100009162

FINAL

TERRESTRIAL BASELINE ECOLOGICAL RISK ASSESSMENT
Bonita Peak Mining District Superfund Site
San Juan County, COLORADO

December 2020

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DCN: 03072-7-06-R014-RA-1087

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List of Acronyms and Abbreviations

AMSL	above mean sea level
ATSDR	Agency for Toxic Substances and Disease Registry
ATV	all-terrain vehicle
AUF	area use factor
BERA	baseline ecological risk assessment
BLM	Bureau of Land Management
BPMD	Bonita Peak Mining District
BTAG	Biological Technical Assistance Group
BW	body weight
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CO	Colorado
COPEC	contaminant of potential ecological concern
CPW	Colorado Parks and Wildlife
CSM	conceptual site model
CTE	central tendency exposure
DRC	dose-response category
DW	dry-weight
EcoSSL	ecological soil screening level
EDD	estimated daily dose
EPA	United States Environmental Protection Agency
EPC	exposure point concentration
ERA	ecological risk assessment
ESA	Endangered Species Act
ESV	ecological screening value
EU	exposure unit
FH	high-level floodplain sampling area exposure equation parameter
FIR	food ingestion rate
FL	low-level floodplain sampling area exposure equation parameter
FM	mid-level floodplain sampling area exposure equation parameter
FP	floodplain sampling area (combined) exposure equation parameter
FR	reference floodplain sampling area exposure equation parameter
GIS	geographic information system
GKM	Gold King Mine
HH	high-level halo area exposure equation parameter
HI	hazard index
HL	low-level halo area exposure equation parameter
HM	mid-level halo area exposure equation parameter
HQ	hazard quotient
LANL	Los Alamos National Laboratory
LOAEL	lowest observable adverse effect level
LWA	length-weighted average
NA	not available/assessed
NLCD	National Land Cover Database
NOAEL	no observable adverse effect level

NPL	National Priorities List
ORNL	Oak Ridge National Laboratory
RI/FS	remedial investigation/feasibility study
RME	reasonable maximum exposure
SAP/QAPP	sampling and analysis plan/quality assurance project plan
SGC	Sunnyside Gold Corporation
SIR	soil ingestion rate
SLERA	screening-level ecological risk assessment
SM	small mammal exposure equation parameter
SUF	seasonal use factor
SW	surface water exposure equation parameter
T&E	threatened and endangered
TRV	toxicity reference value
UCL	upper confidence level
USFWS	United States Fish and Wildlife Service
VG	vegetated upland area exposure equation parameter
WHO	World Health Organization
WIR	water ingestion rate
XRF	x-ray fluorescence

EXECUTIVE SUMMARY

ES.1 Introduction

The United States Environmental Protection Agency (EPA) is conducting a terrestrial baseline ecological risk assessment (terrestrial BERA) to characterize exposure and risks in terrestrial and semi-aquatic ecological receptors associated with natural and anthropogenic contamination sources originating from the Bonita Peak Mining District (BPMD). The BPMD is an approximate 150 square-mile mining district located in unincorporated San Juan County, Colorado (CO), in and just outside of the extensively mineralized Silverton Caldera basin, near the town of Silverton, CO. The basin was subject to both large and small mining operations in boom and bust fashion from 1871 to 1991. Years of mining, mine waste disposal practices, and naturally mineralized areas have contaminated habitats in and around the BPMD. As a result of this contamination, EPA added 48 BPMD mine features to the National Priorities List (NPL) in April 2016 (**Figure ES.1**). This addition formally designated these features as the BPMD Superfund site and initiated the remedial investigation/feasibility study (RI/FS) process, which includes conducting risk assessments.

EPA uses information obtained from human health and ecological risk assessments to help guide risk management decisions in selecting and implementing cleanup actions as part of the RI/FS process. Decisions are, in part, made after considering risk characterization information and associated uncertainties and biases. The terrestrial BERA provides an objective overview of ecological risks in which different receptors and specific exposure units (EUs) can be comparatively evaluated. This information is useful during the beginning or scoping stages of the RI/FS process, particularly for such a large and complex site. EPA plans to use risk information in conjunction with long-term environmental monitoring data, collected throughout the BPMD, to prioritize and evaluate potential remedial actions at individual NPL mine features. This terrestrial BERA builds on the BPMD terrestrial screening-level ecological risk assessment (SLERA; EPA, 2018d) and the terrestrial BERA work plan (EPA, 2017e).

The terrestrial BERA characterizes ecological risks to plant communities, soil invertebrates, and wildlife receptors exposed to soils, surface water, and dietary items potentially contaminated by mine wastes and naturally mineralized materials within the BPMD assessment area; specifically, terrestrial exposure areas and floodplain EUs in Mineral Creek, Cement Creek, and Animas River watersheds above Silverton, CO (**Figure ES.2**). Terrestrial exposure areas represent wildlife receptor-specific habitats. For large home range wildlife such as Canada lynx and golden eagle, terrestrial exposure areas represent all available habitat within the BPMD assessment area. For small home range wildlife such as American pika and montane shrew, terrestrial exposure areas represent contaminated halo area habitats downgradient of mine waste piles. Halo areas are assumed to be mine waste-contaminated habitats that can support plants and invertebrates and are separate and downgradient from unvegetated waste piles. Halo areas are ecologically important because they provide wildlife habitat and forage and consequential exposure to elevated concentrations of contaminants. Halo areas are categorized with respect to a dose-response relationship of increasing concentrations of metals in and down gradient of respective waste piles, specifically, using three hypothetical dose-response categories (DRCs) ranging from high-, mid-, to low-level contamination exposures. DRC methodology allows for focused

collection and subsequent application of exposure information to a larger number of NPL mine features.

Floodplain areas provide important habitat for semi-aquatic and terrestrial receptors. Floodplains are also downgradient and can be contaminated by various mine features throughout the BPMD. As such, surface water, overbank soil, and dietary item chemical information is used to characterize exposure to select receptors based on floodplain EUs and DRCs. Floodplain exposure is based on conditions found in 25 floodplain EUs and 5 reference[1] floodplain creek and river reaches in Mineral Creek, Cement Creek, and the upper Animas River. These floodplain EUs are assigned to one of the four DRCs (high, mid, low, or reference) similar to halo area DRCs so that exposure information collected at a subset of floodplain reaches can be extrapolated to floodplain EUs throughout the BPMD. The four floodplain DRCs are also used as hypothetical exposure areas for plant and invertebrate communities.

Risks are also evaluated for vegetated upland areas to characterize environmental conditions and metals concentrations in habitats not obviously or minimally impacted by past mining activities. Evaluation of vegetated upland habitats provides information on potential ecological risks associated with reference conditions. Vegetated upland habitats should not be strictly interpreted as background areas since they may be impacted by mining activities. Identification of background conditions is complicated by the high level of human disturbance, uncharacterized sources of contamination, and the presence of highly variable geologic conditions that occur throughout the expansive BPMD. As such, background characterization is best done on smaller geographic scales than those evaluated herein.

Depending on receptor type, risks are also evaluated in 29 floodplain EUs (**Figure ES.3**). These floodplain EUs are specific reaches of Mineral Creek, Cement Creek, and Animas River and are similar to those developed in the BPMD aquatic BERA (EPA, 2019a). Given the fate and transport mechanisms associated with BPMD contamination sources and topography, it is expected that floodplains receive and accumulate mine wastes from upgradient sources. Floodplains also provide important habitat for terrestrial and semi-aquatic wildlife species. Like vegetated upland areas, reference EUs are also evaluated. Reference EUs represent creek and river reaches that can be reasonably compared to EUs known to be impacted by BPMD NPL contamination sources. They provide an EU-specific context by which to evaluate risk characterization results when compared to non-reference floodplain EUs. Below are summaries of floodplain EUs in each of the three BPMD assessment area subwatersheds.

- Mineral Creek watershed: A total of eight EUs are established in the Mineral Creek watershed (**Figure ES.3**). These EUs include four mainstem reaches from the Animas River confluence to its headwaters (EU-01 through EU-04, moving in an upstream direction) and four Mineral Creek tributaries, one of which is considered a reference reach (EU-R1; Mill Creek) that is expected to have limited mining influence. The three

[1] Note that Bear Creek, one of the five reference floodplain reaches, is only used to estimate exposure for large and very large home range receptors on a site-wide or Mineral Creek watershed-specific basis and for developing surface water exposure estimates for the reference floodplain DRC. Bear Creek is not included as a specific floodplain EU when evaluating medium and small home range receptor risks because no floodplain soils were collected in this reach.

non-reference tributaries are Brown Gulch (EU-3.5), that enters mainstem Mineral Creek in the middle of EU-03, South Fork Mineral Creek (EU-05), that enters mainstem Mineral Creek at the upstream end of EU-01, and Middle Fork Mineral Creek (EU-06), that enters mainstem Mineral Creek at the upstream boundary of EU-02.

- Cement Creek watershed: A total of five EUs are established in the Cement Creek watershed (**Figure ES.3**). These EUs include three mainstem reaches from the Animas River confluence to its headwaters; specifically, EU-20, EU-22, and EU-24, moving in an upstream direction. Two Cement Creek tributaries, Prospect Gulch (EU-21) and South Fork Cement Creek (EU-23), are also included in this watershed.

- Animas River watershed above Silverton: A total of 16 mainstem and tributary floodplain EUs are established in this portion of the Animas River watershed (**Figure ES.3**). Moving in an upriver direction, EU-07 begins near the Arrastra Creek confluence, ends at the Cunningham Creek (EU-08) confluence, and continues upriver with EU-09 just above the Maggie Gulch confluence. The next mainstem EU, EU-10, extends from Maggie Gulch up to the South Fork Animas River confluence in Eureka. The South Fork Animas River watershed has three EUs, as follows. The upper South Fork Animas River (EU-11) starts at the confluence with Eureka Gulch (EU-12) and South Fork Animas River then continues upstream to the headwaters. EU-13 is a reach between mainstem Animas River and Eureka Gulch. EU-14 is on the mainstem Animas River and starts at the South Fork Animas River confluence. EU-14 ascends out of the Animas River valley up to the West Fork Animas River confluence at Animas Forks. The West Fork Animas River watershed contains three EUs starting with EU-15 which begins at the Animas River confluence and continues up to the Placer Gulch (EU-16) confluence. EU-17 (California Gulch) is on the West Fork Animas River above Placer Gulch. EU-18 is on the North Fork Animas River, which begins at Animas Forks and continues up to the Burrows Gulch confluence. EU-19 is Burrows Gulch from its confluence with the North Fork Animas River upstream to its source. Three reference EUs are also located in the Animas River watershed above Silverton, namely Maggie Gulch (EU-R2), Picayune Gulch (EU-R3), and Upper North Fork Animas River (EU-R4).

ES.2 Problem formulation and assessment and measurement endpoints

While mining has not occurred in the BPMD since 1991, mine wastes associated with past mining activities are scattered throughout the environment. NPL mine features are the major sources of contamination in the BPMD. Soils and mineralized rock within the BPMD naturally contain high levels of metals and represent non-mining related sources of contamination in local drainages. Potential contaminants at this site include 20 heavy and essential metals and metalloids. These contaminants are either directly or indirectly related to historic mining and waste management activities. Contaminants are released from natural and mine-impacted areas into downgradient habitats and can ultimately accumulate in terrestrial and floodplain soils, surface waters, and plant and animal tissues. When mine waste contamination occurs in habitats used by plants, invertebrates, and wildlife, there are complete exposure pathways via direct contact and consumption of contaminated soil, surface water, and dietary items. The terrestrial BERA evaluates risks based on the following complete exposure pathways:

- Direct contact of plants with soil;
- Direct contact of soil invertebrates with soil;
- Incidental ingestion of soil by wildlife receptors;
- Ingestion of surface water by wildlife receptors, and
- Ingestion of contaminated forage and prey items by wildlife receptors.

Assessment endpoints represent explicit expressions of the key ecological resources to be protected from site contamination. Measurement endpoints represent measurable ecological characteristics, quantified through predictive exposure/effects analyses, which can be related back to the valued ecological resources chosen as the assessment endpoints. Respective endpoints are selected after developing and evaluating the conceptual site model (CSM) and identifying respective complete exposure pathways.

To assess risks associated with complete exposure pathways, 10 assessment endpoints are selected, and one measurement endpoint is evaluated for each assessment endpoint. The measurement endpoint compares exposure estimates to toxicity benchmarks; specifically, using measured metal concentrations in soil to assess direct contact risks to plants and invertebrates. Wildlife risk evaluations use metals concentrations in soil, surface water, and dietary item (plants, invertebrates, and small mammal) tissues in a food chain model to calculate metal-specific estimated daily doses (EDDs) for comparison against avian and mammalian no- and low-effect dietary toxicity reference values (TRVs). EDDs are calculated using standard food chain models that are tailored to wildlife receptor-specific soil, water, and food intake rates and diet components. The following are the assessment endpoints and associated receptors that are evaluated in the terrestrial BERA:

- Assessment Endpoint #1: Maintain stable and healthy terrestrial plant communities.
- Assessment Endpoint #2: Maintain stable and healthy soil invertebrate communities.
- Assessment Endpoint #3: Maintain stable and healthy herbivorous bird populations; specifically, white-tailed ptarmigan.
- Assessment Endpoint #4: Maintain stable and healthy herbivorous mammal populations; specifically, moose, American beaver, American pika, yellow-bellied marmot, and northern pocket gopher.
- Assessment Endpoint #5: Maintain stable and healthy insectivorous bird populations; specifically, cliff swallow and mountain bluebird.
- Assessment Endpoint #6: Maintain stable and healthy insectivorous mammal populations; specifically, fringed myotis bat and montane shrew.
- Assessment Endpoint #7: Maintain stable and healthy omnivorous bird populations; specifically, American robin.
- Assessment Endpoint #8: Maintain stable and healthy omnivorous mammal populations; specifically, coyote and deer mouse.
- Assessment Endpoint #9: Maintain stable and healthy carnivorous bird populations; specifically, golden eagle and northern goshawk.
- Assessment Endpoint #10: Maintain stable and healthy carnivorous mammal populations; specifically, Canada lynx.

Of the wildlife receptors listed in the above endpoints, moose, beaver, cliff swallow, myotis bat, montane shrew, robin, and deer mouse are assumed to be semi-aquatic species that forage in BPMD floodplain habitats. All other wildlife receptors are considered terrestrial species that primarily forage in upland terrestrial habitats. Plants and soil invertebrate community risks are evaluated in both floodplain and upland habitats.

ES.3 Assessment methods

The terrestrial BERA follows EPA guidance for conducting ecological risk assessments (EPA, 1997; 1998). This process includes identifying contaminants of potential ecological concern (COPECs) for all environmental media prior to being evaluated in the risk characterization phase. COPECs were identified in the terrestrial BERA work plan using risk information reported in the BPMD terrestrial SLERA (EPA, 2017e; 2018d). The SLERA generated a series of hazard quotients (HQs) associated with four terrestrial receptor groups and the three exposure areas. HQs were calculated by dividing the maximum-detected concentrations (or half the maximum detection limit for non-detects) for all contaminants of interest (where applicable) measured in mine wastes, overbank floodplain soils, and campsite soils by the most conservative no-effect soil ecological screening values (ESVs) available for each receptor group (plants, invertebrates, birds, and mammals). Metals with maximum concentrations above their conservative no-effect soil ESVs (HQs>1) were identified in the terrestrial BERA work plan as receptor group-specific soil COPECs, regardless of exposure area. Additionally, all bioaccumulative contaminants were automatically retained as wildlife COPECs for evaluation in BERA food chain modeling.

In this BERA, risks from individual COPECs to plant and invertebrate communities and wildlife receptors are quantified using the HQ method. Plant and invertebrate community HQs are derived by comparing concentrations of COPECs in soil to direct soil contact ESVs. Wildlife HQs are derived by comparing the food chain model-based EDD exposure estimates to no- and low-effect dietary bird and mammal no- and low-effect TRVs. The exposure estimates consist of reasonable maximum exposure (RME) and central tendency exposure (CTE) exposure point concentrations (EPCs) for soil, surface water, or wildlife dietary items. The RME exposure scenario is more conservative than the CTE scenario because it assumes the greatest level of exposure. This may not be the most relevant exposure scenario for many receptors that would be exposed to BPMD contamination over a larger area of their respective EUs.

EPCs are calculated using ProUCL Version 5.1 software (EPA, 2016e). RMEs are the 95% upper confidence limit (UCL) of the arithmetic mean, or maximum detections, when UCLs cannot be calculated. CTEs are average COPEC concentrations measured in environmental samples collected from each EU. HQs are calculated by dividing an EPC by an ESV or TRV as follows:

$$HQ = \text{exposure} / \text{toxicity}$$

Where:

HQ = hazard quotient (unitless)

Exposure	= the EPC (plants and invertebrates; in units of mg COPEC/kg soil) or EDD (for birds and mammals; in units of mg COPEC/kg body weight/day)
Toxicity	= the ESV (plants and invertebrates; in units of mg/kg) or TRV (for birds and mammals; in units of mg/kg body weight/day)

Wildlife risks are evaluated by generating four HQs for each COPEC and receptor: 1) RME/no-effect TRV, 2) RME/low-effect TRV, 3) CTE/no-effect TRV, and 4) CTE/low-effect TRV. The terrestrial BERA assumes that the potential for risk increases from the most conservative HQ to the least conservative HQ. Respective HQs provide a broader context to support future risk management decision making.

ES.4 Risk characterization

The risk characterization step of the terrestrial BERA integrates exposure and effects to determine the likelihood of adverse effects for each assessment endpoint, receptor, and COPEC. It focuses on low-effect CTE HQs that are expected to represent the highest and most realistic levels of risk. Since a number of conservative exposure and effect assumptions are used throughout this BERA, focusing on the least conservative risk characterization scenario should provide the most relevant and realistic means to identify COPECs driving risks and receptors that are most at risk from BPMD contamination exposures.

Even though it is understood that risk does not increase in a linear fashion with increasing HQs, they are described in the context of relative risk, as follows:

- CTE low-effect ESV or TRV HQs >1 but <5, which corresponds to lower risk;
- CTE low-effect HQs >5 but <10, which corresponds to moderate risk; or
- CTE low-effect HQs >10, which corresponds to higher risk.

Risk characterization summaries that describe HQs as being elevated refer to CTE low-effect HQs ≥1.

Table ES-1 presents the risk characterization results for the 10 assessment endpoints at each of the floodplain EUs, high-, mid-, and low-level DRC-based waste pile halo and floodplain areas, and vegetated upland habitats; a summary is provided below.

Plant community risk characterization summary (assessment endpoint #1):

- The highest soil HQs for plant communities are associated with manganese (higher risk), lead (higher risk), molybdenum (higher risk), and zinc (moderate risk). For these COPECs, the greatest CTE low-effect HQs are in the Animas River floodplain EUs downgradient from Placer Gulch (EU-16) and high-level halo and floodplain DRCs. Cobalt, copper, and thallium CTE low-effect HQs are comparably lower, but still may pose lower risk to plant communities in a few floodplain EUs. Arsenic CTE low-effect HQs are below 1, except in upper Mineral Creek (EU-04) and the upper North Fork Animas River reference (EU-R4) where HQs were slightly above 1.

- In addition to floodplain EUs, plant community risks are evaluated for the three halo and four floodplain DRC exposure areas. Analysis of direct contact exposures in halo area and floodplain DRCs result in a dose-response increase in plant community risks from manganese (moderate to lower risks), lead (lower risks), and molybdenum (moderate risks) exposure. For manganese and molybdenum, lower risks are also identified in vegetated upland and reference floodplain exposure areas.

Soil invertebrate risk characterization summary (assessment endpoint #2):

- The highest soil HQs for invertebrate communities are associated with zinc (moderate risk) and manganese (moderate risk). The greatest risks associated with zinc and manganese are in the Animas River floodplain EUs in and down gradient from lower West Fork Animas River (EU-15) and in high-level halo and floodplain DRCs. Lower arsenic, copper, lead, and mercury risks are identified for a few floodplain EUs scattered throughout the BPMD.

- In addition to floodplain EUs, invertebrate community risks are evaluated for the three halo and four floodplain DRC exposure areas. Direct contact COPEC exposure risks to invertebrate communities in halo and floodplain DRCs are comparably lower than those seen in the most contaminated floodplain EUs. However, lower risk still occurs in high-level halo and floodplain exposure areas for zinc and manganese exposures. All other DRC-specific COPECs HQs are below 1.

Wildlife receptor risk characterization summaries (assessment endpoints #3 through #10)

Assessment endpoint #3 – Risks to herbivorous birds:

- White-tailed ptarmigan is evaluated to represent dietary risks to herbivorous birds. Exposure estimates are based on COPEC concentrations measured in soil and plant tissues (100% of diet: 80% shrub, 20% herb) associated with mine waste pile halo DRCs (high-, mid-, and low-level), vegetated reference habitats, and surface water in similarly categorized floodplain EUs. All ptarmigan CTE low-effect HQs are less than 1. The greatest HQs are associated with lead in high-level DRC mine waste pile halo habitats.

Assessment endpoint #4 – Risks to herbivorous mammals:

- Moose is evaluated to represent dietary risks to herbivorous mammals. Moose have very large home ranges and exposure is characterized for floodplain habitat in and specific to each of the three assessment area watersheds (**Figure ES.2**). Exposure estimates are based on COPEC concentrations measured in floodplain soil, surface water, and plant tissues (100% diet: shrub) in respective watersheds. All moose CTE low-effect HQs are much less than 1. The greatest HQs are associated with thallium in the Animas River watershed.

- American beaver is evaluated to represent dietary risks to herbivorous mammals. Exposure estimates are based on COPEC concentrations measured in soil, surface water,

and plant tissues (100% diet: 80% shrub; 20% herb) in each of the 29 floodplain EUs. All beaver CTE low-effect HQs are less than 1. The greatest HQs are associated with lead, with an HQ slightly lower than 1 derived for the mainstem Animas River EU-07 between Arrastra Creek upstream to the confluence with Cunningham Creek in Howardsville. Lead HQs are also slightly elevated in mainstem Animas River reaches above EU-07 and upstream into lower West Fork Animas River (EU-15) and Placer Gulch (EU-16).

- American pika is evaluated to represent dietary risks to herbivorous mammals. Exposure estimates are based on COPEC concentrations measured in halo area soil, similarly categorized floodplain DRC surface water, and plant tissues (100% of diet: grass) for each of the halo DRCs (high-, mid-, and low-level) and vegetated upland habitats. Given this species close association with waste piles, risks are also assessed for pika exposed to waste rock instead of halo area soils. Elevated lead HQs are estimated for pika in both soil exposure scenarios; specifically, lower risk for halo soil and higher risks for waste piles in the high-level DRC exposure area. Moderate arsenic and lower antimony and copper risks were also estimated for the waste rock but not for the halo soil exposure scenario. All other pika COPEC CTE low-effect HQs are less than 1.

- Yellow-bellied marmot is evaluated to represent dietary risks to herbivorous mammals. Exposure estimates are based on COPEC concentrations measured in halo area soil, similarly categorized floodplain DRC surface water, invertebrate tissues (5% of diet) and plant tissues (60% herb, 35% grass) for each of the halo DRCs (high-, mid-, and low-level) and vegetated upland habitats. It is assumed that marmot would only be exposed to BPMD contamination sources for half the year when this species is active and not hibernating. The same DRC-based mine halo and waste pile soil substitution exposure analyses conducted for pika are also conducted for marmot. Under the halo soil exposure scenario, no CTE low-effect HQs are above 1. However, lead risks to marmot are greater under the waste pile exposure scenario. Under this scenario, lower risks occur for lead exposure under each of the three DRCs (high-, mid- and low-level) . Additionally, lower risks from arsenic exposure are associated with the mid-level DRC. All other marmot COPEC CTE low-effect HQs are less than 1.

- Northern pocket gopher is evaluated to represent dietary risks to herbivorous mammals. Exposure estimates are based on COPEC concentrations measured in halo area soil, similarly categorized floodplain DRC surface water, and plant tissues (100% diet: 60% herb, 20% grass, 20% shrub) for each of the halo DRCs (high-, mid-, and low-level) and vegetated upland habitats. The only gopher CTE low-effect HQs above 1 is for lead in the high- (HQ = 2) and mid-level (HQ = 2) DRC exposure areas. All other COPEC CTE low-effect HQs are less than 1. These results suggest lower risk to gopher from lead exposure in the most contaminated halo habitats.

Assessment endpoint #5 – Risks to insectivorous birds:

- Cliff swallow is evaluated to represent dietary risks to insectivorous birds. Exposure estimates are based on COPEC concentrations measured in soil, surface water, and invertebrate tissues (100% of diet) for each of the 29 floodplain EUs. It is assumed that

cliff swallow would only be exposed to BPMD contamination sources for half the year when this species is actively foraging in the assessment area. Elevated CTE low-effect HQs are estimated for swallow exposed to lead in most of the floodplain EUs. The greatest lead risks occur in Animas River watershed downriver from Placer Gulch (EU-16 to EU-07). Within these floodplain EUs, HQs ranged from 9 to 23. However, lower risks from lead exposure are apparent in almost all other floodplain EUs, excluding reference EUs. All other cliff swallow COPEC CTE low-effect HQs are less than 1 throughout the BPMD assessment area floodplain EUs.

- Mountain bluebird is evaluated to represent dietary risks to insectivorous birds. Exposure estimates are based on COPEC concentrations measured in halo area soil, similarly categorized floodplain DRC surface water, invertebrate tissues (92% of diet), and plant tissues (8% shrub) for each of the halo DRCs (high-, mid-, and low-level) and vegetated upland habitats. It is assumed that bluebird would only be exposed to BPMD contamination sources for half the year when this species is actively foraging in the assessment area. Bluebird lead exposure risks occur over a dose-response gradient from high-level (HQ = 10), mid-level (HQ = 9), to low-level (HQ = 4) DRC exposure areas. All other bluebird COPEC CTE low-effect HQs are less than 1.

Assessment endpoint #6 – Risks to insectivorous mammals:

- Fringed myotis bat is evaluated to represent dietary risks to insectivorous mammals. Exposure estimates are based on COPEC concentrations measured in surface water and invertebrate tissues (100% of diet) in each of the 29 floodplain EUs. Due to the unique life-history of myotis bat, surface water exposures are estimated using mine adit and drainage water before discharging/mixing with creek/river surface water. It is assumed that myotis bat would only be exposed to BPMD contamination sources for half the year when this species is actively foraging in the assessment area. Despite being exposed to mine adit and drainage water, all myotis bat COPEC CTE low-effect HQs are less than 1.

- Montane shrew is evaluated to represent dietary risks to insectivorous mammals. Exposure estimates are based on COPEC concentrations measured in floodplain soil, similarly categorized floodplain DRC surface water, invertebrate tissues (90% of diet) and plant tissues (10% herb) for each of the floodplain DRCs (high-, mid-, and low-level) and reference floodplain habitats. Elevated CTE low-effect HQs are estimated for shrew exposed to lead, selenium, copper, arsenic, and thallium in most of the DRCs evaluated. Of these COPECs, lead is most elevated in the high-level DRC (HQ = 14), followed by selenium (HQ = 6) in each DRC and reference floodplain exposure area. Copper risks are lower (HQ = 2) and only occur in the high-level DRC. Arsenic and thallium risks are also lower (HQs just above 1), do not follow a dose-response relationship with DRC, and are similarly elevated in reference floodplain exposure area.

Assessment endpoint #7 – Risks to omnivorous birds:

- American robin is evaluated to represent dietary risks to omnivorous birds. Exposure estimates are based on COPEC concentrations measured in soils, surface water,

invertebrate tissues (42% of diet), and plant tissues (20% shrub, 19% grass, 19% herb) for each of the 29 floodplain EUs. It is assumed that robin would only be exposed to BPMD contamination sources for half the year when this species is actively foraging in the assessment area. Elevated CTE low-effect HQs are estimated for robin exposed to lead occur in most of the floodplain EUs evaluated. Lead risks are higher and moderate in EUs downgradient from Placer Gulch (HQs up to 35), lower in almost all Mineral EUs (HQs up to 4), and lower to moderate in Cement Creek EUs (HQs up to 5). Vanadium risks are lower and only occur in a few EU. Lower risks to robin from copper exposure only occur in Animas River EU-10 with is just downgradient from the South Fork Animas River confluence.

Assessment endpoint #8 – Risks to omnivorous mammals:

- Coyote is evaluated to represent dietary risks to large omnivorous mammals. Coyote have very large home ranges and exposure is characterized for all habitats in the entire BPMD assessment area. As such, exposure modeling requires extensive development and application of area use factors (AUFs). Coyote food chain models are based on COPEC concentrations measured in soils, surface water, small mammal tissues (87% of diet) modeled from soil using literature-based equations, invertebrate tissues (10% of diet), and plant tissues (3% grass). All coyote CTE low-effect HQs are much less than 1.

- Deer mouse is evaluated to represent dietary risks to small omnivorous mammals. Exposure estimates are based on COPEC concentrations measured in floodplain soil, similarly categorized floodplain DRC surface water, invertebrate tissues (25% of diet) and plant tissues (40% herb, 20% grass, 15% shrub) for each of the floodplain DRCs (high-, mid-, and low-level) and reference floodplain habitats. Elevated CTE low-effect HQs occur for selenium, lead, and thallium. Selenium and thallium HQs are very similar among DRC and reference floodplain exposure areas and indicate lower risk to mouse throughout the BPMD. Lead risks are lower and only elevated in the high- (HQ = 2) and mid-level (HQ slightly above 1) floodplain DRC exposure areas.

Assessment endpoint #9 – Risks to carnivorous birds:

- Golden eagle is evaluated to represent dietary risks to large, migratory carnivorous birds. Golden eagles have very large home ranges and exposure is characterized for all habitats in the entire BPMD assessment area. As such, exposure modeling required extensive development and application of AUFs. Eagle food chain models are based on COPEC concentrations measured in soil, surface water, and small mammal tissues (100% of diet) modeled from soil using literature-based equations. It is assumed that golden eagle would only be exposed to BPMD contamination sources for half the year when this species is actively foraging in the assessment area. All golden eagle CTE low-effect HQs are much less than 1.

- Northern goshawk is evaluated to represent dietary risks to large, resident carnivorous birds. Goshawk have large home ranges and exposure is characterized for all habitats in each of the BPMD assessment area watersheds (**Figure ES.2**). Watershed-specific food

chain models are based on COPEC concentrations measured in soil, surface water, and small mammal tissues (100% of diet) modeled from soil using literature-based equations. All CTE low-effect HQs are less than 1.

Assessment endpoint #10 – Risks to carnivorous mammals:

- Canada lynx is evaluated to represent dietary risks to carnivorous mammals and is listed as federally threatened and state endangered. Canada lynx have very large home ranges and exposure is characterized for all evergreen forest habitats present in the entire BPMD assessment area. As such, exposure modeling required extensive development and application of lynx-specific AUFs. Lynx food chain models are based on COPEC concentrations measured in soil, surface water, and small mammal tissues (100% of diet) modeled from soil using literature-based equations. All lynx CTE low-effect HQs are much less than 1.

ES.5 Summary of major uncertainties

Uncertainty is an inherent feature of any BERA because many assumptions must be made in order to proceed with the evaluation. These assumptions can affect all or some aspects of an assessment, including the CSM development, effects analyses, exposure analyses, and risk characterization. The following summary of uncertainties identifies and discusses the major assumptions and potential biases associated with them:

- Exposure analyses for large home range wildlife receptors requires categorizing NPL mine feature waste piles, halo areas, and floodplain EUs into one of three DRCs; high-, mid-, and low-level. Even though final categorization relies on actual concentrations of lead and other COPECs measured in soil that drives risk for most receptors and uses all available environmental data, it contributes to uncertainties associated with comparability to actual exposures. Similar additional uncertainties are associated with extrapolating exposure data collected from target sampling areas to a wider set of non-sampled exposure areas with similar exposure conditions. For mine features, these uncertainties stem from assuming exposure information (soil and dietary items) obtained from the eight halo sampling areas represent all 42[2] BPMD NPL mine features evaluated herein. For floodplain EUs, uncertainties stem from assuming dietary exposure information obtained from the 10 floodplain sampling areas represent the remaining 19 floodplain EUs. Any biases associated with the categorization and subsequent sampling and application of exposure information are unknown. However, it is possible that there are more contaminated habitats in the BPMD assessment area than those that were sampled. If this is the case, current DRC-based exposure metrics may underestimate risks. This is

[2] As described in Section 7.2.2 of the terrestrial BERA work plan (EPA, 2017e), not all the 48 individual NPL mine features are directly evaluated. This includes two study areas (Sunnyside Mine Pool and Prospect Gulch), three in-river/floodplain tailings deposits (Eureka Fluvial Tailings, Kittimack Tailings, and Howardsville Colo Goldfields Tailings) and the grouped Mayflower Mill Repositories (#1 through #4). While not directly evaluated, risks associated with these six NPL features are indirectly evaluated using representative mine sites/features and floodplain EUs.

one reason why the BERA relies on conservative assumptions when estimating exposures.

- There may be more than 5,300 mine-related features present in the study area in addition to the 42 BPMD NPL mine features assessed in this BERA (Mast *et al*., 2007). Although the BPMD NPL features are likely some of the largest and most contaminated found throughout the assessment area, they are a small fraction of total mine features in the district. Mine halo AUF acreages are only estimated for NPL features and not all possible mine-related features, which only accounts for a fraction of possible halo area exposures. This likely results in an underestimate of halo area and an overestimate of vegetated upland area exposures. This uncertainty only affects risk outcomes for specific large home range receptors, namely lynx, coyote, and eagle, that rely on halo and upland habitat AUF-tailored exposure estimates. Since halo areas are more contaminated than vegetated upland areas, large home range receptor COPEC exposures and subsequent risks are likely underestimated. However, associated biases are likely reduced with application of the large, highly conservative halo-to-waste pile acreage multiplier (20.2). Application of this multiplier to all NPL features, some of which with much smaller halo-to-waste pile areas, likely accounts for a proportion of halo areas from uncharacterized mine features. Given that CTE low-effect TRV HQs for lynx, coyote, and eagle are very low and halo areas are such a small fraction of the total assessment area, any additional exposures associated with non-NPL mine features would likely still result in acceptable risks to these receptors.

- Large home range receptor exposure estimates are tailored according to habitat type-based AUFs that require extensive remote sensing and data processing steps. These processes lead to uncertainties associated with the differences between actual and estimated acreages used to derive AUFs. This includes but is not limited to, reliance on spatially explicit habitat data aggregated on much larger geographic scales than those found in the field, and the inherent errors associated with available remote sensing data. It is difficult to characterize biases of these uncertainties. As such, AUFs may over- or underestimate true habitat usage but likely have a variable effect on large home range receptor risk estimates.

- Much of the soil exposure information used in this BERA relies on soil samples collected in areas that maximize the likelihood of finding high concentrations of metals. Such sampling targeted areas of bare, nonvegetated, and fine-grained soils. This is particularly relevant when estimating exposures associated with waste rock, halo soil, and floodplain soil believed to be impacted directly or indirectly by past mining activities. As a result, the soil samples used for calculating the EPCs likely represent “worst-case” exposure conditions that would be experienced by terrestrial receptor groups living and/or foraging throughout the BPMD assessment area. Associated biases would mostly affect risk outcomes for small and medium home range receptors where soil exposure is based on samples collected from relatively small geographic areas; for example, a single floodplain EU. In these cases, exposure and risk is likely overestimated.

- Risk characterization results indicate the potential for risk in vegetated upland exposure areas and reference floodplain EUs for plant and invertebrate communities, montane shrew, American robin, and deer mouse. These risks are likely driven by natural sources of metals present in hydrothermally altered, propylitized rock and soil that is common throughout the BPMD. It is unknown how much natural sources of contamination contribute to total risks in halo DRCs and non-reference EUs. This situation represents a major uncertainty, which would have to be considered as part of any future risk management decision-making; ideally, via site-specific background analyses that are dependent on remedial actions being considered. Despite this uncertainty, it appears highly likely that mining activities have substantially increased ecological receptor exposure to and risks from metals at levels beyond those that would have occurred without mining (Church *et al*., 1999). Comparative analysis between minimally mine-impacted vegetated upland and reference EUs and mine waste contaminated halo areas and non-reference EU also support the conclusion that mining activities have increased risks to ecological receptors.

- The risk analysis assumes that 100% of COPEC concentrations measured by the chemical analyses represents the bioavailable fraction accessible for uptake by ecological receptors. Many physical, chemical, and site-specific factors affect metals bioavailability in mine waste-contaminated exposure media. These factors may include soil particle size, sulfide content, pH, weathering history, and mineralogical composition, among others (Schaider *et al*., 2007). Bioavailability can also be species- and individual-specific. It is not possible to accurately predict what the actual bioavailability might be for the metals measured in BPMD exposure media for all receptors without further testing. It is likely that site-specific bioavailability would be less than 100%. Hence, the current assumption of 100% bioavailability is expected to overestimate risk to all wildlife receptors.

- This BERA uses a highly conservative (low/sensitive) avian low-effect TRV for lead (3.26 mg of lead/kg body weight/day) that results in elevated HQs for cliff swallow, mountain bluebird, and American robin. This TRV is from the same study used to derive the no observable adverse effect level (NOAEL)-based ecological soil screening level (EcoSSL) (EPA 2005b). The low-effect TRV used herein is from Edens and Garlich (1983), which reports the second to lowest available NOAEL with a bounded lowest observable adverse effect level (LOAEL) among five bird species and nine separate studies in the EcoSSL database that resulted in reduced bird reproduction due to lead exposure. The use of this low-effect TRV for lead is justified since the sensitivity of avian receptors assessed herein is unknown and the conservative TRV is likely protective of any sensitive bird species. This low-effect TRV was also recommended for use by the EPA Region 8 United States Fish and Wildlife Service liaison for this site.

- Plant toxicity from aluminum and iron exposure are based on chemical and physical soil conditions (EPA, 2003a,b), for which site-specific information is unavailable. Therefore, plant exposure risks to these two metals are not evaluated in this BERA. Bioavailability of aluminum for plant uptake and toxicity is associated with soil pH. For example, aluminum is soluble and biologically available in acidic (pH <5.5) soils and waters but is biologically inactive in circumneutral to alkaline (pH 5.5 to 8.0) conditions. In alkaline

soils and solutions (pH >8.0), the solubility of aluminum increases, but its bioavailability is poorly known (Sparling and Lowe, 1996). Chemical and toxicological information suggests that aluminum must be in a soluble form in order to be toxic to biota. With respect to iron, the main concern from an ecological risk perspective is not direct chemical toxicity *per se*, but the effect of iron as a mediator in the geochemistry of other, potentially toxic, metals (EPA, 2003b). Although it may be speculated that mine waste-impacted soils have elevated aluminum and iron levels and pH below 5.5, the potential impact of these COPECs on calculated risk estimates is unknown. However, risks to plant communities are likely in heavily contaminated areas that are barren (waste rock piles), or in habitats that support impoverished plant communities consisting of metals-tolerant species.

ES.6 Conclusions

In summary, the terrestrial BERA assesses community-level risks for plant and invertebrate communities and species-specific risks for 16 representative wildlife species that could occur in the assessment area and be exposed to BPMD contamination sources. Risk characterization uses exposure data obtained from soil, surface water, and dietary item tissue samples collected throughout the BPMD and aggregated into hypothetical DRCs ranging from high-, mid-, to low-level contamination categories. The majority of environmental samples were collected from spring 2014 to fall 2018; thus, environmental chemistry data should reflect current conditions. For plant and invertebrate community receptors, risks are evaluated using information on COPEC concentrations in BPMD soils which are compared to direct contact plant and invertebrate soil ESVs. For wildlife receptors, concentrations of COPECs in soil, surface water, invertebrate tissues, and plant tissues are used to develop species-specific food chain modeled-EDDs which are compared to dietary based TRVs. These risk characterization methods generate HQs that, when elevated above unity, suggest that ecological receptors may be at risk from respective COPEC exposures. HQs are the primary, predictive tool used to assess ecological risks to terrestrial and semi-aquatic community and species-specific receptors from BPMD COPEC exposures.

The greatest risks to all receptors occur in terrestrial habitats associated with mine waste piles, high-level DRC halo habitats, and floodplain EUs in highly mineralized watersheds. For community-level receptors, the greatest direct contact exposure risks to plants and soil invertebrates are from manganese, lead, and molybdenum exposure and, to a lesser extent, zinc and thallium. Spatially, the greatest risks to all receptors are in the Animas River floodplain habitats in and downgradient from Placer Gulch, followed by upper mainstem Mineral Creek, South Fork Mineral Creek, and upper Cement Creek. Risks are also elevated for some receptors from COPECs in high-level halo and floodplain DRC exposure areas.

Risk characterization results show that large home range wildlife receptors may be experiencing an acceptable level of risk from dietary-based COPEC exposures. This may be an artifact of life history traits and diversity of exposure associated with the range of contaminated habitats over large geographic areas. Risks for smaller home range herbivorous wildlife receptors such as gopher, deer mouse, shrew, pika, and marmot are relatively low and only occur for a limited number of COPECs (mostly lead) in the most contaminated habitats (halo areas and waste piles).

Of all the wildlife receptors evaluated in the terrestrial BERA, insectivorous and omnivorous birds (swallow, bluebird, and robin) are most at risk from dietary exposures to BPMD COPECs. Risk characterization results for these receptors show that elevated risks from lead exposure occur in upland habitats near mine wastes (halo areas) and most floodplain EUs that are downgradient from mine features. It is important to note that risk estimates are likely biased high since a highly conservative (i.e., low/sensitive) avian TRV is used to generate lead HQs for birds. Combined with elevated lead concentrations in soil and diet, these factors are likely driving elevated HQs for birds. Despite potential biases associated with use of a conservative low-effect TRV and an assumption of 100% bioavailability, CTE-based HQs are sufficiently high that lead exposure risks to avian wildlife cannot be ruled out. Low-level risks to lead and a few other metals were also found in upland habitats not obviously impacted by mining activities and reference floodplain EUs for robin.

In conclusion, the terrestrial BERA provides a thorough evaluation of plant and invertebrate community and wildlife receptor risks associated with anthropogenic and natural sources of contamination within the BPMD. Risk characterization results indicate that large home range receptors likely experience an acceptable level of risk when exposed to BPMD contamination sources. Smaller home range receptors such as insectivorous and omnivorous birds and small mammals may be at risk from dietary exposure to elevated concentrations of metals such as lead that are common in BPMD mine wastes in and downgradient from waste piles and depositional floodplain habitats. However, there is evidence that metal concentrations in less or non-mine impacted habitats may also contribute to ecological risks in sensitive receptors throughout the assessment area. This result speaks to the naturally occurring, highly mineralized soils found throughout the BPMD (i.e. background conditions) which should be considered in future RI/FS activities. Together, this terrestrial BERA and the final aquatic BERA (EPA, 2019a) provide a comprehensive assessment of ecological risks from BPMD contamination throughout the BPMD and the upper Animas River watershed.

SECTION 1: GENERAL INTRODUCTION

1.1 Scope

This terrestrial baseline ecological risk assessment (BERA) assesses risks to terrestrial and semi-aquatic ecological receptors potentially impacted by natural sources and historic mining activities within the Bonita Peak Mining District (BPMD), located in unincorporated San Juan County, Colorado (CO). The BPMD refers to an approximate 150-square-mile mining district located in and just outside of the extensively mineralized Silverton Caldera basin near the town of Silverton, CO. The basin was subject to both large and small mining operations in boom and bust fashion from 1871 to 1991. Years of mining and mine waste disposal practices contaminated habitats in and around the BPMD. In April 2016, the United States Environmental Protection Agency (EPA) added 48 BPMD mine features to the National Priorities List (NPL) (**Figure 1.1**). Select mine features were added due to their potential for ongoing releases of hazardous substances into the environment and impacts to human and ecological health (EPA, 2016b). Designated as a Superfund site, EPA assumed the authority to investigate and remediate contamination sources to lessen or eliminate impacts to human health and the environment through the remedial investigation/feasibility study (RI/FS) process.

EPA uses information obtained from human health and ecological risk assessments to help guide risk management decisions when selecting and implementing cleanup actions as part of the RI/FS process. Decisions are, in part, made after considering risk characterization information which is documented in BERA reports. Final risk characterization steps integrate exposure and effects data to derive risk estimates for relevant receptors. It is the task of risk managers to objectively assimilate all available risk information and associated uncertainties when evaluating the timing and scope of remediation actions. It is important to recognize that this BERA is not the only source of RI/FS supporting information available to site remediation managers. For example, there is a wealth of information contained in the BPMD aquatic BERA and many years of monitoring data collected by EPA and other federal and state agencies (EPA, 2019d). This BERA provides risk information over a large geographic area in which BPMD NPL mine features are located. It provides an objective overview of risks in which specific watersheds, river floodplain reaches, and ecological receptors can be comparatively evaluated. This information is useful during the beginning or scoping stages of the RI/FS process for such a large and complex site. In summary, information provided herein supports the formal RI/FS process. However, it should be recognized that the scale of the assessment area limits wholesale application of BERA results to all individual sources of contamination in the BPMD.

The terrestrial BERA characterizes ecological risks to terrestrial and semi-aquatic wildlife receptors potentially exposed to naturally and mine waste-contaminated soil, water, and wildlife dietary items throughout the BPMD. This terrestrial BERA builds upon the findings from previous risk assessment documents, including the terrestrial screening-level ecological risk assessment (SLERA; EPA, 2018d) and the terrestrial BERA work plan (EPA, 2017e). Risk assessment analysis steps and procedures employed in this terrestrial BERA were developed and refined in the BERA work plan and were informed by the technical input of the BPMD biological technical assistance group (BTAG).

1.2 General ecological risk assessment approach

EPA is applying the 8-step ecological risk assessment (ERA) process to evaluate risks of BPMD mining-related contamination to terrestrial receptors. This process provides a logical and efficient way to document whether actual or potential ecological risks exist at a site, identify which contaminants pose an ecological risk, and generate information to help evaluate and select cleanup options. Steps 1 and 2 were already accomplished in the terrestrial SLERA performed for the BPMD (EPA, 2018d). The terrestrial SLERA provides a simplified assessment using limited site data, high-level exposure estimates, and screening-level toxicity values to identify exposure pathways and contaminants of potential ecological concern (COPECs) that warrant further refinement. The SLERA results and additional site-specific information are used to determine the scope and goals of the BERA during problem formulation, ERA Step 3. Steps 4 through 6 apply to site investigation and the collection of data in support of the BERA. In Step 7, all the collected data are used to characterize exposures, risks, and uncertainties in the final BERA. Step 8 pertains to the subsequent risk management decisions made as a result of BERA results.

In addition to the BERA work plan (EPA, 2017e), the following standard guidance and reference documents are used to prepare this terrestrial BERA:

- EPA, 1997. Ecological Risk Assessment for Superfund: Process for Designing and Conducting Ecological Risk Assessments, Interim Final. Environmental Response Team, Edison, NJ.

- EPA, 1998. Guidelines for Ecological Risk Assessment. EPA/630/R-95/002F.

- EPA, 1994c. Selecting and Using Reference Information in Superfund Ecological Risk Assessments. EPA 540-F-94-05.

- EPA, 2002a. Guidance for Comparing Background and Chemical Concentrations in Soil for Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA] Sites. OSWER 9285.7-41.

- EPA, 2002b. Role of Background in the CERCLA Cleanup Program. OSWER 9285.6-07P

- EPA. 2018a. Frequently Asked Questions About the Development and Use of Background Concentrations at Superfund Sites: Part One, General Concepts. 9200.2-141.

EPA (1997) protocols provide the general framework for planning and conducting this risk assessment. Additional EPA (1998) protocols provide guidance on improving the interaction among risk assessors, risk managers, and interested parties during the planning, problem formulation, and risk characterization steps of the risk assessment process to ensure that the final risk assessment will support the RI/FS and future environmental decision-making. This process includes, but is not limited to, engaging and soliciting comments from BTAG members throughout the risk assessment process and expressing risk characterization results in the context

of major assumptions, uncertainties, and alternative interpretations. Lastly, EPA (1994b; 2002a,b; 2018a) provide guidance on how to interpret and report risk results from reference exposure units (EUs) and general background conditions throughout the BPMD.

1.3 Goals and objectives

Plants, invertebrates, birds, and mammals represent valued ecological resources to be protected from contamination currently present in the BPMD assessment area. Identification of potential risks to these community-level receptors and specific wildlife species provide the basis used to develop goals, objectives and select assessment endpoints for this BERA.

The overarching ecological risk management goal for the terrestrial portion of the BPMD site is defined as follows:

"Promote the health of terrestrial community-level receptor groups and wildlife species that live or forage in upland and floodplain habitats affected by site-related contamination."

Four ERA objectives were identified to accomplish this goal:

- Identify the presence of site-related COPECs that may pose a threat to one or more of the receptor groups;
- Estimate potential exposure to ecological receptors using the available analytical datasets;
- Develop risk estimates by comparing exposure profiles to toxicological benchmarks, interpret results, and discuss major uncertainties associated with the assessment approaches; and
- Provide risk managers a thorough determination of potential ecological risks and associated uncertainties to support the risk management decision-making process.

Although this terrestrial BERA focuses on upland terrestrial ecological receptors, it also assesses risks to a few semi-aquatic wildlife species that use aquatic floodplain habitats. Semi-aquatic wildlife species and their associated exposure pathways evaluated herein are different that those assessed in the BPMD aquatic BERA (EPA, 2019a). Together the aquatic and terrestrial BERAs provide complementary assessments of risks for key receptors[3] or their surrogates potentially impacted by contaminants and other environmental conditions related to BPMD Superfund site mine features.

1.4 Stakeholder cooperation and role of the BTAG

This terrestrial BERA incorporates input from stakeholders and members of the BPMD BTAG. Such input is crucial so that risk characterization and management decisions reflect and support

[3] Key receptors are relevant to the site, are culturally or ecologically important, and have a high likelihood of exposure. More details are provided in Section 2.7.6 of this BERA.

the needs of the affected ecosystems (EPA, 1992). The BTAG consists of natural resource specialists who provide guidance and local insight to risk assessors and managers.

EPA is responsible for providing BTAG members with information on the site, including site history, suspected or known COPECs, and the RI/FS process (EPA, 1992). EPA provides the BTAG this information during regular meetings so that any issues can be discussed among group members, risk assessors, and risk managers. As such, EPA fielded recommendations and addressed comments from the BTAG during development of this BERA. **Attachment 1** provides BTAG comments made on the draft terrestrial BERA and respective responses to comments.

1.5 Exposure units

This terrestrial BERA assesses risks in separate EUs located throughout the approximate 150-square-mile BPMD assessment area (**Figure 1.2**). The BPMD assessment area encompasses the entire Mineral and Cement Creek watersheds from their confluence with the Animas River at Silverton, CO. The assessment area also includes the upper Animas River watershed starting just above Silverton. EUs represent specific floodplain reaches in respective watersheds and hypothetical dose-response categories (DRCs) in which exposure data are aggregated.

Given the large size of the BPMD, it is not feasible to sample all exposure media, in all areas, for all receptors. This represents a major challenge when estimating exposure for large home range wildlife receptors that could be exposed to contamination over widespread and diverse parts of the assessment area. In order to address this challenge, much of the exposure data evaluated herein was collected along, and is applied to, a dose-response gradient. The terrestrial BERA applies site-specific media COPEC concentrations from high-level contamination, mid-level contamination, low-level contamination, vegetated upland, and reference sampling areas to areas similarly classified as having high-level, mid-level, low-level, vegetated upland, and reference exposure conditions; each is defined as a DRC and is specific to floodplain and upland habitats. DRCs represent a possible range of ecological risk associated with the presence of the metals at the BPMD. DRCs should not be viewed in absolute terms because they only represent the potential for ecological exposure in relative terms. For example, the low-level DRC does not mean low exposure, but that exposure is expected to be lower than in the mid-level DRC. Vegetated upland areas and the floodplain reference DRCs are used to characterize natural environmental conditions and metals concentrations in areas not or minimally impacted by past mining activities.

In addition to the DRC EUs, the following BPMD floodplain EUs are used in this BERA to facilitate sample collection, exposure calculations, data interpretation, and risk characterization. Locations of floodplain EUs are shown in **Figure 1.3**. Each of the floodplain EUs are summarized below in order from bottom to top (upstream direction) of each respective watershed.

Mineral Creek watershed:

- *EU-01 Mineral Creek* – 3.1 river miles up from the confluence with the Animas River upstream to the confluence with South Fork Mineral Creek;

- *EU-02 Mineral Creek* – 2.2 river miles up from the confluence with the South Fork Mineral Creek to the confluence with the Middle Fork Mineral Creek;
- *EU-03 Mineral Creek* – 2.0 river miles from the confluence with the Middle Fork Mineral Creek upstream to the confluence with Mill Creek;
- *EU-3.5 Browns Gulch* – 1.6 river miles from the confluence with Mineral Creek;
- *EU-04 Mineral Creek* – 3.5 river miles from the confluence with Mill Creek upstream to mainstem Mineral Creek river mile 10.8;
- *EU-05 South Fork Mineral Creek* – from the confluence with Mineral Creek upstream to river mile 4.1;
- *EU-06 Middle Fork Mineral Creek* – from the confluence with Mineral Creek upstream to river mile 3.2; and
- *EU-R1 Mill Creek Reference Reach* – 3.6 river mile long tributary to the Mainstem Mineral Creek that is upstream of Middle Fork Mineral Creek confluence.

<u>Cement Creek watershed:</u>

- *EU-20 Cement Creek* – 5.9 river miles from the confluence with the Animas River upstream to the confluence with Prospect Gulch;
- *EU-21 Prospect Gulch* – from the confluence with the Cement Creek upstream to river mile 1.6;
- *EU-22 Cement Creek* – 2.1 river miles from the confluence with Prospect Gulch upstream to the Red and Bonita Mining complex;
- *EU-23 South Fork Cement Creek* – from the confluence with the Cement Creek upstream to river mile 1.8; and
- *EU-24 Cement Creek* – 2.1 river miles from the Red and Bonita Mining complex up to mainstem Cement Creek river mile 10.0.

<u>Animas River and tributaries above Silverton, CO:</u>

- *EU-07 Animas River* – 1.9 river miles from the confluence with Arrastra Creek upstream to the confluence with Cunningham Creek in Howardsville;
- *EU-08 Cunningham Creek* – from the confluence with the Animas River upstream 7.1 river miles;
- *EU-09 Animas River* – 2.5 river miles from the confluence with Cunningham Creek in Howardsville upstream to the confluence with Minnie Gulch;
- *EU-10 Animas River* –1.3 river miles from the confluence with Minnie Gulch upstream to the confluence with mainstem South Fork Animas River in Eureka;
- *EU-11 Upper South Fork Animas River* – from the confluence with Eureka Gulch upstream 2.6 river miles;
- *EU-12 Eureka Gulch* – from the confluence with the Upper South Fork Animas River upstream to 2.2 river miles;
- *EU-13 Mainstem South Fork Animas River* – 1.5 river miles from the confluence with the Animas River in Eureka upstream to the confluence of Eureka Gulch and the Upper South Fork Animas River;

- *EU-14 Animas River* – 4.2 river miles from the confluence with mainstem South Fork Animas River in Eureka upstream to the confluence with mainstem West Fork Animas River in Animas Forks;
- *EU-15 Lower West Fork Animas River* – 1.0 river mile from the confluence with Placer Gulch downstream to the Animas River;
- *EU-16 Placer Gulch* – from the confluence with the Upper West Fork Animas River upstream 2.2 river miles;
- *EU-17 Upper West Fork Animas River (California Gulch)* – from the confluence with the with Placer Gulch up to mainstem West Fork Animas River, river mile 3.4;
- *EU-18 North Fork Animas River* – 1.1 river miles from Animas Forks upstream to the confluence with Burrows Gulch;
- *EU-19 Burrows Gulch* – from the confluence with the North Fork Animas River upstream 1.3 river miles;
- *EU-R2 Maggie Gulch Reference Reach* – 5.0 river mile long tributary to the Mainstem Animas River entering between Cunningham Creek and South Fork Animas River confluences;
- *EU-R3 Picayne Gulch Reference Reach* – 1.4 river mile long tributary to the Mainstem Animas River entering downriver from Animas Forks; and
- *EU-R4 Upper North Fork Animas River Reference Reach* – North Fork Animas River, 0.3 river miles upriver from the Burrows Gulch confluence.

1.6 Reference and background

Reference floodplain EUs (EU-R1 through -R4) and the vegetated upland DRC are evaluated herein to investigate receptor risks in areas that are expected to have no to little mining impacts. Reference EUs were selected in cooperation with the BPMD BTAG when planning for ERAs to represent creek and river reaches that could be reasonably compared to EUs known to be impacted by BPMD NPL sources (EPA, 2017b,e). Reference EUs represent the most applicable floodplain habitats available in the assessment area that can be used for this purpose. A few of the reference reaches were also assessed by Mast *et al.* (2007) in a background water quality characterization study for the BPMD watershed.

Reference floodplain reach and vegetated upland receptor exposure area risk assessment information is used to characterize potential background conditions with respect to NPL-impacted EU risks. EPA (2018a) defines reference locations as potential background areas that are not hydrologically connected to the site of interest. In other words, reference areas do not need to be upstream or upgradient from the site being assessed. The vegetated upland exposure area is primarily used to characterize exposure for large home range wildlife receptors. Vegetated upland habitats consists of grass- and forb-dominated alpine and subalpine meadows and evergreen forests not obviously impacted by past mining activities.

Given the large assessment area, the myriad of mine features within it, and the complex underlying geology, characterization of background conditions over the entire assessment area is highly uncertain, highly variable, and best accomplished using location-specific analysis (Mast *et al.*, 2007). Nevertheless, this BERA characterizes reference EU and vegetated upland risks using the same methodology as all other non-reference EUs and DRCs. This assessment methodology

provides a comparative evaluation of potential background risks to cumulative site risks, including discussing and identifying naturally occurring elements that exceed risk-based benchmarks. This type of evaluation is in agreement with EPA (1994b; 2002a,b; 2018a) guidance on how background risks are incorporated into ERAs and should provide risk managers enough information to begin evaluating their statutory authority under the CERCLA when investigating remedial actions with respect to background conditions.

1.7 Terrestrial BERA organization

The remainder of this BPMD terrestrial BERA is organized as follows:

Section 2: Baseline problem formulation
Section 3: Exposure analysis
Section 4: Characterization of effects
Section 5: Risk characterization
Section 6: Summary and conclusions
Section 7: References

SECTION 2: BASELINE PROBLEM FORMULATION

Problem formulation begins in the earliest steps of an ERA and is important because the decisions made therein set the scope and direction for the remainder of the assessment. In this case, problem formulation was developed in the SLERA (EPA, 2018d) and further refined in the BERA work plan (EPA, 2017e). The problem formulation step is a planning and screening process that defines the feasibility, scope, and objectives of the risk assessment and provides an opportunity for consensus building. This process includes examination of scientific data and data needs, regulatory issues, and site-specific factors. Problem formulation identifies the ecosystems potentially at risk, contaminant stressors, and measurement and assessment endpoints. This information is summarized in a conceptual site model (CSM) that hypothesizes how the stressors or contaminants might affect ecological components (i.e., the individuals, populations, communities, or ecosystems of concern).

A CSM is an interpretation of site information explaining which COPECs are present, affected environmental media, fate and transport mechanisms associated with contaminant movement and exposure, and the complete pathways by receptors most exposed to the contamination. A CSM integrates information on site history and use, local and regional geology, hydrogeology, and ecology, laboratory analytical chemistry data for contaminants in each medium of concern, monitoring data, nearby land use and groundwater use. A pictorial representation of the BPMD CSM is presented in **Figure 2.1**. The CSM for the BPMD includes the following elements that are presented in detail in the sections below:

- A description of the assessment area that includes a summary of past mining activities, natural history, and other relevant information needed to understand the basis for assessment activities;
- A summary of the nature and extent of contamination and potential ecological risks as assessed in the BPMD terrestrial SLERA;
- A description of relevant contamination sources, contaminant fate and transport mechanisms, and processes in which contaminants interact with and adversely affect ecological receptors; and
- Identification of COPECs, key ecological receptors, complete exposure pathways, and respective assessment and measurement endpoints developed to assess risks in key receptors.

2.1 Site description and history

The BPMD Superfund site consists of 48 historic mine features (**Figure 1.1**). These mine features are in the upper reaches of the Animas River watershed near Silverton in San Juan County, CO. All NPL features are in or just outside of the extensively mineralized Silverton Caldera basin. Geologic resources in this basin contain large amounts of metals (Storosh, 2013). As such, the area was subject to both large and small mining operations in boom and bust fashion from 1871 to 1991. Ore extraction activities ended after 1991, after which time, numerous reclamation and restoration projects were implemented. However, ecological receptors may still be at risk from contaminants in and downgradient from BPMD sources. The remainder of this section provides a brief history of mining activities that occurred in the BPMD and summarizes recent events relevant to terrestrial and semi-aquatic risks and site management.

The discovery of gold and silver brought miners to the area in the early 1870s. The discovery of silver in the base-metal ores was the major factor in establishing Silverton, CO as a permanent settlement. Between 1870 and 1889, rich lead-silver galena ore deposits were discovered and mined, mostly using hand tools (Jones, 2007). During this period, all but the highest-grade ores were cast aside in surface mine waste dumps or left in underground mine workings in a process called high grading. High grading was conducted in part due to the difficulties with bringing ore up from and out of the mine workings. The Greene & Co. Smelter opened in Silverton in 1875, which stimulated additional mining activities in the area. The Denver & Rio Grande Railway's San Juan Extension arrived in Durango in July 1881 and Silverton in July 1882. Mining operations greatly expanded with the introduction of rail transportation which allowed ore to get out of, and supplies to get into, the BPMD.

A concerted effort was made during the 1880s and 1890s to mine and concentrate the low-grade ore bodies via gravity milling into high-grade concentrates (Jones, 2007). Stamping presses and gravity mills were built across the mining district. Mills used water to separate ores, whereas untreated metal-laden wastes were discharged into streams, rivers, and lakes of the region. Use of aerial trams and new rail lines greatly improved the efficiency of mine-to-mill ore transportation. By 1897, more than 160 mines were documented to be operating in San Juan County (Jones, 2007).

Mining and milling operations slowed down around 1905 and many mines were either permanently closed or consolidated into fewer and larger operations. At that time, mines such as Silver Lake and Sunnyside grew into very large operations that employed up to 400 laborers who worked several thousand linear feet of underground drifts and tunnels. These large, complex mines also excavated long haulage tunnels in lower-elevation mine workings to alleviate water infiltration issues. Haulage tunnels, such as the Unity and Terry tunnels, intercepted and discharged groundwater and left higher-elevation mining workings relatively dry.

The next major expansion in the BPMD occurred during World War I in response to increased war-time demand for zinc. New ball-mill grinding and floatation milling technologies were developed to more efficiently process ores of the region. Sunnyside Mine was the largest zinc ore-producing mine in the country and by 1918, it was producing 600 short tons per day. The postwar recession hit in 1921, causing most mines and mills in the district to close by 1925. By the end of 1930, the Shenandoah-Dives Mine and Mayflower Mill in Silverton were the only major and consistent ore producers in the BPMD. The mid-1930s also brought on new regulations that required mill tailings to be impounded and water to be clarified before it could be discharged (Storosh, 2013). Many of these tailings impoundments were poorly constructed and often breached, releasing metals-contaminated water and tailings into local waterways (Thompson, 2015).

From 1942 to 1953, wars and government strategic metal reserve programs periodically increased demand for base-metals. During this time frame, the Shenandoah-Dives Mining Company and other small mines began to re-mine old underground waste rock and surface dumps left by previous mine operators. A substantial volume of ore was recovered, which likely reduced the amount and footprint of potentially toxic materials in the environment. In 1958, the

Shenandoah-Dives Mining Company became the Marcy-Shenandoah Corporation and obtained the leases for the Gold King Mill and the Sunnyside Mine. In 1960, the Marcy-Shenandoah-Dives Mining Company was purchased by Standard Metals Corporation, which assumed its leases and the Mayflower Mill. Soon thereafter, Standard Metals Corporation renovated and expanded the Gold King Mill level tunnel at Gladstone toward and under the existing Sunnyside Mine workings. The haulage tunnel, which was renamed the American Tunnel, successfully drained underground mine workings in the area. The American Tunnel discharged water into Cement Creek while the Sunnyside Mine workings were expanded.

Continuous mining occurred at the Sunnyside Mine from 1960 to 1991. However, additional mining and mineral explorations occurred during periods of high metals prices, most notably at Old Hundred Mine/Pride of the West Mill site, where more than 15,000 linear feet of new tunnels were excavated. The waste dump from this venture was periodically processed at the Pride of the West Mill from 1970 to 1990 at times when metals prices were high. The Sunnyside Mine undermined Lake Emma and it broke through in June 1978, catastrophically flooding mine workings with an estimated 5 to 10 million gallons of water and black metals-laden mud. Most of the muddy water exited from the Gladstone portal of the American Tunnel before flowing into Cement Creek and the Animas River. By 1991, about 1,500 mining-related sites and deeded mining claims came to be located in the area (Lyon *et al.*, 2003).

Sunnyside Gold Corporation (SGC) ended production in August 1991 after exhausting all of the higher-grade ore deposits and recovery of milled mine-waste dumps. This event marked the end of mining activities in the BPMD. However, SGC continued with reclamation work that is still occurring at many sites in the BPMD, including sites SGC never owned or operated. This effort includes but is not limited to removing tailing deposits along the Animas River between Eureka and Howardsville, removing mine dumps at Longfellow Mine and Koehler Tunnel, rerouting surface water runoff around tailings piles and plugging numerous portals and adits. SGC also operated a water treatment plant at the Gladstone portal on Cement Creek up until the winter of 2004. At this time, SGC installed 12 bulkheads at various sites within the BPMD as part of a court-ordered consent decree to terminate their discharge permit.

On August 5, 2015, EPA contactors triggered a release of about 3 million gallons of metals-laden water from the Gold King Mine (GKM) adit in Cement Creek near Gladstone (EPA, 2015a). The accidental release occurred when an excavator was used to assess the ongoing release of water from the GKM. While excavating above an old adit, pressurized water began leaking above the mine tunnel which culminated in a large release (EPA, 2016d). The release quickly inundated Cement Creek and downriver reaches of the Animas River. The plume of yellow-orange, metals-laden water flowed down the Animas River to the San Juan River over about an eight-day period. The plume ultimately crossed three states (CO, New Mexico, and Utah) and three reservations (Southern Ute Indian Tribe, Ute Mountain Ute Tribe, and Navajo Nation), triggering temporary river water use restrictions.

By August 16, 2015, most of the Animas and San Juan River raw water intakes were reopened and recreational and agricultural uses resumed. By October 15, 2015, all remaining lower San Juan River water use restrictions were lifted (EPA, 2015a). Since the GKM release, EPA has responded by monitoring downstream water chemistry and quality, installing an interim water

treatment plant in Gladstone, and working with various stakeholders to develop monitoring and preparedness plans (EPA, 2016d).

EPA listed 48 BPMD mine features on the NPL after the GKM release in April 2016 (EPA, 2016b). Listing made the BPMD eligible for additional assessment and cleanup resources under the EPA Superfund program. This action designated the group of BPMD mine features as a Superfund site and initiated the 8-step ERA process and the development of this terrestrial BERA.

On December 8, 2017, the EPA Administrator released a list of 21 Superfund sites located across the United States to be targeted for immediate and intense attention (EPA, 2017a). The BPMD Superfund site was one of the 21 sites, signaling EPA's commitment to improving public health and the environment stemming from BPMD impacts. To support this effort, EPA initiated an adaptive management approach that included implementing early actions to improve water quality, stabilizing mine features, and addressing priority areas that pose the greatest risks to human and environmental health. This BERA will be used to inform site managers of potential ecological risks associated with current BPMD impacts to support adaptive management actions.

EPA recently finalized an aquatic BERA for the BPMD Superfund site (EPA, 2019a). The aquatic BERA assesses risks to aquatic receptors throughout the assessment area. Many lines of evidence show that aquatic receptors are at risk from exposure to low pH surface water and metals contamination present in the Animas River watershed above and just below Silverton, CO.

2.2 Climate

The BPMD watershed is mountainous, with elevations ranging from about 9,300 feet above mean sea level (AMSL) at Silverton to more than 13,800 feet AMSL at some of the highest peaks. The basin receives a mean annual precipitation ranging from 24 to 40 inches/year, most of which falls as snow. Winters are long and cold with extensive snow accumulation occurring between November and April. The heavy snows and extended cold season contribute to average snowpack depth that ranges from 10 to 20 feet (Storosh, 2013). The deepest snowpack accumulates in the valleys and forests as prevailing westerly winds tend to strip most of the snow from the upper peaks and canyons. Snow begins to melt in May, but may remain in shaded, sheltered areas throughout the summer. Temperatures are mild during spring and summer, with average high temperatures ranging from 57 to 73˚F between May and September (US Climate Data, 2016). Late summer brings heavy monsoonal thunderstorms, but early fall tends to be dry and sunny (Lyon *et al*., 2003).

2.3 Habitats and wildlife

The BPMD is in the San Juan Mountain range in San Juan County. This mountain range is dominated by rugged peaks and hanging valleys carved out during the last glaciation. The highest elevations are treeless and contain alpine habitats. Alpine areas quickly drop into steep valleys with extensive areas of exposed rock and talus supporting sparse vegetation. Sub-alpine Engelmann spruce (*Picea engelmannii*) and fir forests and high-altitude meadows are common as valley walls become less steep and widen. In most locations, valley bottoms contain relatively

narrow riparian floodplain habitats with high-gradient creeks. This diversity of habitats, in turn supports a rich assemblage of flora and fauna.

Alpine habitats include dry meadows, wet meadows, dwarf shrub lands, fellfields and ice fields that occur above the tree line (Lyon *et al*., 2003). This high-altitude environment is characterized by high winds, low temperatures, shallow nutrient-poor soils and short growing seasons (Hanophy and Teitelbaum, 2003; Blair, 1996). Despite these inhospitable conditions, alpine environments provide habitat for a diverse assemblage of plants, invertebrates, and wildlife. Highly adapted perennial vegetation takes advantage of the lack of snow cover during the short summer growing season. Vegetation species have developed unique traits, such as ground-hugging shapes (curly sedge, *Carex rupestris* and alpine sagebrush, *Artemisia scopulorum*) for protection from the elements and long tap roots (moss champion, *Silene acaulis* and alpine dusty maiden, *Chaenactis douglasii var alpina*) to make the most of what little resources are available (Rottman and Hartman, 1985; Hanophy and Teitelbaum, 2003; Schneider, 2016).

Invertebrates such as black flies play an important ecological role as alpine plant pollinators. Birds such as rosy finch (*Leucosticte australis*) and American pippit (*Anthus rubescens*) take advantage of this abundant food source, only to migrate to lower elevations or warmer regions in the fall. The ground-dwelling white-tailed ptarmigan (*Lagopus leucurus*) inhabits alpine and subalpine zones throughout the year. This species changes its plumage from barred grayish brown to white in the winter. The white-tailed ptarmigan also changes its diet in the winter to one of the only vegetation sources available: willow buds (*Salix* spp.). The mountain bluebird (*Sialia currucoides*) is a ubiquitous seasonal resident commonly found throughout the BPMD. This species uses many BPMD habitats, foraging for ground-dwelling and flying insects when abundant.

Alpine wildlife species have also developed unique adaptations that enable them to thrive throughout the year or as seasonal residents. Year-round resident herbivores, such as the American pika (*Ochotona princeps*), use unique feeding strategies to survive long winters. Pika gather grasses and forbs and pile them into hay piles near their rocky dens for winter forage when vegetation is scarce. This species also has relatively small appendages that prevent heat loss and are less likely to freeze in extreme cold temperatures (Hanophy and Teitelbaum, 2003). Other species, such as the yellow-bellied marmot (*Marmota flaviventris*), spend most of their short waking summer months gorging on vegetation only to hibernate for most of the rest of the year. Marmot can also lower their body temperature and heartbeat during hibernation to conserve fat reserves. Avian predators, such as the red-tailed hawk (*Buteo jamaicensis*) and golden eagle (*Aquila chrysaetos*), prowl steep canyons, rock piles and outcrops in search of pika and marmot. Alpine meadows also provide seasonally abundant vegetation and mineral-rich soils for large game animals such as American elk (*Cervus elaphus*) and mule deer (*Odocoileus hemionus*) that may move through the region. Dangerous rocky cliffs and unstable talus fields provide unlikely habitat for surefooted species such as the mountain goat (*Oreamnos americanus*) and bighorn sheep (*Ovis canadensis*) that require such habitats for safe refuge.

Engelmann spruce is a hardy and predominant evergreen species that occurs at and below the tree line in areas within the BPMD (Lyon *et al*., 2003). At the tree line, this species contributes to the formation of krummholz microhabitats. Krummholz are twisted, shrubby, crooked masses of

tortured trunks and branches. They provide complex structures where plants and wildlife can seek refuge from the weather and relentless winds. These are important refugia for white-tailed ptarmigan and provide nesting habitat for rosy finches. Mixed sub-alpine spruce and fir conifer forests occur below the tree line (Blair, 1996). Similar to alpine ecosystems, sub-alpine plants and wildlife endure much of the same extreme high-altitude conditions, including extended periods of cold temperatures and heavy snow cover.

Slow tree growth and perilous conditions have deterred logging in much of the region, which has contributed to the preservation of late-succession forests. These forests are characterized by thick, dark spruce stands with abundant deadfall. Complex understory provides refuge for small animals such as the snowshoe hare (*Lepus americanus*), red squirrel (*Tamiasciurus hudsonicus*), and dusky grouse (*Dendragapus obscurus*). These species provide prey for predators such as red fox (*Vulpes vulpes*), coyote (*Canis latrans*), pine martin (*Martes americana*) and Canada lynx (*Lynx canadensis*). The Canada lynx was once extirpated from Colorado, but reintroduction efforts have contributed to their survival in the region (Interagency Lynx Biology Team, 2013). Although very rarely encountered by humans, a pair of adult Canada lynx was spotted near the BPMD on Molas Pass between Silverton and Durango in January 2013 (Linhard, 2013). Since then, a few more lynx sightings have occurred between Molas Pass and Ouray (**Figure 2.2**). The most recent sighting occurred on March 7, 2017 (Benjamin, 2017; Hildebrand, 2016; Esper, 2015).

Sub-alpine forests in physically disturbed habitats occur as early successional stage forests or are replaced by sub-alpine meadow (Blair, 1996). These thinner forest and meadow ecological settings provide habitat diversity and support species that are more adapted to open areas or require diverse habitat types. Common sub-alpine forest and meadow plant species include subalpine fir (*Abies lasiocarpa*), quaking aspen (*Populus tremuloides*), sun sedge (*Carex heliophila*), bunch grasses (*Festuca spp.*), and whortleberry (*Vaccinium myrtillus*; Lyon *et al*., 2003). Large mammals, such as American elk, mule deer, moose (*Alces alces americanus*) and black bear (*Ursus americanus*), often thrive in these habitats. Avian species, such as broad-tailed hummingbird (*Selasphorus platycercus*), chipping sparrow (*Spizella passerina*), dark-eyed junco (*Junco hyemalis*), and prairie falcon (*Falco mexicanus*), also take advantage of forage and refuge resources found in diverse sub-alpine open forests and meadows.

Although not typically considered prime wildlife habitat, the numerous mine sites and developed residential and recreational lands do provide habitat for species adapted to thrive in disturbed areas. For example, mine adits and relic mining and mill structures might be attractive roosting and nesting sites for fringed myotis bat (*Myotis thysanodes*), cliff swallow (*Petrochelidon pyrrh*), and rosy finch (Hayes and Adams, 2014; Brown and Brown, 1995; Johnson *et al*., 2000). American pika and marmot might also use mine waste piles and tunnels for refuge. Other species, such as the American robin (*Turdus migratorius*) and Steller's jay (*Cyanocitta stelleri*), often thrive in residential areas where maintained parks, gardens, and lawns provide foraging habitat (Greene *et al*., 1998; Sallabanks and James, 1999). Coyote (*Canis latrans*) has a broad range of habitat preferences and is another wildlife species commonly observed in disturbed areas (Tesky, 1995).

Riparian habitats that occur in the BPMD are used by semi-aquatic and terrestrial wildlife as foraging, nesting, or resting areas. The riparian vegetation in the region can be dominated by dense growths of willows (*Salix* spp.), seepwillow (*Baccharis* sp.), or other shrubs and medium-sized trees. Riparian habitats in some disturbed areas may be dominated by tamarisk (*Tamarix* spp.) and Russian olive (*Eleagnus angustifolia*). Wildlife species, such as American beaver (*Castor canadensis*) and common muskrat (*Ondatra zibethicus*), are found throughout the BPMD lower riparian corridors. Other species, such as moose, can also be found grazing on willows and other aquatic vegetation along BPMD ponds, creeks, and rivers.

Iron fens are infrequent but locally important wetland habitats that occur in some BPMD riparian corridors. These wetlands support a unique assemblage of acid- and metals-tolerant species, including bog birch (*Betula glandulosa*), water sedge (*Carex aquatilis*), fine bogmoss (*Sphagnum angustifolium*) and patches of Engelmann spruce (Lyon *et al*., 2003). Iron fens are most often supported by fractured bedrock and talus groundwater springs rich with sulfates and iron pyrite. Over time, iron fens accumulate thick layers of limonite which are hydrated iron oxides precipitated into cemented peat. These localized iron-cemented, hardened peat formations can be meters thick and persist as limonite ledges. The complex and productive wetland habitat associated with iron fens attracts both herbivorous and insectivorous wildlife. Iron fens and similar wetland systems also play an important role in storing and cycling carbon and regulating hydrological processes that provide stable base flows in local creeks.

In summary, the BPMD contains a diverse assemblage of terrestrial and floodplain habitats that range from alpine meadows, sub-alpine forests, and wetlands to developed areas. The diversity of habitats attracts and supports a diverse assemblage of wildlife. Many wildlife species are highly adapted to survive the extreme conditions often present in the high-altitude habitats of the region. Some species take advantage of forage and refuge resources that are seasonally available throughout the year, store food reserves for the winter, or hibernate. Other wildlife species only use BPMD habitats when resources are seasonally abundant, which is usually during the short summer and fall months when plant and insect communities are most productive. Afterwards, these bird and mammal species migrate to lower elevations or warmer regions.

2.4 Non-mining impacts

The rich cultural and natural history and abundance and accessibility of public land attract many visitors to the BPMD throughout the year. Summer and fall recreation activities include all-terrain vehicle (ATV) use, camping, wildlife viewing, hiking, biking, fishing, and hunting. The relic mining site structures provide unique viewing areas for visitors interested in the region's rich mining heritage (River Protection Workgroup, 2013). Some summer recreation activities, such as ATV use, have a high potential to impact wildlife that are sensitive to human disturbances. Some sensitive species, such as large game species, may not spend much time or use habitats and regions with high levels of human use.

Seasonal sheep grazing occurs in alpine meadow habitats throughout upper BPMD basins. Some flocks may contain up to two hundred sheep and it is common to see multiple flocks grazing in upper Animas River basins during the summer. Sheep and their associated institutional infrastructure have the potential to impact vegetation communities, increase erosion, and displace native wildlife.

Winter activities include heli-skiing, Silverton Mountain backcountry skiing, and snowmobiling. While few wildlife species are present during the winter months, some species, such as the mountain goat and ptarmigan, could be present. Mountain goats, in particular, can be disturbed by heli-skiing activities that often target the same terrain used for winter refuge (Wilson and Shackleton, 2001).

Climate-change impacts can be potentially catastrophic for alpine wildlife (Nydick and Crawford, 2008; United States Forest Service, 2013). For example, many alpine species such as pika are adapted to low-temperature conditions and may experience heat stress during the warm summer months. Given this situation, climate change has the potential to increase stress to some alpine wildlife species. Little opportunity exists to escape to cooler conditions when the weather gets too warm since alpine habitats are already at the highest-available altitudes in the region. Many alpine areas often support high numbers of endemic species because they are geographically isolated. Habitat isolation creates a scenario where endemic wildlife species cannot migrate to new areas, which increases the risk of extinction. Climate change can also influence snow pack cover and duration, which can impact alpine and sub-alpine habitats and the species they support.

2.5 Special status species

A threatened and endangered (T&E) species list for the upper Animas River watershed above the Mineral Creek confluence was obtained from the United States Fish and Wildlife Service ([USFWS], 2017) iPAC environmental conservation online system. State T&E species information was obtained from Colorado Parks and Wildlife ([CPW], 2016). The Canada lynx and North American wolverine (*Gulo gulo*) are two mammal species identified in the iPAC list for the Animas River watershed. The Canada lynx is listed as federally threatened and state endangered, while the North American wolverine is listed as state endangered. The North American wolverine federal listing under the Endangered Species Act (ESA) is currently under review (USFWS, 2016). The southwestern willow flycatcher (*Empidonax traillii extimus*) was identified in the iPAC list and is a federal- and state-endangered bird species. The iPAC list also contained the Uncompahgre fritillary butterfly (*Boloria acrocnema*). This butterfly is a highly endemic and federally endangered insect species. The boreal toad (*Bufo boreas boreas*) was not identified in the iPAC list but is listed as a state-endangered amphibian species. Currently USFWS is reviewing the listing status of the boreal toad under the ESA (USFWS, 2011).

As discussed above in Section 2.3, lynx have been observed near Silverton over the last couple of years even though this species is considered rare in Colorado. Given these sightings and the availability of late-succession forest habitat, it is considered likely that lynx may occur within the BPMD. The wolverine has rarely been seen in Colorado since 1919 and is reported to have been extirpated from San Juan County (CPW, 2017). The chance that the wolverine exists in the BPMD is considered highly unlikely given the current distribution and status of this species. The southwestern willow flycatcher may be present in the BPMD even though it was listed as uncommon in San Juan County by USFWS. Although found in San Juan Country, the only Uncompahgre fritillary butterfly colonies that are known to exist occur on Mount Uncompahgre and Redcloud Peak. Both areas are located northeast of the BPMD (USFWS, 2009). Although the boreal toad has been documented in nearby Mineral, Saguache, western Rio Grande and

Conejos Counties, a dedicated survey did not report any sightings of this species in San Juan County watersheds (Keinath and McGee, 2005). Note that the historic range of boreal toad extended into San Juan County and the BPMD; see F*igure 1 Boreal toad distribution in United States Department of Agriculture Forest Service Region 2* in Keinath and McGee (2005). Bureau of Land Management (BLM) suggested that, although suitable habitat exists within portions of the BPMD, boreal toads are not found in the area due to chemical and physical impacts of metals and acidity (BLM, 2006). Of all the T&E listed species, only the boreal toad, southwestern willow flycatcher, and Canada lynx are plausibly associated with the BPMD. The boreal toad and southwestern willow flycatcher were assessed in the aquatic BERA prepared for the BPMD (EPA, 2019a), whereas Canada lynx BPMD COPEC exposure risks are evaluated herein.

2.6 Summary of the terrestrial BPMD SLERA

A terrestrial SLERA was drafted to assess the ecological risk to terrestrial plants, soil invertebrates, birds, and mammals potentially exposed to mine-impacted soils within the BPMD (EPA, 2018d). The major goal of the SLERA was to identify COPECs for use in the terrestrial BERA and to rank mining-related features for their potential to cause ecological harm. The latter was important when developing DRCs (EPA, 2017e).

The terrestrial SLERA used analytical data from soil samples collected in 2015 and 2016 from three separate groups of exposure areas, namely mine site waste piles, overbank areas associated with floodplain habitats, and public campsites located throughout the BPMD. COPEC selection and subsequent risk characterization were based on deriving hazard quotients (HQs). First, the SLERA selected COPECs for each exposure area by dividing the lowest no-effect ecological screening values (ESVs) among the four terrestrial receptor groups (i.e., plants, invertebrates, birds, and mammals) by the maximum concentrations of metals in soil for each of the three exposure areas. A metal was selected as a COPEC when the maximum concentration in soil was greater than the lowest ESV (HQ>1). Metals without ESVs were also conservatively selected as COPECs and discussed in the uncertainties section of the SLERA. COPECs were then carried into the risk characterization phase of the SLERA where HQs were generated for each receptor group using no-effect ESVs and maximum metals concentrations in soil for each of the 35 mine features, 25 floodplain EU reaches, and 12 campsites. Final risk characterization results were summarized and metals ranked using the sum of individual, receptor group HQs (total risk) for each EU within the three exposure areas. This risk characterization approach allowed for the relative ranking of each EU (mine site, floodplain reach, and campsite), classification of each EU into one of three relative risk categories (higher, moderate, and lower), and identification of COPEC-specific risk drivers for each EU.

Most of the ESVs used in the SLERA consist of EPA (2007a) ecological soil screening levels (EcoSSLs) developed for four receptor groups: plants, soil invertebrates, birds, and mammals. No-effect soil ESVs developed by Los Alamos National Laboratory (LANL), EPA Region 4, and Oak Ridge National Laboratory (ORNL) were used to fill in missing values (Efroymson *et al.*, 1997a,b,c; EPA, 2015b; LANL, 2016). The remainder of this section summarizes the SLERA findings and identifies the COPECs that are considered in the terrestrial BERA.

2.6.1 Mine wastes

EPA (2016f; 2017d) collected mine waste rock and tailings samples from 35 of the BPMD NPL mine sites during the summer of 2015 and 2016. As noted in the terrestrial SLERA, waste pile materials may still have monetary value and are considered the personal property of claim owners. Therefore, the use of the generic term "waste" throughout this terrestrial BERA does not mean that this geologic material has no value.

Composite mine waste pile samples were collected from each site and analyzed for total recoverable metals. The terrestrial SLERA derived conservative HQs as described above. The HQs were then used to categorize each site in one of three risk rank categories; i.e., lower-, moderate-, and higher-risk exposure areas. This simplified risk ranking approach was only intended to rank sites in terms of potential risk and not to assess actual risk at individual sites. The results of the mine site waste pile risk ranking analysis are summarized as follows:

- Thirty of the 35 mine sites were categorized as higher-risk exposure areas and five represent moderate-risk exposure areas. None of the mine sites fell into the lower-risk exposure area category.

- With a few exceptions, lead in mine waste was the main risk driver, with zinc as a strong secondary risk driver. The range of lead and zinc concentrations in the higher-risk and moderate-risk categories are as follows:

    - *Higher-risk exposure areas*: lead = 2,210 mg/kg to 35,700 mg/kg; zinc = 321 mg/kg to 66,800 mg/kg; and
    - *Moderate-risk exposure areas*: lead = 502 mg/kg to 2,800 mg/kg; zinc = 248 mg/kg to 1,040 mg/kg.

- Arsenic was identified as the primary risk driver at Koehler Tunnel (maximum exposure point concentration [EPC] = 13,700 mg/kg) and Longfellow Mine (maximum EPC = 3,160 mg/kg).

- With a few exceptions, the top three risk drivers across the two risk categories systematically accounted for over 70% of the total potential for ecological risk at the mine site exposure areas.

2.6.2 Overbank soils

EPA (2017d) collected overbank soils from over 200 riparian sampling locations throughout the BPMD and analyzed them for total recoverable metals. Sample results were organized into 25 separate EUs. These exposure areas represent the same BPMD floodplain EU reaches, less reference EUs, along the major tributaries of Mineral Creek, Cement Creek, upper Animas River and associated gulches evaluated in this BERA (**Figure 1.3**). Overbank soil COPEC selection and risk ranking methods were identical to those used for mine site waste piles. The results of the overbank soil risk ranking analysis are summarized as follows:

- Twelve of the 25 overbank soil EUs are categorized as higher-risk exposure areas, six represent moderate-risk exposure areas, and seven represent lower-risk exposure areas.

- With exceptions, lead and zinc were the two main risk drivers. The range of concentrations for these two metals in the three risk categories are as follows:

    - *Higher-risk exposure areas*: lead = 1,250 mg/kg to 10,500 mg/kg; zinc = 446 mg/kg to 30,200 mg/kg;
    - *Moderate-risk exposure areas*: lead = 349 mg/kg to 1,760 mg/kg; zinc = 577 mg/kg to 4,120 mg/kg; and
    - *Lower-risk exposure areas*: lead = 162 mg/kg to 508 mg/kg; zinc = 176 mg/kg to 813 mg/kg.

- The top three risk drivers across the three risk categories systematically accounted for over half of the total risk at the overbank soil EUs.

2.6.3 Campsite soils

Soil samples were collected at 12 public campsites located throughout the BPMD and assessed as individual exposure areas (EPA, 2017d). These sites represent relatively flat areas that may contain mine-impacted soils associated with floodplains or nearby mines. Campsites may provide habitat for wildlife species tolerant to human activities. One composite sample was collected from each campsite. These samples were analyzed for total metals. SLERA COPEC selection and risk ranking procedures followed those used for the mine site and overbank exposure areas. The results of the public campsite soil risk ranking analysis are summarized as follows:

- Three of the 12 public campsites were categorized as higher-risk exposure areas, two represented moderate-risk exposure areas, and seven represented lower-risk exposure areas.

- With exceptions, lead and zinc were the two main risk drivers at the public campsites. The range of concentrations for these two metals in the three risk categories are as follows:

    - *Higher-risk exposure areas*: lead = 2,880 mg/kg to 44,200 mg/kg; zinc = 740 mg/kg to 17,300 mg/kg;
    - *Moderate-risk exposure areas*: lead = 761 mg/kg to 1,330 mg/kg; zinc = 540 mg/kg to 1,520 mg/kg; and
    - *Lower-risk exposure areas*: lead = 73.6 mg/kg to 530 mg/kg; zinc = 74.3 mg/kg to 874 mg/kg.

- The top three risk drivers across the three risk categories systematically accounted for over half of the total risk at the public campsite exposure areas.

2.6.4 Risk ranking and COPEC summary

The SLERA risk ranking results are summarized below:

- The mine sites had the highest proportion of exposure areas ranked in the higher-risk category (30 out of 35, or 86%), followed by the overbank soil EUs (12 out of 25, or 48%), and the campsite exposure areas (3 out of 12, or 25%). Hence, as an aggregate, they represented some of the highest levels of potential terrestrial ecological risk in the BPMD;

- Conversely, the public campsites had the highest proportion of exposure areas ranked in the lower-risk category (7 out of 12, or 58%), followed by the overbank soil EUs (7 out of 25, or 28%), and the mine site exposure areas (0 out of 35, or 0%). This indicates that, as an aggregate, more of the public campsites had a lower potential for terrestrial ecological risk compared to the two other exposure area groups;

- Birds were systematically the most at-risk (i.e., having the highest HQs) of the four terrestrial receptor groups evaluated. This situation was likely the result of two interrelated factors: (a) lead and zinc were the two principal risk drivers because of their high soil concentrations, and (b) the avian no-effect soil ESVs for these two COPECs were the lowest of the four receptor groups, indicating the high sensitivity of birds to these metals. This sensitivity stems from their susceptibility of exposure and biochemical dysfunctions at low doses which was reflected in the EPA (2005c) EcoSSLs;

- A relatively small number of soil COPECs, primarily lead and zinc but also including to a lesser degree, antimony, arsenic, cadmium, manganese, and mercury, were responsible for the vast majority of the terrestrial ecological risk identified in the three exposure area groups at the BPMD. With a few exceptions, the remaining COPECs, which consisted of barium, beryllium, chromium, cobalt, copper, molybdenum, selenium, silver, thallium, and vanadium, only played a marginal role; and

- While no reliable aluminum and iron no-effect soil ESVs were available, narrative toxicity statements indicate that plants may be at risk from exposure to these two metals at sites with low soil pH (EPA, 2003a,b).

2.6.5 Terrestrial BERA COPEC selection

Terrestrial BERA COPEC selection is performed in the BERA work plan (EPA, 2017e) using information obtained in the terrestrial SLERA. COPECs are specific to each of the four receptor groups; specifically, plants, invertebrates, birds, and mammals. Metals with maximum concentrations above their conservative no-effect soil ESVs (reflected by HQs>1) are identified as receptor group-specific soil COPECs, regardless of exposure area (**Table 2.1**). However, mine site exposure areas largely drive COPEC selection since they have the greatest concentrations of metals.

Note that no-effect soil ESVs are not available for some of the terrestrial receptor groups analyzed in the SLERA. The missing ESVs are: 1) chromium for plants; 2) cobalt, molybdenum, silver, thallium and vanadium for invertebrates; 3) antimony and beryllium for birds; and 4) aluminum and iron for all four terrestrial receptor groups. Of these potential COPECs, only aluminum and iron in plants is considered in the BERA. This approach is consistent with known sensitivities of plants to these two metals as it pertains to certain soil types (EPA, 2003a,b).

All metals with the potential to bioaccumulate are retained as bird and mammal COPECs for further evaluation in the terrestrial BERA, regardless of SLERA HQ results. The list of potentially bioaccumulative metals is from Tangahu *et al*. (2011). This COPEC-selection step only added nickel for birds and mammals, and chromium for mammals to the list of wildlife COPECs as all the other bioaccumulative metals are selected as COPECs due to elevated HQs. The major common cations are excluded as COPECs because they are essential micronutrients; specifically, sodium, calcium, magnesium and potassium.

2.7 Conceptual site model

2.7.1 Introduction

This section describes the CSM development process and elements used to support terrestrial BERA (**Figure 2.1**). The BPMD terrestrial BERA CSM represents the culmination of the problem formulation process and is used to identify potentially complete exposure pathways for key ecological receptor groups and guides development of risk assessment and measurement endpoints presented in Section 2.8.

All readily available information is reviewed during CSM development to identify sources of contamination and determine which fate and transport mechanisms might result in complete exposure pathways to terrestrial community-level and wildlife receptors that live and feed in the BPMD. The goal of this review is to identify the major elements of a complete exposure pathway, which consists of the following components:

- Sources of contamination;
- Release and transport mechanisms;
- Contact points and exposure media;
- Routes of entry; and
- Key receptors.

Each of these components is discussed in the following subsections.

2.7.2 Sources of contamination

The major sources of anthropogenic contamination in the BPMD are associated with past mining activities in the watersheds of Cement Creek, Mineral Creek, and the Animas River above Silverton. While mining has not occurred in the BPMD since 1991, mine wastes associated with past mining activities are still present and natural sources of contamination exist in the environment. Below are summaries of the major sources of contamination in the BPMD:

1) Mine sites including adits, waste rock piles and tailings. Mining in the region often required advancing tunnels into mineral-rich deposits. Rock and low-value ore were dumped outside of the mine adits as tunnels advanced. The waste rock in these piles was often composed of highly mineralized rock containing high concentrations of metals at levels great enough to be of value to claim owners. Early mine sites often used stamp mills, then floatation mills, to concentrate ore. Stamp mills were often constructed and operated at or near each mine. Most floatation mills were located in centralized areas and processed ore from surrounding mines. Milling processes produced fine-grained tailings that, up until the 1930s, were discharged untreated into local waterways. Waste tailings contained high concentrations of metals because the milling processes were not efficient at removing all metals from the ore. Over time, tailings accumulated downgradient from mills and filled local floodplains with fine-grained, metal-enriched deposits.

2) Mill waste repositories. After the mid-1930s, mills were required to impound tailings wastes on-site so that fine-grained materials could settle out before water was reused or discharged to local waterways. Fine-grained tailings accumulated in waste repositories which were poorly constructed and managed and therefore, often failed. Repositories filled with mill wastes are still present in some areas of the BPMD.

3) Haul roads, railroads, and aerial tramways. Different types of transportation routes were constructed and used to bring ore from the mines to processing and shipping facilities. Waste rock and other mine wastes were readily available and were ideal base materials to build roads and rail lines. Spills and other unintentional releases of metal-rich ore or waste materials from trucks, trains, and trams had the potential to contaminate areas near transportation routes. Given the geography of the assessment area, most of the major transportation routes are located along valley bottoms, in or near floodplain habitats (Jones, 2007).

4) Smelter sites and emissions deposition areas. Around 10 smelters operated within the BPMD mostly prior to 1900, after which ore was transported by rail down the valley to several Durango smelters (Jones, 2007). The former smelters in the BPMD are potential sources of metals contamination. They produced slag-related waste byproducts enriched with high levels of metals that were disposed of on-site. Smelting processes also had the potential to create large amounts of air pollution. Particulate and volatized metals found in smelter emissions have potentially contaminated areas downwind of these smelters. Smelters were mostly located next to creeks and rivers of the region near major transportation routes.

5) Naturally mineralized soils and rock. Soils and rock within the BPMD contain high levels of naturally occurring metals. Over time, these geologic materials weather and can erode into waterways. They likely contribute to a relatively metals-rich baseline, background condition within natural areas of the BPMD. As noted in multiple sections of this BERA, identification and characterization of background conditions at this site represent a considerable challenge since, in part much of the assessment area has been impacted by known and uncharacterized mine features. In addition, the BPMD covered a large area that contains a wide range of geological features and mineral types that contribute to highly variable background conditions throughout the study area (Mast et al., 2007).

2.7.3 Release and transport mechanisms

The potential release and transport of mine-related contamination from the sources to points of contact with terrestrial and semi-aquatic receptors depends on several physical and chemical processes that dictate the concentrations and spatial distribution of metals. The following release and transport mechanisms likely occur throughout the BPMD:

- Erosion of metals-rich rock and soil by wind and gravity from mine and mill waste sources to surrounding depositional, lower-elevation and floodplain areas;
- Transport of metals adsorbed to soil, waste rock and tailings particles via surface water runoff;
- Dissolution and leaching of metals from mine waste, host rock, or vein rock into soil solutions, pore water, and groundwater;
- Migration of metals in pore- and groundwater to floodplain soils, sediment and surface water in adjacent surface water features, and subsequent attenuation by dilution, dispersion, and sorption;
- Transport of dissolved and particulate metals in surface water to downstream instream reaches and floodplains;
- Areal deposition of metals-laden mine waste dust and emissions from smelters to surrounding upland and floodplain soils, and surface waters, and;
- Uptake, accumulation, then trophic transfer of metals incorporated in tissues of terrestrial and semi-aquatic plant, invertebrate, and wildlife food chains.

2.7.4 Contact point and exposure media

Terrestrial exposure areas and floodplain EUs are specific exposure areas represented by analytical chemistry data used to derive EPCs. Exposure areas represent the points of contact that are evaluated in the terrestrial BERA. Exposure areas are specific to each ecological receptor or receptor groups under evaluation. Concentrations of metals in exposure media from within exposure areas are used to calculate EPCs. Ecologically relevant exposure media that are evaluated herein consist of terrestrial upland and floodplain soils, surface water, and tissues of plants, invertebrates, and small mammals. Section 3 of this terrestrial BERA provides more information on the exposure area selection process and the EPC-derivation methods.

2.7.5 Routes of entry

The major routes of entry for metals in soils, surface waters, and dietary items within the BPMD to key ecological receptors are as follows:

- Direct contact of plants with surface soils;
- Direct contact of invertebrates with surface soils;
- Ingestion of contaminated food items by terrestrial and semi-aquatic wildlife receptors;
- Incidental ingestion of contaminated soil by wildlife receptors; and
- Ingestion of surface water by terrestrial and semi-aquatic wildlife receptors.

Although the following routes of entry may occur, they are expected to be minor (most metals are not readily absorbed), are difficult to characterize (no established exposure models or toxicity evaluations) and are not be assessed in the terrestrial BERA. This methodology is consistent with EPA (2007e) guidance on conducting metals-based risk assessments.

- Ingestion of contaminated plants and invertebrates by invertebrates;
- Direct contact of semi-aquatic wildlife receptors with surface water;
- Direct contact of dust (soil particles) by terrestrial plants and invertebrates; and
- Direct contact to or inhalation of dust (soil particles) by terrestrial and semi-aquatic wildlife receptors.

2.7.6 Key receptor groups

This terrestrial BERA evaluates exposures and risks to key terrestrial and semi-aquatic ecological receptors that are relevant to the site, are culturally or ecologically important, and have high likelihood of exposure. Key receptors should be sensitive to metals exposure which, when encountered at elevated concentrations, results in physical dysfunction, reduced growth, impaired reproduction, and/or mortality. Terrestrial plants and soil invertebrates are evaluated as community-level receptor groups, instead of individual species. On the other hand, specific species of birds and mammals are selected and evaluated for risk. Year-round residents, seasonal residents and migratory wildlife species are all considered when selecting wildlife receptors (EPA, 2017e). Selected bird and mammal species can also act as surrogates representing wider feeding guilds (e.g., avian insectivores or mammalian carnivores, etc.) in which food chain modeling parameters are readily available. This BERA assumes that BPMD habitats can support the ecological receptors and species in feeding guilds listed below:

- Plant communities that reside in alpine and sub-alpine meadows and forests and floodplain soils;
- Soil invertebrates that live on soil or within the soil substrate;
- Semi-aquatic herbivorous, insectivorous, and omnivorous wildlife species that spend most of their life within riparian and floodplain habitats feeding on both terrestrial and floodplain food items; and
- Terrestrial herbivorous, insectivorous, and carnivorous wildlife species that reside and forage in upland alpine and sub-alpine meadow and forest habitats.

2.7.7 Exposure pathways

Exposure pathways are the means by which contaminants are transferred from a contaminated medium to the target receptors. This BERA evaluates the following exposure pathways:

- **Plants**
    - Direct contact with terrestrial and floodplain soils;
- **Soil invertebrates**
    - Direct contact with terrestrial and floodplain soils;
- **Semi-aquatic herbivorous wildlife**
    - Ingestion of plants and surface water;
    - Incidental ingestion of floodplain soils;

- **Semi-aquatic insectivorous wildlife**
    - Ingestion of invertebrate prey and surface water;
    - Incidental ingestion of floodplain soils;
- **Semi-aquatic omnivorous wildlife**
    - Ingestion of plants, invertebrates, and surface water;
    - Incidental ingestion of floodplain soils
- **Terrestrial herbivorous wildlife**
    - Ingestion of plants and surface water;
    - Incidental ingestion of upland soils;
- **Terrestrial insectivorous wildlife**
    - Ingestion of invertebrates and surface water;
    - Incidental ingestion of upland soils
- **Terrestrial omnivorous wildlife**
    - Ingestion of plants, invertebrates, and surface water;
    - Incidental ingestion of upland soils; and
- **Carnivorous wildlife**
    - Ingestion of small mammals, and surface water;
    - Incidental ingestion of upland and floodplain soil.

The terrestrial BERA expands upon the above wildlife exposure pathways using species-specific intake rates and proportions of each dietary item within a balanced diet (Section 3).

2.7.8 CSM summary

The BPMD terrestrial BERA CSM provides the foundation of the problem formulation and development of risk assessment and measurement endpoints. The current CSM is based on knowledge of natural and man-made sources of contamination, fate and transport of suspected contaminants, likely ecological receptors, and complete exposure pathways. All these elements are summarized in the previous sections and the terrestrial BERA work plan (EPA, 2017e). The CSM demonstrates how metals move from the contaminant sources through the exposure media to the ecological receptors. **Figure 2.1** presents the CSM for this BERA

2.8 Assessment and measurement endpoints

2.8.1 Introduction

Risk assessment endpoints represent explicit expressions of the key ecological resources to be protected from mining-related contaminants. These endpoints are generally associated with sensitive populations, communities, or trophic guilds (i.e., different feeding strategies). Listed below are general criteria used for selecting the assessment endpoints:

- Have ecological relevance (i.e. plausibly occur at the site);
- Be susceptible to the stressors of concern;
- Have biological, social, and/or economic value; and
- Be relevant to the risk management goals for the site.

Measurement endpoints represent measurable ecological characteristics, quantified through predictive exposure/effects analyses, which can be related back to the valued ecological resources chosen as the assessment endpoints. Measurement endpoints are required because it is often not possible to directly quantify risk to an assessment endpoint. Measurement endpoints should represent the same exposure pathway(s) and mechanism(s) of toxicity as the assessment endpoints to be relevant and useful in supporting risk-based decision making.

Risk questions establish a link between assessment endpoints and their predicted responses. The risk questions summarized in this section provide the basis for assessment and measurement endpoints used in this BERA during risk characterization (EPA, 1997).

2.8.2 Selecting representative assessment endpoint communities or species

It is neither practical nor possible to evaluate the potential for ecological risk to all the individual parts of the local ecosystems affected by contaminants. Instead, receptor groups and key target species are identified to evaluate exposure and risk. This terrestrial BERA evaluates exposures and risks to semi-aquatic and terrestrial ecological receptors that are relevant to the BPMD NPL site, are culturally or ecologically important, and have a high likelihood of exposure. Plants and invertebrates are evaluated as community-level groups. Conversely, key species of birds and mammals are selected to represent a wider group of wildlife species and, in the case of Canada lynx, a locally important and federally threatened species.

Plants and invertebrates

Terrestrial plants are expected to live in upland terrestrial and floodplain soils within the exposure areas of the BPMD. Plants are primary producers that extract energy from the sun and nutrients from soil and water. As such, they are the foundation of terrestrial and semi-aquatic food webs because plants are directly consumed by invertebrates and wildlife. Invertebrates, bacteria, and fungi also consume plant-based organic material in soils. Plants are included in the terrestrial BERA as a target receptor group because of the important ecological roles that they fill in local ecosystems.

Terrestrial invertebrates may include flying insects, ground-dwelling insects, and soil invertebrates. This terrestrial BERA evaluates risks to soil invertebrates associated with upland and floodplain soils, since this invertebrate receptor group is in direct contact with and would have the greatest exposure to soil-based contamination. Soil invertebrates are also directly associated with invertebrate toxicity benchmarks used herein. They are important primary consumers in terrestrial and semi-aquatic ecosystems and are sustained by plants or plant-based organic materials in soils and in turn, are fed upon by various wildlife species.

Wildlife species

In addition to the two community-level terrestrial receptor groups described above (i.e. plants and invertebrates), the terrestrial BERA also evaluates exposure and risks to several representative bird and mammal species. **Table 2.2** provides the list of the target wildlife receptors that are selected in the terrestrial BERA work plan (EPA, 2017e). It is important to note that the American dipper (*Cinclus mexicanus*) is a locally important aquatic bird species that

is not considered for the terrestrial BERA because it is a target receptor evaluated in the aquatic BERA (EPA, 2019a).

2.8.3 Endpoint selection

The following assessment endpoints and risk hypotheses are used to evaluate the potential for ecological risks to the targeted receptor community groups and wildlife species in the BPMD assessment area. It is assumed that evaluating and protecting these assessment endpoints will also protect all other similar terrestrial and semi-aquatic receptors in the BPMD. Note that each endpoint and risk hypothesis is coupled to a corresponding measurement endpoint. **Table 2.3** presents the exposure pathways and respective target receptors associated with each of the 10 assessment/management endpoints summarized below.

Assessment endpoint #1:

- **Maintain stable and healthy terrestrial plant communities**: *Are the contaminant concentrations in soil high enough to affect survival, growth or reproduction of terrestrial plants?*

Measurement endpoint #1:

- Compare the metal concentrations in BPMD assessment area soils to no- and low-effect soil ESVs associated with phytotoxicity.

The quality of the physical habitat to support plants is considered when identifying plant exposure areas. For example, mine waste piles, steep rocky talus slopes, and cliffs or rocky outcrops are not expected to support most plant species regardless of metals contamination. Therefore, plant exposure and risks associated with these habitats are not included in this terrestrial BERA.

Assessment endpoint #2:

- **Maintain stable and healthy soil invertebrate communities:** *Are the contaminant concentrations in soil high enough to affect survival, growth or reproduction of soil invertebrates?*

Measurement endpoint #2:

- Compare the metal concentrations in BPMD assessment area soils to no- and low-effect soil ESVs associated with soil invertebrate toxicity and adverse changes to soil invertebrate community composition.

Like the plant measurement endpoint, the quality of the physical habitat to support stable and healthy soil invertebrate communities is considered when selecting terrestrial exposure areas. Specifically, only areas that support plants (food base for most invertebrates) are included in the terrestrial BERA.

Assessment endpoint #3:

- **Maintain stable and healthy herbivorous bird populations**: *Are the contaminant concentrations in soils, surface water, and plants high enough to affect survival, growth, or reproduction in herbivorous birds?*

Measurement endpoint #3:

- Use metal concentrations measured in BPMD assessment area soils, surface water, and plant tissues in a food chain model to calculate metal-specific estimated daily doses (EDDs) for comparison against avian no- and low-effect toxicity reference values (TRVs) for adverse effects on survival, growth, or reproduction. Further information on derivation of EDDs and sources of TRVs are provided in Section 3 and 4 of this BERA.

Assessment endpoint #4:

- **Maintain stable and healthy herbivorous mammal populations**: *Are the contaminant concentrations in soils, surface water, and plants high enough to affect survival, growth, or reproduction in herbivorous mammals?*

Measurement endpoint #4:

- Use metal concentrations measured in BPMD assessment area soils, surface water, and plant tissues in a food chain model to calculate metal-specific EDDs for comparison to mammal no- and low-effect TRVs for adverse effects on survival, growth, or reproduction.

Assessment endpoint #5:

- **Maintain stable and healthy insectivorous bird populations**: *Are the contaminant concentrations in soils, surface water, and terrestrial invertebrates high enough to affect survival, growth, or reproduction in insectivorous birds?*

Measurement endpoint #5:

- Use metal concentrations measured in BPMD assessment area soils, surface water, and terrestrial invertebrates (flying insects, ground-dwelling insects, and/or soil invertebrates) in a food chain model to calculate metal-specific EDDs for comparison against avian no- and low-effect TRVs for adverse effects on survival, growth, or reproduction.

Assessment endpoint #6:

- **Maintain stable and healthy insectivorous mammal populations**: *Are the contaminant concentrations in soils, surface water, and terrestrial invertebrates high enough to affect survival, growth, or reproduction in insectivorous mammals?*

Measurement endpoint #6:

- Use metal concentrations measured in BPMD assessment area surface water and terrestrial invertebrates (flying insects) in a food chain model to calculate metal-specific EDDs for comparison against mammal no- and low-effect TRVs for adverse effects on survival, growth, or reproduction.

Assessment endpoint #7:

- **Maintain stable and healthy omnivorous bird populations**: *Are the contaminant levels in soils, surface water, terrestrial invertebrates, and plants high enough to affect survival, growth, or reproduction in omnivorous birds?*

Measurement endpoint #7:

- Use metal concentrations measured in BPMD assessment area soils, surface water, terrestrial invertebrates (flying insects, ground-dwelling insects, and/or soil invertebrates), and plants in a food chain model to calculate metal-specific EDDs for comparison against avian no- and low-effect TRVs for adverse effects on survival, growth, or reproduction.

Assessment endpoint #8:

- **Maintain stable and healthy omnivorous mammal populations**: *Are the contaminant levels in soils, surface water, terrestrial invertebrates, small mammals, and plants high enough to affect survival, growth, or reproduction in omnivorous mammals?*

Measurement endpoint #8:

- Use metal concentrations measured in BPMD assessment area soils, surface water, terrestrial invertebrates (flying insects, ground-dwelling insects, and/or soil invertebrates), small mammals, and plants in a food chain model to calculate metal-specific EDDs for comparison against mammal no- and low-effect TRVs for adverse effects on survival, growth, or reproduction.

Assessment endpoint #9:

- **Maintain stable and healthy carnivorous bird populations**: *Are the contaminant levels in soils, surface water, and small mammal tissues high enough to affect survival, growth, or reproduction in carnivorous birds?*

Measurement endpoint #9:

- Use metal concentrations in BPMD assessment area soils, surface water, and small mammal tissues in a food chain model to calculate metal-specific EDDs for comparison

against avian no- and low-effect TRVs for adverse effects on survival, growth, or reproduction. Small mammal tissue metals concentrations are estimated using soil-to-biota uptake factors or regression equations and measured soil concentrations.

Assessment endpoint #10:

- **Maintain stable and healthy carnivorous mammal populations**: *Are the contaminant levels in soils, surface water, and small mammal tissues high enough to affect survival, growth, or reproduction in carnivorous mammals?*

Measurement endpoint #10:

- Use metal concentrations in BPMD assessment area soils, surface water, and small mammal tissues in a food chain model to calculate metal-specific EDDs for comparison against mammal no- and low-effect TRVs for adverse effects on survival, growth, or reproduction. Small mammal tissue metals concentrations are be estimated using soil-to-biota uptake factors or regression equations and measured soil concentrations.

SECTION 3: EXPOSURE ANALYSIS

3.1 Introduction

This section describes data sources and procedures that are used to estimate COPEC exposures for BPMD plants, soil invertebrates, and wildlife receptors. Exposure analyses are specific to each target receptor community group or individual wildlife species and are based on BPMD assessment area habitat, wildlife home ranges, and life-history traits. BPMD assessment area-specific field data are used to quantify COPEC exposures in terrestrial and semi-aquatic wildlife receptors incidentally ingesting soils, drinking surface water, and feeding on dietary items. Field data are used to estimate direct exposure to soil contamination by plants and invertebrates. In addition to summarizing sources and processing of exposure data, this section also describes how area use factors (AUFs) are derived for use in tailoring large home range wildlife receptor exposure estimates.

As discussed in Section 2, COPECs are identified in the final terrestrial BERA work plan (EPA, 2017e) and summarized in **Table 2.1**. The terrestrial BERA exposure analysis only focuses on these 20 COPECs that are unique to plants, invertebrates, birds, and mammals.

3.2 Sources of environmental media exposure data

This terrestrial BERA uses chemistry data from environmental samples collected, analyzed and compiled by EPA. These data are stored and maintained by EPA in a BPMD-specific Scribe database (EPA, 2019d). The Scribe database is the same one that can be accessed through the EPA-sponsored online GeoPlatform BPMD project sample results viewer. All analytical chemistry data were collected by EPA or its contractors using agency-approved sampling and analysis plans/quality assurance project plans (SAPs/QAPPs). This approach ensures that all exposure data are of known quality and reliability. There are five primary sources of exposure data: surface water, mine waste halo and vegetated upland soil, floodplain soil, and floodplain, halo, and upland dietary items (plants and invertebrates). All environmental chemistry data used in this BERA are provided in **Appendix A** and summarized below.

3.2.1 Surface water

Assessment area surface water data are used to estimate drinking water exposures for all wildlife receptors. Total recoverable metals (not filtered) analytical results were obtained from surface water grab samples collected from all available established monitoring locations throughout the BPMD assessment area. Samples were collected by dipping new, certified precleaned high-density polyethylene bottles directly into the water source or filling bottles using a syringe for shallow water sampling locations. Samples were field preserved with nitric acid before submitting to the EPA Region 8 laboratory for chemical analysis.

This BERA relies on two separate types of surface water sampling locations: 1) creek and river reaches and 2) adit discharges and flow paths before entering creek and river reaches. Creek and river reach location samples are used to estimate drinking water exposure for most wildlife receptors. Adit discharge and flow path surface waters are used to estimate exposure for fringed myotis bat that may use mine structures and adit habitats. The creek and river reach dataset

contains approximately 800 surface water samples collected from approximately 190 established monitoring locations distributed throughout all floodplain EUs in the assessment area. These data were collected over multiple runoff hydroperiods between 2016 and 2018 sampling seasons (EPA, 2017d; 2018b, 2019c). Note that the terrestrial BERA work plan (EPA, 2017e) specifies that only 2016 surface water data would be used. However, this results in EUs being represented by very few samples when categorized into runoff hydroperiods. Therefore, additional surface water data are needed so EPCs are based on large sample sizes. Fortunately, multiple years of surface water data collected after the August 2015 GKM release are available for use herein. All creek and river surface water data used in this BERA are provided in **Appendix A, Table A-1**.

The adit discharge and flow path dataset consists of 170 surface water samples collected from approximately 80 established monitoring locations distributed throughout most of the floodplain EUs in the assessment area (**Figures 3.1a** through **3.1h**). These data were collected during the 2014, 2015, and 2016 sampling seasons (EPA, 2015c; 2016f; 2017d). Adit discharges and flow paths are not categorized into runoff hydroperiods when generating EPCs. Adit discharges and flow paths are not available for all floodplain EUs. Since fringed myotis bat risks are evaluated for all floodplain EUs, watershed-specific surface water EPCs are derived and subsequently applied to missing, respective floodplain EUs. All adit discharge and flow path surface water data used in this BERA are in **Appendix A, Table A-2**.

3.2.2 Floodplain soil

Overbank soil samples were collected in floodplain areas throughout the BPMD. They provide information on levels of floodplain soil contamination in different river reaches that provide habitat for terrestrial and semi-aquatic receptors. Most floodplain soil samples are composites made by combining and homogenizing multiple subsamples. Subsamples were collected by transferring soil from the ground surface into glass jars using a new, sample-dedicated plastic scoops. All soil samples were stored at or just below 4˚ Celsius from time of collection to analysis.

The floodplain soil dataset used in this BERA contains analytical data from composite surface soil samples (0- to 6-inch depth interval) collected in floodplain EUs distributed throughout the BPMD assessment area (**Figures 3.1a** through **3.1h**). The dataset contains data from different sampling events that occurred between 2015 and 2018 field sampling seasons. Most floodplain soil samples (175 out of 262 total samples) are from a dedicated overbank soil sampling survey conducted in 2016 (EPA, 2017d). This event consisted of collecting five-point composite surface samples (0- to 2-inch depth interval) from areas with poorly vegetated or un-vegetated soils at specified sampling locations. Overbank soil samples were not sieved. At least one overbank composite soil sample was collected from each of the 29 floodplain EUs evaluated herein. This BERA also uses 0- to 6-inch depth interval, 2-millimeter (mm) sieved fraction floodplain soils collected from EU-09 and -10 during the 2015 sampling event (EPA, 2016f). This added approximately 40 samples to the working BERA floodplain soil dataset.

The working BERA floodplain soil dataset contains a total of 14 campsite-specific surface soil samples (0- to 2-inch depth interval) collected from six floodplain EUs distributed among the three study area watersheds (EPA, 2016f; 2017d). Depending on the size of campsite areas,

samples are either 5- or 30-point composites. Campsite soil samples were sieved using a 2-mm screen opening prior to analysis.

The working BERA floodplain soil dataset contains 10 soil samples collected from floodplain willow plant tissue sampling locations during the spring 2017 sampling event (EPA, 2018b). Co-located willow soil samples were five-point composites from the 0- to 2-inch depth interval and were not sieved prior to analysis

Lastly, floodplain soils collected during the 2018 BERA dietary item sampling event are evaluated herein (EPA, 2017b; 2018b). These BERA-specific samples are 5- or 30-point composites collected from the 0- to 2-inch depth interval. Subsamples were collected from the same floodplain areas in which plant and invertebrate tissue samples were collected and analyzed as collected (not sieved). A total of 29 BERA floodplain soil samples were collected among 10 sampled, floodplain EUs distributed throughout the BPMD assessment area.

All floodplain soil analytical data used in this BERA are provided in **Appendix A, Table A-3**. All 2-mm sieved floodplain soil samples are also identified in this table.

3.2.3 Halo and vegetated upland area soil

Mine waste halo area habitats are directly adjacent to and downgradient from unvegetated mine waste piles. They are assumed to be the most contaminated terrestrial habitats that can support plants and invertebrates which provide forage for select terrestrial wildlife receptors. Vegetated upland areas represent habitats that are vegetated and not obviously impacted by mining activities. Section 3.6 provides information on how each of these areas/habitats are delineated from each other. As a whole, upland areas contribute to most of the BPMD assessment area habitat and represent an important exposure area for large home range wildlife receptors (EPA, 2017e).

Halo and vegetated upland area soil sampling methods are described in the BPMD terrestrial BERA SAP/QAPP (EPA, 2017b) and results are summarized in the EPA (2019c) sampling activities report. A total of about 70 discrete grab and composite halo surface soil samples (0- to 2-inch depth interval) were collected over the 2017 and 2018 field seasons. These samples were collected from areas downgradient from mine waste piles at eight representative BPMD NPL mine sites. Discrete grab samples are confirmation samples collected during x-ray fluorescence (XRF) surveys. Confirmation samples were sieved to a 2-mm fraction prior to analysis. XRF confirmation samples are used to assess the accuracy of XRF survey results and are analyzed using standard analytical methods for metals (EPA Methods 200.2 and 7473). As stipulated in the BERA work plan (EPA, 2017e), XRF survey results are not included in the halo area soil dataset to estimate receptor exposure, but respective confirmation samples are included because they were chemically analyzed in the laboratory using EPA approved analytical methods. Although XRF survey results are not used to explicitly estimate receptor exposures, they are used to conservatively define the extent of contamination in mine halo areas. More information on this procedure is provided in Section 3.6.2 of this BERA. Halo area soil samples also include 5-point composites that were colocated with halo area vegetation and invertebrate tissue samples. These samples were not sieved.

All halo area soil analytical data used in this BERA are provided in **Appendix A, Table A-4**. All 2-mm sieved halo area soil samples are also identified in this table.

A total of about 55 composite vegetated upland surface soil samples (0- to 2-inch depth interval) were collected during the summer 2017 and 2018 BPMD sampling events (EPA, 2018b; 2019c). These samples were collected at the 10 representative vegetated upland areas prescribed in the terrestrial BERA SAP/QAPP (samples not sieved) and upland/upgradient areas associated with eight of the waste pile halo areas (samples sieved to a 2-mm fraction). Vegetated upland samples collected in evergreen forested sampling locations were identified and used when evaluating incidental soil ingestion for Canada lynx. Lynx have very specific habitat requirements that include evergreen forests and not alpine tundra that provides little to no refuge/cover for this reclusive species. **Appendix A, Table A-5** summarizes all vegetated upland soil analytical data used in the BERA and identifies samples collected in evergreen forest lynx habitat.

Figures 3.2a through **3.2d** show all halo and vegetated upland area soil sample locations.

3.2.4 Invertebrate tissues

Flying, ground-dwelling, and soil invertebrate tissue samples were collected and chemically analyzed to support wildlife receptor dietary item food chain modeling. These three invertebrate functional groups are defined according to respective collection methods and represent available prey items associated with waste pile, vegetated upland, and floodplain habitats (EPA, 2017b). A total of 59 composite invertebrate tissue samples were collected for use in this BERA, including 27 flying and 27 ground-dwelling invertebrate samples. A least one composite of each of these functional groups was collected at each sampling area. Only five soil invertebrate samples, consisting of earthworms, were collected among all sampling areas. Despite seeking earthworms at all sampling areas, they were rarely found. However, at least one composite soil invertebrate sample was collected at all but one (high-level) DRC. Although the terrestrial BERA work plan specifies that halo and floodplain invertebrates will be used to generate separate halo- and floodplain-specific EPCs, samples are not separated but combined within each functional group herein. For example, low DRC halo flying insects were combined with low DRC floodplain flying insects for a combined low DRC category and medium DRC halo ground dwelling insects were combined with medium DRC floodplain ground-dwelling insects for a combined medium DRC category. This decision was made to increase sample size and statistical power needed to generate EPC metrics. As such, a single group of functional group-specific invertebrate EPCs are used to estimate terrestrial and semi-aquatic wildlife receptors.

Flying invertebrates were captured by sweeping vegetation using fine-meshed insect nets. This functional group consists of a diverse assemblage of flying emergent aquatic and terrestrial insects such as black flies, moths, beetles, and mosquitoes. Ground-dwelling invertebrates were primarily captured by picking, flipping over rocks and stumps, and trapping using pitfall traps. This functional group consists of a diverse assemblage of ants, beetles, and grubs. Soil invertebrates (earthworms) were captured by picking out of shallow pits in moist, but not saturated, soils with high organic content. All invertebrate tissue samples were processed in the field. All debris were removed from samples and containers with decontaminated forceps and invertebrates were not depurated before analysis. Ash-free dry weights were obtained for flying and ground-dwelling invertebrate samples. Soil invertebrate percent moisture was estimated after

freeze-drying samples for 48 hours. This enabled all samples to be reported on a dry-weight (DW) basis using sample-specific percent moisture/solids data. All invertebrate tissue analytical data used in this BERA are provided in **Appendix A, Table A-6**. **Figures 3.2a** through **3.2d** show invertebrate tissue sampling locations.

3.2.5 Plant tissues

Grass, sedge, herb, and shrub tissue samples were collected and chemically analyzed to support wildlife receptor dietary item food chain modeling. These four plant functional groups represent available forage items associated with waste pile, floodplain, and vegetated upland habitats (EPA, 2017b). A total of 33 grass, 15 sedge, 34 herb, and 33 shrub composite samples were collected among the three halo and floodplain DRC-based collection areas, vegetated upland areas, and floodplain EUs. Grass and sedge samples consist of the top half of above-ground biomass. Herb samples consist of a diverse assemblage of herbaceous and flowering above-ground biomass plant parts. Shrub samples consist mostly of willow leaves and stem tips. All samples were thoroughly homogenized in the laboratory using decontaminated cutting utensils. Ash-free dry weights were obtained for each sample and results were reported on a DW basis. As performed with invertebrate samples, all halo- and floodplain-collected samples were combined into a single set of respective DRCs when generating EPCs. Sedge samples are combined with grass sample results before generating EPCs, since both groups are monocots and sedge samples are not well represented among sampling areas. All plant tissue analytical data used in this BERA are provided in **Appendix A, Table A-7**. **Figures 3.2a** through **3.2d** show plant tissue sampling locations.

3.2.6 Mine waste pile soil

Mine waste pile soil samples were collected at 35 BPMD NPL mine features[4] during summer 2015 and 2016 (EPA, 2016f; 2017d). Waste pile soil samples provide information on levels of contamination in unvegetated NPL mine feature waste piles. Although waste piles provide little to no habitat for wildlife, American pika and yellow-bellied marmot are often observed inhabiting BPMD mine waste piles. Waste piles and respective features likely offer easily accessible refuge. Given that these two species may be preferentially exposed to soils in waste rock piles, respective exposure modeling uses waste pile soil analytical data.

The waste pile soil dataset used in this BERA contains analytical data from composite surface soil samples (0- to 6-inch depth interval) collected at NLP mine features distributed throughout the BPMD assessment area. Samples represent 30-point composite surface samples from each sampled waste pile. Multiple composite samples were often taken at mine features with more than one waste pile. Waste pile samples were sieved (#10) and the less than 2-mm fraction was chemically analyzed. All waste pile soil sample analytical data used in this BERA are provided in **Appendix A, Table A-8**.

[4] Note that not all NPL features have waste piles and not all NPL features with piles could be accessed due to land owner permission and safety constraints.

3.3 Data compilation methods

The following procedures are applied to compile and process exposure chemistry data when calculating the summary statistics and exposure metrics used in this BERA. EPC derivations are discussed in Section 4 below and provided in **Appendix B**:

- Results assigned laboratory or data validation qualifiers, indicating that an analyte was positively detected or presumptively present (i.e., data without flags or data flagged as "D" [diluted] or "J" [estimated]), are retained as reported for use in the exposure calculations.

- Results assigned qualifiers indicating that an analyte was not positively detected (i.e., data flagged as "U" [non-detected] or "UJ" [estimated non-detected]) are retained at one-half their detection limit.

- Any results considered of inadequate quality (i.e., data qualified as "R") are not used.

- Analytical results for surface water samples collected from the same monitoring location but during different sampling events are considered unique samples and are not combined.

- Analytical data from duplicate samples (i.e., quality control samples collected at the same location, date, and time as the assessment samples) are not considered.

- All surface water results are grouped into three distinct hydroperiods to support water year-based exposure assessments. This approach ensures that the surface water exposures reflect the seasonal differences in exposure conditions. The eight-month water year hydroperiods are defined as follows:

  1) Pre-runoff period: March, and April (i.e., 2 months);
  2) runoff period: May and June (i.e., 2 months); and
  3) post-runoff period: July[5], August, September, October (i.e., 4 months).

  Water year EPCs are calculated for the 8-month period when surface water features are not under ice, using the following month-weighted average equation:

  Water year EPC = (pre-runoff EPC * 2) + (runoff EPC * 2) + (post-runoff EPC * 4) / 8

  The three hydroperiods are not fully represented in all EUs. Surface water analytical data are most often missing from the pre-runoff hydroperiod. This is due to difficulties accessing surface water sampling locations covered by snow at high altitudes early in the spring sampling season. When pre-runoff EPCs are missing, post-runoff central tendency

[5] Note that early July surface water sampling at high elevation locations often represents high flow, runoff conditions. For purposes of this BERA, all samples collected in July are used to characterize the post-runoff hydroperiod. This assumption simplifies hydroperiod categorization and is in-line with previous ERA methods (EPA, 2019a).

exposure (CTE) and reasonable maximum exposure (RME) results are used to represent pre-runoff conditions. This substitution is justified given the apparent similarities between the pre- and post-runoff hydroperiods as reported in the BPMD aquatic BERA (EPA, 2019a). Post-runoff hydroperiod sampling results are available for most of the EUs. When post-runoff data are unavailable, this hydroperiod is represented by pre-runoff EPCs. Lastly, there are a few EUs where runoff hydroperiod data are unavailable. In these cases, the only available surface water data collected among all hydroperiods is used to represent missing data. All substitutions are identified in respective **Appendix B** EPC tables.

- Length-weighted average (LWA) surface water year and floodplain soils are calculated to estimate surface water consumption and floodplain soil EPCs for large home range wildlife receptors whose exposure scenarios encompass multiple floodplain EUs. Specifically, LWAs are derived for individual Mineral Creek, Cement Creek, the upper Animas River watersheds and the entire study area. First, water year or floodplain soil EPCs are multiplied by respective EU reach lengths measured in rivermiles. Then, all EU multiplication products are summed across the selected watershed and divided by the total length of all floodplain EUs in the selected watershed. EU-specific rivermiles were measured using Esri ArcGIS software and summarized in **Appendix B** EPC tables.

- Preliminary invertebrate and plant tissue EPCs do not always follow an expected, positive dose-response relationship with respect to increasing DRCs. This primarily occurs for minor, non-DRC indicator COPECs and soil invertebrates. In order to have meaningful DRC dietary item exposure statistics for all COPECs, a DRC-based hierarchical substitution of invertebrate and plant EPCs is employed. This consists of first deriving preliminary RMEs and CTEs using established DRC assignments of respective invertebrate and plant sampling areas (**Appendix B, Table B-26** and **Table B-30**, respectively). Final EPCs are then identified by assigning the highest preliminary plant and invertebrate EPCs among reference, low, mid, and high DRCs to the high-level DRC. The next highest preliminary EPC is then assigned to the mid-level DRC and so on until all DRCs are populated for all COPECs. This substitution scheme results in EPCs that follow a positive dose-response relationship with respect to increasing DRCs (**Appendix B, Table B-27** and **Table B-31**). Final EPCs are used herein to estimate wildlife dietary exposures.

3.4 Exposure point concentrations

The EPCs used in exposure calculations consist of RMEs and CTEs for each COPEC in surface water, adit/mine drainage water, floodplain, DRC, and upland soil, and wildlife dietary items. Only metals identified as COPECs in the BPMD terrestrial BERA work plan (**Table 2.1**) are used to calculate EPCs for each exposure area and floodplain EU. ProUCL 5.1 software was used to calculate 95% Upper Confidence Levels (UCLs) of the arithmetic means for use as RMEs using the program-recommended method (EPA, 2016e).

ProUCL's UCL recommendations are based upon data size, data distribution and skewness and simulation studies summarized in Singh *et al.* (2006). RMEs are represented by their maximum-detected concentrations when available data sets are too small or variable to calculate a reliable

UCL. Ability to derive RME UCLs depends not only on the size of the dataset, but also on the variability of the values in the dataset. Highly variable data result in unreasonably large UCLs (greater than maximum values), especially with small datasets (EPA, 2016). Conversely, practical UCLs can be calculated using a small dataset when data have low variability.

The CTEs are always represented by arithmetic means when more than one value is available for a given EU. As stated in Section 3.3, all non-detected COPEC analytical results are retained at one-half their detection limit and included in RME and CTE datasets. This is a common and acceptable approach when working with censored data (EPA, 2017c) and is prescribed in the BERA work plan (EPA, 2017e).

All environmental media-specific EPCs and respective derivation steps are summarized in the following **Appendix B** tables.

- Surface water – **Tables B-1** to **B-9**
- Mine discharge and adit water – **Tables B-10** to **B-14**
- Floodplain soils – **Tables B-15** to **B-23**
- Halo and vegetated upland soils – **Tables B-24** to **B-25**
- Invertebrate tissues – **Tables B-26** to **B-29**
- Plant tissues – **Tables B-30** to **B-33**
- NPL mine feature waste pile soils – **Table B-34**

3.5 Exposure unit studies

Given the large size of the BPMD, it is not feasible to sample all exposure media, in all areas, for all receptors. As such, the terrestrial BERA work plan (EPA, 2017e) and subsequent field SAP/QAPP (EPA, 2017b) developed and implemented a DRC-based approach to estimate receptor exposures using environmental media analytical chemistry datasets described in Section 3.2. To reiterate, this BERA applies site-specific media COPEC concentrations from high-level contaminated, mid-level contaminated, low-level contaminated, vegetated upland, and reference sampling areas to similar areas classified as having high-level, mid-level, low-level, vegetated upland, and reference exposure conditions. This extrapolation approach requires categorizing field sampling areas into DRCs, after which field sampling is conducted along a DRC gradient. DRC-based field collected exposure data are then applied to similarly categorized EUs when conducting food chain modeling. This approach focuses on wildlife exposure modeling but is also germane to plant and invertebrate exposures.

DRCs represent the possible range of ecological exposures associated with the presence of the metals in BPMD water, soils, and wildlife dietary items. DRCs should not be viewed in absolute terms because they only represent the potential for ecological exposure in relative terms. For example, the low-level DRC does not mean low exposure, but that exposure is expected to be lower than in the mid-level DRC. Vegetated upland areas and the floodplain reference DRC are used to characterize natural environmental conditions and metals concentrations in areas not obviously impacted by past mining activities.

The BPMD terrestrial BERA work plan (EPA, 2017e) used the, then-current environmental media analytical chemistry to categorize all floodplain EUs and each of the 42 NPL mine features evaluated herein into one of the four DRCs: high-level, mid-level, low-level, and reference (floodplain only). Lead was the primary COPEC DRC indicator, but arsenic and zinc concentrations were also considered. After categorizing each NPL mine feature and floodplain, the *2017-2018 Combined Risk Assessment Sampling Events BPMD Sampling and Analysis Plan/Quality Assurance Project Plan* (EPA, 2017b) developed the sampling and analysis methods to collect exposure data at a subset of floodplain and NPL mine features. Associated sampling and analysis activities were carried out during the 2017 and 2018 field seasons (EPA, 2018b; 2019c). Exposure media sampling occurred in halo areas at eight NPL mine features distributed among each of the three assessment area watersheds. Specifically, at Brooklyn and Bandora mines in Mineral Creek, Mogul and Lark mines in Cement Creek, and Vermillion, London, Red Cloud, and Clipper mines in the Animas River watershed. Ten select floodplain reaches that represented a range of DRCs and subwatersheds were also sampled. Two of the 10 reaches are floodplain reference EUs; specifically, Maggie (EU-R2) and Picayune (EU-R3) gulches. Lastly, seven vegetated upland areas were sampled. Vegetated upland sampling areas are located throughout the assessment area and distributed amongst sub-alpine evergreen and alpine tundra terrestrial habitats.

Analytical chemistry results for indicator COPECs at sampled NPL mine feature halo and floodplain areas generally agreed with the DRC designations developed in the terrestrial BERA work plan (EPA, 2017e). Per direction of the BERA work plan, collection and subsequent analysis of additional soil chemistry data is used to reevaluate and recategorize the original DRC designations herein. This results in about half of the NPL mine features being re-designated into different DRCs. This is not unexpected since there was no soil chemistry information from halo areas at mine features that were originally designated using waste rock chemistry data. Only one of the 25 floodplain EUs (EU-3.5) is re-designated into a different DRC (mid-level changed to high-level). **Table 3.1** and **Table 3.2** summarize final DRCs for each of the 42 NPL mine feature halo areas and 25 non-reference floodplain EUs, respectively. **Figure 3.4** and **Figure 3.5** also show final DRCs for each mine feature and halo area throughout the BPMD assessment area. These DRC assignments are used to build receptor-specific EPCs using COPEC concentrations measured in similarly categorized BPMD field collected soils and dietary items.

3.6 Habitat identification and area use factors

The BPMD watershed covers around 150 square miles and contains a diverse assemblage of habitats and mining-impacted areas. Mining-related contamination is not evenly distributed throughout the watershed or habitats. Additionally, ecological receptors do not use all habitats equally. Therefore, AUFs are derived to account for the size of the assessment area relative to the size of the receptor's home range when modeling exposure. AUFs are used in food chain models to tailor exposure profiles for large home range wildlife receptors: Canada lynx, coyote, golden eagle, and goshawk. Note that the AUF (1.0) used in the SLERA is very conservative. It assumes that receptors' home ranges are fully within the contaminated area(s) and thus, the animals are exposed maximum COPEC concentrations 100 percent of the time. The refinement of AUFs is one hallmark of the BERA process.

For this BERA, large home range wildlife receptors' EUs are large geographic areas, such as the entire BPMD assessment area or individual watersheds within the BPMD assessment area. These area-based EUs contain unique distributions of mine halo area, floodplain, and vegetated upland habitats. Acreages of each of these habitat features are used to derive AUFs. AUFs are simple proportions of each habitat feature that occurs in the total habitat for respective wildlife receptor EUs. As such, acreages of all relevant habitat features in the entire 150–square-mile BPMD assessment area are needed to derive AUFs. The terrestrial BERA AUF derivation steps consider the major habitat types that are described in the following subsections.

3.6.1 Mine site waste piles

Waste rock and tailings are major sources of metals contamination in the BPMD. These areas often contain metals at levels that are toxic to vegetation and are barren. As a result, mine waste piles provide little to no habitat for most wildlife species. Therefore, the acreages of NPL mine feature waste piles that are devoid of vegetation are removed from the total habitat for respective wildlife receptor EUs. This action requires knowing the location and total acreage of each NPL mine feature waste pile.

The EPA (2018c) *Waste Pile Delineation Sampling and Analysis Plan/Quality Assurance Project Plan* was drafted and implemented to obtain actual acreages of all 42[6] NPL mine feature waste piles. First, field teams identified edges of each waste pile by visual inspection and assessment of vegetation, soil conditions, and local topography. The waste pile was then georeferenced by continuously walking the entire boundary perimeter with a global positioning system unit using a geographic information system (GIS) data entry application. Most of the NPL mine features were associated with more than one waste pile and each pile was delineated. A total of 35 of the 42 NPL mine features with waste piles were delineated in the field. The remaining seven NPL mine features were not surveyed due to access issues. The waste piles at these seven mine features were delineated remotely using Esri ArcView GIS software and aerial imagery. Many of the delineated waste piles are associated with erosional areas where waste materials are mixed with native soils. Acreages of these erosional areas are relatively small and, as a conservative measure, included in waste pile acreages. **Table 3.3** summarizes waste pile acreages for each of the 42 NPL mine features with waste piles. Results of this analysis show that a total of 52 acres of the BPMD assessment area is covered with NPL mine feature waste piles.

3.6.2 Mine waste pile halo areas

The areas downwind and downgradient of mine waste piles are expected to contain materials that have blown or eroded from mine waste piles. Concentrations of metals in the halo areas are low enough to support some vegetation; therefore, provide habitat for terrestrial ecological receptors. Halo areas are defined herein as the total vegetated area outside and downgradient of waste piles

[6] As described in Section 7.2.2 of the terrestrial BERA work plan (EPA, 2017e), not all the 48 individual NPL mine features are directly evaluated. This includes two study areas (Sunnyside Mine Pool and Prospect Gulch), three in-river/floodplain tailings deposits (Eureka Fluvial Tailings, Kittimack Tailings, and Howardsville Colo Goldfields Tailings) and the grouped Mayflower Mill Repositories (#1 through #4). While not directly evaluated, risks associated with these six NPL features are indirectly evaluated using representative mine sites/features and floodplain EUs.

that has soil metal concentrations elevated above those in local upland soils. It is assumed that the level of contamination in halo areas is proportional to the level of contamination in respective waste piles. Waste pile halo area contamination characterization studies were, in part conducted to identify and estimate the area of influence associated with waste rock piles (EPA, 2017b). Such studies were conducted at a subset of eight NPL mine features among high-, mid-, and low-level DRCs during the 2017 and 2018 field seasons.

The total area of each halo area was delineated using metals concentrations measured along transverse and radial transects extending from the mine waste pile edges. Transects extended to areas upgradient from the mine waste pile or terminated in a major gulch, creek, river, or similar watercourse. Spacing between transects was determined in the field to best characterize each halo area. For example, potentially larger and more complex halo areas required more transects with tighter spacing. Metals were measured along transects using a handheld XRF meter. Lead is the primary COPEC indicator to assess halo area contamination from respective upgradient or non-halo impacted areas. XRF confirmation samples were also collected and chemically analyzed at a subset of transect sampling points. Confirmation sample results showed a high level of correlation ($r^2 = 0.98$) with XRF lead concentrations (data not shown) at an approximate detection limit of 20 mg/kg. Individual lead XRF measurements were plotted on aerial imagery and halo areas delineated using Esri ArcView software. Halo area boundaries were conservatively delineated by evaluating concentrations of lead versus nearby halo samples and general lead concentrations measured in BPMD vegetated upland soils, and local topography. **Figures 3.3a through 3.3h** show delineated mine waste pile and respective halo areas for each of the eight NPL mine features.

Together, mine waste pile and halo area acreage estimates are used to develop a conservative halo-to-waste pile multiplier. This multiplier is critical in estimating halo acreages from waste pile acreages for the remaining BPMD NPL features not subject to halo characterization sampling. Total BPMD NPL mine feature halo acreages are needed to derive halo area AUFs for large home range receptors. The process of developing a halo-to-waste pile multiplier occurs after halo boundaries are delineated and the total acreage of halo footprints at each of the eight mine features are calculated. These acreages are then divided by the total waste pile acreage at each mine feature to derive a halo-to-waste pile acreage multiplier (**Table 3.4**). The largest multiplier is associated with Vermillion Mine, which is about 20 times the size of the waste pile. As a conservative measure, the Vermillion Mine halo-to-waste pile acreage multiplier is applied to the remaining 41 BPMD NPL mine feature waste pile acreages to estimate the total halo acreages for each NPL mine feature (**Table 3.3**). As an additional conservative measure, the Vermillion Mine halo-to-waste pile acreage multiplier is also applied to the seven remaining NPL features where halo studies and delineations occurred. This results in a total of 1,043 acres of halo area in the BPMD assessment area which are separated into one of the three DRCs in each watershed (**Table 3.3**).

3.6.3 Floodplain and valley floor areas

The total acreage of all floodplain and valley floor areas is estimated to calculate a floodplain AUF. BPMD floodplains and river valleys provide important habitat for both semi-aquatic and terrestrial wildlife. These habitats are also contaminated from eroding mine site waste piles, transportation routes, mill tailings, and mine wastes deposited during past flooding events.

Floodplain area is delineated for each of the 30 floodplain EUs using an EPA Office of Research and Development EnviroAtlas national floodplain mapping tool for the contiguous United States. This tool uses digital elevation model-derived variables, flood-related soil characteristics, and land cover in a random forest model to predict and delineate floodplain habitats (Woznicki *et al.*, 2019). Final floodplain and valley floor acreage is determined by aggregating BPMD assessment area rasters with the EnviroAtlas floodplain designation. This results in a total of about 960 acres of floodplain in the BPMD assessment area (**Table 3.5**).

3.6.4 Natural, vegetated upland areas

The total area of BPMD habitats that are vegetated and upgradient from or not clearly associated with any mine sites is identified as vegetated upland. Vegetated upland acreage is used to derive vegetated upland AUFs to estimate large home range receptor exposure. This habitat category consists of grass- and forb-dominated alpine and sub-alpine meadows and sub-alpine forests and does not include rocky slopes, roads, developed areas, waste piles, halo areas, or floodplains. The acreage of vegetated upland habitat within the BERA assessment area is estimated using available data from the National Land Cover Database (NLCD) and Esri ArcView software. Seven NLCD land cover classifications (deciduous, evergreen, and mixed forests, shrub/scrub, grassland/herbaceous, and woody and emergent herbaceous wetland) are used to identify vegetated upland acreage for the entire assessment area. This results in identifying a total of about 60,600 acres of vegetated upland habitat in the BPMD assessment area. The total vegetated upland acreages in each BPMD assessment area watershed are also determined to derive watershed-specific AUFs for Northern goshawk (**Table 3.5**). Since Canada lynx are expected to only occur in evergreen forest, a separate lynx evergreen forest vegetated upland acreage is also estimated using the evergreen NLCD classification. A total of about 20,800 acres of evergreen forest habitat is estimated for the entire BPMD assessment area (**Table 3.5**). Most of the evergreen forest habitat occurs in the Mineral Creek watershed.

3.6.5 Developed lands and natural, non-vegetated areas

This land use category includes all developed areas, including roads, driveways, and buildings, as well as all private and public land within the city limits of Silverton, CO. It also includes steep canyons, rocky peaks and outcrops, and talus fields that are not vegetated and not associated with mine sites. While these areas may provide marginal habitats for wildlife that are tolerant of human disturbance or refuge habitat for a few specialized wildlife species, they are not considered for purposes of this BERA. As such, all areas in these land use categories were removed from all exposure analyses, excluded from evaluation in the terrestrial BERA, and acreages are not included in the total area of wildlife habitat. Note that some mine sites also contain developed areas such as roads, buildings, and support facilities. These areas are also excluded. Developed and non-vegetated areas are identified using Esri ArcView software and NLCD land cover layers. Major road layers are available in Esri ArcView software, but some smaller roads were manually delineated using aerial imagery. Once all the developed lands and natural, non-vegetated areas are digitized, they are cut out of the assessment area and not included in any of the halo, floodplain, and vegetated upland area/acreage estimates.

Table 3.5 provides all the relevant habitat acreages, AUF derivation steps, and final AUFs used to tailor exposure estimates for Canada lynx, coyote, golden eagle, and northern goshawk. These

AUFs are predicated on the above habitat categories and halo acreage estimates summarized in **Table 3.3**. Additional details on how these AUFs are applied during wildlife food chain modeling are provided in Section 3.8.

3.7 Exposure to plants and soil invertebrates

This terrestrial BERA evaluates direct COPEC exposures to plants and soil invertebrates using soil-based RMEs and CTEs calculated for hypothetical waste pile halo, floodplain, and vegetated upland DRC and each floodplain EU. **Table 3.6** summarizes the plant and invertebrate EUs that are evaluated.

The mine site halo EPCs consist of RMEs and CTEs that correspond to the high-, mid-, and low-level halo areas. Halo area RMEs and CTEs are calculated using measured soil COPEC concentrations from the subset of sampled mine halo areas within each DRC. RMEs and CTEs are also calculated using all the soil data from vegetated upland areas (**Appendix A, Table A-4** and **Table A-5**). All plant and invertebrate halo and vegetated upland soil EPCs are summarized in **Appendix B, Table B-24**.

The plant and invertebrate EPCs for the floodplain EUs include all 25 assessment and four reference floodplain EUs (n = 29). The RMEs and CTEs for these EUs are calculated using the COPEC concentrations measured in the floodplain soils (**Appendix A, Table A-3**). All plant and invertebrate floodplain EPCs are summarized in **Appendix B, Tables B-15** to **B-23**. This also includes hypothetical EPCs for high-level, mid-level, low-level, and reference floodplain DRCs.

3.8 Wildlife exposure modeling

Dietary food chain exposure models are used to derive EDDs for each wildlife target receptor and COPEC. An EDD represents a dose of a COPEC that a wildlife receptor may obtain while foraging in the BPMD. **Table 3.7** summarizes each EU that is evaluated for each wildlife receptor. Receptor-specific EDDs are calculated using analytical data for soil, surface water, and dietary items collected and/or applied to habitats throughout the BPMD assessment area. EDDs also incorporate receptor-specific exposure parameters and food chain model assumptions. Soil, water, and food ingestion rates for each wildlife receptor species are defined in the BERA work plan and are provided in **Table 3.8** of this BERA. Note that the BERA work plan identified fresh matter intake (wet-weight) food ingestion rates from Nagy (2001). These are replaced herein by DW equations provided from the same source for the same receptor types to match analytical chemistry data which is reported on a DW basis.

Wildlife receptor diets are species-specific and reflect known dietary item contributions. Available BPMD dietary item analytical chemistry data are available for invertebrate (ground, flying, and soil) and plant (grass/sedge, herb, and shrub) tissue types. Readily available literature is used to determine the relative proportions of each dietary item that would be consumed by each wildlife receptor. Information sources did not always report exact proportions of each dietary item consumed; therefore, professional judgment is also used to build wildlife diets. **Table 3.9** summarizes proportions of each dietary item and the rationale for the selection of each proportion used to model wildlife exposure.

As seen in **Table 3.9**, small mammal metals concentrations are incorporated into the food chain models for the Canada lynx, coyote, golden eagle, and northern goshawk. However, site-specific small mammal tissue concentrations were unavailable. Therefore, they are estimated using soil-to-biota uptake regression equations or factors and measured EPC soil concentrations. **Table 3.10** summarizes soil-to-small mammal equations for the 15 bird and mammal wildlife COPECs identified in **Table 2.1**. Most of these equations are from EPA (2007a) EcoSSL guidance documents. Sample *et al.* (1998) and Ainsworth *et al.* (1990a,b) are used to obtain factors and equations for COPECs not included in EPA (2007a). Respective equations and factors report small mammal concentrations on a DW basis that is directly used to derive wildlife EDDs.

Note that Ainsworth *et al.* (1990a,b) did not report a soil-to-small mammal factor for antimony, but did provide enough information to independently derive one based on small mammal liver data and co-located soil analytical data. These data are used herein to independently derive an antimony soil-to-small mammal uptake factor as performed in other risk assessments where antimony is a COPEC (McCormick, 1999). First, concentrations of antimony measured in the livers from three small mammal species are divided by colocated soil concentrations to derive a series of species-specific antimony soil-to-liver uptake factors. The average of the three uptake factors is used in the terrestrial BERA and is reported in **Table 3.10**. This BERA assumes that a soil-to-liver uptake factor provides a conservative estimate of small mammal whole body concentrations because the liver can preferentially accumulate metals.

Note that the terrestrial BERA assumes that the COPECs in soil, water, and dietary items are 100% bioavailable when ingested by the wildlife receptors. While this is unlikely, it is a conservative assumption and it is better than using lower percentage bioavailability derived from a limited population of animal studies. The uncertainty analysis presented in Section 5.6 of this BERA evaluates the assumption of 100% bioavailability and associated biases on risk estimates.

3.8.1 Exposure equations

The total EDD (EDD_{total}) experienced by the wildlife receptors foraging in the BPMD is the sum of the doses of each COPEC obtained from the three major routes of exposure, as follows.

$$EDD_{total} = EDD_{soil} + EDD_{water} + EDD_{diet}$$

Where:

EDD_{total}	=	Total dose of COPECs from the ingestion of soil, water, and diet;
EDD_{soil}	=	Dose of COPEC from the ingestion of soil (mg COPEC/kg body-weight [BW]/day;
EDD_{water}	=	Dose of COPEC from the ingestion of surface water (mg COPEC/kg BW/day); and
EDD_{diet}	=	Dose of COPEC from the ingestion of food/prey items (mg COPEC/kg BW/day).

Note that the EDD_{total} is adjusted using a seasonal use factors (SUFs) when estimating exposure for wildlife receptors that inhabit the assessment area or hibernate for part of the year. As described in Section 2.2, the BPMD assessment area is unique in that it is covered in snow and ice for about half of the year. This type of climate requires that susceptible wildlife migrate or

hibernate during this time when food is limited. Not all the wildlife receptors evaluated herein migrate or hibernate. Those that don't are species that have special adaptations to be active year-round. **Table 3.11** summarizes life history attributes for each wildlife receptor that were considered when identifying and estimating SUFs. Of the 16 receptors, 6 are assumed to be exposed to BPMD COPECs for only six months or 50% of a typical year. These receptors include American robin; cliff swallow; myotis bat; golden eagle; mountain bluebird; and yellow-bellied marmot.

The dose associated with each exposure route is calculated using the following general food chain modeling equations:

<u>Dose from the ingestion of soil</u>:

$$EDD_{soil} = SIR * C_{soil}$$

Where:

EDD_{soil}	=	Dose of COPEC from the ingestion of soil (mg COPEC/kg BW/day)
SIR	=	Soil ingestion rate (kg/kg BW/day, DW)
C_{soil}	=	RME or CTE COPEC level in soil (mg COPEC/kg soil, DW)

<u>Dose from the ingestion of surface water</u>:

$$EDD_{water} = WIR * C_{water}$$

Where:

EDD_{water}	=	Dose of COPEC from the ingestion of surface water (mg COPEC/kg BW/day)
WIR	=	Water ingestion rate (L/kg BW/day)
C_{water}	=	RME or CTE COPEC level in drinking water (mg COPEC/L water)

<u>Dose from the ingestion of dietary items</u>:

$$EDD_{diet} = FIR * C_{biota}$$

Where:

EDD_{diet}	=	Dose of COPEC from ingesting plants, invertebrates, and/or small mammals (mg COPEC/kg BW/day)
FIR	=	Food ingestion rate (kg food/kg BW/day, DW)
C_{biota}	=	RME or CTE COPEC level in dietary item(s) (mg/kg, DW)

The above calculations are performed for each COPEC. Note that RME or CTE values and respective exposure scenarios are tailored to large home range receptor exposure areas using

AUFs and all wildlife receptor-specific dietary item contributions and unique life history attributes. These receptor-specific exposure scenarios are summarized in the following sections.

3.9 Target receptor-specific exposure estimates

This section provides receptor-specific exposure equations that were used to estimate EDDs for each wildlife species evaluated in this terrestrial BERA. As stated above, target receptor habitat preferences, home ranges, and dietary information are used to tailor respective EDD calculations. The remainder of this section describes receptor-specific C_{soil}, C_{water}, and C_{biota} models that are used to estimate EDD_{total} exposure values.

3.9.1 Canada lynx

Canada lynx have very large home ranges that are assumed to span the entire BPMD assessment area (**Table 3.7**). However, lynx are expected to occur only in spruce-fir forests that provide dense cover and the habitat for its main prey base, the snowshoe hare (Interagency Lynx Biology Team, 2013). Therefore, this BERA assumes that lynx exposure occurs in upland spruce-fir forests. As described in Section 3.6.4, the total area of evergreen forests within the BPMD assessment area is delineated using available land cover data. This delineation includes Mineral and Cement Creek watershed forests and forested areas below the tree line along the west side of the Animas River from Silverton almost up to Eureka. Habitat-specific AUFs are adjusted to include upland habitats within the evergreen forest area (AUF_{FOREST}). The lynx food chain model also considers soil chemistry data from high-, mid-, and low-level mine halo areas, all tailored to respective acreages using halo DRC-specific AUFs. Note that lynx halo area acreages are not segregated with respect to mine features only occurring in evergreen forest habitat but represent all halo areas within the BPMD assessment area. Given that most of the mine features are located outside of evergreen forested areas, applying assessment area-wide halo acreages to total evergreen forest habitat acres results in conservative (elevated) AUFs for halo exposure areas than what would occur in evergreen forest only. Evergreen forest and other habitat type delineations used to derive the Canada lynx AUFs are summarized in **Table 3.5**.

The Canada lynx C_{water} model uses the total assessment area water-year LWA RME and CTE COPEC concentrations in surface water for Mineral Creek, Cement Creek, the Animas River between the Arrastra Gulch confluence and Eureka, and Cunningham Creek (**Appendix B, Table B-9**). The C_{biota} model assumes that small mammals represent 100% of lynx diet. Published soil-to-small mammal uptake equations and factors (**Table 3.10**) are used to estimate the COPEC levels in small mammals based on soil RMEs and CTEs.

<u>Soil:</u>

$$C_{soil} = (HH_{soil} * \text{High-level halo } AUF_{FOREST}) + (HM_{soil} * \text{Mid-level halo } AUF_{FOREST}) + (HL_{soil} * \text{Low-level halo } AUF_{FOREST}) + (VG_{soil} * \text{Vegetated upland } AUF_{FOREST})$$

or

$$C_{soil} = (HH_{soil} * 0.014) + (HM_{soil} * 0.020) + (HL_{soil} * 0.017) + (VG_{soil} * 0.950)$$

Where:

HH_{soil} = RME and CTE COPEC concentrations in high-level waste rock halo area soils

HM_{soil} = RME and CTE COPEC concentrations in mid-level waste rock halo area soils

HL_{soil} = RME and CTE COPEC concentrations in low-level waste rock halo area soils

VG_{soil} = RME and CTE COPEC concentration in forested upland area soils

Note that the numbers in the equation are AUF acreage multipliers and are unitless.

<u>Water:</u>

$$C_{water} = SW_{LWA}$$

Where:

SW_{LWA} = RME and CTE COPEC concentrations in surface water, expressed as a LWA

<u>Diet:</u>

$$C_{biota} = [(HH_{sm} * \text{high-level halo } AUF_{FOREST}) + (HM_{sm} * \text{mid-level halo } AUF_{FOREST}) + (HL_{sm} * \text{low-level halo } AUF_{FOREST}) + (VG_{sm} * \text{vegetated upland } AUF_{FOREST})] * \%\text{ dietary item}$$

or

$$C_{biota} = [(HH_{sm} * 0.014) + (HM_{sm} * 0.020) + (HL_{sm} * 0.017) + (VG_{soil} * 0.950)] * 100\%\text{ sm. mammal}$$

Where:

HH_{sm} = Estimated RME and CTE COPEC concentrations in high-level halo sampling area small mammals; calculated using **Table 3.10** soil-to-small mammal tissue uptake equations and factors where $C_s = HH_{soil}$ RME and CTE

HM_{sm} = Estimated RME and CTE COPEC concentrations in mid-level halo sampling area small mammals; calculated using **Table 3.10** soil-to-small mammal tissue uptake equations and factors where $C_s = HM_{soil}$ RME and CTE

HL_{sm} = Estimated RME and CTE COPEC concentrations in low-level halo sampling area small mammals; calculated using **Table 3.10** soil-to-small mammal tissue uptake equations and factors where $C_s = HL_{soil}$ RME and CTE

VG_{sm} = Estimated RME and CTE COPEC concentrations in forested upland sampling area small mammal tissues; calculated using **Table 3.10** soil-to-small mammal tissue uptake equations and factors where $C_s = VG_{soil}$ RME and CTE

Canada lynx EPCs are summarized in **Table 3.12** and EDD_{total} derivation steps and results are provided in **Appendix C, Table C-1**.

3.9.2 Coyote and golden eagle

Coyote and golden eagle have very large home ranges that are assumed to span the entire BPMD assessment area (**Table 3.7**). Therefore, AUFs are calculated for each habitat type within the entire BPMD assessment area; including floodplains. Respective AUFs are used to calculate assessment area-wide RME and CTE COPEC concentrations in soil and diet (**Table 3.5**). The COPEC concentrations for FP_{soil} are LWAs of overbank soils among all established floodplain EUs in the BPMD (**Appendix B, Table B-23**). The C_{water} models for these two receptors use water year LWA RME and CTE COPEC concentrations in surface water that encompass the entire BPMD assessment area (**Appendix B, Table B-9**).

For coyote, the C_{biota} model assumes the following distribution of dietary items: 87% small mammals, 10% ground-dwelling insects, and 3% vegetation (grass). These values were obtained from percent volume of stomach contents cited in the California Wildlife Biology Exposure Factor and Toxicity Database (Cal/Ecotox, 2017; Ferrel *et al*., 1953). For golden eagle, the C_{biota} model assumes that small mammals represent 100% of the diet. While golden eagle may also prey upon birds (Kochert *et al*., 2002), whole body bird tissue chemistry data and soil-to-bird tissue uptake information are not available. Therefore, published soil-to-small mammal uptake equations and factors (**Table 3.10**) are used to estimate the COPEC levels in small mammals based on soil RMEs and CTEs.

<u>Soil:</u>

$$C_{soil} = (HH_{soil} * \text{High-level halo } AUF_{BPMD}) + (HM_{soil} * \text{Mid-level halo } AUF_{BPMD}) + (HL_{soil} * \text{Low-level halo } AUF_{BPMD}) + (FP_{soil} * \text{Floodplain } AUF_{BPMD}) + (VG_{soil} * \text{Vegetated upland } AUF_{BPMD})$$

or

$$C_{soil} = (HH_{soil} * 0.005) + (HM_{soil} * 0.007) + (HL_{soil} * 0.006) + (FP_{soil} * 0.016) + (VG_{soil} * 0.967)$$

Where:

HH_{soil}	=	RME and CTE COPEC concentrations in high-level waste rock halo area soils
HM_{soil}	=	RME and CTE COPEC concentrations in mid-level waste rock halo area soils
HL_{soil}	=	RME and CTE COPEC concentrations in low-level waste rock halo area soils
FP_{soil}	=	RME and CTE COPEC concentrations in floodplain soils among all floodplain EUs
VG_{soil}	=	RME and CTE COPEC concentrations in vegetated upland area soils

<u>Water:</u>

$$C_{water} = SW_{LWA}$$

Where:

SW_{LWA}	=	RME and CTE COPEC concentrations in surface water

Diet:

$$C_{biota} = (HH_{diet} * \text{high-level halo } AUF_{BPMD}) + (HM_{diet} * \text{mid-level halo } AUF_{BPMD}) + (HL_{diet} * \text{low-level halo } AUF_{BPMD}) + (FP_{diet} * \text{floodplain } AUF_{BPMD}) + (VG_{diet} * \text{veg. upland } AUF_{BPMD}) * \% \text{ dietary item}$$

or, for coyote:

$$C_{biota} = [[(HH_{sm} * 0.005) + (HM_{sm} * 0.007) + (HL_{sm} * 0.006) + (FP_{sm} * 0.016) + (VG_{sm} * 0.967)] * 87\% \text{ sm. mammal}] + [[(HH_{invert} * 0.005) + (HM_{invert} * 0.007) + (HL_{invert} * 0.006) + (FP_{invert} * 0.016) + (VG_{invert} * 0.967)] * 10\% \text{ invertebrate}] + [[(HH_{plant} * 0.005) + (HM_{plant} * 0.007) + (HL_{plant} * 0.006) + (FP_{plant} * 0.016) + (VG_{plant} * 0.967)] * 3\% \text{ plant}]$$

or, for golden eagle:

$$C_{biota} = [(HH_{sm} * 0.005) + (HM_{sm} * 0.007) + (HL_{sm} * 0.006) + (FP_{sm} * 0.016) + (VG_{sm} * 0.967)] * 100\% \text{ small mammal}$$

Where:

HH_{diet}	=	Estimated RME and CTE COPEC concentrations in high-level halo sampling area dietary items; small mammals (sm), ground-dwelling invertebrates (invert), and grass (plant)
HM_{diet}	=	Estimated RME and CTE COPEC concentrations in mid-level halo sampling area dietary items; small mammals (sm), ground-dwelling invertebrates (invert), and grass (plant)
HL_{diet}	=	Estimated RME and CTE COPEC concentrations in low-level halo sampling area dietary items; small mammals (sm), ground-dwelling invertebrates (invert), and grass (plant)
FP_{diet}	=	Estimated LWA RME and CTE COPEC concentrations in small mammals (sm), ground dwelling invertebrates (invert), and grass (plant)
VG_{diet}	=	Estimated RME and CTE COPEC concentrations in vegetated upland sampling area dietary items; small mammals (sm), ground-dwelling invertebrates (invert), and grass (plant)

Coyote and golden eagle EPCs are summarized in **Table 3.13** and **Table 3.14**, respectively. EDD_{total} derivation steps and results for each of these species are provided in **Appendix C, Table C-2** and **Table C-3**, respectively.

3.9.3 Moose

Moose are large home range receptors that are primarily associated with floodplain and other riparian, valley-floor habitats. The terrestrial BERA estimates moose exposure within each of the three major BPMD watersheds; namely, Mineral Creek, Cement Creek, and upper Animas River (i.e., three moose exposure areas). The terrestrial BERA assumes that moose are exposed to COPECs found along the floodplain within each of these major sub watersheds. As such, RME and CTE COPEC concentrations represent watershed-based LWAs for soil, surface water, and diet (**Appendix B, Table B-23**, **Table B-9**, and **Table B-33**, respectively). The C_{biota} model assumes that 100% of the moose diet will be provided from ingesting subwatershed floodplain shrubs (**Appendix B, Table B-33**). Moose are known to also consume aquatic vegetation.

However, their diet is simplified herein to only eating shrubs (willow) in this BERA since willow is dominant in BPMD floodplains and site-specific willow tissue chemistry data are available for food chain modeling. Since EPCs are derived using watershed-specific LWAs, AUFs are not needed to tailor moose exposure profiles.

Soil:

$$C_{soil} = FP_{SOIL\text{-}LWA}$$

Where:

$FP_{SOIL\text{-}LWA}$ = RME and CTE COPEC concentrations in floodplain soils among watershed-specific floodplain EUs

Water:

$$C_{water} = SW_{LWA}$$

Where:

SW_{LWA} = RME and CTE COPEC concentrations in surface water

Diet:

$$C_{biota} = FP_{VEG\text{-}LWA}$$

Where:

$FP_{VEG\text{-}LWA}$ = RME and CTE COPEC concentrations in floodplain vegetation among watershed-specific floodplain EUs

Moose EPCs are summarized in **Table 3.15** and EDD_{total} derivation steps and results for Mineral Creek, Cement Creek, and Animas River watershed EUs are provided in **Appendix C, Table C-4**, **Table C-5**, and **Table C-6**, respectively.

3.9.4 Northern goshawk

Northern goshawk represents a large home range receptor with a home range that would cover upland and riparian foraging habitats throughout the BPMD. The terrestrial BERA assumes that northern goshawk would be exposed to upland and floodplain contamination within each of the three major BPMD watersheds; specifically, Mineral Creek, Cement Creek, and the upper Animas River. As such, watershed-based AUFs are used to calculate watershed-normalized RME and CTE COPEC concentrations in soil and diet (**Table 3.5**). The C_{water} model uses a similar watershed-based calculation as described above for moose to derive LWA_{WS} RME and CTE COPEC concentrations in surface water for each of the three watersheds (**Appendix B, Table B-9**). The C_{biota} model assumes that small mammals represent 100% of the northern goshawk diet. As discussed in the BERA work plan, goshawk also prey on birds (Kennedy, 2003). However, BPMD birds were not collected for tissue analysis and reliable soil-to-bird tissue uptake factors are unavailable. As with other carnivorous wildlife, small mammal tissue concentrations are estimated from soil EPCs (**Appendix B, Table B-23**) using soil-to-small mammal uptake equations and factors (**Table 3.10**).

Soil:

$$C_{soil} = (HH_{soil} * \text{high-level halo } AUF_{WS}) + (HM_{soil} * \text{mid-level halo } AUF_{WS}) + (HL_{soil} * \text{low-level halo } AUF_{WS}) + (FP_{soil} * \text{floodplain } AUF_{WS}) + (VG_{soil} * \text{vegetated upland } AUF_{WS})$$

or, for Mineral Creek:

$$C_{soil} = (HH_{soil} * 0.002) + (HM_{soil} * 0.007) + (HL_{soil} * 0.001) + (FP_{soil} * 0.015) + (VG_{soil} * 0.976)$$

or, for Cement Creek:

$$C_{soil} = (HH_{soil} * 0.004) + (HM_{soil} * 0.014) + (HL_{soil} * 0.014) + (FP_{soil} * 0.009) + (VG_{soil} * 0.958)$$

or, for Animas River:

$$C_{soil} = (HH_{soil} * 0.008) + (HM_{soil} * 0.004) + (HL_{soil} * 0.007) + (FP_{soil} * 0.020) + (VG_{soil} * 0.962)$$

Where:

HH_{soil}	=	RME and CTE COPEC concentrations in high-level waste rock halo area soils
HM_{soil}	=	RME and CTE COPEC concentrations in mid-level waste rock halo area soils
HL_{soil}	=	RME and CTE COPEC concentrations in low-level waste rock halo area soils
FP_{soil}	=	RME and CTE COPEC concentration in floodplain soil among watershed-specific floodplain EUs
VG_{soil}	=	RME and CTE COPEC concentration in vegetated upland reference area soils

Water:

$$C_{water} = SW_{LWA}$$

Where:

SW_{LWA}	=	RME and CTE COPEC concentration in surface water

Diet:

$$C_{biota} = (HH_{sm} * \text{high-level halo } AUF_{WS}) + (HM_{soil} * \text{mid-level halo } AUF_{WS}) + (HL_{soil} * \text{low-level halo } AUF_{WS}) + (FP_{sm} * \text{floodplain } AUF_{WS}) + (VG_{sm} * \text{vegetated upland } AUF_{WS})$$

or, for Mineral Creek:

$$C_{biota} = [(HH_{sm} * 0.002) + (HM_{sm} * 0.007) + (HL_{sm} * 0.001) + (FP_{sm} * 0.015) + (VG_{sm} * 0.976)] * 100\% \text{ small mammal diet}$$

or, for Cement Creek:

$$C_{biota} = [(HH_{sm} * 0.004) + (HM_{sm} * 0.014) + (HL_{sm} * 0.014) + (FP_{sm} * 0.009) + (VG_{sm} * 0.958)] * 100\% \text{ small mammal diet}$$

or, for Animas River:

$$C_{biota} = [(HH_{sm} * 0.008) + (HM_{sm} * 0.004) + (HL_{sm} * 0.007) + (FP_{sm} * 0.020) + (VG_{sm} * 0.962)] * 100\% \text{ small mammal diet}$$

Where:

HH_{sm}	=	Estimated RME and CTE COPEC small mammal tissue concentrations in high-level waste rock halo area; small mammal tissue concentrations calculated using **Table 3.10** equations where $C_s = HH_{soil}$ RME and CTE
HM_{sm}	=	Estimated RME and CTE COPEC small mammal tissue concentrations in mid-level waste rock halo area
HL_{sm}	=	Estimated RME and CTE COPEC small mammal tissue concentrations in low-level waste rock halo area
FP_{sm}	=	Estimated sub watershed LWA RME and CTE COPEC floodplain small mammal tissue concentrations
VG_{sm}	=	Estimated RME and CTE COPEC small mammal tissue concentrations in vegetated upland area

Northern goshawk EPCs are summarized in **Table 3.16** and EDD_{total} derivation steps and results for Mineral Creek, Cement Creek, and Animas River subwatershed EUs are provided in **Appendix C, Table C-7**, **Table C-8**, and **Table C-9**, respectively**.**

3.9.5 Medium home range receptors: American robin, cliff swallow, fringed myotis bat, and American beaver

The terrestrial BERA assumes that the American robin, cliff swallow, fringed myotis bat, and American beaver primarily forage within floodplain and associated riparian habitats. Hence, RME and CTE COPEC concentrations in soil, water, and diet are calculated for each individual floodplain EU, including reference reaches (**Table 3.7**). Medium home range receptor EPCs are derived from soil and water samples collected within each floodplain EU (**Appendix B, Table B-21** and **Table B-22** for soil EPCs and **Appendix B, Table B-7** for water year, surface water EPCs). Since dietary items, invertebrates and plants, are only collected from a subset of floodplain areas, dietary EPCs are derived using data from all high-, mid-, and low-level DRC sampling areas (Sections 3.2.4 and 3.2.5). These DRC-specific EPCs are applied to floodplain EUs with the same DRC designation (**Appendix B, Table B-27** for invertebrate tissues and **Appendix B, Table B-31** for plant tissues). This same logic is applied to reference floodplain EUs that are represented by combined vegetated upland/floodplain reference invertebrate and plant dietary items (**Appendix B, Table B-27** and **Table B-31**, respectively**)**. Finally, each medium home range receptor food chain model incorporates a unique set of percentages of dietary items, as described in **Table 3.9**.

Soil:

$$C_{soil} = EU_{soil}$$

Where:

EU_{soil}	=	RME and CTE COPEC concentrations in overbank soils for each floodplain EU

Water:

$$C_{water} = EU_{water}$$

Where:

EU_{water} = RME and CTE COPEC concentrations in surface water for each floodplain EU

Mine adit and mine drainage water EPCs are used instead of water year, surface water EPCs to calculate C_{water} for fringed myotis bats (Section 3.2.1). However, mine adit water chemistry is not available for all floodplain EUs. When these data are missing, the RME and CTE COPEC concentrations for all available mine adit water data in the entire respective subwatershed is used in the exposure calculations (**Appendix B, Table B-10** through **Table B-14**).

Diet:

$$C_{biota} = EU_{diet}$$

Where:

EU_{diet} = RME and CTE COPEC concentrations in each dietary item for each floodplain EU

Medium home range, floodplain receptor EPCs for each floodplain EU are summarized in **Table 3.17** for American robin, **Table 3.18** for cliff swallow, **Table 3.19** for fringed myotis bat, and **Table 3.20** for American beaver. Medium home range, floodplain receptor EDD_{total} derivation steps and results for each floodplain EU are provided in **Appendix C, Table C-10** through **Table C-38** for American robin, **Appendix C, Table C-39** through **Table C-67** for cliff swallow, **Table C-68** through **Table C-96** for fringed myotis bat, and **Table C-97** through **Table C-125** for American beaver.

3.9.6 Medium home range receptors: Mountain bluebird, white-tailed ptarmigan, American pika, yellow-bellied marmot, and northern pocket gopher

The terrestrial BERA assumes that the mountain bluebird, white-tailed ptarmigan, American pika, yellow-bellied marmot, and northern pocket gopher forage within upland BPMD assessment area habitats. Four terrestrial DRCs are used as hypothetical exposure areas for these wildlife receptors. DRC-based exposure areas are high-, mid- and low-level mine site halo DRCs and vegetated upland habitats. Food chain models use soil and dietary item chemistry data from samples collected within respective DRCs to calculate RMEs and CTEs (**Appendix B, Table B-24**). Surface water RME and CTE COPEC concentrations are calculated using surface water metal concentrations obtained from each of the four similarly categorized floodplain EU DRCs (**Appendix B, Table B-7**). Dietary item DRC-specific EPCs are summarized in **Appendix B, Table B-27** for invertebrate tissues and **Appendix B, Table B-31** for plant tissues. Each medium home range upland receptor food chain model incorporates a unique set and percentages of dietary items as described in **Table 3.9**.

Soil:

$$C_{soil} = HH_{soil} \text{ or } HM_{soil} \text{ or } HL_{soil} \text{ or } VG_{soil}$$

Where:

HH_{soil} = RME and CTE COPEC concentrations in high-level waste rock halo area soils

HM_{soil} = RME and CTE COPEC concentrations in mid-level waste rock halo area soils

HL_{soil} = RME and CTE COPEC concentrations in low-level waste rock halo area soils

VG_{soil} = RME and CTE COPEC concentrations in vegetated upland area soils

American pika and yellow-bellied marmot are often observed inhabiting BPMD mine waste piles. Waste piles and respective features likely offer easily accessible refuge. Therefore, these two species may be preferentially exposed to mine site soils in waste rock piles. As such, the terrestrial BERA includes three additional exposure area calculations for these two species that substitute halo area soil with respective mine waste rock soil COPEC concentrations. The three additional calculations consist of high-, mid- and low-level EUs that utilize mine site soil RME and CTE COPEC concentrations from respective high-, mid- and low-level categorized mine sites (**Appendix B, Table B-34**). Since waste piles do not support plants, remaining dietary exposure for the three additional exposure area calculations are from halo area sources. This exposure modeling scenario results in a total of seven unique, DRC-based exposure area calculations for American pika and yellow-bellied marmot.

<u>Water:</u>

$$C_{water} = SW_{HI} \text{ or } SW_{MED} \text{ or } SW_{LOW} \text{ or } SW_{REF}$$

Where:

SW_{HI} = RME and CTE COPEC concentrations in surface water from all high-level floodplain EUs

SW_{MED} = RME and CTE COPEC concentrations in surface water from all mid-level floodplain EUs

SW_{LOW} = RME and CTE COPEC concentrations in surface water from all low-level floodplain EUs

SW_{REF} = RME and CTE COPEC concentrations in surface water from all reference floodplain EUs

Note that C_{water} for the American pika and yellow-bellied marmot are based on the RME and CTE COPEC concentrations calculated using all available mine adit water data in the entire BPMD (**Appendix B, Table B-14**).

<u>Diet:</u>

$$C_{biota} = HH_{diet} \text{ or } HM_{diet} \text{ or } HL_{diet} \text{ or } VG_{diet}$$

Where:

HH_{diet} = RME and CTE COPEC concentrations in high-level waste rock halo area dietary items

HH_{diet} = RME and CTE COPEC concentrations in mid-level waste rock halo area dietary items

HH_{diet} = RME and CTE COPEC concentrations in low-level waste rock halo area dietary items

VG_{diet} = RME and CTE COPEC concentrations in vegetated upland area dietary items

Medium home range, upland receptor EPCs for each mine halo DRC and vegetated upland EU are summarized in **Table 3.21** for mountain bluebird, **Table 3.22** for white-tailed ptarmigan, **Table 3.23** for American pika, **Table 3.24** for yellow-bellied marmot, and **Table 3.25** for northern pocket gopher. Medium home range, upland receptor EDD_{total} derivation steps and results for each mine halo DRC and vegetated upland EU are provided in **Appendix C, Table C-126** through **Table C-129** for mountain bluebird, **Appendix C, Table C-130** through **Table C-133** for white-tailed ptarmigan, **Table C-134** through **Table C-140** for American pika, **Table C-141** through **Table C-147** for yellow-bellied marmot, and **Table C-148** through **Table C-151** for northern pocket gopher.

3.9.7 Small home range receptors

The two small home range receptor species (montane shrew and deer mouse) forage in a diverse set of habitats. The terrestrial BERA assumes that these species primarily forage within floodplain areas. As such, the four floodplain DRCs are used as hypothetical EUs for these two wildlife receptors. DRC-based exposure areas are high-level, mid-level, low-level, and reference floodplain DRC sampling areas. Food chain models use soil, surface water, and dietary item chemistry data from samples collected within respective floodplain DRC sampling areas to calculate four sets of RMEs and CTEs (**Appendix B, Table B-19, Table B-8,** and **Tables B-27** and **B-31**, respectively). Percent contributions of each item in shrew and mouse diets are provided in **Table 3.9**.

Soil:

$$C_{soil} = FH_{soil} \text{ or } FM_{soil} \text{ or } FL_{soil} \text{ or } FR_{soil}$$

Where:

FH_{soil} = RME and CTE COPEC concentrations in high-level floodplain sampling area soils

FM_{soil} = RME and CTE COPEC concentrations in mid-level floodplain sampling area soils

FL_{soil} = RME and CTE COPEC concentrations in low-level floodplain sampling area soils

FR_{soil} = RME and CTE COPEC concentrations in reference floodplain soil sampling area soils

Water:

$$C_{water} = SW_{HI} \text{ or } SW_{MED} \text{ or } SW_{LOW} \text{ or } SW_{REF}$$

Where:

SW_{HI} = RME and CTE COPEC concentrations in surface water from all high-level floodplain EUs

SW_{MED} = RME and CTE COPEC concentrations in surface water from all mid-level floodplain EUs

SW_{LOW} = RME and CTE COPEC concentrations in surface water from all low-level floodplain EUs

SW_{REF} = RME and CTE COPEC concentrations in surface water from all reference floodplain EUs

<u>Diet:</u>

$$C_{biota} = FH_{diet} \text{ or } FM_{diet} \text{ or } FL_{diet} \text{ or } FR_{diet}$$

Where:

FH_{diet} = RME and CTE COPEC concentrations in high-level floodplain DRC dietary item sampling areas

FH_{diet} = RME and CTE COPEC concentrations in mid-level floodplain DRC dietary item sampling areas

FL_{diet} = RME and CTE COPEC concentrations in low-level floodplain DRC dietary item sampling areas

FR_{diet} = RME and CTE COPEC concentrations in reference floodplain DRC dietary item sampling areas

Small home range receptor EPCs for each floodplain DRC habitat are summarized in **Table 3.26** for montane shrew and **Table 3.27** for deer mouse. Small home range receptor EDD_{total} derivation steps and results for each floodplain DRC habitat are provided in **Appendix C, Table C-152** through **Table C-155** for montane shrew and **Appendix C, Table C-156** through **Table C-159** for deer mouse.

SECTION 4: CHARACTERIZATION OF EFFECTS

4.1 Introduction

The characterization of effects consists of quantifying the toxicity of each COPEC to the various terrestrial receptors under different exposure conditions.

The terrestrial BERA uses a HQ approach to characterize the potential risk of individual COPEC exposures to selected ecological receptors. HQs are calculated by dividing an EPC by an ESV or TRV as follows:

$$HQ = \text{exposure} / \text{toxicity}$$

Where:

HQ	= hazard quotient (unitless)
Exposure	= the EPC (plants and invertebrates; in units of mg COPEC/kg soil) or EDD (for birds and mammals; in units of mg COPEC/kg BW/day)
Toxicity	= the ESV (plants and invertebrates; in units of mg/kg) or TRV (for birds and mammals; in units of mg/kg BW/day)

This section summarizes the no- and low-effect ESVs and TRVs selected for use in the terrestrial BERA, as well as the potential adverse effects of metals exposure.

4.2 Adverse effects of metals exposure

This section provides a brief overview of adverse biological effects of acute and chronic metal exposures to plants, invertebrates, and wildlife. This information is helpful in understanding the possible adverse effects that could occur in terrestrial and semi-aquatic receptors from exposures to suspected BPMD contaminants. **Table 4.1** presents adverse sublethal effects in wildlife receptors from exposure to select COPECs as reported in the literature. Suspected contamination may be detrimental to exposed individuals and when severe and widespread, respective populations. A summary of some of the sublethal effects pertinent to terrestrial exposure to BPMD contaminants is presented below.

Plants can be sensitive to metals-contaminated soil and water. At the individual level, exposure to elevated levels of bioavailable metals can lead to increased generation of reactive oxygen species or free radicals that can cause oxidative stress in affected plant tissues and cells (Emamvedian *et al*., 2015; Naidu *et al*., 2003). Excess generation of free radicals can lead to growth reduction, lower biomass, and death of sensitive species. If present at great enough concentrations, metals can limit or completely inhibit plant germination and growth. This may be occurring in barren BPMD mine waste piles. Waste pile substrata can also become cemented which can also limit colonization of even hardy plant species. Thus, poor soil conditions can potentially impact plant communities irrespective of metals contamination. It is important to note that chronic exposure to metals-contaminated soils may result in the proliferation of metals-tolerant plant communities that often provide little forage value for primary consumers.

Secondly, plants can accumulate metals in various tissues. This is especially important when soil characteristics, such as pH, organic matter, and moisture content support metals speciation that favors bioavailability of metals, with subsequent bioaccumulation in plant tissues and potential trophic transfer to herbivorous wildlife.

When exposed to metals, terrestrial invertebrates can develop epithelial cell damage in various digestive system, gonadal, and fat reserve tissues (Zhang *et al.*, 2009). Metals exposure can also disrupt vitellogenesis and developing embryos. Different invertebrate taxa have very different sensitivities to metals. Similar to that described above for plants, metals-contaminated habitats may only support pollution-tolerant invertebrate species. These species have potential to bioaccumulate metals into their tissues and thereby expose insectivorous wildlife species when consumed as prey.

In addition to being stressed from a reduced plant and invertebrate prey base, metals exposure can be detrimental to birds and mammals. Dietary exposures to metals can cause oxidative stress-related tissue and organ damage, reduced fecundity, immune system dysfunctions, reduced growth rates, decreased eggshell thickness, skeletal abnormalities, behavioral changes, dermatitis, anemia, tremors, and ataxia (Agency for Toxic Substances and Disease Registry [ATSDR], 2005, 2006; Eisler, 1985, 1988a,b, 1998; EPA, 2005a,b; 2007c,d; Irwin *et al.*, 1997a,b,c,d; World Health Organization [WHO], 2005).

4.3 Selection of toxicity benchmarks

This terrestrial BERA uses ESVs and TRVs relevant to the BPMD assessment area exposure pathways, exposure media, COPECs, and ecological receptors. Exposure pathways primarily consist of direct contact and dietary exposure to COPECs (Section 2.7.7). ESVs are direct contact soil toxicity benchmarks that represent COPEC concentrations that correspond to no- and low-effect levels (mg/kg). TRVs refer to doses of COPECs in wildlife diets that correspond to no- and low-effect levels (mg/kg BW/day).

4.3.1 Direct-contact soil ESVs

Direct-contact soil ESVs are used to characterize metals toxicity in terrestrial plants and soil invertebrates. These two community-level receptor groups are assumed to be exposed to COPECs via direct contact with soil. **Tables 4.2** and **Table 4.3** provide no- and low-effect ESVs for plants and soil invertebrates, respectively.

The following hierarchy is used to select no-effect ESVs:

1. EPA EcoSSLs (2005c) are the primary source for no-effect plant and invertebrate soil ESVs. These values are derived using an agency-accepted approach that incorporates multiple studies, receptors, and endpoints. Note that the EcoSSLs are also used in the terrestrial SLERA to identify soil COPECs and calculate receptor-specific HQs.
2. LANL ECORISK Database (LANL, 2016) are no observable adverse effect level (NOAEL) soil ESVs used for no-effect ESVs when EcoSSLs were unavailable.

3. EPA Region 4 soil screening values for hazardous waste sites (EPA, 2015b) are used when EcoSSL and LANL values are unavailable; and
4. ORNL preliminary remediation goals for soil are used when none of the above are available (Efroymson *et al*., 1997a,b,c).

For low-effect plant and invertebrate soil ESVs, the following selection hierarchy is used:

1. LANL (2017) is the primary source for the lowest observable adverse effect level (LOAEL) soil ESVs which cover the majority of the COPECs that are considered in the terrestrial BERA.
2. ORNL preliminary remediation goals for soil (Efroymson *et al*., 1997a,b,c) are used when LANL values are unavailable.

4.3.2 Wildlife receptors

Wildlife toxicity evaluations consider both no- and low-effect TRVs to provide a range of potential risk outcomes for risk managers to consider during the RI/FS process. No-effect TRVs are comparable to NOAELs and represent COPECs concentrations below which adverse effects are not expected. Low-effect TRVs are comparable to LOAELs and represent COPECs concentrations above which adverse effects may occur in sensitive receptors. Selected wildlife TRVs are dietary-based and measured in units of milligrams of COPEC per kilograms of receptor BW consumed each day (i.e., mg/kg BW/day). This is a common dose metric for birds and mammals and is directly comparable to EDDs.

This terrestrial BERA uses the no- and low-effect TRVs for birds and mammals that are primarily obtained from the LANL ECORISK Database (2016); **Table 4.4** and **Table 4.5**, respectively. The LANL NOAEL TRVs are from the same toxicity studies used by EPA (2005c) to develop the EcoSSLs, except for barium for birds. LANL calculated the barium bird TRV by selecting the most-applicable toxicity study obtained from an independent review of primary toxicity literature. This is the same procedure that is used by EPA when developing EcoSSLs (EPA, 2005c). LOAEL TRVs are derived by LANL by either applying an uncertainty factor of 10 to the selected NOAEL or selecting a paired LOAEL associated with the same study. Additional details on how LANL TRVs are developed can be found in LANL (2014; 2015). Note that wildlife TRVs used herein are the same as those used in the BPMD aquatic BERA (EPA, 2019a).

A few additional COPEC NOAEL and LOAEL TRVs not reported in LANL are from Sample *et al*. (1996). These TRVs are derived by selecting the most-applicable toxicity study for each COPEC obtained from an independent review of primary toxicity literature. Note that wildlife TRVs are not species-specific but represent concentrations of compounds via the ingestion pathway that are protective of most bird and mammal species. As such, COPEC-specific bird and mammal TRVs are used to derive HQs for respective target receptor bird and mammal species.

SECTION 5: RISK CHARACTERIZATION

5.1 Introduction

The potential for ecological risk is quantified during the risk characterization step of this BERA. This step, which represents the last working section of a risk assessment, is built around three sequential steps: 1) risk estimation; 2) an interpretation of the results; and 3) uncertainty analysis. The characterization of effects and the exposure analysis presented in previous sections of this terrestrial BERA are integrated during risk estimation to determine the potential for adverse effects to each of the assessment endpoints with respect to the assumptions and biases inherent to the analysis.

Table 2.3 summarizes the risk assessment endpoints and associated community-level and individual wildlife receptors evaluated in this BERA. Each endpoint and exposure pathway is tied to specific or similar groups of target receptors. As such, the risk characterization depends on the life history traits and exposure areas for each receptor. The receptor-specific floodplain EUs and upland exposure areas are very diverse (**Table 3.6** and **Table 3.7**) and provide a wide range of exposure scenarios for use in estimating risk on different geographical scales, including hypothetical DRCs that can be applied to similarly categorized mine features. This approach provides risk managers with different options to evaluate and address terrestrial ecological risk associated with BPMD contamination exposures.

5.2 Risk estimation and description methods

This BPMD terrestrial BERA provides an "integrated" risk characterization for plants, invertebrates, and target wildlife receptors that are evaluated using a HQ approach. This means that risks from background and NPL sources are not explicitly separated but reported as one HQ for each receptor, exposure area, and COPEC. Such an approach provides the most realistic understanding of potential for ecological risk for each assessment endpoint using stated measurement endpoints.

The HQ method compares measured exposures (i.e., direct contact with soil) or estimated exposures (i.e., wildlife EDDs) to corresponding toxicity values (i.e., no- and low-effect soil ESVs for the community level receptor groups and no- and low-effect TRVs for the wildlife receptors). COPEC-specific HQs are calculated using the following general equation:

$$HQ = EPC \text{ or } EDD / ESV \text{ or } TRV$$

Where:

HQ	=	hazard quotient (unitless)
EPC	=	exposure point concentration (µg/L or mg/kg)
EDD	=	estimated daily dose (mg/kg BW/day)
ESV	=	ecological screening value (µg/L or mg/kg)
TRV	=	wildlife toxicity reference value (mg/kg BW/day)

The risk characterization approach outlined herein generates a set of four HQs for a given receptor and COPEC in order to provide a broader context in support of future risk management decision making. The four HQs for each combination of target receptor and COPEC and EU are:

- HQ = RME exposure / no-effect toxicity value (more conservative)
- HQ = CTE exposure / no-effect toxicity value
- HQ = RME exposure / low-effect toxicity value
- HQ = CTE exposure / low-effect toxicity value (less conservative)

The terrestrial BERA assumes that the potential for risk increases from the most conservative HQ to the least conservative HQ. The RME exposure scenario is more conservative than the average or CTE scenario because it assumes the greatest level of exposure. This may not be the most relevant exposure scenario for many receptors that would be exposed to BPMD contamination over a larger area of their respective EUs. Although both RME and CTE risks are evaluated herein, risk characterization summaries in this BERA focus on low-effect CTE HQs. The low-effect CTE risk characterization scenario would show the lowest risk. Since a number of conservative exposure and effect assumptions are used throughout this BERA, focusing on the least conservative risk characterization scenario should provide the most relevant and realistic means to identify COPECs driving risks and receptors that are most at risk from BPMD contamination exposures.

Even though it is understood that risk does not increase in a linear fashion with increasing HQs, they are described in the context of relative risk as follows:

- CTE low-effect HQs ≥1 but <5 – which corresponds to lower risk;
- CTE low-effect HQs ≥5 but <10 – which corresponds to moderate risk; or
- CTE low-effect HQs ≥10 – which corresponds to higher risk.

These HQ thresholds provide a consistent categorization method to assess and describe relative risks between COPECs and EUs for each receptor. As such, this terminology is only used to qualitatively highlight differences in risk and should not be interpreted beyond this intended use. Lastly, risk characterization summaries that describe HQs as being elevated refer to CTE low-effect HQs ≥1.

This BERA characterizes risk for four separate reference floodplain EUs and vegetated upland areas that are expected to have little to no mining impacts. The HQs in these EUs can be compared to the HQs in the EUs impacted by NPL mine features without specifically defining background conditions. Co-analysis of these EUs is useful when comparing relative risks between EUs potentially impacted by NPL mine features versus EUs that are not downgradient from of directly affected by NPL sources. This assessment methodology provides a comparative evaluation of potential background risks to integrated or cumulative site risks, including identifying naturally occurring elements that exceed risk-based screening levels. This type of evaluation is in line with EPA (1994c; 2002a,b; 2018a) guidance on the methods in which background risks are incorporated into ERAs.

Uncertainty is an inherent feature of any BERA because many assumptions must be made to proceed with the evaluation. These assumptions can affect all or some aspects of an assessment, including the CSM development, effects analyses, exposure analyses, and risk characterization. The uncertainty analysis provided at the end of this section identifies and discusses the major assumptions made in this BERA, as well as potential biases associated with them. The result is a balanced overview of uncertainty to help risk managers understand the full extent and validity of potential ecological risk to receptors living or feeding in terrestrial and semi-aquatic habitats throughout the BPMD.

The remainder of this section summarizes the results of the risk characterization phase for each of the risk assessment endpoints.

5.3 Community-level receptors – terrestrial plants

Assessment endpoint 1: Maintain stable and healthy terrestrial plant communities. *Are the contaminant levels in soil high enough to affect survival, growth or reproduction of terrestrial plants?*

This BERA compares COPEC concentrations in BPMD assessment area soils to no- and low-effect soil ESVs associated with phytotoxicity to evaluate risks to terrestrial plants.

Appendix D, Tables D-1 to D-37 present the no- and low-effect HQs for plants exposed to COPECs in soil from each EU. **Table 5.1** summarizes the CTE low-effect ESV HQs for each EU. Note that only COPECs with at least one CTE low-effect HQ at or above 1 are shown in this table. These HQs represent the least conservative levels of risk among plants exposed to contaminants in soil.

Eight of the 17 plant COPECs have CTE low-effect HQs above 1 (**Table 5.1**). The greatest HQs are derived for manganese, lead, molybdenum, and zinc. Arsenic, cobalt, and copper CTE low-effect HQs are comparably lower, but still above 1 in 7 of the 29 floodplain EUs. Plant communities can also be sensitive to elevated levels of aluminum and iron in soil but only under acidic (pH < 5.5) soil conditions (EPA, 2003a,b). Soil pH was not measured at the time when samples were collected. Therefore, aluminum and iron risks to plant communities cannot be evaluated. It is plausible, however, that mine waste-impacted soils have elevated aluminum and iron levels and pH below 5.5. **Appendix D** plant community EPC tables provide CTE and RME values for these two metals in all EU soils to allow for aluminum and iron risk evaluations when more exposure data or reliable ESVs become available. This issue is discussed further in the uncertainty analysis of this BERA (Section 5.6).

The most elevated CTE low-effect HQs for manganese, lead, molybdenum, zinc, and copper are in the Animas River watershed in EUs downgradient of Placer Gulch downstream to Silverton, CO. Most of these EUs are located in a lower elevation depositional zone in the mainstem Animas River downriver from the South Fork Animas River confluence. Mine waste-impacted sediments from upgradient sources may have accumulated in floodplain habitats in this large, relatively flat depositional area. Two large tailings deposits (Kittimack and Howardsville Goldfield tailings NPL sites) are also located in or near this depositional area in EU-09.

Arsenic, cobalt, and thallium CTE low-effect HQs indicate the potential for lower risk to plants (**Table 5.1**). Of these three COPECs, thallium risks were identified in almost all EUs in each subwatershed. It is important to note that reference floodplain EU arsenic, cobalt, and thallium HQs are comparable to non-reference EUs. Therefore, risks from these minor COPECs might be from elevated background conditions and not entirely from mining-related contamination sources.

As seen in **Table 5.1**, mine halo and floodplain area DRC CTE low-effect HQs generally increase with increasing DRC (low- to high-level). This trend is especially evident for the most elevated COPECs: manganese, lead, molybdenum, and zinc. For these COPECs, halo area CTE low-effect HQs are similar or slightly elevated when compared to floodplain DRCs. As discussed above for floodplain reference EUs, vegetated upland and floodplain reference HQs for manganese, molybdenum, and thallium indicate the potential for lower risk to plant communities in habitats with little to no obvious mining-related impacts.

5.4 Community-level receptors – soil invertebrates

Assessment endpoint 2: Maintain stable and healthy soil invertebrate communities. *Are the contaminant levels in soil high enough to affect survival, growth or reproduction of soil invertebrates?*

This BERA compares COPEC concentrations in BPMD assessment area soils to no- and low-effect soil ESVs associated with soil invertebrate toxicity and adverse changes to soil invertebrate community composition.

Appendix D, Tables D-38 to **D-74** present the no- and low-effect HQs for soil invertebrates exposed to COPECs in soil from each EU. **Table 5.2** summarizes the CTE low-effect ESV HQs for each EU. Note that only COPECs with at least one CTE low-effect HQ at or above 1are shown in this table. These HQs represent the least conservative levels of risk among soil invertebrates exposed to contaminants in soil.

Six of the 11 invertebrate-specific COPECs have CTE low-effect HQs above 1 (**Table 5.2**). The greatest HQs are derived for zinc (HQ = 5) and manganese (HQ = 5) below Placer Gulch (EU-15) and in the Animas River just below the South Fork Animas River confluence (EU-10), respectively. Risk outcomes for other EUs for these two COPECs are considered lower (HQ >1 but <5). Arsenic, copper, lead, and mercury CTE low-effect HQs are comparably lower than zinc and manganese, but still above 1 in 6 of the 29 floodplain EUs. Most elevated HQs are associated with high-level floodplain DRC EUs in the Animas River subwatershed within and down gradient of Placer Gulch (EU-16) and lower West Fork Animas River (EU-15). Elevated concentrations of COPECs in these EUs may reflect the depositional nature of floodplain habitat in this area and/or loading from South Fork Animas River (EU-11 through EU-13).

Reference floodplain EU CTE low-effect HQs were generally lower than non-reference EUs and less than 1. However, lower risks to soil invertebrates from arsenic exposure are identified in Mill Creek (EU-R1; HQ = 1) and upper North Fork Animas River (EU-R4; HQ = 2) reference EUs. Mill Creek is near upper mainstem Mineral Creek (EU-04) that also has slightly elevated

risks for arsenic (HQ = 2). This indicates that there may be a source (natural or anthropogenic) in upper reaches of the Mineral Creek subwatershed.

As seen in **Table 5.2**, mine halo and floodplain area DRC CTE low-effect HQs generally increase with increasing DRC (low- to high-level). However, respective HQs are only slightly elevated for manganese and zinc in the high-level halo and floodplain DRCs. These results indicate lower risk to soil invertebrates exposed to the greatest concentrations of manganese and zinc among all DRCs. All CTE low-effect HQs for COPECs in vegetated upland and reference floodplain DRCs are less than 1. This indicates that soil invertebrates are not likely at risk from metals exposure in terrestrial and floodplain habitats with little to no obvious mining-related impacts. However, as seen in the plant community assessment, these habitats contain elevated concentrations of metals. This presents a potential exposure issue for invertivorous wildlife when invertebrates accumulate bioaccumulative metals into their tissues.

5.5 Wildlife receptors

The remaining assessment endpoints (#3 through #10) are associated with evaluating risks to individual wildlife species that inhabit or may inhabit terrestrial and floodplain habitats within and throughout the BPMD assessment area.

5.5.1 Assessment endpoint #3: Maintain stable and healthy herbivorous bird populations

Assessment endpoint #3 is assessed using the following risk question: *Are the contaminant levels in soils, surface water, and plants high enough to affect survival, growth, or reproduction in herbivorous birds?*

This terrestrial BERA uses one measurement endpoint to assess the potential impact of metals ingested by this receptor group: dietary COPEC exposure risks to white-tailed ptarmigan. Exposure estimates are based on COPEC concentrations measured in soil and plant (shrub) tissues associated with mine waste pile halo DRCs and vegetated reference habitats. Risk characterization described herein is based on CTE low-effect HQs, as performed for plants and soil invertebrates. Respective HQs correspond to the least conservative levels of risk and most realistic exposure for ptarmigan exposed to BPMD assessment area contamination sources.

White-tailed ptarmigan:

Appendix E, Tables E-1 to E-4 present the no- and low-effect HQs for white-tailed ptarmigan exposed to COPECs in diet from each mine halo DRC and vegetated upland habitats. Ptarmigan CTE low-effect HQs for each avian COPEC are summarized in **Table 5.3**. All HQs are less than 1. The greatest CTE low-effect HQs are associated with lead, with a maximum HQ (0.6) derived for high-level DRC mine waste pile halo habitats. All other COPEC and exposure area HQs are well below this result.

Risk characterization results show that white-tailed ptarmigan exposed to some of the greatest levels of contamination in the BPMD assessment area may experience an acceptable level of risk. These risk characterization results are counter to what was observed during ptarmigan BPMD field studies conducted in the late 1990s by Larison *et al*. (2000). Study authors

conducted a field-based cadmium exposure and effects assessments to follow up on a 1969 account of fragile-bone ptarmigan inhabiting the Animas River watershed. The authors collected soils and ptarmigan dietary items (vegetation) and found that only cadmium accumulated in plants to levels that would be expected to be toxic. The greatest cadmium concentrations were measured in willow (*Salix* spp.) leaf buds, new shoots and stems, which represent important dietary items for ptarmigan. Paired histological and chemical analysis of ptarmigan kidney tissue samples showed that renal damage occurred in birds with high cadmium levels. Larison *et al*. (2000) also showed that ptarmigan with high kidney cadmium residuals had lower bone calcium concentrations, which potentially supported historical observations of fragile-boned ptarmigan. The authors reported that the Animas River watershed ptarmigan population had high adult mortality and lower than expected breeding densities, especially in areas with calcium-poor, acidic, and metals-rich habitats.

Larison *et al*. (2000) measured and summarized concentrations of cadmium in willow and crop content that can be compared to cadmium concentrations used herein to estimate ptarmigan exposure. This comparison provides insight on how estimated exposures and risk results compare to the dedicated, ptarmigan injury field study. As seen in **Table 5.4**, Larison *et al.* (2000) reported cadmium concentrations in willow (2.63 mg/kg DW) and ptarmigan crop contents (2.10 mg/kg DW) are slightly lower than the average cadmium concentration measured in shrub (willow) stem tips and buds (3.48 mg/kg DW) collected during the BERA 2016-17 field sampling events. In this BERA, about 95% of the total cadmium EDD estimated for ptarmigan is from ingesting plants (supporting data in **Appendix E, Tables E-1 through E-4**). This exemplifies the cadmium bioaccumulation potential in BPMD plants and importance of this exposure route for ptarmigan. Larison *et al.* (2000) found renal damage in the most exposed ptarmigan that corresponded to calcium deficiency reported toxicity studies. These results indicate that there may be uncertainties associated with the findings of acceptable risks in BPMD ptarmigan in this BERA. Such uncertainties are discussed in Section 5.6 of this BERA.

5.5.2 Assessment endpoint #4: Maintain stable and healthy herbivorous mammal populations

Assessment endpoint #4 is assessed using the following risk question: *Are the contaminant levels in soils, surface water, and plants high enough to affect survival, growth, or reproduction in herbivorous mammals?*

This terrestrial BERA uses one measurement endpoint and six wildlife receptors to assess the potential impact of metals ingested by this receptor group: dietary COPEC exposure risks to moose, American beaver, American pika, yellow-bellied marmot, and northern pocket gopher. These receptors provide an evaluation of herbivorous mammal risks based on a wide range of exposure area sizes and types. Exposure estimates are receptor-specific and based on COPEC concentrations measured in soil and plant tissues associated with mine waste pile halo DRCs, vegetated reference habitats, or each floodplain EU. Risk characterization results are based on CTE low-effect HQs, as performed for plants and soil invertebrates. Respective HQs correspond to the least conservative level of risk and most realistic exposure for herbivorous mammals exposed to BPMD assessment area contamination sources.

Moose:

Appendix E, Tables E-5 to E-7 present the no- and low-effect HQs for moose exposed to COPECs in diet from each of the three BPMD assessment area subwatersheds: Mineral Creek, Cement Creek, and the Animas River upriver of Silverton. Moose CTE low-effect HQs for each mammal COPEC are summarized in **Table 5.5**. All CTE low-effect HQs are less than 1. The greatest CTE low-effect HQs are associated with thallium, with a maximum HQ of 0.2 derived for the Cement Creek subwatershed and lead (HQ = 0.1) in the Animas River subwatershed. All other COPEC and exposure area CTE low-effect HQs are well below these results.

Moose are relatively common inhabitants of the assessment area (Esper, 2014). Cow moose are often seen with calves in willow-dominated ponded areas throughout each subwatershed and the Animas River floodplain between Silverton and Eureka. On occasion, bull moose are also seen. Observations of adult and young moose in metals-contaminated aquatic and floodplain habitats indicates that this species may not be experiencing ill effects from metals exposure. Risk characterization results presented herein support this claim and indicate that moose may have an acceptable level of risk when exposed to metals in their diet.

American beaver:

Appendix E, Tables E-8 to E-36 present the no- and low-effect HQs for beaver exposed to COPECs in diet from each floodplain EU. Beaver CTE low-effect HQs for each mammal COPEC are summarized in **Table 5.6**. All CTE low-effect HQs are less than 1. The greatest CTE low-effect HQs for beaver are for lead, with a maximum CTE low-effect HQ of 0.9 derived for the most downriver Animas River floodplain EU. Similar lead HQs are also derived for Animas River watershed floodplain EUs downgradient from South Fork Animas River confluence. All other COPEC and floodplain EU CTE low-effect HQs are well below those derived for lead.

Beaver risk estimates for reference floodplain EUs are generally comparable to non-reference EUs. However, reference EU lead, and to a lesser extent, copper, thallium, and zinc, HQs are lower than non-reference EUs. This indicates increased exposure of these metals in floodplain EUs potentially impacted by mining activities.

As described above, the Animas River floodplain flattens out into depositional floodplain habitat downriver from the South Fork Animas River confluence. As such, higher concentrations of lead from upgradient sources within the watershed may have deposited in floodplain soils and accumulate in vegetation in the lower Animas River EUs. This likely corresponds to increased exposures and risks to beaver living in these habitats. Beaver are currently found in the most contaminated, floodplain EUs. These observations support risk characterization results presented herein and that BPMD beaver populations are subject to an acceptable level of risk.

American pika:

Appendix E, Tables E-37 to E-43 present the no- and low-effect HQs for American pika exposed to COPECs in diet from mine halo DRC and vegetated upland habitats. Pika risks are evaluated using two separate soil-based exposure scenarios. One scenario estimates soil exposure

using incidental halo area soil ingestion. The second scenario substitutes halo area soil with mine waste rock COPEC concentrations and surface water with mine adit/drainage water. This second, waste rock exposure scenario, evaluates elevated exposure risks to pika which are commonly seen inhabiting waste rock piles in the BPMD assessment area. The three additional waste rock soil EUs consist of high-, mid-, and low-level DRCs that utilize mine waste pile soil RME and CTE COPEC concentrations from respective high-, mid-, and low-level categorized mine sites. Since waste piles do not support plants, dietary item EPCs for the three additional EUs are from halo area sources. This results in characterizing pika risks for seven different exposure areas. All pika CTE low-effect HQs for each of the seven different exposure areas and mammal COPEC are summarized in **Table 5.7**.

Under the halo soil exposure scenario, the only CTE low-effect HQs greater than 1 are for lead exposure in high- and mid-level DRCs; HQs are 3 and 2, respectively. These lead-based HQs are well above those generated for the low-level DRC and vegetated upland exposure areas. All other COPEC CTE low-effect HQs are well below 1 for pika.

Lead, arsenic, and antimony CTE low-effect HQs are elevated (HQ >1) under the mine waste exposure scenario (**Table 5.7**). Of these COPECs, lead is most elevated in the high-level DRC (HQ = 15), but risk declines in the mid-level DRC (HQ = 7) and low-level DRC (HQ = 5) exposure scenarios. These results show that pika exposed to lead in mine waste rock show a dose-response decrease in risk according to each DRC. This is expected since lead is the primary dose-response indicator COPEC. This is counter to what is seen with arsenic risks, where the greatest HQ (5) is associated with the mid-level DRC waste rock exposure. This is an artifact of upper Mineral Creek mine features (Koehler and Junction Mines), which are classified as mid-level DRC, having high concentrations of arsenic and only moderate levels of lead. Lastly, antimony CTE low-effect HQs were only slightly above 1 in the high-level DRC associated with waste rock exposure.

The co-analysis of halo area and waste rock exposure scenarios characterizes a range of potential risk outcomes for American pika foraging around the BPMD and on mine waste piles. Results show that lower risks associated with lead are possible when dietary exposure comes from halo areas. However, higher to moderate risks are possible for lead and arsenic when waste rock exposure is considered.

<u>Yellow-bellied marmot:</u>

Appendix E, Tables E-44 to E-50 present the no- and low-effect HQs for yellow-bellied marmot exposed to COPECs in diet from mine halo DRC and vegetated upland habitats. Like pika, marmot risks are also evaluated under three additional HQ calculations that consist of high-, mid- and low-level DRCs that utilize mine waste pile soil RME and CTE COPEC concentrations from respective high-, mid- and low-level categorized mine sites. Marmot CTE low-effect HQs for each mammal COPEC and exposure scenario are summarized in **Table 5.8**.

Risk characterization results show that marmot may be at lower risk when exposed to some of the highest levels of BPMD contamination. Lead and, to a lesser extent, arsenic drive exposure risks. Under the halo area soil exposure scenario, no CTE low-effect HQs are above 1.

Understandably, lead risks to marmot increase when waste rock exposure is considered (**Table 5.8**). Lead risks from waste rock exposure follow a dose-response increase from high- to low-level DRCs; HQs = 3 and 1, respectively. Arsenic risks are also slightly elevated under the waste rock exposure scenario but only for the mid-level DRC (HQ = 1). Note that exposure modeling performed for this species assumes that marmot are only active in the BPMD assessment area for half the year; in reality, they may hibernate up to 60% of the year in some locations (Svendson, 1976).

Northern pocket gopher:

Appendix E, Tables E-51 to E-54 present the no- and low-effect HQs for northern pocket gopher exposed to COPECs in diet from each mine halo DRC and vegetated upland habitats. Gopher CTE low-effect HQs for each mammal COPEC are summarized in **Table 5.9**.

Based on the risk characterization results, northern pocket gopher may be at lower risk from exposure to lead. Elevated (HQ > 1) CTE low-effect HQs occur at the high-level DRC and the mid-level DRC (both HQs = 2). However, lead risks decline for the low-level DRC and the vegetated upland exposure areas. Other than lead, all other gopher COPEC HQs are less than 1.

Pocket gophers are known to excavate extensive burrow systems. According to Reynolds *et al*. (2006), they have small home ranges and relatively large tissues for small mammals, making them potentially useful biomonitors for sites marked by elevated contaminant concentrations in the soil. Furthermore, the propensity for the northern pocket gophers to excavate shallow burrows (often less than 10 centimeters below surface) increases their likelihood of exposure to soil contamination common at mine sites (Sterner *et al*. 1999). In a study of pocket gophers inhabiting a smelter site in Montana, Reynolds *et al*. (2006) found gopher tissues accumulated lead in a positive relationship with soil concentrations. In this same study, reduced red blood cell δ-aminolevulinic acid dehydratase activity was observed in gophers with elevated lead exposure and tissue concentrations. As such, bioaccumulation of lead in tissues may have sublethal consequences for pocket gophers as well as for potential predators further up the food chain.

5.5.3 Assessment endpoint #5: Maintain stable and healthy insectivorous bird populations

Assessment endpoint #5 is assessed using the following risk question: *Are the contaminant levels in soils, surface water, and terrestrial invertebrates high enough to affect survival, growth, or reproduction in insectivorous birds?*

This terrestrial BERA uses one measurement endpoint to assess the potential impact of metals ingested by this receptor group. Specifically, using metal levels measured in BPMD assessment area soils, surface water, and terrestrial invertebrates (flying insects, ground-dwelling insects, and/or soil invertebrates) in a food chain model to calculate metal-specific EDDs for comparison against avian no- and low-effect TRVs for adverse effects on survival, growth, or reproduction.

Risks from dietary COPEC exposure are evaluated for cliff swallow and mountain bluebird. Exposure estimates are based on COPEC concentrations measured in soils, surface water, and insect and/or soil invertebrate tissues. Exposure areas include waste pile halo DRCs and vegetated reference habitats (bluebird) and each floodplain EU (cliff swallow). Exposure

modeling assumes that these two species only forage in the BPMD assessment area for half the year when respective habitats are not covered with snow and ice. Risk characterization described herein is based on CTE low-effect HQs. Respective HQs correspond to the least conservative levels of risk and most realistic exposure for insectivorous birds exposed to BPMD assessment area contamination sources; the following subsections present the risk characterization results for insectivorous birds.

Cliff swallow:

Appendix E, Tables E-55 to E-83 present the no- and low-effect HQs for cliff swallow exposed to COPECs in diet for each floodplain EU. Swallow CTE low-effect HQs for each avian COPEC are summarized in **Table 5.10**.

Elevated CTE low-effect HQs only occur for lead. Lead HQs are higher for most of the Animas River floodplain EUs. This is especially evident in EU-07 (located below Cunningham Creek; HQ = 23), EU-09 (located below Minnie Gulch; HQs = 11) and EU-10 (located below South Fork Animas River; HQs = 14). Lower lead exposure risks occur in most Mineral and Cement Creek floodplain EUs.

Mountain bluebird**:**

Appendix E, Tables E-84 to E-87 present the no- and low-effect HQs for mountain bluebird exposed to COPECs in diet from mine halo DRC and vegetated upland habitats. Bluebird CTE low-effect HQs for each avian COPEC are summarized in **Table 5.11**.

Dietary exposure to BPMD mine halo contamination sources results in HQs greater than 1 for lead. Lead risks are most elevated in the high-level DRC (HQ = 10). Lead exposure risks decline precipitously with declining DRCs but are still elevated (HQ = 4) in the low-level DRC exposure area. All other bluebird COPEC CTE low-effect HQs are less than 1.

5.5.4 Assessment endpoint #6: Maintain stable and healthy insectivorous mammal populations

Assessment endpoint #6 is assessed using the following risk question: *Are the contaminant levels in soils, surface water, and terrestrial invertebrates high enough to affect survival, growth, or reproduction in insectivorous mammals?*

This terrestrial BERA uses one measurement endpoint to assess the potential impact of metals ingested by this receptor group. Specifically, using metal levels measured in BPMD assessment area surface water and terrestrial invertebrates (flying insects) in a food chain model to calculate metal-specific EDDs for comparison against mammal no- and low-effect TRVs for adverse effects on survival, growth, or reproduction.

Risks from dietary COPEC exposure were evaluated for fringed myotis bat and montane shrew. Exposure estimates are based on COPEC concentrations measured in insect and/or soil invertebrate tissues, ingestion of site soils and ingestion of surface water associated with mine waste pile halo DRCs, vegetated reference habitats, and each floodplain EU; depending on

receptor. Risk characterization described herein is based on CTE low-effect HQs. Respective HQs correspond to the least conservative level of risk and most realistic exposure for insectivorous mammals exposed to BPMD assessment area contamination sources; the following subsections present the risk characterization results for insectivorous mammals.

Fringed myotis bat:

Appendix E, Tables E-88 to E-116 present the no- and low-effect HQs for fringed myotis bat exposed to COPECs in diet from each floodplain EU. Myotis bat CTE low-effect HQs for each mammal COPEC are summarized in **Table 5.12**. Despite being exposed to mine adit and drainage water, all myotis bat COPEC CTE low-effect HQs are less than 1.

Montane shrew:

Appendix E, Tables E-117 to E-120 present the no- and low-effect HQs for montane shrew exposed to COPECs in diet from high-, mid-, and low DRC and reference floodplain habitats. Shrew CTE low-effect HQs for each mammal COPEC are summarized in **Table 5.13**.

Lead, selenium, arsenic, thallium, and copper HQs are greater than 1 for montane shrew exposed to floodplain DRC and reference habitats. Lead exposure in the high-level DRC results in higher risk to shrew (HQ = 14) but risk declines with decreasing DRCs. Moderate risks from selenium exposure are also apparent; however, HQs do not follow a dose-response relationship with DRC and are similarly elevated in the reference floodplain exposure area (all HQs = 6). Arsenic, thallium, and copper risks are markedly lower than lead but still elevated (HQs ≥ 2. Lower risk to shrew from arsenic and thallium exposure also occur for the reference floodplain area (both HQs = 1).

5.5.5 Assessment endpoint #7: Maintain stable and healthy omnivorous bird populations

Assessment endpoint #7 is assessed using the following risk question: *Are the contaminant levels in soils, surface water, terrestrial invertebrates, and plants high enough to affect survival, growth, or reproduction in omnivorous birds?*

This terrestrial BERA uses one measurement endpoint to assess the potential impact of metals ingested by this receptor group. Specifically, using metal levels measured in BPMD assessment area soils, surface water, terrestrial invertebrates (flying insects, ground-dwelling insects, and/or soil invertebrates), and plants in a food chain model to calculate metal-specific EDDs for comparison against avian no- and low-effect TRVs for adverse effects on survival, growth, or reproduction.

Risks from dietary COPEC exposure were evaluated for American robin. Exposure estimates are based on COPEC concentrations measured in insect and/or soil invertebrate tissues, ingestion of site soils and ingestion of surface water associated with each floodplain EU. Risk characterization described herein is based on CTE low-effect HQs, as performed for plants and soil invertebrates. Respective HQs correspond to the least conservative level of risk and most realistic exposure for omnivorous birds exposed to BPMD assessment area contamination

sources. The following subsection presents the risk characterization results for the one omnivorous bird species evaluated here; American robin.

American robin:

Appendix E, Tables E-121 to E-149 present the no- and low-effect HQs for American robin exposed to COPECs in diet from each floodplain EU. Robin CTE low-effect HQs for each avian COPEC are summarized in **Table 5.14**.

Risk characterization results indicate higher risks to robin from lead exposure with HQs ranging up to 35. The highest lead risks occur in the Animas River watershed in and downgradient from Placer Gulch (EU-16) to just upriver from Silverton, CO (EU-07). Lower risks are estimated for robin exposed to lead in Mineral and Cement Creek with HQs up to 4 and 5, respectively. Mill Creek (EU-R1) and Upper North Fork (EU-R4) reference reach lead CTE low-effect HQs are also elevated and ranged from 1 to 2. These results indicate that robin may be at risk from lead exposure throughout the BPMD assessment area.

In addition to lead, CTE low-effect HQ results indicate lower risks to robin exposed to vanadium and copper. CTE low-effect HQs for vanadium are elevated in a few floodplain EUs; specifically, in lower Mineral Creek EU-01 and Eureka Gulch EU-12 (both HQs = 1). Copper risks are only elevated in Animas River EU-10 (HQ = 1) which is downgradient from South Fork Animas River confluence. All other COPEC CTE low-effect HQs are less than 1.

5.5.6 Assessment endpoint #8: Maintain stable and healthy omnivorous mammal populations

Assessment endpoint #8 is assessed using the following risk question: *Are the contaminant levels in soils, surface water, terrestrial invertebrates, small mammals, and plants high enough to affect survival, growth, or reproduction in omnivorous mammals?*

This terrestrial BERA uses one measurement endpoint to assess the potential impact of metals ingested by this receptor group. Specifically, using metal levels measured in BPMD assessment area soils, surface water, terrestrial invertebrates (flying insects, ground-dwelling insects, and/or soil invertebrates), small mammal tissues (modeled from soil), and plants in a food chain model to calculate metal-specific EDDs for comparison against mammal no- and low-effect TRVs for adverse effects on survival, growth, or reproduction.

Risks from dietary COPEC exposure were evaluated for coyote and deer mouse. Exposure estimates are based on COPEC concentrations measured in insect and/or soil invertebrate tissues, plants, ingestion of site soils and ingestion of surface water associated with either the entire BPMD site (coyote) or floodplain soils (deer mouse). Risk characterization described herein is based on CTE low-effect HQs. Respective HQs correspond to the least conservative level of risk and most realistic exposure for insectivorous mammals exposed to BPMD assessment area contamination sources; the following subsections present the risk characterization results for omnivorous mammals.

Coyote:

Appendix E, Table E-150 presents the no- and low-effect HQs for coyote exposed to COPECs in diet from the entire BPMD assessment area terrestrial and floodplain habitats. Coyote CTE low-effect HQs for each mammal COPEC are summarized in **Table 5.15**.

All coyote CTE low-effect HQs are much less than 1. The greatest HQ is associated with selenium exposure, with a maximum HQ of 0.1. The CTE low-effect HQ for lead is also 0.1.

Deer mouse:

Appendix E, Table E-151 to E-154 presents the no- and low-effect HQs for deer mouse exposed to COPECs in diet from high-mid- and low DRC and reference floodplain habitats. Mouse CTE low-effect HQs for each mammal COPEC are summarized in **Table 5.16**.

Elevated CTE low-effect HQs occur for selenium, thallium, and lead. Selenium (HQ = 4) and thallium (HQ = 1) risks are very similar among floodplain DRC and reference areas and indicate lower risk from these COPECs to deer mouse throughout BPMD floodplains. Lead risks are lower in the high- (HQ = 2) and mid-level (HQ = 1) DRC exposure areas.

5.5.7 Assessment endpoint #9: Maintain stable and healthy carnivorous bird populations

Assessment endpoint #9 is assessed using the following risk question: *Are the contaminant levels in soils, surface water, and small mammal tissues high enough to affect survival, growth, or reproduction in carnivorous birds?*

This terrestrial BERA uses one measurement endpoint to assess the potential impact of metals ingested by this receptor group. Specifically, using metal levels in BPMD assessment area soils, surface water, and small mammal tissues in a food chain model to calculate metal-specific EDDs for comparison against avian no- and low-effect TRVs for adverse effects on survival, growth, or reproduction. Small mammal tissue metals concentrations are estimated using soil-to-biota uptake factors or regression equations and measured soil concentrations.

Golden eagle:

Appendix E, Table E-155 presents the no- and low-effect HQs for golden eagle exposed to COPECs in diet from the entire BPMD assessment area terrestrial and floodplain habitats. Eagle CTE low-effect HQs for each avian COPEC are summarized in **Table 5.17**.

As shown on **Table 5.17**, there are no COPEC HQs greater than 1 for golden eagle, which indicates an acceptable level of risks from COPEC exposures throughout the entire BPMD assessment area. The CTE low-effect HQ for lead is 0.2.

Northern goshawk:

Appendix E, Table E-156 to Table E-158 presents the no- and low-effect HQs for northern goshawk exposed to COPECs in diet from the three BPMD assessment area subwatersheds;

Mineral Creek, Cement Creek, and Animas River upriver of Silverton. Goshawk CTE low-effect HQs for each avian COPEC are summarized in **Table 5.18**.

As shown on **Table 5.18**, there are no COPEC HQs greater than 1 for northern goshawk, which indicates acceptable risks from COPEC exposures in the three BPMD assessment area subwatersheds. The highest CTE low-effect HQ for lead is 0.4 which occurs in the Animas River subwatershed; however, lead HQs are similar in Mineral (HQ = 0.3) and Cement (HQ = 0.3) Creeks. For all other avian COPECs, goshawk HQs are much lower than lead.

5.5.8 Assessment endpoint #10: Maintain stable and healthy carnivorous mammal populations

Assessment endpoint #10 is assessed using the following risk question: *Are the contaminant levels in soils, surface water, and small mammal tissues high enough to affect survival, growth, or reproduction in carnivorous mammals?*

This terrestrial BERA uses one measurement endpoint to assess the potential impact of metals ingested by this receptor group. Specifically, using metal levels in BPMD assessment area soils, surface water, and small mammal tissues in a food chain model to calculate metal-specific EDDs for comparison against mammalian no- and low-effect TRVs for adverse effects on survival, growth, or reproduction. Small mammal tissue metals concentrations are estimated using soil-to-biota uptake factors or regression equations and measured soil concentrations.

Canada lynx:

Appendix E, Table E-159 presents the no- and low-effect HQs for Canada lynx exposed to COPECs in diet from evergreen forested terrestrial habitats throughout the entire BPMD assessment area. Lynx CTE low-effect HQs for each mammal COPEC are summarized in **Table 5.19**.

As shown on **Table 5.19**, there are no COPEC with CTE low-effect HQs greater than 1. This indicates an acceptable level of risk for Canada lynx when exposed to metals that occur throughout the entire BPMD assessment area. Of all COPECs, the greatest lynx HQs are associated with thallium (HQ = 0.1), lead (HQ < 0.1), and copper (HQ < 0.1). Lynx is federally threatened and state endangered species that has been sighted near the BPMD assessment area. Their presence is significant because it is estimated that only 100 to 200 lynx live in CO and most of these individuals occur in the southwest corner of the state (Dutta, 2018). Given the importance of high-altitude forest habitat to this important species, its protection was considered when designating the BPMD as a Superfund site. Risk assessment results suggest an acceptable level of risk for lynx exposed to metals in diet.

5.6 Uncertainty analysis

An integral part of the risk assessment process is to identify and understand sources of uncertainty. Multiple choices and assumptions were made in the exposure and effects characterization, any one of which can affect the outcome of the risk characterization.

Uncertainty is inherent in any ERA due to incomplete or inadequate knowledge about several key input parameters and reliance on assumptions that are needed to complete assessment of risk endpoints. This lack of knowledge is usually addressed by making conservative assumptions based on guidance and best professional judgment. These assumptions can affect all aspects of the BERA, including CSM development, exposure analysis, derivation and use of toxicity values, and risk characterization. The following uncertainty analysis identifies and discusses the major assumptions made in the terrestrial BERA. It also provides descriptions of potential biases, when appropriate, to determine whether assumptions may have overestimated or underestimated the potential for ecological risk. The result is a balanced overview of uncertainty to help risk managers understand the full extent of potential ecological risk to terrestrial receptors in the BPMD. The major uncertainties and related biases associated with this BERA are discussed below:

- Exposure analyses for large home range wildlife receptors requires categorizing NPL mine feature wastes and halo areas and floodplain EUs into one of three DRCs; high-, mid-, and low-level. Even though categorization relies on actual concentrations of lead measured in soil that drive risk for most receptors and use all available environmental data, it contributes to uncertainties associated with actual exposures. Similar additional uncertainties are associated with extrapolating analytical data collected from sampling areas to a wider set of non-sampled exposure areas with similar exposure conditions. For mine features, these uncertainties stem from assuming exposure information (soil and dietary items) obtained from the eight halo sampling areas represent all 42 BPMD NPL mine features evaluated herein. For floodplain EUs, uncertainties stem from assuming dietary exposure information obtained from the 10 floodplain sampling areas represent the remaining 19 floodplain EUs. Any biases associated with the categorization and subsequent sampling and application of exposure information are unknown. However, it is possible that there are more contaminated habitats in the BPMD assessment area than what was sampled. Therefore, current DRC-based exposure metrics may underestimate risks. This is one reason why the BERA relies on conservative assumptions when estimating exposures.

- There may be more than 5,300 mine-related features present in the study area in addition to the 42 BPMD NPL mine features assessed in this BERA (Mast *et al*., 2007). Although the BPMD NPL features are some of the largest and most contaminated habitats found throughout the assessment area, they are a small fraction of total mine features in the district. Mine halo AUF acreages are only estimated for NPL features and not all possible mine-related features in respective exposure areas and therefore, may only account for a small fraction of total halo area exposures. This likely results in an underestimation of halo and an overestimation of vegetated upland area exposures. Since halo areas are more contaminated than vegetated upland areas, large home range receptor COPEC exposures and subsequent risks may be underestimated. This uncertainty only affects risk outcomes for specific large home range receptors, namely lynx, coyote, and eagle that rely on upland habitat AUF-tailored exposure estimates. However, associated biases are likely reduced with application of the large, highly conservative halo-to-waste pile acreage multiplier (20.2; **Table 3.4**). Application of this multiplier to all NPL features, some of which with much smaller halo areas, likely accounts for a portion of halo areas from

uncharacterized mine features. Given that CTE, low-effect TRV HQs for lynx, coyote, and eagle are very low, any additional exposures associated with non-NPL mine features would likely still result in acceptable risks to these receptors.

- Large-home range receptor exposure estimates are tailored according to habitat type-based AUFs that require extensive GIS remote sensing and data processing steps. These processes lead to uncertainties associated with the differences between actual and estimated acreages used to derive AUFs. This includes but is not limited to, reliance on spatially explicit habitat data aggregated on much larger geographic scales than those found in the field and inherent errors associated with available remote sensing data. It is difficult to characterize biases of these uncertainties. As such, AUFs may over- or underestimate true habitat usage but likely have a variable effect on large home range receptor risk estimates.

- As discussed in Section 2.8, this BERA is predicated on assessing population risks to selected wildlife receptors. While assessment methods for large and small home range wildlife receptors support assessment endpoints, there is some uncertainty with characterizing population-level risks for medium home range receptors using highly localized exposure estimates and respective exposure areas. This is particularly relevant for mountain bluebird, white-tailed ptarmigan, American pika, yellow-bellied marmot, and northern pocket gopher that are assessed using mine halo DRC exposure areas. For example, halo areas represent a small proportion of available upland habitat in which these receptors could forage. As such, any individual-level impacts to these species in these exposure areas might not result in population-level effects since there is ample habitat that would support respective populations outside of halo areas. Therefore, risk estimates for these receptors may not fully address respective assessment endpoints and population-level risks presented herein are likely overestimated.

- Much of the soil exposure information used in this BERA relies on soil samples collected in areas that maximize the chances of finding high levels of metals. Such sampling targeted areas of bare, nonvegetated, and fine-grained soils. This is particularly relevant when estimating exposures associated with waste rock, halo soil, and floodplain soil believed to be impacted directly or indirectly by past mining activities. As a result, the samples used for calculating the EPCs likely represent “worst case” exposure conditions that would be experienced by terrestrial receptor groups living and/or foraging throughout the BPMD assessment area. Associated biases would mostly affect risk outcomes for smaller home range receptors where soil exposure is based on samples collected from relatively small geographic areas; such as, individual floodplain EUs. In these cases, soil exposure and risk are likely overestimated.

- This BERA uses information on metals concentrations in soil samples collected from different studies with different sample collection and preparation methods. For example, about half of the samples were sieved to a 2-mm fraction prior to analysis while the other half was not sieved and analyzed as collected. Sieving was conducted to remove larger grained particles and improve homogenization of composite subsamples. Sieving produces finer soil grain sizes that are more likely to in ingested by most wildlife

receptors. It is expected that finer grained soils contain higher metals concentrations; therefore, sieving may bias concentrations higher than non-sieved samples. As such, there is some uncertainty regarding use of sieved and non-sieved samples, but it is low, since all soil sampling targeted fine grain soil sizes and all composite samples were thoroughly mixed. Additionally, all samples were collected within the 0- to 2-inch or 0- to 6-inch depth from ground surface intervals. There may be some uncertainty in using samples collected in various intervals, but it is low, since they were all collected within the surface soil horizon where wildlife exposure occurs. The soil datasets used herein are composed of grab, 5-point composites, and 30-point composites. The type of sample collection method is directly related to the size of the area being characterized. For example, grab samples were used to characterize metals concentrations in one spot, roughly the size of 10 square inches. Composite subsampling was used to characterize metals concentrations in much bigger areas. The larger the number of subsamples composited into a single sample, the higher the likelihood that the composite sample accurately characterizes the sampling area. Therefore, the confidence is higher from using 30-point composites than 5-point composites when the sampling area is the same size. However, this uncertainty is likely minor since the number of subsamples was directly related to the size of the area being characterized.

- Risks are characterized using a metal-by-metal HQ analysis. The HQs are not summed to calculate a hazard index (HI) because this approach assumes that metals toxicity is additive. It is not anticipated that all the inorganic COPECs evaluated in this BERA would exert their toxic effects on one and the same biological function, which is a basic requirement for calculating HIs. Therefore, risks associated with mixed metal exposures cannot be evaluated using HQ-based risk endpoints. It is possible that some of the COPECs may in fact exert additive toxicity, in which case, the metal-by-metal HQ approach would underestimate certain risks associated with mixed metal exposures. Nevertheless, the metal-by-metal HQ approach used herein likely underestimates risk when assessed individually. However, this potential bias may be relatively small since very few COPECs drive risk for most receptors.

- Risk characterization results indicate potential for risk in vegetated upland exposure areas and reference floodplain EUs for plant and invertebrate communities, montane shrew, American robin, and deer mouse. These risks are likely driven by natural sources of metals present in hydrothermally altered, propylitized rock that are common throughout the BPMD. This situation represents a major uncertainty which would have to be considered as part of any future risk management decision-making; ideally, via site-specific background conditions analyses and depending on remedial actions being considered. Despite this uncertainty, it appears highly likely that mining activities since the 19th century have substantially increased ecological receptor exposure to, and risk, from metals to levels beyond those that would have occurred without mining (Church *et al*., 1999). Comparative analysis between minimally mine-impacted vegetated upland and reference EUs and mine waste impacted halo areas and non-reference EU also support that mining activities have increased risks to ecological receptors.

- The BERA assumes that 100% of the COPEC concentrations measured by chemical analyses represent the bioavailable fraction accessible for uptake by ecological receptors. This assumption is conservative and actual bioavailability of metals ingested by wildlife is likely to be less than 100%. Many physical, chemical, and site-specific factors affect metals bioavailability in mine waste-contaminated exposure media, including soil particle size, sulfide content, pH, weathering history, and mineralogical composition, among others (Schaider *et al*., 2007). Bioavailability and uptake rates can also be species- and individual-specific. It is not possible to accurately predict the actual bioavailability of the metals measured in BPMD exposure media without further testing. If such information was available, site-specific bioavailability is excepted be less than the assumed 100%. Since percent bioavailability is directly proportional to HQ-based risk estimates, assuming lower percent bioavailability would lead to lower HQs. Hence, the current assumption of 100% bioavailability is expected to overestimate risk in all receptors.

- The effects assessment for the wildlife receptors use published no- and low-effect TRVs to measure COPEC toxicity. The assessment endpoints focus on preserving populations, whereas TRVs are derived from data on individuals or small groups of a test species. Extrapolating individual-level effects to higher levels of biological organization is inherently uncertain, particularly because these extrapolations are applied across non-related species (e.g., chicken to robin, or mouse to lynx). The degree of uncertainty with this approach is unknown but may be large. Nevertheless, TRVs used herein are based on toxicity studies that report adverse effects on reproduction and growth, which represent two endpoints that are expected to adversely affect wildlife populations over time.

- This BERA uses TRVs derived from sub-chronic to chronic toxicity studies. Therefore, all risk estimates are based on chronic exposure to BPMD COPECs. There is some uncertainty associated with this methodology since there may be habitats within the assessment area that contain metals concentrations at levels that could elicit acute toxicity. However, any acute toxicity benchmarks would likely be much greater than those used herein. Therefore, this uncertainty would only apply to the few receptors, COPECs, and EUs with extremely elevated HQs; most notably, lead exposure in passerine birds near mine waste piles and in lower Animas River floodplains. Information on acute lead toxicity in birds is mostly associated with ingestion of lead-based shot. Although dated, Eisler (1988b) summarizes many of the early toxicity studies in which birds were acutely exposed to lead shot and other forms of lead. Results were variable between species tested, testing conditions, and form of lead. However, summarized studies showed that toxicity was observed in sensitive species acutely exposed to 25 to 75 mg/kg BW for more soluable and bioavailable forms of lead, and 150 to 500 mg/kg BW exposed to a single dose of lead shot. At these dosing rates, birds showed some mortality, weight loss, organ damage, and/or reduced reproduction. While BPMD soils contain lead at lower concentrations than those that would elicit acute toxicity, especially those for less soluble forms of lead, it is possible that mine waste rock and other mine waste materials could contain enough lead to be acutely toxic. The greatest risks would be to seed-eating birds targeting waste rock and other mine wastes for use as grit.

- This BERA uses a highly conservative avian low-effect TRV for lead (3.26 mg of lead/kg BW/day) that results in extremely elevated HQs for lead exposure in swallow, bluebird, and robin. This TRV is from the same study used to derive the NOAEL-based EcoSSL (EPA 2005b). These levels were obtained from Edens and Garlich (1983), who reported the second lowest NOAEL with a bounded LOAEL for reproduction among five bird species and nine separate studies in the EcoSSL database that resulted in reduced bird reproduction due to lead exposure. Specifically, the statistically significant reduction in egg production in domestic chickens. The use of this conservative TRV for lead is justified since the sensitivity of avian receptors assessed herein is unknown and is likely protective of any sensitive bird species. This low-effect TRV was also recommended for use by the EPA Region 8 USFWS liaison for this site.

- Plant toxicity from aluminum and iron exposure are based on chemical and physical soil conditions (EPA, 2003a,b), for which site-specific information is unavailable. Therefore, plant exposure risks to these two metals are not evaluated in this BERA. As discussed above in Section 5.3, bioavailability of aluminum for plant uptake and toxicity is associated with pH, since aluminum is soluble and biologically available in acidic (pH <5.5) soils and waters but is biologically inactive in circumneutral to alkaline (pH 5.5-8.0) conditions. In alkaline soils and solutions (pH >8.0), the solubility of aluminum increases, but its bioavailability is poorly known (Sparling and Lowe, 1996). However, chemical and toxicological information suggests that aluminum must be in a soluble form in order to be toxic to biota. With respect to iron, the main concern from an ecological risk perspective is not direct chemical toxicity *per se*, but the effect of iron as a mediator in the geochemistry of other, potentially toxic, metals (EPA, 2003b). Although it is speculation that mine waste-impacted soils have elevated aluminum and iron levels and pH below 5.5, the potential impact of these COPECs is unknown. However, risks are likely relevant in heavily contaminated areas that are barren or in habitats that support impoverish plant communities consisting of metals-tolerant species.

- In some cases, surface water hydroperiod data that are used to support water-year based exposure assessments are missing, and other hydroperiod data are used as substitutions. As a result, the three hydroperiods were not fully represented in all EUs. This mostly occurs in the spring, low flow surface water data that, when missing, are substituted with fall, low flow surface water data. This substitution is justified given the apparent similarities between the pre- and post-runoff hydroperiods as reported in the BPMD aquatic BERA (EPA, 2019a). It is uncertain how much of an impact such substitutions have on the final BERA results, but it is likely minor since surface water ingestion is a minor fraction of total dietary exposure when compared to soil and prey items.

- The BERA relies on literature-reported and best professional judgement to estimate the proportions of different dietary items consumed by wildlife receptors (**Table 3.9**). These estimates also consider availability of site-specific tissue types. It is uncertain whether selected dietary item compositions used to estimate wildlife receptor exposures are representative of actual dietary compositions. This may be more of an issue with moose and goshawk that are known to have more varied diets than used herein. For example, moose are known to eat aquatic vegetation because of the sodium, crude protein,

phosphorous, and other essential nutrients it contains. However, aquatic vegetation does not occur and is unavailable for collection in most BPMD waterways. Similar uncertainties exist for goshawk that prey upon other birds in addition to small mammals. BPMD birds were not collected for tissue analysis and reliable soil-to-bird tissue uptake factors are unavailable. This may be a considerable uncertainty, given that birds may be up to 50% of total goshawk diet (Kennedy, 2003). Since it is unknown whether aquatic plant and bird accumulation is different than respective shrub and small mammal accumulation, related biases on moose and goshawk exposure estimates are also unknown.

- The exposure estimates for surface water and floodplain soil are derived from relatively small datasets for select floodplain EUs. Small EU-specific datasets are particularly pervasive in EU-3.5, -07, -08, -11, -13, -16, -17, -18, and every reference EU (**Appendix B**). For these and other EU-specific small datasets (three to five data points), a UCL-based RME could not always be derived and maximum values are used instead. Although not common, RME and CTE exposure estimates are the same for the EU datasets that contain only one observation. Assessing risks based on small datasets reduces the level of confidence in risk estimates and the inference that can be applied to the affected EUs. Similarly, adit/mine drainage surface water data are also sparse and are not available for most floodplain EUs. Therefore, watershed-specific EPCs are calculated and applied to respective watershed EUs when missing. This procedure reduces the special variability and level inference that can be drawn from myotis bat risks. However, it provides the most defensible adit surface water exposure estimates that are based on nearby adit water samples.

- Dietary items, plants and invertebrates, were primarily collected for residue analysis during one week in August 2018. These samples provide measured, versus estimated tissue data for use in the food chain modeling for most receptors evaluated herein. It is not known whether or how much metal levels fluctuate in plant and invertebrate tissues throughout the year or year-to-year. Since the dynamics of metals accumulation is unknown at this time, biases associated with using data from a single point in time is also unknown. However, since dietary tissue EPCs are modeled from composites made from different plant and invertebrate species collected throughout the BPMD assessment area, they should reasonably characterize the average concentration of metals accumulated plants and invertebrates. Since this BERA focuses on CTE-based or average exposure risk characterization results and most plant and invertebrate EDD contributions are relatively small when compared to soil, this uncertainty is considered a relatively minor. Nevertheless, the limited temporal characterization of COPEC concentrations in dietary item tissues limits the level of inference associated with exposure estimates.

- Carnivorous wildlife food chain models rely, in part, on published soil-to-small mammal accumulation regression equations or uptake factors, instead of field-collected tissue samples (**Table 3.10**). It is not known whether or how much metal uptake differs between actual and estimated uptake rates. However, it is likely that literature-sourced values are poor predictors of site-specific tissue levels. To circumvent potential for underestimation, the most conservative uptake rates are used to model metals concentrations in small

mammals. This action likely positively biased exposure and risks for carnivorous wildlife. Use of accumulation models to predict wildlife exposure also becomes uncertain when contamination is so great that it may be directly toxic to the prey itself. For example, predicted tissue concentrations based on very high metals concentrations may be well above those used to develop soil-to-small mammal uptake models. This action also likely positively biased exposure and risks for carnivorous wildlife. Fortunately, the contribution of total COPEC EDDs represented by small mammals is small when compared to soils. Therefore, any biases associated with this uncertainty is likely small and not substantially impactive on HQ results.

- The exposure modeling includes incidental soil ingestion that often contributes to over 90% of the total COPEC EDD for wildlife receptors. Soil ingestion rates are obtained from literature sources that may not account for BPMD assessment area-specific environmental conditions and actual wildlife habitat characteristics. BERA soil sampling focused on fine-grained soils that are expected to contain the highest concentrations of COPECs. However, much of the available BPMD habitats are dominated by large-grained soils with high fractions of gravel, pebble, and small cobble, instead of the fine sands and silts that were targeted during sampling and expected to be accidentally ingested by wildlife receptors during feeding. As such, the actual incidental soil ingestion may be substantially lower than assumed in the food chain models when site-specific conditions are considered. Given that most wildlife receptor risks estimates are based on fine fraction sediments, this uncertainty may be significant. Therefore, wildlife risks that are driven by incidental soil ingestion may be biased high.

- Due to high potential for human exposure and associated risks, EPA has recently decided to conduct interim remedial actions at two campsites (CMP4 and CMP7) located in floodplain areas that have elevated levels of lead contamination (EPA, 2019b). It is anticipated that these actions will reduce concentrations of metals in respective soils. Therefore, using soils results from samples collected from the two campsites prior to planned remediation creates uncertainty in estimating incidental soil exposure to floodplain receptors. Furthermore, respective campsite soils metals concentrations are highly elevated above other floodplain soil samples collected in floodplain EU-07 and EU-14. Removal of these elevated results would result in lower soil EPCs for respective exposure areas. Such actions would lead to an overestimation of soil exposure and subsequent risks to receptors in floodplain exposure units where these campsite areas are located. To elucidate this overestimation, the floodplain soil EPCs for these two EUs are recalculated without CMP4 and CMP7 soils. Using American robin as an example, lead CTE low-effect HQs would be reduced from 35 to 8 for EU-07 and 12 to 5 in EU-14 when campsite CMP4 and CMP7 soils results are removed from respective EPC estimates. While these revised risk estimates may not reflect actual post-remediation exposure scenarios, they do exemplify how influential CMP4 and CMP7 soils results are to risk estimates reported in this BERA.

- The terrestrial BERA assessment area did not assess risks in areas downgradient from the BPMD. This represents an uncertainty, given that fate and transport mechanisms could transport contaminants from the BPMD to downstream habitats, and evaluation of the

most downgradient Animas River EU-07 showed elevated risks to sensitive wildlife receptors. However, this uncertainty is minimized when the aquatic BERA for this site is considered. The aquatic BERA assesses risks to sensitive wildlife receptors exposed to Animas River sediments far downriver to Durango, CO (EPA, 2019a). Since sediment transport would be the most relevant pathway in which BPMD contamination could impact downgradient habitats, respective exposure risks to wildlife are also most relevant. Note that the aquatic BERA did identify lower risks (CTE low-effect HQs up to 2) to American dipper from lead exposure in the Durango EUs. This species has high levels of incidental soil/sediment ingestion and should be a sensitive surrogate for avian species evaluated herein. As such, risk managers can use information obtained in this and the aquatic BERA to understand ecological risks throughout the BPMD and downgradient habitats when both risk assessments are considered.

SECTION 6: SUMMARY AND CONCLUSIONS

The BPMD is a large geographic area with high elevation terrestrial and semi-aquatic habitats that are potentially impacted by 100 years of boom and bust mining operations, associated waste management practices, and naturally mineralized soils and water. These sources have high potential to impact local ecological communities when plants, invertebrates, and wildlife are exposed to metals contaminated-surface waters, soils, and dietary items that contact or intermingle with mineralized material.

In April 2016, EPA placed 48 mining-related features located throughout the BPMD on the NPL, thereby designating the BPMD into a Superfund site. This designation started the RI/FS process that included drafting this terrestrial BERA. Information presented in this risk assessment is intended to provide an overview of risks over a large geographical area. This overview will, in part, guide future risk management decisions when selecting and implementing cleanup actions. This BERA focuses on assessing ecological risks in terrestrial and floodplain habitats located in Mineral Creek, Cement Creek and Animas River watersheds upgradient from Silverton, CO.

The terrestrial BERA assesses community-level risks for plants and invertebrates, and species-specific risks for 16 representative model wildlife species that could occur at the site and be exposed to BPMD contamination sources. Risk characterization uses exposure data obtained from surface water, soil, and dietary item tissue samples collected throughout the BPMD from spring 2014 to fall 2018 for comparison to direct contact plant and invertebrate soil ESVs or development of food chain modeled-EDDs and subsequent comparison to dietary based-TRVs for wildlife receptors. These risk characterization methods generate HQs that, when elevated above unity, suggest that ecological receptors may be at risk from respective COPEC exposures. HQs are the primary, predictive tool used to assess ecological risks to terrestrial and semi-aquatic community and species-specific receptors from BPMD COPEC exposures. Risk characterization results for all endpoints are summarized in **Table 6.1**.

The lowest level risks are identified for select receptors from exposure to COPECs in Mill Creek and Upper North Fork Animas River reference floodplain EUs. These results suggest that natural and/or minimally impacted habitats have potential to impact sensitive ecological receptors. However, these risks are much less than those estimated for habitats downgradient from NPL mine features. For example, the greatest risks to all receptors occur in terrestrial habitats associated with mine waste piles, high-level DRC halo habitats, and floodplain reaches in highly mineralized watersheds. For community-level receptors, the greatest direct contact risks to plants and soil invertebrates are from manganese, lead, and molybdenum exposure and to a lesser extent, zinc and thallium. Spatially, the greatest risks to receptors are in the Animas River floodplain habitats in and downgradient from Placer Gulch followed by upper mainstem Mineral Creek, South Fork Mineral Creek, and upper Cement Creek.

BERA results show that large home range wildlife receptors may be experiencing an acceptable level of risk from dietary-based COPEC exposures. This may be an artifact of life history traits and diversity of exposure to a range of contaminated habitats over large geographic areas. Risks for smaller home range herbivorous wildlife receptors such as gopher, deer mouse, shrew, pika,

and marmot are relatively low and only occur for a limited number of COPECs (mostly lead) in the most contaminated habitats (high-level halo areas and floodplain EUs and waste piles). As discussed herein, exposure and effects evaluations rely on a wide range of assumptions which lead to uncertainties and associated biases that are reflected in risk estimates.

Of all the receptors evaluated in the terrestrial BERA, insectivorous and omnivorous birds (cliff swallow, mountain bluebird, and American robin) are most at risk from dietary exposures to BPMD COPECs primarily due to incidental soil ingestion. Risk characterization results for these receptors show that elevated risks from lead exposure occur in upland habitats near mine wastes (halo areas) and most floodplain EUs that are downgradient from mine features. It should be noted that a highly conservative avian TRV is used to generate lead HQs for birds and actual bioavailability of lead is likely less than 100% as assumed herein. Combined with elevated lead concentrations in soil and diet, all of these factors are likely driving elevated HQs for birds. Despite potential biases associated with use of conservative assumptions, HQs are sufficiently high that lead exposure risks to avian wildlife cannot be ruled out. Low-level risks to lead and a few other metals were also found in upland habitats not obviously impacted by mining activities and reference floodplain EUs for robin.

In conclusion, the terrestrial BERA provides a thorough evaluation of plant and invertebrate community and wildlife receptor risks associated with anthropogenic and natural sources of contamination within the BPMD. Risk characterization results indicate that large home range receptors likely experience an acceptable level of risk when exposed to BPMD contamination sources. Smaller home range receptors such as insectivorous and omnivorous birds and small mammals may be at risk from dietary exposure to elevated concentrations of metals such as lead that are common in BPMD mine wastes in and downgradient from waste piles and depositional, floodplain habitats. However, there is evidence that metal concentrations in less or non-mine impacted habitats may also contribute to elevated ecological risks. This result speaks to the naturally occurring, highly mineralized soils found throughout the BPMD, which should be considered in future RI/FS activities. Together, this BERA and the final aquatic BERA (EPA, 2019a) provide a comprehensive assessment of ecological risks from contamination found throughout the BPMD and the Animas River.

SECTION 7: REFERENCES

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Table ES.1 Final Risk Characterization Summary For Each Assessment Endpoint and Exposure Unit. Hazard quotient (HQ)-based risk characterization are central tendency exposure (CTE) low-effect HQs that represent the highest levels of risk.

Watershed	Exposure Unit	Plant Community	Invert. Community	Ptarmigan	Moose	Beaver	Pika (Waste Rock)	Marmot (Waste Rock)	Gopher	Swallow	Bluebird	Myotis Bat	Shrew	Robin	Coyote	Mouse	Eagle	Goshawk	Lynx
Mineral Creek	EU-01	Lower risk	Acceptable risk	NA	Acceptable risk	Acceptable risk	NA	NA	NA	Lower risk	NA	Acceptable risk	NA	Lower risk	Acceptable risk	NA	Acceptable risk	Acceptable risk	Acceptable risk
	EU-02	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
	EU-03	Lower risk	Acceptable risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-3.5	Lower risk	Acceptable risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-04	Lower risk	Lower risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-05	Mod. risk	Lower risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-06	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
	EU-R1 Mill Creek	Lower risk	Lower risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
Cement Creek	EU-20	Lower risk	Acceptable risk		Acceptable risk	Acceptable risk				Lower risk		Acceptable risk		Lower risk				Acceptable risk	
	EU-21	Lower risk	Acceptable risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-22	Lower risk	Lower risk			Acceptable risk				Lower risk		Acceptable risk		Mod. risk					
	EU-23	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
	EU-24	Mod. risk	Lower risk			Acceptable risk				Lower risk		Acceptable risk		Mod. risk					
Animas River	EU-07	Higher risk	Lower risk		Acceptable risk	Acceptable risk				Higher risk		Acceptable risk		Higher risk				Acceptable risk	
	EU-08	Lower risk	Acceptable risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-09	Mod. risk	Lower risk			Acceptable risk				Higher risk		Acceptable risk		Higher risk					
	EU-10	Higher risk	Mod. risk			Acceptable risk				Higher risk		Acceptable risk		Higher risk					
	EU-11	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
	EU-12	Mod. risk	Lower risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-13	Mod. risk	Lower risk			Acceptable risk				Mod. risk		Acceptable risk		Higher risk					
	EU-14	Mod. risk	Lower risk			Acceptable risk				Mod. risk		Acceptable risk		Higher risk					
	EU-15	Higher risk	Mod. risk			Acceptable risk				Mod. risk		Acceptable risk		Mod. risk					
	EU-16	Higher risk	Lower risk			Acceptable risk				Mod. risk		Acceptable risk		Mod. risk					
	EU-17	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
	EU-18	Lower risk	Acceptable risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-19	Mod. risk	Acceptable risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-R2 Maggie Gulch	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Acceptable risk					
	EU-R3 Picayune Gulch	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Acceptable risk					
	EU-R4 Upper North Fork	Mod. risk	Lower risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
Entire Assessment Area	High-level halo area	Mod. risk	Lower risk	Acceptable risk	NA	NA	Higher risk	Lower risk	Lower risk	NA	Higher risk	NA	NA	NA	NA	NA	NA	NA	NA
	Mid-level halo area	Lower risk	Acceptable risk	Acceptable risk			Mod. risk	Lower risk	Lower risk		Mod. risk								
	Low-level halo area	Lower risk	Acceptable risk	Acceptable risk			Mod. risk	Lower risk	Acceptable risk		Lower risk								
	Vegetated upland area	Lower risk	Acceptable risk	Acceptable risk			NA	NA	Acceptable risk		Acceptable risk								
	High-level floodplain	Mod. risk	Lower risk	NA					NA		NA		Higher risk			Lower risk			
	Mid-level floodplain	Lower risk	Acceptable risk										Mod. risk			Lower risk			
	Low-level floodplain	Lower risk	Acceptable risk										Mod. risk			Lower risk			
	Floodplain reference	Lower risk	Acceptable risk										Mod. risk			Lower risk			

COPEC = Contaminant of Potential Ecological Concern; NA = Not Assessed

Color code definitions*:

Acceptable risk	All CTE low-effect HQs <1.0
Lower risk	At least one COPEC CTE low-effect HQ >1.0 but <5.0
Mod. risk	At least one COPEC CTE low-effect HQ >5.0 but <10.0
Higher risk	At least one COPEC CTE low-effect HQ >10.0

* Note that it is understood that risk does not increase in a linear fashion with increasing HQs. As such, relative risk terminology was only used to qualitatively highlight differences in risk and should not be interpreted beyond this intended use.

Table 2.1 Summary of Contaminants of Potential Ecological Concern (COPEC) Evaluated in the Terrestrial Baseline Ecological Risk Assessment

COPEC[1]	Plants	Invertebrates	Birds	Mammals
Aluminum	X[a]			
Antimony	X	X		X
Arsenic	X	X	X	X
Barium	X	X	X	
Beryllium	X			
Cadmium	X	X	X	X
Chromium		X	X	X[b]
Cobalt	X			
Copper	X	X	X	X
Iron	X[a]			
Lead	X	X	X	X
Manganese	X	X	X	X
Mercury		X	X	X
Molybdenum	X		X	X
Nickel	X		X[b]	X[b]
Selenium	X	X	X	X
Silver			X	X
Thallium	X			X
Vanadium	X		X	
Zinc	X	X	X	X

a = COPEC did not have an ecological screening value but was retained due to known sensitivity to plants in certain soil types

b = Not identified as a COPEC using the hazard quotient screening process but retained for wildlife receptors due to bioaccumulation potential

1 = "X" indicates that a chemical was selected as a COPEC for respective receptor groups

Table 2.2 Target Wildlife Receptors Evaluated in the Terrestrial Baseline Ecological Risk Assessment		
Feeding Guild	**Birds**	**Mammals**
Herbivores	White-tailed ptarmigan	Moose American beaver American pika Yellow-bellied marmot Northern pocket gopher
Terrestrial insectivores	Mountain bluebird	Montane shrew
Aerial insectivores	Cliff swallow	Fringed myotis bat
Omnivores	American robin	Coyote Deer mouse
Carnivores	Golden eagle Northern goshawk	Canada lynx

Table 2.3 Summary of Exposure Pathways and Respective Target Receptors Associated with Each Assessment Endpoint. Note that some of the identified herbivorous and insectivorous bird and mammal receptors consume minor amounts of other dietary items. However, these dietary items are a small proportion of total diet when compared to respective plant and/or insect consumption.

Assessment Endpoints	*Exposure Pathways*	Receptors
1) Maintain stable and healthy plant communities		
	Direct contact with terrestrial and floodplain soils	
		Plants (receptor group)
2) Maintain stable and healthy soil terrestrial invertebrate communities		
	Direct contact with terrestrial and floodplain soils	
		Soil invertebrates (receptor group)
3) Maintain stable and healthy herbivorous bird populations		
	Ingestion of soils, plants, and surface water	
		White-tailed ptarmigan
4) Maintain stable and healthy herbivorous mammal populations		
	Ingestion of soils, plants, and surface water	
		Moose; American beaver; American pika; Yellow-bellied marmot; Northern pocket gopher
5) Maintain stable and healthy insectivorous bird populations		
	Ingestion of soils, surface water, and invertebrates	
		Cliff swallow
		Mountain bluebird
6) Maintain stable and healthy insectivorous mammal populations		
	Ingestion of soils, surface water, and invertebrates	
		Fringed myotis bat
		Montane shrew
7) Maintain stable and healthy omnivorous bird populations		
	Ingestion of soils, plants, surface water, and invertebrates	
		American robin
8) Maintain stable and healthy omnivorous mammal populations		
	Ingestion of soils, plants, surface water, invertebrates, and small mammals [1]	
		Coyote
		Deer mouse
9) Maintain stable and healthy carnivorous bird populations		
	Ingestion of soil, surface water, and small mammals	
		Golden eagle
		Northern goshawk
10) Maintain stable and healthy carnivorous mammal populations		
	Ingestion of soil, surface water and small mammals	
		Canada lynx

1 = Small mammal exposure only for coyote

Table 3.1 Final Dose-Response Categories (DRCs) for Each National Priorities List (NPL) Mine Feature Halo Area

NPL Feature	Final DRC	NPL Feature	Final DRC
Anglo Saxon Mine	Mid-level	Mountain Queen Mine	High-level
Aspen Mine	High-level	Natalie/Occidental Mine	Low-level
Bandora Mine	High-level	Paradise Mine	Mid-level
Ben Butler Mine	High-level	Pride of the West Mine	Mid-level
Ben Franklin Mine	Low-level	Red and Bonita Mine	Mid-level
Boston Mine	Low-level	Red Cloud Mine	High-level
Brooklyn Mine	Mid-level	Senator Mine	High-level
Clipper Mine	Mid-level	Silver Ledge Mine	High-level
Columbus Mine	Low-level	Silver Wing Mine	Mid-level
Dewitt Mine	Mid-level	Sunbank Group Mine	Low-level
Forest Queen Mine	Mid-level	Sunnyside Mine	High-level
Gold King Mine	Mid-level	Tom Moore Mine	High-level
Grand Mogul Mine	High-level	Vermillion Mine	High-level
Henrietta Mine	Low-level	Wynona Mine	High-level
Joe and Johns Mine	Low-level	American Tunnel	High-level
Junction Mine	Mid-level	Amy Tunnel	High-level
Lark Mine	Low-level	Frisco/Bagley Tunnel	Mid-level
Little Nation Mine	High-level	Koehler Tunnel	Mid-level
London Mine	High-level	Mammoth Tunnel	High-level
Longfellow Mine	Mid-level	Terry Tunnel	High-level
Mogul Mine	Low-level	Yukon Tunnel (Gold Hub)	Mid-level

Table 3.2 Final Dose-Response Categories (DRCs) for Each Bonita Peak Mining District Assessment Area Floodplain Exposure Unit

Subwatershed	Exposure Unit	DRC
Mineral Creek	EU-01	Mid-level
	EU-02	Low-level
	EU-03	Mid-level
	EU-3.5	Mid-level
	EU-04	High-level
	EU-05	Mid-level
	EU-06	Low-level
Cement Creek	EU-20	Mid-level
	EU-21	Mid-level
	EU-22	High-level
	EU-23	Low-level
	EU-24	High-level
Animas River	EU-07	High-level
	EU-08	Mid-level
	EU-09	High-level
	EU-10	High-level
	EU-11	Low-level
	EU-12	High-level
	EU-13	High-level
	EU-14	High-level
	EU-15	High-level
	EU-16	High-level
	EU-17	Low-level
	EU-18	Mid-level
	EU-19	High-level

Table 3.3 Bonita Peak Mining District National Priorities List (NPL) Mine Feature Waste Pile Acreages and Estimated Waste Pile Halo Area Acreages

Subwatershed	NPL Mine Feature	Dose Response Category (DRC)	Number of Piles	Total Mine Waste Acreage	Estimated Halo Area Acreage[1]
Mineral Creek	Bandora Mine	High-level	6	2.26	45.59
	Brooklyn Mine	Mid-level	2	6.16	124.27
	Junction Mine	Mid-level	1	0.08	1.61
	Koehler Tunnel	Mid-level	1	0.08	1.61
	Longfellow Mine	Low-level	1	0.77	15.53
	Paradise Mine	Low-level	4	0.35	7.06
	Silver Ledge Mine	Mid-level	1	2.10	42.36
		Mineral Creek High-Level DRC Totals =	*6*	*2.26*	*45.59*
		Mineral Creek Mid-Level DRC Totals =	*5*	*8.42*	*169.86*
		Mineral Creek Low-Level DRC Totals =	*5*	*1.12*	*22.59*
		Mineral Creek Watershed Totals =	**16**	**11.80**	**238.04**
Cement Creek	American Tunnel	High-level	--[2]	--[2]	--[2]
	Anglo Saxon Mine	Mid-level	2	0.85	17.15
	Gold King Mine	Mid-level	1	3.53	71.21
	Grand Mogul Mine	High-level	3	1.36	27.52
	Henrietta Mine	Low-level	1	1.98	39.94
	Joe and Johns Mine	Low-level	1	0.19	3.83
	Lark Mine	Low-level	1	3.77	76.05
	Mammoth Tunnel	High-level	1	0.57	11.50
	Mogul Mine	Low-level	3	2.40	48.42
	Natalie/Occidental Mine	Low-level	4	1.31	26.43
	Red and Bonita Mine	Mid-level	1	1.21	24.41
	Wynona Mine	High-level	1	0.25	5.04
	Yukon Tunnel/Gold Hub	Mid-level	3	1.92	38.73
		Cement Creek High-Level DRC Totals =	*5*	*2.18*	*44.06*
		Cement Creek Mid-Level DRC Totals =	*7*	*7.51*	*151.50*
		Cement Creek Low-Level DRC Totals =	*10*	*9.65*	*194.67*
		Cement Creek Watershed Totals =	**22**	**19.34**	**390.23**
Animas River	Amy Tunnel	High-level	--[3]	--[3]	--[3]
	Aspen Mine	High-level	--[3]	--[3]	--[3]
	Ben Butler Mine	High-level	2	0.37	7.46
	Ben Franklin Mine	Low-level	3	2.00	40.35
	Boston Mine	Low-level	1	0.17	3.43
	Clipper Mine	Mid-level	3	0.30	6.05
	Columbus Mine	Low-level	1	1.30	26.23
	Dewitt Mine	Mid-level	1	0.04	0.81
	Forest Queen Mine	Mid-level	1	0.16	3.23
	Frisco/Bagley Tunnel	Mid-level	4	2.15	43.37
	Little Nation Mine	High-level	1	0.19	3.83
	London Mine	High-level	2	0.96	19.37
	Mountain Queen Mine	High-level	2	0.67	13.52
	Pride of the West Mine	Mid-level	1	0.18	3.63
	Red Cloud Mine	High-level	2	0.53	10.69
	Senator Mine	High-level	1	0.59	11.90
	Silver Wing Mine	Mid-level	1	1.58	31.87
	Sunbank Group Mine	Low-level	1	2.83	57.09
	Sunnyside Mine	High-level	3	1.56	31.47
	Terry Tunnel	High-level	2	4.11	82.91
	Tom Moore Mine	High-level	1	0.35	7.06
	Vermillion Mine	High-level	1	0.52	10.49
		Animas River High-Level DRC Totals =	*17*	*9.85*	*198.70*
		Animas River Mid-Level DRC Totals =	*11*	*4.41*	*88.96*
		Animas River Low-Level DRC Totals =	*6*	*6.30*	*127.09*
		Animas River Watershed Totals =	**34**	**20.56**	**414.76**
		Assessment Area High-Level DRC Totals =	*28*	*14.29*	*288.35*
		Assessment Area Mid-Level DRC Totals =	*23*	*20.34*	*410.32*
		Assessment Area Low-Level DRC Totals =	*21*	*17.07*	*344.35*
		Entire Assessment Area Totals =	**72**	**51.70**	**1043.03**

1 = Halo area acreages estimated using the maximum halo to waste acreage multiplier from **Table 3.4**

2 = Not included because the entire area is completely developed and developed area continues into the floodplain

3 = Not included in the floodplain acreage (downriver from Cunningham Creek confluence (Mayflower Reach))

Table 3.4 Estimated Waste Pile Halo Area Acreages and Halo-to-Waste Acreage Multiplier for Each Surveyed Bonita Peak Mining District NPL Mine Feature

Surveyed NPL Mine Feature	Total Mine Waste Acreage	Estimated Halo Area Acreage	Halo-to-Waste Acreage Multiplier
Bandora Mine	2.26	10.88	4.81
Brooklyn Mine	6.16	22.87	3.71
Clipper Mine	0.30	4.72	15.73
Lark Mine	3.77	14.36	3.81
London Mine	0.96	6.47	6.74
Mogul Mine	2.40	22.74	9.48
Red Cloud Mine	0.53	4.91	9.26
Vermillion Mine	0.52	10.49	20.17
Maximum Halo to Waste Pile Acreage Multiplier =			20.17

NPL = National Priorities List

Table 3.5 Bonita Peak Mining District Assessment Area Habitat Acreages, Area Use Factor (AUF) Derivation Steps, and Final AUFs Used to Estimate Exposures for Large Home-Range Wildlife Receptors

Receptor-Specific Habitat and Exposure Metric Descriptions	Estimated Acreages	Proportion of Total Habitat
Canada Lynx		
Total acreage of evergreen forest in the study area less roads, developed areas, waste piles, and floodplains	20829.74	
High-level dose-response category waste pile halo area acreage in the entire study area	287.95	
Mid-level dose-response category waste pile halo area acreage in the entire study area	410.32	
Low-level dose-response category waste pile halo area acreage in the entire study area	344.35	
High-level waste pile halo area use factor for lynx		*0.01382*
Mid-level waste pile halo area use factor for lynx		*0.01970*
Low-level waste pile halo area use factor for lynx		*0.01653*
Vegetated upland area evergreen forest use factor for lynx		*0.94995*
Coyote and Golden Eagle		
Total acreage of vegetated upland habitat in the study area less roads, developed areas, waste piles, and floodplains	60591.23	
Total acreage of floodplain habitat in the study area less roads, developed areas, and waste piles	959.75	
High-level dose-response category waste pile halo area acreage in the entire study area	287.95	
Mid-level dose-response category waste pile halo area acreage in the entire study area	410.32	
Low-level dose-response category waste pile halo area acreage in the entire study area	344.35	
High-level waste pile halo area use factor for coyote and golden eagle		*0.00468*
Mid-level waste pile halo area use factor for coyote and golden eagle		*0.00667*
Low-level waste pile halo area use factor for coyote and golden eagle		*0.00559*
Floodplain area use factor for coyote and golden eagle		*0.01584*
Vegetated upland area use factor for coyote and golden eagle		*0.96722*
Goshawk - Mineral Creek Watershed		
Total acreage of vegetated upland habitat in Mineral Creek watershed less roads, developed areas, waste piles, and floodplains	25163.14	
Total acreage of floodplain habitat in Mineral Creek watershed less roads, developed areas, and waste piles	368.38	
High-level dose-response category waste pile halo area acreage in Mineral Creek watershed	45.19	
Mid-level dose-response category waste pile halo area acreage in Mineral Creek watershed	169.86	
Low-level dose-response category waste pile halo area acreage in Mineral Creek watershed	22.59	
High-level waste pile halo area use factor for goshawk in the Mineral Creek watershed		*0.00177*
Mid-level waste pile halo area use factor for goshawk in the Mineral Creek watershed		*0.00665*
Low-level waste pile halo area use factor for goshawk in the Mineral Creek watershed		*0.00088*
Floodplain area use factor for goshawk in the Mineral Creek watershed		*0.01464*
Vegetated upland area use factor for goshawk in the Mineral Creek watershed		*0.97605*
Goshawk - Cement Creek Watershed		
Total acreage of vegetated upland habitat in Cement Creek watershed less roads, developed areas, waste piles, and floodplain	10553.32	
Total acreage of floodplain habitat in Cement Creek watershed less roads, developed areas, and waste piles	93.20	
High-level dose-response category waste pile halo area acreage in Cement Creek watershed	44.06	
Mid-level dose-response category waste pile halo area acreage in Cement Creek watershed	151.50	
Low-level dose-response category waste pile halo area acreage in Cement Creek watershed	194.67	
High-level waste pile halo area use factor for goshawk in the Cement Creek watershed		*0.00414*
Mid-level waste pile halo area use factor for goshawk in the Cement Creek watershed		*0.01423*
Low-level waste pile halo area use factor for goshawk in the Cement Creek watershed		*0.01828*
Floodplain area use factor for goshawk in the Cement Creek watershed		*0.00883*
Vegetated upland area use factor for goshawk in the Cement Creek watershed		*0.95452*
Goshawk - Animas River Watershed		
Total acreage of vegetated upland habitat in Animas River watershed less roads, developed areas, waste piles, and floodplain	24874.78	
Total acreage of floodplain habitat in Animas River watershed less roads, developed areas, and waste piles	498.17	
High-level dose-response category waste pile halo area acreage in Animas River watershed	198.70	
Mid-level dose-response category waste pile halo area acreage in Animas River watershed	88.96	
Low-level dose-response category waste pile halo area acreage in Animas River watershed	127.09	
High-level waste pile halo area use factor for goshawk in the Animas River watershed		*0.00783*
Mid-level waste pile halo area use factor for goshawk in the Animas River watershed		*0.00351*
Low-level waste pile halo area use factor for goshawk in the Animas River watershed		*0.00501*
Floodplain area use factor for goshawk in the Animas River watershed		*0.02003*
Vegetated upland area use factor for goshawk in the Animas River watershed		*0.96363*

Table 3.6 Summary of Plant and Soil Invertebrate Direct Contact Soil Exposure Units (EUs)	
EU Descriptions	**Number of EUs**
High-, mid-, and low-level DRC mine feature halo areas	3
Vegetated upland area	1
Each floodplain EU; including reference reaches	29
High-level, mid-level, low-level, and reference DRC floodplain areas	4

DRC = dose-response category

Table 3.7 Summary of Wildlife Receptor Home Range Categories and Associated Exposure Unit (EU) Descriptions		
Target Receptor Species	**Home Range Category**	**EU Descriptions (Number of EUs)**
Canada lynx Coyote Golden eagle	Very large	Entire BPMD assessment area, including upland and floodplain habitats (n=1)[a]
Moose Northern goshawk	Large	Major sub watersheds located in the BPMD assessment area; Mineral Creek, Cement Creek, and Animas River above Silverton (n=3)
American robin Cliff swallow Fringed myotis bat American beaver	Medium	Each floodplain EU located along Mineral Cr., Cement Cr., and Animas R. above Silverton; Including reference reaches (n=29)
Mountain bluebird White-tailed ptarmigan American pika Yellow-bellied marmot Northern pocket gopher	Medium	Mine site halo high-, mid-, and low-level DRCs, and vegetated upland area (n=4)[b]
Montane shrew Deer mouse	Small	Each of the four floodplain sampling area DRCs; High-level, mid-level, low-level, and reference sampling areas (n=4)

BPMD = Bonita Peak Mining District; DRC = dose-response category

a = Canada lynx EU only include spruce-fir forest habitats within the entire BPMD assessment area; Coyote and golden eagle EU include all vegetated habitats in the entire BPMD assessment area

b = An additional three EUs will be used to assess American pika and yellow-bellied marmot risk. Additional EUs will substitute halo area soil exposure with respective mine waste pile soil exposures. All other dietary exposures for these two species will be from halo area sources.

Table 3.8 Food Chain Model Parameter Values for Target Wildlife Receptors				
Target receptor	**Body Weight (kg)**	**Soil Ingestion Rate (kg DW/kg BW/day)**	**Water Ingestion Rate (L/kg BW/day)**	**Food Ingestion Rate (kg DW/kg BW/day)**
American beaver	20.3[a]	0.00085[d]	0.073[o]	0.032[s]
American pika	0.100[a]	0.00940[e]	0.125[o]	0.155[t]
American robin	0.081[b]	0.02500[f]	0.136[p]	0.156[v]
Canada lynx	11.4[b]	0.00053[f]	0.078[p]	0.070[u]
Coyote	13.25[a]	0.00073[ƨ]	0.076[ɨ]	0.028[ə]
Cliff swallow	0.023[a]	0.01510[g]	0.204[o]	0.233[v]
Deer mouse	0.021[b]	0.00180[f]	0.150[p]	0.261[u]
Fringed myotis bat	0.009[a]	--[h]	0.159[q]	0.177[w]
Golden eagle	4.80[a]	0.00078[i]	0.035[o]	0.049[x]
Montane shrew	0.015[c]	0.04060[j]	0.223[r]	0.134[y]
Moose	386[a]	0.00036[k]	0.055[o]	0.007[t]
Mountain bluebird	0.030[a]	0.02239[l]	0.189[o]	0.214[v]
Northern goshawk	1.04[a]	0.00078[i]	0.058[o]	0.082[x]
Northern pocket gopher	0.104[c]	0.00895[m]	0.124[o]	0.116[s]
White-tailed ptarmigan	0.326[a]	0.00070[n]	0.085[o]	0.047[z]
Yellow-bellied marmot	3.50[a]	0.00388[e]	0.087[o]	0.053[s]

BW = body weight; DW = dry weight

a = Species-specific adult BW reported by Tacutu *et al*. (2013)

b = Species-specific BW reported by EPA (2016a)

c = Species-specific BW reported by LANL (2015)

d = Used EPA (1994a) reported soil ingestion rate 2.4% of diet to estimate soil ingestion

e = Assumed soil ingestion would be same as woodchuck 2.0% soil in diet (on a DW basis) reported by Beyer *et al*. (1994)

f = Soil ingestion rate reported for this species by EPA (2016a) for use in Carpenter Snow Creek Mining District Site risk assessment

g = Soil ingestion rate reported for this species by EPA (2007b) for use in Standard Mine Site risk assessment

h = Assumed the same zero soil ingestion rate reported for big brown bat by EPA (2007b) for use in Standard Mine Site risk assessment

i = BW normalized soil ingestion rate for bald eagle reported by Pascoe *et al*. (1996)

j = Soil ingestion rate estimated using 10% fraction of diet used for montane shew in LANL (2015)

k = Soil ingestion rate estimated using 2.0% soil in diet (on a DW basis) reported by Beyer *et al*. (1994)

l = Estimated using American woodcock 10.4% soil in diet (on a DW basis) reported by Beyer *et al*. (1994)

m = Estimated using black-tailed prairie dog 7.7% soil in diet (on a DW basis) reported by Beyer *et al*. (1994)

n = Assumed the same soil ingestion rate reported for sage grouse by EPA (2007b) for use in Standard Mine Site risk assessment

o = Estimated using BW normalized water ingestion rate equations provided in EPA (1993)

p = Water ingestion rate reported for this species by EPA (2016a) for use in Carpenter Snow Creek Mining District Site risk assessment

q = Water ingestion rate reported for little brown myotis bat in LANL (2015)

r = Water ingestion rate reported for this species in LANL (2015)

s = Estimated using Nagy (2001) dry matter intake equation for Rodentia and Tacutu *et al*. (2013) BW

t = Estimated using Nagy (2001) dry matter intake equation for mammalian herbivores and Tacutu *et al*. (2013) BW

u = Estimated using Nagy (2001) dry matter intake equation for mesic rodents and EPA (2016a) BW

v = Estimated using Nagy (2001) dry matter intake equation for Passerines, and Tacutu *et al*. (2013) BW

w = Estimated using Nagy (2001) dry matter intake equation for bats and Tacutu *et al*. (2013) BW

x = Estimated using Nagy (2001) dry matter intake equation for carnivorous birds and Tacutu *et al*. (2013) BW

y = Estimated using Nagy (2001) dry matter intake equation for Insectivora and Tacutu *et al*. (2013) BW

z = Estimated using Nagy (2001) dry matter intake equation for Galliformes and Tacutu *et al*. (2013) BW

ƨ = Soil ingestion rate estimated using 2.8% soil in diet (on a DW basis) for red fox reported by Beyer *et al*. (1994)

ɨ = Water ingestion rate estimated using EPA (1993) allometric scaling formula for mammals and Tacutu *et al*. (2013) BW

ə = Estimated using Nagy (2001) dry matter intake equation for Carnivora and Tacutu *et al*. (2013) BW

Table 3.9 Proportions of Dietary Items Used to Estimate Contaminant of Potential Ecological Concern (COPEC) Exposures for Wildlife Receptors		
Wildlife Receptor	**Dietary Item (Percentage of Total Diet)**	**Notes and References**
Canada lynx	Small mammals (100%)	Strict carnivore that's entire diet consists of small mammals; specifically, hares and squirrels (Interagency Lynx Biology Team, 2013)
Coyote	Small mammals (87%) Ground-dwelling invertebrates (10%) Plants - grass (3%)	Mostly carnivorous. Dietary item percentages estimated from stomach contents cited in the California Wildlife Biology Exposure Factor and Toxicity Database (Cal/Ecotox, 2017; Ferrel *et al.* , 1953)
Golden eagle	Small mammals (100%)	Strict carnivore that mainly preys on small to medium-sized mammals, including hares, squirrels, prairie dogs, and marmots (Kochert *et al.* , 2002).
Moose	Plants - shrub (100%)	Herbivore commonly seen foraging in shrub/willow dominated riparian habitats with in the study area; Assumed that the entire diet consists of tender willow tips and leaves that have been shown to readily accumulate metals from BPMD habitats (Larison *et al.* , 2000)
Northern goshawk	Small mammals (100%)	Carnivore that mainly preys on ground and tree squirrels, rabbits and hares (Squires and Reynolds, 1997).
American robin	Plants (58%) - grass (19%); herb (19%); shrub (20%) Soil invertebrates (22%) Ground-dwelling invertebrates (20%)	Omnivore. Dietary proportions estimated from Vanderhoff *et al.* (2016) and EPA (1993); Most plant matter consumed consists of fruits and seeds. It is assumed that robin consume roughly equal percentages of each of the three available plant types
Cliff swallow	Flying invertebrates (100%)	Strict insectivore that preys exclusively on flying insects (Brown *et al.* , 2017)
Fringed myotis bat	Flying invertebrates (100%)	Insectivore that preys on beetles and moths (Montana Natural Heritage Program, 2019)
American beaver	Plants (100%) - shrub (80%); herb (20%)	Herbivore that primarily feeds on tree bark and willow and aspen stems when available. May also forage on leafy plants during summer months (Leege, 1968)
Mountain bluebird	Flying invertebrates (35%) Ground-dwelling invertebrates (35%) Soil invertebrates (22%) Plants - shrub (8%)	Omnivore. Proportions of dietary items estimated from Power and Lombardo (1996).
White-tailed ptarmigan	Plants (100%) - shrub (80%); herb (20%)	Herbivore that's diet primarily consists of willow buds, twigs, and leaves and flowers; leaves of forbs are often consumed by chicks (Martin *et al.* , 2015)
American pika	Plants - grass (100%)	Herbivore that feeds on grasses, forbs, and shrubs (Leung, 2014). Stores dried grass in hay piles for winter forage.
Yellow-bellied marmot	Plants (95%) - herb (60%); grass (35%) Ground-dwelling invertebrates (2.5%) Soil invertebrates (2.5%)	Herbivore. Yellow-bellied marmots are reported to occasionally consume insects (Gellhorn, 2002); Therefore, it was assumed that 5% of diet corresponded to an occasional invertebrate diet; General plant dietary composition from Washington Nature Mapping Project (2019)
Northern pocket gopher	Plants (100%) - herb (60%); grass (20%); shrub (20%)	Consumes a wide verity of plant types, but herbs and forbs most cited (Chase and Jasch, 1994)
Montane shrew	Ground-dwelling invertebrates (45%) Soil invertebrates (45%) Plants - herb (10%)	Omnivore. The proportion of montane shrew dietary items was estimated from Williams (1955).
Deer mouse	Plants (75%) - herb (40%); grass (20%); shrub (15%) Soil invertebrates (13%) Ground-dwelling invertebrates (12%)	Omnivore. The proportion of deer deer mouse dietary items was estimateded from Sullivan (1995) and EPA (1993)

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Table 3.10 Soil-to-Small Mammal Tissue Uptake Equations and Factors for Each Bird and Mammal Contaminant of Potential Ecological Concern (COPEC)		
COPEC	**Equation or Factor**	**Source**
Antimony	$C_m = 0.002 * C_s^*$	Ainsworth *et al* ., 1990a,b
Arsenic	$\ln(C_m) = 0.8188 * \ln(C_s) - 4.8471$	EPA, 2007
Cadmium	$\ln(C_m) = 0.4723 * \ln(C_s) - 1.2571$	EPA, 2007
Chromium	$\ln(C_m) = 0.7338 * \ln(C_s) - 1.4599$	EPA, 2007
Copper	$\ln(C_m) = 0.1444 * \ln(C_s) + 2.042$	EPA, 2007
Lead	$\ln(C_m) = 0.4422 * \ln(C_s) + 0.0761$	EPA, 2007
Manganese	$C_m = 0.0205 * C_s$	EPA, 2007
Mercury	$C_m = 0.0543 * C_s$	Sample *et al* ., 1998
Molybdenum	Not applicable#	--
Nickel	$\ln(C_m) = 0.4658 * \ln(C_s) - 0.2462$	EPA, 2007
Selenium	$\ln(C_m) = 0.3764 * \ln(C_s) - 0.4158$	EPA, 2007
Silver	$C_m = 0.004 * C_s$	EPA, 2007
Thallium	$C_m = 0.1124 * C_s$	Sample *et al* ., 1998
Vanadium	$C_m = 0.0123 * C_s$	EPA, 2007
Zinc	$\ln(C_m) = 0.0706 * \ln(C_s) + 4.3632$	EPA, 2007

C_m = COPEC concentration in small mammal tissue (mg/kg dry weight)

C_s = COPEC concentration in soil (mg/kg dry weight)

* = Approximate value derived from antimony concentrations in surficial soil and small mammal liver reported by Ainsworth *et al* . (1990a,b); see text for more details

= No apparent bioaccumulation of molybdenum in animal tissues; therefore, no soil to small mammal tissue uptake equations are available

A percent water content of 68% will be used when converting dry weight small mammal concentrations to wet weight (EPA, 2007a)

Table 3.11 Receptor Exposure Duration Factor Potential Summary		
Receptor	**Life History Notes**	**Seasonal Use Factor**
American beaver	Permanent resident to floodplain habitats; active year round; forages in lodges over winter	None - 100%
American pika	Permanent resident to high alpine valleys; active year round; forages in rock burrows over winter	None - 100%
American robin	Seasonal migrant to sub-alpine forests and alpine floodplains and valleys; migrates in around the beginning of April and out around late September	Six months - 50%
Canada lynx	Permanent resident; forages in sub-alpine forests throughout the entire year; highly adapted to winter conditions	None - 100%
Cliff swallow	Seasonal migrant to sub-alpine forests and alpine floodplains; migrates in around the beginning of April and out around late September	Six months - 50%
Coyote	Permanent resident; territorial; winter habitat might be concentrated to sub-alpine forests with less snow cover and more abundant food sources	None - 100%
Deer mouse	Permanent resident; usually active and forage during winter but can become torpid or physically inactive during the coldest part of the coldest winter days	None - 100%
Fringed myotis bat	Permanent resident (likely); little is known about overwintering habits of bats in the Rocky Mountains, but it is likely that they do hibernate or become torpid during the coldest winter months when food/insects are unavailable; it is also likely that some bats migrate to warmer locations in autumn and do not overwinter in the study area; either life history strategy suggests that they do not forage in BPMD on a year-round basis	Six months - 50%
Golden eagle	Seasonal resident of sub-alpine forests and alpine floodplains; although golden eagles can survive cold winter weather it is more likely that they will migrate from the BPMD to lower elevations with more resources	Six months - 50%
Montane shrew	Permanent resident that does not hibernate; shrew are active all year long	None - 100%
Moose	Can be a seasonal or permanent resident; they actively forage on floodplain vegetation throughout the year and rely heavily on willow during the winter; moose will often move tens of miles to overwintering habitat with adequate food reserves; the BERA assumes that the BPMD contains adequate overwintering habitat	None - 100%
Mountain bluebird	Seasonal migrant to sub-alpine forests and alpine floodplains and valleys; migrates in around the beginning of April and out around late September	Six months - 50%
Northern goshawk	Partial migrant; may make long winter migrations or short movements depending on food availability; the BERA assumes that the BPMD contains adequate overwintering habitat	None - 100%
Northern pocket gopher	Permanent resident; may have reduced activity during winter but does not hibernate and is generally active year round	None - 100%
White-tailed ptarmigan	Permanent resident; makes seasonal elevational movements to lower foraging grounds during winter; the BERA assumes that the BPMD contains adequate overwintering habitat	None - 100%
Yellow-bellied marmot	Permanent resident that hibernates during winter; typically hibernates from around the beginning of April and out around late September	Six months - 50%

BPMD = Bonita Peak Mining District; BERA = baseline ecological risk assessment

Table 3.12 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for Canada Lynx. EPC derivation methods are detailed in cited EPC sources. All soil and small mammal tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Antimony		Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
Entire assessment area	High DRC halo soils (mg/kg)	6.23E+00	1.23E+01	4.93E+01	6.55E+01	9.55E+00	2.00E+01	4.76E+00	5.19E+00	1.82E+02	2.65E+02	2.20E+03	2.94E+03	6.67E+03	2.17E+04	8.85E-02	1.44E-01	1.23E+01	2.92E+01	6.48E+00	1.49E+01	9.32E-01	1.26E+00	7.69E+00	1.12E+01	9.20E-01	1.36E+00	2.01E+03	5.52E+03	Table B-24
	Med DRC halo soils (mg/kg)	1.63E+00	3.29E+00	2.93E+01	3.94E+01	1.63E+00	2.35E+00	6.59E+00	7.70E+00	6.92E+01	9.76E+01	1.83E+03	3.34E+03	1.89E+03	2.39E+03	2.80E-02	1.20E-01	2.42E+00	3.52E+00	5.29E+00	5.83E+00	8.15E-01	1.16E+00	4.91E+00	8.40E+00	8.22E-01	1.20E+00	4.56E+02	9.61E+02	
	Low DRC halo soils (mg/kg)	2.62E+00	3.87E+00	4.26E+01	5.74E+01	1.61E+00	2.52E+00	4.87E+00	5.47E+00	1.50E+02	2.56E+02	7.29E+02	9.58E+02	8.36E+02	1.13E+03	8.92E-02	4.01E-01	1.72E+00	2.45E+00	3.17E+00	3.74E+00	1.47E+00	1.87E+00	2.87E+00	3.63E+00	1.71E+01	1.91E+01	3.68E+02	5.39E+02	
	Veg. upland soils (mg/kg)	5.16E-01	7.33E-01	6.56E+00	8.29E+00	5.71E-01	7.13E-01	5.94E+00	6.38E+00	2.15E+01	2.62E+01	7.10E+01	1.17E+02	1.16E+03	1.62E+03	4.11E-02	2.66E-01	7.96E-01	1.10E+00	2.68E+00	3.42E+00	9.59E-01	1.39E+00	5.60E-01	9.16E-01	7.52E-01	1.10E+00	1.20E+02	1.54E+02	
	High DRC small mammal (mg/kg)	1.25E-02	2.47E-02	1.91E-01	2.41E-01	8.26E-01	1.17E+00	7.30E-01	7.78E-01	1.63E+01	1.72E+01	3.24E+01	3.69E+01	1.37E+02	4.44E+02	4.81E-03	7.82E-03	NA	NA	1.87E+00	2.75E+00	6.43E-01	7.20E-01	3.08E-02	4.48E-02	1.03E-01	1.53E-01	1.34E+02	1.44E+02	Table C-1
	Med DRC small mammal (mg/kg)	3.27E-03	6.59E-03	1.25E-01	1.59E-01	3.58E-01	4.25E-01	9.27E-01	1.04E+00	1.42E+01	1.49E+01	2.99E+01	3.90E+01	3.87E+01	4.89E+01	1.52E-03	6.52E-03	NA	NA	1.70E+00	1.78E+00	6.11E-01	6.97E-01	1.97E-02	3.36E-02	9.24E-02	1.35E-01	1.21E+02	1.27E+02	
	Low DRC small mammal (mg/kg)	5.24E-03	7.73E-03	1.70E-01	2.16E-01	3.56E-01	4.40E-01	7.42E-01	8.08E-01	1.59E+01	1.72E+01	1.99E+01	2.25E+01	1.71E+01	2.31E+01	4.84E-03	2.18E-02	NA	NA	1.34E+00	1.45E+00	7.64E-01	8.35E-01	1.15E-02	1.45E-02	1.93E+00	2.15E+00	1.19E+02	1.22E+02	
	Veg. upland small mammal (mg/kg)	1.03E-03	1.47E-03	3.66E-02	4.44E-02	2.18E-01	2.42E-01	8.58E-01	9.04E-01	1.20E+01	1.23E+01	7.11E+00	8.88E+00	2.37E+01	3.32E+01	2.23E-03	1.44E-02	NA	NA	1.24E+00	1.39E+00	6.49E-01	7.48E-01	2.24E-03	3.66E-03	8.45E-02	1.24E-01	1.10E+02	1.12E+02	
	Surface water (mg/L)	1.65E-03	1.94E-03	3.31E-03	6.41E-03	2.98E-03	4.95E-03	3.26E-03	4.18E-03	3.53E-02	6.31E-02	1.23E-02	3.23E-02	2.06E+00	3.10E+00	NA	NA	2.50E-03	2.50E-03	4.13E-03	6.27E-03	3.42E-03	3.99E-03	1.63E-03	2.07E-03	3.60E-03	5.01E-03	9.02E-01	1.70E+00	Table B-8

CTE = central tendency exposure; RME = reasonable maximum exposure; DRC = dose-response category; NA = not available

Table 3.13 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for Coyote. EPC derivation methods are detailed in cited EPC sources. All soil, small mammal tissue, invertebrate tissue, and plant tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Antimony		Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
Entire assessment area	High DRC halo soils (mg/kg)	6.23E+00	1.23E+01	4.93E+01	6.55E+01	9.55E+00	2.00E+01	4.76E+00	5.19E+00	1.82E+02	2.65E+02	2.20E+03	2.94E+03	6.67E+03	2.17E+04	8.85E-02	1.44E-01	1.23E+01	2.92E+01	6.48E+00	1.49E+01	9.32E-01	1.26E+00	7.69E+00	1.12E+01	9.20E-01	1.36E+00	2.01E+03	5.52E+03	Table B-24
	Med DRC halo soils (mg/kg)	1.63E+00	3.29E+00	2.93E+01	3.94E+01	1.63E+00	2.35E+00	6.59E+00	7.70E+00	6.92E+01	9.76E+01	1.83E+03	3.34E+03	1.89E+03	2.39E+03	2.80E-02	1.20E-01	2.42E+00	3.52E+00	5.29E+00	5.83E+00	8.15E-01	1.16E+00	4.91E+00	8.40E+00	8.22E-01	1.20E+00	4.56E+02	9.61E+02	
	Low DRC halo soils (mg/kg)	2.62E+00	3.87E+00	4.26E+01	5.74E+01	1.61E+00	2.52E+00	4.87E+00	5.47E+00	1.50E+02	2.56E+02	7.29E+02	9.58E+02	8.36E+02	1.13E+03	8.92E-02	4.01E-01	1.72E+00	2.45E+00	3.17E+00	3.74E+00	1.47E+00	1.87E+00	2.87E+00	3.63E+00	1.71E+01	1.91E+01	3.68E+02	5.39E+02	
	Floodplain soils (mg/kg)	3.06E+00	7.14E+00	3.53E+01	6.72E+01	4.29E+00	1.69E+01	5.03E+00	6.51E+00	1.74E+02	4.76E+02	1.06E+03	2.90E+03	3.34E+03	6.67E+03	5.02E+02	1.59E+03	4.37E+00	9.01E+00	5.50E+00	8.22E+00	1.57E+00	2.16E+00	3.14E+00	8.72E+00	6.03E-01	8.06E-01	7.84E+02	2.04E+03	Table B-23
	Veg. upland soils (mg/kg)	6.57E-01	1.02E+00	1.49E+01	1.99E+01	1.07E+00	1.88E+00	5.92E+00	6.23E+00	2.92E+01	3.41E+01	1.74E+02	2.25E+02	1.36E+03	1.96E+03	3.33E-02	1.11E-01	3.26E+00	6.12E+00	3.37E+00	4.82E+00	9.30E-01	1.29E+00	1.10E+00	2.23E+00	7.48E-01	9.76E-01	1.90E+02	2.37E+02	Table B-24
	High DRC small mammal (mg/kg)	1.25E-02	2.47E-02	1.91E-01	2.41E-01	8.26E-01	1.17E+00	7.30E-01	7.78E-01	1.63E+01	1.72E+01	3.24E+01	3.69E+01	1.37E+02	4.44E+02	4.81E-03	7.82E-03	NA	NA	1.87E+00	2.75E+00	6.43E-01	7.20E-01	3.08E-02	4.48E-02	1.03E-01	1.53E-01	1.34E+02	1.44E+02	Table C-2
	Med DRC small mammal (mg/kg)	3.27E-03	6.59E-03	1.25E-01	1.59E-01	3.58E-01	4.25E-01	9.27E-01	1.04E+00	1.42E+01	1.49E+01	2.99E+01	3.90E+01	3.87E+01	4.89E+01	1.52E-03	6.52E-03	NA	NA	1.70E+00	1.78E+00	6.11E-01	6.97E-01	1.97E-02	3.36E-02	9.24E-02	1.35E-01	1.21E+02	1.27E+02	
	Low DRC small mammal (mg/kg)	5.24E-03	7.73E-03	1.70E-01	2.16E-01	3.56E-01	4.40E-01	7.42E-01	8.08E-01	1.59E+01	1.72E+01	1.99E+01	2.25E+01	1.71E+01	2.31E+01	4.84E-03	2.18E-02	NA	NA	1.34E+00	1.45E+00	7.64E-01	8.35E-01	1.15E-02	1.45E-02	1.93E+00	2.15E+00	1.19E+02	1.22E+02	
	Floodplain small mammal (mg/kg)	6.12E-03	1.43E-02	1.45E-01	2.46E-01	5.66E-01	1.08E+00	7.60E-01	9.18E-01	1.62E+01	1.88E+01	2.35E+01	3.66E+01	6.84E+01	1.37E+02	2.73E+01	8.62E+01	NA	NA	1.73E+00	2.09E+00	7.83E-01	8.82E-01	1.25E-02	3.49E-02	6.77E-02	9.06E-02	1.26E+02	1.34E+02	
	Veg. upland small mammal (mg/kg)	1.31E-03	2.05E-03	7.15E-02	9.09E-02	2.94E-01	3.83E-01	8.56E-01	8.89E-01	1.25E+01	1.28E+01	1.06E+01	1.18E+01	2.78E+01	4.03E+01	1.81E-03	6.03E-03	NA	NA	1.38E+00	1.63E+00	6.42E-01	7.26E-01	4.40E-03	8.92E-03	8.41E-02	1.10E-01	1.14E+02	1.15E+02	
	High DRC ground invertebrate (mg/kg)	1.26E+00	3.56E+00	1.50E+00	2.53E+00	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	4.42E+02	9.12E+02	Table B-27
	Med DRC ground invertebrate (mg/kg)	1.26E+00	3.56E+00	1.13E+00	1.88E+00	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	2.10E+02	2.92E+02	
	Low DRC ground invertebrate (mg/kg)	1.26E+00	3.56E+00	7.80E-01	1.28E+00	2.32E+00	4.50E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	8.86E+00	1.83E+01	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	8.94E-01	2.69E+00	1.07E+00	4.51E+00	2.97E-01	6.09E-01	2.10E+02	2.92E+02	
	Floodplain ground invertebrate (mg/kg)	1.26E+00	3.56E+00	1.14E+00	1.88E+00	3.78E+00	7.78E+00	3.45E+00	6.15E+00	4.33E+01	8.46E+01	3.53E+01	6.79E+01	4.06E+02	1.22E+03	NA	NA	NA	NA	1.04E+00	2.27E+00	8.67E-01	2.51E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	2.87E+02	4.90E+02	
	Veg. upland ground invertebrate (mg/kg)	1.26E+00	3.56E+00	7.80E-01	1.15E+00	2.15E+00	3.16E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	4.75E+00	8.00E+00	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	7.36E-01	1.63E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	2.10E+02	2.55E+02	
	High DRC grass (mg/kg)	1.74E-01	2.36E-01	3.04E-01	9.64E-01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	3.62E-01	8.47E-01	1.73E+02	2.20E+02	Table B-31
	Med DRC grass (mg/kg)	1.40E-01	1.67E-01	3.04E-01	9.64E-01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	2.78E-01	3.30E-01	9.71E+01	1.40E+02	
	Low DRC grass (mg/kg)	1.40E-01	1.67E-01	1.81E-01	3.47E-01	3.08E-01	6.61E-01	1.98E+00	2.53E+00	6.09E+00	7.68E+00	1.29E+00	3.03E+00	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.06E+00	1.57E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	3.37E-01	7.83E-01	7.95E+01	1.34E+02	
	Floodplain grass (mg/kg)	1.51E-01	1.90E-01	2.64E-01	7.62E-01	4.01E-01	7.40E-01	2.21E+00	2.49E+00	8.74E+00	1.16E+01	1.39E+01	5.19E+01	3.16E+02	4.98E+02	1.25E-01	1.25E-01	NA	NA	1.21E+00	1.86E+00	3.18E-01	4.46E-01	1.97E-01	3.67E-01	3.06E-01	5.01E-01	1.13E+02	1.54E+02	
	Veg. upland grass (mg/kg)	1.40E-01	1.67E-01	1.81E-01	3.47E-01	1.34E-01	3.42E-01	1.98E+00	2.31E+00	5.33E+00	6.25E+00	1.29E+00	3.03E+00	2.04E+02	2.82E+02	1.24E-01	1.25E-01	NA	NA	1.06E+00	1.57E+00	2.96E-01	3.79E-01	1.46E-01	1.83E-01	2.78E-01	3.30E-01	5.84E+01	7.48E+01	
	Surface water (mg/L)	1.65E-03	1.94E-03	3.31E-03	6.41E-03	2.98E-03	4.95E-03	3.26E-03	4.18E-03	3.53E-02	6.31E-02	1.23E-02	3.23E-02	2.06E+00	3.10E+00	NA	NA	2.50E-03	2.50E-03	4.13E-03	6.27E-03	3.42E-03	3.99E-03	1.63E-03	2.07E-03	3.60E-03	5.01E-03	9.02E-01	1.70E+00	Table B-8

CTE = central tendency exposure; RME = reasonable maximum exposure; DRC = dose-response category; NA = not available

Table 3.14 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for Golden Eagle. EPC derivation methods are detailed in cited EPC sources. All soil and small mammal tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Arsenic		Barium		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Vanadium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
Entire assessment area	High DRC halo soils (mg/kg)	4.93E+01	6.55E+01	1.52E+02	2.07E+02	9.55E+00	2.00E+01	4.76E+00	5.19E+00	1.82E+02	2.65E+02	2.20E+03	2.94E+03	6.67E+03	2.17E+04	8.85E-02	1.44E-01	1.23E+01	2.92E+01	6.48E+00	1.49E+01	9.32E-01	1.26E+00	7.69E+00	1.12E+01	1.28E+01	1.40E+01	2.01E+03	5.52E+03	Table B-24
	Med DRC halo soils (mg/kg)	2.93E+01	3.94E+01	1.38E+02	2.12E+02	1.63E+00	2.35E+00	6.59E+00	7.70E+00	6.92E+01	9.76E+01	1.83E+03	3.34E+03	1.89E+03	2.39E+03	2.80E-02	1.20E-01	2.42E+00	3.52E+00	5.29E+00	5.83E+00	8.15E-01	1.16E+00	4.91E+00	8.40E+00	1.99E+01	2.24E+01	4.56E+02	9.61E+02	
	Low DRC halo soils (mg/kg)	4.26E+01	5.74E+01	1.72E+02	1.95E+02	1.61E+00	2.52E+00	4.87E+00	5.47E+00	1.50E+02	2.56E+02	7.29E+02	9.58E+02	8.36E+02	1.13E+03	8.92E-02	4.01E-01	1.72E+00	2.45E+00	3.17E+00	3.74E+00	1.47E+00	1.87E+00	2.87E+00	3.63E+00	1.71E+01	1.91E+01	3.68E+02	5.39E+02	
	Floodplain soils (mg/kg)	3.53E+01	6.72E+01	9.19E+01	1.26E+02	4.29E+00	1.69E+01	5.03E+00	6.51E+00	1.74E+02	4.76E+02	1.06E+03	2.90E+03	3.34E+03	6.67E+03	5.02E+02	1.59E+03	4.37E+00	9.01E+00	5.50E+00	8.22E+00	1.57E+00	2.16E+00	3.14E+00	8.72E+00	2.04E+01	2.68E+01	7.84E+02	2.04E+03	Table B-23
	Veg. upland soils (mg/kg)	1.49E+01	1.99E+01	1.64E+02	1.81E+02	1.07E+00	1.88E+00	5.92E+00	6.23E+00	2.92E+01	3.41E+01	1.74E+02	2.25E+02	1.36E+03	1.96E+03	3.33E-02	1.11E-01	3.26E+00	6.12E+00	3.37E+00	4.82E+00	9.30E-01	1.29E+00	1.10E+00	2.23E+00	1.80E+01	1.93E+01	1.90E+02	2.37E+02	Table B-24
	High DRC small mammal (mg/kg)	1.91E-01	2.41E-01	1.14E+00	1.55E+00	8.26E-01	1.17E+00	7.30E-01	7.78E-01	1.63E+01	1.72E+01	3.24E+01	3.69E+01	1.37E+02	4.44E+02	4.81E-03	7.82E-03	NA	NA	1.87E+00	2.75E+00	6.43E-01	7.20E-01	3.08E-02	4.48E-02	1.57E-01	1.72E-01	1.34E+02	1.44E+02	Table C-2
	Med DRC small mammal (mg/kg)	1.25E-01	1.59E-01	1.04E+00	1.59E+00	3.58E-01	4.25E-01	9.27E-01	1.04E+00	1.42E+01	1.49E+01	2.99E+01	3.90E+01	3.87E+01	4.89E+01	1.52E-03	6.52E-03	NA	NA	1.70E+00	1.78E+00	6.11E-01	6.97E-01	1.97E-02	3.36E-02	2.45E-01	2.76E-01	1.21E+02	1.27E+02	
	Low DRC small mammal (mg/kg)	1.70E-01	2.16E-01	1.29E+00	1.46E+00	3.56E-01	4.40E-01	7.42E-01	8.08E-01	1.59E+01	1.72E+01	1.99E+01	2.25E+01	1.71E+01	2.31E+01	4.84E-03	2.18E-02	NA	NA	1.34E+00	1.45E+00	7.64E-01	8.35E-01	1.15E-02	1.45E-02	2.11E-01	2.35E-01	1.19E+02	1.22E+02	
	Floodplain small mammal (mg/kg)	1.45E-01	2.46E-01	6.89E-01	9.48E-01	5.66E-01	1.08E+00	7.60E-01	9.18E-01	1.62E+01	1.88E+01	2.35E+01	3.66E+01	6.84E+01	1.37E+02	2.73E+01	8.62E+01	NA	NA	1.73E+00	2.09E+00	7.83E-01	8.82E-01	1.25E-02	3.49E-02	2.51E-01	3.30E-01	1.26E+02	1.34E+02	
	Veg. upland small mammal (mg/kg)	7.15E-02	9.09E-02	1.23E+00	1.36E+00	2.94E-01	3.83E-01	8.56E-01	8.89E-01	1.25E+01	1.28E+01	1.06E+01	1.18E+01	2.78E+01	4.03E+01	1.81E-03	6.03E-03	NA	NA	1.38E+00	1.63E+00	6.42E-01	7.26E-01	4.40E-03	8.92E-03	2.22E-01	2.38E-01	1.14E+02	1.15E+02	
	Surface water (mg/L)	3.31E-03	6.41E-03	2.20E-02	2.33E-02	2.98E-03	4.95E-03	3.26E-03	4.18E-03	3.53E-02	6.31E-02	1.23E-02	3.23E-02	2.06E+00	3.10E+00	NA	NA	2.50E-03	2.50E-03	4.13E-03	6.27E-03	3.42E-03	3.99E-03	1.63E-03	2.07E-03	2.76E-03	3.22E-03	9.02E-01	1.70E+00	Table B-8

CTE = central tendency exposure; RME = reasonable maximum exposure; DRC = dose-response category; NA = not available

Table 3.15 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for Moose. EPC derivation methods are detailed in cited EPC sources. All soil and plant tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Antimony		Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
Mineral Creek	Floodplain soils (mg/kg)	1.73E+00	2.83E+00	4.60E+01	1.26E+02	3.82E+00	2.67E+01	4.39E+00	5.61E+00	1.51E+02	7.10E+02	3.58E+02	9.38E+02	2.06E+03	6.23E+03	1.61E+03	5.08E+03	2.75E+00	4.05E+00	4.98E+00	8.48E+00	1.44E+00	2.11E+00	1.01E+00	2.72E+00	6.72E-01	8.85E-01	4.85E+02	1.33E+03	Table B-23
	Shrub (mg/kg)	1.95E-01	5.01E-01	1.63E-01	3.27E-01	4.09E+00	6.79E+00	2.47E+00	3.00E+00	6.40E+00	8.32E+00	2.11E+00	4.95E+00	3.28E+02	9.06E+02	1.25E-01	1.27E-01	NA	NA	9.65E-01	2.07E+00	3.15E-01	6.51E-01	1.63E-01	3.27E-01	3.15E-01	6.51E-01	2.85E+02	3.85E+02	Table B-33
	Surface water (mg/L)	1.64E-03	1.98E-03	4.06E-03	1.01E-02	2.51E-03	6.45E-03	3.22E-03	4.33E-03	3.95E-02	9.17E-02	1.60E-02	5.54E-02	7.27E-01	1.46E+00	NA	NA	2.50E-03	2.50E-03	4.48E-03	8.20E-03	3.46E-03	4.19E-03	1.62E-03	2.16E-03	3.39E-03	4.83E-03	7.10E-01	2.15E+00	Table B-9
Cement Creek	Floodplain soils (mg/kg)	2.66E+00	3.82E+00	3.42E+01	4.11E+01	2.06E+00	4.76E+00	4.69E+00	5.63E+00	1.01E+02	1.44E+02	5.84E+02	8.56E+02	1.82E+03	2.95E+03	6.37E-02	1.09E-01	3.82E+00	4.97E+00	3.53E+00	5.01E+00	2.12E+00	2.54E+00	1.27E+00	1.97E+00	2.21E+01	2.54E+01	5.28E+02	1.08E+03	Table B-23
	Shrub (mg/kg)	2.04E-01	5.47E-01	1.75E-01	3.93E-01	5.70E+00	9.52E+00	2.55E+00	3.17E+00	7.30E+00	1.01E+01	2.58E+00	5.88E+00	3.70E+02	9.06E+02	1.25E-01	1.27E-01	NA	NA	1.14E+00	2.62E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	3.98E+02	5.31E+02	Table B-33
	Surface water (mg/L)	1.69E-03	1.91E-03	4.17E-03	6.51E-03	4.82E-03	6.29E-03	3.42E-03	4.43E-03	6.92E-02	1.02E-01	2.08E-02	3.28E-02	3.24E+00	5.43E+00	NA	NA	2.50E-03	2.50E-03	6.54E-03	9.56E-03	3.60E-03	3.97E-03	1.72E-03	2.17E-03	3.96E-03	5.52E-03	1.80E+00	2.94E+00	Table B-9
Animas River	Floodplain soils (mg/kg)	4.02E+00	1.10E+01	2.91E+01	4.06E+01	5.37E+00	1.52E+01	5.54E+00	7.38E+00	2.13E+02	4.50E+02	1.66E+03	4.82E+03	4.66E+03	8.25E+03	2.27E-01	5.79E-01	5.56E+00	1.35E+01	6.52E+00	9.19E+00	1.47E+00	2.06E+00	5.10E+00	1.48E+01	5.67E-01	8.06E-01	1.06E+03	2.81E+03	Table B-23
	Shrub (mg/kg)	2.12E-01	5.89E-01	1.66E-01	3.46E-01	4.81E+00	8.01E+00	2.50E+00	3.07E+00	7.36E+00	1.04E+01	2.58E+00	6.58E+00	3.92E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.03E+00	2.30E+00	3.22E-01	6.89E-01	1.66E-01	3.46E-01	3.22E-01	6.89E-01	3.56E+02	4.56E+02	Table B-33
	Surface water (mg/L)	1.64E-03	1.92E-03	2.44E-03	3.67E-03	2.64E-03	3.35E-03	3.22E-03	3.98E-03	1.95E-02	2.76E-02	6.42E-03	1.52E-02	2.60E+00	3.43E+00	NA	NA	2.50E-03	2.50E-03	2.98E-03	3.64E-03	3.33E-03	3.85E-03	1.60E-03	1.97E-03	3.62E-03	4.95E-03	7.07E-01	9.15E-01	Table B-9

CTE = central tendency exposure; RME = reasonable maximum exposure; NA = not available

Table 3.16 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for Northern Goshawk. EPC derivation methods are detailed in cited EPC sources. All soil and small mammal tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Arsenic		Barium		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Vanadium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
Mineral Creek	High DRC halo soils (mg/kg)	4.93E+01	6.55E+01	1.52E+02	2.07E+02	9.55E+00	2.00E+01	4.76E+00	5.19E+00	1.82E+02	2.65E+02	2.20E+03	2.94E+03	6.67E+03	2.17E+04	8.85E-02	1.44E-01	1.23E+01	2.92E+01	6.48E+00	1.49E+01	9.32E-01	1.26E+00	7.69E+00	1.12E+01	1.28E+01	1.40E+01	2.01E+03	5.52E+03	Table B-24
	Med DRC halo soils (mg/kg)	2.93E+01	3.94E+01	1.38E+02	2.12E+02	1.63E+00	2.35E+00	6.59E+00	7.70E+00	6.92E+01	9.76E+01	1.83E+03	3.34E+03	1.89E+03	2.39E+03	2.80E-02	1.20E-01	2.42E+00	3.52E+00	5.29E+00	5.83E+00	8.15E-01	1.16E+00	4.91E+00	8.40E+00	1.99E+01	2.24E+01	4.56E+02	9.61E+02	
	Low DRC halo soils (mg/kg)	4.26E+01	5.74E+01	1.72E+02	1.95E+02	1.61E+00	2.52E+00	4.87E+00	5.47E+00	1.50E+02	2.56E+02	7.29E+02	9.58E+02	8.36E+02	1.13E+03	8.92E-02	4.01E-01	1.72E+00	2.45E+00	3.17E+00	3.74E+00	1.47E+00	1.87E+00	2.87E+00	3.63E+00	1.71E+01	1.91E+01	3.68E+02	5.39E+02	
	Floodplain soils (mg/kg)	4.60E+01	1.26E+02	9.47E+01	1.27E+02	3.82E+00	2.67E+01	4.39E+00	5.61E+00	1.51E+02	7.10E+02	3.58E+02	9.38E+02	2.06E+03	6.23E+03	1.61E+03	5.08E+03	2.75E+00	4.05E+00	4.98E+00	8.48E+00	1.44E+00	2.11E+00	1.01E+00	2.72E+00	2.14E+01	3.19E+01	4.85E+02	1.33E+03	Table B-23
	Veg. upland soils (mg/kg)	1.49E+01	1.99E+01	1.64E+02	1.81E+02	1.07E+00	1.88E+00	5.92E+00	6.23E+00	2.92E+01	3.41E+01	1.74E+02	2.25E+02	1.36E+03	1.96E+03	3.33E-02	1.11E-01	3.26E+00	6.12E+00	3.37E+00	4.82E+00	9.30E-01	1.29E+00	1.10E+00	2.23E+00	1.80E+01	1.93E+01	1.90E+02	2.37E+02	Table B-24
	High DRC small mammal (mg/kg)	1.91E-01	2.41E-01	1.14E+00	1.55E+00	8.26E-01	1.17E+00	7.30E-01	7.78E-01	1.63E+01	1.72E+01	3.24E+01	3.69E+01	1.37E+02	4.44E+02	4.81E-03	7.82E-03	NA	NA	1.87E+00	2.75E+00	6.43E-01	7.20E-01	3.08E-02	4.48E-02	1.57E-01	1.72E-01	1.34E+02	1.44E+02	Table C-7
	Med DRC small mammal (mg/kg)	1.25E-01	1.59E-01	1.04E+00	1.59E+00	3.58E-01	4.25E-01	9.27E-01	1.04E+00	1.42E+01	1.49E+01	2.99E+01	3.90E+01	3.87E+01	4.89E+01	1.52E-03	6.52E-03	NA	NA	1.70E+00	1.78E+00	6.11E-01	6.97E-01	1.97E-02	3.36E-02	2.45E-01	2.76E-01	1.21E+02	1.27E+02	
	Low DRC small mammal (mg/kg)	1.70E-01	2.16E-01	1.29E+00	1.46E+00	3.56E-01	4.40E-01	7.42E-01	8.08E-01	1.59E+01	1.72E+01	1.99E+01	2.25E+01	1.71E+01	2.31E+01	4.84E-03	2.18E-02	NA	NA	1.34E+00	1.45E+00	7.64E-01	8.35E-01	1.15E-02	1.45E-02	2.11E-01	2.35E-01	1.19E+02	1.22E+02	
	Floodplain small mammal (mg/kg)	1.80E-01	4.11E-01	7.10E-01	9.52E-01	5.36E-01	1.34E+00	6.88E-01	8.23E-01	1.59E+01	1.99E+01	1.45E+01	2.22E+01	4.22E+01	1.28E+02	8.73E+01	2.76E+02	NA	NA	1.65E+00	2.12E+00	7.56E-01	8.75E-01	4.05E-03	1.09E-02	2.63E-01	3.93E-01	1.21E+02	1.30E+02	
	Veg. upland small mammal (mg/kg)	7.15E-02	9.09E-02	1.23E+00	1.36E+00	2.94E-01	3.83E-01	8.56E-01	8.89E-01	1.25E+01	1.28E+01	1.06E+01	1.18E+01	2.78E+01	4.03E+01	1.81E-03	6.03E-03	NA	NA	1.38E+00	1.63E+00	6.42E-01	7.26E-01	4.40E-03	8.92E-03	2.22E-01	2.38E-01	1.14E+02	1.15E+02	
	Surface water (mg/L)	4.06E-03	1.01E-02	2.43E-02	2.65E-02	2.51E-03	6.45E-03	3.22E-03	4.33E-03	3.95E-02	9.17E-02	1.60E-02	5.54E-02	7.27E-01	1.46E+00	NA	NA	2.50E-03	2.50E-03	4.48E-03	8.20E-03	3.46E-03	4.19E-03	1.62E-03	2.16E-03	2.33E-03	3.24E-03	7.10E-01	2.15E+00	Table B-9
Cement Creek	High DRC halo soils (mg/kg)	4.93E+01	6.55E+01	1.52E+02	2.07E+02	9.55E+00	2.00E+01	4.76E+00	5.19E+00	1.82E+02	2.65E+02	2.20E+03	2.94E+03	6.67E+03	2.17E+04	8.85E-02	1.44E-01	1.23E+01	2.92E+01	6.48E+00	1.49E+01	9.32E-01	1.26E+00	7.69E+00	1.12E+01	1.28E+01	1.40E+01	2.01E+03	5.52E+03	Table B-24
	Med DRC halo soils (mg/kg)	2.93E+01	3.94E+01	1.38E+02	2.12E+02	1.63E+00	2.35E+00	6.59E+00	7.70E+00	6.92E+01	9.76E+01	1.83E+03	3.34E+03	1.89E+03	2.39E+03	2.80E-02	1.20E-01	2.42E+00	3.52E+00	5.29E+00	5.83E+00	8.15E-01	1.16E+00	4.91E+00	8.40E+00	1.99E+01	2.24E+01	4.56E+02	9.61E+02	
	Low DRC halo soils (mg/kg)	4.26E+01	5.74E+01	1.72E+02	1.95E+02	1.61E+00	2.52E+00	4.87E+00	5.47E+00	1.50E+02	2.56E+02	7.29E+02	9.58E+02	8.36E+02	1.13E+03	8.92E-02	4.01E-01	1.72E+00	2.45E+00	3.17E+00	3.74E+00	1.47E+00	1.87E+00	2.87E+00	3.63E+00	1.71E+01	1.91E+01	3.68E+02	5.39E+02	
	Floodplain soils (mg/kg)	3.42E+01	4.11E+01	8.49E+01	1.15E+02	2.06E+00	4.76E+00	4.69E+00	5.63E+00	1.01E+02	1.44E+02	5.84E+02	8.56E+02	1.82E+03	2.95E+03	6.37E-02	1.09E-01	3.82E+00	4.97E+00	3.53E+00	5.01E+00	2.12E+00	2.54E+00	1.27E+00	1.97E+00	2.21E+01	2.54E+01	5.28E+02	1.08E+03	Table B-23
	Veg. upland soils (mg/kg)	1.49E+01	1.99E+01	1.64E+02	1.81E+02	1.07E+00	1.88E+00	5.92E+00	6.23E+00	2.92E+01	3.41E+01	1.74E+02	2.25E+02	1.36E+03	1.96E+03	3.33E-02	1.11E-01	3.26E+00	6.12E+00	3.37E+00	4.82E+00	9.30E-01	1.29E+00	1.10E+00	2.23E+00	1.80E+01	1.93E+01	1.90E+02	2.37E+02	Table B-24
	High DRC small mammal (mg/kg)	1.91E-01	2.41E-01	1.14E+00	1.55E+00	8.26E-01	1.17E+00	7.30E-01	7.78E-01	1.63E+01	1.72E+01	3.24E+01	3.69E+01	1.37E+02	4.44E+02	4.81E-03	7.82E-03	NA	NA	1.87E+00	2.75E+00	6.43E-01	7.20E-01	3.08E-02	4.48E-02	1.57E-01	1.72E-01	1.34E+02	1.44E+02	Table C-7
	Med DRC small mammal (mg/kg)	1.25E-01	1.59E-01	1.04E+00	1.59E+00	3.58E-01	4.25E-01	9.27E-01	1.04E+00	1.42E+01	1.49E+01	2.99E+01	3.90E+01	3.87E+01	4.89E+01	1.52E-03	6.52E-03	NA	NA	1.70E+00	1.78E+00	6.11E-01	6.97E-01	1.97E-02	3.36E-02	2.45E-01	2.76E-01	1.21E+02	1.27E+02	
	Low DRC small mammal (mg/kg)	1.70E-01	2.16E-01	1.29E+00	1.46E+00	3.56E-01	4.40E-01	7.42E-01	8.08E-01	1.59E+01	1.72E+01	1.99E+01	2.25E+01	1.71E+01	2.31E+01	4.84E-03	2.18E-02	NA	NA	1.34E+00	1.45E+00	7.64E-01	8.35E-01	1.15E-02	1.45E-02	2.11E-01	2.35E-01	1.19E+02	1.22E+02	
	Floodplain small mammal (mg/kg)	1.42E-01	1.65E-01	6.36E-01	8.65E-01	4.00E-01	5.94E-01	7.22E-01	8.25E-01	1.50E+01	1.58E+01	1.80E+01	2.14E+01	3.73E+01	6.06E+01	3.46E-03	5.90E-03	NA	NA	1.41E+00	1.66E+00	8.75E-01	9.38E-01	5.08E-03	7.88E-03	2.71E-01	3.12E-01	1.22E+02	1.29E+02	
	Veg. upland small mammal (mg/kg)	7.15E-02	9.09E-02	1.23E+00	1.36E+00	2.94E-01	3.83E-01	8.56E-01	8.89E-01	1.25E+01	1.28E+01	1.06E+01	1.18E+01	2.78E+01	4.03E+01	1.81E-03	6.03E-03	NA	NA	1.38E+00	1.63E+00	6.42E-01	7.26E-01	4.40E-03	8.92E-03	2.22E-01	2.38E-01	1.14E+02	1.15E+02	
	Surface water (mg/L)	4.17E-03	6.51E-03	1.39E-02	1.61E-02	4.82E-03	6.29E-03	3.42E-03	4.43E-03	6.92E-02	1.02E-01	2.08E-02	3.28E-02	3.24E+00	5.43E+00	NA	NA	2.50E-03	2.50E-03	6.54E-03	9.56E-03	3.60E-03	3.97E-03	1.72E-03	2.17E-03	5.50E-03	6.30E-03	1.80E+00	2.94E+00	Table B-9
Animas River	High DRC halo soils (mg/kg)	4.93E+01	6.55E+01	1.52E+02	2.07E+02	9.55E+00	2.00E+01	4.76E+00	5.19E+00	1.82E+02	2.65E+02	2.20E+03	2.94E+03	6.67E+03	2.17E+04	8.85E-02	1.44E-01	1.23E+01	2.92E+01	6.48E+00	1.49E+01	9.32E-01	1.26E+00	7.69E+00	1.12E+01	1.28E+01	1.40E+01	2.01E+03	5.52E+03	Table B-24
	Med DRC halo soils (mg/kg)	2.93E+01	3.94E+01	1.38E+02	2.12E+02	1.63E+00	2.35E+00	6.59E+00	7.70E+00	6.92E+01	9.76E+01	1.83E+03	3.34E+03	1.89E+03	2.39E+03	2.80E-02	1.20E-01	2.42E+00	3.52E+00	5.29E+00	5.83E+00	8.15E-01	1.16E+00	4.91E+00	8.40E+00	1.99E+01	2.24E+01	4.56E+02	9.61E+02	
	Low DRC halo soils (mg/kg)	4.26E+01	5.74E+01	1.72E+02	1.95E+02	1.61E+00	2.52E+00	4.87E+00	5.47E+00	1.50E+02	2.56E+02	7.29E+02	9.58E+02	8.36E+02	1.13E+03	8.92E-02	4.01E-01	1.72E+00	2.45E+00	3.17E+00	3.74E+00	1.47E+00	1.87E+00	2.87E+00	3.63E+00	1.71E+01	1.91E+01	3.68E+02	5.39E+02	
	Floodplain soils (mg/kg)	2.91E+01	4.06E+01	9.27E+01	1.30E+02	5.37E+00	1.52E+01	5.54E+00	7.38E+00	2.13E+02	4.50E+02	1.66E+03	4.82E+03	4.66E+03	8.25E+03	2.27E-01	5.79E-01	5.56E+00	1.35E+01	6.52E+00	9.19E+00	1.47E+00	2.06E+00	5.10E+00	1.48E+01	1.91E+01	2.42E+01	1.06E+03	2.81E+03	Table B-23
	Veg. upland soils (mg/kg)	1.49E+01	1.99E+01	1.64E+02	1.81E+02	1.07E+00	1.88E+00	5.92E+00	6.23E+00	2.92E+01	3.41E+01	1.74E+02	2.25E+02	1.36E+03	1.96E+03	3.33E-02	1.11E-01	3.26E+00	6.12E+00	3.37E+00	4.82E+00	9.30E-01	1.29E+00	1.10E+00	2.23E+00	1.80E+01	1.93E+01	1.90E+02	2.37E+02	Table B-24
	High DRC small mammal (mg/kg)	1.91E-01	2.41E-01	1.14E+00	1.55E+00	8.26E-01	1.17E+00	7.30E-01	7.78E-01	1.63E+01	1.72E+01	3.24E+01	3.69E+01	1.37E+02	4.44E+02	4.81E-03	7.82E-03	NA	NA	1.87E+00	2.75E+00	6.43E-01	7.20E-01	3.08E-02	4.48E-02	1.57E-01	1.72E-01	1.34E+02	1.44E+02	Table C-7
	Med DRC small mammal (mg/kg)	1.25E-01	1.59E-01	1.04E+00	1.59E+00	3.58E-01	4.25E-01	9.27E-01	1.04E+00	1.42E+01	1.49E+01	2.99E+01	3.90E+01	3.87E+01	4.89E+01	1.52E-03	6.52E-03	NA	NA	1.70E+00	1.78E+00	6.11E-01	6.97E-01	1.97E-02	3.36E-02	2.45E-01	2.76E-01	1.21E+02	1.27E+02	
	Low DRC small mammal (mg/kg)	1.70E-01	2.16E-01	1.29E+00	1.46E+00	3.56E-01	4.40E-01	7.42E-01	8.08E-01	1.59E+01	1.72E+01	1.99E+01	2.25E+01	1.71E+01	2.31E+01	4.84E-03	2.18E-02	NA	NA	1.34E+00	1.45E+00	7.64E-01	8.35E-01	1.15E-02	1.45E-02	2.11E-01	2.35E-01	1.19E+02	1.22E+02	
	Floodplain small mammal (mg/kg)	1.24E-01	1.63E-01	6.95E-01	9.75E-01	6.29E-01	1.03E+00	8.15E-01	1.01E+00	1.67E+01	1.86E+01	2.86E+01	4.59E+01	9.54E+01	1.69E+02	1.23E-02	3.14E-02	NA	NA	1.87E+00	2.20E+00	7.62E-01	8.66E-01	2.04E-02	5.92E-02	2.35E-01	2.98E-01	1.28E+02	1.38E+02	
	Veg. upland small mammal (mg/kg)	7.15E-02	9.09E-02	1.23E+00	1.36E+00	2.94E-01	3.83E-01	8.56E-01	8.89E-01	1.25E+01	1.28E+01	1.06E+01	1.18E+01	2.78E+01	4.03E+01	1.81E-03	6.03E-03	NA	NA	1.38E+00	1.63E+00	6.42E-01	7.26E-01	4.40E-03	8.92E-03	2.22E-01	2.38E-01	1.14E+02	1.15E+02	
	Surface water (mg/L)	2.44E-03	3.67E-03	2.33E-02	2.37E-02	2.64E-03	3.35E-03	3.22E-03	3.98E-03	1.95E-02	2.76E-02	6.42E-03	1.52E-02	2.60E+00	3.43E+00	NA	NA	2.50E-03	2.50E-03	2.98E-03	3.64E-03	3.33E-03	3.85E-03	1.60E-03	1.97E-03	2.06E-03	2.06E-03	7.07E-01	9.15E-01	Table B-9

CTE = central tendency exposure; RME = reasonable maximum exposure; DRC = dose-response category; NA = not available

Table 3.17 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for American Robin. EPC derivation methods are detailed in cited EPC sources. All soil, invertebrate tissue, and plant tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Arsenic		Barium		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Vanadium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
EU-01	Floodplain soils (mg/kg)	3.14E+01	4.53E+01	1.20E+02	1.67E+02	1.63E+00	3.01E+00	5.14E+00	7.21E+00	1.38E+02	2.57E+02	3.67E+02	6.04E+02	1.15E+03	1.90E+03	1.53E-01	2.88E-01	3.20E+00	4.25E+00	4.16E+00	5.50E+00	1.87E+00	3.00E+00	7.95E-01	1.49E+00	3.42E+01	7.61E+01	4.86E+02	7.10E+02	Table B-15
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.13E+00	1.88E+00	2.51E+01	3.18E+01	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	5.01E-01	5.05E-01	9.71E+01	1.40E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	7.07E-01	1.05E+00	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.14E+02	5.84E+02	
	Surface water (mg/L)	3.54E-03	5.53E-03	2.37E-02	2.56E-02	5.47E-04	6.19E-04	3.60E-03	4.58E-03	9.05E-03	1.39E-02	8.40E-03	1.98E-02	2.78E-01	3.45E-01	NA	NA	2.50E-03	2.50E-03	2.37E-03	3.02E-03	3.88E-03	4.26E-03	1.78E-03	2.30E-03	1.83E-03	1.99E-03	1.47E-01	1.63E-01	Table B-7
EU-02	Floodplain soils (mg/kg)	2.32E+01	3.79E+01	1.35E+02	1.85E+02	7.58E-01	1.32E+00	3.46E+00	4.48E+00	4.38E+01	6.56E+01	2.31E+02	3.74E+02	5.59E+02	7.97E+02	8.10E-02	1.56E-01	3.36E+00	4.95E+00	2.02E+00	2.50E+00	1.41E+00	2.23E+00	4.95E-01	7.95E-01	1.93E+01	2.39E+01	3.37E+02	5.15E+02	Table B-15
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	1.26E+01	1.26E+01	3.75E+00	5.92E+00	1.76E+01	1.76E+01	1.15E+02	1.15E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	5.40E-01	6.48E-01	1.53E+01	1.53E+01	3.56E+02	4.63E+02	Table B-27
	Ground invertebrate (mg/kg)	7.80E-01	1.28E+00	2.51E+01	3.16E+01	2.32E+00	4.50E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	8.86E+00	1.83E+01	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.82E+00	2.47E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	1.81E-01	3.47E-01	2.53E+01	3.07E+01	3.08E-01	6.61E-01	1.98E+00	2.53E+00	6.09E+00	7.68E+00	1.29E+00	3.03E+00	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.06E+00	1.57E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	4.99E-01	5.05E-01	7.95E+01	1.34E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.07E+01	4.88E+01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	7.07E-01	1.05E+00	6.52E+01	8.55E+01	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	1.06E+02	1.38E+02	
	Surface water (mg/L)	3.31E-03	5.00E-03	2.03E-02	2.11E-02	1.09E-03	1.28E-03	3.59E-03	4.42E-03	1.48E-02	1.62E-02	9.62E-03	1.30E-02	5.86E-01	7.51E-01	NA	NA	2.50E-03	2.50E-03	3.14E-03	5.13E-03	3.77E-03	5.08E-03	1.80E-03	2.21E-03	2.60E-03	2.83E-03	2.56E-01	2.94E-01	Table B-7
EU-03	Floodplain soils (mg/kg)	2.52E+01	4.21E+01	5.61E+01	8.24E+01	1.26E+00	2.30E+00	4.50E+00	7.12E+00	4.73E+01	7.73E+01	3.32E+02	6.17E+02	1.92E+03	8.12E+03	5.15E-02	8.82E-02	1.79E+00	2.38E+00	3.06E+00	4.44E+00	1.07E+00	1.50E+00	5.66E-01	8.23E-01	1.81E+01	2.27E+01	1.17E+02	1.90E+02	Table B-15
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.13E+00	1.88E+00	2.51E+01	3.18E+01	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	5.01E-01	5.05E-01	9.71E+01	1.40E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	7.07E-01	1.05E+00	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.14E+02	5.84E+02	
	Surface water (mg/L)	3.70E-03	6.58E-03	2.62E-02	2.65E-02	9.79E-04	1.16E-03	3.52E-03	4.54E-03	1.29E-02	1.65E-02	2.26E-02	4.50E-02	2.10E-01	2.50E-01	NA	NA	2.50E-03	2.50E-03	1.90E-03	2.09E-03	3.78E-03	4.16E-03	1.77E-03	2.27E-03	1.32E-03	1.33E-03	3.06E-01	3.35E-01	Table B-7
EU-3.5	Floodplain soils (mg/kg)	3.78E+01	7.89E+01	6.49E+01	7.89E+01	8.26E-01	1.14E+00	4.61E+00	7.15E+00	3.87E+01	6.88E+01	6.06E+02	2.74E+03	1.16E+03	1.93E+03	2.10E-01	8.29E-01	1.62E+00	2.38E+00	5.35E+00	7.98E+00	1.19E+00	1.60E+00	1.66E+00	6.40E+00	1.87E+01	2.32E+01	2.03E+02	3.69E+02	Table B-15
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.13E+00	1.88E+00	2.51E+01	3.18E+01	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	5.01E-01	5.05E-01	9.71E+01	1.40E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	7.07E-01	1.05E+00	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.14E+02	5.84E+02	
	Surface water (mg/L)	2.33E-03	5.65E-03	2.70E-02	2.70E-02	5.10E-03	1.01E-02	2.63E-03	4.06E-03	4.69E-02	7.39E-02	5.62E-03	1.12E-02	2.16E+00	3.37E+00	NA	NA	NA	NA	1.16E-02	1.81E-02	2.98E-03	3.99E-03	1.38E-03	2.00E-03	2.00E-03	2.00E-03	1.17E+00	2.31E+00	Table B-7
EU-04	Floodplain soils (mg/kg)	1.12E+02	4.31E+02	7.53E+01	1.09E+02	1.28E+00	1.84E+00	4.59E+00	5.35E+00	1.61E+02	3.95E+02	3.77E+02	1.23E+03	9.72E+02	1.20E+03	1.39E-01	3.59E-01	1.09E+00	1.44E+00	5.17E+00	6.66E+00	1.04E+00	1.31E+00	5.86E-01	1.10E+00	1.71E+01	2.08E+01	3.33E+02	8.51E+02	Table B-15
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	5.00E-01	5.05E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.28E-02	4.54E-02	3.73E-02	4.70E-02	5.95E-03	1.35E-02	3.59E-03	4.39E-03	2.10E-01	4.84E-01	6.38E-02	1.94E-01	2.08E+00	4.82E+00	NA	NA	NA	NA	1.09E-02	2.53E-02	3.78E-03	4.07E-03	1.80E-03	2.19E-03	1.59E-03	2.66E-03	2.58E+00	5.70E+00	Table B-7
EU-05	Floodplain soils (mg/kg)	1.92E+01	2.72E+01	9.77E+01	1.12E+02	1.62E+01	1.42E+02	5.50E+00	6.55E+00	3.46E+02	2.84E+03	4.66E+02	1.28E+03	5.75E+03	2.34E+04	4.18E-02	8.94E-02	1.53E+00	2.14E+00	9.57E+00	2.19E+01	1.40E+00	2.09E+00	2.49E+00	8.46E+00	2.31E+01	3.13E+01	1.43E+03	5.28E+03	Table B-15
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.13E+00	1.88E+00	2.51E+01	3.18E+01	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	5.01E-01	5.05E-01	9.71E+01	1.40E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	7.07E-01	1.05E+00	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.14E+02	5.84E+02	
	Surface water (mg/L)	2.55E-03	4.51E-03	2.80E-02	3.04E-02	6.12E-03	2.19E-02	3.07E-03	4.44E-03	2.72E-02	1.05E-01	2.14E-02	1.37E-01	6.44E-01	2.16E+00	NA	NA	NA	NA	3.87E-03	5.72E-03	3.41E-03	3.89E-03	1.55E-03	2.22E-03	1.41E-03	1.68E-03	1.33E+00	7.30E+00	Table B-7
EU-06	Floodplain soils (mg/kg)	1.21E+01	1.50E+01	7.78E+01	8.96E+01	7.93E-01	1.18E+00	2.76E+00	3.30E+00	1.53E+01	1.79E+01	1.14E+02	1.32E+02	1.66E+03	2.49E+03	3.88E-02	4.88E-02	5.51E+00	8.52E+00	3.33E+00	4.74E+00	1.88E+00	2.29E+00	5.17E-01	6.22E-01	2.34E+01	2.82E+01	1.04E+02	1.24E+02	Table B-15
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	1.26E+01	1.26E+01	3.75E+00	5.92E+00	1.76E+01	1.76E+01	1.15E+02	1.15E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	5.40E-01	6.48E-01	1.53E+01	1.53E+01	3.56E+02	4.63E+02	Table B-27
	Ground invertebrate (mg/kg)	7.80E-01	1.28E+00	2.51E+01	3.16E+01	2.32E+00	4.50E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	8.86E+00	1.83E+01	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.82E+00	2.47E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	1.81E-01	3.47E-01	2.53E+01	3.07E+01	3.08E-01	6.61E-01	1.98E+00	2.53E+00	6.09E+00	7.68E+00	1.29E+00	3.03E+00	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.06E+00	1.57E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	4.99E-01	5.05E-01	7.95E+01	1.34E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.07E+01	4.88E+01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	7.07E-01	1.05E+00	6.52E+01	8.55E+01	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	1.06E+02	1.38E+02	
	Surface water (mg/L)	2.38E-03	3.83E-03	1.73E-02	1.90E-02	1.10E-03	1.82E-03	2.90E-03	3.96E-03	4.87E-03	1.01E-02	8.66E-04	1.98E-03	9.24E-01	1.14E+00	NA	NA	NA	NA	5.28E-03	1.09E-02	3.17E-03	4.13E-03	1.45E-03	1.98E-03	4.11E-03	9.76E-03	1.36E-01	1.69E-01	Table B-7
EU-R1 Mill Creek	Floodplain soils (mg/kg)	8.45E+01	2.29E+02	1.13E+02	1.71E+02	1.33E+00	2.10E+00	4.10E+00	4.60E+00	2.21E+02	6.12E+02	4.07E+02	9.68E+02	1.42E+03	2.68E+03	1.10E-01	2.90E-01	3.60E+00	5.80E+00	4.37E+00	6.80E+00	1.43E+00	2.50E+00	6.20E-01	1.20E+00	1.51E+01	2.22E+01	3.01E+02	4.40E+02	Table B-15
	Soil invertebrate (mg/kg)	7.53E+00	9.32E+00	5.65E+01	7.75E+01	6.76E+00	9.14E+00	3.75E+00	5.92E+00	1.19E+01	1.68E+01	6.96E+00	1.13E+01	3.39E+02	5.41E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	4.49E-01	6.48E-01	5.58E+00	9.45E+00	2.78E+02	4.63E+02	Table B-27
	Ground invertebrate (mg/kg)	7.80E-01	1.15E+00	2.51E+01	3.16E+01	2.15E+00	3.16E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	4.75E+00	8.00E+00	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	7.36E-01	1.63E+00	1.07E+00	4.51E+00	1.82E+00	2.49E+00	2.10E+02	2.55E+02	
	Grass (mg/kg)	1.81E-01	3.47E-01	2.53E+01	3.07E+01	1.34E-01	3.42E-01	1.98E+00	2.31E+00	5.33E+00	6.25E+00	1.29E+00	3.03E+00	2.04E+02	2.82E+02	1.24E-01	1.25E-01	NA	NA	1.06E+00	1.57E+00	2.96E-01	3.79E-01	1.46E-01	1.83E-01	4.99E-01	5.00E-01	5.84E+01	7.48E+01	
	Herb (mg/kg)	1.25E-01	1.26E-01	4.07E+01	4.88E+01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	5.54E-01	6.51E-01	5.19E+01	7.89E+01	Table B-31
	Shrub (mg/kg)	1.25E-01	1.26E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	2.72E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	5.31E-01	9.72E-01	2.50E-01	2.51E-01	1.25E-01	1.26E-01	5.00E-01	5.02E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.75E-03	3.62E-03	2.41E-02	2.41E-02	2.75E-04	4.12E-04	2.69E-03	4.15E-03	1.44E-03	2.04E-03	9.29E-04	1.49E-03	3.89E-02	7.72E-02	NA	NA	NA	NA	1.29E-03	2.11E-03	2.97E-03	4.07E-03	1.34E-03	2.08E-03	1.32E-03	1.32E-03	3.14E-02	3.95E-02	Table B-7
EU-20	Floodplain soils (mg/kg)	4.28E+01	5.05E+01	8.22E+01	1.03E+02	1.42E+00	1.86E+00	4.69E+00	5.76E+00	8.11E+01	9.65E+01	5.87E+02	7.66E+02	6.51E+02	7.62E+02	7.58E-02	1.43E-01	3.86E+00	5.38E+00	2.87E+00	3.44E+00	2.24E+00	2.61E+00	1.45E+00	2.61E+00	2.30E+01	2.63E+01	4.78E+02	5.99E+02	Table B-16
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.13E+00	1.88E+00	2.51E+01	3.18E+01	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	5.01E-01	5.05E-01	9.71E+01	1.40E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	7.07E-01	1.05E+00	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.14E+02	5.84E+02	
	Surface water (mg/L)	5.11E-03	5.73E-03	1.16E-02	1.22E-02	3.40E-03	3.84E-03	3.73E-03	4.79E-03	5.92E-02	8.65E-02	2.07E-02	2.83E-02	3.51E+00	4.48E+00	NA	NA	2.50E-03	2.50E-03	7.11E-03	8.86E-03	3.93E-03	4.28E-03	1.87E-03	2.31E-03	4.33E-03	5.37E-03	1.55E+00	1.89E+00	Table B-7
EU-21	Floodplain soils (mg/kg)	3.57E+01	4.28E+01	1.75E+02	2.76E+02	6.05E-01	1.57E+00	3.04E+00	3.52E+00	2.83E+01	3.68E+01	3.38E+02	4.12E+02	2.23E+02	3.16E+02	6.97E-02	9.22E-02	1.69E+00	2.11E+00	1.56E+00	2.02E+00	2.00E+00	2.38E+00	1.15E+00	1.70E+00	1.63E+01	1.85E+01	1.52E+02	3.84E+02	Table B-16
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.13E+00	1.88E+00	2.51E+01	3.18E+01	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	5.01E-01	5.05E-01	9.71E+01	1.40E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	7.07E-01	1.05E+00	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.14E+02	5.84E+02	
	Surface water (mg/L)	5.71E-03	1.66E-02	8.15E-03	8.15E-03	2.42E-03	4.00E-03	2.57E-03	2.83E-03	7.95E-02	1.43E-01	5.06E-02	9.09E-02	5.16E-01	6.63E-01	NA	NA	NA	NA	7.21E-03	1.13E-02	2.63E-03	2.85E-03	1.29E-03	1.41E-03	2.34E-02	2.34E-02	6.31E-01	1.10E+00	Table B-7
EU-22	Floodplain soils (mg/kg)	2.47E+01	3.38E+01	4.06E+01	5.21E+01	1.60E+00	2.53E+00	5.43E+00	6.35E+00	9.74E+01	1.37E+02	8.64E+02	1.73E+03	9.50E+02	1.39E+03	5.70E-02	1.03E-01	4.77E+00	5.91E+00	3.38E+00	4.54E+00	2.37E+00	2.99E+00	1.09E+00	1.33E+00	2.74E+01	3.12E+01	9.86E+02	3.27E+03	Table B-16
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	5.00E-01	5.05E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	3.14E-03	4.81E-03	1.74E-02	2.23E-02	8.78E-03	1.07E-02	3.53E-03	4.74E-03	1.09E-01	1.46E-01	2.19E-02	3.26E-02	6.07E+00	8.10E+00	NA	NA	2.50E-03	2.50E-03	6.66E-03	9.32E-03	3.72E-03	4.17E-03	1.80E-03	2.32E-03	2.14E-03	2.98E-03	3.61E+00	4.49E+00	Table B-7
EU-23	Floodplain soils (mg/kg)	1.70E+01	2.03E+01	7.07E+01	9.84E+01	1.13E+00	3.63E+00	4.39E+00	5.25E+00	6.55E+01	1.57E+02	2.11E+02	3.61E+02	8.12E+02	1.80E+03	3.22E-02	4.34E-02	4.38E+00	5.38E+00	4.62E+00	9.10E+00	1.88E+00	2.40E+00	8.20E-01	1.08E+00	2.32E+01	2.69E+01	2.33E+02	5.82E+02	Table B-16
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	1.26E+01	1.26E+01	3.75E+00	5.92E+00	1.76E+01	1.76E+01	1.15E+02	1.15E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	5.40E-01	6.48E-01	1.53E+01	1.53E+01	3.56E+02	4.63E+02	Table B-27
	Ground invertebrate (mg/kg)	7.80E-01	1.28E+00	2.51E+01	3.16E+01	2.32E+00	4.50E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	8.86E+00	1.83E+01	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.82E+00	2.47E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	1.81E-01	3.47E-01	2.53E+01	3.07E+01	3.08E-01	6.61E-01	1.98E+00	2.53E+00	6.09E+00	7.68E+00	1.29E+00	3.03E+00	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.06E+00	1.57E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	4.99E-01	5.05E-01	7.95E+01	1.34E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.07E+01	4.88E+01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	7.07E-01	1.05E+00	6.52E+01	8.55E+01	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	1.06E+02	1.38E+02	
	Surface water (mg/L)	3.05E-03	4.87E-03	1.43E-02	1.63E-02	2.60E-03	6.14E-03	3.54E-03	4.68E-03	2.80E-02	6.49E-02	7.23E-03	1.99E-02	3.07E+00	1.31E+01	NA	NA	NA	NA	5.03E-03	1.23E-02	3.75E-03	4.23E-03	1.79E-03	2.34E-03	1.41E-03	1.45E-03	1.44E+00	6.74E+00	Table B-7
EU-24	Floodplain soils (mg/kg)	3.33E+01	3.90E+01	7.92E+01	1.03E+02	6.31E+00	1.88E+01	5.51E+00	6.49E+00	2.48E+02	3.59E+02	8.07E+02	1.00E+03	8.16E+03	1.39E+04	5.89E-02	8.62E-02	3.93E+00	4.79E+00	6.19E+00	8.78E+00	1.81E+00	2.16E+00	1.43E+00	1.79E+00	1.76E+01	2.08E+01	7.53E+02	1.17E+03	Table B-16
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	5.00E-01	5.05E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	2.31E-03	3.91E-03	2.11E-02	2.73E-02	8.62E-03	1.06E-02	2.97E-03	4.15E-03	8.46E-02	1.03E-01	8.26E-03	1.14E-02	1.88E+00	2.49E+00	NA	NA	NA	NA	5.62E-03	8.01E-03	3.21E-03	3.57E-03	1.50E-03	2.06E-03	1.76E-03	3.13E-03	1.92E+00	2.47E+00	Table B-7
EU-07	Floodplain soils (mg/kg)	2.82E+01	6.45E+01	5.33E+01	8.28E+01	1.70E+01	9.43E+01	5.22E+00	7.11E+00	6.66E+02	2.51E+03	8.79E+03	4.42E+04	1.20E+03	1.62E+03	1.22E+00	6.00E+00	2.66E+01	1.18E+02	5.17E+00	7.61E+00	2.80E+00	4.78E+00	2.54E+01	9.69E+01	1.71E+01	2.20E+01	3.08E+03	1.73E+04	Table B-17
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	5.00E-01	5.05E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	2.51E-03	4.67E-03	2.05E-02	2.09E-02	6.52E-04	7.74E-04	3.32E-03	4.45E-03	6.36E-03	9.43E-03	5.82E-03	1.68E-02	3.26E-01	4.55E-01	NA	NA	2.50E-03	2.50E-03	1.66E-03	2.03E-03	3.47E-03	4.11E-03	1.66E-03	2.22E-03	2.55E-03	2.55E-03	2.42E-01	3.32E-01	Table B-7
EU-08	Floodplain soils (mg/kg)	1.28E+01	1.82E+01	6.60E+01	1.02E+02	1.84E+00	2.32E+00	3.89E+00	7.10E+00	1.00E+02	2.65E+02	7.97E+02	1.22E+03	1.58E+03	2.08E+03	4.10E-02	6.74E-02	4.43E+00	7.10E+00	3.54E+00	4.64E+00	7.92E-01	1.29E+00	1.44E+00	2.13E+00	1.62E+01	2.50E+01	3.84E+02	4.89E+02	Table B-17
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.13E+00	1.88E+00	2.51E+01	3.18E+01	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	5.01E-01	5.05E-01	9.71E+01	1.40E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	7.07E-01	1.05E+00	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.14E+02	5.84E+02	
	Surface water (mg/L)	2.47E-03	4.02E-03	4.52E-02	4.52E-02	3.53E-04	4.30E-04	3.24E-03	4.12E-03	2.21E-03	3.79E-03	4.60E-03	2.55E-02	1.96E-02	4.75E-02	NA	NA	2.50E-03	2.50E-03	1.59E-03	2.07E-03	3.35E-03	4.12E-03	1.62E-03	2.06E-03	2.56E-03	2.56E-03	2.19E-02	2.95E-02	Table B-7
EU-09	Floodplain soils (mg/kg)	2.13E+01	2.61E+01	8.98E+01	1.02E+02	6.84E+00	9.47E+00	3.63E+00	4.24E+00	4.47E+02	5.73E+02	3.69E+03	5.17E+03	8.87E+03	1.27E+04	2.13E-01	3.17E-01	4.08E+00	6.06E+00	4.27E+00	5.03E+00	1.13E+00	1.30E+00	1.11E+01	1.57E+01	1.61E+01	1.86E+01	1.18E+03	1.64E+03	Table B-17
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	5.00E-01	5.05E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	2.35E-03	4.06E-03	1.77E-02	1.87E-02	1.17E-03	1.75E-03	3.12E-03	4.20E-03	1.20E-02	1.98E-02	3.88E-03	5.58E-03	6.19E-01	8.48E-01	NA	NA	2.50E-03	2.50E-03	1.69E-03	2.08E-03	3.29E-03	3.92E-03	1.56E-03	2.10E-03	2.53E-03	2.54E-03	4.15E-01	5.65E-01	Table B-7
EU-10	Floodplain soils (mg/kg)	4.08E+01	4.33E+01	8.34E+01	9.19E+01	1.30E+01	1.44E+01	5.29E+00	5.74E+00	8.54E+02	1.00E+03	5.25E+03	6.38E+03	2.43E+04	3.64E+04	2.04E-01	2.57E-01	1.11E+01	1.81E+01	5.66E+00	6.59E+00	1.04E+00	1.20E+00	1.88E+01	2.44E+01	1.49E+01	1.62E+01	2.22E+03	2.55E+03	Table B-17
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	5.00E-01	5.05E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	2.20E-03	4.22E-03	1.63E-02	1.68E-02	2.19E-03	2.92E-03	3.02E-03	3.81E-03	3.24E-02	4.68E-02	5.86E-03	8.27E-03	1.22E+00	1.41E+00	NA	NA	2.50E-03	2.50E-03	1.85E-03	2.25E-03	3.20E-03	3.85E-03	1.48E-03	1.91E-03	2.53E-03	2.53E-03	6.56E-01	8.27E-01	Table B-7
EU-11	Floodplain soils (mg/kg)	2.45E+01	2.45E+01	7.23E+01	7.23E+01	6.40E-01	6.40E-01	8.00E+00	8.00E+00	7.45E+01	7.45E+01	1.64E+02	1.64E+02	1.25E+03	1.25E+03	9.60E-03	9.60E-03	5.40E+00	5.40E+00	6.10E+00	6.10E+00	2.50E+00	2.50E+00	4.25E-01	4.25E-01	2.74E+01	2.74E+01	1.24E+02	1.24E+02	Table B-17
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	1.26E+01	1.26E+01	3.75E+00	5.92E+00	1.76E+01	1.76E+01	1.15E+02	1.15E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	5.40E-01	6.48E-01	1.53E+01	1.53E+01	3.56E+02	4.63E+02	Table B-27
	Ground invertebrate (mg/kg)	7.80E-01	1.28E+00	2.51E+01	3.16E+01	2.32E+00	4.50E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	8.86E+00	1.83E+01	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.82E+00	2.47E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	1.81E-01	3.47E-01	2.53E+01	3.07E+01	3.08E-01	6.61E-01	1.98E+00	2.53E+00	6.09E+00	7.68E+00	1.29E+00	3.03E+00	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.06E+00	1.57E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	4.99E-01	5.05E-01	7.95E+01	1.34E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.07E+01	4.88E+01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	7.07E-01	1.05E+00	6.52E+01	8.55E+01	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	1.06E+02	1.38E+02	
	Surface water (mg/L)	3.03E-03	4.06E-03	1.48E-02	1.48E-02	4.06E-04	4.38E-04	3.56E-03	4.38E-03	7.26E-03	1.21E-02	6.04E-04	8.33E-04	9.57E-02	1.70E-01	NA	NA	NA	NA	2.04E-03	2.26E-03	3.75E-03	4.38E-03	1.78E-03	2.19E-03	1.31E-03	1.31E-03	4.53E-02	6.94E-02	Table B-7
EU-12	Floodplain soils (mg/kg)	2.27E+01	2.81E+01	8.80E+01	1.28E+02	6.10E+00	9.85E+00	7.16E+00	7.92E+00	2.16E+02	3.20E+02	6.96E+02	9.93E+02	6.07E+03	8.85E+03	1.01E-01	1.53E-01	3.51E+00	5.05E+00	9.36E+00	1.08E+01	2.20E+00	2.89E+00	1.74E+00	2.50E+00	3.02E+01	3.47E+01	1.38E+03	3.43E+03	Table B-17
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	5.00E-01	5.05E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	2.96E-03	4.06E-03	1.45E-02	1.64E-02	2.15E-03	4.06E-03	3.59E-03	3.92E-03	1.22E-02	2.02E-02	2.20E-03	4.56E-03	3.48E-01	8.06E-01	NA	NA	NA	NA	1.99E-03	2.64E-03	3.66E-03	3.96E-03	1.79E-03	1.96E-03	1.30E-03	1.30E-03	8.54E-01	1.66E+00	Table B-7
EU-13	Floodplain soils (mg/kg)	3.12E+01	3.86E+01	1.27E+02	1.40E+02	1.25E+01	1.48E+01	1.72E+01	2.70E+01	4.08E+02	4.85E+02	2.65E+03	4.39E+03	8.20E+03	1.11E+04	9.86E-01	1.90E+00	7.05E+00	7.40E+00	3.77E+01	6.37E+01	2.40E+00	3.20E+00	3.68E+00	5.95E+00	2.74E+01	2.97E+01	3.28E+03	3.77E+03	Table B-17
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	5.00E-01	5.05E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	2.69E-03	4.06E-03	2.22E-02	2.22E-02	1.19E-03	1.55E-03	3.46E-03	4.38E-03	2.54E-02	3.06E-02	2.03E-03	3.57E-03	2.73E-01	3.25E-01	NA	NA	2.50E-03	2.50E-03	1.73E-03	2.19E-03	3.46E-03	4.38E-03	1.73E-03	2.19E-03	5.00E-03	5.00E-03	3.74E-01	4.68E-01	Table B-7
EU-14	Floodplain soils (mg/kg)	5.70E+01	8.31E+01	7.35E+01	1.34E+02	6.66E+00	9.95E+00	5.60E+00	6.94E+00	2.23E+02	3.47E+02	2.77E+03	1.07E+04	3.98E+03	1.02E+04	1.95E-01	3.62E-01	5.86E+00	7.40E+00	5.09E+00	6.41E+00	1.72E+00	2.38E+00	5.93E+00	2.67E+01	1.51E+01	2.17E+01	1.87E+03	3.37E+03	Table B-18
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	5.00E-01	5.05E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	2.53E-03	4.58E-03	1.77E-02	1.87E-02	4.16E-03	4.90E-03	3.14E-03	4.72E-03	5.40E-02	8.00E-02	1.21E-02	2.49E-02	3.74E+00	6.25E+00	NA	NA	2.50E-03	2.50E-03	3.06E-03	4.01E-03	3.38E-03	4.15E-03	1.55E-03	2.28E-03	2.54E-03	2.55E-03	1.25E+00	1.50E+00	Table B-7
EU-15	Floodplain soils (mg/kg)	5.95E+01	1.43E+02	1.23E+02	2.80E+02	3.60E+01	2.16E+02	5.22E+00	6.02E+00	5.87E+02	2.80E+03	1.67E+03	6.00E+03	1.36E+04	4.98E+04	6.97E-01	1.39E+00	2.99E+01	5.91E+01	1.18E+01	4.18E+01	2.25E+00	3.72E+00	3.32E+00	8.82E+00	1.80E+01	2.22E+01	5.09E+03	3.02E+04	Table B-18
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	5.00E-01	5.05E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	2.70E-03	5.00E-03	2.14E-02	2.14E-02	8.11E-03	9.96E-03	3.28E-03	4.76E-03	3.30E-02	4.22E-02	2.35E-02	4.00E-02	1.36E+01	1.58E+01	NA	NA	NA	NA	8.28E-03	1.07E-02	3.69E-03	4.45E-03	1.64E-03	2.38E-03	3.13E-03	3.13E-03	2.76E+00	3.38E+00	Table B-7
EU-16	Floodplain soils (mg/kg)	3.31E+01	5.19E+01	1.34E+02	1.69E+02	6.06E+00	9.53E+00	5.62E+00	6.88E+00	2.89E+02	4.97E+02	1.74E+03	3.16E+03	1.09E+04	1.96E+04	3.62E-01	7.71E-01	5.23E+00	7.80E+00	5.62E+00	6.50E+00	2.24E+00	3.40E+00	3.91E+00	5.20E+00	1.70E+01	2.14E+01	1.13E+03	1.60E+03	Table B-18
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	5.00E-01	5.05E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	3.06E-03	4.06E-03	2.13E-02	2.13E-02	3.19E-03	3.65E-03	3.66E-03	4.38E-03	2.65E-02	3.34E-02	2.58E-02	4.69E-02	1.82E+00	2.27E+00	NA	NA	NA	NA	3.55E-03	4.06E-03	3.75E-03	4.23E-03	1.83E-03	2.19E-03	1.30E-03	1.30E-03	1.29E+00	1.51E+00	Table B-7
EU-17	Floodplain soils (mg/kg)	2.88E+01	3.14E+01	4.87E+01	5.75E+01	1.27E+00	1.60E+00	6.16E+00	6.78E+00	7.95E+01	1.56E+02	1.36E+02	1.62E+02	4.14E+03	7.02E+03	4.50E-02	6.30E-02	4.55E+00	4.70E+00	5.84E+00	7.40E+00	1.38E+00	1.90E+00	6.70E-01	1.24E+00	2.75E+01	3.25E+01	2.77E+02	4.07E+02	Table B-18
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	1.26E+01	1.26E+01	3.75E+00	5.92E+00	1.76E+01	1.76E+01	1.15E+02	1.15E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	5.40E-01	6.48E-01	1.53E+01	1.53E+01	3.56E+02	4.63E+02	Table B-27
	Ground invertebrate (mg/kg)	7.80E-01	1.28E+00	2.51E+01	3.16E+01	2.32E+00	4.50E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	8.86E+00	1.83E+01	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.82E+00	2.47E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	1.81E-01	3.47E-01	2.53E+01	3.07E+01	3.08E-01	6.61E-01	1.98E+00	2.53E+00	6.09E+00	7.68E+00	1.29E+00	3.03E+00	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.06E+00	1.57E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	4.99E-01	5.05E-01	7.95E+01	1.34E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.07E+01	4.88E+01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	7.07E-01	1.05E+00	6.52E+01	8.55E+01	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	1.06E+02	1.38E+02	
	Surface water (mg/L)	2.87E-03	4.06E-03	2.12E-02	2.12E-02	8.73E-03	1.09E-02	3.68E-03	4.20E-03	3.15E-02	3.64E-02	5.76E-03	1.71E-02	1.99E+01	2.51E+01	NA	NA	NA	NA	9.96E-03	1.25E-02	3.60E-03	3.99E-03	1.80E-03	2.00E-03	1.30E-03	1.30E-03	2.60E+00	3.30E+00	Table B-7
EU-18	Floodplain soils (mg/kg)	3.18E+01	3.49E+01	5.71E+01	9.89E+01	1.53E+00	2.00E+00	7.10E+00	1.20E+01	2.29E+01	2.86E+01	1.94E+02	2.76E+02	2.01E+03	2.66E+03	3.53E-02	4.60E-02	4.53E+00	4.70E+00	4.10E+00	5.50E+00	1.20E+00	1.60E+00	5.50E-01	6.50E-01	1.55E+01	1.90E+01	2.11E+02	2.70E+02	Table B-18
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.13E+00	1.88E+00	2.51E+01	3.18E+01	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	2.10E+02	2.92E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	5.01E-01	5.05E-01	9.71E+01	1.40E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	7.07E-01	1.05E+00	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.14E+02	5.84E+02	
	Surface water (mg/L)	2.66E-03	4.78E-03	2.55E-02	2.74E-02	5.27E-03	6.67E-03	3.30E-03	4.64E-03	3.19E-02	7.67E-02	1.05E-02	1.54E-02	1.12E+00	1.42E+00	NA	NA	NA	NA	3.00E-03	3.52E-03	3.53E-03	4.27E-03	1.65E-03	2.32E-03	1.30E-03	1.30E-03	9.52E-01	1.13E+00	Table B-7
EU-19	Floodplain soils (mg/kg)	5.99E+01	7.94E+01	7.04E+01	7.84E+01	3.80E+00	1.00E+01	4.01E+00	4.73E+00	8.33E+01	1.98E+02	5.21E+02	8.80E+02	3.31E+03	7.52E+03	5.65E-02	7.58E-02	1.31E+01	2.02E+01	4.05E+00	5.12E+00	1.43E+00	1.91E+00	1.46E+00	2.25E+00	1.25E+01	1.47E+01	2.80E+02	4.41E+02	Table B-18
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Grass (mg/kg)	3.04E-01	9.64E-01	2.53E+01	4.53E+01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	5.00E-01	5.05E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	3.51E-03	4.06E-03	2.62E-02	2.62E-02	1.38E-02	1.74E-02	3.99E-03	4.16E-03	7.28E-02	8.16E-02	1.16E-02	1.40E-02	4.08E+00	4.66E+00	NA	NA	NA	NA	9.33E-03	1.06E-02	4.01E-03	4.17E-03	2.00E-03	2.08E-03	3.13E-03	3.13E-03	2.02E+00	2.61E+00	Table B-7
EU-R2 Maggie Gulch	Floodplain soils (mg/kg)	1.03E+01	1.19E+01	1.81E+02	2.53E+02	8.42E-01	1.18E+00	3.74E+00	5.31E+00	2.75E+01	3.71E+01	6.67E+01	1.25E+02	1.40E+03	1.60E+03	7.67E-02	1.94E-01	1.85E+00	2.00E+00	5.16E+00	5.61E+00	7.33E-01	1.11E+00	4.97E-01	6.78E-01	1.83E+01	2.53E+01	1.52E+02	2.03E+02	Table B-17
	Soil invertebrate (mg/kg)	7.53E+00	9.32E+00	5.65E+01	7.75E+01	6.76E+00	9.14E+00	3.75E+00	5.92E+00	1.19E+01	1.68E+01	6.96E+00	1.13E+01	3.39E+02	5.41E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	4.49E-01	6.48E-01	5.58E+00	9.45E+00	2.78E+02	4.63E+02	Table B-27
	Ground invertebrate (mg/kg)	7.80E-01	1.15E+00	2.51E+01	3.16E+01	2.15E+00	3.16E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	4.75E+00	8.00E+00	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	7.36E-01	1.63E+00	1.07E+00	4.51E+00	1.82E+00	2.49E+00	2.10E+02	2.55E+02	
	Grass (mg/kg)	1.81E-01	3.47E-01	2.53E+01	3.07E+01	1.34E-01	3.42E-01	1.98E+00	2.31E+00	5.33E+00	6.25E+00	1.29E+00	3.03E+00	2.04E+02	2.82E+02	1.24E-01	1.25E-01	NA	NA	1.06E+00	1.57E+00	2.96E-01	3.79E-01	1.46E-01	1.83E-01	4.99E-01	5.00E-01	5.84E+01	7.48E+01	
	Herb (mg/kg)	1.25E-01	1.26E-01	4.07E+01	4.88E+01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	5.54E-01	6.51E-01	5.19E+01	7.89E+01	Table B-31
	Shrub (mg/kg)	1.25E-01	1.26E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	2.72E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	5.31E-01	9.72E-01	2.50E-01	2.51E-01	1.25E-01	1.26E-01	5.00E-01	5.02E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.25E-03	1.25E-03	0.00E+00	0.00E+00	2.50E-04	2.50E-04	2.50E-03	2.50E-03	1.25E-03	1.25E-03	3.16E-04	3.16E-04	1.30E-02	1.30E-02	NA	NA	NA	NA	1.25E-03	1.25E-03	2.50E-03	2.50E-03	0.00E+00	0.00E+00	2.54E-03	2.55E-03	5.00E-03	5.00E-03	Table B-7
EU-R3 Picayune Gulch	Floodplain soils (mg/kg)	4.45E+01	5.58E+01	9.71E+01	1.21E+02	1.44E+00	1.52E+00	4.81E+00	5.37E+00	3.53E+01	4.53E+01	1.40E+02	1.72E+02	3.11E+03	5.41E+03	4.10E-02	5.60E-02	2.60E+00	2.60E+00	5.62E+00	5.87E+00	6.00E-01	1.24E+00	1.24E+00	2.04E+00	1.98E+01	2.27E+01	2.44E+02	2.63E+02	Table B-18
	Soil invertebrate (mg/kg)	7.53E+00	9.32E+00	5.65E+01	7.75E+01	6.76E+00	9.14E+00	3.75E+00	5.92E+00	1.19E+01	1.68E+01	6.96E+00	1.13E+01	3.39E+02	5.41E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	4.49E-01	6.48E-01	5.58E+00	9.45E+00	2.78E+02	4.63E+02	Table B-27
	Ground invertebrate (mg/kg)	7.80E-01	1.15E+00	2.51E+01	3.16E+01	2.15E+00	3.16E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	4.75E+00	8.00E+00	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	7.36E-01	1.63E+00	1.07E+00	4.51E+00	1.82E+00	2.49E+00	2.10E+02	2.55E+02	
	Grass (mg/kg)	1.81E-01	3.47E-01	2.53E+01	3.07E+01	1.34E-01	3.42E-01	1.98E+00	2.31E+00	5.33E+00	6.25E+00	1.29E+00	3.03E+00	2.04E+02	2.82E+02	1.24E-01	1.25E-01	NA	NA	1.06E+00	1.57E+00	2.96E-01	3.79E-01	1.46E-01	1.83E-01	4.99E-01	5.00E-01	5.84E+01	7.48E+01	
	Herb (mg/kg)	1.25E-01	1.26E-01	4.07E+01	4.88E+01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	5.54E-01	6.51E-01	5.19E+01	7.89E+01	Table B-31
	Shrub (mg/kg)	1.25E-01	1.26E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	2.72E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	5.31E-01	9.72E-01	2.50E-01	2.51E-01	1.25E-01	1.26E-01	5.00E-01	5.02E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.25E-03	1.25E-03	0.00E+00	0.00E+00	2.50E-04	2.50E-04	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-04	2.50E-04	1.51E-01	1.51E-01	NA	NA	NA	NA	1.25E-03	1.25E-03	2.50E-03	2.50E-03	1.25E-03	1.25E-03	0.00E+00	0.00E+00	1.23E-02	1.23E-02	Table B-7
EU-R4 Upper North Fork	Floodplain soils (mg/kg)	1.05E+02	1.05E+02	6.15E+01	6.15E+01	1.70E+00	1.70E+00	2.90E+00	2.90E+00	8.15E+01	8.15E+01	3.34E+02	3.34E+02	6.28E+02	6.28E+02	7.20E-02	7.20E-02	1.02E+01	1.02E+01	2.40E+00	2.40E+00	1.50E+00	1.50E+00	2.40E+00	2.40E+00	1.24E+01	1.24E+01	4.80E+02	4.80E+02	Table B-18
	Soil invertebrate (mg/kg)	7.53E+00	9.32E+00	5.65E+01	7.75E+01	6.76E+00	9.14E+00	3.75E+00	5.92E+00	1.19E+01	1.68E+01	6.96E+00	1.13E+01	3.39E+02	5.41E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	4.49E-01	6.48E-01	5.58E+00	9.45E+00	2.78E+02	4.63E+02	Table B-27
	Ground invertebrate (mg/kg)	7.80E-01	1.15E+00	2.51E+01	3.16E+01	2.15E+00	3.16E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	4.75E+00	8.00E+00	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	7.36E-01	1.63E+00	1.07E+00	4.51E+00	1.82E+00	2.49E+00	2.10E+02	2.55E+02	
	Grass (mg/kg)	1.81E-01	3.47E-01	2.53E+01	3.07E+01	1.34E-01	3.42E-01	1.98E+00	2.31E+00	5.33E+00	6.25E+00	1.29E+00	3.03E+00	2.04E+02	2.82E+02	1.24E-01	1.25E-01	NA	NA	1.06E+00	1.57E+00	2.96E-01	3.79E-01	1.46E-01	1.83E-01	4.99E-01	5.00E-01	5.84E+01	7.48E+01	
	Herb (mg/kg)	1.25E-01	1.26E-01	4.07E+01	4.88E+01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	5.54E-01	6.51E-01	5.19E+01	7.89E+01	Table B-31
	Shrub (mg/kg)	1.25E-01	1.26E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	2.72E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	5.31E-01	9.72E-01	2.50E-01	2.51E-01	1.25E-01	1.26E-01	5.00E-01	5.02E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	2.80E-03	5.00E-03	0.00E+00	0.00E+00	8.32E-04	1.11E-03	3.36E-03	5.00E-03	2.02E-03	2.58E-03	1.08E-03	1.51E-03	2.06E-02	3.04E-02	NA	NA	NA	NA	1.63E-03	2.50E-03	3.65E-03	5.00E-03	1.68E-03	2.50E-03	1.30E-03	1.30E-03	1.30E-01	1.63E-01	Table B-7

CTE = central tendency exposure; RME = reasonable maximum exposure; NA = not available

Table 3.18 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for Cliff Swallow. EPC derivation methods are detailed in cited EPC sources. All soil and invertebrate tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Arsenic		Barium		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Vanadium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
EU-01	Floodplain soils (mg/kg)	3.14E+01	4.53E+01	1.20E+02	1.67E+02	1.63E+00	3.01E+00	5.14E+00	7.21E+00	1.38E+02	2.57E+02	3.67E+02	6.04E+02	1.15E+03	1.90E+03	1.53E-01	2.88E-01	3.20E+00	4.25E+00	4.16E+00	5.50E+00	1.87E+00	3.00E+00	7.95E-01	1.49E+00	3.42E+01	7.61E+01	4.86E+02	7.10E+02	Table B-15
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	3.54E-03	5.53E-03	2.37E-02	2.56E-02	5.47E-04	6.19E-04	3.60E-03	4.58E-03	9.05E-03	1.39E-02	8.40E-03	1.98E-02	2.78E-01	3.45E-01	NA	NA	2.50E-03	2.50E-03	2.37E-03	3.02E-03	3.88E-03	4.26E-03	1.78E-03	2.30E-03	1.83E-03	1.99E-03	1.47E-01	1.63E-01	Table B-7
EU-02	Floodplain soils (mg/kg)	2.32E+01	3.79E+01	1.35E+02	1.85E+02	7.58E-01	1.32E+00	3.46E+00	4.48E+00	4.38E+01	6.56E+01	2.31E+02	3.74E+02	5.59E+02	7.97E+02	8.10E-02	1.56E-01	3.36E+00	4.95E+00	2.02E+00	2.50E+00	1.41E+00	2.23E+00	4.95E-01	7.95E-01	1.93E+01	2.39E+01	3.37E+02	5.15E+02	Table B-15
	Flying invertebrate (mg/kg)	1.49E+00	5.92E+00	2.00E+01	3.12E+01	3.24E+00	6.67E+00	3.21E+00	4.47E+00	3.23E+01	4.26E+01	1.23E+01	2.57E+01	4.56E+02	7.15E+02	NA	NA	NA	NA	8.59E-01	1.56E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.63E+00	2.52E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	3.31E-03	5.00E-03	2.03E-02	2.11E-02	1.09E-03	1.28E-03	3.59E-03	4.42E-03	1.48E-02	1.62E-02	9.62E-03	1.30E-02	5.86E-01	7.51E-01	NA	NA	2.50E-03	2.50E-03	3.14E-03	5.13E-03	3.77E-03	5.08E-03	1.80E-03	2.21E-03	2.60E-03	2.83E-03	2.56E-01	2.94E-01	Table B-7
EU-03	Floodplain soils (mg/kg)	2.52E+01	4.21E+01	5.61E+01	8.24E+01	1.26E+00	2.30E+00	4.50E+00	7.12E+00	4.73E+01	7.73E+01	3.32E+02	6.17E+02	1.92E+03	8.12E+03	5.15E-02	8.82E-02	1.79E+00	2.38E+00	3.06E+00	4.44E+00	1.07E+00	1.50E+00	5.66E-01	8.23E-01	1.81E+01	2.27E+01	1.17E+02	1.90E+02	Table B-15
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	3.70E-03	6.58E-03	2.62E-02	2.65E-02	9.79E-04	1.16E-03	3.52E-03	4.54E-03	1.29E-02	1.65E-02	2.26E-02	4.50E-02	2.10E-01	2.50E-01	NA	NA	2.50E-03	2.50E-03	1.90E-03	2.09E-03	3.78E-03	4.16E-03	1.77E-03	2.27E-03	1.32E-03	1.33E-03	3.06E-01	3.35E-01	Table B-7
EU-3.5	Floodplain soils (mg/kg)	3.78E+01	7.89E+01	6.49E+01	7.89E+01	8.26E-01	1.14E+00	4.61E+00	7.15E+00	3.87E+01	6.88E+01	6.06E+02	2.74E+03	1.16E+03	1.93E+03	2.10E-01	8.29E-01	1.62E+00	2.38E+00	5.35E+00	7.98E+00	1.19E+00	1.60E+00	1.66E+00	6.40E+00	1.87E+01	2.32E+01	2.03E+02	3.69E+02	Table B-15
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	2.33E-03	5.65E-03	2.70E-02	2.70E-02	5.10E-03	1.01E-02	2.63E-03	4.06E-03	4.69E-02	7.39E-02	5.62E-03	1.12E-02	2.16E+00	3.37E+00	NA	NA	NA	NA	1.16E-02	1.81E-02	2.98E-03	3.99E-03	1.38E-03	2.00E-03	2.00E-03	2.00E-03	1.17E+00	2.31E+00	Table B-7
EU-04	Floodplain soils (mg/kg)	1.12E+02	4.31E+02	7.53E+01	1.09E+02	1.28E+00	1.84E+00	4.59E+00	5.35E+00	1.61E+02	3.95E+02	3.77E+02	1.23E+03	9.72E+02	1.20E+03	1.39E-01	3.59E-01	1.09E+00	1.44E+00	5.17E+00	6.66E+00	1.04E+00	1.31E+00	5.86E-01	1.10E+00	1.71E+01	2.08E+01	3.33E+02	8.51E+02	Table B-15
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Surface water (mg/L)	1.28E-02	4.54E-02	3.73E-02	4.70E-02	5.95E-03	1.35E-02	3.59E-03	4.39E-03	2.10E-01	4.84E-01	6.38E-02	1.94E-01	2.08E+00	4.82E+00	NA	NA	NA	NA	1.09E-02	2.53E-02	3.78E-03	4.07E-03	1.80E-03	2.19E-03	1.59E-03	2.66E-03	2.58E+00	5.70E+00	Table B-7
EU-05	Floodplain soils (mg/kg)	1.92E+01	2.72E+01	9.77E+01	1.12E+02	1.62E+01	1.42E+02	5.50E+00	6.55E+00	3.46E+02	2.84E+03	4.66E+02	1.28E+03	5.75E+03	2.34E+04	4.18E-02	8.94E-02	1.53E+00	2.14E+00	9.57E+00	2.19E+01	1.40E+00	2.09E+00	2.49E+00	8.46E+00	2.31E+01	3.13E+01	1.43E+03	5.28E+03	Table B-15
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	2.55E-03	4.51E-03	2.80E-02	3.04E-02	6.12E-03	2.19E-02	3.07E-03	4.44E-03	2.72E-02	1.05E-01	2.14E-02	1.37E-01	6.44E-01	2.16E+00	NA	NA	NA	NA	3.87E-03	5.72E-03	3.41E-03	3.89E-03	1.55E-03	2.22E-03	1.41E-03	1.68E-03	1.33E+00	7.30E+00	Table B-7
EU-06	Floodplain soils (mg/kg)	1.21E+01	1.50E+01	7.78E+01	8.96E+01	7.93E-01	1.18E+00	2.76E+00	3.30E+00	1.53E+01	1.79E+01	1.14E+02	1.32E+02	1.66E+03	2.49E+03	3.88E-02	4.88E-02	5.51E+00	8.52E+00	3.33E+00	4.74E+00	1.88E+00	2.29E+00	5.17E-01	6.22E-01	2.34E+01	2.82E+01	1.04E+02	1.24E+02	Table B-15
	Flying invertebrate (mg/kg)	1.49E+00	5.92E+00	2.00E+01	3.12E+01	3.24E+00	6.67E+00	3.21E+00	4.47E+00	3.23E+01	4.26E+01	1.23E+01	2.57E+01	4.56E+02	7.15E+02	NA	NA	NA	NA	8.59E-01	1.56E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.63E+00	2.52E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	2.38E-03	3.83E-03	1.73E-02	1.90E-02	1.10E-03	1.82E-03	2.90E-03	3.96E-03	4.87E-03	1.01E-02	8.66E-04	1.98E-03	9.24E-01	1.14E+00	NA	NA	NA	NA	5.28E-03	1.09E-02	3.17E-03	4.13E-03	1.45E-03	1.98E-03	4.11E-03	9.76E-03	1.36E-01	1.69E-01	Table B-7
EU-R1 Mill Creek	Floodplain soils (mg/kg)	8.45E+01	2.29E+02	1.13E+02	1.71E+02	1.33E+00	2.10E+00	4.10E+00	4.60E+00	2.21E+02	6.12E+02	4.07E+02	9.68E+02	1.42E+03	2.68E+03	1.10E-01	2.90E-01	3.60E+00	5.80E+00	4.37E+00	6.80E+00	1.43E+00	2.50E+00	6.20E-01	1.20E+00	1.51E+01	2.22E+01	3.01E+02	4.40E+02	Table B-15
	Flying invertebrate (mg/kg)	3.32E-01	5.02E-01	9.53E+00	1.21E+01	2.29E+00	4.86E+00	3.21E+00	4.47E+00	3.12E+01	3.75E+01	1.46E+00	2.37E+00	1.05E+02	1.39E+02	NA	NA	NA	NA	5.57E-01	8.31E-01	5.26E-01	1.15E+00	2.21E-01	3.34E-01	9.79E-01	1.25E+00	2.25E+02	2.70E+02	Table B-27
	Surface water (mg/L)	1.75E-03	3.62E-03	2.41E-02	2.41E-02	2.75E-04	4.12E-04	2.69E-03	4.15E-03	1.44E-03	2.04E-03	9.29E-04	1.49E-03	3.89E-02	7.72E-02	NA	NA	NA	NA	1.29E-03	2.11E-03	2.97E-03	4.07E-03	1.34E-03	2.08E-03	1.32E-03	1.32E-03	3.14E-02	3.95E-02	Table B-7
EU-20	Floodplain soils (mg/kg)	4.28E+01	5.05E+01	8.22E+01	1.03E+02	1.42E+00	1.86E+00	4.69E+00	5.76E+00	8.11E+01	9.65E+01	5.87E+02	7.66E+02	6.51E+02	7.62E+02	7.58E-02	1.43E-01	3.86E+00	5.38E+00	2.87E+00	3.44E+00	2.24E+00	2.61E+00	1.45E+00	2.61E+00	2.30E+01	2.63E+01	4.78E+02	5.99E+02	Table B-16
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	5.11E-03	5.73E-03	1.16E-02	1.22E-02	3.40E-03	3.84E-03	3.73E-03	4.79E-03	5.92E-02	8.65E-02	2.07E-02	2.83E-02	3.51E+00	4.48E+00	NA	NA	2.50E-03	2.50E-03	7.11E-03	8.86E-03	3.93E-03	4.28E-03	1.87E-03	2.31E-03	4.33E-03	5.37E-03	1.55E+00	1.89E+00	Table B-7
EU-21	Floodplain soils (mg/kg)	3.57E+01	4.28E+01	1.75E+02	2.76E+02	6.05E-01	1.57E+00	3.04E+00	3.52E+00	2.83E+01	3.68E+01	3.38E+02	4.12E+02	2.23E+02	3.16E+02	6.97E-02	9.22E-02	1.69E+00	2.11E+00	1.56E+00	2.02E+00	2.00E+00	2.38E+00	1.15E+00	1.70E+00	1.63E+01	1.85E+01	1.52E+02	3.84E+02	Table B-16
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	5.71E-03	1.66E-02	8.15E-03	8.15E-03	2.42E-03	4.00E-03	2.57E-03	2.83E-03	7.95E-02	1.43E-01	5.06E-02	9.09E-02	5.16E-01	6.63E-01	NA	NA	NA	NA	7.21E-03	1.13E-02	2.63E-03	2.85E-03	1.29E-03	1.41E-03	2.34E-02	2.34E-02	6.31E-01	1.10E+00	Table B-7
EU-22	Floodplain soils (mg/kg)	2.47E+01	3.38E+01	4.06E+01	5.21E+01	1.60E+00	2.53E+00	5.43E+00	6.35E+00	9.74E+01	1.37E+02	8.64E+02	1.73E+03	9.50E+02	1.39E+03	5.70E-02	1.03E-01	4.77E+00	5.91E+00	3.38E+00	4.54E+00	2.37E+00	2.99E+00	1.09E+00	1.33E+00	2.74E+01	3.12E+01	9.86E+02	3.27E+03	Table B-16
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Surface water (mg/L)	3.14E-03	4.81E-03	1.74E-02	2.23E-02	8.78E-03	1.07E-02	3.53E-03	4.74E-03	1.09E-01	1.46E-01	2.19E-02	3.26E-02	6.07E+00	8.10E+00	NA	NA	2.50E-03	2.50E-03	6.66E-03	9.32E-03	3.72E-03	4.17E-03	1.80E-03	2.32E-03	2.14E-03	2.98E-03	3.61E+00	4.49E+00	Table B-7
EU-23	Floodplain soils (mg/kg)	1.70E+01	2.03E+01	7.07E+01	9.84E+01	1.13E+00	3.63E+00	4.39E+00	5.25E+00	6.55E+01	1.57E+02	2.11E+02	3.61E+02	8.12E+02	1.80E+03	3.22E-02	4.34E-02	4.38E+00	5.38E+00	4.62E+00	9.10E+00	1.88E+00	2.40E+00	8.20E-01	1.08E+00	2.32E+01	2.69E+01	2.33E+02	5.82E+02	Table B-16
	Flying invertebrate (mg/kg)	1.49E+00	5.92E+00	2.00E+01	3.12E+01	3.24E+00	6.67E+00	3.21E+00	4.47E+00	3.23E+01	4.26E+01	1.23E+01	2.57E+01	4.56E+02	7.15E+02	NA	NA	NA	NA	8.59E-01	1.56E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.63E+00	2.52E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	3.05E-03	4.87E-03	1.43E-02	1.63E-02	2.60E-03	6.14E-03	3.54E-03	4.68E-03	2.80E-02	6.49E-02	7.23E-03	1.99E-02	3.07E+00	1.31E+01	NA	NA	NA	NA	5.03E-03	1.23E-02	3.75E-03	4.23E-03	1.79E-03	2.34E-03	1.41E-03	1.45E-03	1.44E+00	6.74E+00	Table B-7
EU-24	Floodplain soils (mg/kg)	3.33E+01	3.90E+01	7.92E+01	1.03E+02	6.31E+00	1.88E+01	5.51E+00	6.49E+00	2.48E+02	3.59E+02	8.07E+02	1.00E+03	8.16E+03	1.39E+04	5.89E-02	8.62E-02	3.93E+00	4.79E+00	6.19E+00	8.78E+00	1.81E+00	2.16E+00	1.43E+00	1.79E+00	1.76E+01	2.08E+01	7.53E+02	1.17E+03	Table B-16
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Surface water (mg/L)	2.31E-03	3.91E-03	2.11E-02	2.73E-02	8.62E-03	1.06E-02	2.97E-03	4.15E-03	8.46E-02	1.03E-01	8.26E-03	1.14E-02	1.88E+00	2.49E+00	NA	NA	NA	NA	5.62E-03	8.01E-03	3.21E-03	3.57E-03	1.50E-03	2.06E-03	1.76E-03	3.13E-03	1.92E+00	2.47E+00	Table B-7
EU-07	Floodplain soils (mg/kg)	2.82E+01	6.45E+01	5.33E+01	8.28E+01	1.70E+01	9.43E+01	5.22E+00	7.11E+00	6.66E+02	2.51E+03	8.79E+03	4.42E+04	1.20E+03	1.62E+03	1.22E+00	6.00E+00	2.66E+01	1.18E+02	5.17E+00	7.61E+00	2.80E+00	4.78E+00	2.54E+01	9.69E+01	1.71E+01	2.20E+01	3.08E+03	1.73E+04	Table B-17
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Surface water (mg/L)	2.51E-03	4.67E-03	2.05E-02	2.09E-02	6.52E-04	7.74E-04	3.32E-03	4.45E-03	6.36E-03	9.43E-03	5.82E-03	1.68E-02	3.26E-01	4.55E-01	NA	NA	2.50E-03	2.50E-03	1.66E-03	2.03E-03	3.47E-03	4.11E-03	1.66E-03	2.22E-03	2.55E-03	2.55E-03	2.42E-01	3.32E-01	Table B-7
EU-08	Floodplain soils (mg/kg)	1.28E+01	1.82E+01	6.60E+01	1.02E+02	1.84E+00	2.32E+00	3.89E+00	7.10E+00	1.00E+02	2.65E+02	7.97E+02	1.22E+03	1.58E+03	2.08E+03	4.10E-02	6.74E-02	4.43E+00	7.10E+00	3.54E+00	4.64E+00	7.92E-01	1.29E+00	1.44E+00	2.13E+00	1.62E+01	2.50E+01	3.84E+02	4.89E+02	Table B-17
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	2.47E-03	4.02E-03	4.52E-02	4.52E-02	3.53E-04	4.30E-04	3.24E-03	4.12E-03	2.21E-03	3.79E-03	4.60E-03	2.55E-02	1.96E-02	4.75E-02	NA	NA	2.50E-03	2.50E-03	1.59E-03	2.07E-03	3.35E-03	4.12E-03	1.62E-03	2.06E-03	2.56E-03	2.56E-03	2.19E-02	2.95E-02	Table B-7
EU-09	Floodplain soils (mg/kg)	2.13E+01	2.61E+01	8.98E+01	1.02E+02	6.84E+00	9.47E+00	3.63E+00	4.24E+00	4.47E+02	5.73E+02	3.69E+03	5.17E+03	8.87E+03	1.27E+04	2.13E-01	3.17E-01	4.08E+00	6.06E+00	4.27E+00	5.03E+00	1.13E+00	1.30E+00	1.11E+01	1.57E+01	1.61E+01	1.86E+01	1.18E+03	1.64E+03	Table B-17
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Surface water (mg/L)	2.35E-03	4.06E-03	1.77E-02	1.87E-02	1.17E-03	1.75E-03	3.12E-03	4.20E-03	1.20E-02	1.98E-02	3.88E-03	5.58E-03	6.19E-01	8.48E-01	NA	NA	2.50E-03	2.50E-03	1.69E-03	2.08E-03	3.29E-03	3.92E-03	1.56E-03	2.10E-03	2.53E-03	2.54E-03	4.15E-01	5.65E-01	Table B-7
EU-10	Floodplain soils (mg/kg)	4.08E+01	4.33E+01	8.34E+01	9.19E+01	1.30E+01	1.44E+01	5.29E+00	5.74E+00	8.54E+02	1.00E+03	5.25E+03	6.38E+03	2.43E+04	3.64E+04	2.04E-01	2.57E-01	1.11E+01	1.81E+01	5.66E+00	6.59E+00	1.04E+00	1.20E+00	1.88E+01	2.44E+01	1.49E+01	1.62E+01	2.22E+03	2.55E+03	Table B-17
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Surface water (mg/L)	2.20E-03	4.22E-03	1.63E-02	1.68E-02	2.19E-03	2.92E-03	3.02E-03	3.81E-03	3.24E-02	4.68E-02	5.86E-03	8.27E-03	1.22E+00	1.41E+00	NA	NA	2.50E-03	2.50E-03	1.85E-03	2.25E-03	3.20E-03	3.85E-03	1.48E-03	1.91E-03	2.53E-03	2.53E-03	6.56E-01	8.27E-01	Table B-7
EU-11	Floodplain soils (mg/kg)	2.45E+01	2.45E+01	7.23E+01	7.23E+01	6.40E-01	6.40E-01	8.00E+00	8.00E+00	7.45E+01	7.45E+01	1.64E+02	1.64E+02	1.25E+03	1.25E+03	9.60E-03	9.60E-03	5.40E+00	5.40E+00	6.10E+00	6.10E+00	2.50E+00	2.50E+00	4.25E-01	4.25E-01	2.74E+01	2.74E+01	1.24E+02	1.24E+02	Table B-17
	Flying invertebrate (mg/kg)	1.49E+00	5.92E+00	2.00E+01	3.12E+01	3.24E+00	6.67E+00	3.21E+00	4.47E+00	3.23E+01	4.26E+01	1.23E+01	2.57E+01	4.56E+02	7.15E+02	NA	NA	NA	NA	8.59E-01	1.56E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.63E+00	2.52E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	3.03E-03	4.06E-03	1.48E-02	1.48E-02	4.06E-04	4.38E-04	3.56E-03	4.38E-03	7.26E-03	1.21E-02	6.04E-04	8.33E-04	9.57E-02	1.70E-01	NA	NA	NA	NA	2.04E-03	2.26E-03	3.75E-03	4.38E-03	1.78E-03	2.19E-03	1.31E-03	1.31E-03	4.53E-02	6.94E-02	Table B-7
EU-12	Floodplain soils (mg/kg)	2.27E+01	2.81E+01	8.80E+01	1.28E+02	6.10E+00	9.85E+00	7.16E+00	7.92E+00	2.16E+02	3.20E+02	6.96E+02	9.93E+02	6.07E+03	8.85E+03	1.01E-01	1.53E-01	3.51E+00	5.05E+00	9.36E+00	1.08E+01	2.20E+00	2.89E+00	1.74E+00	2.50E+00	3.02E+01	3.47E+01	1.38E+03	3.43E+03	Table B-17
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Surface water (mg/L)	2.96E-03	4.06E-03	1.45E-02	1.64E-02	2.15E-03	4.06E-03	3.59E-03	3.92E-03	1.22E-02	2.02E-02	2.20E-03	4.56E-03	3.48E-01	8.06E-01	NA	NA	NA	NA	1.99E-03	2.64E-03	3.66E-03	3.96E-03	1.79E-03	1.96E-03	1.30E-03	1.30E-03	8.54E-01	1.66E+00	Table B-7
EU-13	Floodplain soils (mg/kg)	3.12E+01	3.86E+01	1.27E+02	1.40E+02	1.25E+01	1.48E+01	1.72E+01	2.70E+01	4.08E+02	4.85E+02	2.65E+03	4.39E+03	8.20E+03	1.11E+04	9.86E-01	1.90E+00	7.05E+00	7.40E+00	3.77E+01	6.37E+01	2.40E+00	3.20E+00	3.68E+00	5.95E+00	2.74E+01	2.97E+01	3.28E+03	3.77E+03	Table B-17
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Surface water (mg/L)	2.69E-03	4.06E-03	2.22E-02	2.22E-02	1.19E-03	1.55E-03	3.46E-03	4.38E-03	2.54E-02	3.06E-02	2.03E-03	3.57E-03	2.73E-01	3.25E-01	NA	NA	2.50E-03	2.50E-03	1.73E-03	2.19E-03	3.46E-03	4.38E-03	1.73E-03	2.19E-03	5.00E-03	5.00E-03	3.74E-01	4.68E-01	Table B-7
EU-14	Floodplain soils (mg/kg)	5.70E+01	8.31E+01	7.35E+01	1.34E+02	6.66E+00	9.95E+00	5.60E+00	6.94E+00	2.23E+02	3.47E+02	2.77E+03	1.07E+04	3.98E+03	1.02E+04	1.95E-01	3.62E-01	5.86E+00	7.40E+00	5.09E+00	6.41E+00	1.72E+00	2.38E+00	5.93E+00	2.67E+01	1.51E+01	2.17E+01	1.87E+03	3.37E+03	Table B-18
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Surface water (mg/L)	2.53E-03	4.58E-03	1.77E-02	1.87E-02	4.16E-03	4.90E-03	3.14E-03	4.72E-03	5.40E-02	8.00E-02	1.21E-02	2.49E-02	3.74E+00	6.25E+00	NA	NA	2.50E-03	2.50E-03	3.06E-03	4.01E-03	3.38E-03	4.15E-03	1.55E-03	2.28E-03	2.54E-03	2.55E-03	1.25E+00	1.50E+00	Table B-7
EU-15	Floodplain soils (mg/kg)	5.95E+01	1.43E+02	1.23E+02	2.80E+02	3.60E+01	2.16E+02	5.22E+00	6.02E+00	5.87E+02	2.80E+03	1.67E+03	6.00E+03	1.36E+04	4.98E+04	6.97E-01	1.39E+00	2.99E+01	5.91E+01	1.18E+01	4.18E+01	2.25E+00	3.72E+00	3.32E+00	8.82E+00	1.80E+01	2.22E+01	5.09E+03	3.02E+04	Table B-18
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Surface water (mg/L)	2.70E-03	5.00E-03	2.14E-02	2.14E-02	8.11E-03	9.96E-03	3.28E-03	4.76E-03	3.30E-02	4.22E-02	2.35E-02	4.00E-02	1.36E+01	1.58E+01	NA	NA	NA	NA	8.28E-03	1.07E-02	3.69E-03	4.45E-03	1.64E-03	2.38E-03	3.13E-03	3.13E-03	2.76E+00	3.38E+00	Table B-7
EU-16	Floodplain soils (mg/kg)	3.31E+01	5.19E+01	1.34E+02	1.69E+02	6.06E+00	9.53E+00	5.62E+00	6.88E+00	2.89E+02	4.97E+02	1.74E+03	3.16E+03	1.09E+04	1.96E+04	3.62E-01	7.71E-01	5.23E+00	7.80E+00	5.62E+00	6.50E+00	2.24E+00	3.40E+00	3.91E+00	5.20E+00	1.70E+01	2.14E+01	1.13E+03	1.60E+03	Table B-18
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Surface water (mg/L)	3.06E-03	4.06E-03	2.13E-02	2.13E-02	3.19E-03	3.65E-03	3.66E-03	4.38E-03	2.65E-02	3.34E-02	2.58E-02	4.69E-02	1.82E+00	2.27E+00	NA	NA	NA	NA	3.55E-03	4.06E-03	3.75E-03	4.23E-03	1.83E-03	2.19E-03	1.30E-03	1.30E-03	1.29E+00	1.51E+00	Table B-7
EU-17	Floodplain soils (mg/kg)	2.88E+01	3.14E+01	4.87E+01	5.75E+01	1.27E+00	1.60E+00	6.16E+00	6.78E+00	7.95E+01	1.56E+02	1.36E+02	1.62E+02	4.14E+03	7.02E+03	4.50E-02	6.30E-02	4.55E+00	4.70E+00	5.84E+00	7.40E+00	1.38E+00	1.90E+00	6.70E-01	1.24E+00	2.75E+01	3.25E+01	2.77E+02	4.07E+02	Table B-18
	Flying invertebrate (mg/kg)	1.49E+00	5.92E+00	2.00E+01	3.12E+01	3.24E+00	6.67E+00	3.21E+00	4.47E+00	3.23E+01	4.26E+01	1.23E+01	2.57E+01	4.56E+02	7.15E+02	NA	NA	NA	NA	8.59E-01	1.56E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.63E+00	2.52E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	2.87E-03	4.06E-03	2.12E-02	2.12E-02	8.73E-03	1.09E-02	3.68E-03	4.20E-03	3.15E-02	3.64E-02	5.76E-03	1.71E-02	1.99E+01	2.51E+01	NA	NA	NA	NA	9.96E-03	1.25E-02	3.60E-03	3.99E-03	1.80E-03	2.00E-03	1.30E-03	1.30E-03	2.60E+00	3.30E+00	Table B-7
EU-18	Floodplain soils (mg/kg)	3.18E+01	3.49E+01	5.71E+01	9.89E+01	1.53E+00	2.00E+00	7.10E+00	1.20E+01	2.29E+01	2.86E+01	1.94E+02	2.76E+02	2.01E+03	2.66E+03	3.53E-02	4.60E-02	4.53E+00	4.70E+00	4.10E+00	5.50E+00	1.20E+00	1.60E+00	5.50E-01	6.50E-01	1.55E+01	1.90E+01	2.11E+02	2.70E+02	Table B-18
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	3.65E+02	5.66E+02	Table B-27
	Surface water (mg/L)	2.66E-03	4.78E-03	2.55E-02	2.74E-02	5.27E-03	6.67E-03	3.30E-03	4.64E-03	3.19E-02	7.67E-02	1.05E-02	1.54E-02	1.12E+00	1.42E+00	NA	NA	NA	NA	3.00E-03	3.52E-03	3.53E-03	4.27E-03	1.65E-03	2.32E-03	1.30E-03	1.30E-03	9.52E-01	1.13E+00	Table B-7
EU-19	Floodplain soils (mg/kg)	5.99E+01	7.94E+01	7.04E+01	7.84E+01	3.80E+00	1.00E+01	4.01E+00	4.73E+00	8.33E+01	1.98E+02	5.21E+02	8.80E+02	3.31E+03	7.52E+03	5.65E-02	7.58E-02	1.31E+01	2.02E+01	4.05E+00	5.12E+00	1.43E+00	1.91E+00	1.46E+00	2.25E+00	1.25E+01	1.47E+01	2.80E+02	4.41E+02	Table B-18
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Surface water (mg/L)	3.51E-03	4.06E-03	2.62E-02	2.62E-02	1.38E-02	1.74E-02	3.99E-03	4.16E-03	7.28E-02	8.16E-02	1.16E-02	1.40E-02	4.08E+00	4.66E+00	NA	NA	NA	NA	9.33E-03	1.06E-02	4.01E-03	4.17E-03	2.00E-03	2.08E-03	3.13E-03	3.13E-03	2.02E+00	2.61E+00	Table B-7
EU-R2 Maggie Gulch	Floodplain soils (mg/kg)	1.03E+01	1.19E+01	1.81E+02	2.53E+02	8.42E-01	1.18E+00	3.74E+00	5.31E+00	2.75E+01	3.71E+01	6.67E+01	1.25E+02	1.40E+03	1.60E+03	7.67E-02	1.94E-01	1.85E+00	2.00E+00	5.16E+00	5.61E+00	7.33E-01	1.11E+00	4.97E-01	6.78E-01	1.83E+01	2.53E+01	1.52E+02	2.03E+02	Table B-17
	Flying invertebrate (mg/kg)	3.32E-01	5.02E-01	9.53E+00	1.21E+01	2.29E+00	4.86E+00	3.21E+00	4.47E+00	3.12E+01	3.75E+01	1.46E+00	2.37E+00	1.05E+02	1.39E+02	NA	NA	NA	NA	5.57E-01	8.31E-01	5.26E-01	1.15E+00	2.21E-01	3.34E-01	9.79E-01	1.25E+00	2.25E+02	2.70E+02	Table B-27
	Surface water (mg/L)	1.25E-03	1.25E-03	0.00E+00	0.00E+00	2.50E-04	2.50E-04	2.50E-03	2.50E-03	1.25E-03	1.25E-03	3.16E-04	3.16E-04	1.30E-02	1.30E-02	NA	NA	NA	NA	1.25E-03	1.25E-03	2.50E-03	2.50E-03	0.00E+00	0.00E+00	2.54E-03	2.55E-03	5.00E-03	5.00E-03	Table B-7
EU-R3 Picayune Gulch	Floodplain soils (mg/kg)	4.45E+01	5.58E+01	9.71E+01	1.21E+02	1.44E+00	1.52E+00	4.81E+00	5.37E+00	3.53E+01	4.53E+01	1.40E+02	1.72E+02	3.11E+03	5.41E+03	4.10E-02	5.60E-02	2.60E+00	2.60E+00	5.62E+00	5.87E+00	6.00E-01	1.24E+00	1.24E+00	2.04E+00	1.98E+01	2.27E+01	2.44E+02	2.63E+02	Table B-18
	Flying invertebrate (mg/kg)	3.32E-01	5.02E-01	9.53E+00	1.21E+01	2.29E+00	4.86E+00	3.21E+00	4.47E+00	3.12E+01	3.75E+01	1.46E+00	2.37E+00	1.05E+02	1.39E+02	NA	NA	NA	NA	5.57E-01	8.31E-01	5.26E-01	1.15E+00	2.21E-01	3.34E-01	9.79E-01	1.25E+00	2.25E+02	2.70E+02	Table B-27
	Surface water (mg/L)	1.25E-03	1.25E-03	0.00E+00	0.00E+00	2.50E-04	2.50E-04	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-04	2.50E-04	1.51E-01	1.51E-01	NA	NA	NA	NA	1.25E-03	1.25E-03	2.50E-03	2.50E-03	1.25E-03	1.25E-03	0.00E+00	0.00E+00	1.23E-02	1.23E-02	Table B-7
EU-R4 Upper North Fork	Floodplain soils (mg/kg)	1.05E+02	1.05E+02	6.15E+01	6.15E+01	1.70E+00	1.70E+00	2.90E+00	2.90E+00	8.15E+01	8.15E+01	3.34E+02	3.34E+02	6.28E+02	6.28E+02	7.20E-02	7.20E-02	1.02E+01	1.02E+01	2.40E+00	2.40E+00	1.50E+00	1.50E+00	2.40E+00	2.40E+00	1.24E+01	1.24E+01	4.80E+02	4.80E+02	Table B-18
	Flying invertebrate (mg/kg)	3.32E-01	5.02E-01	9.53E+00	1.21E+01	2.29E+00	4.86E+00	3.21E+00	4.47E+00	3.12E+01	3.75E+01	1.46E+00	2.37E+00	1.05E+02	1.39E+02	NA	NA	NA	NA	5.57E-01	8.31E-01	5.26E-01	1.15E+00	2.21E-01	3.34E-01	9.79E-01	1.25E+00	2.25E+02	2.70E+02	Table B-27
	Surface water (mg/L)	2.80E-03	5.00E-03	0.00E+00	0.00E+00	8.32E-04	1.11E-03	3.36E-03	5.00E-03	2.02E-03	2.58E-03	1.08E-03	1.51E-03	2.06E-02	3.04E-02	NA	NA	NA	NA	1.63E-03	2.50E-03	3.65E-03	5.00E-03	1.68E-03	2.50E-03	1.30E-03	1.30E-03	1.30E-01	1.63E-01	Table B-7

CTE = central tendency exposure; RME = reasonable maximum exposure; NA = not available

Table 3.19 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for Fringed Myotis Bat. EPC derivation methods are detailed in cited EPC sources. All invertebrate tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Antimony		Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
EU-01	Flying invertebrate (mg/kg)	9.42E-01	1.78E+00	6.33E+00	1.75E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	3.59E-01	6.09E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	5.42E-03	8.21E-03	3.44E-03	3.65E-03	2.50E-03	2.50E-03	1.10E-01	1.56E-01	6.44E-03	6.98E-03	6.66E+00	9.78E+00	NA	NA	NA	NA	1.25E-03	1.25E-03	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-03	2.50E-03	1.09E+00	1.23E+00	Table B-10
EU-02	Flying invertebrate (mg/kg)	7.45E-01	1.42E+00	1.49E+00	5.92E+00	3.24E+00	6.67E+00	3.21E+00	4.47E+00	3.23E+01	4.26E+01	1.23E+01	2.57E+01	4.56E+02	7.15E+02	NA	NA	NA	NA	8.59E-01	1.56E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	2.50E-01	2.50E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.31E-03	1.42E-03	2.07E-01	9.68E-01	1.70E-02	4.50E-02	2.62E-03	2.81E-03	5.43E-01	2.32E+00	7.81E-02	1.62E-01	6.44E+00	1.07E+01	NA	NA	NA	NA	2.12E-02	5.46E-02	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.62E-03	2.82E-03	6.11E+00	1.21E+01	Table B-14
EU-03	Flying invertebrate (mg/kg)	9.42E-01	1.78E+00	6.33E+00	1.75E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	3.59E-01	6.09E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.31E-03	1.42E-03	2.07E-01	9.68E-01	1.70E-02	4.50E-02	2.62E-03	2.81E-03	5.43E-01	2.32E+00	7.81E-02	1.62E-01	6.44E+00	1.07E+01	NA	NA	NA	NA	2.12E-02	5.46E-02	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.62E-03	2.82E-03	6.11E+00	1.21E+01	Table B-14
EU-3.5	Flying invertebrate (mg/kg)	9.42E-01	1.78E+00	6.33E+00	1.75E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	3.59E-01	6.09E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	2.09E-02	2.20E-02	1.72E-02	1.90E-02	2.50E-03	2.50E-03	2.91E-01	3.28E-01	2.44E-02	2.51E-02	6.00E+00	6.38E+00	NA	NA	NA	NA	1.06E-02	1.29E-02	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-03	2.50E-03	5.44E+00	5.81E+00	Table B-10
EU-04	Flying invertebrate (mg/kg)	1.23E+00	1.97E+00	6.33E+00	1.75E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	7.27E-01	2.98E+00	4.92E+02	8.62E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	5.15E-01	2.60E+00	2.53E-02	4.07E-02	2.79E-03	3.32E-03	1.14E+00	1.84E+00	7.89E-02	1.31E-01	9.43E+00	3.76E+01	NA	NA	NA	NA	4.48E-02	7.66E-02	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.80E-03	3.34E-03	1.08E+01	1.81E+01	Table B-10
EU-05	Flying invertebrate (mg/kg)	9.42E-01	1.78E+00	6.33E+00	1.75E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	3.59E-01	6.09E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.85E-03	3.05E-03	5.10E-03	1.28E-02	3.91E-02	6.78E-02	2.50E-03	2.50E-03	4.35E-01	1.07E+00	3.93E-01	9.77E-01	4.72E+00	6.77E+00	NA	NA	NA	NA	6.85E-03	1.05E-02	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-03	2.50E-03	8.41E+00	1.35E+01	Table B-10
EU-06	Flying invertebrate (mg/kg)	7.45E-01	1.42E+00	1.49E+00	5.92E+00	3.24E+00	6.67E+00	3.21E+00	4.47E+00	3.23E+01	4.26E+01	1.23E+01	2.57E+01	4.56E+02	7.15E+02	NA	NA	NA	NA	8.59E-01	1.56E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	2.50E-01	2.50E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	1.25E-03	1.25E-03	6.82E-04	1.40E-03	2.50E-03	2.50E-03	2.39E-03	3.09E-03	3.76E-03	1.50E-02	3.13E+00	4.89E+00	NA	NA	NA	NA	4.63E-03	1.35E-02	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-03	2.50E-03	4.02E-01	6.08E-01	Table B-10
EU-R1 Mill Creek	Flying invertebrate (mg/kg)	4.68E-01	6.91E-01	3.32E-01	5.02E-01	2.29E+00	4.86E+00	3.21E+00	4.47E+00	3.12E+01	3.75E+01	1.46E+00	2.37E+00	1.05E+02	1.39E+02	NA	NA	NA	NA	5.57E-01	8.31E-01	5.26E-01	1.15E+00	2.21E-01	3.34E-01	2.97E-01	6.09E-01	2.25E+02	2.70E+02	Table B-27
	Adit water (mg/L)	1.31E-03	1.42E-03	2.07E-01	9.68E-01	1.70E-02	4.50E-02	2.62E-03	2.81E-03	5.43E-01	2.32E+00	7.81E-02	1.62E-01	6.44E+00	1.07E+01	NA	NA	NA	NA	2.12E-02	5.46E-02	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.62E-03	2.82E-03	6.11E+00	1.21E+01	Table B-14
EU-20	Flying invertebrate (mg/kg)	9.42E-01	1.78E+00	6.33E+00	1.75E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	3.59E-01	6.09E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	4.45E-03	6.70E-03	4.42E-03	2.14E-02	2.50E-03	2.50E-03	5.33E-01	3.61E+00	5.92E-03	8.39E-03	7.16E+00	1.06E+01	NA	NA	NA	NA	8.00E-03	3.06E-02	2.50E-03	2.50E-03	1.25E-03	1.25E-03	3.42E-03	5.21E-03	2.37E+00	3.80E+00	Table B-11
EU-21	Flying invertebrate (mg/kg)	9.42E-01	1.78E+00	6.33E+00	1.75E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	3.59E-01	6.09E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	9.78E-03	5.96E-02	1.12E-02	4.14E-02	2.50E-03	2.50E-03	1.45E-01	5.30E-01	1.35E-01	7.88E-01	1.31E+00	9.97E+00	NA	NA	NA	NA	1.43E-02	6.76E-02	2.50E-03	2.50E-03	1.50E-03	1.98E-03	3.17E-03	4.43E-03	4.48E+00	2.02E+01	Table B-11
EU-22	Flying invertebrate (mg/kg)	1.23E+00	1.97E+00	6.33E+00	1.75E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	7.27E-01	2.98E+00	4.92E+02	8.62E+02	Table B-27
	Adit water (mg/L)	1.67E-03	2.10E-03	1.45E-02	6.15E-02	3.25E-02	7.33E-02	3.93E-03	4.80E-03	1.33E+00	5.50E+00	4.73E-02	1.29E-01	3.23E+01	4.38E+01	NA	NA	4.00E-03	5.00E-03	3.96E-02	4.56E-02	3.93E-03	4.80E-03	1.96E-03	2.40E-03	3.50E-03	6.49E-03	1.80E+01	2.66E+01	Table B-11
EU-23	Flying invertebrate (mg/kg)	7.45E-01	1.42E+00	1.49E+00	5.92E+00	3.24E+00	6.67E+00	3.21E+00	4.47E+00	3.23E+01	4.26E+01	1.23E+01	2.57E+01	4.56E+02	7.15E+02	NA	NA	NA	NA	8.59E-01	1.56E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	2.50E-01	2.50E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	1.97E-03	2.74E-03	2.59E-03	4.86E-03	2.81E-03	3.41E-03	3.35E-02	8.92E-02	4.11E-03	6.09E-03	2.06E+00	2.67E+00	NA	NA	2.50E-03	2.50E-03	2.86E-03	3.94E-03	2.81E-03	3.41E-03	1.41E-03	1.70E-03	2.03E-03	2.47E-03	6.84E-01	8.77E-01	Table B-11
EU-24	Flying invertebrate (mg/kg)	1.23E+00	1.97E+00	6.33E+00	1.75E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	7.27E-01	2.98E+00	4.92E+02	8.62E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	4.04E-03	1.05E-02	3.54E-02	5.51E-02	2.61E-03	2.81E-03	5.98E-01	1.97E+00	9.20E-02	2.11E-01	9.07E+00	1.60E+01	NA	NA	2.50E-03	2.50E-03	6.09E-03	8.43E-03	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.18E-03	2.36E-03	1.36E+01	2.22E+01	Table B-11
EU-07	Flying invertebrate (mg/kg)	1.23E+00	1.97E+00	6.33E+00	1.75E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	7.27E-01	2.98E+00	4.92E+02	8.62E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	1.75E-03	2.80E-03	9.80E-03	1.42E-01	2.50E-03	2.50E-03	2.37E-01	1.15E+00	3.46E-02	1.48E-01	1.45E+00	1.64E+00	NA	NA	2.50E-03	2.50E-03	2.84E-03	5.86E-03	2.50E-03	2.50E-03	1.25E-03	1.25E-03	3.97E-03	1.11E-02	2.11E+00	7.26E+00	Table B-12
EU-08	Flying invertebrate (mg/kg)	9.42E-01	1.78E+00	6.33E+00	1.75E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	3.59E-01	6.09E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	1.25E-03	1.25E-03	9.66E-03	1.18E-02	2.50E-03	2.50E-03	4.04E-02	5.45E-02	2.99E-02	4.22E-02	3.20E-01	4.01E-01	NA	NA	NA	NA	1.25E-03	1.25E-03	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-03	2.50E-03	1.78E+00	2.19E+00	Table B-12
EU-09	Flying invertebrate (mg/kg)	1.23E+00	1.97E+00	6.33E+00	1.75E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	7.27E-01	2.98E+00	4.92E+02	8.62E+02	Table B-27
	Adit water (mg/L)	1.41E-03	1.70E-03	2.19E-03	4.90E-03	6.16E-02	2.17E-01	2.81E-03	3.41E-03	4.76E-01	1.95E+00	4.50E-01	3.27E+00	5.51E+01	1.40E+02	NA	NA	NA	NA	3.36E-02	1.28E-01	2.81E-03	3.41E-03	1.41E-03	1.70E-03	2.81E-03	3.41E-03	2.10E+01	5.02E+01	Table B-12
EU-10	Flying invertebrate (mg/kg)	1.23E+00	1.97E+00	6.33E+00	1.75E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	7.27E-01	2.98E+00	4.92E+02	8.62E+02	Table B-27
	Adit water (mg/L)	1.21E-03	1.29E-03	1.08E-03	1.25E-03	4.38E-03	7.80E-03	2.25E-03	2.50E-03	1.26E-02	2.14E-02	1.75E-02	3.17E-02	1.46E+00	2.35E+00	NA	NA	2.50E-03	2.50E-03	2.39E-03	5.25E-03	2.50E-03	2.50E-03	1.13E-03	1.25E-03	1.75E-03	2.46E-03	5.71E-01	6.87E-01	Table B-12
EU-11	Flying invertebrate (mg/kg)	7.45E-01	1.42E+00	1.49E+00	5.92E+00	3.24E+00	6.67E+00	3.21E+00	4.47E+00	3.23E+01	4.26E+01	1.23E+01	2.57E+01	4.56E+02	7.15E+02	NA	NA	NA	NA	8.59E-01	1.56E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	2.50E-01	2.50E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.50E-03	1.67E-03	1.13E-02	2.81E-02	5.26E-02	1.07E-01	2.56E-03	2.67E-03	1.02E+00	2.61E+00	2.11E-01	4.43E-01	9.98E+00	6.58E+01	NA	NA	2.50E-03	2.50E-03	8.01E-03	1.84E-02	2.97E-03	3.47E-03	1.32E-03	1.44E-03	2.90E-03	4.26E-03	1.36E+01	3.17E+01	Table B-14
EU-12	Flying invertebrate (mg/kg)	1.23E+00	1.97E+00	6.33E+00	1.75E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	7.27E-01	2.98E+00	4.92E+02	8.62E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	1.25E-03	1.25E-03	2.76E-02	7.97E-02	2.50E-03	2.50E-03	1.09E+00	1.58E+00	6.14E-01	1.99E+00	1.07E+01	1.59E+01	NA	NA	2.50E-03	2.50E-03	5.73E-03	1.31E-02	2.50E-03	2.50E-03	1.25E-03	1.25E-03	4.01E-03	9.37E-03	8.59E+00	2.30E+01	Table B-12
EU-13	Flying invertebrate (mg/kg)	1.23E+00	1.97E+00	6.33E+00	1.75E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	7.27E-01	2.98E+00	4.92E+02	8.62E+02	Table B-27
	Adit water (mg/L)	1.50E-03	1.67E-03	1.13E-02	2.81E-02	5.26E-02	1.07E-01	2.56E-03	2.67E-03	1.02E+00	2.61E+00	2.11E-01	4.43E-01	9.98E+00	6.58E+01	NA	NA	2.50E-03	2.50E-03	8.01E-03	1.84E-02	2.97E-03	3.47E-03	1.32E-03	1.44E-03	2.90E-03	4.26E-03	1.36E+01	3.17E+01	Table B-14
EU-14	Flying invertebrate (mg/kg)	1.23E+00	1.97E+00	6.33E+00	1.75E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	7.27E-01	2.98E+00	4.92E+02	8.62E+02	Table B-27
	Adit water (mg/L)	2.27E-03	4.62E-03	7.23E-02	1.01E-01	8.73E-03	1.18E-02	2.50E-03	2.50E-03	4.03E+00	5.95E+00	1.76E-02	3.00E-02	2.65E+00	3.14E+00	NA	NA	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-03	2.50E-03	1.25E-03	1.25E-03	3.75E-03	9.91E-03	2.43E+00	3.21E+00	Table B-13
EU-15	Flying invertebrate (mg/kg)	1.23E+00	1.97E+00	6.33E+00	1.75E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	7.27E-01	2.98E+00	4.92E+02	8.62E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	4.81E-03	1.18E-02	2.52E-01	1.09E+00	2.86E-03	3.53E-03	1.87E+00	5.23E+00	2.65E-01	4.87E-01	8.82E+00	1.31E+01	NA	NA	2.50E-03	2.50E-03	1.48E-02	6.69E-02	5.65E-03	1.48E-02	1.25E-03	1.25E-03	1.88E-03	2.26E-03	6.16E+01	2.73E+02	Table B-13
EU-16	Flying invertebrate (mg/kg)	1.23E+00	1.97E+00	6.33E+00	1.75E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	7.27E-01	2.98E+00	4.92E+02	8.62E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	1.25E-03	1.25E-03	1.02E-02	1.55E-02	2.50E-03	2.50E-03	1.04E-02	3.78E-02	1.79E-01	2.53E-01	7.08E+00	9.46E+00	NA	NA	2.50E-03	2.50E-03	8.51E-03	1.14E-02	2.50E-03	2.50E-03	1.25E-03	1.25E-03	1.88E-03	2.50E-03	4.53E+00	4.71E+00	Table B-13
EU-17	Flying invertebrate (mg/kg)	7.45E-01	1.42E+00	1.49E+00	5.92E+00	3.24E+00	6.67E+00	3.21E+00	4.47E+00	3.23E+01	4.26E+01	1.23E+01	2.57E+01	4.56E+02	7.15E+02	NA	NA	NA	NA	8.59E-01	1.56E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	2.50E-01	2.50E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	3.36E-03	1.17E-02	1.39E-02	4.19E-02	2.50E-03	2.50E-03	2.98E-01	2.00E+00	5.80E-02	1.01E-01	1.71E+00	4.12E+00	NA	NA	2.50E-03	2.50E-03	2.04E-03	4.32E-03	2.50E-03	2.50E-03	1.25E-03	1.25E-03	3.48E-03	7.98E-03	2.58E+00	5.77E+00	Table B-13
EU-18	Flying invertebrate (mg/kg)	9.42E-01	1.78E+00	6.33E+00	1.75E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	3.59E-01	6.09E-01	3.65E+02	5.66E+02	Table B-27
	Adit water (mg/L)	1.50E-03	1.67E-03	1.13E-02	2.81E-02	5.26E-02	1.07E-01	2.56E-03	2.67E-03	1.02E+00	2.61E+00	2.11E-01	4.43E-01	9.98E+00	6.58E+01	NA	NA	2.50E-03	2.50E-03	8.01E-03	1.84E-02	2.97E-03	3.47E-03	1.32E-03	1.44E-03	2.90E-03	4.26E-03	1.36E+01	3.17E+01	Table B-14
EU-19	Flying invertebrate (mg/kg)	1.23E+00	1.97E+00	6.33E+00	1.75E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	7.27E-01	2.98E+00	4.92E+02	8.62E+02	Table B-27
	Adit water (mg/L)	2.28E-03	4.57E-03	4.65E-03	1.48E-02	2.68E-02	4.70E-02	2.50E-03	2.50E-03	9.50E-02	1.58E-01	1.60E-01	8.30E-01	5.61E-01	9.90E-01	NA	NA	NA	NA	1.75E-03	3.94E-03	2.50E-03	2.50E-03	1.85E-03	4.44E-03	2.50E-03	2.50E-03	5.07E+00	8.98E+00	Table B-13
EU-R2 Maggie Gulch	Flying invertebrate (mg/kg)	4.68E-01	6.91E-01	3.32E-01	5.02E-01	2.29E+00	4.86E+00	3.21E+00	4.47E+00	3.12E+01	3.75E+01	1.46E+00	2.37E+00	1.05E+02	1.39E+02	NA	NA	NA	NA	5.57E-01	8.31E-01	5.26E-01	1.15E+00	2.21E-01	3.34E-01	2.97E-01	6.09E-01	2.25E+02	2.70E+02	Table B-27
	Adit water (mg/L)	1.50E-03	1.50E-03	1.13E-02	1.13E-02	5.26E-02	5.26E-02	2.56E-03	2.56E-03	1.02E+00	1.02E+00	2.11E-01	2.11E-01	9.98E+00	9.98E+00	NA	NA	2.50E-03	2.50E-03	8.01E-03	8.01E-03	2.97E-03	2.97E-03	1.32E-03	1.32E-03	2.90E-03	2.90E-03	1.36E+01	1.36E+01	Table B-14
EU-R3 Picayune Gulch	Flying invertebrate (mg/kg)	4.68E-01	6.91E-01	3.32E-01	5.02E-01	2.29E+00	4.86E+00	3.21E+00	4.47E+00	3.12E+01	3.75E+01	1.46E+00	2.37E+00	1.05E+02	1.39E+02	NA	NA	NA	NA	5.57E-01	8.31E-01	5.26E-01	1.15E+00	2.21E-01	3.34E-01	2.97E-01	6.09E-01	2.25E+02	2.70E+02	Table B-27
	Adit water (mg/L)	1.25E-03	1.25E-03	4.35E-03	5.07E-03	2.50E-04	2.50E-04	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-04	2.50E-04	2.10E+00	2.19E+00	NA	NA	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-03	2.50E-03	1.25E-03	1.25E-03	1.25E-03	1.25E-03	1.73E-02	2.07E-02	Table B-13
EU-R4 Upper North Fork	Flying invertebrate (mg/kg)	4.68E-01	6.91E-01	3.32E-01	5.02E-01	2.29E+00	4.86E+00	3.21E+00	4.47E+00	3.12E+01	3.75E+01	1.46E+00	2.37E+00	1.05E+02	1.39E+02	NA	NA	NA	NA	5.57E-01	8.31E-01	5.26E-01	1.15E+00	2.21E-01	3.34E-01	2.97E-01	6.09E-01	2.25E+02	2.70E+02	Table B-27
	Adit water (mg/L)	1.50E-03	1.67E-03	1.13E-02	2.81E-02	5.26E-02	1.07E-01	2.56E-03	2.67E-03	1.02E+00	2.61E+00	2.11E-01	4.43E-01	9.98E+00	6.58E+01	NA	NA	2.50E-03	2.50E-03	8.01E-03	1.84E-02	2.97E-03	3.47E-03	1.32E-03	1.44E-03	2.90E-03	4.26E-03	1.36E+01	3.17E+01	Table B-14

CTE = central tendency exposure; RME = reasonable maximum exposure; NA = not available

Table 3.20 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for American Beaver. EPC derivation methods are detailed in cited EPC sources. All soil and plant tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Antimony		Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
EU-01	Floodplain soils (mg/kg)	4.46E+00	8.83E+00	3.14E+01	4.53E+01	1.63E+00	3.01E+00	5.14E+00	7.21E+00	1.38E+02	2.57E+02	3.67E+02	6.04E+02	1.15E+03	1.90E+03	1.53E-01	2.88E-01	3.20E+00	4.25E+00	4.16E+00	5.50E+00	1.87E+00	3.00E+00	7.95E-01	1.49E+00	6.50E-01	7.27E-01	4.86E+02	7.10E+02	Table B-15
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	2.83E-01	3.31E-01	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.14E+02	5.84E+02	
	Surface water (mg/L)	1.71E-03	1.96E-03	3.54E-03	5.53E-03	5.47E-04	6.19E-04	3.60E-03	4.58E-03	9.05E-03	1.39E-02	8.40E-03	1.98E-02	2.78E-01	3.45E-01	NA	NA	2.50E-03	2.50E-03	2.37E-03	3.02E-03	3.88E-03	4.26E-03	1.78E-03	2.30E-03	3.60E-03	4.78E-03	1.47E-01	1.63E-01	Table B-7
EU-02	Floodplain soils (mg/kg)	6.14E-01	8.06E-01	2.32E+01	3.79E+01	7.58E-01	1.32E+00	3.46E+00	4.48E+00	4.38E+01	6.56E+01	2.31E+02	3.74E+02	5.59E+02	7.97E+02	8.10E-02	1.56E-01	3.36E+00	4.95E+00	2.02E+00	2.50E+00	1.41E+00	2.23E+00	4.95E-01	7.95E-01	4.10E-01	6.10E-01	3.37E+02	5.15E+02	Table B-15
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	2.78E-01	3.30E-01	6.52E+01	8.55E+01	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	2.62E-01	2.85E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.65E-03	2.12E-03	3.31E-03	5.00E-03	1.09E-03	1.28E-03	3.59E-03	4.42E-03	1.48E-02	1.62E-02	9.62E-03	1.30E-02	5.86E-01	7.51E-01	NA	NA	2.50E-03	2.50E-03	3.14E-03	5.13E-03	3.77E-03	5.08E-03	1.80E-03	2.21E-03	3.66E-03	4.67E-03	2.56E-01	2.94E-01	Table B-7
EU-03	Floodplain soils (mg/kg)	1.39E+00	1.70E+00	2.52E+01	4.21E+01	1.26E+00	2.30E+00	4.50E+00	7.12E+00	4.73E+01	7.73E+01	3.32E+02	6.17E+02	1.92E+03	8.12E+03	5.15E-02	8.82E-02	1.79E+00	2.38E+00	3.06E+00	4.44E+00	1.07E+00	1.50E+00	5.66E-01	8.23E-01	6.96E-01	8.69E-01	1.17E+02	1.90E+02	Table B-15
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	2.83E-01	3.31E-01	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.14E+02	5.84E+02	
	Surface water (mg/L)	1.61E-03	1.88E-03	3.70E-03	6.58E-03	9.79E-04	1.16E-03	3.52E-03	4.54E-03	1.29E-02	1.65E-02	2.26E-02	4.50E-02	2.10E-01	2.50E-01	NA	NA	2.50E-03	2.50E-03	1.90E-03	2.09E-03	3.78E-03	4.16E-03	1.77E-03	2.27E-03	3.74E-03	4.44E-03	3.06E-01	3.35E-01	Table B-7
EU-3.5	Floodplain soils (mg/kg)	1.73E+00	2.66E+00	3.78E+01	7.89E+01	8.26E-01	1.14E+00	4.61E+00	7.15E+00	3.87E+01	6.88E+01	6.06E+02	2.74E+03	1.16E+03	1.93E+03	2.10E-01	8.29E-01	1.62E+00	2.38E+00	5.35E+00	7.98E+00	1.19E+00	1.60E+00	1.66E+00	6.40E+00	6.01E-01	6.26E-01	2.03E+02	3.69E+02	Table B-15
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	2.83E-01	3.31E-01	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.14E+02	5.84E+02	
	Surface water (mg/L)	1.45E-03	1.98E-03	2.33E-03	5.65E-03	5.10E-03	1.01E-02	2.63E-03	4.06E-03	4.69E-02	7.39E-02	5.62E-03	1.12E-02	2.16E+00	3.37E+00	NA	NA	NA	NA	1.16E-02	1.81E-02	2.98E-03	3.99E-03	1.38E-03	2.00E-03	2.68E-03	4.03E-03	1.17E+00	2.31E+00	Table B-7
EU-04	Floodplain soils (mg/kg)	1.68E+00	2.13E+00	1.12E+02	4.31E+02	1.28E+00	1.84E+00	4.59E+00	5.35E+00	1.61E+02	3.95E+02	3.77E+02	1.23E+03	9.72E+02	1.20E+03	1.39E-01	3.59E-01	1.09E+00	1.44E+00	5.17E+00	6.66E+00	1.04E+00	1.31E+00	5.86E-01	1.10E+00	6.86E-01	7.58E-01	3.33E+02	8.51E+02	Table B-15
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.87E-03	2.02E-03	1.28E-02	4.54E-02	5.95E-03	1.35E-02	3.59E-03	4.39E-03	2.10E-01	4.84E-01	6.38E-02	1.94E-01	2.08E+00	4.82E+00	NA	NA	NA	NA	1.09E-02	2.53E-02	3.78E-03	4.07E-03	1.80E-03	2.19E-03	3.96E-03	5.15E-03	2.58E+00	5.70E+00	Table B-7
EU-05	Floodplain soils (mg/kg)	9.61E-01	1.66E+00	1.92E+01	2.72E+01	1.62E+01	1.42E+02	5.50E+00	6.55E+00	3.46E+02	2.84E+03	4.66E+02	1.28E+03	5.75E+03	2.34E+04	4.18E-02	8.94E-02	1.53E+00	2.14E+00	9.57E+00	2.19E+01	1.40E+00	2.09E+00	2.49E+00	8.46E+00	6.89E-01	1.39E+00	1.43E+03	5.28E+03	Table B-15
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	2.83E-01	3.31E-01	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.14E+02	5.84E+02	
	Surface water (mg/L)	1.65E-03	1.91E-03	2.55E-03	4.51E-03	6.12E-03	2.19E-02	3.07E-03	4.44E-03	2.72E-02	1.05E-01	2.14E-02	1.37E-01	6.44E-01	2.16E+00	NA	NA	NA	NA	3.87E-03	5.72E-03	3.41E-03	3.89E-03	1.55E-03	2.22E-03	3.34E-03	5.24E-03	1.33E+00	7.30E+00	Table B-7
EU-06	Floodplain soils (mg/kg)	1.24E+00	1.49E+00	1.21E+01	1.50E+01	7.93E-01	1.18E+00	2.76E+00	3.30E+00	1.53E+01	1.79E+01	1.14E+02	1.32E+02	1.66E+03	2.49E+03	3.88E-02	4.88E-02	5.51E+00	8.52E+00	3.33E+00	4.74E+00	1.88E+00	2.29E+00	5.17E-01	6.22E-01	8.60E-01	9.92E-01	1.04E+02	1.24E+02	Table B-15
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	2.78E-01	3.30E-01	6.52E+01	8.55E+01	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	2.62E-01	2.85E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.57E-03	1.77E-03	2.38E-03	3.83E-03	1.10E-03	1.82E-03	2.90E-03	3.96E-03	4.87E-03	1.01E-02	8.66E-04	1.98E-03	9.24E-01	1.14E+00	NA	NA	NA	NA	5.28E-03	1.09E-02	3.17E-03	4.13E-03	1.45E-03	1.98E-03	3.12E-03	4.95E-03	1.36E-01	1.69E-01	Table B-7
EU-R1 Mill Creek	Floodplain soils (mg/kg)	1.61E+00	2.80E+00	8.45E+01	2.29E+02	1.33E+00	2.10E+00	4.10E+00	4.60E+00	2.21E+02	6.12E+02	4.07E+02	9.68E+02	1.42E+03	2.68E+03	1.10E-01	2.90E-01	3.60E+00	5.80E+00	4.37E+00	6.80E+00	1.43E+00	2.50E+00	6.20E-01	1.20E+00	6.73E-01	7.70E-01	3.01E+02	4.40E+02	Table B-15
	Herb (mg/kg)	1.80E-01	4.21E-01	1.25E-01	1.26E-01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	5.19E+01	7.89E+01	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.25E-01	1.26E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	2.72E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	5.31E-01	9.72E-01	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.44E-03	2.04E-03	1.75E-03	3.62E-03	2.75E-04	4.12E-04	2.69E-03	4.15E-03	1.44E-03	2.04E-03	9.29E-04	1.49E-03	3.89E-02	7.72E-02	NA	NA	NA	NA	1.29E-03	2.11E-03	2.97E-03	4.07E-03	1.34E-03	2.08E-03	2.87E-03	5.06E-03	3.14E-02	3.95E-02	Table B-7
EU-20	Floodplain soils (mg/kg)	2.96E+00	4.04E+00	4.28E+01	5.05E+01	1.42E+00	1.86E+00	4.69E+00	5.76E+00	8.11E+01	9.65E+01	5.87E+02	7.66E+02	6.51E+02	7.62E+02	7.58E-02	1.43E-01	3.86E+00	5.38E+00	2.87E+00	3.44E+00	2.24E+00	2.61E+00	1.45E+00	2.61E+00	5.59E-01	6.51E-01	4.78E+02	5.99E+02	Table B-16
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	2.83E-01	3.31E-01	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.14E+02	5.84E+02	
	Surface water (mg/L)	1.73E-03	1.98E-03	5.11E-03	5.73E-03	3.40E-03	3.84E-03	3.73E-03	4.79E-03	5.92E-02	8.65E-02	2.07E-02	2.83E-02	3.51E+00	4.48E+00	NA	NA	NA	NA	7.11E-03	8.86E-03	3.93E-03	4.28E-03	1.87E-03	2.31E-03	4.22E-03	5.88E-03	1.55E+00	1.89E+00	Table B-7
EU-21	Floodplain soils (mg/kg)	3.69E+00	4.98E+00	3.57E+01	4.28E+01	6.05E-01	1.57E+00	3.04E+00	3.52E+00	2.83E+01	3.68E+01	3.38E+02	4.12E+02	2.23E+02	3.16E+02	6.97E-02	9.22E-02	1.69E+00	2.11E+00	1.56E+00	2.02E+00	2.00E+00	2.38E+00	1.15E+00	1.70E+00	5.40E-01	5.90E-01	1.52E+02	3.84E+02	Table B-16
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	2.83E-01	3.31E-01	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.14E+02	5.84E+02	
	Surface water (mg/L)	1.30E-03	1.42E-03	5.71E-03	1.66E-02	2.42E-03	4.00E-03	2.57E-03	2.83E-03	7.95E-02	1.43E-01	5.06E-02	9.09E-02	5.16E-01	6.63E-01	NA	NA	NA	NA	7.21E-03	1.13E-02	2.63E-03	2.85E-03	1.29E-03	1.41E-03	2.85E-03	3.34E-03	6.31E-01	1.10E+00	Table B-7
EU-22	Floodplain soils (mg/kg)	2.89E+00	4.06E+00	2.47E+01	3.38E+01	1.60E+00	2.53E+00	5.43E+00	6.35E+00	9.74E+01	1.37E+02	8.64E+02	1.73E+03	9.50E+02	1.39E+03	5.70E-02	1.03E-01	4.77E+00	5.91E+00	3.38E+00	4.54E+00	2.37E+00	2.99E+00	1.09E+00	1.33E+00	5.89E-01	6.29E-01	9.86E+02	3.27E+03	Table B-16
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.82E-03	2.06E-03	3.14E-03	4.81E-03	8.78E-03	1.07E-02	3.53E-03	4.74E-03	1.09E-01	1.46E-01	2.19E-02	3.26E-02	6.07E+00	8.10E+00	NA	NA	NA	NA	6.66E-03	9.32E-03	3.72E-03	4.17E-03	1.80E-03	2.32E-03	4.78E-03	6.86E-03	3.61E+00	4.49E+00	Table B-7
EU-23	Floodplain soils (mg/kg)	1.17E+00	1.88E+00	1.70E+01	2.03E+01	1.13E+00	3.63E+00	4.39E+00	5.25E+00	6.55E+01	1.57E+02	2.11E+02	3.61E+02	8.12E+02	1.80E+03	3.22E-02	4.34E-02	4.38E+00	5.38E+00	4.62E+00	9.10E+00	1.88E+00	2.40E+00	8.20E-01	1.08E+00	5.29E-01	6.63E-01	2.33E+02	5.82E+02	Table B-16
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	2.78E-01	3.30E-01	6.52E+01	8.55E+01	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	2.62E-01	2.85E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.84E-03	2.10E-03	3.05E-03	4.87E-03	2.60E-03	6.14E-03	3.54E-03	4.68E-03	2.80E-02	6.49E-02	7.23E-03	1.99E-02	3.07E+00	1.31E+01	NA	NA	NA	NA	5.03E-03	1.23E-02	3.75E-03	4.23E-03	1.79E-03	2.34E-03	3.80E-03	5.14E-03	1.44E+00	6.74E+00	Table B-7
EU-24	Floodplain soils (mg/kg)	2.07E+00	3.70E+00	3.33E+01	3.90E+01	6.31E+00	1.88E+01	5.51E+00	6.49E+00	2.48E+02	3.59E+02	8.07E+02	1.00E+03	8.16E+03	1.39E+04	5.89E-02	8.62E-02	3.93E+00	4.79E+00	6.19E+00	8.78E+00	1.81E+00	2.16E+00	1.43E+00	1.79E+00	7.25E-01	8.11E-01	7.53E+02	1.17E+03	Table B-16
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.57E-03	1.76E-03	2.31E-03	3.91E-03	8.62E-03	1.06E-02	2.97E-03	4.15E-03	8.46E-02	1.03E-01	8.26E-03	1.14E-02	1.88E+00	2.49E+00	NA	NA	NA	NA	5.62E-03	8.01E-03	3.21E-03	3.57E-03	1.50E-03	2.06E-03	3.38E-03	5.21E-03	1.92E+00	2.47E+00	Table B-7
EU-07	Floodplain soils (mg/kg)	1.15E+01	4.68E+01	2.82E+01	6.45E+01	1.70E+01	9.43E+01	5.22E+00	7.11E+00	6.66E+02	2.51E+03	8.79E+03	4.42E+04	1.20E+03	1.62E+03	1.22E+00	6.00E+00	2.66E+01	1.18E+02	5.17E+00	7.61E+00	2.80E+00	4.78E+00	2.54E+01	9.69E+01	8.30E-01	2.30E+00	3.08E+03	1.73E+04	Table B-17
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.60E-03	1.90E-03	2.51E-03	4.67E-03	6.52E-04	7.74E-04	3.32E-03	4.45E-03	6.36E-03	9.43E-03	5.82E-03	1.68E-02	3.26E-01	4.55E-01	NA	NA	2.50E-03	2.50E-03	1.66E-03	2.03E-03	3.47E-03	4.11E-03	1.66E-03	2.22E-03	4.18E-03	6.58E-03	2.42E-01	3.32E-01	Table B-7
EU-08	Floodplain soils (mg/kg)	1.34E+00	3.73E+00	1.28E+01	1.82E+01	1.84E+00	2.32E+00	3.89E+00	7.10E+00	1.00E+02	2.65E+02	7.97E+02	1.22E+03	1.58E+03	2.08E+03	4.10E-02	6.74E-02	4.43E+00	7.10E+00	3.54E+00	4.64E+00	7.92E-01	1.29E+00	1.44E+00	2.13E+00	4.11E-01	5.59E-01	3.84E+02	4.89E+02	Table B-17
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	2.83E-01	3.31E-01	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.14E+02	5.84E+02	
	Surface water (mg/L)	1.66E-03	2.06E-03	2.47E-03	4.02E-03	3.53E-04	4.30E-04	3.24E-03	4.12E-03	2.21E-03	3.79E-03	4.60E-03	2.55E-02	1.96E-02	4.75E-02	NA	NA	2.50E-03	2.50E-03	1.59E-03	2.07E-03	3.35E-03	4.12E-03	1.62E-03	2.06E-03	3.21E-03	4.13E-03	2.19E-02	2.95E-02	Table B-7
EU-09	Floodplain soils (mg/kg)	6.73E+00	1.17E+01	2.13E+01	2.61E+01	6.84E+00	9.47E+00	3.63E+00	4.24E+00	4.47E+02	5.73E+02	3.69E+03	5.17E+03	8.87E+03	1.27E+04	2.13E-01	3.17E-01	4.08E+00	6.06E+00	4.27E+00	5.03E+00	1.13E+00	1.30E+00	1.11E+01	1.57E+01	4.24E-01	7.41E-01	1.18E+03	1.64E+03	Table B-17
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.62E-03	1.95E-03	2.35E-03	4.06E-03	1.17E-03	1.75E-03	3.12E-03	4.20E-03	1.20E-02	1.98E-02	3.88E-03	5.58E-03	6.19E-01	8.48E-01	NA	NA	2.50E-03	2.50E-03	1.69E-03	2.08E-03	3.29E-03	3.92E-03	1.56E-03	2.10E-03	3.38E-03	4.88E-03	4.15E-01	5.65E-01	Table B-7
EU-10	Floodplain soils (mg/kg)	1.59E+01	1.89E+01	4.08E+01	4.33E+01	1.30E+01	1.44E+01	5.29E+00	5.74E+00	8.54E+02	1.00E+03	5.25E+03	6.38E+03	2.43E+04	3.64E+04	2.04E-01	2.57E-01	1.11E+01	1.81E+01	5.66E+00	6.59E+00	1.04E+00	1.20E+00	1.88E+01	2.44E+01	3.38E-01	3.72E-01	2.22E+03	2.55E+03	Table B-17
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.57E-03	1.92E-03	2.20E-03	4.22E-03	2.19E-03	2.92E-03	3.02E-03	3.81E-03	3.24E-02	4.68E-02	5.86E-03	8.27E-03	1.22E+00	1.41E+00	NA	NA	2.50E-03	2.50E-03	1.85E-03	2.25E-03	3.20E-03	3.85E-03	1.48E-03	1.91E-03	3.94E-03	5.93E-03	6.56E-01	8.27E-01	Table B-7
EU-11	Floodplain soils (mg/kg)	1.10E+00	1.10E+00	2.45E+01	2.45E+01	6.40E-01	6.40E-01	8.00E+00	8.00E+00	7.45E+01	7.45E+01	1.64E+02	1.64E+02	1.25E+03	1.25E+03	9.60E-03	9.60E-03	5.40E+00	5.40E+00	6.10E+00	6.10E+00	2.50E+00	2.50E+00	4.25E-01	4.25E-01	5.40E-01	5.40E-01	1.24E+02	1.24E+02	Table B-17
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	2.78E-01	3.30E-01	6.52E+01	8.55E+01	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	2.62E-01	2.85E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.84E-03	2.19E-03	3.03E-03	4.06E-03	4.06E-04	4.38E-04	3.56E-03	4.38E-03	7.26E-03	1.21E-02	6.04E-04	8.33E-04	9.57E-02	1.70E-01	NA	NA	NA	NA	2.04E-03	2.26E-03	3.75E-03	4.38E-03	1.78E-03	2.19E-03	5.43E-03	7.51E-03	4.53E-02	6.94E-02	Table B-7
EU-12	Floodplain soils (mg/kg)	1.51E+00	1.85E+00	2.27E+01	2.81E+01	6.10E+00	9.85E+00	7.16E+00	7.92E+00	2.16E+02	3.20E+02	6.96E+02	9.93E+02	6.07E+03	8.85E+03	1.01E-01	1.53E-01	3.51E+00	5.05E+00	9.36E+00	1.08E+01	2.20E+00	2.89E+00	1.74E+00	2.50E+00	5.76E-01	6.17E-01	1.38E+03	3.43E+03	Table B-17
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.82E-03	1.97E-03	2.96E-03	4.06E-03	2.15E-03	4.06E-03	3.59E-03	3.92E-03	1.22E-02	2.02E-02	2.20E-03	4.56E-03	3.48E-01	8.06E-01	NA	NA	NA	NA	1.99E-03	2.64E-03	3.66E-03	3.96E-03	1.79E-03	1.96E-03	4.73E-03	7.37E-03	8.54E-01	1.66E+00	Table B-7
EU-13	Floodplain soils (mg/kg)	5.80E+00	1.01E+01	3.12E+01	3.86E+01	1.25E+01	1.48E+01	1.72E+01	2.70E+01	4.08E+02	4.85E+02	2.65E+03	4.39E+03	8.20E+03	1.11E+04	9.86E-01	1.90E+00	7.05E+00	7.40E+00	3.77E+01	6.37E+01	2.40E+00	3.20E+00	3.68E+00	5.95E+00	5.75E-01	6.10E-01	3.28E+03	3.77E+03	Table B-17
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.73E-03	2.19E-03	2.69E-03	4.06E-03	1.19E-03	1.55E-03	3.46E-03	4.38E-03	2.54E-02	3.06E-02	2.03E-03	3.57E-03	2.73E-01	3.25E-01	NA	NA	NA	NA	1.73E-03	2.19E-03	3.46E-03	4.38E-03	1.73E-03	2.19E-03	5.02E-03	6.08E-03	3.74E-01	4.68E-01	Table B-7
EU-14	Floodplain soils (mg/kg)	1.09E+01	4.25E+01	5.70E+01	8.31E+01	6.66E+00	9.95E+00	5.60E+00	6.94E+00	2.23E+02	3.47E+02	2.77E+03	1.07E+04	3.98E+03	1.02E+04	1.95E-01	3.62E-01	5.86E+00	7.40E+00	5.09E+00	6.41E+00	1.72E+00	2.38E+00	5.93E+00	2.67E+01	5.32E-01	5.88E-01	1.87E+03	3.37E+03	Table B-18
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.65E-03	2.05E-03	2.53E-03	4.58E-03	4.16E-03	4.90E-03	3.14E-03	4.72E-03	5.40E-02	8.00E-02	1.21E-02	2.49E-02	3.74E+00	6.25E+00	NA	NA	NA	NA	3.06E-03	4.01E-03	3.38E-03	4.15E-03	1.55E-03	2.28E-03	3.23E-03	4.92E-03	1.25E+00	1.50E+00	Table B-7
EU-15	Floodplain soils (mg/kg)	3.99E+00	7.05E+00	5.95E+01	1.43E+02	3.60E+01	2.16E+02	5.22E+00	6.02E+00	5.87E+02	2.80E+03	1.67E+03	6.00E+03	1.36E+04	4.98E+04	6.97E-01	1.39E+00	2.99E+01	5.91E+01	1.18E+01	4.18E+01	2.25E+00	3.72E+00	3.32E+00	8.82E+00	7.40E-01	1.02E+00	5.09E+03	3.02E+04	Table B-18
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.71E-03	2.11E-03	2.70E-03	5.00E-03	8.11E-03	9.96E-03	3.28E-03	4.76E-03	3.30E-02	4.22E-02	2.35E-02	4.00E-02	1.36E+01	1.58E+01	NA	NA	NA	NA	8.28E-03	1.07E-02	3.69E-03	4.45E-03	1.64E-03	2.38E-03	3.35E-03	5.05E-03	2.76E+00	3.38E+00	Table B-7
EU-16	Floodplain soils (mg/kg)	2.88E+00	5.38E+00	3.31E+01	5.19E+01	6.06E+00	9.53E+00	5.62E+00	6.88E+00	2.89E+02	4.97E+02	1.74E+03	3.16E+03	1.09E+04	1.96E+04	3.62E-01	7.71E-01	5.23E+00	7.80E+00	5.62E+00	6.50E+00	2.24E+00	3.40E+00	3.91E+00	5.20E+00	9.94E-01	1.34E+00	1.13E+03	1.60E+03	Table B-18
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.86E-03	2.11E-03	3.06E-03	4.06E-03	3.19E-03	3.65E-03	3.66E-03	4.38E-03	2.65E-02	3.34E-02	2.58E-02	4.69E-02	1.82E+00	2.27E+00	NA	NA	NA	NA	3.55E-03	4.06E-03	3.75E-03	4.23E-03	1.83E-03	2.19E-03	3.91E-03	4.70E-03	1.29E+00	1.51E+00	Table B-7
EU-17	Floodplain soils (mg/kg)	1.17E+00	1.60E+00	2.88E+01	3.14E+01	1.27E+00	1.60E+00	6.16E+00	6.78E+00	7.95E+01	1.56E+02	1.36E+02	1.62E+02	4.14E+03	7.02E+03	4.50E-02	6.30E-02	4.55E+00	4.70E+00	5.84E+00	7.40E+00	1.38E+00	1.90E+00	6.70E-01	1.24E+00	8.23E-01	9.90E-01	2.77E+02	4.07E+02	Table B-18
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	2.78E-01	3.30E-01	6.52E+01	8.55E+01	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	2.62E-01	2.85E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.82E-03	2.00E-03	2.87E-03	4.06E-03	8.73E-03	1.09E-02	3.68E-03	4.20E-03	3.15E-02	3.64E-02	5.76E-03	1.71E-02	1.99E+01	2.51E+01	NA	NA	NA	NA	9.96E-03	1.25E-02	3.60E-03	3.99E-03	1.80E-03	2.00E-03	3.98E-03	6.41E-03	2.60E+00	3.30E+00	Table B-7
EU-18	Floodplain soils (mg/kg)	1.09E+00	1.50E+00	3.18E+01	3.49E+01	1.53E+00	2.00E+00	7.10E+00	1.20E+01	2.29E+01	2.86E+01	1.94E+02	2.76E+02	2.01E+03	2.66E+03	3.53E-02	4.60E-02	4.53E+00	4.70E+00	4.10E+00	5.50E+00	1.20E+00	1.60E+00	5.50E-01	6.50E-01	6.50E-01	7.70E-01	2.11E+02	2.70E+02	Table B-18
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	2.83E-01	3.31E-01	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.14E+02	5.84E+02	
	Surface water (mg/L)	1.73E-03	2.12E-03	2.66E-03	4.78E-03	5.27E-03	6.67E-03	3.30E-03	4.64E-03	3.19E-02	7.67E-02	1.05E-02	1.54E-02	1.12E+00	1.42E+00	NA	NA	NA	NA	3.00E-03	3.52E-03	3.53E-03	4.27E-03	1.65E-03	2.32E-03	3.81E-03	6.43E-03	9.52E-01	1.13E+00	Table B-7
EU-19	Floodplain soils (mg/kg)	2.87E+00	4.49E+00	5.99E+01	7.94E+01	3.80E+00	1.00E+01	4.01E+00	4.73E+00	8.33E+01	1.98E+02	5.21E+02	8.80E+02	3.31E+03	7.52E+03	5.65E-02	7.58E-02	1.31E+01	2.02E+01	4.05E+00	5.12E+00	1.43E+00	1.91E+00	1.46E+00	2.25E+00	1.04E+00	1.71E+00	2.80E+02	4.41E+02	Table B-18
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	2.00E-03	2.08E-03	3.51E-03	4.06E-03	1.38E-02	1.74E-02	3.99E-03	4.16E-03	7.28E-02	8.16E-02	1.16E-02	1.40E-02	4.08E+00	4.66E+00	NA	NA	NA	NA	9.33E-03	1.06E-02	4.01E-03	4.17E-03	2.00E-03	2.08E-03	4.82E-03	6.50E-03	2.02E+00	2.61E+00	Table B-7
EU-R2 Maggie Gulch	Floodplain soils (mg/kg)	7.76E-01	2.50E+00	1.03E+01	1.19E+01	8.42E-01	1.18E+00	3.74E+00	5.31E+00	2.75E+01	3.71E+01	6.67E+01	1.25E+02	1.40E+03	1.60E+03	7.67E-02	1.94E-01	1.85E+00	2.00E+00	5.16E+00	5.61E+00	7.33E-01	1.11E+00	4.97E-01	6.78E-01	4.19E-01	6.87E-01	1.52E+02	2.03E+02	Table B-17
	Herb (mg/kg)	1.80E-01	4.21E-01	1.25E-01	1.26E-01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	5.19E+01	7.89E+01	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.25E-01	1.26E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	2.72E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	5.31E-01	9.72E-01	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.25E-03	1.25E-03	1.25E-03	1.25E-03	2.50E-04	2.50E-04	2.50E-03	2.50E-03	1.25E-03	1.25E-03	3.16E-04	3.16E-04	1.30E-02	1.30E-02	NA	NA	NA	NA	1.25E-03	1.25E-03	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-03	2.50E-03	5.00E-03	5.00E-03	Table B-7
EU-R3 Picayune Gulch	Floodplain soils (mg/kg)	9.17E-01	2.01E+00	4.45E+01	5.58E+01	1.44E+00	1.52E+00	4.81E+00	5.37E+00	3.53E+01	4.53E+01	1.40E+02	1.72E+02	3.11E+03	5.41E+03	4.10E-02	5.60E-02	2.60E+00	2.60E+00	5.62E+00	5.87E+00	6.00E-01	1.24E+00	1.24E+00	2.04E+00	3.32E-01	5.27E-01	2.44E+02	2.63E+02	Table B-18
	Herb (mg/kg)	1.80E-01	4.21E-01	1.25E-01	1.26E-01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	5.19E+01	7.89E+01	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.25E-01	1.26E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	2.72E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	5.31E-01	9.72E-01	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.25E-03	1.25E-03	1.25E-03	1.25E-03	2.50E-04	2.50E-04	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-04	2.50E-04	1.51E-01	1.51E-01	NA	NA	NA	NA	1.25E-03	1.25E-03	2.50E-03	2.50E-03	1.25E-03	1.25E-03	2.50E-03	2.50E-03	1.23E-02	1.23E-02	Table B-7
EU-R4 Upper North Fork	Floodplain soils (mg/kg)	1.90E+00	1.90E+00	1.05E+02	1.05E+02	1.70E+00	1.70E+00	2.90E+00	2.90E+00	8.15E+01	8.15E+01	3.34E+02	3.34E+02	6.28E+02	6.28E+02	7.20E-02	7.20E-02	1.02E+01	1.02E+01	2.40E+00	2.40E+00	1.50E+00	1.50E+00	2.40E+00	2.40E+00	7.60E-01	7.60E-01	4.80E+02	4.80E+02	Table B-18
	Herb (mg/kg)	1.80E-01	4.21E-01	1.25E-01	1.26E-01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	5.19E+01	7.89E+01	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.25E-01	1.26E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	2.72E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	5.31E-01	9.72E-01	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.78E-03	2.50E-03	2.80E-03	5.00E-03	8.32E-04	1.11E-03	3.36E-03	5.00E-03	2.02E-03	2.58E-03	1.08E-03	1.51E-03	2.06E-02	3.04E-02	NA	NA	NA	NA	1.63E-03	2.50E-03	3.65E-03	5.00E-03	1.68E-03	2.50E-03	3.27E-03	5.00E-03	1.30E-01	1.63E-01	Table B-7

CTE = central tendency exposure; RME = reasonable maximum exposure; NA = not available

Table 3.21 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for Mountain Bluebird. EPC derivation methods are detailed in cited EPC sources. All soil, invertebrate tissue, and plant tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Arsenic		Barium		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Vanadium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
High-level halo area	Halo soils (mg/kg)	4.93E+01	6.55E+01	1.52E+02	2.07E+02	9.55E+00	2.00E+01	4.76E+00	5.19E+00	1.82E+02	2.65E+02	2.20E+03	2.94E+03	6.67E+03	2.17E+04	8.85E-02	1.44E-01	1.23E+01	2.92E+01	6.48E+00	1.49E+01	9.32E-01	1.26E+00	7.69E+00	1.12E+01	1.28E+01	1.40E+01	2.01E+03	5.52E+03	Table B-24
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	4.64E+00	8.25E+00	3.56E+00	6.74E+00	4.16E+01	7.31E+01	6.32E+01	1.32E+02	1.41E+03	8.26E+03	NA	NA	NA	NA	2.89E+00	1.18E+01	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	4.92E+02	8.62E+02	Table B-27
	Ground invertebrate (mg/kg)	1.50E+00	2.53E+00	2.51E+01	6.18E+01	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	4.42E+02	9.12E+02	
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	Table B-31
	Surface water (mg/L)	4.02E-03	7.32E-03	2.05E-02	2.28E-02	5.11E-03	7.08E-03	3.37E-03	3.71E-03	6.14E-02	1.21E-01	1.82E-02	2.16E-02	2.42E+00	3.16E+00	NA	NA	2.50E-03	2.50E-03	4.65E-03	7.23E-03	3.45E-03	3.63E-03	1.66E-03	1.84E-03	2.77E-03	3.13E-03	1.45E+00	1.88E+00	Table B-8
Mid-level halo area	Halo soils (mg/kg)	2.93E+01	3.94E+01	1.38E+02	2.12E+02	1.63E+00	2.35E+00	6.59E+00	7.70E+00	6.92E+01	9.76E+01	1.83E+03	3.34E+03	1.89E+03	2.39E+03	2.80E-02	1.20E-01	2.42E+00	3.52E+00	5.29E+00	5.83E+00	8.15E-01	1.16E+00	4.91E+00	8.40E+00	1.99E+01	2.24E+01	4.56E+02	9.61E+02	Table B-24
	Flying invertebrate (mg/kg)	6.33E+00	1.75E+01	3.83E+01	8.96E+01	3.24E+00	6.67E+00	3.56E+00	6.74E+00	3.23E+01	4.26E+01	6.32E+01	1.32E+02	4.56E+02	7.15E+02	NA	NA	NA	NA	9.44E-01	1.58E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.95E+00	4.62E+00	3.65E+02	5.66E+02	Table B-27
	Ground invertebrate (mg/kg)	1.13E+00	1.88E+00	2.51E+01	3.18E+01	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.94E+00	3.77E+00	2.10E+02	2.92E+02	
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	1.53E+01	1.53E+01	6.87E+02	6.87E+02	
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.14E+02	5.84E+02	Table B-31
	Surface water (mg/L)	4.02E-03	5.58E-03	2.56E-02	3.01E-02	2.52E-03	4.52E-03	3.50E-03	4.00E-03	3.38E-02	5.96E-02	2.00E-02	3.40E-02	1.21E+00	2.22E+00	NA	NA	2.50E-03	2.50E-03	4.32E-03	5.75E-03	3.69E-03	3.90E-03	1.75E-03	1.96E-03	3.61E-03	5.65E-03	7.73E-01	1.29E+00	Table B-8
Low-level halo area	Halo soils (mg/kg)	4.26E+01	5.74E+01	1.72E+02	1.95E+02	1.61E+00	2.52E+00	4.87E+00	5.47E+00	1.50E+02	2.56E+02	7.29E+02	9.58E+02	8.36E+02	1.13E+03	8.92E-02	4.01E-01	1.72E+00	2.45E+00	3.17E+00	3.74E+00	1.47E+00	1.87E+00	2.87E+00	3.63E+00	1.71E+01	1.91E+01	3.68E+02	5.39E+02	Table B-24
	Flying invertebrate (mg/kg)	1.49E+00	5.92E+00	2.00E+01	3.12E+01	3.24E+00	6.67E+00	3.21E+00	4.47E+00	3.23E+01	4.26E+01	1.23E+01	2.57E+01	4.56E+02	7.15E+02	NA	NA	NA	NA	8.59E-01	1.56E+00	9.29E-01	1.70E+00	5.52E-01	1.10E+00	1.63E+00	2.52E+00	3.65E+02	5.66E+02	Table B-27
	Ground invertebrate (mg/kg)	7.80E-01	1.28E+00	2.51E+01	3.16E+01	2.32E+00	4.50E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	8.86E+00	1.83E+01	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	8.94E-01	2.69E+00	1.07E+00	4.51E+00	1.82E+00	2.47E+00	2.10E+02	2.92E+02	
	Soil invertebrate (mg/kg)	8.63E+00	9.32E+00	6.42E+01	7.75E+01	1.26E+01	1.26E+01	3.75E+00	5.92E+00	1.76E+01	1.76E+01	1.15E+02	1.15E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	5.40E-01	6.48E-01	1.53E+01	1.53E+01	3.56E+02	4.63E+02	
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	1.06E+02	1.38E+02	Table B-31
	Surface water (mg/L)	3.23E-03	3.94E-03	1.74E-02	1.86E-02	2.64E-03	4.37E-03	3.67E-03	4.15E-03	1.66E-02	2.23E-02	5.94E-03	1.07E-02	4.43E+00	8.26E+00	NA	NA	2.50E-03	2.50E-03	4.98E-03	7.42E-03	3.79E-03	3.99E-03	1.83E-03	2.07E-03	3.09E-03	5.06E-03	8.19E-01	1.49E+00	Table B-8
Vegetated upland area	Veg. upland soils (mg/kg)	1.49E+01	1.99E+01	1.64E+02	1.81E+02	1.07E+00	1.88E+00	5.92E+00	6.23E+00	2.92E+01	3.41E+01	1.74E+02	2.25E+02	1.36E+03	1.96E+03	3.33E-02	1.11E-01	3.26E+00	6.12E+00	3.37E+00	4.82E+00	9.30E-01	1.29E+00	1.10E+00	2.23E+00	1.80E+01	1.93E+01	1.90E+02	2.37E+02	Table B-24
	Flying invertebrate (mg/kg)	3.32E-01	5.02E-01	9.53E+00	1.21E+01	2.29E+00	4.86E+00	3.21E+00	4.47E+00	3.12E+01	3.75E+01	1.46E+00	2.37E+00	1.05E+02	1.39E+02	NA	NA	NA	NA	5.57E-01	8.31E-01	5.26E-01	1.15E+00	2.21E-01	3.34E-01	9.79E-01	1.25E+00	2.25E+02	2.70E+02	Table B-27
	Ground invertebrate (mg/kg)	7.80E-01	1.15E+00	2.51E+01	3.16E+01	2.15E+00	3.16E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	4.75E+00	8.00E+00	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	7.36E-01	1.63E+00	1.07E+00	4.51E+00	1.82E+00	2.49E+00	2.10E+02	2.55E+02	
	Soil invertebrate (mg/kg)	7.53E+00	9.32E+00	5.65E+01	7.75E+01	6.76E+00	9.14E+00	3.75E+00	5.92E+00	1.19E+01	1.68E+01	6.96E+00	1.13E+01	3.39E+02	5.41E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	4.49E-01	6.48E-01	5.58E+00	9.45E+00	2.78E+02	4.63E+02	
	Shrub (mg/kg)	1.25E-01	1.26E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	2.72E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	5.31E-01	9.72E-01	2.50E-01	2.51E-01	1.25E-01	1.26E-01	5.00E-01	5.02E-01	1.06E+02	1.38E+02	Table B-31
	Surface water (mg/L)	2.10E-03	4.06E-03	2.32E-02	2.41E-02	4.56E-04	8.11E-04	2.97E-03	4.43E-03	1.62E-03	1.95E-03	7.78E-04	1.07E-03	3.20E-02	6.01E-02	NA	NA	NA	NA	1.45E-03	2.25E-03	3.15E-03	3.72E-03	1.49E-03	2.21E-03	1.31E-03	1.32E-03	5.36E-02	1.28E-01	Table B-8

CTE = central tendency exposure; RME = reasonable maximum exposure; NA = not available

Table 3.22 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for White-Tailed Ptarmigan. EPC derivation methods are detailed in cited EPC sources. All soil and plant tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Arsenic		Barium		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Vanadium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
High-level halo area	Halo soils (mg/kg)	4.93E+01	6.55E+01	1.52E+02	2.07E+02	9.55E+00	2.00E+01	4.76E+00	5.19E+00	1.82E+02	2.65E+02	2.20E+03	2.94E+03	6.67E+03	2.17E+04	8.85E-02	1.44E-01	1.23E+01	2.92E+01	6.48E+00	1.49E+01	9.32E-01	1.26E+00	7.69E+00	1.12E+01	1.28E+01	1.40E+01	2.01E+03	5.52E+03	Table B-24
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	7.07E-01	1.05E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.94E+02	6.05E+02	
	Surface water (mg/L)	4.02E-03	7.32E-03	2.05E-02	2.28E-02	5.11E-03	7.08E-03	3.37E-03	3.71E-03	6.14E-02	1.21E-01	1.82E-02	2.16E-02	2.42E+00	3.16E+00	NA	NA	2.50E-03	2.50E-03	4.65E-03	7.23E-03	3.45E-03	3.63E-03	1.66E-03	1.84E-03	2.77E-03	3.13E-03	1.45E+00	1.88E+00	Table B-8
Mid-level halo area	Halo soils (mg/kg)	2.93E+01	3.94E+01	1.38E+02	2.12E+02	1.63E+00	2.35E+00	6.59E+00	7.70E+00	6.92E+01	9.76E+01	1.83E+03	3.34E+03	1.89E+03	2.39E+03	2.80E-02	1.20E-01	2.42E+00	3.52E+00	5.29E+00	5.83E+00	8.15E-01	1.16E+00	4.91E+00	8.40E+00	1.99E+01	2.24E+01	4.56E+02	9.61E+02	Table B-24
	Herb (mg/kg)	3.10E-01	8.78E-01	4.66E+01	7.99E+01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	7.07E-01	1.05E+00	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.92E+01	7.37E+01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	4.14E+02	5.84E+02	
	Surface water (mg/L)	4.02E-03	5.58E-03	2.56E-02	3.01E-02	2.52E-03	4.52E-03	3.50E-03	4.00E-03	3.38E-02	5.96E-02	2.00E-02	3.40E-02	1.21E+00	2.22E+00	NA	NA	2.50E-03	2.50E-03	4.32E-03	5.75E-03	3.69E-03	3.90E-03	1.75E-03	1.96E-03	3.61E-03	5.65E-03	7.73E-01	1.29E+00	Table B-8
Low-level halo area	Halo soils (mg/kg)	4.26E+01	5.74E+01	1.72E+02	1.95E+02	1.61E+00	2.52E+00	4.87E+00	5.47E+00	1.50E+02	2.56E+02	7.29E+02	9.58E+02	8.36E+02	1.13E+03	8.92E-02	4.01E-01	1.72E+00	2.45E+00	3.17E+00	3.74E+00	1.47E+00	1.87E+00	2.87E+00	3.63E+00	1.71E+01	1.91E+01	3.68E+02	5.39E+02	Table B-24
	Herb (mg/kg)	3.10E-01	8.78E-01	4.07E+01	4.88E+01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	7.07E-01	1.05E+00	6.52E+01	8.55E+01	Table B-31
	Shrub (mg/kg)	1.75E-01	3.93E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	6.63E-01	1.57E+00	1.06E+02	1.38E+02	
	Surface water (mg/L)	3.23E-03	3.94E-03	1.74E-02	1.86E-02	2.64E-03	4.37E-03	3.67E-03	4.15E-03	1.66E-02	2.23E-02	5.94E-03	1.07E-02	4.43E+00	8.26E+00	NA	NA	2.50E-03	2.50E-03	4.98E-03	7.42E-03	3.79E-03	3.99E-03	1.83E-03	2.07E-03	3.09E-03	5.06E-03	8.19E-01	1.49E+00	Table B-8
Vegetated upland area	Veg. upland soils (mg/kg)	1.49E+01	1.99E+01	1.64E+02	1.81E+02	1.07E+00	1.88E+00	5.92E+00	6.23E+00	2.92E+01	3.41E+01	1.74E+02	2.25E+02	1.36E+03	1.96E+03	3.33E-02	1.11E-01	3.26E+00	6.12E+00	3.37E+00	4.82E+00	9.30E-01	1.29E+00	1.10E+00	2.23E+00	1.80E+01	1.93E+01	1.90E+02	2.37E+02	Table B-24
	Herb (mg/kg)	1.25E-01	1.26E-01	4.07E+01	4.88E+01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	5.54E-01	6.51E-01	5.19E+01	7.89E+01	Table B-31
	Shrub (mg/kg)	1.25E-01	1.26E-01	2.42E+01	3.22E+01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	2.72E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	5.31E-01	9.72E-01	2.50E-01	2.51E-01	1.25E-01	1.26E-01	5.00E-01	5.02E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	2.10E-03	4.06E-03	2.32E-02	2.41E-02	4.56E-04	8.11E-04	2.97E-03	4.43E-03	1.62E-03	1.95E-03	7.78E-04	1.07E-03	3.20E-02	6.01E-02	NA	NA	NA	NA	1.45E-03	2.25E-03	3.15E-03	3.72E-03	1.49E-03	2.21E-03	1.31E-03	1.32E-03	5.36E-02	1.28E-01	Table B-8

CTE = central tendency exposure; RME = reasonable maximum exposure; NA = not available

Table 3.23 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for American Pika. EPC derivation methods are detailed in cited EPC sources. All soil and plant tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Antimony		Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
High-level halo area	Halo soils (mg/kg)	6.23E+00	1.23E+01	4.93E+01	6.55E+01	9.55E+00	2.00E+01	4.76E+00	5.19E+00	1.82E+02	2.65E+02	2.20E+03	2.94E+03	6.67E+03	2.17E+04	8.85E-02	1.44E-01	1.23E+01	2.92E+01	6.48E+00	1.49E+01	9.32E-01	1.26E+00	7.69E+00	1.12E+01	9.20E-01	1.36E+00	2.01E+03	5.52E+03	Table B-24
	Waste pile soils (mg/kg)	9.00E+01	1.25E+02	1.38E+02	1.79E+02	4.57E+01	8.00E+01	2.84E+00	4.08E+00	8.28E+02	1.37E+03	1.33E+04	1.73E+04	7.68E+03	4.83E+04	9.33E-01	1.28E+00	4.21E+01	7.11E+01	4.72E+00	1.32E+01	4.35E+00	6.73E+00	3.72E+01	4.77E+01	8.30E-01	1.34E+00	1.33E+04	2.26E+04	Table B-34
	Grass (mg/kg)	1.74E-01	2.36E-01	3.04E-01	9.64E-01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	3.62E-01	8.47E-01	1.73E+02	2.20E+02	Table B-31
	Adit surface water (mg/L)	1.42E-03	1.51E-03	4.16E-02	1.31E-01	3.55E-02	7.45E-02	2.75E-03	2.88E-03	8.08E-01	1.44E+00	1.29E-01	2.37E-01	1.11E+01	1.36E+01	NA	NA	2.75E-03	2.99E-03	1.38E-02	2.21E-02	2.89E-03	3.13E-03	1.39E-03	1.46E-03	2.81E-03	3.08E-03	1.14E+01	2.10E+01	Table B-14
	Surface water (mg/L)	1.65E-03	1.74E-03	4.02E-03	7.32E-03	5.11E-03	7.08E-03	3.37E-03	3.71E-03	6.14E-02	1.21E-01	1.82E-02	2.16E-02	2.42E+00	3.16E+00	NA	NA	2.50E-03	2.50E-03	4.65E-03	7.23E-03	3.45E-03	3.63E-03	1.66E-03	1.84E-03	4.12E-03	4.98E-03	1.45E+00	1.88E+00	Table B-8
Mid-level halo area	Halo soils (mg/kg)	1.63E+00	3.29E+00	2.93E+01	3.94E+01	1.63E+00	2.35E+00	6.59E+00	7.70E+00	6.92E+01	9.76E+01	1.83E+03	3.34E+03	1.89E+03	2.39E+03	2.80E-02	1.20E-01	2.42E+00	3.52E+00	5.29E+00	5.83E+00	8.15E-01	1.16E+00	4.91E+00	8.40E+00	8.22E-01	1.20E+00	4.56E+02	9.61E+02	Table B-24
	Waste pile soils (mg/kg)	4.04E+01	7.16E+01	8.92E+02	3.40E+03	8.53E+00	1.55E+01	4.05E+00	5.52E+00	7.37E+02	1.32E+03	6.42E+03	9.47E+03	2.27E+03	6.53E+03	7.30E-01	2.13E+00	2.49E+01	4.30E+01	2.82E+00	3.61E+00	4.53E+00	6.55E+00	1.99E+01	2.43E+01	5.28E-01	7.20E-01	2.62E+03	4.56E+03	Table B-34
	Grass (mg/kg)	1.40E-01	1.67E-01	3.04E-01	9.64E-01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	2.78E-01	3.30E-01	9.71E+01	1.40E+02	Table B-31
	Adit surface water (mg/L)	1.42E-03	1.51E-03	4.16E-02	1.31E-01	3.55E-02	7.45E-02	2.75E-03	2.88E-03	8.08E-01	1.44E+00	1.29E-01	2.37E-01	1.11E+01	1.36E+01	NA	NA	2.75E-03	2.99E-03	1.38E-02	2.21E-02	2.89E-03	3.13E-03	1.39E-03	1.46E-03	2.81E-03	3.08E-03	1.14E+01	2.10E+01	Table B-14
	Surface water (mg/L)	1.53E-03	1.60E-03	4.02E-03	5.58E-03	2.52E-03	4.52E-03	3.50E-03	4.00E-03	3.38E-02	5.96E-02	2.00E-02	3.40E-02	1.21E+00	2.22E+00	NA	NA	2.50E-03	2.50E-03	4.32E-03	5.75E-03	3.69E-03	3.90E-03	1.75E-03	1.96E-03	3.74E-03	4.37E-03	7.73E-01	1.29E+00	Table B-8
Low-level halo area	Halo soils (mg/kg)	2.62E+00	3.87E+00	4.26E+01	5.74E+01	1.61E+00	2.52E+00	4.87E+00	5.47E+00	1.50E+02	2.56E+02	7.29E+02	9.58E+02	8.36E+02	1.13E+03	8.92E-02	4.01E-01	1.72E+00	2.45E+00	3.17E+00	3.74E+00	1.47E+00	1.87E+00	2.87E+00	3.63E+00	8.11E-01	1.12E+00	3.68E+02	5.39E+02	Table B-24
	Waste pile soils (mg/kg)	2.66E+01	5.69E+01	1.13E+02	1.47E+02	5.80E+00	8.94E+00	3.95E+00	4.90E+00	2.82E+02	4.07E+02	4.52E+03	9.09E+03	2.28E+03	6.94E+03	4.38E-01	7.25E-01	2.58E+01	5.22E+01	2.23E+00	2.81E+00	2.99E+00	4.12E+00	1.61E+01	2.06E+01	1.49E+00	3.79E+00	2.34E+03	3.74E+03	Table B-34
	Grass (mg/kg)	1.40E-01	1.67E-01	1.81E-01	3.47E-01	3.08E-01	6.61E-01	1.98E+00	2.53E+00	6.09E+00	7.68E+00	1.29E+00	3.03E+00	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.06E+00	1.57E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	3.37E-01	7.83E-01	7.95E+01	1.34E+02	Table B-31
	Adit surface water (mg/L)	1.42E-03	1.51E-03	4.16E-02	1.31E-01	3.55E-02	7.45E-02	2.75E-03	2.88E-03	8.08E-01	1.44E+00	1.29E-01	2.37E-01	1.11E+01	1.36E+01	NA	NA	2.75E-03	2.99E-03	1.38E-02	2.21E-02	2.89E-03	3.13E-03	1.39E-03	1.46E-03	2.81E-03	3.08E-03	1.14E+01	2.10E+01	Table B-14
	Surface water (mg/L)	1.89E-03	1.98E-03	3.23E-03	3.94E-03	2.64E-03	4.37E-03	3.67E-03	4.15E-03	1.66E-02	2.23E-02	5.94E-03	1.07E-02	4.43E+00	8.26E+00	NA	NA	2.50E-03	2.50E-03	4.98E-03	7.42E-03	3.79E-03	3.99E-03	1.83E-03	2.07E-03	3.09E-03	5.06E-03	8.19E-01	1.49E+00	Table B-8
Vegetated upland area	Veg. upland soils (mg/kg)	6.57E-01	1.02E+00	1.49E+01	1.99E+01	1.07E+00	1.88E+00	5.92E+00	6.23E+00	2.92E+01	3.41E+01	1.74E+02	2.25E+02	1.36E+03	1.96E+03	3.33E-02	1.11E-01	3.26E+00	6.12E+00	3.37E+00	4.82E+00	9.30E-01	1.29E+00	1.10E+00	2.23E+00	7.48E-01	9.76E-01	1.90E+02	2.37E+02	Table B-24
	Grass (mg/kg)	1.40E-01	1.67E-01	1.81E-01	3.47E-01	1.34E-01	3.42E-01	1.98E+00	2.31E+00	5.33E+00	6.25E+00	1.29E+00	3.03E+00	2.04E+02	2.82E+02	1.24E-01	1.25E-01	NA	NA	1.06E+00	1.57E+00	2.96E-01	3.79E-01	1.46E-01	1.83E-01	2.78E-01	3.30E-01	5.84E+01	7.48E+01	Table B-34
	Surface water (mg/L)	1.54E-03	1.84E-03	2.10E-03	4.06E-03	4.56E-04	8.11E-04	2.97E-03	4.43E-03	1.62E-03	1.95E-03	7.78E-04	1.07E-03	3.20E-02	6.01E-02	NA	NA	NA	NA	1.45E-03	2.25E-03	3.15E-03	3.72E-03	1.49E-03	2.21E-03	3.01E-03	4.65E-03	5.36E-02	1.28E-01	Table B-8

CTE = central tendency exposure; RME = reasonable maximum exposure; NA = not available

Table 3.24 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for Yellow-Bellied Marmot. EPC derivation methods are detailed in cited EPC sources. All soil, invertebrate tissue, and plant tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Antimony		Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
High-level halo area	Halo soils (mg/kg)	6.23E+00	1.23E+01	4.93E+01	6.55E+01	9.55E+00	2.00E+01	4.76E+00	5.19E+00	1.82E+02	2.65E+02	2.20E+03	2.94E+03	6.67E+03	2.17E+04	8.85E-02	1.44E-01	1.23E+01	2.92E+01	6.48E+00	1.49E+01	9.32E-01	1.26E+00	7.69E+00	1.12E+01	9.20E-01	1.36E+00	2.01E+03	5.52E+03	Table B-24
	Waste pile soils (mg/kg)	9.00E+01	1.25E+02	1.38E+02	1.79E+02	4.57E+01	8.00E+01	2.84E+00	4.08E+00	8.28E+02	1.37E+03	1.33E+04	1.73E+04	7.68E+03	4.83E+04	9.33E-01	1.28E+00	4.21E+01	7.11E+01	4.72E+00	1.32E+01	4.35E+00	6.73E+00	3.72E+01	4.77E+01	8.30E-01	1.34E+00	1.33E+04	2.26E+04	Table B-34
	Ground invertebrate (mg/kg)	1.26E+00	3.56E+00	1.50E+00	2.53E+00	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	4.42E+02	9.12E+02	Table B-27
	Soil invertebrate (mg/kg)	7.03E-01	7.03E-01	8.63E+00	9.32E+00	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	2.50E-01	2.50E-01	6.87E+02	6.87E+02	
	Grass (mg/kg)	1.74E-01	2.36E-01	3.04E-01	9.64E-01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	3.62E-01	8.47E-01	1.73E+02	2.20E+02	Table B-31
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	
	Adit surface water (mg/L)	1.42E-03	1.51E-03	4.16E-02	1.31E-01	3.55E-02	7.45E-02	2.75E-03	2.88E-03	8.08E-01	1.44E+00	1.29E-01	2.37E-01	1.11E+01	1.36E+01	NA	NA	2.75E-03	2.99E-03	1.38E-02	2.21E-02	2.89E-03	3.13E-03	1.39E-03	1.46E-03	2.81E-03	3.08E-03	1.14E+01	2.10E+01	Table B-14
	Surface water (mg/L)	1.65E-03	1.74E-03	4.02E-03	7.32E-03	5.11E-03	7.08E-03	3.37E-03	3.71E-03	6.14E-02	1.21E-01	1.82E-02	2.16E-02	2.42E+00	3.16E+00	NA	NA	2.50E-03	2.50E-03	4.65E-03	7.23E-03	3.45E-03	3.63E-03	1.66E-03	1.84E-03	4.12E-03	4.98E-03	1.45E+00	1.88E+00	Table B-8
Mid-level halo area	Halo soils (mg/kg)	1.63E+00	3.29E+00	2.93E+01	3.94E+01	1.63E+00	2.35E+00	6.59E+00	7.70E+00	6.92E+01	9.76E+01	1.83E+03	3.34E+03	1.89E+03	2.39E+03	2.80E-02	1.20E-01	2.42E+00	3.52E+00	5.29E+00	5.83E+00	8.15E-01	1.16E+00	4.91E+00	8.40E+00	8.22E-01	1.20E+00	4.56E+02	9.61E+02	Table B-24
	Waste pile soils (mg/kg)	4.04E+01	7.16E+01	8.92E+02	3.40E+03	8.53E+00	1.55E+01	4.05E+00	5.52E+00	7.37E+02	1.32E+03	6.42E+03	9.47E+03	2.27E+03	6.53E+03	7.30E-01	2.13E+00	2.49E+01	4.30E+01	2.82E+00	3.61E+00	4.53E+00	6.55E+00	1.99E+01	2.43E+01	5.28E-01	7.20E-01	2.62E+03	4.56E+03	Table B-34
	Ground invertebrate (mg/kg)	1.26E+00	3.56E+00	1.13E+00	1.88E+00	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	2.10E+02	2.92E+02	Table B-27
	Soil invertebrate (mg/kg)	7.03E-01	7.03E-01	8.63E+00	9.32E+00	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	2.50E-01	2.50E-01	6.87E+02	6.87E+02	
	Grass (mg/kg)	1.40E-01	1.67E-01	3.04E-01	9.64E-01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	2.78E-01	3.30E-01	9.71E+01	1.40E+02	Table B-31
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	2.83E-01	3.31E-01	9.94E+01	1.68E+02	
	Adit surface water (mg/L)	1.42E-03	1.51E-03	4.16E-02	1.31E-01	3.55E-02	7.45E-02	2.75E-03	2.88E-03	8.08E-01	1.44E+00	1.29E-01	2.37E-01	1.11E+01	1.36E+01	NA	NA	2.75E-03	2.99E-03	1.38E-02	2.21E-02	2.89E-03	3.13E-03	1.39E-03	1.46E-03	2.81E-03	3.08E-03	1.14E+01	2.10E+01	Table B-14
	Surface water (mg/L)	1.53E-03	1.60E-03	4.02E-03	5.58E-03	2.52E-03	4.52E-03	3.50E-03	4.00E-03	3.38E-02	5.96E-02	2.00E-02	3.40E-02	1.21E+00	2.22E+00	NA	NA	2.50E-03	2.50E-03	4.32E-03	5.75E-03	3.69E-03	3.90E-03	1.75E-03	1.96E-03	3.74E-03	4.37E-03	7.73E-01	1.29E+00	Table B-8
Low-level halo area	Halo soils (mg/kg)	2.62E+00	3.87E+00	4.26E+01	5.74E+01	1.61E+00	2.52E+00	4.87E+00	5.47E+00	1.50E+02	2.56E+02	7.29E+02	9.58E+02	8.36E+02	1.13E+03	8.92E-02	4.01E-01	1.72E+00	2.45E+00	3.17E+00	3.74E+00	1.47E+00	1.87E+00	2.87E+00	3.63E+00	8.11E-01	1.12E+00	3.68E+02	5.39E+02	Table B-24
	Waste pile soils (mg/kg)	2.66E+01	5.69E+01	1.13E+02	1.47E+02	5.80E+00	8.94E+00	3.95E+00	4.90E+00	2.82E+02	4.07E+02	4.52E+03	9.09E+03	2.28E+03	6.94E+03	4.38E-01	7.25E-01	2.58E+01	5.22E+01	2.23E+00	2.81E+00	2.99E+00	4.12E+00	1.61E+01	2.06E+01	1.49E+00	3.79E+00	2.34E+03	3.74E+03	Table B-34
	Ground invertebrate (mg/kg)	1.26E+00	3.56E+00	7.80E-01	1.28E+00	2.32E+00	4.50E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	8.86E+00	1.83E+01	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	8.94E-01	2.69E+00	1.07E+00	4.51E+00	2.97E-01	6.09E-01	2.10E+02	2.92E+02	Table B-27
	Soil invertebrate (mg/kg)	7.03E-01	7.03E-01	8.63E+00	9.32E+00	1.26E+01	1.26E+01	3.75E+00	5.92E+00	1.76E+01	1.76E+01	1.15E+02	1.15E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	5.40E-01	6.48E-01	8.29E-01	2.71E+00	3.56E+02	4.63E+02	
	Grass (mg/kg)	1.40E-01	1.67E-01	1.81E-01	3.47E-01	3.08E-01	6.61E-01	1.98E+00	2.53E+00	6.09E+00	7.68E+00	1.29E+00	3.03E+00	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.06E+00	1.57E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	3.37E-01	7.83E-01	7.95E+01	1.34E+02	Table B-31
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	2.78E-01	3.30E-01	6.52E+01	8.55E+01	
	Adit surface water (mg/L)	1.42E-03	1.51E-03	4.16E-02	1.31E-01	3.55E-02	7.45E-02	2.75E-03	2.88E-03	8.08E-01	1.44E+00	1.29E-01	2.37E-01	1.11E+01	1.36E+01	NA	NA	2.75E-03	2.99E-03	1.38E-02	2.21E-02	2.89E-03	3.13E-03	1.39E-03	1.46E-03	2.81E-03	3.08E-03	1.14E+01	2.10E+01	Table B-14
	Surface water (mg/L)	1.89E-03	1.98E-03	3.23E-03	3.94E-03	2.64E-03	4.37E-03	3.67E-03	4.15E-03	1.66E-02	2.23E-02	5.94E-03	1.07E-02	4.43E+00	8.26E+00	NA	NA	2.50E-03	2.50E-03	4.98E-03	7.42E-03	3.79E-03	3.99E-03	1.83E-03	2.07E-03	3.09E-03	5.06E-03	8.19E-01	1.49E+00	Table B-8
Vegetated upland area	Veg. upland soils (mg/kg)	6.57E-01	1.02E+00	1.49E+01	1.99E+01	1.07E+00	1.88E+00	5.92E+00	6.23E+00	2.92E+01	3.41E+01	1.74E+02	2.25E+02	1.36E+03	1.96E+03	3.33E-02	1.11E-01	3.26E+00	6.12E+00	3.37E+00	4.82E+00	9.30E-01	1.29E+00	1.10E+00	2.23E+00	7.48E-01	9.76E-01	1.90E+02	2.37E+02	Table B-24
	Ground invertebrate (mg/kg)	1.26E+00	3.56E+00	7.80E-01	1.15E+00	2.15E+00	3.16E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	4.75E+00	8.00E+00	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	7.36E-01	1.63E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	2.10E+02	2.55E+02	Table B-27
	Soil invertebrate (mg/kg)	3.29E-01	5.76E-01	7.53E+00	9.32E+00	6.76E+00	9.14E+00	3.75E+00	5.92E+00	1.19E+01	1.68E+01	6.96E+00	1.13E+01	3.39E+02	5.41E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	4.49E-01	6.48E-01	2.00E-01	2.50E-01	2.78E+02	4.63E+02	
	Grass (mg/kg)	1.40E-01	1.67E-01	1.81E-01	3.47E-01	1.34E-01	3.42E-01	1.98E+00	2.31E+00	5.33E+00	6.25E+00	1.29E+00	3.03E+00	2.04E+02	2.82E+02	1.24E-01	1.25E-01	NA	NA	1.06E+00	1.57E+00	2.96E-01	3.79E-01	1.46E-01	1.83E-01	2.78E-01	3.30E-01	5.84E+01	7.48E+01	Table B-31
	Herb (mg/kg)	1.80E-01	4.21E-01	1.25E-01	1.26E-01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	5.19E+01	7.89E+01	
	Surface water (mg/L)	1.54E-03	1.84E-03	2.10E-03	4.06E-03	4.56E-04	8.11E-04	2.97E-03	4.43E-03	1.62E-03	1.95E-03	7.78E-04	1.07E-03	3.20E-02	6.01E-02	NA	NA	NA	NA	1.45E-03	2.25E-03	3.15E-03	3.72E-03	1.49E-03	2.21E-03	3.01E-03	4.65E-03	5.36E-02	1.28E-01	Table B-8

CTE = central tendency exposure; RME = reasonable maximum exposure; NA = not available

Table 3.25 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for Northern Pocket Gopher. EPC derivation methods are detailed in cited EPC sources. All soil and plant tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Antimony		Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
High-level halo area	Halo soils (mg/kg)	6.23E+00	1.23E+01	4.93E+01	6.55E+01	9.55E+00	2.00E+01	4.76E+00	5.19E+00	1.82E+02	2.65E+02	2.20E+03	2.94E+03	6.67E+03	2.17E+04	8.85E-02	1.44E-01	1.23E+01	2.92E+01	6.48E+00	1.49E+01	9.32E-01	1.26E+00	7.69E+00	1.12E+01	9.20E-01	1.36E+00	2.01E+03	5.52E+03	Table B-24
	Grass (mg/kg)	1.74E-01	2.36E-01	3.04E-01	9.64E-01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	3.62E-01	8.47E-01	1.73E+02	2.20E+02	Table B-31
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.65E-03	1.74E-03	4.02E-03	7.32E-03	5.11E-03	7.08E-03	3.37E-03	3.71E-03	6.14E-02	1.21E-01	1.82E-02	2.16E-02	2.42E+00	3.16E+00	NA	NA	2.50E-03	2.50E-03	4.65E-03	7.23E-03	3.45E-03	3.63E-03	1.66E-03	1.84E-03	4.12E-03	4.98E-03	1.45E+00	1.88E+00	Table B-8
Mid-level halo area	Halo soils (mg/kg)	1.63E+00	3.29E+00	2.93E+01	3.94E+01	1.63E+00	2.35E+00	6.59E+00	7.70E+00	6.92E+01	9.76E+01	1.83E+03	3.34E+03	1.89E+03	2.39E+03	2.80E-02	1.20E-01	2.42E+00	3.52E+00	5.29E+00	5.83E+00	8.15E-01	1.16E+00	4.91E+00	8.40E+00	8.22E-01	1.20E+00	4.56E+02	9.61E+02	Table B-24
	Grass (mg/kg)	1.40E-01	1.67E-01	3.04E-01	9.64E-01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	2.78E-01	3.30E-01	9.71E+01	1.40E+02	Table B-31
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	2.83E-01	3.31E-01	9.94E+01	1.68E+02	
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.14E+02	5.84E+02	
	Surface water (mg/L)	1.53E-03	1.60E-03	4.02E-03	5.58E-03	2.52E-03	4.52E-03	3.50E-03	4.00E-03	3.38E-02	5.96E-02	2.00E-02	3.40E-02	1.21E+00	2.22E+00	NA	NA	2.50E-03	2.50E-03	4.32E-03	5.75E-03	3.69E-03	3.90E-03	1.75E-03	1.96E-03	3.74E-03	4.37E-03	7.73E-01	1.29E+00	Table B-8
Low-level halo area	Halo soils (mg/kg)	2.62E+00	3.87E+00	4.26E+01	5.74E+01	1.61E+00	2.52E+00	4.87E+00	5.47E+00	1.50E+02	2.56E+02	7.29E+02	9.58E+02	8.36E+02	1.13E+03	8.92E-02	4.01E-01	1.72E+00	2.45E+00	3.17E+00	3.74E+00	1.47E+00	1.87E+00	2.87E+00	3.63E+00	8.11E-01	1.12E+00	3.68E+02	5.39E+02	Table B-24
	Grass (mg/kg)	1.40E-01	1.67E-01	1.81E-01	3.47E-01	3.08E-01	6.61E-01	1.98E+00	2.53E+00	6.09E+00	7.68E+00	1.29E+00	3.03E+00	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.06E+00	1.57E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	3.37E-01	7.83E-01	7.95E+01	1.34E+02	Table B-31
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	2.78E-01	3.30E-01	6.52E+01	8.55E+01	
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	2.62E-01	2.85E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.89E-03	1.98E-03	3.23E-03	3.94E-03	2.64E-03	4.37E-03	3.67E-03	4.15E-03	1.66E-02	2.23E-02	5.94E-03	1.07E-02	4.43E+00	8.26E+00	NA	NA	2.50E-03	2.50E-03	4.98E-03	7.42E-03	3.79E-03	3.99E-03	1.83E-03	2.07E-03	3.09E-03	5.06E-03	8.19E-01	1.49E+00	Table B-8
Vegetated upland area	Veg. upland soils (mg/kg)	6.57E-01	1.02E+00	1.49E+01	1.99E+01	1.07E+00	1.88E+00	5.92E+00	6.23E+00	2.92E+01	3.41E+01	1.74E+02	2.25E+02	1.36E+03	1.96E+03	3.33E-02	1.11E-01	3.26E+00	6.12E+00	3.37E+00	4.82E+00	9.30E-01	1.29E+00	1.10E+00	2.23E+00	7.48E-01	9.76E-01	1.90E+02	2.37E+02	Table B-24
	Grass (mg/kg)	1.40E-01	1.67E-01	1.81E-01	3.47E-01	1.34E-01	3.42E-01	1.98E+00	2.31E+00	5.33E+00	6.25E+00	1.29E+00	3.03E+00	2.04E+02	2.82E+02	1.24E-01	1.25E-01	NA	NA	1.06E+00	1.57E+00	2.96E-01	3.79E-01	1.46E-01	1.83E-01	2.78E-01	3.30E-01	5.84E+01	7.48E+01	Table B-31
	Herb (mg/kg)	1.80E-01	4.21E-01	1.25E-01	1.26E-01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	5.19E+01	7.89E+01	
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.25E-01	1.26E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	2.72E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	5.31E-01	9.72E-01	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.54E-03	1.84E-03	2.10E-03	4.06E-03	4.56E-04	8.11E-04	2.97E-03	4.43E-03	1.62E-03	1.95E-03	7.78E-04	1.07E-03	3.20E-02	6.01E-02	NA	NA	NA	NA	1.45E-03	2.25E-03	3.15E-03	3.72E-03	1.49E-03	2.21E-03	3.01E-03	4.65E-03	5.36E-02	1.28E-01	Table B-8

CTE = central tendency exposure; RME = reasonable maximum exposure; NA = not available

Table 3.26 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for Montane Shrew. EPC derivation methods are detailed in cited EPC sources. All soil, invertebrate tissue, and plant tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Antimony		Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
High-level floodplain	Floodplain soils (mg/kg)	6.91E+00	1.04E+01	4.36E+01	7.13E+01	9.09E+00	1.69E+01	5.33E+00	6.31E+00	4.16E+02	4.88E+02	2.64E+03	4.29E+03	1.01E+04	1.51E+04	2.34E-01	4.61E-01	8.17E+00	1.04E+01	6.29E+00	6.88E+00	1.62E+00	1.79E+00	8.00E+00	1.33E+01	6.10E-01	7.76E-01	1.57E+03	2.20E+03	Table B-19
	Ground invertebrate (mg/kg)	1.26E+00	3.56E+00	1.50E+00	2.53E+00	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	4.42E+02	9.12E+02	Table B-27
	Soil invertebrate (mg/kg)	7.03E-01	7.03E-01	8.63E+00	9.32E+00	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	2.50E-01	2.50E-01	6.87E+02	6.87E+02	
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Surface water (mg/L)	1.65E-03	1.74E-03	4.02E-03	7.32E-03	5.11E-03	7.08E-03	3.37E-03	3.71E-03	6.14E-02	1.21E-01	1.82E-02	2.16E-02	2.42E+00	3.16E+00	NA	NA	2.50E-03	2.50E-03	4.65E-03	7.23E-03	3.45E-03	3.63E-03	1.66E-03	1.84E-03	4.12E-03	4.98E-03	1.45E+00	1.88E+00	Table B-8
Mid-level floodplain	Floodplain soils (mg/kg)	2.40E+00	3.11E+00	3.10E+01	3.49E+01	4.04E+00	1.46E+01	4.46E+00	4.96E+00	1.14E+02	9.96E+01	4.67E+02	5.68E+02	1.83E+03	1.93E+03	7.99E-02	1.51E-01	2.51E+00	2.90E+00	4.26E+00	4.95E+00	1.64E+00	1.85E+00	1.44E+00	2.74E+00	5.93E-01	7.44E-01	5.00E+02	6.25E+02	Table B-19
	Ground invertebrate (mg/kg)	1.26E+00	3.56E+00	1.13E+00	1.88E+00	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	2.10E+02	2.92E+02	Table B-27
	Soil invertebrate (mg/kg)	7.03E-01	7.03E-01	8.63E+00	9.32E+00	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	2.50E-01	2.50E-01	6.87E+02	6.87E+02	
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	2.83E-01	3.31E-01	9.94E+01	1.68E+02	Table B-31
	Surface water (mg/L)	1.53E-03	1.60E-03	4.02E-03	5.58E-03	2.52E-03	4.52E-03	3.50E-03	4.00E-03	3.38E-02	5.96E-02	2.00E-02	3.40E-02	1.21E+00	2.22E+00	NA	NA	2.50E-03	2.50E-03	4.32E-03	5.75E-03	3.69E-03	3.90E-03	1.75E-03	1.96E-03	3.74E-03	4.37E-03	7.73E-01	1.29E+00	Table B-8
Low-level floodplain	Floodplain soils (mg/kg)	1.12E+00	1.30E+00	1.69E+01	2.01E+01	9.22E-01	1.23E+00	3.77E+00	4.27E+00	4.09E+01	5.49E+01	1.62E+02	2.03E+02	1.46E+03	1.97E+03	4.26E-02	5.34E-02	4.76E+00	5.83E+00	3.81E+00	4.80E+00	1.79E+00	2.04E+00	6.11E-01	8.70E-01	6.89E-01	7.77E-01	1.89E+02	2.55E+02	Table B-19
	Ground invertebrate (mg/kg)	1.26E+00	3.56E+00	7.80E-01	1.28E+00	2.32E+00	4.50E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	8.86E+00	1.83E+01	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	8.94E-01	2.69E+00	1.07E+00	4.51E+00	2.97E-01	6.09E-01	2.10E+02	2.92E+02	Table B-27
	Soil invertebrate (mg/kg)	7.03E-01	7.03E-01	8.63E+00	9.32E+00	1.26E+01	1.26E+01	3.75E+00	5.92E+00	1.76E+01	1.76E+01	1.15E+02	1.15E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	5.40E-01	6.48E-01	8.29E-01	2.71E+00	3.56E+02	4.63E+02	
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	2.78E-01	3.30E-01	6.52E+01	8.55E+01	Table B-31
	Surface water (mg/L)	1.89E-03	1.98E-03	3.23E-03	3.94E-03	2.64E-03	4.37E-03	3.67E-03	4.15E-03	1.66E-02	2.23E-02	5.94E-03	1.07E-02	4.43E+00	8.26E+00	NA	NA	2.50E-03	2.50E-03	4.98E-03	7.42E-03	3.79E-03	3.99E-03	1.83E-03	2.07E-03	3.09E-03	5.06E-03	8.19E-01	1.49E+00	Table B-8
Reference floodplain	Floodplain soils (mg/kg)	1.08E+00	1.80E+00	4.27E+01	1.13E+02	1.18E+00	1.41E+00	4.06E+00	4.70E+00	7.51E+01	2.56E+02	1.80E+02	3.46E+02	1.84E+03	2.42E+03	7.33E-02	1.36E-01	3.90E+00	6.20E+00	4.93E+00	5.53E+00	9.00E-01	1.21E+00	8.72E-01	1.20E+00	4.73E-01	7.86E-01	2.33E+02	2.87E+02	Table B-19
	Ground invertebrate (mg/kg)	1.26E+00	3.56E+00	7.80E-01	1.15E+00	2.15E+00	3.16E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	4.75E+00	8.00E+00	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	7.36E-01	1.63E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	2.10E+02	2.55E+02	Table B-27
	Soil invertebrate (mg/kg)	3.29E-01	5.76E-01	7.53E+00	9.32E+00	6.76E+00	9.14E+00	3.75E+00	5.92E+00	1.19E+01	1.68E+01	6.96E+00	1.13E+01	3.39E+02	5.41E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	4.49E-01	6.48E-01	2.00E-01	2.50E-01	2.78E+02	4.63E+02	
	Herb (mg/kg)	1.80E-01	4.21E-01	1.25E-01	1.26E-01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	5.19E+01	7.89E+01	Table B-31
	Surface water (mg/L)	1.54E-03	1.84E-03	2.10E-03	4.06E-03	4.56E-04	8.11E-04	2.97E-03	4.43E-03	1.62E-03	1.95E-03	7.78E-04	1.07E-03	3.20E-02	6.01E-02	NA	NA	NA	NA	1.45E-03	2.25E-03	3.15E-03	3.72E-03	1.49E-03	2.21E-03	3.01E-03	4.65E-03	5.36E-02	1.28E-01	Table B-8

CTE = central tendency exposure; RME = reasonable maximum exposure; NA = not available

Table 3.27 Summary of CTE and RME Exposure Point Concentrations (EPCs) Used to Estimate Dietary Exposures for Deer Mouse. EPC derivation methods are detailed in cited EPC sources. All soil, invertebrate tissue, and plant tissue concentrations are reported on a dry-weight basis.

Exposure Unit	Exposure Media (units)	Antimony		Arsenic		Cadmium		Chromium		Copper		Lead		Manganese		Mercury		Molybdenum		Nickel		Selenium		Silver		Thallium		Zinc		EPC Source
		CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	CTE	RME	
High-level floodplain	Floodplain soils (mg/kg)	6.91E+00	1.04E+01	4.36E+01	7.13E+01	9.09E+00	1.69E+01	5.33E+00	6.31E+00	4.16E+02	4.88E+02	2.64E+03	4.29E+03	1.01E+04	1.51E+04	2.34E-01	4.61E-01	8.17E+00	1.04E+01	6.29E+00	6.88E+00	1.62E+00	1.79E+00	8.00E+00	1.33E+01	6.10E-01	7.76E-01	1.57E+03	2.20E+03	Table B-19
	Ground invertebrate (mg/kg)	1.26E+00	3.56E+00	1.50E+00	2.53E+00	5.43E+00	9.72E+00	3.45E+00	6.15E+00	4.94E+01	8.74E+01	6.39E+01	1.08E+02	8.03E+02	3.06E+03	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	4.42E+02	9.12E+02	Table B-27
	Soil invertebrate (mg/kg)	7.03E-01	7.03E-01	8.63E+00	9.32E+00	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	2.50E-01	2.50E-01	6.87E+02	6.87E+02	
	Grass (mg/kg)	1.74E-01	2.36E-01	3.04E-01	9.64E-01	5.91E-01	1.07E+00	2.33E+00	2.53E+00	1.31E+01	1.91E+01	3.00E+01	1.06E+02	3.94E+02	5.54E+02	1.25E-01	1.25E-01	NA	NA	1.28E+00	2.01E+00	3.42E-01	5.02E-01	2.07E-01	4.05E-01	3.62E-01	8.47E-01	1.73E+02	2.20E+02	
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	2.86E+00	4.14E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	2.02E+01	5.75E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	4.78E-01	1.14E+00	1.70E-01	1.29E-01	4.68E-01	1.01E+00	4.23E+02	5.85E+02	Table B-31
	Shrub (mg/kg)	2.37E-01	7.26E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	8.98E+00	1.39E+01	3.39E+00	9.12E+00	4.94E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	1.18E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.94E+02	6.05E+02	
	Surface water (mg/L)	1.65E-03	1.74E-03	4.02E-03	7.32E-03	5.11E-03	7.08E-03	3.37E-03	3.71E-03	6.14E-02	1.21E-01	1.82E-02	2.16E-02	2.42E+00	3.16E+00	NA	NA	2.50E-03	2.50E-03	4.65E-03	7.23E-03	3.45E-03	3.63E-03	1.66E-03	1.84E-03	4.12E-03	4.98E-03	1.45E+00	1.88E+00	Table B-8
Mid-level floodplain	Floodplain soils (mg/kg)	2.40E+00	3.11E+00	3.10E+01	3.49E+01	4.04E+00	1.46E+01	4.46E+00	4.96E+00	1.14E+02	9.96E+01	4.67E+02	5.68E+02	1.83E+03	1.93E+03	7.99E-02	1.51E-01	2.51E+00	2.90E+00	4.26E+00	4.95E+00	1.64E+00	1.85E+00	1.44E+00	2.74E+00	5.93E-01	7.44E-01	5.00E+02	6.25E+02	Table B-19
	Ground invertebrate (mg/kg)	1.26E+00	3.56E+00	1.13E+00	1.88E+00	3.68E+00	9.72E+00	3.45E+00	6.15E+00	4.40E+01	8.74E+01	3.53E+01	8.20E+01	2.18E+02	3.77E+02	NA	NA	NA	NA	1.24E+00	2.91E+00	8.94E-01	2.69E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	2.10E+02	2.92E+02	Table B-27
	Soil invertebrate (mg/kg)	7.03E-01	7.03E-01	8.63E+00	9.32E+00	7.45E+01	7.45E+01	3.75E+00	5.92E+00	2.82E+01	2.82E+01	1.86E+02	1.86E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	1.22E+00	1.22E+00	2.50E-01	2.50E-01	6.87E+02	6.87E+02	
	Grass (mg/kg)	1.40E-01	1.67E-01	3.04E-01	9.64E-01	3.92E-01	6.61E-01	2.33E+00	2.53E+00	7.46E+00	8.69E+00	1.05E+01	4.62E+01	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.28E+00	2.01E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	2.78E-01	3.30E-01	9.71E+01	1.40E+02	
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	9.76E-01	1.87E+00	2.51E+00	2.98E+00	1.13E+01	1.84E+01	6.80E+00	2.77E+01	4.04E+02	1.69E+03	1.25E-01	1.26E-01	NA	NA	1.36E+00	2.42E+00	2.83E-01	3.31E-01	1.42E-01	1.66E-01	2.83E-01	3.31E-01	9.94E+01	1.68E+02	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	6.37E+00	1.07E+01	2.58E+00	3.24E+00	6.85E+00	8.86E+00	2.39E+00	4.50E+00	3.14E+02	9.06E+02	1.25E-01	1.28E-01	NA	NA	1.16E+00	2.79E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	3.37E-01	7.83E-01	4.14E+02	5.84E+02	
	Surface water (mg/L)	1.53E-03	1.60E-03	4.02E-03	5.58E-03	2.52E-03	4.52E-03	3.50E-03	4.00E-03	3.38E-02	5.96E-02	2.00E-02	3.40E-02	1.21E+00	2.22E+00	NA	NA	2.50E-03	2.50E-03	4.32E-03	5.75E-03	3.69E-03	3.90E-03	1.75E-03	1.96E-03	3.74E-03	4.37E-03	7.73E-01	1.29E+00	Table B-8
Low-level floodplain	Floodplain soils (mg/kg)	1.12E+00	1.30E+00	1.69E+01	2.01E+01	9.22E-01	1.23E+00	3.77E+00	4.27E+00	4.09E+01	5.49E+01	1.62E+02	2.03E+02	1.46E+03	1.97E+03	4.26E-02	5.34E-02	4.76E+00	5.83E+00	3.81E+00	4.80E+00	1.79E+00	2.04E+00	6.11E-01	8.70E-01	6.89E-01	7.77E-01	1.89E+02	2.55E+02	Table B-19
	Ground invertebrate (mg/kg)	1.26E+00	3.56E+00	7.80E-01	1.28E+00	2.32E+00	4.50E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	8.86E+00	1.83E+01	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	8.94E-01	2.69E+00	1.07E+00	4.51E+00	2.97E-01	6.09E-01	2.10E+02	2.92E+02	Table B-27
	Soil invertebrate (mg/kg)	7.03E-01	7.03E-01	8.63E+00	9.32E+00	1.26E+01	1.26E+01	3.75E+00	5.92E+00	1.76E+01	1.76E+01	1.15E+02	1.15E+02	7.32E+02	7.32E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	5.40E-01	6.48E-01	8.29E-01	2.71E+00	3.56E+02	4.63E+02	
	Grass (mg/kg)	1.40E-01	1.67E-01	1.81E-01	3.47E-01	3.08E-01	6.61E-01	1.98E+00	2.53E+00	6.09E+00	7.68E+00	1.29E+00	3.03E+00	3.02E+02	5.35E+02	1.25E-01	1.26E-01	NA	NA	1.06E+00	1.57E+00	3.09E-01	4.32E-01	2.07E-01	4.05E-01	3.37E-01	7.83E-01	7.95E+01	1.34E+02	
	Herb (mg/kg)	1.80E-01	4.21E-01	3.10E-01	8.78E-01	6.59E-01	1.04E+00	2.47E+00	2.74E+00	7.78E+00	9.52E+00	2.39E+00	8.38E+00	1.80E+02	3.05E+02	1.25E-01	1.26E-01	NA	NA	7.98E-01	1.36E+00	2.62E-01	2.85E-01	1.31E-01	1.43E-01	2.78E-01	3.30E-01	6.52E+01	8.55E+01	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.75E-01	3.93E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	3.14E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	9.69E-01	1.50E+00	3.37E-01	7.83E-01	1.75E-01	3.93E-01	2.62E-01	2.85E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.89E-03	1.98E-03	3.23E-03	3.94E-03	2.64E-03	4.37E-03	3.67E-03	4.15E-03	1.66E-02	2.23E-02	5.94E-03	1.07E-02	4.43E+00	8.26E+00	NA	NA	2.50E-03	2.50E-03	4.98E-03	7.42E-03	3.79E-03	3.99E-03	1.83E-03	2.07E-03	3.09E-03	5.06E-03	8.19E-01	1.49E+00	Table B-8
Reference floodplain	Floodplain soils (mg/kg)	1.08E+00	1.80E+00	4.27E+01	1.13E+02	1.18E+00	1.41E+00	4.06E+00	4.70E+00	7.51E+01	2.56E+02	1.80E+02	3.46E+02	1.84E+03	2.42E+03	7.33E-02	1.36E-01	3.90E+00	6.20E+00	4.93E+00	5.53E+00	9.00E-01	1.21E+00	8.72E-01	1.20E+00	4.73E-01	7.86E-01	2.33E+02	2.87E+02	Table B-19
	Ground invertebrate (mg/kg)	1.26E+00	3.56E+00	7.80E-01	1.15E+00	2.15E+00	3.16E+00	3.45E+00	6.15E+00	3.64E+01	7.90E+01	4.75E+00	8.00E+00	2.03E+02	2.63E+02	NA	NA	NA	NA	6.56E-01	9.64E-01	7.36E-01	1.63E+00	1.07E+00	4.51E+00	8.29E-01	2.71E+00	2.10E+02	2.55E+02	Table B-27
	Soil invertebrate (mg/kg)	3.29E-01	5.76E-01	7.53E+00	9.32E+00	6.76E+00	9.14E+00	3.75E+00	5.92E+00	1.19E+01	1.68E+01	6.96E+00	1.13E+01	3.39E+02	5.41E+02	NA	NA	NA	NA	1.48E+00	2.31E+00	2.02E+01	4.59E+01	4.49E-01	6.48E-01	2.00E-01	2.50E-01	2.78E+02	4.63E+02	
	Grass (mg/kg)	1.40E-01	1.67E-01	1.81E-01	3.47E-01	1.34E-01	3.42E-01	1.98E+00	2.31E+00	5.33E+00	6.25E+00	1.29E+00	3.03E+00	2.04E+02	2.82E+02	1.24E-01	1.25E-01	NA	NA	1.06E+00	1.57E+00	2.96E-01	3.79E-01	1.46E-01	1.83E-01	2.78E-01	3.30E-01	5.84E+01	7.48E+01	
	Herb (mg/kg)	1.80E-01	4.21E-01	1.25E-01	1.26E-01	3.40E-01	6.73E-01	2.47E+00	2.74E+00	7.26E+00	8.36E+00	6.66E-01	9.38E-01	1.17E+02	1.57E+02	1.25E-01	1.26E-01	NA	NA	7.18E-01	1.25E+00	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	5.19E+01	7.89E+01	Table B-31
	Shrub (mg/kg)	1.89E-01	4.66E-01	1.25E-01	1.26E-01	1.35E+00	2.14E+00	2.34E+00	2.70E+00	5.23E+00	6.19E+00	1.47E+00	4.14E+00	2.72E+02	9.06E+02	1.25E-01	1.26E-01	NA	NA	5.31E-01	9.72E-01	2.50E-01	2.51E-01	1.25E-01	1.26E-01	2.50E-01	2.51E-01	1.06E+02	1.38E+02	
	Surface water (mg/L)	1.54E-03	1.84E-03	2.10E-03	4.06E-03	4.56E-04	8.11E-04	2.97E-03	4.43E-03	1.62E-03	1.95E-03	7.78E-04	1.07E-03	3.20E-02	6.01E-02	NA	NA	NA	NA	1.45E-03	2.25E-03	3.15E-03	3.72E-03	1.49E-03	2.21E-03	3.01E-03	4.65E-03	5.36E-02	1.28E-01	Table B-8

CTE = central tendency exposure; RME = reasonable maximum exposure; NA = not available

Table 4.1 Adverse Sublethal Effects for Select Contaminants of Potential Ecological Concern (COPECs) Reported in the Literature for Birds and Mammals

COPEC	Birds	Mammals	References
Arsenic	Oxidative stress-related tissue damage; Decreased growth, food intake, and weight; Changes in organ weights; Blood enzyme changes	Peripheral nervous system dysfunction; Decreased growth; Anemia; Cardiac abnormalities; Liver damage	Eisler, 1988; Sanchez-Virosta *et al* ., 2015
Cadmium	Damage to kidney and liver tissues; Anemia; Reduced growth, egg production, and bone calcium; Low population densities	Damage to kidney, liver, and gonad tissues; Anemia	Eslier, 1985; Irwin *et al* ., 1997a; Larison *et al* ., 2000; EPA, 2005a
Copper	Reduced growth; Gizzard erosion; Hepatocyte damage; Kidney cell necrosis	Liver, kidney, brain, and muscle damage; Reduced growth; Altered liver and serum enzyme activities; Hemolytic anemia	Eisler, 1998; Iqbal *et al* ., 2012; Irwin *et al* ., 1997b
Lead	Decreased eggshell thickness, egg production, egg survival, fledgling success, growth, and fertility	Peripheral nervous system dysfunction (ataxia); Increased organ weights; Anemia; Enzyme inhibition; Increased risk of abortion and miscarriage	Beyer *et al* ., 2013; Irwin *et al* ., 1997c; EPA, 2005b
Manganese	Oxidative damage to immune system organs; Hepatocyte damage	Hypo activity, tremors, ataxia; Myocardial contraction inhibition, blood vessel dilation, hypotension; Liver damage; Decreased growth	EPA, 2007c; O'Neal and Zheng 2015; Roy *et al* ., 2015; WHO, 2005
Zinc	Skeletal anomalies; Ataxia; Reduced growth and reproductive success; Delayed hatching: Gizzard and pancreatic lesions; Changes in organ weights	Dermatitis; Emaciation/anorexia; Reduced fecundity and growth	ATSDR, 2005; 2006; Irwin *et al* ., 1997d; USDOI, 1998; EPA, 2007d

ATSDR = Agency for Toxic Substances and Disease Registry; EPA = U.S. Environmental Protection Agency; USDOI = U.S. Department of the Interior; WHO = World Health Organization

Table 4.2 Ecological Screening Values (ESVs) for Terrestrial Plants. All values are in mg of contaminant of potential ecological concern (COPEC; dry weight) per kg soil (mg/kg).

COPEC	No-effect ESV	Source	Low-effect ESV	Source
Aluminum	narrative*	a	narrative*	a
Antimony	11	b	58	d
Arsenic	18	a	91	d
Barium	110	b	260	d
Beryllium	2.5	b	10	e
Cadmium	32	a	160	d
Cobalt	13	a	20	e
Copper	70	a	490	d
Iron	narrative*	a	narrative*	a
Lead	120	a	570	d
Manganese	220	a	1,100	d
Molybdenum	2	c	2#	e
Nickel	38	a	270	d
Selenium	0.52	a	3	d
Thallium	0.05	b	0.5	d
Vanadium	60	b	80	d
Zinc	160	a	810	d

Sources for the ESVs:

a = EPA (2005c) ecological soil screening levels

b = Los Alamos National Laboratory (2016) no observable adverse effect level ecological screening level

c = EPA (2015b) Region 4 soil screening values for hazardous waste sites

d = Los Alamos National Laboratory (2016) lowest observable adverse effect ecological screening level

e = Oak Ridge National Laboratory preliminary remediation goals (Efroymson *et al*., 1997a,b,c)

* = Aluminum and iron ESVs are based on chemical and physical soil conditions and not concentrations of metals in soil. As such, plant ESVs for aluminum and iron will be based on narrative guidance provided in EPA (2003a,b).

= If exposure estimates are greater than the no-effect ESV for molybdenum, this low-effect ESV may be revised to that reported in McGrath *et al*. (2010).

Table 4.3 Ecological Screening Values (ESVs) for Soil Invertebrates. All values are in mg of contaminant of potential ecological concern (COPEC; dry weight) per kg soil (mg/kg).

COPEC	No-effect ESV	Source	Low-effect ESV	Source
Antimony	78	a	780	d
Arsenic	6.8	b	68	d
Barium	330	a	3,200	d
Cadmium	140	a	760	d
Chromium	0.4	e	28	c
Copper	80	a	530	d
Lead	1,700	a	8,400	d
Manganese	450	a	4,500	d
Mercury#	0.05	b	0.5	d
Selenium	4.1	a	41	d
Zinc	120	a	930	d

Sources for the ESVs:

a = EPA (2005c) ecological soil screening levels

b = Los Alamos National Laboratory (2016) no observable adverse effect level ecological screening level

c = EPA (2015b) Region 4 soil screening values for hazardous waste sites

d = Los Alamos National Laboratory (2016) lowest observable adverse effect ecological screening level

e = Oak Ridge National Laboratory preliminary remediation goals (Efroymson *et al* ., 1997a,b,c)

= ESVs are for inorganic mercury

Table 4.4 Toxicity Reference Values (TRVs) for Birds. All values are in mg of contaminant of potential ecological concern (COPEC; dry weight) per kg body weight per day.

COPEC	No-effect TRV	Source	Low-effect TRV	Source
Arsenic	2.24	a	22.4	c
Barium	73.5	a	131	c
Cadmium	1.47	a	14.7	c
Chromium	2.66	a	26.6	c
Copper	4.05	a	12.1	c
Lead	1.63	a	3.26	c
Manganese	179	a	1,790	c
Mercury[#]	0.45	b	0.9	d
Molybdenum	3.5	a	35	c
Nickel	6.71	a	67.1	c
Selenium	0.29	a	0.579	c
Silver	2.02	a	20.2	c
Vanadium	0.344	a	0.688	c
Zinc	66.1	a	661	c

Sources for the TRVs:

a = Los Alamos National Laboratory (2016) no observable adverse effect level ecological screening level

b = Sample *et al* . (1996) no observable adverse effect level toxicological benchmark

c = Los Alamos National Laboratory (2016) lowest observable adverse effect level ecological screening level

d = Sample *et al* . (1996) lowest observable adverse effect level toxicological benchmark

= TRVs are for inorganic mercury from a Japanese quail chronic toxicity study

Table 4.5 Toxicity Reference Values (TRVs) for Mammals. All values are in mg of contaminant of potential ecological concern (COPEC; dry weight) per kg body weight per day.

COPEC	No-effect TRV	Source	Low-effect TRV	Source
Antimony	0.059	a	0.59	c
Arsenic	1.04	a	1.66	c
Cadmium	0.77	a	7.7	c
Chromium	2.4	a	24	c
Copper	5.6	a	9.34	c
Lead	4.7	a	8.9	c
Manganese	51.5	a	515	c
Mercury#	1	b	14.1	c
Molybdenum	0.26	b	2.6	d
Nickel	1.7	a	3.4	c
Selenium	0.143	a	0.215	c
Silver	6.02	a	60.2	c
Thallium	0.0071	a	0.071	c
Zinc	75.4	a	754	c

Sources for the TRVs:

a = Los Alamos National Laboratory (2016) no and lowest observed effect levels

b = Sample *et al* . (1996) no observable adverse effect level toxicological benchmark

c = Los Alamos National Laboratory (2016) no and lowest observed effect levels

d = Sample *et al* . (1996) lowest observable adverse effect level toxicological benchmark

= TRVs are for inorganic mercury in from chronic mink toxicity studies

Table 5.1 Summary of Direct Soil Contact Central Tendency Exposure (CTE) Low-Effect Ecological Screening Value Hazard Quotients (HQs) for Community-Level Plant Receptors. Note that only contaminants that had at least one CTE low-effect HQ>1 in at least one exposure unit are summarized.

Watershed	Exposure Unit	Arsenic	Cobalt	Copper	Lead	Manganese	Molybdenum	Thallium	Zinc
Mineral Creek	EU-01	<1	<1	<1	<1	1	2	1	<1
	EU-02	<1	<1	<1	<1	<1	2	<1	<1
	EU-03	<1	<1	<1	<1	2	<1	1	<1
	EU-3.5	<1	<1	<1	1	1	<1	1	<1
	EU-04	1	<1	<1	<1	<1	<1	1	<1
	EU-05	<1	<1	<1	<1	5	<1	1	2
	EU-06	<1	<1	<1	<1	2	3	2	<1
	EU-R1 Mill Creek	<1	1	<1	<1	1	2	1	<1
Cement Creek	EU-20	<1	<1	<1	1	<1	2	1	<1
	EU-21	<1	<1	<1	<1	<1	<1	1	<1
	EU-22	<1	<1	<1	2	<1	2	1	1
	EU-23	<1	<1	<1	<1	<1	2	1	<1
	EU-24	<1	1	<1	1	7	2	1	<1
Animas River	EU-07	<1	<1	1	15	1	13	2	4
	EU-08	<1	<1	<1	1	1	2	<1	<1
	EU-09	<1	<1	<1	6	8	2	<1	1
	EU-10	<1	<1	2	9	22	6	<1	3
	EU-11	<1	<1	<1	<1	1	3	1	<1
	EU-12	<1	<1	<1	1	6	2	1	2
	EU-13	<1	<1	<1	5	7	4	1	4
	EU-14	<1	<1	<1	5	4	3	1	2
	EU-15	<1	<1	1	3	12	15	1	6
	EU-16	<1	<1	<1	3	10	3	2	1
	EU-17	<1	<1	<1	<1	4	2	2	<1
	EU-18	<1	<1	<1	<1	2	2	1	<1
	EU-19	<1	<1	<1	<1	3	7	2	<1
	EU-R2 Maggie Gulch	<1	<1	<1	<1	1	<1	<1	<1
	EU-R3 Picayune Gulch	<1	<1	<1	<1	3	1	<1	<1
	EU-R4 Upper North Fork	1	<1	<1	<1	<1	5	2	<1
Entire Assessment Area	High-level halo area	<1	<1	<1	4	6	6	2	2
	Mid-level halo area	<1	<1	<1	3	2	1	2	<1
	Low-level halo area	<1	<1	<1	1	<1	<1	2	<1
	Vegetated upland area	<1	<1	<1	<1	1	2	1	<1
	High-level floodplain	<1	<1	<1	5	9	4	1	2
	Mid-level floodplain	<1	<1	<1	<1	2	1	1	<1
	Low-level floodplain	<1	<1	<1	<1	1	2	1	<1
	Floodplain reference	<1	<1	<1	<1	2	2	<1	<1

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.2 Summary of Direct Soil Contact Central Tendency Exposure (CTE) Low-Effect Ecological Screening Value Hazard Quotients (HQs) for Soil Invertebrates. Note that only contaminants that had at least one CTE low-effect HQ>1 in at least one exposure unit are summarized.

Watershed	Exposure Unit	Arsenic	Copper	Lead	Manganese	Mercury	Zinc
Mineral Creek	EU-01	<1	<1	<1	<1	<1	<1
	EU-02	<1	<1	<1	<1	<1	<1
	EU-03	<1	<1	<1	<1	<1	<1
	EU-3.5	<1	<1	<1	<1	<1	<1
	EU-04	2	<1	<1	<1	<1	<1
	EU-05	<1	<1	<1	1	<1	2
	EU-06	<1	<1	<1	<1	<1	<1
	EU-R1 Mill Creek	1	<1	<1	<1	<1	<1
Cement Creek	EU-20	<1	<1	<1	<1	<1	<1
	EU-21	<1	<1	<1	<1	<1	<1
	EU-22	<1	<1	<1	<1	<1	1
	EU-23	<1	<1	<1	<1	<1	<1
	EU-24	<1	<1	<1	2	<1	<1
Animas River	EU-07	<1	1	1	<1	2	3
	EU-08	<1	<1	<1	<1	<1	<1
	EU-09	<1	<1	<1	2	<1	1
	EU-10	<1	2	<1	5	<1	2
	EU-11	<1	<1	<1	<1	<1	<1
	EU-12	<1	<1	<1	1	<1	1
	EU-13	<1	<1	<1	2	2	4
	EU-14	<1	<1	<1	<1	<1	2
	EU-15	<1	1	<1	3	1	5
	EU-16	<1	<1	<1	2	<1	1
	EU-17	<1	<1	<1	<1	<1	<1
	EU-18	<1	<1	<1	<1	<1	<1
	EU-19	<1	<1	<1	<1	<1	<1
	EU-R2 Maggie Gulch	<1	<1	<1	<1	<1	<1
	EU-R3 Picayune Gulch	<1	<1	<1	<1	<1	<1
	EU-R4 Upper North Fork	2	<1	<1	<1	<1	<1
Entire assessment area	High-level halo area	<1	<1	<1	1	<1	2
	Mid-level halo area	<1	<1	<1	<1	<1	<1
	Low-level halo area	<1	<1	<1	<1	<1	<1
	Vegetated upland area	<1	<1	<1	<1	<1	<1
	High-level floodplain	<1	<1	<1	2	<1	2
	Mid-level floodplain	<1	<1	<1	<1	<1	<1
	Low-level floodplain	<1	<1	<1	<1	<1	<1
	Floodplain reference	<1	<1	<1	<1	<1	<1

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.3 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for White-Tailed Ptarmigan. Note that all contaminants of potential ecological concern (COPECs) are summarized.

COPEC	High-Level DRC	Mid-Level DRC	Low-Level DRC	Vegetated Upland
Arsenic	<1	<1	<1	<1
Barium	<1	<1	<1	<1
Cadmium	<1	<1	<1	<1
Chromium	<1	<1	<1	<1
Copper	<1	<1	<1	<1
Lead	<1	<1	<1	<1
Manganese	<1	<1	<1	<1
Mercury	<1	<1	<1	<1
Molybdenum	<1	<1	<1	<1
Nickel	<1	<1	<1	<1
Selenium	<1	<1	<1	<1
Silver	<1	<1	<1	<1
Vanadium	<1	<1	<1	<1
Zinc	<1	<1	<1	<1

DRC = dose-response category

Color code definitions:

Lightest	HQ <1
	HQ >1 but <5
	HQ >5 but <10
Darkest	HQ >10

Table 5.4 Cadmium Concentrations Measured in Bonita Peak Mining District Ptarmigan Dietary Items. All concentrations are in mg/kg, dry-weight.

Study	Sample Type	Average	Minimum	Maximum	No. of Samples
Larison et al., 2000	Willow	2.63	0.37	10.8	NA
	Crop contents	2.10	NA	NA	13
2016-17 BERA sampling	High-level DRC shrub	5.31	1.64	10.2	11
	Mid-level DRC shrub	6.37	2.98	11.5	4
	Low-level DRC shrub	0.87	0.13	3.77	10
	Vegetated upland shrub	1.35	0.07	2.98	8
	All exposure areas	3.48	0.07	11.50	33

BERA = baseline ecological risk assessment
DRC = dose-response category
NA = not available

Table 5.5 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for Moose. Note that all contaminants of potential ecological concern (COPECs) are summarized.

COPEC	Mineral Creek	Cement Creek	Animas River
Antimony	<1	<1	<1
Arsenic	<1	<1	<1
Cadmium	<1	<1	<1
Chromium	<1	<1	<1
Copper	<1	<1	<1
Lead	<1	<1	<1
Manganese	<1	<1	<1
Mercury	<1	<1	<1
Molybdenum	<1	<1	<1
Nickel	<1	<1	<1
Selenium	<1	<1	<1
Silver	<1	<1	<1
Thallium	<1	<1	<1
Zinc	<1	<1	<1

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.6 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for American Beaver. Note that all contaminants of potential ecological concern (COPECs) are summarized.

Watershed	Exposure Unit	Antimony	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
Mineral Creek	EU-01	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-03	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-3.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-05	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-06	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R1 Mill Creek	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cement Creek	EU-20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-21	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-22	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-23	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-24	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Animas River	EU-07	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-08	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-09	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-14	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-15	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-16	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-19	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R2 Maggie Gulch	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R3 Picayune Gulch	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R4 Upper North Fork	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.7 Summary of Dietary Central Tendency Exposure Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for American Pika. Note that all contaminants of potential ecological concern (COPECs) are summarized.

	Halo Area Exposure Scenario				Waste Rock Exposure Scenario		
COPEC	**High-level**	**Mid-level**	**Low-level**	**Veg. Upland**	**High-level**	**Mid-level**	**Low-level**
Antimony	<1	<1	<1	<1	1	<1	<1
Arsenic	<1	<1	<1	<1	<1	5	<1
Cadmium	<1	<1	<1	<1	<1	<1	<1
Chromium	<1	<1	<1	<1	<1	<1	<1
Copper	<1	<1	<1	<1	1	<1	<1
Lead	3	2	<1	<1	15	7	5
Manganese	<1	<1	<1	<1	<1	<1	<1
Mercury	<1	<1	<1	<1	<1	<1	<1
Molybdenum	<1	<1	<1	<1	<1	<1	<1
Nickel	<1	<1	<1	<1	<1	<1	<1
Selenium	<1	<1	<1	<1	<1	<1	<1
Silver	<1	<1	<1	<1	<1	<1	<1
Thallium	<1	<1	<1	<1	<1	<1	<1
Zinc	<1	<1	<1	<1	<1	<1	<1

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.8 Summary of Dietary Central Tendency Exposure Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for Yellow-Bellied Marmot. Note that all contaminants of potential ecological concern (COPECs) are summarized.

	Halo Area Exposure Scenario				Waste Rock Exposure Scenario		
COPEC	**High-level**	**Mid-level**	**Low-level**	**Veg. Upland**	**High-level**	**Mid-level**	**Low-level**
Antimony	<1	<1	<1	<1	<1	<1	<1
Arsenic	<1	<1	<1	<1	<1	1	<1
Cadmium	<1	<1	<1	<1	<1	<1	<1
Chromium	<1	<1	<1	<1	<1	<1	<1
Copper	<1	<1	<1	<1	<1	<1	<1
Lead	<1	<1	<1	<1	3	1	1
Manganese	<1	<1	<1	<1	<1	<1	<1
Mercury	<1	<1	<1	<1	<1	<1	<1
Molybdenum	<1	<1	<1	<1	<1	<1	<1
Nickel	<1	<1	<1	<1	<1	<1	<1
Selenium	<1	<1	<1	<1	<1	<1	<1
Silver	<1	<1	<1	<1	<1	<1	<1
Thallium	<1	<1	<1	<1	<1	<1	<1
Zinc	<1	<1	<1	<1	<1	<1	<1

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.9 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for Northern Pocket Gopher. Note that all contaminants of potential ecological concern (COPECs) are summarized.

COPEC	High-Level DRC	Mid-Level DRC	Low-Level DRC	Veg. Upland
Antimony	<1	<1	<1	<1
Arsenic	<1	<1	<1	<1
Cadmium	<1	<1	<1	<1
Chromium	<1	<1	<1	<1
Copper	<1	<1	<1	<1
Lead	2	2	<1	<1
Manganese	<1	<1	<1	<1
Mercury	<1	<1	<1	<1
Molybdenum	<1	<1	<1	<1
Nickel	<1	<1	<1	<1
Selenium	<1	<1	<1	<1
Silver	<1	<1	<1	<1
Thallium	<1	<1	<1	<1
Zinc	<1	<1	<1	<1

DRC = dose-response category

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.10 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for Cliff Swallow. Note that all contaminants of potential ecological concern (COPECs) are summarized.

Watershed	Exposure Unit	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Vanadium	Zinc
Mineral Creek	EU-01	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1
	EU-02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-03	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1
	EU-3.5	<1	<1	<1	<1	<1	4	<1	<1	<1	<1	<1	<1	<1	<1
	EU-04	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1
	EU-05	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1
	EU-06	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R1 Mill Creek	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cement Creek	EU-20	<1	<1	<1	<1	<1	4	<1	<1	<1	<1	<1	<1	<1	<1
	EU-21	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1
	EU-22	<1	<1	<1	<1	<1	4	<1	<1	<1	<1	<1	<1	<1	<1
	EU-23	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-24	<1	<1	<1	<1	<1	4	<1	<1	<1	<1	<1	<1	<1	<1
Animas River	EU-07	<1	<1	<1	<1	<1	23	<1	<1	<1	<1	<1	<1	<1	<1
	EU-08	<1	<1	<1	<1	<1	4	<1	<1	<1	<1	<1	<1	<1	<1
	EU-09	<1	<1	<1	<1	<1	11	<1	<1	<1	<1	<1	<1	<1	<1
	EU-10	<1	<1	<1	<1	<1	14	<1	<1	<1	<1	<1	<1	<1	<1
	EU-11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-12	<1	<1	<1	<1	<1	4	<1	<1	<1	<1	<1	<1	<1	<1
	EU-13	<1	<1	<1	<1	<1	8	<1	<1	<1	<1	<1	<1	<1	<1
	EU-14	<1	<1	<1	<1	<1	9	<1	<1	<1	<1	<1	<1	<1	<1
	EU-15	<1	<1	<1	<1	<1	6	<1	<1	<1	<1	<1	<1	<1	<1
	EU-16	<1	<1	<1	<1	<1	6	<1	<1	<1	<1	<1	<1	<1	<1
	EU-17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-18	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1
	EU-19	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R2 Maggie Gulch	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R3 Picayune Gulch	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R4 Upper North Fork	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.11 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for Mountain Bluebird. Note that all contaminants of potential ecological concern (COPECs) are summarized.

COPEC	High-Level DRC	Mid-Level DRC	Low-Level DRC	Veg. Upland
Arsenic	<1	<1	<1	<1
Barium	<1	<1	<1	<1
Cadmium	<1	<1	<1	<1
Chromium	<1	<1	<1	<1
Copper	<1	<1	<1	<1
Lead	10	9	4	<1
Manganese	<1	<1	<1	<1
Mercury	<1	<1	<1	<1
Molybdenum	<1	<1	<1	<1
Nickel	<1	<1	<1	<1
Selenium	<1	<1	<1	<1
Silver	<1	<1	<1	<1
Vanadium	<1	<1	<1	<1
Zinc	<1	<1	<1	<1

DRC = dose-response category

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.12 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for Fringed Myotis Bat. Note that all contaminants of potential ecological concern (COPECs) are summarized.

Watershed	Exposure Unit	Antimony	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc
Mineral Creek	EU-01	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-02	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-03	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-3.5	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-04	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-05	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-06	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R1 Mill Creek	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Cement Creek	EU-20	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-21	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-22	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-23	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-24	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
Animas River	EU-07	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-08	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-09	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-10	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-11	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-12	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-13	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-14	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-15	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-16	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-17	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-18	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-19	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R2 Maggie Gulch	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R3 Picayune Gulch	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R4 Upper North Fork	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.13 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for Montane Shrew. Note that all contaminants of potential ecological concern (COPECs) are summarized.

COPEC	High-Level DRC	Mid-Level DRC	Low-Level DRC	Ref. Floodplain
Antimony	<1	<1	<1	<1
Arsenic	1	1	<1	1
Cadmium	<1	<1	<1	<1
Chromium	<1	<1	<1	<1
Copper	2	<1	<1	<1
Lead	14	4	2	<1
Manganese	<1	<1	<1	<1
Mercury	<1	<1	<1	<1
Molybdenum	<1	<1	<1	<1
Nickel	<1	<1	<1	<1
Selenium	6	6	6	6
Silver	<1	<1	<1	<1
Thallium	1	1	1	1
Zinc	<1	<1	<1	<1

DRC = dose-response category

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.14 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for American Robin. Note that all contaminants of potential ecological concern (COPECs) are summarized.

Watershed	Exposure Unit	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Vanadium	Zinc
Mineral Creek	EU-01	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	1	<1
	EU-02	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1
	EU-03	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1
	EU-3.5	<1	<1	<1	<1	<1	4	<1	<1	<1	<1	<1	<1	<1	<1
	EU-04	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1
	EU-05	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1
	EU-06	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R1 Mill Creek	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1
Cement Creek	EU-20	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1
	EU-21	<1	<1	<1	<1	<1	3	<1	<1	<1	<1	<1	<1	<1	<1
	EU-22	<1	<1	<1	<1	<1	5	<1	<1	<1	<1	<1	<1	<1	<1
	EU-23	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-24	<1	<1	<1	<1	<1	5	<1	<1	<1	<1	<1	<1	<1	<1
Animas River	EU-07	<1	<1	<1	<1	<1	35	<1	<1	<1	<1	<1	<1	<1	<1
	EU-08	<1	<1	<1	<1	<1	4	<1	<1	<1	<1	<1	<1	<1	<1
	EU-09	<1	<1	<1	<1	<1	16	<1	<1	<1	<1	<1	<1	<1	<1
	EU-10	<1	<1	<1	<1	1	22	<1	<1	<1	<1	<1	<1	<1	<1
	EU-11	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-12	<1	<1	<1	<1	<1	4	<1	<1	<1	<1	<1	<1	1	<1
	EU-13	<1	<1	<1	<1	<1	12	<1	<1	<1	<1	<1	<1	<1	<1
	EU-14	<1	<1	<1	<1	<1	12	<1	<1	<1	<1	<1	<1	<1	<1
	EU-15	<1	<1	<1	<1	<1	8	<1	<1	<1	<1	<1	<1	<1	<1
	EU-16	<1	<1	<1	<1	<1	8	<1	<1	<1	<1	<1	<1	<1	<1
	EU-17	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-18	<1	<1	<1	<1	<1	2	<1	<1	<1	<1	<1	<1	<1	<1
	EU-19	<1	<1	<1	<1	<1	4	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R2 Maggie Gulch	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R3 Picayune Gulch	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
	EU-R4 Upper North Fork	<1	<1	<1	<1	<1	1	<1	<1	<1	<1	<1	<1	<1	<1

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.15 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for Coyote. Note that all contaminants of potential ecological concern (COPECs) are summarized.

COPEC	Entire BPMD Assessment Area
Antimony	<1
Arsenic	<1
Cadmium	<1
Chromium	<1
Copper	<1
Lead	<1
Manganese	<1
Mercury	<1
Molybdenum	<1
Nickel	<1
Selenium	<1
Silver	<1
Thallium	<1
Zinc	<1

DRC = dose-response category
BPMD = Bonita Peak Mining District

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.16 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for Deer Mouse. Note that all contaminants of potential ecological concern (COPECs) are summarized.

COPEC	High-Level DRC	Mid-Level DRC	Low-Level DRC	Ref. Floodplain
Antimony	<1	<1	<1	<1
Arsenic	<1	<1	<1	<1
Cadmium	<1	<1	<1	<1
Chromium	<1	<1	<1	<1
Copper	<1	<1	<1	<1
Lead	2	1	<1	<1
Manganese	<1	<1	<1	<1
Mercury	<1	<1	<1	<1
Molybdenum	<1	<1	<1	<1
Nickel	<1	<1	<1	<1
Selenium	4	4	4	4
Silver	<1	<1	<1	<1
Thallium	2	1	1	1
Zinc	<1	<1	<1	<1

DRC = dose-response category

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.17 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for Golden Eagle. Note that all contaminants of potential ecological concern (COPECs) are summarized.

COPEC	Entire BPMD Assessment Area
Arsenic	<1
Barium	<1
Cadmium	<1
Chromium	<1
Copper	<1
Lead	<1
Manganese	<1
Mercury	<1
Molybdenum	<1
Nickel	<1
Selenium	<1
Silver	<1
Vanadium	<1
Zinc	<1

DRC = dose-response category
BPMD = Bonita Peak Mining District

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.18 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for Northern Goshawk. Note that all contaminants of potential ecological concern (COPECs) are summarized.

COPEC	Mineral Creek	Cement Creek	Animas River
Arsenic	<1	<1	<1
Barium	<1	<1	<1
Cadmium	<1	<1	<1
Chromium	<1	<1	<1
Copper	<1	<1	<1
Lead	<1	<1	<1
Manganese	<1	<1	<1
Mercury	<1	<1	<1
Molybdenum	<1	<1	<1
Nickel	<1	<1	<1
Selenium	<1	<1	<1
Silver	<1	<1	<1
Vanadium	<1	<1	<1
Zinc	<1	<1	<1

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 5.19 Summary of Dietary Central Tendency Exposure (CTE) Low-Effect Toxicity Reference Value Hazard Quotients (HQs) for Canada Lynx. Note that all contaminants of potential ecological concern (COPECs) are summarized.

COPEC	Entire BPMD Assessment Area
Antimony	<1
Arsenic	<1
Cadmium	<1
Chromium	<1
Copper	<1
Lead	<1
Manganese	<1
Mercury	<1
Molybdenum	<1
Nickel	<1
Selenium	<1
Silver	<1
Thallium	<1
Zinc	<1

DRC = dose-response category
BPMD = Bonita Peak Mining District

Color code definitions:

Lightest	HQ <1.0
	HQ >1.0 but <5.0
	HQ >5.0 but <10.0
Darkest	HQ >10.0

Table 6.1 Final Risk Characterization Summary For Each Assessment Endpoint and Exposure Unit. Hazard quotient (HQ)-based risk characterization are central tendency exposure (CTE) low-effect HQs that represent the highest levels of risk.

Watershed	Exposure Unit	Plant Community	Invert. Community	Ptarmigan	Moose	Beaver	Pika (Waste Rock)	Marmot (Waste Rock)	Gopher	Swallow	Bluebird	Myotis Bat	Shrew	Robin	Coyote	Mouse	Eagle	Goshawk	Lynx
Mineral Creek	EU-01	Lower risk	Acceptable risk	NA	Acceptable risk	Acceptable risk	NA	NA	NA	Lower risk	NA	Acceptable risk	NA	Lower risk	Acceptable risk	NA	Acceptable risk	Acceptable risk	Acceptable risk
	EU-02	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
	EU-03	Lower risk	Acceptable risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-3.5	Lower risk	Acceptable risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-04	Lower risk	Lower risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-05	Mod. risk	Lower risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-06	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
	EU-R1 Mill Creek	Lower risk	Lower risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
Cement Creek	EU-20	Lower risk	Acceptable risk		Acceptable risk	Acceptable risk				Lower risk		Acceptable risk		Lower risk				Acceptable risk	
	EU-21	Lower risk	Acceptable risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-22	Lower risk	Lower risk			Acceptable risk				Lower risk		Acceptable risk		Mod. risk					
	EU-23	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
	EU-24	Mod. risk	Lower risk			Acceptable risk				Lower risk		Acceptable risk		Mod. risk					
Animas River	EU-07	Higher risk	Lower risk		Acceptable risk	Acceptable risk				Higher risk		Acceptable risk		Higher risk				Acceptable risk	
	EU-08	Lower risk	Acceptable risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-09	Mod. risk	Lower risk			Acceptable risk				Higher risk		Acceptable risk		Higher risk					
	EU-10	Higher risk	Mod. risk			Acceptable risk				Higher risk		Acceptable risk		Higher risk					
	EU-11	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
	EU-12	Mod. risk	Lower risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-13	Mod. risk	Lower risk			Acceptable risk				Mod. risk		Acceptable risk		Higher risk					
	EU-14	Mod. risk	Lower risk			Acceptable risk				Mod. risk		Acceptable risk		Higher risk					
	EU-15	Higher risk	Mod. risk			Acceptable risk				Mod. risk		Acceptable risk		Mod. risk					
	EU-16	Higher risk	Lower risk			Acceptable risk				Mod. risk		Acceptable risk		Mod. risk					
	EU-17	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
	EU-18	Lower risk	Acceptable risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-19	Mod. risk	Acceptable risk			Acceptable risk				Lower risk		Acceptable risk		Lower risk					
	EU-R2 Maggie Gulch	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Acceptable risk					
	EU-R3 Picayune Gulch	Lower risk	Acceptable risk			Acceptable risk				Acceptable risk		Acceptable risk		Acceptable risk					
	EU-R4 Upper North Fork	Mod. risk	Lower risk			Acceptable risk				Acceptable risk		Acceptable risk		Lower risk					
Entire Assessment Area	High-level halo area	Mod. risk	Lower risk	Acceptable risk	NA	NA	Higher risk	Lower risk	Lower risk	NA	Higher risk	NA	NA	NA	NA	NA	NA	NA	NA
	Mid-level halo area	Lower risk	Acceptable risk	Acceptable risk			Mod. risk	Lower risk	Lower risk		Mod. risk								
	Low-level halo area	Lower risk	Acceptable risk	Acceptable risk			Mod. risk	Lower risk	Acceptable risk		Lower risk								
	Vegetated upland area	Lower risk	Acceptable risk	Acceptable risk			NA	NA	Acceptable risk		Acceptable risk								
	High-level floodplain	Mod. risk	Lower risk	NA					NA		NA		Higher risk			Lower risk			
	Mid-level floodplain	Lower risk	Acceptable risk										Mod. risk			Lower risk			
	Low-level floodplain	Lower risk	Acceptable risk										Mod. risk			Lower risk			
	Floodplain reference	Lower risk	Acceptable risk										Mod. risk			Lower risk			

COPEC = Contaminant of Potential Ecological Concern; NA = Not Assessed

Color code definitions*:

Acceptable risk	All CTE low-effect HQs <1.0
Lower risk	At least one COPEC CTE low-effect HQ >1.0 but <5.0
Mod. risk	At least one COPEC CTE low-effect HQ >5.0 but <10.0
Higher risk	At least one COPEC CTE low-effect HQ >10.0

* Note that it is understood that risk does not increase in a linear fashion with increasing HQs. As such, relative risk terminology was only used to qualitatively highlight differences in risk and should not be interpreted beyond this intended use.

Figures

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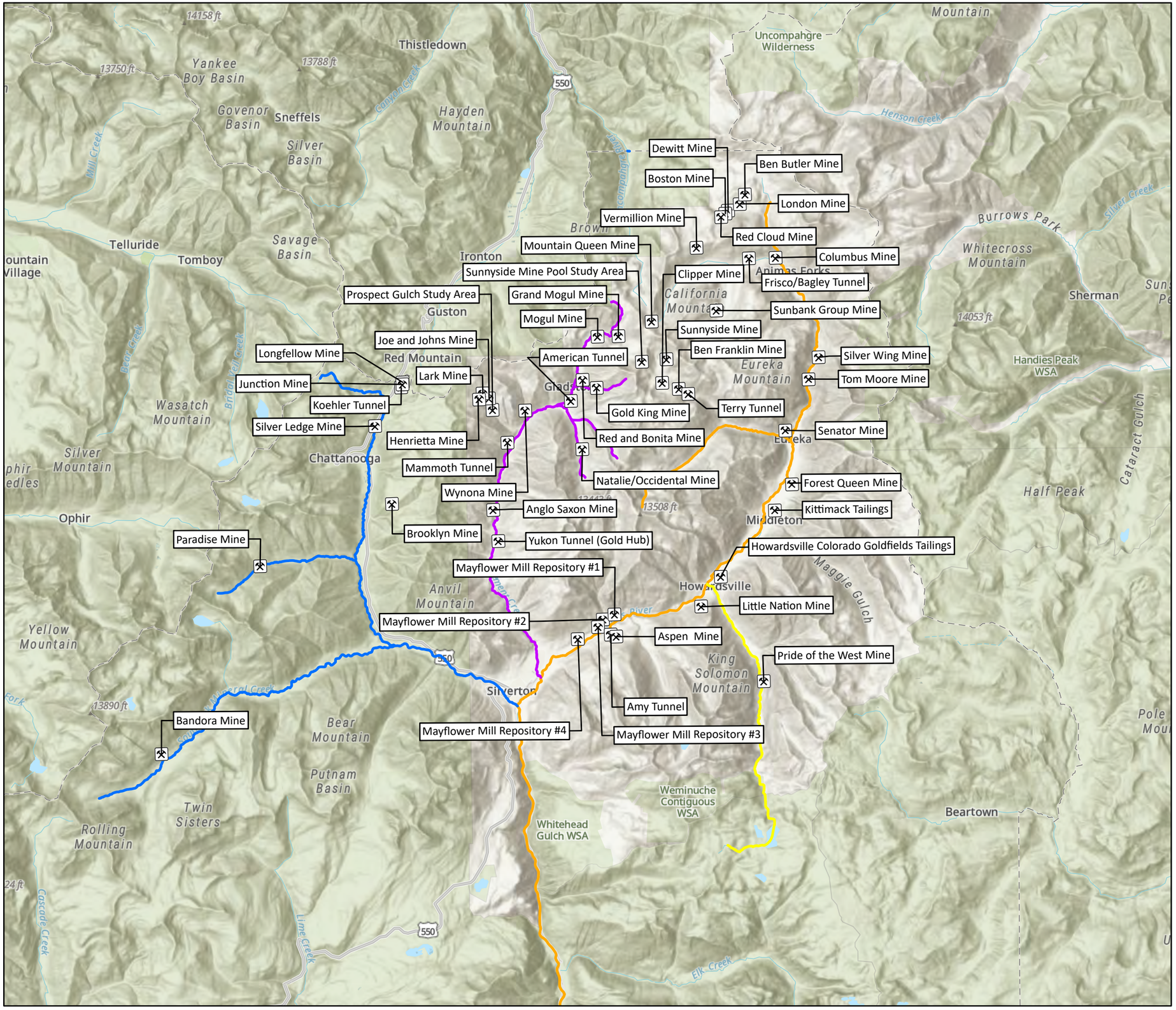
Figure ES.1
Bonita Peak Mining District
National Priorities List Sites



National Priorities List Mine Features
Animas River
Cement Creek
Cunningham Creek
Mineral Creek

Date: December 06, 2019

Map Projection: UTM Zone 13N, WGS84, Meters

Data Sources:
Rivers & Creeks: *CDOW* (2004);
Mine Features: *USGS* (2000);
Base Map: *Esri World Topographic Web Service* (2019).

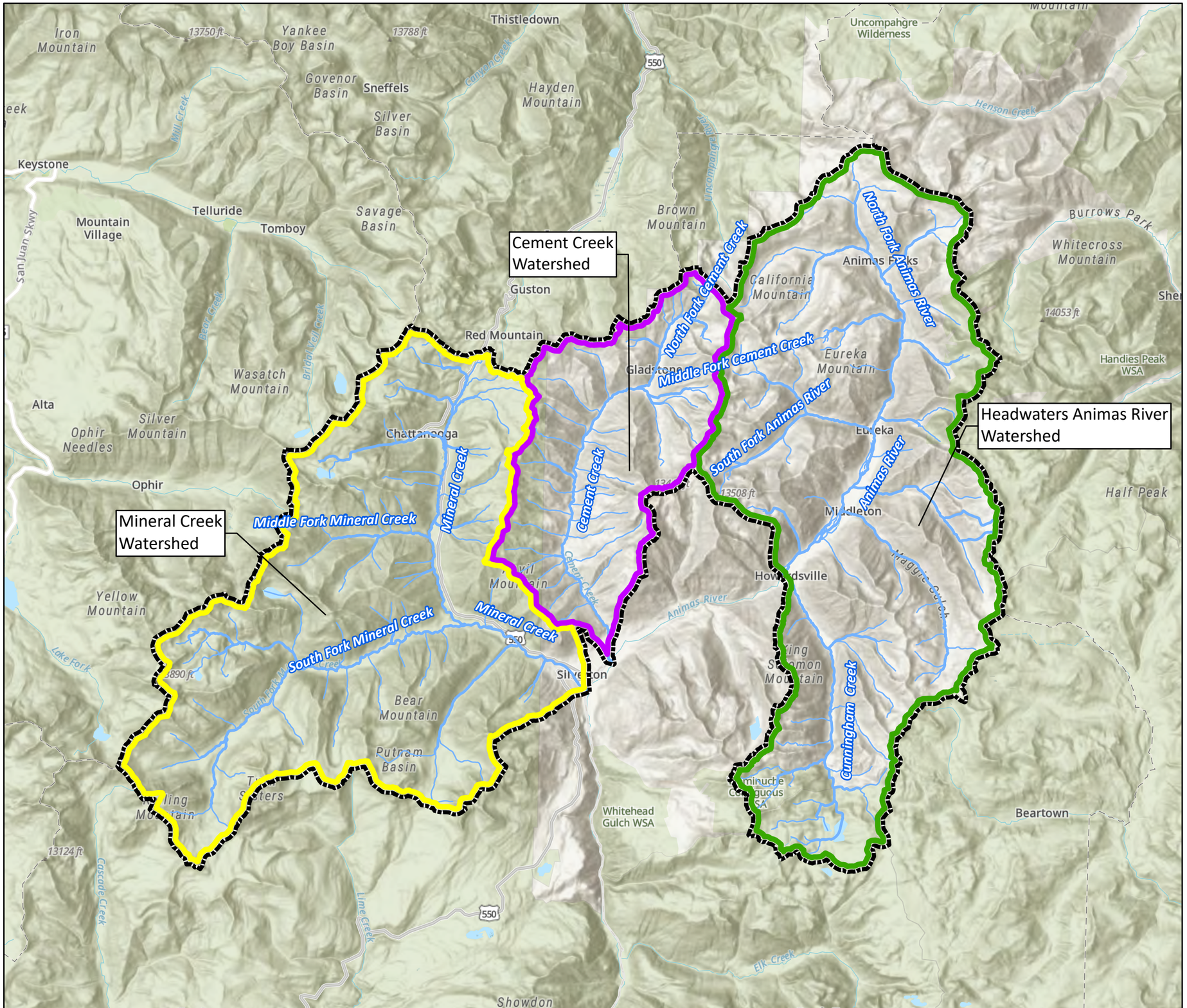
0 2.5 5 Miles

0 2.5 5 Kilometers

N

Area Enlarged

Figure ES.2
Bonita Peak Mining District
Overview Map



Assessment Area
Cement Creek Watershed
Headwaters Animas River Watershed
Mineral Creek Drainage
Minor Streams
Major Streams

Date: December 6, 2019

Map Projection: UTM Zone 13N, WGS84, Meters

Data Sources:
Rivers & Creeks: *CDOW* (2004);
Assessment Area & Watersheds: *USDA* (2013);
Base Map: *Esri World Topographic Web Service* (2019).

0 2 4 Miles

0 2 4 Kilometers

N

Area Enlarged

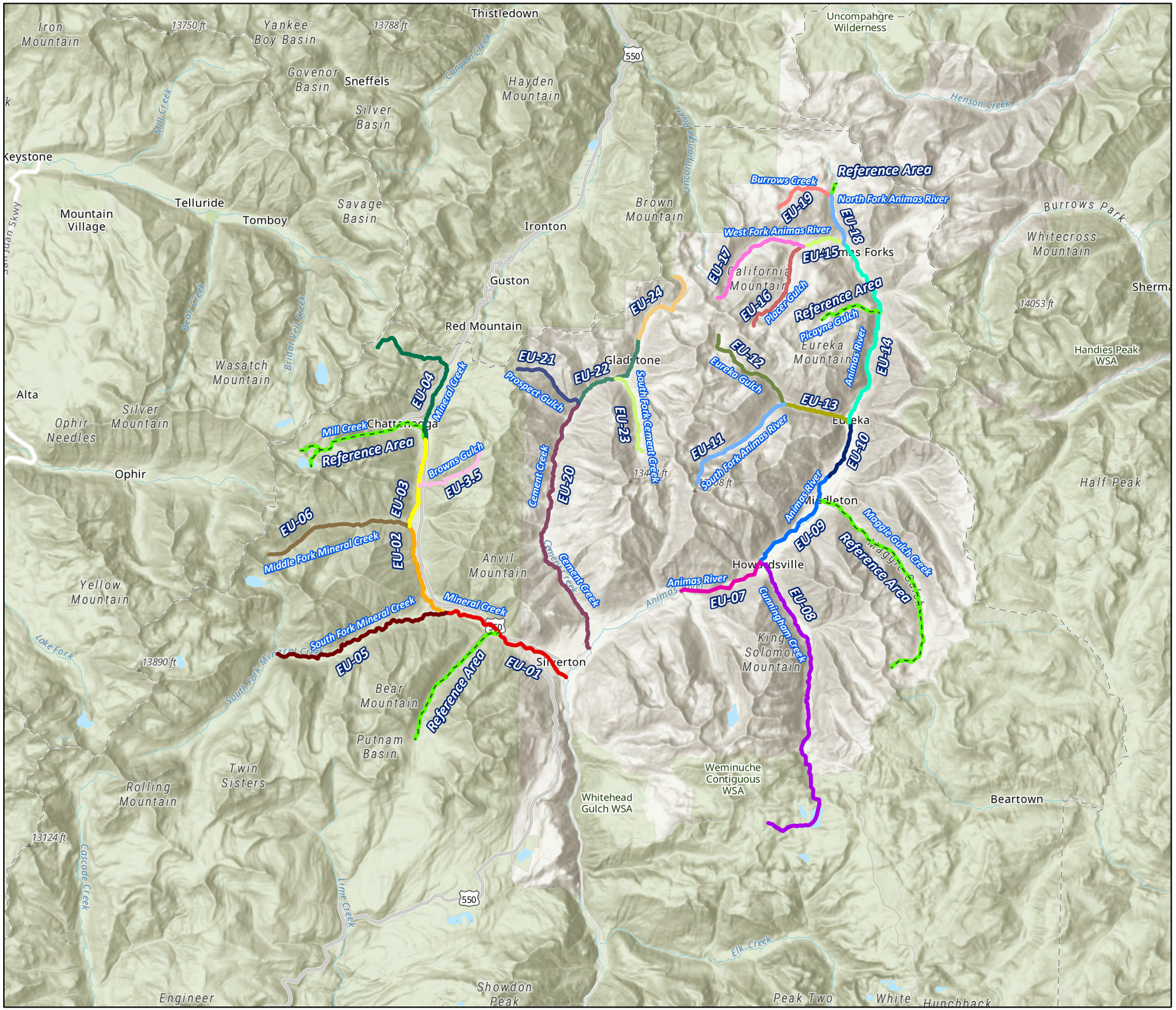


Figure ES.3
Bonita Peak Mining District

Floodplain Exposure Units

- **EU-01** (Mineral Creek)
- **EU-02** (Mineral Creek)
- **EU-03** (Mineral Creek)
- **EU-04** (Mineral Creek)
- **EU-05** (South Fork Mineral Creek)
- **EU-06** Middle Fork (Mineral Creek)
- **EU-07** (Animas River)
- **EU-08** (Cunningham Creek)
- **EU-09** (Animas River)
- **EU-10** (Animas River)
- **EU-11** (Upper South Fork of Animas River)
- **EU-12** (Eureka Gulch)
- **EU-13** (South Fork of Animas River)
- **EU-14** (Animas River)
- **EU-15** (West Fork of Animas River)
- **EU-16** (Placer Gulch)
- **EU-17** (Upper West Fork Animas River)
- **EU-18** (North Fork of Animas River)
- **EU-19** (Burrows Creek)
- **EU-20** (Cement Creek)
- **EU-21** (Prospect Gulch)
- **EU-22** (Cement Creek)
- **EU-23** South Fork of Cement Creek)
- **EU-24** (Cement Creek)
- **EU-3.5** (Browns Creek)
- Reference Area

Date: March 9, 2020

Map Projection: UTM Zone 13N, WGS84, Meters

Data Sources:
Rivers & Creeks: *CDOW* (2004);
Exposure Units & Reference Areas: *U.S. EPA* (2016);
Base Map: *Esri World Topographic Web Service* (2019).

0 2 4 Miles

Area Enlarged

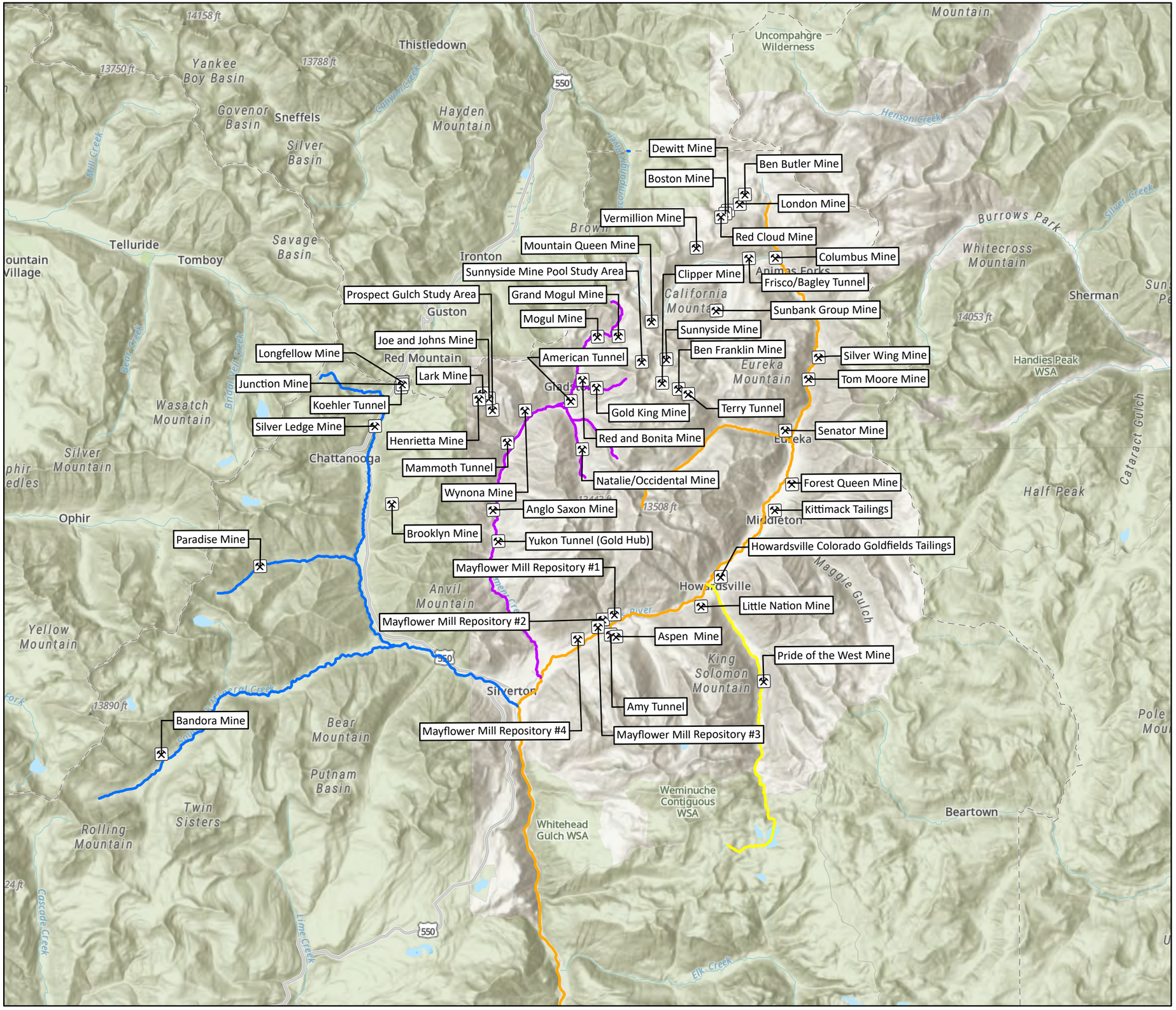


Figure 1.1
Bonita Peak Mining District
National Priorities List Sites

National Priorities List Mine Features
Animas River
Cement Creek
Cunningham Creek
Mineral Creek

Date: December 06, 2019

Map Projection: UTM Zone 13N, WGS84, Meters

Data Sources:
Rivers & Creeks: *CDOW* (2004);
Mine Features: *USGS* (2000);
Base Map: *Esri World Topographic Web Service* (2019).

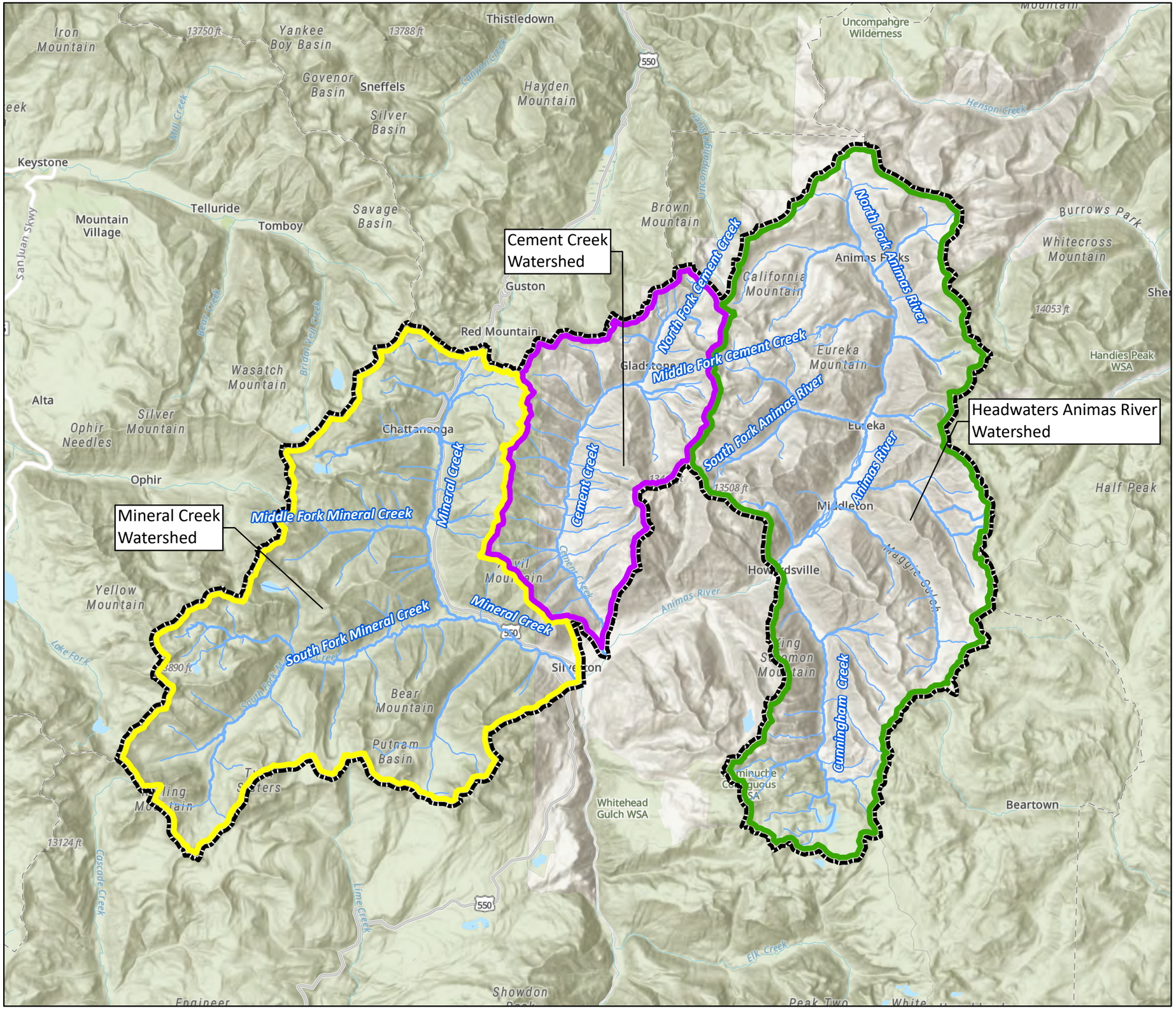
0 2.5 5 Miles

0 2.5 5 Kilometers

N

Area Enlarged

Figure 1.2
Bonita Peak Mining District
Overview Map



Assessment Area
Cement Creek Watershed
Headwaters Animas River Watershed
Mineral Creek Drainage
Minor Streams
Major Streams

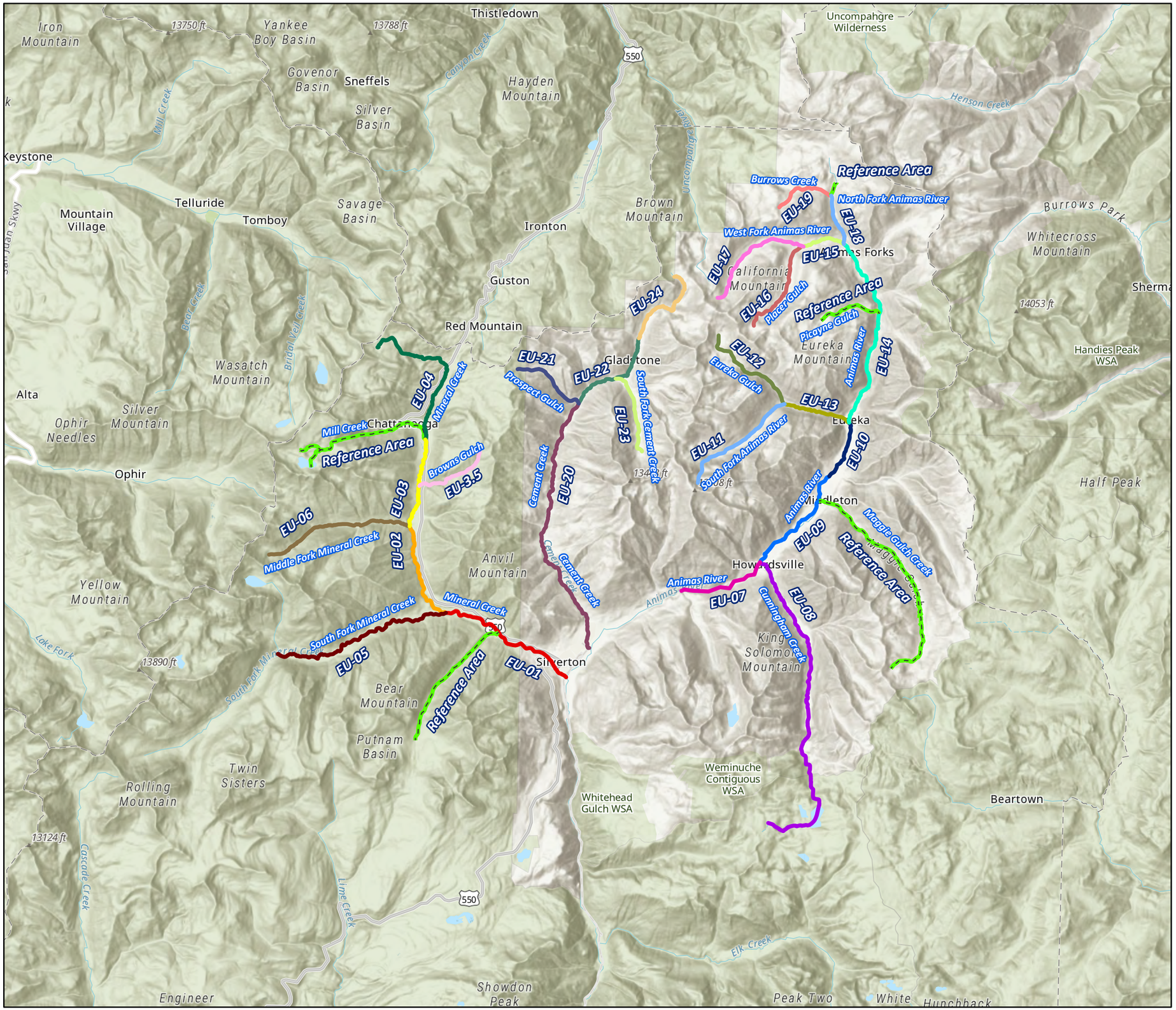
Date: December 6, 2019

Map Projection: UTM Zone 13N, WGS84, Meters

Data Sources:
Rivers & Creeks: *CDOW* (2004);
Assessment Area & Watersheds: *USDA* (2013);
Base Map: *Esri World Topographic Web Service* (2019).

0 2 4 Miles
0 2 4 Kilometers

Figure 1.3
Bonita Peak Mining District
Floodplain Exposure Units



EU-01 (Mineral Creek)
EU-02 (Mineral Creek)
EU-03 (Mineral Creek)
EU-04 (Mineral Creek)
EU-05 (South Fork Mineral Creek)
EU-06 Middle Fork (Mineral Creek)
EU-07 (Animas River)
EU-08 (Cunningham Creek)
EU-09 (Animas River)
EU-10 (Animas River)
EU-11 (Upper South Fork of Animas River)
EU-12 (Eureka Gulch)
EU-13 (South Fork of Animas River)
EU-14 (Animas River)
EU-15 (West Fork of Animas River)
EU-16 (Placer Gulch)
EU-17 (Upper West Fork Animas River)
EU-18 (North Fork of Animas River)
EU-19 (Burrows Creek)
EU-20 (Cement Creek)
EU-21 (Prospect Gulch)
EU-22 (Cement Creek)
EU-23 South Fork of Cement Creek)
EU-24 (Cement Creek)
EU-3.5 (Browns Creek)
Reference Area

Date: March 9, 2020

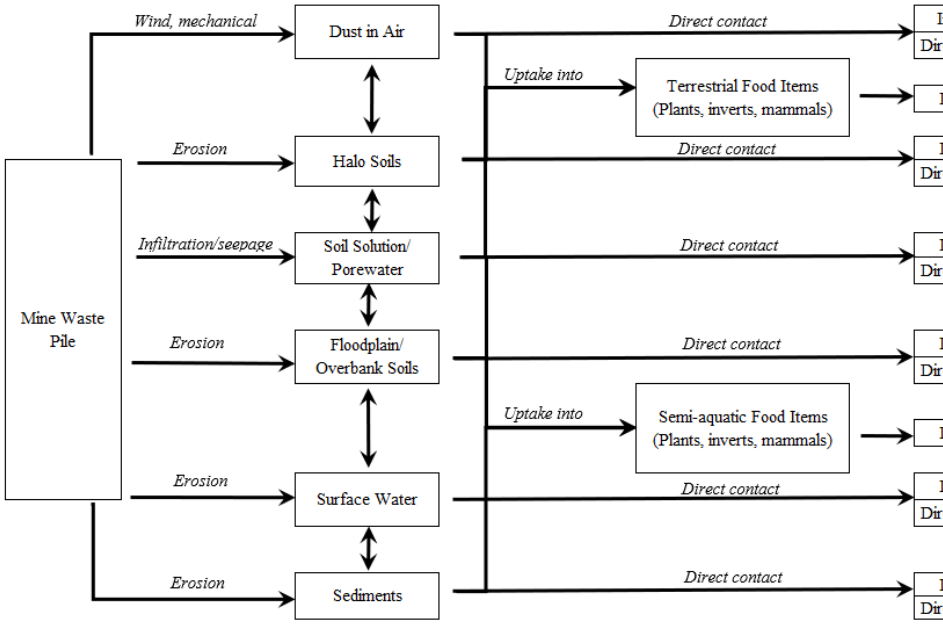
Map Projection: UTM Zone 13N, WGS84, Meters

Data Sources:
Rivers & Creeks: *CDOW* (2004);
Exposure Units & Reference Areas*: U.S. EPA* (2016);
Base Map: *Esri World Topographic Web Service* (2019).

0 2 4 Miles

Area Enlarged

Figure 2.1 Bonita Peak Mining District Terrestrial Baseline Ecological Risk Assessment (BERA) Work Plan Conceptual Site Model



	Plants		Invertebrates		Wildlife	
	Semi-aquatic	Terrestrial	Semi-aquatic	Terrestrial	Birds	Mammals
Inhalation					X	X
Direct contact		X		X	X	X
Ingestion				O	O	O
Ingestion			X	O	O	O
Direct contact		O	X	O	X	X
Ingestion						
Direct contact	O	O	X	X		
Ingestion			O	X	O	O
Direct contact	O		O	X	X	X
Ingestion			O		O	O
Ingestion			O		O	O
Direct contact	O		O		X	X
Ingestion			O		O	O
Direct contact	O		O		X	X

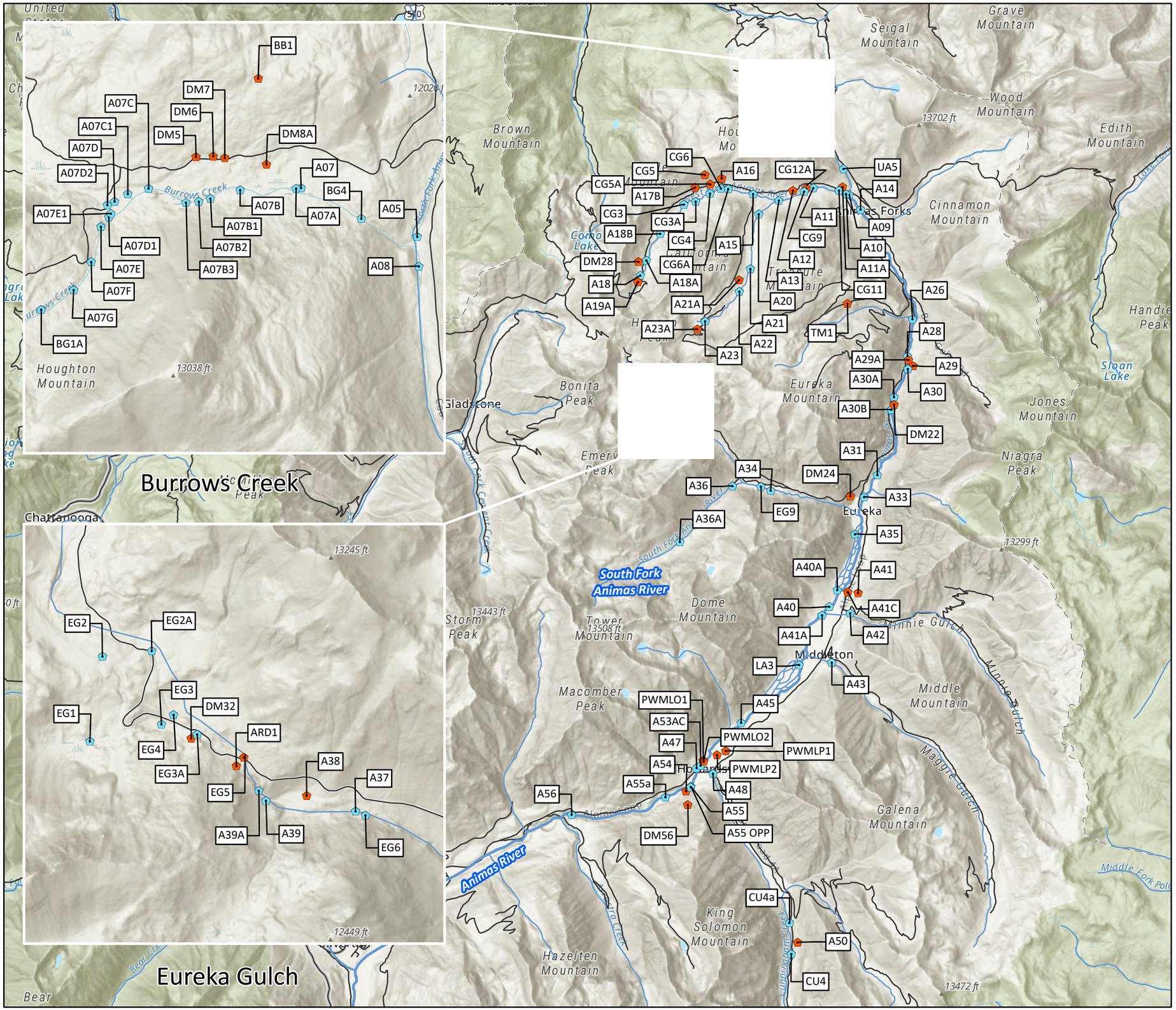
Symbol key

O	Complete pathway that will be evaluated
O	Complete pathway that could be significant
X	Complete pathway but potentially minor
Blank	Incomplete pathway

Note that shaded cells identify which exposure pathways are evaluated in the terrestrial BERA

Figure 2.2. Pair of Canada Lynx (*Lynx canadensis*) Photographed Near Molas Pass Outside of Silverton, Colorado on December 15, 2016. Photograph taken by Dontje Hildebrand (2016).

Figure 3.1a
Bonita Peak Mining District
Upper Animas River
Surface Water
Sampling Locations 2014-2018



Creek and River Sampling Location

Adit Discharge Sampling Location

Streams and Rivers

Roads

Date: September 24, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Sample Locations: *U.S. EPA* (2014-2018);
Streams and Rivers: *NDHPlus V2 - U.S. EPA and USGS* (2013);
Roads: *HERE* (2016);
Base Map: *Esri World Topographic Web Service* (2020).

0 1 2 Miles

Area Enlarged

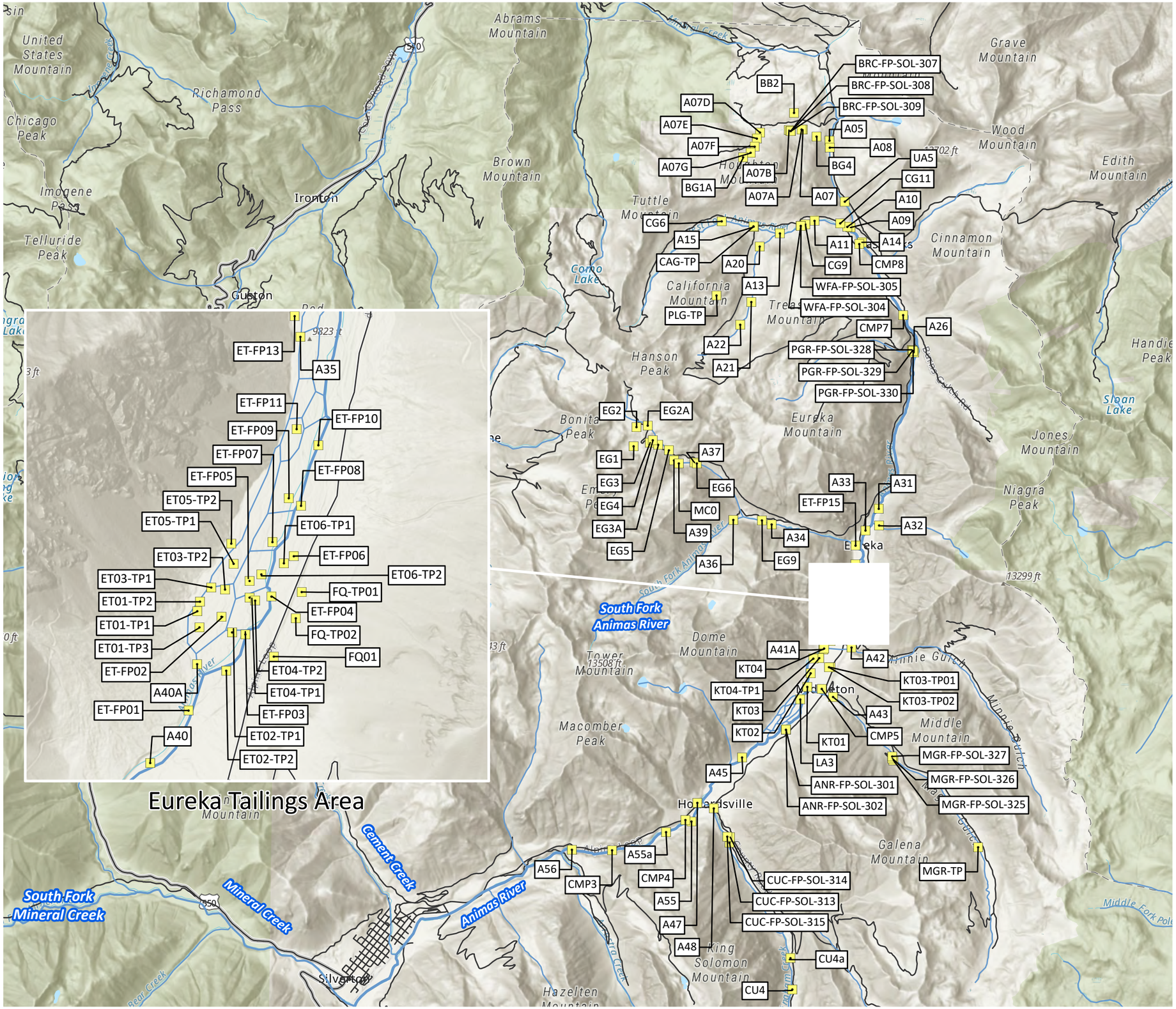


Figure 3.1b
Bonita Peak Mining District
Upper Animas River
Surface Soil
Sampling Locations 2015-2018

Surface (0- to 6-inch) Soil Sampling Location
Streams and Rivers
Roads

Date: September 24, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Sample Locations: *U.S. EPA* (2015-2018);
Streams and Rivers: *NDHPlus V2 - U.S. EPA and USGS* (2013);
Roads: *HERE* (2016);
Base Map: *Esri World Topographic Web Service* (2020).

0 1 2 Miles

Area Enlarged

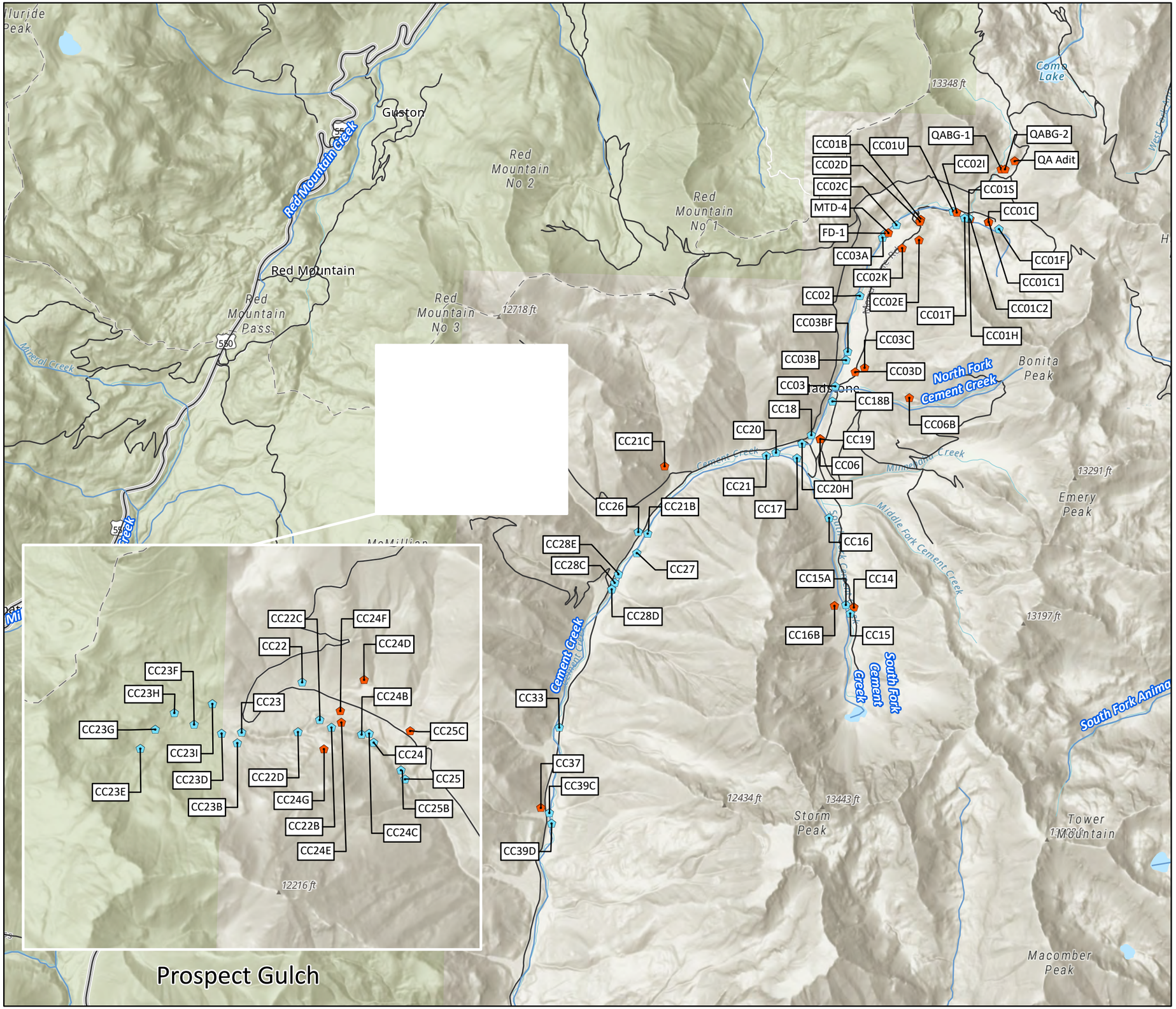


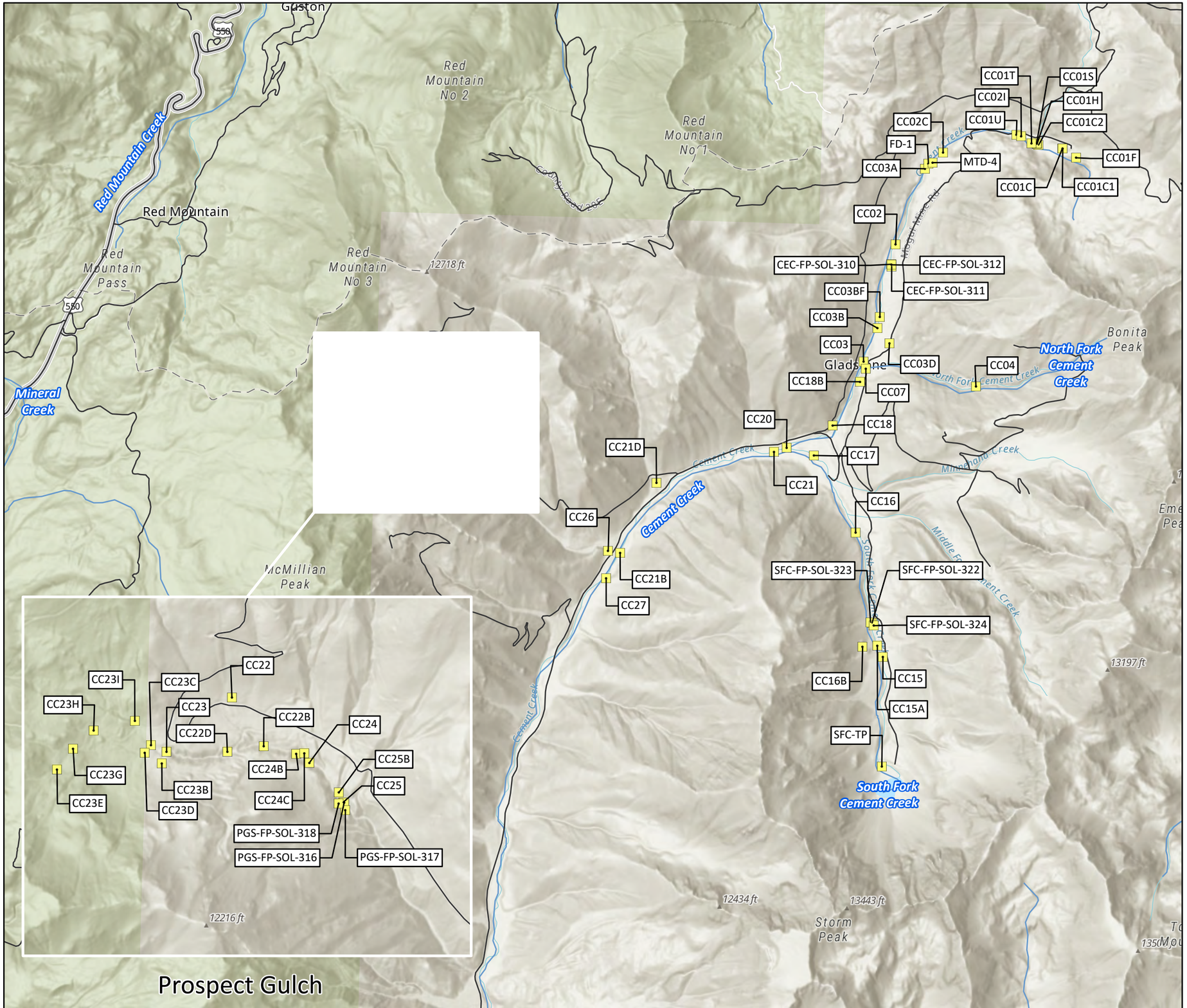
Figure 3.1c
Bonita Peak Mining District
Upper Cement Creek
Surface Water
Sampling Locations 2014-2018

- Creek and River Sampling Location
- Adit Discharge Sampling Location
- Streams and Rivers
- Roads

Date: September 28, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Sample Locations: *U.S. EPA* (2014-2018);
Streams and Rivers: *NDHPlus V2 - U.S. EPA and USGS* (2013);
Roads: *HERE* (2016);
Base Map: *Esri World Topographic Web Service* (2020).

0 0.5 1 Miles

Figure 3.1d
Bonita Peak Mining District
Upper Cement Creek
Surface Soil
Sampling Locations 2015-2018



Surface (0- to 6-inch) Soil Sampling Location
Streams and Rivers
Roads

Date: September 29, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Sample Locations: *U.S. EPA* (2015-2018);
Streams and Rivers: *NDHPlus V2 - U.S. EPA and USGS* (2013);
Roads: *HERE* (2016);
Base Map: *Esri World Topographic Web Service* (2020).

0 0.5 1 Miles

Area Enlarged

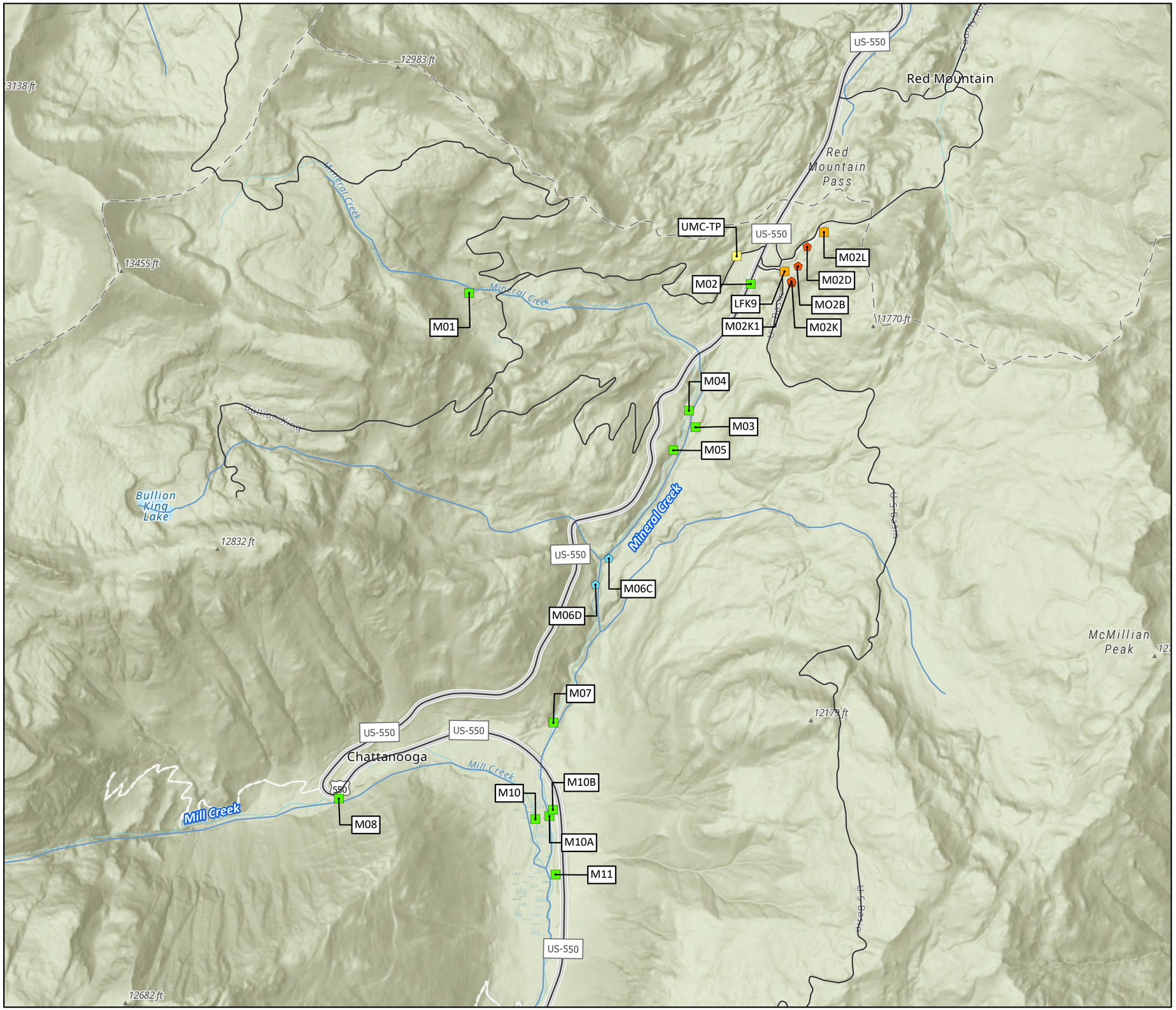


Figure 3.1e
Bonita Peak Mining District
Upper Mineral Creek Surface Water and Soil Sampling Locations 2014-2018

- Creek and River Sampling Location
- Creek and River and Surface (0- to 6-inch) Soil Sampling Location
- Adit Discharge Sampling Location
- Adit Discharge and Surface (0- to 6-inch) Soil Sampling Location
- Surface (0- to 6-inch) Soil Sampling Location
- Streams and Rivers
- Roads

Date: September 30, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Sample Locations: *U.S. EPA* (2014-2018);
Streams and Rivers: *NDHPlus V2 - U.S. EPA and USGS* (2013);
Roads: *HERE* (2016);
Base Map: *Esri World Topographic Web Service* (2020).

0 0.25 0.5 Miles

Area Enlarged

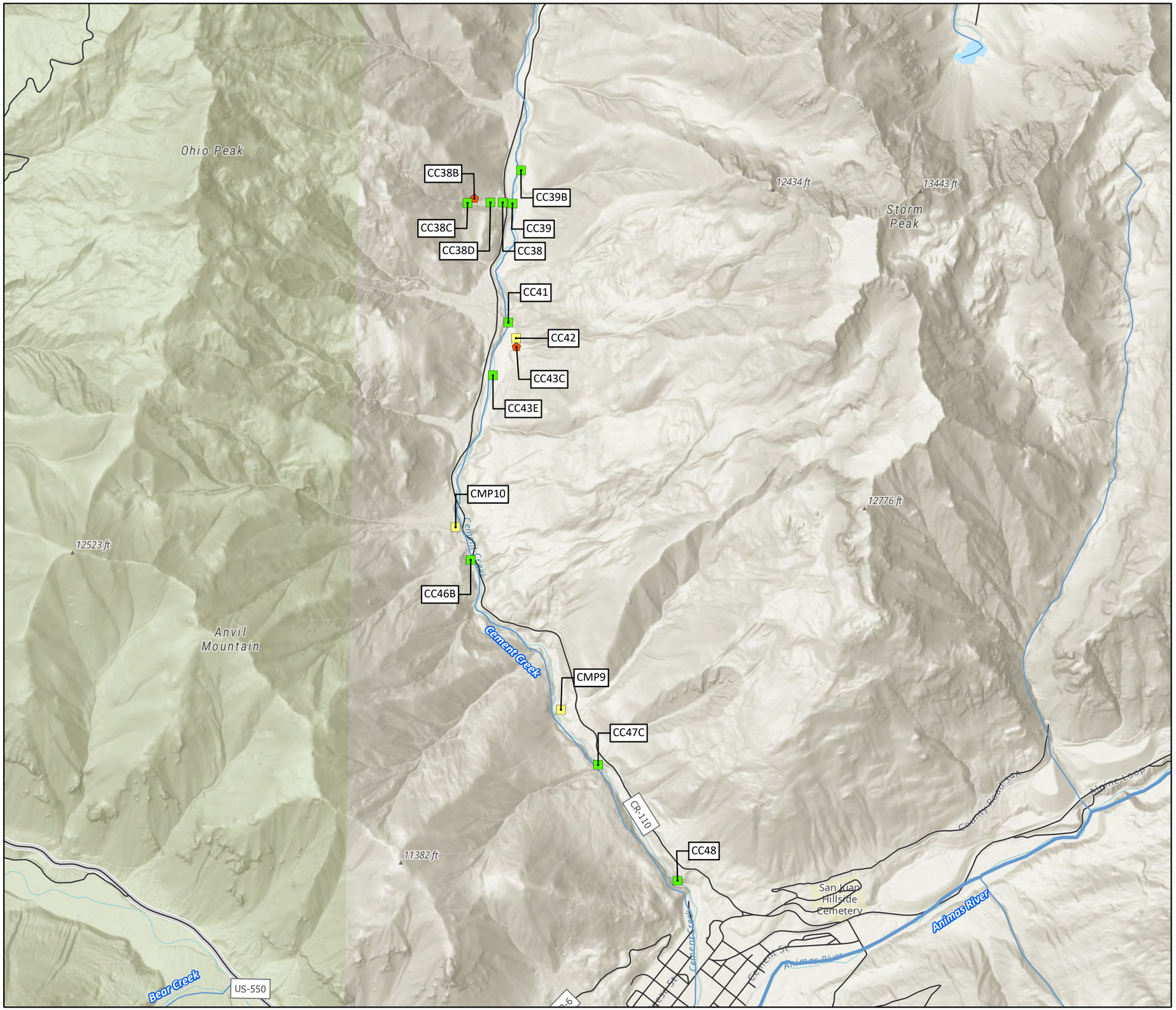


Figure 3.1f
Bonita Peak Mining District
Lower Cement Creek
Surface Water and Soil
Sampling Locations 2014-2018

- Creek and River and Surface (0- to 6-inch) Soil Sampling Location
- Adit Discharge Sampling Location
- Surface (0- to 6-inch) Soil Sampling Location
- Streams and Rivers
- Roads

Date: September 30, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Sample Locations: *U.S. EPA* (2014-2018);
Streams and Rivers: *NDHPlus V2 - U.S. EPA and USGS* (2013);
Roads: *HERE* (2016);
Base Map: *Esri World Topographic Web Service* (2020).

0 0.5 1 Miles

Area Enlarged

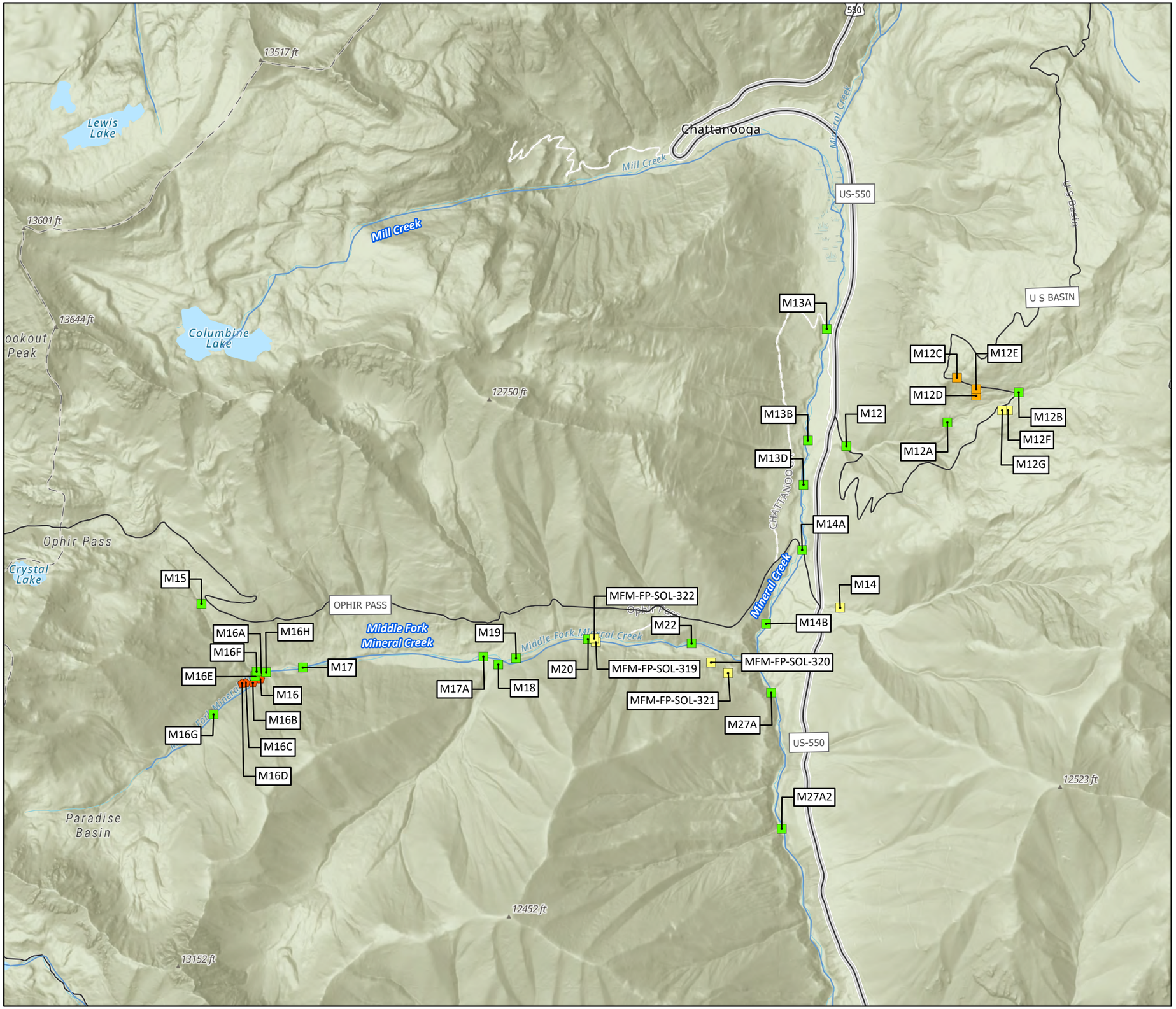


Figure 3.1g
Bonita Peak Mining District
Middle Fork & Mainstem Mineral Creek Surface Water and Soil Sampling Locations 2014-2018

- Creek and River and Surface (0- to 6-inch) Soil Sampling Location
- Adit Discharge Sampling Location
- Adit Discharge and Surface (0- to 6-inch) Soil Sampling Location
- Surface (0- to 6-inch) Soil Sampling Location
- Streams and Rivers
- Roads

Date: October 12, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Sample Locations: *U.S. EPA* (2014-2018);
Streams and Rivers: *NDHPlus V2 - U.S. EPA and USGS* (2013);
Roads: *HERE* (2016);
Base Map: *Esri World Topographic Web Service* (2020).

0 0.25 0.5 Miles

Area Enlarged

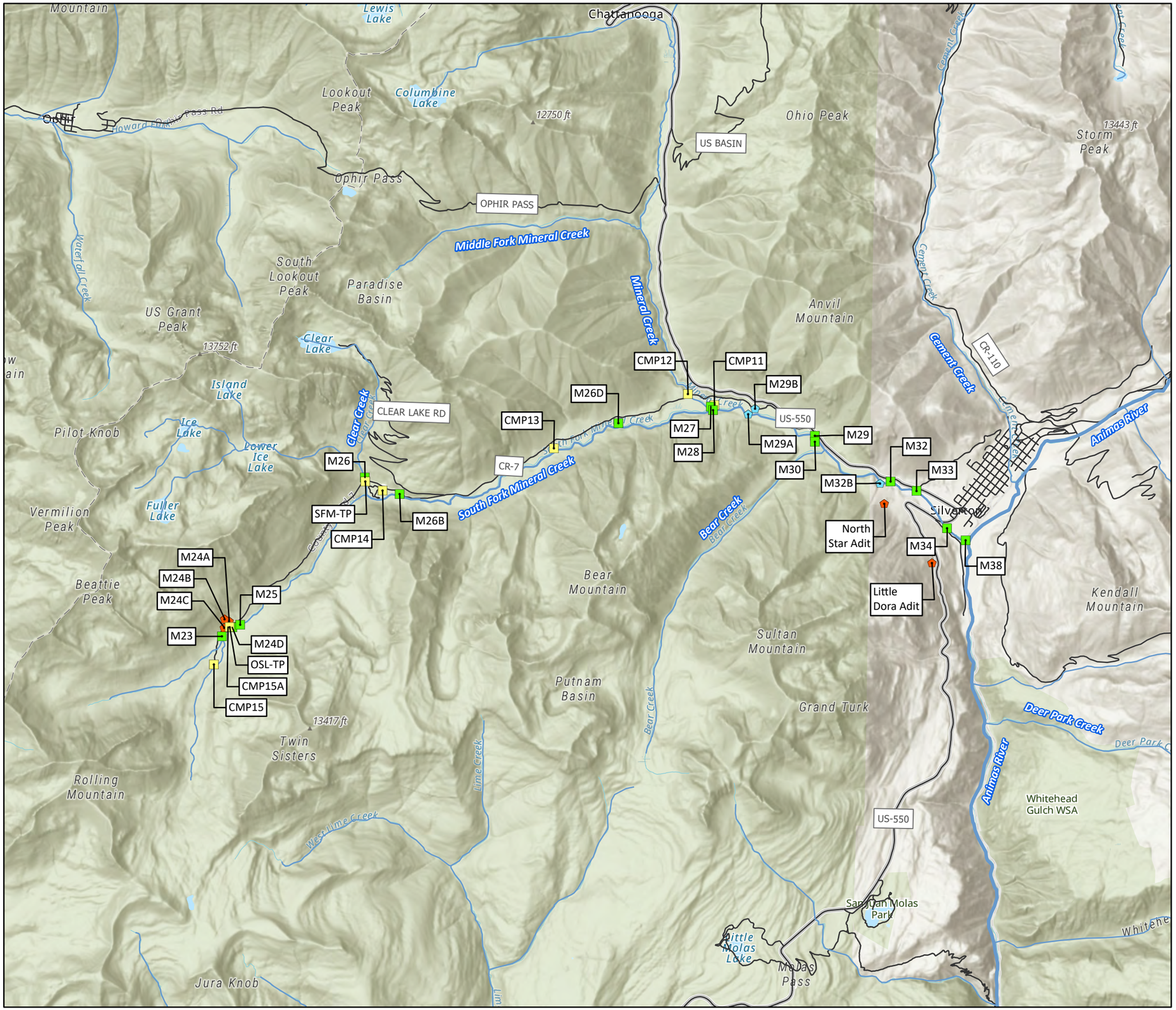


Figure 3.1h
Bonita Peak Mining District
South Fork & Lower Mineral Creek Surface Water and Soil Sampling Locations 2014-2018

- Creek and River Sampling Location
- Creek and River and Surface (0- to 6-inch) Soil Sampling Location
- Adit Discharge Sampling Location
- Surface (0- to 6-inch) Soil Sampling Location
- Streams and Rivers
- Roads

Date: October 12, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Sample Locations: *U.S. EPA* (2014-2018);
Streams and Rivers: *NDHPlus V2 - U.S. EPA and USGS* (2013);
Roads: *HERE* (2016);
Base Map: *Esri World Topographic Web Service* (2020).

0 1 2 Miles

Area Enlarged

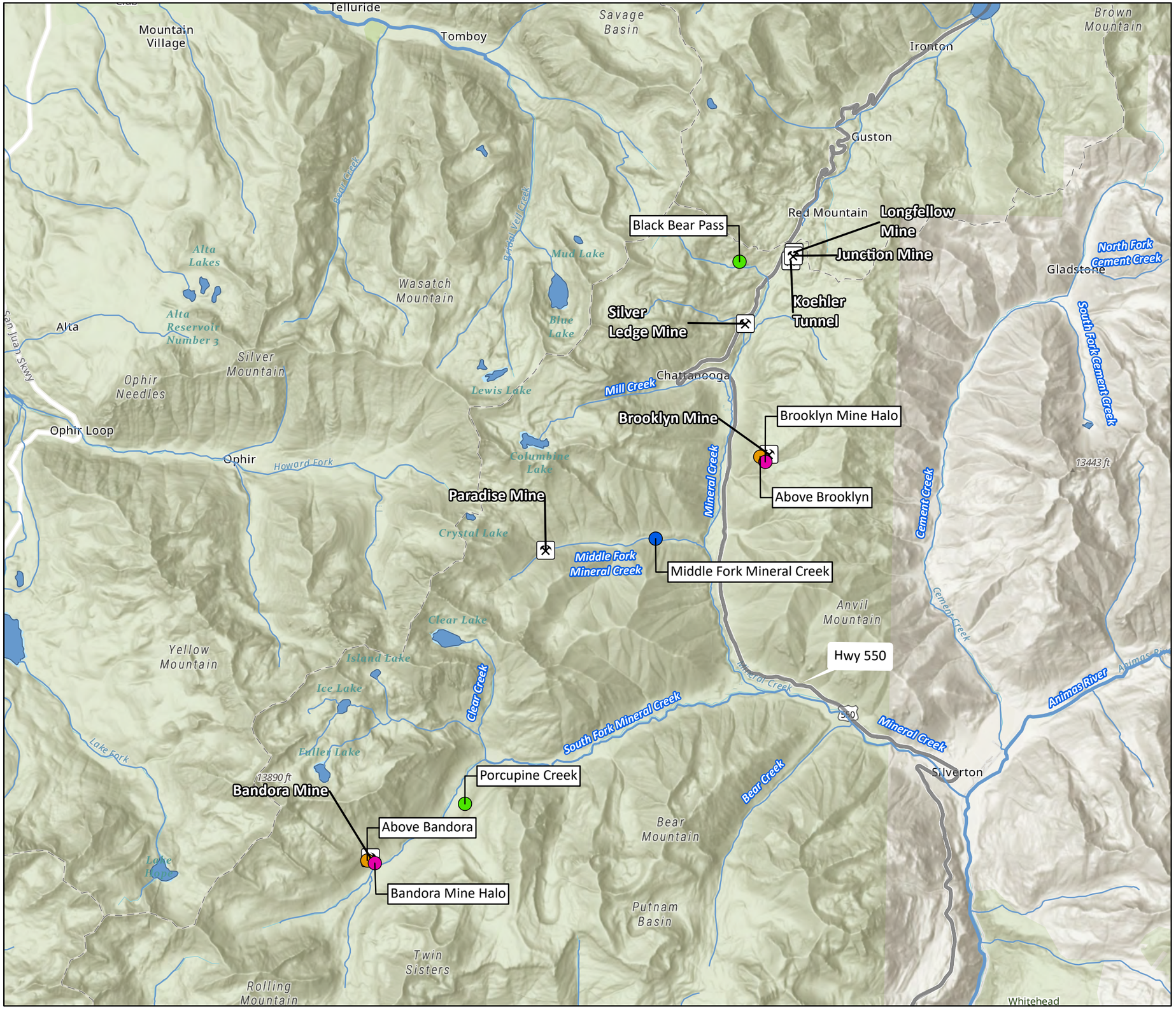


Figure 3.2a
Bonita Peak Mining District
Mineral Creek
Soil, Vegetation, and Invertebrate Sampling Locations 2017-2018

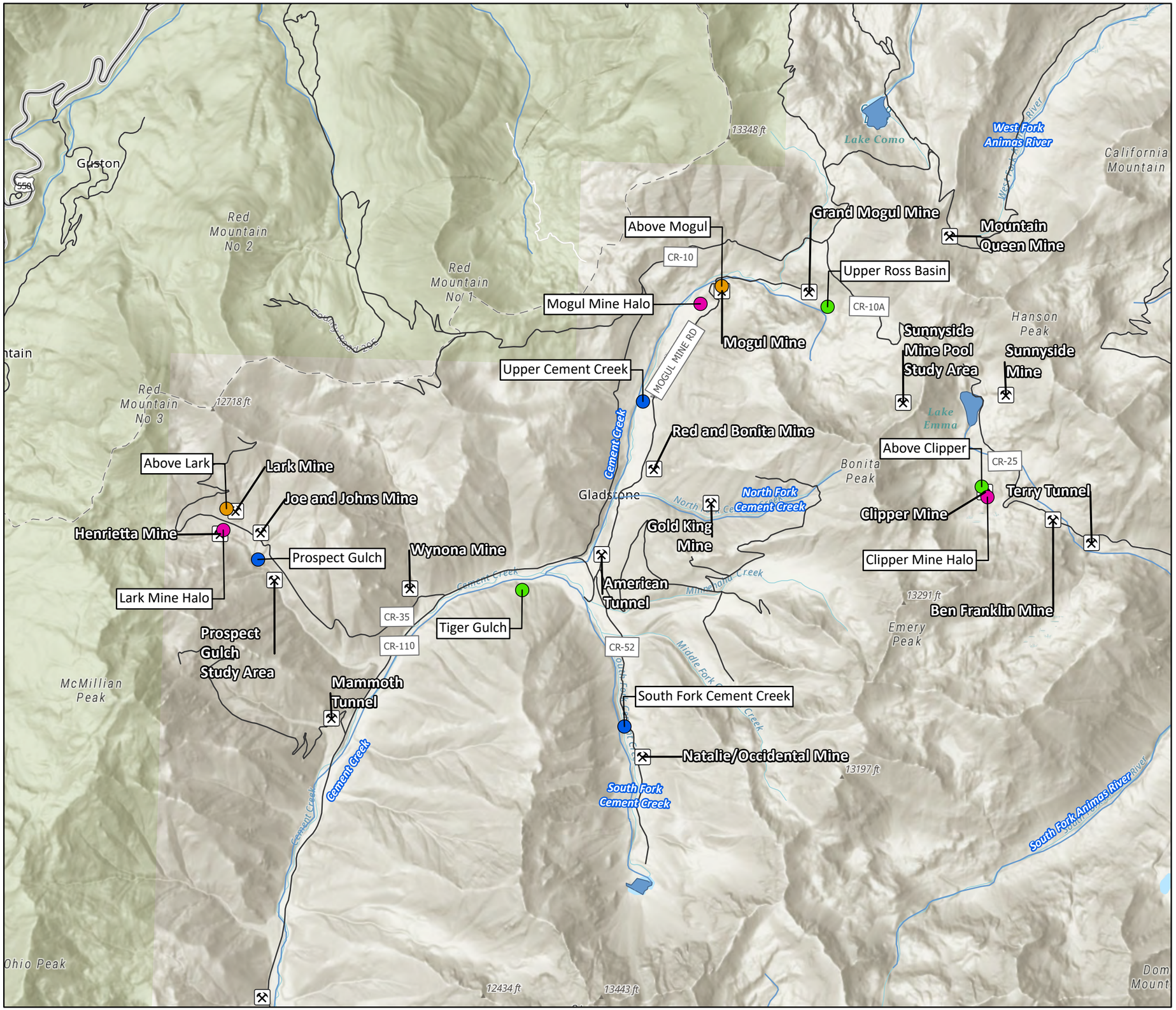
- Floodplain Area
- Mine Waste Halo Area
- Vegetated Upland Area
- Vegetated Upland Area (soil only)
- Mine Feature
- Streams and Rivers
- Highway
- Waterbodies

Date: September 24, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Sample Areas: *U.S. EPA* (2020);
Hydrography: *NDHPlus V2 - U.S. EPA & USGS* (2013);
Highways: *HERE* (2016);
Base Map: *Esri World Topographic Web Service* (2020).

0 1 2 Miles

Area Enlarged

Figure 3.2b
Bonita Peak Mining District
Cement Creek
Soil, Vegetation, and Invertebrate Sampling Locations 2017-2018



- Floodplain Area
- Mine Waste Halo Area
- Vegetated Upland Area
- Vegetated Upland Area (soil only)
- Mine Feature
- Streams and Rivers
- Highway
- Waterbodies

Date: October 13, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Sample Areas: *U.S. EPA* (2020);
Hydrography: *NDHPlus V2 - U.S. EPA & USGS* (2013);
Highways: *HERE* (2016);
Base Map: *Esri World Topographic Web Service* (2020).

0 0.5 1 Miles

Area Enlarged

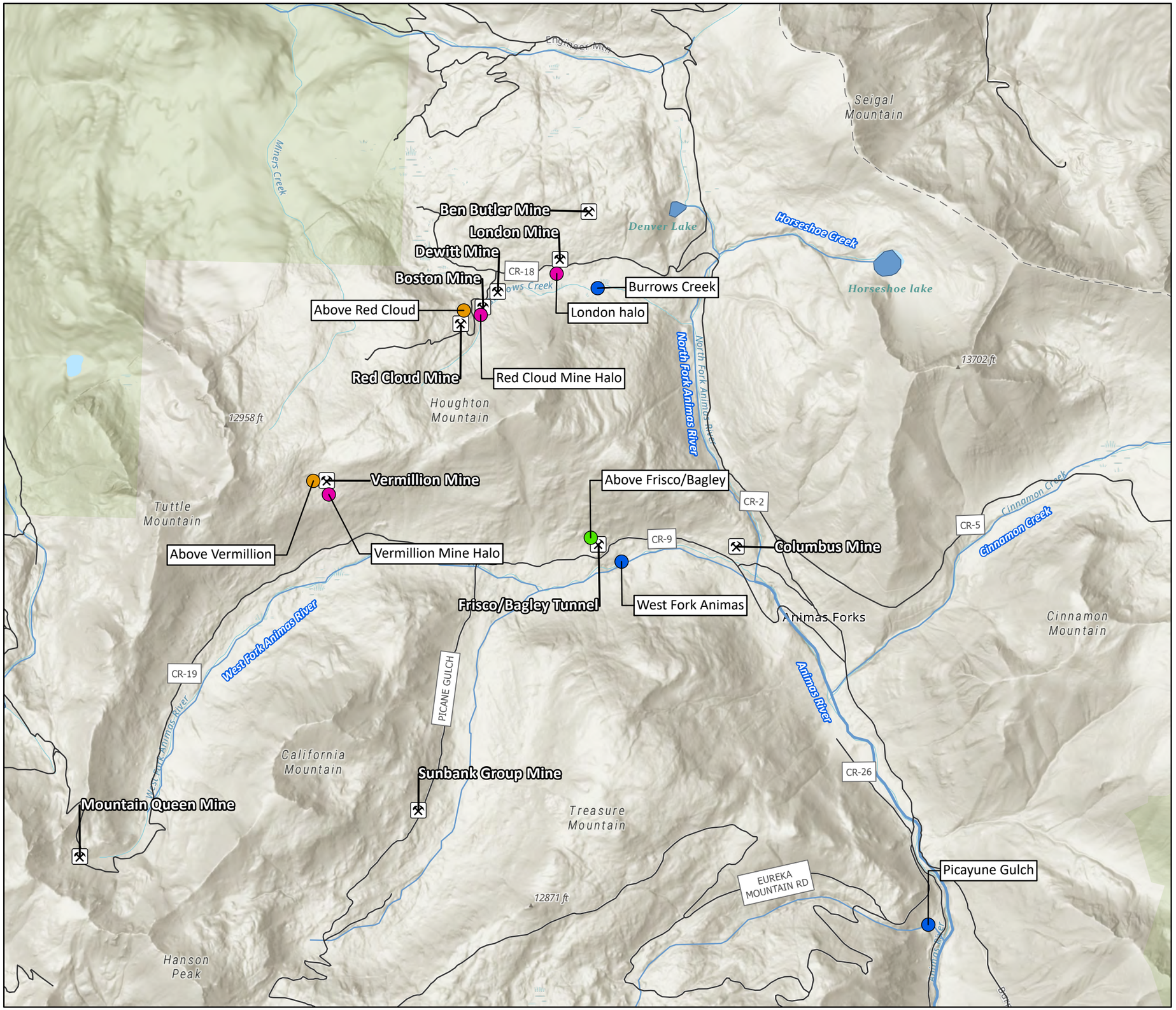


Figure 3.2c
Bonita Peak Mining District
Upper Animas River
Soil, Vegetation, and Invertebrate Sampling Locations 2017-2018

- Floodplain Area
- Mine Waste Halo Area
- Vegetated Upland Area
- Vegetated Upland Area (soil only)
- Mine Feature
- Streams and Rivers
- Highway
- Waterbodies

Date: October 14, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Sample Areas: *U.S. EPA* (2020);
Hydrography: *NDHPlus V2 - U.S. EPA & USGS* (2013);
Highways: *HERE* (2016);
Base Map: *Esri World Topographic Web Service* (2020).

0 0.5 1 Miles

Area Enlarged

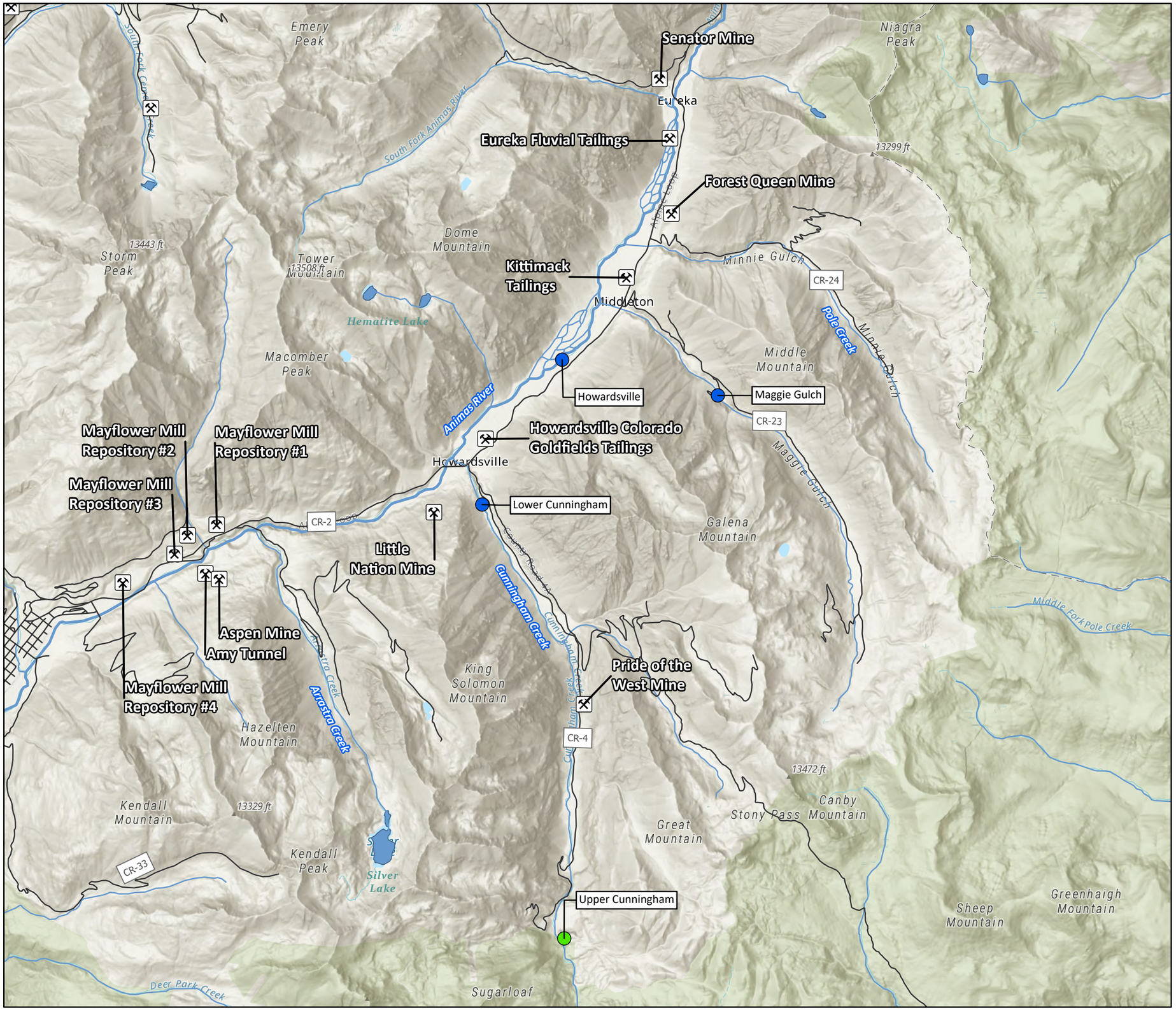


Figure 3.2d
Bonita Peak Mining District

Lower Animas River
Soil, Vegetation, and Invertebrate Sampling Locations 2017-2018

- Floodplain Area
- Vegetated Upland Area
- Mine Feature
- Streams and Rivers
- Highway
- Waterbodies

Date: October 14, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Sample Areas: *U.S. EPA* (2020);
Hydrography: *NDHPlus V2 - U.S. EPA & USGS* (2013);
Highways: *HERE* (2016);
Base Map: *Esri World Topographic Web Service* (2020).

0 1 2 Miles

Area Enlarged

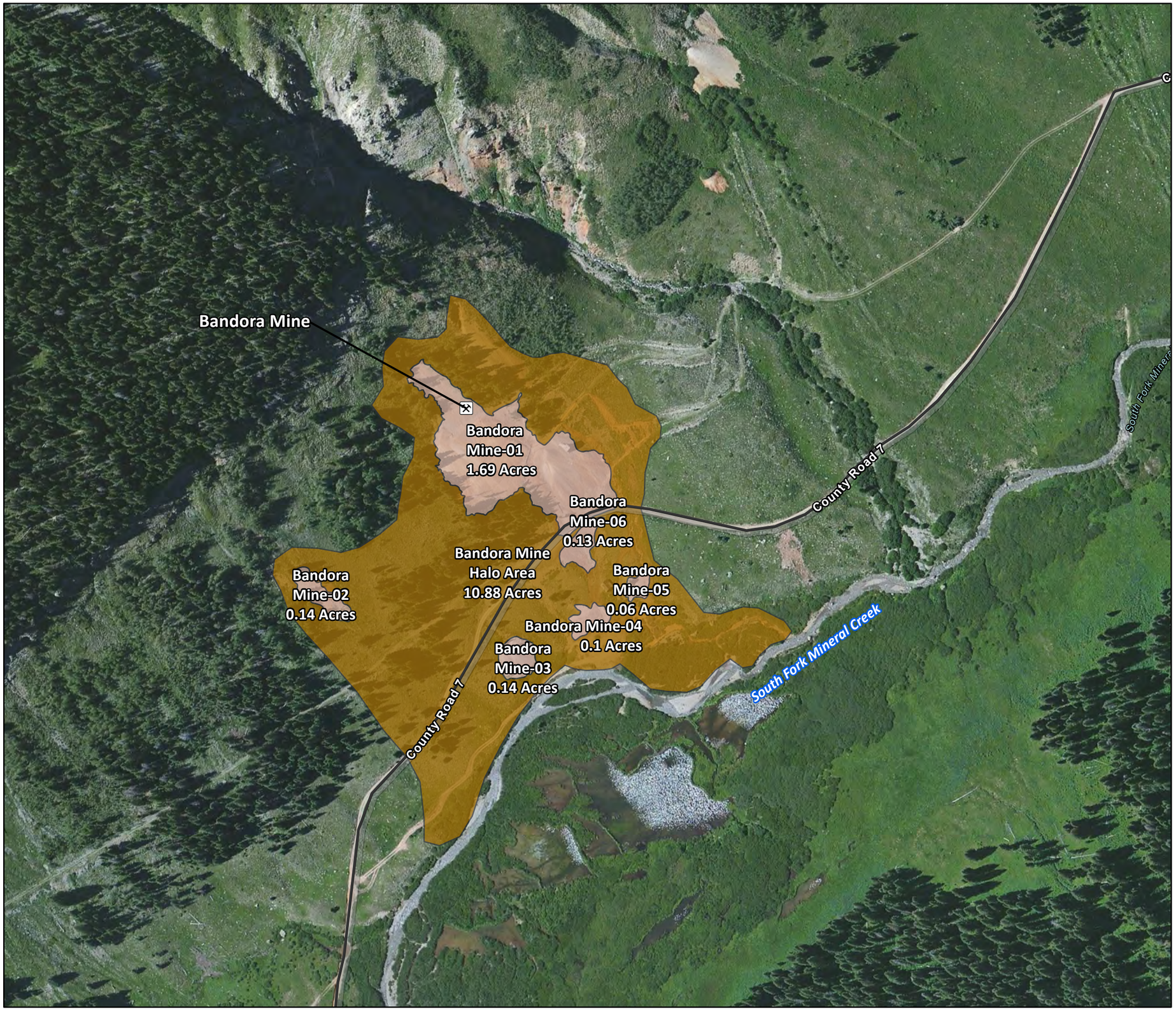


Figure 3.3a
Bonita Peak Mining District
Mine Waste Pile Halo Areas
Bandora Mine

Mine Feature
Roads
Bandora Mine Halo Area
Bandora Mine Waste Piles

Date: October 15, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
HRS Source Mines: *U.S. EPA* (2016);
Roads: *HERE* (2016);
Halo Areas & Mine Waste Piles: *U.S. EPA* (2019);
Base Map: *Esri World Imagery (Clarity) Web Service* (2020).

0 250 500 Feet

Area Enlarged

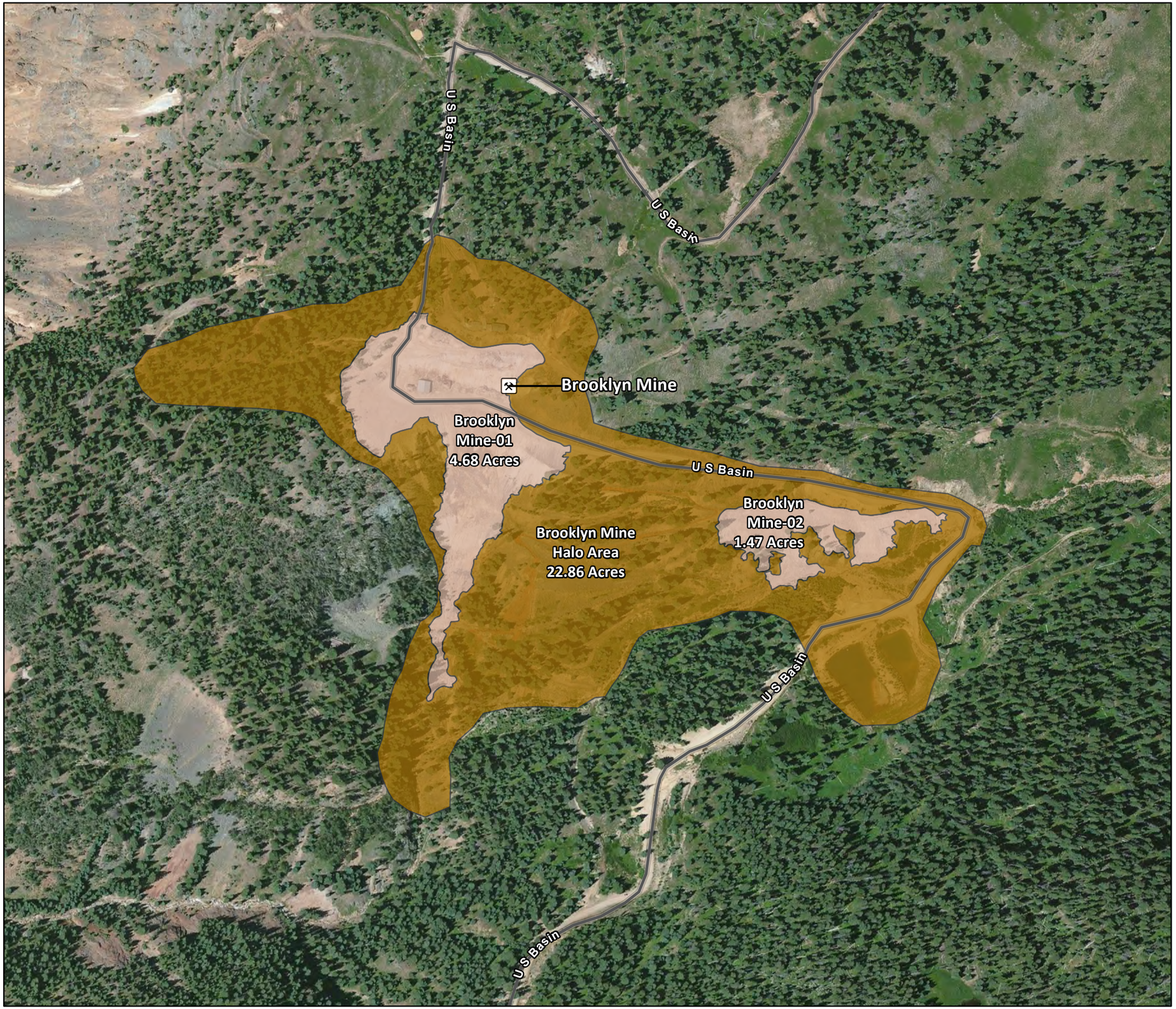


Figure 3.3b
Bonita Peak Mining District
Mine Waste Pile Halo Areas
Brooklyn Mine

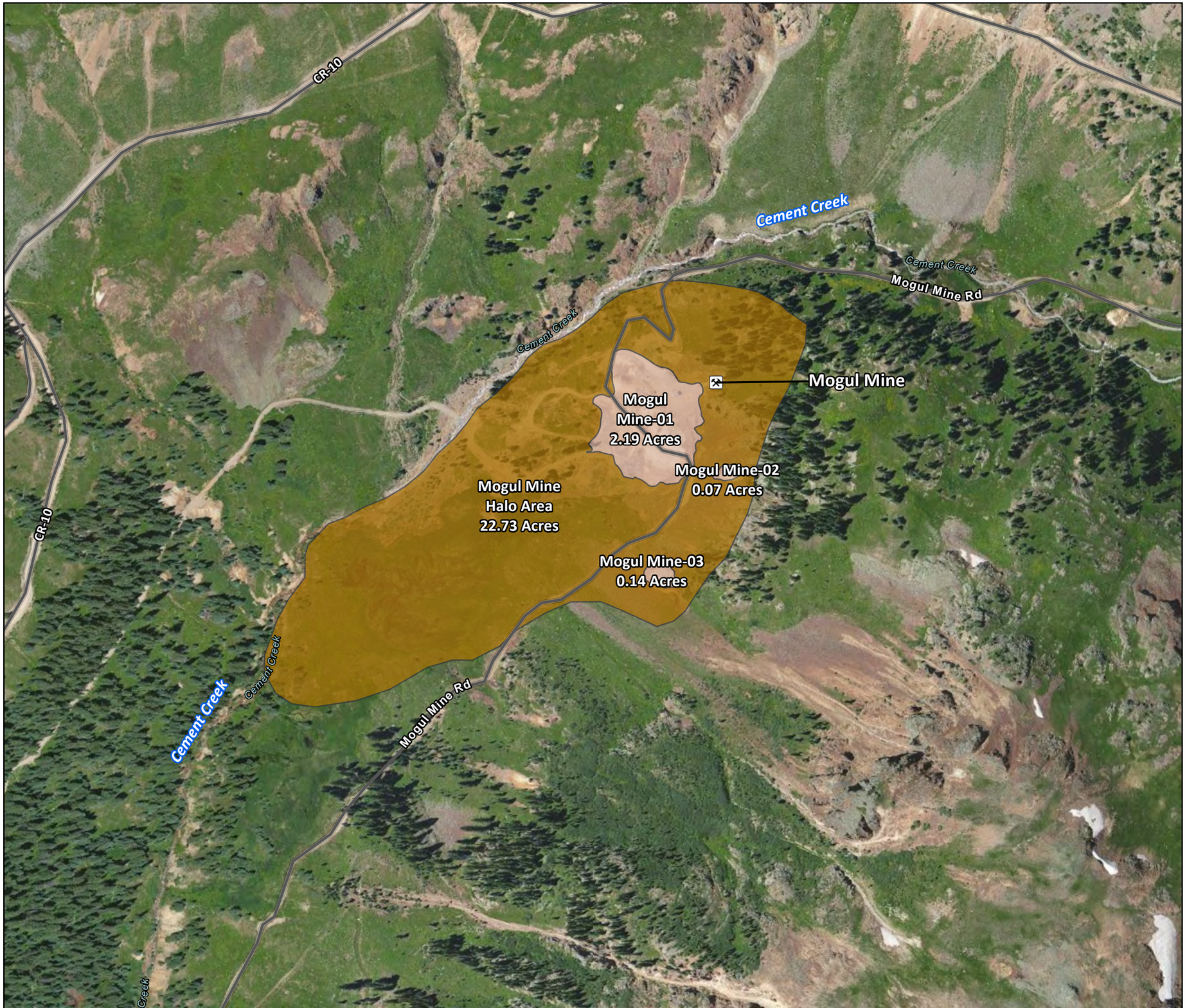
Mine Feature
Roads
Brooklyn Mine Halo Area
Brooklyn Mine Waste Piles

Date: October 15, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
HRS Source Mines: *U.S. EPA* (2016);
Roads: *HERE* (2016);
Halo Areas & Mine Waste Piles: *U.S. EPA* (2019);
Base Map: *Esri World Imagery (Clarity) Web Service* (2020).

0 250 500 Feet

Area Enlarged

Figure 3.3c
Bonita Peak Mining District
Mine Waste Pile Halo Areas
Mogul Mine



Mine Feature
Roads
Mogul Mine Halo Area
Mogul Mine Waste Piles

Date: October 15, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
HRS Source Mines: *U.S. EPA* (2016);
Roads: *HERE* (2016);
Halo Areas & Mine Waste Piles: *U.S. EPA* (2019);
Base Map: *Esri World Imagery (Clarity) Web Service* (2020).

0 250 500 Feet

Area Enlarged

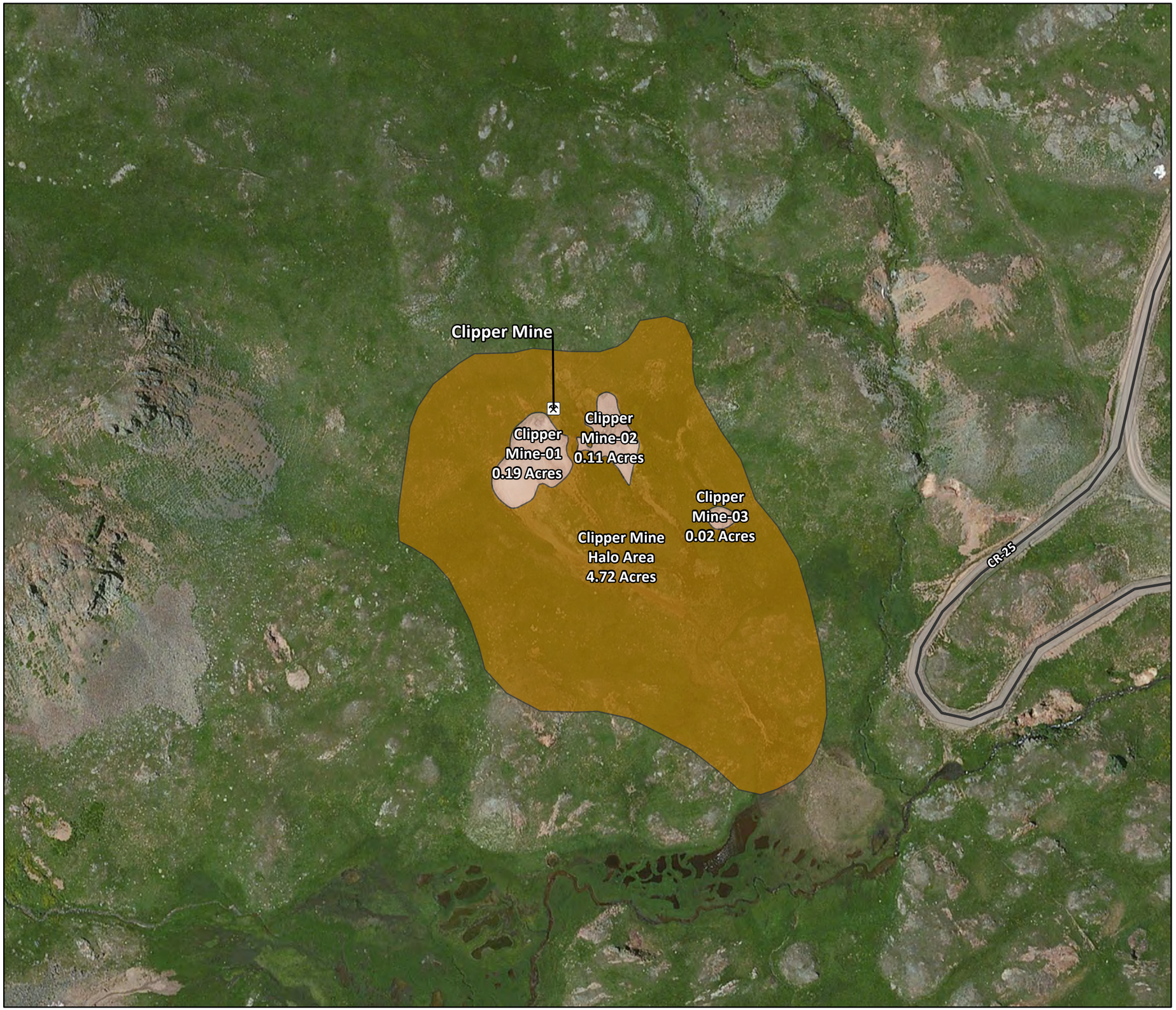


Figure 3.3d
Bonita Peak Mining District
Mine Waste Pile Halo Areas
Clipper Mine

Mine Feature
Roads
Clipper Mine Halo Area
Clipper Mine Waste Piles

Date: October 15, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
HRS Source Mines: *U.S. EPA* (2016);
Roads: *HERE* (2016);
Halo Areas & Mine Waste Piles: *U.S. EPA* (2019);
Base Map: *Esri World Imagery (Clarity) Web Service* (2020).

0 125 250 Feet

N

Area Enlarged

Figure 3.3e
Bonita Peak Mining District
Mine Waste Pile Halo Areas
Lark Mine

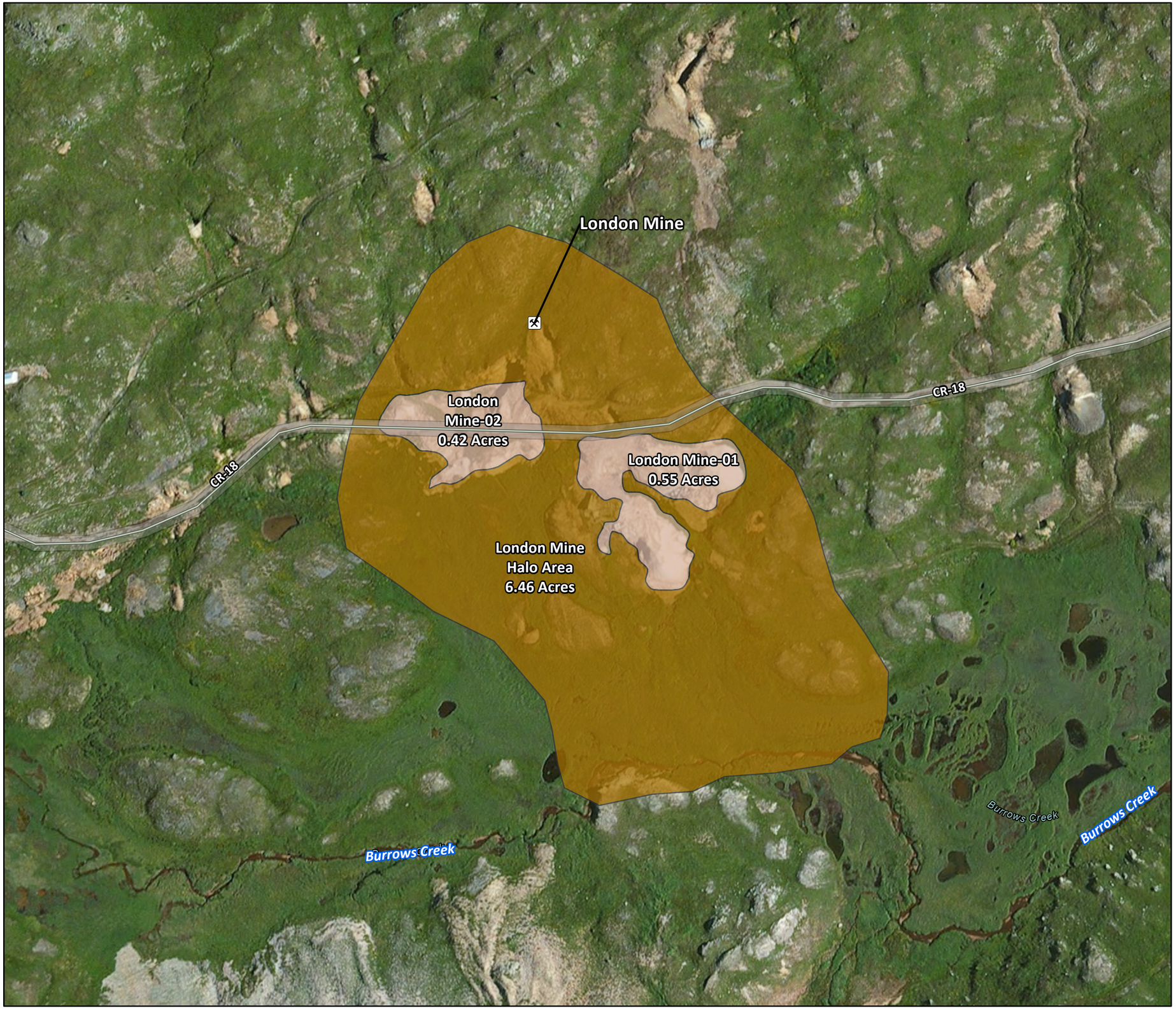
Mine Feature
Roads
Lark Mine Halo Area
Lark Mine Waste Piles

Date: October 15, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
HRS Source Mines: *U.S. EPA* (2016);
Roads: *HERE* (2016);
Halo Areas & Mine Waste Piles: *U.S. EPA* (2019);
Base Map: *Esri World Imagery (Clarity) Web Service* (2020).

0 250 500 Feet

Area Enlarged

Figure 3.3f
Bonita Peak Mining District
Mine Waste Pile Halo Areas
London Mine



Mine Feature
Roads
London Mine Halo Area
London Mine Waste Piles

Date: October 19, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
HRS Source Mines: *U.S. EPA* (2016);
Roads: *HERE* (2016);
Halo Areas & Mine Waste Piles: *U.S. EPA* (2019);
Base Map: *Esri World Imagery (Clarity) Web Service* (2020).

0 125 250 Feet

Area Enlarged

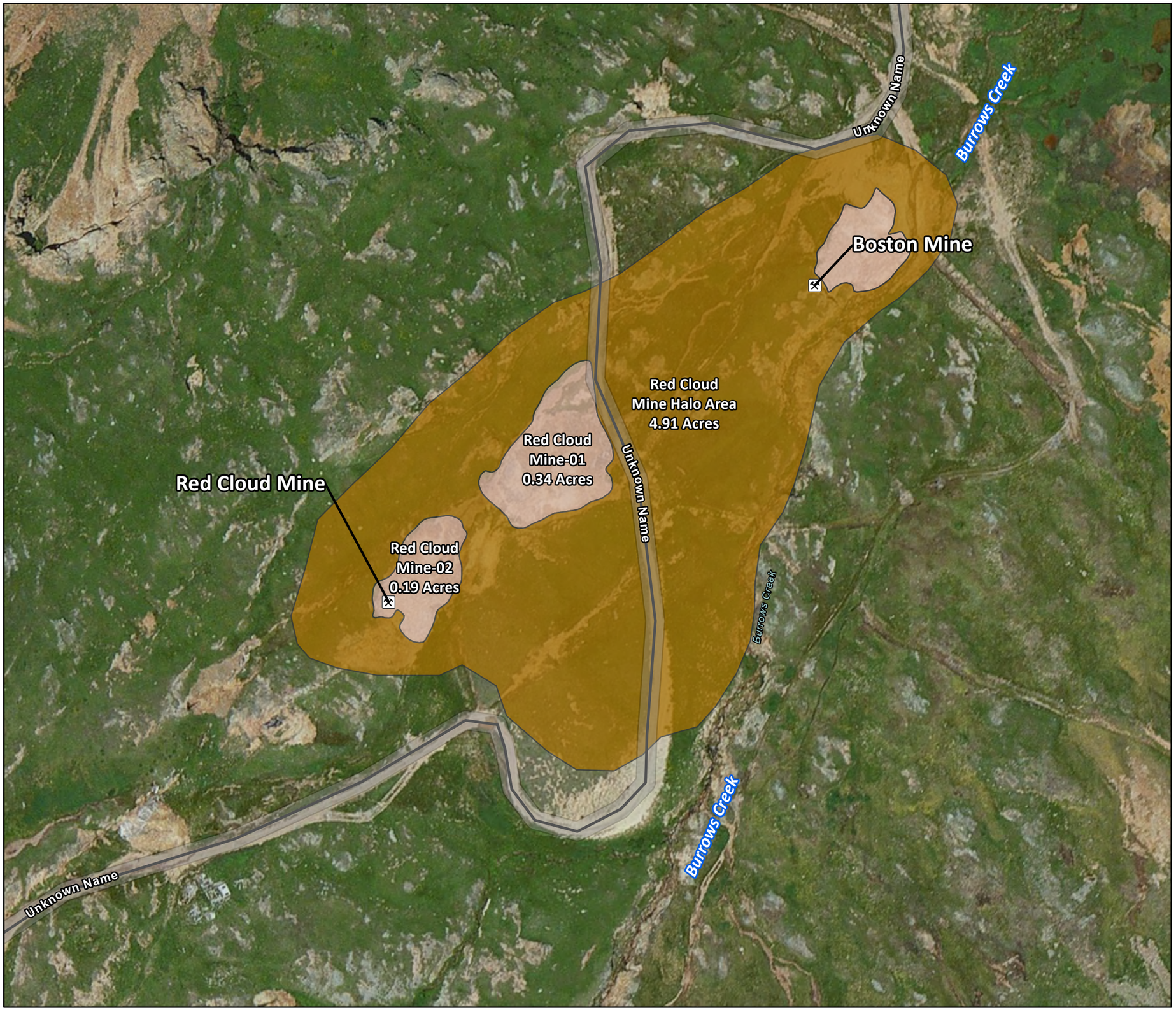


Figure 3.3g
Bonita Peak Mining District
Mine Waste Pile Halo Areas
Red Cloud Mine

Mine Feature
Roads
London Mine Halo Area
London Mine Waste Piles

Date: October 19, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
HRS Source Mines: *U.S. EPA* (2016);
Roads: *HERE* (2016);
Halo Areas & Mine Waste Piles: *U.S. EPA* (2019);
Base Map: *Esri World Imagery (Clarity) Web Service* (2020).

0 125 250 Feet

Area Enlarged

Figure 3.3h
Bonita Peak Mining District
Mine Waste Pile Halo Areas
Vermillion Mine

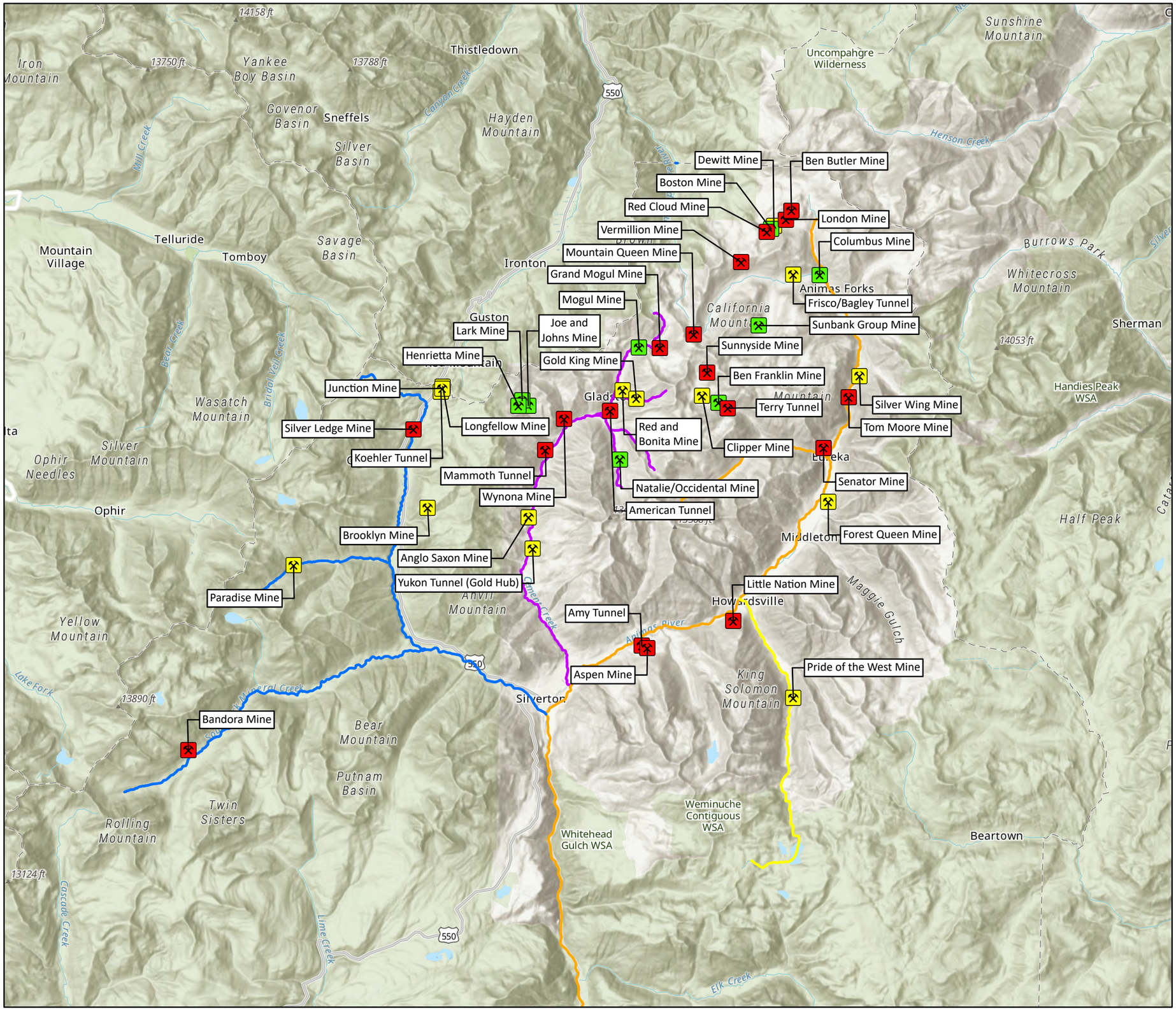
Mine Feature
Roads
London Mine Halo Area
London Mine Waste Piles

Date: October 21, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
HRS Source Mines: *U.S. EPA* (2016);
Roads: *HERE* (2016);
Halo Areas & Mine Waste Piles: *U.S. EPA* (2019);
Base Map: *Esri World Imagery (Clarity) Web Service* (2020).

0 250 500 Feet

Area Enlarged

Figure 3.4
Bonita Peak Mining District
Mine Feature
Dose-Response Categories



Mine Feature - Dose Response Category

- High-level
- Mid-level
- Low-level

Rivers & Creeks

- Animas River
- Cement Creek
- Cunningham Creek
- Mineral Creek

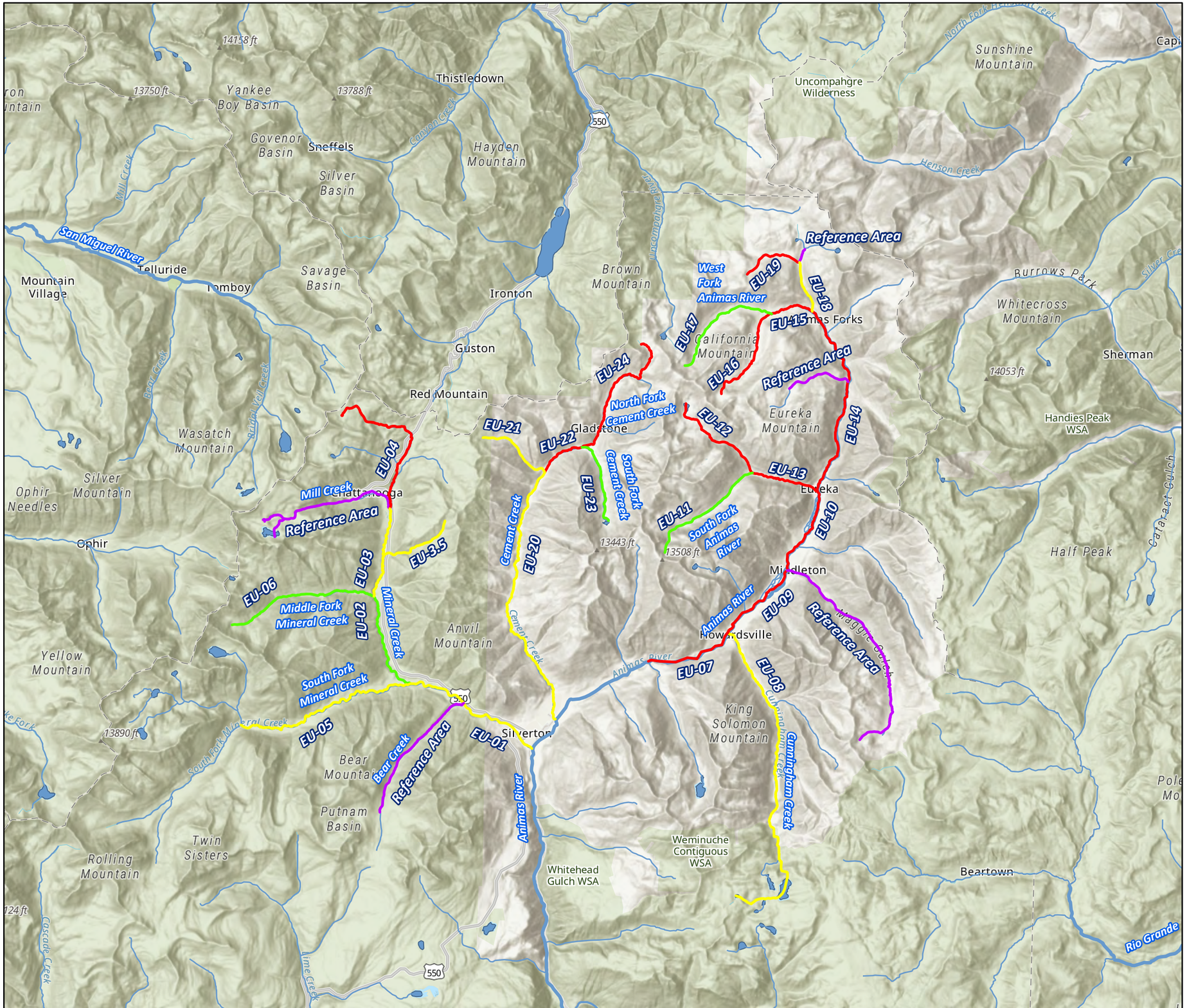
Date: September 23, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
NPL Mine Features: *U.S. EPA* (2016;
Rivers & Creeks: *CDOW* (2004);
Base Map: *Esri World Topographic Web Service* (2020).

0 2 4 Miles

N

Area Enlarged

Figure 3.5
Bonita Peak Mining District
Floodplain Exposure Unit Dose-Response Categories



Floodplain Exposure Unit - Dose Response Category

- High-level
- Mid-level
- Low-level
- Reference Area

Hydrography

- Streams and Rivers
- Waterbodies

Date: September 23, 2020
Map Projection: UTM Zone 13N, WGS84, Meters
Data Sources:
Floodplain Exposure Units & Reference Areas:: *U.S. EPA* (2016);
Hydrography:: *NDHPlus V2 - U.S. EPA & USGS* (2013);
Base Map: *Esri World Topographic Web Service* (2020).

0 2 4 Miles

Area Enlarged

Appendices

Appendix A

Environmental Exposure Data Used in the Bonita Peak Mining District Terrestrial Baseline Ecological Risk Assessment

List of Appendix A Tables:

Table A-1 Surface Water Analytical Chemistry Dataset

Table A-2 Mine Drainage and Adit Water Analytical Chemistry Dataset

Table A-3 Floodplain Soil Analytical Chemistry Dataset

Table A-4 Mine Waste Pile Halo Area Soil Analytical Chemistry Dataset

Table A-5 Vegetated Reference Area Soil Analytical Chemistry Dataset

Table A-6 Terrestrial Invertebrate Tissue Analytical Chemistry Dataset

Table A-7 Terrestrial Plant Tissue Analytical Chemistry Dataset

Table A-8 Mine Feature Waste Pile Soil Analytical Chemistry Dataset

Data Qualifier Definitions:

J The result is an estimated quantity. The associated numerical value is the approximate concentration of the analyte in the sample.

J- The result is an estimated quantity and likely to have a low bias. The associated numerical value is the approximate concentration of the analyte in the sample.

J+ The result is an estimated quantity and likely to have a high bias. The associated numerical value is the approximate concentration of the analyte in the sample.

D The analyte was diluted prior to analysis.

U The analyte was analyzed for but was not detected above the level of the reported sample quantitation limit.

B The analyte was detected in the sample as well as in the associated blank

Appendix A Reference List:

U.S. Environmental Protection Agency. 2015. Sampling and Analysis Report 2014 Sampling Events. Upper Animas Mining District Gladstone, San Juan County, Colorado. Final. Prepared by TechLaw, Inc. EPA Region 8 Environmental Services Assistance Team.

U.S. Environmental Protection Agency. 2016. Sampling and Analysis Report 2015 Sampling Events. Bonita Peak Mining District a San Juan County, Colorado. Final, Revision 2. Prepared by TechLaw, Inc. EPA Region 8 Environmental Services Assistance Team. April.

U.S. Environmental Protection Agency. 2017. Sampling Activities Report 2016 Sampling Event. Bonita Peak Mining District a San Juan / La Plata Counties, Colorado. Final. Prepared by TechLaw, Inc. EPA Region 8 Environmental Services Assistance Team. September.

U.S. Environmental Protection Agency. 2018. Sampling Activities Report 2017 Sampling Events. Bonita Peak Mining District Site San Juan / La Plata Counties, Colorado. Final. Prepared by TechLaw, Inc. EPA Region 8 Environmental Services Assistance Team.

U.S. Environmental Protection Agency. 2019. Sampling Activities Report 2018 Sampling Events. Bonita Peak Mining District San Juan / La Plata Counties, Colorado. Final. Prepared by TechLaw, Inc. EPA Region 8 Environmental Services Assistance Team.

Table A-1 Surface Water Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in µg/L. See Appendix A title page for data qualifier definitions.

Location ID	Subwatershed	Exposure Unit	DRC	Sample Date	Hydroperiod	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Source
A33	Animas	EU-14	High	May 2016	Pre-runoff	2.5 U	2.5 U	25 U	2.31 D	5 U	129 D	12.6 D	513	5 U	2.5 U	5 U	2.5 U	5 U	10 U	676	Table 11 in EPA, 2017
A34	Animas	EU-13	High	May 2016	Pre-runoff	2.5 U	2.5 U	25 U	1.53 D	5 U	61.1 D	3.11 D	337	5 U	2.5 U	5 U	2.5 U	9.3 JD	10 U	545	Table 11 in EPA, 2017
A35	Animas	EU-10	High	May 2016	Pre-runoff	2.5 U	2.5 U	25 U	2.11 D	5 U	110 D	9.2 D	483	5 U	2.5 U	5 U	2.5 U	9.86 JD	10 U	654	Table 11 in EPA, 2017
A40	Animas	EU-10	High	May 2016	Pre-runoff	2.5 U	2.5 U	25 U	1.65 D	5 U	70.4 D	8.98 D	383	5 U	2.5 U	5 U	2.5 U	5 U	10 U	558	Table 11 in EPA, 2017
A41A	Animas	EU-09	High	May 2016	Pre-runoff	2.5 U	2.5 U	25 U	1.71 D	5 U	61 D	6.36 D	363	5 U	2.5 U	5 U	2.5 U	5 U	10 U	539	Table 11 in EPA, 2017
A45	Animas	EU-09	High	May 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.795 JD	5 U	22.3 D	2.18 D	144	5 U	2.5 U	5 U	2.5 U	5 U	10 U	308	Table 11 in EPA, 2017
A47	Animas	EU-07	High	May 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.513 JD	5.7	5 U	2.5 U	5 U	2.5 U	5 U	10 U	14.1 J	Table 11 in EPA, 2017
A48	Animas	EU-08	Mid	May 2016	Pre-runoff	2.5 U	2.5 U	37.7 JD	0.5 U	5 U	2.5 U	1.41 D	2.92 J	5 U	2.5 U	5 U	2.5 U	5 U	10 U	21.2	Table 11 in EPA, 2017
A55	Animas	EU-07	High	May 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.973 JD	5 U	17.8 D	2.98 D	274	5 U	2.5 U	5 U	2.5 U	5 U	10 U	317	Table 11 in EPA, 2017
A56	Animas	EU-07	High	May 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.842 JD	5 U	17.9 D	4.86 D	282	5 U	2.5 U	5 U	2.5 U	5 U	10 U	333	Table 11 in EPA, 2017
LA3	Animas	EU-09	High	May 2016	Pre-runoff	2.5 U	2.5 U	25 U	1.01 D	5 U	33.5 D	2.83 D	209	5 U	2.5 U	5 U	2.5 U	5 U	10 U	366	Table 11 in EPA, 2017
A05	Animas	NF Animas	Ref.	June 2016	Runoff	2.5 U	2.5 U	--	1.47 D	5 U	2.5 U	3.05 D	64.7	--	2.5 U	5 U	2.5 U	5 U	--	197	Table 15 in EPA, 2017
A07	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	6.41 D	5 U	26.3 D	7.44 D	1450	--	2.91 JD	5 U	2.5 U	7.51 JD	--	1100	Table 15 in EPA, 2017
A08	Animas	EU-18	Mid	June 2016	Runoff	2.5 U	2.5 U	--	3.06 D	5 U	10.7 D	5.16 D	563	--	2.5 U	5 U	2.5 U	7.76 JD	--	497	Table 15 in EPA, 2017
A09	Animas	EU-18	Mid	June 2016	Runoff	2.5 U	2.5 U	--	2.71 D	5 U	10.5 D	4.82 D	437	--	2.5 U	5 U	2.5 U	5 U	--	496	Table 15 in EPA, 2017
A10	Animas	EU-15	High	June 2016	Runoff	2.5 U	2.5 U	--	2.54 D	5 U	20.5 D	37.3 D	3160	--	2.5 U	5 U	2.5 U	5 U	--	934	Table 15 in EPA, 2017
A11	Animas	EU-15	High	June 2016	Runoff	2.5 U	2.5 U	--	2.6 D	5 U	32.4 D	147 D	2590	--	2.5 U	5 U	2.5 U	5 U	--	848	Table 15 in EPA, 2017
A13	Animas	EU-15	High	June 2016	Runoff	2.5 U	2.5 U	--	2.87 D	5 U	28.2 D	106 D	3510	--	2.5 U	5 U	2.5 U	5 U	--	950	Table 15 in EPA, 2017
A14	Animas	EU-14	High	June 2016	Runoff	2.5 U	2.5 U	--	2.95 D	5 U	15.4 D	17.6 D	2300	--	2.5 U	5 U	2.5 U	5 U	--	791	Table 15 in EPA, 2017
A15	Animas	EU-17	Low	June 2016	Runoff	2.5 U	2.5 U	--	3.55 D	5 U	11.1 D	2.9 D	6800	--	3.06 JD	5 U	2.5 U	5 U	--	1170	Table 15 in EPA, 2017
A30	Animas	EU-14	High	June 2016	Runoff	2.5 U	2.5 U	--	1.9 D	5 U	18.6 D	14.6 D	1250	--	2.5 U	5 U	2.5 U	5 U	--	505	Table 15 in EPA, 2017
A30A	Animas	EU-14	High	June 2016	Runoff	2.5 U	2.5 U	--	1.86 D	5 U	15.6 D	11.5 D	1200	--	2.5 U	5 U	2.5 U	5 U	--	469	Table 15 in EPA, 2017
A30B	Animas	EU-14	High	June 2016	Runoff	2.5 U	2.5 U	--	1.68 D	5 U	14.5 D	12.1 D	1100	--	2.5 U	5 U	2.5 U	5 U	--	433	Table 15 in EPA, 2017
A31	Animas	EU-14	High	June 2016	Runoff	2.5 U	3.84 JD	--	2.81 D	5 U	101 D	122 D	1440	--	2.5 U	5 U	2.5 U	5 U	--	625	Table 15 in EPA, 2017
A33	Animas	EU-14	High	June 2016	Runoff	2.5 U	2.5 U	--	1.84 D	5 U	24.2 D	41.8 D	1140	--	2.5 U	5 U	2.5 U	5 U	--	473	Table 15 in EPA, 2017
A34	Animas	EU-13	High	June 2016	Runoff	2.5 U	2.5 U	--	1.13 D	5 U	13.3 D	7.99 D	395	--	2.5 U	5 U	2.5 U	5 U	--	383	Table 15 in EPA, 2017
A35	Animas	EU-10	High	June 2016	Runoff	2.5 U	2.5 U	--	1.36 D	5 U	14.3 D	11.5 D	636	--	2.5 U	5 U	2.5 U	7.93 JD	--	401	Table 15 in EPA, 2017
A36	Animas	EU-11	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	3.46 JD	1.83 D	38.7	--	2.5 U	5 U	2.5 U	8.43 JD	--	31	Table 15 in EPA, 2017
A37	Animas	EU-12	High	June 2016	Runoff	2.5 U	2.5 U	--	2.42 D	5 U	15.6 D	4.58 D	816	--	2.5 U	5 U	2.5 U	5 U	--	854	Table 15 in EPA, 2017
A40	Animas	EU-10	High	June 2016	Runoff	2.5 U	2.5 U	--	1.43 D	5 U	13.4 D	10.7 D	656	--	2.5 U	5 U	2.5 U	5 U	--	532	Table 15 in EPA, 2017
A40A	Animas	EU-10	High	June 2016	Runoff	2.5 U	2.5 U	--	1.59 D	5 U	16.9 D	20.3 D	773	--	2.5 U	5 U	2.5 U	5 U	--	456	Table 15 in EPA, 2017
A41A	Animas	EU-09	High	June 2016	Runoff	2.5 U	2.5 U	--	0.959 JD	5 U	10.4 D	12.6 D	405	--	2.5 U	5 U	2.5 U	5 U	--	316	Table 15 in EPA, 2017
A42	Animas	Minnie G.	Ref.	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.852 JD	16.8	--	2.5 U	5 U	2.5 U	5 U	--	10.8 J	Table 15 in EPA, 2017
A43	Animas	Maggie G.	Ref.	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.513 JD	38.9	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 15 in EPA, 2017
A45	Animas	EU-09	High	June 2016	Runoff	2.5 U	2.5 U	--	1.03 D	5 U	12.2 D	21.4 D	447	--	2.5 U	5 U	2.5 U	5 U	--	380	Table 15 in EPA, 2017
A47	Animas	EU-07	High	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.735 JD	9.1	--	2.5 U	5 U	2.5 U	5 U	--	10.5 J	Table 15 in EPA, 2017
A55	Animas	EU-07	High	June 2016	Runoff	2.5 U	2.5 U	--	1.3 D	5 U	22.5 D	45.7 D	654	--	2.5 U	5 U	2.5 U	5 U	--	401	Table 15 in EPA, 2017
A55a	Animas	EU-07	High	June 2016	Runoff	2.5 U	2.5 U	--	1.11 D	5 U	13.7 D	28 D	425	--	2.5 U	5 U	2.5 U	5 U	--	344	Table 15 in EPA, 2017
A56	Animas	EU-07	High	June 2016	Runoff	2.5 U	2.5 U	--	1.03 D	5 U	10.7 D	19.5 D	405	--	2.5 U	5 U	2.5 U	5 U	--	329	Table 15 in EPA, 2017
BG4	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	6.75 D	5 U	27.1 D	7.49 D	1540	--	3.29 JD	5 U	2.5 U	5 U	--	1150	Table 15 in EPA, 2017
CC03	Cement	EU-22	High	June 2016	Runoff	2.5 U	2.5 U	--	3.44 D	5 U	64.6 D	41.6 D	1400	--	2.5 U	5 U	2.5 U	5 U	--	1030	Table 15 in EPA, 2017
CC03B	Cement	EU-22	High	June 2016	Runoff	2.5 U	2.5 U	--	3.28 D	5 U	63 D	8.61 D	860	--	2.5 U	5 U	2.5 U	5 U	--	861	Table 15 in EPA, 2017
CC03BF	Cement	EU-22	High	June 2016	Runoff	2.5 U	2.5 U	--	3.4 D	5 U	64.5 D	9.17 D	899	--	2.5 U	5 U	2.5 U	5 U	--	888	Table 15 in EPA, 2017
CC15	Cement	EU-23	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	8.71 D	0.579 JD	84.3	--	2.5 U	5 U	2.5 U	5 U	--	61.6	Table 15 in EPA, 2017
CC15A	Cement	EU-23	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.787 JD	5 U	15.8 D	1.28 D	325	--	2.5 U	5 U	2.5 U	7.34 JD	--	165	Table 15 in EPA, 2017
CC16	Cement	EU-23	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.968 JD	5 U	17 D	1.09 D	330	--	2.5 U	5 U	2.5 U	7.87 JD	--	168	Table 15 in EPA, 2017
CC17	Cement	EU-23	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.914 JD	5 U	14.9 D	2.74 D	313	--	2.5 U	5 U	2.5 U	5 U	--	194	Table 15 in EPA, 2017
CC18	Cement	EU-22	High	June 2016	Runoff	2.5 U	2.5 U	--	3.54 D	5 U	74.1 D	12.5 D	1670	--	2.5 U	5 U	2.5 U	5 U	--	1160	Table 15 in EPA, 2017
CC18B	Cement	EU-22	High	June 2016	Runoff	2.5 U	2.5 U	--	3.41 D	5 U	74.8 D	12.7 D	1350	--	2.5 U	5 U	2.5 U	7.43 JD	--	1030	Table 15 in EPA, 2017
CC20	Cement	EU-23	Low	June 2016	Runoff	2.5 U	2.5 U	--	4.3 D	5 U	86.7 D	57.9 D	2160	--	2.5 U	5 U	2.5 U	5 U	--	1360	Table 15 in EPA, 2017
CC21	Cement	EU-22	High	June 2016	Runoff	2.5 U	2.68 JD	--	4.87 D	5 U	91.1 D	123 D	2200	--	2.5 U	5 U	2.5 U	5 U	--	1380	Table 15 in EPA, 2017
CC22	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	17.3 D	35 D	226	--	3.68 JD	5 U	2.5 U	5 U	--	57.1	Table 15 in EPA, 2017
CC22B	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	2.5 U	--	1.11 D	5 U	34 D	23.9 D	110	--	2.5 U	5 U	2.5 U	5 U	--	302	Table 15 in EPA, 2017
CC22C	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	12.9 D	29.7 D	182	--	2.83 JD	5 U	2.5 U	5 U	--	63.4	Table 15 in EPA, 2017
CC22D	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	2.5 U	--	1.65 D	5 U	46.1 D	31.4 D	92.1	--	2.5 U	5 U	2.5 U	5 U	--	406	Table 15 in EPA, 2017
CC24	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	2.62 JD	--	1.58 D	5 U	87.7 D	25.5 D	147	--	2.5 U	5 U	2.5 U	5 U	--	426	Table 15 in EPA, 2017
CC24B	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	2.5 U	--	1.08 D	5 U	58.9 D	25.6 D	124	--	2.5 U	5 U	2.5 U	5 U	--	330	Table 15 in EPA, 2017
CC24C	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	2.5 U	--	1.76 D	5 U	51 D	41.3 D	78.3	--	2.5 U	5 U	2.5 U	5 U	--	457	Table 15 in EPA, 2017
CC25B	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	3.1 JD	--	2.75 D	5 U	105 D	103 D	129	--	2.5 U	5 U	2.5 U	5 U	--	701	Table 15 in EPA, 2017
CC38	Cement	EU-20	Mid	June 2016	Runoff	2.5 U	2.6 JD	--	0.5 U	5 U	11.9 D	31.1 D	640	--	2.5 U	5 U	2.5 U	10.1 D	--	179	Table 15 in EPA, 2017
CC38C	Cement	EU-20	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	19.9 D	110 D	105	--	2.5 U	5 U	2.5 U	5 U	--	103	Table 15 in EPA, 2017
CC38D	Cement	EU-20	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	12.9 D	35.8 D	577	--	2.5 U	5 U	2.5 U	5 U	--	174	Table 15 in EPA, 2017
CC39	Cement	EU-20	Mid	June 2016	Runoff	2.5 U	4.72 JD	--	2.26 D	5 U	70.1 D	50.9 D	932	--	2.9 JD	5 U	2.5 U	5 U	--	669	Table 15 in EPA, 2017
CC39B	Cement	EU-20	Mid	June 2016	Runoff	2.5 U	5.76 JD	--	2.41 D	5 U	69.3 D	58.8 D	917	--	3.19 JD	5 U	2.5 U	5 U	--	657	Table 15 in EPA, 2017
CC41	Cement	EU-20	Mid	June 2016	Runoff	2.5 U	4.12 JD	--	2.98 D	5 U	99.4 D	43.1 D	1060	--	2.85 JD	5 U	2.5 U	5 U	--	858	Table 15 in EPA, 2017
CC43E	Cement	EU-20	Mid	June 2016	Runoff	2.5 U	5.63 JD	--	3 D	5 U	104 D	59.4 D	1100	--	2.89 JD	5 U	2.5 U	5 U	--	912	Table 15 in EPA, 2017
CC48	Cement	EU-20	Mid	June 2016	Runoff	2.5 U	9.23 JD	--	2.58 D	5 U	95.4 D	149 D	1140	--	2.8 JD	5 U	2.5 U	5 U	--	765	Table 15 in EPA, 2017
CG11	Animas	EU-14	High	June 2016	Runoff	2.5 U	2.5 U	--	2.29 D	5 U	24.9 D	89.9 D	2690	--	2.5 U	5 U	2.5 U	5 U	--	765	Table 15 in EPA, 2017
CG9	Animas	EU-15	High	June 2016	Runoff	2.5 U	2.5 U	--	2.77 D	5 U	38.9 D	152 D	2780	--	2.5 U	5 U	2.5 U	5 U	--	881	Table 15 in EPA, 2017
CU4	Animas	EU-08	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.8 JD	27.5 D	152	--	2.5 U	5 U	2.5 U	5 U	--	13.2 J	Table 15 in EPA, 2017
CU4a	Animas	EU-08	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	3.88 JD	46.4 D	174	--	2.5 U	5 U	2.5 U	5 U	--	35.1	Table 15 in EPA, 2017
EG9	Animas	EU-13	High	June 2016	Runoff	2.5 U	2.5 U	--	1.27 D	5 U	9.42 D	4.08 D	407	--	2.5 U	5 U	2.5 U	5 U	--	438	Table 15 in EPA, 2017
LA3	Animas	EU-09	High	June 2016	Runoff	2.5 U	2.5 U	--	0.884 JD	5 U	10.4 D	9.74 D	384	--	2.5 U	5 U	2.5 U	7.95 JD	--	339	Table 15 in EPA, 2017
M07	Mineral	EU-04	High	June 2016	Runoff	2.5 U	2.5 U	--	0.527 JD	5 U	14 D	24.7 D	152	--	2.5 U	5 U	2.5 U	5 U	--	153	Table 15 in EPA, 2017
M08	Mineral	Mill Cr.	Ref.	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	1.74 D	15.5	--	2.5 U	5 U	2.5 U	5 U	--	19.3 J	Table 15 in EPA, 2017
M10	Mineral	Mill Cr.	Ref.	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	3.72 D	47.6	--	2.5 U	5 U	2.5 U	5 U	--	26.4	Table 15 in EPA, 2017
M10A	Mineral	EU-04	High	June 2016	Runoff	2.5 U	2.5 U	--	0.642 JD	5 U	13.1 D	29 D	156	--	2.5 U	5 U	2.5 U	5 U	--	169	Table 15 in EPA, 2017
M11	Mineral	EU-03	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	8.45 D	16.7 D	113	--	2.5 U	5 U	2.5 U	5 U	--	116	Table 15 in EPA, 2017
M12	Mineral	EU-3.5	Mid	June 2016	Runoff	2.5 U	7.59 JD	--	0.726 JD	5 U	15.6 D	14.6 D	488	--	2.5 U	5 U	2.5 U	5 U	--	174	Table 15 in EPA, 2017
M13A	Mineral	EU-03	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	8.26 D	16.4 D	106	--	2.5 U	5 U	2.5 U	5 U	--	125	Table 15 in EPA, 2017
M13B	Mineral	EU-03	Mid	June 2016	Runoff	2.5 U	24.6 D	--	1.35 D	5 U	56.1 D	283 D	558	--	2.5 U	5 U	2.5 U	8.75 JD	--	308	Table 15 in EPA, 2017
M14A	Mineral	EU-03	Mid	June 2016	Runoff	2.5 U	23.2 D	--	0.964 JD	5 U	45.3 D	207 D	498	--	2.5 U	5 U	2.5 U	5 U	--	273	Table 15 in EPA, 2017
M14B	Mineral	EU-03	Mid	June 2016	Runoff	2.5 U	8.2 JD	--	0.784 JD	5 U	30.7 D	92.2 D	313	--	2.5 U	5 U	2.5 U	5 U	--	188	Table 15 in EPA, 2017
M16E	Mineral	EU-06	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	1.77 D	195	--	2.5 U	5 U	2.5 U	5 U	--	34.3	Table 15 in EPA, 2017
M16F	Mineral	EU-06	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	53.3	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 15 in EPA, 2017
M16G	Mineral	EU-06	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	120	--	2.5 U	5 U	2.5 U	5 U	--	20.2	Table 15 in EPA, 2017
M16H	Mineral	EU-06	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.613 JD	216	--	2.5 U	5 U	2.5 U	5 U	--	30	Table 15 in EPA, 2017
M17	Mineral	EU-06	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	2.09 D	277	--	2.5 U	5 U	2.5 U	5 U	--	32.1	Table 15 in EPA, 2017
M17A	Mineral	EU-06	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	3.07 D	269	--	2.5 U	5 U	2.5 U	5 U	--	31.3	Table 15 in EPA, 2017
M18	Mineral	EU-06	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.566 JD	5 U	5.38 D	0.5 U	235	--	2.5 U	5 U	2.5 U	5 U	--	40.3	Table 15 in EPA, 2017
M19	Mineral	EU-06	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	2.13 D	266	--	2.5 U	5 U	2.5 U	5 U	--	33.5	Table 15 in EPA, 2017
M20	Mineral	EU-06	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	3.81 D	271	--	2.5 U	5 U	2.5 U	5 U	--	33.2	Table 15 in EPA, 2017
M22	Mineral	EU-06	Low	June 2016	Runoff	2.5 U	4.32 JD	--	0.501 JD	5 U	6 D	29.7 D	498	--	2.5 U	5 U	2.5 U	5 U	--	89.5	Table 15 in EPA, 2017
M26	Mineral	EU-05	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	10.1 D	100	--	2.5 U	5 U	2.5 U	5 U	--	20.8	Table 15 in EPA, 2017
M26B	Mineral	EU-05	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	2.82 D	70.7	--	2.5 U	5 U	2.5 U	7.87 JD	--	21.2	Table 15 in EPA, 2017
M27	Mineral	EU-02	Low	June 2016	Runoff	2.5 U	2.5 U	--	0.558 JD	5 U	11.9 D	18.8 D	250	--	2.5 U	5 U	2.5 U	8.43 JD	--	124	Table 15 in EPA, 2017
M27A	Mineral	EU-02	Low	June 2016	Runoff	2.5 U	3.67 JD	--	0.544 JD	5 U	19.6 D	49.2 D	300	--	2.5 U	5 U	2.5 U	5 U	--	140	Table 15 in EPA, 2017
M28	Mineral	EU-05	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	1.13 D	49.7	--	2.5 U	5 U	2.5 U	5 U	--	15.8 J	Table 15 in EPA, 2017
M29	Mineral	EU-01	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	5.89 D	11.7 D	156	--	2.5 U	5 U	2.5 U	5 U	--	72.8	Table 15 in EPA, 2017
M29A	Mineral	EU-01	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	5.59 D	10.6 D	149	--	2.5 U	5 U	2.5 U	5 U	--	64.4	Table 15 in EPA, 2017

DRC = dose-response category; -- = no data

Table A-1 Surface Water Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in µg/L. See Appendix A title page for data qualifier definitions. Continued

Location ID	Subwatershed	Exposure Unit	DRC	Sample Date	Hydroperiod	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Source
M29B	Mineral	EU-01	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	31.5 D	0.557 JD	8.46	--	2.5 U	5 U	2.5 U	5 U	--	19.6 J	Table 15 in EPA, 2017
M32	Mineral	EU-01	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	5.9 D	15.5 D	170	--	2.5 U	5 U	2.5 U	5 U	--	68.3	Table 15 in EPA, 2017
M32B	Mineral	EU-01	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	5.15 D	14.4 D	150	--	2.5 U	5 U	2.5 U	5 U	--	65.1	Table 15 in EPA, 2017
M33	Mineral	EU-01	Mid	June 2016	Runoff	2.5 U	5.15 JD	--	0.5 U	5 U	9.74 D	50.3 D	332	--	2.5 U	5 U	2.5 U	5 U	--	94.8	Table 15 in EPA, 2017
M34	Mineral	EU-01	Mid	June 2016	Runoff	2.5 U	6.26 JD	--	0.5 U	5 U	13.7 D	58.4 D	393	--	2.5 U	5 U	2.5 U	5 U	--	113	Table 15 in EPA, 2017
M38	Mineral	EU-01	Mid	June 2016	Runoff	2.5 U	5.54 JD	--	0.5 U	5 U	12.8 D	50.4 D	335	--	2.5 U	5 U	2.5 U	5 U	--	106	Table 15 in EPA, 2017
UA5	Animas	EU-18	Mid	June 2016	Runoff	2.5 U	2.5 U	--	3.02 D	5 U	11.2 D	4.22 D	517	--	2.5 U	5 U	2.5 U	5 U	--	553	Table 15 in EPA, 2017
A07A	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	12.3 D	5 U	57 D	7.6 D	2740	--	7 D	5 U	2.5 U	5 U	--	1650	Table 18 in EPA, 2017
A07B	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	10.4 D	5 U	42.2 D	10.8 D	2380	--	6.65 D	5 U	2.5 U	12.3 D	--	1690	Table 18 in EPA, 2017
A07B1	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	11.3 D	5 U	43.5 D	11.2 D	2540	--	5.82 D	5 U	2.5 U	13.5 D	--	1810	Table 18 in EPA, 2017
A07B2	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.521 JD	5.78	--	2.5 U	5 U	2.5 U	5 U	--	17.5 J	Table 18 in EPA, 2017
A07B3	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	31.8 D	5 U	91 D	0.725 JD	3570	--	11.5 D	5 U	2.5 U	5 U	--	4380	Table 18 in EPA, 2017
A07C	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	9.23 D	5 U	39.6 D	12.3 D	2460	--	5.47 D	5 U	2.5 U	5 U	--	1560	Table 18 in EPA, 2017
A07D	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	7.55 D	5 U	38.9 D	11.6 D	2160	--	4.73 JD	5 U	2.5 U	5 U	--	1130	Table 18 in EPA, 2017
A07D1	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	33.2 D	5 U	55.5 D	1.52 D	6080	--	15.6 D	5 U	2.5 U	5 U	--	6020	Table 18 in EPA, 2017
A07D2	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	25.5 D	5 U	96.2 D	22.5 D	824	--	2.5 U	5 U	2.5 U	5 U	--	3740	Table 18 in EPA, 2017
A07E	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	5.02 D	5 U	35.4 D	11.6 D	1820	--	3.99 JD	5 U	2.5 U	5 U	--	715	Table 18 in EPA, 2017
A07F	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	5.06 D	5 U	36 D	11.8 D	1840	--	4.07 JD	5 U	2.5 U	5 U	--	715	Table 18 in EPA, 2017
A07G	Animas	EU-19	High	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	10.6	--	2.5 U	5 U	2.5 U	5 U	--	56.3	Table 18 in EPA, 2017
A18A	Animas	EU-17	Low	June 2016	Runoff	2.5 U	2.5 U	--	1.2 D	5 U	19.6 D	1.99 D	1030	--	2.5 U	5 U	2.5 U	5 U	--	265	Table 18 in EPA, 2017
A18B	Animas	EU-17	Low	June 2016	Runoff	2.5 U	2.5 U	--	4.14 D	5 U	23.4 D	1.47 D	10400	--	4.45 JD	5 U	2.5 U	5 U	--	1060	Table 18 in EPA, 2017
A20	Animas	EU-16	High	June 2016	Runoff	2.5 U	2.5 U	--	3.25 D	5 U	34.3 D	14.6 D	2420	--	3.76 JD	5 U	2.5 U	5 U	--	1130	Table 18 in EPA, 2017
A21	Animas	EU-16	High	June 2016	Runoff	2.5 U	2.5 U	--	3.88 D	5 U	42.3 D	9.02 D	3120	--	4.67 JD	5 U	2.5 U	5 U	--	1410	Table 18 in EPA, 2017
A22	Animas	EU-16	High	June 2016	Runoff	2.5 U	2.5 U	--	3.65 D	5 U	43 D	6.09 JD	3370	--	4.61 JD	5 U	2.5 U	5 U	--	1360	Table 18 in EPA, 2017
A28	Animas	EU-14	High	June 2016	Runoff	2.5 U	2.5 U	--	2.25 D	5 U	11.3 D	3.48 D	1850	--	2.5 U	5 U	2.5 U	11 D	--	587	Table 18 in EPA, 2017
A39	Animas	EU-12	High	June 2016	Runoff	2.5 U	2.5 U	--	3.06 D	5 U	15.6 D	3.13 D	589	--	2.5 U	5 U	2.5 U	5 U	--	1000	Table 18 in EPA, 2017
A39A	Animas	EU-18	Mid	June 2016	Runoff	2.5 U	2.5 U	--	3.25 D	5 U	16.2 D	3.06 D	607	--	2.5 U	5 U	2.5 U	5 U	--	1040	Table 18 in EPA, 2017
CC01F	Cement	EU-24	High	June 2016	Runoff	2.5 U	2.5 U	--	1.19 D	5 U	31.1 D	8.04 D	82.5	--	2.5 U	5 U	2.5 U	5 U	--	267	Table 18 in EPA, 2017
CC01H	Cement	EU-24	High	June 2016	Runoff	2.5 U	2.5 U	--	5.39 D	5 U	163 D	10 D	474	--	2.5 U	5 U	2.5 U	5 U	--	1120	Table 18 in EPA, 2017
CC01S	Cement	EU-24	High	June 2016	Runoff	2.5 U	2.5 U	--	7.72 D	5 U	73.1 D	14.6 D	4740	--	4.35 JD	5 U	2.5 U	5 U	--	1300	Table 18 in EPA, 2017
CC01T	Cement	EU-24	High	June 2016	Runoff	2.5 U	2.5 U	--	5.75 D	5 U	156 D	8.43 D	3190	--	2.65 JD	5 U	2.5 U	5 U	--	1060	Table 18 in EPA, 2017
CC01U	Cement	EU-24	High	June 2016	Runoff	2.5 U	2.5 U	--	4.18 D	5 U	69.2 D	8.95 D	1890	--	2.5 U	5 U	2.5 U	5 U	--	815	Table 18 in EPA, 2017
CC02	Cement	EU-24	High	June 2016	Runoff	2.5 U	2.5 U	--	4.65 D	5 U	75.6 D	13.2 D	1700	--	2.5 U	5 U	2.5 U	5 U	--	1030	Table 18 in EPA, 2017
CC02C	Cement	EU-24	High	June 2016	Runoff	2.5 U	2.5 U	--	4.29 D	5 U	61.7 D	7.66 D	1810	--	2.5 U	5 U	2.5 U	5 U	--	792	Table 18 in EPA, 2017
CC03A	Cement	EU-24	High	June 2016	Runoff	2.5 U	2.5 U	--	4.82 D	5 U	69 D	7.35 D	1830	--	2.5 U	5 U	2.5 U	11.6 D	--	1020	Table 18 in EPA, 2017
CC23	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	20.8 D	--	0.969 JD	5 U	45.3 D	247 D	365	--	2.5 U	5 U	2.5 U	5 U	--	254	Table 18 in EPA, 2017
CC23B	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	8 JD	--	0.805 JD	5 U	62.4 D	84.6 D	410	--	7.68 D	5 U	2.5 U	5 U	--	121	Table 18 in EPA, 2017
CC23D	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	11.2 D	--	0.719 JD	5 U	39.9 D	38 D	739	--	3.37 JD	5 U	2.5 U	5 U	--	213	Table 18 in EPA, 2017
CC23E	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.759 JD	95.3	--	2.5 U	5 U	2.5 U	5 U	--	11.6 J	Table 18 in EPA, 2017
CC23F	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	3.51 JD	--	0.5 U	5 U	18.1 D	65.9 D	19.5	--	2.5 U	5 U	2.5 U	5 U	--	116	Table 18 in EPA, 2017
CC23G	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	1.64 D	75.5	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 18 in EPA, 2017
CC23H	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	11.5 D	15.6 D	137	--	2.5 U	5 U	2.5 U	5 U	--	13.6 J	Table 18 in EPA, 2017
CC23I	Cement	EU-21	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	20.5 D	9.05 D	38.3	--	2.5 U	5 U	2.5 U	5 U	--	13 J	Table 18 in EPA, 2017
CG3	Animas	EU-17	Low	June 2016	Runoff	2.5 U	2.5 U	--	6.54 D	5 U	22.9 D	1.31 D	10600	--	5.62 D	5 U	2.5 U	5 U	--	1820	Table 18 in EPA, 2017
CG3A	Animas	EU-17	Low	June 2016	Runoff	2.5 U	2.5 U	--	6.51 D	5 U	22.2 D	8.2 D	9540	--	5.22 D	5 U	2.5 U	5 U	--	1790	Table 18 in EPA, 2017
CG4	Animas	EU-17	Low	June 2016	Runoff	2.5 U	2.5 U	--	5.49 D	5 U	18.5 D	1.16 D	9020	--	4.32 JD	5 U	2.5 U	5 U	--	1550	Table 18 in EPA, 2017
CG6	Animas	EU-17	Low	June 2016	Runoff	2.5 U	2.5 U	--	5.74 D	5 U	18.3 D	2.16 D	8750	--	4.5 JD	5 U	2.5 U	12.7 D	--	1560	Table 18 in EPA, 2017
CG6A	Animas	EU-17	Low	June 2016	Runoff	2.5 U	2.5 U	--	5.57 D	5 U	23.4 D	26.2 D	8350	--	4.58 JD	5 U	2.5 U	5 U	--	1580	Table 18 in EPA, 2017
EG1	Animas	EU-12	High	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	2 U	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 18 in EPA, 2017
EG2	Animas	EU-12	High	June 2016	Runoff	2.5 U	2.5 U	--	2.52 D	5 U	7.32 D	0.5 U	262	--	2.5 U	5 U	2.5 U	5 U	--	1040	Table 18 in EPA, 2017
EG2A	Animas	EU-12	High	June 2016	Runoff	2.5 U	2.5 U	--	13.7 D	5 U	51.7 D	2.72 D	2720	--	4.45 JD	5 U	2.5 U	5 U	--	4500	Table 18 in EPA, 2017
EG3	Animas	EU-12	High	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	54.2	--	2.5 U	5 U	2.5 U	5 U	--	230	Table 18 in EPA, 2017
EG3A	Animas	EU-12	High	June 2016	Runoff	2.5 U	2.5 U	--	3.33 D	5 U	12.9 D	2.63 D	633	--	2.5 U	5 U	2.5 U	5 U	--	1120	Table 18 in EPA, 2017
EG4	Animas	EU-12	High	June 2016	Runoff	2.5 U	2.5 U	--	12.4 D	5 U	44.5 D	2.3 D	2440	--	3.94 JD	5 U	2.5 U	5 U	--	4110	Table 18 in EPA, 2017
EG6	Animas	EU-12	High	June 2016	Runoff	2.5 U	2.5 U	--	2.07 D	5 U	11.4 D	2.19 D	417	--	2.5 U	5 U	2.5 U	11.5 D	--	671	Table 18 in EPA, 2017
FD-1	Cement	EU-24	High	June 2016	Runoff	2.5 U	2.5 U	--	7.24 D	5 U	68.3 D	4.66 D	1800	--	2.5 U	5 U	2.5 U	5 U	--	2430	Table 18 in EPA, 2017
M01	Mineral	EU-04	High	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.704 JD	35.1	--	2.5 U	5 U	2.5 U	5 U	--	14.6 J	Table 18 in EPA, 2017
M02	Mineral	EU-04	High	June 2016	Runoff	2.5 U	119 D	--	12.2 D	5 U	522 D	75.3 D	4120	--	17.6 D	5 U	2.5 U	5 U	--	4590	Table 18 in EPA, 2017
M03	Mineral	EU-04	High	June 2016	Runoff	2.5 U	46.1 D	--	0.961 JD	5 U	210 D	135 D	127	--	2.5 U	5 U	2.5 U	11 D	--	254	Table 18 in EPA, 2017
M07	Mineral	EU-04	High	June 2016	Runoff	2.5 U	2.5 U	--	0.51 JD	5 U	12.7 D	21.5 D	103	--	2.5 U	5 U	2.5 U	5 U	--	142	Table 18 in EPA, 2017
M12	Mineral	EU-3.5	Mid	June 2016	Runoff	2.5 U	2.5 U	--	3.94 D	5 U	33.9 D	3.3 D	1320	--	6.04 D	5 U	2.5 U	5 U	--	861	Table 18 in EPA, 2017
M12A	Mineral	EU-3.5	Mid	June 2016	Runoff	2.5 U	2.5 U	--	1.05 D	5 U	22.9 D	7.04 D	799	--	4.17 JD	5 U	2.5 U	5 U	--	282	Table 18 in EPA, 2017
M12B	Mineral	EU-3.5	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	11.1 D	1.11 D	545	--	2.97 JD	5 U	2.5 U	5 U	--	61	Table 18 in EPA, 2017
M25	Mineral	EU-05	Mid	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	90.7	--	2.82 JD	5 U	2.5 U	5 U	--	58.4	Table 18 in EPA, 2017
M30	Mineral	Bear Cr.	Ref.	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	9.64	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 27 in EPA, 2017
M29	Mineral	EU-01	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	7.85 D	6.29 D	272	--	2.5 U	5 U	2.5 U	5 U	--	135	Table 27 in EPA, 2017
M32	Mineral	EU-01	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	5.49 D	2.05 D	212	--	2.5 U	5 U	2.5 U	5 U	--	98.1	Table 27 in EPA, 2017
M33	Mineral	EU-01	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	5.72 D	2.11 D	232	--	2.5 U	5 U	2.5 U	5 U	--	106	Table 27 in EPA, 2017
M34	Mineral	EU-01	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	6.34 D	2.17 D	235	--	2.5 U	5 U	2.5 U	5 U	--	109	Table 27 in EPA, 2017
M38	Mineral	EU-01	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	6.48 D	2.18 D	236	--	2.5 U	5 U	2.5 U	5 U	--	108	Table 27 in EPA, 2017
M27	Mineral	EU-02	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.823 JD	5 U	15.3 D	7.18 D	488	--	2.5 U	5 U	2.5 U	5 U	--	210	Table 27 in EPA, 2017
M27A	Mineral	EU-02	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.01 D	5 U	14 D	6.03 D	486	--	2.5 U	5 U	2.5 U	5 U	--	204	Table 27 in EPA, 2017
M11	Mineral	EU-03	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.732 JD	5 U	9.83 D	18 D	133	--	2.5 U	5 U	2.5 U	5 U	--	224	Table 27 in EPA, 2017
M13A	Mineral	EU-03	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.708 JD	5 U	8.23 D	11.8 D	131	--	2.5 U	5 U	2.5 U	5 U	--	215	Table 27 in EPA, 2017
M13B	Mineral	EU-03	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.662 JD	5 U	8.05 D	10.5 D	144	--	2.5 U	5 U	2.5 U	5 U	--	234	Table 27 in EPA, 2017
M13D	Mineral	EU-03	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.966 JD	5 U	11.2 D	13.5 D	220	--	2.5 U	5 U	2.5 U	9.85 JD	--	272	Table 27 in EPA, 2017
M14A	Mineral	EU-03	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.812 JD	5 U	8.08 D	8.68 D	185	--	2.5 U	5 U	2.5 U	5 U	--	223	Table 27 in EPA, 2017
M14B	Mineral	EU-03	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.85 JD	5 U	18.1 D	10.1 D	211	--	2.5 U	5 U	2.5 U	5 U	--	224	Table 27 in EPA, 2017
M01	Mineral	EU-04	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	4.33 J	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 27 in EPA, 2017
M02	Mineral	EU-04	High	Sept 2016	Post-runoff	2.5 U	90.3 D	--	35.7 D	5 U	1290 D	35.5 D	16200	--	70.5 D	5 U	2.5 U	5 U	--	16800	Table 27 in EPA, 2017
M03	Mineral	EU-04	High	Sept 2016	Post-runoff	2.5 U	5.24 JD	--	1.95 D	5 U	118 D	7.25 D	137	--	2.5 U	5 U	2.5 U	5 U	--	514	Table 27 in EPA, 2017
M04	Mineral	EU-04	High	Sept 2016	Post-runoff	2.5 U	3.59 JD	--	2.25 D	5 U	80.9 D	1.71 D	1080	--	4.36 JD	5 U	2.5 U	5 U	--	1110	Table 27 in EPA, 2017
M05	Mineral	EU-04	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	2.58 D	5 U	74.2 D	1.83 D	1070	--	4.07 JD	5 U	2.5 U	5 U	--	1180	Table 27 in EPA, 2017
M07	Mineral	EU-04	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.45 D	5 U	21.2 D	36.8 D	243	--	2.5 U	5 U	2.5 U	5 U	--	460	Table 27 in EPA, 2017
M10A	Mineral	EU-04	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.41 D	5 U	20.7 D	34.3 D	246	--	2.5 U	5 U	2.5 U	5 U	--	466	Table 27 in EPA, 2017
M10B	Mineral	EU-04	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	6.95	--	2.5 U	5 U	2.5 U	5 U	--	21.6	Table 27 in EPA, 2017
M23	Mineral	EU-05	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	200	--	4.96 JD	5 U	2.5 U	5 U	--	32.5	Table 27 in EPA, 2017
M24D	Mineral	EU-05	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	42.4 D	5 U	189 D	177 D	4780	--	8.83 D	5 U	2.5 U	5 U	--	10700	Table 27 in EPA, 2017
M25	Mineral	EU-05	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.54 JD	5 U	2.5 U	0.5 U	207	--	4.72 JD	5 U	2.5 U	5 U	--	104	Table 27 in EPA, 2017
M26	Mineral	EU-05	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	172	--	2.5 U	5 U	2.5 U	5 U	--	31.3	Table 27 in EPA, 2017
M26B	Mineral	EU-05	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	144	--	2.5 U	5 U	2.5 U	5 U	--	45.3	Table 27 in EPA, 2017
M26D	Mineral	EU-05	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	91.7	--	2.5 U	5 U	2.5 U	5 U	--	30.4	Table 27 in EPA, 2017
M28	Mineral	EU-05	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	84.2	--	2.5 U	5 U	2.5 U	5 U	--	23.4	Table 27 in EPA, 2017
M15	Mineral	EU-06	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	96.1	--	2.5 U	5 U	2.5 U	5 U	--	12.5 J	Table 27 in EPA, 2017
M16E	Mineral	EU-06	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	1.45 D	403	--	2.5 U	5 U	2.5 U	5 U	--	64.2	Table 27 in EPA, 2017
M16F	Mineral	EU-06	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	65.4	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 27 in EPA, 2017
M16G	Mineral	EU-06	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	345	--	2.5 U	5 U	2.5 U	5 U	--	37.9	Table 27 in EPA, 2017
M16H	Mineral	EU-06	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.617 JD	1200	--	2.5 U	5 U	2.5 U	5 U	--	146	Table 27 in EPA, 2017
M17	Mineral	EU-06	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.641 JD	1170	--	2.5 U	5 U	2.5 U	5 U	--	143	Table 27 in EPA, 2017

DRC = dose-response category; -- = no data

Table A-1 Surface Water Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in µg/L. See Appendix A title page for data qualifier definitions. Continued

Location ID	Subwatershed	Exposure Unit	DRC	Sample Date	Hydroperiod	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Source
M17A	Mineral	EU-06	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.613 JD	919	--	2.5 U	5 U	2.5 U	5 U	--	107	Table 27 in EPA, 2017
M18	Mineral	EU-06	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	4.31 D	5 U	22.2 D	0.5 U	1400	--	15.7 D	5 U	2.5 U	5 U	--	246	Table 27 in EPA, 2017
M19	Mineral	EU-06	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.01 D	5 U	5.11 D	0.653 JD	1060	--	3.52 JD	5 U	2.5 U	5 U	--	140	Table 27 in EPA, 2017
M20	Mineral	EU-06	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.955 JD	5 U	5.25 D	0.713 JD	990	--	3.27 JD	5 U	2.5 U	8.16 JD	--	129	Table 27 in EPA, 2017
M22	Mineral	EU-06	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.1 D	5 U	5.71 D	0.68 JD	961	--	2.92 JD	5 U	2.5 U	5 U	--	152	Table 27 in EPA, 2017
UA5	Animas	EU-18	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	7.83 D	5 U	21 D	13.6 D	1640	--	3.71 JD	5 U	2.5 U	5 U	--	1290	Table 27 in EPA, 2017
M12	Mineral	EU-3.5	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	6.07 D	5 U	53.4 D	3.88 D	2280	--	12.1 D	5 U	2.5 U	5 U	--	1300	Table 27 in EPA, 2017
M12A	Mineral	EU-3.5	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.28 D	5 U	31.7 D	1.66 D	1440	--	8.86 D	5 U	2.5 U	5 U	--	347	Table 27 in EPA, 2017
M12B	Mineral	EU-3.5	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	19.6 D	0.81 JD	1190	--	7.84 D	5 U	2.5 U	5 U	--	81	Table 27 in EPA, 2017
M08	Mineral	Mill Cr.	Ref.	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.777 JD	87.1	--	2.5 U	5 U	2.5 U	5 U	--	42.1	Table 27 in EPA, 2017
M10	Mineral	Mill Cr.	Ref.	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.59 JD	30	--	2.5 U	5 U	2.5 U	5 U	--	43.8	Table 27 in EPA, 2017
A05	Animas	NF Animas	Ref.	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.989 JD	5 U	2.5 U	1.1 D	14.7	--	2.5 U	5 U	2.5 U	5 U	--	148	Table 27 in EPA, 2017
A07	Animas	EU-19	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	18.6 D	5 U	54.9 D	5.9 D	4810	--	10.6 D	5 U	2.5 U	8.85 JD	--	2960	Table 27 in EPA, 2017
A07A	Animas	EU-19	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	23.2 D	5 U	70.8 D	7.95 D	6030	--	13.8 D	5 U	2.5 U	5 U	--	3690	Table 27 in EPA, 2017
A07B	Animas	EU-19	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	26.4 D	5 U	61.6 D	10.5 D	5980	--	14.4 D	5 U	2.5 U	5 U	--	4260	Table 27 in EPA, 2017
A07C	Animas	EU-19	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	19.9 D	5 U	57.4 D	13.8 D	5890	--	10.9 D	5 U	2.5 U	5 U	--	3830	Table 27 in EPA, 2017
A07D	Animas	EU-19	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	19.1 D	5 U	92.5 D	7.22 D	4860	--	10.7 D	5 U	2.5 U	7.76 JD	--	2840	Table 27 in EPA, 2017
A07E	Animas	EU-19	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	12.3 D	5 U	64.6 D	14 D	5090	--	8.99 D	5 U	2.5 U	8.15 JD	--	2150	Table 27 in EPA, 2017
A07F	Animas	EU-19	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	8.97 D	5 U	52.4 D	11.9 D	3790	--	6.68 D	5 U	2.5 U	5 U	--	1380	Table 27 in EPA, 2017
A07G	Animas	EU-19	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.41 D	5 U	4.44 JD	3.99 D	122	--	2.5 U	5 U	2.5 U	5 U	--	297	Table 27 in EPA, 2017
A08	Animas	EU-18	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	7.77 D	5 U	22.7 D	2.43 D	1900	--	3.84 JD	5 U	2.5 U	5 U	--	1240	Table 27 in EPA, 2017
A09	Animas	EU-18	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	7.3 D	5 U	23.4 D	12.5 D	1340	--	3.26 JD	5 U	2.5 U	5 U	--	1190	Table 27 in EPA, 2017
A10	Animas	EU-15	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	7.69 D	5 U	30.9 D	5.66 D	13000	--	7.42 D	5 U	2.5 U	5 U	--	2670	Table 27 in EPA, 2017
A11	Animas	EU-15	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	6.79 D	5 U	22.5 D	4.36 D	12600	--	6.87 D	5 U	2.5 U	5 U	--	2390	Table 27 in EPA, 2017
A13	Animas	EU-15	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	7.17 D	5 U	22.7 D	4.2 D	13400	--	8.36 D	5 U	2.5 U	5 U	--	2360	Table 27 in EPA, 2017
A14	Animas	EU-14	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	8.17 D	5 U	26.9 D	7.17 D	9530	--	5.78 D	5 U	2.5 U	5 U	--	2230	Table 27 in EPA, 2017
A15	Animas	EU-17	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	11.5 D	5 U	30.3 D	0.894 JD	24100	--	13.4 D	5 U	2.5 U	5 U	--	3420	Table 27 in EPA, 2017
A18	Animas	EU-17	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	2.53 D	5 U	46.4 D	0.996 JD	498	--	2.5 U	5 U	2.5 U	5 U	--	374	Table 27 in EPA, 2017
A18A	Animas	EU-17	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	2.99 D	5 U	8.73 D	0.5 U	22500	--	6.16 D	5 U	2.5 U	5 U	--	1250	Table 27 in EPA, 2017
A18B	Animas	EU-17	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	14.2 D	5 U	45.8 D	0.5 U	39300	--	16.9 D	5 U	2.5 U	5 U	--	3830	Table 27 in EPA, 2017
A20	Animas	EU-16	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	2.95 D	5 U	14.1 D	7.81 D	1030	--	2.53 JD	5 U	2.5 U	5 U	--	1260	Table 27 in EPA, 2017
A21	Animas	EU-16	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	4.03 D	5 U	18.1 D	103 D	1550	--	3.76 JD	5 U	2.5 U	5 U	--	1610	Table 27 in EPA, 2017
A22	Animas	EU-16	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	3.11 D	5 U	14.1 D	4.32 D	1250	--	4.02 JD	5 U	2.5 U	5 U	--	1430	Table 27 in EPA, 2017
A26	Animas	Picayne G.	Ref.	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	151	--	2.5 U	5 U	2.5 U	5 U	--	12.3 J	Table 27 in EPA, 2017
A30A	Animas	EU-14	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	4.25 D	5 U	35.2 D	3.22 D	3760	--	2.5 U	5 U	2.5 U	5 U	--	1130	Table 27 in EPA, 2017
A30B	Animas	EU-14	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	4.09 D	5 U	53.4 D	3.48 D	3670	--	2.5 U	5 U	2.5 U	5 U	--	1120	Table 27 in EPA, 2017
A31	Animas	EU-14	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	3.79 D	5 U	25.1 D	4.21 D	3330	--	2.5 U	5 U	2.5 U	5 U	--	1070	Table 27 in EPA, 2017
A33	Animas	EU-14	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	3.71 D	5 U	31.4 D	2.95 D	2970	--	2.5 U	5 U	2.5 U	5 U	--	1050	Table 27 in EPA, 2017
A34	Animas	EU-13	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.74 JD	5 U	8.58 D	0.5 U	137	--	2.5 U	5 U	2.5 U	5 U	--	238	Table 27 in EPA, 2017
A35	Animas	EU-10	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	2.52 D	5 U	20.8 D	3.23 D	2070	--	2.5 U	5 U	2.5 U	5 U	--	730	Table 27 in EPA, 2017
A36	Animas	EU-11	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	9.53 D	0.5 U	140	--	2.5 U	5 U	2.5 U	5 U	--	55.2	Table 27 in EPA, 2017
A37	Animas	EU-12	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.615 JD	5 U	7.13 D	1.06 D	103	--	2.5 U	5 U	2.5 U	13.1 D	--	241	Table 27 in EPA, 2017
A39	Animas	EU-12	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.73 D	5 U	29.7 D	7.6 D	310	--	2.5 U	5 U	2.5 U	5 U	--	618	Table 27 in EPA, 2017
A40	Animas	EU-10	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	2.29 D	5 U	14.9 D	2.71 D	1680	--	2.5 U	5 U	2.5 U	5 U	--	609	Table 27 in EPA, 2017
A40A	Animas	EU-10	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	2.57 D	5 U	17.7 D	3.26 D	1990	--	2.5 U	5 U	2.5 U	5 U	--	661	Table 27 in EPA, 2017
A41A	Animas	EU-09	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.24 D	5 U	8.53 D	1.3 D	924	--	2.5 U	5 U	2.5 U	5 U	--	335	Table 27 in EPA, 2017
A42	Animas	Minnie G.	Ref.	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	25.4	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 27 in EPA, 2017
A43	Animas	Maggie G.	Ref.	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	4.3 J	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 27 in EPA, 2017
A45	Animas	EU-09	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.901 JD	5 U	4.8 JD	1.39 D	510	--	2.5 U	5 U	2.5 U	5 U	--	309	Table 27 in EPA, 2017
A47	Animas	EU-07	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	2.94 J	--	2.5 U	5 U	2.5 U	5 U	--	14.8 J	Table 27 in EPA, 2017
A48	Animas	EU-08	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.989 JD	3.72 J	--	2.5 U	5 U	2.5 U	5 U	--	22.6	Table 27 in EPA, 2017
A55	Animas	EU-07	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.646 JD	5 U	4.65 JD	2.73 D	411	--	2.5 U	5 U	2.5 U	7.4 JD	--	193	Table 27 in EPA, 2017
A55a	Animas	EU-07	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.526 JD	5 U	4.27 JD	2.24 D	364	--	2.5 U	5 U	2.5 U	5 U	--	180	Table 27 in EPA, 2017
A56	Animas	EU-07	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.635 JD	5 U	4.67 JD	1.45 D	391	--	2.5 U	5 U	2.5 U	5 U	--	205	Table 27 in EPA, 2017
BG1A	Animas	EU-19	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.88 D	5 U	3.34 JD	2.28 D	106	--	2.5 U	5 U	2.5 U	5 U	--	351	Table 27 in EPA, 2017
BG4	Animas	EU-19	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	17.2 D	5 U	51.9 D	4.83 D	5010	--	9.96 D	5 U	2.5 U	5 U	--	2920	Table 27 in EPA, 2017
CC01F	Cement	EU-24	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	2.7 D	5 U	59 D	2.93 D	126	--	2.5 U	5 U	2.5 U	5 U	--	475	Table 27 in EPA, 2017
CC01H	Cement	EU-24	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	7.13 D	5 U	161 D	2.14 D	417	--	2.5 U	5 U	2.5 U	5 U	--	1600	Table 27 in EPA, 2017
CC01S	Cement	EU-24	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	18.1 D	5 U	89.5 D	3.93 D	5800	--	11.8 D	5 U	2.5 U	5 U	--	3170	Table 27 in EPA, 2017
CC01T	Cement	EU-24	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	11.1 D	5 U	132 D	2.76 D	2400	--	5.5 D	5 U	2.5 U	5 U	--	2210	Table 27 in EPA, 2017
CC01U	Cement	EU-24	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	12.1 D	5 U	131 D	4.53 D	2310	--	8.34 D	5 U	2.5 U	5 U	--	2200	Table 27 in EPA, 2017
CC02	Cement	EU-24	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	13.1 D	5 U	144 D	7.94 D	2870	--	6.51 D	5 U	2.5 U	5 U	--	3780	Table 27 in EPA, 2017
CC02C	Cement	EU-24	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	10.2 D	5 U	113 D	4.3 D	1980	--	26.4 D	5 U	2.5 U	5 U	--	2060	Table 27 in EPA, 2017
CC03	Cement	EU-22	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	15.6 D	5 U	99.3 D	20.6 D	10700	--	14.9 D	5 U	2.5 U	5 U	--	6400	Table 27 in EPA, 2017
CC03A	Cement	EU-24	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	14.3 D	5 U	178 D	8.76 D	3240	--	6.64 D	5 U	2.5 U	7.77 JD	--	4400	Table 27 in EPA, 2017
CC03B	Cement	EU-22	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	12.3 D	5 U	133 D	7.68 D	2870	--	5.09 D	5 U	2.5 U	8.1 JD	--	3650	Table 27 in EPA, 2017
CC03BF	Cement	EU-22	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	12 D	5 U	132 D	8.17 D	2820	--	9.58 D	5 U	2.5 U	5 U	--	3600	Table 27 in EPA, 2017
CC15	Cement	EU-23	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	5.38 D	0.5 U	64.2	--	2.5 U	5 U	2.5 U	5 U	--	36	Table 27 in EPA, 2017
CC15A	Cement	EU-23	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.16 D	5 U	8.95 D	1.93 D	1410	--	2.5 U	5 U	2.5 U	5 U	--	403	Table 27 in EPA, 2017
CC16	Cement	EU-23	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.97 D	5 U	18.5 D	1.48 D	1320	--	3.78 JD	5 U	2.5 U	5 U	--	429	Table 27 in EPA, 2017
CC17	Cement	EU-23	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.29 D	5 U	12.3 D	0.785 JD	906	--	2.5 U	5 U	2.5 U	5 U	--	337	Table 27 in EPA, 2017
CC18	Cement	EU-22	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	14.7 D	5 U	120 D	21.4 D	13100	--	15.5 D	5 U	2.5 U	5 U	--	7200	Table 27 in EPA, 2017
CC18B	Cement	EU-22	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	15.8 D	5 U	134 D	31.4 D	10500	--	13.7 D	5 U	2.5 U	5 U	--	6280	Table 27 in EPA, 2017
CC20	Cement	EU-23	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.35 D	5 U	14 D	1.56 D	1080	--	2.5 U	5 U	2.5 U	5 U	--	389	Table 27 in EPA, 2017
CC21	Cement	EU-22	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	6.84 D	5 U	62.6 D	14.9 D	5920	--	4.21 JD	5 U	2.5 U	5 U	--	2980	Table 27 in EPA, 2017
CC21B	Cement	EU-22	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	5.79 D	5 U	56.8 D	16 D	5220	--	4.89 JD	5 U	2.5 U	7.5 JD	--	2650	Table 27 in EPA, 2017
CC22	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.797 JD	5 U	34.1 D	101 D	1550	--	15.8 D	5 U	2.5 U	5 U	--	222	Table 27 in EPA, 2017
CC22B	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.43 D	5 U	33.6 D	43.8 D	584	--	5.65 D	5 U	2.5 U	5 U	--	376	Table 27 in EPA, 2017
CC22C	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.762 JD	5 U	30.1 D	80.4 D	1430	--	14.6 D	5 U	2.5 U	5 U	--	225	Table 27 in EPA, 2017
CC22D	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.7 D	5 U	42.6 D	59.9 D	307	--	2.63 JD	5 U	2.5 U	5 U	--	435	Table 27 in EPA, 2017
CC23	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.88 D	5 U	41.6 D	33.2 D	362	--	3.1 JD	5 U	2.5 U	5 U	--	474	Table 27 in EPA, 2017
CC23B	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.45 D	5 U	84.8 D	20.5 D	926	--	11.1 D	5 U	2.5 U	5 U	--	226	Table 27 in EPA, 2017
CC23D	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.91 D	5 U	75.7 D	71.7 D	252	--	2.5 U	5 U	2.5 U	5 U	--	551	Table 27 in EPA, 2017
CC23E	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.83 D	5 U	6.11 D	0.744 JD	502	--	2.5 U	5 U	2.5 U	5 U	--	555	Table 27 in EPA, 2017
CC23F	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	2.02 D	232	--	2.86 JD	5 U	2.5 U	5 U	--	23.2	Table 27 in EPA, 2017
CC23G	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	3.9 JD	1.77 D	284	--	3.99 JD	5 U	2.5 U	5 U	--	29.9	Table 27 in EPA, 2017
CC23H	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	6.17 D	5.03 D	86.2	--	2.5 U	5 U	2.5 U	5 U	--	20.5	Table 27 in EPA, 2017
CC23I	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	3.31 JD	1.58 D	2.06 J	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 27 in EPA, 2017
CC24	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	3.16 D	5 U	171 D	53.2 D	569	--	5.76 D	5 U	2.5 U	5 U	--	833	Table 27 in EPA, 2017
CC24B	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	2.03 D	5 U	106 D	44.5 D	506	--	4.9 JD	5 U	2.5 U	5 U	--	549	Table 27 in EPA, 2017
CC24C	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	18.4 D	5 U	558 D	342 D	1240	--	11.7 D	5 U	2.5 U	7.43 JD	--	4730	Table 27 in EPA, 2017
CC25	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	4.34 D	5 U	191 D	59.4 D	579	--	6.63 D	5 U	2.5 U	5 U	--	1110	Table 27 in EPA, 2017
CC25B	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	3.56 D	5 U	185 D	51.3 D	580	--	6.3 D	5 U	2.5 U	5 U	--	897	Table 27 in EPA, 2017
CC26	Cement	EU-21	Mid	Sept 2016	Post-runoff	2.5 U	22.2 D	--	4.57 D	5 U	105 D	35.5 D	745	--	18.1 D	5 U	2.5 U	5 U	--	1190	Table 27 in EPA, 2017
CC27	Cement	EU-20	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	6.05 D	5 U	62.9 D	18.8 D	4990	--	6.22 D	5 U	2.5 U	5 U	--	2580	Table 27 in EPA, 2017
CC33	Cement	EU-20	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	5.02	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 27 in EPA, 2017
CC38	Cement	EU-20	Mid	Sept 2016	Post-runoff	2.5 U	2.96 JD	--	2.11 D	5 U	18.8 D	8.73 D	7860	--	2.5 U	5 U	2.5 U	5 U	--	1790	Table 27 in EPA, 2017
CC38C	Cement	EU-20	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	2.2 D	5 U	20.2 D	24.4 D	91	--	2.5 U	5 U	2.5 U	5 U	--	533	Table 27 in EPA, 2017
CC38D	Cement	EU-20	Mid	Sept 2016	Post-runoff	2.5 U	2.5 JD	--	1.93 D	5 U	19.1 D	9.25 D	7910	--	2.5 U	5 U	2.5 U	5 U	--	1760	Table 27 in EPA, 2017

DRC = dose-response category; -- = no data

Table A-1 Surface Water Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in µg/L. See Appendix A title page for data qualifier definitions. Continued

Location ID	Subwatershed	Exposure Unit	DRC	Sample Date	Hydroperiod	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Source
CC39	Cement	EU-20	Mid	Sept 2016	Post-runoff	2.5 U	6.93 JD	--	5.72 D	5 U	108 D	44.7 D	4460	--	10.9 D	5 U	2.5 U	10.8 D	--	2400	Table 27 in EPA, 2017
CC39B	Cement	EU-20	Mid	Sept 2016	Post-runoff	2.5 U	4.78 JD	--	5.43 D	5 U	55 D	13.7 D	4690	--	10.2 D	5 U	2.5 U	11.6 D	--	2140	Table 27 in EPA, 2017
CC41	Cement	EU-20	Mid	Sept 2016	Post-runoff	2.5 U	6.49 JD	--	6.63 D	5 U	141 D	27.2 D	5110	--	10.6 D	5 U	2.5 U	5 U	--	2610	Table 27 in EPA, 2017
CC43E	Cement	EU-20	Mid	Sept 2016	Post-runoff	2.5 U	3.6 JD	--	5.06 D	5 U	84.9 D	15.2 D	4170	--	9.19 D	5 U	2.5 U	5 U	--	2070	Table 27 in EPA, 2017
CC46B	Cement	EU-20	Mid	Sept 2016	Post-runoff	2.5 U	6.68 JD	--	6.55 D	8.76 JD	189 D	14.8 D	4580	--	9.17 D	5 U	2.5 U	5 U	--	2450	Table 27 in EPA, 2017
CC47C	Cement	EU-20	Mid	Sept 2016	Post-runoff	2.5 U	4.05 JD	--	5.5 D	5 U	147 D	13 D	4170	--	9.13 D	5 U	2.5 U	5 U	--	2180	Table 27 in EPA, 2017
CC48	Cement	EU-20	Mid	Sept 2016	Post-runoff	2.5 U	4.64 JD	--	5.5 D	5 U	165 D	13.2 D	4120	--	8.74 D	5 U	2.5 U	5 U	--	2170	Table 27 in EPA, 2017
CG11	Animas	EU-14	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	6.89 D	5 U	22.4 D	4.15 D	12200	--	6.68 D	5 U	2.5 U	5 U	--	2280	Table 27 in EPA, 2017
CG3	Animas	EU-17	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	17 D	5 U	44.5 D	0.815 JD	34400	--	17.8 D	5 U	2.5 U	5 U	--	5350	Table 27 in EPA, 2017
CG4	Animas	EU-17	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	13.8 D	5 U	36.6 D	1.36 D	27300	--	14.7 D	5 U	2.5 U	5 U	--	4380	Table 27 in EPA, 2017
CG6	Animas	EU-17	Low	Sept 2016	Post-runoff	2.5 U	2.5 U	--	12.2 D	5 U	31.8 D	0.889 JD	25600	--	13.6 D	5 U	2.5 U	5 U	--	3510	Table 27 in EPA, 2017
CG9	Animas	EU-15	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	6.92 D	5 U	23.1 D	4.05 D	12600	--	6.76 D	5 U	2.5 U	5 U	--	2300	Table 27 in EPA, 2017
CU4	Animas	EU-08	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	6.62 D	1.9 D	4.47 J	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 27 in EPA, 2017
CU4a	Animas	EU-08	Mid	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	1.27 D	6	--	2.5 U	5 U	2.5 U	5 U	--	24.3	Table 27 in EPA, 2017
EG1	Animas	EU-12	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	11.4	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 27 in EPA, 2017
EG2	Animas	EU-12	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	2 U	--	2.5 U	5 U	2.5 U	7.81 JD	--	317	Table 27 in EPA, 2017
EG2A	Animas	EU-12	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	7.21 D	5 U	38.4 D	2.08 D	781	--	3.7 JD	5 U	2.5 U	8.52 JD	--	3540	Table 27 in EPA, 2017
EG3	Animas	EU-12	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.5 U	8	--	2.5 U	5 U	2.5 U	5 U	--	51.9	Table 27 in EPA, 2017
EG3A	Animas	EU-12	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.79 JD	0.5 U	18.3	--	2.5 U	5 U	2.5 U	5 U	--	79.8	Table 27 in EPA, 2017
EG4	Animas	EU-12	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	4.43 D	5 U	13.5 D	0.596 JD	387	--	2.5 U	5 U	2.5 U	5 U	--	2280	Table 27 in EPA, 2017
EG6	Animas	EU-12	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.22 D	5 U	13.9 D	3.85 D	251	--	2.5 U	5 U	2.5 U	5 U	--	430	Table 27 in EPA, 2017
EG9	Animas	EU-13	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	7.06 D	0.5 U	117	--	2.5 U	5 U	2.5 U	5 U	--	114	Table 27 in EPA, 2017
FD-1	Cement	EU-24	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	12.4 D	5 U	93.4 D	3.5 D	3630	--	3.67 JD	5 U	2.5 U	5 U	--	4790	Table 27 in EPA, 2017
LA3	Animas	EU-09	High	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.13 D	5 U	6.31 D	1.28 D	718	--	2.5 U	5 U	2.5 U	5 U	--	312	Table 27 in EPA, 2017
A55	Animas	EU-07	High	March 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.656 JD	5 U	2.5 U	0.851 JD	377	5 U	2.5 U	5 U	2.5 U	9.14 JD	10 U	320	Table 3 in EPA, 2017
A56	Animas	EU-07	High	March 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.736 JD	5 U	2.5 U	1.2 D	337	5 U	2.5 U	5 U	2.5 U	5 U	10 U	364	Table 3 in EPA, 2017
A53AC	Animas	EU-09	High	March 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.784 JD	5 U	2.5 U	1.03 D	518	5 U	2.5 U	5 U	2.5 U	5 U	10 U	420	Table 3 in EPA, 2017
A55	Animas	EU-07	High	March 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.577 JD	5 U	2.5 U	1.02 D	353	5 U	2.5 U	5 U	2.5 U	5 U	10 U	291	Table 3 in EPA, 2017
A56	Animas	EU-07	High	March 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.593 JD	5 U	2.92 JD	1.33 D	318	5 U	2.5 U	5 U	2.5 U	5 U	10 U	296	Table 3 in EPA, 2017
A53AC	Animas	EU-09	High	March 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.775 JD	5 U	3.12 JD	1.13 D	598	5 U	2.5 U	5 U	2.5 U	8.72 JD	10 U	463	Table 3 in EPA, 2017
A55	Animas	EU-07	High	March 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.659 JD	5 U	2.5 U	0.957 JD	450	5 U	2.5 U	5 U	2.5 U	5 U	10 U	355	Table 3 in EPA, 2017
A56	Animas	EU-07	High	March 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.69 JD	5 U	2.5 U	0.994 JD	372	5 U	2.5 U	5 U	2.5 U	5 U	10 U	335	Table 3 in EPA, 2017
A33	Animas	EU-14	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	2.34 D	5 U	102 D	3.6 D	592	5 U	2.5 U	5 U	2.5 U	5 U	10 U	739	Table 5 in EPA, 2017
A34	Animas	EU-13	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	3.44 D	5 U	88.2 D	1.07 D	565	5 U	2.5 U	5 U	2.5 U	8.21 JD	10 U	940	Table 5 in EPA, 2017
A35	Animas	EU-10	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	2.93 D	5 U	72.8 D	2.5 D	579	5 U	2.5 U	5 U	2.5 U	8.2 JD	10 U	837	Table 5 in EPA, 2017
A40	Animas	EU-10	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.643 JD	5 U	8.74 D	1.04 D	110	5 U	2.5 U	5 U	2.5 U	5 U	10 U	236	Table 5 in EPA, 2017
A41A	Animas	EU-09	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	1.06 D	5 U	15.3 D	1.45 D	161	5 U	2.5 U	5 U	2.5 U	5 U	10 U	380	Table 5 in EPA, 2017
A45	Animas	EU-09	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.69 JD	1.34 D	36.9	5 U	2.5 U	5 U	2.5 U	5 U	10 U	256	Table 5 in EPA, 2017
A47	Animas	EU-07	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.634 JD	6.87	5 U	2.5 U	5 U	2.5 U	5 U	10 U	18.7 J	Table 5 in EPA, 2017
A55	Animas	EU-07	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.616 JD	5 U	4.11 JD	1.38 D	339	5 U	2.5 U	5 U	2.5 U	5 U	10 U	300	Table 5 in EPA, 2017
A56	Animas	EU-07	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.76 JD	5 U	6.92 D	11.2 D	400	5 U	2.5 U	5 U	2.5 U	5 U	10 U	351	Table 5 in EPA, 2017
LA3	Animas	EU-09	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.775 JD	5 U	6.74 D	0.767 JD	89.8	5 U	2.5 U	5 U	2.5 U	5 U	10 U	300	Table 5 in EPA, 2017
A53AC	Animas	EU-09	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	1.34 D	5 U	20.1 D	7.52 D	439	5 U	2.5 U	5 U	2.5 U	5 U	10 U	477	Table 9 in EPA, 2017
A55	Animas	EU-07	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	1.05 D	5 U	17.6 D	7.14 D	342	5 U	2.5 U	5 U	2.5 U	8.67 JD	10 U	367	Table 9 in EPA, 2017
A56	Animas	EU-07	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.53 JD	5 U	17.4 D	5.57 D	194	5 U	2.5 U	5 U	2.5 U	5 U	10 U	205	Table 9 in EPA, 2017
A53AC	Animas	EU-09	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.808 JD	5 U	8.76 D	2.13 D	453	5 U	2.5 U	5 U	2.5 U	5 U	10 U	462	Table 9 in EPA, 2017
A55	Animas	EU-07	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.752 JD	5 U	6.73 D	1.97 D	337	5 U	2.5 U	5 U	2.5 U	8.04 JD	10 U	347	Table 9 in EPA, 2017
A56	Animas	EU-07	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.722 JD	5 U	5.59 D	1.5 D	297	5 U	2.5 U	5 U	2.5 U	5 U	10 U	333	Table 9 in EPA, 2017
A53AC	Animas	EU-09	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.935 JD	5 U	12.8 D	1.69 D	412	5 U	2.5 U	5 U	2.5 U	5 U	10 U	420	Table 9 in EPA, 2017
A55	Animas	EU-07	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.823 JD	5 U	10.7 D	1.57 D	313	5 U	2.5 U	5 U	2.5 U	8.79 JD	10 U	321	Table 9 in EPA, 2017
A56	Animas	EU-07	High	April 2016	Pre-runoff	2.5 U	2.5 U	25 U	0.803 JD	5 U	10.1 D	3.91 D	310	5 U	2.5 U	5 U	2.5 U	5 U	10 U	319	Table 9 in EPA, 2017
A55	Animas	EU-07	High	May 2017	Runoff	--	10 U	--	0.587 J	10 U	7.26	1.5 D	254	5 U	5 U	10 U	5 U	10 U	--	291	Table 11 in EPA, 2018
A56	Animas	EU-07	High	May 2017	Runoff	--	10 U	--	0.562 J	10 U	6.86	2.1 D	234	5 U	5 U	10 U	5 U	6.35 J	--	269	Table 11 in EPA, 2018
CC21	Cement	EU-22	High	May 2017	Runoff	--	10 U	--	8.54	10 U	123	21.6 D	8390	5 U	3.45 J	10 U	5 U	10 U	--	3890	Table 11 in EPA, 2018
CC48	Cement	EU-20	Mid	May 2017	Runoff	--	4.63 J	--	3.23	10 U	52.3	12.4 D	3130	5 U	3.97 J	10 U	5 U	10 U	--	1450	Table 11 in EPA, 2018
M14A	Mineral	EU-03	Mid	May 2017	Runoff	--	10 U	--	1.4	10 U	17.5	15.6 D	335	5 U	5 U	10 U	5 U	10 U	--	481	Table 11 in EPA, 2018
M27	Mineral	EU-02	Low	May 2017	Runoff	--	10 U	--	1.22	10 U	18.2	8.7 D	610	5 U	5 U	10 U	5 U	10 U	--	338	Table 11 in EPA, 2018
M34	Mineral	EU-01	Mid	May 2017	Runoff	--	10 U	--	0.686 J	10 U	11.5 J	4.15 D	318	5 U	5 U	10 U	5 U	10 U	--	191	Table 11 in EPA, 2018
A13	Animas	EU-15	High	June 2017	Runoff	5 U	10 U	--	2.15	10 U	20.6	37.4	2710	--	5 U	10 U	5 U	10 U	--	744	Table 19 in EPA, 2018
A14	Animas	EU-14	High	June 2017	Runoff	5 U	10 U	--	2.37	10 U	16.2	13.2	1720	--	5 U	10 U	5 U	10 U	--	657	Table 19 in EPA, 2018
A28	Animas	EU-14	High	June 2017	Runoff	5 U	10 U	--	1.73	10 U	10.4	7.01	1030	--	5 U	10 U	5 U	10 U	--	422	Table 19 in EPA, 2018
A30	Animas	EU-14	High	June 2017	Runoff	5 U	10 U	--	1.68	10 U	19.7	9.11	1050	--	5 U	10 U	5 U	10 U	--	433	Table 19 in EPA, 2018
A30A	Animas	EU-14	High	June 2017	Runoff	5 U	10 U	--	1.87	10 U	22.2	5.25	980	--	5 U	10 U	5 U	10 U	--	408	Table 19 in EPA, 2018
A31	Animas	EU-14	High	June 2017	Runoff	5 U	10 U	--	1.64	10 U	16.1	5.9	953	--	5 U	10 U	5 U	10 U	--	423	Table 19 in EPA, 2018
A33	Animas	EU-14	High	June 2017	Runoff	5 U	10 U	--	1.84	10 U	17.7	6.38	949	--	5 U	10 U	5 U	10 U	--	425	Table 19 in EPA, 2018
A34	Animas	EU-13	High	June 2017	Runoff	5 U	10 U	--	1.21	10 U	9.87	2.36	352	--	5 U	10 U	5 U	10 U	--	378	Table 19 in EPA, 2018
A35	Animas	EU-10	High	June 2017	Runoff	5 U	10 U	--	1.56	10 U	17	7.68	810	--	5 U	10 U	5 U	10 U	--	419	Table 19 in EPA, 2018
A40	Animas	EU-10	High	June 2017	Runoff	5 U	10 U	--	1.49	10 U	16.2	17.9	679	--	5 U	10 U	5 U	10 U	--	471	Table 19 in EPA, 2018
A40A	Animas	EU-10	High	June 2017	Runoff	5 U	10 U	--	1.59	10 U	20.8	26.4	831	--	5 U	10 U	5 U	10 U	--	443	Table 19 in EPA, 2018
A41A	Animas	EU-09	High	June 2017	Runoff	5 U	10 U	--	0.782 J	10 U	9.23	7.82	345	--	5 U	10 U	5 U	10 U	--	252	Table 19 in EPA, 2018
A45	Animas	EU-09	High	June 2017	Runoff	5 U	10 U	--	1.27	10 U	15.6	17.3	487	--	5 U	10 U	5 U	10 U	--	404	Table 19 in EPA, 2018
CG11	Animas	EU-14	High	June 2017	Runoff	5 U	10 U	--	2.12	10 U	13.5 J	11.9 J	2460	--	5 U	10 U	5 U	10 U	--	723	Table 19 in EPA, 2018
CG9	Animas	EU-15	High	June 2017	Runoff	5 U	10 U	--	2.04	10 U	15.9	20.9	2610	--	5 U	10 U	5 U	10 U	--	743	Table 19 in EPA, 2018
LA3	Animas	EU-09	High	June 2017	Runoff	5 U	10 U	--	0.858 J	10 U	10.6	8.76 J	366	--	5 U	10 U	5 U	10 U	--	286	Table 19 in EPA, 2018
A30B	Animas	EU-14	High	March 2017	Pre-runoff	5 U	10 U	--	1.68	10 U	18.5	8.38	1030	--	5 U	10 U	5 U	10 U	--	429	Table 19 in EPA, 2018
A47	Animas	EU-07	High	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	0.658 J	7.61	--	5 U	10 U	5 U	10 U	--	20 U	Table 19 in EPA, 2018
A48	Animas	EU-08	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	5.58	19	--	5 U	10 U	5 U	10 U	--	20.7	Table 19 in EPA, 2018
A55	Animas	EU-07	High	June 2017	Runoff	5 U	10 U	--	1.19	10 U	16.1	19.5	461	--	5 U	10 U	5 U	11.9	--	356	Table 19 in EPA, 2018
A55a	Animas	EU-07	High	June 2017	Runoff	5 U	10 U	--	1.06	10 U	13.3	21.4	469	--	5 U	10 U	5 U	13	--	333	Table 19 in EPA, 2018
A56	Animas	EU-07	High	June 2017	Runoff	5 U	10 U	--	0.997 J	10 U	14.2	26.5	434	--	5 U	10 U	5 U	10 U	--	336	Table 19 in EPA, 2018
CU4	Animas	EU-08	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	2.07	16.8	--	5 U	10 U	5 U	10 U	--	20 U	Table 19 in EPA, 2018
CU4a	Animas	EU-08	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	4.43	21.2	--	5 U	10 U	5 U	10 U	--	16.2 J	Table 19 in EPA, 2018
A05	Animas	NF Animas	Ref.	June 2017	Runoff	5 U	10 U	--	1.45	10 U	5 U	2.8	77.3 J+	--	5 U	10 U	5 U	10 U	--	206	Table 19 in EPA, 2018
A09	Animas	EU-18	Mid	June 2017	Runoff	5 U	10 U	--	2.34	10 U	9.75	5.41	371	--	5 U	10 U	5 U	10.7	--	403	Table 19 in EPA, 2018
A10	Animas	EU-15	High	June 2017	Runoff	5 U	10 U	--	2.55	10 U	17.7	14.4	2530	--	5 U	10 U	5 U	10.9	--	792	Table 19 in EPA, 2018
A11	Animas	EU-15	High	June 2017	Runoff	5 U	10 U	--	2.46	10 U	17.7	22.3	2550	--	5 U	10 U	5 U	10 U	--	728	Table 19 in EPA, 2018
A55	Animas	EU-07	High	March 2017	Pre-runoff	--	10 U	--	1 U	10 U	2.58 J	1.86	228	--	5 U	10 U	5 U	10 U	--	232	Table 2 in EPA, 2018
A56	Animas	EU-07	High	March 2017	Pre-runoff	--	10 U	--	0.622 J	10 U	3.84 J	2.79	193	--	5 U	10 U	5 U	9.06 J	--	243	Table 2 in EPA, 2018
CC21	Cement	EU-22	High	March 2017	Pre-runoff	--	10 U	--	11.5	10 U	231	26.3	9240	--	6.69	10 U	5 U	10 U	--	4720	Table 2 in EPA, 2018
CC48	Cement	EU-20	Mid	March 2017	Pre-runoff	--	10 U	--	3.09	10 U	65.1	14.6	2500	--	4.94 J	10 U	5 U	10 U	--	1250	Table 2 in EPA, 2018
M14A	Mineral	EU-03	Mid	March 2017	Pre-runoff	--	10 U	--	1.58	10 U	15.1	29	268	--	5 U	10 U	5 U	10 U	--	508	Table 2 in EPA, 2018
M27	Mineral	EU-02	Low	March 2017	Pre-runoff	--	10 U	--	1.23	10 U	18	16	405	--	5 U	10 U	5 U	10 U	--	334	Table 2 in EPA, 2018
M34	Mineral	EU-01	Mid	March 2017	Pre-runoff	--	10 U	--	0.817 J	10 U	9.82	9.05	262	--	5 U	10 U	5 U	10 U	--	217	Table 2 in EPA, 2018
CC39D	Cement	EU-20	Mid	June 2017	Runoff	5 U	10 U	--	1.97	10 U	47.1	20.6	862	--	5 U	10 U	5 U	10 U	--	600	Table 20 in EPA, 2018
CC41	Cement	EU-20	Mid	June 2017	Runoff	5 U	10 U	--	1.61	10 U	44.5	19.3	844	--	5 U	10 U	5 U	10 U	--	580	Table 20 in EPA, 2018
CC43E	Cement	EU-20	Mid	June 2017	Runoff	5 U	10 U	--	1.69	10 U	45.7	18.7	839	--	5 U	10 U	5 U	10 U	--	582	Table 20 in EPA, 2018
CC48	Cement	EU-20	Mid	June 2017	Runoff	5 U	2.55 J	--	1.38	10 U	40.9	21.8	731	--	5 U	10 U	5 U	10 U	--	477	Table 20 in EPA, 2018
CC21	Cement	EU-22	High	March 2017	Pre-runoff	5 U	10 U	--	2.96	10 U	62.6	16.9	1360	--	5 U	10 U	5 U	13.1	--	943	Table 20 in EPA, 2018
CC03	Cement	EU-22	High	June 2017	Runoff	5 U	10 U	--	3.65	10 U	72.1	12.3	1470	--	5 U	10 U	5 U	10 U	--	1190	Table 20 in EPA, 2018
CC03B	Cement	EU-22	High	June 2017	Runoff	5 U	10 U	--	3.39	10 U	73.7	9.66	830	--	5 U	10 U	5 U	10 U	--	943	Table 20 in EPA, 2018

DRC = dose-response category; -- = no data

Table A-1 Surface Water Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in µg/L. See Appendix A title page for data qualifier definitions. Continued

Location ID	Subwatershed	Exposure Unit	DRC	Sample Date	Hydroperiod	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Source
CC17	Cement	EU-23	Low	June 2017	Runoff	5 U	10 U	--	0.824 J	10 U	20.7	4.39	322	--	5 U	10 U	5 U	10 U	--	208	Table 20 in EPA, 2018
CC18	Cement	EU-23	Low	June 2017	Runoff	5 U	10 U	--	3.62	10 U	85.2	18.3	1700	--	5 U	10 U	5 U	10 U	--	1230	Table 20 in EPA, 2018
CC20H	Cement	EU-22	High	June 2017	Runoff	5 U	10 U	--	3.62	10 U	86.3	18.6	1700	--	9.77	10 U	5 U	10 U	--	1240	Table 20 in EPA, 2018
CC26	Cement	EU-21	Mid	June 2017	Runoff	5 U	3.55 J	--	1.92	10 U	139	56.7	156	--	5 U	10 U	5 U	10 U	--	495	Table 20 in EPA, 2018
CC28C	Cement	EU-20	Mid	June 2017	Runoff	5 U	10 U	--	1.98	10 U	60.2	34.6	955	--	5 U	10 U	5 U	10 U	--	691	Table 20 in EPA, 2018
CC28D	Cement	EU-20	Mid	June 2017	Runoff	5 U	10 U	--	2.19	10 U	65.1	31.9	966	--	5 U	10 U	5 U	10 U	--	698	Table 20 in EPA, 2018
CC28E	Cement	EU-20	Mid	June 2017	Runoff	5 U	10 U	--	2.3	10 U	63.7	30	967	--	5 U	10 U	5 U	10 U	--	706	Table 20 in EPA, 2018
CC39	Cement	EU-20	Mid	June 2017	Runoff	5 U	10 U	--	1.66	10 U	43.1	36	779	--	5 U	10 U	5 U	10 U	--	505	Table 20 in EPA, 2018
CC39B	Cement	EU-20	Mid	June 2017	Runoff	5 U	10 U	--	1.96	10 U	51.1	33.9	815	--	5 U	10 U	5 U	10 U	--	588	Table 20 in EPA, 2018
CC39C	Cement	EU-20	Mid	June 2017	Runoff	5 U	3.26 J	--	1.68	10 U	52.4	35.5	841	--	5 U	10 U	5 U	10 U	--	599	Table 20 in EPA, 2018
M06C	Mineral	EU-04	High	June 2017	Runoff	5 U	15.7	--	1 U	10 U	52.9	52 J	131	--	5 U	10 U	5 U	10 U	--	174	Table 21 in EPA, 2018
M07	Mineral	EU-04	High	June 2017	Runoff	5 U	5 J	--	1 U	10 U	26.6	36.1 J	114	--	5 U	10 U	5 U	10 U	--	152	Table 21 in EPA, 2018
M11	Mineral	EU-03	Mid	June 2017	Runoff	5 U	5.34 J	--	1 U	10 U	19.8	31.6 J	86.4	--	5 U	10 U	5 U	10 U	--	120	Table 21 in EPA, 2018
M16E	Mineral	EU-06	Low	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	0.531 J	147	--	5 U	10 U	5 U	10 U	--	29.2	Table 21 in EPA, 2018
M16F	Mineral	EU-06	Low	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	1 UJ	36.7	--	5 U	10 U	5 U	13	--	20 U	Table 21 in EPA, 2018
M16G	Mineral	EU-06	Low	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	1 UJ	119	--	5 U	10 U	5 U	14.8	--	19.8 J	Table 21 in EPA, 2018
M16H	Mineral	EU-06	Low	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	0.511 J	254	--	5 U	10 U	5 U	10 U	--	34.2	Table 21 in EPA, 2018
M17	Mineral	EU-06	Low	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	1 UJ	266	--	5 U	10 U	5 U	10 U	--	36.9	Table 21 in EPA, 2018
M12	Mineral	EU-3.5	Mid	June 2017	Runoff	5 U	10 U	--	1.27	10 U	16.1	3.76 J	463	--	5 U	10 U	5 U	10 U	--	268	Table 21 in EPA, 2018
M13A	Mineral	EU-03	Mid	June 2017	Runoff	5 U	10 U	--	0.552 J	10 U	13.9	19.1 J	104	--	5 U	10 U	5 U	10 U	--	126	Table 21 in EPA, 2018
M13B	Mineral	EU-03	Mid	June 2017	Runoff	5 U	3.4 J	--	1 U	10 U	13.1	16.7 J	107	--	5 U	10 U	5 U	10 U	--	133	Table 21 in EPA, 2018
M13D	Mineral	EU-03	Mid	June 2017	Runoff	5 U	10 U	--	0.536 J	10 U	12.4	13.6 J	163	--	5 U	10 U	5 U	10 U	--	156	Table 21 in EPA, 2018
M14A	Mineral	EU-03	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	11.2	13.7 J	141	--	5 U	10 U	5 U	10 U	--	142	Table 21 in EPA, 2018
M14B	Mineral	EU-03	Mid	June 2017	Runoff	5 U	2.68 J	--	1 U	10 U	15.5	15.1 J	144	--	5 U	10 U	5 U	10 U	--	132	Table 21 in EPA, 2018
M17A	Mineral	EU-06	Low	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	1.54 J	234	--	5 U	10 U	5 U	10 U	--	32.4	Table 21 in EPA, 2018
M18	Mineral	EU-06	Low	June 2017	Runoff	5 U	10 U	--	0.801 J	10 U	6.48 J+	1 UJ	264	--	5 U	10 U	5 U	10 U	--	46.1	Table 21 in EPA, 2018
M19	Mineral	EU-06	Low	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	0.901 J	238	--	5 U	10 U	5 U	10 U	--	36.4	Table 21 in EPA, 2018
M20	Mineral	EU-06	Low	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	1.27 J	219	--	5 U	10 U	5 U	10 U	--	33.6	Table 21 in EPA, 2018
M22	Mineral	EU-06	Low	June 2017	Runoff	5 U	10 U	--	1 U	10 U	3.04 J+	1.27 J	224	--	5 U	10 U	5 U	10 U	--	59.4	Table 21 in EPA, 2018
M26B	Mineral	EU-05	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	1.01 J	55.3	--	5 U	10 U	5 U	10 U	--	17.3 J	Table 21 in EPA, 2018
M26D	Mineral	EU-05	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	1.33 J	48.4	--	5 U	10 U	5 U	10 U	--	18.7 J	Table 21 in EPA, 2018
M27	Mineral	EU-02	Low	June 2017	Runoff	5 U	10 U	--	1 U	10 U	8.67 J+	10.2 J	176	--	5 U	10 U	5 U	10 UJ	--	107	Table 21 in EPA, 2018
M27A	Mineral	EU-02	Low	June 2017	Runoff	5 U	10 U	--	1 U	10 U	13.3 J+	13.1 J	175	--	5 U	10 U	5 U	10 U	--	114	Table 21 in EPA, 2018
M27A2	Mineral	EU-02	Low	June 2017	Runoff	5 U	10 U	--	1 U	10 U	11.1 J+	14.9 J	178	--	5 U	10 U	5 U	10 U	--	113	Table 21 in EPA, 2018
M28	Mineral	EU-05	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5 U	1.21 J	51.8	--	5 U	10 U	5 U	10 U	--	19.2 J	Table 21 in EPA, 2018
M29	Mineral	EU-01	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5.13 J+	7.41 J	110	--	5 U	10 U	5 U	10 U	--	61.2	Table 21 in EPA, 2018
M29A	Mineral	EU-01	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5.31	7.55	109	--	5 U	10 U	5 U	10 U	--	58.9	Table 21 in EPA, 2018
M29B	Mineral	EU-01	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	39.3 J+	0.756 J	7.68	--	5 U	10 U	5 U	13.5	--	20.8	Table 21 in EPA, 2018
M32	Mineral	EU-01	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	4.82 J	6.94 J	107	--	5 U	10 U	5 U	10 U	--	53.4	Table 21 in EPA, 2018
M32B	Mineral	EU-01	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	6.69	24.7 J	17.9	--	5 U	10 U	5 U	10 U	--	82.8	Table 21 in EPA, 2018
M33	Mineral	EU-01	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	5.74	6.93 J	103	--	5 U	10 U	5 U	10 U	--	55	Table 21 in EPA, 2018
M34	Mineral	EU-01	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	7.77	6.59 J	123	--	5 U	10 U	5 U	10 U	--	58.4	Table 21 in EPA, 2018
M38	Mineral	EU-01	Mid	June 2017	Runoff	5 U	10 U	--	1 U	10 U	7.62	7.98 J	124	--	5 U	10 U	5 U	10 U	--	62.6	Table 21 in EPA, 2018
A05	Animas	NF Animas	Ref.	July 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	6.34	--	5 U	10 U	5 U	10 U	--	62.2	Table 28 in EPA, 2018
A07	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	8.87	10 U	44.6	11.3 J	2160 J	--	5	10 U	5 U	7.01 J	--	1190	Table 28 in EPA, 2018
A07A	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	10.5	10 U	52.6	7.48 J	2530 J	--	5.41	10 U	5 U	7.95 J	--	1340	Table 28 in EPA, 2018
A07B	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	8.73	10 U	34.5	10.7 J	2070 J	--	4.71 J	10 U	5 U	10 U	--	1380	Table 28 in EPA, 2018
A08	Animas	EU-18	Mid	July 2017	Post-runoff	5 U	10 U	--	4.24	10 U	19.9	5.04 J	959 J	--	5 U	10 U	5 U	10 U	--	553	Table 28 in EPA, 2018
A15	Animas	EU-17	Low	July 2017	Post-runoff	5 U	10 U	--	5.34	10 U	22.9	8.24 J	8720 J	--	4.27 J	10 U	5 U	10 U	--	1440	Table 28 in EPA, 2018
A18	Animas	EU-17	Low	July 2017	Post-runoff	5 U	3.01 J	--	1.88	10 U	36.7	36.4 J	443 J	--	5 U	10 U	5 U	10 U	--	346	Table 28 in EPA, 2018
A18A	Animas	EU-17	Low	July 2017	Post-runoff	5 U	3.43 J	--	0.744 J	10 U	21.4	40.2 J	316 J	--	5 U	10 U	5 U	10 U	--	152	Table 28 in EPA, 2018
A18B	Animas	EU-17	Low	July 2017	Post-runoff	5 U	10 U	--	1.12	10 U	50.6	20.9 J	1120 J	--	5 U	10 U	5 U	10 U	--	245	Table 28 in EPA, 2018
A36	Animas	EU-11	Low	July 2017	Post-runoff	5 U	10 U	--	1 U	10 U	2.96 J	1 UJ	40.3 J	--	5 U	10 U	5 U	10 U	--	30.5	Table 28 in EPA, 2018
A37	Animas	EU-12	High	July 2017	Post-runoff	5 U	10 U	--	0.751 J	10 U	8.03	1.38 J	117 J	--	5 U	10 U	5 U	10 U	--	247	Table 28 in EPA, 2018
A39	Animas	EU-12	High	July 2017	Post-runoff	5 U	10 U	--	1.31	10 U	12.9	3.17 J	206 J	--	5 U	10 U	5 U	10 U	--	459	Table 28 in EPA, 2018
A39A	Animas	EU-18	Mid	July 2017	Post-runoff	5 U	10 U	--	1.63	10 U	155	34.9 J	330 J	--	5 U	10 U	5 U	10 U	--	520	Table 28 in EPA, 2018
CG3	Animas	EU-17	Low	July 2017	Post-runoff	5 U	10 U	--	6.48	10 U	28.1 J+	4.21 J	11400 J	--	5.44	10 U	5 U	10 U	--	1770	Table 28 in EPA, 2018
CG4	Animas	EU-17	Low	July 2017	Post-runoff	5 U	10 U	--	5.41	10 U	22.4 J+	1.93 J	10700 J	--	4.97 J	10 U	5 U	10 U	--	1690	Table 28 in EPA, 2018
CG6	Animas	EU-17	Low	July 2017	Post-runoff	5 U	10 U	--	5.24	10 U	20.5 J+	2.86 J	9390 J	--	4.34 J	10 U	5 U	10 U	--	1560	Table 28 in EPA, 2018
EG6	Animas	EU-12	High	July 2017	Post-runoff	5 U	10 U	--	0.808 J	10 U	8.99	1.51 J	174 J	--	5 U	10 U	5 U	10 U	--	327	Table 28 in EPA, 2018
EG9	Animas	EU-13	High	July 2017	Post-runoff	5 U	10 U	--	1 U	10 U	4.73 J	1.59 J	69.5 J	--	5 U	10 U	5 U	10 U	--	126	Table 28 in EPA, 2018
A07B1	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	0.899 J	10 U	5 U	1 UJ	22 J	--	5 U	10 U	5 U	10 U	--	115	Table 28 in EPA, 2018
A07B2	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	21.3	10 U	172	0.675 J	4870 J	--	12.8	10 U	5 U	10 U	--	1800	Table 28 in EPA, 2018
A07B3	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	16.2	10 U	72.3	1 UJ	4740 J	--	10.3	10 U	5 U	10 U	--	1470	Table 28 in EPA, 2018
A07C1	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	6.56	10 U	35	12.1 J	1950 J	--	3.9 J	10 U	5 U	10 U	--	992	Table 28 in EPA, 2018
A07D	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	4.32	10 U	33.9	14.1 J	1690 J	--	3.16 J	10 U	5 U	10 U	--	634	Table 28 in EPA, 2018
A07E	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	4.31	10 U	32.8	12.1 J	1650 J	--	2.84 J	10 U	5 U	10 U	--	613	Table 28 in EPA, 2018
A07E1	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	35.2	10 U	54	0.933 J	6410 J	--	15.9	10 U	5 U	10 U	--	5810	Table 28 in EPA, 2018
A07F	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	3.92	10 U	30.4	11.8 J	1520 J	--	5 U	10 U	5 U	10 U	--	540	Table 28 in EPA, 2018
A07G	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	2.65	10 U	15.2	14.9 J	1080 J	--	5 U	10 U	5 U	10 U	--	336	Table 28 in EPA, 2018
A20	Animas	EU-16	High	July 2017	Post-runoff	5 U	10 U	--	2.96	10 U	32.6	13.5	2240	--	3.18 J	10 U	5 U	10 U	--	961	Table 28 in EPA, 2018
A21	Animas	EU-16	High	July 2017	Post-runoff	5 U	10 U	--	3.06	10 U	43.1	24.4 J	2710 J	--	4.07 J	10 U	5 U	6.82 J	--	1060	Table 28 in EPA, 2018
A22	Animas	EU-16	High	July 2017	Post-runoff	5 U	10 U	--	2.93	10 U	43.4	37 J	2730 J	--	3.81 J	10 U	5 U	7.77 J	--	1020	Table 28 in EPA, 2018
A23	Animas	EU-16	High	July 2017	Post-runoff	5 U	10 U	--	1.63	10 U	12	19.4 J	1530 J	--	5 U	10 U	5 U	10 U	--	600	Table 28 in EPA, 2018
A36A	Animas	EU-11	Low	July 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 UJ	2.9 J	--	5 U	10 U	5 U	10 U	--	19.2 J	Table 28 in EPA, 2018
A55 OPP	Animas	EU-07	High	July 2017	Post-runoff	5 U	2.71 J	--	0.848 J	10 U	11.9	13 J	504 J	--	5 U	10 U	5 U	10 U	--	266	Table 28 in EPA, 2018
BG1A	Animas	EU-19	High	July 2017	Post-runoff	5 U	10 U	--	2.76	10 U	18.3	19.4 J	1270 J	--	5 U	10 U	5 U	10 U	--	368	Table 28 in EPA, 2018
EG1	Animas	EU-12	High	July 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	0.76 J	5 U	--	5 U	10 U	5 U	10 U	--	20 U	Table 28 in EPA, 2018
EG2	Animas	EU-12	High	July 2017	Post-runoff	5 U	10 U	--	0.852 J	10 U	5.62	1 UJ	37.2 J	--	5 U	10 U	5 U	6.72 J	--	454	Table 28 in EPA, 2018
EG2A	Animas	EU-12	High	July 2017	Post-runoff	5 U	10 U	--	5.54	10 U	32.8	9.99 J	1010 J	--	5 U	10 U	5 U	10 U	--	2190	Table 28 in EPA, 2018
EG3	Animas	EU-12	High	July 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 UJ	8.34 J	--	5 U	10 U	5 U	10 U	--	81.9	Table 28 in EPA, 2018
EG3A	Animas	EU-12	High	July 2017	Post-runoff	5 U	10 U	--	1.24	10 U	7.65	0.718 J	201 J	--	5 U	10 U	5 U	10 U	--	476	Table 28 in EPA, 2018
EG4	Animas	EU-12	High	July 2017	Post-runoff	5 U	10 U	--	5.57	10 U	26.5	5.82 J	905 J	--	5 U	10 U	5 U	10 U	--	2050	Table 28 in EPA, 2018
A07D1	Animas	EU-19	High	March 2017	Pre-runoff	5 U	10 U	--	14	10 U	124	17.5 J	5140 J	--	12.6	10 U	5 U	10 U	--	1830	Table 28 in EPA, 2018
CC01F	Cement	EU-24	High	July 2017	Post-runoff	5 U	10 U	--	1.25	10 U	28.3 J+	7.14 J	70.8 J	--	5 U	10 U	5 U	6.07 J	--	256	Table 29 in EPA, 2018
CC01S	Cement	EU-24	High	July 2017	Post-runoff	5 U	10 U	--	4.39	10 U	69.9	19.5 J	2840 J	--	2.75 J	10 U	5 U	6.44 J	--	790	Table 29 in EPA, 2018
CC01T	Cement	EU-24	High	July 2017	Post-runoff	5 U	7.74 J	--	4.1	10 U	70.3	67.6 J	2700 J	--	3.19 J	10 U	5 U	10 U	--	751	Table 29 in EPA, 2018
CC02C	Cement	EU-24	High	July 2017	Post-runoff	5 U	10 U	--	3.7	10 U	49.6	4.84 J	1510 J	--	5 U	10 U	5 U	10 U	--	681	Table 29 in EPA, 2018
CC15	Cement	EU-23	Low	July 2017	Post-runoff	5 U	10 U	--	1 U	10 U	8.6 J+	8.95 J	51.3 J	--	5 U	10 U	5 U	10 U	--	64.6	Table 29 in EPA, 2018
CC48	Cement	EU-20	Mid	July 2017	Post-runoff	5 U	4.26 J	--	2.33	10 U	46.6	56 J	1720 J	--	2.61 J	10 U	5 U	10 U	--	730	Table 29 in EPA, 2018
CC15A	Cement	EU-23	Low	March 2017	Pre-runoff	5 U	10 U	--	0.926 J	10 U	7.56 J+	2.33 J	632 J	--	5 U	10 U	5 U	10 U	--	277	Table 29 in EPA, 2018
M01	Mineral	EU-04	High	July 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	2.5 UJ	7.92 J	--	5 U	10 U	5 U	10 U	--	11 U	Table 29 in EPA, 2018
M02	Mineral	EU-04	High	July 2017	Post-runoff	5 U	118	--	31.4	10 U	1460	64.4 J	10800 J	--	46.2	10 U	5 U	10 U	--	12200	Table 29 in EPA, 2018
M03	Mineral	EU-04	High	July 2017	Post-runoff	5 U	5.69 J	--	1.09	10 U	103	8.49 J+	74.2 J	--	5 U	10 U	5 U	10 U	--	222	Table 29 in EPA, 2018
M04	Mineral	EU-04	High	July 2017	Post-runoff	5 U	10 U	--	0.7 J	10 U	32.4	1.55 U	271 J	--	5 U	10 U	5 U	10 U	--	292	Table 29 in EPA, 2018
M05	Mineral	EU-04	High	July 2017	Post-runoff	5 U	10 U	--	0.799 J	10 U	35.4	1.79 U	264 J	--	5 U	10 U	5 U	10 U	--	289	Table 29 in EPA, 2018
M10	Mineral	Mill Cr.	Ref.	July 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1.1 U	30.3 J	--	5 U	10 U	5 U	10 U	--	19.2 J	Table 29 in EPA, 2018
M10B	Mineral	EU-04	High	July 2017	Post-runoff	5 U	10 U	--	1 U	10 U	7.63 J+	1.69 U	312 J	--	5 U	10 U	5 U	7.96 J	--	103	Table 29 in EPA, 2018

DRC = dose-response category; -- = no data

Table A-1 Surface Water Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in µg/L. See Appendix A title page for data qualifier definitions. Continued

Location ID	Subwatershed	Exposure Unit	DRC	Sample Date	Hydroperiod	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Source
M23	Mineral	EU-05	Mid	July 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	2.84 J+	131 J	--	2.91 J	10 U	5 U	10 U	--	21.3	Table 30 in EPA, 2018
M24D	Mineral	EU-05	Mid	July 2017	Post-runoff	5 U	10 U	--	36.3	10 U	89	30.2 J	1910 J	--	6.12	10 U	5 U	10 U	--	8210	Table 30 in EPA, 2018
M25	Mineral	EU-05	Mid	July 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	4.02 J+	90 J	--	2.8 J	10 U	5 U	10 U	--	34.5	Table 30 in EPA, 2018
M29	Mineral	EU-01	Mid	July 2017	Post-runoff	5 U	13.4	--	1 U	10 U	25.3	86.2 J	358 J	--	5 U	10 U	5 U	10 U	--	131	Table 30 in EPA, 2018
M06D	Mineral	EU-04	High	March 2017	Pre-runoff	5 U	10 U	--	0.5 J	10 U	12.1	28 J	98 J	--	5 U	10 U	5 U	10 U	--	162	Table 30 in EPA, 2018
A05	Animas	NF Animas	Ref.	Sept 2017	Post-runoff	5 U	10 U	--	0.697 J	10 U	5 U	1 U	8.45	--	5 U	10 U	5 U	10 U	--	125	Table 37 in EPA, 2018
A07	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	17.6	10 U	62.3	6.23	5290	--	10.6	10 U	5 U	7.24 J	--	2950	Table 37 in EPA, 2018
A07A	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	22.1	10 U	70.8	5.22	6700	--	14.6	10 U	5 U	10 U	--	3660	Table 37 in EPA, 2018
A07B	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	21.6	10 U	42.8	6.67	5700	--	11.5	10 U	5 U	10 U	--	3820	Table 37 in EPA, 2018
A07B1	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	28.4	10 U	161	1 U	11300	--	20.4	10 U	5 U	10 U	--	2980	Table 37 in EPA, 2018
A07B2	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	26.1	10 U	136	0.669 J	10200	--	19.4	10 U	5 U	10 U	--	2870	Table 37 in EPA, 2018
A07B3	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	21.6	10 U	84.6	0.796 J	6560	--	15.6	10 U	5 U	10 U	--	2280	Table 37 in EPA, 2018
A07C1	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	26.1	10 U	83.2	17.2	6030	--	15.5	10 U	5 U	10 U	--	4290	Table 37 in EPA, 2018
A07D	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	23.1	10 U	107	11	6660	--	15.7	10 U	5 U	10 U	--	3650	Table 37 in EPA, 2018
A07D1	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	19.6	10 U	111	27.6	8500	--	15	10 U	5 U	10 U	--	3460	Table 37 in EPA, 2018
A07E	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	19.3	10 U	120	28.9	8660	--	16.7	10 U	5 U	10 U	--	3370	Table 37 in EPA, 2018
A07E1	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	20.2	10 U	92.4	36.1	8840	--	16.3	10 U	5 U	10 U	--	3850	Table 37 in EPA, 2018
A07F	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	16.4	10 U	116	26.9	8210	--	15.2	10 U	5 U	10 U	--	2660	Table 37 in EPA, 2018
A07G	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	1.38	10 U	7.42	3.88	222	--	5 U	10 U	5 U	10 U	--	299	Table 37 in EPA, 2018
A08	Animas	EU-18	Mid	Sept 2017	Post-runoff	5 U	10 U	--	7.09	10 U	24.4	2.54	2150	--	3.63 J	10 U	5 U	10 U	--	1270	Table 37 in EPA, 2018
A09	Animas	EU-18	Mid	Sept 2017	Post-runoff	5 U	10 U	--	6.51	10 U	18.4	11.2	1480	--	2.81 J	10 U	5 U	10 U	--	1180	Table 37 in EPA, 2018
A10	Animas	EU-15	High	Sept 2017	Post-runoff	5 U	10 U	--	9.16	10 U	37	13.8	16200	--	8.55	10 U	5 U	10 U	--	3260	Table 37 in EPA, 2018
A11	Animas	EU-15	High	Sept 2017	Post-runoff	5 U	10 U	--	8.94	10 U	34	15	16500	--	8.05	10 U	5 U	10 U	--	3240	Table 37 in EPA, 2018
A14	Animas	EU-14	High	Sept 2017	Post-runoff	5 U	10 U	--	10.5	10 U	41.2	10.2	11900	--	4.61 J-	10 U	5 U	7.61 J	--	3190	Table 37 in EPA, 2018
A35	Animas	EU-10	High	Sept 2017	Post-runoff	5 U	10 U	--	2.14	10 U	27.3	1.71	1410	--	5 UJ	10 U	5 U	10 U	--	633	Table 37 in EPA, 2018
A36	Animas	EU-11	Low	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	12.4	1 U	231	--	5 UJ	10 U	5 U	9.04 U	--	86.7	Table 37 in EPA, 2018
A36A	Animas	EU-11	Low	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	3.96 J	--	5 UJ	10 U	5 U	10 J+	--	15.6 J	Table 37 in EPA, 2018
A37	Animas	EU-12	High	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	2.5 J	1 U	20.2	--	5 UJ	10 U	5 U	10 U	--	168	Table 37 in EPA, 2018
A56	Animas	EU-07	High	Sept 2017	Post-runoff	5 U	10 U	--	0.546 J	10 U	3.7 J	1.39	361	--	5 UJ	10 U	5 U	10 U	--	235	Table 37 in EPA, 2018
BG1A	Animas	EU-19	High	Sept 2017	Post-runoff	5 U	10 U	--	1.64	10 U	4.02 J	4.27	53.4	--	5 U	10 U	5 U	10 U	--	297	Table 37 in EPA, 2018
CG11	Animas	EU-14	High	Sept 2017	Post-runoff	5 U	10 U	--	8.38	10 U	30.9	12.1	16000	--	7.4	10 U	5 U	10 U	--	2910	Table 37 in EPA, 2018
CG9	Animas	EU-15	High	Sept 2017	Post-runoff	5 U	10 U	--	7.99	10 U	29.6 J	10.4	16900	--	8.14 J-	10 U	5 U	10 U	--	2910	Table 37 in EPA, 2018
EG9	Animas	EU-13	High	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	7.96	1 U	153	--	5 U	10 U	5 U	10 U	--	137	Table 37 in EPA, 2018
A13	Animas	EU-15	High	Sept 2017	Post-runoff	5 U	10 U	--	9.63	10 U	27.8	6.97	18200	--	8.2 J-	10 U	5 U	10 U	--	2970	Table 37 in EPA, 2018
A15	Animas	EU-17	Low	Sept 2017	Post-runoff	5 U	10 U	--	13.3	10 U	34.4	1.32	28300	--	12.6 J-	10 U	5 U	8 J	--	3970	Table 37 in EPA, 2018
A18A	Animas	EU-17	Low	Sept 2017	Post-runoff	5 U	10 U	--	4.05	10 U	7.55	1 U	42200	--	11.8 J-	10 U	5 U	10 U	--	2020	Table 37 in EPA, 2018
A18B	Animas	EU-17	Low	Sept 2017	Post-runoff	5 U	10 U	--	19	10 U	61.1	0.517 J	54400	--	22.9 J-	10 U	5 U	10 U	--	4900	Table 37 in EPA, 2018
A20	Animas	EU-16	High	Sept 2017	Post-runoff	5 U	10 U	--	3.09	10 U	20.3	20.9	904	--	5 UJ	10 U	5 U	10 U	--	1420	Table 37 in EPA, 2018
A21	Animas	EU-16	High	Sept 2017	Post-runoff	5 U	10 U	--	4.06	10 U	21	32.5	1530	--	5 UJ	10 U	5 U	10 U	--	1680	Table 37 in EPA, 2018
A22	Animas	EU-16	High	Sept 2017	Post-runoff	5 U	10 U	--	2.27	10 U	8.36	7.52	489	--	5 UJ	10 U	5 U	10 U	--	1260	Table 37 in EPA, 2018
A23	Animas	EU-16	High	Sept 2017	Post-runoff	5 U	10 U	--	2.52	10 U	8.6	1.88	1260	--	5 UJ	10 U	5 U	10 U	--	1080	Table 37 in EPA, 2018
A28	Animas	EU-14	High	Sept 2017	Post-runoff	5 U	10 U	--	3.81	10 U	12.6	3.53	3580	--	5 UJ	10 U	5 U	10 U	--	1100	Table 37 in EPA, 2018
A30	Animas	EU-14	High	Sept 2017	Post-runoff	5 U	10 U	--	4.16	10 U	70	4.98	3480	--	5 UJ	10 U	5 U	10 U	--	1110	Table 37 in EPA, 2018
A30A	Animas	EU-14	High	Sept 2017	Post-runoff	5 U	10 U	--	3.88	10 U	58.5	2.86	3220	--	5 UJ	10 U	5 U	10 U	--	1090	Table 37 in EPA, 2018
A30B	Animas	EU-14	High	Sept 2017	Post-runoff	5 U	10 U	--	3.31	10 U	47.8	2.5	2770	--	5 UJ	10 U	5 U	10 U	--	960	Table 37 in EPA, 2018
A39	Animas	EU-12	High	Sept 2017	Post-runoff	5 U	10 U	--	1.88	10 U	38.4	16.4	555	--	5 UJ	10 U	5 U	10 U	--	703	Table 37 in EPA, 2018
A39A	Animas	EU-18	Mid	Sept 2017	Post-runoff	5 U	10 U	--	2.49	10 U	60	26	688	--	5 UJ	10 U	5 U	10 U	--	833	Table 37 in EPA, 2018
A55a	Animas	EU-07	High	Sept 2017	Post-runoff	5 U	10 U	--	0.689 J	10 U	3.45 J	1.26	467	--	5 UJ	10 U	5 U	10 U	--	279	Table 37 in EPA, 2018
CG3	Animas	EU-17	Low	Sept 2017	Post-runoff	5 U	10 U	--	20.6	10 U	54.5	0.548 J	42900	--	23.2	10 U	5 U	10 U	--	6190	Table 37 in EPA, 2018
CG4	Animas	EU-17	Low	Sept 2017	Post-runoff	5 U	10 U	--	13.9	10 U	38	1 U	34000	--	16.9	10 U	5 U	10 U	--	4830	Table 37 in EPA, 2018
CG6	Animas	EU-17	Low	Sept 2017	Post-runoff	5 U	10 U	--	15.9	10 U	43.1 J-	0.506 J	34000	--	19.2 J-	10 U	5 U	10 U	--	4800	Table 37 in EPA, 2018
CU4	Animas	EU-08	Mid	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 UJ	1 U	7.02	--	5 UJ	10 U	5 U	10 U	--	20 U	Table 37 in EPA, 2018
CU4a	Animas	EU-08	Mid	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 UJ	2.76	7.75	--	5 UJ	10 U	5 U	10 U	--	52.8	Table 37 in EPA, 2018
EG1	Animas	EU-12	High	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	9.27	--	5 U	10 U	5 U	10 U	--	20 U	Table 37 in EPA, 2018
EG2	Animas	EU-12	High	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	2.55 J	1 U	27.2	--	5 U	10 U	5 U	9.16 J	--	352	Table 37 in EPA, 2018
EG2A	Animas	EU-12	High	Sept 2017	Post-runoff	5 U	10 U	--	3.74	10 U	24.5	1.05	446	--	2.82 J	10 U	5 U	9.4 J	--	2410	Table 37 in EPA, 2018
EG3	Animas	EU-12	High	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	5.09	--	5 U	10 U	5 U	10 U	--	67.5	Table 37 in EPA, 2018
EG3A	Animas	EU-12	High	Sept 2017	Post-runoff	5 U	10 U	--	0.503 J	10 U	3.35 J	1.6	28.6	--	5 U	10 U	5 U	10 U	--	313	Table 37 in EPA, 2018
EG4	Animas	EU-12	High	Sept 2017	Post-runoff	5 U	10 U	--	2.39	10 U	7.05	1 U	241	--	5 U	10 U	5 U	10 U	--	1500	Table 37 in EPA, 2018
EG6	Animas	EU-12	High	Sept 2017	Post-runoff	5 U	10 U	--	0.899 J	10 U	6.77	1.49	154	--	5 U	10 U	5 U	10 U	--	406	Table 37 in EPA, 2018
A33	Animas	EU-14	High	Sept 2017	Post-runoff	5 U	10 U	--	3.28	10 U	37.8	2.44	2420	--	5 UJ	10 U	5 U	10 U	--	891	Table 37 in EPA, 2018
A34	Animas	EU-13	High	Sept 2017	Post-runoff	5 U	10 U	--	0.727 J	10 U	11.9	1 U	165	--	5 UJ	10 U	5 U	10 U	--	273	Table 37 in EPA, 2018
A40	Animas	EU-10	High	Sept 2017	Post-runoff	5 U	10 U	--	1.92	10 U	20.9	1.26	1490	--	5 UJ	10 U	5 U	10 U	--	627	Table 37 in EPA, 2018
A40A	Animas	EU-10	High	Sept 2017	Post-runoff	5 U	10 U	--	2.29	10 U	23.8	1.56	1660	--	5 UJ	10 U	5 U	10 U	--	703	Table 37 in EPA, 2018
A41A	Animas	EU-09	High	Sept 2017	Post-runoff	5 U	10 U	--	1.91	10 U	18	1.1	1290	--	5 UJ	10 U	5 U	10 U	--	556	Table 37 in EPA, 2018
A45	Animas	EU-09	High	Sept 2017	Post-runoff	5 U	10 U	--	0.667 J	10 U	5.13	1.1	358	--	5 UJ	10 U	5 U	10 U	--	297	Table 37 in EPA, 2018
A47	Animas	EU-07	High	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	2.12 J	--	5 UJ	10 U	5 U	10 U	--	20.7	Table 37 in EPA, 2018
A48	Animas	EU-08	Mid	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	0.725 J	5.29	--	5 UJ	10 U	5 U	10 U	--	32.6	Table 37 in EPA, 2018
A53AC	Animas	EU-09	High	Sept 2017	Post-runoff	5 U	10 U	--	1.15	10 U	6.47	2.28	873	--	5 UJ	10 U	5 U	10 U	--	489	Table 37 in EPA, 2018
LA3	Animas	EU-09	High	Sept 2017	Post-runoff	5 U	10 U	--	1.06	10 U	9.52	0.601 J	703	--	5 U	10 U	5 U	10 U	--	402	Table 37 in EPA, 2018
CC21	Cement	EU-22	High	Sept 2017	Post-runoff	5 U	10 U	--	7.9	10 U	109	26.1	9540	--	3.9 J	10 U	5 U	10 U	--	3080	Table 38 in EPA, 2018
CC26	Cement	EU-21	Mid	Sept 2017	Post-runoff	5 U	31	--	4.19	10 U	60	17.8	812	--	21.9	10 U	5 U	10 U	--	1150	Table 38 in EPA, 2018
CC27	Cement	EU-20	Mid	Sept 2017	Post-runoff	5 U	10 U	--	5.12	10 U	72	18.8	6520	--	5.81	10 U	5 U	10 U	--	2260	Table 38 in EPA, 2018
CC28C	Cement	EU-20	Mid	Sept 2017	Post-runoff	5 U	8.7 J	--	4.25	10 U	56.9	15.9	5730	--	9.46	10 U	5 U	10 U	--	2140	Table 38 in EPA, 2018
CC28D	Cement	EU-20	Mid	Sept 2017	Post-runoff	5 U	8.06 J	--	4.62	10 U	59.7	16.7	5990	--	10.3	10 U	5 U	10 U	--	2120	Table 38 in EPA, 2018
CC28E	Cement	EU-20	Mid	Sept 2017	Post-runoff	5 U	9.42 J	--	4.82	10 U	61.4	16.7	5880	--	8.85	10 U	5 U	10 U	--	2170	Table 38 in EPA, 2018
CC39	Cement	EU-20	Mid	Sept 2017	Post-runoff	5 U	5.9 J	--	3.89	10 U	42.4	13	5440	--	10.7	10 U	5 U	10 U	--	1860	Table 38 in EPA, 2018
CC39B	Cement	EU-20	Mid	Sept 2017	Post-runoff	5 U	7.1 J	--	4.05	10 U	52.2	14.8	4960	--	8.16	10 U	5 U	8.76 J+	--	1940	Table 38 in EPA, 2018
CC39C	Cement	EU-20	Mid	Sept 2017	Post-runoff	10 U	12.7 J	--	8.69	20 U	112	32.1	5780	--	18.2	20 U	10 U	18.9 J+	--	1930	Table 38 in EPA, 2018
CC39D	Cement	EU-20	Mid	Sept 2017	Post-runoff	5 U	5.86 J	--	3.94	10 U	41.5	13.9	5220	--	8.21	10 U	5 U	10 U	--	1850	Table 38 in EPA, 2018
CC41	Cement	EU-20	Mid	Sept 2017	Post-runoff	5 U	4.48 J	--	3.93	10 U	39.4	13.3	5210	--	7.86	10 U	5 U	10 U	--	1800	Table 38 in EPA, 2018
CC43E	Cement	EU-20	Mid	Sept 2017	Post-runoff	5 U	3.17 J	--	3.43	10 U	40.5	11.7	4620	--	6.79	10 U	5 U	10 U	--	1630	Table 38 in EPA, 2018
CC48	Cement	EU-20	Mid	Sept 2017	Post-runoff	5 U	4.4 J	--	3.13	10 U	36.4	11.4	4180	--	6.45	10 U	5 U	10 U	--	1460	Table 38 in EPA, 2018
CC01F	Cement	EU-24	High	Sept 2017	Post-runoff	5 U	10 U	--	1.23	10 U	15.8 J+	0.822 J	42.7	--	5 U	10 U	5 U	10 U	--	215	Table 38 in EPA, 2018
CC01S	Cement	EU-24	High	Sept 2017	Post-runoff	5 U	10 U	--	15.2	10 U	49.2	3.16	1660	--	10.5	10 U	5 U	10 U	--	2810	Table 38 in EPA, 2018
CC01T	Cement	EU-24	High	Sept 2017	Post-runoff	5 U	10 U	--	9.74	10 U	64.2	3.16	762	--	3.97 J	10 U	5 U	10 U	--	1960	Table 38 in EPA, 2018
CC02C	Cement	EU-24	High	Sept 2017	Post-runoff	5 U	10 U	--	8.07	10 U	69.2	5.77	586	--	3.81 J	10 U	5 U	10 U	--	1880	Table 38 in EPA, 2018
CC03	Cement	EU-22	High	Sept 2017	Post-runoff	5 U	10 U	--	12.2	10 U	83.3	25.7	12900	--	14.7	10 U	5 U	10 U	--	7200	Table 38 in EPA, 2018
CC03B	Cement	EU-22	High	Sept 2017	Post-runoff	5 U	10 U	--	11.6	10 U	119	9.26	2690	--	3.05 J	10 U	5 U	8.03 J	--	4020	Table 38 in EPA, 2018
CC17	Cement	EU-23	Low	Sept 2017	Post-runoff	5 U	10 U	--	2.2	10 U	23.2 J+	6.12	2190	--	5 U	10 U	5 U	10 U	--	603	Table 38 in EPA, 2018
CC20H	Cement	EU-22	High	Sept 2017	Post-runoff	5 U	10 U	--	11.7	10 U	104	28.6	12800	--	14.3	10 U	5 U	10 U	--	6660	Table 38 in EPA, 2018
CC15	Cement	EU-23	Low	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	6.2 J+	1 U	63.7	--	5 U	10 U	5 U	10 U	--	47.1	Table 38 in EPA, 2018
CC15A	Cement	EU-23	Low	Sept 2017	Post-runoff	5 U	10 U	--	1.61	10 U	10.5 J+	2.92	1660	--	5 U	10 U	5 U	10 U	--	471	Table 38 in EPA, 2018
CC18	Cement	EU-23	Low	Sept 2017	Post-runoff	5 U	10 U	--	11.3	10 U	99.9	23.9	13100	--	15.8	10 U	5 U	10 U	--	6810	Table 38 in EPA, 2018
M01	Mineral	EU-04	High	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	5 U	--	5 U	10 U	5 U	10 U	--	20 U	Table 39 in EPA, 2018
M06C	Mineral	EU-04	High	Sept 2017	Post-runoff	5 UJ	8.23 J	--	10.3	10 U	162 J-	738	2070	--	10.4	10 U	5 U	10 U	--	4260	Table 39 in EPA, 2018
M06D	Mineral	EU-04	High	Sept 2017	Post-runoff	5 UJ	10 U	--	3.83	10 U	50.4 J-	262	707	--	3.35 J	10 U	5 U	10 U	--	1610	Table 39 in EPA, 2018
M16E	Mineral	EU-06	Low	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	498	--	5 U	10 U	5 U	10 U	--	82.9	Table 39 in EPA, 2018

DRC = dose-response category; -- = no data

Table A-1 Surface Water Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in µg/L. See Appendix A title page for data qualifier definitions. Continued

Location ID	Subwatershed	Exposure Unit	DRC	Sample Date	Hydroperiod	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Source
M16F	Mineral	EU-06	Low	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	69.6	--	5 U	10 U	5 U	10 U	--	11.2 J	Table 39 in EPA, 2018
M16G	Mineral	EU-06	Low	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	423	--	5 U	10 U	5 U	10 U	--	41.8	Table 39 in EPA, 2018
M16H	Mineral	EU-06	Low	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	1720	--	5 U	10 U	5 U	10 U	--	207	Table 39 in EPA, 2018
M17A	Mineral	EU-06	Low	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	0.715 J	1200	--	5 U	10 U	5 U	10 U	--	142	Table 39 in EPA, 2018
M18	Mineral	EU-06	Low	Sept 2017	Post-runoff	5 U	10 U	--	5.23	10 U	27.2	1 U	1880	--	19.8	10 U	5 U	10 U	--	328	Table 39 in EPA, 2018
M19	Mineral	EU-06	Low	Sept 2017	Post-runoff	5 U	10 U	--	1.68	10 U	7.96	0.628 J	1390	--	3.78 J	10 U	5 U	10 U	--	188	Table 39 in EPA, 2018
M20	Mineral	EU-06	Low	Sept 2017	Post-runoff	5 U	10 U	--	1.43	10 U	6.04	0.539 J	1360	--	5 U	10 U	5 U	10 U	--	182	Table 39 in EPA, 2018
M22	Mineral	EU-06	Low	Sept 2017	Post-runoff	5 U	10 U	--	1.51	10 U	7.21	0.726 J	1330	--	5 U	10 U	5 U	10 U	--	207	Table 39 in EPA, 2018
M32	Mineral	EU-01	Mid	Sept 2017	Post-runoff	5 U	10 U	--	0.582 J	10 U	6.19	2.26	344	--	5 U	10 U	5 U	10 UJ	--	139	Table 39 in EPA, 2018
M32B	Mineral	EU-01	Mid	Sept 2017	Post-runoff	5 U	10 U	--	0.512 J	10 U	3.94 J	1.21	175	--	5 U	10 U	5 U	10 UJ	--	134	Table 39 in EPA, 2018
M33	Mineral	EU-01	Mid	Sept 2017	Post-runoff	5 U	10 U	--	0.526 J	10 U	7.6	2.26	375	--	5 U	10 U	5 U	10 UJ	--	149	Table 39 in EPA, 2018
M34	Mineral	EU-01	Mid	Sept 2017	Post-runoff	5 U	10 U	--	0.6 J	10 U	8.12	2.34	378	--	5 U	10 U	5 U	10 UJ	--	153	Table 39 in EPA, 2018
M38	Mineral	EU-01	Mid	Sept 2017	Post-runoff	5 U	10 U	--	0.581 J	10 U	8.3	2.63	381	--	5 U	10 U	5 U	10 UJ	--	159	Table 39 in EPA, 2018
M02	Mineral	EU-04	High	Sept 2017	Post-runoff	5 U	62.4	--	39.7 J	10 U	1590	50.2	17400	--	86.2	10 U	5 U	10 U	--	17800	Table 39 in EPA, 2018
M03	Mineral	EU-04	High	Sept 2017	Post-runoff	5 U	5.69 J	--	1.17	10 U	85	2.81	111	--	5 U	10 U	5 U	10 U	--	341	Table 39 in EPA, 2018
M05	Mineral	EU-04	High	Sept 2017	Post-runoff	5 U	9.57 J	--	7.09	10 U	244	9.37	2870	--	13.6	10 U	5 U	10.7	--	3330	Table 39 in EPA, 2018
M13B	Mineral	EU-03	Mid	Sept 2017	Post-runoff	5 UJ	10 U	--	0.945 J	10 U	10.2 J	13.9	202	--	5 U	10 U	5 U	10 U	--	330	Table 39 in EPA, 2018
M13D	Mineral	EU-03	Mid	Sept 2017	Post-runoff	5 UJ	10 U	--	1.06	10 U	8.77 J	11.5	305	--	5 U	10 U	5 U	10 U	--	352	Table 39 in EPA, 2018
M14A	Mineral	EU-03	Mid	Sept 2017	Post-runoff	5 UJ	10 U	--	0.98 J	10 U	8.26 J	8.58	285	--	5 U	10 U	5 U	10 U	--	326	Table 39 in EPA, 2018
M14B	Mineral	EU-03	Mid	Sept 2017	Post-runoff	5 UJ	10 U	--	1.05	10 U	23.3 J	7.44	294	--	5 U	10 U	5 U	10 U	--	298	Table 39 in EPA, 2018
M23	Mineral	EU-05	Mid	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	289	--	7.73	10 U	5 U	10 U	--	47.4	Table 39 in EPA, 2018
M24D	Mineral	EU-05	Mid	Sept 2017	Post-runoff	5 U	10 U	--	0.64 J	10 U	2.8 J	1 U	404	--	5.45	10 U	5 U	10 U	--	80.2	Table 39 in EPA, 2018
M25	Mineral	EU-05	Mid	Sept 2017	Post-runoff	5 U	10 U	--	0.674 J	10 U	5 U	1 U	250	--	6.12	10 U	5 U	8.24 J-	--	131	Table 39 in EPA, 2018
M26B	Mineral	EU-05	Mid	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1.55	128	--	5 U	10 U	5 U	8.53 J-	--	67.6	Table 39 in EPA, 2018
M26D	Mineral	EU-05	Mid	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	38.5	--	5 U	10 U	5 U	10 UJ	--	17 J	Table 39 in EPA, 2018
M27	Mineral	EU-02	Low	Sept 2017	Post-runoff	5 U	10 U	--	1.28	10 U	16.7	6.14	758	--	5 U	10 U	5 U	10 UJ	--	250	Table 39 in EPA, 2018
M28	Mineral	EU-05	Mid	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	51.4	--	5 U	10 U	5 U	10 UJ	--	17 J	Table 39 in EPA, 2018
M07	Mineral	EU-04	High	Sept 2017	Post-runoff	5 UJ	10 U	--	2.72	10 U	44.6 J-	153	524	--	5 U	10 U	5 U	10 U	--	1110	Table 39 in EPA, 2018
M10A	Mineral	EU-04	High	Sept 2017	Post-runoff	5 UJ	10 U	--	2.58	10 U	25.1 J	92.1	352	--	5 U	10 U	5 U	10 U	--	947	Table 39 in EPA, 2018
M10B	Mineral	EU-04	High	Sept 2017	Post-runoff	5 UJ	10 U	--	1 U	10 U	4.31 J	0.779 J	205	--	5 U	10 U	5 U	10 U	--	60.4	Table 39 in EPA, 2018
M11	Mineral	EU-03	Mid	Sept 2017	Post-runoff	5 UJ	10 U	--	1.02	10 U	9.32 J	28.9	131	--	5 U	10 U	5 U	10 U	--	350	Table 39 in EPA, 2018
M12	Mineral	EU-3.5	Mid	Sept 2017	Post-runoff	5 UJ	10 U	--	6.67	10 U	61.9 J-	5.5	2990	--	12.9	10 U	5 U	10 U	--	1570	Table 39 in EPA, 2018
M13A	Mineral	EU-03	Mid	Sept 2017	Post-runoff	5 UJ	10 U	--	0.818 J	10 U	6.34 J	14.1	231	--	5 U	10 U	5 U	10 U	--	305	Table 39 in EPA, 2018
M27A	Mineral	EU-02	Low	Sept 2017	Post-runoff	5 U	10 U	--	1.22	10 U	14.6	5.54	738	--	5 U	10 U	5 U	10 UJ	--	267	Table 39 in EPA, 2018
M27A2	Mineral	EU-02	Low	Sept 2017	Post-runoff	5 U	10 U	--	1.31	10 U	16.1	5.88	747	--	5 U	10 U	5 U	10 UJ	--	283	Table 39 in EPA, 2018
M29	Mineral	EU-01	Mid	Sept 2017	Post-runoff	5 U	10 U	--	0.676 J	10 U	8.54	3.44	369	--	5 U	10 U	5 U	10 UJ	--	169	Table 39 in EPA, 2018
M29A	Mineral	EU-01	Mid	Sept 2017	Post-runoff	5 U	10 U	--	0.705 J	10 U	8.5	3.38	393	--	5 U	10 U	5 U	10 UJ	--	164	Table 39 in EPA, 2018
M30	Mineral	Bear Cr.	Ref.	Sept 2017	Post-runoff	5 U	10 U	--	1 U	10 U	5 U	1 U	6.91	--	5 U	10 U	5 U	10 UJ	--	20 U	Table 39 in EPA, 2018
M04	Mineral	EU-04	High	March 2017	Pre-runoff	5 U	4.48 J	--	8.99	10 U	266	4.09	3610	--	17	10 U	5 U	10 U	--	4060	Table 39 in EPA, 2018
A55	Animas	EU-07	High	April 2017	Pre-runoff	--	10 U	--	1 U	10 U	4.19 J	0.692 J	251	--	5 U	10 U	5 U	10 U	--	258	Table 5 in EPA, 2018
A56	Animas	EU-07	High	April 2017	Pre-runoff	--	10 U	--	0.606 J	10 U	2.97 J	1.06	215	--	5 U	10 U	5 U	7.07 J	--	233	Table 5 in EPA, 2018
CC21	Cement	EU-22	High	April 2017	Pre-runoff	--	10 U	--	8.21	10 U	100	20.7	9840	--	5 U	10 U	5 U	10 U	--	4140	Table 5 in EPA, 2018
CC48	Cement	EU-20	Mid	April 2017	Pre-runoff	--	4.74 J	--	2.99	10 U	45.4	12.9	3560	--	4.15 J	10 U	5 U	10 U	--	1540	Table 5 in EPA, 2018
M14A	Mineral	EU-03	Mid	April 2017	Pre-runoff	--	10 U	--	1.69	10 U	13.7	25.9	317	--	5 U	10 U	5 U	10 U	--	492	Table 5 in EPA, 2018
M27	Mineral	EU-02	Low	April 2017	Pre-runoff	--	10 U	--	1.47	10 U	17.1	11	709	--	5 U	10 U	5 U	10 U	--	339	Table 5 in EPA, 2018
M34	Mineral	EU-01	Mid	April 2017	Pre-runoff	--	10 U	--	0.807 J	10 U	9.17	6	360	--	5 U	10 U	5 U	10 U	--	201	Table 5 in EPA, 2018
A55	Animas	EU-07	High	April 2017	Pre-runoff	--	10 U	--	1.47	10 U	25.6	24.5	551	5 U	5 U	10 U	5 U	10 U	--	534	Table 8 in EPA, 2018
A56	Animas	EU-07	High	April 2017	Pre-runoff	--	10 U	--	1.39	10 U	24.5	20.5	524	5 U	5 U	10 U	5 U	6.09 J	--	491	Table 8 in EPA, 2018
CC21	Cement	EU-22	High	April 2017	Pre-runoff	--	10 U	--	10.6	10 U	209	44	6410	5 U	4.97 J	10 U	5 U	10 U	--	3790	Table 8 in EPA, 2018
CC48	Cement	EU-20	Mid	April 2017	Pre-runoff	--	10 U	--	3.24	10 U	70.1	18	2020	5 U	3.59 J	10 U	5 U	10 U	--	1160	Table 8 in EPA, 2018
M14A	Mineral	EU-03	Mid	April 2017	Pre-runoff	--	10 U	--	1.39	10 U	19	22.1	267	5 U	5 U	10 U	5 U	10 U	--	429	Table 8 in EPA, 2018
M27	Mineral	EU-02	Low	April 2017	Pre-runoff	--	10 U	--	1.15	10 U	18.5	13.6	327	5 U	5 U	10 U	5 U	10 U	--	281	Table 8 in EPA, 2018
M34	Mineral	EU-01	Mid	April 2017	Pre-runoff	--	10 U	--	0.655 J	10 U	11.4	8.01	209	5 U	5 U	10 U	5 U	10 U	--	177	Table 8 in EPA, 2018
A28	Animas	EU-14	High	Sept 2018	Post-runoff	2 U	0.53 J	22.6	6.5	2 U	21.2	6.9	4850	--	5.4	5 U	1 U	1 U	0.08 J	2060	Table 13 in EPA, 2019
A30	Animas	EU-14	High	Sept 2018	Post-runoff	2 U	1.7	22.6	7.3	2 U	186	7.4	5030	--	5.5	5 U	1 U	1 U	0.12 J	2260	Table 13 in EPA, 2019
A30A	Animas	EU-14	High	Sept 2018	Post-runoff	2 U	0.71 J	22.2	7	2 U	119	6.7	4950	--	5.5	5 U	1 U	1 U	0.07 J	2280	Table 13 in EPA, 2019
A30B	Animas	EU-14	High	Sept 2018	Post-runoff	2 U	0.64 J	21.7	7	2 U	101	5.9	4750	--	5.3	5 U	0.07 J	1 U	0.06 J	2240	Table 13 in EPA, 2019
A45	Animas	EU-09	High	Sept 2018	Post-runoff	2 U	1 U	24.8	1 U	2 U	2.1	1 U	130	--	0.37 J	5 U	1 U	1 U	0.07 J	290	Table 13 in EPA, 2019
A48	Animas	EU-08	Mid	Sept 2018	Post-runoff	2 U	1 U	54.7	1 U	2 U	2 U	1 U	3.8	--	0.1 J	5 U	1 U	1 U	0.12 J	22.2	Table 13 in EPA, 2019
A55	Animas	EU-07	High	Sept 2018	Post-runoff	2 U	1 U	29.2	1 U	2 U	2.5	1.1	380	--	0.46 J	5 U	1 U	1 U	0.1 J	308	Table 13 in EPA, 2019
A56	Animas	EU-07	High	Sept 2018	Post-runoff	2 U	1 U	27.6	1 U	2 U	2.5	1.8	320	--	0.47 J	5 U	1 U	1 U	0.09 J	311	Table 13 in EPA, 2019
A05	Animas	NF Animas	Ref.	Sept 2018	Post-runoff	2 U	0.33 J	25.4	0.84 J	2 U	1.6 J	1 U	3.3	--	0.22 J	5 U	1 U	1 U	0.06 J	144	Table 13 in EPA, 2019
A07	Animas	EU-19	High	Sept 2018	Post-runoff	2 U	0.81 J	30.7	21.2	2 U	76	7.8	5990	--	14.5	5 U	1 U	1 U	5 U	3340	Table 13 in EPA, 2019
A08	Animas	EU-18	Mid	Sept 2018	Post-runoff	2 U	0.55 J	27.2	7.8	2 U	25.4	2.3	1850	--	5.1	5 U	1 U	1 U	0.06 J	1250	Table 13 in EPA, 2019
A09	Animas	EU-18	Mid	Sept 2018	Post-runoff	2 U	0.27 J	32.4	7.8	2 U	12.8	12.2	666	--	4.7	5 U	1 U	1 U	0.06 J	1450	Table 13 in EPA, 2019
A10	Animas	EU-15	High	Sept 2018	Post-runoff	2 U	0.94 J	24.4	18.4	2 U	74.1	17.5	23900	--	19.3	5 U	1 U	1 U	5 U	6260	Table 13 in EPA, 2019
A13	Animas	EU-15	High	Sept 2018	Post-runoff	2 U	0.93 J	24.4	16.2	2 U	51.5	14.6	26300	--	20.9	10 U	1 U	1 U	5 U	5410	Table 13 in EPA, 2019
A14	Animas	EU-14	High	Sept 2018	Post-runoff	2 U	0.74 J	27.5	16.2	2 U	60.5	16.4	17700	--	15.8	5 U	1 U	1 U	0.06 J	5170	Table 13 in EPA, 2019
A15	Animas	EU-17	Low	Sept 2018	Post-runoff	2 U	1.4 J	24.1	22.7	2 U	60.9	1 U	45500	--	31.2	0.83 J	1 U	1 U	0.06 J	7060	Table 13 in EPA, 2019
A20	Animas	EU-16	High	Sept 2018	Post-runoff	2 U	0.18 J	24.2	4.9	2 U	42.1	46	1290	--	4.4	5 U	1 U	1 U	0.06 J	2330	Table 13 in EPA, 2019
A33	Animas	EU-14	High	Sept 2018	Post-runoff	2 U	0.56 J	20.3	5.5	2 U	69.2	3.6	3590	--	4.2	5 U	0.04 J	1 U	0.07 J	1810	Table 13 in EPA, 2019
A35	Animas	EU-10	High	Sept 2018	Post-runoff	2 U	0.29 J	19.1	3.8	2 U	39	2.1	2290	--	3.2	5 U	0.03 J	1 U	0.06 J	1280	Table 13 in EPA, 2019
A40	Animas	EU-10	High	Sept 2018	Post-runoff	2 U	1 U	21.1	4.4	2 U	31.9	1.8	2330	--	3.3 J	5 U	1 U	1 U	0.06 J	1250	Table 13 in EPA, 2019
A41A	Animas	EU-09	High	Sept 2018	Post-runoff	2 U	1 U	21.1	4.1	2 U	31.8	1.6	2140	--	3 J	5 U	1 U	1 U	0.06 J	1260	Table 13 in EPA, 2019
A36	Animas	EU-11	Low	Sept 2018	Post-runoff	2 U	1 U	15.6	1 U	2 U	21.9	1 U	278	--	2.6 J	5 U	1 U	1 U	0.08 J	104	Table 13 in EPA, 2019
A37	Animas	EU-12	High	Sept 2018	Post-runoff	2 U	1 U	17.7	1 U	2 U	2.8	1 U	17.6	--	0.26 J	5 U	1 U	1 U	0.07 J	176	Table 13 in EPA, 2019
EG6	Animas	EU-12	High	Sept 2018	Post-runoff	2 U	1 U	12.6	0.94 J	2 U	5.2	1 U	85.8	--	0.37 J	5 U	1 U	1 U	0.07 J	488	Table 13 in EPA, 2019
CC21B	Cement	EU-22	High	Sept 2018	Post-runoff	2 U	2.9	12.4	5.3	0.06 J	52.1	19.8	7810	--	17.1	5 U	1 U	1 U	2.3 J	3470	Table 14 in EPA, 2019
CC26	Cement	EU-21	Mid	Sept 2018	Post-runoff	2 U	51	6.7 J	4.7	0.97 J	15.4	3.8	917	--	36.7	5 U	1 U	1.5	29.5	1500	Table 14 in EPA, 2019
CC27	Cement	EU-20	Mid	Sept 2018	Post-runoff	2 U	4.8	11.6	5.1	0.06 J	48.6	17.8	7410	--	17.8	5 U	1 U	1 U	3.5 J	3250	Table 14 in EPA, 2019
CC28C	Cement	EU-20	Mid	Sept 2018	Post-runoff	2 U	13.4	10.3	4.4	0.19 J	41.2	13.8	6820	--	24.8	5 U	1 U	1 U	7.7	3260	Table 14 in EPA, 2019
CC39	Cement	EU-20	Mid	Sept 2018	Post-runoff	2 U	8.5	10.6	4	0.2 J	36.4	12.1	6020	--	22.4	5 U	1 U	1 U	4 J	2720	Table 14 in EPA, 2019
CC39B	Cement	EU-20	Mid	Sept 2018	Post-runoff	2 U	8.8	10.6	3.9	0.24 J	37	12.6	6030	--	22.7	5 U	1 U	1 U	4.3 J	2770	Table 14 in EPA, 2019
CC41	Cement	EU-20	Mid	Sept 2018	Post-runoff	2 U	7.9	10.7	3.9	0.07 J	36.5	12.1	5880	--	21.9	5 U	1 U	1 U	3.8 J	2710	Table 14 in EPA, 2019
CC43E	Cement	EU-20	Mid	Sept 2018	Post-runoff	2 U	7.1	11.5	3.6	0.14 J	36.8	11.1	5460	--	19.6	5 U	1 U	1 U	3.1 J	2480	Table 14 in EPA, 2019
CC46B	Cement	EU-20	Mid	Sept 2018	Post-runoff	2 U	6.9	13.8	3.4	0.17 J	38.8	14.2	5390	--	19.4	5 U	1 U	1 U	3.3 J	2450	Table 14 in EPA, 2019
CC48	Cement	EU-20	Mid	Sept 2018	Post-runoff	2 U	5.4	11.3	3.1	0.04 J	32.9	10.9	4680	--	18.1	5 U	1 U	1 U	3.1 J	2080	Table 14 in EPA, 2019
CC03B	Cement	EU-22	High	Sept 2018	Post-runoff	2 U	1 U	25.6	16.5	0.05 J	187	11	4070	--	9.8	5 U	1 U	1 U	0.07 J	6070	Table 14 in EPA, 2019
CC17	Cement	EU-23	Low	Sept 2018	Post-runoff	2 U	1 U	12.5	1.9	2 U	16.6	1.4	1330	--	6.7	5 U	1 U	1 U	0.14 J	435	Table 14 in EPA, 2019
CC20	Cement	EU-23	Low	Sept 2018	Post-runoff	2 U	1 U	14.8	12.2	2 U	105	25.7	20600	--	27.6	5 U	1 U	1 U	0.22 J	8730	Table 14 in EPA, 2019
FD-1	Cement	EU-24	High	Sept 2018	Post-runoff	2 U	1 U	16.6	12.9	2 U	88.6	2.6	3170	--	11.6	5 U	1 U	1 U	0.11 J	3320	Table 14 in EPA, 2019
CC01H	Cement	EU-24	High	Sept 2018	Post-runoff	2 U	1 U	20.7	5.4	2 U	64.3	1 U	41.9	--	1.6	5 U	1 U	1 U	5 U	1440	Table 14 in EPA, 2019
CC01S	Cement	EU-24	High	Sept 2018	Post-runoff	2 U	1 U	32.6	23.3	2 U	64.6	3.3	1850	--	18.7	5 U	1 U	1 U	0.06 J	3840	Table 14 in EPA, 2019
CC01T	Cement	EU-24	High	Sept 2018	Post-runoff	2 U	1 U	26.2	14.4	0.05 J	81.2	1.8	901	--	9.8	5 U	1 U	1 U	0.06 J	2500	Table 14 in EPA, 2019
CC18	Cement	EU-23	Low	Sept 2018	Post-runoff	2 U	1.1	17.5	12.3	0.04 J	108	22.7	24000	--	37.4	5 U	1 U	1 U	0.26 J	12400	Table 14 in EPA, 2019
M16E	Mineral	EU-06	Low	Sept 2018	Post-runoff	2 U	1 U	21.4	0.12 J	2 U	2 U	1 U	501	--	1.4	5 U	1 U	1 U	0.1 J	102	Table 15 in EPA, 2019
M16F	Mineral	EU-06	Low	Sept 2018	Post-runoff	2 U	1 U	28.5	1 U	2 U	2 U	1 U	20.1	--	1.4	5 U	1 U	1 U	0.1 J	10.6	Table 15 in EPA, 2019
M16G	Mineral	EU-06	Low	Sept 2018	Post-runoff	2 U	1 U	20.8	0.2 J	2 U	2 U	1 U	310	--	1.4	5 U	1 U	1 U	0.1 J	35.9	Table 15 in EPA, 2019

DRC = dose-response category; -- = no data

Table A-1 Surface Water Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in µg/L. See Appendix A title page for data qualifier definitions. Continued

Location ID	Subwatershed	Exposure Unit	DRC	Sample Date	Hydroperiod	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Source
M16H	Mineral	EU-06	Low	Sept 2018	Post-runoff	2 U	1.4	17.7	0.23 J	2 U	2 U	1 U	2360	--	9.5	0.82 J	1 U	1 U	4.4 J	307	Table 15 in EPA, 2019
M17	Mineral	EU-06	Low	Sept 2018	Post-runoff	2 U	1.3	17.7	0.24 J	2 U	2 U	1 U	2290	--	9.4	10 U	1 U	1 U	4.3 J	315	Table 15 in EPA, 2019
M27	Mineral	EU-02	Low	Sept 2018	Post-runoff	2 U	1.1	22.6	1.5	2 U	15	5.1	1010	--	7.4	5 U	1 U	1 U	1.6 J	350 J	Table 15 in EPA, 2019
M27A2	Mineral	EU-02	Low	Sept 2018	Post-runoff	2 U	0.93 J	23.9	1.4	2 U	14.5	4	1070	--	7.7	0.8 J	1 U	1 U	1.7 J	314 J	Table 15 in EPA, 2019
M29	Mineral	EU-01	Mid	Sept 2018	Post-runoff	2 U	0.74 J	29.2	0.77 J	2 U	7.4	2.5	456	--	4.1	5 U	1 U	1 U	0.79 J	240 J	Table 15 in EPA, 2019
M29A	Mineral	EU-01	Mid	Sept 2018	Post-runoff	2 U	0.88 J	29.8	0.68 J	2 U	7.4	2.5	490	--	4	5 U	1 U	1 U	0.86 J	186 J	Table 15 in EPA, 2019
M32	Mineral	EU-01	Mid	Sept 2018	Post-runoff	2 U	0.87 J	29.9	0.66 J	2 U	6.7	2.3	450	--	4.4	5 U	1 U	1 U	0.99 J	205 J	Table 15 in EPA, 2019
M32B	Mineral	EU-01	Mid	Sept 2018	Post-runoff	2 U	0.06 J	16	0.14 J	2 U	2 U	1.2	30.5	--	0.9 J	0.85 J	1 U	1 U	0.1 J	87 J	Table 15 in EPA, 2019
M33	Mineral	EU-01	Mid	Sept 2018	Post-runoff	2 U	0.82 J	28.8	0.72 J	2 U	11.6	2.7	467	--	4.5	5 U	1 U	1 U	0.89 J	227 J	Table 15 in EPA, 2019
M34	Mineral	EU-01	Mid	Sept 2018	Post-runoff	4 U	1.1	29.4	0.86 J	2 U	15.7	2.9	479	--	4.3	10 U	0.08 J	1 U	0.89 J	233 J	Table 15 in EPA, 2019
M38	Mineral	EU-01	Mid	Sept 2018	Post-runoff	2 U	1 U	29	1	2 U	15.9	2.9	485	--	4.2	5 U	0.09 J	1 U	0.93 J	233 J	Table 15 in EPA, 2019
M13B	Mineral	EU-03	Mid	Sept 2018	Post-runoff	2 U	0.34 J	31.4	0.92 J	2 U	6.2	4.4	140	--	1.2	5 U	1 U	1 U	0.11 J	303	Table 15 in EPA, 2019
M13D	Mineral	EU-03	Mid	Sept 2018	Post-runoff	2 U	0.27 J	30.5	1.1	2 U	6.8	3.5	176	--	1.3	5 U	1 U	1 U	0.09 J	315	Table 15 in EPA, 2019
M14A	Mineral	EU-03	Mid	Sept 2018	Post-runoff	2 U	1 U	30.6	0.97 J	2 U	6.3	2.8	184	--	1.2	5 U	1 U	1 U	0.08 J	296	Table 15 in EPA, 2019
M14B	Mineral	EU-03	Mid	Sept 2018	Post-runoff	2 U	1 U	30.4	0.97 J	2 U	15.3	3.1	228	--	1.9	5 U	1 U	1 U	0.1 J	275	Table 15 in EPA, 2019
M17A	Mineral	EU-06	Low	Sept 2018	Post-runoff	2 U	1 U	16.1	0.09 J	2 U	2 U	1 U	1530	--	6	5 U	1 U	1 U	2 J	199	Table 15 in EPA, 2019
M18	Mineral	EU-06	Low	Sept 2018	Post-runoff	2 U	2.1	18.3	10.8	2 U	34.4	1 U	3090	--	47.2	2.2 J	1 U	1 U	14.4	614	Table 15 in EPA, 2019
M19	Mineral	EU-06	Low	Sept 2018	Post-runoff	2 U	1.3	16.1	1.9	2 U	6.8	1 U	1870	--	14.4	1 J	1 U	1 U	4.5 J	278	Table 15 in EPA, 2019
M20	Mineral	EU-06	Low	Sept 2018	Post-runoff	2 U	1.3	15.8	1.8	2 U	5.9	1 U	1790	--	13.4	1.1 J	1 U	1 U	4.3 J	266	Table 15 in EPA, 2019
M22	Mineral	EU-06	Low	Sept 2018	Post-runoff	2 U	1.2	16.4	1.9	2 U	7.2	1 U	1710	--	13.1	0.97 J	1 U	1 U	3.9 J	292	Table 15 in EPA, 2019
M23	Mineral	EU-05	Mid	Sept 2018	Post-runoff	2 U	0.17 J	29.4	0.33 J	2 U	2 U	1 U	299	--	9.6	5 U	1 U	1 U	0.09 J	48.6 J	Table 15 in EPA, 2019
M24D	Mineral	EU-05	Mid	Sept 2018	Post-runoff	2 U	2.8	28.1	62.4	0.13 J	327	234	5840	--	14.1	5 U	1 U	1 U	0.57 J	11700 J	Table 15 in EPA, 2019
M25	Mineral	EU-05	Mid	Sept 2018	Post-runoff	2 U	0.1 J	32.9	1.8	2 U	2 U	1 U	155	--	5.6	5 U	1 U	1 U	0.13 J	509 J	Table 15 in EPA, 2019
M26B	Mineral	EU-05	Mid	Sept 2018	Post-runoff	2 U	0.13 J	33.5	0.24 J	2 U	2 U	1 U	63.2	--	2.9	5 U	1 U	1 U	0.11 J	85.2 J	Table 15 in EPA, 2019
M26D	Mineral	EU-05	Mid	Sept 2018	Post-runoff	2 U	0.24 J	38.5	1 U	2 U	2 U	1 U	18.5	--	0.34 J	5 U	1 U	1 U	0.11 J	7.2 J	Table 15 in EPA, 2019
M28	Mineral	EU-05	Mid	Sept 2018	Post-runoff	2 U	0.67 J	36.5	1 U	2 U	2 U	1 U	32.9	--	0.95 J	5 U	1 U	1 U	0.27 J	11.9 J	Table 15 in EPA, 2019
M01	Mineral	EU-04	High	Sept 2018	Post-runoff	2 U	1 U	48	1 U	2 U	2 U	1 U	2.1	--	1 U	5 U	1 U	1 U	5 U	8.9	Table 15 in EPA, 2019
M02	Mineral	EU-04	High	Sept 2018	Post-runoff	2 U	56.3	13.2	54.5	1.5 J	2650	68.8	23500	--	117	0.94 J	1 U	2.1	0.55 J	27800	Table 15 in EPA, 2019
M03	Mineral	EU-04	High	Sept 2018	Post-runoff	2 U	9.9	78.3	3.5	2 U	131	9.4	205	--	4.3	5 U	1 U	1 U	0.2 J	1510	Table 15 in EPA, 2019
M04	Mineral	EU-04	High	Sept 2018	Post-runoff	2 U	3	44.7	11.1	0.1 J	318	6.4	3350	--	23.1	5 U	1 U	1 U	0.09 J	5020	Table 15 in EPA, 2019
M05	Mineral	EU-04	High	Sept 2018	Post-runoff	2 U	3.8	49.5	10.7	0.11 J	302	6.5	2960	--	22.8	5 U	1 U	1 U	0.11 J	4920	Table 15 in EPA, 2019
M06C	Mineral	EU-04	High	Sept 2018	Post-runoff	2 U	1.5	40.9	16.4	2 U	230	778	2370	--	17.5	5 U	1 U	1 U	0.07 J	6370	Table 15 in EPA, 2019
M06D	Mineral	EU-04	High	Sept 2018	Post-runoff	2 U	0.58 J	37.7	8.4	2 U	109	608	1060	--	8.2	5 U	1 U	1 U	0.07 J	3150	Table 15 in EPA, 2019
M07	Mineral	EU-04	High	Sept 2018	Post-runoff	2 U	0.32 J	47	7.1	2 U	50.8	234	525	--	5.6	5 U	1 U	1 U	0.06 J	2610	Table 15 in EPA, 2019
M10	Mineral	Mill Cr.	Ref.	Sept 2018	Post-runoff	2 U	0.15 J	28	0.13 J	2 U	2 U	1 U	27.2	--	0.22 J	5 U	1 U	1 U	0.09 J	35.6	Table 15 in EPA, 2019
M11	Mineral	EU-03	Mid	Sept 2018	Post-runoff	2 U	0.22 J	31.3	0.9 J	0.4 J	4	7.5	56.1	--	1	5 U	1 U	1 U	0.1 J	331	Table 15 in EPA, 2019
M12	Mineral	EU-3.5	Mid	Sept 2018	Post-runoff	2 U	1.9	25.2	16.8	0.14 J	111	16.6	5030	--	29.1	5 U	1 U	1 U	1 J	3860	Table 15 in EPA, 2019
M13A	Mineral	EU-03	Mid	Sept 2018	Post-runoff	2 U	0.21 J	30.4	0.99 J	2 U	5.5	4	139	--	1	5 U	1 U	1 U	0.1 J	399	Table 15 in EPA, 2019
M27A	Mineral	EU-02	Low	Sept 2018	Post-runoff	2 U	0.74 J	22.2	1.5	2 U	10.1	1.6	1070	--	7.9	5 U	1 U	1 U	2.1 J	381 J	Table 15 in EPA, 2019
A09	Animas	EU-18	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	3.07 D	5 U	13.6 D	7.32 D	683	--	2.5 U	5 U	2.5 U	5 U	10 U	488	Table 4 in EPA, 2019
A10	Animas	EU-15	High	June 2018	Runoff	2.5 U	2.5 U	25 U	3.82 D	5 U	48.5 D	81.7 D	5280	--	4.2 JD	5 U	2.5 U	5 U	10 U	1300	Table 4 in EPA, 2019
A14	Animas	EU-14	High	June 2018	Runoff	2.5 U	2.5 U	25 U	3.89 D	5 U	48.7 D	183 D	3600	--	3.11 JD	5 U	2.5 U	5 U	10 U	1120	Table 4 in EPA, 2019
A28	Animas	EU-14	High	June 2018	Runoff	2.5 U	2.5 U	25 U	2.08 D	5 U	12 D	13.4 D	1780	--	2.5 U	5 U	2.5 U	5 U	10 U	575	Table 4 in EPA, 2019
A30	Animas	EU-14	High	June 2018	Runoff	2.5 U	2.5 U	25 U	1.89 D	5 U	15.4 D	9.69 D	1810	--	2.5 U	5 U	2.5 U	5 U	10 U	590	Table 4 in EPA, 2019
A30A	Animas	EU-14	High	June 2018	Runoff	2.5 U	2.5 U	25 U	2.02 D	5 U	16.4 D	7.01 D	1770	--	2.5 U	5 U	2.5 U	5 U	10 U	597	Table 4 in EPA, 2019
A30B	Animas	EU-14	High	June 2018	Runoff	2.5 U	2.5 U	25 U	2.06 D	5 U	14.6 D	6.42 D	1710	--	2.5 U	5 U	2.5 U	5 U	10 U	600	Table 4 in EPA, 2019
A35	Animas	EU-10	High	June 2018	Runoff	2.5 U	2.5 U	25 U	1.14 D	5 U	12.6 D	8.85 D	818	--	2.5 U	5 U	2.5 U	5 U	10 U	345	Table 4 in EPA, 2019
A40	Animas	EU-10	High	June 2018	Runoff	2.5 U	2.5 U	25 U	1.27 D	5 U	10.3 D	5.43 D	953	--	2.5 U	5 U	2.5 U	5 U	10 U	380	Table 4 in EPA, 2019
A41A	Animas	EU-09	High	June 2018	Runoff	2.5 U	2.5 U	25 U	0.908 JD	5 U	6.94 D	3.37 D	688	--	2.5 U	5 U	2.5 U	5 U	10 U	275	Table 4 in EPA, 2019
A45	Animas	EU-09	High	June 2018	Runoff	2.5 U	2.5 U	25 U	0.81 JD	5 U	5.97 D	2.66 D	597	--	2.5 U	5 U	2.5 U	5 U	10 U	285	Table 4 in EPA, 2019
A48	Animas	EU-08	Mid	June 2018	Runoff	2.5 U	2.5 U	33.5 JD	0.5 U	5 U	2.5 U	1.06 D	4.17 J	--	2.5 U	5 U	2.5 U	5 U	10 U	13.3 J	Table 4 in EPA, 2019
A55	Animas	EU-07	High	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	1.04 D	513	--	2.5 U	5 U	2.5 U	5 U	10 U	252	Table 4 in EPA, 2019
A56	Animas	EU-07	High	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	481	--	2.5 U	5 U	2.5 U	5 U	10 U	244	Table 4 in EPA, 2019
A05	Animas	NF Animas	Ref.	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.82 JD	1.29 D	31.7	--	2.5 U	5 U	2.5 U	5 U	10 U	79.4	Table 4 in EPA, 2019
A07	Animas	EU-19	High	June 2018	Runoff	2.5 U	2.5 U	25 U	6.87 D	5 U	31.8 D	11.6 D	1910	--	4.77 JD	5 U	2.5 U	7.1 JD	10 U	1060	Table 4 in EPA, 2019
A08	Animas	EU-18	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	3.21 D	5 U	15.8 D	5.03 D	914	--	2.61 JD	5 U	2.5 U	7.82 JD	10 U	535	Table 4 in EPA, 2019
A13	Animas	EU-15	High	June 2018	Runoff	2.5 U	2.5 U	25 U	3.76 D	5 U	18.8 D	31.1 D	6120	--	4.3 JD	5 U	2.5 U	5 U	10 U	1280	Table 4 in EPA, 2019
A15	Animas	EU-17	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	5.67 D	5.05 JD	15.1 D	1.84 D	12400	--	6.58 D	5 U	2.5 U	5 U	10 U	1770	Table 4 in EPA, 2019
A20	Animas	EU-16	High	June 2018	Runoff	2.5 U	2.5 U	25 U	2.74 D	5 U	26.3 D	65 D	1740	--	2.99 JD	5 U	2.5 U	5 U	10 U	1040	Table 4 in EPA, 2019
A33	Animas	EU-14	High	June 2018	Runoff	2.5 U	2.5 U	25 U	2.02 D	5 U	13.9 D	8.59 D	1710	--	2.5 U	5 U	2.5 U	5 U	10 U	593	Table 4 in EPA, 2019
A36	Animas	EU-11	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.85 JD	0.5 U	31	--	2.5 U	5 U	2.5 U	7.5 JD	10 U	20.3	Table 4 in EPA, 2019
A37	Animas	EU-12	High	June 2018	Runoff	2.5 U	2.5 U	25 U	0.804 JD	5 U	8.43 D	2.09 D	166	--	2.5 U	5 U	2.5 U	8.14 JD	10 U	342	Table 4 in EPA, 2019
EG6	Animas	EU-12	High	June 2018	Runoff	2.5 U	2.5 U	25 U	1.14 D	5 U	10.5 D	2.7 D	229	--	2.5 U	5 U	2.5 U	5 U	10 U	419	Table 4 in EPA, 2019
CC28C	Cement	EU-20	Mid	June 2018	Runoff	2.5 U	3.61 JD	25 U	2.58 D	5 U	55.7 D	14.3 D	2130	--	3.09 JD	5 U	2.5 U	5 U	10 U	1070	Table 5 in EPA, 2019
CC39	Cement	EU-20	Mid	June 2018	Runoff	2.5 U	2.5 JD	25 U	2.29 D	5 U	45.3 D	10.2 D	2170	--	2.93 JD	5 U	2.5 U	5 U	10 U	1030	Table 5 in EPA, 2019
CC39B	Cement	EU-20	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	1.93 D	5 U	43.9 D	10.1 D	1910	--	2.91 JD	5 U	2.5 U	5 U	10 U	965	Table 5 in EPA, 2019
CC41	Cement	EU-20	Mid	June 2018	Runoff	2.5 U	2.7 JD	25 U	2.18 D	5 U	44 D	9.07 D	1850	--	3.19 JD	5 U	2.5 U	5 U	10 U	997	Table 5 in EPA, 2019
CC43E	Cement	EU-20	Mid	June 2018	Runoff	2.5 U	2.63 JD	25 U	2.03 D	5 U	44.6 D	8.02 D	1970	--	2.5 U	5 U	2.5 U	5 U	10 U	979	Table 5 in EPA, 2019
CC46B	Cement	EU-20	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	2.08 D	5 U	43.5 D	7.92 D	1880	--	2.5 U	5 U	2.5 U	5 U	10 U	942	Table 5 in EPA, 2019
CC48	Cement	EU-20	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	1.85 D	5 U	39.6 D	7.03 D	1770	--	2.5 U	5 U	2.5 U	5 U	10 U	874	Table 5 in EPA, 2019
CC17	Cement	EU-23	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.887 JD	5 U	13.1 D	1.37 D	413	--	2.5 U	5 U	2.5 U	5 U	10 U	186	Table 5 in EPA, 2019
CC20	Cement	EU-23	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	5.46 D	5 U	74.1 D	15.6 D	5320	--	3.12 JD	5 U	2.5 U	5 U	10 U	2460	Table 5 in EPA, 2019
CC21B	Cement	EU-22	High	June 2018	Runoff	2.5 U	2.5 U	25 U	2.89 D	5 U	38.9 D	8.45 D	2530	--	2.5 U	5 U	2.5 U	6.58 JD	10 U	1190	Table 5 in EPA, 2019
CC26	Cement	EU-21	Mid	June 2018	Runoff	2.5 U	6.73 JD	25 U	2.61 D	5 U	233 D	29.8 D	395	--	6.66 D	5 U	2.5 U	7.57 JD	10 U	705	Table 5 in EPA, 2019
CC27	Cement	EU-20	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	2.73 D	5 U	53.4 D	9.64 D	2340	--	2.5 U	5 U	2.5 U	5 U	10 U	1120	Table 5 in EPA, 2019
CC01H	Cement	EU-24	High	June 2018	Runoff	2.5 U	2.5 U	25 U	2.12 D	5 U	64.7 D	7.25 D	176	--	2.5 U	5 U	2.5 U	5 U	10 U	510	Table 5 in EPA, 2019
CC01S	Cement	EU-24	High	June 2018	Runoff	2.5 U	2.5 U	25 U	4.69 D	5 U	43.8 D	15.8 D	2310	--	2.5 U	5 U	2.5 U	5 U	10 U	883	Table 5 in EPA, 2019
CC01T	Cement	EU-24	High	June 2018	Runoff	2.5 U	2.5 U	25 U	2.89 D	5 U	52 D	6.94 D	856	--	2.5 U	5 U	2.5 U	5 U	10 U	646	Table 5 in EPA, 2019
CC03B	Cement	EU-22	High	June 2018	Runoff	2.5 U	2.5 U	25 U	3.84 D	5 U	50.2 D	4.18 D	1030	--	2.5 U	5 U	2.5 U	5 U	10 U	1020	Table 5 in EPA, 2019
FD-1	Cement	EU-24	High	June 2018	Runoff	2.5 U	2.5 U	25 U	12.9 D	5 U	96.6 D	3.67 D	4750	--	4.1 JD	5 U	2.5 U	5 U	10 U	4170	Table 5 in EPA, 2019
M16E	Mineral	EU-06	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	186	--	2.5 U	5 U	2.5 U	5 U	10 U	28	Table 6 in EPA, 2019
M16F	Mineral	EU-06	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	41.3	--	2.5 U	5 U	2.5 U	5 U	10 U	10 U	Table 6 in EPA, 2019
M16G	Mineral	EU-06	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	165	--	2.5 U	5 U	2.5 U	5.94 JD	10 U	17.6 J	Table 6 in EPA, 2019
M16H	Mineral	EU-06	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	562	--	2.5 U	5 U	2.5 U	6.18 JD	10 U	65.7	Table 6 in EPA, 2019
M17	Mineral	EU-06	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	545	--	2.5 U	5 U	2.5 U	5 U	10 U	63.9	Table 6 in EPA, 2019
M20	Mineral	EU-06	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.681 JD	5 U	3.19 JD	0.5 U	557	--	2.5 U	5 U	2.5 U	5 U	10 U	77.1	Table 6 in EPA, 2019
M22	Mineral	EU-06	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.699 JD	5 U	3.31 JD	0.5 U	593	--	2.5 U	5 U	2.5 U	5 U	10 U	92.6	Table 6 in EPA, 2019
M23	Mineral	EU-05	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	151	--	3.15 JD	5 U	2.5 U	5 U	10 U	23.1	Table 6 in EPA, 2019
M24D	Mineral	EU-05	Mid	June 2018	Runoff	2.5 U	3.58 JD	25 U	47.7 D	5 U	267 D	286 D	5260	--	7.43 D	5 U	2.5 U	5 U	10 U	12400	Table 6 in EPA, 2019
M25	Mineral	EU-05	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	169	--	3.48 JD	5 U	2.5 U	5 U	10 U	47.4	Table 6 in EPA, 2019
M26B	Mineral	EU-05	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	78.9	--	2.5 U	5 U	2.5 U	5 U	10 U	22	Table 6 in EPA, 2019
M26D	Mineral	EU-05	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	43.4	--	2.5 U	5 U	2.5 U	5 U	10 U	16.3 J	Table 6 in EPA, 2019
M29A	Mineral	EU-01	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	3.69 JD	1.95 D	145	--	2.5 U	5 U	2.5 U	5 U	10 U	58.5	Table 6 in EPA, 2019
M34	Mineral	EU-01	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	3.97 JD	1.64 D	146	--	2.5 U	5 U	2.5 U	5 U	10 U	72	Table 6 in EPA, 2019
M38	Mineral	EU-01	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	4.4 JD	1.68 D	149	--	2.5 U	5 U	2.5 U	5 U	10 U	70.2	Table 6 in EPA, 2019
M13A	Mineral	EU-03	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	7.32 D	11.6 D	74	--	2.5 U	5 U	2.5 U	5 U	10 U	84.7	Table 6 in EPA, 2019
M13B	Mineral	EU-03	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	7.37 D	9.62 D	70.7	--	2.5 U	5 U	2.5 U	5 U	10 U	97.2	Table 6 in EPA, 2019
M13D	Mineral	EU-03	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	6.3 D	8.52 D	100	--	2.5 U	5 U	2.5 U	5 U	10 U	111	Table 6 in EPA, 2019

DRC = dose-response category; -- = no data

Table A-1 Surface Water Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in µg/L. See Appendix A title page for data qualifier definitions. Continued

Location ID	Subwatershed	Exposure Unit	DRC	Sample Date	Hydroperiod	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Source
M14A	Mineral	EU-03	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	5.96 D	7.41 D	104	--	2.5 U	5 U	2.5 U	5 U	10 U	112	Table 6 in EPA, 2019
M14B	Mineral	EU-03	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	11.9 D	11.6 D	133	--	2.5 U	5 U	2.5 U	5 U	10 U	119	Table 6 in EPA, 2019
M17A	Mineral	EU-06	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	533	--	2.5 U	5 U	2.5 U	5 U	10 U	61.3	Table 6 in EPA, 2019
M18	Mineral	EU-06	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	2.15 D	5 U	11.2 D	0.5 U	787	--	7.82 D	5 U	2.5 U	5 U	10 U	135	Table 6 in EPA, 2019
M19	Mineral	EU-06	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.687 JD	5 U	3.35 JD	0.5 U	615	--	2.5 U	5 U	2.5 U	5 U	10 U	80.9	Table 6 in EPA, 2019
M27	Mineral	EU-02	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.616 JD	5 U	8.78 D	5.86 D	279	--	2.5 U	5 U	2.5 U	5 U	10 U	108	Table 6 in EPA, 2019
M27A2	Mineral	EU-02	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	8.19 D	6.42 D	217	--	2.5 U	5 U	2.5 U	5 U	10 U	96.8	Table 6 in EPA, 2019
M28	Mineral	EU-05	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	40.5	--	2.5 U	5 U	2.5 U	5 U	10 U	12.8 J	Table 6 in EPA, 2019
M29	Mineral	EU-01	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	3.21 JD	1.77 D	135	--	2.5 U	5 U	2.5 U	5 U	10 U	67.2	Table 6 in EPA, 2019
M30	Mineral	Bear Cr.	Ref.	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	7.07	--	2.5 U	5 U	2.5 U	5 U	10 U	10 U	Table 6 in EPA, 2019
M32	Mineral	EU-01	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	3.05 JD	1.89 D	130	--	2.5 U	5 U	2.5 U	5 U	10 U	61.3	Table 6 in EPA, 2019
M32B	Mineral	EU-01	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.63 JD	1.65 D	116	--	2.5 U	5 U	2.5 U	5 U	10 U	65.2	Table 6 in EPA, 2019
M33	Mineral	EU-01	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	3.2 JD	1.62 D	136	--	2.5 U	5 U	2.5 U	5 U	10 U	65.1	Table 6 in EPA, 2019
M01	Mineral	EU-04	High	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	4.18 JD	1.99 D	17.6	--	2.5 U	5 U	2.5 U	5 U	10 U	13.8 J	Table 6 in EPA, 2019
M02	Mineral	EU-04	High	June 2018	Runoff	2.5 U	96.8 D	25 U	15.6 D	5 U	696 D	27.2 D	5940	--	24.3 D	5 U	2.5 U	6.85 JD	10 U	6640	Table 6 in EPA, 2019
M03	Mineral	EU-04	High	June 2018	Runoff	2.5 U	9.94 JD	27.9 JD	1.49 D	5 U	106 D	7.64 D	107	--	2.5 U	5 U	2.5 U	5 U	10 U	416	Table 6 in EPA, 2019
M04	Mineral	EU-04	High	June 2018	Runoff	2.5 U	3.78 JD	25 U	0.756 JD	5 U	31.4 D	1.07 D	333	--	2.5 U	5 U	2.5 U	5 U	10 U	354	Table 6 in EPA, 2019
M05	Mineral	EU-04	High	June 2018	Runoff	2.5 U	4.66 JD	25 U	0.683 JD	5 U	40.8 D	2.03 D	250	--	2.5 U	5 U	2.5 U	5 U	10 U	324	Table 6 in EPA, 2019
M06C	Mineral	EU-04	High	June 2018	Runoff	2.5 U	3.84 JD	25 U	1.07 D	5 U	34.3 D	68.3 D	281	--	2.5 U	5 U	2.5 U	5 U	10 U	454	Table 6 in EPA, 2019
M06D	Mineral	EU-04	High	June 2018	Runoff	2.5 U	2.5 U	25 U	0.551 JD	5 U	13.3 D	31.3 D	114	--	2.5 U	5 U	2.5 U	5 U	10 U	222	Table 6 in EPA, 2019
M07	Mineral	EU-04	High	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	11.8 D	25.3 D	87.5	--	2.5 U	5 U	2.5 U	5 U	10 U	168	Table 6 in EPA, 2019
M10	Mineral	Mill Cr.	Ref.	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	11.2	--	2.5 U	5 U	2.5 U	5.85 JD	10 U	14.2 J	Table 6 in EPA, 2019
M10B	Mineral	EU-04	High	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	2.5 U	0.5 U	2 U	--	2.5 U	5 U	2.5 U	6.42 JD	10 U	21.5	Table 6 in EPA, 2019
M11	Mineral	EU-03	Mid	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	5.77 D	9.89 D	47.2	--	2.5 U	5 U	2.5 U	5 U	10 U	103	Table 6 in EPA, 2019
M12	Mineral	EU-3.5	Mid	June 2018	Runoff	2.5 U	2.5 U	32.5 JD	3.19 D	5 U	26.8 D	2.58 D	1690	--	5.54 D	5 U	2.5 U	5 U	10 U	735	Table 6 in EPA, 2019
M27A	Mineral	EU-02	Low	June 2018	Runoff	2.5 U	2.5 U	25 U	0.5 U	5 U	9.43 D	4.23 D	278	--	2.5 U	5 U	2.5 U	5 U	10 U	124	Table 6 in EPA, 2019

DRC = dose-response category; -- = no data

Table A-2 Mine Drainage and Adit Water Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in µg/L.See Appendix A title page for data qualifier definitions.

Station ID	Subwatershed	Exposure Unit	Mine name	Sample Date	Hydroperiod	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Source
CC03C	Cement	EU-22	Red & Bonita	May 2014	Runoff	2.5 U	2.59 JD	25 U	26.6 D	5 U	16.7 D	77.7 D	34300 D	--	34.9 D	5 U	2.5 U	2.5 U	10 U	15800 D	Table 2.2-2 in EPA 2015
CC14	Cement	EU-23	Silver Ledge	May 2014	Runoff	2.5 U	2.5 U	25 U	2.28 D	5 U	28.3 D	3.77 D	2500 D	--	2.5 U	5 U	2.5 U	2.5 U	10 U	764 D	Table 2.2-2 in EPA 2015
CC19	Cement	EU-22	American Tunnel	May 2014	Runoff	2.5 U	3.38 JD	25 U	2.26 D	5 U	9.37 D	2.55 D	46900 D	--	50.7 D	5 U	2.5 U	2.5 U	10 U	20400 D	Table 2.2-2 in EPA 2015
CC01C2	Cement	EU-24	Grand Mogul	Sept 2014	Post-runoff	2.5 U	6.49 JD	25 U	58.8 D	5 U	1510 D	27.9 D	4780	--	6.1 D	5 U	2.5 U	2.5 U	10 U	13500	Table 2.2-5 in EPA 2015
CC02D	Cement	EU-24	Mogul	Sept 2014	Post-runoff	2.5 U	2.5 U	25 U	61.6 D	5 U	18.7 D	226 D	28000	--	3.53 JD	5 UJ	2.5 U	2.5 U	10 U	35400	Table 2.2-5 in EPA 2015
CC02E	Cement	EU-24	Gold Point	Sept 2014	Post-runoff	2.5 U	8.81 JD	25 U	0.5 U	5 U	3.11 JD	1.45 D	2540	--	2.5 U	5 UJ	2.5 U	2.5 U	10 U	841	Table 2.2-5 in EPA 2015
CC02K	Cement	EU-24	Pride of Bonita	Sept 2014	Post-runoff	2.5 U	2.5 U	25 U	22.3 D	5 U	17.7 D	38.3 D	1950	--	2.5 U	5 U	2.5 U	2.5 U	10 U	2500	Table 2.2-5 in EPA 2015
CC03C	Cement	EU-22	Red & Bonita	Sept 2014	Post-runoff	2.5 U	5 U	50 U	23.9 D	10 U	20.1 D	73.8 D	33300 D	--	25.6 D	10 U	5 U	5 U	20 U	14900 D	Table 2.2-5 in EPA 2015
CC03D	Cement	EU-22	Red & Bonita	Sept 2014	Post-runoff	2.5 U	5 U	50 U	23.1 D	10 U	18.4 D	68 D	33700 D	--	21.9 D	10 U	5 U	5 U	20 U	15100 D	Table 2.2-5 in EPA 2015
CC06	Cement	EU-22	Gold King	Sept 2014	Post-runoff	2.5 U	5 U	50 U	88.6 D	10 U	5020 D	1 U	36000 D	--	34.7 D	10 U	5 U	5 U	20 U	29700 D	Table 2.2-5 in EPA 2015
CC06B	Cement	EU-22	Gold King	Sept 2014	Post-runoff	2.5 U	5 U	50 U	77.7 D	10 U	4800 D	1 U	34800 D	--	34.8 D	10 U	5 U	5 U	20 U	28100 D	Table 2.2-5 in EPA 2015
CC14	Cement	EU-23	Silver Ledge	Sept 2014	Post-runoff	2.5 U	5 U	50 U	1.66 JD	10 U	8.95 JD	2.4 D	2480 D	--	5 U	10 U	5 U	5 U	20 U	729 D	Table 2.2-5 in EPA 2015
CC19	Cement	EU-22	American Tunnel	Sept 2014	Post-runoff	2.5 U	5 U	50 U	1.58 JD	10 U	8.3 JD	2.32 D	46600 D	--	31.4 D	10 U	5 U	5 U	20 U	20200 D	Table 2.2-5 in EPA 2015
MTD-4	Cement	EU-24	Mogul	Sept 2014	Post-runoff	2.5 U	2.5 U	25 U	56.7 D	5 U	567 D	53.9 D	15800 D	--	4.35 JD	5 UJ	2.5 U	2.5 U	10 U	22900 D	Table 2.2-5 in EPA 2015
A11A	Animas	EU-15	Columbus	June 2015	Runoff	2.5 U	8.65 JD	25 U	194 D	5 U	2510 D	1010 D	1840	5 U	7.64 D	5 U	2.5 U	2.5 U	10 U	47000	Table 2.2-2 in EPA 2016
A12	Animas	EU-15	Frisco Tunnel	June 2015	Runoff	2.5 U	2.5 U	25 U	4.69 D	5 U	5.29 D	4.02 D	7950	5 U	2.5 U	5 U	2.5 U	2.5 U	10 U	3500	Table 2.2-2 in EPA 2016
A29	Animas	EU-14	Silverwing	June 2015	Runoff	2.5 U	99.7 D	25 U	14 D	5 U	6190 D	25.8 D	3100	5 U	2.5 U	5 U	2.5 U	2.5 U	10 U	3950	Table 2.2-2 in EPA 2016
A41C	Animas	EU-10	Forest Queen	June 2015	Runoff	2.5 U	2.5 U	25 U	1.96 D	5 U	25.5 D	30.8 D	616	5 U	2.5 U	5 U	2.5 U	2.5 U	10 U	687	Table 2.2-2 in EPA 2016
A54	Animas	EU-07	Little Nation	June 2015	Runoff	2.5 U	3.73 JD	25 U	4.36 D	5 U	24.2 D	18 D	1780	5 U	4.57 JD	5 U	2.5 U	11.1 D	10 U	1160	Table 2.2-2 in EPA 2016
CG12A	Animas	EU-15	Bagley Pond	June 2015	Runoff	2.5 U	2.5 U	25 U	2.17 D	5 U	5.13 D	27 D	3.77 J	5 U	2.5 U	5 U	2.5 U	2.5 U	10 U	536	Table 2.2-2 in EPA 2016
TM1	Animas	Picayne G.	Treasure Mountain	June 2015	Runoff	2.5 U	5.07 JD	25 U	0.5 U	5 U	2.5 U	0.5 U	2190	5 U	2.5 U	5 U	2.5 U	2.5 U	10 U	20.7	Table 2.2-2 in EPA 2016
CC03D	Cement	EU-22	Red & Bonita	June 2015	Runoff	2.5 U	2.5 U	25 U	25.8 D	5 U	158 D	147 D	26500	5 U	38.7 D	5 U	2.5 U	11.6 D	10 U	13200	Table 2.2-2 in EPA 2016
CC14	Cement	EU-23	Silver Ledge	June 2015	Runoff	2.5 U	4.46 JD	25 U	5.25 D	5 U	86.9 D	7.3 D	1980	5 U	5.47 D	5 U	2.5 U	2.5 U	10 U	843	Table 2.2-2 in EPA 2016
CC19	Cement	EU-22	American Tunnel	June 2015	Runoff	2.5 U	3.58 JD	25 U	2.35 D	5 U	14.1 D	3.27 D	40000	5 U	53 D	5 U	2.5 U	2.5 U	10 U	18900	Table 2.2-2 in EPA 2016
A41C	Animas	EU-10	Forest Queen	August 2015	Post-runoff	2 UJ	0.2 J	9 J	0.93 J	2 U	20.4	39.5	297		1 U	5 U	1 UJ	1 U	0.07 J	332	Table 2.2-4 in EPA 2016
A11A	Animas	EU-15	Columbus	Sept 2015	Post-runoff	2.5 U	12 D	25 U	1090 D	5 U	6800 D	254 D	17600	5 U	66.5 D	17.4 D	2.5 U	2.5 U	10 U	278000	Table 2.2-6 in EPA 2016
A12	Animas	EU-15	Frisco Tunnel	Sept 2015	Post-runoff	2.5 U	2.5 U	25 U	4.47 D	5 U	2.5 U	1.39 D	16500	5 UJ	2.5 U	5 U	2.5 U	2.5 U	10 U	5470	Table 2.2-6 in EPA 2016
A16	Animas	EU-17	Vermillion Tunnel	Sept 2015	Post-runoff	2.5 U	2.5 U	25 U	1.7 D	5 U	2.5 U	0.718 JD	901	5 UJ	2.5 U	5 U	2.5 U	2.5 U	10 U	871	Table 2.2-6 in EPA 2016
A17B	Animas	EU-17	Burrows	Sept 2015	Post-runoff	2.5 U	2.5 U	25 U	14.8 D	5 U	15.7 D	2.41 D	235	5 UJ	2.5 U	5 U	2.5 U	2.5 U	10 U	5980	Table 2.2-6 in EPA 2016
A19A	Animas	EU-17	Mountain Queen	Sept 2015	Post-runoff	2.5 U	2.5 U	25 U	44.5 D	5 U	1270 D	192 D	5750	5 UJ	4.91 JD	5 U	2.5 U	2.5 U	10 U	5630	Table 2.2-6 in EPA 2016
A21A	Animas	EU-16	Comet	Sept 2015	Post-runoff	2.5 U	2.5 U	25 U	12.1 D	5 U	2.5 U	194 D	9460	5 UJ	10.4 D	5 U	2.5 U	2.5 U	10 U	4590	Table 2.2-6 in EPA 2016
A23A	Animas	EU-16	Gold Prince	Sept 2015	Post-runoff	2.5 U	2.5 U	25 U	3.39 D	5 U	37.8 D	79.7 D	710	5 U	2.5 U	5 U	2.5 U	2.5 U	10 U	4500	Table 2.2-6 in EPA 2016
A29	Animas	EU-14	Silverwing	Sept 2015	Post-runoff	3.43 JD	132 D	25 U	16.6 D	5 U	10200 D	25.5 D	3520	5 U	2.5 U	5 U	2.5 U	15 D	10 U	4320	Table 2.2-6 in EPA 2016
A41	Animas	EU-10	Forest Queen	Sept 2015	Post-runoff	2.5 U	2.5 U	25 U	11.8 D	5 U	2.5 U	1.98 D	2460	5 U	4.82 JD	5 U	2.5 U	2.5 U	10 U	676	Table 2.2-6 in EPA 2016
A54	Animas	EU-07	Little Nation	Sept 2015	Post-runoff	2.5 U	2.5 U	25 U	1.75 D	5 U	3.46 JD	1.81 D	1350	5 U	2.5 U	5 U	2.5 U	2.5 U	10 U	705	Table 2.2-6 in EPA 2016
ARD1	Animas	EU-12	Terry Tunnel	Sept 2015	Post-runoff	2.5 U	2.5 U	25 U	57.5 D	5 U	1940 D	840 D	22300	5 U	12.8 D	5 U	2.5 U	2.5 U	10 U	19900	Table 2.2-6 in EPA 2016
DM28	Animas	EU-17	Indian Chief	Sept 2015	Post-runoff	2.5 U	18.5 D	25 U	1.49 D	5 U	7.22 D	83 D	1240	5 U	2.5 U	5 U	2.5 U	2.5 U	10 U	312	Table 2.2-6 in EPA 2016
DM32	Animas	EU-12	Ben Franklin	Sept 2015	Post-runoff	2.5 U	2.5 U	25 U	40 D	5 U	2030 D	1990 D	13100	5 U	7.26 D	5 U	2.5 U	2.5 U	10 U	11900	Table 2.2-6 in EPA 2016
TM1	Animas	Picayne G.	Treasure Mountain	Sept 2015	Post-runoff	2.5 U	3.63 JD	25 U	0.5 U	5 U	2.5 U	0.5 U	2010	5 U	2.5 U	5 U	2.5 U	2.5 U	10 U	13.9 J	Table 2.2-6 in EPA 2016
CC02D	Cement	EU-24	Mogul	Sept 2015	Post-runoff	2.5 U	3.07 JD	25 U	50.6 D	5 U	13.3 D	234 D	29700	5 U	6.7 D	5 U	2.5 U	2.5 U	10 U	35800	Table 2.2-6 in EPA 2016
CC02E	Cement	EU-24	Gold Point	Sept 2015	Post-runoff	2.5 U	2.5 U	25 U	21.9 D	5 U	17.8 D	34 D	1960	5 U	3.55 JD	5 U	2.5 U	2.5 U	10 U	2620	Table 2.2-6 in EPA 2016
CC03D	Cement	EU-22	Red & Bonita	Sept 2015	Post-runoff	5 U	5 U	50 U	21.6 D	10 U	16 D	65.3 D	34900	10 U	44.1 D	10 U	5 U	5 U	20 U	16000	Table 2.2-6 in EPA 2016
CC06	Cement	EU-22	Gold King	Sept 2015	Post-runoff	5 U	33.4 D	50 U	63.7 D	10 U	5440 D	38.2 D	32800	10 U	45.4 D	10 U	5 U	5 U	21 JD	25000	Table 2.2-6 in EPA 2016
CC14	Cement	EU-23	Silver Ledge	Sept 2015	Post-runoff	2.5 U	2.5 U	25 U	1.82 D	5 U	7.78 D	3.41 D	2630	5 U	2.5 U	5 U	2.5 U	2.5 U	10 U	732	Table 2.2-6 in EPA 2016
CC19	Cement	EU-22	American Tunnel	Sept 2015	Post-runoff	5 U	5 U	50 U	1.55 JD	10 U	8.36 JD	2.29 D	49700 D	10 U	49.3 D	10 U	5 U	5 U	20 U	21500 D	Table 2.2-6 in EPA 2016
MTD-4	Cement	EU-24	Mogul	June 2016	Runoff	2.5 U	2.5 U	--	20.1 D	5 U	306 D	26.5 D	5250	--	4.62 JD	5 U	2.5 U	5 U	--	7980	Table 18 in EPA, 2017
A11A	Animas	EU-15	Columbus	June 2016	Runoff	2.5 U	5.91 JD	--	180 D	5 U	2350 D	911 D	1710	--	7.65 D	5 U	2.5 U	5 U	--	40300	Table 15 in EPA 2017
A12	Animas	EU-15	Frisco Tunnel	June 2016	Runoff	2.5 U	2.5 U	--	7.76 D	5 U	7.36 D	1.61 D	16300	--	2.5 U	5 U	2.5 U	5 U	--	6640	Table 15 in EPA 2017
A29	Animas	EU-14	Silverwing	June 2016	Runoff	4.15 JD	161 D	--	16.1 D	5 U	6280 D	22.7 D	3300	--	2.5 U	5 U	2.5 U	5 U	--	4220	Table 15 in EPA 2017
A29A	Animas	EU-14	Silverwing	June 2016	Runoff	5.38 D	143 D	--	14.7 D	5 U	6660 D	61.8 D	3070	--	2.5 U	5 U	2.5 U	5 U	--	3900	Table 15 in EPA 2017
A41	Animas	EU-10	Forest Queen	June 2016	Runoff	2.5 U	2.5 U	--	3.44 D	5 U	6.82 D	1.7 D	2510	--	2.5 U	5 U	2.5 U	5 U	--	639	Table 15 in EPA 2017
A41C	Animas	EU-10	Forest Queen	June 2016	Runoff	2.5 U	2.5 U	--	1.54 D	5 U	20.2 D	28.5 D	558	--	2.5 U	5 U	2.5 U	5 U	--	471	Table 15 in EPA 2017
A50	Animas	EU-08	Pride of the West	June 2016	Runoff	2.5 U	2.5 U	--	11.8 D	5 U	54.5 D	42.2 D	401	--	2.5 U	5 U	2.5 U	5 U	--	2190	Table 15 in EPA 2017
A54	Animas	EU-07	Little Nation	June 2016	Runoff	2.5 U	2.5 U	--	2.18 D	5 U	4.39 JD	2.52 D	1480	--	2.5 U	5 U	2.5 U	5 U	--	810	Table 15 in EPA 2017
CG12A	Animas	EU-15	Bagley Pond	June 2016	Runoff	2.5 U	2.5 U	--	0.977 JD	5 U	6.37 D	138 D	3.2 J	--	2.5 U	5 U	2.5 U	5 U	--	141	Table 15 in EPA 2017
DM24	Animas	EU-14	Senator	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	1.1 D	3510	--	2.5 U	5 U	2.5 U	5 U	--	151	Table 15 in EPA 2017
DM56	Animas	EU-07	Little Nation	June 2016	Runoff	2.5 U	2.5 U	--	39.7 D	5 U	1150 D	148 D	1240	--	5.86 D	5 U	2.5 U	5 U	--	7260	Table 15 in EPA 2017
DM7	Animas	EU-19	London	June 2016	Runoff	3.18 JD	4.25 JD	--	13.8 D	5 U	41.3 D	13.3 D	277	--	2.5 U	5 U	2.5 U	5 U	--	2930	Table 15 in EPA 2017
PWMLO1	Animas	EU-09	Pride of the West	June 2016	Runoff	2.5 U	2.5 U	--	16.8 D	5 U	45.8 D	18.2 D	20500	--	5.4 D	5 U	2.5 U	5 U	--	9240	Table 15 in EPA 2017
PWMLO2	Animas	EU-09	Pride of the West	June 2016	Runoff	2.5 U	2.5 U	--	13.4 D	5 U	44.1 D	17.5 D	17900	--	4.73 JD	5 U	2.5 U	5 U	--	8400	Table 15 in EPA 2017
PWMLP1	Animas	EU-09	Pride of the West	June 2016	Runoff	2.5 U	4.59 JD	--	158 D	5 U	1560 D	1440 D	126000 D	--	93 D	5 U	2.5 U	5 U	--	47200 D	Table 15 in EPA 2017
PWMLP2	Animas	EU-09	Pride of the West	June 2016	Runoff	2.5 U	2.5 U	--	17.3 D	5 U	21.9 D	3.28 D	23200	--	5.65 D	5 U	2.5 U	5 U	--	9880	Table 15 in EPA 2017
CC03C	Cement	EU-22	Red & Bonita	June 2016	Runoff	2.5 U	2.72 JD	--	26.6 D	5 U	22.8 D	92 D	33200	--	35.3 D	5 U	2.5 U	5 U	--	15000	Table 15 in EPA 2017
CC03D	Cement	EU-22	Red & Bonita	June 2016	Runoff	2.5 U	2.77 JD	--	26.8 D	5 U	101 D	94.7 D	31400	--	34.4 D	5 U	2.5 U	5 U	--	14300	Table 15 in EPA 2017
CC06	Cement	EU-22	Gold King	June 2016	Runoff	12.5 U	228 D	--	187 D	25 U	12100 D	22.9 D	23900	--	87.9 D	25 U	12.5 U	25 U	--	44100	Table 15 in EPA 2017
CC14	Cement	EU-23	Silver Ledge	June 2016	Runoff	2.5 U	2.5 U	--	5.59 D	5 U	90.8 D	9.84 D	2670	--	4.63 JD	5 U	2.5 U	5 U	--	1130	Table 15 in EPA 2017
CC16B	Cement	EU-23	Gold King	June 2016	Runoff	2.5 U	2.5 U	--	0.77 JD	5 U	18.8 D	1.2 D	352	--	2.5 U	5 U	2.5 U	5 U	--	172	Table 15 in EPA 2017
CC19	Cement	EU-22	American Tunnel	June 2016	Runoff	2.5 U	2.5 U	--	1.56 D	5 U	14.9 D	2.71 D	34900	--	36.2 D	5 U	2.5 U	8.06 JD	--	15100	Table 15 in EPA 2017
CC21C	Cement	EU-22	Wynona	June 2016	Runoff	2.5 U	2.5 U	--	16.3 D	5 U	92.2 D	1.86 D	918	--	14.8 D	5 U	2.5 U	5 U	--	1470	Table 15 in EPA 2017
CC24D	Cement	EU-21	Lark	June 2016	Runoff	2.5 U	2.5 U	--	21.4 D	5 U	530 D	111 D	120	--	4.53 JD	5 U	3.26 JD	5 U	--	5610	Table 15 in EPA 2017
CC24E	Cement	EU-21	Henrietta	June 2016	Runoff	2.5 U	2.5 U	--	0.579 JD	5 U	13.3 D	16.3 D	30.9	--	2.5 U	5 U	2.5 U	5 U	--	162	Table 15 in EPA 2017
CC24F	Cement	EU-21	Henrietta	June 2016	Runoff	2.5 U	2.5 U	--	1.09 D	5 U	28.1 D	16.1 D	19	--	2.5 U	5 U	2.5 U	5 U	--	261	Table 15 in EPA 2017
CC25C	Cement	EU-21	Joe and Johns	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	46.1 D	32.8	--	2.5 U	5 U	2.5 U	5 U	--	16.7 J	Table 15 in EPA 2017
CC37	Cement	EU-20	Anglo Saxon	June 2016	Runoff	2.5 U	7.91 JD	--	2.75 D	5 U	7.68 D	10.3 D	8940	--	3.95 JD	5 U	2.5 U	8.95 JD	--	2930	Table 15 in EPA 2017
CC38B	Cement	EU-20	Porcupine Gulch	June 2016	Runoff	2.5 U	6.39 JD	--	2.06 D	5 U	58.8 D	9.54 D	11600	--	4.09 JD	5 U	2.5 U	5 U	--	2290	Table 15 in EPA 2017
CC43C	Cement	EU-20	Yukon Tunnel	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	11.6 D	2.76 D	793	--	2.5 U	5 U	2.5 U	5 U	--	109	Table 15 in EPA 2017
CC43D	Cement	EU-20	Yukon Tunnel	June 2016	Runoff	2.5 U	2.5 U	--	21.4 D	5 U	3610 D	3.89 D	6530	--	39 D	5 U	2.5 U	5 U	--	5810	Table 15 in EPA 2017
M16	Mineral	EU-06	Paradise	June 2016	Runoff	2.5 U	2.5 U	--	0.982 JD	5 U	2.94 JD	0.5 U	6000	--	4.18 JD	5 U	2.5 U	5 U	--	627	Table 15 in EPA 2017
M16C	Mineral	EU-06	Paradise	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	4.44 D	681	--	2.5 U	5 U	2.5 U	5 U	--	117	Table 15 in EPA 2017
M16D	Mineral	EU-06	Paradise	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	8.1 D	1290	--	2.5 U	5 U	2.5 U	5 U	--	315	Table 15 in EPA 2017
A16	Animas	EU-17	Vermillion Tunnel	June 2016	Runoff	2.5 U	2.5 U	--	2.39 D	5 U	2.72 JD	1.5 D	1100	--	2.5 U	5 U	2.5 U	5 U	--	1030	Table 18 in EPA 2017
A21A	Animas	EU-16	Comet	June 2016	Runoff	2.5 U	2.5 U	--	11.9 D	5 U	2.5 U	253 D	8980	--	11 D	5 U	2.5 U	5 U	--	4300	Table 18 in EPA 2017
A38	Animas	EU-12	Terry Tunnel	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	2.36 D	10600	--	2.5 U	5 U	2.5 U	12 D	--	1180	Table 18 in EPA 2017
ARD1	Animas	EU-12	Terry Tunnel	June 2016	Runoff	2.5 U	2.5 U	--	43.8 D	5 U	1990 D	745 D	12700	--	8.89 D	5 U	2.5 U	5 U	--	12500	Table 18 in EPA 2017
BB1	Animas	EU-19	Ben Butler	June 2016	Runoff	2.5 U	2.5 U	--	10.7 D	5 U	192 D	830 D	92.8	--	2.5 U	5 U	6.01 D	5 U	--	2080	Table 18 in EPA 2017
CG5	Animas	EU-17	Vermillion	June 2016	Runoff	2.5 U	2.5 U	--	7.84 D	5 U	61.3 D	47.7 D	472	--	2.5 U	5 U	2.5 U	5 U	--	1730	Table 18 in EPA 2017
CG5A	Animas	EU-17	Vermillion	June 2016	Runoff	2.5 U	2.5 U	--	7.54 D	5 U	60.4 D	54.8 D	435	--	2.5 U	5 U	2.5 U	5 U	--	1720	Table 18 in EPA 2017
DM22	Animas	EU-14	Tom Moore	June 2016	Runoff	2.5 U	2.5 U	--	1.14 D	5 U	2.5 U	0.826 JD	409	--	2.5 U	5 U	2.5 U	5 U	--	627	Table 18 in EPA 2017
DM32	Animas	EU-12	Ben Franklin	June 2016	Runoff	2.5 U	2.5 U	--	49.5 D	5 U	2230 D	1800 D	10800	--	6.66 D	5 U	2.5 U	5 U	--	14400	Table 18 in EPA 2017
DM5	Animas	EU-19	London	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	5.41 D	96.9 D	28.2	--	2.5 U	5 U	2.5 U	5 U	--	84.6	Table 18 in EPA 2017
DM6	Animas	EU-19	London	June 2016	Runoff	2.5 U	2.5 U	--	8.17 D	5 U	30.3 D	61.7 D	189	--	2.5 U	5 U	2.5 U	5 U	--	1540	Table 18 in EPA 2017
DM7	Animas	EU-19	London	June 2016	Runoff	4.77 JD	11.9 D	--	46.2 D	5 U	107 D	22.1 D	1030	--	2.5 U	5 U	2.5 U	5 U	--	8130	Table 18 in EPA 2017
DM8A	Animas	EU-19	Prairie	June 2016	Runoff	2.5 U	2.5 U	--	1.7 D	5 U	2.5 U	0.5 U	2.41 J	--	2.5 U	5 U	2.5 U	5 U	--	448	Table 18 in EPA 2017
EG5	Animas	EU-12	Vermillion	June 2016	Runoff	2.5 U	2.5 U	--	3.11 D	5 U	14.8 D	2.56 D	636	--	2.5 U	5 U	2.5 U	10.6 D	--	1120	Table 18 in EPA 2017
CC01C	Cement	EU-24	Grand Mogul	June 2016	Runoff	2.5 U	2.5 U	--	18.7 D	5 U	470 D	39.7 D	1720	--	2.65 JD	5 U	2.5 U	5 U	--	3650	Table 18 in EPA 2017
CC01C1	Cement	EU-24	Grand Mogul	June 2016	Runoff	2.5 U	3.85 JD	--	41.7 D	5 U	1440 D	33.7 D	3760	--	5.51 D	5 U	2.5 U	5 U	--	8850	Table 18 in EPA 2017
CC01C2	Cement	EU-24	Grand Mogul	June 2016	Runoff	2.5 U	2.5 U	--	23.1 D	5 U	733 D	28.1 D	2180	--	3.14 JD	5 U	2.5 U	5 U	--	4680	Table 18 in EPA 2017
CC02D	Cement	EU-24	Mogul	June 2016	Runoff	2.5 U	2.87 JD	--	42.4 D	5 U	33.4 D	149 D	23300	--	5.1 D	5 U	2.5 U	5 U	--	26500	Table 18 in EPA 2017
CC02I	Cement	EU-24	Mogul	June 2016	Runoff	2.5 U	2.5 U	--	6.17 D	5 U	24 D	8.84 D	121	--	4.95 JD	5 U	2.5 U	5 U	--	1750	Table 18 in EPA 2017
CC24G	Cement	EU-21	Henrietta	June 2016	Runoff	2.5 U	2.72 JD	--	0.5 U	5 U	36.9 D	3.3 D	72.9	--	8.66 D	5 U	2.5 U	5 U	--	116	Table 18 in EPA 2017
QA Adit	Cement	EU-24	Queen Anne	June 2016	Runoff	2.5 U	2.5 U	--	6.97 D	5 U	119 D	33.7 D	924	--	2.5 U	5 U	2.5 U	5 U	--	1650	Table 18 in EPA 2017

-- = no data

Table A-2 Mine Drainage and Adit Water Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in µg/L. See Appendix A title page for data qualifier definitions. Continued

Station ID	Subwatershed	Exposure Unit	Mine name	Sample Date	Hydroperiod	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Source
QABG-1	Cement	EU-24	Queen Anne	June 2016	Runoff	2.5 U	2.5 U	--	0.539 JD	5 U	2.5 U	2.09 D	185	--	2.5 U	5 U	2.5 U	5 U	--	109	Table 18 in EPA 2017
QABG-2	Cement	EU-24	Queen Anne	June 2016	Runoff	2.5 U	2.5 U	--	0.63 JD	5 U	3.43 JD	39.7 D	2 U	--	2.5 U	5 U	2.5 U	5 U	--	205	Table 18 in EPA 2017
LFK9	Mineral	EU-04	Junction/Longfellow/Koehler	June 2016	Runoff	2.5 U	177 D	--	19.4 D	5 U	891 D	100 D	7220	--	32.3 D	5 U	2.5 U	5 U	--	7870	Table 18 in EPA 2017
M02B	Mineral	EU-04	Junction	June 2016	Runoff	2.5 U	143 D	--	7.17 D	5 U	261 D	131 D	348	--	3.75 JD	5 U	2.5 U	5 U	--	1640	Table 18 in EPA 2017
M02D	Mineral	EU-04	Longfellow	June 2016	Runoff	2.5 U	3.85 JD	--	0.5 U	5 U	8.91 D	1.45 D	80	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 18 in EPA 2017
M02K	Mineral	EU-04	Junction/Longfellow/Koehler	June 2016	Runoff	2.5 U	1800 D	--	51.1 D	5 U	2630 D	115 D	19200	--	88.3 D	5 U	2.5 U	5 U	--	21100	Table 18 in EPA 2017
M02K1	Mineral	EU-04	Junction/Longfellow/Koehler	June 2016	Runoff	2.5 U	2.5 U	--	40.7 D	5 U	3170 D	3.19 D	16600	--	71.9 D	5 U	2.5 U	5 U	--	17700	Table 18 in EPA 2017
M02L	Mineral	EU-04	Junction/Longfellow/Koehler	June 2016	Runoff	2.5 U	2.5 U	--	0.5 U	5 U	8.64 D	0.5 U	18.5	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 18 in EPA 2017
M12C	Mineral	EU-3.5	Brooklyn	June 2016	Runoff	2.5 U	20.7 D	--	14.9 D	5 U	236 D	25.1 D	5240	--	7.88 D	5 U	2.5 U	5 U	--	4670	Table 18 in EPA 2017
A11A	Animas	EU-15	Columbus	Sept 2016	Post-runoff	2.5 U	14 D	--	1030 D	6.12 JD	6960 D	302 D	12400	--	58.5 D	19.1 D	2.5 U	5 U	--	229000	Table 27 in EPA 2017
A12	Animas	EU-15	Frisco Tunnel	Sept 2016	Post-runoff	2.5 U	2.5 U	--	5.43 D	5 U	2.93 JD	0.5 U	13900	--	2.5 U	5 U	2.5 U	5 U	--	5090	Table 27 in EPA 2017
A16	Animas	EU-17	Vermillion Tunnel	Sept 2016	Post-runoff	2.5 U	2.99 JD	--	1.84 D	5 U	2.5 U	1.13 D	1030	--	2.5 U	5 U	2.5 U	8.85 JD	--	904	Table 27 in EPA 2017
A19A	Animas	EU-17	Mountain Queen	Sept 2016	Post-runoff	2.5 U	2.5 U	--	43 D	5 U	1260 D	139 D	4190	--	4.69 JD	5 U	2.5 U	10 D	--	5060	Table 27 in EPA 2017
A21A	Animas	EU-16	Comet	Sept 2016	Post-runoff	2.5 U	2.5 U	--	13.3 D	5 U	2.5 U	188 D	9160	--	11.4 D	5 U	2.5 U	5 U	--	4710	Table 27 in EPA 2017
A29	Animas	EU-14	Silverwing	Sept 2016	Post-runoff	2.5 U	110 D	--	14.8 D	5 U	6970 D	19.1 D	3290	--	2.5 U	5 U	2.5 U	5 U	--	4020	Table 27 in EPA 2017
A38	Animas	EU-12	Terry Tunnel	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.726 JD	5 U	2.5 U	8.53 D	11000	--	2.5 U	5 U	2.5 U	5 U	--	1340	Table 27 in EPA 2017
A41	Animas	EU-10	Forest Queen	Sept 2016	Post-runoff	2.5 U	2.5 U	--	6.58 D	5 U	2.5 U	2.57 D	2340	--	5.25 D	5 U	2.5 U	5 U	--	621	Table 27 in EPA 2017
A50	Animas	EU-08	Pride of the West	Sept 2016	Post-runoff	2.5 U	2.5 U	--	7.51 D	5 U	26.3 D	17.6 D	239	--	2.5 U	5 U	2.5 U	5 U	--	1360	Table 27 in EPA 2017
ARD1	Animas	EU-12	Terry Tunnel	Sept 2016	Post-runoff	2.5 U	2.5 U	--	79.7 D	5 U	2690 D	747 D	26000	--	15.4 D	5 U	2.5 U	5 U	--	23000	Table 27 in EPA 2017
DM22	Animas	EU-14	Tom Moore	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.77 JD	5 U	2.5 U	0.5 U	165	--	2.5 U	5 U	2.5 U	5 U	--	572	Table 27 in EPA 2017
DM24	Animas	EU-14	Senator	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.996 JD	3490	--	2.5 U	5 U	2.5 U	5 U	--	98	Table 27 in EPA 2017
DM32	Animas	EU-12	Ben Franklin	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.536 JD	5 U	5.89 D	1.36 D	13.3	--	2.5 U	5 U	2.5 U	5 U	--	80.3	Table 27 in EPA 2017
DM56	Animas	EU-07	Little Nation	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.01 D	5 U	2.5 U	2.59 D	1390	--	2.5 U	5 U	2.5 U	5 U	--	595	Table 27 in EPA 2017
DM6	Animas	EU-19	London	Sept 2016	Post-runoff	2.5 U	2.5 U	--	84.4 D	5 U	260 D	226 D	1640	--	5.27 D	5 U	2.5 U	5 U	--	17200	Table 27 in EPA 2017
DM7	Animas	EU-19	London	Sept 2016	Post-runoff	4.06 JD	14.8 D	--	49.4 D	5 U	123 D	27.9 D	1230	--	2.5 U	5 U	2.5 U	5 U	--	8170	Table 27 in EPA 2017
EG5	Animas	EU-12	Vermillion	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.18 D	5 U	12.2 D	3.11 D	144	--	2.5 U	5 U	2.5 U	5 U	--	493	Table 27 in EPA 2017
PWMLO1	Animas	EU-09	Pride of the West	Sept 2016	Post-runoff	2.5 U	2.5 U	--	23.7 D	5 U	81.8 D	58.2 D	33500	--	12.2 D	5 U	2.5 U	5 U	--	12900	Table 27 in EPA 2017
PWMLO2	Animas	EU-09	Pride of the West	Sept 2016	Post-runoff	2.5 U	2.5 U	--	20.2 D	5 U	60.8 D	34.8 D	32200	--	10.2 D	5 U	2.5 U	5 U	--	13400	Table 27 in EPA 2017
PWMLP1	Animas	EU-09	Pride of the West	Sept 2016	Post-runoff	5 U	5.43 JD	--	217 D	10 U	1950 D	2010 D	160000 D	--	128 D	10 U	5 U	10 U	--	55500 D	Table 27 in EPA 2017
PWMLP2	Animas	EU-09	Pride of the West	Sept 2016	Post-runoff	2.5 U	2.5 U	--	26.2 D	5 U	39.3 D	14 D	27200	--	9.33 D	5 U	2.5 U	5 U	--	11400	Table 27 in EPA 2017
CC01B	Cement	EU-24	Mogul	Sept 2016	Post-runoff	2.5 U	2.87 JD	--	47.5 D	5 U	18.4 D	471 D	26300	--	7.35 D	5 U	2.5 U	5 U	--	32500	Table 27 in EPA 2017
CC01B	Cement	EU-24	Mogul	Sept 2016	Post-runoff	2.5 U	2.5 U	--	48.9 D	5 U	18.1 D	423 D	26000	--	11.7 D	5 U	2.5 U	5 U	--	32500	Table 27 in EPA 2017
CC01C	Cement	EU-24	Grand Mogul	Sept 2016	Post-runoff	2.5 U	37.1 D	--	95.4 D	5 U	2620 D	27.9 D	6120	--	14.2 D	5 U	2.5 U	5 U	--	24500	Table 27 in EPA 2017
CC01C1	Cement	EU-24	Grand Mogul	Sept 2016	Post-runoff	2.5 U	20.3 D	--	127 D	5.56 JD	5080 D	7.59 D	11400	--	15.7 D	5 U	2.5 U	5 U	--	31300	Table 27 in EPA 2017
CC01C2	Cement	EU-24	Grand Mogul	Sept 2016	Post-runoff	2.5 U	2.5 U	--	69.1 D	5 U	2220 D	22.1 D	5730	--	9.01 D	5 U	2.5 U	5 U	--	14900	Table 27 in EPA 2017
CC02D	Cement	EU-24	Mogul	Sept 2016	Post-runoff	2.5 U	2.5 U	--	48.2 D	5 U	19.1 D	446 D	26200	--	26.4 D	5 U	2.5 U	5 U	--	33000	Table 27 in EPA 2017
CC02I	Cement	EU-24	Mogul	Sept 2016	Post-runoff	2.5 U	2.5 U	--	11.2 D	5 U	128 D	2.93 D	2330	--	8.34 D	5 U	2.5 U	5 U	--	2140	Table 27 in EPA 2017
CC03C	Cement	EU-22	Red & Bonita	Sept 2016	Post-runoff	2.5 U	3.91 JD	--	24.5 D	5 U	8.36 D	232 D	31600	--	48.5 D	5 U	2.5 U	5 U	--	14600	Table 27 in EPA 2017
CC03D	Cement	EU-22	Red & Bonita	Sept 2016	Post-runoff	2.5 U	2.5 U	--	25.1 D	5 U	6.95 D	61.2 D	31300	--	43.5 D	5 U	2.5 U	5 U	--	14300	Table 27 in EPA 2017
CC14	Cement	EU-23	Silver Ledge	Sept 2016	Post-runoff	2.5 U	2.53 JD	--	1.87 D	5 U	7.17 D	3.17 D	2520	--	3.01 JD	5 U	2.5 U	5 U	--	704	Table 27 in EPA 2017
CC16B	Cement	EU-23	Gold King	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.45 D	5 U	19.1 D	1.78 D	1320	--	3.5 JD	5 U	2.5 U	5 U	--	395	Table 27 in EPA 2017
CC19	Cement	EU-22	American Tunnel	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.85 D	5 U	7.91 D	3.16 D	40100	--	52.7 D	5 U	2.5 U	5 U	--	18900	Table 27 in EPA 2017
CC21C	Cement	EU-22	Wynona	Sept 2016	Post-runoff	2.5 U	2.5 U	--	14.8 D	5 U	38 D	1.78 D	870	--	13.5 D	5 U	2.5 U	5 U	--	1260	Table 27 in EPA 2017
CC24D	Cement	EU-21	Lark	Sept 2016	Post-runoff	2.5 U	9.64 JD	--	24.2 D	5 U	176 D	27.2 D	9970	--	78.2 D	5 U	2.5 U	7.84 JD	--	20200	Table 27 in EPA 2017
CC24F	Cement	EU-21	Henrietta	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	3.93 D	21.9	--	2.5 U	5 U	2.5 U	5 U	--	117	Table 27 in EPA 2017
CC25C	Cement	EU-21	Joe and Johns	Sept 2016	Post-runoff	2.5 U	59.6 D	--	41.4 D	5 U	372 D	853 D	215	--	17.7 D	5 U	2.5 U	5 U	--	9390	Table 27 in EPA 2017
CC37	Cement	EU-20	Anglo Saxon	Sept 2016	Post-runoff	2.5 U	7.17 JD	--	2.26 D	5 U	5.21 D	8.44 D	8700	--	3.63 JD	5 U	2.5 U	5 U	--	2830	Table 27 in EPA 2017
CC38B	Cement	EU-20	Porcupine Gulch	Sept 2016	Post-runoff	2.5 U	5.93 JD	--	1.95 D	5 U	24.4 D	3.89 D	12400	--	2.8 JD	5 U	2.5 U	5 U	--	2530	Table 27 in EPA 2017
CC43C	Cement	EU-20	Yukon Tunnel	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	12.2 D	2.65 D	1130	--	2.5 U	5 U	2.5 U	5 U	--	121	Table 27 in EPA 2017
MTD-4	Cement	EU-24	Mogul	Sept 2016	Post-runoff	2.5 U	2.5 U	--	59.5 D	5 U	643 D	63.7 D	16700	--	11.4 D	5 U	2.5 U	5 U	--	24100	Table 27 in EPA, 2017
QA Adit	Cement	EU-24	Queen Anne	Sept 2016	Post-runoff	2.5 U	2.5 U	--	11.6 D	5 U	105 D	35.5 D	1630	--	2.5 U	5 U	2.5 U	5 U	--	2690	Table 27 in EPA 2017
QABG-1	Cement	EU-24	Queen Anne	Sept 2016	Post-runoff	2.5 U	2.5 U	--	2.02 D	5 U	3.32 JD	3.16 D	71.1	--	2.5 U	5 U	2.5 U	5 U	--	551	Table 27 in EPA 2017
QABG-2	Cement	EU-24	Queen Anne	Sept 2016	Post-runoff	2.5 U	2.5 U	--	2.15 D	5 U	4.52 JD	4.77 D	97.3	--	2.5 U	5 U	2.5 U	5 U	--	533	Table 27 in EPA 2017
LFK9	Mineral	EU-04	Junction/Longfellow/Koehler	Sept 2016	Post-runoff	2.5 U	234 D	--	47.2 D	5 U	1610 D	59.8 D	20800	--	92.5 D	5 U	2.5 U	5 U	--	22400	Table 27 in EPA 2017
Little Dora Adit	Mineral	EU-01	Little Dora	Sept 2016	Post-runoff	2.5 U	2.63 JD	--	3.22 D	5 U	63.5 D	6.98 D	9780	--	2.5 U	5 U	2.5 U	5 U	--	1230	Table 27 in EPA 2017
M02B	Mineral	EU-04	Junction	Sept 2016	Post-runoff	2.5 U	303 D	--	25.1 D	5 U	777 D	304 D	1780	--	16.6 D	5 U	2.5 U	5 U	--	6590	Table 27 in EPA 2017
M02D	Mineral	EU-04	Longfellow	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	5.04 D	0.931 JD	88.1	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 27 in EPA 2017
M02K	Mineral	EU-04	Junction/Longfellow/Koehler	Sept 2016	Post-runoff	2.5 U	3000 D	--	86.2 D	5.72 JD	3140 D	152 D	37600	--	182 D	5 U	2.5 U	5.79 JD	--	41500	Table 27 in EPA 2017
M02L	Mineral	EU-04	Junction/Longfellow/Koehler	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	6.36 D	0.516 JD	33.5	--	2.5 U	5 U	2.5 U	5 U	--	10 U	Table 27 in EPA 2017
M12C	Mineral	EU-3.5	Brooklyn	Sept 2016	Post-runoff	2.5 U	20.6 D	--	19 D	5 U	319 D	25 D	6380	--	12.9 D	5 U	2.5 U	5 U	--	5690	Table 27 in EPA 2017
M12D	Mineral	EU-3.5	Brooklyn	Sept 2016	Post-runoff	2.5 U	20.1 D	--	18.9 D	5 U	328 D	24.7 D	6300	--	11.7 D	5 U	2.5 U	5 U	--	5810	Table 27 in EPA 2017
M12E	Mineral	EU-3.5	Brooklyn	Sept 2016	Post-runoff	2.5 U	22.2 D	--	16 D	5 U	281 D	22.9 D	6070	--	9.93 D	5 U	2.5 U	5 U	--	5570	Table 27 in EPA 2017
M16	Mineral	EU-06	Paradise	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.4 D	5 U	2.7 JD	0.5 U	6300	--	13.5 D	5 U	2.5 U	5 U	--	692	Table 27 in EPA 2017
M16A	Mineral	EU-06	Paradise	Sept 2016	Post-runoff	2.5 U	2.5 U	--	1.37 D	5 U	3.01 JD	0.5 U	6320	--	13.1 D	5 U	2.5 U	5 U	--	699	Table 27 in EPA 2017
M16B	Mineral	EU-06	Paradise	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.7 JD	0.947 JD	851	--	2.5 U	5 U	2.5 U	5 U	--	11.2 J	Table 27 in EPA 2017
M16C	Mineral	EU-06	Paradise	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.855 JD	919	--	2.5 U	5 U	2.5 U	5 U	--	62.6	Table 27 in EPA 2017
M16D	Mineral	EU-06	Paradise	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.705 JD	5 U	4.04 JD	15 D	2690	--	2.5 U	5 U	2.5 U	5 U	--	692	Table 27 in EPA 2017
M24A	Mineral	EU-05	Bandora	Sept 2016	Post-runoff	3.05 JD	12.8 D	--	67.8 D	5 U	1070 D	977 D	6770	--	10.5 D	5 U	2.5 U	5 U	--	13500	Table 27 in EPA 2017
M24B	Mineral	EU-05	Bandora	Sept 2016	Post-runoff	2.5 U	2.5 U	--	49.3 D	5 U	233 D	201 D	5290	--	8.79 D	5 U	2.5 U	5 U	--	11200	Table 27 in EPA 2017
M24C	Mineral	EU-05	Bandora	Sept 2016	Post-runoff	2.5 U	2.5 U	--	0.5 U	5 U	2.5 U	0.663 JD	2100	--	2.5 U	5 U	2.5 U	5 U	--	540	Table 27 in EPA 2017
North Star Adit	Mineral	EU-01	North Star	Sept 2016	Post-runoff	2.5 U	8.21 JD	--	3.65 D	5 U	156 D	5.9 D	3530	--	2.5 U	5 U	2.5 U	5 U	--	946	Table 27 in EPA 2017

-- = no data

Table A-3 Floodplain Soil Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in mg/kg dry-weight. See Appendix A title page for data qualifier definitions.

Station ID	Subwatershed	Exposure Unit	DRC	Sample Date	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Dataset
KT04[a]	Animas	EU-09	High	August 2015	7310	17.6	38.6	118	0.81	13.5 J	4.8	12.4	813	30900	5560	18100	0.62	--	5.1	--	27.5	0.24 J	18.1	1860	Table 2.6-1 in EPA 2016
KT01[a]	Animas	EU-09	High	August 2015	8720	18.9	33.1	107	0.97	19 J	5.7	10.8	950	27900	7410	23800	0.73	--	5.2	--	25.2	0.31 J	19.5	3300	Table 2.6-1 in EPA 2016
KT04-TP1[a]	Animas	EU-09	High	August 2015	5870	12.5	29.5	106	0.45	9.6 J	4.7	9.3	569	28600	4850	20900	0.31	--	3.7	2 UJ	25.2	0.19 J	15.6	1520	Table 2.6-1 in EPA 2016
KT02[a]	Animas	EU-09	High	August 2015	7970	11	29	125	0.68	11 J	4.9	11.1	494	29200	3510	14200	0.24	--	5.6	--	9.7	0.2 J	20.8	1640	Table 2.6-1 in EPA 2016
KT02-1[a]	Animas	EU-09	High	August 2015	9900	2.3	16.2	90	0.89	9.6 J	5.3	13.7	168	29600	837	4250	0.047 J	--	6.8	--	4	0.16 J	28.1	1220	Table 2.6-1 in EPA 2016
KT03-TP1[a]	Animas	EU-09	High	August 2015	2510	9.4	12	42.2	0.089 J	0.91 J	1.3	2.4	639	18400	11500	150	0.29	--	1.4	1.9 U	5.4	0.077 J	7.8	246	Table 2.6-1 in EPA 2016
KT03-TP2[a]	Animas	EU-09	High	August 2015	6680	2.9	10.1	106	0.23 J	1.7 J	2.9	7.4	579	28900	3180	538	0.15	--	3.5	2.1 UJ	15.1	0.075 J	17.9	330	Table 2.6-1 in EPA 2016
KT03[a]	Animas	EU-09	High	August 2015	2840	7.4	9.7	46.9	0.16 J	1.6 J	2.2	3.4	591	14800	5470	215	0.19	--	2.3	2 UJ	16	0.1 J	9.1	275	Table 2.6-1 in EPA 2016
ET01-TP2[a]	Animas	EU-10	High	August 2015	2890 J	22.7	63.9	38.8	0.28 J	14.8	3.8	6.7	564	55100 J	7450 J	15000 J	0.2	--	2.8	2 J	41.3	0.19 J	10.1	6120 J	Table 2.6-1 in EPA 2016
ET01-TP1[a]	Animas	EU-10	High	August 2015	5000 J	46.2	53.6	117	1.8	11.9	8.5	1.4	2470	25400 J	16700 J	53200 J	0.53	--	1.7	1.8 J	65.4	0.46 J	14.5	2660 J	Table 2.6-1 in EPA 2016
ET04-TP1[a]	Animas	EU-10	High	August 2015	1660	23.2	51.6	21.8	1.1	26.9	9.8	5.1	1590	42300	6120	58100	0.077 J	--	3.4	2	31.2	0.19 J	5.3	5270	Table 2.6-1 in EPA 2016
FQ-TP01[a]	Animas	EU-10	High	August 2015	4660	33.3	50.7	53.7	1.4	11	4.5	2.8	1670	26100	13700	49100	0.37	--	2.1	1.5 J	13.4	0.42 J	10.7	2290	Table 2.6-1 in EPA 2016
ET-FP13[a]	Animas	EU-10	High	August 2015	9260	11	48.7	103	2.3	13.4	5.4	17.6	423	26300	1240	18800	0.081 J	--	10.9	0.29 J	4.2	0.37 J	21.6	1950	Table 2.6-1 in EPA 2016
ET-FP03[a]	Animas	EU-10	High	August 2015	5750	18.9	48.6	73.3	0.84	16.4	4.9	10.4	840	36200	6280	19100	0.28	--	4.8	1.2 J	16.6	0.27 J	14	3360	Table 2.6-1 in EPA 2016
ET03-TP1[a]	Animas	EU-10	High	August 2015	5000 J	34.1	46	103	1.5	11.8	7.9	2.9	1590	23000 J	10700 J	61300 J	0.29	--	2.2	1.5 J	49.8	0.56 J	11.9	2060 J	Table 2.6-1 in EPA 2016
ET03-TP2[a]	Animas	EU-10	High	August 2015	4550	21.8	45.8	86.3	0.32 J	8.2	6.2	11	838	36100	9540	22000	0.25	--	3.5	1 J	36.1	0.38 J	13.8	1050	Table 2.6-1 in EPA 2016
ET-FP01[a]	Animas	EU-10	High	August 2015	6940	19	43	66.4	1.1	11.8	5.5	11.7	1060	34400	5950	15500	0.56	--	5.5	1 J	13.7	0.28 J	16.3	1990	Table 2.6-1 in EPA 2016
ET-FP09[a]	Animas	EU-10	High	August 2015	9450	7.7	42.7	108	2.1	17.4	5.5	16.3	701	28500	2350	24100	0.12	--	10.6	0.8 J	9.9	0.37 J	19.8	2360	Table 2.6-1 in EPA 2016
ET01-TP3[a]	Animas	EU-10	High	August 2015	4370 J	11.1	39.1	51.9	0.26 J	3.9	3.8	7.7	235	35300 J	3900 J	12600 J	0.21	--	3.1	1.1 J	22.3	0.14 J	12.6	1670 J	Table 2.6-1 in EPA 2016
ET02-TP1[a]	Animas	EU-10	High	August 2015	3680 J	24	39	85.3	1.1	5.5	6.2	1.7	1200	22800 J	8760 J	34800 J	0.16	--	1.3	1.3 J	39.9	0.43 J	9.9	1670 J	Table 2.6-1 in EPA 2016
ET-FP01[a]	Animas	EU-10	High	August 2015	8530	5.9	38.5	97.1	1.7	11.9	5	15.1	387	25400	1370	11500	0.056 J	--	9.3	0.77 J	4	0.34 J	19.2	1710	Table 2.6-1 in EPA 2016
ET04-TP2[a]	Animas	EU-10	High	August 2015	6140	14.6	38.4	66.7	1.1	8.2	4.3	12.4	511	28900	3550	12600	0.11	--	5.7	0.8 J	17.9	0.2 J	16.5	1290	Table 2.6-1 in EPA 2016
FQ-TP02[a]	Animas	EU-10	High	August 2015	2730	22.8	38.3	33.7	0.87	14.4	4.5	2.4	1360	22400	6450	44400	0.12	--	1.9	1.3 J	13.1	0.32 J	6.4	3480	Table 2.6-1 in EPA 2016
ET-FP04[a]	Animas	EU-10	High	August 2015	7450	12.7	37.7	103	1.5	15.1	4.9	12.5	745	25700	3400	16800	0.15	--	7.3	0.22 J	14.8	0.32 J	16.2	1890	Table 2.6-1 in EPA 2016
ET06-TP2[a]	Animas	EU-10	High	August 2015	6170	11	37.5	88.7	0.64	8.9	4.3	13.5	555	29200	3810	15800	0.18	--	4.6	0.42 J	15.9	0.27 J	15.6	1320	Table 2.6-1 in EPA 2016
ET02-TP2[a]	Animas	EU-10	High	August 2015	2040 J	21	36.8	56.1	0.91	9.3	6.1	2.5	1140	21600 J	6110 J	43700 J	0.12	--	1.4	1.4 J	34.7	0.31 J	6.9	1730 J	Table 2.6-1 in EPA 2016
ET-FP15[a]	Animas	EU-10	High	August 2015	8800	7	36.5	93.5	1.4	10.5	5.4	17.1	383	29200	1460	10300	0.084 J	--	9.1	0.66 J	5.9	0.3 J	22.2	1390	Table 2.6-1 in EPA 2016
ET-FP08[a]	Animas	EU-10	High	August 2015	8850	7.4	36.1	95.4	1.9	13.8	5	16.1	506	26300	1850	13000	0.085 J	--	9.4	1.2 J	5.2	0.31 J	20.1	1900	Table 2.6-1 in EPA 2016
ET-FP06[a]	Animas	EU-10	High	August 2015	7760	8.7	34.9	110	1.7	14.9	5	15.6	568	24900	2110	14100	0.077 J	--	8.9	0.35 J	7.5	0.32 J	19.2	1750	Table 2.6-1 in EPA 2016
ET-FP02[a]	Animas	EU-10	High	August 2015	7940	11.4	33.7	98.3	1.7	12.8	6.7	13	706	28000	4510	16100	0.19	--	7.6	1.9 U	11.4	0.3 J	16.3	1780	Table 2.6-1 in EPA 2016
ET-FP05[a]	Animas	EU-10	High	August 2015	7870	10.2	33.7	89.7	1.5	17	5.3	15.3	690	28900	3140	15800	0.17	--	7.9	0.44 J	13.7	0.32 J	18.6	1870	Table 2.6-1 in EPA 2016
ET-FP11[a]	Animas	EU-10	High	August 2015	8670	5.2	33	87.4	2.1	13.6	6.7	17.1	455	27600	1310	15800	0.095	--	10.6	0.67 J	4.4	0.38	19.9	1600	Table 2.6-1 in EPA 2016
FQ01[a]	Animas	EU-10	High	August 2015	4370	19.5	32.7	56.6	1.7	13.1	4.1	4.5	1160	22900	6610	23500	0.53	--	2.4	0.89 J	26.8	0.26 J	10.8	2330	Table 2.6-1 in EPA 2016
ET-FP07[a]	Animas	EU-10	High	August 2015	8300	7.3	32.6	109	1.7	15.8	5.1	16.2	774	28400	2630	14800	0.13	--	8.7	1.2 J	11.4	0.32 J	18.9	1840	Table 2.6-1 in EPA 2016
ET06-TP1[a]	Animas	EU-10	High	August 2015	5910	16.5	32.1	82.9	0.86	26.1	3.2	11.6	1090	20700	4820	22700	0.27	--	6.8	0.22 J	13.7	0.27 J	13.5	2120	Table 2.6-1 in EPA 2016
ET05-TP2[a]	Animas	EU-10	High	August 2015	6150	14.8	29.6	113	1.4	18.8	5	12.4	999	23600	5290	--	0.14	--	6.9	0.76 J	19	0.24 J	14.4	2790	Table 2.6-1 in EPA 2016
ET05-TP1[a]	Animas	EU-10	High	August 2015	6920	6.2	26.9	65.4	0.57	8.1	4.2	13.3	541	27400	2550	12600	0.073 J	--	5.2	0.16 J	8.5	0.24 J	15.3	980	Table 2.6-1 in EPA 2016
CMP11[a]	Mineral	EU-02	Low	July 2016	11300	0.82	43.7 J-	80.8	0.38	0.54	4.3	5.5	79.9	48100 J	431	633	0.19	2.9	2.5	2.3	0.98	0.18	25.4	371	Table 24 in EPA 2017
CMP12[a]	Mineral	EU-02	Low	July 2016	10100	0.7	29.5 J-	136	0.35	1.1	4.7	7.1	43.8	35300 J	257	829	0.14	3.4	2.5	2.4	0.65	0.18	23.1	534	Table 24 in EPA 2017
CMP13[a]	Mineral	EU-05	Mid	July 2016	11600	0.57	19.9 J-	123	0.7	0.83	7.1	10.6	22.5	24000 J	100	936	0.00165 U	1.2	9.1	1.1	0.58	0.0195 U	20.8	250	Table 24 in EPA 2017
CMP14	Mineral	EU-05	Mid	July 2016	10500	0.8	18.7 J-	111	0.68	1.1	4.8	9.4	20.4	22100 J	252	1400	0.00165 U	1.1	6.1	0.9	0.89	0.02 U	16.6	270	Table 24 in EPA 2017
CMP15A[a]	Mineral	EU-05	Mid	Sept 2016	12800	0.6 U	11.8 J	90.3	1.4	19.6 J	11.2	29.7	1030	31500 J	761	9030	0.016 J-	--	18.6	4.8	3.3	0.275 R	45	1520	EPA Scribe database
CMP15[a]	Mineral	EU-05	Mid	July 2016	13200	1.4	7.7 J-	131	0.44	3	9.1	5.7	25	19000 J	530	715	0.00185 U	1.5	6.2	0.69	1.1	0.022 U	30.6	874	Table 24 in EPA 2017
CMP4[a]	Animas	EU-07	High	July 2016	8550	46.8	62.9 J-	75.7	0.32	94.3	4.3	9	2510	37400 J	44200	910	6	118 J	2.8	7.1	96.9	0.3	15.4	17300	Table 24 in EPA 2017
CMP7[a]	Animas	EU-14	High	July 2016	13300	42.5	86.9 J-	180	0.8	10.6	8.1	5.9	339	23500 J	11800	1560	0.29	6.4	5.1	2.9	26.7	0.43	24.4	5290	Table 24 in EPA 2017
CMP9[a]	Cement	EU-20	Mid	July 2016	7050	9.7	72.2 J-	140	0.19	1.2	10.5	2.6	111	34800 J	1330	365	0.16	14.2	2.2	3.5	6.4	0.14	23.1	540	Table 24 in EPA 2017
CMP10[a]	Cement	EU-20	Mid	July 2016	8210	1.2	22.7 J-	193	0.24	0.18	4.1	2.7	31.3	45400 J	73.6	202	0.00165 U	3.3	2.5	3.6	0.014 U	0.25	22.3	74.3	Table 24 in EPA 2017
CMP5[a]	Animas	Maggie G.	Ref.	July 2016	14100	0.76	13.6 J-	163	0.74	0.99	6.9	9.3	41.3	25200 J	200	1050	0.21	2	5.8	1.3	0.72	0.15	25.9	252	Table 24 in EPA 2017
MFM-FP-SOL-322	Mineral	EU-06	Low	August 2018	10200 D	1.25 UJ	16.5 D	91.4	0.726 JD	0.646 D	2.57 JD	16.6 D	26.7 D	71700 D	193 D	1090 D	0.035 D	--	2.45 JD	2.5 U	1.25 U	2.5 U	20.5 D	155 JBD	Table 25 in EPA 2019
MFM-FP-SOL-319	Mineral	EU-06	Low	August 2018	8210 D	1.23 U	12.7 D	59.5	0.493 U	0.246 U	2.46 U	8.95 D	18.1 D	98100 D	116 D	655 D	0.013 JD	--	1.23 U	2.46 U	1.23 U	2.46 U	31.2 D	107 JBD	Table 25 in EPA 2019
MFM-FP-SOL-320	Mineral	EU-06	Low	August 2018	8450 D	1.27 U	10.1 D	90.6	0.508 U	0.739 D	2.54 U	8.39 D	21.5 D	85100 D	82.7 D	737 D	0.027 D	--	3.21 D	2.54 U	1.27 U	2.54 U	31 D	107 JBD	Table 25 in EPA 2019
MFM-FP-SOL-321	Mineral	EU-06	Low	August 2018	5860 D	0.893 D	9.53 D	60.6	0.498 U	0.232 D	1.46 D	5.72 D	13.7 D	40500 D	93.8 D	395 D	0.027 D	--	0.949 D	0.642 JD	1.29 D	0.498 U	10.9 D	64.3 JBD	Table 25 in EPA 2019
CUC-FP-SOL-314	Animas	EU-08	Mid	August 2018	13200 D	0.558 D	18.3 D	74.7	0.79 JD	1.88 D	7.55 D	16.9 D	284 D	29500 D	826 D	2450 D	0.05 D	--	6 D	0.697 JD	1.42 D	0.498 U	25.8 D	489 JBD	Table 25 in EPA 2019
CUC-FP-SOL-315	Animas	EU-08	Mid	August 2018	7740 D	0.66 D	10.5 D	127	0.62 JD	2.09 D	2.92 D	8.05 D	56.5 D	20500 D	521 D	1300 D	0.033 D	--	3.38 D	0.492 U	2.61 D	0.492 U	13.7 D	422 JBD	Table 25 in EPA 2019
CUC-FP-SOL-313	Animas	EU-08	Mid	August 2018	7530 D	0.836 D	9.44 D	99.6	0.543 JD	2.32 D	2.89 D	8.86 D	54.4 D	19400 D	598 D	1340 D	0.036 D	--	3.14 D	0.532 JD	2.16 D	0.499 U	13.8 D	453 JBD	Table 25 in EPA 2019
ANR-FP-SOL-302	Animas	EU-09	High	August 2018	4560 D	3.59 D	29.1 D	92 D	0.742 JD	4.61 D	3.29 D	8.25 D	453 D	25700 D	3400 D	10800 BD	0.175 D	--	2.77 D	0.968 JD	12.2 D	2.14 D	11 D	927 D	Table 25 in EPA 2019
ANR-FP-SOL-301	Animas	EU-09	High	August 2018	4630 D	2.1 JD	23.3 JD	79.4 JD	0.664 JD	5.63 JD	3.57 JD	7.84 JD	333 JD	25000 D	2670 D	10800 BD	0.107 D	--	2.86 JD	0.676 JD	10.7 JD	0.499 U	9.65 JD	1200 D	Table 25 in EPA 2019
WFA-FP-SOL-305	Animas	EU-15	High	August 2018	10200 D	0.251 U	20 D	39.4	0.853 JD	4.75 D	5.94 D	12.1 D	233 D	16300 D	135 D	3230 D	0.062 D	--	4.25 D	0.571 JD	1.42 D	0.501 U	16.8 D	1140 JBD	Table 25 in EPA 2019
WFA-FP-SOL-304	Animas	EU-15	High	August 2018	12000 D	0.248 U	19.4 D	120	1.73 JD	4.09 D	5.6 D	18.2 D	128 D	21300 D	137 D	7000 D	0.045 D	--	5.4 D	0.496 U	0.784 D	0.646 JD	18.9 D	487 JBD	Table 25 in EPA 2019
BRC-FP-SOL-309	Animas	EU-19	High	August 2018	7340 D	0.698 D	31 D	72.3 D	0.931 JD	0.592 D	4.6 D	4.76 D	23.3 D	15700 D	130 D	1450 BD	0.038 D	--	3.34 D	0.509 U	0.832 D	0.509 U	13.5 D	92.6 D	Table 25 in EPA 2019
BRC-FP-SOL-308	Animas	EU-19	High	August 2018	7760 D	0.931 D	13.8 D	70.2 D	0.532 JD	0.618 D	4.59 D	2.69 D	11.7 D	12700 D	139 D	495 BD	0.049 D	--	2.66 D	0.508 U	0.78 D	0.508 U	13.4 D	188 D	Table 25 in EPA 2019
BRC-FP-SOL-307	Animas	EU-19	High	August 2018	7500 D	1.26 D	5.79 D	39.2 D	1.37 JD	1.06 D	4.09 D	1.41 D	38.9 D	6050 D	63.1 D	205 BD	0.066 D	--	2.7 D	0.508 U	0.4 JD	0.508 U	8.91 D	177 D	Table 25 in EPA 2019
PGS-FP-SOL-316	Cement	EU-21	Mid	August 2018	2870 JD	7.29 D	21.3 D	378	0.499 U	0.23 D	2.56 D	1.55 D	14 D	18900 D	379 D	415 D	0.04 D	--	1.21 D	1.54 D	3.66 D	0.499 U	9.56 D	38.6 JBD	Table 25 in EPA 2019
PGS-FP-SOL-318	Cement	EU-21	Mid	August 2018	2800 JD	6.53 D	19.6 D	336	0.506 U	0.232 D	2.43 D	1.69 D	13.1 D	17900 D	337 D	346 D	0.042 D	--	1.32 D	1.59 D	3.94 D	0.506 U	9.54 D	39.5 JBD	Table 25 in EPA 2019
PGS-FP-SOL-317	Cement	EU-21	Mid	August 2018	1410 JD	2.72 D	8.8 D	941	0.495 U	0.462 D	1.67 D	0.583 D	13 D	14800 D	131 D	70.6 D	0.048 D	--	0.598 D	1.17 D	0.858 D	0.495 U	5.5 D	95.2 JBD	Table 25 in EPA 2019
SFC-FP-SOL-324	Cement	EU-23	Low	August 2018	10300 D	0.412 JD	14.7 D	142	0.534 JD	0.563 D	5.61 D	6.8 D	32.8 D	39300 D	158 D	851 BD	0.043 D	--	3.97 D	0.504 U	1.17 D	0.504 UJ	21.2 D	139 JBD	Table 25 in EPA 2019
SFC-FP-SOL-322	Cement	EU-23	Low	August 2018	5800 D	0.785 D	12.9 D	108	0.559 JD	0.228 D	2.85 D	6.22 D	42.7 D	60900 D	114 D	489 BD	0.012 JD	--	1.37 D	1.65 D	0.772 D	0.494 UJ	20.4 D	75.5 JBD	Table 25 in EPA 2019
SFC-FP-SOL-323	Cement	EU-23	Low	August 2018	11900 D	0.462 JD	12.8 D	117	0.541 JD	0.388 D	5.64 D	5.51 D	40.6 D	25400 D	168 D	655 BD	0.045 D	--	4.05 D	1.07 D	1.14 D	0.492 UJ	21.1 D	123 JBD	Table 25 in EPA 2019
CEC-FP-SOL-310	Cement	EU-24	High	August 2018	10400 D	1.66 D	34.3 D	91 D	0.617 JD	1.89 D	5.27 D	18 D	230 D	49100 D	812 D	5580 BD	0.046 D	--	4.36 D	0.904 JD	2.65 D	0.494 U	19.6 D	399 D	Table 25 in EPA 2019
CEC-FP-SOL-311	Cement	EU-24	High	August 2018	4790 D	0.518 D	3.9 D	47.7 D	0.492 U	0.329 D	3.66 D	24.3 D	40.8 D	139000 D	151 D	5240 BD	0.047 D	--	1.94 D	0.492 U	0.718 D	0.747 JD	9.67 D	402 D	Table 25 in EPA 2019
CEC-FP-SOL-312	Cement	EU-24	High	August 2018	4950 D	1.26 UJ	2.42 JD	158 D	0.639 JD	1.22 D	3.7 JD	126 D	39.1 D	190000 D	174 D	23300 D	0.051 D	--	2.34 JD	2.51 UJ	1.26 U	2.51 U	8.52 D	615 JBD	Table 25 in EPA 2019
MGR-FP-SOL-326	Animas	Maggie G.	Ref.	August 2018	4980 JD	0.308 JD	10.2 D	284	0.916 JD	0.481 D	2.54 D	11.4 D	26.5 D	22100 D	27.2 D	1440 D	0.056 D	--	5.32 D	0.508 JD	0.666 D	0.506 U	13.4 D	139 JBD	Table 25 in EPA 2019
MGR-FP-SOL-325	Animas	Maggie G.	Ref.	August 2018	5270 JD	0.318 JD	9.87 D	177	0.895 JD	0.489 D	2.09 D	12.5 D	21.8 D	23200 D	17.9 D	1670 D	0.052 D	--	5.61 D	0.492 U	0.246 U	0.492 U	13.6 D	148 JBD	Table 25 in EPA 2019
MGR-FP-SOL-327	Animas	Maggie G.	Ref.	August 2018	4910 JD	0.275 JD	8.55 D	205	0.874 JD	0.504 D	2.1 D	10.4 D	22.6 D	20400 D	22.1 D	1490 D	0.036 D	--	4.66 D	0.497 U	0.374 JD	0.497 U	12 D	135 JBD	Table 25 in EPA 2019
PGR-FP-SOL-328	Animas	Picayne G.	Ref.	August 2018	7450 JD	0.646 D	55.8 D	111	0.766 JD	1.52 D	4.35 D	10.4 D	34.7 D	25900 D	144 D	2530 D	0.056 D	--	5.87 D	0.506 U	2.25 D	0.506 U	17.1 D	263 JBD	Table 25 in EPA 2019
PGR-FP-SOL-329	Animas	Picayne G.	Ref.	August 2018	8130 JD	0.369 JD	38.9 D	115	0.752 JD	1.3 D	4.52 D	9.03 D	32.9 D	23600 D	109 D	2220 D	0.04 D	--	5.59 D	0.501 U	1.02 D	0.501 U	18.7 D	260 JBD	Table 25 in EPA 2019
PGR-FP-SOL-330	Animas	Picayne G.	Ref.	August 2018	8160 JD	0.352 JD	32.2 D	121	0.721 JD	1.42 D	4.97 D	9.41 D	26.6 D	22900 D	133 D	2270 D	0.052 D	--	5.33 D	0.498 JD	0.942 D	0.491 U	20.8 D	228 JBD	Table 25 in EPA 2019
M29	Mineral	EU-01	Mid	Sept 2016	11200 J	0.94	45.4 J	63.1 J	0.47	1	3.2	10.6	72	51300 J	295	702 J	0.086	3	4.2 J	2.1	0.71 U	0.68	21.4 J	484 J	Table 38 in EPA 2017
M38	Mineral	EU-01	Mid	Sept 2016	10700 J	9	39.1 J	163 J	0.55	4	4.7	12.5	125	34500 J	673	1860 J	0.22	4.8	6.1 J	3	3.9 U	0.67	23.4 J	816 J	Table 38 in EPA 2017
M34	Mineral	EU-01	Mid	Sept 2016	17200 J	9.9	36.4 J	167 J	0.53	2	7.7	9.4	356	41800 J	581	2130 J	0.37	3.6	4.8 J	3	2.2 U	0.76	29.7 J	486 J	Table 38 in EPA 2017
M32	Mineral	EU-01	Mid	Sept 2016	9450 J	0.68	28.4 J	64.1 J	0.27	0.67	3	7.1	60.3	52100 J	176	706 J	0.053	2.8	3.2 J	1.5 U	0.56 U	0.56	20.4 J	492 J	Table 38 in EPA 2017
M33	Mineral	EU-01	Mid	Sept 2016	17000 J	1.8	7.7 J	143 J	0.34 J	0.47	7.1	3	77.2	132000 J	112	350 J	0.037	1.8	2.5 J	1 U	0.58 U	0.58	76.1 J	154 J	Table 38 in EPA 2017
M27	Mineral	EU-02	Low	Sept 2016	12300	0.47 J	27 J	88.1 J	0.24 J	0.44	2.2 J	6.6	46.8 J	54900	270	705	0.021	3.9 J	1.4 J	1.7 U	0.55 U	0.55 J	16.6 J	288 J	Table 38 in EPA 2017
M27A2	Mineral	EU-02	Low	Sept 2016	11500 J	0.74	10.1 J	202 J	0.2	1.6	3.5	2.2	26.3	22600 J	177	434 J	0.024	5.6	2.2 J	1.6 U	0.61 U	0.61	13.9 J	446 J	Table 38 in EPA 2017
M27A	Mineral	EU-02	Low	Sept 2016	12100 J	0.34	5.7 J	170 J	0.21 J	0.11	2.6	2.3	22.4	35800 J	20.4	192 J	0.03	1	1.5 J	1.4 U	0.53 U	0.53	17.6 J	45.1 J	Table 38 in EPA 2017
M13A	Mineral	EU-03	Mid	Sept 2016	10400 J	1.2 J	70.9 J	79.5 U	0.6	0.74	12	5	127	63800	1040	1060 J	0.078	1.4	3.7 J	1.2	2.5 U	0.6	21.2 J+	347 UJ	Table 38 in EPA 2017
M11	Mineral	EU-03	Mid	Sept 2016	14100 J	1.5 J-	31.3 J	90.6 U	0.77 J-	2	5.2 J	11.6	56.1 J	51800	222	2330 J	0.037	2.7 J	3.9 J	2 J-	1.5 U	0.77	23.9 J	356 UJ	Table 38 in EPA 2017
M13D	Mineral	EU-03	Mid	Sept 2016	12800 J	2.3 J	26.7 J	227 U	1.2	2.3	4	9.1	60.5	31900	709	8120 J	0.15	1.8	5.8 J	1.5 U	1.2 U	1.2	15.3 J+	577 UJ	Table 38 in EPA 2017
M13B	Mineral	EU-03	Mid	Sept 2016	13900 J	1.2 J	24.1 J	177 U	0.58 U	0.58	4.3	9.4	29	51200	74.2	702 J	0.051	2.2	4.1 J	1.5 U	0.58 U	0.58	26.6 J+	103 UJ	Table 38 in EPA 2017
M14A	Mineral	EU-03	Mid	Sept 2016	11900 J	1.1 J	17.4 J	76.9 U	0.55	2	2.7	5.9	41.1	37500	157	890 J	0.011	2.3	2.5 J	1.6	0.97 U	0.55	17.3 J+	145 UJ	Table 38 in EPA 2017
M14	Mineral	EU-03	Mid	Sept 2016	10500 J	1.1 J	10.6 UJ	124 U	0.54 U	0.54	1.7	1.2	14	32100	118	247 J	0.0044	1.9	0.86 J	1.9 U	0.54 U	0.54	14.1 J+	63.6 UJ	Table 38 in EPA 2017
M14B	Mineral	EU-03	Mid	Sept 2016	5190 UJ	1.3 J	1.3 UJ	10.7 U	0.63 U	0.63	1.6	0.71	3.2	317000 J	0.92 J	85.1 J	0.029	0.24 J	0.59 J	0.5 U	0.63 U	0.63	8.2 J+	51.9 UJ	Table 38 in EPA 2017
M10A	Mineral	EU-04	High	Sept 2016	14800 J	3.4 J-	831 J	59.5 U	0.86 UJ	1.7	7.4 J	11.8	967 J	85000	1350	1070 J	0.45	1.2 J	5.7 J	2.6 UJ	1.7 U	0.86	23.2 J	1320 UJ	Table 38 in EPA 2017
M07	Mineral	EU-04	High	Sept 2016	11000 J	2.1 J-	135 J	65.4	0.75 J-	3.7	4.6 J	3.2	139 J	38400	1960	258 J	0.67	1.6 J	2.8 J	2.1 J-	4.7 U	0.7	16.7 U	1880 J-	Table 38 in EPA 2017
LFK9	Mineral	EU-04	High	Sept 2016	11700	2.5	125	100 U	0.55	2.5	3.4	7.1	175	28200	217	668	0.11	0.95	4.3 J	1.3	0.98 U	0.55	17.7 J	405 J	Table 38 in EPA 2017
M10B	Mineral	EU-04	High	Sept 2016	11000 J	1.2 J-	26.4 J	127 U	0.61 J-	1	3.5 J	10.2	63.3 J	40100	271	1710 J	0.03	2.5 J	4.5 J	1.4 J-	1.2 U	0.61	12.8	361 UJ	Table 38 in EPA 2017
M04	Mineral	EU-04	High	Sept 2016	17700	1.3	22	127 U	0.66	1.3	4.2	9.2	175	29800	63.9	1110	0.022	1	4.3 J	1.4 U	0.66 U	0.66	17.9 J	373 UJ	Table 38 in EPA 2017
M05	Mineral	EU-04	High	Sept 2016	18600	2.4	19.9	131 U	1.2 U	1.2	4.5	17.7	80.6	39200	56.5	978	0.015	0.94	12.9 J	1.3 J	0.091 U	0.61	25.1 J	160 UJ	Table 38 in EPA 2017
M02	Mineral	EU-04	High	Sept 2016	20400	1.3	14.6	166 U	0.67 U	0.67	6.5	10.5	30.2	33900	53.7	981	0.092	0.68	5.5 J	1.2 U	0.67 U	0.67	24.7 J	135 UJ	Table 38 in EPA 2017
M03	Mineral	EU-04	High	Sept 2016	14200	1.2	13.6	92.9 U	0.59 U	0.59	2.6	8	55.9	46000	39.6	897	0.013	0.42	3.2 J	0.76 U	0.59 U	0.59	15 U	71.4 UJ	Table 38 in EPA 2017

DRC = dose-response category; -- = no data

a = Sample sieved using a #10 sieve with a 2 millimeter (mm) mesh size; sample results for 2 mm fraction

Table A-3 Floodplain Soil Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in mg/kg dry-weight. See Appendix A title page for data qualifier definitions. Continued

Station ID	Subwatershed	Exposure Unit	DRC	Sample Date	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Dataset
M01	Mineral	EU-04	High	Sept 2016	15700	1.3	12.3	103	0.78 U	0.67	4.2	5.2	8.2	25000	56.5	1100	0.036	1.1	3.8 J	1.1 U	0.67 U	0.67	13.9	110 UJ	Table 38 in EPA 2017
M02L	Mineral	EU-04	High	Sept 2016	18600	1.3	10.4	183	0.68 U	0.63	4.2	11	35.4	32800	28.5	1470	0.039	0.52	5.3 J	1.6 U	0.63 U	0.63	19.8	121 UJ	Table 38 in EPA 2017
M25	Mineral	EU-05	Mid	Sept 2016	18200	0.31 J	27.9 J	141 J	0.47	1.1	6.7 J	5.8	12 J	17300	55.3	709	0.039	1 J	5.5 J	0.96 U	0.67 U	0.67 J	23.1 U	174 J	Table 38 in EPA 2017
M28	Mineral	EU-05	Mid	Sept 2016	10100	0.71 J	23 J	53.2 J	0.27 J	0.17	4.5 J	5.3	4.5 J	167000	72.2	286	0.23	1.2 J	4.5 J	1.7 U	1 U	1 J	54.7 J	94.1 J	Table 38 in EPA 2017
M26D	Mineral	EU-05	Mid	Sept 2016	13400 J	1.4	17.4	165 U	0.7 U	0.7 J	5.3	4.7	16.3	61800	46.4	256 J	0.056	3.8	4.2 J	6.6 U	0.7 U	0.7 J	19.4 J	57.9 UJ	Table 38 in EPA 2017
M26B	Mineral	EU-05	Mid	Sept 2016	9460	0.27 J	12.2 J	92.2 J	0.33	1.2	2.2 J	6.9	11.7 J	19200	144	1040	0.011	0.55 J	6.1 J	1.1 U	0.53 U	0.53 J	7.8 J	278 J	Table 38 in EPA 2017
M24D	Mineral	EU-05	Mid	Sept 2016	21300	0.85 J	8.9 J	93.8	0.79	21.1	5.4 J	11.1	197 J	31300	349	6020	0.039	2.5 J	10.2 J	1.5	1.6 U	0.55 J	22.5 U	4120 J	Table 38 in EPA 2017
M26	Mineral	EU-05	Mid	Sept 2016	12400	0.13 J	7 J	80.4 J	0.33 J	0.2	4 J	5.2	9.3 J	21300	133	966	0.0063	0.28 J	5.5 J	0.98 U	0.59 U	0.59 J	10.1 J	79.1 J	Table 38 in EPA 2017
M23	Mineral	EU-05	Mid	Sept 2016	14600	0.13 J	4 J	76.7 J	0.3 J	0.21	5.9 J	5.8	13.9 J	23700	19	380	0.026	2.2 J	7.1 J	1.2 U	0.65 U	0.65 J	26.1 J	88.7 J	Table 38 in EPA 2017
M17A	Mineral	EU-06	Low	Sept 2016	8300	1.2 J	26.4 J	90.9 UJ	0.58 UJ	0.58	1.8 J	6.3	15.1	37700	112 J	968	0.029	18.8 J	1.8 J	2.1	0.82 UJ	0.58	10.3 U	101 UJ	Table 38 in EPA 2017
M19	Mineral	EU-06	Low	Sept 2016	10300	1.2 J	25.8 J	102 UJ	0.62 J	0.63	1.9 J	8.1	12.3	25900	161 J	1660	0.017	1.7 J	2.2 J	1.4 U	0.62 UJ	0.62	9.8 J	198 UJ	Table 38 in EPA 2017
M22	Mineral	EU-06	Low	Sept 2016	13900	0.89 J	17.3 J	42.4 J	0.2 J	0.22 J	1.6 J	5.1	21.2 J	58700	128	608	0.077	5.8 J	1.6 J	3.9 U	1.1 U	1.1 J	12.7 U	119 J	Table 38 in EPA 2017
M17	Mineral	EU-06	Low	Sept 2016	21200	1.4 J	12.9 J	131 J	0.85 J	1.1	3.1 J	45.8	11.6	99200	158 J	4200	0.026	5.4 J	5.2	4.9 U	0.72 UJ	0.72	29.4 J	336 UJ	Table 38 in EPA 2017
M16F	Mineral	EU-06	Low	Sept 2016	16600	1.3 J	11.6 J	111 J	0.64 UJ	0.63	2.4 J	31	11.4	75200	75.5 J	2810	0.014	3.6 J	3.5	3.4 U	0.63 UJ	0.63	20.7 J	188 UJ	Table 38 in EPA 2017
M16G	Mineral	EU-06	Low	Sept 2016	22200	1.4 J	10.1 J	109 UJ	0.69 UJ	0.69	4.2 J	19	19.5	55900	174 J	1350	0.039	2.9 J	3 J	2.7 U	0.69 UJ	0.69	29.9 J	138 UJ	Table 38 in EPA 2017
M15	Mineral	EU-06	Low	Sept 2016	23900 J	2.5 J	9.2 J	225 U	1.3 U	1.3	4.1	36.9	10.4	70700	44.3	1480 J	0.068	4.5	9.9 J	5.5 U	1.3 U	1.3	25 J	234 UJ	Table 38 in EPA 2017
M18	Mineral	EU-06	Low	Sept 2016	19100	1.6 J	8.4 J	182 UJ	0.8 UJ	0.8	4.6 J	3.3	24	44600	81.2 J	461	0.065	6.6 J	3.3 J	3.5 U	0.8 UJ	0.8	34.8 J	75 UJ	Table 38 in EPA 2017
M20	Mineral	EU-06	Low	Sept 2016	15600	0.41 J	7.1 J	72 J	0.33 J	0.22	2.4 J	12.4	13.2 J	104000	114	1200	0.015	6.1 J	1.6 J	2.6 U	0.75 U	0.75 J	44.3 J	126 J	Table 38 in EPA 2017
M16H	Mineral	EU-06	Low	Sept 2016	24400	1.6 J	6.8 J	82.5 J	0.96 UJ	0.78	5 J	11.2	9.7	50700	103 J	936	0.054	2.4 J	3.6	4 U	0.78 UJ	0.78	39.1 U	124 UJ	Table 38 in EPA 2017
M16E	Mineral	EU-06	Low	Sept 2016	18800	2 J	4.9 J	103 UJ	1 UJ	1	3.5 J	14.9	11.5	60200	78.8 J	2230	0.08	2.3 J	3.2 J	4.1	1.2 UJ	1	25.4 J	133 UJ	Table 38 in EPA 2017
M16A	Mineral	EU-06	Low	Sept 2016	19800	1.6 J	3.6 J	97.5 J	1.4 J	3	3.1 J	69.8	5	118000	113 J	5780	0.035	6 J	7.2	7 U	0.79 UJ	0.79	29.7 J	430 UJ	Table 38 in EPA 2017
A55	Animas	EU-07	High	Sept 2016	12400	1.1	15 J	64.4 U	0.54	1 J	3.4	9	47.8 J	41200	192 J	1320 J	0.0076	1.9 J	4 J	1.2 U	0.54 U	0.54	20.5 J	412 UJ	Table 38 in EPA 2017
A56	Animas	EU-07	High	Sept 2016	15400	1.1	10.1 J	34 U	0.54	0.68 J	7	9.7	90 J	37500	508 J	1200 J	0.018	2.5 J	5.9 J	0.91	1.1 U	0.54	23.7 J	275 UJ	Table 38 in EPA 2017
A55a	Animas	EU-07	High	Sept 2016	19000	1.2	9.8 J	92.7	1.2	2.5 J	8.8	25.1	79.8 J	33900	328 J	1810 J	0.041	6.3 J	9.7	3	1.3 U	0.58	31.4 U	559 UJ	Table 38 in EPA 2017
A47	Animas	EU-07	High	Sept 2016	13600	1	6.9 J	48.9	0.83	2.5 J	5.1	12.1	130 J	28500	236 J	1590 J	0.013	4.3 J	7 J	1.6	0.84 U	0.52	20.6 U	506 UJ	Table 38 in EPA 2017
CU4	Animas	EU-08	Mid	Sept 2016	10500	1.2	23.4 J	28.9 U	0.59	2.2 J	2.4	5	105 J	21800	1760 J	2210 J	0.015	7.1 J	2.3 J	1	2 U	0.59	9.3 U	665 UJ	Table 38 in EPA 2017
CU4a	Animas	EU-08	Mid	Sept 2016	13000	3.8	9.2 J	115 U	0.61	2 J	4.8	9.3	47.2 J	30200	820 J	1260 J	0.012	4.4 J	3.9 J	1.9	2.4 U	0.61	32.1 J	458 J	Table 38 in EPA 2017
A48	Animas	EU-08	Mid	Sept 2016	11100	1	6 J	45.6 U	0.52 U	0.52 J	2.8	4	52.6 J	24900	258 J	918 J	0.1	1.8 J	2.5 J	0.75 U	0.52 U	0.52	14.2 U	294 UJ	Table 38 in EPA 2017
A45	Animas	EU-09	High	Sept 2016	10500	2.7 J-	26.7 J	104 J-	1.2 J	10.8	3.6 J	11.2	331 J	25600	1860 J	12200	0.049	6.6 J	6.5 J	1.5 J	4.9 UJ	0.58	16.6	2660 J-	Table 38 in EPA 2017
LA3	Animas	EU-09	High	Sept 2016	9630	1.6 J-	19.8 J	98.3 J-	0.91 J	5.2	2.8 J	10	169 J	28500	810 J	4320	0.036	3.3 J	5.3 J	1.6 J	2.1 U	0.54	15.9 J	1020 J-	Table 38 in EPA 2017
A41A	Animas	EU-09	High	Sept 2016	10700	1.1 J-	16.1 J	75 J-	1.7 J	2	2.6 J	8.9	90.5 J	26900	433 J	2980	0.032	3.1 J	4.4 J	1.4 J	2 U	0.54	15.7 J	584 U	Table 38 in EPA 2017
A42	Animas	EU-09	High	Sept 2016	9930	1.1 J-	5.1 J	67.8 J-	0.68 UJ	0.54	3.2 J	7.7	77 J	30000	98.3 J	964	0.011	3.3 J	4.4 J	1.2 J	0.71 UJ	0.54	18.9 J	183 U	Table 38 in EPA 2017
A35	Animas	EU-10	High	Sept 2016	11800	3.8 J-	51 J	70.9 J-	1.7 J	9.1	3.6 J	12.1	316 J	26200	1490 J	10800	0.065	7.7 J	7.6 J	1.6 J	3.9 UJ	0.52	16.8 J	2230 J-	Table 38 in EPA 2017
A40	Animas	EU-10	High	Sept 2016	13800	26.5 J-	50.3 J	164 J-	0.93 J	10.2	4.8 J	4.9	879 J	31000	10500 J	43000	0.67	18.1 J	1.9 J	2.2 J	47.9 U	0.68	13.1 J	2530 J-	Table 38 in EPA 2017
A40A	Animas	EU-10	High	Sept 2016	10900	3.2 J-	44 J	79.2 J-	1.5 J	10.1	4.2 J	9.8	378 J	26200	2180 J	12900	0.069	7.4 J	6 J	1.5 J	4.6 UJ	0.52	14.7 J	2130 J-	Table 38 in EPA 2017
A36	Animas	EU-11	Low	Sept 2016	11100	1.1 J	24.5	72.3 J	0.48 J	0.64	8 J	10.6	74.5	52000 J	164 J	1250	0.0096	5.4 J	6.1 J	2.5 J	0.85 U	0.54	27.4 J	247 UJ	Table 38 in EPA 2017
EG5	Animas	EU-12	High	Sept 2016	18100	1.2 J	42.4	108	0.84 J	4.9	7.7 J	14	192	65400 J	730 J	5830	0.046	6.1 J	8.8	2.8 J	4.9 U	0.53	32.7 J	1050 J-	Table 38 in EPA 2017
MC0	Animas	EU-12	High	Sept 2016	20700	2.9 J	31.9	223	1.8 J	20.8	8.3 J	20	571	44000 J	1390 J	13400	0.32	5.4 J	15.9	5.2 J	7.6 U	0.79	34.2 J	3690 J-	Table 38 in EPA 2017
EG6	Animas	EU-12	High	Sept 2016	16000	2.4 J	31.7	85.3	0.86 J	11	6.3 J	17.3	439	67000 J	1770 J	15100	0.11	5.2 J	9.2 J	2.3 J	5.8 U	0.58	27.8 J	3450 J-	Table 38 in EPA 2017
EG2A	Animas	EU-12	High	Sept 2016	20900 J	1.1 J	26.6 J	51	0.76	1.3 J	7.8 J	11.8	76.3 J	44900 J	321 J	3410 J	0.064	1.8 J	7.4 J	1.6	1.5 U	0.54	30.8	892 UJ	Table 38 in EPA 2017
EG4	Animas	EU-12	High	Sept 2016	18300 J	1.1 J	23.8 J	55.7	0.69	2.4 J	6.1 J	13.4	180 J	47500 J	673 J	3550 J	0.12	1.2 J	7.9 J	1.8	2 U	0.57	29.1 U	688 UJ	Table 38 in EPA 2017
A37	Animas	EU-12	High	Sept 2016	14800	1.3 J	20.4	159	0.87 J	12	5.5 J	17.9	237	36100 J	838 J	10000	0.093	4.3 J	9.6 J	2.1 J	2.2 U	0.55	23.5 J	1940 J-	Table 38 in EPA 2017
A39	Animas	EU-12	High	Sept 2016	17700	2 J	18.6	70.1	0.98 J	12.2	5.9 J	15.7	456	60100 J	1010 J	9450	0.055	9.5 J	11.5	3 J	7.6 U	0.55	25.9 J	3640 J-	Table 38 in EPA 2017
EG3A	Animas	EU-12	High	Sept 2016	17300 J	1.2 J	17.4 J	48	0.74	0.71 J	8.8 J	18	96.9 J	55600 J	605 J	1620 J	0.23	2.1 J	10 J	2.2	4.9 U	0.53	39.2 J	282 J	Table 38 in EPA 2017
EG2	Animas	EU-12	High	Sept 2016	22800 J	1.1 J	14.7 J	49.2	0.73	0.57 J	6.7 J	17.2	59.3 J	48000 J	130 J	1880 J	0.036	0.88 J	8 J	2	0.7 U	0.53	46 J	366 UJ	Table 38 in EPA 2017
EG1	Animas	EU-12	High	Sept 2016	23500 J	1.2 J	13.5 J	64.4 J	0.5 U	0.6 J	9.7 J	5.8	25.2 J	32500 J	97.7 J	1210 J	0.021	1.5 J	6.2 J	0.92 U	0.6 U	0.6	28.1 J	187 UJ	Table 38 in EPA 2017
EG3	Animas	EU-12	High	Sept 2016	19200 J	1.1 J	8.8 J	54.4	0.59 U	0.57 J	6 J	13.7	37.6 J	39200 J	89.6 J	1300 J	0.021	0.62 J	8.4 J	1.5 U	0.57 U	0.57	29.2 J	178 UJ	Table 38 in EPA 2017
EG9	Animas	EU-13	High	Sept 2016	15800	1.5 J	38.6	140	0.97 J	10.2	7.4 J	20.8	331	63500 J	913 J	11100	0.071	6.7 J	11.6	3.2 J	2.8 U	0.61	29.7 J	2790 J-	Table 38 in EPA 2017
A34	Animas	EU-13	High	Sept 2016	11700	10.1 J	23.7	113	0.61 J	14.8	27 J	18.8	485	95800 J	4390 J	5300	1.9	7.4 J	63.7 J	1.6 J	11.9 U	0.54	25.1 J	3770 J-	Table 38 in EPA 2017
A31	Animas	EU-14	High	Sept 2016	10900	9.6	93.8	60.8	1.5	7.9 J	4.7	10.8	330	25800	1180 J	6810 J	0.031	6.8	6.7 J	1.6	2.2 U	0.64	21.5 U	1770 J	Table 38 in EPA 2017
A33	Animas	EU-14	High	Sept 2016	9690	4.3 J	71.3	75.6	2 J	10.9	4.4 J	10.9	405	21200 J	874 J	10200	0.028	7.4 J	6.8 J	1.9 J	3.1 U	0.54	19.6	2190 J-	Table 38 in EPA 2017
A14	Animas	EU-14	High	Sept 2016	12100 J	5.8 J	43.6	47.1 U	1.1 J	3.1 J	4.3 J	3.9	92.9 J	17700	1250 J	2130	0.56	3.1 J	3.1 J	2.1	3.7 U	0.54	14.3 U	907 J	Table 38 in EPA 2017
A32	Animas	EU-14	High	Sept 2016	7920	1.1	16.3	27.6	0.8	1 J	4.9	6.9	77	16600	182 J	1240 J	0.11	5.6	3.3 J	1.3	1.2 U	0.54	13.8 J	192 UJ	Table 38 in EPA 2017
CG9	Animas	EU-15	High	Sept 2016	16900 J	6.1 J	176	357	9 J	216 J	3.4 J	63.6	2890 J	69700	1730 J	55900	0.2	81.8 J	53.1 J	5.9	5.9 U	1.5	8.6 J	30200 J	Table 38 in EPA 2017
A10	Animas	EU-15	High	Sept 2016	12800 J	3.9 J	60.2 J	72 J	0.38	1.3 J	5.9 J	6.3	141 J	40500 J	1870 J	2350 J	0.64	16.3 J	3.6 J	1.2	5.9 U	0.55	20.3 J	404 J	Table 38 in EPA 2017
A11	Animas	EU-15	High	Sept 2016	16100 J	1.7 J	57.8	102	1.8 J	4 J	6.4 J	16.1	65.6 J	25700	500 J	5490	0.13	32.4 J	6.8 J	3.9	3.2 U	0.79	27.1 J	413 J	Table 38 in EPA 2017
CG11	Animas	EU-15	High	Sept 2016	15500 J	4 J	41.7	59.3	1 J	5.9 J	5.2 J	8.8	182 J	29300	1300 J	6080	1.2	6.3 J	4.6 J	1.8	5.2 U	0.62	19.5 J	857 J	Table 38 in EPA 2017
A13	Animas	EU-15	High	Sept 2016	15800 J	12 J	41.2	113	1.7 J	15.9 J	4.1 J	6.5	466 J	28900	6000 J	14800	2.6	12.9 J	4.6 J	2.1	21.8 U	0.82	14.9 J	2100 J	Table 38 in EPA 2017
A20	Animas	EU-16	High	Sept 2016	20100 J	1.5 J	52.5	144	1.8 J	2.6 J	4.7 J	12.7	98.1 J	27400	491 J	14700	0.092	3.2 J	6.2 J	1.9	1.4	0.79	15.9 J	976 UJ	Table 38 in EPA 2017
A21	Animas	EU-16	High	Sept 2016	17000	5.8	79.3 UJ	87.9	2.2	5.7	4.2	12.3	518	37000	3390 J	4270 J	0.86	7.8	3.6 J	3.4	10.4 U	1.4	13.8	1460 J	Table 38 in EPA 2017
A22	Animas	EU-16	High	Sept 2016	21200 J	3.1 J	44.8 U	169	2.8 J	9.8 J	6.7 J	13.4	318 J	24000	1500 J	19600	0.16	4.7 J	6.5 J	2.6	4.2	0.78	21.4	1600 J	Table 38 in EPA 2017
A15	Animas	EU-17	Low	Sept 2016	18000 J	1.4 J	31.4	57.5	2.8 J	1.1 J	5.9 J	9.3	67.5 J	29700	150 J	4800	0.034	4.4 J	5.6 J	1.9	0.75 U	0.69	22.5	432 UJ	Table 38 in EPA 2017
CG6	Animas	EU-17	Low	Sept 2016	25400 J	1.6 J	29.9	39.9	6.1 J	1.6 J	5.8 J	15.2	156 J	40100	162 J	7020	0.038	4.7 J	7.4 J	2.5 U	0.79 U	0.79	32.5	813 UJ	Table 38 in EPA 2017
A08	Animas	EU-18	Mid	Sept 2016	9340	0.67	34.9 J	29.6 J	0.59	1.5	2.6	4.6	20.9	17100	163 J	2490 J	0.046	4.7	2.4 J	1	1.3 U	0.63	10.4	270 J	Table 38 in EPA 2017
A09	Animas	EU-18	Mid	Sept 2016	18600 J	1.1 J	32.8 J	98.9	0.66	1.1 J	12 J	6.5	28.6 J	24200 J	276 J	2660 J	0.02	4.4 J	4.4 J	1	0.9 U	0.55	17.2	430 UJ	Table 38 in EPA 2017
UA5	Animas	EU-18	Mid	Sept 2016	11200	1.5	27.7	85.7 U	0.77	2 J	6.7	4.9	19.1	13700	142 J	868 J	0.04	4.5	5.5 J	1.6	1.1 U	0.77	19 J	293 UJ	Table 38 in EPA 2017
A07G	Animas	EU-19	High	Sept 2016	9890	5 J	115 J	60.4 J	0.24 U	0.62	3.5 J	2.6	21.8 J	24600 J	1490 J	347 J	0.049	8.7 J	2.5 J	0.77	6.6 U	0.62	12.3 J	107 J	Table 38 in EPA 2017
A07E	Animas	EU-19	High	Sept 2016	13600	5.4 J	114 J	85	1.2	3.3	6.6 J	36.2	175 J	106000 J	505 J	7540 J	0.054	29.1 J	3.4 J	2.5	4.1	3.3	12.4 J	434 J	Table 38 in EPA 2017
A07F	Animas	EU-19	High	Sept 2016	15600	1.7 J	112 J	59.7 J	0.34 U	0.81	2.6 J	2.5	34.5 J	29000 J	280 J	410 J	0.062	6.5 J	1.9 J	1.4	2.8 U	0.81	11.2 J	156 J	Table 38 in EPA 2017
BG1A	Animas	EU-19	High	Sept 2016	5910	7.6 J	101 J	80.1 J	0.2 U	0.63	2 J	3	28.8 J	13000 J	1350 J	484 J	0.061	39.6 J	1.6 J	1.4	5.1 U	0.63	6.9 J	123 J	Table 38 in EPA 2017
BB2	Animas	EU-19	High	Sept 2016	14700	1.3 J	60.1 J	75 J	0.46	0.99	4.9 J	4.4	21.9 J	22900 J	473 J	910 J	0.028	2.2 J	4 J	0.92	1.2 U	0.63	19.5 J	328 UJ	Table 38 in EPA 2017
A07D	Animas	EU-19	High	Sept 2016	21700	1.5 J	59.2 J	80.1	1	3.2	5.4 J	8.8	59.2 J	23000 J	487 J	2710 J	0.051	3.7 J	5.2 J	1.9	2 U	0.75	16.7 J	818 UJ	Table 38 in EPA 2017
A07	Animas	EU-19	High	Sept 2016	15900	2.4	57.8 J	78.8	1.9	14.1	2.8	26.1	95.9	32800	470 J	1440 J	0.016	13.7	7.7 J	1.7	1.1	1.5	12.1 J	1070 UJ	Table 38 in EPA 2017
A07A	Animas	EU-19	High	Sept 2016	30700	4.6	55.4 J	94.8	3.3	15.2	3.7	46	325	41600	638 J	14400 J	0.14	14.8	8.9 J	3.5	2.7 U	2.3	11.6 J	1070 UJ	Table 38 in EPA 2017
BG4	Animas	EU-19	High	Sept 2016	19600	1.7 J	36.2 J	78	0.91	1.3	5.6 J	7.2	38.3 J	21500 J	180 J	1870 J	0.065	5.5 J	4.9 J	1.3	1.2 U	0.86	19.6 J	338 UJ	Table 38 in EPA 2017
A07B	Animas	EU-19	High	Sept 2016	48300	3.2	34.7 UJ	41.9	2.9	7 J	1.7	25	208	36800	561 J	10700 J	0.056	7.4	3.8 J	2.4	1.9 U	1.4 J	4.6 J	546 J	Table 38 in EPA 2017
CC38C	Cement	EU-20	Mid	Sept 2016	11200 J	2.7	73.5 J	95.3 J	0.3	1.7	1.4 J	8.1	93.9 J	40500	1480 J	1150 J	0.031	1.8 J	1.9 J	2.6	3.5 U	0.63	16.7 J	546 J	Table 38 in EPA 2017
CC43E	Cement	EU-20	Mid	Sept 2016	8380 J	3.7	57.2 J	63 J	0.16	0.82	5 J	3.5	48.9 J	53100	343 J	583 J	0.032	2.7 J	2.3 J	1.7	5.1 U	0.57	27.8 J	765 J	Table 38 in EPA 2017
CC38D	Cement	EU-20	Mid	Sept 2016	9870 J	1.1	48.8 J	87.2 J	0.27	3.7	2.2 J	5.5	76.5 J	42700	890 J	926 J	0.073	1.5 J	2 J	1.7	2.3 U	0.53	16.6 U	638 J	Table 38 in EPA 2017
CC38	Cement	EU-20	Mid	Sept 2016	11000 J	0.82	46.3 J	106 J	0.27	0.66	2.7 J	3.4	54.3 J	40300	540 J	585 J	0.047	1.8 J	2.3 J	1.3	1.5 U	1.1	17.3 J	285 J	Table 38 in EPA 2017
CC41	Cement	EU-20	Mid	Sept 2016	9410 J	3.5	45.2 J	60.3 J	0.22	2.1	4.4 J	4.9	77.9 J	56600	621 J	575 J	0.041	3.9 J	3 J	2.2	2.5 U	0.58	29.6 J	502 J	Table 38 in EPA 2017
CC47C	Cement	EU-20	Mid	Sept 2016	9420 J	1.4	43.7 J	35.7 U	0.6 J	1.2	4.6	3.8	48.2	58800	279 J	597 J	0.013	3.2 J	3.1 J	1.5	1.1 U	0.6	30.7 J	282 J	Table 38 in EPA 2017
CC39B	Cement	EU-20	Mid	Sept 2016	9290 J	2.8	42.8 J	50.2 J	0.26	2.7	5.1 J	5.1	122 J	70500	626 J	764 J	0.042	4.9 J	2.9 J	2.2	2.6 U	0.63	34.6 J	904 J	Table 38 in EPA 2017
CC48	Cement	EU-20	Mid	Sept 2016	13200 J	5.1	41.9 J	153 U	0.56 J	1.1	4.8	6.1	163	43400	392 J	778 J	0.061	2 J	4.1 J	1.7	1.6 U	0.56	24.1 J	286 J	Table 38 in EPA 2017
CC39	Cement	EU-20	Mid	Sept 2016	9170 J	2.2	36.4 J	48.8 J	0.14	1	4.5 J	3.1	61.7 J	57400	414 J	650 J	0.02	2.6 J	2.3 J	1.4	1.6 U	0.53	27.2 J	577 J	Table 38 in EPA 2017
CC27	Cement	EU-20	Mid	Sept 2016	6950 J	5.7 J	36.3	58.6 J	0.11	2	4	3.4	86.7 J	49600 J	755	538 J	0.26	4.9	2.2 J	2.4	4.9 U	0.55	25.7 J	656 J	Table 38 in EPA 2017
CC46B	Cement	EU-20	Mid	Sept 2016	9870 J	1.7	36.2 J	41.2 U	0.58 J	2.1	3.9	4.5	90	58800	438 J	703 J	0.038	3.3 J	2.5 J	1.9	1.7 U	0.58	25.9 J	841 J	Table 38 in EPA 2017
CC43D	Cement	EU-20	Mid	Sept 2016	14800 J	1	31.8 J	109 J	0.29 J	0.29	9.2 J	8.8	93.3 J	65700	205 J	960 J	0.028	3 J	6.5 J	2.1	0.99 U	0.58	20.9 J	177 J	Table 38 in EPA 2017
CC42	Cement	EU-20	Mid	Sept 2016	8230 J	1.8	7.3 J	106 J	0.11 J	0.47	4 J	3.2	58.2 J	27200	422 J	385 J	0.29	4.8 J	3.2 J	3.8	1.3 U	0.55	21.4 U	101 J	Table 38 in EPA 2017
CC22B	Cement	EU-21	Mid	Sept 2016	8670 J	6.2 J	77.5 J	148 J	0.13	0.84	3.8 J	2.3	46.7 J	46500	617 J	204	0.12	1.7 J	1.6	2.9 J	5.8 U	0.57	19.8 J	352 J	Table 38 in EPA 2017
CC22	Cement	EU-21	Mid	Sept 2016	3920 J	6.9 J	65.9 J	118 J	0.11 U	0.54	5.5 J	1.1	22.2 J	33400	275 J	83.6	0.058	4.5 J	1.1	4 J	2.2 U	0.54	16 J	18.7 J	Table 38 in EPA 2017
CC22D	Cement	EU-21	Mid	Sept 2016	6880 J	2.1 J	63.3 J	35.2 J	0.17 J	3.5	1.9 J	2.1	61.4 J	42100 J	568 J	289 J	0.096	0.91	1.3 J	1.6	1.3 U	0.54	12.1 J	898 J	Table 38 in EPA 2017
CC23H	Cement	EU-21	Mid	Sept 2016	8720 J	2.6 J	55.8 J	152 U	0.68 UJ	0.68	3.8 J	2.3	14.7 J	41500 J	600 J	145 J	0.073	1.7	1.9 J	1.8 U	0.68 U	0.68	20.5 J	48.4 J	Table 38 in EPA 2017
CC26	Cement	EU-21	Mid	Sept 2016	5350 J	6.4 J	91 U	99.2 J	0.067	1.6	3.3	1.8	67.2 J	43300 J	398	200 J	0.25	2.8	1.3	2.9	3.1 U	0.53	21.8 J	382 J	Table 38 in EPA 2017
CC23G	Cement	EU-21	Mid	Sept 2016	3520 J	1.3 J	44.8 J	128 U	0.65 UJ	0.65 J	0.74 UJ	0.65	8.7 J	55600 J	664 J	9 J	0.063	0.88 U	0.65 J	1.5	1.9 U	0.65	19 J	24.7 UJ	Table 38 in EPA 2017
CC23	Cement	EU-21	Mid	Sept 2016	4180 J	1.2 J	40.9 J	114 U	0.58 UJ	0.58	2 J	0.65	20.5 J	29900 J	101 J	73.3 J	0.045	2.6	0.92 J	2.4	0.62 U	0.58	11.4	33.6 UJ	Table 38 in EPA 2017
CC23C	Cement	EU-21	Mid	Sept 2016	9430 J	1.3 J	36.1 J	111 U	0.63 UJ	0.63	3.7 J	2.4	25.1 J	26800 J	169 J	189 J	0.081	1.2	1.9 J	1.4	0.88 U	0.63	17.9 J	77.7 UJ	Table 38 in EPA 2017
CC23I	Cement	EU-21	Mid	Sept 2016	5330 J	4.7 J	35.1	118 J	0.16 U	0.61	4	1.9	22.5 J	22500 J	577	190 J	0.036	1.7	1.4 J	1.9	3.3 U	0.61	21.3 J	102 J	Table 38 in EPA 2017
CC23B	Cement	EU-21	Mid	Sept 2016	7620 J	1.3 J	31.3 J	78.3 U	0.6 UJ	0.6	2.6 J	0.94	13.4 J	25200 J	72.5 J	147 J	0.025	1.1	0.84 J	1.5 U	0.6 U	0.6	11.4	47.5 J	Table 38 in EPA 2017
CC24C	Cement	EU-21	Mid	Sept 2016	5930 J	3.5 J	61.8 U	268 J	0.19 U	0.56	5.6	1.2	43.2 J	37300 J	205	161 J	0.075	1.4	1.1 J	2.6	1 U	0.56	27.2	48.9 J	Table 38 in EPA 2017

DRC = dose-response category; -- = no data

Table A-3 Floodplain Soil Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in mg/kg dry-weight. See Appendix A title page for data qualifier definitions. Continued

Station ID	Subwatershed	Exposure Unit	DRC	Sample Date	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Dataset
CC24B	Cement	EU-21	Mid	Sept 2016	5430 J	2.8 J	59.8 U	224 J	0.12 U	0.63	3.8	2.4	28 J	26900 J	165	190 J	0.028	1.7	1.8 J	2.4	0.9 U	0.63	20.4	35 J	Table 38 in EPA 2017
CC24	Cement	EU-21	Mid	Sept 2016	4990 J	3 J	55 U	82.7 J	0.16	2	2.7	2.8	47.8 J	27600 J	483	136 J	0.14	1.1	1.5 J	2.1	2 U	0.62	13.2 J	638 J	Table 38 in EPA 2017
CC25B	Cement	EU-21	Mid	Sept 2016	6590 J	2.5 J	26.5	116 J	0.061 U	0.57	3.2	1.2	14.9 J	42800 J	364	360 J	0.024	1.9	0.88	3.4	0.7 U	0.57	25.3	33.6 J	Table 38 in EPA 2017
CC25	Cement	EU-21	Mid	Sept 2016	2280 J	9 J	41.7 U	240 J	0.051 U	0.53	2.1	0.66	18.3 J	25800 J	334	84.5 J	0.048	2.5	0.58	3.5	3 U	0.53	10.8	23.5 J	Table 38 in EPA 2017
CC23E	Cement	EU-21	Mid	Sept 2016	10500 J	1.2 J	18.6 J	120 U	0.61 J	0.76	2.5 J	10.4	21.3 J	24700 J	100 J	705 J	0.073	0.68	4.7 J	1.3 U	0.61 U	0.61	15.2 J	211 UJ	Table 38 in EPA 2017
CC23D	Cement	EU-21	Mid	Sept 2016	10700 J	1.2 J	13.1 J	84.1 U	0.59 UJ	0.59	3.2 J	8.7	49.6 J	27300 J	211 J	467 J	0.028	0.75	4.5 J	1.6 U	0.59 U	0.59	18.1 J	142 UJ	Table 38 in EPA 2017
CC07	Cement	EU-22	High	Sept 2016	10200 J-	1.8	53.5 J	48.6 U	0.56 U	0.56	4.5	3.2	82.7 J	82300 J	1950 J	489 J	0.056	6.9	2.1 J	2.1 J	2.4 U	0.56	25.4 J	577 J	Table 38 in EPA 2017
CC21	Cement	EU-22	High	Sept 2016	9640 J	3.6 J	31.2 J	56.6 J	0.38	4.7	7.1 J	7.1	156 J	66300	1330 J	1230	0.028	5.2 J	7 J	2.5 J	2.8 U	0.61	29.6 J	5300 J	Table 38 in EPA 2017
CC18B	Cement	EU-22	High	Sept 2016	10800 J	1.5 J	30.1 J	47.5 J	0.22	0.66	6 J	7.1	84.4 J	63500	498 J	1180	0.027	3.6 J	3.9 J	2 J	1.9 U	0.53	32.1 J	338 J	Table 38 in EPA 2017
CC18	Cement	EU-22	High	Sept 2016	12500 J	3.5 J	27.6 J	54.9	1.1	2	7 J	5.5	234 J	78200	2070 J	1230	0.056	7.2 J	3.6	2.8 J	3.8 U	0.56	35.1 J	1060 J	Table 38 in EPA 2017
CC21D	Cement	EU-22	High	Sept 2016	6200 J	2.8 J	24.2 J	65.9 J	0.083 U	0.52	3.9 J	0.69	21.6 J	30400	302 J	259	0.028	6.7 J	0.94	4.7 J	1.2 U	0.52	17.5 J	64.4 J	Table 38 in EPA 2017
CC03	Cement	EU-22	High	Sept 2016	10400	1.7	22.9 J	87.4 U	0.56 J	1.2 J	6.8	13.2	104 J	43200	504 J	2470	0.14	3.9	4.6 J	2.5	2.3 U	0.56 J	32.2 J	349 J	Table 38 in EPA 2017
CC21B	Cement	EU-22	High	Sept 2016	9310 J	7.4 J	22.4 J	40.6 J	0.2	3.4	5.7 J	4.5	98.9 J	56100	580 J	1080	0.026	4.4 J	3.4 J	2 J	2 U	0.64	31.6 J	765 J	Table 38 in EPA 2017
CC04	Cement	EU-22	High	Sept 2016	11400 J-	1.2	9.2 J	47.8 U	0.59 U	0.59	5	7.2	41.4 J	33700 J	294 J	409 J	0.032	2.8	3.8 J	1.6 J	1.3 U	0.59	23.7 J	62.9 UJ	Table 38 in EPA 2017
CC03D	Cement	EU-22	High	Sept 2016	5970R	2.5	1.5 J	16.1 U	0.73 U	0.73	2.9	1.5	53.8 J	292000 J	247 J	207 J	0.12	2.2	1.1 J	1.1 J	1.9 U	0.73	19.2 J	385 J	Table 38 in EPA 2017
CC20	Cement	EU-23	Low	Sept 2016	11800 J	1.6 J	27.1 J	76.2 J	0.52	0.96	6.2 J	11.4	127 J	57600	487 J	1320	0.025	4.2 J	4.1	3.3 J	1.8 U	0.6	37.4 J	397 J	Table 38 in EPA 2017
CC16B	Cement	EU-23	Low	Sept 2016	11600 J-	1.2	26.3 J	48.5 U	0.59 U	0.59	3.3	4.8	43.9 J	99300 J	94.9 J	420 J	0.024	4.1	1.9 J	2.1 J	0.71 U	0.59	23.3 J	143 UJ	Table 38 in EPA 2017
CC15A	Cement	EU-23	Low	Sept 2016	8220 J-	1.2	20.5 J	51.2 U	0.58 U	0.58	2.6	3.9	29.9 J	37700 J	259 J	359 J	0.027	6.7	1.9 J	2.4 J	1.5 U	0.58	17.1 J	146 UJ	Table 38 in EPA 2017
CC15	Cement	EU-23	Low	Sept 2016	9570 J-	1.2	14.8 J	68 U	0.59 U	0.59	2.6	4.1	25.2 J	41900 J	78.6 J	453 J	0.012	3.1	1.4 J	2 UJ	0.59 U	0.59	18.8 J	53.7 UJ	Table 38 in EPA 2017
CC16	Cement	EU-23	Low	Sept 2016	10300 J-	1.1	13.4 J	59.6 U	0.56 U	0.56	4.3	3.3	35.5 J	56900 J	103 J	408 J	0.012	4	1.9 J	2.1 J	0.64 U	0.56	27 J	71.9 UJ	Table 38 in EPA 2017
CC17	Cement	EU-23	Low	Sept 2016	8960 J	3.2 J	12.5 J	79.3 J	0.12 U	0.62	4.5 J	3.2	41.8 J	30200	541 J	491	0.057	4.2 J	2.3 J	2.2 J	3.4 U	0.62	22.6	176 J	Table 38 in EPA 2017
MTD-4	Cement	EU-24	High	Sept 2016	12100	2.2	54.3 J	82.5 U	0.71 J	1.6 J	8	7.5	235 J	66300	2140 J	1250	0.049	6.2	4.2 J	1.9	4.7 U	0.71 J	30.4	467 J	Table 38 in EPA 2017
CC03A	Cement	EU-24	High	Sept 2016	17200	5	52.9 J	119	1.2 J	5.1 J	11.4	15.4	427 J	51700	964 J	3920	0.022	6.9	7.4 J	3.2	5.2 U	0.83 J	37.9 U	737 J	Table 38 in EPA 2017
CC01U	Cement	EU-24	High	Sept 2016	13000	7.2	50.5 J	126	0.9 J	2.5 J	5.6	10.8	241 J	39400	711 J	4130	0.038	7.9	5 J	2.4	4.2 U	0.63 J	21.4 U	642 J	Table 38 in EPA 2017
CC02C	Cement	EU-24	High	Sept 2016	15000	2	47.5 J	73.3	0.68 J	1.8 J	5.9	10.7	370 J	46900	819 J	3640	0.02	3.6	5.2 J	2	2.9 U	0.57 J	22.8 J	2490 J	Table 38 in EPA 2017
CC01C	Cement	EU-24	High	Sept 2016	10400 J	3.3	41.4	30.7 U	0.65	0.91	4	4.9	191	32700 J	1150	1560 J	0.31	4.8 J	3.3 J	1	3.1 U	0.65	17.4 J+	280 J	Table 38 in EPA 2017
CC01H	Cement	EU-24	High	Sept 2016	16800 J	1.5	41.3 J	62.8	0.83	6.5	5.5	19.5	549	34000 J	896	6960 J	0.059	2.5 J	7.2 J	1.8	1.8 U	0.73	18.1 J+	629 UJ	Table 38 in EPA 2017
CC03B	Cement	EU-24	High	Sept 2016	13300	1.5 J	37.5 J	49.3 U	0.57 J	1.4 J	5.1 J	11.4 J	137 J	45200	707 J	3370	0.011	3.5 J	4.8 J	1.8 J	1.3 U	0.57 J	26.3 J	343 J	Table 38 in EPA 2017
CC01C1	Cement	EU-24	High	Sept 2016	11400 J	1.6	36.6	99.5 U	0.8	3.9	4.1	5.3	192	26000 J	1080	2460 J	0.1	1.8 J	4.1 J	1.1	2.9 U	0.8	12.6 J+	737 UJ	Table 38 in EPA 2017
CC01C2	Cement	EU-24	High	Sept 2016	25300 J	1.5	36.3	136	1.7	54.5	6.6	39.5	995	33600 J	1650	35900 J	0.041	3.2 J	19 J	3.3	3.4	1	19.8 J+	5560 UJ	Table 38 in EPA 2017
CC02	Cement	EU-24	High	Sept 2016	13800	0.086 U	32.8 J	6.2 U	0.62 UJ	0.62 J	0.12 U	0.62	161 J	37400	572 J	2740	0.013	0.11 U	0.62 U	3.1 J	0.07 U	0.62 J	0.52 J	440 J	Table 38 in EPA 2017
CC01T	Cement	EU-24	High	Sept 2016	20400	1.6	31.3 J	196	1.2 J	18.4 J	9.3	29.6	307 J	32300	812 J	15500	0.034	3.6	13.1 J	2.7	2.4 U	0.7 J	30.4 J	1410 J	Table 38 in EPA 2017
CC03BF	Cement	EU-24	High	Sept 2016	14400 J-	1.7	29.8 J	51 U	0.67	1.7	3.9	10.8	195 J	44300 J	579 J	3800 J	0.042	3.4	4 J	1.2 J	2 U	0.67	19.3	501 J	Table 38 in EPA 2017
CC02I	Cement	EU-24	High	Sept 2016	15000	2.5	28.4 J	129 U	0.7 J	3.2 J	8.2	17.5	131 J	36100	930 J	3910	0.055	2.8	6.2 J	1.3	1.6 U	0.7 J	27.7 J	567 J	Table 38 in EPA 2017
FD-1	Cement	EU-24	High	Sept 2016	19700 J-	1.9	26.6 J	204	0.92	10.2	4.6	81.5	124 J	31900 J	442 J	26500 J	0.095	5.2	15.7 J	2.9 J	2.3	1.1	17.5 J	1120 J	Table 38 in EPA 2017
CC01F	Cement	EU-24	High	Sept 2016	12300 J	1.3	23	57.7 U	0.65 U	0.65	5.8	10.2	59.5	27200 J	462	1670 J	0.062	4.5 J	4.9 J	1	1.2 U	0.65	16.9 J+	173 UJ	Table 38 in EPA 2017
CC01S	Cement	EU-24	High	Sept 2016	7670 J	1.6	22.4	74.4 U	0.59	3.4	3.9	8	86.3	19900 J	287	3600 J	0.025	2.9 J	4.5 J	1.2	1.7 U	0.59	12.7 U	349 J	Table 38 in EPA 2017
M12C	Mineral	EU-3.5	Mid	Sept 2016	10400 J	3.5 J	103 J	64.8 U	0.62 U	0.62	2.9	3.3	99.2	56200	3370	456 J	1.2	3.8	2.6 J	2	18.2 U	0.62	18.6 U	763 J	Table 38 in EPA 2017
M12G	Mineral	EU-3.5	Mid	Sept 2016	10800	1.1 J	43.6 J	96 J	0.27 U	0.57	1.9 J	3.6	28.1 J	36300 J	44.3 J	352 J	0.11	0.88 J	2.6 J	1.2 U	0.57 U	0.57	14.8	61.6 UJ	Table 38 in EPA 2017
M12D	Mineral	EU-3.5	Mid	Sept 2016	6960 J	1.6 J	39.6 J	127 U	0.58	1.1	10.5	15.6	28.8	48500	405	1750 J	0.067	1.6	8.9 J	1.8	2.8 U	0.58	27.1 J+	314 J	Table 38 in EPA 2017
M12F	Mineral	EU-3.5	Mid	Sept 2016	11400	2.7	77.3 U	115 U	0.59 U	0.59	2	2.6	34	49400	574	245	0.13	1.1	1.6 J	1.5	2.2 U	0.59	18.7 J	129 J	Table 38 in EPA 2017
M12A	Mineral	EU-3.5	Mid	Sept 2016	9880 J	1.4 J-	36.8 J	161 U	0.68 U	0.68	3.4 J	14.3	24.5 J	32300	62.5	764 J	0.035	1.2 J	7.7 J	1.6 J-	1 U	0.68	22.8 J	88.3 UJ	Table 38 in EPA 2017
M12B	Mineral	EU-3.5	Mid	Sept 2016	8260 J	1.2 J-	34.5 UJ	103 U	0.58 UJ	0.58 J	1.1 J	4.8	15.9 J	27400	48.1	251 J	0.05	0.7 J	1.8 J	1 U	0.58 U	0.58	10.1 J+	55.6 UJ	Table 38 in EPA 2017
M12	Mineral	EU-3.5	Mid	Sept 2016	15700 J	1.2 J-	16.4 J	170 U	0.62 J-	1.9	10.5 J	19.1	56.3 J	40900	241	3520 J	0.075	2.9 J	12.3 J	2.1 UJ	0.62 U	0.62	25.9 J	446 UJ	Table 38 in EPA 2017
M12E	Mineral	EU-3.5	Mid	Sept 2016	22600	1.1	7.2	106 U	0.57 U	0.57	4.6	9.3	23	41900	100	1900	0.011	0.79	5.3 J	1 U	0.57 U	0.57	20.8 J	186 UJ	Table 38 in EPA 2017
A43	Animas	Maggie G.	Ref.	Sept 2016	10000	2.5 J-	11.4 J	147 UJ	1.2 UJ	1.2	4 J	10.5	27.6 J	32500	40.8 J	1180	0.06	1.7 J	5.2 J	2.2 UJ	1.2 UJ	0.62	26.6 J	121 UJ	Table 38 in EPA 2017
M10	Mineral	Mill Cr.	Ref.	Sept 2016	14000 J	2.8 J-	229 J	94.5	0.85 J-	2.1	4.6 J	45.7	612 J	44400	968	2680 J	0.29	3.4 J	3.9 J	2.5 J-	2.4 U	0.7	22.2 J	880 UJ	Table 38 in EPA 2017
M30	Mineral	Mill Cr.	Ref.	Sept 2016	9330 J	0.32	12.4 J	73.6	0.55	0.68	3.7	10.8	23.9	21400 J	31.4	1060 J	0.01	1.6	6.8 J	1.6 U	0.55 U	0.55	16 J	225 J	Table 38 in EPA 2017
M08	Mineral	Mill Cr.	Ref.	Sept 2016	7300 J	1.7 J-	12 J	342 U	0.77 J-	1.2	4 J	3.7	28.4 J	39300	220	505 J	0.03	5.8 J	2.4 J	2 UJ	0.77 U	0.77	14.2 U	238 J-	Table 38 in EPA 2017
A05	Animas	NF Animas	Ref.	Sept 2016	11400	1.9	105 J	61.5 J	0.68	1.7	2.9	4.4	81.5	26000	334 J	628 J	0.072	10.2	2.4 J	1.5	2.4	0.76	12.4 J	480 J	Table 38 in EPA 2017
A26	Animas	Picayne G.	Ref.	Sept 2016	11800 J	2.3 J	50.9 J	82.6 U	1.2 J	1.5	5.4 J	8.8	46.9 J	31900	174 J	5410	0.016	2.6 J	5.7 J	1.4 J	1.5 U	0.58	22.7 J	446 UJ	Table 38 in EPA 2017
UMC-TP	Mineral	EU-04	High	July 2017	9000	1 UJ	19	--	2.5 U	0.164 J	5.43	--	37.5 J+	22300	50.9	451	0.057	--	4.58 J+	2 U	1 U	2 U	--	46.7	Table 60 in EPA, 2018
OSL-TP	Mineral	EU-05	Mid	July 2017	7500	4.82 J-	76.1	--	2.49 U	0.608	3.43	--	75.6 J+	20000	2440	811	0.070	--	2.8	1.23 J	20.8	1.99 U	--	214	Table 60 in EPA, 2018
OSL-TP	Mineral	EU-05	Mid	July 2017	9000	1.73 J-	30.4	--	5.21 J	191	4.79 J	--	3720 J+	106000	1870	61800	0.066	--	46.9	4.99 U	6.17	4.99 U	--	13200	Table 60 in EPA, 2018
SFM-TP	Mineral	EU-05	Mid	July 2017	7580	0.993 UJ	12.5	--	2.48 U	0.552	3.33	--	13.5 J+	13700	81.1	1010	0.028	--	4.61 J+	1.99 U	0.763 J	1.99 U	--	117	Table 60 in EPA, 2018
SFM-TP	Mineral	EU-05	Mid	July 2017	7640	0.989 UJ	10.8	--	2.47 U	0.866	4.74	--	24.2 J+	14300	129	865	0.037	--	6.17 J+	1.98 U	0.919 J	1.98 U	--	156	Table 60 in EPA, 2018
PLG-TP	Animas	EU-16	High	July 2017	11700	1.11 J-	17.9	--	2.51 J	6.12	6.88	--	220 J+	15700	1570	5120	0.334	--	6.19 J+	1.07 J	4.83	2.01 U	--	967	Table 60 in EPA, 2018
CAG-TP	Animas	EU-17	Low	July 2017	12600	0.992 UJ	25.2	--	0.854 J	1.1	6.78	--	14.9 J+	15400	96.5	592	0.063	--	4.52	1.98 U	1.24	1.98 U	--	208	Table 60 in EPA, 2018
SFC-TP	Cement	EU-23	Low	July 2017	24000	0.998 UJ	15.1	--	3.72	6.26	6.26	--	236 J+	17100	101	2670	0.065	--	23.3	2.69	0.8 J	2 U	--	1210	Table 60 in EPA, 2018
MGR-TP	Animas	Maggie G.	Ref.	July 2017	8000	0.993 UJ	8.44	--	0.707 J	1.39	4.82	--	25 J+	16600	92.1	1570	0.046	--	4.39	1.99 U	0.993 U	1.99 U	--	176	Table 60 in EPA, 2018
CMP3	Animas	EU-07	High	Sept 2017	3640	17.5	64.5	--	2.5 U	0.855	2.7 J	--	1140	44800	7260	390	1.262	--	1.61 J	3.57 J	53.8	5 U	--	315	Table 63 in EPA, 2018
CMP8	Animas	EU-14	High	Sept 2017	8990	1.79	30.3	--	0.6 J	6.48	7.21	--	92.3	19800	1320	1920	0.153	--	5.53	0.508 J	3.75	1 U	--	940	Table 63 in EPA, 2018

DRC = dose-response category; -- = no data

Table A-4 Mine Waste Pile Halo Area Soil Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in mg/kg dry-weight. See Appendix A title page for data qualifier definitions.

Station ID	Watershed	Sample Area	DRC	Sample Date	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Dataset
BDM-1s[a]	Mineral	Bandora Mine	High	August 2017	9590	4.72 J-	19.7 J-	143	5 U	19.2	6.76	12.6	318 J-	20400	2530	5700	0.000111 J-	10.6	8.93	2 U	35.7	2 U	15.1	2150 J+	Table 62 in EPA 2018
BDM-2s[a]	Mineral	Bandora Mine	High	August 2017	10500	1.16 J-	8.32 J-	149	4.87 U	2.73	7.64	6.29	56.5 J-	13800	775	1130	0.000062 J-	3.45	6.96	1.95 U	4.04	1.95 U	17.3	436 J+	Table 62 in EPA 2018
BDM-T7-1[a]	Mineral	Bandora Mine	High	August 2017	11100	1.13 J-	7.02 J-	151	4.87 U	1.87	8.2	6.35	41.1 J-	12300	1160	830	0.000074 J-	1.49	7.11	1.95 U	25.9	1.95 U	17.3	210 J+	Table 62 in EPA 2018
BRM-1s[a]	Mineral	Brooklyn Mine	Mid	August 2017	6880	5.86 J-	71.4 J-	145	4.83 U	1.08	4.98	7.52	67.6 J-	39300	1620	1150	0.000116 J-	3.02	4.02	1.93 U	9.59	1.93 U	15.1	285 J+	Table 62 in EPA 2018
BRM-2s[a]	Mineral	Brooklyn Mine	Mid	August 2017	10200	1.01 UJ	29.5 J-	244	5.05 U	1.19	6.9	8.62	35.5 J-	27300	282	1840	0.000064 J-	1.01 U	6.5	2.02 U	1.83	2.02 U	19.5	236 J+	Table 62 in EPA 2018
BRM-T2-3[a]	Mineral	Brooklyn Mine	Mid	August 2017	5500	0.696 J-	9.83 J-	405	5.04 U	2.51	5.29	4.32	24.4 J-	10300	171	2540	0.00011 J-	1.01 U	4.78	2.02 U	1.03	2.02 U	12.5	393 J+	Table 62 in EPA 2018
BRM-T3-2[a]	Mineral	Brooklyn Mine	Mid	August 2017	9140	0.699 J-	29.9 J-	436	4.9 U	1.84	6.61	10.5	27.1 J-	23200	387	4470	0.000093 J-	0.979 U	7.12	1.96 U	1.97	1.96 U	17.9	304 J+	Table 62 in EPA 2018
BRM-T5-1[a]	Mineral	Brooklyn Mine	Mid	August 2017	7270	2.04 J-	81.6 J-	175	5.04 U	0.188	13.4	5.56	66.5 J-	49300	2530	678	0.000138 J-	3.07	6.07	2.02 U	20.3	2.02 U	16.9	175 J+	Table 62 in EPA 2018
CLM-1s[a]	Animas	Clipper Mine	Mid	August 2017	10600	3.7 J-	30.1 J-	51.9	4.78 U	1.79	5.86	9.84	126 J-	40000	1770	1790	0.000133 J-	6.99	4.88	1.91 U	5.08	1.91 U	26.1	573 J+	Table 62 in EPA 2018
CLM-2s[a]	Animas	Clipper Mine	Mid	August 2017	11500	0.999 UJ	12.1 J-	83.3	5 U	1.15	6.55	9.79	85.9 J-	25500	675	1230	0.000058 J-	1.43	5.89	2 U	1.1	2 U	25	249 J+	Table 62 in EPA 2018
CLM-T2-4[a]	Animas	Clipper Mine	Mid	August 2017	10600	1 UJ	11.9 J-	56.1	5.01 U	0.963	6.57	15.6	253 J-	21600	173	3850	0.000025 J-	1.37	4.72	2.01 U	0.701 J	2.01 U	20.4	238 J+	Table 62 in EPA 2018
CLM-T5-1[a]	Animas	Clipper Mine	Mid	August 2017	14500	1 UJ	36.6 J-	67.6	5 U	1.28	7.15	15.6	76.9 J-	44500	528	3260	0.000047 J-	4.08	5.56	2 U	1.33	2 U	30.6	421 J+	Table 62 in EPA 2018
CLM-T7-2[a]	Animas	Clipper Mine	Mid	August 2017	5990	2.85 J-	4.89	48.1	5.05 U	1.65	4.62	5.42	932	12400	11100	918	0.000098 J-	1.35	4.82	1.16 J	10.7	1.2 J	12.5	405	Table 62 in EPA 2018
CLM-T8-1[a]	Animas	Clipper Mine	Mid	August 2017	8600	2.85 J-	9.93 J-	25.8	5.03 U	5.94	6.72	7.25	338 J-	46600	4480	623	0.000697 J-	3.77	4.59	2.01 U	12.1	2.01 U	23.7	2130 J+	Table 62 in EPA 2018
LRKM-2s[a]	Cement	Lark Mine	Low	August 2017	3390	9.93 J-	51.9 J-	177	4.89 U	3.11	3.15	1.85	41.9 J-	17500	1460	227	0.000301 J-	1.44	1.59	2.21	2.85	1.96 U	13.4	694 J+	Table 62 in EPA 2018
LRKM-T5-4[a]	Cement	Lark Mine	Low	August 2017	5550	3.19 J-	31.9 J-	134	4.92 U	0.137	3.92	2.4	16.1 J-	20000	165	101	0.000246 J-	1.35	2.85	2.51	1.59	1.97 U	14.1	62.1 J+	Table 62 in EPA 2018
LRKM-T6-1[a]	Cement	Lark Mine	Low	August 2017	3910	4.86 J-	64.9 J-	83.5	5.01 U	0.585	3.44	1.06	84.7 J-	21900	718	66.8	0.000387 J-	1.45	1.27	3.31	4.19	2 U	13.8	146 J+	Table 62 in EPA 2018
LRKM-T6-2[a]	Cement	Lark Mine	Low	August 2017	4500	1.59 J-	17.1 J-	258	4.99 U	1.62	4.46	3.51	31.2 J-	9620	512	813	0.000119 J-	0.998 U	4.32	1.36 J	4.99	2 U	11.2	279 J+	Table 62 in EPA 2018
LRKM-T8-3[a]	Cement	Lark Mine	Low	August 2017	4070	2.78 J-	58.5 J-	313	4.95 U	5.31	3.69	2.35	73.2 J-	35000	1500	146	0.000107 J-	1.69	1.62	2.78	5.11	1.98 U	15.8	1060 J+	Table 62 in EPA 2018
LRKM-T8-4[a]	Cement	Lark Mine	Low	August 2017	5530	1.26 J-	28.4 J-	147	4.97 U	0.219	4.27	2.5	37.2 J-	22400	157	379	0.000059 J-	1.11	2.08	1.29 J	0.77 J	1.99 U	15.5	88.8 J+	Table 62 in EPA 2018
LRKM-T9-2[a]	Cement	Lark Mine	Low	August 2017	3350	2.44 J-	60.5 J-	204	4.94 U	1.28	3.12	1.04	58.1 J-	31500	1090	79.8	0.000107 J-	1.6	0.936 J	2.58	3.76	1.98 U	14.3	322 J+	Table 62 in EPA 2018
LRKM-T9-3[a]	Cement	Lark Mine	Low	August 2017	4650	1.09 J-	10.5	237	4.96 U	0.648	4.98	2.69	17	8790	65.1	997	0.000114 J-	0.993 U	4.07	1.99 U	1.31	1.99 U	11.7	109	Table 62 in EPA 2018
LRKM-T9-4[a]	Cement	Lark Mine	Low	August 2017	4760	2.05 J-	22.6	207	5.01 U	0.295	4.74	2.01	16.6	19100	124	402	0.00004 J-	1.04	2.66	2 U	1 U	2 U	14.9	75.5	Table 62 in EPA 2018
LON-1s[a]	Animas	London Mine	High	August 2017	2450	23.1 J-	149 J-	114	4.86 U	7.64	1.54 J	1.9	67.2 J-	25900	2640	670	0.000123 J-	44.2	0.841 J	1.31 J	13	3.38	5.62	1530 J+	Table 62 in EPA 2018
LON-2s[a]	Animas	London Mine	High	August 2017	7230	14.5 J-	173 J-	171	4.91 U	16	4.36	6.14	211 J-	33500	6750	4310	0.00027 J-	38.3	4.41	2.01	19.7	1.89 J	13.9	1780 J+	Table 62 in EPA 2018
LON-T2-2[a]	Animas	London Mine	High	August 2017	9870	1.04 J-	41 J-	84.6	4.94 U	2.22	6.04	3.43	32.4 J-	18500	722	633	0.000047 J-	3.04	4.4	1.98 U	1.9	1.98 U	18.2	577 J+	Table 62 in EPA 2018
LON-T3-4[a]	Animas	London Mine	High	August 2017	8550	7.71 J-	14.5 J-	45.8	5.04 U	3.81	5.8	4.87	160 J-	13900	15900	1070	0.000095 J-	3.72	5.5	1.93 J	4.53	2.01 U	16.1	650 J+	Table 62 in EPA 2018
LON-T4-1[a]	Animas	London Mine	High	August 2017	1230	33.8 J-	84.8 J-	38.5	4.98 U	8.45	1.99 U	0.472	91.5 J-	13500	1880	192	0.00006 J-	61.7	0.996 U	1.2 J	9.55	1.99 U	3.45	1790 J+	Table 62 in EPA 2018
LON-T4-5[a]	Animas	London Mine	High	August 2017	3320	4.45 J-	10.3 J-	27.5	4.97 U	7.37	3.61	1.86	552 J-	10500	966	144	0.000127 J-	4.27	2.12	1.5 J	4.04	1.99 U	3.74	656 J+	Table 62 in EPA 2018
LON-T5-5[a]	Animas	London Mine	High	August 2017	4080	3.78 J-	53.3 J-	754	1.05 J	47.7	2.65	52.8	339 J-	81100	295	72300	0.000095 J-	7.74	21.6	2 U	1.97	2 U	6.52	8730 J+	Table 62 in EPA 2018
LON-T7-3[a]	Animas	London Mine	High	August 2017	8740	1.26 J-	37.4 J-	87.2	5.06 U	4.38	5.48	4.11	115 J-	14000	550	886	0.000077 J-	3.42	4.52	2.02 U	1.91	2.02 U	16	628 J+	Table 62 in EPA 2018
MGLM-T5-3[a]	Cement	Mogul Mine	Low	August 2017	10300	0.719 J-	25.6 J-	130	4.82 U	1.24	6.26	6.4	57.1 J-	26700	455	1050	0.000102 J-	3.38	4.4	1.93 U	1.65	1.93 U	25.3	349 J+	Table 62 in EPA 2018
MGLM-T8-4[a]	Cement	Mogul Mine	Low	August 2017	8060	1.32 J-	40.8 J-	99.6	4.88 U	0.763	5.98	5.4	70.8 J-	49100	412	1190	0.000033 J-	4.69	4.07	1.95 U	1.63	1.95 U	25.2	300 J+	Table 62 in EPA 2018
MGLM-T8-6[a]	Cement	Mogul Mine	Low	August 2017	8940	0.694 J-	13.9 J-	272	4.93 U	1.2	6.96	5.68	21.4 J-	15900	180	2420	0.000094 J-	1.06	5.77	1.97 U	0.675 J	1.97 U	19.3	276 J+	Table 62 in EPA 2018
MGLM-T8-7[a]	Cement	Mogul Mine	Low	August 2017	13800	1.1 J-	21.9 J-	119	4.88 U	5.54	8.74	13	194 J-	25900	931	1980	0.000065 J-	1.85	5.81	1.95 U	3.22	1.95 U	27.7	971 J+	Table 62 in EPA 2018
MGLM-T9-7[a]	Cement	Mogul Mine	Low	August 2017	7790	1.08 J-	19.1 J-	156	5.04 U	1.34	7.36	5.22	33.4 J-	22200	412	716	0.000053 J-	2.47	4.95	2.01 U	1.06	2.01 U	22.1	170 J+	Table 62 in EPA 2018
RCM-1s[a]	Animas	Red Cloud Mine	High	August 2017	6110	54.8 J-	195 J-	349	4.83 U	19.6	4.17	3.17	130 J-	29900	6040	654	0.001193 J-	13.9	2.6	1.55 J	29.7	1.93 U	14.1	2770 J+	Table 62 in EPA 2018
RCM-2s[a]	Animas	Red Cloud Mine	High	August 2017	8630	6.09 J-	82 J-	106	5.01 U	1.43	5.63	3.79	78 J-	21900	1080	661	0.000162 J-	7.39	3.68	2 U	5.25	2 U	15.5	260 J+	Table 62 in EPA 2018
RCM-T4-2[a]	Animas	Red Cloud Mine	High	August 2017	13100	1.54 J-	8.21 J-	51.7	5.02 U	2.63	6.11	2.68	107 J-	7540	1750	294	0.000106 J-	1.07	4.49	2.01 U	2.43	2.01 U	10.9	450 J+	Table 62 in EPA 2018
RCM-T7-2[a]	Animas	Red Cloud Mine	High	August 2017	6560	2.23 J-	28.4	136	4.98 U	2.64	4.31	3.39	19.8	10800	690	556	0.000076 J-	2.84	2.66	1.99 U	2.94	1.99 U	16.4	377	Table 62 in EPA 2018
RCM-T8-1[a]	Animas	Red Cloud Mine	High	August 2017	9720	0.871 J-	60.7 J-	93.7	4.93 U	1.72	5.13	5.57	45.3 J-	21000	460	1230	0.000056 J-	5.03	2.94	1.97 U	2.01	1.43 J	17.9	294	Table 62 in EPA 2018
VRM-1s[a]	Animas	Vermillion Mine	High	August 2017	5410	4.82 J-	95.8 J-	87.1	4.93 U	2.77	5.09	2.97	102 J-	29400	2160	490	0.000324 J-	15	3.62	1.03 J	12.4	1.97 U	13.2	662 J+	Table 62 in EPA 2018
VRM-2s[a]	Animas	Vermillion Mine	High	August 2017	9640	0.517 J-	51.4 J-	75	4.91 U	1.41	5.97	9.32	128 J-	27200	826	1390	0.000068 J-	4.37	4.04	1.97 U	1.8	1.97 U	16.3	341 J+	Table 62 in EPA 2018
VRM-T5-3[a]	Animas	Vermillion Mine	High	August 2017	8070	0.989 UJ	18.5 J-	43.6	1 J	1.97	4.89	9.59	51 J-	10900	2960	2150	0.000052 J-	1.79	4.21	1.98 U	1.61	1.98 U	12.8	456 J+	Table 62 in EPA 2018
BDM-HA-SOL-001	Mineral	Bandora Mine	High	August 2018	5050 D	1.27 D	8.84 D	141 D	2.1 JD	55.3 D	4.22 D	27.6 D	684 D	46000 D	710 D	10600 BD	0.057 D	--	9.05 D	0.58 JD	2.01 D	0.5 U	12.7 D	5790 D	Table 25 in EPA 2019
BDM-HA-SOL-002	Mineral	Bandora Mine	High	August 2018	7340 D	1.22 D	11.2 D	202 D	1.56 JD	43.8 D	5.58 D	24.1 D	687 D	35100 D	641 D	12700 BD	0.089 D	--	11.3 D	0.83 JD	2.4 D	0.506 U	17.7 D	3530 D	Table 25 in EPA 2019
BDM-HA-SOL-003	Mineral	Bandora Mine	High	August 2018	3220 D	7.21 D	21.3 D	625 D	2.49 U	25.9 D	5.71 D	35.9 D	27 D	29700 D	553 D	96100 BD	0.522 D	--	66.8 D	2.49 U	1.82 JD	2.49 U	5.85 JD	26700 D	Table 25 in EPA 2019
BDM-HA-SOL-004	Mineral	Bandora Mine	High	August 2018	7010 D	2.53 D	28.9 D	120 D	3.29 D	15.4 D	4.4 D	16 D	1050 D	39500 D	2860 D	2480 BD	0.128 D	--	4.42 D	1.4 D	10.2 D	0.499 U	10.6 D	1660 D	Table 25 in EPA 2019
BRK-HA-SOL-005	Mineral	Brooklyn Mine	Mid	August 2018	4560 D	1.85 D	38.8 D	165 D	0.493 U	1.92 D	3.89 D	5.55 D	52.8 D	24200 D	741 D	1890 BD	0.106 D	--	2.95 D	0.632 JD	3.58 D	0.493 U	12.1 D	385 D	Table 25 in EPA 2019
BRK-HA-SOL-006	Mineral	Brooklyn Mine	Mid	August 2018	7720 D	1.4 D	48.2 D	118 D	0.873 JD	2.18 D	9.31 D	10.5 D	74.2 D	46300 D	1840 D	2040 BD	0.067 D	--	8.03 D	0.51 U	3.78 D	0.51 U	14.2 D	646 D	Table 25 in EPA 2019
CLM-HA-SOL-009	Animas	Clipper Mine	Mid	August 2018	13200 D	0.541 JD	5.53 D	70	0.552 JD	0.772 D	4.64 D	11.4 D	95.2 D	28000 D	1110 D	967 D	0.098 D	--	5.35 D	0.502 U	1.42 D	0.502 U	27.9 D	248 JBD	Table 25 in EPA 2019
CLM-HA-SOL-010	Animas	Clipper Mine	Mid	August 2018	9310 D	0.956 D	37 D	50.5	0.496 U	0.709 D	7.26 D	6.93 D	88.3 D	38100 D	899 D	1180 D	0.12 D	--	4.64 D	0.551 JD	2.84 D	1.01 D	22.6 D	300 JBD	Table 25 in EPA 2019
CLM-HA-SOL-011	Animas	Clipper Mine	Mid	August 2018	11400 D	0.674 D	12.2 D	71.6	0.56 JD	0.847 D	5.76 D	10.2 D	63 D	35000 D	1010 D	1810 D	0.055 D	--	4.68 D	0.497 U	1.28 D	0.497 U	21.3 D	309 JBD	Table 25 in EPA 2019
LKM-HA-SOL-013	Cement	Lark Mine	Low	August 2018	3390 D	12.2 D	176 D	156	0.502 U	4.14 D	3.09 D	1.85 D	152 D	12400 D	2400 D	812 D	0.792 D	--	2.66 D	1.93 D	8.43 D	0.502 U	9.96 D	1060 JBD	Table 25 in EPA 2019
LKM-HA-SOL-014	Cement	Lark Mine	Low	August 2018	6440 D	0.847 D	30.2 D	184	0.498 U	0.206 D	3.88 D	2.32 D	38.1 D	28300 D	302 D	178 D	0.224 D	--	1.83 D	1.34 D	1.83 D	0.498 U	14.8 D	88.7 JBD	Table 25 in EPA 2019
LKM-HA-SOL-015	Cement	Lark Mine	Low	August 2018	5300 D	1.06 D	38.5 D	173	0.5 U	0.347 D	3.62 D	1.79 D	43.4 D	32400 D	1110 D	158 D	0.234 D	--	1.66 D	1.23 D	2.64 D	0.5 U	12.9 D	127 JBD	Table 25 in EPA 2019
LON-HA-SOL-017	Animas	London Mine	High	August 2018	7170 D	2.91 D	30.8 D	73.3	0.688 JD	8.48 D	4.09 D	4.1 D	60 D	15200 D	1170 D	946 D	0.096 D	--	3.21 D	0.589 JD	4.91 D	0.507 U	12.7 D	1400 JBD	Table 25 in EPA 2019
LON-HA-SOL-018	Animas	London Mine	High	August 2018	6040 D	17.8 D	94.2 D	62.8	0.767 JD	2.79 D	3.34 D	6 D	256 D	25000 D	3100 D	691 D	0.236 D	--	2.39 D	0.908 JD	16.7 D	0.803 JD	11.2 D	549 JBD	Table 25 in EPA 2019
LON-HA-SOL-019	Animas	London Mine	High	August 2018	5370 D	1.52 D	29.2 D	52.4	0.556 JD	3.55 D	3.49 D	1.49 D	51.2 D	14900 D	775 D	273 D	0.099 D	--	2.49 D	0.499 U	2.62 D	0.499 U	11.2 D	352 JBD	Table 25 in EPA 2019
LON-HA-SOL-020	Animas	London Mine	High	August 2018	5160 D	2.47 D	81.5 D	34	0.501 U	1.19 D	3.86 D	2.27 D	81.5 D	38500 D	489 D	539 D	0.128 D	--	1.8 D	0.501 U	3.83 D	0.621 JD	16.2 D	242 JBD	Table 25 in EPA 2019
MGM-HA-SOL-021	Cement	Mogul Mine	Low	August 2018	10000 D	0.671 JD	26.1 D	123	0.505 U	1.67 D	5.7 D	5.18 D	72.8 D	29400 D	761 D	1570 D	0.052 D	--	4.15 D	0.505 U	2.78 D	0.505 U	21.2 D	482 JBD	Table 25 in EPA 2019
MGM-HA-SOL-022	Cement	Mogul Mine	Low	August 2018	7000 D	2.11 D	57.4 D	116	0.505 U	1.94 D	5.28 D	7.34 D	235 D	70300 D	1160 D	2390 D	0.338 D	--	3.1 D	0.923 JD	5.18 D	1.12 D	18.2 D	429 JBD	Table 25 in EPA 2019
MGM-HA-SOL-023	Cement	Mogul Mine	Low	August 2018	6460 JD	1.42 D	57 D	142	0.504 U	0.636 D	4.71 D	4.85 D	90.6 D	70800 D	658 D	1040 D	0.143 D	--	3.57 D	0.866 JD	3.16 D	0.504 U	21.4 D	275 JBD	Table 25 in EPA 2019
RCM-HA-SOL-026	Animas	Red Cloud Mine	High	August 2018	9060 D	1.89 JD	27.7 D	66.3	0.506 U	1.23 D	4.74 D	2.1 D	146 D	10900 D	1550 D	268 BD	0.181 D	--	2.98 D	0.506 U	10.2 D	0.506 U	11.5 D	378 JBD	Table 25 in EPA 2019
RCM-HA-SOL-027	Animas	Red Cloud Mine	High	August 2018	8550 D	1.77 JD	53.4 D	438	0.503 U	2.26 D	4.99 D	2.67 D	32.9 D	17700 D	2050 D	436 BD	0.723 D	--	3.1 D	0.503 U	6.67 D	1.15 D	15.3 D	498 JBD	Table 25 in EPA 2019
RCM-HA-SOL-028	Animas	Red Cloud Mine	High	August 2018	8520 D	1.82 D	40.3 D	494	0.492 U	1.76 D	4.74 D	4.53 D	80.1 D	15800 D	1840 D	792 BD	0.53 D	--	2.97 D	0.492 U	8.85 D	1.24 D	13.8 D	415 JBD	Table 25 in EPA 2019
VRM-HA-SOL-029	Animas	Vermillion Mine	High	August 2018	10800 D	0.78 D	66.1 D	33.6	0.847 JD	0.765 D	6.01 D	12.2 D	222 D	62500 D	2630 JD	2480 BD	0.068 D	--	2.55 D	0.55 JD	5.41 D	0.856 JD	14.3 D	389 JBD	Table 25 in EPA 2019
VRM-HA-SOL-030	Animas	Vermillion Mine	High	August 2018	9930 D	0.25 U	16.2 D	36	0.866 JD	1.6 D	4.52 D	3.36 D	70.6 D	11400 D	613 JD	659 BD	0.045 D	--	4.56 D	0.637 JD	2.56 D	0.499 UJ	11.4 D	405 JBD	Table 25 in EPA 2019
VRM-HA-SOL-031	Animas	Vermillion Mine	High	August 2018	7010 D	0.261 JD	14.9 D	37.5	0.853 JD	1.83 D	3.73 D	6.34 JD	48.2 D	9550 D	2200 D	1520 JD	0.056 D	--	3.16 D	0.613 JD	1.85 D	0.496 U	9.23 D	433 JBD	Table 25 in EPA 2019
VRM-HA-SOL-032	Animas	Vermillion Mine	High	August 2018	7580 D	0.312 JD	12.4 D	49.7	1.28 JD	3.45 D	4.01 D	3.85 D	49.9 D	9300 D	3400 D	856 D	0.048 D	--	4.41 D	0.643 JD	1.09 D	0.795 JD	10.8 D	861 JBD	Table 25 in EPA 2019

DRC = dose-response category; -- = no data

a = Sample sieved using a #10 sieve with a 2 millimeter (mm) mesh size; sample results for 2 mm fraction

Table A-5 Vegetated Reference Area Soil Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in mg/kg dry-weight. See Appendix A title page for data qualifier definitions.

Station ID	Watershed	Sample Area	Subtype	Sample Date	Aluminum	Antimony	Arsenic	Barium	Beryllium	Cadmium	Chromium	Cobalt	Copper	Iron	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Dataset
BDM-HA-SOL-005	Mineral	Above Bandora Mine	Not lynx	August 2018	6800 D	0.344 JD	4 D	195 D	0.505 U	2.86 D	4.89 D	4.69 D	19.2 D	9080 D	163 D	870 BD	0.065 D	--	3.75 D	0.505 U	1.2 D	0.505 U	12.6 D	366 D	Table 25 in EPA 2019
BDM-T6-3[a]	Mineral	Above Bandora Mine	Not lynx	August 2017	4680	0.802 J-	3.22 J-	169	4.92 U	2.2	4.68	3.24	28.2 J-	6010	352	643	0.000091 J-	1.13	3.85	1.97 U	2.27	1.97 U	9.05	320 J+	Table 62 in EPA 2018
BRM-T4-3[a]	Mineral	Above Brooklyn Mine	Lynx	August 2017	10400	0.985 UJ	9.14 J-	197	4.93 U	0.684	7.68	6.95	11.6 J-	18000	49	1570	0.000028 J-	0.985 U	6.08	1.97 U	0.985 U	1.97 U	21.6	94.1 J+	Table 62 in EPA 2018
BRM-T5-2[a]	Mineral	Above Brooklyn Mine	Lynx	August 2017	14000	0.946 UJ	14.5 J-	164	4.73 U	0.68	6	11.2	72.1 J-	41000	73.4	1390	0.000045 J-	1.1	7.27	1.89 U	0.507 J	1.89 U	18.1	214 J+	Table 62 in EPA 2018
CLM-T6-4[a]	Animas	Above Clipper Mine	Not lynx	August 2017	16700	1.01 UJ	9.37	87.8	5.06 U	0.495	7.59	11.5	41.1 J-	30500	104	1270	0.000039 J-	1.01 U	7.01	2.03 U	1.01 U	2.03 U	33.5	164	Table 62 in EPA 2018
LRKM-1s[a]	Cement	Above Lark Mine	Not lynx	August 2017	3550	4.02 J-	73.3 J-	114	5.04 U	1.02	3.17	1.05	71.6 J-	23000	582	79.6	0.000241 J-	1.73	1.14	3.36	3.13	2.02 U	14.5	231 J+	Table 62 in EPA 2018
LRKM-T1-4[a]	Cement	Above Lark Mine	Not lynx	August 2017	1820	2.41 J-	34.5 J-	144	5 U	0.2	1.78 J	0.721	7.82 J-	14700	123	74.9	0.000021 J-	2.85	0.68 J	2.51	1 U	2 U	9.42	26.9 J+	Table 62 in EPA 2018
MGLM-1s[a]	Cement	Above Mogul Mine	Not lynx	August 2017	9130	1.59 J-	24.6 J-	108	4.91 U	3.39	6.65	5.98	133 J-	25500	729	1260	0.000129 J-	3.44	4.39	1.97 U	3.33	1.97 U	20	400 J+	Table 62 in EPA 2018
MGLM-2s[a]	Cement	Above Mogul Mine	Not lynx	August 2017	12300	1.38 J-	33.9 J-	171	4.94 U	3.92	7.33	16.1	47.9 J-	42800	456	8420	0.00005 J-	7.19	11.3	1.98 U	1.71	1.98 U	24.3	1160 J+	Table 62 in EPA 2018
MGLM-T1-4[a]	Cement	Above Mogul Mine	Not lynx	August 2017	10700	0.489 J-	8.91 J-	107	4.89 U	0.244	7.3	3.25	17.1 J-	14100	262	316	0.000065 J-	1.54	4.46	1.96 U	1.22	1.96 U	23.1	104 J+	Table 62 in EPA 2018
RCM-HA-SOL-025	Animas	Above Red Cloud Mine	Not lynx	August 2018	8180 JD	1.03 D	20.1 D	36.4	0.502 U	0.79 D	4.74 D	1.45 D	106 D	17700 D	852 D	167 D	0.256 D	--	2.8 D	0.631 JD	13.8 D	0.502 U	9.36 D	285 JBD	Table 25 in EPA 2019
RCM-T1-4[a]	Animas	Above Red Cloud Mine	Not lynx	August 2017	7100	0.894 J-	69.5 J-	69.1	4.88 U	0.337	3.89	2.65	42.5 J-	19900	584	404	0.000028 J-	8.31	2.02	1.95 U	2.4	1.95 U	15.7	75.9 J+	Table 62 in EPA 2018
RCM-T3-4[a]	Animas	Above Red Cloud Mine	Not lynx	August 2017	9730	1 J-	43 J-	141	4.96 U	1.15	6.59	6.58	17.8 J-	17500	296	3610	0.000103 J-	11	4.58	1.98 U	1.83	1.98 U	17.6	219 J+	Table 62 in EPA 2018
VRM-T2-3[a]	Animas	Above Vermillion Mine	Not lynx	August 2017	9450	0.978 UJ	44.3 J-	88.9	4.89 U	0.647	6.25	5.42	17.8 J-	16300	106	1300	0.000077 J-	2.54	5.29	1.96 U	1.07	1.96 U	17.6	164 J+	Table 62 in EPA 2018
VRM-T6-1[a]	Animas	Above Vermillion Mine	Not lynx	August 2017	8460	1.01 UJ	14.8 J-	98.7	5.06 U	2.75	6.09	4.64	18.9 J-	12600	384	646	0.000042 J-	1.01 U	4.92	2.03 U	1.01 U	2.03 U	16.2	450 J+	Table 62 in EPA 2018
BBP-UA-SOL-208	Mineral	Mineral Black Bear pass	Lynx	August 2017	12200	1 UJ	4.32	351	5.02 U	0.318	5.81	10.6	20.9	24800	26.6	1160	0.000048 J-	--	1 U	2.01 U	1 U	2.01 U	23.9	81.7	Table 62 in EPA 2018
BBP-UA-SOL-209	Mineral	Mineral Black Bear pass	Lynx	August 2017	10000	0.529 J-	21	162	4.94 U	0.24	5.29	8.87	22.8	27800	23.7	749	0.000039 J-	--	2.58	1.98 U	0.988 U	1.7 J	19	57.9 J+	Table 62 in EPA 2018
BBP-UA-SOL-210	Mineral	Mineral Black Bear pass	Lynx	August 2017	10200	0.972 UJ	8.11 J-	211	4.86 U	0.675	7.05	5.99	17.8 J-	16200	59.3	1150	0.000092 J-	--	0.972 U	1.94 U	0.972 U	1.1 J	20	72.6 J+	Table 62 in EPA 2018
BBP-UA-SOL-211	Mineral	Mineral Black Bear pass	Lynx	August 2017	9310	0.968 UJ	6.02 J-	289	4.84 U	0.276	5.8	5.11	12.9 J-	15800	27.5	784	0.000059 J-	--	1.6	1.94 U	0.968 U	1.94 U	17.4	52 J+	Table 62 in EPA 2018
BBP-UA-SOL-212	Mineral	Mineral Black Bear pass	Lynx	August 2017	9790	0.994 UJ	4.61 J-	276	4.97 U	0.572	7.31	5.89	16.5 J-	12900	29.8	1040	0.000074 J-	--	0.994 U	1.99 U	0.994 U	1.99 U	20.4	92.6 J+	Table 62 in EPA 2018
PRC-UA1	Mineral	Mineral Porcupine Creek	Lynx	August 2017	7340	0.981 UJ	3.24 J-	169	4.9 U	0.544	7	2.88	7.81 J-	8080	17.9	163	0.000071 J-	--	0.981 U	1.96 U	0.981 U	1.96 U	16.4	39.8 J+	Table 62 in EPA 2018
PRC-UA2	Mineral	Mineral Porcupine Creek	Lynx	August 2017	5200	1.01 UJ	3.43 J-	232	5.03 U	0.697	5.98	2.56	16.3 J-	5060	25.8	342	0.000253 J-	--	1.01 U	1.32 J	1.01 U	2.01 U	9.64	61.1 J+	Table 62 in EPA 2018
PRC-UA3	Mineral	Mineral Porcupine Creek	Lynx	August 2017	4220	0.806 J-	2.19 J-	148	4.93 U	0.392	5.07	2.01	23.9 J-	3890	10.6	174	0.000108 J-	--	0.986 U	1.77 J	0.986 U	1.97 U	8.57	48.7 J+	Table 62 in EPA 2018
PRC-UA4	Mineral	Mineral Porcupine Creek	Lynx	August 2017	4930	0.496 J-	3.18 J-	209	4.95 U	0.401	5.86	2.66	17.2 J-	4790	15.8	282	0.000129 J-	--	0.99 U	1.6 J	0.99 U	1.98 U	9.66	64.8 J+	Table 62 in EPA 2018
PRC-UA5	Mineral	Mineral Porcupine Creek	Lynx	August 2017	5280	0.533 J-	3.43 J-	227	4.89 U	0.579	6	2.79	21.4 J-	5200	19.9	305	0.000171 J-	--	1.32	1.26 J	0.978 U	1.96 U	11.3	73.5 J+	Table 62 in EPA 2018
TGL-1	Cement	Cement Tiger Gulch	Lynx	August 2017	8720	0.985 UJ	14.4 J-	67.7	4.93 U	0.289	5.43	2.56	31.4 J-	104000	99.7	472	0.000164 J-	--	2.16	1.72 J	1.1	1.19 J	22.5	83.4 J+	Table 62 in EPA 2018
TGL-2	Cement	Cement Tiger Gulch	Lynx	August 2017	7110	0.587 J-	10.4 J-	168	5 U	0.528	6.26	5.17	21.3 J-	18700	135	1410	0.000084 J-	--	1.78	2 U	0.687 J	2 U	21.6	156 J+	Table 62 in EPA 2018
TGL-3	Cement	Cement Tiger Gulch	Lynx	August 2017	4690	1.04 J-	5.74 J-	219	4.91 U	1.89	5.19	3.36	34.9 J-	8320	254	2180	0.000277 J-	--	0.982 U	1.47 J	1.96	1.96 U	12.2	387 J+	Table 62 in EPA 2018
TGL-4	Cement	Cement Tiger Gulch	Lynx	August 2017	3410	0.749 J-	3.69 J-	263	5.07 U	2.26	4.39	2.42	36.4 J-	13700	277	2870	0.000271 J-	--	1.01 U	2.03 U	0.97 J	2.03 U	9.22	480 J+	Table 62 in EPA 2018
TGL-5	Cement	Cement Tiger Gulch	Lynx	August 2017	6940	0.722 J-	9.3 J-	277	4.94 U	0.712	5.87	5.31	20 J-	37000	115	1750	0.00017 J-	--	1.21	1.98 U	0.645 J	1.98 U	15.4	188 J+	Table 62 in EPA 2018
UEG-UA-SOL-205	Animas	SF Animas upper Eureka	Not lynx	August 2017	14600	1.01 UJ	7.34 J-	131	5.06 U	0.605	6.92	8.74	28.9 J-	23500	84.7	712	0.000085 J-	--	1.01 U	2.03 U	1.01 U	2.03 U	29.3	149 J+	Table 62 in EPA 2018
UEG-UA-SOL-206	Animas	SF Animas upper Eureka	Not lynx	August 2017	13400	0.987 UJ	14.7 J-	93.9	4.93 U	0.347	7.53	9.71	27.5 J-	24400	67.5	1600	0.000045 J-	--	0.987 U	1.97 U	0.987 U	1.97 U	25.7	127 J+	Table 62 in EPA 2018
UEG-UA-SOL-207	Animas	SF Animas upper Eureka	Not lynx	August 2017	13500	0.998 UJ	9.16 J-	112	4.99 U	0.443	6.85	10.3	22 J-	22800	66.4	1080	0.000045 J-	--	0.998 U	2 U	0.998 U	2 U	27.1	110 J+	Table 62 in EPA 2018
WFA-UA-SOL-201	Animas	WF Animas above Frisco/Bagley	Not lynx	August 2017	9690	0.531 J-	25.8 J-	140	1.53 J	3.24	6.57	8.28	27.7 J-	15800	157	2090	0.000046 J-	--	4.36	1.99 U	1.08	1.99 U	17.7	267 J+	Table 62 in EPA 2018
WFA-UA-SOL-202	Animas	WF Animas above Frisco/Bagley	Not lynx	August 2017	9260	0.968 UJ	13.6 J-	180	4.84 U	0.832	6.63	7.61	17.3 J-	15400	66.6	1460	0.000055 J-	--	1.78	1.94 U	0.583 J	1.94 U	21.4	151 J+	Table 62 in EPA 2018
WFA-UA-SOL-203	Animas	WF Animas above Frisco/Bagley	Not lynx	August 2017	13800	0.985 UJ	24.3 J-	146	3.14 J	6.52	7	7.46	74 J-	15400	219	3790	0.000089 J-	--	7.3	1.97 U	1.52	1.97 U	17	508 J+	Table 62 in EPA 2018
WFA-UA-SOL-204	Animas	WF Animas above Frisco/Bagley	Not lynx	August 2017	14100	0.979 UJ	25.5 J-	122	3.31 J	6.02	6.97	6.65	79 J-	14900	199	3460	0.000092 J-	--	7.29	1.96 U	1.56	1.96 U	16.1	527 J+	Table 62 in EPA 2018
BBP-UA-SO-993	Mineral	Mineral Black Bear pass	Lynx	August 2018	8060 D	1.08 D	4.48 D	255 D	0.571 JD	0.319 D	6.18 D	5.88 D	23.9 D	15900 D	24.5 D	517 BD	0.035 D	--	4.68 D	0.727 JD	0.253 U	0.507 U	18 D	51.8 D	Table 25 in EPA 2019
BBP-UA-SO-994	Mineral	Mineral Black Bear pass	Lynx	August 2018	8200 D	0.697 D	7.48 D	456 D	0.507 JD	1.11 D	6.47 D	13.7 D	36 D	38600 D	263 D	7020 BD	0.605 D	--	5.59 D	0.496 U	0.434 JD	0.496 U	18.1 D	262 D	Table 25 in EPA 2019
PRC-UA-SOL-990	Mineral	Porcupine Creek	Lynx	August 2018	3000 JD	0.856 D	2 D	125	0.494 U	0.353 D	3.26 D	1.64 D	25.3 D	3390 D	10 D	221 D	0.104 D	--	1.86 D	2.22 D	0.247 JD	0.494 U	6.7 D	29.3 JBD	Table 25 in EPA 2019
PRC-UA-SOL-991	Mineral	Porcupine Creek	Lynx	August 2018	5190 JD	0.249 U	2.46 D	137	0.498 U	0.254 D	4.58 D	2.62 D	7.18 D	6510 D	12.5 D	291 D	0.031 D	--	3.65 D	0.526 JD	0.249 U	0.498 U	10.3 D	65.3 JBD	Table 25 in EPA 2019
PRC-UA-SOL-992	Mineral	Porcupine Creek	Lynx	August 2018	5550 JD	0.254 U	2.21 D	120	0.509 U	0.205 D	4.35 D	2.57 D	5.88 D	7170 D	11.3 D	232 D	0.023 D	--	3.82 D	0.509 U	0.254 U	0.509 U	11 D	59.8 JBD	Table 25 in EPA 2019
TGL-UA-SOL-001	Cement	Cement Tiger Gulch	Lynx	August 2018	7850 D	0.447 JD	12 D	71.8	0.505 U	0.295 D	4.55 D	2.65 D	20.8 D	62000 D	88.6 D	492 BD	0.125 D	--	2.63 D	0.945 JD	1.59 D	0.505 UJ	19.1 D	91.6 JBD	Table 25 in EPA 2019
TGL-UA-SOL-002	Cement	Cement Tiger Gulch	Lynx	August 2018	5740 D	0.356 JD	7.78 D	174	0.495 U	0.385 D	4.07 D	3.78 D	17.6 D	16800 D	142 D	1150 BD	0.082 D	--	3.62 D	0.495 U	0.609 D	0.495 UJ	16 D	140 JBD	Table 25 in EPA 2019
UCC-UA-SOL-212	Animas	Upper Cunninigham	Lynx	August 2018	10600 D	0.25 U	4 D	210	0.499 U	0.272 D	7.88 D	8.13 D	14.6 D	19300 D	31.3 D	1260 BD	0.033 D	--	6.49 D	0.499 U	0.25 U	0.499 UJ	24.6 D	99.5 JBD	Table 25 in EPA 2019
UCC-UA-SOL-213	Animas	Upper Cunninigham	Lynx	August 2018	9330 D	0.247 U	3.96 D	196	0.493 U	0.232 D	7.78 D	6.86 D	11.3 D	17700 D	43 D	1060 BD	0.036 D	--	5.3 D	0.493 U	0.247 U	0.493 UJ	22.4 D	102 JBD	Table 25 in EPA 2019
UCC-UA-SOL-214	Animas	Upper Cunninigham	Lynx	August 2018	11200 D	0.252 U	4.01 D	215	0.503 U	0.259 D	9.17 D	7.39 D	13.3 D	20800 D	29.6 D	1180 BD	0.033 D	--	6.2 D	0.503 U	0.331 JD	0.503 UJ	26.2 D	91 JBD	Table 25 in EPA 2019
UEG-UA-SOL-208	Animas	Above Clipper Mine	Not lynx	August 2018	12000 D	0.247 U	6.74 D	109	0.495 U	0.44 D	6.44 D	5.31 D	19 D	18700 D	100 JD	739 BD	0.051 D	--	5.29 D	0.495 UJ	0.279 JD	0.495 UJ	21.2 D	123 JBD	Table 25 in EPA 2019
UEG-UA-SOL-209	Animas	Above Clipper Mine	Not lynx	August 2018	13600 D	0.25 U	6.18 D	81.4	0.501 U	0.205 D	6.23 D	6.89 D	19.8 D	23200 D	70.8 JD	847 BD	0.036 D	--	6.09 D	0.501 UJ	0.25 U	0.501 UJ	23 D	116 JBD	Table 25 in EPA 2019
URB-UA-SOL-217	Cement	Upper Ross Basin	Not lynx	August 2018	10400 D	0.305 JD	15.7 D	116	0.495 U	1.13 D	5.83 D	5.99 D	25.5 D	23200 D	431 JD	1450 BD	0.049 D	--	4.52 D	0.495 UJ	0.856 D	0.495 UJ	19.6 D	210 JBD	Table 25 in EPA 2019
URB-UA-SOL-218	Cement	Upper Ross Basin	Not lynx	August 2018	11000 D	1.18 D	19.3 D	109	0.499 U	0.685 D	5.22 D	7.17 D	25.9 D	27500 D	420 JD	1440 BD	0.041 D	--	4.32 D	0.499 UJ	0.865 D	0.499 UJ	20.5 D	168 JBD	Table 25 in EPA 2019
URB-UA-SOL-219	Cement	Upper Ross Basin	Not lynx	August 2018	11500 D	0.426 JD	24.5 D	95.6	0.496 U	0.979 D	6.45 D	6.78 D	30.8 D	28400 D	420 JD	1790 BD	0.041 D	--	4.63 D	0.496 UJ	1.01 D	0.496 UJ	22.9 D	316 JBD	Table 25 in EPA 2019
WFA-UA-SO-210	Animas	Above Frisco/Bagley	Not lynx	August 2018	7390 D	0.272 JD	26 D	141	0.491 U	0.674 D	4.88 D	5.9 D	17.2 D	17100 D	107 D	1200 D	0.107 D	--	3.26 D	0.491 U	0.698 D	0.491 U	20.4 D	168 JBD	Table 25 in EPA 2019
WFA-UA-SO-211	Animas	Above Frisco/Bagley	Not lynx	August 2018	7310 D	0.252 U	22.9 D	133	0.504 U	0.454 D	4.76 D	5.67 D	13.8 D	15600 D	93 D	1250 D	0.04 D	--	2.98 D	0.504 U	0.774 D	0.504 U	18.4 D	117 JBD	Table 25 in EPA 2019

-- = no data

a = Sample sieved using a #10 sieve with a 2 millimeter (mm) mesh size; sample results for 2 mm fraction

Table A-6 Terrestrial Invertebrate Tissue Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in mg/kg dry-weight. See Appendix A title page for data qualifier definitions.

Station ID	Exposure Unit	Sample Area	DRC	Functional Group	Sample Date	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Dataset
ANR-FP-INV-401	EU-09	Animas near Howardsville	High	Flying	July 2018	2.88 D	1.25 U	7.86 D	3.33 D	7.74 D	21 D	2.15 D	113 D	6.37 D	2.5 U	1.25 U	4.85 D	5 U	298 D	Table 26 in EPA 2019
ANR-FP-INV-402	EU-09	Animas near Howardsville	High	Ground	July 2018	1.41 D	1.81 D	19.7 D	10.2 D	2.34 D	84.5 D	157 D	2020 D	0.51 D	0.479 D	1.68 D	0.217 U	1.16 D	532 D	Table 26 in EPA 2019
BRC-FP-INV-408	EU-19	Burrows Creek	High	Flying	July 2018	0.289 D	0.266 D	12.3 D	2.87 D	2.27 D	21 D	3.5 D	211 D	0.596 D	0.499 D	0.304 D	0.192 U	0.738 D	253 D	Table 26 in EPA 2019
BRC-FP-INV-407	EU-19	Burrows Creek	High	Ground	July 2018	0.107 D	0.397 D	7.56 D	1.47 D	1.75 D	6.45 D	2.82 D	178 D	0.29 D	0.338 D	0.0697 D	0.101 U	0.672 D	109 D	Table 26 in EPA 2019
CUC-FP-INV-414	EU-08	Lower Cunningham Cr.	Mid	Flying	July 2018	0.662 D	0.441 D	16 D	4.88 D	2.51 D	29.7 D	17.5 D	290 D	0.34 D	0.387 D	0.259 D	0.529 JD	1.24 D	266 D	Table 26 in EPA 2019
CUC-FP-INV-415	EU-08	Lower Cunningham Cr.	Mid	Ground	July 2018	0.33 D	1.88 D	32.1 D	9.72 D	2.2 D	59.4 D	90 D	250 D	0.623 D	0.871 D	0.744 D	0.164 U	2.5 D	263 D	Table 26 in EPA 2019
CUC-FP-INV-413	EU-08	Lower Cunningham Cr.	Mid	Soil	July 2018	0.492 D	6.99 D	36 D	74.5 D	2.65 D	28.2 D	186 D	503 D	0.835 D	5.49 D	1.22 D	0.099 U	4.18 D	687 D	Table 26 in EPA 2019
MGR-FP-INV-425	Maggie G.	Maggie Gulch	Ref.	Flying	July 2018	1.04 D	0.464 JD	15.7 D	0.766 D	2.16 D	35.4 D	0.946 D	135 D	0.25 U	1.61 D	0.25 U	0.5 U	1.09 JD	218 D	Table 26 in EPA 2019
MGR-FP-INV-426	Maggie G.	Maggie Gulch	Ref.	Ground	July 2018	0.42 JD	0.25 U	18.3 D	1.53 D	1.61 D	24.4 D	0.423 D	168 D	0.25 U	0.643 JD	0.25 U	0.5 U	1 U	169 D	Table 26 in EPA 2019
MGR-FP-INV-427	Maggie G.	Maggie Gulch	Ref.	Soil	July 2018	0.576 D	5.46 D	77.5 D	4.78 D	2.47 D	16.8 D	11.3 D	541 D	1.61 D	4.08 D	0.274 JD	0.5 U	5.55 D	190 D	Table 26 in EPA 2019
MFM-FP-INV-419	EU-06	Middle Fork Mineral Cr.	Low	Flying	July 2018	2.22 D	0.25 U	6.32 D	7.23 D	2.34 D	47.8 D	1.53 D	159 D	0.25 U	2.69 D	1.85 D	0.5 U	2.88 D	409 D	Table 26 in EPA 2019
MFM-FP-INV-420	EU-06	Middle Fork Mineral Cr.	Low	Flying	July 2018	0.417 JD	1.47 D	16 D	3.06 D	2.16 D	26.1 D	9.64 D	242 D	0.25 U	0.878 JD	0.25 U	0.5 U	3.09 D	220 D	Table 26 in EPA 2019
MFM-FP-INV-422	EU-06	Middle Fork Mineral Cr.	Low	Flying	July 2018	0.25 U	0.31 JD	14.5 D	2.13 D	2.03 D	17.1 D	1.69 D	187 D	0.25 U	0.5 U	0.25 U	0.5 U	1.02 JD	202 D	Table 26 in EPA 2019
MFM-FP-INV-419[a]	EU-06	Middle Fork Mineral Cr.	Low	Ground	July 2018	2.22 D	0.25 U	6.32 D	7.23 D	2.34 D	47.8 D	1.53 D	159 D	0.25 U	2.69 D	1.85 D	0.5 U	2.88 D	409 D	Table 26 in EPA 2019
MFM-FP-INV-420[a]	EU-06	Middle Fork Mineral Cr.	Low	Ground	July 2018	0.417 JD	1.47 D	16 D	3.06 D	2.16 D	26.1 D	9.64 D	242 D	0.25 U	0.878 JD	0.25 U	0.5 U	3.09 D	220 D	Table 26 in EPA 2019
MFM-FP-INV-422[a]	EU-06	Middle Fork Mineral Cr.	Low	Ground	July 2018	0.25 U	0.31 JD	14.5 D	2.13 D	2.03 D	17.1 D	1.69 D	187 D	0.25 U	0.5 U	0.25 U	0.5 U	1.02 JD	202 D	Table 26 in EPA 2019
MFM-FP-INV-421	EU-06	Middle Fork Mineral Cr.	Low	Soil	July 2018	0.703 D	8.63 D	64.2 D	12.6 D	3.13 D	17.6 D	115 D	732 D	1.26 D	12.7 D	0.54 D	0.5 U	15.3 D	356 D	Table 26 in EPA 2019
PGR-FP-INV-428	Picayune G.	Picayune Gulch	Ref.	Flying	July 2018	0.458 JD	0.84 JD	12.2 D	7.5 D	2.28 D	32.5 D	4.46 D	150 D	0.506 D	0.5 U	0.488 JD	0.5 U	1.31 JD	366 D	Table 26 in EPA 2019
PGR-FP-INV-429	Picayune G.	Picayune Gulch	Ref.	Ground	July 2018	0.25 U	1.94 D	30.7 D	5.89 D	2.15 D	26.7 D	6.16 D	371 D	0.379 JD	0.5 U	0.25 U	0.5 U	1.5 D	278 D	Table 26 in EPA 2019
PGS-FP-INV-416	EU-21	Prospect Gulch	Mid	Flying	July 2018	1.99 D	20.4 D	103 D	3.42 D	2.28 D	18.9 D	148 D	174 D	0.909 D	1.09 D	0.765 D	0.5 U	4.62 D	182 D	Table 26 in EPA 2019
PGS-FP-INV-417	EU-21	Prospect Gulch	Mid	Ground	July 2018	0.25 U	0.576 JD	15.8 D	1.4 D	1.45 D	7.55 D	5.04 D	112 D	0.25 U	0.618 JD	0.25 U	0.5 U	1 U	141 D	Table 26 in EPA 2019
SFC-FP-INV-422	EU-23	South Fork Cement Cr.	Low	Flying	July 2018	0.42 D	0.531 D	22.1 D	1.84 D	2.27 D	22.5 D	2.02 D	916 D	1.98 D	0.347 D	0.153 D	0.2 U	1.06 D	224 D	Table 26 in EPA 2019
SFC-FP-INV-423	EU-23	South Fork Cement Cr.	Low	Ground	July 2018	0.121 D	0.171 D	1.87 D	0.133 D	0.293 D	7.04 D	1.69 D	27.9 D	0.0658 U	0.198 D	0.0873 D	0.132 U	0.296 D	59.7 D	Table 26 in EPA 2019
CEC-FP-INV-410	EU-24	Upper Cement Creek	High	Flying	July 2018	1.4 D	0.242 D	25.2 D	1.72 D	2.34 D	37.8 D	1.81 D	8260 D	0.781 D	0.227 U	0.235 D	0.227 U	0.643 D	447 D	Table 26 in EPA 2019
CEC-FP-INV-411	EU-24	Upper Cement Creek	High	Ground	July 2018	0.5 D	0.372 D	5.49 D	3.74 D	2.52 D	66 D	14.7 D	600 D	0.586 D	0.706 D	1.81 D	0.417 U	1.4 D	363 D	Table 26 in EPA 2019
WFA-FP-INV-404	EU-15	West Fork Animas	High	Flying	July 2018	0.179 JD	0.498 D	5.42 D	4.93 D	1.65 JD	33.4 D	2.56 JD	254 D	0.32 D	0.198 D	0.119 D	0.133 UJ	0.541 D	889 D	Table 26 in EPA 2019
WFA-FP-INV-405	EU-15	West Fork Animas	High	Ground	July 2018	0.188 D	0.949 D	4.53 D	3.76 D	1.55 D	17 D	3.89 D	206 D	0.121 D	0.276 D	0.216 D	0.247 JD	0.789 D	266 D	Table 26 in EPA 2019
URB-UA-INV-278	EU-24	Upper Ross Basin	Ref.	Flying	July 2018	0.894 JD	0.359 D	3.63 D	2.26 D	7.18 JD	24.5 D	1.56 JD	82.7 D	1.17 D	0.357 U	0.199 D	0.357 UJ	0.714 D	201 D	Table 26 in EPA 2019
URB-UA-INV-279	EU-24	Upper Ross Basin	Ref.	Ground	July 2018	0.359 JD	0.733 D	13.2 D	1.59 D	1.59 JD	13.7 D	10.6 JD	147 D	0.479 D	0.291 D	0.508 D	0.244 UJ	1.17 D	118 D	Table 26 in EPA 2019
BDM-HA-INV-151	N/A	Bandora Mine	High	Flying	July 2018	0.211 D	0.611 D	23.5 D	4.77 D	2.52 D	76.1 D	22.9 D	458 D	13.7 D	0.323 U	0.543 D	0.323 U	1.32 D	414 D	Table 26 in EPA 2019
BDM-HA-INV-152	N/A	Bandora Mine	High	Flying	July 2018	0.945 D	2.23 D	95.9 D	13.6 D	4.68 D	116 D	145 D	3070 D	3.74 D	0.625 U	0.734 D	0.625 U	4.99 D	1330 D	Table 26 in EPA 2019
BDM-HA-INV-152	N/A	Bandora Mine	High	Ground	July 2018	0.945 D	2.23 D	95.9 D	13.6 D	4.68 D	116 D	145 D	3070 D	3.74 D	0.625 U	0.734 D	0.625 U	4.99 D	1330 D	Table 26 in EPA 2019
BRK-HA-INV-154	N/A	Brooklyn Mine	Mid	Flying	July 2018	0.715 D	3.98 D	24.5 D	2.04 D	6.74 D	38.1 D	52.7 D	289 D	1.65 D	1.09 U	0.891 D	1.09 U	2.17 U	240 D	Table 26 in EPA 2019
BRK-HA-INV-155	N/A	Brooklyn Mine	Mid	Ground	July 2018	0.344 D	0.584 D	3.98 D	1.35 D	2.7 D	88.4 D	6.64 D	112 D	3.32 D	0.773 D	0.761 D	0.27 U	0.899 D	194 D	Table 26 in EPA 2019
CLM-HA-INV-157	N/A	Clipper Mine	Mid	Flying	July 2018	0.399 D	0.478 D	9.48 D	1.81 D	2.72 D	29.6 D	34.4 D	113 D	0.878 D	0.392 D	0.267 D	0.222 U	0.845 D	262 D	Table 26 in EPA 2019
CLM-HA-INV-158	N/A	Clipper Mine	Mid	Ground	July 2018	0.17 D	1.48 D	20.4 D	2.23 D	2.03 D	20.6 D	39.3 D	396 D	0.871 D	0.26 D	0.282 D	0.172 U	3.87 D	226 D	Table 26 in EPA 2019
LKM-HA-INV-160	N/A	Lark Mine	Low	Flying	July 2018	1.16 D	5.92 D	45.9 D	1.99 D	5.15 D	45.9 D	43.5 D	731 D	1.71 D	1.16 D	0.457 JD	0.5 U	1.2 JD	837 D	Table 26 in EPA 2019
LKM-HA-INV-161	N/A	Lark Mine	Low	Ground	July 2018	1.45 D	0.716 JD	6.54 D	0.45 D	1.31 D	26.2 D	7.38 D	22.8 D	0.616 D	0.694 JD	0.25 U	0.5 U	1 U	133 D	Table 26 in EPA 2019
LON-HA-INV-163	N/A	London Mine	High	Flying	July 2018	3.38 D	1.06 D	12 D	3.91 D	2 D	21.8 D	7.75 D	88.5 D	0.25 U	0.514 JD	0.409 JD	0.5 U	1 U	273 D	Table 26 in EPA 2019
LON-HA-INV-164	N/A	London Mine	High	Ground	July 2018	2.43 D	4.91 D	11.1 D	5.23 D	2.24 D	42 D	114 D	172 D	0.566 D	0.508 JD	1.38 D	0.5 U	2.04 D	382 D	Table 26 in EPA 2019
MGM-HA-INV-166	N/A	Mogul Mine	Low	Flying	July 2018	0.25 U	0.605 JD	14.9 D	3.19 D	2.24 D	34.1 D	15.2 D	503 D	1.09 D	0.5 U	0.6 D	0.5 U	1 U	300 D	Table 26 in EPA 2019
MGM-HA-INV-167	N/A	Mogul Mine	Low	Ground	July 2018	0.427 JD	1.63 D	6.72 D	0.937 D	1.37 D	16.4 D	31.2 D	115 D	0.25 U	0.653 JD	0.373 JD	0.5 U	1.07 JD	133 D	Table 26 in EPA 2019
RCM-HA-INV-170	N/A	Red Cloud Mine	High	Flying	July 2018	1.45 D	0.5 U	11.5 D	5.29 D	2.96 D	21.3 D	16.1 D	167 D	0.5 U	1 U	0.5 U	1 U	2 U	351 D	Table 26 in EPA 2019
RCM-HA-INV-169	N/A	Red Cloud Mine	High	Ground	July 2018	1.49 D	0.824 D	6.63 D	1.34 D	2.32 D	17.5 D	60.4 D	97.2 D	0.455 U	0.909 U	0.455 U	0.909 U	1.82 U	179 D	Table 26 in EPA 2019
VRM-HA-INV-173	N/A	Vermillion Mine	High	Flying	July 2018	0.355 JD	0.246 D	2.51 D	1.38 D	1.91 JD	25.8 D	3.04 JD	38.7 D	0.192 U	0.385 U	0.192 U	0.385 UJ	0.769 U	173 D	Table 26 in EPA 2019
VRM-HA-INV-172	N/A	Vermillion Mine	High	Ground	July 2018	1.71 JD	1 U	4.79 D	4.07 D	4 JD	45.4 D	13.2 JD	78.1 D	1 U	2 U	1 U	2 UJ	4 U	376 D	Table 26 in EPA 2019
UEG-UA-INV-269	N/A	Above Clipper Mine	Ref.	Flying	July 2018	0.158 D	0.195 D	8.55 D	1.85 D	2.2 D	20.8 D	2.22 D	114 D	0.463 D	0.306 D	0.258 D	0.217 U	0.76 D	244 D	Table 26 in EPA 2019
UEG-UA-INV-270	N/A	Above Clipper Mine	Ref.	Ground	July 2018	5.89 JD	1.25 U	23.1 D	1.67 D	4.21 JD	18.3 D	2.51 JD	290 D	1.25 U	2.5 U	1.25 U	2.5 UJ	5 U	242 D	Table 26 in EPA 2019
WFA-UA-INV-266	N/A	Above Frisco/Bagley	Ref.	Flying	July 2018	0.361 JD	0.333 U	12.4 D	2.15 D	2.64 JD	22.7 D	1.14 JD	183 D	0.333 U	0.667 U	0.333 U	0.667 UJ	1.33 U	246 D	Table 26 in EPA 2019
WFA-UA-INV-267	N/A	Above Frisco/Bagley	Ref.	Ground	July 2018	2.19 D	1.67 U	13.4 D	0.958 D	11.1 D	21.2 D	3.64 D	124 D	1.75 D	3.33 U	1.67 U	3.52 D	6.67 U	222 D	Table 26 in EPA 2019
BBP-UA-INV-263	N/A	Black Bear Pass	Ref.	Flying	July 2018	0.893 U	0.893 U	7.01 D	0.684 D	4.96 D	44.5 D	0.576 D	45.4 D	1.19 D	1.79 U	0.893 U	1.79 U	3.57 U	151 D	Table 26 in EPA 2019
BBP-UA-INV-264	N/A	Black Bear Pass	Ref.	Ground	July 2018	0.749 D	1.47 D	36 D	2.59 D	2.81 D	9.91 D	2.23 D	229 D	0.754 D	0.556 U	0.278 U	0.556 U	1.3 D	176 D	Table 26 in EPA 2019
PRC-UA-INV-273	N/A	Porcupine Creek	Ref.	Flying	July 2018	0.255 D	0.0959 D	9.86 D	1.64 D	2.35 D	43.8 D	0.354 D	95.2 D	0.454 D	0.441 D	0.082 U	0.277 D	0.845 D	215 D	Table 26 in EPA 2019
PRC-UA-INV-274	N/A	Porcupine Creek	Ref.	Ground	July 2018	0.542 D	0.118 D	19.6 D	1.31 D	1.54 D	12 D	0.224 D	83.9 D	0.101 D	0.331 D	0.0459 U	0.0917 U	0.602 D	141 D	Table 26 in EPA 2019
PRC-UA-INV-272	N/A	Porcupine Creek	Ref.	Soil	July 2018	0.25 U	9.32 D	28 D	9.14 D	2.87 D	11.1 D	2.3 D	40.4 D	0.531 D	45.9 D	0.648 D	0.5 U	1.75 D	181 D	Table 26 in EPA 2019
TGL-UA-INV-261	N/A	Tiger Gulch	Ref.	Ground	July 2018	1.67 U	1.67 U	43.6 D	0.486 D	3.34 D	166 D	15.7 D	285 D	1.67 U	3.33 U	7.14 D	3.33 U	6.67 U	348 D	Table 26 in EPA 2019
UCC-UA-INV-277	N/A	Upper Cunninigham	Ref.	Flying	July 2018	0.133 D	0.0924 D	6.9 D	1.45 D	1.91 D	25.2 D	0.429 D	37.8 D	0.38 D	0.195 D	0.0806 U	0.161 U	0.659 D	158 D	Table 26 in EPA 2019
UCC-UA-INV-276	N/A	Upper Cunninigham	Ref.	Ground	July 2018	0.201 D	0.341 D	28.3 D	3.32 D	2.68 D	35.7 D	1.28 D	133 D	0.856 D	0.251 D	0.113 D	0.169 U	2.16 D	198 D	Table 26 in EPA 2019
UCC-UA-INV-275	N/A	Upper Cunninigham	Ref.	Soil	July 2018	0.285 JD	7.81 D	64.1 D	6.36 D	5.92 D	7.85 D	7.27 JD	436 JD	2.31 D	10.6 D	0.426 D	0.2 UJ	9.45 D	463 JD	Table 26 in EPA 2019

a = Sample consisted of combined flying and ground-dwelling invertebrates and sample results repeated so that each function group is represented

DRC = dose-response categroy; N/A = not applicable

Table A-7 Terrestrial Plant Tissue Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in mg/kg dry-weight. See Appendix A title page for data qualifier definitions.

Station ID	Exposure Unit	Sample Area	DRC	Functional Group	Sample Date	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Dataset
ANR-FP-PLT-352	EU-09	Animas near Howardsville	High	Herb	July 2018	0.464 JD	0.248 U	11.4 D	4 D	2.53 D	10.3 D	1.36 D	208 BD	0.247 U	0.248 U	0.496 U	0.248 U	0.619 JD	0.992 U	402 D	Table 27 in EPA 2019
ANR-FP-PLT-353	EU-09	Animas near Howardsville	High	Grass	July 2018	0.611 JD	0.252 U	4.24 D	0.14 D	1.71 D	6.22 JD	0.711 D	558 JBD	0.248 U	0.252 U	0.505 U	0.252 U	0.505 U	1.01 U	95.3 JD	Table 27 in EPA 2019
ANR-FP-PLT-354	EU-09	Animas near Howardsville	High	Shrub	July 2018	1.36 D	0.249 U	3.7 D	3.7 D	2.65 D	7.97 D	1.28 D	236 BD	0.249 U	0.249 U	0.499 U	0.249 U	0.499 U	0.997 U	445 D	Table 27 in EPA 2019
BBP-UA-PLT-230	N/A	Black Bear Pass	Upland	Herb	July 2018	0.677 D	0.251 U	64.8 D	0.155 D	2.57 D	10.1 D	0.236 D	93.6 BD	0.249 U	0.251 U	0.502 U	0.251 U	0.502 U	1 U	43.3 JD	Table 27 in EPA 2019
BBP-UA-PLT-232	N/A	Black Bear Pass	Upland	Shrub	July 2018	0.634 D	0.251 U	18 D	1.2 D	2.67 D	5.97 D	0.217 D	1280 BD	0.246 U	0.251 U	0.501 U	0.251 U	0.501 U	1 U	172 D	Table 27 in EPA 2019
BBP-UA-PLT-233	N/A	Black Bear Pass	Upland	Grass	July 2018	0.251 U	0.251 U	22.5 D	0.173 D	1.62 D	6.36 D	4.79 D	493 BD	0.248 U	0.396 JD	0.502 U	0.251 U	0.502 U	1 U	99.1 D	Table 27 in EPA 2019
BDM-HA-PLT-051	N/A	Bandora Mine	High	Grass	July 2018	0.251 U	0.251 U	4.85 D	0.552 D	0.859 JD	5.73 D	2.45 D	48.1 BD	0.251 U	0.609 D	0.501 U	0.251 U	0.501 U	1 U	81.6 D	Table 27 in EPA 2019
BDM-HA-PLT-052	N/A	Bandora Mine	High	Herb	July 2018	0.249 U	0.249 U	56.9 D	1.89 D	3.2 D	14.7 D	16.9 D	134 BD	0.252 U	0.515 D	0.497 U	0.249 U	0.497 U	0.994 U	265 D	Table 27 in EPA 2019
BDM-HA-PLT-053	N/A	Bandora Mine	High	Shrub	July 2018	0.249 U	0.285 JD	5.37 D	4.98 D	2.89 D	29.5 D	17.7 D	293 BD	0.252 U	1.39 D	0.498 U	0.249 U	0.498 U	1.04 JD	774 D	Table 27 in EPA 2019
BDM-HA-PLT-055	N/A	Bandora Mine	High	Herb	July 2018	0.252 U	0.252 U	42.8 D	1.72 D	2.58 D	20.6 D	18.6 D	266 BD	0.249 U	0.634 D	0.504 U	0.252 U	0.504 U	1.31 JD	513 D	Table 27 in EPA 2019
BDM-HA-PLT-056	N/A	Bandora Mine	High	Grass	July 2018	0.251 U	0.351 JD	7.24 D	2.62 D	2.06 D	31 D	22.4 D	500 BD	0.248 U	1.11 D	0.502 U	0.251 U	0.502 U	1 U	392 D	Table 27 in EPA 2019
BDM-HA-PLT-059	N/A	Bandora Mine	Upland	Herb	July 2018	0.249 U	0.249 U	48.7 D	0.632 D	2.09 D	8.96 D	0.92 D	40.7 BD	0.254 U	0.249 U	0.498 U	0.249 U	0.498 U	0.996 U	37 JD	Table 27 in EPA 2019
BDM-HA-PLT-062	N/A	Bandora Mine	High	Herb	July 2018	0.284 U	0.284 U	38.6 D	0.718 D	2.61 D	8.01 D	3.18 D	198 D	0.251 U	0.284 U	0.567 U	0.284 U	0.567 U	1.13 U	92.4 D	Table 27 in EPA 2019
BDM-HA-PLT-063	N/A	Bandora Mine	High	Grass	July 2018	0.249 UJ	0.249 U	15.4 D	0.0499 U	2.54 D	3.56 D	3.84 D	87.6 JD	0.249 U	0.249 U	0.499 U	0.249 U	0.499 U	0.997 U	35.6 D	Table 27 in EPA 2019
BDM-HA-PLT-064	N/A	Bandora Mine	High	Sedge	July 2018	0.248 U	0.248 U	1.32 D	0.154 D	2.07 D	8.06 D	1.55 D	163 D	0.251 U	0.248 U	0.496 U	0.248 U	0.496 U	0.991 U	109 D	Table 27 in EPA 2019
BDM-HA-PLT-065	N/A	Bandora Mine	High	Shrub	July 2018	0.25 U	0.25 U	1.32 D	6.08 D	2.96 D	3.73 D	1.25 D	123 D	0.248 U	0.25 U	0.5 U	0.25 U	0.5 U	1 U	827 D	Table 27 in EPA 2019
BRC-FP-PLT-361	EU-19	Burrows Creek	High	Sedge	July 2018	0.251 U	0.251 U	3.99 D	0.317 D	2.31 D	14.2 D	0.383 D	713 D	0.247 U	1.75 D	0.502 U	0.251 U	0.502 U	1 U	122 D	Table 27 in EPA 2019
BRC-FP-PLT-362	EU-19	Burrows Creek	High	Shrub	July 2018	0.248 U	0.248 U	2.51 D	1.86 D	3.18 D	12.1 D	0.668 D	928 D	0.249 U	2.25 D	0.496 U	0.248 U	0.496 U	0.993 U	446 D	Table 27 in EPA 2019
BRC-FP-PLT-363	EU-19	Burrows Creek	High	Grass	July 2018	0.249 U	0.249 U	6.25 D	0.506 D	2.43 D	16.1 D	0.93 D	1220 D	0.246 U	1.01 D	0.498 U	0.249 U	0.498 U	0.997 U	194 D	Table 27 in EPA 2019
BRC-FP-PLT-364	EU-19	Burrows Creek	High	Herb	July 2018	0.248 U	0.248 U	13.1 D	2.19 D	2.85 D	8.79 D	0.256 D	355 D	0.251 U	1.04 D	0.497 U	0.248 U	0.497 U	0.993 U	401 D	Table 27 in EPA 2019
BRK-HA-PLT-057	N/A	Brooklyn Mine	Mid	Grass	July 2018	0.248 U	0.327 JD	48.7 D	0.652 D	2.43 D	4.91 D	8.37 D	635 D	0.247 U	0.638 D	0.496 U	0.248 U	0.496 U	0.992 U	180 D	Table 27 in EPA 2019
BRK-HA-PLT-059	N/A	Brooklyn Mine	Mid	Herb	July 2018	0.301 U	0.301 U	87.4 D	0.328 D	2.67 D	22.8 D	1.81 D	1690 D	0.25 U	2.78 D	0.603 U	0.301 U	0.603 U	1.21 U	131 D	Table 27 in EPA 2019
BRK-HA-PLT-060	N/A	Brooklyn Mine	Mid	Grass	July 2018	0.252 U	1.35 D	13.3 D	0.528 D	2.47 D	7.7 D	60.1 D	244 D	0.249 U	2.01 D	0.503 U	0.252 U	0.503 U	1.01 U	156 D	Table 27 in EPA 2019
BRK-HA-PLT-061	N/A	Brooklyn Mine	Mid	Sedge	July 2018	0.25 U	0.25 U	13.6 D	0.816 D	2.26 D	10.8 D	2.36 D	167 D	0.246 U	3.53 D	0.5 U	0.25 U	0.5 U	0.999 U	176 D	Table 27 in EPA 2019
BRK-HA-PLT-062	N/A	Brooklyn Mine	Mid	Herb	July 2018	0.365 U	0.41 JD	31.9 D	0.402 D	3.26 D	8.93 D	2.16 D	124 D	0.254 U	1 D	0.729 U	0.365 U	0.729 U	1.46 U	62 D	Table 27 in EPA 2019
BRK-HA-PLT-063	N/A	Brooklyn Mine	Mid	Shrub	July 2018	0.253 U	0.253 U	10.5 D	11.5 D	3.24 D	6.16 D	4.5 D	132 D	0.256 U	1.31 D	0.505 U	0.253 U	0.505 U	1.01 U	584 D	Table 27 in EPA 2019
CEC-FP-PLT-367	EU-24	Upper Cement Cr.	High	Herb	July 2018	0.299 JD	0.763 JD	18.6 JD	1.52 D	2.83 JD	12.7 D	4.63 D	412 D	0.249 U	1.79 JD	1.44 D	0.251 U	1.18 D	1 UJ	247 D	Table 27 in EPA 2019
CEC-FP-PLT-368	EU-24	Upper Cement Cr.	High	Grass	July 2018	0.248 U	0.248 U	6.53 JD	0.108 D	2.04 JD	6.66 D	0.195 D	984 D	0.254 UJ	1.57 JD	0.497 U	0.248 U	0.497 U	0.994 UJ	72.1 D	Table 27 in EPA 2019
CEC-FP-PLT-369	EU-24	Upper Cement Cr.	High	Shrub	July 2018	0.249 U	0.249 U	0.695 JD	1.64 D	2.92 JD	5.31 D	0.22 D	1400 D	0.248 U	2.8 JD	0.499 U	0.249 U	0.499 U	0.998 UJ	269 D	Table 27 in EPA 2019
CLM-HA-PLT-063	N/A	Clipper Mine	Mid	Shrub	July 2018	0.251 U	0.251 U	4.23 JD	5.09 D	2.75 JD	8.86 D	1.62 D	203 D	0.249 U	0.251 UJ	0.501 U	0.251 U	0.501 U	1 UJ	456 D	Table 27 in EPA 2019
CLM-HA-PLT-064	N/A	Clipper Mine	Mid	Sedge	July 2018	0.251 U	0.251 U	13.1 JD	0.274 D	2.25 JD	8.57 D	3.3 D	85.4 D	0.249 U	1.07 JD	0.502 U	0.251 U	0.502 U	1 UJ	74 D	Table 27 in EPA 2019
CLM-HA-PLT-065	N/A	Clipper Mine	Mid	Herb	July 2018	0.249 U	0.249 U	9.92 JD	2.46 D	2.23 JD	14.3 D	27.7 D	20.9 D	0.246 U	0.467 JD	0.498 U	0.249 U	0.498 U	0.995 UJ	210 D	Table 27 in EPA 2019
CLM-HA-PLT-066	N/A	Clipper Mine	Mid	Grass	July 2018	0.252 U	0.252 U	15.2 JD	0.0505 U	2.24 JD	7.15 D	2.43 D	209 D	0.255 U	1.54 JD	0.505 U	0.252 U	0.505 U	1.01 UJ	44.6 D	Table 27 in EPA 2019
CUC-FP-PLT-371	EU-08	Lower Cunningham Cr.	Mid	Shrub	July 2018	0.248 U	0.248 U	16.4 JD	5.91 D	2.91 JD	8.67 D	3.33 D	78.3 D	0.245 U	0.248 UJ	0.495 U	0.248 U	0.495 U	0.991 UJ	525 D	Table 27 in EPA 2019
CUC-FP-PLT-372	EU-08	Lower Cunningham Cr.	Mid	Sedge	July 2018	0.25 U	0.25 U	19.5 JD	0.588 D	2.2 JD	7.83 D	1.03 D	60.2 D	0.247 U	0.25 UJ	0.5 U	0.25 U	0.5 U	1 UJ	52.3 D	Table 27 in EPA 2019
CUC-FP-PLT-373	EU-08	Lower Cunningham Cr.	Mid	Herb	July 2018	0.252 U	0.252 U	23.7 JD	1.35 D	2.42 JD	6.46 D	2.13 D	43.7 D	0.251 U	0.252 UJ	0.503 U	0.252 U	0.503 U	1.01 UJ	66.3 D	Table 27 in EPA 2019
CUC-FP-PLT-375	EU-08	Lower Cunningham Cr.	Mid	Grass	July 2018	0.25 U	0.25 U	15.8 JD	0.228 D	2.7 JD	7.38 D	5.83 D	123 D	0.255 U	0.499 JD	0.501 U	0.25 U	0.501 U	1 UJ	70.6 D	Table 27 in EPA 2019
LKM-HA-PLT-070	N/A	Lark Mine	Low	Grass	July 2018	0.252 U	0.252 U	29.1 JD	0.0504 U	2.32 JD	6.72 D	4.14 D	275 D	0.245 U	0.709 JD	0.504 U	0.252 U	0.504 U	1.01 UJ	34.8 D	Table 27 in EPA 2019
LKM-HA-PLT-071	N/A	Lark Mine	Low	Herb	July 2018	0.249 U	0.464 JD	34 JD	1.67 D	3.11 JD	7.66 D	6.02 D	47.4 D	0.245 U	0.249 UJ	0.499 U	0.249 U	0.499 U	0.998 UJ	88.4 D	Table 27 in EPA 2019
LKM-HA-PLT-072	N/A	Lark Mine	Low	Sedge	July 2018	0.252 U	0.252 U	20.6 JD	1.19 D	2.26 JD	9.14 D	1.27 D	253 D	0.247 U	0.252 UJ	1.13 D	0.419 JD	0.503 U	1.01 UJ	170 D	Table 27 in EPA 2019
LKM-HA-PLT-073	N/A	Lark Mine	Low	Shrub	July 2018	0.248 U	0.248 U	8.46 JD	1.97 D	3.05 JD	5.37 D	2.09 D	76 D	0.248 U	1.08 JD	0.496 U	0.248 U	0.496 U	0.991 UJ	152 D	Table 27 in EPA 2019
LON-HA-PLT-075	N/A	London Mine	High	Grass	July 2018	0.372 JD	0.622 JD	11.7 JD	0.476 D	2.2 JD	8.8 JD	2.65 D	305 D	0.247 U	0.591 JD	1.62 D	0.252 U	1.92 D	1.01 UJ	146 D	Table 27 in EPA 2019
LON-HA-PLT-076	N/A	London Mine	High	Herb	July 2018	0.249 UJ	0.797 JD	8.37 D	0.377 D	2.26 D	6.15 D	2.04 D	36.2 D	0.246 U	1.26 D	1.76 D	0.249 U	1.53 D	0.997 U	65.5 D	Table 27 in EPA 2019
LON-HA-PLT-077	N/A	London Mine	High	Shrub	July 2018	0.248 UJ	0.248 U	4.43 D	5.28 D	1.68 D	3.8 D	1.45 D	25.2 D	0.251 U	0.248 U	0.497 U	0.248 U	0.497 U	0.993 U	304 D	Table 27 in EPA 2019
MFM-FP-PLT-381	EU-06	Middle Fork Mineral Cr.	Low	Herb	July 2018	0.248 UJ	1.04 D	36.9 D	0.442 D	2.07 D	6.51 D	8.38 D	256 D	0.247 U	0.836 D	0.497 U	0.248 U	0.497 U	1.77 D	55.3 D	Table 27 in EPA 2019
MFM-FP-PLT-382	EU-06	Middle Fork Mineral Cr.	Low	Shrub	July 2018	0.25 UJ	0.25 U	1.57 D	0.222 D	2.01 D	3.57 D	0.138 D	264 D	0.252 U	1.86 D	0.5 U	0.25 U	0.5 U	1 U	52.9 D	Table 27 in EPA 2019
MFM-FP-PLT-383	EU-06	Middle Fork Mineral Cr.	Low	Shrub	July 2018	0.248 UJ	0.248 U	3.6 D	0.251 D	1.81 D	3.57 D	0.0855 JD	195 D	0.252 U	0.31 JD	0.496 U	0.248 U	0.496 U	0.992 U	70.3 D	Table 27 in EPA 2019
MFM-FP-PLT-385	EU-06	Middle Fork Mineral Cr.	Low	Shrub	July 2018	0.25 UJ	0.25 U	8.7 D	0.268 D	1.9 D	4.82 D	0.647 D	280 D	0.25 U	1.11 D	0.5 U	0.25 U	0.5 U	1 U	41.3 D	Table 27 in EPA 2019
MFM-FP-PLT-386	EU-06	Middle Fork Mineral Cr.	Low	Grass	July 2018	0.249 UJ	0.249 U	0.249 D	0.249 D	0.249 D	0.249 D	0.249 JD	126 D	0.254 U	0.249 D	0.249 U	0.249 U	0.249 U	0.249 U	67 D	Table 27 in EPA 2019
MFM-FP-PLT-386	EU-06	Middle Fork Mineral Cr.	Low	Shrub	July 2018	0.25 UJ	0.25 U	0.25 D	0.25 U	0.25 D	0.25 D	0.25 D	684 D	0.252 U	0.25 JD	0.25 U	0.25 U	0.25 U	0.25 U	21.5 D	Table 27 in EPA 2019
MFM-FP-PLT-387	EU-06	Middle Fork Mineral Cr.	Low	Shrub	July 2018	0.251 UJ	0.251 U	5.5 D	0.493 D	1.61 D	2.78 D	0.053 JD	62 D	0.25 U	0.251 U	0.502 U	0.251 U	0.502 U	1 U	83.8 D	Table 27 in EPA 2019
MFM-FP-PLT-388	EU-06	Middle Fork Mineral Cr.	Low	Grass	July 2018	0.249 UJ	0.249 U	7.44 D	0.0498 U	1.58 D	3.78 D	0.175 D	36 D	0.248 U	0.249 U	0.498 U	0.249 U	0.498 U	0.995 U	23.9 D	Table 27 in EPA 2019
MFM-FP-PLT-389	EU-06	Middle Fork Mineral Cr.	Low	Herb	July 2018	0.25 UJ	0.25 U	13.7 D	0.499 D	1.51 D	8.66 D	0.295 D	54.4 D	0.251 U	0.25 U	0.5 U	0.25 U	0.5 U	1 U	44.4 D	Table 27 in EPA 2019
MFM-FP-PLT-390	EU-06	Middle Fork Mineral Cr.	Low	Sedge	July 2018	0.249 UJ	0.249 U	8.13 D	0.0597 JD	1.58 D	2.66 D	0.0547 JD	72.5 D	0.251 U	0.249 U	0.498 U	0.249 U	0.498 U	0.996 U	20.7 D	Table 27 in EPA 2019
MFM-FP-PLT-392	EU-06	Middle Fork Mineral Cr.	Low	Grass	July 2018	0.252 UJ	0.252 U	6.03 D	0.0505 U	2.32 D	4.85 D	0.126 D	883 D	0.25 U	0.783 D	0.505 U	0.252 U	0.505 U	1.01 U	30 D	Table 27 in EPA 2019
MFM-FP-PLT-394	EU-06	Middle Fork Mineral Cr.	Low	Shrub	July 2018	0.249 UJ	0.249 U	3.33 D	0.7 D	1.91 D	2.9 D	0.0603 JD	348 D	0.254 U	0.808 D	0.499 U	0.249 U	0.499 U	0.997 U	103 D	Table 27 in EPA 2019
MFM-FP-PLT-395	EU-06	Middle Fork Mineral Cr.	Low	Sedge	July 2018	0.252 UJ	0.252 U	2.75 D	0.62 D	2.22 D	6.02 D	0.217 D	945 D	0.252 U	0.5 JD	0.505 U	0.622 D	0.505 UJ	1.01 UJ	74 JD	Table 27 in EPA 2019
MFM-FP-PLT-396	EU-06	Middle Fork Mineral Cr.	Low	Grass	July 2018	0.251 U	0.251 U	8.82 D	0.238 D	2.24 D	8.51 D	0.168 D	314 D	0.253 U	1.97 D	0.503 U	0.251 U	0.503 U	1.01 U	47.4 D	Table 27 in EPA 2019
MFM-FP-PLT-397	EU-06	Middle Fork Mineral Cr.	Low	Shrub	July 2018	0.25 UJ	0.25 U	1.59 D	0.579 D	2.89 D	4.73 D	0.0616 JD	47.8 JD	0.255 U	0.401 JD	0.5 U	0.25 U	0.5 U	1 U	88.2 D	Table 27 in EPA 2019
MFM-FP-PLT-398	EU-06	Middle Fork Mineral Cr.	Low	Sedge	July 2018	0.251 U	0.251 U	11.5 D	0.0518 JD	1.98 D	3.53 D	0.135 D	119 D	0.252 U	0.251 U	0.501 U	0.251 U	0.501 U	1 U	21.2 D	Table 27 in EPA 2019
MFM-FP-PLT-399	EU-06	Middle Fork Mineral Cr.	Low	Herb	July 2018	0.333 U	0.333 U	11.7 D	0.568 D	1.48 D	5.96 D	0.915 D	54.4 D	0.254 UJ	0.473 JD	0.666 U	0.333 U	0.666 U	1.33 U	44.8 D	Table 27 in EPA 2019
MFM-FP-PLT-401	EU-06	Middle Fork Mineral Cr.	Low	Herb	July 2018	0.251 U	0.251 U	5.09 D	0.052 JD	2.17 D	4.39 D	0.144 D	517 D	0.253 UJ	0.509 D	0.503 U	0.251 U	0.503 U	1.01 U	31.7 D	Table 27 in EPA 2019
MGM-HA-PLT-081	N/A	Mogul Mine	Low	Sedge	July 2018	0.251 U	0.251 U	6.59 D	0.644 D	2.2 D	4.95 D	2.76 D	55.8 D	0.25 UJ	0.251 U	0.502 U	0.401 JD	0.502 U	1 U	314 D	Table 27 in EPA 2019
MGM-HA-PLT-082	N/A	Mogul Mine	Low	Grass	July 2018	0.252 U	0.252 U	1.79 D	0.241 D	1.72 D	7.11 D	0.235 D	202 D	0.249 UJ	0.742 D	0.503 U	0.252 U	0.503 U	1.01 U	96 D	Table 27 in EPA 2019
MGM-HA-PLT-083	N/A	Mogul Mine	Low	Shrub	July 2018	1.25 U	1.25 U	1.25 U	0.298 JD	2.5 JD	3.76 D	0.25 U	983 D	0.25 UJ	1.25 U	2.5 U	1.25 U	2.5 U	5.01 U	121 D	Table 27 in EPA 2019
MGM-HA-PLT-085	N/A	Mogul Mine	Low	Herb	July 2018	0.252 U	0.252 U	0.868 D	0.412 D	2.27 D	10.8 D	0.262 D	120 D	0.249 UJ	1.21 D	0.504 U	0.252 U	0.504 U	1.01 U	103 D	Table 27 in EPA 2019
MGR-FP-PLT-391	Maggie G.	Maggie Gulch	Ref.	Shrub	July 2018	0.252 U	0.252 U	44.1 D	0.414 D	2.64 D	5.87 D	0.461 D	131 D	0.252 UJ	0.252 U	0.504 U	0.252 U	0.504 U	1.01 U	93.3 D	Table 27 in EPA 2019
MGR-FP-PLT-392	Maggie G.	Maggie Gulch	Ref.	Herb	July 2018	0.248 U	0.248 U	53.8 D	0.114 D	3.08 D	6.82 D	0.31 D	153 D	0.246 UJ	0.248 U	0.495 U	0.248 U	0.495 U	0.99 U	35.7 D	Table 27 in EPA 2019
MGR-FP-PLT-393	Maggie G.	Maggie Gulch	Ref.	Grass	July 2018	0.25 U	0.25 U	33.4 D	0.05 U	2.31 D	4.64 D	0.236 D	67.1 D	0.248 UJ	0.25 U	0.5 U	0.25 U	0.5 U	0.999 U	20.7 D	Table 27 in EPA 2019
PGR-FP-PLT-396	Picayne G.	Picayune Gulch	Ref.	Shrub	July 2018	0.249 U	0.249 U	20.4 D	0.686 D	2.87 D	4.14 D	2.25 D	93.8 D	0.246 UJ	0.511 D	0.498 U	0.249 U	0.498 U	0.996 U	113 D	Table 27 in EPA 2019
PGR-FP-PLT-398	Picayne G.	Picayune Gulch	Ref.	Herb	July 2018	0.252 U	0.252 U	38.9 D	0.217 D	2.22 D	5.19 D	1.42 D	70.2 D	0.251 UJ	0.83 D	0.504 U	0.252 U	0.504 U	1.01 U	43.9 D	Table 27 in EPA 2019
PGR-FP-PLT-399	Picayne G.	Picayune Gulch	Ref.	Grass	July 2018	0.249 U	0.426 JD	28.4 D	0.134 D	1.97 D	3.82 D	3.84 D	139 D	0.247 UJ	1.09 D	0.498 U	0.249 U	0.498 U	0.997 U	59.5 D	Table 27 in EPA 2019
PGR-FP-PLT-400	Picayne G.	Picayune Gulch	Ref.	Sedge	July 2018	0.305 JD	0.498 JD	44.5 D	0.469 D	1.55 D	6.03 D	1.68 D	177 D	0.245 UJ	1.03 D	0.803 JD	0.25 U	0.594 JD	1 U	101 D	Table 27 in EPA 2019
PGS-FP-PLT-376	EU-21	Prospect Gulch	Mid	Grass	July 2018	0.25 U	0.25 U	43.5 D	0.05 U	2.05 D	5.36 D	0.499 D	293 D	0.254 UJ	0.816 D	0.5 U	0.25 U	0.5 U	1 U	23.6 D	Table 27 in EPA 2019
PGS-FP-PLT-377	EU-21	Prospect Gulch	Mid	Herb	July 2018	0.248 U	0.248 U	80.2 D	0.341 D	1.95 D	4.21 D	0.175 D	140 D	0.247 UJ	2.26 D	0.496 U	0.248 U	0.496 U	0.992 U	27.8 D	Table 27 in EPA 2019
PGS-FP-PLT-378	EU-21	Prospect Gulch	Mid	Shrub	July 2018	0.251 U	0.251 U	85.5 D	2.98 D	1.42 D	3.72 D	0.0964 JD	313 D	0.253 UJ	3.06 D	0.502 U	0.251 U	0.502 U	1 U	89.4 D	Table 27 in EPA 2019
PRC-UA-PLT-246	N/A	Porcupine Creek	Upland	Grass	July 2018	0.249 U	0.249 U	8.47 D	0.0498 U	1.45 D	3.22 D	0.0948 JD	22.6 D	0.247 UJ	0.293 JD	0.498 U	0.249 U	0.498 U	0.996 U	20 D	Table 27 in EPA 2019
PRC-UA-PLT-247	N/A	Porcupine Creek	Upland	Herb	July 2018	0.252 U	0.252 U	18.4 D	0.088 JD	1.79 D	5.6 D	0.0503 U	31.6 D	0.249 UJ	0.252 U	0.503 U	0.252 U	0.503 U	1.01 U	24.2 D	Table 27 in EPA 2019
PRC-UA-PLT-248	N/A	Porcupine Creek	Upland	Shrub	July 2018	0.25 U	0.25 U	18.2 D	0.289 D	1.47 D	3.83 D	0.158 D	28.5 D	0.252 UJ	0.464 JD	0.5 U	0.25 U	0.5 U	1 U	80.8 D	Table 27 in EPA 2019
PRC-UA-PLT-249	N/A	Porcupine Creek	Upland	Sedge	July 2018	0.25 U	0.25 U	9.73 D	0.0501 U	0.637 JD	2.52 D	0.0501 U	30.5 D	0.245 UJ	0.25 U	0.501 U	0.25 U	0.501 U	1 U	24.8 D	Table 27 in EPA 2019
RCM-HA-PLT-087	N/A	Red Cloud Mine	High	Grass	July 2018	0.248 U	0.248 U	41.6 D	1.59 D	1.93 D	41.2 D	257 D	343 D	0.246 UJ	1.44 D	0.497 U	0.248 U	0.497 U	0.993 U	333 D	Table 27 in EPA 2019
RCM-HA-PLT-088	N/A	Red Cloud Mine	High	Shrub	July 2018	0.251 U	0.251 U	19.6 D	6.14 D	1.31 D	5.82 D	0.352 D	441 D	0.247 UJ	1.78 D	0.503 U	0.251 U	0.503 U	1.01 U	360 D	Table 27 in EPA 2019
RCM-HA-PLT-089	N/A	Red Cloud Mine	High	Herb	July 2018	0.249 U	0.249 U	36.6 D	2.04 D	1.92 D	17.4 D	59.4 D	332 D	0.249 UJ	2.43 D	0.499 U	0.249 U	0.499 U	0.998 U	417 D	Table 27 in EPA 2019
RCM-HA-PLT-090	N/A	Red Cloud Mine	High	Grass	July 2018	0.25 U	0.25 U	19.1 D	0.273 D	1.7 D	12 D	37.9 D	128 D	0.25 UJ	1.91 D	0.5 U	0.25 U	0.5 U	1 U	196 D	Table 27 in EPA 2019
RCM-HA-PLT-091	N/A	Red Cloud Mine	High	Herb	July 2018	0.25 UJ	0.25 U	101 D	7.72 D	2.42 D	12.6 D	42.7 JD	373 BD	0.252 UJ	1.1 D	0.501 U	0.25 U	0.501 U	1 U	967 D	Table 27 in EPA 2019
RCM-HA-PLT-092	N/A	Red Cloud Mine	High	Shrub	July 2018	0.25 UJ	0.25 U	20.3 D	10.2 D	2.55 D	6.94 D	0.455 D	255 BD	0.253 UJ	1.98 D	0.499 U	0.25 U	0.499 U	0.998 U	354 D	Table 27 in EPA 2019
SFC-FP-PLT-386	EU-23	South Fork Cement Cr.	Low	Sedge	July 2018	0.25 U	0.25 U	15.6 D	0.552 D	2.53 D	10.5 D	0.97 D	372 BD	0.251 UJ	2.49 D	0.499 U	0.25 U	0.499 U	0.998 U	74.2 D	Table 27 in EPA 2019
SFC-FP-PLT-387	EU-23	South Fork Cement Cr.	Low	Grass	July 2018	0.248 U	0.248 U	20.9 D	0.0806 JD	2.48 D	11.2 D	0.224 D	268 BD	0.254 UJ	2.02 D	0.496 U	0.248 U	0.496 U	0.991 U	60.7 D	Table 27 in EPA 2019
SFC-FP-PLT-388	EU-23	South Fork Cement Cr.	Low	Herb	July 2018	0.252 U	0.252 U	12.1 D	0.97 D	2.69 D	10.5 D	0.677 D	212 BD	0.253 UJ	2.31 D	0.504 U	0.252 U	0.504 U	1.01 U	88.7 D	Table 27 in EPA 2019
SFC-FP-PLT-389	EU-23	South Fork Cement Cr.	Low	Shrub	July 2018	0.252 U	0.252 U	12 D	3.77 D	2.62 D	6.33 D	0.271 D	202 BD	0.246 UJ	3.12 D	0.504 U	0.252 U	0.504 U	1.01 U	177 D	Table 27 in EPA 2019
TGL-UA-PLT-226	N/A	Tiger Gulch	Upland	Herb	July 2018	0.252 U	0.252 U	36 D	0.163 D	2.67 D	10.1 D	1.19 D	259 BD	0.245 UJ	2.82 D	0.503 U	0.252 U	0.503 U	1.01 U	51.6 D	Table 27 in EPA 2019
TGL-UA-PLT-227	N/A	Tiger Gulch	Upland	Shrub	July 2018	0.251 U	0.251 U	29.2 D	0.0681 JD	2.71 D	7.2 D	4.14 D	110 BD	0.251 UJ	0.251 U	0.502 U	0.251 U	0.502 U	1 U	35.4 D	Table 27 in EPA 2019
TGL-UA-PLT-228	N/A	Tiger Gulch	Upland	Grass	July 2018	0.25 U	0.25 U	32.2 D	0.461 D	2.56 D	7.45 D	0.694 D	444 BD	0.253 UJ	1.46 D	0.501 U	0.375 JD	0.501 U	1 U	103 D	Table 27 in EPA 2019
UCC-UA-PLT-251	N/A	Upper Cunninigham	Upland	Shrub	July 2018	0.252 U	0.252 U	38.5 D	2.45 D	2.7 D	5.28 D	0.351 D	196 BD	0.253 UJ	0.714 D	0.504 U	0.252 U	0.504 U	1.01 U	117 D	Table 27 in EPA 2019
UCC-UA-PLT-252	N/A	Upper Cunninigham	Upland	Herb	July 2018	0.251 U	0.251 U	47.3 D	0.14 D	3.21 D	6.99 D	0.564 D	116 BD	0.252 UJ	0.442 JD	0.501 U	0.251 U	0.501 U	1.03 JD	34.5 D	Table 27 in EPA 2019
UCC-UA-PLT-253	N/A	Upper Cunninigham	Upland	Grass	July 2018	0.251 U	0.251 U	35.6 D	0.0503 U	2.81 D	5.28 D	0.459 D	145 BD	0.249 UJ	0.568 D	0.503 U	0.251 U	0.503 U	1.01 U	29.5 D	Table 27 in EPA 2019
UEG-UA-PLT-240	N/A	Above Clipper Mine	Upland	Herb	July 2018	0.25 U	0.25 U	29.8 D	0.316 D	2.68 D	5.27 D	0.276 D	177 BD	0.253 UJ	0.605 D	0.501 U	0.25 U	0.501 U	1 U	67 D	Table 27 in EPA 2019
UEG-UA-PLT-241	N/A	Above Clipper Mine	Upland	Sedge	July 2018	0.248 U	0.248 U	24.6 D	0.165 D	2.87 D	5.75 D	0.324 D	236 BD	0.248 UJ	1.64 D	0.496 U	0.248 U	0.496 U	0.992 U	79.5 D	Table 27 in EPA 2019
UEG-UA-PLT-242	N/A	Above Clipper Mine	Upland	Grass	July 2018	0.25 U	0.25 U	20.4 D	0.05 U	2.21 D	6.46 D	0.491 D	161 BD	0.247 UJ	1.42 D	0.5 U	0.25 UJ	0.5 U	1 U	49.8 D	Table 27 in EPA 2019
URB-UA-PLT-255	N/A	Upper Ross Basin	Upland	Herb	July 2018	0.25 U	0.25 U	25.6 D	1.34 D	1.96 D	7.7 D	0.605 D	128 BD	0.249 UJ	1.86 D	0.499 U	0.25 UJ	0.499 U	0.999 U	151 D	Table 27 in EPA 2019

DRC = dose-response categroy; N/A = not applicable

Table A-7 Terrestrial Plant Tissue Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in mg/kg dry-weight. See Appendix A title page for data qualifier definitions.

Station ID	Exposure Unit	Sample Area	DRC	Functional Group	Sample Date	Antimony	Arsenic	Barium	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Nickel	Selenium	Silver	Thallium	Vanadium	Zinc	Dataset
URB-UA-PLT-256	N/A	Upper Ross Basin	Upland	Grass	July 2018	0.248 U	0.248 U	18.1 D	0.0496 U	1.79 D	8.51 D	0.802 D	300 BD	0.254 UJ	3.75 D	0.496 U	0.248 UJ	0.496 U	0.991 U	51.1 D	Table 27 in EPA 2019
URB-UA-PLT-257	N/A	Upper Ross Basin	Upland	Shrub	July 2018	0.248 U	0.248 U	11.2 D	2.98 D	1.65 D	6.48 D	0.492 D	211 BD	0.246 UJ	2.06 D	0.496 U	0.248 UJ	0.496 U	0.992 U	170 D	Table 27 in EPA 2019
VRM-HA-PLT-093	N/A	Vermillion Mine	High	Shrub	July 2018	0.248 U	0.248 U	3.07 D	3.76 D	1.93 D	9.15 D	8.18 D	530 BD	0.254 UJ	0.907 D	0.496 U	0.248 UJ	0.496 U	0.992 U	315 D	Table 27 in EPA 2019
VRM-HA-PLT-094	N/A	Vermillion Mine	High	Grass	July 2018	0.251 U	0.251 U	8.43 D	0.653 D	2.02 D	9.49 D	96.7 D	149 BD	0.249 UJ	1.27 D	0.501 U	0.251 UJ	0.501 U	1 U	190 D	Table 27 in EPA 2019
VRM-HA-PLT-095	N/A	Vermillion Mine	High	Herb	July 2018	0.252 U	0.252 U	20.1 D	5.17 D	2.03 D	9.73 D	86.2 D	304 BD	0.254 UJ	4.44 D	0.505 U	0.252 UJ	0.505 U	1.01 U	549 D	Table 27 in EPA 2019
VRM-HA-PLT-096	N/A	Vermillion Mine	High	Grass	July 2018	0.251 U	0.251 U	8.75 D	0.17 D	1.26 D	4.56 D	21.4 D	18.7 BD	0.248 UJ	0.273 JD	0.501 U	0.251 UJ	0.501 U	1 U	100 D	Table 27 in EPA 2019
VRM-HA-PLT-097	N/A	Vermillion Mine	High	Shrub	July 2018	0.251 U	0.251 U	4.32 D	9.54 D	1.99 D	6.9 D	5.17 D	486 BD	0.252 UJ	0.642 D	0.501 U	0.251 UJ	0.501 U	1 U	666 D	Table 27 in EPA 2019
VRM-HA-PLT-098	N/A	Vermillion Mine	High	Herb	July 2018	0.25 U	0.25 U	17.9 D	6.67 D	1.33 D	3.4 D	6.15 D	62.8 BD	0.251 UJ	0.25 U	0.5 U	0.25 UJ	0.5 U	0.999 U	1030 D	Table 27 in EPA 2019
WFA-FP-PLT-356	EU-15	West Fork Animas	High	Shrub	July 2018	0.248 UJ	0.248 U	1.93 D	5.18 JD	1.91 JD	7.6 JD	0.539 JD	715 D	0.249 UJ	0.82 JD	0.497 U	0.248 UJ	0.497 U	0.994 UJ	677 D	Table 27 in EPA 2019
WFA-FP-PLT-357	EU-15	West Fork Animas	High	Herb	July 2018	0.25 U	0.25 U	20.1 D	0.305 D	2.17 D	8.31 D	0.357 D	62 D	0.254 UJ	0.325 JD	0.5 U	0.25 UJ	0.5 U	1 U	126 D	Table 27 in EPA 2019
WFA-FP-PLT-358	EU-15	West Fork Animas	High	Sedge	July 2018	0.251 U	0.251 U	17.4 D	0.979 D	1.97 D	16.4 D	0.937 D	310 D	0.253 UJ	1.24 D	0.502 U	0.328 JD	0.502 U	1 U	283 D	Table 27 in EPA 2019
WFA-FP-PLT-359	EU-15	West Fork Animas	High	Grass	July 2018	0.252 U	0.252 U	5.63 D	0.298 D	1.67 D	12.1 D	0.528 D	388 D	0.248 UJ	0.79 D	0.504 U	0.252 UJ	0.504 U	1.01 U	245 D	Table 27 in EPA 2019
WFA-UA-PLT-235	N/A	Above Frisco/Bagley	Upland	Grass	July 2018	0.249 U	0.249 U	25.4 D	0.0618 JD	1.97 D	3.92 D	2.09 D	236 D	0.245 UJ	0.772 D	0.497 U	0.249 UJ	0.497 U	0.994 U	63.2 D	Table 27 in EPA 2019
WFA-UA-PLT-236	N/A	Above Frisco/Bagley	Upland	Herb	July 2018	0.25 U	0.25 U	43.8 D	0.23 D	2.41 D	5.86 D	1.11 D	105 D	0.253 UJ	0.25 U	0.501 U	0.25 UJ	0.501 U	1 U	31.2 D	Table 27 in EPA 2019
WFA-UA-PLT-237	N/A	Above Frisco/Bagley	Upland	Shrub	July 2018	0.249 U	0.249 U	13.8 D	2.7 D	1.97 D	3.03 D	3.7 D	124 D	0.252 UJ	0.249 U	0.499 U	0.249 UJ	0.499 U	0.997 U	62.3 D	Table 27 in EPA 2019

DRC = dose-response categroy; N/A = not applicable

Table A-8 Mine Feature Waste Pile Soil Analytical Chemistry Dataset. All results represent total recoverable metals concentrations in mg/kg dry-weight. See Appendix A title page for data qualifier definitions. All mine waste samples were sieved using a #10 sieve with a 2 millimeter (mm) mesh size. Sample results for 2 mm fraction.

Station ID	Mine Feature	DRC	Sample Date	Antimony	Arsenic	Cadmium	Chromium	Copper	Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Zinc	Dataset
WR-CC37	Anglo Saxon Mine	Mid	July 2016	3.3 J-	41.8	0.42 J-	4.4	71.4	785	3780 J	0.11 U	10.9	3.6	4.5 J	4 J-	0.3	283	Table 24 in EPA, 2017
WR-CC38B	Anglo Saxon Mine	Mid	July 2016	58.7 J-	143	4.3 J-	1.2	283	3340	300 J	0.42	22.6	0.67	10.1 J	14.2 J-	0.46	1650	Table 24 in EPA, 2017
AE10C	Bagley Pond	Mid	July 2016	42.5	95.4	1.9 J	0.68	626	8610 J	116	0.39	72.9	0.36 J	0.69	33.7 J	0.66	782	Table 24 in EPA, 2017
WR1-M24	Bandora Mine	High	July 2016	59.3	85	86.3 J	3.9	1410	14700 J	15700	0.37	38.8	11.8	3	92.4 J	0.16	12800	Table 24 in EPA, 2017
WR2-M24	Bandora Mine	High	July 2016	176	108	10.7 J	5.1	1710	24400 J	1040	0.49	36.9	1.6	7.7	40.4 J	0.18	11100	Table 24 in EPA, 2017
WR3-M24	Bandora Mine	High	July 2016	118 J	150	147 J	2.1	1610	23200 J	15100	0.71	48.8 J	8.2 J	3.3	48.4 J	0.2	66800	Table 24 in EPA, 2017
WR4-M24	Bandora Mine	High	July 2016	4.5	33.9	160 J	7.1	2790	2450 J	72100	0.15 U	25	34.6	3	5.9 J	0.33	16600	Table 24 in EPA, 2017
WR-BB	Ben Butler Mine	High	July 2016	128 J	207	29.3 J	2.1	435	24000 J	194	0.77	49.8 J	0.97 J	1.2	93.7 J	2.3	20200	Table 2.6-1 in EPA, 2016
BE4	Ben Franklin Mine	Low	August 2015	12.6 J	57.3 J	6.4 J	2.9 J	475 J	6770 J	1130 J	0.47	--	2.6 J	1.7 J	34.8 J	0.37 J	2870 J	Table 24 in EPA, 2017
WR-BSN	Boston Mine	Low	July 2016	81.1 J	245	15.8 J	1.3	81.8	4660 J	122	1.7	118 J	0.68 J	0.99	22.4 J	2.3	4450	Table 24 in EPA, 2017
WR1-M12	Brooklyn Mine	Mid	July 2016	12.7	72.5	1.8 J	3.1	123	2950 J	422	0.2	5.4	2.9	2	27 J	0.4	903	Table 24 in EPA, 2017
WR2-M12	Brooklyn Mine	Mid	July 2016	5.5	137	0.51 J	5.3	117	1310 J	847	0.11 U	2.3	4.8	1.2	6.2 J	0.28	311	Table 24 in EPA, 2017
WR-M12	Brooklyn Mine	Mid	July 2016	2.7 J-	86.4	0.18 J-	9.9	47.4	1920	571 J	0.14	6.5	4.3	1.9 J	14.3 J-	0.32	145	Table 2.6-1 in EPA, 2016
BE2	Clipper Mine	Mid	August 2015	62.9 J	31.7 J	34.6 J	0.65 J	749 J	28400 J	528 J	0.7	--	0.71 J	1.6 J	34.7 J	0.76 J	18300 J	Table 2.6-1 in EPA, 2016
AE13	Columbus Mine	Low	August 2015	5.6 J-	91.9 J	6.4 J	5 J	512 J	6060 J	1160 J	0.74	--	3.8 J	0.99 UJ	17.7 J	0.81 J	1750 J	Table 24 in EPA, 2017
WR-DWT	Dewitt Mine	Mid	July 2016	23.7 J-	169	1.1 J-	2.8	167	5840	939 J	0.22	22.4	2.3	5.6 J	40.8 J-	0.71	589	Table 2.6-1 in EPA, 2016
FQ01	Forest Queen Mine	Mid	August 2015	19.5 J	32.7 J	13.1 J	4.1 J	1160 J	6610 J	23500 J	0.53	--	2.4 J	0.89 J	26.8 J-	0.26 UJ	2330 J	Table 2.6-1 in EPA, 2016
AE10A	Frisco/Bagley Tunnel	Mid	August 2015	7.6 J-	150 J	14.9 J	1.5 J	143 J	3400 J	2640 J	0.82	--	1.2 J	0.8 UJ	17.3 J	1.1 J	3200 J	Table 24 in EPA, 2017
WR-CC06	Gold King Mine	Mid	July 2016	3.9 J-	22.8	0.97 J-	4.3	146	2800	1130 J	0.14	9.4	1.5	4.7 J	11.1 J-	0.34	409	Table 24 in EPA, 2017
WR-CC01C	Grand Mogel Mine	High	July 2016	65.8 J	106	15.2 J	3.8	2050	19900 J	977	1.4	6.3 J	1.1 J	4	32.1 J	0.44	17900	Table 24 in EPA, 2017
WR-CC01C2	Grand Mogel Mine	High	July 2016	64.6 J	81	20.1 J	2.2	758	12800 J	670	1.5	15.4 J	0.78 J	4.4	26.2 J	0.45	14700	Table 24 in EPA, 2017
WR-CC22	Henrietta Mine	Low	July 2016	12.9 J-	109	5.2 J-	3.1	264	6700	366 J	0.31	0.91	3.7	4.8 J	13.8 J-	0.27	4320	Table 24 in EPA, 2017
WR-CC25	Joe and Johns Mine	Low	July 2016	6.6 J-	223	10.1 J-	7.2	64.7	1350	136 J	0.37	4.3	2	7.3 J	7.5 J-	0.69	1040	Table 24 in EPA, 2017
WR-M02D	Junction Mine	Mid	July 2016	30.1 J-	1720	5.4 J-	16.5	487	10200	388 J	7.6	1.7	10.3	6 J	35.9 J-	0.89	1980	Table 24 in EPA, 2017
WR-M02C	Koelher Mine	Mid	July 2016	18.5 J-	13700	3.3 J-	6.2	539	3740	1700 J	3	4.6	9.2 U	3 J	14.6 J-	3.4	910	Table 24 in EPA, 2017
WR-CC24	Lark Mine	Low	July 2016	7.3 J-	112	1.2 J-	4	67	502	358 J	0.19	2.1	1.5	5.3 J	2.4 J-	0.31	248	Table 24 in EPA, 2017
WR1-LND	London Mine	High	July 2016	99.3	94	17.8 J	2.3	166	3300 J	161	0.6	16.2	1	2.9	16.9 J	0.63	2250	Table 24 in EPA, 2017
WR2-LND	London Mine	High	July 2016	87.9	169	33.3 J	1.7	143	5490 J	713	0.53	48.9	1.3	1.4	35.4 J	2	7690	Table 2.6-1 in EPA, 2016
AE18	London Mine	High	August 2015	155 J-	119 J	34.7 J	0.76 J	197 J	5660 J	107 J	0.66	--	1.2 J	2.2 J	47.4 J	2 J	9680 J	Table 24 in EPA, 2017
WR-M02B	Longfellow Mine	Mid	July 2016	49.2 J-	3160	4.8 J-	3.8	669	3680	528 J	0.56	5.2	4.7	1.9 J	27.2 J-	0.54	1340	Table 24 in EPA, 2017
WR-CC02	Mogul Mine	Low	July 2016	28.8 J	70.3	20.7 J	1.3	924	21400 J	570	0.54	12.1 J	0.46 J	3.3	25.1 J	0.39	10200	Table 24 in EPA, 2017
WR-CC02A	Mogul Mine	Low	July 2016	28.4 J-	72.9	4.7 J-	1.6	225	5140	382 J	0.45	25	0.49	3.8 J	19.7 J-	0.39	3510	Table 2.6-1 in EPA, 2016
AE1	Mountain Queen Mine	High	August 2015	332 J-	227 J	95.8 J	1 J	664 J	35700 J	54.3 J	1.5	--	0.35 J	32.3 J	16 J	0.089 UJ	12400 J	Table 2.6-1 in EPA, 2016
AE2	Mountain Queen Mine	High	August 2015	27.5 J-	106 J	2.5 J	0.61 J	117 J	1950 J	258 J	1.8	--	0.31 J	2.3 J	49.6 J	0.28 UJ	621 J	Table 24 in EPA, 2017
WR-CC14A	Natalie/Occidental Mine	Low	July 2016	0.81 J-	28.9	0.15 J-	6.2	48.3	484	614 J	0.1 U	6.3	3.4	3.9 J	4 J-	0.21	310	Table 24 in EPA, 2017
WR-CC14B	Natalie/Occidental Mine	Low	July 2016	2.5 J-	35.9	0.29 J-	3.7	71.4	845	712 J	0.18	37.9	1.8	5.3 J	12.5 J-	0.24	223	Table 24 in EPA, 2017
WR1-M16	Paradise Mine	Mid	July 2016	16.8	61.5	0.85 J	3.8	38	2370 J	1070	0.23	15	2.3	15.4	26.4 J	0.27	321	Table 24 in EPA, 2017
WR2-M16	Paradise Mine	Mid	July 2016	2.7	36	0.15 J	2.3	3.1 U	16200 J	272	0.12 U	6.2	0.8	16.4	10.1 J	0.22	96.5	Table 24 in EPA, 2017
WR-M16	Paradise Mine	Mid	July 2016	0.57	3.7	0.11 U	1.2	2.7 UJ	92.9	175 J	0.52	3.7	0.61	3.7	0.34 J	0.13	23.6	Table 24 in EPA, 2017
PWMLT1	Pride of the West Mill Tailings	Mid	July 2016	10.7 J	128	6 J	8.1	732	4800 J	2430	0.41	48.3 J	2.4 J	1.8	16.4 J	0.37	2710	Table 24 in EPA, 2017
WR-PWN	Pride of the West Mine	Mid	July 2016	4	27.8	39.7	3.3	906 J	13900	5450 J	0.1 U	101	4.5	3	12.9	0.23	9920	Table 24 in EPA, 2017
WR-PWS	Pride of the West Mine	Mid	July 2016	33.7	85.7	46.8	5.4	1640 J	16300	5860 J	0.27	82.4	5.5	1.2	50.4	0.29	12100	Table 24 in EPA, 2017
WR-CC03B	Red and Bonita Mine	Mid	July 2016	1.1 J-	24.8	1.3 J-	1.6	104	1970	350 J	0.22	6.3	1	2.1 J	3.1 J-	0.097 J	388	Table 24 in EPA, 2017
WR-RC	Red Cloud Mine	High	July 2016	209 J	369	22.1 J	0.8	251 J	19100	43 J	3.6	18.3 J	0.61 J	3.7	34.4 J	1.5	10300	Table 2.6-1 in EPA, 2016
AE32A	Silver Wing Mine	Mid	August 2015	273 J-	702 J	10.5 J	2.7 J	3830 J	7010 J	357 J	0.17	--	1.9 J	4.3 J	16 J	0.39 UJ	1340 J	Table 2.6-1 in EPA, 2016
AE32b	Silver Wing Mine	Mid	August 2015	273 J-	729 J	8.6 J	0.97 J	2530 J	4710 J	289 J	0.51	--	0.73 J	3 J	17.6 J	0.39 UJ	1970 J	Table 2.6-1 in EPA, 2016
AE44	Sunbank Group	Low	August 2015	101 J-	148 J	1.1 J	4.9 J	422 J	2040 J	3080 J	0.2	--	3.1 J	1.4 UJ	20.1 J	2.8 J	496 J	Table 2.6-1 in EPA, 2016
AE45	Sunbank Group	Low	August 2015	50 J-	109 J	2.7 J	4.1 J	270 J	2210 J	8240 J	0.24	--	2.8 J	1.4 UJ	20.3 J	4.6 J	640 J	Table 2.6-1 in EPA, 2016
AE46	Sunbank Group	Low	August 2015	7.7 J-	170 J	0.68 J	6.1 J	246 J	631 J	12800 J	0.26	--	2.6 J	1.1 UJ	8.7 J	6 J	295 J	Table 2.6-1 in EPA, 2016
BE1A	Sunnyside Mine	High	August 2015	20.5 J	55.1 J	12.2 J	7.4 J	773 J	10500 J	11600 J	0.58	--	10 J	0.86 J	22.4 J	0.86 J	4030 J	Table 2.6-1 in EPA, 2016
BE1B	Sunnyside Mine	High	August 2015	1.4 J	6.1 J	0.86 J	1.9 J	104 J	119 J	167 J	0.026 J	--	4 J	0.57 J	0.48 J	0.43 J	127 J	Table 2.6-1 in EPA, 2016
BE1C	Sunnyside Mine	High	August 2015	36.7 J	64.3 J	104 J	5.8 J	1400 J	17100 J	18500 J	0.95	--	6.1 J	1.4 J	51.7 J	0.38 J	19900 J	Table 24 in EPA, 2017
WR-TM	Tom Moore Mine	High	July 2016	14.9 J	361	7.6 J	1.6	106 J	8180	837 J	0.14	159 J	0.67 J	1.1	10.4 J	1.9	3080	Table 24 in EPA, 2017
AE9A	Vermillion Mine	High	July 2016	20	147	23.8 J	1	213	10400 J	60.4	1.1	41.2	0.42	2.9	45.1 J	1	8520	Table 24 in EPA, 2017
WR-CC43	Yukon Tunnel	Mid	July 2016	13 J-	51.8	3.5 J-	3.4	2580	3160	711 J	0.26	45.8	3.5	13.4 J	16.3 J-	0.38	844	Table 24 in EPA, 2017

DRC = dose-response category; -- = no data

Appendix B

Exposure Point Concentrations Used in the Bonita Peak Mining District Terrestrial Baseline Ecological Risk Assessment

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Table B-1 Mineral Creek Exposure Units (EUs) Surface Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L.

COPEC	Runoff Period	EU-01 Lower Mainstem Mineral Creek				EU-02 Lower Mainstem Mineral Creek				EU-03 Middle Mainstem Mineral Creek				EU-3.5 Browns Gulch			
		FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	Pre-runoff	0/20	1.71	1.98	95% Student's-t UCL	0/8	1.63	2.12	95% Student's-t UCL	0/18	1.58	1.86	95% Student's-t UCL	0/5	1.45	2.02	95% Student's-t UCL
	High-flow	0/23	1.69	1.90	95% Student's-t UCL	0/8	1.72	2.15	95% Student's-t UCL	0/17	1.69	1.95	95% Student's-t UCL	0/6	1.46	1.88	95% Student's-t UCL
	Low-flow	0/20	1.71	1.98	95% Student's-t UCL	0/8	1.63	2.12	95% Student's-t UCL	0/18	1.58	1.86	95% Student's-t UCL	0/5	1.45	2.02	95% Student's-t UCL
Arsenic	Pre-runoff	0/3	5.00	5.00	Maximum Value	0/3	5.00	5.00	Maximum Value	0/3	5.00	5.00	Maximum Value	1/5	2.13	5.00	Maximum Value
	High-flow	0/23	3.21	5.00	95% Chebyshev UCL	1/9	3.19	5.00	Maximum Value	6/18	5.41	12.65	95% Chebyshev UCL	1/6	2.93	7.59	Maximum Value
	Low-flow	7/20	2.98	6.05	95% Chebyshev UCL	3/8	2.53	5.00	Maximum Value	4/18	2.20	4.33	95% Chebyshev UCL	1/5	2.13	5.00	Maximum Value
Barium	Pre-runoff	7/7	27.44	29.90	Maximum Value	3/3	22.90	23.90	Maximum Value	6/6	30.77	31.14	95% Student's-t UCL	1/1	25.20	25.20	Maximum Value
	High-flow	0/7	12.50	12.50	Maximum Value	0/3	12.50	12.50	Maximum Value	0/6	12.50	12.50	Maximum Value	1/1	32.50	32.50	Maximum Value
	Low-flow	7/7	27.44	29.90	Maximum Value	3/3	22.90	23.90	Maximum Value	6/6	30.77	31.14	95% Student's-t UCL	1/1	25.20	25.20	Maximum Value
Cadmium	Pre-runoff	3/3	0.76	0.82	Maximum Value	3/3	1.28	1.47	Maximum Value	3/3	1.55	1.81	95% Student's-t UCL	4/5	6.21	12.47	95% Student's-t UCL
	High-flow	1/24	0.35	0.40	95% Student's-t UCL	4/9	0.55	0.82	95% Adjusted Gamma	6/18	0.53	0.91	95% Chebyshev UCL	5/6	1.74	2.95	95% Student's-t UCL
	Low-flow	14/20	0.54	0.63	95% Student's-t UCL	8/8	1.26	1.41	95% Student's-t UCL	18/18	0.91	0.97	95% Student's-t UCL	4/5	6.21	12.47	95% Student's-t UCL
Chromium	Pre-runoff	0/3	5.00	5.00	Maximum Value	0/3	5.00	5.00	Maximum Value	0/3	5.00	5.00	Maximum Value	1/5	2.53	4.17	95% Student's-t UCL
	High-flow	0/24	3.44	3.87	95% Student's-t UCL	0/9	3.61	4.43	95% Student's-t UCL	0/18	3.47	3.99	95% Student's-t UCL	0/6	2.92	3.76	95% Student's-t UCL
	Low-flow	0/20	2.98	4.73	95% Chebyshev UCL	0/8	2.88	4.13	95% Student's-t UCL	1/18	2.80	4.59	95% Chebyshev UCL	1/5	2.53	4.17	95% Student's-t UCL
Copper	Pre-runoff	3/3	10.13	11.40	Maximum Value	3/3	17.87	18.50	Maximum Value	3/3	15.93	19.00	Maximum Value	5/5	55.52	89.16	95% Student's-t UCL
	High-flow	24/24	8.68	16.54	95% Chebyshev UCL	9/9	12.13	14.73	95% Student's-t UCL	18/18	16.49	23.12	95% Adjusted Gamma	6/6	21.07	28.00	95% Student's-t UCL
	Low-flow	19/20	8.70	13.77	95% Chebyshev UCL	8/8	14.54	15.87	95% Student's-t UCL	18/18	9.65	11.91	95% Adjusted Gamma	5/5	55.52	89.16	95% Student's-t UCL
Lead	Pre-runoff	3/3	7.69	9.05	Maximum Value	3/3	13.53	16.00	Maximum Value	3/3	25.67	31.49	95% Student's-t UCL	5/5	5.69	11.76	95% Student's-t UCL
	High-flow	24/24	12.38	20.16	95% Adjusted Gamma	9/9	14.60	23.15	95% Student's-t UCL	18/18	44.41	123.00	95% Chebyshev UCL	6/6	5.40	9.44	95% Student's-t UCL
	Low-flow	20/20	6.78	25.02	95% Chebyshev UCL	8/8	5.18	6.33	95% Student's-t UCL	18/18	10.13	12.75	95% Student's-t UCL	5/5	5.69	11.76	95% Student's-t UCL
Manganese	Pre-runoff	3/3	277.00	360.00	Maximum Value	3/3	480.30	709.00	Maximum Value	3/3	284.00	317.00	Maximum Value	5/5	2586.00	4055.00	95% Student's-t UCL
	High-flow	24/24	152.90	240.60	95% Chebyshev UCL	9/9	273.70	386.20	95% Adjusted Gamma	18/18	177.70	250.50	95% H-UCL	6/6	884.20	1303.00	95% Student's-t UCL
	Low-flow	20/20	340.90	388.70	95% Student's-t UCL	8/8	795.90	954.80	95% Student's-t UCL	18/18	188.60	215.50	95% Student's-t UCL	5/5	2586.00	4055.00	95% Student's-t UCL
Mercury	Pre-runoff	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	Pre-runoff	0/1	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	--	--	--	--
	High-flow	0/1	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	--	--	--	--
	Low-flow	0/1	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	--	--	--	--
Nickel	Pre-runoff	0/3	2.50	2.50	Maximum Value	3/3	2.50	2.50	Maximum Value	0/3	2.50	2.50	Maximum Value	5/5	14.16	22.38	95% Student's-t UCL
	High-flow	0/24	1.72	1.94	95% Student's-t UCL	0/9	1.81	2.21	95% Student's-t UCL	0/18	1.74	1.99	95% Student's-t UCL	4/6	3.75	5.26	95% Student's-t UCL
	Low-flow	7/20	2.63	3.83	95% Chebyshev UCL	3/8	4.13	7.90	Maximum Value	6/18	1.67	1.93	95% Student's-t UCL	5/5	14.16	22.38	95% Student's-t UCL
Selenium	Pre-runoff	0/3	5.00	5.00	Maximum Value	0/3	5.00	5.00	Maximum Value	0/3	5.00	5.00	Maximum Value	0/5	3.00	4.07	95% Student's-t UCL
	High-flow	0/24	3.44	3.87	95% Student's-t UCL	0/9	3.61	4.43	95% Student's-t UCL	0/18	3.47	3.99	95% Student's-t UCL	0/6	2.92	3.76	95% Student's-t UCL
	Low-flow	1/20	3.54	4.08	95% Student's-t UCL	1/8	3.23	5.45	95% Adjusted Gamma	0/18	3.33	3.83	95% Student's-t UCL	0/5	3.00	4.07	95% Student's-t UCL
Silver	Pre-runoff	0/3	2.50	2.50	Maximum Value	0/3	2.50	2.50	Maximum Value	0/3	2.50	2.50	Maximum Value	0/5	1.35	2.04	95% Student's-t UCL
	High-flow	0/24	1.72	1.94	95% Student's-t UCL	0/9	1.81	2.21	95% Student's-t UCL	0/18	1.74	1.99	95% Student's-t UCL	0/6	1.46	1.88	95% Student's-t UCL
	Low-flow	2/20	1.45	2.38	95% Chebyshev UCL	0/8	1.44	2.06	95% Student's-t UCL	0/18	1.42	2.29	95% Chebyshev UCL	0/5	1.35	2.04	95% Student's-t UCL
Thallium	Pre-runoff	0/3	5.00	5.00	Maximum Value	0/3	5.00	5.00	Maximum Value	0/3	5.00	5.00	Maximum Value	0/5	2.60	4.12	95% Student's-t UCL
	High-flow	1/24	3.79	4.63	95% Student's-t UCL	1/9	4.27	5.51	95% Student's-t UCL	1/18	3.82	4.53	95% Student's-t UCL	0/6	2.92	3.76	95% Student's-t UCL
	Low-flow	0/20	2.80	4.75	95% Chebyshev UCL	0/8	2.69	4.09	95% Student's-t UCL	1/18	3.08	4.12	95% Student's-t UCL	0/5	2.60	4.12	95% Student's-t UCL
Vanadium	Pre-runoff	7/7	0.78	0.99	Maximum Value	3/3	1.80	2.10	Maximum Value	6/6	0.10	0.11	95% Student's-t UCL	1/1	1.00	1.00	Maximum Value
	High-flow	0/7	5.00	5.00	Maximum Value	0/3	5.00	5.00	Maximum Value	0/6	5.00	5.00	Maximum Value	0/1	5.00	5.00	Maximum Value
	Low-flow	7/7	0.78	0.99	Maximum Value	3/3	1.80	2.10	Maximum Value	6/6	0.10	0.11	95% Student's-t UCL	1/1	1.00	1.00	Maximum Value
Zinc	Pre-runoff	3/3	198.30	217.00	Maximum Value	3/3	318.00	339.00	Maximum Value	3/3	476.30	508.00	Maximum Value	5/5	1432.00	2856.00	95% Student's-t UCL
	High-flow	24/24	71.15	82.62	95% Student's-t UCL	9/9	140.50	187.10	95% Student's-t UCL	18/18	162.60	203.00	95% Student's-t UCL	6/6	396.80	662.60	95% Student's-t UCL
	Low-flow	20/20	158.30	176.90	95% Student's-t UCL	8/8	282.40	324.70	95% Student's-t UCL	18/18	292.90	314.50	95% Student's-t UCL	5/5	1432.00	2856.00	95% Student's-t UCL

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence interval or maximum value); -- = no data; UCL = upper confidence level

Grey shaded values are low-flow or pre-runoff CTE and RME results when respective hydroperiod data are unavailable

Table B-1 Mineral Creek Exposure Units (EUs) Surface Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L. Continued

COPEC	Runoff Period	EU-04 Upper Mainstem Mineral Creek				EU-05 South Fork Mineral Creek				EU-06 Middle Fork Mineral Creek				Reference EU Mill Creek			
		FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	Pre-runoff	0/2	2.50	2.50	Maximum Value	0/22	1.69	1.95	95% Student's-t UCL	0/30	1.54	1.74	95% Student's-t UCL	0/4	1.50	2.30	95% Student's-t UCL
	High-flow	0/17	1.40	1.57	95% Student's-t UCL	0/13	1.54	1.81	95% Student's-t UCL	0/30	1.67	1.85	95% Student's-t UCL	0/3	1.25	1.25	Maximum Value
	Low-flow	0/31	1.79	2.01	95% Student's-t UCL	0/22	1.69	1.95	95% Student's-t UCL	0/30	1.54	1.74	95% Student's-t UCL	0/4	1.50	2.30	95% Student's-t UCL
Arsenic	Pre-runoff	1/2	4.74	5.00	Maximum Value	6/22	2.63	4.58	95% Chebyshev UCL	6/30	2.31	3.76	95% Chebyshev UCL	1/4	1.91	4.41	95% Student's-t UCL
	High-flow	9/17	18.52	104.40	95% Chebyshev UCL	1/13	2.30	4.31	95% Chebyshev UCL	1/30	2.60	4.04	95% Chebyshev UCL	0/3	1.25	1.25	Maximum Value
	Low-flow	17/31	14.06	36.03	95% Chebyshev UCL	6/22	2.63	4.58	95% Chebyshev UCL	6/30	2.31	3.76	95% Chebyshev UCL	1/4	1.91	4.41	95% Student's-t UCL
Barium	Pre-runoff	8/8	44.94	56.85	95% Student's-t UCL	6/6	33.15	36.43	95% Student's-t UCL	10/10	18.88	21.14	95% Student's-t UCL	1/1	28.00	28.00	Maximum Value
	High-flow	9/9	14.21	17.39	95% Student's-t UCL	0/6	12.50	12.50	Maximum Value	0/10	12.50	12.50	Maximum Value	0/1	12.50	12.50	Maximum Value
	Low-flow	8/8	44.94	56.85	95% Student's-t UCL	6/6	33.15	36.43	95% Student's-t UCL	10/10	18.88	21.14	95% Student's-t UCL	1/1	28.00	28.00	Maximum Value
Cadmium	Pre-runoff	2/2	4.75	8.99	Maximum Value	9/22	6.84	22.53	95% Chebyshev UCL	17/30	1.31	2.18	95% H-UCL	1/4	0.28	0.47	95% Student's-t UCL
	High-flow	12/17	2.18	6.90	95% Chebyshev UCL	1/13	3.96	19.85	95% Chebyshev UCL	7/30	0.47	0.76	95% Chebyshev UCL	0/3	0.25	0.25	Maximum Value
	Low-flow	24/31	8.43	18.99	95% Chebyshev UCL	9/22	6.84	22.53	95% Chebyshev UCL	17/30	1.31	2.18	95% H-UCL	1/4	0.28	0.47	95% Student's-t UCL
Chromium	Pre-runoff	0/2	5.00	5.00	Maximum Value	1/22	3.07	4.72	95% Chebyshev UCL	0/30	2.75	4.05	95% Chebyshev UCL	0/4	2.75	4.70	95% Student's-t UCL
	High-flow	0/17	2.79	3.15	95% Student's-t UCL	0/13	3.08	3.62	95% Student's-t UCL	0/30	3.33	3.71	95% Student's-t UCL	0/3	2.50	2.50	Maximum Value
	Low-flow	3/31	3.28	4.70	95% Chebyshev UCL	1/22	3.07	4.72	95% Chebyshev UCL	0/30	2.75	4.05	95% Chebyshev UCL	0/4	2.75	4.70	95% Student's-t UCL
Copper	Pre-runoff	2/2	139.10	266.00	Maximum Value	4/22	28.99	102.70	95% Chebyshev UCL	12/30	5.61	12.04	95% Chebyshev UCL	0/4	1.50	2.30	95% Student's-t UCL
	High-flow	15/17	105.40	584.90	95% Chebyshev UCL	1/13	21.98	111.00	95% Chebyshev UCL	8/30	2.65	4.37	95% Chebyshev UCL	0/3	1.25	1.25	Maximum Value
	Low-flow	26/31	298.30	542.90	95% Adjusted Gamma	4/22	28.99	102.70	95% Chebyshev UCL	12/30	5.61	12.04	95% Chebyshev UCL	0/4	1.50	2.30	95% Student's-t UCL
Lead	Pre-runoff	2/2	16.05	28.00	Maximum Value	6/22	20.73	101.70	95% Chebyshev UCL	11/30	0.55	0.62	95% Student's-t UCL	2/4	0.60	0.75	95% Student's-t UCL
	High-flow	16/17	31.73	63.68	95% Adjusted Gamma	7/13	23.47	241.30	95% Chebyshev UCL	13/30	1.82	6.07	95% Chebyshev UCL	2/3	1.90	3.72	Maximum Value
	Low-flow	23/31	103.70	342.30	95% Chebyshev UCL	6/22	20.73	101.70	95% Chebyshev UCL	11/30	0.55	0.62	95% Student's-t UCL	2/4	0.60	0.75	95% Student's-t UCL
Manganese	Pre-runoff	2/2	1854.00	3610.00	Maximum Value	22/22	699.10	2140.00	95% Chebyshev UCL	30/30	1132.00	1370.00	95% Student's-t UCL	4/4	43.65	87.10	Maximum Value
	High-flow	16/17	710.00	4715.00	95% Chebyshev UCL	13/13	477.60	2215.00	95% Chebyshev UCL	30/30	299.50	432.60	95% H-UCL	3/3	24.77	47.60	Maximum Value
	Low-flow	30/31	2869.00	5476.00	95% Adjusted Gamma	22/22	699.10	2140.00	95% Chebyshev UCL	30/30	1132.00	1370.00	95% Student's-t UCL	4/4	43.65	87.10	Maximum Value
Mercury	Pre-runoff	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	Pre-runoff	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	Pre-runoff	1/2	9.75	17.00	Maximum Value	15/22	4.35	6.12	95% Adjusted Gamma	16/30	6.42	13.82	95% Chebyshev UCL	1/4	1.31	2.40	95% Student's-t UCL
	High-flow	2/17	3.72	10.70	95% Chebyshev UCL	4/13	2.45	4.52	95% Chebyshev UCL	1/30	1.89	2.28	95% Student's-t UCL	0/3	1.25	1.25	Maximum Value
	Low-flow	15/31	15.13	36.81	95% Chebyshev UCL	15/22	4.35	6.12	95% Adjusted Gamma	16/30	6.42	13.82	95% Chebyshev UCL	1/4	1.31	2.40	95% Student's-t UCL
Selenium	Pre-runoff	0/2	5.00	5.00	Maximum Value	0/22	3.52	3.98	95% Student's-t UCL	5/30	3.12	4.27	95% Chebyshev UCL	0/4	3.13	4.60	95% Student's-t UCL
	High-flow	0/17	2.79	3.15	95% Student's-t UCL	0/13	3.08	3.62	95% Student's-t UCL	0/30	3.33	3.71	95% Student's-t UCL	0/3	2.50	2.50	Maximum Value
	Low-flow	1/31	3.66	4.07	95% Student's-t UCL	0/22	3.52	3.98	95% Student's-t UCL	5/30	3.12	4.27	95% Chebyshev UCL	0/4	3.13	4.60	95% Student's-t UCL
Silver	Pre-runoff	0/2	2.50	2.50	Maximum Value	0/22	1.56	2.35	95% Chebyshev UCL	0/30	1.38	2.02	95% Chebyshev UCL	0/4	1.38	2.35	95% Student's-t UCL
	High-flow	0/17	1.40	1.57	95% Student's-t UCL	0/13	1.54	1.81	95% Student's-t UCL	0/30	1.67	1.85	95% Student's-t UCL	0/3	1.25	1.25	Maximum Value
	Low-flow	1/31	1.66	2.34	95% Chebyshev UCL	0/22	1.56	2.35	95% Chebyshev UCL	0/30	1.38	2.02	95% Chebyshev UCL	0/4	1.38	2.35	95% Student's-t UCL
Thallium	Pre-runoff	0/2	5.00	5.00	Maximum Value	2/22	3.29	5.54	95% Chebyshev UCL	1/30	2.77	4.43	95% Chebyshev UCL	0/4	2.63	4.79	95% Student's-t UCL
	High-flow	3/17	3.78	4.79	95% Student's-t UCL	1/13	3.49	4.33	95% Student's-t UCL	4/30	4.16	6.52	95% Chebyshev UCL	1/3	3.62	5.85	Maximum Value
	Low-flow	3/31	3.53	5.41	95% Chebyshev UCL	2/22	3.29	5.54	95% Chebyshev UCL	1/30	2.77	4.43	95% Chebyshev UCL	0/4	2.63	4.79	95% Student's-t UCL
Vanadium	Pre-runoff	7/8	0.46	1.88	95% Adjusted Gamma	6/6	0.21	0.57	Maximum Value	10/10	3.81	11.35	95% Adjusted Gamma	1/1	0.09	0.09	Maximum Value
	High-flow	0/9	5.00	5.00	Maximum Value	0/6	5.00	5.00	Maximum Value	0/10	5.00	5.00	Maximum Value	0/1	5.00	5.00	Maximum Value
	Low-flow	7/8	0.46	1.88	95% Adjusted Gamma	6/6	0.21	0.57	Maximum Value	10/10	3.81	11.35	95% Adjusted Gamma	1/1	0.09	0.09	Maximum Value
Zinc	Pre-runoff	2/2	2111.00	4060.00	Maximum Value	22/22	1452.00	6250.00	95% Chebyshev UCL	29/30	166.40	206.90	95% Student's-t UCL	4/4	35.18	43.80	Maximum Value
	High-flow	17/17	838.90	5275.00	95% Chebyshev UCL	13/13	976.40	#######	95% Chebyshev UCL	27/30	43.82	55.35	95% Adjusted Gamma	3/3	19.97	26.40	Maximum Value
	Low-flow	28/31	3694.00	6738.00	95% Adjusted Gamma	22/22	1452.00	6250.00	95% Chebyshev UCL	29/30	166.40	206.90	95% Student's-t UCL	4/4	35.18	43.80	Maximum Value

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence interval or maximum value); -- = no data; UCL = upper confidence level

Grey shaded values are low-flow or pre-runoff CTE and RME results when respective hydroperiod data are unavailable

Table B-1 Mineral Creek Exposure Units (EUs) Surface Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L. Continued

COPEC	Runoff Period	Reference EU Bear Creek			
		FOD	CTE	RME	RME Method
Antimony	Pre-runoff	0/2	1.88	2.50	Maximum Value
	High-flow	0/1	1.25	1.25	Maximum Value
	Low-flow	0/2	1.88	2.50	Maximum Value
Arsenic	Pre-runoff	0/2	3.13	5.00	Maximum Value
	High-flow	0/1	1.25	1.25	Maximum Value
	Low-flow	0/2	3.13	5.00	Maximum Value
Barium	Pre-runoff	0/1	12.50	12.50	Maximum Value
	High-flow	0/1	12.50	12.50	Maximum Value
	Low-flow	0/1	12.50	12.50	Maximum Value
Cadmium	Pre-runoff	0/2	0.38	0.50	Maximum Value
	High-flow	0/1	0.25	0.25	Maximum Value
	Low-flow	0/2	0.38	0.50	Maximum Value
Chromium	Pre-runoff	0/2	3.75	5.00	Maximum Value
	High-flow	0/1	2.50	2.50	Maximum Value
	Low-flow	0/2	3.75	5.00	Maximum Value
Copper	Pre-runoff	0/2	1.88	2.50	Maximum Value
	High-flow	0/1	1.25	1.25	Maximum Value
	Low-flow	0/2	1.88	2.50	Maximum Value
Lead	Pre-runoff	0/2	0.38	0.50	Maximum Value
	High-flow	0/1	0.25	0.25	Maximum Value
	Low-flow	0/2	0.38	0.50	Maximum Value
Manganese	Pre-runoff	2/2	8.28	9.64	Maximum Value
	High-flow	1/1	7.07	7.07	Maximum Value
	Low-flow	2/2	8.28	9.64	Maximum Value
Mercury	Pre-runoff	--	--	--	--
	High-flow	--	--	--	--
	Low-flow	--	--	--	--
Molybdenum	Pre-runoff	--	--	--	--
	High-flow	--	--	--	--
	Low-flow	--	--	--	--
Nickel	Pre-runoff	0/2	1.88	2.50	Maximum Value
	High-flow	0/1	1.25	1.25	Maximum Value
	Low-flow	0/2	1.88	2.50	Maximum Value
Selenium	Pre-runoff	0/2	3.75	5.00	Maximum Value
	High-flow	0/1	2.50	2.50	Maximum Value
	Low-flow	0/2	3.75	5.00	Maximum Value
Silver	Pre-runoff	0/2	1.88	2.50	Maximum Value
	High-flow	0/1	1.25	1.25	Maximum Value
	Low-flow	0/2	1.88	2.50	Maximum Value
Thallium	Pre-runoff	0/2	3.75	5.00	Maximum Value
	High-flow	0/1	2.50	2.50	Maximum Value
	Low-flow	0/2	3.75	5.00	Maximum Value
Vanadium	Pre-runoff	0/1	5.00	5.00	Maximum Value
	High-flow	0/1	5.00	5.00	Maximum Value
	Low-flow	0/1	5.00	5.00	Maximum Value
Zinc	Pre-runoff	0/2	7.50	10.00	Maximum Value
	High-flow	0/1	5.00	5.00	Maximum Value
	Low-flow	0/2	7.50	10.00	Maximum Value

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data

Grey shaded values are low-flow or pre-runoff CTE and RME results when respective hydroperiod data are unavailable; Blue shaded values are high-flow CTE and RME results when low-flow or pre-runoff data are unavailable

Table B-2 Cement Creek Exposure Units (EUs) Surface Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L.

COPEC	Runoff Period	EU-20 Lower Mainstem Cement Creek				EU-21 Prospect Gulch				EU-22 Middle Mainstem Cement Creek			
		FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	Pre-runoff	0/32	1.73	2.00	95% Student's-t UCL	0/20	1.30	1.41	95% Student's-t UCL	0/1	2.50	2.50	Maximum Value
	High-flow	0/26	1.73	1.94	95% Student's-t UCL	0/18	1.32	1.44	95% Student's-t UCL	11/11	1.59	1.91	95% Student's-t UCL
	Low-flow	0/32	1.73	2.00	95% Student's-t UCL	0/20	1.30	1.41	95% Student's-t UCL	0/13	1.60	1.91	95% Student's-t UCL
Arsenic	Pre-runoff	1/3	4.91	5.00	Maximum Value	3/20	6.27	19.11	95% Chebyshev UCL	0/4	5.00	5.00	Maximum Value
	High-flow	13/27	3.76	4.39	95% Student's-t UCL	8/18	4.00	9.21	95% Chebyshev UCL	1/12	2.62	4.89	95% Chebyshev UCL
	Low-flow	28/32	5.88	6.76	95% Student's-t UCL	3/20	6.27	19.11	95% Chebyshev UCL	1/13	2.47	4.68	95% Chebyshev UCL
Barium	Pre-runoff	8/8	11.30	12.05	95% Student's-t UCL	1/1	6.70	6.70	Maximum Value	2/2	19.00	25.60	95% Student's-t UCL
	High-flow	0/8	12.50	12.50	Maximum Value	0/1	12.50	12.50	Maximum Value	0/2	12.50	12.50	Maximum Value
	Low-flow	8/8	11.30	12.05	95% Student's-t UCL	1/1	6.70	6.70	Maximum Value	2/2	19.00	25.60	95% Student's-t UCL
Cadmium	Pre-runoff	3/3	3.11	3.24	Maximum Value	16/20	2.89	4.70	95% Adjusted Gamma	4/4	8.32	11.50	Maximum Value
	High-flow	24/27	1.97	2.62	95% Chebyshev UCL	11/18	1.04	1.90	95% Chebyshev UCL	12/12	3.99	4.77	95% Student's-t UCL
	Low-flow	31/32	4.27	4.75	95% Student's-t UCL	16/20	2.89	4.70	95% Adjusted Gamma	13/13	11.40	13.30	95% Student's-t UCL
Chromium	Pre-runoff	0/3	5.00	5.00	Maximum Value	1/20	2.55	2.81	95% Student's-t UCL	0/4	5.00	5.00	Maximum Value
	High-flow	0/27	3.52	3.93	95% Student's-t UCL	0/18	2.64	2.88	95% Student's-t UCL	0/12	3.33	3.97	95% Student's-t UCL
	Low-flow	9/32	3.20	5.12	95% Chebyshev UCL	1/20	2.55	2.81	95% Student's-t UCL	2/13	2.89	5.00	Maximum Value
Copper	Pre-runoff	3/3	60.20	82.22	95% Student's-t UCL	19/20	87.73	159.10	95% Adjusted Gamma	4/4	150.70	247.20	95% Student's-t UCL
	High-flow	27/27	52.56	71.16	95% Chebyshev UCL	16/18	54.73	93.99	95% Adjusted Gamma	12/12	73.03	84.01	95% Student's-t UCL
	Low-flow	31/32	61.92	96.38	95% Chebyshev UCL	19/20	87.73	159.10	95% Adjusted Gamma	13/13	107.10	125.60	95% Student's-t UCL
Lead	Pre-runoff	3/3	15.17	18.00	Maximum Value	20/20	51.46	93.90	95% Adjusted Gamma	4/4	26.98	41.08	95% Student's-t UCL
	High-flow	27/27	33.67	45.32	95% Adjusted Gamma	18/18	48.02	81.70	95% Adjusted Gamma	12/12	23.53	44.25	95% H-UCL
	Low-flow	31/32	16.94	25.01	95% Chebyshev UCL	20/20	51.46	93.90	95% Adjusted Gamma	13/13	18.51	22.49	95% Student's-t UCL
Manganese	Pre-runoff	3/3	2693.00	3560.00	Maximum Value	20/20	623.30	786.90	95% Student's-t UCL	4/4	6713.00	9840.00	Maximum Value
	High-flow	27/27	1267.00	1563.00	95% Adjusted Gamma	18/18	195.50	291.50	95% Adjusted Gamma	12/12	2027.00	3023.00	95% H-UCL
	Low-flow	32/32	5034.00	6404.00	95% Chebyshev UCL	20/20	623.30	786.90	95% Student's-t UCL	13/13	7765.00	9768.00	95% Student's-t UCL
Mercury	Pre-runoff	--	--	--	--	--	--	--	--	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	Pre-runoff	0/1	2.50	2.50	Maximum Value	--	--	--	--	0/1	2.50	2.50	Maximum Value
	High-flow	0/1	2.50	2.50	Maximum Value	--	--	--	--	0/1	2.50	2.50	Maximum Value
	Low-flow	0/1	2.50	2.50	Maximum Value	--	--	--	--	0/1	2.50	2.50	Maximum Value
Nickel	Pre-runoff	3/3	4.23	4.94	Maximum Value	16/20	8.84	13.62	95% Adjusted Gamma	2/4	4.17	6.57	95% Student's-t UCL
	High-flow	10/27	2.39	2.64	95% Student's-t UCL	5/18	2.32	4.32	95% Chebyshev UCL	2/12	2.35	5.43	95% Chebyshev UCL
	Low-flow	28/32	10.91	13.93	95% Adjusted Gamma	16/20	8.84	13.62	95% Adjusted Gamma	13/13	10.06	12.64	95% Student's-t UCL
Selenium	Pre-runoff	0/3	5.00	5.00	Maximum Value	0/20	2.63	2.84	95% Student's-t UCL	0/4	5.00	5.00	Maximum Value
	High-flow	0/27	3.52	3.93	95% Student's-t UCL	0/18	2.64	2.88	95% Student's-t UCL	0/12	3.33	3.97	95% Student's-t UCL
	Low-flow	0/32	3.59	4.10	95% Student's-t UCL	0/20	2.63	2.84	95% Student's-t UCL	0/13	3.27	3.86	95% Student's-t UCL
Silver	Pre-runoff	0/3	2.50	2.50	Maximum Value	0/20	1.28	1.40	95% Student's-t UCL	0/4	2.50	2.50	Maximum Value
	High-flow	0/27	1.76	1.97	95% Student's-t UCL	0/18	1.32	1.44	95% Student's-t UCL	0/12	1.67	1.99	95% Student's-t UCL
	Low-flow	0/32	1.61	2.39	95% Chebyshev UCL	0/20	1.28	1.40	95% Student's-t UCL	0/13	1.52	2.40	95% Chebyshev UCL
Thallium	Pre-runoff	0/3	5.00	5.00	Maximum Value	18/20	2.82	3.30	95% Student's-t UCL	1/4	7.03	11.79	95% Student's-t UCL
	High-flow	1/27	3.80	4.38	95% Student's-t UCL	1/18	2.92	3.45	95% Student's-t UCL	2/12	4.08	5.02	95% Student's-t UCL
	Low-flow	4/32	4.03	7.06	95% Chebyshev UCL	18/20	2.82	3.30	95% Student's-t UCL	3/13	4.01	5.32	95% Student's-t UCL
Vanadium	Pre-runoff	8/8	4.10	5.49	95% Adjusted Gamma	1/1	29.50	29.50	Maximum Value	2/2	1.19	2.30	Maximum Value
	High-flow	0/8	5.00	5.00	Maximum Value	0/1	5.00	5.00	Maximum Value	0/2	5.00	5.00	Maximum Value
	Low-flow	8/8	4.10	5.49	95% Adjusted Gamma	1/1	29.50	29.50	Maximum Value	2/2	1.19	2.30	Maximum Value
Zinc	Pre-runoff	3/3	1317.00	1540.00	Maximum Value	19/20	755.10	1354.00	95% Adjusted Gamma	4/4	3398.00	4720.00	Maximum Value
	High-flow	27/27	732.20	832.20	95% Student's-t UCL	17/18	260.50	355.50	95% Student's-t UCL	12/12	1319.00	1746.00	95% Student's-t UCL
	Low-flow	31/32	2072.00	2602.00	95% Chebyshev UCL	19/20	755.10	1354.00	95% Adjusted Gamma	13/13	4866.00	5738.00	95% Student's-t UCL

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data; UCL = upper confidence level

Grey shaded values are low-flow or pre-runoff CTE and RME results when respective hydroperiod data are unavailable

Table B-2 Cement Creek Exposure Units (EUs) Surface Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L. Continued

COPEC	Runoff Period	EU-23 South Fork Cement Creek				EU-24 Upper Mainstem Cement Creek			
		FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	Pre-runoff	0/1	2.50	2.50	Maximum Value	0/21	1.68	1.93	95% Student's-t UCL
	High-flow	0/9	1.53	1.87	95% Student's-t UCL	0/13	1.25	1.25	Maximum Value
	Low-flow	0/13	1.67	2.01	95% Student's-t UCL	0/21	1.68	1.93	95% Student's-t UCL
Arsenic	Pre-runoff	0/1	5.00	5.00	Maximum Value	1/21	2.67	4.80	95% Chebyshev UCL
	High-flow	0/9	2.08	4.49	95% Chebyshev UCL	0/13	1.25	1.25	Maximum Value
	Low-flow	1/13	2.57	5.00	Maximum Value	1/21	2.67	4.80	95% Chebyshev UCL
Barium	Pre-runoff	3/3	14.93	17.50	Maximum Value	4/4	24.03	32.19	95% Student's-t UCL
	High-flow	0/2	12.50	12.50	Maximum Value	0/4	12.50	12.50	Maximum Value
	Low-flow	3/3	14.93	17.50	Maximum Value	4/4	24.03	32.19	95% Student's-t UCL
Cadmium	Pre-runoff	1/1	0.93	0.93	Maximum Value	21/21	9.75	11.95	95% Student's-t UCL
	High-flow	8/9	2.00	4.78	95% Chebyshev UCL	13/13	5.22	6.67	95% Student's-t UCL
	Low-flow	10/13	3.73	9.44	95% Chebyshev UCL	21/21	9.75	11.95	95% Student's-t UCL
Chromium	Pre-runoff	0/1	5.00	5.00	Maximum Value	1/21	3.12	4.69	95% Chebyshev UCL
	High-flow	0/9	3.06	3.74	95% Student's-t UCL	0/13	2.50	2.50	Maximum Value
	Low-flow	1/13	3.04	5.00	Maximum Value	1/21	3.12	4.69	95% Chebyshev UCL
Copper	Pre-runoff	1/1	7.56	7.56	Maximum Value	21/21	86.48	102.50	95% Student's-t UCL
	High-flow	9/9	37.36	86.70	Maximum Value	13/13	78.78	103.90	95% Adjusted Gamma
	Low-flow	13/13	33.63	82.74	95% Chebyshev UCL	21/21	86.48	102.50	95% Student's-t UCL
Lead	Pre-runoff	1/1	2.33	2.33	Maximum Value	21/21	8.02	11.59	95% H-UCL
	High-flow	9/9	11.47	41.84	95% Adjusted Gamma	13/13	8.97	10.75	95% Student's-t UCL
	Low-flow	11/13	7.55	17.79	95% Adjusted Gamma	21/21	8.02	11.59	95% H-UCL
Manganese	Pre-runoff	1/1	632.00	632.00	Maximum Value	21/21	1853.00	2413.00	95% Student's-t UCL
	High-flow	9/9	1219.00	3687.00	95% Chebyshev UCL	13/13	1970.00	2717.00	95% Student's-t UCL
	Low-flow	13/13	5213.00	24000.00	Maximum Value	21/21	1853.00	2413.00	95% Student's-t UCL
Mercury	Pre-runoff	--	--	--	--	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--
Molybdenum	Pre-runoff	--	--	--	--	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--
Nickel	Pre-runoff	0/1	2.50	2.50	Maximum Value	16/21	6.89	9.89	95% Adjusted Gamma
	High-flow	1/9	1.25	2.20	95% Student's-t UCL	3/13	1.82	2.38	95% Student's-t UCL
	Low-flow	5/13	8.18	22.27	95% Chebyshev UCL	16/21	6.89	9.89	95% Adjusted Gamma
Selenium	Pre-runoff	0/1	5.00	5.00	Maximum Value	0/21	3.45	3.92	95% Student's-t UCL
	High-flow	0/9	3.06	3.74	95% Student's-t UCL	0/13	2.50	2.50	Maximum Value
	Low-flow	0/13	3.46	4.09	95% Student's-t UCL	0/21	3.45	3.92	95% Student's-t UCL
Silver	Pre-runoff	0/1	2.50	2.50	Maximum Value	0/21	1.58	2.33	95% Chebyshev UCL
	High-flow	0/9	1.53	1.87	95% Student's-t UCL	0/13	1.25	1.25	Maximum Value
	Low-flow	0/13	1.56	2.50	Maximum Value	0/21	1.58	2.33	95% Chebyshev UCL
Thallium	Pre-runoff	0/1	5.00	5.00	Maximum Value	3/21	3.44	5.47	95% Chebyshev UCL
	High-flow	2/9	4.19	5.56	95% Student's-t UCL	1/13	3.20	4.45	95% Student's-t UCL
	Low-flow	0/13	3.00	5.00	Maximum Value	3/21	3.44	5.47	95% Chebyshev UCL
Vanadium	Pre-runoff	3/3	0.21	0.26	Maximum Value	3/4	0.68	2.50	Maximum Value
	High-flow	0/2	5.00	5.00	Maximum Value	0/4	5.00	5.00	Maximum Value
	Low-flow	3/3	0.21	0.26	Maximum Value	3/4	0.68	2.50	Maximum Value
Zinc	Pre-runoff	1/1	277.00	277.00	Maximum Value	21/21	2149.00	2665.00	95% Student's-t UCL
	High-flow	9/9	670.30	1880.00	95% Chebyshev UCL	13/13	1234.00	1883.00	95% Adjusted Gamma
	Low-flow	13/13	2397.00	12400.00	Maximum Value	21/21	2149.00	2665.00	95% Student's-t UCL

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data; UCL = upper confidence level

Grey shaded values are low-flow or pre-runoff CTE and RME results when respective hydroperiod data are unavailable

Table B-3 Animas River from Arrastra Creek to Eureka Exposure Units (EUs) Surface Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L.

COPEC	Runoff Period	EU-07 Arrastra Cr. to Cunningham Cr.				EU-08 Cunningham Creek				EU-09 Cunningham Cr. to Minnie Gulch				EU-10 Minnie Gulch to S. Fork Animas River			
		FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	Pre-runoff	0/18	1.25	1.25	Maximum Value	0/1	1.25	1.25	Maximum Value	0/11	1.25	1.25	Maximum Value	0/4	1.25	1.25	Maximum Value
	High-flow	0/10	1.75	2.12	95% Student's-t UCL	0/6	1.88	2.44	95% Student's-t UCL	0/8	1.72	2.15	95% Student's-t UCL	0/8	1.72	2.15	95% Student's-t UCL
	Low-flow	0/10	1.70	2.10	95% Student's-t UCL	0/7	1.75	2.27	95% Student's-t UCL	0/9	1.75	2.20	95% Student's-t UCL	0/8	1.66	2.13	95% Student's-t UCL
Arsenic	Pre-runoff	0/24	2.19	3.66	95% Chebyshev UCL	0/1	1.25	1.25	Maximum Value	0/11	1.25	1.25	Maximum Value	0/4	1.25	1.25	Maximum Value
	High-flow	0/12	3.13	5.00	Maximum Value	0/6	3.13	4.82	95% Student's-t UCL	0/8	2.66	5.00	Maximum Value	0/8	2.66	5.65	95% Chebyshev UCL
	Low-flow	1/10	2.37	5.00	Maximum Value	0/7	2.75	5.00	Maximum Value	0/9	2.75	5.00	Maximum Value	1/8	2.44	5.00	Maximum Value
Barium	Pre-runoff	0/18	12.50	12.50	Maximum Value	1/1	37.70	37.70	Maximum Value	0/11	12.50	12.50	Maximum Value	0/4	12.50	12.50	Maximum Value
	High-flow	0/2	12.50	12.50	Maximum Value	1/1	33.50	33.50	Maximum Value	0/2	12.50	12.50	Maximum Value	0/2	12.50	12.50	Maximum Value
	Low-flow	2/2	28.40	29.20	Maximum Value	1/1	54.70	54.70	Maximum Value	2/2	22.95	24.80	Maximum Value	2/2	20.10	21.10	Maximum Value
Cadmium	Pre-runoff	20/24	0.72	0.82	95% Student's-t UCL	0/1	0.25	0.25	Maximum Value	10/11	0.93	1.13	95% Student's-t UCL	4/4	1.83	2.93	Maximum Value
	High-flow	8/12	0.76	0.96	95% Student's-t UCL	0/6	0.38	0.49	95% Student's-t UCL	8/8	0.94	1.04	95% Student's-t UCL	8/8	1.43	1.54	95% Student's-t UCL
	Low-flow	6/10	0.56	0.66	95% Student's-t UCL	0/7	0.39	0.49	95% Student's-t UCL	8/9	1.41	2.41	95% Adjusted Gamma	8/8	2.74	3.60	95% Adjusted Gamma
Chromium	Pre-runoff	0/24	3.13	3.51	95% Student's-t UCL	0/1	2.50	2.50	Maximum Value	0/11	2.50	2.50	Maximum Value	0/4	2.50	2.50	Maximum Value
	High-flow	0/12	3.75	4.43	95% Student's-t UCL	0/6	3.75	4.88	95% Student's-t UCL	0/8	3.44	4.30	95% Student's-t UCL	0/8	3.44	4.30	95% Student's-t UCL
	Low-flow	0/10	3.20	4.93	95% Adjusted Gamma	0/7	3.36	4.55	95% Student's-t UCL	0/9	3.28	5.00	Maximum Value	0/8	3.06	4.22	95% Student's-t UCL
Copper	Pre-runoff	17/24	7.93	11.86	95% Adjusted Gamma	0/1	1.25	1.25	Maximum Value	10/11	17.05	26.65	95% Student's-t UCL	4/4	65.49	110.00	Maximum Value
	High-flow	8/12	9.24	12.85	95% Student's-t UCL	2/6	2.57	3.26	95% Student's-t UCL	8/8	10.17	12.17	95% Student's-t UCL	8/8	15.19	17.36	95% Student's-t UCL
	Low-flow	8/10	4.14	6.51	95% Adjusted Gamma	1/7	2.52	5.32	95% Adjusted Gamma	9/9	10.30	20.16	95% Adjusted Gamma	8/8	24.54	29.84	95% Student's-t UCL
Lead	Pre-runoff	24/24	4.21	9.72	95% Chebyshev UCL	1/1	1.41	1.41	Maximum Value	11/11	2.58	4.38	95% Adjusted Gamma	4/4	5.43	9.20	Maximum Value
	High-flow	11/12	13.91	45.70	Maximum Value	6/6	14.51	96.93	95% Adjusted Gamma	8/8	10.46	14.79	95% Student's-t UCL	8/8	13.60	18.43	95% Student's-t UCL
	Low-flow	8/10	2.57	5.90	95% Adjusted Gamma	5/7	1.24	1.85	95% Student's-t UCL	8/9	1.24	1.57	95% Student's-t UCL	8/8	2.20	2.72	95% Student's-t UCL
Manganese	Pre-runoff	24/24	302.90	347.70	95% Student's-t UCL	1/1	2.92	2.92	Maximum Value	11/11	311.20	414.90	95% Student's-t UCL	4/4	388.80	579.00	Maximum Value
	High-flow	12/12	362.20	465.00	95% Student's-t UCL	6/6	64.53	174.00	Maximum Value	8/8	464.90	545.90	95% Student's-t UCL	8/8	769.50	841.30	95% Student's-t UCL
	Low-flow	10/10	320.30	504.00	Maximum Value	7/7	5.44	6.59	95% Student's-t UCL	9/9	849.60	1215.00	95% Student's-t UCL	8/8	1865.00	2102.00	95% Student's-t UCL
Mercury	Pre-runoff	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	Pre-runoff	0/20	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	0/11	2.50	2.50	Maximum Value	0/4	2.50	2.50	Maximum Value
	High-flow	0/2	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	0/11	2.50	2.50	Maximum Value	0/4	2.50	2.50	Maximum Value
	Low-flow	0/20	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	0/11	2.50	2.50	Maximum Value	0/4	2.50	2.50	Maximum Value
Nickel	Pre-runoff	0/24	1.56	1.76	95% Student's-t UCL	0/1	1.25	1.25	Maximum Value	0/11	1.25	1.25	Maximum Value	0/4	1.25	1.25	Maximum Value
	High-flow	0/12	1.88	2.21	95% Student's-t UCL	0/6	1.88	2.44	95% Student's-t UCL	0/8	1.72	2.15	95% Student's-t UCL	0/8	1.72	2.15	95% Student's-t UCL
	Low-flow	2/10	1.59	2.08	95% Student's-t UCL	1/7	1.62	2.30	95% Student's-t UCL	2/9	1.90	2.45	95% Student's-t UCL	2/8	2.22	2.80	95% Student's-t UCL
Selenium	Pre-runoff	0/24	3.13	3.51	95% Student's-t UCL	0/1	2.50	2.50	Maximum Value	0/11	2.50	2.50	Maximum Value	0/4	2.50	2.50	Maximum Value
	High-flow	0/12	3.75	4.43	95% Student's-t UCL	0/6	3.75	4.88	95% Student's-t UCL	0/8	3.44	4.30	95% Student's-t UCL	0/8	3.44	4.30	95% Student's-t UCL
	Low-flow	0/10	3.50	4.25	95% Student's-t UCL	0/7	3.57	4.55	95% Student's-t UCL	0/9	3.61	4.43	95% Student's-t UCL	0/8	3.44	4.30	95% Student's-t UCL
Silver	Pre-runoff	0/24	1.56	1.76	95% Student's-t UCL	0/1	1.25	1.25	Maximum Value	0/11	1.25	1.25	Maximum Value	0/4	1.25	1.25	Maximum Value
	High-flow	0/12	1.88	2.21	95% Student's-t UCL	0/6	1.88	2.44	95% Student's-t UCL	0/8	1.72	2.15	95% Student's-t UCL	0/8	1.72	2.15	95% Student's-t UCL
	Low-flow	0/10	1.60	2.46	95% Adjusted Gamma	0/7	1.68	2.28	95% Student's-t UCL	0/9	1.64	2.50	Maximum Value	1/8	1.47	2.11	95% Student's-t UCL
Thallium	Pre-runoff	7/24	4.45	6.77	95% Chebyshev UCL	0/1	2.50	2.50	Maximum Value	1/11	3.07	4.09	95% Student's-t UCL	2/4	5.77	9.86	Maximum Value
	High-flow	3/12	5.10	9.76	95% Chebyshev UCL	0/6	3.75	4.88	95% Student's-t UCL	1/8	4.12	5.45	95% Student's-t UCL	1/8	4.12	5.44	95% Student's-t UCL
	Low-flow	1/10	3.59	4.89	95% Student's-t UCL	0/7	3.29	4.57	95% Student's-t UCL	0/9	3.17	5.00	Maximum Value	0/8	2.94	4.21	95% Student's-t UCL
Vanadium	Pre-runoff	0/18	5.00	5.00	Maximum Value	0/1	5.00	5.00	Maximum Value	0/11	5.00	5.00	Maximum Value	0/4	5.00	5.00	Maximum Value
	High-flow	0/2	5.00	5.00	Maximum Value	0/1	5.00	5.00	Maximum Value	0/2	5.00	5.00	Maximum Value	0/2	5.00	5.00	Maximum Value
	Low-flow	2/2	0.10	0.10	Maximum Value	1/1	0.12	0.12	Maximum Value	2/2	0.07	0.07	Maximum Value	2/2	0.06	0.06	Maximum Value
Zinc	Pre-runoff	24/24	299.10	400.10	95% Chebyshev UCL	1/1	21.20	21.20	Maximum Value	11/11	399.20	446.40	95% Student's-t UCL	4/4	571.30	837.00	Maximum Value
	High-flow	11/12	264.60	401.00	Maximum Value	5/6	18.08	25.55	95% Student's-t UCL	8/8	317.10	352.90	95% Student's-t UCL	8/8	430.90	469.80	95% Student's-t UCL
	Low-flow	10/10	201.30	263.20	95% Student's-t UCL	5/7	24.21	35.69	95% Student's-t UCL	9/9	472.20	729.50	95% Adjusted Gamma	8/8	811.60	1001.00	95% Student's-t UCL

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data; UCL = upper confidence level

Grey shaded values are low-flow or pre-runoff CTE and RME results when respective hydroperiod data are unavailable; Blue shaded values are high-flow CTE and RME results when low-flow or pre-runoff data are unavailable

Table B-3 Animas River from Arrastra Creek to Eureka Exposure Units (EUs) Surface Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L. Continued

COPEC	Runoff Period	EU-11 S. Fork Animas River to Eureka G.				EU-12 Eureka Gulch				EU-13 S. Fork Animas River abv. Eureka G.				Reference Maggie Gulch			
		FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	Pre-runoff	0/6	2.04	2.50	Maximum Value	0/29	2.01	2.21	95% Student's-t UCL	0/2	1.25	1.25	Maximum Value	0/1	1.25	1.25	Maximum Value
	High-flow	0/2	1.25	1.25	Maximum Value	0/11	1.25	1.25	Maximum Value	0/3	1.67	2.50	Maximum Value	0/1	1.25	1.25	Maximum Value
	Low-flow	0/6	2.04	2.50	Maximum Value	0/29	2.01	2.21	95% Student's-t UCL	0/5	2.00	2.50	Maximum Value	0/1	1.25	1.25	Maximum Value
Arsenic	Pre-runoff	0/6	3.63	5.00	Maximum Value	0/29	3.53	5.00	Maximum Value	0/2	1.25	1.25	Maximum Value	0/1	1.25	1.25	Maximum Value
	High-flow	0/2	1.25	1.25	Maximum Value	0/11	1.25	1.25	Maximum Value	0/3	2.50	5.00	Maximum Value	0/1	1.25	1.25	Maximum Value
	Low-flow	0/6	3.63	5.00	Maximum Value	0/29	3.53	5.00	Maximum Value	0/5	3.50	5.00	Maximum Value	0/1	1.25	1.25	Maximum Value
Barium	Pre-runoff	1/1	15.60	15.60	Maximum Value	2/2	15.15	17.70	Maximum Value	1/1	25.40	25.40	Maximum Value	--	--	--	--
	High-flow	0/1	12.50	12.50	Maximum Value	0/2	12.50	12.50	Maximum Value	0/2	12.50	12.50	Maximum Value	--	--	--	--
	Low-flow	1/1	15.60	15.60	Maximum Value	2/2	15.15	17.70	Maximum Value	1/1	25.40	25.40	Maximum Value	--	--	--	--
Cadmium	Pre-runoff	0/6	0.46	0.50	Maximum Value	18/29	1.59	2.44	95% H-UCL	2/2	2.49	3.44	Maximum Value	0/1	0.25	0.25	Maximum Value
	High-flow	0/2	0.25	0.25	Maximum Value	9/11	3.81	8.94	95% Adjusted Gamma	3/3	1.20	1.27	Maximum Value	0/1	0.25	0.25	Maximum Value
	Low-flow	0/6	0.46	0.50	Maximum Value	18/29	1.59	2.44	95% H-UCL	2/5	0.54	0.74	95% Student's-t UCL	0/1	0.25	0.25	Maximum Value
Chromium	Pre-runoff	0/6	3.92	5.00	Maximum Value	0/29	3.95	4.40	95% Student's-t UCL	0/2	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value
	High-flow	0/2	2.50	2.50	Maximum Value	0/11	2.50	2.50	Maximum Value	0/3	3.33	5.00	Maximum Value	0/1	2.50	2.50	Maximum Value
	Low-flow	0/6	3.92	5.00	Maximum Value	0/29	3.95	4.40	95% Student's-t UCL	0/5	4.00	5.00	Maximum Value	0/1	2.50	2.50	Maximum Value
Copper	Pre-runoff	4/6	8.63	14.99	95% Student's-t UCL	24/29	10.85	15.58	95% Adjusted Gamma	2/2	74.65	88.20	Maximum Value	0/1	1.25	1.25	Maximum Value
	High-flow	2/2	3.16	3.46	Maximum Value	9/11	16.40	34.20	95% Adjusted Gamma	3/3	10.86	13.30	Maximum Value	0/1	1.25	1.25	Maximum Value
	Low-flow	4/6	8.63	14.99	95% Student's-t UCL	24/29	10.85	15.58	95% Adjusted Gamma	5/5	8.05	10.53	95% Student's-t UCL	0/1	1.25	1.25	Maximum Value
Lead	Pre-runoff	0/6	0.46	0.50	Maximum Value	16/29	2.23	5.13	95% Chebyshev UCL	2/2	2.09	3.11	Maximum Value	0/1	0.25	0.25	Maximum Value
	High-flow	1/2	1.04	1.83	Maximum Value	8/11	2.10	2.84	95% Student's-t UCL	3/3	4.81	7.99	Maximum Value	1/1	0.51	0.51	Maximum Value
	Low-flow	0/6	0.46	0.50	Maximum Value	16/29	2.23	5.13	95% Chebyshev UCL	1/5	0.62	1.59	Maximum Value	0/1	0.25	0.25	Maximum Value
Manganese	Pre-runoff	6/6	116.00	214.10	95% Student's-t UCL	27/29	211.10	357.00	95% Adjusted Gamma	2/2	451.00	565.00	Maximum Value	1/1	4.30	4.30	Maximum Value
	High-flow	2/2	34.85	38.70	Maximum Value	10/11	757.00	2151.00	95% Adjusted Gamma	3/3	384.70	407.00	Maximum Value	1/1	38.90	38.90	Maximum Value
	Low-flow	6/6	116.00	214.10	95% Student's-t UCL	27/29	211.10	357.00	95% Adjusted Gamma	5/5	128.30	164.00	95% Student's-t UCL	1/1	4.30	4.30	Maximum Value
Mercury	Pre-runoff	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	Pre-runoff	--	--	--	--	--	--	--	--	0/2	2.50	2.50	Maximum Value	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--	0/2	2.50	2.50	Maximum Value	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--	0/2	2.50	2.50	Maximum Value	--	--	--	--
Nickel	Pre-runoff	1/6	2.31	2.60	Maximum Value	4/29	2.06	2.70	95% Chebyshev UCL	0/2	1.25	1.25	Maximum Value	0/1	1.25	1.25	Maximum Value
	High-flow	0/2	1.25	1.25	Maximum Value	2/11	1.79	2.44	95% Student's-t UCL	0/3	1.67	2.50	Maximum Value	0/1	1.25	1.25	Maximum Value
	Low-flow	1/6	2.31	2.60	Maximum Value	4/29	2.06	2.70	95% Chebyshev UCL	0/5	2.00	2.50	Maximum Value	0/1	1.25	1.25	Maximum Value
Selenium	Pre-runoff	0/6	4.17	5.00	Maximum Value	0/29	4.05	4.44	95% Student's-t UCL	0/2	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value
	High-flow	0/2	2.50	2.50	Maximum Value	0/11	2.50	2.50	Maximum Value	0/3	3.33	5.00	Maximum Value	0/1	2.50	2.50	Maximum Value
	Low-flow	0/6	4.17	5.00	Maximum Value	0/29	4.05	4.44	95% Student's-t UCL	0/5	4.00	5.00	Maximum Value	0/1	2.50	2.50	Maximum Value
Silver	Pre-runoff	0/6	1.96	2.50	Maximum Value	0/29	1.97	2.20	95% Student's-t UCL	0/2	1.25	1.25	Maximum Value	0/1	1.25	1.25	Maximum Value
	High-flow	0/2	1.25	1.25	Maximum Value	0/11	1.25	1.25	Maximum Value	0/3	1.67	2.50	Maximum Value	0/1	1.25	1.25	Maximum Value
	Low-flow	0/6	1.96	2.50	Maximum Value	0/29	1.97	2.20	95% Student's-t UCL	0/5	2.00	2.50	Maximum Value	0/1	1.25	1.25	Maximum Value
Thallium	Pre-runoff	1/6	4.59	7.21	95% Student's-t UCL	6/29	5.02	7.21	95% Chebyshev UCL	2/2	8.76	9.30	Maximum Value	0/1	2.50	2.50	Maximum Value
	High-flow	2/2	7.97	8.43	Maximum Value	2/11	3.83	7.85	95% Chebyshev UCL	0/3	3.33	5.00	Maximum Value	0/1	2.50	2.50	Maximum Value
	Low-flow	1/6	4.59	7.21	95% Student's-t UCL	6/29	5.02	7.21	95% Chebyshev UCL	0/5	4.00	5.00	Maximum Value	0/1	2.50	2.50	Maximum Value
Vanadium	Pre-runoff	1/1	0.08	0.08	Maximum Value	2/2	0.07	0.07	Maximum Value	0/2	5.00	5.00	Maximum Value	--	--	--	--
	High-flow	0/1	5.00	5.00	Maximum Value	0/2	5.00	5.00	Maximum Value	0/2	5.00	5.00	Maximum Value	--	--	--	--
	Low-flow	1/1	0.08	0.08	Maximum Value	2/2	0.07	0.07	Maximum Value	0/2	5.00	5.00	Maximum Value	--	--	--	--
Zinc	Pre-runoff	6/6	51.87	82.16	95% Student's-t UCL	26/29	705.20	1122.00	95% Adjusted Gamma	2/2	742.50	940.00	Maximum Value	0/1	5.00	5.00	Maximum Value
	High-flow	2/2	25.65	31.00	Maximum Value	10/11	1299.00	3292.00	95% Student's-t UCL	3/3	399.70	438.00	Maximum Value	0/1	5.00	5.00	Maximum Value
	Low-flow	6/6	51.87	82.16	95% Student's-t UCL	26/29	705.20	1122.00	95% Adjusted Gamma	5/5	177.60	246.90	95% Student's-t UCL	0/1	5.00	5.00	Maximum Value

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data; UCL = upper confidence level

Grey shaded values are low-flow or pre-runoff CTE and RME results when respective hydroperiod data are unavailable; Blue shaded values are high-flow CTE and RME results when low-flow or pre-runoff data are unavailable

Table B-4 Animas River Above Eureka Exposure Units (EUs) Surface Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L.

COPEC	Runoff Period	EU-14 S. Fork Animas to W. Fork Animas				EU-15 Lower W. Fork Animas to Placer Gulch				EU-16 Placer Gulch				EU-17 Upper W. Fork Animas River			
		FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	Pre-runoff	0/3	1.67	2.50	Maximum Value	0/10	1.70	2.10	95% Student's-t UCL	0/12	2.06	2.40	95% Student's-t UCL	0/21	2.01	2.25	95% Student's-t UCL
	High-flow	0/21	1.67	1.89	95% Student's-t UCL	0/10	1.75	2.12	95% Student's-t UCL	0/4	1.25	1.25	Maximum Value	0/9	1.25	1.25	Maximum Value
	Low-flow	0/19	1.63	1.91	95% Student's-t UCL	0/10	1.70	2.10	95% Student's-t UCL	0/12	2.06	2.40	95% Student's-t UCL	0/21	2.01	2.25	95% Student's-t UCL
Arsenic	Pre-runoff	0/3	2.50	5.00	Maximum Value	2/10	2.69	5.00	Maximum Value	1/12	3.66	5.00	Maximum Value	3/21	3.41	5.00	Maximum Value
	High-flow	1/21	2.62	4.35	95% Chebyshev UCL	0/10	2.75	5.00	Maximum Value	0/4	1.25	1.25	Maximum Value	0/9	1.25	1.25	Maximum Value
	Low-flow	6/19	2.49	4.48	95% Chebyshev UCL	2/10	2.69	5.00	Maximum Value	1/12	3.66	5.00	Maximum Value	3/21	3.41	5.00	Maximum Value
Barium	Pre-runoff	0/2	12.50	12.50	Maximum Value	2/2	24.40	24.40	Maximum Value	1/1	24.20	24.20	Maximum Value	1/1	24.10	24.10	Maximum Value
	High-flow	0/6	12.50	12.50	Maximum Value	0/2	12.50	12.50	Maximum Value	0/1	12.50	12.50	Maximum Value	0/1	12.50	12.50	Maximum Value
	Low-flow	6/6	22.82	24.83	95% Student's-t UCL	2/2	24.40	24.40	Maximum Value	1/1	24.20	24.20	Maximum Value	1/1	24.10	24.10	Maximum Value
Cadmium	Pre-runoff	3/3	2.11	2.34	Maximum Value	10/10	9.89	12.24	95% Student's-t UCL	12/12	3.13	3.58	95% Student's-t UCL	21/21	9.99	12.59	95% Student's-t UCL
	High-flow	21/21	2.13	2.33	95% Student's-t UCL	10/10	2.76	3.10	95% Student's-t UCL	4/4	3.38	3.88	Maximum Value	9/9	4.93	6.00	95% Student's-t UCL
	Low-flow	19/19	6.20	7.46	95% Student's-t UCL	10/10	9.89	12.24	95% Student's-t UCL	12/12	3.13	3.58	95% Student's-t UCL	21/21	9.99	12.59	95% Student's-t UCL
Chromium	Pre-runoff	0/3	3.33	5.77	95% Student's-t UCL	0/10	3.20	4.93	95% Adjusted Gamma	0/12	4.04	5.00	Maximum Value	0/21	3.98	4.49	95% Student's-t UCL
	High-flow	0/21	3.33	3.79	95% Student's-t UCL	0/10	3.50	4.25	95% Student's-t UCL	0/4	2.50	2.50	Maximum Value	1/9	2.78	3.31	95% Student's-t UCL
	Low-flow	0/19	2.95	4.67	95% Chebyshev UCL	0/10	3.20	4.93	95% Adjusted Gamma	0/12	4.04	5.00	Maximum Value	0/21	3.98	4.49	95% Student's-t UCL
Copper	Pre-runoff	3/3	83.17	129.00	Maximum Value	10/10	35.32	44.69	95% Student's-t UCL	12/12	23.15	30.16	95% Student's-t UCL	21/21	35.54	41.25	95% Student's-t UCL
	High-flow	21/21	22.10	40.83	95% Chebyshev UCL	10/10	25.92	34.56	95% Adjusted Gamma	4/4	36.48	43.00	Maximum Value	9/9	19.39	22.00	95% Student's-t UCL
	Low-flow	19/19	55.27	75.03	95% Adjusted Gamma	10/10	35.32	44.69	95% Student's-t UCL	12/12	23.15	30.16	95% Student's-t UCL	21/21	35.54	41.25	95% Student's-t UCL
Lead	Pre-runoff	3/3	8.19	12.60	Maximum Value	10/10	9.65	12.68	95% Student's-t UCL	12/12	26.52	40.88	95% Student's-t UCL	16/21	5.93	17.08	95% Chebyshev UCL
	High-flow	21/21	28.56	72.60	95% Chebyshev UCL	10/10	65.01	121.90	95% Adjusted Gamma	4/4	23.68	65.00	Maximum Value	9/9	5.25	17.09	95% Chebyshev UCL
	Low-flow	19/19	5.83	7.29	95% Student's-t UCL	10/10	9.65	12.68	95% Student's-t UCL	12/12	26.52	40.88	95% Student's-t UCL	16/21	5.93	17.08	95% Chebyshev UCL
Manganese	Pre-runoff	3/3	711.70	1030.00	Maximum Value	10/10	16960.00	19721.00	95% Student's-t UCL	12/12	1543.00	1902.00	95% Student's-t UCL	21/21	23671.00	29982.00	95% Student's-t UCL
	High-flow	21/21	1642.00	1931.00	95% Adjusted Gamma	10/10	3384.00	4123.00	95% Student's-t UCL	4/4	2663.00	3370.00	Maximum Value	9/9	8543.00	10544.00	95% Student's-t UCL
	Low-flow	19/19	6300.00	11023.00	95% Chebyshev UCL	10/10	16960.00	19721.00	95% Student's-t UCL	12/12	1543.00	1902.00	95% Student's-t UCL	21/21	23671.00	29982.00	95% Student's-t UCL
Mercury	Pre-runoff	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	Pre-runoff	0/2	2.50	2.50	Maximum Value	--	--	--	--	--	--	--	--	--	--	--	--
	High-flow	0/2	2.50	2.50	Maximum Value	--	--	--	--	--	--	--	--	--	--	--	--
	Low-flow	0/2	2.50	2.50	Maximum Value	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	Pre-runoff	0/3	1.67	2.50	Maximum Value	10/10	10.26	13.29	95% Student's-t UCL	7/12	3.40	3.86	95% Student's-t UCL	17/21	11.82	14.95	95% Student's-t UCL
	High-flow	1/21	1.76	2.01	95% Student's-t UCL	2/10	2.35	3.02	95% Student's-t UCL	4/4	4.01	4.67	Maximum Value	8/9	4.40	5.35	95% Student's-t UCL
	Low-flow	10/19	4.40	5.76	95% Student's-t UCL	10/10	10.26	13.29	95% Student's-t UCL	7/12	3.40	3.86	95% Student's-t UCL	17/21	11.82	14.95	95% Student's-t UCL
Selenium	Pre-runoff	0/3	3.33	5.00	Maximum Value	0/10	3.75	4.51	95% Student's-t UCL	0/12	4.17	4.81	95% Student's-t UCL	1/21	3.97	4.49	95% Student's-t UCL
	High-flow	0/21	3.33	3.79	95% Student's-t UCL	0/10	3.50	4.25	95% Student's-t UCL	0/4	2.50	2.50	Maximum Value	0/9	2.50	2.50	Maximum Value
	Low-flow	0/19	3.42	3.91	95% Student's-t UCL	0/10	3.75	4.51	95% Student's-t UCL	0/12	4.17	4.81	95% Student's-t UCL	1/21	3.97	4.49	95% Student's-t UCL
Silver	Pre-runoff	0/3	1.67	2.50	Maximum Value	0/10	1.60	2.46	95% Adjusted Gamma	0/12	2.02	2.50	Maximum Value	0/21	1.99	2.25	95% Student's-t UCL
	High-flow	0/21	1.67	1.89	95% Student's-t UCL	0/10	1.75	2.12	95% Student's-t UCL	0/4	1.25	1.25	Maximum Value	0/9	1.25	1.25	Maximum Value
	Low-flow	2/19	1.43	2.35	95% Chebyshev UCL	0/10	1.60	2.46	95% Adjusted Gamma	0/12	2.02	2.50	Maximum Value	0/21	1.99	2.25	95% Student's-t UCL
Thallium	Pre-runoff	0/3	3.33	5.00	Maximum Value	0/10	3.10	4.15	95% Student's-t UCL	2/12	4.38	5.44	95% Student's-t UCL	1/21	4.10	5.68	95% Chebyshev UCL
	High-flow	1/21	3.74	4.51	95% Student's-t UCL	1/10	4.09	7.77	95% Chebyshev UCL	0/4	2.50	2.50	Maximum Value	1/9	3.63	8.57	95% Chebyshev UCL
	Low-flow	1/19	2.93	5.09	95% Chebyshev UCL	0/10	3.10	4.15	95% Student's-t UCL	2/12	4.38	5.44	95% Student's-t UCL	1/21	4.10	5.68	95% Chebyshev UCL
Vanadium	Pre-runoff	0/2	5.00	5.00	Maximum Value	0/2	2.50	2.50	Maximum Value	1/1	0.06	0.06	Maximum Value	1/1	0.06	0.06	Maximum Value
	High-flow	0/6	5.00	5.00	Maximum Value	0/2	5.00	5.00	Maximum Value	0/1	5.00	5.00	Maximum Value	0/1	5.00	5.00	Maximum Value
	Low-flow	6/6	0.08	0.10	95% Student's-t UCL	0/2	2.50	2.50	Maximum Value	1/1	0.06	0.06	Maximum Value	1/1	0.06	0.06	Maximum Value
Zinc	Pre-runoff	3/3	614.70	739.00	Maximum Value	10/10	3377.00	4163.00	95% Student's-t UCL	12/12	1309.00	1537.00	95% Student's-t UCL	21/21	3004.00	3792.00	95% Student's-t UCL
	High-flow	21/21	581.60	645.50	95% Student's-t UCL	10/10	920.00	1042.00	95% Student's-t UCL	4/4	1235.00	1410.00	Maximum Value	9/9	1396.00	1820.00	Maximum Value
	Low-flow	19/19	1892.00	2317.00	95% Student's-t UCL	10/10	3377.00	4163.00	95% Student's-t UCL	12/12	1309.00	1537.00	95% Student's-t UCL	21/21	3004.00	3792.00	95% Student's-t UCL

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data; UCL = upper

Grey shaded values are low-flow or pre-runoff CTE and RME results when respective hydroperiod data are unavailable; Blue shaded values are high-flow CTE and RME results when low-flow or pre-runoff data are unavailable

Table B-4 Animas River Above Eureka Exposure Units (EUs) Surface Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L. Continued

COPEC	Runoff Period	EU-18 N. Fork Animas River to Burrows Cr.				EU-19 Burrows Creek				Reference Picayne Gulch				Reference Upper N. Fork Animas River			
		FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	Pre-runoff	0/10	1.83	2.24	95% Student's-t UCL	0/1	2.50	2.50	Maximum Value	0/1	1.25	1.25	Maximum Value	0/4	1.81	2.50	Maximum Value
	High-flow	0/7	1.43	1.78	95% Student's-t UCL	0/15	1.25	1.25	Maximum Value	0/1	1.25	1.25	Maximum Value	0/3	1.67	2.50	Maximum Value
	Low-flow	0/10	1.83	2.24	95% Student's-t UCL	0/38	2.13	2.29	95% Student's-t UCL	0/1	1.25	1.25	Maximum Value	0/4	1.81	2.50	Maximum Value
Arsenic	Pre-runoff	2/10	2.96	5.00	Maximum Value	0/1	5.00	5.00	Maximum Value	0/1	1.25	1.25	Maximum Value	1/4	2.90	5.00	Maximum Value
	High-flow	0/7	1.79	4.12	95% Chebyshev UCL	0/15	1.25	1.25	Maximum Value	0/1	1.25	1.25	Maximum Value	0/3	2.50	5.00	Maximum Value
	Low-flow	2/10	2.96	5.00	Maximum Value	1/38	3.90	5.00	Maximum Value	0/1	1.25	1.25	Maximum Value	1/4	2.90	5.00	Maximum Value
Barium	Pre-runoff	2/2	29.80	32.40	Maximum Value	1/1	30.70	30.70	Maximum Value	--	--	--	--	--	--	--	--
	High-flow	0/2	12.50	12.50	Maximum Value	0/1	12.50	12.50	Maximum Value	--	--	--	--	--	--	--	--
	Low-flow	2/2	29.80	32.40	Maximum Value	1/1	30.70	30.70	Maximum Value	--	--	--	--	--	--	--	--
Cadmium	Pre-runoff	10/10	6.05	7.83	Maximum Value	1/1	14.00	14.00	Maximum Value	0/1	0.25	0.25	Maximum Value	3/4	0.76	0.99	Maximum Value
	High-flow	7/7	2.95	3.19	95% Student's-t UCL	13/15	11.46	20.94	95% Adjusted Gamma	0/1	0.25	0.25	Maximum Value	2/3	1.06	1.47	Maximum Value
	Low-flow	10/10	6.05	7.83	Maximum Value	38/38	14.78	17.33	95% Student's-t UCL	0/1	0.25	0.25	Maximum Value	3/4	0.76	0.99	Maximum Value
Chromium	Pre-runoff	0/10	3.45	5.00	Maximum Value	0/1	5.00	5.00	Maximum Value	0/1	2.50	2.50	Maximum Value	0/4	3.38	5.00	Maximum Value
	High-flow	0/7	2.86	3.55	95% Student's-t UCL	0/15	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	0/3	3.33	5.00	Maximum Value
	Low-flow	0/10	3.45	5.00	Maximum Value	0/38	4.24	4.58	95% Student's-t UCL	0/1	2.50	2.50	Maximum Value	0/4	3.38	5.00	Maximum Value
Copper	Pre-runoff	10/10	38.30	97.50	95% Chebyshev UCL	1/1	124.00	124.00	Maximum Value	0/1	1.25	1.25	Maximum Value	1/4	1.96	2.50	Maximum Value
	High-flow	7/7	12.54	14.49	95% Student's-t UCL	13/15	41.53	53.52	95% Student's-t UCL	0/1	1.25	1.25	Maximum Value	1/3	2.19	2.82	Maximum Value
	Low-flow	10/10	38.30	97.50	95% Chebyshev UCL	37/38	62.80	74.47	95% Student's-t UCL	0/1	1.25	1.25	Maximum Value	1/4	1.96	2.50	Maximum Value
Lead	Pre-runoff	10/10	12.27	18.52	95% Student's-t UCL	1/1	17.50	17.50	Maximum Value	0/1	0.25	0.25	Maximum Value	1/4	0.65	1.00	95% Student's-t UCL
	High-flow	7/7	5.00	5.95	95% Student's-t UCL	14/15	8.60	11.33	95% Student's-t UCL	0/1	0.25	0.25	Maximum Value	3/3	2.38	3.05	Maximum Value
	Low-flow	10/10	12.27	18.52	95% Student's-t UCL	35/38	10.07	13.53	95% Adjusted Gamma	0/1	0.25	0.25	Maximum Value	1/4	0.65	1.00	95% Student's-t UCL
Manganese	Pre-runoff	10/10	1300.00	1655.00	95% Student's-t UCL	1/1	5140.00	5140.00	Maximum Value	1/1	151.00	151.00	Maximum Value	4/4	8.20	14.70	Maximum Value
	High-flow	7/7	584.60	715.70	95% Student's-t UCL	15/15	2089.00	2756.00	95% Student's-t UCL	1/1	151.00	151.00	Maximum Value	3/3	57.90	77.30	Maximum Value
	Low-flow	10/10	1300.00	1655.00	95% Student's-t UCL	38/38	4541.00	5373.00	95% Student's-t UCL	1/1	151.00	151.00	Maximum Value	4/4	8.20	14.70	Maximum Value
Mercury	Pre-runoff	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	Pre-runoff	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	Pre-runoff	7/10	3.46	3.99	95% Student's-t UCL	1/1	12.60	12.60	Maximum Value	0/1	1.25	1.25	Maximum Value	1/4	1.62	2.50	Maximum Value
	High-flow	1/7	1.62	2.09	95% Student's-t UCL	12/15	5.30	7.07	95% Student's-t UCL	0/1	1.25	1.25	Maximum Value	0/3	1.67	2.50	Maximum Value
	Low-flow	7/10	3.46	3.99	95% Student's-t UCL	30/38	9.70	11.29	95% Student's-t UCL	0/1	1.25	1.25	Maximum Value	1/4	1.62	2.50	Maximum Value
Selenium	Pre-runoff	0/10	3.75	4.51	95% Student's-t UCL	0/1	5.00	5.00	Maximum Value	0/1	2.50	2.50	Maximum Value	0/4	3.75	5.00	Maximum Value
	High-flow	0/7	2.86	3.55	95% Student's-t UCL	0/15	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	0/3	3.33	5.00	Maximum Value
	Low-flow	0/10	3.75	4.51	95% Student's-t UCL	0/38	4.28	4.59	95% Student's-t UCL	0/1	2.50	2.50	Maximum Value	0/4	3.75	5.00	Maximum Value
Silver	Pre-runoff	0/10	1.73	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	0/1	1.25	1.25	Maximum Value	0/4	1.69	2.50	Maximum Value
	High-flow	0/7	1.43	1.78	95% Student's-t UCL	0/15	1.25	1.25	Maximum Value	0/1	1.25	1.25	Maximum Value	0/3	1.67	2.50	Maximum Value
	Low-flow	0/10	1.73	2.50	Maximum Value	0/38	2.12	2.29	95% Student's-t UCL	0/1	1.25	1.25	Maximum Value	0/4	1.69	2.50	Maximum Value
Thallium	Pre-runoff	0/10	3.35	5.00	Maximum Value	0/1	5.00	5.00	Maximum Value	0/1	2.50	2.50	Maximum Value	0/4	3.25	5.00	Maximum Value
	High-flow	3/7	5.18	10.70	Maximum Value	4/15	4.53	8.80	95% Chebyshev UCL	0/1	2.50	2.50	Maximum Value	0/3	3.33	5.00	Maximum Value
	Low-flow	0/10	3.35	5.00	Maximum Value	6/38	4.87	6.11	95% Chebyshev UCL	0/1	2.50	2.50	Maximum Value	0/4	3.25	5.00	Maximum Value
Vanadium	Pre-runoff	2/2	0.06	0.06	Maximum Value	0/1	2.50	2.50	Maximum Value	--	--	--	--	1/1	0.06	0.06	Maximum Value
	High-flow	0/2	5.00	5.00	Maximum Value	0/5	5.00	5.00	Maximum Value	--	--	--	--	0/1	5.00	5.00	Maximum Value
	Low-flow	2/2	0.06	0.06	Maximum Value	0/1	2.50	2.50	Maximum Value	--	--	--	--	1/1	0.06	0.06	Maximum Value
Zinc	Pre-runoff	10/10	1078.00	1266.00	95% Student's-t UCL	1/1	1830.00	1830.00	Maximum Value	1/1	12.30	12.30	Maximum Value	4/4	119.80	148.00	Maximum Value
	High-flow	7/7	573.10	728.30	95% Student's-t UCL	15/15	1786.00	3321.00	95% Adjusted Gamma	1/1	12.30	12.30	Maximum Value	3/3	160.80	206.00	Maximum Value
	Low-flow	10/10	1078.00	1266.00	95% Student's-t UCL	38/38	2238.00	2646.00	95% Student's-t UCL	1/1	12.30	12.30	Maximum Value	4/4	119.80	148.00	Maximum Value

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data; UCL = upper confidence level

Grey shaded values are low-flow or pre-runoff CTE and RME results when respective hydroperiod data are unavailable; Blue shaded values are high-flow CTE and RME results when low-flow or pre-runoff data are unavailable

Table B-5 Dose Response Category (DRC) Surface Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L.

COPEC	Runoff Period	High-Level DRC				Mid-Level DRC				Low-Level DRC				Reference DRC			
		FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	Pre-runoff	0/42	1.40	1.51	95% Student's-t UCL	0/1	1.25	1.25	Maximum Value	0/1	2.50	2.50	Maximum Value	0/13	1.60	1.91	95% Student's-t UCL
	High-flow	0/131	1.51	1.58	95% Student's-t UCL	0/116	1.61	1.69	95% Student's-t UCL	0/58	1.57	1.69	95% Student's-t UCL	0/9	1.39	1.65	95% Student's-t UCL
	Low-flow	0/205	1.85	1.93	95% Student's-t UCL	0/134	1.64	1.74	95% Student's-t UCL	0/78	1.74	1.87	95% Student's-t UCL	0/13	1.60	1.91	95% Student's-t UCL
Arsenic	Pre-runoff	1/51	2.27	3.29	95% Chebyshev UCL	1/10	4.60	5.00	Maximum Value	0/4	5.00	5.00	Maximum Value	2/13	2.25	4.60	95% Chebyshev UCL
	High-flow	11/134	4.25	9.37	95% Chebyshev UCL	32/119	3.58	5.10	95% Chebyshev UCL	2/59	2.36	3.33	95% Chebyshev UCL	0/9	1.67	2.44	95% Student's-t UCL
	Low-flow	30/205	4.77	8.31	95% Chebyshev UCL	51/134	3.96	6.12	95% Chebyshev UCL	13/78	2.77	3.72	95% Chebyshev UCL	2/13	2.25	4.60	95% Chebyshev UCL
Barium	Pre-runoff	0/37	12.50	12.50	Maximum Value	0/1	37.70	37.70	Maximum Value	18/18	19.00	20.68	95% Student's-t UCL	2/2	26.70	28.00	Maximum Value
	High-flow	1/33	12.97	13.76	95% Student's-t UCL	2/32	13.78	15.29	95% Student's-t UCL	0/17	12.50	12.50	Maximum Value	0/3	12.50	12.50	Maximum Value
	Low-flow	32/32	28.35	32.43	95% Student's-t UCL	32/32	25.38	33.75	95% Chebyshev UCL	18/18	19.00	20.68	95% Student's-t UCL	2/2	26.70	28.00	Maximum Value
Cadmium	Pre-runoff	46/51	2.02	3.87	95% Chebyshev UCL	9/10	1.65	2.29	95% Student's-t UCL	4/4	1.19	1.46	95% Student's-t UCL	4/13	0.44	0.65	95% H-UCL
	High-flow	120/134	3.61	4.43	95% H-UCL	55/119	1.47	3.22	95% Chebyshev UCL	27/59	1.39	2.46	95% Chebyshev UCL	2/9	0.52	1.29	95% Chebyshev UCL
	Low-flow	180/205	7.41	10.01	95% Chebyshev UCL	102/134	3.48	6.28	95% Chebyshev UCL	57/78	3.99	6.78	95% Chebyshev UCL	4/13	0.44	0.65	95% H-UCL
Chromium	Pre-runoff	0/51	3.19	3.45	95% Student's-t UCL	0/10	4.75	5.21	95% Student's-t UCL	0/4	5.00	5.00	Maximum Value	0/13	3.04	4.81	95% Chebyshev UCL
	High-flow	0/134	3.06	3.21	95% Student's-t UCL	0/119	3.26	3.43	95% Student's-t UCL	1/59	3.22	3.47	95% Student's-t UCL	0/9	2.78	3.29	95% Student's-t UCL
	Low-flow	6/205	3.62	4.10	95% Chebyshev UCL	13/134	3.00	3.69	95% Chebyshev UCL	1/78	3.23	4.06	95% Chebyshev UCL	0/13	3.04	4.81	95% Chebyshev UCL
Copper	Pre-runoff	43/51	40.06	95.71	95% H-UCL	9/10	26.00	56.87	95% Adjusted Gamma	4/4	15.29	18.50	Maximum Value	1/13	1.64	1.94	95% Student's-t UCL
	High-flow	125/134	42.63	72.24	95% Chebyshev UCL	101/119	28.78	44.67	95% Chebyshev UCL	37/59	11.96	22.13	95% Chebyshev UCL	1/9	1.56	1.95	95% Student's-t UCL
	Low-flow	191/205	81.44	158.60	95% Chebyshev UCL	107/134	40.30	68.33	95% H-UCL	58/78	19.48	24.33	Approx. Gamma UCL	1/13	1.64	1.94	95% Student's-t UCL
Lead	Pre-runoff	51/51	6.62	9.83	95% H-UCL	10/10	14.70	19.91	95% Student's-t UCL	4/4	10.73	16.00	Maximum Value	3/13	0.50	0.62	95% Student's-t UCL
	High-flow	128/134	20.96	33.15	95% Chebyshev UCL	113/119	27.98	47.80	95% Chebyshev UCL	41/59	5.74	12.05	95% Chebyshev UCL	7/9	1.61	2.41	95% Student's-t UCL
	Low-flow	175/205	22.67	21.75	95% H-UCL	115/134	18.69	34.15	95% Chebyshev UCL	47/78	3.64	7.45	95% Chebyshev UCL	3/13	0.50	0.62	95% Student's-t UCL
Manganese	Pre-runoff	51/51	999.70	2281.00	95% Chebyshev UCL	10/10	976.60	3030.00	95% Adjusted Gamma	4/4	518.30	709.00	Maximum Value	13/13	31.13	63.49	95% Adjusted Gamma
	High-flow	133/134	1463.00	1726.00	Approx. Gamma UCL	119/119	509.20	791.30	95% H-UCL	59/59	1684.00	3531.00	95% Chebyshev UCL	9/9	34.53	49.89	95% Student's-t UCL
	Low-flow	202/205	3618.00	4322.00	95% Adjusted Gamma	134/134	1680.00	2525.00	95% Chebyshev UCL	78/78	7768.00	14406.00	95% Chebyshev UCL	13/13	31.13	63.49	95% Adjusted Gamma
Mercury	Pre-runoff	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	High-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Low-flow	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	Pre-runoff	0/40	2.50	2.50	Maximum Value	0/4	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	--	--	--	--
	High-flow	0/3	2.50	2.50	Maximum Value	0/3	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	--	--	--	--
	Low-flow	0/40	2.50	2.50	Maximum Value	0/4	2.50	2.50	Maximum Value	0/1	2.50	2.50	Maximum Value	--	--	--	--
Nickel	Pre-runoff	4/51	2.21	3.91	95% Chebyshev UCL	3/10	2.89	3.50	95% Student's-t UCL	0/4	2.50	2.50	Maximum Value	2/13	1.48	2.45	95% Chebyshev UCL
	High-flow	28/134	2.58	3.73	95% Chebyshev UCL	24/119	2.15	2.34	95% Student's-t UCL	10/59	2.21	3.05	95% Chebyshev UCL	0/9	1.39	1.65	95% Student's-t UCL
	Low-flow	112/205	6.91	10.65	95% Chebyshev UCL	85/134	6.13	8.59	95% Chebyshev UCL	42/78	7.61	12.07	95% Chebyshev UCL	2/13	1.48	2.45	95% Chebyshev UCL
Selenium	Pre-runoff	0/51	3.19	3.45	95% Student's-t UCL	0/10	4.75	5.00	Maximum Value	0/4	5.00	5.00	Maximum Value	0/13	3.27	3.86	95% Student's-t UCL
	High-flow	0/134	3.06	3.21	95% Student's-t UCL	0/119	3.26	3.43	95% Student's-t UCL	0/59	3.18	3.42	95% Student's-t UCL	0/9	2.78	3.29	95% Student's-t UCL
	Low-flow	1/205	3.79	3.93	95% Student's-t UCL	1/134	3.38	3.57	95% Student's-t UCL	7/78	3.50	3.77	95% Student's-t UCL	0/13	3.27	3.86	95% Student's-t UCL
Silver	Pre-runoff	0/51	1.59	1.73	95% Student's-t UCL	0/10	2.38	2.50	Maximum Value	0/4	2.50	2.50	Maximum Value	0/13	1.52	2.40	95% Chebyshev UCL
	High-flow	0/134	1.53	1.61	95% Student's-t UCL	0/119	1.63	1.72	95% Student's-t UCL	0/59	1.59	1.71	95% Student's-t UCL	0/9	1.39	1.65	95% Student's-t UCL
	Low-flow	3/205	1.77	2.01	95% Chebyshev UCL	2/134	1.50	1.82	95% Chebyshev UCL	0/78	1.62	2.03	95% Chebyshev UCL	0/13	1.52	2.40	95% Chebyshev UCL
Thallium	Pre-runoff	13/51	4.59	6.29	95% Chebyshev UCL	0/10	4.75	5.00	Maximum Value	0/4	5.00	5.00	Maximum Value	0/13	2.96	4.88	95% Chebyshev UCL
	High-flow	19/134	3.97	4.34	95% Student's-t UCL	8/119	3.67	3.96	95% Student's-t UCL	10/59	4.23	5.81	95% Chebyshev UCL	1/9	3.15	3.96	95% Student's-t UCL
	Low-flow	25/205	3.96	4.65	95% Chebyshev UCL	9/134	3.27	4.26	95% Chebyshev UCL	3/78	3.30	4.33	95% Chebyshev UCL	0/13	2.96	4.88	95% Chebyshev UCL
Vanadium	Pre-runoff	0/37	5.00	5.00	Maximum Value	0/1	5.00	5.00	Maximum Value	18/18	2.46	5.09	95% Adjusted Gamma	2/2	0.08	0.09	Maximum Value
	High-flow	0/33	5.00	5.00	Maximum Value	0/32	5.00	5.00	Maximum Value	0/17	5.00	5.00	Maximum Value	0/3	5.00	5.00	Maximum Value
	Low-flow	26/32	0.54	1.27	95% Chebyshev UCL	32/32	2.21	6.30	95% Chebyshev UCL	18/18	2.46	5.09	95% Adjusted Gamma	2/2	0.08	0.09	Maximum Value
Zinc	Pre-runoff	51/51	722.10	1368.00	95% Chebyshev UCL	10/10	599.50	904.40	95% Student's-t UCL	4/4	307.80	339.00	Maximum Value	9/13	50.55	103.30	95% Adjusted Gamma
	High-flow	128/134	924.80	1347.00	95% Chebyshev UCL	117/119	405.80	868.20	95% Chebyshev UCL	56/59	359.80	707.70	95% Chebyshev UCL	7/9	62.57	200.50	95% Adjusted Gamma
	Low-flow	203/205	2085.00	2400.00	Approx. Gamma UCL	130/134	1044.00	1689.00	95% Chebyshev UCL	77/78	1305.00	2464.00	95% Chebyshev UCL	9/13	50.55	103.30	95% Adjusted Gamma

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data; UCL = upper confidence level

Grey shaded values are low-flow or pre-runoff CTE and RME results when respective hydroperiod data are unavailable

Table B-6 Approximate Floodplain Exposure Unit Reach Lengths for Use in Estimating Length Weighted Surface Water Exposure Point Concentrations.

Watershed	Exposure Unit	Reach Description	Reach Length (approx. rivermiles)
Mineral Creek	EU-01	Lower Mainstem Mineral Creek	3.13
	EU-02	Lower Mainstem Mineral Creek	2.20
	EU-03	Middle Mainstem Mineral Creek	1.99
	EU-3.5	Browns Gulch	1.62
	EU-04	Upper Mainstem Mineral Creek	3.52
	EU-05	South Fork Mineral Creek	4.14
	EU-06	Middle Fork Mineral Creek	3.19
	Mill Creek Ref.	Middle Mainstem Mineral Creek trib.	3.58
	Bear Creek Ref.	Lower Mainstem Mineral Creek trib.	2.98
		Total (Mineral Creek watershed) =	**26.35**
Cement Creek	EU-20	Lower Cement Creek	5.85
	EU-21	Prospect Gulch	1.62
	EU-22	Middle Fork Cement Creek	2.10
	EU-23	South Fork Cement Creek	1.79
	EU-24	Upper Cement Creek	2.06
		Total (Cement Creek watershed) =	**13.42**
Animas River	EU-07	Arrastra Cr. to Cunningham Cr.	0.00
	EU-08	Cunningham Creek	7.13
	EU-09	Cunningham Cr. to Minnie Gulch	2.52
	EU-10	Minnie Gulch to S. Fork Animas River	1.27
	EU-11	S. Fork Animas River to Eureka Gulch	2.58
	EU-12	Eureka Gulch	2.22
	EU-13	S. Fork Animas River abv. Eureka Gulch	1.45
	EU-14	Minnie Gulch to S. Fork Animas River	4.24
	EU-15	Lower W. Fork Animas to Placer Gulch	0.94
	EU-16	Placer Gulch	2.16
	EU-17	Upper W. Fork Animas River	2.50
	EU-18	N. Fork Animas River to Burrows Cr.	1.07
	EU-19	Burrows Creek	1.33
	Maggie Gulch Ref.	Mainstem Animas	5.04
	Picayne Gulch Ref.	Mainstem Animas	1.38
	Upper NF Animas Ref.	Mainstem Animas	0.29
		Total (Animas River watershed) =	**36.12**
		Grand Total (combined Mineral Cr., Cement Cr., and Animas R. watersheds) =	**75.89**

Table B-7 Surface Water, Water Year and Watershed Reach Length-Weighted Average (LWA) Exposure Point Concentrations (EPCs) for Each Floodplain Exposure Unit and Subwatershed.

Exposure Unit	EPC	Sb	As	Ba	Cd	Cr	Cu	Pb	Mn	Hg	Mo	Ni	Se	Ag	Ti	V	Zn
EU-01	CTE	1.71	3.54	23.71	0.55	3.60	9.05	8.40	277.93	--	2.50	2.37	3.88	1.78	3.60	1.83	146.51
	RME	1.96	5.53	25.55	0.62	4.58	13.87	19.81	344.50	--	2.50	3.02	4.26	2.30	4.78	1.99	163.36
EU-02	CTE	1.65	3.31	20.30	1.09	3.59	14.77	9.62	586.45	--	2.50	3.14	3.77	1.80	3.66	2.60	255.83
	RME	2.12	5.00	21.05	1.28	4.42	16.24	12.95	751.20	--	2.50	5.13	5.08	2.21	4.67	2.83	293.88
EU-03	CTE	1.61	3.70	26.20	0.98	3.52	12.93	22.59	209.73	--	2.50	1.90	3.78	1.77	3.74	1.32	306.18
	RME	1.88	6.58	26.48	1.16	4.54	16.49	45.00	249.63	--	2.50	2.09	4.16	2.27	4.44	1.33	335.00
EU-3.5	CTE	1.45	2.33	27.03	5.10	2.63	46.91	5.62	2160.55	--	--	11.56	2.98	1.38	2.68	2.00	1173.20
	RME	1.98	5.65	27.03	10.09	4.06	73.87	11.18	3367.00	--	--	18.10	3.99	2.00	4.03	2.00	2307.65
EU-04	CTE	1.87	12.85	37.26	5.95	3.59	210.28	63.80	2075.50	--	--	10.93	3.78	1.80	3.96	1.59	2584.48
	RME	2.02	45.37	46.99	13.47	4.39	484.18	194.07	4819.25	--	--	25.33	4.07	2.19	5.15	2.66	5702.75
EU-05	CTE	1.65	2.55	27.99	6.12	3.07	27.24	21.42	643.73	--	--	3.87	3.41	1.55	3.34	1.41	1333.10
	RME	1.91	4.51	30.45	21.86	4.44	104.78	136.60	2158.75	--	--	5.72	3.89	2.22	5.24	1.68	7299.50
EU-06	CTE	1.57	2.38	17.29	1.10	2.90	4.87	0.87	923.88	--	--	5.28	3.17	1.45	3.12	4.11	135.76
	RME	1.77	3.83	18.98	1.82	3.96	10.12	1.98	1135.65	--	--	10.93	4.13	1.98	4.95	9.76	169.01
Mill Creek Ref.	CTE	1.44	1.75	24.13	0.27	2.69	1.44	0.93	38.93	--	--	1.29	2.97	1.34	2.87	1.32	31.38
	RME	2.04	3.62	24.13	0.41	4.15	2.04	1.49	77.23	--	--	2.11	4.07	2.08	5.06	1.32	39.45
Bear Creek Ref.	CTE	1.72	2.66	12.50	0.34	3.44	1.72	0.34	7.97	--	--	1.72	3.44	1.72	3.44	5.00	6.88
	RME	2.19	4.06	12.50	0.44	4.38	2.19	0.44	9.00	--	--	2.19	4.38	2.19	4.38	5.00	8.75
Mineral Creek LWAs	**CTE**	**1.64**	**4.06**	**24.31**	**2.51**	**3.22**	**39.52**	**16.01**	**727.08**	**--**	**2.50**	**4.48**	**3.46**	**1.62**	**3.39**	**2.33**	**710.19**
	RME	**1.98**	**10.10**	**26.50**	**6.45**	**4.33**	**91.68**	**55.40**	**1461.45**	**--**	**2.50**	**8.20**	**4.19**	**2.16**	**4.83**	**3.24**	**2146.60**
EU-20	CTE	1.73	5.11	11.60	3.40	3.73	59.15	20.68	3507.00	--	2.50	7.11	3.93	1.87	4.22	4.33	1548.30
	RME	1.98	5.73	12.16	3.84	4.79	86.54	28.34	4482.75	--	2.50	8.86	4.28	2.31	5.88	5.37	1894.05
EU-21	CTE	1.30	5.71	8.15	2.42	2.57	79.48	50.60	516.35	--	--	7.21	2.63	1.29	2.85	23.38	631.45
	RME	1.42	16.63	8.15	4.00	2.83	142.82	90.85	663.05	--	--	11.30	2.85	1.41	3.34	23.38	1104.38
EU-22	CTE	1.82	3.14	17.38	8.78	3.53	109.48	21.88	6067.50	--	2.50	6.66	3.72	1.80	4.78	2.14	3612.25
	RME	2.06	4.81	22.33	10.72	4.74	145.60	32.58	8099.75	--	2.50	9.32	4.17	2.32	6.86	2.98	4485.50
EU-23	CTE	1.8435	3.05325	14.3225	2.59825	3.535	28.045	7.2265	3069.25	--	--	5.025	3.745	1.786	3.7975	1.40525	1435.325
	RME	2.09875	4.8715	16.25	6.14425	4.68475	64.935	19.9375	13079.75	--	--	12.31	4.22825	2.34225	5.14	1.445	6739.25
EU-24	CTE	1.57175	2.312	21.1475	8.61925	2.96575	84.555	8.25925	1882.25	--	--	5.62425	3.214	1.49975	3.3815	1.76225	1920.25
	RME	1.76	3.9125	27.2675	10.63	4.1455	102.85	11.38	2489	--	--	8.01275	3.56575	2.06225	5.2145	3.125	2469.5
Cement Creek LWAs	**CTE**	**1.69**	**4.17**	**13.92**	**4.82**	**3.42**	**69.23**	**20.78**	**3238.87**	**--**	**2.50**	**6.54**	**3.60**	**1.72**	**3.96**	**5.50**	**1802.62**
	RME	**1.91**	**6.51**	**16.13**	**6.29**	**4.43**	**102.20**	**32.82**	**5428.30**	**--**	**2.50**	**9.56**	**3.97**	**2.17**	**5.52**	**6.30**	**2938.84**

CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data

Sb = antimony; As = arsenic; Ba = barium; Cd = cadmium; Cr = chromium; Cu = copper; Pb = lead; Mn = manganese; Hg = mercury; Mo = molybdemum; Ni = nickel; Se = selenium; Ag = silver; Ti = thallium; V = vanadium; Zn = zinc

Table B-7 Surface Water Water Year and Watershed Reach Length-Weighted Average (LWA) Exposure Point Concentrations (EPCs) for Each Floodplain Exposure Unit. Continued

Exposure Unit	EPC	Sb	As	Ba	Cd	Cr	Cu	Pb	Mn	Hg	Mo	Ni	Se	Ag	Ti	V	Zn
EU-07	CTE	1.60	2.51	20.45	0.65	3.32	6.36	5.82	326.43	--	2.50	1.66	3.47	1.66	4.18	2.55	241.58
	RME	1.90	4.67	20.85	0.77	4.45	9.43	16.81	455.18	--	2.50	2.03	4.11	2.22	6.58	2.55	331.88
EU-08	CTE	1.66	2.47	45.15	0.35	3.24	2.21	4.60	19.58	--	2.50	1.59	3.35	1.62	3.21	2.56	21.93
	RME	2.06	4.02	45.15	0.43	4.12	3.79	25.51	47.52	--	2.50	2.07	4.12	2.06	4.13	2.56	29.53
EU-09	CTE	1.62	2.35	17.73	1.17	3.12	11.96	3.88	618.83	--	2.50	1.69	3.29	1.56	3.38	2.53	415.18
	RME	1.95	4.06	18.65	1.75	4.20	19.79	5.58	847.70	--	2.50	2.08	3.92	2.10	4.88	2.54	564.58
EU-10	CTE	1.57	2.20	16.30	2.19	3.02	32.44	5.86	1222.08	--	2.50	1.85	3.20	1.48	3.94	2.53	656.35
	RME	1.92	4.22	16.80	2.92	3.81	46.76	8.27	1406.08	--	2.50	2.25	3.85	1.91	5.93	2.53	827.20
EU-11	CTE	1.84	3.03	14.83	0.41	3.56	7.26	0.60	95.71	--	--	2.04	3.75	1.78	5.43	1.31	45.32
	RME	2.19	4.06	14.83	0.44	4.38	12.11	0.83	170.25	--	--	2.26	4.38	2.19	7.51	1.31	69.37
EU-12	CTE	1.82	2.96	14.49	2.15	3.59	12.24	2.20	347.58	--	--	1.99	3.66	1.79	4.73	1.30	853.65
	RME	1.97	4.06	16.40	4.06	3.92	20.24	4.56	805.50	--	--	2.64	3.96	1.96	7.37	1.30	1664.50
EU-13	CTE	1.73	2.69	22.18	1.19	3.46	25.40	2.03	273.08	--	2.50	1.73	3.46	1.73	5.02	5.00	374.35
	RME	2.19	4.06	22.18	1.55	4.38	30.64	3.57	325.00	--	2.50	2.19	4.38	2.19	6.08	5.00	467.95
EU-14	CTE	1.65	2.53	17.66	4.16	3.14	53.95	12.10	3738.43	--	2.50	3.06	3.38	1.55	3.23	2.54	1245.08
	RME	2.05	4.58	18.67	4.90	4.72	79.97	24.95	6251.75	--	2.50	4.01	4.15	2.28	4.92	2.55	1504.63
EU-15	CTE	1.71	2.70	21.43	8.11	3.28	32.97	23.49	13566.00	--	--	8.28	3.69	1.64	3.35	3.13	2762.75
	RME	2.11	5.00	21.43	9.96	4.76	42.16	39.99	15821.50	--	--	10.72	4.45	2.38	5.05	3.13	3382.75
EU-16	CTE	1.86	3.06	21.28	3.19	3.66	26.48	25.81	1823.00	--	--	3.55	3.75	1.83	3.91	1.30	1290.50
	RME	2.11	4.06	21.28	3.65	4.38	33.37	46.91	2269.00	--	--	4.06	4.23	2.19	4.70	1.30	1505.25
EU-17	CTE	1.82	2.87	21.20	8.73	3.68	31.50	5.76	19889.00	--	--	9.96	3.60	1.80	3.98	1.30	2602.00
	RME	2.00	4.06	21.20	10.94	4.20	36.44	17.08	25122.50	--	--	12.55	3.99	2.00	6.41	1.30	3299.00
EU-18	CTE	1.73	2.66	25.48	5.27	3.30	31.86	10.45	1121.15	--	--	3.00	3.53	1.65	3.81	1.30	951.78
	RME	2.12	4.78	27.43	6.67	4.64	76.75	15.38	1420.18	--	--	3.52	4.27	2.32	6.43	1.30	1131.58
EU-19	CTE	2.00	3.51	26.15	13.76	3.99	72.78	11.56	4077.75	--	--	9.33	4.01	2.00	4.82	3.13	2023.00
	RME	2.08	4.06	26.15	17.40	4.16	81.62	13.97	4660.50	--	--	10.56	4.17	2.08	6.50	3.13	2610.75
Maggie Gulch Ref.	CTE	1.25	1.25	--	0.25	2.50	1.25	0.32	12.95	--	--	1.25	2.50	1.25	2.50	--	5.00
	RME	1.25	1.25	--	0.25	2.50	1.25	0.32	12.95	--	--	1.25	2.50	1.25	2.50	--	5.00
Picayne Gulch Ref.	CTE	1.25	1.25	--	0.25	2.50	1.25	0.25	151.00	--	--	1.25	2.50	1.25	2.50	--	12.30
	RME	1.25	1.25	--	0.25	2.50	1.25	0.25	151.00	--	--	1.25	2.50	1.25	2.50	--	12.30
Upper NF Animas Ref.	CTE	1.78	2.80	--	0.83	3.36	2.02	1.08	20.62	--	--	1.63	3.65	1.68	3.27	1.30	130.05
	RME	2.50	5.00	--	1.11	5.00	2.58	1.51	30.35	--	--	2.50	5.00	2.50	5.00	1.30	162.50
Animas River LWAs	**CTE**	**1.64**	**2.44**	**23.28**	**2.64**	**3.22**	**19.52**	**6.42**	**2597.77**	**--**	**2.50**	**2.98**	**3.33**	**1.60**	**3.62**	**2.06**	**707.32**
	RME	**1.92**	**3.67**	**23.70**	**3.35**	**3.98**	**27.63**	**15.19**	**3434.30**	**--**	**2.50**	**3.64**	**3.85**	**1.97**	**4.95**	**2.06**	**915.48**

CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data

Sb = antimony; As = arsenic; Ba = barium; Cd = cadmium; Cr = chromium; Cu = copper; Pb = lead; Mn = manganese; Hg = mercury; Mo = molybdemum; Ni = nickel; Se = selenium; Ag = silver; Ti = thallium; V = vanadium; Zn = zinc

Table B-8 Surface Water, Water Year Exposure Point Concentrations for Each Floodplain Dose Response Category (DRC). All EPC values represent total recoverable metals concentrations in µg/L.

COPEC	High-Level DRC		Mid-Level DRC		Low-Level DRC		Reference DRC	
	CTE	**RME**	**CTE**	**RME**	**CTE**	**RME**	**CTE**	**RME**
Antimony	1.65	1.74	1.53	1.60	1.89	1.98	1.54	1.84
Arsenic	4.02	7.32	4.02	5.58	3.23	3.94	2.10	4.06
Barium	20.54	22.78	25.56	30.12	17.38	18.64	23.15	24.13
Cadmium	5.11	7.08	2.52	4.52	2.64	4.37	0.46	0.81
Chromium	3.37	3.71	3.50	4.00	3.67	4.15	2.97	4.43
Copper	61.39	121.29	33.85	59.55	16.55	22.32	1.62	1.95
Lead	18.23	21.62	20.02	34.00	5.94	10.74	0.78	1.07
Manganese	2424.68	3162.75	1211.45	2217.83	4434.58	8263.00	31.98	60.09
Mercury	--	--	--	--	--	--	--	--
Molybdenum	2.50	2.50	2.50	2.50	2.50	2.50	--	--
Nickel	4.65	7.23	4.32	5.75	4.98	7.42	1.45	2.25
Selenium	3.45	3.63	3.69	3.90	3.79	3.99	3.15	3.72
Silver	1.66	1.84	1.75	1.96	1.83	2.07	1.49	2.21
Thallium	4.12	4.98	3.74	4.37	3.96	4.87	3.01	4.65
Vanadium	2.77	3.13	3.61	5.65	3.09	5.06	1.31	1.32
Zinc	1454.23	1878.75	773.33	1287.65	819.40	1493.68	53.56	127.60

COPEC = contaminant of potential ecological concern; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data

Table B-9 Surface Water Watershed Reach Length-Weighted Average (LWA) Exposure Point Concentrations for Each Subwatershed and the Entire Study Area.

COPEC	Mineral Creek LWAs		Cement Creek LWAs		Animas River LWAs		Study Area LWAs	
	CTE	RME	CTE	RME	CTE	RME	CTE	RME
Sb	1.64	1.98	1.69	1.91	1.64	1.92	1.65	1.94
As	4.06	10.10	4.17	6.51	2.44	3.67	3.31	6.41
Ba	24.31	26.50	13.92	16.13	23.28	23.70	21.98	23.34
Cd	2.51	6.45	4.82	6.29	2.64	3.35	2.98	4.95
Cr	3.22	4.33	3.42	4.43	3.22	3.98	3.26	4.18
Cu	39.52	91.68	69.23	102.20	19.52	27.63	35.25	63.06
Pb	16.01	55.40	20.78	32.82	6.42	15.19	12.29	32.27
Mn	727.08	1461.45	3238.87	5428.30	2597.77	3434.30	2061.61	3101.91
Hg	--	--	--	--	--	--	--	--
Mo	2.50	2.50	2.50	2.50	2.50	2.50	2.50	2.50
Ni	4.48	8.20	6.54	9.56	2.98	3.64	4.13	6.27
Se	3.46	4.19	3.60	3.97	3.33	3.85	3.42	3.99
Ag	1.62	2.16	1.72	2.17	1.60	1.97	1.63	2.07
Ti	3.39	4.83	3.96	5.52	3.62	4.95	3.60	5.01
V	2.33	3.24	5.50	6.30	2.06	2.06	2.76	3.22
Zn	710.19	2146.60	1802.62	2938.84	707.32	915.48	902.00	1700.74

COPEC = contaminant of potential ecological concern; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data

Sb = antimony; As = arsenic; Ba = barium; Cd = cadmium; Cr = chromium; Cu = copper; Pb = lead; Mn = manganese; Hg = mercury; Mo = molybdemum; Ni = nickel; Se = selenium; Ag = silver; Ti = thallium; V = vanadium; Zn = zinc

Table B-10 Mineral Creek Exposure Units (EUs) Adit/Mine Drainage Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L.

COPEC	EU-01 Lower Mainstem Mineral Creek				EU-04 Upper Mainstem Mineral Creek				EU-3.5 Browns Gulch			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	0/2	1.25	1.25	Maximum Value	0/11	1.25	1.25	Maximum Value	0/4	1.25	1.25	Maximum Value
Arsenic	2/2	5.42	8.21	Maximum Value	7/11	515.10	2604.00	95% Adjusted Gamma	4/4	20.90	21.97	95% Student's-t UCL
Barium	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	2/2	3.44	3.65	Maximum Value	7/11	25.26	40.68	95% Student's-t UCL	4/4	17.20	19.00	Maximum Value
Chromium	0/2	2.50	2.50	Maximum Value	1/11	2.79	3.32	95% Student's-t UCL	0/4	2.50	2.50	Maximum Value
Copper	2/2	109.80	156.00	Maximum Value	11/11	1137.00	1842.00	95% Student's-t UCL	4/4	291.00	328.00	Maximum Value
Lead	2/2	6.44	6.98	Maximum Value	10/11	78.92	131.00	95% Student's-t UCL	4/4	24.43	25.10	Maximum Value
Manganese	2/2	6655.00	9780.00	Maximum Value	11/11	9433.00	37600.00	Maximum Value	4/4	5998.00	6380.00	Maximum Value
Mercury	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	0/2	1.25	1.25	Maximum Value	7/11	44.76	76.60	95% Student's-t UCL	4/4	10.60	12.90	Maximum Value
Selenium	0/2	2.50	2.50	Maximum Value	0/11	2.50	2.50	Maximum Value	0/4	2.50	2.50	Maximum Value
Silver	0/2	1.25	1.25	Maximum Value	0/11	1.25	1.25	Maximum Value	0/4	1.25	1.25	Maximum Value
Thallium	0/2	2.50	2.50	Maximum Value	1/11	2.80	3.34	95% Student's-t UCL	0/4	2.50	2.50	Maximum Value
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	2/2	1088.00	1230.00	Maximum Value	7/11	10802.00	18148.00	95% Student's-t UCL	4/4	5435.00	5810.00	Maximum Value

COPEC	EU-05 South Fork Mineral Creek				EU-06 Middle Fork Mineral Creek			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	1/3	1.85	3.05	Maximum Value	0/8	1.25	1.25	Maximum Value
Arsenic	1/3	5.10	12.80	Maximum Value	0/8	1.25	1.25	Maximum Value
Barium	--	--	--	--	--	--	--	--
Cadmium	2/3	39.12	67.80	Maximum Value	4/8	0.68	1.40	Maximum Value
Chromium	0/3	2.50	2.50	Maximum Value	0/8	2.50	2.50	Maximum Value
Copper	2/3	434.80	1070.00	Maximum Value	5/8	2.39	3.09	95% Student's-t UCL
Lead	3/3	392.90	977.00	Maximum Value	5/8	3.76	15.00	Maximum Value
Manganese	3/3	4720.00	6770.00	Maximum Value	8/8	3131.00	4888.00	95% Student's-t UCL
Mercury	--	--	--	--	--	--	--	--
Molybdenum	--	--	--	--	--	--	--	--
Nickel	2/3	6.85	10.50	Maximum Value	3/8	4.63	13.50	Maximum Value
Selenium	0/3	2.50	2.50	Maximum Value	0/8	2.50	2.50	Maximum Value
Silver	0/3	1.25	1.25	Maximum Value	0/8	1.25	1.25	Maximum Value
Thallium	0/3	2.50	2.50	Maximum Value	0/8	2.50	2.50	Maximum Value
Vanadium	--	--	--	--	--	--	--	--
Zinc	3/3	8413.00	13500.00	Maximum Value	8/8	402.00	608.20	95% Student's-t UCL

COPEC = contaminant of potential ecologic concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data; UCL = upper confidence limit

Table B-11 Cement Creek Exposure Units (EUs) Adit/Mine Drainage Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L.

COPEC	EU-20 Lower Mainstem Cement Creek				EU-21 Prospect Gulch				EU-22 Middle Mainstem Cement Creek			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	0/7	1.25	1.25	Maximum Value	0/8	1.25	1.25	Maximum Value	0/21	1.67	2.10	95% Student's-t UCL
Arsenic	0/7	4.45	6.70	95% Student's-t UCL	3/8	9.78	59.60	Maximum Value	8/21	14.54	61.51	95% Chebyshev UCL
Barium	--	--	--	--	--	--	--	--	0/12	20.83	24.01	95% Student's-t UCL
Cadmium	5/7	4.42	21.40	Maximum Value	5/8	11.18	41.40	Maximum Value	21/21	32.54	73.33	95% Chebyshev UCL
Chromium	0/7	2.50	2.50	Maximum Value	0/8	2.50	2.50	Maximum Value	0/21	3.93	4.80	95% Student's-t UCL
Copper	7/7	532.80	3610.00	Maximum Value	8/8	144.90	530.00	Maximum Value	21/21	1330.00	5499.00	95% Chebyshev UCL
Lead	7/7	5.92	8.39	95% Student's-t UCL	8/8	134.60	788.20	95% Adjusted Gamma	19/21	47.32	129.10	95% Chebyshev UCL
Manganese	7/7	7156.00	10575.00	95% Student's-t UCL	8/8	1310.00	9970.00	Maximum Value	21/21	32271.00	43845.00	95% Chebyshev UCL
Mercury	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	--	--	--	--	--	--	--	--	0/5	4.00	5.00	Maximum Value
Nickel	5/7	8.00	30.60	95% Chebyshev UCL	4/8	14.26	67.63	95% Adjusted Gamma	21/21	39.59	45.57	95% Student's-t UCL
Selenium	0/7	2.50	2.50	Maximum Value	0/8	2.50	2.50	Maximum Value	0/21	3.93	4.80	95% Student's-t UCL
Silver	0/7	1.25	1.25	Maximum Value	1/8	1.50	1.98	95% Student's-t UCL	0/21	1.96	2.40	95% Student's-t UCL
Thallium	1/7	3.42	5.21	95% Student's-t UCL	0/8	3.17	4.43	95% Student's-t UCL	2/21	3.50	6.49	95% Chebyshev UCL
Vanadium	--	--	--	--	--	--	--	--	1/12	9.25	11.54	95% Student's-t UCL
Zinc	7/7	2374.00	3798.00	95% Student's-t UCL	8/8	4484.00	20200.00	Maximum Value	21/21	17992.00	26640.00	95% Chebyshev UCL

COPEC	EU-23 South Fork Cement Creek				EU-24 Upper Mainstem Cement Creek			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	0/8	1.25	1.25	Maximum Value	0/27	1.25	1.25	Maximum Value
Arsenic	2/8	1.97	2.74	95% Student's-t UCL	8/27	4.04	10.49	95% Chebyshev UCL
Barium	0/4	15.63	22.98	95% Student's-t UCL	0/7	12.50	12.50	Maximum Value
Cadmium	8/8	2.59	4.86	95% Adjusted Gamma	26/27	35.37	55.13	95% Adjusted Gamma
Chromium	0/8	2.81	3.41	95% Student's-t UCL	1/27	2.61	2.81	95% Student's-t UCL
Copper	8/8	33.48	89.24	95% Adjusted Gamma	26/27	597.70	1971.00	95% Chebyshev UCL
Lead	8/8	4.11	6.09	95% Student's-t UCL	27/27	92.02	210.50	95% Adjusted Gamma
Manganese	8/8	2057.00	2670.00	95% Chebyshev UCL	26/27	9065.00	16032.00	95% Adjusted Gamma
Mercury	--	--	--	--	--	--	--	--
Molybdenum	0/2	2.50	2.50	Maximum Value	0/2	2.50	2.50	Maximum Value
Nickel	4/8	2.86	3.94	95% Student's-t UCL	19/27	6.09	8.43	95% Adjusted Gamma
Selenium	0/8	2.81	3.41	95% Student's-t UCL	0/27	2.50	2.50	Maximum Value
Silver	0/8	1.41	1.70	95% Student's-t UCL	0/27	1.25	1.25	Maximum Value
Thallium	0/8	2.03	2.47	95% Student's-t UCL	0/27	2.18	2.36	95% Student's-t UCL
Vanadium	0/4	6.25	9.19	95% Student's-t UCL	0/7	5.00	5.00	Maximum Value
Zinc	8/8	683.60	876.60	95% Student's-t UCL	27/27	13617.00	22157.00	95% Adjusted Gamma

COPEC = contaminant of potential ecologic concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data; UCL = upper confidence limit

Table B-12 Animas River from Arrastra Creek to Eureka Exposure Units (EUs) Adit/Mine Drainage Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L.

COPEC	EU-07 Arrastra Cr. to Cunningham Cr.				EU-08 Cunningham Creek				EU-09 Cunningham Cr. to Minnie Gulch			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	0/5	1.25	1.25	Maximum Value	0/2	1.25	1.25	Maximum Value	0/8	1.41	1.70	95% Student's-t UCL
Arsenic	1/5	1.75	2.80	95% Student's-t UCL	0/2	1.25	1.25	Maximum Value	2/8	2.19	4.90	95% Chebyshev UCL
Barium	0/2	12.50	12.50	Maximum Value	--	--	--	--	--	--	--	--
Cadmium	5/5	9.80	141.60	95% Adjusted Gamma	2/2	9.66	11.80	Maximum Value	8/8	61.58	217.00	Maximum Value
Chromium	0/5	2.50	2.50	Maximum Value	0/2	2.50	2.50	Maximum Value	0/8	2.81	3.41	95% Student's-t UCL
Copper	4/5	236.70	1150.00	Maximum Value	2/2	40.40	54.50	Maximum Value	8/8	475.50	1950.00	Maximum Value
Lead	5/5	34.58	148.00	Maximum Value	2/2	29.90	42.20	Maximum Value	8/8	449.50	3271.00	95% Chebyshev UCL
Manganese	5/5	1448.00	1643.00	95% Student's-t UCL	2/2	320.00	401.00	Maximum Value	8/8	55063.00	140270.00	95% Chebyshev UCL
Mercury	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	0/2	2.50	2.50	Maximum Value	--	--	--	--	--	--	--	--
Nickel	2/5	2.84	5.86	Maximum Value	0/2	1.25	1.25	Maximum Value	8/8	33.56	128.00	Maximum Value
Selenium	0/5	2.50	2.50	Maximum Value	0/2	2.50	2.50	Maximum Value	0/8	2.81	3.41	95% Student's-t UCL
Silver	0/5	1.25	1.25	Maximum Value	0/2	1.25	1.25	Maximum Value	0/8	1.41	1.70	95% Student's-t UCL
Thallium	1/5	3.97	11.10	Maximum Value	0/2	2.50	2.50	Maximum Value	0/8	2.81	3.41	95% Student's-t UCL
Vanadium	0/2	5.00	5.00	Maximum Value	--	--	--	--	--	--	--	--
Zinc	5/5	2106.00	7260.00	Maximum Value	2/2	1775.00	2190.00	Maximum Value	8/8	20990.00	50189.00	95% Student's-t UCL

COPEC	EU-10 Minnie Gulch to S. Fork Animas River				EU-12 Eureka Gulch			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	0/6	1.21	1.29	95% Student's-t UCL	0/10	1.25	1.25	Maximum Value
Arsenic	1/6	1.08	1.25	Maximum Value	0/10	1.25	1.25	Maximum Value
Barium	1/3	11.33	12.50	Maximum Value	0/2	12.50	12.50	Maximum Value
Cadmium	6/6	4.38	7.80	95% Student's-t UCL	9/10	27.63	79.70	Maximum Value
Chromium	0/6	2.25	2.50	Maximum Value	0/10	2.50	2.50	Maximum Value
Copper	4/6	12.57	21.40	95% Student's-t UCL	8/10	1092.00	1577.00	95% Hall's Bootstrap
Lead	6/6	17.51	31.73	95% Student's-t UCL	10/10	614.00	1990.00	Maximum Value
Manganese	6/6	1464.00	2346.00	95% Student's-t UCL	10/10	10729.00	15861.00	95% Student's-t UCL
Mercury	--	--	--	--	--	--	--	--
Molybdenum	0/2	2.50	2.50	Maximum Value	0/2	2.50	2.50	Maximum Value
Nickel	2/6	2.39	5.25	Maximum Value	5/10	5.73	13.09	Maximum Value
Selenium	0/6	2.50	2.50	Maximum Value	0/10	2.50	2.50	Maximum Value
Silver	0/6	1.13	1.25	Maximum Value	0/10	1.25	1.25	Maximum Value
Thallium	0/6	1.75	2.46	95% Student's-t UCL	2/10	4.01	9.37	95% Chebyshev UCL
Vanadium	1/3	3.36	8.16	95% Student's-t UCL	0/2	5.00	5.00	Maximum Value
Zinc	6/6	571.00	686.60	95% Student's-t UCL	10/10	8591.00	23000.00	Maximum Value

COPEC = contaminant of potential ecologic concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data; UCL = upper confidence limit

Table B-13 Animas River Above Eureka Exposure Units (EUs) Adit/Mine Drainage Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L.

COPEC	EU-14 S. Fork Animas to W. Fork Animas				EU-15 Lower W. Fork Animas to Placer Gulch				EU-16 Placer Gulch			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	3/9	2.27	4.62	95% Chebyshev UCL	0/10	1.25	1.25	Maximum Value	0/4	1.25	1.25	Maximum Value
Arsenic	5/9	72.30	101.10	95% Hall's Bootstrap	4/10	4.81	11.75	95% Chebyshev UCL	0/4	1.25	1.25	Maximum Value
Barium	0/2	12.50	12.50	Maximum Value	0/5	12.50	12.50	Maximum Value	0/2	12.50	12.50	Maximum Value
Cadmium	7/9	8.73	11.82	95% Hall's Bootstrap	10/10	251.90	1090.00	Maximum Value	4/4	10.17	15.54	95% Student's-t UCL
Chromium	0/9	2.50	2.50	Maximum Value	1/10	2.86	3.53	95% Student's-t UCL	0/4	2.50	2.50	Maximum Value
Copper	5/9	4034.00	5948.00	95% Hall's Bootstrap	9/10	1865.00	5232.00	95% Hall's Bootstrap	1/4	10.39	37.80	Maximum Value
Lead	8/9	17.56	30.04	95% Student's-t UCL	9/10	264.90	487.20	95% Student's-t UCL	4/4	178.70	253.00	Maximum Value
Manganese	9/9	2650.00	3140.00	95% Hall's Bootstrap	10/10	8821.00	13081.00	95% Student's-t UCL	4/4	7078.00	9460.00	Maximum Value
Mercury	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	0/2	2.50	2.50	Maximum Value	0/5	2.50	2.50	Maximum Value	0/2	2.50	2.50	Maximum Value
Nickel	0/9	1.25	1.25	Maximum Value	4/10	14.78	66.85	Maximum Value	3/4	8.51	11.40	Maximum Value
Selenium	0/9	2.50	2.50	Maximum Value	2/10	5.65	14.82	95% Chebyshev UCL	0/4	2.50	2.50	Maximum Value
Silver	0/9	1.25	1.25	Maximum Value	0/10	1.25	1.25	Maximum Value	0/4	1.25	1.25	Maximum Value
Thallium	1/9	3.75	9.91	95% Chebyshev UCL	0/10	1.88	2.26	95% Student's-t UCL	0/4	1.88	2.50	Maximum Value
Vanadium	0/2	5.00	5.00	Maximum Value	0/5	5.00	5.00	Maximum Value	0/2	5.00	5.00	Maximum Value
Zinc	9/9	2429.00	3210.00	95% Hall's Bootstrap	10/10	61568.00	273278.00	95% Adjusted Gamma	4/4	4525.00	4710.00	Maximum Value

COPEC	EU-17 Upper W. Fork Animas River				EU-19 Burrows Creek				Reference Picayne Gulch			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	0/9	1.25	1.25	Maximum Value	3/8	2.28	4.57	95% Chebyshev UCL	0/2	1.25	1.25	Maximum Value
Arsenic	2/9	3.36	11.65	95% Chebyshev UCL	3/8	4.65	14.80	Maximum Value	2/2	4.35	5.07	Maximum Value
Barium	0/4	12.50	12.50	Maximum Value					0/2	12.50	12.50	Maximum Value
Cadmium	9/9	13.90	41.91	95% Adjusted Gamma	7/8	26.83	46.95	95% Student's-t UCL	0/2	0.25	0.25	Maximum Value
Chromium	0/9	2.50	2.50	Maximum Value	0/8	2.50	2.50	Maximum Value	0/2	2.50	2.50	Maximum Value
Copper	7/9	297.80	1998.00	95% Adjusted Gamma	0/8	95.03	157.80	95% Student's-t UCL	0/2	1.25	1.25	Maximum Value
Lead	9/9	58.03	100.80	95% Student's-t UCL	7/8	159.80	830.00	Maximum Value	0/2	0.25	0.25	Maximum Value
Manganese	9/9	1706.00	4122.00	95% Adjusted Gamma	8/8	561.20	989.80	95% Student's-t UCL	2/2	2100.00	2190.00	Maximum Value
Mercury	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	0/4	2.50	2.50	Maximum Value	--	--	--	--	0/2	2.50	2.50	Maximum Value
Nickel	2/9	2.04	4.32	95% Chebyshev UCL	1/8	1.75	3.94	95% Chebyshev UCL	0/2	1.25	1.25	Maximum Value
Selenium	0/9	2.50	2.50	Maximum Value	0/8	2.50	2.50	Maximum Value	0/2	2.50	2.50	Maximum Value
Silver	0/9	1.25	1.25	Maximum Value	1/8	1.85	4.44	95% Chebyshev UCL	0/2	1.25	1.25	Maximum Value
Thallium	2/9	3.48	7.98	95% H-UCL	0/8	2.50	2.50	Maximum Value	0/2	1.25	1.25	Maximum Value
Vanadium	0/4	5.00	5.00	Maximum Value	--	--	--	--	0/2	5.00	5.00	Maximum Value
Zinc	9/9	2582.00	5773.00	95% Adjusted Gamma	8/8	5073.00	8981.00	95% Student's-t UCL	2/2	17.30	20.70	Maximum Value

COPEC = contaminant of potential ecologic concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); = no data; UCL = upper confidence limit

Table B-14 Mineral Creek, Cement Creek, and Animas River Subwatershed Adit/Mine Drainage Water Exposure Point Concentrations (EPCs). All EPC values represent total recoverable metals concentrations in µg/L.

COPEC	Mineral Creek				Cement Creek				Animas River				Entire Assessment Area			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	1/28	1.31	1.42	95% Student's-t UCL	0/71	1.37	1.50	95% Student's-t UCL	6/73	1.50	1.67	95% Student's-t UCL	7/172	1.42	1.51	95% Student's-t UCL
Arsenic	14/28	206.60	968.30	95% Chebyshev UCL	25/71	7.60	22.10	95% Chebyshev UCL	20/73	11.34	28.11	95% Chebyshev UCL	59/172	41.59	130.70	95% Chebyshev UCL
Barium	--	--	--	--	0/23	17.39	19.62	95% Student's-t UCL	1/22	12.34	12.50	Maximum Value	1/45	14.92	16.21	95% Student's-t UCL
Cadmium	19/28	17.01	44.95	95% Chebyshev UCL	65/71	25.06	42.27	95% Chebyshev UCL	67/73	52.64	107.00	95% H-UCL	151/172	35.45	74.49	95% Chebyshev UCL
Chromium	1/28	2.62	2.81	95% Student's-t UCL	1/71	3.00	3.29	95% Student's-t UCL	1/73	2.56	2.67	95% Student's-t UCL	3/172	2.75	2.88	95% Student's-t UCL
Copper	24/28	543.40	2323.00	95% Chebyshev UCL	68/71	693.20	1665.00	95% Chebyshev UCL	55/73	1020.00	2609.00	95% Chebyshev UCL	146/172	807.70	1439.00	95% Chebyshev UCL
Lead	24/28	78.12	161.80	95% Adjusted Gamma	69/71	65.20	135.90	95% Chebyshev UCL	68/73	210.90	443.10	95% Chebyshev UCL	161/172	129.10	237.20	95% Chebyshev UCL
Manganese	28/28	6439.00	10690.00	95% Adjusted Gamma	70/71	14077.00	22013.00	95% Chebyshev UCL	73/73	9984.00	65795.00	95% H-UCL	171/172	11097.00	13600.00	95% Adjusted Gamma
Mercury	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	--	--	--	--	0/9	3.33	4.11	95% Student's-t UCL	0/21	2.50	2.50	Maximum Value	0/30	2.75	2.99	95% Student's-t UCL
Nickel	16/28	21.24	54.64	95% Chebyshev UCL	53/71	16.74	27.11	95% Chebyshev UCL	27/73	8.01	18.41	95% Chebyshev UCL	96/172	13.77	22.08	95% Chebyshev UCL
Selenium	0/28	2.50	2.50	Maximum Value	0/71	2.96	3.24	95% Student's-t UCL	2/73	2.97	3.47	95% Student's-t UCL	2/172	2.89	3.13	95% Student's-t UCL
Silver	0/28	1.25	1.25	Maximum Value	1/71	1.51	1.65	95% Student's-t UCL	1/73	1.32	1.44	95% Student's-t UCL	2/172	1.39	1.46	95% Student's-t UCL
Thallium	1/28	2.62	2.82	95% Student's-t UCL	4/71	2.79	3.19	95% Student's-t UCL	6/73	2.90	4.26	95% Chebyshev UCL	11/172	2.81	3.08	95% Student's-t UCL
Vanadium	--	--	--	--	1/23	7.44	8.80	95% Student's-t UCL	1/22	4.78	5.00	Maximum Value	2/45	6.14	8.15	95% Chebyshev UCL
Zinc	24/28	6114.00	12118.00	95% Adjusted Gamma	71/71	11316.00	17403.00	95% Chebyshev UCL	73/73	13573.00	31746.00	95% H-UCL	172/172	11427.00	20997.00	95% Chebyshev UCL

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); = no data; UCL = upper confidence limit

Table B-15 Mineral Creek Exposure Units (EUs) Floodplain Soil Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	EU-01 Lower Mainstem Mineral Creek				EU-02 Lower Mainstem Mineral Creek				EU-03 Middle Mainstem Mineral Creek				EU-3.5 Browns Gulch			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Aluminum	5/5	13110.00	16636.00	95% Student's-t UCL	5/5	11460.00	12285.00	95% Student's-t UCL	6/7	10885.00	14100.00	Maximum Value	8/8	12000.00	15342.00	95% Student's-t UCL
Antimony	5/5	4.46	8.83	95% Student's-t UCL	5/5	0.61	0.81	95% Student's-t UCL	7/7	1.39	1.70	95% Student's-t UCL	8/8	1.73	2.66	95% Adjusted Gamma
Arsenic	5/5	31.40	45.31	95% Student's-t UCL	5/5	23.20	37.91	95% Student's-t UCL	5/7	25.19	42.12	95% Student's-t UCL	6/8	37.81	78.88	95% Adjusted Gamma
Barium	5/5	120.00	167.00	Maximum Value	5/5	135.40	185.00	95% Student's-t UCL	0/7	56.12	82.35	95% Student's-t UCL	8/8	64.93	78.90	95% Student's-t UCL
Beryllium	5/5	0.43	0.55	95% Student's-t UCL	5/5	0.28	0.36	95% Student's-t UCL	4/7	0.57	0.82	95% Student's-t UCL	2/8	0.36	0.47	95% Student's-t UCL
Cadmium	5/5	1.63	3.01	95% Student's-t UCL	5/5	0.76	1.32	95% Student's-t UCL	7/7	1.26	2.30	Maximum Value	8/8	0.83	1.14	95% Student's-t UCL
Chromium	5/5	5.14	7.21	95% Student's-t UCL	5/5	3.46	4.48	95% Student's-t UCL	7/7	4.50	7.12	95% Student's-t UCL	8/8	4.61	7.15	95% Student's-t UCL
Cobalt	5/5	8.52	12.00	95% Student's-t UCL	5/5	4.74	6.98	95% Student's-t UCL	7/7	6.13	9.19	95% Student's-t UCL	8/8	9.08	13.42	95% Student's-t UCL
Copper	5/5	138.10	256.60	95% Student's-t UCL	5/5	43.84	65.56	95% Student's-t UCL	7/7	47.27	77.30	95% Student's-t UCL	8/8	38.73	68.76	95% Adjusted Gamma
Iron	5/5	62340.00	132000.00	Maximum Value	5/5	39340.00	51285.00	95% Student's-t UCL	7/7	83614.00	254271.00	95% Chebyshev UCL	8/8	41613.00	48009.00	95% Student's-t UCL
Lead	5/5	367.40	603.90	95% Student's-t UCL	5/5	231.10	373.70	95% Student's-t UCL	7/7	331.60	617.30	95% Student's-t UCL	8/8	605.60	2743.00	95% Adjusted Gamma
Manganese	5/5	1150.00	1904.00	95% Student's-t UCL	5/5	558.60	797.00	95% Student's-t UCL	7/7	1919.00	8120.00	Maximum Value	8/8	1155.00	1932.00	95% Student's-t UCL
Mercury	5/5	0.15	0.29	95% Student's-t UCL	5/5	0.08	0.16	95% Student's-t UCL	7/7	0.05	0.09	95% Student's-t UCL	8/8	0.21	0.83	95% Chebyshev UCL
Molybdenum	5/5	3.20	4.25	95% Student's-t UCL	5/5	3.36	4.95	95% Student's-t UCL	7/7	1.79	2.38	95% Student's-t UCL	8/8	1.62	2.38	95% Student's-t UCL
Nickel	5/5	4.16	5.50	95% Student's-t UCL	5/5	2.02	2.50	Maximum Value	7/7	3.06	4.44	95% Student's-t UCL	8/8	5.35	7.98	95% Student's-t UCL
Selenium	3/5	1.87	3.00	Maximum Value	2/5	1.41	2.23	95% Student's-t UCL	3/7	1.07	1.50	95% Student's-t UCL	4/8	1.19	1.60	95% Student's-t UCL
Silver	0/5	0.80	1.49	95% Student's-t UCL	2/5	0.50	0.80	95% Student's-t UCL	0/7	0.57	0.82	95% Student's-t UCL	0/8	1.66	6.40	95% Adjusted Gamma
Thallium	5/5	0.65	0.73	95% Student's-t UCL	5/5	0.41	0.61	Maximum Value	7/7	0.70	0.87	95% Student's-t UCL	8/8	0.60	0.63	95% Student's-t UCL
Vanadium	5/5	34.20	76.10	Maximum Value	5/5	19.32	23.87	95% Student's-t UCL	7/7	18.09	22.71	95% Student's-t UCL	7/8	18.69	23.22	95% Student's-t UCL
Zinc	5/5	486.40	709.60	95% Student's-t UCL	5/5	336.80	514.80	95% Student's-t UCL	0/7	117.40	189.70	95% Student's-t UCL	3/8	203.10	369.00	95% Student's-t UCL

COPEC	EU-04 Upper Mainstem Mineral Creek				EU-05 South Fork Mineral Creek				EU-06 Middle Fork Mineral Creek				Reference EU Mill Creek			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Aluminum	11/11	14791.00	16850.00	95% Student's-t UCL	15/15	11952.00	13739.00	95% Student's-t UCL	16/16	15426.00	18142.00	95% Student's-t UCL	3/3	10210.00	14000.00	Maximum Value
Antimony	10/11	1.68	2.13	95% Student's-t UCL	12/15	0.96	1.66	95% Adjusted Gamma	13/16	1.24	1.49	95% Student's-t UCL	3/3	1.61	2.80	Maximum Value
Arsenic	11/11	111.70	430.90	95% Chebyshev UCL	15/15	19.22	27.19	95% Student's-t UCL	16/16	12.06	14.95	95% Student's-t UCL	3/3	84.47	229.00	Maximum Value
Barium	3/10	75.31	109.20	95% Adjusted Gamma	10/11	97.74	112.00	95% Student's-t UCL	10/16	77.78	89.64	95% Student's-t UCL	2/3	113.00	171.00	Maximum Value
Beryllium	4/11	0.57	0.71	95% Student's-t UCL	11/15	1.00	1.63	95% Adjusted Gamma	6/16	0.49	0.63	95% Student's-t UCL	3/3	0.72	0.85	Maximum Value
Cadmium	11/11	1.28	1.84	95% Student's-t UCL	15/15	16.15	141.70	95% Chebyshev UCL	15/16	0.79	1.18	95% Adjusted Gamma	3/3	1.33	2.10	Maximum Value
Chromium	11/11	4.59	5.35	95% Student's-t UCL	15/15	5.50	6.55	95% Student's-t UCL	14/16	2.76	3.30	95% Student's-t UCL	3/3	4.10	4.60	Maximum Value
Cobalt	10/10	9.39	11.70	95% Student's-t UCL	11/11	9.11	13.84	95% Adjusted Gamma	16/16	18.97	29.80	95% Adjusted Gamma	3/3	20.07	45.70	Maximum Value
Copper	11/11	160.60	394.70	95% Adjusted Gamma	15/15	346.40	2836.00	95% Chebyshev UCL	16/16	15.31	17.90	95% Student's-t UCL	3/3	221.40	612.00	Maximum Value
Iron	11/11	38245.00	49572.00	95% Chebyshev (Mean	15/15	39480.00	87453.00	95% Chebyshev (Mean	16/16	68513.00	80176.00	95% Student's-t UCL	3/3	35033.00	44400.00	Maximum Value
Lead	11/11	377.10	1233.00	95% Chebyshev UCL	15/15	465.50	1280.00	95% Chebyshev UCL	16/16	114.30	131.90	95% Student's-t UCL	3/3	406.50	968.00	Maximum Value
Manganese	11/11	972.10	1199.00	95% Student's-t UCL	15/15	5748.00	23416.00	95% Chebyshev UCL	16/16	1660.00	2491.00	95% Adjusted Gamma	3/3	1415.00	2680.00	Maximum Value
Mercury	11/11	0.14	0.36	95% Adjusted Gamma	15/15	0.04	0.09	95% Adjusted Gamma	16/16	0.04	0.05	95% Student's-t UCL	3/3	0.11	0.29	Maximum Value
Molybdenum	10/10	1.09	1.44	95% Student's-t UCL	10/10	1.53	2.14	95% Student's-t UCL	12/12	5.51	8.52	95% Adjusted Gamma	3/3	3.60	5.80	Maximum Value
Nickel	11/11	5.17	6.66	95% Student's-t UCL	15/15	9.57	21.93	95% Chebyshev UCL	15/16	3.33	4.74	95% Adjusted Gamma	3/3	4.37	6.80	Maximum Value
Selenium	4/11	1.04	1.31	95% Student's-t UCL	6/15	1.40	2.09	95% Adjusted Gamma	3/16	1.88	2.29	95% Student's-t UCL	1/3	1.43	2.50	Maximum Value
Silver	0/11	0.59	1.10	95% Adjusted Gamma	8/15	2.49	8.46	95% Chebyshev UCL	1/16	0.52	0.62	95% Student's-t UCL	0/3	0.62	1.20	Maximum Value
Thallium	10/11	0.69	0.76	95% Student's-t UCL	7/15	0.69	1.39	95% Chebyshev UCL	12/16	0.86	0.99	95% Student's-t UCL	3/3	0.67	0.77	Maximum Value
Vanadium	8/10	17.10	20.79	95% Student's-t UCL	9/11	23.08	31.34	95% Student's-t UCL	13/16	23.35	28.16	95% Student's-t UCL	2/3	15.10	22.20	Maximum Value
Zinc	3/11	332.50	851.40	95% Adjusted Gamma	14/15	1431.00	5282.00	95% Chebyshev UCL	6/16	103.60	124.20	95% Student's-t UCL	2/3	301.00	440.00	Maximum Value

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence interval or maximum value); UCL = upper confidence level

Table B-16 Cement Creek Exposure Units (EUs) Floodplain Soil Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	EU-20 Lower Mainstem Cement Creek				EU-21 Prospect Gulch				EU-22 Middle Mainstem Cement Creek			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Aluminum	15/15	9737.00	10706.00	95% Student's-t UCL	20/20	5856.00	6916.00	95% Student's-t UCL	8/8	10056.00	11298.00	95% Student's-t UCL
Antimony	15/15	2.96	4.04	95% Student's-t UCL	20/20	3.69	4.98	95% Adjusted Gamma	9/9	2.89	4.06	95% Student's-t UCL
Arsenic	15/15	42.82	50.49	95% Student's-t UCL	15/20	35.66	42.80	95% Student's-t UCL	9/9	24.73	33.76	95% Student's-t UCL
Barium	12/15	82.16	102.90	95% Student's-t UCL	13/20	174.90	275.70	95% H-UCL	5/9	40.61	52.12	95% Student's-t UCL
Beryllium	15/15	0.29	0.39	95% Adjusted Gamma	5/20	0.21	0.26	95% Student's-t UCL	5/9	0.38	0.75	95% Adjusted Gamma
Cadmium	15/15	1.42	1.86	95% Student's-t UCL	20/20	0.61	1.57	95% Chebyshev UCL	9/9	1.60	2.53	95% Student's-t UCL
Chromium	15/15	4.69	5.76	95% Student's-t UCL	19/20	3.04	3.52	95% Student's-t UCL	9/9	5.43	6.35	95% Student's-t UCL
Cobalt	15/15	4.58	5.44	95% Student's-t UCL	20/20	2.37	3.44	95% H-UCL	9/9	5.55	7.88	95% Student's-t UCL
Copper	15/15	81.13	96.48	95% Student's-t UCL	20/20	28.28	36.77	95% Adjusted Gamma	9/9	97.42	137.40	95% Student's-t UCL
Iron	15/15	49653.00	55063.00	95% Student's-t UCL	20/20	31540.00	35722.00	95% Student's-t UCL	9/9	82856.00	147330.00	95% H-UCL
Lead	15/15	587.20	765.70	95% Student's-t UCL	20/20	337.50	412.40	95% Student's-t UCL	9/9	863.90	1729.00	95% Adjusted Gamma
Manganese	15/15	650.70	761.90	95% Student's-t UCL	20/20	223.30	316.40	95% Adjusted Gamma	9/9	950.40	1393.00	95% Student's-t UCL
Mercury	14/15	0.08	0.14	95% Adjusted Gamma	20/20	0.07	0.09	95% Adjusted Gamma	9/9	0.06	0.10	95% H-UCL
Molybdenum	15/15	3.86	5.38	95% Adjusted Gamma	16/17	1.69	2.11	95% Student's-t UCL	9/9	4.77	5.91	95% Student's-t UCL
Nickel	15/15	2.87	3.44	95% Adjusted Gamma	20/20	1.56	2.02	95% Adjusted Gamma	9/9	3.38	4.54	95% Student's-t UCL
Selenium	15/15	2.24	2.61	95% Student's-t UCL	16/20	2.00	2.38	95% Student's-t UCL	9/9	2.37	2.99	95% Student's-t UCL
Silver	1/15	1.45	2.61	95% Adjusted Gamma	3/20	1.15	1.70	95% Adjusted Gamma	0/9	1.09	1.33	95% Student's-t UCL
Thallium	15/15	0.56	0.65	95% Student's-t UCL	17/20	0.54	0.59	95% Student's-t UCL	9/9	0.59	0.63	95% Student's-t UCL
Vanadium	13/15	22.99	26.30	95% Student's-t UCL	20/20	16.30	18.53	95% Student's-t UCL	9/9	27.38	31.24	95% Student's-t UCL
Zinc	15/15	478.30	598.60	95% Student's-t UCL	15/20	152.30	383.60	95% Chebyshev UCL	8/9	985.50	3272.00	95% Adjusted Gamma

COPEC	EU-23 South Fork Cement Creek				EU-24 Upper Mainstem Cement Creek			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Aluminum	10/10	11245.00	14823.00	95% Adjusted Gamma	19/19	13574.00	15597.00	95% Student's-t UCL
Antimony	9/10	1.17	1.88	95% Adjusted Gamma	17/19	2.07	3.70	95% Chebyshev UCL
Arsenic	10/10	17.01	20.26	95% Student's-t UCL	19/19	33.33	38.97	95% Student's-t UCL
Barium	5/9	70.68	98.35	95% Student's-t UCL	10/19	79.16	103.30	95% Student's-t UCL
Beryllium	5/10	0.71	2.18	95% Chebyshev UCL	16/19	0.75	0.89	95% Student's-t UCL
Cadmium	10/10	1.13	3.63	95% Chebyshev UCL	19/19	6.31	18.75	95% Chebyshev UCL
Chromium	10/10	4.39	5.25	95% Student's-t UCL	18/19	5.51	6.49	95% Student's-t UCL
Cobalt	9/9	5.47	7.05	95% Student's-t UCL	19/19	23.76	38.64	95% Adjusted Gamma
Copper	10/10	65.54	157.30	95% Chebyshev UCL	19/19	247.90	359.30	95% Adjusted Gamma
Iron	10/10	46630.00	60228.00	95% Student's-t UCL	19/19	51737.00	93722.00	95% Chebyshev UCL
Lead	10/10	210.50	361.30	95% Adjusted Gamma	19/19	807.30	999.60	95% Student's-t UCL
Manganese	10/10	811.60	1796.00	95% Chebyshev UCL	19/19	8159.00	13854.00	95% H-UCL
Mercury	10/10	0.03	0.04	95% Student's-t UCL	19/19	0.06	0.09	95% H-UCL
Molybdenum	6/6	4.38	5.38	95% Student's-t UCL	15/16	3.93	4.79	95% Student's-t UCL
Nickel	10/10	4.62	9.10	95% H-UCL	18/19	6.19	8.78	95% Adjusted Gamma
Selenium	8/10	1.88	2.40	95% Student's-t UCL	17/19	1.81	2.16	95% Student's-t UCL
Silver	4/10	0.82	1.08	95% Student's-t UCL	4/19	1.43	1.79	95% Student's-t UCL
Thallium	6/10	0.53	0.66	95% Student's-t UCL	17/19	0.73	0.81	95% Student's-t UCL
Vanadium	9/9	23.21	26.94	95% Student's-t UCL	16/19	17.55	20.78	95% Student's-t UCL
Zinc	6/10	232.8	581.9	95% Adjusted Gamma	15/19	753.2	1166	95% H-UCL

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence interval or maximum value); UCL = upper confidence level

Table B-17 Animas River from Arrastra Creek to Eureka Exposure Units (EUs) Floodplain Soil Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	EU-07 Arrastra Cr. to Cunningham Cr.				EU-08 Cunningham Creek				EU-09 Cunningham Cr. to Minnie Gulch				EU-10 Minnie Gulch to S. Fork Animas River			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Aluminum	6/6	12098.00	16529.00	95% Student's-t UCL	6/6	10512.00	12538.00	95% Student's-t UCL	14/14	7268.00	8602.00	95% Student's-t UCL	32/32	6697.00	7542.00	95% Student's-t UCL
Antimony	6/6	11.45	46.80	Maximum Value	6/6	1.34	3.73	95% Adjusted Gamma	14/14	6.73	11.73	95% Adjusted Gamma	32/32	15.90	18.88	95% Student's-t UCL
Arsenic	6/6	28.20	64.50	Maximum Value	6/6	12.81	18.24	95% Student's-t UCL	14/14	21.31	26.08	95% Student's-t UCL	32/32	40.84	43.33	95% Student's-t UCL
Barium	3/5	53.30	82.83	95% Student's-t UCL	3/6	66.01	101.90	95% Student's-t UCL	14/14	89.83	101.60	95% Student's-t UCL	32/32	83.41	91.94	95% Student's-t UCL
Beryllium	5/6	0.78	1.09	95% Student's-t UCL	5/6	0.57	0.71	95% Student's-t UCL	13/14	0.70	0.91	95% Student's-t UCL	32/32	1.30	1.46	95% Student's-t UCL
Cadmium	6/6	16.97	94.30	Maximum Value	6/6	1.84	2.32	Maximum Value	14/14	6.84	9.47	95% Student's-t UCL	32/32	12.96	14.44	95% Student's-t UCL
Chromium	6/6	5.22	7.11	95% Student's-t UCL	6/6	3.89	7.10	95% Adjusted Gamma	14/14	3.63	4.24	95% Student's-t UCL	32/32	5.29	5.74	95% Adjusted Gamma
Cobalt	5/5	12.98	28.73	95% Adjusted Gamma	6/6	8.69	12.43	95% Student's-t UCL	14/14	8.89	10.37	95% Student's-t UCL	32/32	10.40	1.99	95% Student's-t UCL
Copper	6/6	666.30	2510.00	Maximum Value	6/6	99.95	264.80	95% Chebyshev UCL	14/14	446.90	573.10	95% Student's-t UCL	32/32	853.90	1000.00	95% Student's-t UCL
Iron	6/6	37217.00	41877.00	95% Student's-t UCL	6/6	24383.00	28187.00	95% Student's-t UCL	14/14	26429.00	28589.00	95% Student's-t UCL	32/32	28625.00	30664.00	95% Student's-t UCL
Lead	6/6	8787.00	44200.00	Maximum Value	6/6	797.20	1222.00	95% Student's-t UCL	14/14	3685.00	5167.00	95% Student's-t UCL	32/32	5245.00	6381.00	95% Student's-t UCL
Manganese	6/6	1203.00	1619.00	95% Student's-t UCL	6/6	1580.00	2077.00	95% Student's-t UCL	14/14	8873.00	12721.00	95% Student's-t UCL	31/31	24316.00	36425.00	95% Chebyshev UCL
Mercury	6/6	1.22	6.00	Maximum Value	6/6	0.04	0.07	95% Student's-t UCL	14/14	0.21	0.32	95% Student's-t UCL	32/32	0.20	0.26	95% Adjusted Gamma
Molybdenum	5/5	26.60	118.00	Maximum Value	3/3	4.43	7.10	Maximum Value	4/4	4.08	6.06	95% Student's-t UCL	3/3	11.07	18.10	Maximum Value
Nickel	6/6	5.17	7.61	95% Student's-t UCL	6/6	3.54	4.64	95% Student's-t UCL	14/14	4.27	5.03	95% Student's-t UCL	32/32	5.66	6.59	95% Student's-t UCL
Selenium	5/6	2.80	4.78	95% Student's-t UCL	4/6	0.79	1.29	95% Student's-t UCL	6/10	1.13	1.30	95% Student's-t UCL	31/32	1.04	1.20	95% Student's-t UCL
Silver	2/6	25.43	96.90	Maximum Value	3/6	1.44	2.13	95% Student's-t UCL	10/14	11.13	15.65	95% Student's-t UCL	29/32	18.75	24.44	95% Adjusted Gamma
Thallium	5/6	0.83	2.30	95% Chebyshev UCL	3/6	0.41	0.56	95% Student's-t UCL	13/14	0.42	0.74	95% Adjusted Gamma	32/32	0.34	0.37	95% Student's-t UCL
Vanadium	2/5	17.12	22.03	95% Student's-t UCL	4/6	16.19	25.00	95% Student's-t UCL	14/14	16.05	18.60	95% Student's-t UCL	32/32	14.85	16.15	95% Student's-t UCL
Zinc	2/6	3082.00	17300.00	Maximum Value	4/6	383.60	488.60	95% Student's-t UCL	12/14	1184.00	1638.00	95% Student's-t UCL	32/32	2222.00	2545.00	95% Student's-t UCL

COPEC	EU-11 S. Fork Animas River to Eureka G.				EU-12 Eureka Gulch				EU-13 S. Fork Animas River abv. Eureka G.				Reference Maggie Gulch			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Aluminum	1/1	11000.00	11000.00	Maximum Value	11/11	19027.00	20511.00	95% Student's-t UCL	2/2	13750.00	15800.00	Maximum Value	6/6	7877.00	10893.00	95% Student's-t UCL
Antimony	1/1	1.10	1.10	Maximum Value	11/11	1.51	1.85	95% Student's-t UCL	2/2	5.80	10.10	Maximum Value	5/6	0.78	2.50	Maximum Value
Arsenic	1/1	24.50	24.50	Maximum Value	11/11	22.71	28.07	95% Student's-t UCL	2/2	31.15	38.60	Maximum Value	6/6	10.34	11.94	95% Student's-t UCL
Barium	1/1	72.30	72.30	Maximum Value	11/11	88.01	128.40	95% Adjusted Gamma	2/2	126.50	140.00	Maximum Value	4/5	180.50	252.90	95% Student's-t UCL
Beryllium	1/1	0.48	0.48	Maximum Value	9/11	0.80	1.02	95% Student's-t UCL	2/2	0.79	0.97	Maximum Value	5/6	0.79	0.89	95% Student's-t UCL
Cadmium	1/1	0.64	0.64	Maximum Value	11/11	6.10	9.85	95% Student's-t UCL	2/2	12.50	14.80	Maximum Value	6/6	0.84	1.18	95% Student's-t UCL
Chromium	1/1	8.00	8.00	Maximum Value	11/11	7.16	7.92	95% Student's-t UCL	2/2	17.20	27.00	Maximum Value	6/6	3.74	5.31	95% Student's-t UCL
Cobalt	1/1	10.60	10.60	Maximum Value	11/11	14.98	17.12	95% Student's-t UCL	2/2	19.80	20.80	Maximum Value	5/5	10.82	11.96	95% Student's-t UCL
Copper	1/1	74.50	74.50	Maximum Value	11/11	215.50	319.50	95% Student's-t UCL	2/2	408.00	485.00	Maximum Value	6/6	27.47	37.11	95% Adjusted Gamma
Iron	1/1	52000.00	52000.00	Maximum Value	11/11	49118.00	55443.00	95% Student's-t UCL	2/2	79650.00	95800.00	Maximum Value	6/6	23333.00	27733.00	95% Student's-t UCL
Lead	1/1	164.00	164.00	Maximum Value	11/11	695.80	992.70	95% Student's-t UCL	2/2	2652.00	4390.00	Maximum Value	6/6	66.68	124.90	95% Student's-t UCL
Manganese	1/1	1250.00	1250.00	Maximum Value	11/11	6068.00	8851.00	95% Student's-t UCL	2/2	8200.00	11100.00	Maximum Value	6/6	1400.00	1596.00	95% Student's-t UCL
Mercury	1/1	0.01	0.01	Maximum Value	11/11	0.10	0.15	95% Student's-t UCL	2/2	0.99	1.90	Maximum Value	6/6	0.08	0.19	95% Chebyshev UCL
Molybdenum	1/1	5.40	5.40	Maximum Value	11/11	3.51	5.05	95% Student's-t UCL	2/2	7.05	7.40	Maximum Value	2/2	1.85	2.00	Maximum Value
Nickel	1/1	6.10	6.10	Maximum Value	11/11	9.36	10.77	95% Student's-t UCL	2/2	37.65	63.70	Maximum Value	6/6	5.16	5.61	95% Student's-t UCL
Selenium	1/1	2.50	2.50	Maximum Value	9/11	2.20	2.89	95% Student's-t UCL	2/2	2.40	3.20	Maximum Value	2/6	0.73	1.11	95% Student's-t UCL
Silver	0/1	0.43	0.43	Maximum Value	0/11	1.74	2.50	95% Student's-t UCL	0/2	3.68	5.95	Maximum Value	3/6	0.50	0.68	95% Student's-t UCL
Thallium	1/1	0.54	0.54	Maximum Value	11/11	0.58	0.62	95% Student's-t UCL	2/2	0.58	0.61	Maximum Value	2/6	0.42	0.69	95% Student's-t UCL
Vanadium	1/1	27.40	27.40	Maximum Value	10/11	30.18	34.66	95% Student's-t UCL	2/2	27.40	29.70	Maximum Value	5/5	18.30	25.25	95% Student's-t UCL
Zinc	0/1	123.50	123.50	Maximum Value	6/11	1383.00	3427.00	95% Adjusted Gamma	2/2	3280.00	3770.00	Maximum Value	5/6	151.80	203.00	95% Student's-t UCL

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence interval or maximum value); UCL = upper confidence level

Table B-18 Animas River Above Eureka Exposure Units (EUs) Floodplain Soil Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	EU-14 S. Fork Animas to W. Fork Animas				EU-15 Lower W. Fork Animas to Placer Gulch				EU-16 Placer Gulch				EU-17 Upper W. Fork Animas River			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Aluminum	6/6	10483.00	12135.00	95% Student's-t UCL	7/7	14186.00	16033.00	95% Student's-t UCL	4/4	17500.00	21200.00	Maximum Value	3/3	18667.00	25400.00	Maximum Value
Antimony	6/6	10.85	42.50	Maximum Value	5/7	3.99	7.05	95% Student's-t UCL	4/4	2.88	5.38	95% Student's-t UCL	2/3	1.17	1.60	Maximum Value
Arsenic	6/6	57.03	83.05	95% Student's-t UCL	7/7	59.47	142.90	95% Adjusted Gamma	2/4	33.11	51.90	95% Student's-t UCL	3/3	28.83	31.40	Maximum Value
Barium	4/5	73.51	134.00	95% Student's-t UCL	7/7	123.20	280.40	95% Adjusted Gamma	3/3	133.60	169.00	Maximum Value	2/2	48.70	57.50	Maximum Value
Beryllium	6/6	1.13	1.57	95% Student's-t UCL	7/7	2.35	7.55	95% Adjusted Gamma	4/4	2.33	2.80	Maximum Value	3/3	3.25	6.10	Maximum Value
Cadmium	6/6	6.66	9.95	95% Student's-t UCL	7/7	35.99	216.00	Maximum Value	4/4	6.06	9.53	95% Student's-t UCL	3/3	1.27	1.60	Maximum Value
Chromium	6/6	5.60	6.94	95% Student's-t UCL	7/7	5.22	6.02	95% Student's-t UCL	4/4	5.62	6.88	Maximum Value	3/3	6.16	6.78	Maximum Value
Cobalt	5/5	7.68	10.63	95% Student's-t UCL	7/7	18.80	50.23	95% Adjusted Gamma	3/3	12.80	13.40	Maximum Value	2/2	12.25	15.20	Maximum Value
Copper	6/6	222.70	346.60	95% Student's-t UCL	7/7	586.50	2795.00	95% Adjusted Gamma	4/4	288.50	497.30	95% Student's-t UCL	3/3	79.47	156.00	Maximum Value
Iron	6/6	20767.00	23633.00	95% Chebyshev UCL	7/7	33100.00	46179.00	95% Student's-t UCL	4/4	26025.00	36396.00	95% Student's-t UCL	3/3	28400.00	40100.00	Maximum Value
Lead	6/6	2768.00	10677.00	95% Chebyshev UCL	7/7	1667.00	6000.00	Maximum Value	4/4	1738.00	3158.00	95% Student's-t UCL	3/3	136.20	162.00	Maximum Value
Manganese	6/6	3977.00	10200.00	Maximum Value	7/7	13550.00	49821.00	95% Adjusted Gamma	4/4	10923.00	19600.00	Maximum Value	3/3	4137.00	7020.00	Maximum Value
Mercury	6/6	0.20	0.36	95% Student's-t UCL	7/7	0.70	1.39	95% Student's-t UCL	4/4	0.36	0.77	95% Student's-t UCL	3/3	0.05	0.06	Maximum Value
Molybdenum	5/5	5.86	7.40	Maximum Value	5/5	29.94	59.06	95% Student's-t UCL	3/3	5.23	7.80	Maximum Value	2/2	4.55	4.70	Maximum Value
Nickel	6/6	5.09	6.41	95% Student's-t UCL	7/7	11.76	41.84	95% Chebyshev UCL	4/4	5.62	6.50	Maximum Value	3/3	5.84	7.40	Maximum Value
Selenium	6/6	1.72	2.38	95% Student's-t UCL	6/7	2.25	3.72	95% Student's-t UCL	4/4	2.24	3.40	Maximum Value	1/3	1.38	1.90	Maximum Value
Silver	2/6	5.93	26.70	Maximum Value	2/7	3.32	8.82	95% Adjusted Gamma	3/4	3.91	5.20	Maximum Value	1/3	0.67	1.24	Maximum Value
Thallium	5/6	0.53	0.59	95% Student's-t UCL	6/7	0.74	1.02	95% Student's-t UCL	3/4	0.99	1.34	95% Student's-t UCL	2/3	0.82	0.99	Maximum Value
Vanadium	3/6	15.14	21.72	95% Student's-t UCL	7/7	18.01	22.15	95% Student's-t UCL	3/3	17.03	21.40	Maximum Value	2/2	27.50	32.50	Maximum Value
Zinc	5/6	1866.00	3371.00	95% Student's-t UCL	7/7	5086.00	30200.00	Maximum Value	3/4	1129.00	1600.00	Maximum Value	1/3	276.80	406.50	Maximum Value

COPEC	EU-18 N. Fork Animas River to Burrows Cr.				EU-19 Burrows Creek				Reference Picayne Gulch				Reference Upper N. Fork Animas River			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Aluminum	3/3	13047.00	18600.00	Maximum Value	13/13	16808.00	22619.00	95% Student's-t UCL	4/4	8885.00	11204.00	95% Student's-t UCL	1/1	11400.00	11400.00	Maximum Value
Antimony	3/3	1.09	1.50	Maximum Value	13/13	2.87	4.49	95% Adjusted Gamma	4/4	0.92	2.01	95% Student's-t UCL	1/1	1.90	1.90	Maximum Value
Arsenic	3/3	31.80	34.90	Maximum Value	12/13	59.90	79.38	95% Student's-t UCL	4/4	44.45	55.80	Maximum Value	1/1	105.00	105.00	Maximum Value
Barium	2/3	57.12	98.90	Maximum Value	13/13	70.42	78.43	95% Student's-t UCL	3/4	97.08	121.00	Maximum Value	1/1	61.50	61.50	Maximum Value
Beryllium	3/3	0.67	0.77	Maximum Value	10/13	1.15	1.65	95% Student's-t UCL	4/4	0.86	1.13	95% Student's-t UCL	1/1	0.68	0.68	Maximum Value
Cadmium	3/3	1.53	2.00	Maximum Value	13/13	3.80	10.03	95% Student's-t UCL	4/4	1.44	1.52	Maximum Value	1/1	1.70	1.70	Maximum Value
Chromium	3/3	7.10	12.00	Maximum Value	13/13	4.01	4.73	95% Student's-t UCL	4/4	4.81	5.37	95% Student's-t UCL	1/1	2.90	2.90	Maximum Value
Cobalt	3/3	5.33	6.50	Maximum Value	13/13	13.13	26.48	95% Adjusted Gamma	4/4	9.41	10.24	95% Student's-t UCL	1/1	4.40	4.40	Maximum Value
Copper	3/3	22.87	28.60	Maximum Value	13/13	83.25	198.30	95% Chebyshev UCL	4/4	35.28	45.27	95% Student's-t UCL	1/1	81.50	81.50	Maximum Value
Iron	3/3	18333.00	24200.00	Maximum Value	13/13	29665.00	45551.00	95% Adjusted Gamma	4/4	26075.00	30887.00	95% Student's-t UCL	1/1	26000.00	26000.00	Maximum Value
Lead	3/3	193.70	276.00	Maximum Value	13/13	520.50	880.10	95% Adjusted Gamma	4/4	140.00	171.70	95% Student's-t UCL	1/1	334.00	334.00	Maximum Value
Manganese	3/3	2006.00	2660.00	Maximum Value	13/13	3305.00	7521.00	95% Adjusted Gamma	4/4	3108.00	5410.00	Maximum Value	1/1	628.00	628.00	Maximum Value
Mercury	3/3	0.04	0.05	Maximum Value	13/13	0.06	0.08	95% Adjusted Gamma	4/4	0.04	0.06	Maximum Value	1/1	0.07	0.07	Maximum Value
Molybdenum	3/3	4.53	4.70	Maximum Value	10/10	13.12	20.15	95% Student's-t UCL	1/1	2.60	2.60	Maximum Value	1/1	10.20	10.20	Maximum Value
Nickel	3/3	4.10	5.50	Maximum Value	13/13	4.05	5.12	95% Student's-t UCL	4/4	5.62	5.87	Maximum Value	1/1	2.40	2.40	Maximum Value
Selenium	3/3	1.20	1.60	Maximum Value	10/13	1.43	1.91	95% Student's-t UCL	2/4	0.60	1.24	95% Student's-t UCL	1/1	1.50	1.50	Maximum Value
Silver	0/3	0.55	0.65	Maximum Value	5/13	1.46	2.25	95% Adjusted Gamma	3/4	1.24	2.04	95% Student's-t UCL	1/1	2.40	2.40	Maximum Value
Thallium	3/3	0.65	0.77	Maximum Value	10/13	1.04	1.71	95% Adjusted Gamma	1/4	0.33	0.53	95% Student's-t UCL	1/1	0.76	0.76	Maximum Value
Vanadium	3/3	15.53	19.00	Maximum Value	13/13	12.52	14.67	95% Student's-t UCL	4/4	19.83	22.70	95% Student's-t UCL	1/1	12.40	12.40	Maximum Value
Zinc	1/3	210.50	270.00	Maximum Value	8/13	279.70	441.30	95% H-UCL	3/4	243.50	263.00	Maximum Value	1/1	480.00	480.00	Maximum Value

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence interval or maximum value); UCL = upper confidence level

Table B-19 Dose Response Category (DRC) Floodplain Soil Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	High-Level DRC				Mid-Level DRC				Low-Level DRC			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Aluminum	134/134	11859.00	12816.00	95% App. Gamma	78/79	9904.00	10680.00	95% Student's-t UCL	35/35	13819.00	15435.00	95% Student's-t UCL
Antimony	129/134	6.91	10.36	95% Chebyshev UCL	76/79	2.40	3.11	95% H-UCL	30/35	1.12	1.30	95% Student's-t UCL
Arsenic	131/134	43.59	71.33	95% Chebyshev UCL	70/79	31.04	34.85	95% Student's-t UCL	35/35	16.86	20.06	95% Adjusted Gamma
Barium	107/130	81.41	88.60	95% App. Gamma	46/75	105.10	124.00	95% H-UCL	23/33	82.64	94.97	95% Student's-t UCL
Beryllium	113/134	1.03	1.14	95% App. Gamma	50/79	0.48	0.59	95% H-UCL	20/35	0.76	1.62	95% Chebyshev UCL
Cadmium	134/134	9.09	16.94	95% Chebyshev UCL	79/79	4.04	14.60	95% Chebyshev UCL	34/35	0.92	1.23	95% H-UCL
Chromium	133/134	5.33	6.31	95% Chebyshev UCL	78/79	4.46	4.96	95% App. Gamma	33/35	3.77	4.27	95% Student's-t UCL
Cobalt	130/130	13.08	18.66	95% Chebyshev UCL	75/75	5.90	6.91	95% App. Gamma	33/33	12.47	16.58	95% H-UCL
Copper	134/134	416.40	488.00	95% App. Gamma	79/79	113.60	99.63	95% H-UCL	35/35	40.93	54.86	95% H-UCL
Iron	134/134	38838.00	50813.00	95% Chebyshev UCL	79/79	43025.00	46706.00	95% H-UCL	35/35	54183.00	61692.00	95% Student's-t UCL
Lead	134/134	2644.00	4294.00	95% H-UCL	79/79	467.20	567.70	95% App. Gamma	35/35	161.70	203.30	95% H-UCL
Manganese	133/133	10136.00	15052.00	95% Chebyshev UCL	79/79	1827.00	1933.00	95% H-UCL	35/35	1461.00	1968.00	95% H-UCL
Mercury	134/134	0.23	0.46	95% Chebyshev UCL	75/79	0.08	0.15	95% Chebyshev UCL	35/35	0.04	0.05	95% Adjusted Gamma
Molybdenum	82/83	8.17	10.40	95% H-UCL	67/68	2.51	2.90	95% App. Gamma	26/26	4.76	5.83	95% Adjusted Gamma
Nickel	133/134	6.29	6.88	95% H-UCL	79/79	4.26	4.95	95% H-UCL	34/35	3.81	4.80	95% Adjusted Gamma
Selenium	109/130	1.62	1.79	95% App. Gamma	54/79	1.64	1.85	95% App. Gamma	15/35	1.79	2.04	95% Student's-t UCL
Silver	57/134	8.00	13.27	95% Chebyshev UCL	15/79	1.44	2.74	95% Chebyshev UCL	8/35	0.61	0.87	95% Chebyshev UCL
Thallium	123/134	0.61	0.78	95% Chebyshev UCL	65/79	0.59	0.74	95% Chebyshev UCL	26/35	0.69	0.78	95% Student's-t UCL
Vanadium	120/130	17.99	19.11	95% Student's-t UCL	68/75	20.21	22.25	95% App. Gamma	30/33	23.08	25.61	95% Student's-t UCL
Zinc	103/134	1565.00	2195.00	95% H-UCL	57/79	499.90	625.10	95% H-UCL	18/35	189.20	255.40	95% H-UCL

COPEC	Reference DRC			
	FOD	CTE	RME	RME Method
Aluminum	14/14	8916.00	10355.00	95% Student's-t UCL
Antimony	13/14	1.08	1.80	95% Adjusted Gamma
Arsenic	14/14	42.73	112.90	95% Chebyshev UCL
Barium	10/13	130.10	163.60	95% Student's-t UCL
Beryllium	13/14	0.79	0.86	95% Student's-t UCL
Cadmium	14/14	1.18	1.41	95% Student's-t UCL
Chromium	14/14	4.06	4.70	95% Student's-t UCL
Cobalt	13/13	12.03	24.63	95% Chebyshev UCL
Copper	14/14	75.12	256.00	95% Chebyshev UCL
Iron	14/14	26814.00	30441.00	95% Student's-t UCL
Lead	14/14	179.50	346.20	95% Adjusted Gamma
Manganese	14/14	1836.00	2416.00	95% Student's-t UCL
Mercury	14/14	0.07	0.14	95% H-UCL
Molybdenum	7/7	3.90	6.20	95% Student's-t UCL
Nickel	14/14	4.93	5.53	95% Student's-t UCL
Selenium	6/14	0.90	1.21	95% Student's-t UCL
Silver	7/14	0.87	1.20	95% Student's-t UCL
Thallium	7/14	0.47	0.79	95% Chebyshev UCL
Vanadium	12/13	17.58	20.48	95% Student's-t UCL
Zinc	11/14	233.40	286.70	95% Student's-t UCL

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence interval or maximum value); UCL = upper confidence level

Table B-20 Approximate Floodplain Exposure Unit Reach Lengths for Use in Estimating Length-Weighted Floodplain Soil Exposure Point Concentrations

Watershed	Exposure Unit	Reach Description	Reach Length (approx. rivermiles)
Mineral Creek	EU-01	Lower Mainstem Mineral Creek	3.13
	EU-02	Lower Mainstem Mineral Creek	2.20
	EU-03	Middle Mainstem Mineral Creek	1.99
	EU-3.5	Browns Gulch	1.62
	EU-04	Upper Mainstem Mineral Creek	3.52
	EU-05	South Fork Mineral Creek	4.14
	EU-06	Middle Fork Mineral Creek	3.19
	Mill Creek Ref.	Middle Mainstem Mineral Creek trib.	3.58
		Total (Mineral Creek watershed) =	**23.37**
Cement Creek	EU-20	Lower Cement Creek	5.85
	EU-21	Prospect Gulch	1.62
	EU-22	Middle Fork Cement Creek	2.10
	EU-23	South Fork Cement Creek	1.79
	EU-24	Upper Cement Creek	2.06
		Total (Cement Creek watershed) =	**13.42**
Animas River	EU-07	Arrastra Cr. to Cunningham Cr.	1.90
	EU-08	Cunningham Creek	7.13
	EU-09	Cunningham Cr. to Minnie Gulch	2.52
	EU-10	Minnie Gulch to S. Fork Animas River	1.27
	EU-11	S. Fork Animas River to Eureka Gulch	2.58
	EU-12	Eureka Gulch	2.22
	EU-13	S. Fork Animas River abv. Eureka Gulch	1.45
	EU-14	Minnie Gulch to S. Fork Animas River	4.24
	EU-15	Lower W. Fork Animas to Placer Gulch	0.94
	EU-16	Placer Gulch	2.16
	EU-17	Upper W. Fork Animas River	2.50
	EU-18	N. Fork Animas River to Burrows Cr.	1.07
	EU-19	Burrows Creek	1.33
	Maggie Gulch Ref.	Mainstem Animas	5.04
	Picayne Gulch Ref.	Mainstem Animas	1.38
	Upper NF Animas Ref.	Mainstem Animas	0.29
		Total (Animas River watershed) =	**38.02**
		Grand Total (combined Mineral Cr., Cement Cr., and Animas R. watersheds) =	**74.81**

Table B-21 Floodplain Soil Exposure Unit and Watershed Reach Length-Weighted Average (LWA) Exposure Point Concentrations (EPCs) for Mineral Creek and Cement Creek Subwatersheds.

Exposure Unit	EPC	Al	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Ti	V	Zn
EU-01	CTE	13110.00	4.46	31.40	120.00	0.43	1.63	5.14	8.52	138.10	62340.00	367.40	1150.00	0.15	3.20	4.16	1.87	0.80	0.65	34.20	486.40
	RME	16636.00	8.83	45.31	167.00	0.55	3.01	7.21	12.00	256.60	132000.00	603.90	1904.00	0.29	4.25	5.50	3.00	1.49	0.73	76.10	709.60
EU-02	CTE	11460.00	0.61	23.20	135.40	0.28	0.76	3.46	4.74	43.84	39340.00	231.10	558.60	0.08	3.36	2.02	1.41	0.50	0.41	19.32	336.80
	RME	12285.00	0.81	37.91	185.00	0.36	1.32	4.48	6.98	65.56	51285.00	373.70	797.00	0.16	4.95	2.50	2.23	0.80	0.61	23.87	514.80
EU-03	CTE	10885.00	1.39	25.19	56.12	0.57	1.26	4.50	6.13	47.27	83614.00	331.60	1919.00	0.05	1.79	3.06	1.07	0.57	0.70	18.09	117.40
	RME	14100.00	1.70	42.12	82.35	0.82	2.30	7.12	9.19	77.30	254271.00	617.30	8120.00	0.09	2.38	4.44	1.50	0.82	0.87	22.71	189.70
EU-3.5	CTE	12000.00	1.73	37.81	64.93	0.36	0.83	4.61	9.08	38.73	41613.00	605.60	1155.00	0.21	1.62	5.35	1.19	1.66	0.60	18.69	203.10
	RME	15342.00	2.66	78.88	78.90	0.47	1.14	7.15	13.42	68.76	48009.00	2743.00	1932.00	0.83	2.38	7.98	1.60	6.40	0.63	23.22	369.00
EU-04	CTE	14791.00	1.68	111.70	75.31	0.57	1.28	4.59	9.39	160.60	38245.00	377.10	972.10	972.10	1.09	5.17	1.04	0.59	0.69	17.10	332.50
	RME	16850.00	2.13	430.90	109.20	0.71	1.84	5.35	11.70	394.70	49572.00	1233.00	1199.00	1199.00	1.44	6.66	1.31	1.10	0.76	20.79	851.40
EU-05	CTE	11952.00	0.96	19.22	97.74	1.00	16.15	5.50	9.11	346.40	39480.00	465.50	5748.00	5748.00	1.53	9.57	1.40	2.49	0.69	23.08	1431.00
	RME	13739.00	1.66	27.19	112.00	1.63	141.70	6.55	13.84	2836.00	87453.00	1280.00	23416.00	23416.00	2.14	21.93	2.09	8.46	1.39	31.34	5282.00
EU-06	CTE	15426.00	1.24	12.06	77.78	0.49	0.79	2.76	18.97	15.31	68513.00	114.30	1660.00	1660.00	5.51	3.33	1.88	0.52	0.86	23.35	103.60
	RME	18142.00	1.49	14.95	89.64	0.63	1.18	3.30	29.80	17.90	80176.00	131.90	2491.00	2491.00	8.52	4.74	2.29	0.62	0.99	28.16	124.20
Mill Creek Ref.	CTE	10210.00	1.61	84.47	113.00	0.72	1.33	4.10	20.07	221.40	35033.00	406.50	1415.00	1415.00	3.60	4.37	1.43	0.62	0.67	15.10	301.00
	RME	14000.00	2.80	229.00	171.00	0.85	2.10	4.60	45.70	612.00	44400.00	968.00	2680.00	2680.00	5.80	6.80	2.50	1.20	0.77	22.20	440.00
Mineral Creek LWAs	**CTE**	**12608.21**	**1.73**	**45.97**	**94.68**	**0.60**	**3.82**	**4.39**	**11.43**	**150.89**	**49530.22**	**358.31**	**2058.11**	**1608.07**	**2.75**	**4.98**	**1.44**	**1.01**	**0.67**	**21.40**	**484.76**
	RME	**15241.56**	**2.83**	**125.53**	**126.98**	**0.82**	**26.67**	**5.61**	**19.26**	**709.93**	**88190.98**	**937.53**	**6234.70**	**5079.43**	**4.05**	**8.48**	**2.11**	**2.72**	**0.89**	**31.91**	**1333.53**
EU-20	CTE	9737.00	2.96	42.82	82.16	0.29	1.42	4.69	4.58	81.13	49653.00	587.20	650.70	0.08	3.86	2.87	2.24	1.45	0.56	22.99	478.30
	RME	10706.00	4.04	50.49	102.90	0.39	1.86	5.76	5.44	96.48	55063.00	765.70	761.90	0.14	5.38	3.44	2.61	2.61	0.65	26.30	598.60
EU-21	CTE	5856.00	3.69	35.66	174.90	0.21	0.61	3.04	2.37	28.28	31540.00	337.50	223.30	0.07	1.69	1.56	2.00	1.15	0.54	16.30	152.30
	RME	6916.00	4.98	42.80	275.70	0.26	1.57	3.52	3.44	36.77	35722.00	412.40	316.40	0.09	2.11	2.02	2.38	1.70	0.59	18.53	383.60
EU-22	CTE	10056.00	2.89	24.73	40.61	0.38	1.60	5.43	5.55	97.42	82856.00	863.90	950.40	0.06	4.77	3.38	2.37	1.09	0.59	27.38	985.50
	RME	11298.00	4.06	33.76	52.12	0.75	2.53	6.35	7.88	137.40	147330.00	1729.00	1393.00	0.10	5.91	4.54	2.99	1.33	0.63	31.24	3272.00
EU-23	CTE	11245.00	1.17	17.01	70.68	0.71	1.13	4.39	5.47	65.54	46630.00	210.50	811.60	0.03	4.38	4.62	1.88	0.82	0.53	23.21	232.80
	RME	14823.00	1.88	20.26	98.35	2.18	3.63	5.25	7.05	157.30	60228.00	361.30	1796.00	0.04	5.38	9.10	2.40	1.08	0.66	26.94	581.90
EU-24	CTE	13574.00	2.07	33.33	79.16	0.75	6.31	5.51	23.76	247.90	51737.00	807.30	8159.00	0.06	3.93	6.19	1.81	1.43	0.73	17.55	753.20
	RME	15597.00	3.70	38.97	103.30	0.89	18.75	6.49	38.64	359.30	93722.00	999.60	13854.00	0.09	4.79	8.78	2.16	1.79	0.81	20.78	1166.00
Cement Creek LWAs	**CTE**	**10108.55**	**2.66**	**34.23**	**84.86**	**0.42**	**2.06**	**4.69**	**7.53**	**100.82**	**52578.87**	**583.90**	**1820.01**	**0.06**	**3.82**	**3.53**	**2.12**	**1.27**	**0.58**	**22.06**	**527.77**
	RME	**11641.04**	**3.82**	**41.14**	**115.27**	**0.74**	**4.76**	**5.63**	**10.89**	**144.13**	**73789.61**	**855.76**	**2954.48**	**0.11**	**4.97**	**5.01**	**2.54**	**1.97**	**0.67**	**25.37**	**1075.86**

CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value)

Al = aluminum; Sb = antimony; As = arsenic; Ba = barium; Be = beryllium; Cd = cadmium; Co = cobalt; Cr = chromium; Cu = copper; Fe = iron; Pb = lead; Mn = manganese; Hg = mercury; Mo = molybdemum; Ni = nickel; Se = selenium; Ag = silver; Ti = thallium; V = vanadium; Zn = zinc

Table B-22 Floodplain Soil Exposure Unit and Watershed Reach Length-Weighted Average (LWA) Exposure Point Concentrations (EPCs) for Animas River Subwatershed.

Exposure Unit	EPC	Al	Sb	As	Ba	Be	Cd	Cr	Co	Cu	Fe	Pb	Mn	Hg	Mo	Ni	Se	Ag	Ti	V	Zn
EU-07	CTE	12098.00	11.45	28.20	53.30	0.78	16.97	5.22	12.98	666.30	37217.00	8787.00	1203.00	1.22	5.17	5.17	2.80	25.43	0.83	17.12	3082.00
	RME	16529.00	46.80	64.50	82.83	1.09	94.30	7.11	28.73	2510.00	41877.00	44200.00	1619.00	6.00	118.00	7.61	4.78	96.90	2.30	22.03	17300.00
EU-08	CTE	10512.00	1.34	12.81	66.01	0.57	1.84	3.89	8.69	99.95	24383.00	797.20	1580.00	0.04	4.43	3.54	0.79	1.44	0.41	16.19	383.60
	RME	12538.00	3.73	18.24	101.90	0.71	2.32	7.10	12.43	264.80	28187.00	1222.00	2077.00	0.07	7.10	4.64	1.29	2.13	0.56	25.00	488.60
EU-09	CTE	7268.00	6.73	21.31	89.83	0.70	6.84	3.63	8.89	446.90	26429.00	3685.00	8873.00	0.21	4.08	4.27	1.13	11.13	0.42	16.05	1184.00
	RME	8602.00	11.73	26.08	101.60	0.91	9.47	4.24	10.37	573.10	28589.00	5167.00	12721.00	0.32	6.06	5.03	1.30	15.65	0.74	18.60	1638.00
EU-10	CTE	6697.00	15.90	40.84	83.41	1.30	12.96	5.29	10.40	853.90	28625.00	5245.00	24316.00	0.20	11.07	5.66	1.04	18.75	0.34	14.85	2222.00
	RME	7542.00	18.88	43.33	91.94	1.46	14.44	5.74	1.99	1000.00	30664.00	6381.00	36425.00	0.26	18.10	6.59	1.20	24.44	0.37	16.15	2545.00
EU-11	CTE	11000.00	1.10	24.50	72.30	0.48	0.64	8.00	10.60	74.50	52000.00	164.00	1250.00	0.01	5.40	6.10	2.50	0.43	0.54	27.40	123.50
	RME	11000.00	1.10	24.50	72.30	0.48	0.64	8.00	10.60	74.50	52000.00	164.00	1250.00	0.01	5.40	6.10	2.50	0.43	0.54	27.40	123.50
EU-12	CTE	19027.00	1.51	22.71	88.01	0.80	6.10	7.16	14.98	215.50	49118.00	695.80	6068.00	0.10	3.51	9.36	2.20	1.74	0.58	30.18	1383.00
	RME	20511.00	1.85	28.07	128.40	1.02	9.85	7.92	17.12	319.50	55443.00	992.70	8851.00	0.15	5.05	10.77	2.89	2.50	0.62	34.66	3427.00
EU-13	CTE	13750.00	5.80	31.15	126.50	0.79	12.50	17.20	19.80	408.00	79650.00	2652.00	8200.00	0.99	7.05	37.65	2.40	3.68	0.58	27.40	3280.00
	RME	15800.00	10.10	38.60	140.00	0.97	14.80	27.00	20.80	485.00	95800.00	4390.00	11100.00	1.90	7.40	63.70	3.20	5.95	0.61	29.70	3770.00
EU-14	CTE	10483.00	10.85	57.03	73.51	1.13	6.66	5.60	7.68	222.70	20767.00	2768.00	3977.00	0.20	5.86	5.09	1.72	5.93	0.53	15.14	1866.00
	RME	12135.00	42.50	83.05	134.00	1.57	9.95	6.94	10.63	346.60	23633.00	10677.00	10200.00	0.36	7.40	6.41	2.38	26.70	0.59	21.72	3371.00
EU-15	CTE	14186.00	3.99	59.47	123.20	2.35	35.99	5.22	18.80	586.50	33100.00	1667.00	13550.00	0.70	29.94	11.76	2.25	3.32	0.74	18.01	5086.00
	RME	16033.00	7.05	142.90	280.40	7.55	216.00	6.02	50.23	2795.00	46179.00	6000.00	49821.00	1.39	59.06	41.84	3.72	8.82	1.02	22.15	30200.00
EU-16	CTE	17500.00	2.88	33.11	133.60	2.33	6.06	5.62	12.80	288.50	26025.00	1738.00	10923.00	0.36	5.23	5.62	2.24	3.91	0.99	17.03	1129.00
	RME	21200.00	5.38	51.90	169.00	2.80	9.53	6.88	13.40	497.30	36396.00	3158.00	19600.00	0.77	7.80	6.50	3.40	5.20	1.34	21.40	1600.00
EU-17	CTE	18667.00	1.17	28.83	48.70	3.25	1.27	6.16	12.25	79.47	28400.00	136.20	4137.00	0.05	4.55	5.84	1.38	0.67	0.82	27.50	276.80
	RME	25400.00	1.60	31.40	57.50	6.10	1.60	6.78	15.20	156.00	40100.00	162.00	7020.00	0.06	4.70	7.40	1.90	1.24	0.99	32.50	406.50
EU-18	CTE	13047.00	1.09	31.80	57.12	0.67	1.53	7.10	5.33	22.87	18333.00	193.70	2006.00	0.04	4.53	4.10	1.20	0.55	0.65	15.53	210.50
	RME	18600.00	1.50	34.90	98.90	0.77	2.00	12.00	6.50	28.60	24200.00	276.00	2660.00	0.05	4.70	5.50	1.60	0.65	0.77	19.00	270.00
EU-19	CTE	16808.00	2.87	59.90	70.42	1.15	3.80	4.01	13.13	83.25	29665.00	520.50	3305.00	0.06	13.12	4.05	1.43	1.46	1.04	12.52	279.70
	RME	22619.00	4.49	79.38	78.43	1.65	10.03	4.73	26.48	198.30	45551.00	880.10	7521.00	0.08	20.15	5.12	1.91	2.25	1.71	14.67	441.30
Maggie Gulch Ref.	CTE	7877.00	0.78	10.34	180.50	0.79	0.84	3.74	10.82	27.47	23333.00	66.68	1400.00	0.20	1.85	5.16	0.73	5.93	0.42	18.30	151.80
	RME	10893.00	2.50	11.94	252.90	0.89	1.18	5.31	11.96	37.11	27733.00	124.90	1596.00	0.19	2.00	5.61	1.11	26.70	0.69	25.25	203.00
Picayne Gulch Ref.	CTE	8885.00	0.92	44.45	97.08	0.86	1.44	4.81	9.41	35.28	26075.00	140.00	3108.00	0.04	2.60	5.62	0.60	1.24	0.33	19.83	243.50
	RME	11204.00	2.01	55.80	121.00	1.13	1.52	5.37	10.24	45.27	30887.00	171.70	5410.00	0.06	2.60	5.87	1.24	2.04	0.53	22.70	263.00
Upper NF Animas Ref.	CTE	11400.00	1.90	105.00	61.50	0.68	1.70	2.90	4.40	81.50	26000.00	334.00	628.00	0.07	10.20	2.40	1.50	2.40	0.76	12.40	480.00
	RME	11400.00	1.90	105.00	61.50	0.68	1.70	2.90	4.40	81.50	26000.00	334.00	628.00	0.07	10.20	2.40	1.50	2.40	0.76	12.40	480.00
Animas River LWAs	**CTE**	**11813.45**	**4.02**	**29.15**	**92.68**	**1.08**	**5.37**	**5.54**	**10.84**	**213.44**	**30846.53**	**1658.69**	**4655.00**	**0.23**	**5.56**	**6.52**	**1.47**	**5.10**	**0.57**	**19.14**	**1057.40**
	RME	**14422.67**	**10.96**	**40.57**	**129.97**	**1.59**	**15.17**	**7.38**	**14.32**	**449.88**	**36469.58**	**4823.14**	**8250.33**	**0.58**	**13.49**	**9.19**	**2.06**	**14.80**	**0.81**	**24.21**	**2805.39**

CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value)

Al = aluminum; Sb = antimony; As = arsenic; Ba = barium; Be = beryllium; Cd = cadmium; Cr = chromium; Co = cobalt; Cu = copper; Fe = iron; Pb = lead; Mn = manganese; Hg = mercury; Mo = molybdemum; Ni = nickel; Se = selenium; Ag = silver; Ti = thallium; V = vanadium; Zn = zinc

Table B-23 Summary of Floodplain Soil Watershed Reach Length-Weighted Average (LWA) Exposure Point Concentrations for Each Subwatershed and the Entire Study Area.

COPEC	Mineral Creek LWAs		Cement Creek LWAs		Animas River LWAs		Study Area LWAs	
	CTE	RME	CTE	RME	CTE	RME	CTE	RME
Al	12608.21	15241.56	10108.55	11641.04	11813.45	14422.67	11755.89	14179.49
Sb	1.73	2.83	2.66	3.82	4.02	10.96	3.06	7.14
As	45.97	125.53	34.23	41.14	29.15	40.57	35.31	67.21
Ba	94.68	126.98	84.86	115.27	92.68	129.97	91.90	126.40
Be	0.60	0.82	0.42	0.74	1.08	1.59	0.81	1.20
Cd	3.82	26.67	2.06	4.76	5.37	15.17	4.29	16.89
Cr	4.39	5.61	4.69	5.63	5.54	7.38	5.03	6.51
Co	11.43	19.26	7.53	10.89	10.84	14.32	10.43	15.25
Cu	150.89	709.93	100.82	144.13	213.44	449.88	173.70	476.27
Fe	49530.22	88190.98	52578.87	73789.61	30846.53	36469.58	40581.67	59321.66
Pb	358.31	937.53	583.90	855.76	1658.69	4823.14	1059.66	2897.61
Mn	2058.11	6234.70	1820.01	2954.48	4655.00	8250.33	3335.19	6670.65
Hg	1608.07	5079.43	0.06	0.11	0.23	0.58	502.48	1587.08
Mo	2.75	4.05	3.82	4.97	5.56	13.49	4.37	9.01
Ni	4.98	8.48	3.53	5.01	6.52	9.19	5.50	8.22
Se	1.44	2.11	2.12	2.54	1.47	2.06	1.57	2.16
Ag	1.01	2.72	1.27	1.97	5.10	14.80	3.14	8.72
Ti	0.67	0.89	0.58	0.67	0.57	0.81	0.60	0.81
V	21.40	31.91	22.06	25.37	19.14	24.21	20.37	26.83
Zn	484.76	1333.53	527.77	1075.86	1057.40	2805.39	783.50	2035.34

COPEC = contaminant of potential ecological concern; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value)

Al = aluminum; Sb = antimony; As = arsenic; Ba = barium; Be = beryllium; Cd = cadmium; Cr = chromium; Co = cobalt; Cu = copper; Fe = iron; Pb = lead; Mn = manganese; Hg = mercury; Mo = molybdemum; Ni = nickel; Se = selenium; Ag = silver; Ti = thallium; V = vanadium; Zn = zinc

Table B-24 Dose Response Category (DRC) Mine Feature Halo and Vegetated Upland Area Soil Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	High-Level DRC				Mid-Level DRC				Low-Level DRC				Vegetated Upland DRC			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Aluminum	34/34	7403.00	8180.00	95% Student's-t UCL	16/16	9186.00	10406.00	95% Student's-t UCL	20/20	6360.00	7429.00	95% Student's-t UCL	54/54	8863.00	9631.00	95% Student's-t UCL
Antimony	32/34	6.23	12.34	95% H-UCL	12/16	1.63	3.29	95% Chebyshev UCL	20/20	2.62	3.87	95% H-UCL	28/54	0.66	1.02	95% Chebyshev UCL
Arsenic	34/34	49.27	65.47	95% Adjusted Gamma	16/16	29.34	39.38	95% Student's-t UCL	20/20	42.64	57.42	95% Adjusted Gamma	54/54	14.86	19.91	95% H-UCL
Barium	34/34	152.20	206.70	95% H-UCL	16/16	138.30	211.60	95% Adjusted Gamma	20/20	171.60	195.10	95% Student's-t UCL	54/54	163.50	180.90	95% Student's-t UCL
Beryllium	12/34	1.74	2.43	95% Chebyshev UCL	3/16	1.87	2.53	Maximum Value	0/20	1.81	2.52	Maximum Value	5/54	1.71	2.35	95% Chebyshev UCL
Cadmium	34/34	9.55	20.01	95% Chebyshev UCL	16/16	1.63	2.35	95% Adjusted Gamma	20/20	1.61	2.52	95% Adjusted Gamma	54/54	1.07	1.88	95% Chebyshev UCL
Chromium	33/34	4.76	5.19	95% Student's-t UCL	16/16	6.59	7.70	95% Adjusted Gamma	20/20	4.87	5.47	95% Student's-t UCL	54/54	5.92	6.23	95% Student's-t UCL
Cobalt	34/34	8.64	12.56	95% H-UCL	16/16	9.04	10.51	95% Student's-t UCL	20/20	3.92	5.25	95% Adjusted Gamma	54/54	5.76	6.51	95% Student's-t UCL
Copper	34/34	182.10	264.60	95% H-UCL	16/16	69.23	97.56	95% Adjusted Gamma	20/20	150.40	256.40	95% H-UCL	54/54	29.23	34.06	95% H-UCL
Iron	34/34	23444.00	28281.00	95% Adjusted Gamma	16/16	31975.00	37305.00	95% Student's-t UCL	20/20	28461.00	36324.00	95% Adjusted Gamma	54/54	20537.00	23922.00	95% App. Gamma UCL
Lead	34/34	2198.00	2940.00	95% Adjusted Gamma	16/16	1832.00	3339.00	95% Adjusted Gamma	20/20	728.60	958.00	95% Student's-t UCL	54/54	174.30	225.00	95% App. Gamma UCL
Manganese	34/34	6666.00	21678.00	95% Chebyshev UCL	16/16	1890.00	2386.00	95% Student's-t UCL	20/20	835.80	1128.00	95% Student's-t UCL	54/54	1355.00	1964.00	95% H-UCL
Mercury	34/34	0.09	0.14	95% Hall's Bootstrap	16/16	0.03	0.12	Maximum Value	20/20	0.09	0.40	95% Hall's Bootstrap U	54/54	0.03	0.11	97.5% Chebyshev UCL
Molybdenum	19/19	12.28	29.16	95% Chebyshev UCL	8/11	2.42	3.52	95% Student's-t UCL	12/14	1.72	2.45	95% Adjusted Gamma	10/13	3.26	6.12	95% Adjusted Gamma
Nickel	33/34	6.48	14.93	95% Chebyshev UCL	16/16	5.29	5.83	95% Student's-t UCL	20/20	3.17	3.74	95% Student's-t UCL	42/54	3.37	4.82	95% Chebyshev UCL
Selenium	16/34	0.93	1.26	95% Chebyshev UCL	3/16	0.82	1.16	95% Chebyshev UCL	12/20	1.47	1.87	95% Adjusted Gamma	13/54	0.93	1.29	95% Chebyshev UCL
Silver	34/34	7.69	11.19	95% H-UCL	16/16	4.91	8.40	95% Adjusted Gamma	19/20	2.87	3.63	95% Student's-t UCL	31/54	1.10	2.23	95% Chebyshev UCL
Thallium	9/34	0.92	1.36	95% Chebyshev UCL	2/16	0.82	1.20	95% Chebyshev UCL	1/20	0.81	1.12	Maximum Value	3/54	0.75	0.98	95% Chebyshev UCL
Vanadium	34/34	12.79	13.97	95% Student's-t UCL	16/16	19.89	22.44	95% Student's-t UCL	20/20	17.14	19.12	95% Student's-t UCL	54/54	18.01	19.34	95% Student's-t UCL
Zinc	34/34	2010.00	5523.00	95% Chebyshev UCL	16/16	456.10	961.30	95% Chebyshev UCL	20/20	368.20	538.90	95% Adjusted Gamma	54/54	190.00	236.70	95% H-UCL

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); UCL = upper confidence limit

Table B-25 Lynx Evergreen Forest Vegetated Upland Area Soil Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	Vegetated Upland DRC (Lynx Evergreen Forest Only)			
	FOD	CTE	RME	RME Method
Aluminum	27/27	7721.00	8649.00	95% Student's-t UCL
Antimony	13/27	0.52	0.73	95% Chebyshev (Mean, Sd) UCL
Arsenic	27/27	6.56	8.29	95% Adjusted Gamma UCL
Barium	27/27	207.00	233.90	95% Student's-t UCL
Beryllium	2/27	1.67	2.54	Maximum Value
Cadmium	27/27	0.57	0.71	95% H-UCL
Chromium	27/27	5.94	6.38	95% Student's-t UCL
Cobalt	27/27	5.24	6.67	95% H-UCL
Copper	27/27	21.52	26.16	95% Adjusted Gamma UCL
Iron	27/27	21237.00	28975.00	95% Adjusted Gamma UCL
Lead	27/27	70.96	117.40	95% H-UCL
Manganese	27/27	1156.00	1618.00	95% Adjusted Gamma UCL
Mercury	27/27	0.04	0.27	99% Chebyshev (Mean, Sd) UCL
Molybdenum	1/2	0.80	1.10	Maximum Value
Nickel	18/27	2.68	3.42	95% Student's-t UCL
Selenium	10/27	0.96	1.39	95% Chebyshev (Mean, Sd) UCL
Silver	11/27	0.56	0.92	95% Chebyshev (Mean, Sd) UCL
Thallium	3/27	0.75	1.10	95% Chebyshev (Mean, Sd) UCL
Vanadium	27/27	16.64	18.47	95% Student's-t UCL
Zinc	27/27	120.00	154.20	95% H-UCL

COPEC = contaminant of concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); UCL = upper confidence limit

Table B-26 Preliminary Dose Response Category (DRC) and Vegetated Upland Area Invertebrate Tissue Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	Invert. Type	High-Level DRC				Mid-Level DRC				Low-Level DRC				Vegetated Upland DRC			
		FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	Flying	9/9	1.23	1.97	95% Student's-t UCL	4/4	0.94	1.78	95% Student's-t UCL	4/6	0.75	1.42	95% Student's-t UCL	7/8	0.47	0.69	95% Student's-t UCL
	Ground	8/8	1.10	1.64	95% Student's-t UCL	3/4	0.24	0.34	Max value	5/6	0.79	1.50	95% Student's-t UCL	7/9	1.26	3.56	95% Adj. Gamma UCL
	Soil	--	--	--	--	1/1	0.49	0.49	Max value	1/1	0.70	0.70	Max value	2/3	0.33	0.58	Max value
Arsenic	Flying	7/9	0.67	1.34	95% Adj. Gamma UCL	4/4	6.33	17.5	95% Student's-t UCL	5/6	1.49	5.92	Max value	6/8	0.33	0.50	95% Student's-t UCL
	Ground	7/8	1.50	2.53	95% Student's-t UCL	4/4	1.13	1.88	Max value	5/6	0.74	1.28	95% Student's-t UCL	5/9	0.78	1.15	95% Student's-t UCL
	Soil	--	--	--	--	1/1	6.99	6.99	Max value	1/1	8.63	8.63	Max value	3/3	7.53	9.32	Max value
Barium	Flying	9/9	21.8	54.04	95% Adj. Gamma UCL	4/4	38.25	89.56	95% Student's-t UCL	6/6	19.95	31.2	95% Student's-t UCL	8/8	9.531	12.1	95% Student's-t UCL
	Ground	8/8	19.46	61.81	95% Adj. Gamma UCL	4/4	18.07	31.76	95% Student's-t UCL	6/6	8.658	13.13	95% Student's-t UCL	9/9	25.13	31.57	95% Student's-t UCL
	Soil	--	--	--	--	1/1	36	36	Max value	1/1	64.2	64.2	Max value	3/3	56.53	77.5	Max value
Cadmium	Flying	9/9	4.644	8.245	95% Adj. Gamma UCL	4/4	3.038	4.708	95% Student's-t UCL	6/6	3.24	6.667	95% Adj. Gamma UCL	8/8	2.288	4.855	95% Adj. Gamma UCL
	Ground	8/8	5.426	8.307	95% Student's-t UCL	4/4	3.675	9.72	Max value	6/6	2.323	4.496	95% Student's-t UCL	9/9	2.149	3.163	95% Student's-t UCL
	Soil	--	--	--	--	1/1	74.5	74.5	Max value	1/1	12.6	12.6	Max value	3/3	6.76	9.14	Max value
Chromium	Flying	9/9	3.119	4.83	95% Adj. Gamma UCL	4/4	3.563	6.74	Max value	6/6	2.698	3.69	95% Student's-t UCL	8/8	3.21	4.465	95% Student's-t UCL
	Ground	8/8	2.675	3.407	95% Student's-t UCL	4/4	2.095	2.7	Max value	6/6	1.584	2.209	95% Student's-t UCL	9/9	3.448	6.15	95% Adj. Gamma UCL
	Soil	--	--	--	--	1/1	2.65	2.65	Max value	1/1	3.13	3.13	Max value	3/3	3.753	5.92	Max value
Copper	Flying	9/9	41.58	73.11	95% Adj. Gamma UCL	4/4	29.08	38.1	Max value	6/6	32.25	42.62	95% Student's-t UCL	8/8	31.18	37.46	Max value
	Ground	8/8	49.36	74.58	95% Student's-t UCL	4/4	43.99	87.41	95% Student's-t UCL	6/6	23.44	34.88	95% Student's-t UCL	9/9	36.43	78.95	95% H-UCL
	Soil	--	--	--	--	1/1	28.2	28.2	Max value	1/1	17.6	17.6	Max value	3/3	11.92	16.8	Max value
Lead	Flying	9/9	22.76	87.61	95% Adj. Gamma UCL	4/4	63.15	131.8	95% Student's-t UCL	6/6	12.26	25.65	95% Student's-t UCL	8/8	1.461	2.374	95% Student's-t UCL
	Ground	8/8	63.88	107.8	95% Student's-t UCL	4/4	35.25	82.04	95% Student's-t UCL	6/6	8.855	18.3	95% Student's-t UCL	9/9	4.752	8.002	95% Student's-t UCL
	Soil	--	--	--	--	1/1	186	186	Max value	1/1	115	115	Max value	3/3	6.957	11.3	Max value
Manganese	Flying	9/9	1407	8260	Max value	4/4	216.5	290	Max value	6/6	456.3	715.4	95% Student's-t UCL	8/8	105.4	139.1	95% Student's-t UCL
	Ground	8/8	802.7	3056	95% Adj. Gamma UCL	4/4	217.5	377.1	95% Student's-t UCL	6/6	125.6	198	95% Student's-t UCL	9/9	203.4	262.6	95% Student's-t UCL
	Soil	--	--	--	--	1/1	503	503	Max value	1/1	732	732	Max value	3/3	339.1	541	Max value
Mercury	Flying	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Ground	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Soil	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	Flying	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Ground	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Soil	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	Flying	6/9	2.886	11.75	95% Adj. Gamma UCL	4/4	0.944	1.577	95% Student's-t UCL	3/6	0.859	1.562	95% Student's-t UCL	6/8	0.557	0.831	95% Student's-t UCL
	Ground	6/8	0.818	2.847	95% H-UCL	3/4	1.235	2.911	95% Student's-t UCL	1/6	0.191	0.616	Max value	6/9	0.656	0.964	95% Student's-t UCL
	Soil	--	--	--	--	1/1	0.835	0.835	Max value	1/1	1.26	1.26	Max value	3/3	1.484	2.31	Max value
Selenium	Flying	3/9	0.416	0.789	95% Adj. Gamma UCL	3/4	0.604	0.995	95% Student's-t UCL	4/6	0.929	1.702	95% Student's-t UCL	4/8	0.526	1.147	95% Adj. Gamma UCL
	Ground	5/8	0.509	0.671	95% Student's-t UCL	4/4	0.631	0.871	Max value	5/6	0.894	2.69	Max value	4/9	0.736	1.632	95% Chebyshev UCL
	Soil	--	--	--	--	1/1	5.49	5.49	Max value	1/1	12.7	12.7	Max value	3/3	20.19	45.9	Max value
Silver	Flying	6/9	0.368	0.508	95% Student's-t UCL	4/4	0.546	0.891	Max value	4/6	0.552	1.1	95% Student's-t UCL	3/8	0.221	0.334	95% Student's-t UCL
	Ground	6/8	0.827	1.295	95% Student's-t UCL	3/4	0.478	0.761	Max value	3/6	0.448	1.85	Max value	3/9	1.07	4.505	95% Adj. Gamma UCL
	Soil	--	--	--	--	1/1	1.22	1.22	Max value	1/1	0.54	0.54	Max value	3/3	0.449	0.648	Max value
Thallium	Flying	1/9	0.727	2.982	95% Chebyshev UCL	1/4	0.359	0.545	Max value	0/6	0.225	0.25	Max value	1/8	0.297	0.609	95% Adj. Gamma UCL
	Ground	1/8	0.329	0.528	95% Student's-t UCL	0/4	0.138	0.23	95% Student's-t UCL	0/6	0.219	0.25	Max value	1/9	0.829	2.712	95% Adj. Gamma UCL
	Soil	--	--	--	--	0/1	0.0495	0.0495	Max value	0/1	0.25	0.25	Max value	0/3	0.2	0.25	Max value
Vanadium	Flying	5/9	1.402	2.983	95% Adj. Gamma UCL	3/4	1.948	4.62	Max value	5/6	1.625	2.515	95% Student's-t UCL	6/8	0.979	1.245	95% Student's-t UCL
	Ground	6/8	1.745	3.367	95% Adj. Gamma UCL	3/4	1.942	3.765	95% Student's-t UCL	5/6	1.476	2.47	95% Student's-t UCL	5/9	1.822	2.487	95% Student's-t UCL
	Soil	--	--	--	--	1/1	4.18	4.18	Max value	1/1	15.3	15.3	Max value	3/3	5.583	9.45	Max value
Zinc	Flying	9/9	492	862.3	95% Adj. Gamma UCL	4/4	237.5	266	Max value	6/6	365.3	565.6	95% Student's-t UCL	8/8	224.9	269.7	95% Student's-t UCL
	Ground	8/8	442.1	912	95% Adj. Gamma UCL	4/4	206	263	Max value	6/6	192.8	291.8	95% Student's-t UCL	9/9	210.2	254.6	95% Student's-t UCL
	Soil	--	--	--	--	1/1	687	687	Max value	1/1	356	356	Max value	3/3	278	463	Max value

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data; UCL = upper confidence limit

Table B-27 Final Dose Response Category (DRC) and Vegetated Upland Area Invertebrate Tissue Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	Invert. Type	High-Level DRC		Mid-Level DRC		Low-Level DRC		Vegetated Upland DRC	
		CTE	RME	CTE	RME	CTE	RME	CTE	RME
Antimony	Flying	1.23	1.97	0.94	1.78	0.75	1.42	0.47	0.69
	Ground	1.26a	3.56a	1.26b	3.56b	1.26c	3.56c	1.26	3.56
	Soil	0.70d	0.70d	0.70e	0.70e	0.70	0.70	0.33	0.58
Arsenic	Flying	6.33f	17.5f	6.33	17.5	1.49	5.92	0.33	0.50
	Ground	1.50	2.53	1.13	1.88	0.78c	1.28	0.78	1.15
	Soil	8.63d	9.32a	8.63e	9.32b	8.63	9.32c	7.53	9.32
Barium	Flying	38.2f	89.6f	38.3	89.6	20.0	31.2	9.53	12.1
	Ground	25.1a	61.8	25.1b	31.8	25.1c	31.6c	25.1	31.6
	Soil	64.2d	77.5a	64.2e	77.5b	64.2	77.5c	56.5	77.5
Cadmium	Flying	4.64	8.25	3.24e	6.67e	3.24	6.67	2.29	4.86
	Ground	5.43	9.72f	3.68	9.72	2.32	4.50	2.15	3.16
	Soil	74.5f	74.5f	74.5	74.5	12.6	12.6	6.76	9.14
Chromium	Flying	3.56f	6.74f	3.56	6.74	3.21c	4.47c	3.21	4.47
	Ground	3.45a	6.15a	3.45b	6.15b	3.45c	6.15c	3.45	6.15
	Soil	3.75a	5.92a	3.75b	5.92b	3.75c	5.92c	3.75	5.92
Copper	Flying	41.6	73.1	32.3e	42.6e	32.3	42.6	31.2	37.5
	Ground	49.4	87.4f	44.0	87.4	36.4c	79.0c	36.4	79.0
	Soil	28.2f	28.2f	28.2	28.2	17.6	17.6	11.92	16.8
Lead	Flying	63.2f	132f	63.2	132	12.3	25.7	1.46	2.37
	Ground	63.9	108	35.3	82.0	8.86	18.3	4.75	8.00
	Soil	186f	186f	186	186	115	115	6.96	11.3
Manganese	Flying	1407	8260	456e	715e	456	715	105	139
	Ground	803	3056	218	377	203c	263c	203	263
	Soil	732d	732d	732e	732e	732	732	339	541
Nickel	Flying	2.89	11.75	0.94	1.58	0.86	1.56	0.56	0.83
	Ground	1.24f	2.91f	1.24	2.91	0.66c	0.96c	0.66	0.96
	Soil	1.48a	2.31a	1.48b	2.31b	1.48c	2.31c	1.48	2.31
Selenium	Flying	0.93d	1.70d	0.93e	1.70e	0.93	1.70	0.53	1.15
	Ground	0.89f	2.69f	0.89e	2.69e	0.89	2.69	0.74	1.63
	Soil	20.2a	45.9a	20.2b	45.9b	20.2c	45.9c	20.2	45.9
Silver	Flying	0.55d	1.10d	0.55e	1.10e	0.55	1.10	0.22	0.33
	Ground	1.07a	4.51a	1.07b	4.51b	1.07c	4.51c	1.07	4.51
	Soil	1.22f	1.22f	1.22	1.22	0.54	0.65c	0.45	0.65
Thallium	Flying	0.73	2.98	0.36	0.61b	0.30c	0.61c	0.30	0.61
	Ground	0.83a	2.71a	0.83b	2.71b	0.83c	2.71c	0.83	2.71
	Soil	0.25d	0.25a	0.25e	0.25b	0.25	0.25c	0.20	0.25
Vanadium	Flying	1.95f	4.62f	1.95	4.62	1.63	2.52	0.98	1.25
	Ground	1.94f	3.77f	1.94	3.77	1.82c	2.47	1.82	2.49
	Soil	15.3d	15.3d	15.3e	15.3e	15.3	15.3	5.58	9.45
Zinc	Flying	492	862	365e	566e	365	566	225	270
	Ground	442	912	210b	292e	210c	292	210	255
	Soil	687f	687f	687	687	356	463c	278	463

COPEC = contaminant of potential ecological concern; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value)

Footnotes:

a = High-level DRC substituted with vegetated upland DRC concentration
b = Mid-level DRC substituted with vegetated upland DRC concentration
c = Low-level DRC substituted with vegetated upland DRC concentration
d = High-level DRC substituted with low-level DRC concentration
e = Mid-level DRC substituted with low-level DRC concentration
f = High-level DRC substituted with mid-level DRC concentration

Table B-28 Approximate Floodplain Exposure Unit Reach Lengths for Use in Estimating Length-Weighted Average Floodplain Invertebrate Exposure Point Concentrations

Watershed	Exposure Unit	DRC	Reach Description	Reach Length (approx. rivermiles)
Mineral Creek	EU-01	Mid-Level	Lower Mainstem Mineral Creek	3.13
	EU-02	Low-Level	Lower Mainstem Mineral Creek	2.20
	EU-03	Mid-Level	Middle Mainstem Mineral Creek	1.99
	EU-3.5	Mid-Level	Browns Gulch	1.62
	EU-04	High-Level	Upper Mainstem Mineral Creek	3.52
	EU-05	Mid-Level	South Fork Mineral Creek	4.14
	EU-06	Low-Level	Middle Fork Mineral Creek	3.19
	Mill Creek Ref.	Reference	Middle Mainstem Mineral Creek trib.	3.58
	Bear Creek Ref.	Reference	Lower Mainstem Mineral Creek trib.	2.98
			Total Mineral Creek Watershed Rivermiles =	26.35
Cement Creek	EU-20	Mid-Level	Lower Cement Creek	5.85
	EU-21	Mid-Level	Prospect Gulch	1.62
	EU-22	High-Level	Middle Fork Cement Creek	2.10
	EU-23	Low-Level	South Fork Cement Creek	1.79
	EU-24	High-Level	Upper Cement Creek	2.06
			Total Cement Creek Watershed Rivermiles =	13.42
Animas River	EU-07	High-Level	Arrastra Cr. to Cunningham Cr.	1.90
	EU-08	Mid-Level	Cunningham Creek	7.13
	EU-09	High-Level	Cunningham Cr. to Minnie Gulch	2.52
	EU-10	High-Level	Minnie Gulch to S. Fork Animas River	1.27
	EU-11	Low-Level	S. Fork Animas River to Eureka Gulch	2.58
	EU-12	High-Level	Eureka Gulch	2.22
	EU-13	High-Level	S. Fork Animas River abv. Eureka Gulch	1.45
	EU-14	High-Level	Minnie Gulch to S. Fork Animas River	4.24
	EU-15	High-Level	Lower W. Fork Animas to Placer Gulch	0.94
	EU-16	High-Level	Placer Gulch	2.16
	EU-17	Low-Level	Upper W. Fork Animas River	2.50
	EU-18	Mid-Level	N. Fork Animas River to Burrows Cr.	1.07
	EU-19	High-Level	Burrows Creek	1.33
	Maggie Gulch Ref.	Reference	Mainstem Animas	5.04
	Picayne Gulch Ref.	Reference	Mainstem Animas	1.38
	Upper NF Animas Ref.	Reference	Mainstem Animas	0.29
			Total Animas River Wastershed Rivermiles =	38.02
			Total High-Level DRC Rivermiles =	**25.71**
			Total Mid-Level DRC Rivermiles =	**26.55**
			Total Low-Level DRC Rivermiles =	**12.26**
			Total Reference DRC Rivermiles =	**13.27**
			Total Rivermiles (All DRCs) =	**77.79**

DRC = dose-response category

Table B-29 Subwatershed and Entire Assessment Area Length-Weighted Average Invertebrate Tissue Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	Mineral Creek Watershed						Cement Creek Watershed					
	CTE			RME			CTE			RME		
	Flying	Ground	Soil	Flying	Ground	Soil	Flying	Ground	Soil	Flying	Ground	Soil
Antimony	0.82	1.26	0.61	1.46	3.56	0.67	1.01	1.26	0.70	1.79	3.56	0.70
Arsenic	3.85	1.02	8.36	10.9	1.66	9.32	5.68	1.20	8.63	16.0	2.00	9.32
Barium	27.4	25.1	62.3	58.3	35.7	77.5	35.8	25.1	64.2	81.8	41.1	77.5
Cadmium	3.19	3.25	45.0	6.43	7.02	45.6	3.68	4.04	66.2	7.16	9.02	66.2
Chromium	3.40	3.45	3.75	5.71	6.15	5.92	3.51	3.45	3.75	6.44	6.15	5.92
Copper	33.3	41.3	22.0	45.4	83.6	23.2	35.2	44.6	26.8	52.1	86.3	26.8
Lead	37.4	26.1	127	77.9	54.0	128	56.4	40.6	177	118	81.5	177
Manganese	496	289	634	1580	683	684	751	397	732	3054	1192	732
Mercury	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	1.09	0.97	1.48	2.75	2.03	2.31	1.53	1.16	1.48	4.73	2.65	2.31
Selenium	0.83	0.85	20.2	1.56	2.43	45.90	0.93	0.89	20.2	1.70	2.69	45.9
Silver	0.47	1.07	0.89	0.91	4.51	0.96	0.55	1.07	1.1	1.10	4.51	1.14
Thallium	0.38	0.83	0.24	0.93	2.71	0.25	0.47	0.83	0.25	1.35	2.71	0.25
Vanadium	1.64	1.89	12.9	3.35	3.18	13.8	1.91	1.93	15.3	4.34	3.59	15.3
Zinc	347	241	517	532	365	585	404	282	643	658	484	657

COPEC	Animas River Watershed						EntireAssessment Area					
	CTE			RME			CTE			RME		
	Flying	Ground	Soil	Flying	Ground	Soil	Flying	Ground	Soil	Flying	Ground	Soil
Antimony	0.97	1.26	0.63	1.63	3.56	0.68	0.93	1.26	0.64	1.60	3.56	0.68
Arsenic	4.62	1.20	8.44	13.0	1.98	9.32	4.54	1.14	8.44	12.8	1.88	9.32
Barium	30.7	25.1	62.8	68.1	46.0	77.5	30.5	25.11	62.9	67.2	41.6	77.5
Cadmium	3.74	4.06	54.3	7.10	7.86	54.7	3.54	3.78	53.2	6.88	7.78	53.6
Chromium	3.45	3.45	3.75	6.04	6.15	5.92	3.45	3.45	3.75	5.99	6.15	5.92
Copper	36.5	44.2	23.91	56.2	84.8	24.8	35.2	43.3	23.8	51.8	84.6	24.6
Lead	45.5	39.9	145	94.9	72.7	146	44.6	35.3	144	93.1	67.9	145
Manganese	845	491	663	4191	1612	698	711	406	665	3110	1225	699
Mercury	--	--	--	--	--	--	--	--	--	--	--	--
Molybdenum	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	1.79	1.06	1.48	6.27	2.31	2.31	1.51	1.05	1.48	4.81	2.27	2.31
Selenium	0.86	0.86	20.2	1.60	2.50	45.9	0.86	0.86	20.2	1.61	2.51	45.9
Silver	0.49	1.07	0.99	0.96	4.51	1.04	0.49	1.07	0.98	0.97	4.51	1.03
Thallium	0.51	0.83	0.24	1.73	2.71	0.25	0.46	0.83	0.24	1.39	2.71	0.25
Vanadium	1.73	1.90	13.6	3.74	3.37	14.3	1.73	1.90	13.6	3.71	3.34	14.3
Zinc	401	320	571	654	579	618	383	287	565	613	491	613

COPEC = contaminant of potential ecological concern; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data

Table B-30 Preliminary Dose Response Category (DRC) and Vegetated Upland Area Plant Tissue Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	Plant Type	High-Level DRC				Mid-Level DRC				Low-Level DRC				Vegetated Upland DRC			
		FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Antimony	Grass/Sedge	2/15	0.17	0.24	95% Student's-t UCL	0/8	0.13	0.13	95% Student's-t UCL	0/13	0.13	0.13	95% Student's-t UCL	1/12	0.14	0.17	95% Student's-t UCL
	Herb	2/12	0.17	0.22	95% Student's-t UCL	0/5	0.14	0.17	95% Student's-t UCL	0/7	0.13	0.14	95% Student's-t UCL	1/10	0.18	0.42	95% Chebyshev UCL
	Shrub	1/11	0.24	0.73	95% Chebyshev UCL	0/4	0.13	0.13	Maximum Value	0/10	0.18	0.39	95% Chebyshev UCL	1/8	0.19	0.47	95% Chebyshev UCL
Arsenic	Grass/Sedge	2/15	0.17	0.24	95% Student's-t UCL	2/8	0.30	0.96	95% Chebyshev UCL	0/13	0.13	0.13	95% Student's-t UCL	2/12	0.18	0.35	95% Chebyshev UCL
	Herb	2/12	0.24	0.56	95% Chebyshev UCL	1/5	0.19	0.41	Maximum Value	2/7	0.31	0.88	95% Chebyshev UCL	0/10	0.13	0.13	95% Student's-t UCL
	Shrub	1/11	0.14	0.17	95% Student's-t UCL	0/4	0.13	0.13	Maximum Value	0/10	0.18	0.39	95% Chebyshev UCL	0/8	0.13	0.13	95% Student's-t UCL
Barium	Grass/Sedge	15/15	10.83	16.80	95% Adjusted Gamma	8/8	22.84	45.29	95% Chebyshev UCL	13/13	10.73	14.96	95% Student's-t UCL	12/12	25.28	30.71	95% Student's-t UCL
	Herb	12/12	32.12	51.81	95% Adjusted Gamma	5/5	46.62	79.92	95% Student's-t UCL	7/7	16.34	26.49	95% Student's-t UCL	10/10	40.71	48.77	95% Student's-t UCL
	Shrub	11/11	6.11	12.54	95% Adjusted Gamma	4/4	29.16	73.74	95% Student's-t UCL	10/10	4.56	6.87	95% Student's-t UCL	8/8	24.18	32.15	95% Student's-t UCL
Cadmium	Grass/Sedge	14/15	0.59	1.07	95% Adjusted Gamma	6/8	0.39	0.59	95% Student's-t UCL	10/13	0.31	0.66	95% Adjusted Gamma	6/12	0.13	0.34	95% Chebyshev UCL
	Herb	12/12	2.86	4.14	95% Student's-t UCL	5/5	0.98	1.87	95% Student's-t UCL	7/7	0.66	1.04	95% Student's-t UCL	10/10	0.34	0.67	95% Adjusted Gamma
	Shrub	11/11	5.31	6.79	95% Student's-t UCL	4/4	6.37	10.65	95% Student's-t UCL	9/10	0.87	2.01	95% Adjusted Gamma	8/8	1.35	2.14	95% Student's-t UCL
Chromium	Grass/Sedge	15/15	1.92	2.12	95% Student's-t UCL	8/8	2.33	2.46	95% Student's-t UCL	13/13	1.98	2.53	Maximum Value	12/12	1.98	2.31	95% Student's-t UCL
	Herb	12/12	2.39	2.65	95% Student's-t UCL	5/5	2.51	2.98	95% Student's-t UCL	7/7	2.19	2.62	95% Student's-t UCL	10/10	2.47	2.74	95% Student's-t UCL
	Shrub	11/11	2.36	2.70	95% Student's-t UCL	4/4	2.58	3.24	Maximum Value	10/10	2.06	2.52	95% Student's-t UCL	8/8	2.34	2.70	95% Student's-t UCL
Copper	Grass/Sedge	15/15	13.07	19.09	95% Adjusted Gamma	8/8	7.46	8.69	95% Student's-t UCL	13/13	6.09	7.68	95% Student's-t UCL	12/12	5.33	6.25	95% Student's-t UCL
	Herb	12/12	11.06	13.56	95% Student's-t UCL	5/5	11.34	18.42	95% Student's-t UCL	7/7	7.78	9.52	95% Student's-t UCL	10/10	7.26	8.36	95% Student's-t UCL
	Shrub	11/11	8.98	13.89	95% Adjusted Gamma	4/4	6.85	8.86	Maximum Value	10/10	3.81	4.78	95% Student's-t UCL	8/8	5.23	6.19	95% Student's-t UCL
Lead	Grass/Sedge	15/15	29.97	106.30	95% Chebyshev UCL	8/8	10.49	46.24	95% Adjusted Gamma	13/13	0.83	2.34	95% Chebyshev UCL	11/12	1.29	3.03	95% Adjusted Gamma
	Herb	12/12	20.15	57.52	95% Adjusted Gamma	5/5	6.80	27.70	Maximum Value	7/7	2.39	8.38	Maximum Value	9/10	0.67	0.94	95% Student's-t UCL
	Shrub	11/11	3.39	9.12	95% Adjusted Gamma	4/4	2.39	4.50	Maximum Value	9/10	0.38	1.01	95% Adjusted Gamma	8/8	1.47	4.14	Maximum Value
Manganese	Grass/Sedge	15/15	394.40	554.10	95% Student's-t UCL	8/8	227.10	349.50	95% Student's-t UCL	13/13	301.60	534.90	95% Adjusted Gamma	12/12	204.30	281.50	95% Student's-t UCL
	Herb	12/12	228.60	296.90	95% Student's-t UCL	5/5	403.70	1690.00	Maximum Value	7/7	180.20	304.90	95% Student's-t UCL	10/10	117.40	156.60	95% Student's-t UCL
	Shrub	11/11	493.80	711.30	95% Student's-t UCL	4/4	181.60	300.90	95% Student's-t UCL	10/10	314.20	487.80	95% Student's-t UCL	8/8	271.80	905.80	95% Chebyshev UCL
Mercury	Grass/Sedge	0/15	0.13	0.13	95% Student's-t UCL	0/8	0.13	0.13	95% Student's-t UCL	0/13	0.13	0.13	95% Student's-t UCL	0/12	0.12	0.13	95% Student's-t UCL
	Herb	0/12	0.13	0.13	95% Student's-t UCL	0/5	0.13	0.13	95% Student's-t UCL	0/7	0.13	0.13	95% Student's-t UCL	0/10	0.13	0.13	95% Student's-t UCL
	Shrub	0/11	0.13	0.13	95% Student's-t UCL	0/4	0.13	0.13	Maximum Value	0/10	0.13	0.13	95% Student's-t UCL	0/8	0.13	0.13	95% Student's-t UCL
Molybdenum	Grass/Sedge	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Herb	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	Shrub	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	Grass/Sedge	12/15	0.93	1.21	95% Student's-t UCL	7/8	1.28	2.01	95% Student's-t UCL	8/13	0.78	1.55	95% Adjusted Gamma	10/12	1.06	1.57	95% Student's-t UCL
	Herb	9/12	1.16	1.81	95% Student's-t UCL	4/5	1.33	2.42	95% Student's-t UCL	5/7	0.80	1.36	95% Student's-t UCL	5/10	0.72	1.25	95% Student's-t UCL
	Shrub	8/11	1.18	1.69	95% Student's-t UCL	2/4	1.16	2.79	95% Student's-t UCL	8/10	0.97	1.50	95% Student's-t UCL	4/8	0.53	0.97	95% Student's-t UCL
Selenium	Grass/Sedge	1/15	0.34	0.50	95% Student's-t UCL	0/8	0.25	0.25	95% Student's-t UCL	1/13	0.31	0.43	95% Student's-t UCL	1/12	0.30	0.38	95% Student's-t UCL
	Herb	2/12	0.48	1.14	95% Chebyshev UCL	0/5	0.28	0.33	95% Student's-t UCL	0/7	0.26	0.29	95% Student's-t UCL	0/10	0.25	0.25	95% Student's-t UCL
	Shrub	0/11	0.25	0.25	95% Student's-t UCL	0/4	0.25	0.25	Maximum Value	0/10	0.34	0.78	95% Chebyshev UCL	0/8	0.25	0.25	95% Student's-t UCL
Silver	Grass/Sedge	1/15	0.14	0.16	95% Student's-t UCL	0/8	0.13	0.13	95% Student's-t UCL	3/13	0.21	0.41	95% Chebyshev UCL	1/12	0.15	0.18	95% Student's-t UCL
	Herb	0/12	0.13	0.13	95% Student's-t UCL	0/5	0.14	0.17	95% Student's-t UCL	0/7	0.13	0.14	95% Student's-t UCL	0/10	0.13	0.13	95% Student's-t UCL
	Shrub	0/11	0.13	0.13	95% Student's-t UCL	0/4	0.13	0.13	Maximum Value	0/10	0.18	0.39	95% Chebyshev UCL	0/8	0.13	0.13	95% Student's-t UCL
Thallium	Grass/Sedge	1/15	0.36	0.85	95% Chebyshev UCL	0/8	0.25	0.25	95% Student's-t UCL	0/13	0.24	0.25	Maximum Value	1/12	0.28	0.33	95% Student's-t UCL
	Herb	3/12	0.47	1.01	95% Chebyshev UCL	0/5	0.28	0.33	95% Student's-t UCL	0/7	0.26	0.29	95% Student's-t UCL	0/10	0.25	0.25	95% Student's-t UCL
	Shrub	0/11	0.25	0.25	95% Student's-t UCL	0/4	0.25	0.25	Maximum Value	0/10	0.34	0.78	95% Chebyshev UCL	0/8	0.25	0.25	95% Student's-t UCL
Vanadium	Grass/Sedge	0/15	0.50	0.50	95% Student's-t UCL	0/8	0.50	0.50	95% Student's-t UCL	0/13	0.47	0.51	Maximum Value	0/12	0.50	0.50	95% Student's-t UCL
	Herb	1/12	0.57	0.69	95% Student's-t UCL	0/5	0.57	0.66	95% Student's-t UCL	1/7	0.71	1.05	95% Student's-t UCL	1/10	0.55	0.65	95% Student's-t UCL
	Shrub	1/11	0.55	0.64	95% Student's-t UCL	0/4	0.50	0.51	95% Student's-t UCL	0/10	0.66	1.57	95% Chebyshev UCL	0/8	0.50	0.50	95% Student's-t UCL
Zinc	Grass/Sedge	15/15	173.00	219.80	95% Student's-t UCL	8/8	97.14	139.50	95% Student's-t UCL	13/13	79.53	134.00	95% Adjusted Gamma	12/12	58.43	74.77	95% Student's-t UCL
	Herb	12/12	422.90	584.60	95% Student's-t UCL	5/5	99.42	168.30	95% Student's-t UCL	7/7	65.19	85.50	95% Student's-t UCL	10/10	51.94	78.85	95% Adjusted Gamma
	Shrub	11/11	494.30	605.40	95% Student's-t UCL	4/4	413.60	584.00	Maximum Value	10/10	91.10	119.40	95% Student's-t UCL	8/8	105.50	137.80	95% Student's-t UCL

COPEC = contaminant of potential ecological concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = not data; UCL = upper confidence level

Table B-31 Final Dose Response Category (DRC) and Vegetated Upland Area Plant Tissue Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	Plant Type	High-Level DRC		Mid-Level DRC		Low-Level DRC		Vegetated Upland DRC	
		CTE	RME	CTE	RME	CTE	RME	CTE	RME
Antimony	Grass/Sedge	0.17	0.24	0.14b	0.17b	0.14c	0.17c	0.14	0.17
	Herb	0.18a	0.42a	0.18b	0.42b	0.18c	0.42c	0.18	0.42
	Shrub	0.24	0.73	0.19	0.47	0.19c	0.47c	0.19	0.47
Arsenic	Grass/Sedge	0.30f	0.96f	0.30	0.96	0.18c	0.35c	0.18	0.35
	Herb	0.31d	0.88d	0.31e	0.88e	0.31	0.88	0.13	0.13
	Shrub	0.18d	0.39d	0.18e	0.39e	0.18	0.39	0.13	0.13
Barium	Grass/Sedge	25.3d	45.3f	25.3e	45.3	25.3c	30.7c	25.3	30.7
	Herb	46.6f	79.9f	46.6	79.9	40.7c	48.8c	40.7	48.8
	Shrub	29.2f	73.7f	29.2	73.7	24.2c	32.2c	24.2	32.2
Cadmium	Grass/Sedge	0.59	1.07	0.39	0.66e	0.31	0.66	0.13	0.34
	Herb	2.86	4.14	0.98	1.87	0.66	1.04	0.34	0.67
	Shrub	6.37f	10.7f	6.37	10.7	1.35c	2.14c	1.35	2.14
Chromium	Grass/Sedge	2.33f	2.53d	2.33	2.53e	1.98c	2.53	1.98	2.31
	Herb	2.51f	2.98f	2.51	2.98	2.47c	2.74c	2.47	2.74
	Shrub	2.58f	3.24f	2.58	3.24	2.34c	2.70c	2.34	2.70
Copper	Grass/Sedge	13.1	19.1	7.46	8.69	6.09	7.68	5.33	6.25
	Herb	11.3f	18.4f	11.3	18.4	7.78	9.52	7.26	8.36
	Shrub	8.98	13.9	6.85	8.86	5.23c	6.19c	5.23	6.19
Lead	Grass/Sedge	29.97	106.30	10.49	46.24	1.29c	3.03c	1.29	3.03
	Herb	20.15	57.52	6.80	27.70	2.39	8.38	0.67	0.94
	Shrub	3.39	9.12	2.39	4.50	1.47c	4.14c	1.47	4.14
Manganese	Grass/Sedge	394	554	302e	534e	302	535	204	282
	Herb	404f	1690f	404	1690	180	305	117	157
	Shrub	494	906a	314b	906b	314	906c	272	906
Mercury	Grass/Sedge	0.13a	0.13a	0.13b	0.13b	0.13	0.13	0.12	0.13
	Herb	0.13a	0.13a	0.13b	0.13b	0.13c	0.13c	0.13	0.13
	Shrub	0.13a	0.13a	0.13b	0.13b	0.13c	0.13	0.13	0.13
Molybdenum	Grass/Sedge	--	--	--	--	--	--	--	--
	Herb	--	--	--	--	--	--	--	--
	Shrub	--	--	--	--	--	--	--	--
Nickel	Grass/Sedge	1.28f	2.01f	1.28	2.01	1.06c	1.57c	1.06	1.57
	Herb	1.36f	2.42f	1.36	2.42	0.80	1.36	0.72	1.25
	Shrub	1.18	2.79f	1.16	2.79	0.97	1.50	0.53	0.97
Selenium	Grass/Sedge	0.34	0.50	0.31e	0.43e	0.31	0.43	0.30	0.38
	Herb	0.48	1.14	0.28	0.33	0.26	0.29	0.25	0.25
	Shrub	0.34d	0.78d	0.34e	0.78e	0.34	0.78	0.25	0.25
Silver	Grass/Sedge	0.21d	0.41d	0.21e	0.41e	0.21	0.41	0.15	0.18
	Herb	0.14f	0.17f	0.14	0.17	0.13c	0.14	0.13	0.13
	Shrub	0.18d	0.39d	0.18e	0.39e	0.18	0.39	0.13	0.13
Thallium	Grass/Sedge	0.36	0.85	0.28b	0.33b	0.28c	0.33c	0.28	0.33
	Herb	0.47	1.01	0.28	0.33	0.26	0.29	0.25	0.25
	Shrub	0.34d	0.78d	0.34e	0.78e	0.34	0.78	0.25	0.25
Vanadium	Grass/Sedge	0.50d	0.51d	0.50e	0.51e	0.50c	0.51	0.50	0.50
	Herb	0.71d	1.05d	0.71e	1.05e	0.71	1.05	0.55	0.65
	Shrub	0.66d	1.57d	0.66e	1.57e	0.66	1.57	0.50	0.50
Zinc	Grass/Sedge	173	220	97.1	140	79.5	134	58.4	74.8
	Herb	423	585	99.4	168	65.2	85.5	51.9	78.9
	Shrub	494	605	414	584	106c	138	106	138

COPEC = contaminant of potential ecological concern; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data

Footnotes:

a = High-level DRC substituted with vegetated upland DRC concentration
b = Mid-level DRC substituted with vegetated upland DRC concentration
c = Low-level DRC substituted with vegetated upland DRC concentration
d = High-level DRC substituted with low-level DRC concentration
e = Mid-level DRC substituted with low-level DRC concentration
f = High-level DRC substituted with mid-level DRC concentration

Table B-32 Approximate Floodplain Exposure Unit Reach Lengths for Use in Estimating Length-Weighted Average Plant Tissue Exposure Point Concentrations

Watershed	Exposure Unit	DRC	Reach Description	Reach Length (approx. rivermiles)
Mineral Creek	EU-01	Mid-Level	Lower Mainstem Mineral Creek	3.13
	EU-02	Low-Level	Lower Mainstem Mineral Creek	2.20
	EU-03	Mid-Level	Middle Mainstem Mineral Creek	1.99
	EU-3.5	Mid-Level	Browns Gulch	1.62
	EU-04	High-Level	Upper Mainstem Mineral Creek	3.52
	EU-05	Mid-Level	South Fork Mineral Creek	4.14
	EU-06	Low-Level	Middle Fork Mineral Creek	3.19
	Mill Creek Ref.	Reference	Middle Mainstem Mineral Creek trib.	3.58
	Bear Creek Ref.	Reference	Lower Mainstem Mineral Creek trib.	2.98
			Total Mineral Creek Watershed Rivermiles =	26.35
Cement Creek	EU-20	Mid-Level	Lower Cement Creek	5.85
	EU-21	Mid-Level	Prospect Gulch	1.62
	EU-22	High-Level	Middle Fork Cement Creek	2.10
	EU-23	Low-Level	South Fork Cement Creek	1.79
	EU-24	High-Level	Upper Cement Creek	2.06
			Total Cement Creek Watershed Rivermiles =	13.42
Animas River	EU-07	High-Level	Arrastra Cr. to Cunningham Cr.	1.90
	EU-08	Mid-Level	Cunningham Creek	7.13
	EU-09	High-Level	Cunningham Cr. to Minnie Gulch	2.52
	EU-10	High-Level	Minnie Gulch to S. Fork Animas River	1.27
	EU-11	Low-Level	S. Fork Animas River to Eureka Gulch	2.58
	EU-12	High-Level	Eureka Gulch	2.22
	EU-13	High-Level	S. Fork Animas River abv. Eureka Gulch	1.45
	EU-14	High-Level	Minnie Gulch to S. Fork Animas River	4.24
	EU-15	High-Level	Lower W. Fork Animas to Placer Gulch	0.94
	EU-16	High-Level	Placer Gulch	2.16
	EU-17	Low-Level	Upper W. Fork Animas River	2.50
	EU-18	Mid-Level	N. Fork Animas River to Burrows Cr.	1.07
	EU-19	High-Level	Burrows Creek	1.33
	Maggie Gulch Ref.	Reference	Mainstem Animas	5.04
	Picayne Gulch Ref.	Reference	Mainstem Animas	1.38
	Upper NF Animas Ref.	Reference	Mainstem Animas	0.29
			Total Animas River Wastershed Rivermiles =	38.02
			Total High-Level DRC Rivermiles =	**25.71**
			Total Mid-Level DRC Rivermiles =	**26.55**
			Total Low-Level DRC Rivermiles =	**12.26**
			Total Reference DRC Rivermiles =	**13.27**
			Total Rivermiles (All DRCs) =	**77.79**

DRC = dose-response category

Table B-33 Subwatershed and Entire Assessment Area Length-Weighted Average Plant Tissue Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	Mineral Creek Watershed						Cement Creek Watershed					
	CTE			RME			CTE			RME		
	Grass/Sedge	Herb	Shrub	Grass/Sedge	Herb	Shrub	Grass/Sedge	Herb	Shrub	Grass/Sedge	Herb	Shrub
Antimony	0.14	0.18	0.20	0.18	0.42	0.50	0.15	0.18	0.20	0.19	0.42	0.55
Arsenic	0.25	0.26	0.16	0.68	0.69	0.33	0.29	0.31	0.18	0.88	0.88	0.39
Barium	25.3	43.9	26.9	38.7	65.8	54.9	25.3	45.8	28.5	43.3	75.8	68.2
Cadmium	0.34	1.00	4.09	0.64	1.70	6.79	0.44	1.52	5.70	0.79	2.46	9.52
Chromium	2.17	2.49	2.47	2.47	2.87	3.00	2.28	2.50	2.55	2.53	2.95	3.17
Copper	7.40	9.60	6.40	9.27	14.1	8.32	9.02	10.9	7.30	11.8	17.2	10.1
Lead	8.92	6.15	2.11	34.7	21.1	4.95	15.3	10.3	2.58	59.1	34.4	5.88
Manganese	290	287	328	474	1025	906	330	374	370	541	1505	906
Mercury	0.12	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13	0.13
Molybdenum	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	1.18	1.09	0.96	1.81	1.91	2.07	1.25	1.29	1.14	1.95	2.28	2.62
Selenium	0.31	0.30	0.32	0.43	0.41	0.65	0.32	0.34	0.34	0.45	0.58	0.78
Silver	0.19	0.14	0.16	0.35	0.15	0.33	0.21	0.14	0.18	0.41	0.16	0.39
Thallium	0.29	0.30	0.32	0.40	0.39	0.65	0.30	0.34	0.34	0.49	0.54	0.78
Vanadium	0.50	0.67	0.62	0.50	0.95	1.30	0.50	0.71	0.66	0.51	1.05	1.57
Zinc	94.0	124	285	133	185	385	118	195	398	164	286	531

COPEC	Animas River Watershed						Entire Study Area					
	CTE			RME			CTE			RME		
	Grass/Sedge	Herb	Shrub	Grass/Sedge	Herb	Shrub	Grass/Sedge	Herb	Shrub	Grass/Sedge	Herb	Shrub
Antimony	0.16	0.18	0.21	0.20	0.42	0.59	0.15	0.18	0.21	0.19	0.42	0.55
Arsenic	0.27	0.28	0.17	0.77	0.75	0.35	0.26	0.28	0.17	0.76	0.75	0.35
Barium	25.3	44.8	27.6	40.8	70.3	60.8	25.3	44.7	27.5	40.5	69.7	60.1
Cadmium	0.43	1.71	4.81	0.80	2.62	8.01	0.40	1.44	4.72	0.74	2.28	7.86
Chromium	2.22	2.49	2.50	2.49	2.90	3.07	2.21	2.49	2.50	2.49	2.90	3.06
Copper	9.56	10.1	7.36	13.1	15.5	10.4	8.74	10.1	7.02	11.6	15.3	9.64
Lead	16.9	11.5	2.58	61.3	34.5	6.58	13.9	9.47	2.42	51.9	29.9	5.91
Manganese	328	323	392	499	1234	906	316	320	366	498	1210	906
Mercury	0.12	0.13	0.13	0.13	0.13	0.13	0.12	0.13	0.13	0.13	0.13	0.13
Molybdenum	--	--	--	--	--	--	--	--	--	--	--	--
Nickel	1.21	1.17	1.03	1.87	2.07	2.30	1.21	1.16	1.03	1.86	2.05	2.28
Selenium	0.32	0.37	0.32	0.46	0.70	0.69	0.32	0.34	0.32	0.45	0.58	0.69
Silver	0.20	0.14	0.17	0.37	0.16	0.35	0.20	0.14	0.17	0.37	0.16	0.35
Thallium	0.32	0.36	0.32	0.58	0.63	0.69	0.31	0.34	0.32	0.50	0.54	0.69
Vanadium	0.50	0.68	0.63	0.50	0.98	1.38	0.50	0.68	0.64	0.50	0.99	1.39
Zinc	124	240	356	165	339	456	113	193	339	154	278	445

COPEC = contaminant of potential ecological concern; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); -- = no data

Table B-34 Dose Response Category (DRC) Mine Feature Waste Pile Soil Exposure Point Concentrations (EPCs). All EPC values are total recoverable metal concentrations in mg/kg dry-weight.

COPEC	High-Level DRC				Mid-Level DRC				Low-Level DRC			
	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method	FOD	CTE	RME	RME Method
Aluminum	--	--	--	--	--	--	--	--	--	--	--	--
Antimony	18/18	90.02	125.30	95% Student's-t UCL	24/24	40.39	71.60	95% Adjusted Gamma	13/13	26.56	56.93	95% Adjusted Gamma
Arsenic	18/18	138.20	179.10	95% Student's-t UCL	24/24	892.20	3400.00	95% Chebyshev UCL	13/13	113.30	146.50	95% Student's-t UCL
Barium	--	--	--	--	--	--	--	--	--	--	--	--
Beryllium	--	--	--	--	--	--	--	--	--	--	--	--
Cadmium	18/18	45.74	80.00	95% Adjusted Gamma	23/24	8.53	15.45	95% Adjusted Gamma	13/13	5.80	8.94	95% Student's-t UCL
Chromium	18/18	2.84	4.08	95% Adjusted Gamma	24/24	4.05	5.52	95% Adjusted Gamma	13/13	3.95	4.90	95% Student's-t UCL
Cobalt	--	--	--	--	--	--	--	--	--	--	--	--
Copper	18/18	827.60	1373.00	95% Adjusted Gamma	22/24	737.10	1320.00	95% Adjusted Gamma	13/13	282.40	406.80	95% Student's-t UCL
Iron	--	--	--	--	--	--	--	--	--	--	--	--
Lead	18/18	13275.00	17269.00	95% Student's-t UCL	24/24	6421.00	9473.00	95% Adjusted Gamma	13/13	4522.00	9092.00	95% Adjusted Gamma
Manganese	18/18	7682.00	48268.00	95% Chebyshev UCL	24/24	2265.00	6534.00	95% Chebyshev UCL	13/13	2282.00	6936.00	95% Chebyshev UCL
Mercury	17/18	0.93	1.28	95% Student's-t UCL	20/24	0.73	2.13	95% Chebyshev UCL	12/13	0.44	0.73	95% Adjusted Gamma
Molybdenum	12/12	42.05	71.08	95% Adjusted Gamma	19/19	24.87	43.01	95% Adjusted Gamma	8/8	25.83	52.21	95% Student's-t UCL
Nickel	18/18	4.72	13.23	95% Chebyshev UCL	23/24	2.82	3.61	95% Student's-t UCL	13/13	2.23	2.81	95% Student's-t UCL
Selenium	18/18	4.35	6.73	95% H-UCL	23/24	4.53	6.55	95% Adjusted Gamma	9/13	2.99	4.12	95% Student's-t UCL
Silver	18/18	37.16	47.68	95% Student's-t UCL	24/24	19.89	24.33	95% Student's-t UCL	13/13	16.08	20.59	95% Student's-t UCL
Thallium	16/18	0.83	1.34	95% Adjusted Gamma	21/24	0.53	0.72	95% H-UCL	13/13	1.49	3.79	95% Chebyshev UCL
Vanadium	--	--	--	--	--	--	--	--	--	--	--	--
Zinc	18/18	13261.00	22551.00	95% Adjusted Gamma	24/24	2619.00	4559.00	95% Adjusted Gamma	13/13	2335.00	3742.00	95% Student's-t UCL

COPEC = contaminant of concern; FOD = frequency of detection; CTE = central tendency exposure (average); RME = reasonable maximum exposure (95% upper confidence level or maximum value); UCL = upper confidence limit; -- = no data

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COPEC	Exposure Point Concentrations									EDDs (mg/kg BW/day)			
	HH Soil (mg/kg, DW)	MH Soil (mg/kg, DW)	LH Soil (mg/kg, DW)	VG Soil (mg/kg, DW)	HH SM[1] (mg/kg, DW)	MH SM[1] (mg/kg, DW)	LH SM[1] (mg/kg, DW)	VG SM[1] (mg/kg, DW)	Surface Water LWA (mg/L)	$Dose_{soil}$[2]	$Dose_{SM}$[3]	$Dose_{water}$[4]	Total EDD[5]
Central Tendency Exposure (CTE) Scenario													
Antimony	6.23	1.63	2.62	0.52	0.01	0.00	0.01	0.00	1.65E-03	3.45E-04	4.23E-05	1.29E-04	5.17E-04
Arsenic	49.27	29.34	42.64	6.56	0.19	0.12	0.17	0.04	3.31E-03	4.34E-03	1.39E-03	2.58E-04	5.99E-03
Cadmium	9.55	1.63	1.61	0.57	0.83	0.36	0.36	0.22	2.98E-03	3.89E-04	7.52E-03	2.33E-04	8.14E-03
Chromium	4.76	6.59	4.87	5.94	0.73	0.93	0.74	0.86	3.26E-03	3.13E-03	2.78E-02	2.54E-04	3.12E-02
Copper	182.10	69.23	150.40	21.52	16.34	14.21	15.89	12.00	3.53E-02	1.42E-02	3.95E-01	2.75E-03	4.12E-01
Lead	2198.00	1832.00	728.60	70.96	32.43	29.92	19.90	7.11	1.23E-02	7.73E-02	2.63E-01	9.58E-04	3.42E-01
Manganese	6666.00	1890.00	835.80	1156.00	136.65	38.75	17.13	23.70	2.06E+00	6.58E-01	8.26E-01	1.61E-01	1.64E+00
Mercury	0.09	0.03	0.09	0.04	0.005	0.002	0.005	0.002	0	2.24E-05	7.45E-05	0.00E+00	9.69E-05
Molybdenum	12.28	2.42	1.72	0.80	0	0	0	0	2.50E-03	5.31E-04	0.00E+00	1.95E-04	7.26E-04
Nickel	6.48	5.29	3.17	2.68	1.87	1.70	1.34	1.24	4.13E-03	1.48E-03	4.08E-02	3.22E-04	4.26E-02
Selenium	0.93	0.82	1.47	0.96	0.64	0.61	0.76	0.65	3.42E-03	5.11E-04	2.11E-02	2.67E-04	2.19E-02
Silver	7.69	4.91	2.87	0.56	0.03	0.02	0.01	0.00	1.63E-03	4.15E-04	1.02E-04	1.27E-04	6.43E-04
Thallium	0.92	0.82	17.14	0.75	0.10	0.09	1.93	0.08	3.60E-03	5.44E-04	3.74E-03	2.81E-04	4.57E-03
Zinc	2010.00	456.10	368.20	120.00	134.31	120.96	119.15	110.08	9.02E-01	8.31E-02	3.60E+00	7.04E-02	3.75E+00
Reasonable Maximum Exposure (RME) Scenario													
Antimony	12.34	3.29	3.87	0.73	0.02	0.01	0.01	0.00	1.94E-03	5.28E-04	6.46E-05	1.51E-04	7.44E-04
Arsenic	65.47	39.38	57.42	8.29	0.24	0.16	0.22	0.04	6.41E-03	5.57E-03	1.69E-03	5.00E-04	7.76E-03
Cadmium	20.01	2.35	2.52	0.71	1.17	0.43	0.44	0.24	4.95E-03	5.52E-04	8.51E-03	3.86E-04	9.45E-03
Chromium	5.19	7.70	5.47	6.38	0.78	1.04	0.81	0.90	4.18E-03	3.38E-03	2.93E-02	3.26E-04	3.30E-02
Copper	264.60	97.56	256.40	26.16	17.24	14.93	17.17	12.35	6.31E-02	1.84E-02	4.07E-01	4.92E-03	4.30E-01
Lead	2940.00	3339.00	958.00	117.40	36.88	39.01	22.46	8.88	3.23E-02	1.24E-01	3.27E-01	2.52E-03	4.54E-01
Manganese	21678.00	2386.00	1128.00	1618.00	444.40	48.91	23.12	33.17	3.10E+00	1.01E+00	1.27E+00	2.42E-01	2.52E+00
Mercury	0.14	0.12	0.40	0.27	0.01	0.01	0.02	0.01	0	1.40E-04	4.65E-04	0.00E+00	6.04E-04
Molybdenum	29.16	3.52	2.45	1.10	0	0	0	0	2.50E-03	8.26E-04	0.00E+00	1.95E-04	1.02E-03
Nickel	14.93	5.83	3.74	3.42	2.75	1.78	1.45	1.39	6.27E-03	1.92E-03	4.59E-02	4.89E-04	4.83E-02
Selenium	1.26	1.16	1.87	1.39	0.72	0.70	0.84	0.75	3.99E-03	7.40E-04	2.43E-02	3.11E-04	2.53E-02
Silver	11.19	8.40	3.63	0.92	0.04	0.03	0.01	0.00	2.07E-03	6.63E-04	1.62E-04	1.62E-04	9.87E-04
Thallium	1.36	1.20	19.12	1.10	0.15	0.13	2.15	0.12	5.01E-03	7.45E-04	5.13E-03	3.91E-04	6.26E-03
Zinc	5523.00	961.30	538.90	154.20	144.25	127.50	122.39	112.04	1.70E+00	1.33E-01	3.67E+00	1.33E-01	3.93E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; AUF = area use factor; HH = high-level halo; HM = mid-level halo; HL = low-level halo; VG = vegetated upland; SW = surface water; LWA = length-weighted average; SM = small mammal

Grey shaded entries indicate that exposure values are unavailable; no soil to small mammal uptake equation for molybdenum and mercury not analyzed in surface water

Food chain modeling equations

1 See soil to small mammal equations in report Table 3.10

2 $Dose_{soil} = [(HH_{soil}*HH\ AUF_{forest}) + (MH_{soil}*MH\ AUF_{forest}) + (LH_{soil}*LH\ AUF_{forest}) + (VG_{soil}*VG\ AUF_{forest})]*SIR$

3 $Dose_{SM} = [(HH_{SM}*HH\ AUF_{forest}) + (MH_{SM}*MH\ AUF_{forest}) + (LH_{SM}*LH\ AUF_{forest}) + (VG_{SM}*VG\ AUF_{forest})]*FIR*100\%$

4 $Dose_{water} = SW_{LWA}*WIR$

5 Total EDD = $Dose_{soil} + (Dose_{SM}) + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	11.4	kilograms
Soil ingestion rate (SIR) =	0.0005	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0780	L/kg BW/day
Food ingestion rate (FIR) =	0.0325	kg DW/kg BW/day

Area use factors (unitless)

HH AUF_{forest} =	0.0138
MH AUF_{forest} =	0.0197
LH AUF_{forest} =	0.0165
VG AUF_{forest} =	0.9499

Percent diet composition

Sm. mammal diet = 100%

Table C-2 Estimated Daily Doses (EDDs) for Coyote Foraging in Terrestrial and Floodplain Habitats Throughout the Entire Bonita Peak Mining District Assessment Area

COPEC	HH Soil (mg/kg, DW)	MH Soil (mg/kg, DW)	LH Soil (mg/kg, DW)	FP Soil (mg/kg, DW)	VG Soil (mg/kg, DW)	HH SM[1] (mg/kg, DW)	MH SM[1] (mg/kg, DW)	LH SM[1] (mg/kg, DW)	FP SM[1] (mg/kg, DW)	VG SM[1] (mg/kg, DW)	HH Invert. (mg/kg, DW)	MH Invert. (mg/kg, DW)	LH Invert. (mg/kg, DW)	FP Invert. (mg/kg, DW)	VG Invert. (mg/kg, DW)	HH Plant (mg/kg, DW)	MH Plant (mg/kg, DW)	LH Plant (mg/kg, DW)	FP Plant (mg/kg, DW)	VG Plant (mg/kg, DW)	Surface Water LWA (mg/L)
Exposure Point Concentrations																					
Central Tendency Exposure (CTE) Scenario																					
Antimony	6.23	1.63	2.62	3.06	0.66	0.01	0.00	0.01	0.01	0.00	1.26	1.26	1.26	1.26	1.26	0.17	0.14	0.14	0.15	0.14	1.65E-03
Arsenic	49.27	29.34	42.64	35.31	14.86	0.19	0.12	0.17	0.15	0.07	1.50	1.13	0.78	1.14	0.78	0.30	0.30	0.18	0.26	0.18	3.31E-03
Cadmium	9.55	1.63	1.61	4.29	1.07	0.83	0.36	0.36	0.57	0.29	5.43	3.68	2.32	3.78	2.15	0.59	0.39	0.31	0.40	0.13	2.98E-03
Chromium	4.76	6.59	4.87	5.03	5.92	0.73	0.93	0.74	0.76	0.86	3.45	3.45	3.45	3.45	3.45	2.33	2.33	1.98	2.21	1.98	3.26E-03
Copper	182.10	69.23	150.40	173.70	29.23	16.34	14.21	15.89	16.23	12.55	49.36	43.99	36.43	43.28	36.43	13.07	7.46	6.09	8.74	5.33	3.53E-02
Lead	2198.00	1832.00	728.60	1059.66	174.30	32.43	29.92	19.90	23.48	10.57	63.88	35.25	8.86	35.35	4.75	29.97	10.49	1.29	13.91	1.29	1.23E-02
Manganese	6666.00	1890.00	835.80	3335.19	1355.00	136.65	38.75	17.13	68.37	27.78	802.70	217.50	203.40	406.28	203.40	394.40	301.60	301.60	315.67	204.30	2.06E+00
Mercury	0.09	0.03	0.09	502.48	0.03	0.005	0.002	0.005	27.28	0.002	0	0	0	0	0	0.13	0.13	0.13	0.12	0.12	0
Molybdenum	12.28	2.42	1.72	4.37	3.26	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.50E-03
Nickel	6.48	5.29	3.17	5.50	3.37	1.87	1.70	1.34	1.73	1.38	1.24	1.24	0.66	1.04	0.66	1.28	1.28	1.06	1.21	1.06	4.13E-03
Selenium	0.93	0.82	1.47	1.57	0.93	0.64	0.61	0.76	0.78	0.64	0.89	0.89	0.89	0.87	0.74	0.34	0.31	0.31	0.32	0.30	3.42E-03
Silver	7.69	4.91	2.87	3.14	1.10	0.03	0.02	0.01	0.01	0.00	1.07	1.07	1.07	1.07	1.07	0.21	0.21	0.21	0.20	0.15	1.63E-03
Thallium	0.92	0.82	17.14	0.60	0.75	0.10	0.09	1.93	0.07	0.08	0.83	0.83	0.30	0.83	0.83	0.36	0.28	0.34	0.31	0.28	3.60E-03
Zinc	2010.00	456.10	368.20	783.50	190.00	134.31	120.96	119.15	125.67	113.71	442.10	210.20	210.20	286.84	210.20	173.00	97.14	79.53	112.83	58.43	9.02E-01
Reasonable Maximum Exposure (RME) Scenario																					
Antimony	12.34	3.29	3.87	7.14	1.02	0.02	0.01	0.01	0.01	0.00	3.56	3.56	3.56	3.56	3.56	0.24	0.17	0.17	0.19	0.17	1.94E-03
Arsenic	65.47	39.38	57.42	67.21	19.91	0.24	0.16	0.22	0.25	0.09	2.53	1.88	1.28	1.88	1.15	0.96	0.96	0.35	0.76	0.35	6.41E-03
Cadmium	20.01	2.35	2.52	16.89	1.88	1.17	0.43	0.44	1.08	0.38	9.72	9.72	4.50	7.78	3.16	1.07	0.66	0.66	0.74	0.34	4.95E-03
Chromium	5.19	7.70	5.47	6.51	6.23	0.78	1.04	0.81	0.92	0.89	6.15	6.15	6.15	6.15	6.15	2.53	2.53	2.53	2.49	2.31	4.18E-03
Copper	264.60	97.56	256.40	476.27	34.06	17.24	14.93	17.17	18.77	12.83	87.41	87.41	78.95	84.63	78.95	19.09	8.69	7.68	11.55	6.25	6.31E-02
Lead	2940.00	3339.00	958.00	2897.61	225.00	36.88	39.01	22.46	36.64	11.84	107.80	82.04	18.30	67.88	8.00	106.30	46.24	3.03	51.91	3.03	3.23E-02
Manganese	21678.00	2386.00	1128.00	6670.65	1964.00	444.40	48.91	23.12	136.75	40.26	3056.00	377.10	262.60	1224.91	262.60	554.10	534.90	534.90	498.02	281.50	3.10E+00
Mercury	0.14	0.12	0.40	1587.08	0.11	0.01	0.01	0.02	86.18	0.01	0	0	0	0	0	0.13	0.13	0.13	0.13	0.13	0
Molybdenum	29.16	3.52	2.45	9.01	6.12	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2.50E-03
Nickel	14.93	5.83	3.74	8.22	4.82	2.75	1.78	1.45	2.09	1.63	2.91	2.91	0.96	2.27	0.96	2.01	2.01	1.57	1.86	1.57	6.27E-03
Selenium	1.26	1.16	1.87	2.16	1.29	0.72	0.70	0.84	0.88	0.73	2.69	2.69	2.69	2.51	1.63	0.50	0.43	0.43	0.45	0.38	3.99E-03
Silver	11.19	8.40	3.63	8.72	2.23	0.04	0.03	0.01	0.03	0.01	4.51	4.51	4.51	4.51	4.51	0.41	0.41	0.41	0.37	0.18	2.07E-03
Thallium	1.36	1.20	19.12	0.81	0.98	0.15	0.13	2.15	0.09	0.11	2.71	2.71	0.61	2.71	2.71	0.85	0.33	0.78	0.50	0.33	5.01E-03
Zinc	5523.00	961.30	538.90	2035.34	236.70	144.25	127.50	122.39	134.43	115.49	912.00	291.80	291.80	490.43	254.60	219.80	139.50	134.00	154.13	74.77	1.70E+00

COPEC	EDDs (mg/kg BW/day)											
	Central Tendency Exposure (CTE) Scenario						Reasonable Maximum Exposure (RME) Scenario					
	$Dose_{soil}$[2]	$Dose_{SM}$[3]	$Dose_{invert}$[4]	$Dose_{plant}$[5]	$Dose_{water}$[6]	Total EDD[7]	$Dose_{soil}$[2]	$Dose_{SM}$[3]	$Dose_{invert}$[4]	$Dose_{plant}$[5]	$Dose_{water}$[6]	Total EDD[7]
Antimony	5.04E-04	3.61E-05	3.53E-03	1.18E-04	1.25E-04	4.31E-03	7.96E-04	5.88E-05	9.98E-03	1.41E-04	1.47E-04	1.11E-02
Arsenic	1.10E-02	1.81E-03	2.22E-03	1.55E-04	2.51E-04	1.54E-02	1.47E-02	2.32E-03	3.30E-03	3.03E-04	4.87E-04	2.11E-02
Cadmium	8.05E-04	7.37E-03	6.18E-03	1.20E-04	2.27E-04	1.47E-02	1.42E-03	9.73E-03	9.31E-03	2.99E-04	3.76E-04	2.11E-02
Chromium	4.25E-03	2.08E-02	9.67E-03	1.67E-03	2.47E-04	3.67E-02	4.47E-03	2.17E-02	1.73E-02	1.95E-03	3.18E-04	4.57E-02
Copper	2.22E-02	3.09E-01	1.03E-01	4.58E-03	2.68E-03	4.41E-01	2.65E-02	3.17E-01	2.22E-01	5.40E-03	4.79E-03	5.75E-01
Lead	1.42E-01	2.70E-01	1.61E-02	1.42E-03	9.34E-04	4.31E-01	1.89E-01	3.07E-01	2.80E-02	3.85E-03	2.45E-03	5.31E-01
Manganese	9.92E-01	7.06E-01	5.88E-01	1.75E-01	1.57E-01	2.62E+00	1.48E+00	1.07E+00	8.18E-01	2.43E-01	2.36E-01	3.84E+00
Mercury	2.43E-05	1.06E-02	0.00E+00	1.04E-04	0.00E+00	1.07E-02	8.11E-05	3.35E-02	0.00E+00	1.05E-04	0.00E+00	3.36E-02
Molybdenum	2.36E-03	0.00E+00	0.00E+00	0.00E+00	1.90E-04	2.55E-03	4.45E-03	0.00E+00	0.00E+00	0.00E+00	1.90E-04	4.64E-03
Nickel	2.44E-03	3.38E-02	1.88E-03	8.93E-04	3.14E-04	3.93E-02	3.50E-03	4.00E-02	2.82E-03	1.33E-03	4.76E-04	4.81E-02
Selenium	6.70E-04	1.57E-02	2.08E-03	2.50E-04	2.60E-04	1.90E-02	9.27E-04	1.78E-02	4.67E-03	3.21E-04	3.03E-04	2.40E-02
Silver	8.39E-04	1.17E-04	3.00E-03	1.24E-04	1.24E-04	4.21E-03	1.67E-03	2.37E-04	1.26E-02	1.60E-04	1.57E-04	1.49E-02
Thallium	6.05E-04	2.30E-03	2.32E-03	2.35E-04	2.74E-04	5.73E-03	7.78E-04	2.96E-03	7.57E-03	2.84E-04	3.81E-04	1.20E-02
Zinc	1.45E-01	2.78E+00	5.96E-01	5.07E-02	6.86E-02	3.64E+00	1.93E-01	2.83E+00	7.35E-01	6.52E-02	1.29E-01	3.95E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg bw-day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; AUF = area use factor; HH = high-level halo; HM = mid-level halo; HL = low-level halo; FP = floodplain; VG = vegetated upland; SW = surface water; LWA = length-weighted average; SM = small mammal; BPMD = Bonita Peak Mining District

Grey shaded entries indicate that exposure values are unavailable; no soil to small mammal uptake equation for molybdenum and mercury not analyzed in surface water and invertebrate tissue

Food chain modeling equations

1 See soil to small mammal equations in report Table 3.10

2 $Dose_{soil} = [(HH_{soil}*HH\ AUF_{BPMD}) + (MH_{soil}*MH\ AUF_{BPMD}) + (LH_{soil}*LH\ AUF_{BPMD}) + (FP_{soil}*FP\ AUF_{BPMD}) + (VG_{soil}*VG\ AUF_{BPMD})]*SIR$

3 $Dose_{sm} = [[(HH_{SM}*HH\ AUF_{BPMD}) + (MH_{SM}*MH\ AUF_{BPMD}) + (LH_{SM}*LH\ AUF_{BPMD}) + (FP_{SM}*FP\ AUF_{BPMD}) + (VG_{SM}*VG\ AUF_{BPMD})]*FIR]*87\%$

4 $Dose_{invert} = [[(HH_{invert}*HH\ AUF_{BPMD}) + (MH_{invert}*MH\ AUF_{BPMD}) + (LH_{invert}*LH\ AUF_{BPMD}) + (FP_{invert}*FP\ AUF_{BPMD}) + (VG_{invert}*VG\ AUF_{BPMD})]*FIR]*10\%$

5 $Dose_{plant} = [[(HH_{plant}*HH\ AUF_{BPMD}) + (MH_{plant}*MH\ AUF_{BPMD}) + (LH_{plant}*LH\ AUF_{BPMD}) + (FP_{plant}*FP\ AUF_{BPMD}) + (VG_{plant}*VG\ AUF_{BPMD})]*FIR]*3\%$

6 $Dose_{water} = SW_{LWA}*WIR$

7 Total EDD = $Dose_{soil} + Dose_{SM} + Dose_{invert} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	13.25	kilograms
Soil ingestion rate (SIR) =	0.0007	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0760	L/kg BW/day
Food ingestion rate (FIR) =	0.0281	kg DW/kg BW/day

Area use factors (unitless)

AUF	Value
HH AUF_{BPMD} =	0.0047
MH AUF_{BPMD} =	0.0067
LH AUF_{BPMD} =	0.0056
FP AUF_{BPMD} =	0.0158
VG AUF_{BPMD} =	0.9672

Percent diet composition

Metric	Value
Sm. mammal diet =	87%
Ground-dwelling invert. diet =	10%
Plant (grass) diet =	3%

Table C-3 Estimated Daily Doses (EDDs) for Golden Eagle Foraging in Terrestrial and Floodplain Habitats Throughout the Entire Bonita Peak Mining District Assessment Area

COPEC	Exposure Point Concentrations											EDDs (mg/kg BW/day)			
	HH Soil (mg/kg, DW)	MH Soil (mg/kg, DW)	LH Soil (mg/kg, DW)	FP Soil (mg/kg, DW)	VG Soil (mg/kg, DW)	HH SM[1] (mg/kg, DW)	MH SM[1] (mg/kg, DW)	LH SM[1] (mg/kg, DW)	FP SM[1] (mg/kg, DW)	VG SM[1] (mg/kg, DW)	Surface Water LWA (mg/L)	$Dose_{soil}$[2]	$Dose_{SM}$[3]	$Dose_{water}$[4]	Total EDD[5]
Central Tendency Exposure (CTE) Scenario															
Arsenic	49.27	29.34	42.64	35.31	14.860	0.19	0.12	0.17	0.15	0.07	3.31E-03	1.22E-02	3.62E-03	1.16E-04	7.95E-03
Barium	152.20	138.30	171.60	91.90	163.500	1.14	1.04	1.29	0.69	1.23	2.20E-02	1.27E-01	5.93E-02	7.69E-04	9.33E-02
Cadmium	9.55	1.63	1.61	4.29	1.074	0.83	0.36	0.36	0.57	0.29	2.98E-03	9.14E-04	1.47E-02	1.04E-04	7.87E-03
Chromium	4.76	6.59	4.87	5.03	5.917	0.73	0.93	0.74	0.76	0.86	3.26E-03	4.60E-03	4.17E-02	1.14E-04	2.32E-02
Copper	182.10	69.23	150.40	173.70	29.230	16.34	14.21	15.89	16.23	12.55	3.53E-02	2.59E-02	6.17E-01	1.23E-03	3.22E-01
Lead	2198.00	1832.00	728.60	1059.66	174.300	32.43	29.92	19.90	23.48	10.57	1.23E-02	1.65E-01	5.40E-01	4.30E-04	3.53E-01
Manganese	6666.00	1890.00	835.80	3335.19	1355.000	136.65	38.75	17.13	68.37	27.78	2.06E+00	1.10E+00	1.41E+00	7.22E-02	1.29E+00
Mercury	0.09	0.03	0.09	502.48	0.033	0.005	0.002	0.005	27.28	0.002	0	6.23E-03	2.12E-02	0.00E+00	1.37E-02
Molybdenum	12.28	2.42	1.72	4.37	3.256	0	0	0	0	0	2.50E-03	2.58E-03	0.00E+00	8.75E-05	1.33E-03
Nickel	6.48	5.29	3.17	5.50	3.367	1.87	1.70	1.34	1.73	1.38	4.13E-03	2.67E-03	6.76E-02	1.45E-04	3.52E-02
Selenium	0.93	0.82	1.47	1.57	0.930	0.64	0.61	0.76	0.78	0.64	3.42E-03	7.35E-04	3.15E-02	1.20E-04	1.62E-02
Silver	7.69	4.91	2.87	3.14	1.101	0.03	0.02	0.01	0.01	0.00	1.63E-03	9.35E-04	2.34E-04	5.70E-05	6.13E-04
Vanadium	12.79	19.89	17.14	20.37	18.010	0.16	0.24	0.21	0.25	0.22	2.76E-03	1.41E-02	1.08E-02	9.66E-05	1.25E-02
Zinc	2010.00	456.10	368.20	783.50	190.000	134.31	120.96	119.15	125.67	113.71	9.02E-01	1.64E-01	5.57E+00	3.16E-02	2.88E+00
Reasonable Maximum Exposure (RME) Scenario															
Arsenic	65.47	39.38	57.42	67.21	19.91	0.24	0.16	0.22	0.25	0.09	6.41E-03	1.65E-02	4.65E-03	2.24E-04	1.07E-02
Barium	206.70	211.60	195.10	126.40	180.90	1.55	1.59	1.46	0.95	1.36	2.33E-02	1.41E-01	6.60E-02	8.17E-04	1.04E-01
Cadmium	20.01	2.35	2.52	16.89	1.88	1.17	0.43	0.44	1.08	0.38	4.95E-03	1.72E-03	1.95E-02	1.73E-04	1.07E-02
Chromium	5.19	7.70	5.47	6.51	6.23	0.78	1.04	0.81	0.92	0.89	4.18E-03	4.86E-03	4.34E-02	1.46E-04	2.42E-02
Copper	264.60	97.56	256.40	476.27	34.06	17.24	14.93	17.17	18.77	12.83	6.31E-02	3.42E-02	6.33E-01	2.21E-03	3.35E-01
Lead	2940.00	3339.00	958.00	2897.61	225.00	36.88	39.01	22.46	36.64	11.84	3.23E-02	2.38E-01	6.14E-01	1.13E-03	4.27E-01
Manganese	21678.00	2386.00	1128.00	6670.65	1964.00	444.40	48.91	23.12	136.75	40.26	3.10E+00	1.66E+00	2.13E+00	1.09E-01	1.95E+00
Mercury	0.14	0.12	0.40	1587.08	0.11	0.01	0.01	0.02	86.18	0.01	0	1.97E-02	6.69E-02	0.00E+00	4.33E-02
Molybdenum	29.16	3.52	2.45	9.01	6.12	0	0	0	0	0	2.50E-03	4.87E-03	0.00E+00	8.75E-05	2.48E-03
Nickel	14.93	5.83	3.74	8.22	4.82	2.75	1.78	1.45	2.09	1.63	6.27E-03	3.84E-03	8.00E-02	2.19E-04	4.20E-02
Selenium	1.26	1.16	1.87	2.16	1.29	0.72	0.70	0.84	0.88	0.73	3.99E-03	1.02E-03	3.55E-02	1.40E-04	1.84E-02
Silver	11.19	8.40	3.63	8.72	2.23	0.04	0.03	0.01	0.03	0.01	2.07E-03	1.89E-03	4.73E-04	7.25E-05	1.22E-03
Vanadium	13.97	22.44	19.12	26.83	19.34	0.17	0.28	0.24	0.33	0.24	3.22E-03	1.52E-02	1.17E-02	1.13E-04	1.35E-02
Zinc	5523.00	961.30	538.90	2035.34	236.70	144.25	127.50	122.39	134.43	115.49	1.70E+00	2.31E-01	5.66E+00	5.95E-02	2.98E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of concern; DW = dry-weight; AUF = area use factor; HH = high-level halo; MH = mid-level halo; LH = low-level halo; FP = floodplain; VG = vegetated upland; SW = surface water; LWA = length-weighted average; SM = small mammal; BPMD = Bonita Peak Mining District

Grey shaded entries indicate that exposure values are unavailable; no soil to small mammal uptake equation for molybdenum and mercury not analyzed in surface water and invertebrate tissue

Food chain modeling equations

1 See soil to small mammal equations in report Table 3.10

2 $Dose_{soil} = [(HH_{soil}*HH\ AUF_{BPMD}) + (MH_{soil}*MH\ AUF_{BPMD}) + (LH_{soil}*LH\ AUF_{BPMD}) + (FPsoil*FP\ AUF_{BPMD}) + (VG_{soil}*VG\ AUF_{BPMD})]*SIR$

3 $Dose_{SM} = [[(HH_{SM}*HH\ AUF_{BPMD}) + (MH_{SM}*MH\ AUF_{BPMD}) + (LH_{SM}*LH\ AUF_{BPMD}) + (FP_{SM}*FP\ AUF_{BPMD}) + (VG_{SM}*VG\ AUF_{BPMD})]*FIR]*100\%$

4 $Dose_{water} = SW_{LWA}*WIR$

5 Total EDD = $(Dose_{soil} + Dose_{SM} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	4.8	kilograms
Soil ingestion rate (SIR) =	0.0008	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0350	L/kg BW/day
Food ingestion rate (FIR) =	0.0488	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Area use factors (unitless)

Metric	Value
HH AUF_{BPMD} =	0.0047
MH AUF_{BPMD} =	0.0067
LH AUF_{BPMD} =	0.0056
FP AUF_{BPMD} =	0.0158
VG AUF_{BPMD} =	0.9672

Percent diet composition

Metric	Value
Sm. mammal diet =	100%

Table C-4 Estimated Daily Doses (EDDs) for Moose Foraging in Mineral Creek Watershed Floodplain Habitats

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil LWA (mg/kg, DW)	FP Plant LWA (mg/kg, DW)	Surface Water LWA (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]	FP Soil LWA (mg/kg, DW)	FP Plant LWA (mg/kg, DW)	Surface Water LWA (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.73	0.20	0.0016	6.24E-04	1.40E-03	9.02E-05	2.12E-03	2.83	0.50	0.002	1.02E-03	3.59E-03	1.09E-04	4.72E-03
Arsenic	45.97	0.16	0.0041	1.65E-02	1.17E-03	2.23E-04	1.79E-02	125.53	0.33	0.01	4.52E-02	2.34E-03	5.56E-04	4.81E-02
Cadmium	3.82	4.09	0.0025	1.38E-03	2.94E-02	1.38E-04	3.09E-02	26.67	6.79	0.0064	9.60E-03	4.87E-02	3.55E-04	5.87E-02
Chromium	4.39	2.47	0.0032	1.58E-03	1.77E-02	1.77E-04	1.95E-02	5.61	3.00	0.0043	2.02E-03	2.15E-02	2.38E-04	2.38E-02
Copper	150.89	6.40	0.04	5.43E-02	4.59E-02	2.17E-03	1.02E-01	709.93	8.32	0.09	2.56E-01	5.97E-02	5.04E-03	3.20E-01
Lead	358.31	2.11	0.02	1.29E-01	1.51E-02	8.81E-04	1.45E-01	937.53	4.95	0.06	3.38E-01	3.55E-02	3.05E-03	3.76E-01
Manganese	2058.11	327.64	0.73	7.41E-01	2.35E+00	4.00E-02	3.13E+00	6234.70	905.80	1.46	2.24E+00	6.50E+00	8.04E-02	8.82E+00
Mercury	1608.07	0.13	0	5.79E-01	8.97E-04	0.00E+00	5.80E-01	5079.43	0.13	0	1.83E+00	9.10E-04	0.00E+00	1.83E+00
Molybdenum	2.75	0	0.0025	9.90E-04	0.00E+00	1.38E-04	1.13E-03	4.05	0	0.0025	1.46E-03	0.00E+00	1.38E-04	1.59E-03
Nickel	4.98	0.96	0.0045	1.79E-03	6.92E-03	2.46E-04	8.96E-03	8.48	2.07	0.0082	3.05E-03	1.49E-02	4.51E-04	1.84E-02
Selenium	1.44	0.32	0.0035	5.17E-04	2.26E-03	1.90E-04	2.97E-03	2.11	0.65	0.0042	7.61E-04	4.67E-03	2.31E-04	5.66E-03
Silver	1.01	0.16	0.0016	3.64E-04	1.17E-03	8.89E-05	1.62E-03	2.72	0.33	0.0022	9.80E-04	2.34E-03	1.19E-04	3.44E-03
Thallium	0.67	0.32	0.0034	2.42E-04	2.26E-03	1.86E-04	2.69E-03	0.89	0.65	0.0048	3.19E-04	4.67E-03	2.66E-04	5.25E-03
Zinc	484.76	284.65	0.71	1.75E-01	2.04E+00	3.91E-02	2.26E+00	1333.53	384.50	2.15	4.80E-01	2.76E+00	1.18E-01	3.36E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of concern; DW = dry-weight; FP = floodplain; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; molybdenum not analyzed in plants and mercury not analyzed in surface water

Food chain modeling equations

1 $Dose_{soil} = FP_{soil\ LWA} * SIR$

2 $Dose_{plant} = FP_{plant\ LWA} * FIR * 100\%$

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	386	kilograms
Soil ingestion rate (SIR) =	0.0004	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0550	L/kg BW/day
Food ingestion rate (FIR) =	0.0072	kg DW/kg BW/day

Percent diet composition

Metric	Value
Plant (shrub) diet =	100%

Table C-5 Estimated Daily Doses (EDDs) for Moose Foraging in Cement Creek Watershed Floodplain Habitats

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil LWA (mg/kg, DW)	FP Plant LWA (mg/kg, DW)	Surface Water LWA (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]	FP Soil LWA (mg/kg, DW)	FP Plant LWA (mg/kg, DW)	Surface Water LWA (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	2.66	0.20	0.0017	9.58E-04	1.46E-03	9.27E-05	2.51E-03	3.82	0.55	0.0019	1.37E-03	3.92E-03	1.05E-04	5.40E-03
Arsenic	34.23	0.18	0.0042	1.23E-02	1.26E-03	2.29E-04	1.38E-02	41.14	0.39	0.0065	1.48E-02	2.82E-03	3.58E-04	1.80E-02
Cadmium	2.06	5.70	0.0048	7.41E-04	4.09E-02	2.65E-04	4.19E-02	4.76	9.52	0.0063	1.71E-03	6.83E-02	3.46E-04	7.03E-02
Chromium	4.69	2.55	0.0034	1.69E-03	1.83E-02	1.88E-04	2.02E-02	5.63	3.17	0.0044	2.03E-03	2.27E-02	2.44E-04	2.50E-02
Copper	100.82	7.30	0.0692	3.63E-02	5.23E-02	3.81E-03	9.24E-02	144.13	10.06	0.10	5.19E-02	7.22E-02	5.62E-03	1.30E-01
Lead	583.90	2.58	0.02	2.10E-01	1.85E-02	1.14E-03	2.30E-01	855.76	5.88	0.03	3.08E-01	4.22E-02	1.81E-03	3.52E-01
Manganese	1820.01	369.87	3.24	6.55E-01	2.65E+00	1.78E-01	3.49E+00	2954.48	905.80	5.43	1.06E+00	6.50E+00	2.99E-01	7.86E+00
Mercury	0.06	0.13	0	2.29E-05	8.97E-04	0.00E+00	9.20E-04	0.11	0.13	0	3.91E-05	9.12E-04	0.00E+00	9.51E-04
Molybdenum	3.82	0	0.0025	1.38E-03	0.00E+00	1.38E-04	1.51E-03	4.97	0	0.0025	1.79E-03	0.00E+00	1.38E-04	1.93E-03
Nickel	3.53	1.14	0.0065	1.27E-03	8.16E-03	3.60E-04	9.79E-03	5.01	2.62	0.0096	1.81E-03	1.88E-02	5.26E-04	2.11E-02
Selenium	2.12	0.34	0.0036	7.62E-04	2.42E-03	1.98E-04	3.38E-03	2.54	0.78	0.0040	9.16E-04	5.62E-03	2.19E-04	6.75E-03
Silver	1.27	0.18	0.0017	4.58E-04	1.26E-03	9.46E-05	1.81E-03	1.97	0.39	0.0022	7.09E-04	2.82E-03	1.19E-04	3.65E-03
Thallium	22.06	0.34	0.0040	7.94E-03	2.42E-03	2.18E-04	1.06E-02	25.37	0.78	0.0055	9.13E-03	5.62E-03	3.04E-04	1.51E-02
Zinc	527.77	397.52	1.80	1.90E-01	2.85E+00	9.91E-02	3.14E+00	1075.86	531.12	2.94	3.87E-01	3.81E+00	1.62E-01	4.36E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of concern; DW = dry-weight; FP = floodplain; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; molybdenum not analyzed in plants and mercury not analyzed in surface water

Food chain modeling equations

1 $Dose_{soil} = FP_{soil\ LWA} * SIR$

2 $Dose_{plant} = FP_{plant\ LWA} * FIR * 100\%$

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	386	kilograms
Soil ingestion rate (SIR) =	0.0004	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0550	L/kg BW/day
Food ingestion rate (FIR) =	0.0072	kg DW/kg BW/day

Percent diet composition

Metric	Value
Plant (shrub) diet =	100%

Table C-6 Estimated Daily Doses (EDDs) for Moose Foraging in Animas River Watershed Floodplain Habitats

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil LWA (mg/kg, DW)	FP Plant LWA (mg/kg, DW)	Surface Water LWA (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]	FP Soil LWA (mg/kg, DW)	FP Plant LWA (mg/kg, DW)	Surface Water LWA (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	4.02	0.21	0.0016	1.45E-03	1.52E-03	3.24E-02	3.54E-02	10.96	0.59	0.0019	3.94E-03	4.23E-03	1.05E-04	8.28E-03
Arsenic	29.15	0.17	0.0024	1.05E-02	1.19E-03	1.34E-04	1.18E-02	40.57	0.35	0.0037	1.46E-02	2.48E-03	2.02E-04	1.73E-02
Cadmium	5.37	4.81	0.0026	1.93E-03	3.45E-02	1.45E-04	3.66E-02	15.17	8.01	0.0034	5.46E-03	5.75E-02	1.84E-04	6.31E-02
Chromium	5.54	2.50	0.0032	1.99E-03	1.80E-02	1.77E-04	2.01E-02	7.38	3.07	0.004	2.66E-03	2.21E-02	2.19E-04	2.49E-02
Copper	213.44	7.36	0.020	7.68E-02	5.28E-02	1.07E-03	1.31E-01	449.88	10.42	0.028	1.62E-01	7.47E-02	1.52E-03	2.38E-01
Lead	1658.69	2.58	0.006	5.97E-01	1.85E-02	3.53E-04	6.16E-01	4823.14	6.58	0.015	1.74E+00	4.72E-02	8.35E-04	1.78E+00
Manganese	4655.00	391.89	2.60	1.68E+00	2.81E+00	1.43E-01	4.63E+00	8250.33	905.80	3.43	2.97E+00	6.50E+00	1.89E-01	9.66E+00
Mercury	0.23	0.13	0	8.18E-05	8.97E-04	0.00E+00	9.79E-04	0.58	0.13	0	2.08E-04	9.07E-04	0.00E+00	1.12E-03
Molybdenum	5.56	0	0.0025	2.00E-03	0.00E+00	1.38E-04	2.14E-03	13.49	0	0.0025	4.86E-03	0.00E+00	1.38E-04	4.99E-03
Nickel	6.52	1.03	0.003	2.35E-03	7.39E-03	1.64E-04	9.90E-03	9.19	2.30	0.0036	3.31E-03	1.65E-02	2.00E-04	2.00E-02
Selenium	1.47	0.32	0.0033	5.28E-04	2.31E-03	1.83E-04	3.02E-03	2.06	0.69	0.0039	7.41E-04	4.94E-03	2.12E-04	5.90E-03
Silver	5.10	0.17	0.0016	1.84E-03	1.19E-03	8.82E-05	3.12E-03	14.80	0.35	0.002	5.33E-03	2.48E-03	1.08E-04	7.92E-03
Thallium	0.57	0.32	0.0036	2.04E-04	2.31E-03	1.99E-04	2.71E-03	0.81	0.69	0.005	2.90E-04	4.94E-03	2.72E-04	5.51E-03
Zinc	1057.40	356.33	0.71	3.81E-01	2.56E+00	3.89E-02	2.98E+00	2805.39	455.78	0.92	1.01E+00	3.27E+00	5.04E-02	4.33E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of concern; DW = dry-weight; FP = floodplain; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; molybdenum not analyzed in plants and mercury not analyzed in surface water

Food chain modeling equations

1 $Dose_{soil} = FP_{soil\ LWA} * SIR$

2 $Dose_{plant} = FP_{plant\ LWA} * FIR * 100\%$

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	386	kilograms
Soil ingestion rate (SIR) =	0.0004	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0550	L/kg BW/day
Food ingestion rate (FIR) =	0.0072	kg DW/kg BW/day

Percent diet composition

Metric	Value
Plant (shrub) diet =	100%

Table C-7 Estimated Daily Doses (EDDs) for Northern Goshawk Foraging in Mineral Creek Terrestrial and Floodplain Habitats

COPEC	Exposure Point Concentrations											EDDs (mg/kg BW/day)			
	HH Soil (mg/kg, DW)	MH Soil (mg/kg, DW)	LH Soil (mg/kg, DW)	FP Soil (mg/kg, DW)	VG Soil (mg/kg, DW)	HH SM[1] (mg/kg, DW)	MH SM[1] (mg/kg, DW)	LH SM[1] (mg/kg, DW)	FP SM[1] (mg/kg, DW)	VG SM[1] (mg/kg, DW)	Surface Water LWA (mg/L)	$Dose_{soil}$[2]	$Dose_{sm}$[3]	$Dose_{water}$[4]	Total EDD[5]
Central Tendency Exposure (CTE) Scenario															
Arsenic	49.27	29.34	42.64	45.97	14.86	0.19	0.12	0.17	0.18	0.07	4.06E-03	1.21E-02	6.03E-03	2.36E-04	1.84E-02
Barium	152.20	138.30	171.60	94.68	163.50	1.14	1.04	1.29	0.71	1.23	2.43E-02	1.27E-01	9.94E-02	1.41E-03	2.27E-01
Cadmium	9.55	1.63	1.61	3.82	1.07	0.83	0.36	0.36	0.54	0.29	2.51E-03	8.84E-04	2.44E-02	1.45E-04	2.55E-02
Chromium	4.76	6.59	4.87	4.39	5.92	0.73	0.93	0.74	0.69	0.86	3.22E-03	4.60E-03	6.97E-02	1.87E-04	7.45E-02
Copper	182.10	69.23	150.40	150.89	29.23	16.34	14.21	15.89	15.90	12.55	3.95E-02	2.47E-02	1.03E+00	2.29E-03	1.06E+00
Lead	2198.00	1832.00	728.60	358.31	174.30	32.43	29.92	19.90	14.54	10.57	1.60E-02	1.50E-01	8.83E-01	9.29E-04	1.03E+00
Manganese	6666.00	1890.00	835.80	2058.11	1355.00	136.65	38.75	17.13	42.19	27.78	7.27E-01	1.07E+00	2.31E+00	4.22E-02	3.42E+00
Mercury	0.09	0.03	0.09	1608.07	0.03	0.005	0.002	0.005	87.32	0.002	0	1.84E-02	1.05E-01	0.00E+00	1.23E-01
Molybdenum	12.28	2.42	1.72	2.75	3.26	0	0	0	0	0	2.50E-03	2.54E-03	0.00E+00	1.45E-04	2.69E-03
Nickel	6.48	5.29	3.17	4.98	3.37	1.87	1.70	1.34	1.65	1.38	4.48E-03	2.66E-03	1.13E-01	2.60E-04	1.16E-01
Selenium	0.93	0.82	1.47	1.44	0.93	0.64	0.61	0.76	0.76	0.64	3.46E-03	7.31E-04	5.26E-02	2.01E-04	5.35E-02
Silver	7.69	4.91	2.87	1.01	1.10	0.03	0.02	0.01	0.00	0.00	1.62E-03	8.88E-04	3.72E-04	9.38E-05	1.35E-03
Vanadium	12.79	19.89	17.14	21.40	18.01	0.16	0.24	0.21	0.26	0.22	2.33E-03	1.41E-02	1.81E-02	1.35E-04	3.24E-02
Zinc	2010.00	456.10	368.20	484.76	190.00	134.31	120.96	119.15	121.48	113.71	7.10E-01	1.56E-01	9.31E+00	4.12E-02	9.50E+00
Reasonable Maximum Exposure (RME) Scenario															
Arsenic	65.47	39.38	57.42	125.53	19.91	0.24	0.16	0.22	0.41	0.09	1.01E-02	1.69E-02	7.88E-03	5.86E-04	2.54E-02
Barium	206.70	211.60	195.10	126.98	180.90	1.55	1.59	1.46	0.95	1.36	2.65E-02	1.41E-01	1.11E-01	1.54E-03	2.53E-01
Cadmium	20.01	2.35	2.52	26.67	1.88	1.17	0.43	0.44	1.34	0.38	6.45E-03	1.78E-03	3.26E-02	3.74E-04	3.48E-02
Chromium	5.19	7.70	5.47	5.61	6.23	0.78	1.04	0.81	0.82	0.89	4.33E-03	4.86E-03	7.26E-02	2.51E-04	7.77E-02
Copper	264.60	97.56	256.40	709.93	34.06	17.24	14.93	17.17	19.89	12.83	9.17E-02	3.51E-02	1.06E+00	5.32E-03	1.10E+00
Lead	2940.00	3339.00	958.00	937.53	225.00	36.88	39.01	22.46	22.25	11.84	5.54E-02	2.04E-01	9.98E-01	3.21E-03	1.21E+00
Manganese	21678.00	2386.00	1128.00	6234.70	1964.00	444.40	48.91	23.12	127.81	40.26	1.46E+00	1.61E+00	3.46E+00	8.48E-02	5.15E+00
Mercury	0.14	0.12	0.40	5079.43	0.11	0.008	0.007	0.022	275.81	0.006	0	5.81E-02	3.30E-01	0.00E+00	3.88E-01
Molybdenum	29.16	3.52	2.45	4.05	6.12	0	0	0	0	0	2.50E-03	4.77E-03	0.00E+00	1.45E-04	4.91E-03
Nickel	14.93	5.83	3.74	8.48	4.82	2.75	1.78	1.45	2.12	1.63	8.20E-03	3.82E-03	1.34E-01	4.76E-04	1.38E-01
Selenium	1.26	1.16	1.87	2.11	1.29	0.72	0.70	0.84	0.87	0.73	4.19E-03	1.01E-03	5.95E-02	2.43E-04	6.07E-02
Silver	11.19	8.40	3.63	2.72	2.23	0.04	0.03	0.01	0.01	0.01	2.16E-03	1.79E-03	7.50E-04	1.25E-04	2.66E-03
Vanadium	13.97	22.44	19.12	31.91	19.34	0.17	0.28	0.24	0.39	0.24	3.24E-03	1.52E-02	1.96E-02	1.88E-04	3.51E-02
Zinc	5523.00	961.30	538.90	1333.53	236.70	144.25	127.50	122.39	130.48	115.49	2.15E+00	2.08E-01	9.46E+00	1.25E-01	9.80E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of concern; DW = dry-weight; AUF = area use factor; HH = high-level halo; MH = mid-level halo; LH = low-level halo; FP = floodplain; VG = vegetated upland; SW = surface water; LWA = length-weighted average; SM = small mammal; BPMD = Bonita Peak Mining District

Grey shaded entries indicate that exposure values are unavailable; no soil to small mammal uptake equation for molybdenum and mercury not analyzed in surface water and invertebrate tissue

Food chain modeling equations

1 See soil to small mammal equations in report Table 3.10

2 $Dose_{soil} = [(HH_{soil}*HH\ AUF_{BPMD}) + (MH_{soil}*MH\ AUF_{BPMD}) + (LH_{soil}*LH\ AUF_{BPMD}) + (FP_{soil}*FP\ AUF_{BPMD}) + (VG_{soil}*VG\ AUF_{BPMD})]*SIR$

3 $Dose_{SM} = [[(HH_{SM}*HH\ AUF_{BPMD}) + (MH_{SM}*MH\ AUF_{BPMD}) + (LH_{SM}*LH\ AUF_{BPMD}) + (FP_{SM}*FP\ AUF_{BPMD}) + (VG_{SM}*VG\ AUF_{BPMD})]*FIR]*100\%$

4 $Dose_{water} = SW_{LWA}*WIR$

5 Total EDD = $Dose_{soil} + Dose_{SM} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	1.04	kilograms
Soil ingestion rate (SIR) =	0.0008	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0580	L/kg BW/day
Food ingestion rate (FIR) =	0.0817	kg DW/kg BW/day

Area use factors (unitless)

Metric	Value
HH AUF_{BPMD} =	0.0018
MH AUF_{BPMD} =	0.0067
LH AUF_{BPMD} =	0.0009
FP AUF_{BPMD} =	0.0146
VG AUF_{BPMD} =	0.9761

Percent diet composition

Metric	Value
Sm. mammal diet =	100%

Table C-8 Estimated Daily Doses (EDDs) for Northern Goshawk Foraging in Cement Creek Terrestrial and Floodplain Habitats

COPEC	Exposure Point Concentrations											EDDs (mg/kg BW/day)			
	HH Soil (mg/kg, DW)	MH Soil (mg/kg, DW)	LH Soil (mg/kg, DW)	FP Soil (mg/kg, DW)	VG Soil (mg/kg, DW)	HH SM[1] (mg/kg, DW)	MH SM[1] (mg/kg, DW)	LH SM[1] (mg/kg, DW)	FP SM[1] (mg/kg, DW)	VG SM[1] (mg/kg, DW)	Surface Water LWA (mg/L)	$Dose_{soil}$[2]	$Dose_{sm}$[3]	$Dose_{water}$[4]	Total EDD[5]
Central Tendency Exposure (CTE) Scenario															
Arsenic	49.27	29.34	42.64	34.23	14.86	0.19	0.12	0.17	0.14	0.07	4.17E-03	1.24E-02	6.14E-03	2.42E-04	1.88E-02
Barium	152.20	138.30	171.60	84.86	163.50	1.14	1.04	1.29	0.64	1.23	1.39E-02	1.27E-01	9.96E-02	8.07E-04	2.27E-01
Cadmium	9.55	1.63	1.61	2.06	1.07	0.83	0.36	0.36	0.40	0.29	4.82E-03	8.86E-04	2.45E-02	2.80E-04	2.56E-02
Chromium	4.76	6.59	4.87	4.69	5.92	0.73	0.93	0.74	0.72	0.86	3.42E-03	4.60E-03	6.97E-02	1.98E-04	7.45E-02
Copper	182.10	69.23	150.40	100.82	29.23	16.34	14.21	15.89	15.00	12.55	6.92E-02	2.60E-02	1.03E+00	4.02E-03	1.06E+00
Lead	2198.00	1832.00	728.60	583.90	174.30	32.43	29.92	19.90	18.04	10.57	2.08E-02	1.72E-01	9.13E-01	1.21E-03	1.09E+00
Manganese	6666.00	1890.00	835.80	1820.01	1355.00	136.65	38.75	17.13	37.31	27.78	3.24E+00	1.08E+00	2.31E+00	1.88E-01	3.57E+00
Mercury	0.09	0.03	0.09	0.06	0.03	0.005	0.002	0.005	0.00	0.002	0	2.71E-05	1.54E-04	0.00E+00	1.81E-04
Molybdenum	12.28	2.42	1.72	3.82	3.26	0	0	0	0	0	2.50E-03	2.54E-03	0.00E+00	1.45E-04	2.69E-03
Nickel	6.48	5.29	3.17	3.53	3.37	1.87	1.70	1.34	1.41	1.38	6.54E-03	2.66E-03	1.13E-01	3.80E-04	1.16E-01
Selenium	0.93	0.82	1.47	2.12	0.93	0.64	0.61	0.76	0.87	0.64	3.60E-03	7.40E-04	5.28E-02	2.09E-04	5.37E-02
Silver	7.69	4.91	2.87	1.27	1.10	0.03	0.02	0.01	0.01	0.00	1.72E-03	9.49E-04	3.97E-04	9.98E-05	1.45E-03
Vanadium	12.79	19.89	17.14	22.06	18.01	0.16	0.24	0.21	0.27	0.22	5.50E-03	1.41E-02	1.81E-02	3.19E-04	3.25E-02
Zinc	2010.00	456.10	368.20	527.77	190.00	134.31	120.96	119.15	122.21	113.71	1.80E+00	1.62E-01	9.32E+00	1.05E-01	9.58E+00
Reasonable Maximum Exposure (RME) Scenario															
Arsenic	65.47	39.38	57.42	41.14	19.91	0.24	0.16	0.22	0.16	0.09	6.51E-03	1.66E-02	7.80E-03	3.77E-04	2.47E-02
Barium	206.70	211.60	195.10	115.27	180.90	1.55	1.59	1.46	0.86	1.36	1.61E-02	1.41E-01	1.11E-01	9.36E-04	2.53E-01
Cadmium	20.01	2.35	2.52	4.76	1.88	1.17	0.43	0.44	0.59	0.38	6.29E-03	1.56E-03	3.19E-02	3.65E-04	3.38E-02
Chromium	5.19	7.70	5.47	5.63	6.23	0.78	1.04	0.81	0.83	0.89	4.43E-03	4.86E-03	7.26E-02	2.57E-04	7.77E-02
Copper	264.60	97.56	256.40	144.13	34.06	17.24	14.93	17.17	15.80	12.83	1.02E-01	3.19E-02	1.06E+00	5.93E-03	1.10E+00
Lead	2940.00	3339.00	958.00	855.76	225.00	36.88	39.01	22.46	21.37	11.84	3.28E-02	2.34E-01	1.03E+00	1.90E-03	1.27E+00
Manganese	21678.00	2386.00	1128.00	2954.48	1964.00	444.40	48.91	23.12	60.57	40.26	5.43E+00	1.60E+00	3.42E+00	3.15E-01	5.33E+00
Mercury	0.14	0.12	0.40	0.11	0.11	0.008	0.007	0.022	0.01	0.006	0	9.09E-05	5.17E-04	0.00E+00	6.08E-04
Molybdenum	29.16	3.52	2.45	4.97	6.12	0	0	0	0	0	2.50E-03	4.76E-03	0.00E+00	1.45E-04	4.91E-03
Nickel	14.93	5.83	3.74	5.01	4.82	2.75	1.78	1.45	1.66	1.63	9.56E-03	3.79E-03	1.33E-01	5.54E-04	1.38E-01
Selenium	1.26	1.16	1.87	2.54	1.29	0.72	0.70	0.84	0.94	0.73	3.97E-03	1.02E-03	5.96E-02	2.31E-04	6.08E-02
Silver	11.19	8.40	3.63	1.97	2.23	0.04	0.03	0.01	0.01	0.01	2.17E-03	1.85E-03	7.77E-04	1.26E-04	2.76E-03
Vanadium	13.97	22.44	19.12	25.37	19.34	0.17	0.28	0.24	0.31	0.24	6.30E-03	1.51E-02	1.95E-02	3.65E-04	3.50E-02
Zinc	5523.00	961.30	538.90	1075.86	236.70	144.25	127.50	122.39	128.52	115.49	2.94E+00	2.20E-01	9.48E+00	1.70E-01	9.87E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of concern; DW = dry-weight; AUF = area use factor; HH = high-level halo; MH = mid-level halo; LH = low-level halo; FP = floodplain; VG = vegetated upland; SW = surface water; LWA = length-weighted average; SM = small mammal; BPMD = Bonita Peak Mining District

Grey shaded entries indicate that exposure values are unavailable; no soil to small mammal uptake equation for molybdenum and mercury not analyzed in surface water and invertebrate tissue

Food chain modeling equations

1 See soil to small mammal equations in report Table 3.10

2 $Dose_{soil} = [(HH_{soil}*HH\ AUF_{BPMD}) + (MH_{soil}*MH\ AUF_{BPMD}) + (LH_{soil}*LH\ AUF_{BPMD}) + (FP_{soil}*FP\ AUF_{BPMD}) + (VG_{soil}*VG\ AUF_{BPMD})]*SIR$

3 $Dose_{SM} = [[(HH_{SM}*HH\ AUF_{BPMD}) + (MH_{SM}*MH\ AUF_{BPMD}) + (LH_{SM}*LH\ AUF_{BPMD}) + (FP_{SM}*FP\ AUF_{BPMD}) + (VG_{SM}*VG\ AUF_{BPMD})]*FIR]*100\%$

4 $Dose_{water} = SW_{LWA}*WIR$

5 Total EDD = $Dose_{soil} + Dose_{SM} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	1.04	kilograms
Soil ingestion rate (SIR) =	0.0008	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0580	L/kg BW/day
Food ingestion rate (FIR) =	0.0817	kg DW/kg BW/day

Area use factors (unitless)

Metric	Value
HH AUF_{BPMD} =	0.0041
MH AUF_{BPMD} =	0.0142
LH AUF_{BPMD} =	0.0183
FP AUF_{BPMD} =	0.0088
VG AUF_{BPMD} =	0.9545

Percent diet composition

Metric	Value
Sm. mammal diet =	100%

Table C-9 Estimated Daily Doses (EDDs) for Northern Goshawk Foraging in Animas River Terrestrial and Floodplain Habitats

COPEC	Exposure Point Concentrations											EDDs (mg/kg BW/day)			
	HH Soil (mg/kg, DW)	MH Soil (mg/kg, DW)	LH Soil (mg/kg, DW)	FP Soil (mg/kg, DW)	VG Soil (mg/kg, DW)	HH SM[1] (mg/kg, DW)	MH SM[1] (mg/kg, DW)	LH SM[1] (mg/kg, DW)	FP SM[1] (mg/kg, DW)	VG SM[1] (mg/kg, DW)	Surface Water LWA (mg/L)	$Dose_{soil}$[2]	$Dose_{sm}$[3]	$Dose_{water}$[4]	Total EDD[5]
Central Tendency Exposure (CTE) Scenario															
Arsenic	49.27	29.34	42.64	29.15	14.86	0.19	0.12	0.17	0.12	0.07	2.44E-03	1.22E-02	6.06E-03	1.41E-04	1.84E-02
Barium	152.20	138.30	171.60	92.68	163.50	1.14	1.04	1.29	0.70	1.23	2.33E-02	1.26E-01	9.92E-02	1.35E-03	2.27E-01
Cadmium	9.55	1.63	1.61	5.37	1.07	0.83	0.36	0.36	0.63	0.29	2.64E-03	9.60E-04	2.50E-02	1.53E-04	2.61E-02
Chromium	4.76	6.59	4.87	5.54	5.92	0.73	0.93	0.74	0.82	0.86	3.22E-03	4.60E-03	6.98E-02	1.87E-04	7.46E-02
Copper	182.10	69.23	150.40	213.44	29.23	16.34	14.21	15.89	16.72	12.55	1.95E-02	2.72E-02	1.04E+00	1.13E-03	1.06E+00
Lead	2198.00	1832.00	728.60	1658.69	174.30	32.43	29.92	19.90	28.63	10.57	6.42E-03	1.78E-01	9.16E-01	3.72E-04	1.10E+00
Manganese	6666.00	1890.00	835.80	4655.00	1355.00	136.65	38.75	17.13	95.43	27.78	2.60E+00	1.14E+00	2.45E+00	1.51E-01	3.74E+00
Mercury	0.09	0.03	0.09	0.23	0.03	0.005	0.002	0.005	0.01	0.002	0	2.95E-05	1.68E-04	0.00E+00	1.98E-04
Molybdenum	12.28	2.42	1.72	5.56	3.26	0	0	0	0	0	2.50E-03	2.62E-03	0.00E+00	1.45E-04	2.77E-03
Nickel	6.48	5.29	3.17	6.52	3.37	1.87	1.70	1.34	1.87	1.38	2.98E-03	2.70E-03	1.14E-01	1.73E-04	1.16E-01
Selenium	0.93	0.82	1.47	1.47	0.93	0.64	0.61	0.76	0.76	0.64	3.33E-03	7.36E-04	5.27E-02	1.93E-04	5.36E-02
Silver	7.69	4.91	2.87	5.10	1.10	0.03	0.02	0.01	0.02	0.00	1.60E-03	9.79E-04	4.10E-04	9.30E-05	1.48E-03
Vanadium	12.79	19.89	17.14	19.14	18.01	0.16	0.24	0.21	0.24	0.22	2.06E-03	1.40E-02	1.81E-02	1.19E-04	3.22E-02
Zinc	2010.00	456.10	368.20	1057.40	190.00	134.31	120.96	119.15	128.36	113.71	7.07E-01	1.74E-01	9.33E+00	4.10E-02	9.55E+00
Reasonable Maximum Exposure (RME) Scenario															
Arsenic	65.47	39.38	57.42	40.57	19.91	0.24	0.16	0.22	0.16	0.09	3.67E-03	1.63E-02	7.71E-03	2.13E-04	2.43E-02
Barium	206.70	211.60	195.10	129.97	180.90	1.55	1.59	1.46	0.97	1.36	2.37E-02	1.41E-01	1.10E-01	1.37E-03	2.52E-01
Cadmium	20.01	2.35	2.52	15.17	1.88	1.17	0.43	0.44	1.03	0.38	3.35E-03	1.79E-03	3.29E-02	1.95E-04	3.49E-02
Chromium	5.19	7.70	5.47	7.38	6.23	0.78	1.04	0.81	1.01	0.89	3.98E-03	4.87E-03	7.27E-02	2.31E-04	7.78E-02
Copper	264.60	97.56	256.40	449.88	34.06	17.24	14.93	17.17	18.62	12.83	2.76E-02	3.55E-02	1.06E+00	1.60E-03	1.10E+00
Lead	2940.00	3339.00	958.00	4823.14	225.00	36.88	39.01	22.46	45.90	11.84	1.52E-02	2.75E-01	1.05E+00	8.81E-04	1.33E+00
Manganese	21678.00	2386.00	1128.00	8250.33	1964.00	444.40	48.91	23.12	169.13	40.26	3.43E+00	1.75E+00	3.75E+00	1.99E-01	5.70E+00
Mercury	0.14	0.12	0.40	0.58	0.11	0.008	0.007	0.022	0.03	0.006	0	9.52E-05	5.42E-04	0.00E+00	6.37E-04
Molybdenum	29.16	3.52	2.45	13.49	6.12	0	0	0	0	0	2.50E-03	5.01E-03	0.00E+00	1.45E-04	5.16E-03
Nickel	14.93	5.83	3.74	9.19	4.82	2.75	1.78	1.45	2.20	1.63	3.64E-03	3.89E-03	1.35E-01	2.11E-04	1.39E-01
Selenium	1.26	1.16	1.87	2.06	1.29	0.72	0.70	0.84	0.87	0.73	3.85E-03	1.02E-03	5.95E-02	2.23E-04	6.08E-02
Silver	11.19	8.40	3.63	14.80	2.23	0.04	0.03	0.01	0.06	0.01	1.97E-03	2.01E-03	8.43E-04	1.14E-04	2.97E-03
Vanadium	13.97	22.44	19.12	24.21	19.34	0.17	0.28	0.24	0.30	0.24	2.06E-03	1.51E-02	1.95E-02	1.19E-04	3.48E-02
Zinc	5523.00	961.30	538.90	2805.39	236.70	144.25	127.50	122.39	137.51	115.49	9.15E-01	2.60E-01	9.49E+00	5.31E-02	9.81E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of concern; DW = dry-weight; AUF = area use factor; HH = high-level halo; MH = mid-level halo; LH = low-level halo; FP = floodplain; VG = vegetated upland; SW = surface water; LWA = length-weighted average; SM = small mammal; BPMD = Bonita Peak Mining District

Grey shaded entries indicate that exposure values are unavailable; no soil to small mammal uptake equation for molybdenum and mercury not analyzed in surface water and invertebrate tissue

Food chain modeling equations

1 See soil to small mammal equations in report Table 3.10

2 $Dose_{soil} = [(HH_{soil}*HH\ AUF_{BPMD}) + (MH_{soil}*MH\ AUF_{BPMD}) + (LH_{soil}*LH\ AUF_{BPMD}) + (FP_{soil}*FP\ AUF_{BPMD}) + (VG_{soil}*VG\ AUF_{BPMD})]*SIR$

3 $Dose_{SM} = [[(HH_{SM}*HH\ AUF_{BPMD}) + (MH_{SM}*MH\ AUF_{BPMD}) + (LH_{SM}*LH\ AUF_{BPMD}) + (FP_{SM}*FP\ AUF_{BPMD}) + (VG_{SM}*VG\ AUF_{BPMD})]*FIR]*100\%$

4 $Dose_{water} = SW_{LWA}*WIR$

5 Total EDD = $Dose_{soil} + Dose_{SM} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	1.04	kilograms
Soil ingestion rate (SIR) =	0.0008	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0580	L/kg BW/day
Food ingestion rate (FIR) =	0.0817	kg DW/kg BW/day

Area use factors (unitless)

Metric	Value
HH AUF_{BPMD} =	0.0078
MH AUF_{BPMD} =	0.0035
LH AUF_{BPMD} =	0.0050
FP AUF_{BPMD} =	0.0200
VG AUF_{BPMD} =	0.9636

Percent diet composition

Metric	Value
Sm. mammal diet =	100%

Table C-10 EU-01 Estimated Daily Doses (EDDs) for American Robin Foraging in Lower Mainstem Mineral Creek. Invertebrate and plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	31.40	8.63	1.13	0.30	0.31	0.18	3.54E-03	7.85E-01	3.32E-01	2.37E-02	4.82E-04	5.71E-01
Barium	120.00	64.20	25.13	25.28	46.62	29.16	2.37E-02	3.00E+00	3.00E+00	3.05E+00	3.22E-03	4.52E+00
Cadmium	1.63	74.50	3.68	0.39	0.98	6.37	5.47E-04	4.07E-02	2.68E+00	2.40E-01	7.44E-05	1.48E+00
Chromium	5.14	3.75	3.45	2.33	2.51	2.58	3.60E-03	1.29E-01	2.37E-01	2.24E-01	4.89E-04	2.95E-01
Copper	138.10	28.20	43.99	7.46	11.34	6.85	9.05E-03	3.45E+00	2.35E+00	7.73E-01	1.23E-03	3.29E+00
Lead	367.40	186.00	35.25	10.49	6.80	2.39	8.40E-03	9.19E+00	7.50E+00	5.88E-01	1.14E-03	8.64E+00
Manganese	1150.00	732.00	217.50	301.60	403.70	314.20	2.78E-01	2.88E+01	3.20E+01	3.08E+01	3.78E-02	4.58E+01
Mercury	0.15	0	0	0.13	0.13	0.13	0	3.83E-03	0.00E+00	1.13E-02	0.00E+00	7.58E-03
Molybdenum	3.20	0	0	0	0	0	2.50E-03	8.00E-02	0.00E+00	0.00E+00	3.40E-04	4.02E-02
Nickel	4.16	1.48	1.24	1.28	1.36	1.16	2.37E-03	1.04E-01	8.97E-02	1.15E-01	3.22E-04	1.54E-01
Selenium	1.87	20.19	0.89	0.31	0.28	0.34	3.88E-03	4.68E-02	7.23E-01	2.81E-02	5.28E-04	3.99E-01
Silver	0.80	1.22	1.07	0.21	0.14	0.18	1.78E-03	1.99E-02	7.55E-02	1.58E-02	2.42E-04	5.57E-02
Vanadium	34.20	15.30	1.94	0.50	0.71	0.66	1.83E-03	8.55E-01	5.87E-01	5.67E-02	2.49E-04	7.50E-01
Zinc	486.40	687.00	210.20	97.14	99.42	413.60	1.47E-01	1.22E+01	3.02E+01	1.88E+01	1.99E-02	3.06E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	45.31	9.32	1.88	0.96	0.88	0.39	5.53E-03	1.13E+00	3.80E-01	6.70E-02	7.52E-04	7.90E-01
Barium	167.00	77.50	31.76	45.29	79.92	73.74	2.56E-02	4.18E+00	3.66E+00	6.03E+00	3.47E-03	6.93E+00
Cadmium	3.01	74.50	9.72	0.66	1.87	10.65	6.19E-04	7.53E-02	2.87E+00	4.08E-01	8.42E-05	1.68E+00
Chromium	7.21	5.92	6.15	2.53	2.98	3.24	4.58E-03	1.80E-01	3.96E-01	2.65E-01	6.23E-04	4.21E-01
Copper	256.60	28.20	87.41	8.69	18.42	8.86	1.39E-02	6.42E+00	3.71E+00	1.08E+00	1.89E-03	5.60E+00
Lead	603.90	186.00	82.04	46.24	27.70	4.50	1.98E-02	1.51E+01	8.97E+00	2.34E+00	2.69E-03	1.32E+01
Manganese	1904.00	732.00	377.10	534.90	1690.00	905.80	3.45E-01	4.76E+01	3.70E+01	9.45E+01	4.69E-02	8.96E+01
Mercury	0.29	0	0	0.13	0.13	0.13	0	7.20E-03	0.00E+00	1.15E-02	0.00E+00	9.35E-03
Molybdenum	4.25	0	0	0	0	0	2.50E-03	1.06E-01	0.00E+00	0.00E+00	3.40E-04	5.33E-02
Nickel	5.50	2.31	2.91	2.01	2.42	2.79	3.02E-03	1.37E-01	1.71E-01	2.19E-01	4.11E-04	2.64E-01
Selenium	3.00	45.90	2.69	0.43	0.33	0.78	4.26E-03	7.50E-02	1.66E+00	4.72E-02	5.79E-04	8.93E-01
Silver	1.49	1.22	4.51	0.41	0.17	0.39	2.30E-03	3.73E-02	1.83E-01	2.93E-02	3.12E-04	1.25E-01
Vanadium	76.10	15.30	3.77	0.51	1.05	1.57	1.99E-03	1.90E+00	6.44E-01	9.54E-02	2.71E-04	1.32E+00
Zinc	709.60	687.00	291.80	139.50	168.30	584.00	1.63E-01	1.77E+01	3.28E+01	2.74E+01	2.22E-02	3.90E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{Mid-level } DRC_{soil\ invert} * 22\%) + (\text{Mid-level } DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(\text{Mid-level } DRC_{grass} * 19\%) + (\text{Mid-level } DRC_{herb} * 19\%) + (\text{Mid-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-11 EU-02 Estimated Daily Doses (EDDs) for American Robin Foraging in Lower Mainstem Mineral Creek. Invertebrate and plant tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	23.20	8.63	0.78	0.18	0.31	0.18	3.31E-03	5.80E-01	3.21E-01	2.01E-02	4.51E-04	4.61E-01
Barium	135.40	64.20	25.13	25.28	40.71	24.18	2.03E-02	3.39E+00	3.00E+00	2.72E+00	2.76E-03	4.55E+00
Cadmium	0.76	12.60	2.32	0.31	0.66	1.35	1.09E-03	1.90E-02	5.06E-01	7.09E-02	1.48E-04	2.98E-01
Chromium	3.46	3.75	3.45	1.98	2.47	2.34	3.59E-03	8.65E-02	2.37E-01	2.05E-01	4.88E-04	2.65E-01
Copper	43.84	17.60	36.43	6.09	7.78	5.23	1.48E-02	1.10E+00	1.75E+00	5.76E-01	2.01E-03	1.71E+00
Lead	231.10	115.00	8.86	1.29	2.39	1.47	9.62E-03	5.78E+00	4.24E+00	1.55E-01	1.31E-03	5.08E+00
Manganese	558.60	732.00	203.40	301.60	180.20	314.20	5.86E-01	1.40E+01	3.16E+01	2.42E+01	7.98E-02	3.49E+01
Mercury	0.08	0	0	0.13	0.13	0.13	0	2.03E-03	0.00E+00	1.13E-02	0.00E+00	6.68E-03
Molybdenum	3.36	0	0	0	0	0	2.50E-03	8.40E-02	0.00E+00	0.00E+00	3.40E-04	4.22E-02
Nickel	2.02	1.48	0.66	1.06	0.80	0.97	3.14E-03	5.05E-02	7.16E-02	8.54E-02	4.27E-04	1.04E-01
Selenium	1.41	20.19	0.89	0.31	0.26	0.34	3.77E-03	3.53E-02	7.23E-01	2.75E-02	5.12E-04	3.93E-01
Silver	0.50	0.54	1.07	0.21	0.13	0.18	1.80E-03	1.24E-02	5.21E-02	1.55E-02	2.44E-04	4.01E-02
Vanadium	19.32	15.30	1.82	0.50	0.71	0.66	2.60E-03	4.83E-01	5.84E-01	5.66E-02	3.54E-04	5.62E-01
Zinc	336.80	356.00	210.20	79.53	65.19	105.50	2.56E-01	8.42E+00	1.88E+01	7.60E+00	3.48E-02	1.74E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	37.91	9.32	1.28	0.35	0.88	0.39	5.00E-03	9.48E-01	3.61E-01	4.87E-02	6.80E-04	6.79E-01
Barium	185.00	77.50	31.57	30.71	48.77	32.15	2.11E-02	4.63E+00	3.66E+00	3.37E+00	2.86E-03	5.83E+00
Cadmium	1.32	12.60	4.50	0.66	1.04	2.14	1.28E-03	3.30E-02	5.74E-01	1.18E-01	1.74E-04	3.63E-01
Chromium	4.48	5.92	6.15	2.53	2.74	2.70	4.42E-03	1.12E-01	3.96E-01	2.41E-01	6.01E-04	3.75E-01
Copper	65.56	17.60	78.95	7.68	9.52	6.19	1.62E-02	1.64E+00	3.08E+00	7.05E-01	2.21E-03	2.71E+00
Lead	373.70	115.00	18.30	3.03	8.38	4.14	1.30E-02	9.34E+00	4.53E+00	4.69E-01	1.76E-03	7.17E+00
Manganese	797.00	732.00	262.60	534.90	304.90	905.80	7.51E-01	1.99E+01	3.34E+01	5.33E+01	1.02E-01	5.34E+01
Mercury	0.16	0	0	0.13	0.13	0.13	0	3.90E-03	0.00E+00	1.14E-02	0.00E+00	7.67E-03
Molybdenum	4.95	0	0	0	0	0	2.50E-03	1.24E-01	0.00E+00	0.00E+00	3.40E-04	6.20E-02
Nickel	2.50	2.31	0.96	1.57	1.36	1.50	5.13E-03	6.25E-02	1.10E-01	1.34E-01	6.97E-04	1.54E-01
Selenium	2.23	45.90	2.69	0.43	0.29	0.78	5.08E-03	5.58E-02	1.66E+00	4.58E-02	6.91E-04	8.83E-01
Silver	0.80	0.65	4.51	0.41	0.14	0.39	2.21E-03	1.99E-02	1.63E-01	2.86E-02	3.00E-04	1.06E-01
Vanadium	23.87	15.30	2.47	0.51	1.05	1.57	2.83E-03	5.97E-01	6.04E-01	9.54E-02	3.84E-04	6.48E-01
Zinc	514.80	463.00	291.80	134.00	85.50	137.80	2.94E-01	1.29E+01	2.51E+01	1.08E+01	4.00E-02	2.44E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{Low-level } DRC_{soil\ invert} * 22\%) + (\text{Low-level } DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(\text{Low-level } DRC_{grass} * 19\%) + (\text{Low-level } DRC_{herb} * 19\%) + (\text{Low-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-12 EU-03 Estimated Daily Doses (EDDs) for American Robin Foraging in Mainstem Mineral Creek. Invertebrate and plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	25.19	8.63	1.13	0.30	0.31	0.18	3.70E-03	6.30E-01	3.32E-01	2.37E-02	5.03E-04	4.93E-01
Barium	56.12	64.20	25.13	25.28	46.62	29.16	2.62E-02	1.40E+00	3.00E+00	3.05E+00	3.56E-03	3.73E+00
Cadmium	1.26	74.50	3.68	0.39	0.98	6.37	9.79E-04	3.14E-02	2.68E+00	2.40E-01	1.33E-04	1.48E+00
Chromium	4.50	3.75	3.45	2.33	2.51	2.58	3.52E-03	1.13E-01	2.37E-01	2.24E-01	4.78E-04	2.87E-01
Copper	47.27	28.20	43.99	7.46	11.34	6.85	1.29E-02	1.18E+00	2.35E+00	7.73E-01	1.76E-03	2.15E+00
Lead	331.60	186.00	35.25	10.49	6.80	2.39	2.26E-02	8.29E+00	7.50E+00	5.88E-01	3.07E-03	8.19E+00
Manganese	1919.00	732.00	217.50	301.60	403.70	314.20	2.10E-01	4.80E+01	3.20E+01	3.08E+01	2.85E-02	5.54E+01
Mercury	0.05	0	0	0.13	0.13	0.13	0	1.29E-03	0.00E+00	1.13E-02	0.00E+00	6.31E-03
Molybdenum	1.79	0	0	0	0	0	2.50E-03	4.48E-02	0.00E+00	0.00E+00	3.40E-04	2.26E-02
Nickel	3.06	1.48	1.24	1.28	1.36	1.16	1.90E-03	7.66E-02	8.97E-02	1.15E-01	2.58E-04	1.41E-01
Selenium	1.07	20.19	0.89	0.31	0.28	0.34	3.78E-03	2.68E-02	7.23E-01	2.81E-02	5.15E-04	3.89E-01
Silver	0.57	1.22	1.07	0.21	0.14	0.18	1.77E-03	1.42E-02	7.55E-02	1.58E-02	2.40E-04	5.29E-02
Vanadium	18.09	15.30	1.94	0.50	0.71	0.66	1.32E-03	4.52E-01	5.87E-01	5.67E-02	1.80E-04	5.48E-01
Zinc	117.40	687.00	210.20	97.14	99.42	413.60	3.06E-01	2.94E+00	3.02E+01	1.88E+01	4.16E-02	2.60E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	42.12	9.32	1.88	0.96	0.88	0.39	6.58E-03	1.05E+00	3.80E-01	6.70E-02	8.95E-04	7.50E-01
Barium	82.35	77.50	31.76	45.29	79.92	73.74	2.65E-02	2.06E+00	3.66E+00	6.03E+00	3.60E-03	5.88E+00
Cadmium	2.30	74.50	9.72	0.66	1.87	10.65	1.16E-03	5.75E-02	2.87E+00	4.08E-01	1.58E-04	1.67E+00
Chromium	7.12	5.92	6.15	2.53	2.98	3.24	4.54E-03	1.78E-01	3.96E-01	2.65E-01	6.18E-04	4.20E-01
Copper	77.30	28.20	87.41	8.69	18.42	8.86	1.65E-02	1.93E+00	3.71E+00	1.08E+00	2.24E-03	3.36E+00
Lead	617.30	186.00	82.04	46.24	27.70	4.50	4.50E-02	1.54E+01	8.97E+00	2.34E+00	6.12E-03	1.34E+01
Manganese	8120.00	732.00	377.10	534.90	1690.00	905.80	2.50E-01	2.03E+02	3.70E+01	9.45E+01	3.39E-02	1.67E+02
Mercury	0.09	0	0	0.13	0.13	0.13	0	2.21E-03	0.00E+00	1.15E-02	0.00E+00	6.85E-03
Molybdenum	2.38	0	0	0	0	0	2.50E-03	5.95E-02	0.00E+00	0.00E+00	3.40E-04	2.99E-02
Nickel	4.44	2.31	2.91	2.01	2.42	2.79	2.09E-03	1.11E-01	1.71E-01	2.19E-01	2.84E-04	2.50E-01
Selenium	1.50	45.90	2.69	0.43	0.33	0.78	4.16E-03	3.75E-02	1.66E+00	4.72E-02	5.66E-04	8.75E-01
Silver	0.82	1.22	4.51	0.41	0.17	0.39	2.27E-03	2.06E-02	1.83E-01	2.93E-02	3.08E-04	1.17E-01
Vanadium	22.71	15.30	3.77	0.51	1.05	1.57	1.33E-03	5.68E-01	6.44E-01	9.54E-02	1.81E-04	6.54E-01
Zinc	189.70	687.00	291.80	139.50	168.30	584.00	3.35E-01	4.74E+00	3.28E+01	2.74E+01	4.56E-02	3.25E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{Mid-level } DRC_{soil\ invert} * 22\%) + (\text{Mid-level } DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(\text{Mid-level } DRC_{grass} * 19\%) + (\text{Mid-level } DRC_{herb} * 19\%) + (\text{Mid-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-13 EU-3.5 Estimated Daily Doses (EDDs) for American Robin Foraging in Browns Gulch. Invertebrate and plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	37.81	8.63	1.13	0.30	0.31	0.18	2.33E-03	9.45E-01	3.32E-01	2.37E-02	3.17E-04	6.51E-01
Barium	64.93	64.20	25.13	25.28	46.62	29.16	2.70E-02	1.62E+00	3.00E+00	3.05E+00	3.68E-03	3.84E+00
Cadmium	0.83	74.50	3.68	0.39	0.98	6.37	5.10E-03	2.07E-02	2.68E+00	2.40E-01	6.93E-04	1.47E+00
Chromium	4.61	3.75	3.45	2.33	2.51	2.58	2.63E-03	1.15E-01	2.37E-01	2.24E-01	3.57E-04	2.89E-01
Copper	38.73	28.20	43.99	7.46	11.34	6.85	4.69E-02	9.68E-01	2.35E+00	7.73E-01	6.38E-03	2.05E+00
Lead	605.60	186.00	35.25	10.49	6.80	2.39	5.62E-03	1.51E+01	7.50E+00	5.88E-01	7.64E-04	1.16E+01
Manganese	1155.00	732.00	217.50	301.60	403.70	314.20	2.16E+00	2.89E+01	3.20E+01	3.08E+01	2.94E-01	4.60E+01
Mercury	0.21	0	0	0.13	0.13	0.13	0	5.25E-03	0.00E+00	1.13E-02	0.00E+00	8.30E-03
Molybdenum	1.62	0	0	0	0	0	0	4.05E-02	0.00E+00	0.00E+00	0.00E+00	2.03E-02
Nickel	5.35	1.48	1.24	1.28	1.36	1.16	1.16E-02	1.34E-01	8.97E-02	1.15E-01	1.57E-03	1.70E-01
Selenium	1.19	20.19	0.89	0.31	0.28	0.34	2.98E-03	2.99E-02	7.23E-01	2.81E-02	4.05E-04	3.91E-01
Silver	1.66	1.22	1.07	0.21	0.14	0.18	1.38E-03	4.15E-02	7.55E-02	1.58E-02	1.87E-04	6.65E-02
Vanadium	18.69	15.30	1.94	0.50	0.71	0.66	2.00E-03	4.67E-01	5.87E-01	5.67E-02	2.72E-04	5.56E-01
Zinc	203.10	687.00	210.20	97.14	99.42	413.60	1.17E+00	5.08E+00	3.02E+01	1.88E+01	1.60E-01	2.71E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	78.88	9.32	1.88	0.96	0.88	0.39	5.65E-03	1.97E+00	3.80E-01	6.70E-02	7.68E-04	1.21E+00
Barium	78.90	77.50	31.76	45.29	79.92	73.74	2.70E-02	1.97E+00	3.66E+00	6.03E+00	3.68E-03	5.83E+00
Cadmium	1.14	74.50	9.72	0.66	1.87	10.65	1.01E-02	2.85E-02	2.87E+00	4.08E-01	1.37E-03	1.65E+00
Chromium	7.15	5.92	6.15	2.53	2.98	3.24	4.06E-03	1.79E-01	3.96E-01	2.65E-01	5.53E-04	4.20E-01
Copper	68.76	28.20	87.41	8.69	18.42	8.86	7.39E-02	1.72E+00	3.71E+00	1.08E+00	1.00E-02	3.26E+00
Lead	2743.00	186.00	82.04	46.24	27.70	4.50	1.12E-02	6.86E+01	8.97E+00	2.34E+00	1.52E-03	3.99E+01
Manganese	1932.00	732.00	377.10	534.90	1690.00	905.80	3.37E+00	4.83E+01	3.70E+01	9.45E+01	4.58E-01	9.01E+01
Mercury	0.83	0	0	0.13	0.13	0.13	0	2.07E-02	0.00E+00	1.15E-02	0.00E+00	1.61E-02
Molybdenum	2.38	0	0	0	0	0	0	5.94E-02	0.00E+00	0.00E+00	0.00E+00	2.97E-02
Nickel	7.98	2.31	2.91	2.01	2.42	2.79	1.81E-02	2.00E-01	1.71E-01	2.19E-01	2.46E-03	2.96E-01
Selenium	1.60	45.90	2.69	0.43	0.33	0.78	3.99E-03	4.01E-02	1.66E+00	4.72E-02	5.42E-04	8.76E-01
Silver	6.40	1.22	4.51	0.41	0.17	0.39	2.00E-03	1.60E-01	1.83E-01	2.93E-02	2.72E-04	1.86E-01
Vanadium	23.22	15.30	3.77	0.51	1.05	1.57	2.00E-03	5.81E-01	6.44E-01	9.54E-02	2.72E-04	6.60E-01
Zinc	369.00	687.00	291.80	139.50	168.30	584.00	2.31E+00	9.23E+00	3.28E+01	2.74E+01	3.14E-01	3.49E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = [(Mid-level $DRC_{soil\ invert}$ * 22%) + (Mid-level $DRC_{GD\ invert}$ * 20%)] * FIR

3 $Dose_{plant}$ = [(Mid-level DRC_{grass} * 19%) + (Mid-level DRC_{herb} * 19%) + (Mid-level DRC_{shrub} * 20%)] * FIR

4 $Dose_{water} = SW_{LWA} * WIR$

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-14 EU-04 Estimated Daily Doses (EDDs) for American Robin Foraging in Upper Mainstem Mineral Creek. Invertebrate and plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	111.70	8.63	1.50	0.30	0.31	0.18	1.28E-02	2.79E+00	3.44E-01	2.37E-02	1.75E-03	1.58E+00
Barium	75.31	64.20	25.13	25.28	46.62	29.16	3.73E-02	1.88E+00	3.00E+00	3.05E+00	5.07E-03	3.97E+00
Cadmium	1.28	74.50	5.43	0.59	2.86	6.37	5.95E-03	3.21E-02	2.73E+00	3.02E-01	8.09E-04	1.53E+00
Chromium	4.59	3.75	3.45	2.33	2.51	2.58	3.59E-03	1.15E-01	2.37E-01	2.24E-01	4.88E-04	2.88E-01
Copper	160.60	28.20	49.36	13.07	11.34	8.98	2.10E-01	4.02E+00	2.51E+00	1.01E+00	2.86E-02	3.78E+00
Lead	377.10	186.00	63.88	29.97	20.15	3.39	6.38E-02	9.43E+00	8.40E+00	1.60E+00	8.68E-03	9.72E+00
Manganese	972.10	732.00	802.70	394.40	403.70	493.80	2.08E+00	2.43E+01	5.03E+01	3.92E+01	2.82E-01	5.70E+01
Mercury	0.14	0	0	0.13	0.13	0.13	0	3.48E-03	0.00E+00	1.13E-02	0.00E+00	7.41E-03
Molybdenum	1.09	0	0	0	0	0	0	2.73E-02	0.00E+00	0.00E+00	0.00E+00	1.36E-02
Nickel	5.17	1.48	1.24	1.28	1.36	1.18	1.09E-02	1.29E-01	8.97E-02	1.15E-01	1.49E-03	1.68E-01
Selenium	1.04	20.19	0.89	0.34	0.48	0.34	3.78E-03	2.60E-02	7.23E-01	3.49E-02	5.14E-04	3.92E-01
Silver	0.59	1.22	1.07	0.21	0.17	0.18	1.80E-03	1.47E-02	7.55E-02	1.67E-02	2.45E-04	5.35E-02
Vanadium	17.10	15.30	1.94	0.50	0.71	0.66	1.59E-03	4.27E-01	5.87E-01	5.66E-02	2.17E-04	5.36E-01
Zinc	332.50	687.00	442.10	173.00	422.90	494.30	2.58E+00	8.31E+00	3.75E+01	3.32E+01	3.51E-01	3.97E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	430.90	9.32	2.53	0.96	0.88	0.39	4.54E-02	1.08E+01	4.00E-01	6.70E-02	6.17E-03	5.62E+00
Barium	109.20	77.50	61.81	45.29	79.92	73.74	4.70E-02	2.73E+00	4.60E+00	6.03E+00	6.39E-03	6.68E+00
Cadmium	1.84	74.50	9.72	1.07	4.14	10.65	1.35E-02	4.61E-02	2.87E+00	4.88E-01	1.83E-03	1.70E+00
Chromium	5.35	5.92	6.15	2.53	2.98	3.24	4.39E-03	1.34E-01	3.96E-01	2.65E-01	5.97E-04	3.98E-01
Copper	394.70	28.20	87.41	19.09	18.42	13.89	4.84E-01	9.87E+00	3.71E+00	1.55E+00	6.58E-02	7.59E+00
Lead	1233.00	186.00	107.80	106.30	57.52	9.12	1.94E-01	3.08E+01	9.77E+00	5.15E+00	2.64E-02	2.29E+01
Manganese	1199.00	732.00	3056.00	554.10	1690.00	905.80	4.82E+00	3.00E+01	1.21E+02	9.50E+01	6.55E-01	1.23E+02
Mercury	0.36	0	0	0.13	0.13	0.13	0	8.98E-03	0.00E+00	1.14E-02	0.00E+00	1.02E-02
Molybdenum	1.44	0	0	0	0	0	0	3.60E-02	0.00E+00	0.00E+00	0.00E+00	1.80E-02
Nickel	6.66	2.31	2.91	2.01	2.42	2.79	2.53E-02	1.66E-01	1.71E-01	2.19E-01	3.44E-03	2.80E-01
Selenium	1.31	45.90	2.69	0.50	1.14	0.78	4.07E-03	3.28E-02	1.66E+00	7.34E-02	5.54E-04	8.85E-01
Silver	1.10	1.22	4.51	0.41	0.13	0.39	2.19E-03	2.75E-02	1.83E-01	2.82E-02	2.98E-04	1.19E-01
Vanadium	20.79	15.30	3.77	0.51	1.05	1.57	2.66E-03	5.20E-01	6.44E-01	9.54E-02	3.62E-04	6.30E-01
Zinc	851.40	687.00	912.00	219.80	584.60	605.40	5.70E+00	2.13E+01	5.22E+01	4.29E+01	7.76E-01	5.85E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{High-level } DRC_{soil\ invert} * 22\%) + (\text{High-level } DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(\text{High-level } DRC_{grass} * 19\%) + (\text{High-level } DRC_{herb} * 19\%) + (\text{High-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-15 EU-05 Estimated Daily Doses (EDDs) for American Robin Foraging in South Fork Mineral Creek. Invertebrate and plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	19.22	8.63	1.13	0.30	0.31	0.18	2.55E-03	4.81E-01	3.32E-01	2.37E-02	3.46E-04	4.18E-01
Barium	97.74	64.20	25.13	25.28	46.62	29.16	2.80E-02	2.44E+00	3.00E+00	3.05E+00	3.81E-03	4.25E+00
Cadmium	16.15	74.50	3.68	0.39	0.98	6.37	6.12E-03	4.04E-01	2.68E+00	2.40E-01	8.33E-04	1.66E+00
Chromium	5.50	3.75	3.45	2.33	2.51	2.58	3.07E-03	1.37E-01	2.37E-01	2.24E-01	4.18E-04	3.00E-01
Copper	346.40	28.20	43.99	7.46	11.34	6.85	2.72E-02	8.66E+00	2.35E+00	7.73E-01	3.70E-03	5.89E+00
Lead	465.50	186.00	35.25	10.49	6.80	2.39	2.14E-02	1.16E+01	7.50E+00	5.88E-01	2.91E-03	9.87E+00
Manganese	5748.00	732.00	217.50	301.60	403.70	314.20	6.44E-01	1.44E+02	3.20E+01	3.08E+01	8.75E-02	1.03E+02
Mercury	0.04	0	0	0.13	0.13	0.13	0	1.05E-03	0.00E+00	1.13E-02	0.00E+00	6.19E-03
Molybdenum	1.53	0	0	0	0	0	0	3.83E-02	0.00E+00	0.00E+00	0.00E+00	1.92E-02
Nickel	9.57	1.48	1.24	1.28	1.36	1.16	3.87E-03	2.39E-01	8.97E-02	1.15E-01	5.27E-04	2.22E-01
Selenium	1.40	20.19	0.89	0.31	0.28	0.34	3.41E-03	3.50E-02	7.23E-01	2.81E-02	4.64E-04	3.93E-01
Silver	2.49	1.22	1.07	0.21	0.14	0.18	1.55E-03	6.23E-02	7.55E-02	1.58E-02	2.11E-04	7.69E-02
Vanadium	23.08	15.30	1.94	0.50	0.71	0.66	1.41E-03	5.77E-01	5.87E-01	5.67E-02	1.92E-04	6.11E-01
Zinc	1431.00	687.00	210.20	97.14	99.42	413.60	1.33E+00	3.58E+01	3.02E+01	1.88E+01	1.81E-01	4.25E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	27.19	9.32	1.88	0.96	0.88	0.39	4.51E-03	6.80E-01	3.80E-01	6.70E-02	6.13E-04	5.63E-01
Barium	112.00	77.50	31.76	45.29	79.92	73.74	3.04E-02	2.80E+00	3.66E+00	6.03E+00	4.14E-03	6.25E+00
Cadmium	141.70	74.50	9.72	0.66	1.87	10.65	2.19E-02	3.54E+00	2.87E+00	4.08E-01	2.97E-03	3.41E+00
Chromium	6.55	5.92	6.15	2.53	2.98	3.24	4.44E-03	1.64E-01	3.96E-01	2.65E-01	6.04E-04	4.13E-01
Copper	2836.00	28.20	87.41	8.69	18.42	8.86	1.05E-01	7.09E+01	3.71E+00	1.08E+00	1.42E-02	3.79E+01
Lead	1280.00	186.00	82.04	46.24	27.70	4.50	1.37E-01	3.20E+01	8.97E+00	2.34E+00	1.86E-02	2.17E+01
Manganese	23416.00	732.00	377.10	534.90	1690.00	905.80	2.16E+00	5.85E+02	3.70E+01	9.45E+01	2.94E-01	3.59E+02
Mercury	0.09	0	0	0.13	0.13	0.13	0	2.24E-03	0.00E+00	1.15E-02	0.00E+00	6.87E-03
Molybdenum	2.14	0	0	0	0	0	0	5.34E-02	0.00E+00	0.00E+00	0.00E+00	2.67E-02
Nickel	21.93	2.31	2.91	2.01	2.42	2.79	5.72E-03	5.48E-01	1.71E-01	2.19E-01	7.78E-04	4.69E-01
Selenium	2.09	45.90	2.69	0.43	0.33	0.78	3.89E-03	5.22E-02	1.66E+00	4.72E-02	5.29E-04	8.82E-01
Silver	8.46	1.22	4.51	0.41	0.17	0.39	2.22E-03	2.12E-01	1.83E-01	2.93E-02	3.01E-04	2.12E-01
Vanadium	31.34	15.30	3.77	0.51	1.05	1.57	1.68E-03	7.84E-01	6.44E-01	9.54E-02	2.28E-04	7.62E-01
Zinc	5282.00	687.00	291.80	139.50	168.30	584.00	7.30E+00	1.32E+02	3.28E+01	2.74E+01	9.93E-01	9.66E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = [(Mid-level $DRC_{soil\ invert}$ * 22%) + (Mid-level $DRC_{GD\ invert}$ * 20%)] * FIR

3 $Dose_{plant}$ = [(Mid-level DRC_{grass} * 19%) + (Mid-level DRC_{herb} * 19%) + (Mid-level DRC_{shrub} * 20%)] * FIR

4 $Dose_{water} = SW_{LWA} * WIR$

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-16 EU-06 Estimated Daily Doses (EDDs) for American Robin Foraging in Middle Fork Mineral Creek. Invertebrate and plant tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD[5]
Arsenic	12.06	8.63	0.78	0.18	0.31	0.18	2.38E-03	3.02E-01	3.21E-01	2.01E-02	3.24E-04	3.22E-01
Barium	77.78	64.20	25.13	25.28	40.71	24.18	1.73E-02	1.94E+00	3.00E+00	2.72E+00	2.35E-03	3.83E+00
Cadmium	0.79	12.60	2.32	0.31	0.66	1.35	1.10E-03	1.98E-02	5.06E-01	7.09E-02	1.49E-04	2.99E-01
Chromium	2.76	3.75	3.45	1.98	2.47	2.34	2.90E-03	6.91E-02	2.37E-01	2.05E-01	3.94E-04	2.56E-01
Copper	15.31	17.60	36.43	6.09	7.78	5.23	4.87E-03	3.83E-01	1.75E+00	5.76E-01	6.62E-04	1.35E+00
Lead	114.30	115.00	8.86	1.29	2.39	1.47	8.66E-04	2.86E+00	4.24E+00	1.55E-01	1.18E-04	3.62E+00
Manganese	1660.00	732.00	203.40	301.60	180.20	314.20	9.24E-01	4.15E+01	3.16E+01	2.42E+01	1.26E-01	4.87E+01
Mercury	0.04	0	0	0.13	0.13	0.13	0	9.70E-04	0.00E+00	1.13E-02	0.00E+00	6.16E-03
Molybdenum	5.51	0	0	0	0	0	0	1.38E-01	0.00E+00	0.00E+00	0.00E+00	6.89E-02
Nickel	3.33	1.48	0.66	1.06	0.80	0.97	5.28E-03	8.33E-02	7.16E-02	8.54E-02	7.18E-04	1.21E-01
Selenium	1.88	20.19	0.89	0.31	0.26	0.34	3.17E-03	4.70E-02	7.23E-01	2.75E-02	4.32E-04	3.99E-01
Silver	0.52	0.54	1.07	0.21	0.13	0.18	1.45E-03	1.29E-02	5.21E-02	1.55E-02	1.97E-04	4.04E-02
Vanadium	23.35	15.30	1.82	0.50	0.71	0.66	4.11E-03	5.84E-01	5.84E-01	5.66E-02	5.59E-04	6.12E-01
Zinc	103.60	356.00	210.20	79.53	65.19	105.50	1.36E-01	2.59E+00	1.88E+01	7.60E+00	1.85E-02	1.45E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	14.95	9.32	1.28	0.35	0.88	0.39	3.83E-03	3.74E-01	3.61E-01	4.87E-02	5.21E-04	3.92E-01
Barium	89.64	77.50	31.57	30.71	48.77	32.15	1.90E-02	2.24E+00	3.66E+00	3.37E+00	2.58E-03	4.63E+00
Cadmium	1.18	12.60	4.50	0.66	1.04	2.14	1.82E-03	2.95E-02	5.74E-01	1.18E-01	2.48E-04	3.61E-01
Chromium	3.30	5.92	6.15	2.53	2.74	2.70	3.96E-03	8.26E-02	3.96E-01	2.41E-01	5.39E-04	3.60E-01
Copper	17.90	17.60	78.95	7.68	9.52	6.19	1.01E-02	4.48E-01	3.08E+00	7.05E-01	1.38E-03	2.11E+00
Lead	131.90	115.00	18.30	3.03	8.38	4.14	1.98E-03	3.30E+00	4.53E+00	4.69E-01	2.69E-04	4.15E+00
Manganese	2491.00	732.00	262.60	534.90	304.90	905.80	1.14E+00	6.23E+01	3.34E+01	5.33E+01	1.54E-01	7.46E+01
Mercury	0.05	0	0	0.13	0.13	0.13	0	1.22E-03	0.00E+00	1.14E-02	0.00E+00	6.33E-03
Molybdenum	8.52	0	0	0	0	0	0	2.13E-01	0.00E+00	0.00E+00	0.00E+00	1.06E-01
Nickel	4.74	2.31	0.96	1.57	1.36	1.50	1.09E-02	1.19E-01	1.10E-01	1.34E-01	1.49E-03	1.82E-01
Selenium	2.29	45.90	2.69	0.43	0.29	0.78	4.13E-03	5.73E-02	1.66E+00	4.58E-02	5.61E-04	8.84E-01
Silver	0.62	0.65	4.51	0.41	0.14	0.39	1.98E-03	1.56E-02	1.63E-01	2.86E-02	2.69E-04	1.04E-01
Vanadium	28.16	15.30	2.47	0.51	1.05	1.57	9.76E-03	7.04E-01	6.04E-01	9.54E-02	1.33E-03	7.02E-01
Zinc	124.20	463.00	291.80	134.00	85.50	137.80	1.69E-01	3.11E+00	2.51E+01	1.08E+01	2.30E-02	1.95E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{Low-level } DRC_{soil\ invert} * 22\%) + (\text{Low-level } DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(\text{Low-level } DRC_{grass} * 19\%) + (\text{Low-level } DRC_{herb} * 19\%) + (\text{Low-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-17 EU-R1 Estimated Daily Doses (EDDs) for American Robin Foraging in Mill Creek Reference Area. Invertebrate and plant tissue values represent the upland/reference floodplain dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	84.47	7.53	0.78	0.18	0.13	0.13	1.75E-03	2.11E+00	2.84E-01	1.30E-02	2.38E-04	1.20E+00
Barium	113.00	56.53	25.13	25.28	40.71	24.18	2.41E-02	2.83E+00	2.73E+00	2.72E+00	3.28E-03	4.14E+00
Cadmium	1.33	6.76	2.15	0.13	0.34	1.35	2.75E-04	3.32E-02	3.00E-01	5.63E-02	3.74E-05	1.95E-01
Chromium	4.10	3.75	3.45	1.98	2.47	2.34	2.69E-03	1.03E-01	2.37E-01	2.05E-01	3.66E-04	2.73E-01
Copper	221.40	11.92	36.43	5.33	7.26	5.23	1.44E-03	5.54E+00	1.55E+00	5.38E-01	1.96E-04	3.81E+00
Lead	406.50	6.96	4.75	1.29	0.67	1.47	9.29E-04	1.02E+01	3.88E-01	1.04E-01	1.26E-04	5.33E+00
Manganese	1415.00	339.10	203.40	204.30	117.40	271.80	3.89E-02	3.54E+01	1.80E+01	1.81E+01	5.29E-03	3.57E+01
Mercury	0.11	0	0	0.12	0.13	0.13	0	2.75E-03	0.00E+00	1.13E-02	0.00E+00	7.03E-03
Molybdenum	3.60	0	0	0	0	0	0	9.00E-02	0.00E+00	0.00E+00	0.00E+00	4.50E-02
Nickel	4.37	1.48	0.66	1.06	0.72	0.53	1.29E-03	1.09E-01	7.16E-02	6.93E-02	1.76E-04	1.25E-01
Selenium	1.43	20.19	0.74	0.30	0.25	0.25	2.97E-03	3.58E-02	7.18E-01	2.41E-02	4.04E-04	3.89E-01
Silver	0.62	0.45	1.07	0.15	0.13	0.13	1.34E-03	1.55E-02	4.89E-02	1.20E-02	1.83E-04	3.83E-02
Vanadium	15.10	5.58	1.82	0.50	0.55	0.50	1.32E-03	3.78E-01	2.49E-01	4.69E-02	1.79E-04	3.37E-01
Zinc	301.00	278.00	210.20	58.43	51.94	105.50	3.14E-02	7.53E+00	1.61E+01	6.58E+00	4.27E-03	1.51E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	229.00	9.32	1.15	0.35	0.13	0.13	3.62E-03	5.73E+00	3.57E-01	1.80E-02	4.92E-04	3.05E+00
Barium	171.00	77.50	31.57	30.71	48.77	32.15	2.41E-02	4.28E+00	3.66E+00	3.37E+00	3.28E-03	5.65E+00
Cadmium	2.10	9.14	3.16	0.34	0.67	2.14	4.12E-04	5.25E-02	4.14E-01	9.72E-02	5.60E-05	2.82E-01
Chromium	4.60	5.92	6.15	2.31	2.74	2.70	4.15E-03	1.15E-01	3.96E-01	2.35E-01	5.65E-04	3.73E-01
Copper	612.00	16.80	78.95	6.25	8.36	6.19	2.04E-03	1.53E+01	3.05E+00	6.28E-01	2.77E-04	9.49E+00
Lead	968.00	11.30	8.00	3.03	0.94	4.14	1.49E-03	2.42E+01	6.39E-01	2.47E-01	2.03E-04	1.25E+01
Manganese	2680.00	541.00	262.60	281.50	156.60	905.80	7.72E-02	6.70E+01	2.68E+01	4.14E+01	1.05E-02	6.76E+01
Mercury	0.29	0	0	0.13	0.13	0.13	0	7.25E-03	0.00E+00	1.14E-02	0.00E+00	9.33E-03
Molybdenum	5.80	0	0	0	0	0	0	1.45E-01	0.00E+00	0.00E+00	0.00E+00	7.25E-02
Nickel	6.80	2.31	0.96	1.57	1.25	0.97	2.11E-03	1.70E-01	1.10E-01	1.14E-01	2.88E-04	1.97E-01
Selenium	2.50	45.90	1.63	0.38	0.25	0.25	4.07E-03	6.25E-02	1.63E+00	2.66E-02	5.54E-04	8.60E-01
Silver	1.20	0.65	4.51	0.18	0.13	0.13	2.08E-03	3.00E-02	1.63E-01	1.31E-02	2.82E-04	1.03E-01
Vanadium	22.20	9.45	2.49	0.50	0.65	0.50	1.32E-03	5.55E-01	4.03E-01	4.99E-02	1.79E-04	5.04E-01
Zinc	440.00	463.00	254.60	74.77	78.85	137.80	3.95E-02	1.10E+01	2.39E+01	8.88E+00	5.37E-03	2.19E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(Ref.\ DRC_{soil\ invert} * 22\%) + (Ref.\ DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(Ref.\ DRC_{grass} * 19\%) + (Ref.\ DRC_{herb} * 19\%) + (Ref.\ DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $Total\ EDD = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-18 EU-07 Estimated Daily Doses (EDDs) for American Robin Foraging in Animas River Below Cunningham Creek. Invertebrate and plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	28.20	8.63	1.50	0.30	0.31	0.18	2.51E-03	7.05E-01	3.44E-01	2.37E-02	3.42E-04	5.36E-01
Barium	53.30	64.20	25.13	25.28	46.62	29.16	2.05E-02	1.33E+00	3.00E+00	3.05E+00	2.78E-03	3.69E+00
Cadmium	16.97	74.50	5.43	0.59	2.86	6.37	6.52E-04	4.24E-01	2.73E+00	3.02E-01	8.87E-05	1.73E+00
Chromium	5.22	3.75	3.45	2.33	2.51	2.58	3.32E-03	1.30E-01	2.37E-01	2.24E-01	4.51E-04	2.96E-01
Copper	666.30	28.20	49.36	13.07	11.34	8.98	6.36E-03	1.67E+01	2.51E+00	1.01E+00	8.65E-04	1.01E+01
Lead	8787.00	186.00	63.88	29.97	20.15	3.39	5.82E-03	2.20E+02	8.40E+00	1.60E+00	7.91E-04	1.15E+02
Manganese	1203.00	732.00	802.70	394.40	403.70	493.80	3.26E-01	3.01E+01	5.03E+01	3.92E+01	4.44E-02	5.98E+01
Mercury	1.22	0	0	0.13	0.13	0.13	0	3.06E-02	0.00E+00	1.13E-02	0.00E+00	2.10E-02
Molybdenum	26.60	0	0	0	0	0	2.50E-03	6.65E-01	0.00E+00	0.00E+00	3.40E-04	3.33E-01
Nickel	5.17	1.48	1.24	1.28	1.36	1.18	1.66E-03	1.29E-01	8.97E-02	1.15E-01	2.25E-04	1.67E-01
Selenium	2.80	20.19	0.89	0.34	0.48	0.34	3.47E-03	6.99E-02	7.23E-01	3.49E-02	4.72E-04	4.14E-01
Silver	25.43	1.22	1.07	0.21	0.17	0.18	1.66E-03	6.36E-01	7.55E-02	1.67E-02	2.26E-04	3.64E-01
Vanadium	17.12	15.30	1.94	0.50	0.71	0.66	2.55E-03	4.28E-01	5.87E-01	5.66E-02	3.46E-04	5.36E-01
Zinc	3082.00	687.00	442.10	173.00	422.90	494.30	2.42E-01	7.71E+01	3.75E+01	3.32E+01	3.29E-02	7.39E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	64.50	9.32	2.53	0.96	0.88	0.39	4.67E-03	1.61E+00	4.00E-01	6.70E-02	6.35E-04	1.04E+00
Barium	82.83	77.50	61.81	45.29	79.92	73.74	2.09E-02	2.07E+00	4.60E+00	6.03E+00	2.84E-03	6.35E+00
Cadmium	94.30	74.50	9.72	1.07	4.14	10.65	7.74E-04	2.36E+00	2.87E+00	4.88E-01	1.05E-04	2.86E+00
Chromium	7.11	5.92	6.15	2.53	2.98	3.24	4.45E-03	1.78E-01	3.96E-01	2.65E-01	6.05E-04	4.20E-01
Copper	2510.00	28.20	87.41	19.09	18.42	13.89	9.43E-03	6.28E+01	3.71E+00	1.55E+00	1.28E-03	3.40E+01
Lead	44200.00	186.00	107.80	106.30	57.52	9.12	1.68E-02	1.11E+03	9.77E+00	5.15E+00	2.29E-03	5.60E+02
Manganese	1619.00	732.00	3056.00	554.10	1690.00	905.80	4.55E-01	4.05E+01	1.21E+02	9.50E+01	6.19E-02	1.28E+02
Mercury	6.00	0	0	0.13	0.13	0.13	0	1.50E-01	0.00E+00	1.14E-02	0.00E+00	8.07E-02
Molybdenum	118.00	0	0	0	0	0	2.50E-03	2.95E+00	0.00E+00	0.00E+00	3.40E-04	1.48E+00
Nickel	7.61	2.31	2.91	2.01	2.42	2.79	2.03E-03	1.90E-01	1.71E-01	2.19E-01	2.76E-04	2.90E-01
Selenium	4.78	45.90	2.69	0.50	1.14	0.78	4.11E-03	1.19E-01	1.66E+00	7.34E-02	5.59E-04	9.29E-01
Silver	96.90	1.22	4.51	0.41	0.13	0.39	2.22E-03	2.42E+00	1.83E-01	2.82E-02	3.02E-04	1.32E+00
Vanadium	22.03	15.30	3.77	0.51	1.05	1.57	2.55E-03	5.51E-01	6.44E-01	9.54E-02	3.47E-04	6.45E-01
Zinc	17300.00	687.00	912.00	219.80	584.60	605.40	3.32E-01	4.33E+02	5.22E+01	4.29E+01	4.51E-02	2.64E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = [(High-level $DRC_{soil\ invert}$ * 22%) + (High-level $DRC_{GD\ invert}$ * 20%)] * FI

3 $Dose_{plant}$ = [(High-level DRC_{grass} * 19%) + (High-level DRC_{herb} * 19%) + (High-level DRC_{shrub} * 20%)] * FIR

4 $Dose_{water} = SW_{LWA} * WIR$

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-19 EU-08 Estimated Daily Doses (EDDs) for American Robin Foraging in Cunningham Creek. Invertebrate and plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	12.81	8.63	1.13	0.30	0.31	0.18	2.47E-03	3.20E-01	3.32E-01	2.37E-02	3.36E-04	3.38E-01
Barium	66.01	64.20	25.13	25.28	46.62	29.16	4.52E-02	1.65E+00	3.00E+00	3.05E+00	6.14E-03	3.85E+00
Cadmium	1.84	74.50	3.68	0.39	0.98	6.37	3.53E-04	4.59E-02	2.68E+00	2.40E-01	4.80E-05	1.48E+00
Chromium	3.89	3.75	3.45	2.33	2.51	2.58	3.24E-03	9.73E-02	2.37E-01	2.24E-01	4.41E-04	2.80E-01
Copper	99.95	28.20	43.99	7.46	11.34	6.85	2.21E-03	2.50E+00	2.35E+00	7.73E-01	3.01E-04	2.81E+00
Lead	797.20	186.00	35.25	10.49	6.80	2.39	4.60E-03	1.99E+01	7.50E+00	5.88E-01	6.25E-04	1.40E+01
Manganese	1580.00	732.00	217.50	301.60	403.70	314.20	1.96E-02	3.95E+01	3.20E+01	3.08E+01	2.66E-03	5.11E+01
Mercury	0.04	0	0	0.13	0.13	0.13	0	1.03E-03	0.00E+00	1.13E-02	0.00E+00	6.18E-03
Molybdenum	4.43	0	0	0	0	0	2.50E-03	1.11E-01	0.00E+00	0.00E+00	3.40E-04	5.56E-02
Nickel	3.54	1.48	1.24	1.28	1.36	1.16	1.59E-03	8.84E-02	8.97E-02	1.15E-01	2.16E-04	1.47E-01
Selenium	0.79	20.19	0.89	0.31	0.28	0.34	3.35E-03	1.98E-02	7.23E-01	2.81E-02	4.55E-04	3.86E-01
Silver	1.44	1.22	1.07	0.21	0.14	0.18	1.62E-03	3.61E-02	7.55E-02	1.58E-02	2.20E-04	6.38E-02
Vanadium	16.19	15.30	1.94	0.50	0.71	0.66	2.56E-03	4.05E-01	5.87E-01	5.67E-02	3.48E-04	5.25E-01
Zinc	383.60	687.00	210.20	97.14	99.42	413.60	2.19E-02	9.59E+00	3.02E+01	1.88E+01	2.98E-03	2.93E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	18.24	9.32	1.88	0.96	0.88	0.39	4.02E-03	4.56E-01	3.80E-01	6.70E-02	5.46E-04	4.52E-01
Barium	101.90	77.50	31.76	45.29	79.92	73.74	4.52E-02	2.55E+00	3.66E+00	6.03E+00	6.14E-03	6.12E+00
Cadmium	2.32	74.50	9.72	0.66	1.87	10.65	4.30E-04	5.80E-02	2.87E+00	4.08E-01	5.85E-05	1.67E+00
Chromium	7.10	5.92	6.15	2.53	2.98	3.24	4.12E-03	1.78E-01	3.96E-01	2.65E-01	5.60E-04	4.20E-01
Copper	264.80	28.20	87.41	8.69	18.42	8.86	3.79E-03	6.62E+00	3.71E+00	1.08E+00	5.15E-04	5.70E+00
Lead	1222.00	186.00	82.04	46.24	27.70	4.50	2.55E-02	3.06E+01	8.97E+00	2.34E+00	3.47E-03	2.09E+01
Manganese	2077.00	732.00	377.10	534.90	1690.00	905.80	4.75E-02	5.19E+01	3.70E+01	9.45E+01	6.46E-03	9.17E+01
Mercury	0.07	0	0	0.13	0.13	0.13	0	1.69E-03	0.00E+00	1.15E-02	0.00E+00	6.59E-03
Molybdenum	7.10	0	0	0	0	0	2.50E-03	1.78E-01	0.00E+00	0.00E+00	3.40E-04	8.89E-02
Nickel	4.64	2.31	2.91	2.01	2.42	2.79	2.07E-03	1.16E-01	1.71E-01	2.19E-01	2.81E-04	2.53E-01
Selenium	1.29	45.90	2.69	0.43	0.33	0.78	4.12E-03	3.22E-02	1.66E+00	4.72E-02	5.60E-04	8.72E-01
Silver	2.13	1.22	4.51	0.41	0.17	0.39	2.06E-03	5.33E-02	1.83E-01	2.93E-02	2.80E-04	1.33E-01
Vanadium	25.00	15.30	3.77	0.51	1.05	1.57	2.56E-03	6.25E-01	6.44E-01	9.54E-02	3.48E-04	6.83E-01
Zinc	488.60	687.00	291.80	139.50	168.30	584.00	2.95E-02	1.22E+01	3.28E+01	2.74E+01	4.02E-03	3.62E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{Mid-level } DRC_{soil\ invert} * 22\%) + (\text{Mid-level } DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(\text{Mid-level } DRC_{grass} * 19\%) + (\text{Mid-level } DRC_{herb} * 19\%) + (\text{Mid-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-20 EU-09 Estimated Daily Doses (EDDs) for American Robin Foraging in Animas River Below Minnie Gulch. Invertebrate and plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	21.31	8.63	1.50	0.30	0.31	0.18	2.35E-03	5.33E-01	3.44E-01	2.37E-02	3.20E-04	4.50E-01
Barium	89.83	64.20	25.13	25.28	46.62	29.16	1.77E-02	2.25E+00	3.00E+00	3.05E+00	2.41E-03	4.15E+00
Cadmium	6.84	74.50	5.43	0.59	2.86	6.37	1.17E-03	1.71E-01	2.73E+00	3.02E-01	1.59E-04	1.60E+00
Chromium	3.63	3.75	3.45	2.33	2.51	2.58	3.12E-03	9.08E-02	2.37E-01	2.24E-01	4.25E-04	2.76E-01
Copper	446.90	28.20	49.36	13.07	11.34	8.98	1.20E-02	1.12E+01	2.51E+00	1.01E+00	1.63E-03	7.35E+00
Lead	3685.00	186.00	63.88	29.97	20.15	3.39	3.88E-03	9.21E+01	8.40E+00	1.60E+00	5.28E-04	5.11E+01
Manganese	8873.00	732.00	802.70	394.40	403.70	493.80	6.19E-01	2.22E+02	5.03E+01	3.92E+01	8.42E-02	1.56E+02
Mercury	0.21	0	0	0.13	0.13	0.13	0	5.33E-03	0.00E+00	1.13E-02	0.00E+00	8.33E-03
Molybdenum	4.08	0	0	0	0	0	2.50E-03	1.02E-01	0.00E+00	0.00E+00	3.40E-04	5.11E-02
Nickel	4.27	1.48	1.24	1.28	1.36	1.18	1.69E-03	1.07E-01	8.97E-02	1.15E-01	2.30E-04	1.56E-01
Selenium	1.13	20.19	0.89	0.34	0.48	0.34	3.29E-03	2.84E-02	7.23E-01	3.49E-02	4.47E-04	3.93E-01
Silver	11.13	1.22	1.07	0.21	0.17	0.18	1.56E-03	2.78E-01	7.55E-02	1.67E-02	2.12E-04	1.85E-01
Vanadium	16.05	15.30	1.94	0.50	0.71	0.66	2.53E-03	4.01E-01	5.87E-01	5.66E-02	3.44E-04	5.23E-01
Zinc	1184.00	687.00	442.10	173.00	422.90	494.30	4.15E-01	2.96E+01	3.75E+01	3.32E+01	5.65E-02	5.02E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	26.08	9.32	2.53	0.96	0.88	0.39	4.06E-03	6.52E-01	4.00E-01	6.70E-02	5.53E-04	5.60E-01
Barium	101.60	77.50	61.81	45.29	79.92	73.74	1.87E-02	2.54E+00	4.60E+00	6.03E+00	2.54E-03	6.59E+00
Cadmium	9.47	74.50	9.72	1.07	4.14	10.65	1.75E-03	2.37E-01	2.87E+00	4.88E-01	2.38E-04	1.80E+00
Chromium	4.24	5.92	6.15	2.53	2.98	3.24	4.20E-03	1.06E-01	3.96E-01	2.65E-01	5.71E-04	3.84E-01
Copper	573.10	28.20	87.41	19.09	18.42	13.89	1.98E-02	1.43E+01	3.71E+00	1.55E+00	2.69E-03	9.79E+00
Lead	5167.00	186.00	107.80	106.30	57.52	9.12	5.58E-03	1.29E+02	9.77E+00	5.15E+00	7.58E-04	7.21E+01
Manganese	12721.00	732.00	3056.00	554.10	1690.00	905.80	8.48E-01	3.18E+02	1.21E+02	9.50E+01	1.15E-01	2.67E+02
Mercury	0.32	0	0	0.13	0.13	0.13	0	7.93E-03	0.00E+00	1.14E-02	0.00E+00	9.66E-03
Molybdenum	6.06	0	0	0	0	0	2.50E-03	1.51E-01	0.00E+00	0.00E+00	3.40E-04	7.59E-02
Nickel	5.03	2.31	2.91	2.01	2.42	2.79	2.08E-03	1.26E-01	1.71E-01	2.19E-01	2.82E-04	2.58E-01
Selenium	1.30	45.90	2.69	0.50	1.14	0.78	3.92E-03	3.25E-02	1.66E+00	7.34E-02	5.32E-04	8.85E-01
Silver	15.65	1.22	4.51	0.41	0.13	0.39	2.10E-03	3.91E-01	1.83E-01	2.82E-02	2.86E-04	3.01E-01
Vanadium	18.60	15.30	3.77	0.51	1.05	1.57	2.54E-03	4.65E-01	6.44E-01	9.54E-02	3.45E-04	6.03E-01
Zinc	1638.00	687.00	912.00	219.80	584.60	605.40	5.65E-01	4.10E+01	5.22E+01	4.29E+01	7.68E-02	6.80E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{High-level } DRC_{soil\ invert} * 22\%) + (\text{High-level } DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(\text{High-level } DRC_{grass} * 19\%) + (\text{High-level } DRC_{herb} * 19\%) + (\text{High-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-21 EU-10 Estimated Daily Doses (EDDs) for American Robin Foraging in Animas River Below South Fork Animas River. Invertebrate and plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	40.84	8.63	1.50	0.30	0.31	0.18	2.20E-03	1.02E+00	3.44E-01	2.37E-02	2.99E-04	6.94E-01
Barium	83.41	64.20	25.13	25.28	46.62	29.16	1.63E-02	2.09E+00	3.00E+00	3.05E+00	2.22E-03	4.07E+00
Cadmium	12.96	74.50	5.43	0.59	2.86	6.37	2.19E-03	3.24E-01	2.73E+00	3.02E-01	2.97E-04	1.68E+00
Chromium	5.29	3.75	3.45	2.33	2.51	2.58	3.02E-03	1.32E-01	2.37E-01	2.24E-01	4.10E-04	2.97E-01
Copper	853.90	28.20	49.36	13.07	11.34	8.98	3.24E-02	2.13E+01	2.51E+00	1.01E+00	4.41E-03	1.24E+01
Lead	5245.00	186.00	63.88	29.97	20.15	3.39	5.86E-03	1.31E+02	8.40E+00	1.60E+00	7.97E-04	7.06E+01
Manganese	24316.00	732.00	802.70	394.40	403.70	493.80	1.22E+00	6.08E+02	5.03E+01	3.92E+01	1.66E-01	3.49E+02
Mercury	0.20	0	0	0.13	0.13	0.13	0	5.10E-03	0.00E+00	1.13E-02	0.00E+00	8.22E-03
Molybdenum	11.07	0	0	0	0	0	2.50E-03	2.77E-01	0.00E+00	0.00E+00	3.40E-04	1.39E-01
Nickel	5.66	1.48	1.24	1.28	1.36	1.18	1.85E-03	1.41E-01	8.97E-02	1.15E-01	2.52E-04	1.73E-01
Selenium	1.04	20.19	0.89	0.34	0.48	0.34	3.20E-03	2.60E-02	7.23E-01	3.49E-02	4.36E-04	3.92E-01
Silver	18.75	1.22	1.07	0.21	0.17	0.18	1.48E-03	4.69E-01	7.55E-02	1.67E-02	2.01E-04	2.81E-01
Vanadium	14.85	15.30	1.94	0.50	0.71	0.66	2.53E-03	3.71E-01	5.87E-01	5.66E-02	3.44E-04	5.08E-01
Zinc	2222.00	687.00	442.10	173.00	422.90	494.30	6.56E-01	5.56E+01	3.75E+01	3.32E+01	8.93E-02	6.31E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	43.33	9.32	2.53	0.96	0.88	0.39	4.22E-03	1.08E+00	4.00E-01	6.70E-02	5.74E-04	7.75E-01
Barium	91.94	77.50	61.81	45.29	79.92	73.74	1.68E-02	2.30E+00	4.60E+00	6.03E+00	2.28E-03	6.47E+00
Cadmium	14.44	74.50	9.72	1.07	4.14	10.65	2.92E-03	3.61E-01	2.87E+00	4.88E-01	3.97E-04	1.86E+00
Chromium	5.74	5.92	6.15	2.53	2.98	3.24	3.81E-03	1.44E-01	3.96E-01	2.65E-01	5.18E-04	4.03E-01
Copper	1000.00	28.20	87.41	19.09	18.42	13.89	4.68E-02	2.50E+01	3.71E+00	1.55E+00	6.36E-03	1.51E+01
Lead	6381.00	186.00	107.80	106.30	57.52	9.12	8.27E-03	1.60E+02	9.77E+00	5.15E+00	1.12E-03	8.72E+01
Manganese	36425.00	732.00	3056.00	554.10	1690.00	905.80	1.41E+00	9.11E+02	1.21E+02	9.50E+01	1.91E-01	5.63E+02
Mercury	0.26	0	0	0.13	0.13	0.13	0	6.43E-03	0.00E+00	1.14E-02	0.00E+00	8.91E-03
Molybdenum	18.10	0	0	0	0	0	2.50E-03	4.53E-01	0.00E+00	0.00E+00	3.40E-04	2.26E-01
Nickel	6.59	2.31	2.91	2.01	2.42	2.79	2.25E-03	1.65E-01	1.71E-01	2.19E-01	3.06E-04	2.77E-01
Selenium	1.20	45.90	2.69	0.50	1.14	0.78	3.85E-03	3.01E-02	1.66E+00	7.34E-02	5.24E-04	8.84E-01
Silver	24.44	1.22	4.51	0.41	0.13	0.39	1.91E-03	6.11E-01	1.83E-01	2.82E-02	2.59E-04	4.11E-01
Vanadium	16.15	15.30	3.77	0.51	1.05	1.57	2.53E-03	4.04E-01	6.44E-01	9.54E-02	3.44E-04	5.72E-01
Zinc	2545.00	687.00	912.00	219.80	584.60	605.40	8.27E-01	6.36E+01	5.22E+01	4.29E+01	1.12E-01	7.94E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{High-level } DRC_{soil\ invert} * 22\%) + (\text{High-level } DRC_{GD\ invert} * 20\%)] * FI$

3 $Dose_{plant} = [(\text{High-level } DRC_{grass} * 19\%) + (\text{High-level } DRC_{herb} * 19\%) + (\text{High-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 Total EDD = $(Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-22 EU-11 Estimated Daily Doses (EDDs) for American Robin Foraging in Upper South Fork Animas River. Invertebrate and plant tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	24.50	8.63	0.78	0.18	0.31	0.18	3.03E-03	6.13E-01	3.21E-01	2.01E-02	4.12E-04	4.77E-01
Barium	72.30	64.20	25.13	25.28	40.71	24.18	1.48E-02	1.81E+00	3.00E+00	2.72E+00	2.02E-03	3.76E+00
Cadmium	0.64	12.60	2.32	0.31	0.66	1.35	4.06E-04	1.60E-02	5.06E-01	7.09E-02	5.52E-05	2.97E-01
Chromium	8.00	3.75	3.45	1.98	2.47	2.34	3.56E-03	2.00E-01	2.37E-01	2.05E-01	4.85E-04	3.21E-01
Copper	74.50	17.60	36.43	6.09	7.78	5.23	7.26E-03	1.86E+00	1.75E+00	5.76E-01	9.88E-04	2.09E+00
Lead	164.00	115.00	8.86	1.29	2.39	1.47	6.04E-04	4.10E+00	4.24E+00	1.55E-01	8.21E-05	4.25E+00
Manganese	1250.00	732.00	203.40	301.60	180.20	314.20	9.57E-02	3.13E+01	3.16E+01	2.42E+01	1.30E-02	4.35E+01
Mercury	0.01	0	0	0.13	0.13	0.13	0	2.40E-04	0.00E+00	1.13E-02	0.00E+00	5.79E-03
Molybdenum	5.40	0	0	0	0	0	0	1.35E-01	0.00E+00	0.00E+00	0.00E+00	6.75E-02
Nickel	6.10	1.48	0.66	1.06	0.80	0.97	2.04E-03	1.53E-01	7.16E-02	8.54E-02	2.78E-04	1.55E-01
Selenium	2.50	20.19	0.89	0.31	0.26	0.34	3.75E-03	6.25E-02	7.23E-01	2.75E-02	5.10E-04	4.07E-01
Silver	0.43	0.54	1.07	0.21	0.13	0.18	1.78E-03	1.06E-02	5.21E-02	1.55E-02	2.42E-04	3.92E-02
Vanadium	27.40	15.30	1.82	0.50	0.71	0.66	1.31E-03	6.85E-01	5.84E-01	5.66E-02	1.78E-04	6.63E-01
Zinc	123.50	356.00	210.20	79.53	65.19	105.50	4.53E-02	3.09E+00	1.88E+01	7.60E+00	6.16E-03	1.48E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	24.50	9.32	1.28	0.35	0.88	0.39	4.06E-03	6.13E-01	3.61E-01	4.87E-02	5.53E-04	5.11E-01
Barium	72.30	77.50	31.57	30.71	48.77	32.15	1.48E-02	1.81E+00	3.66E+00	3.37E+00	2.02E-03	4.42E+00
Cadmium	0.64	12.60	4.50	0.66	1.04	2.14	4.38E-04	1.60E-02	5.74E-01	1.18E-01	5.95E-05	3.54E-01
Chromium	8.00	5.92	6.15	2.53	2.74	2.70	4.38E-03	2.00E-01	3.96E-01	2.41E-01	5.95E-04	4.19E-01
Copper	74.50	17.60	78.95	7.68	9.52	6.19	1.21E-02	1.86E+00	3.08E+00	7.05E-01	1.65E-03	2.82E+00
Lead	164.00	115.00	18.30	3.03	8.38	4.14	8.33E-04	4.10E+00	4.53E+00	4.69E-01	1.13E-04	4.55E+00
Manganese	1250.00	732.00	262.60	534.90	304.90	905.80	1.70E-01	3.13E+01	3.34E+01	5.33E+01	2.32E-02	5.90E+01
Mercury	0.01	0	0	0.13	0.13	0.13	0	2.40E-04	0.00E+00	1.14E-02	0.00E+00	5.84E-03
Molybdenum	5.40	0	0	0	0	0	0	1.35E-01	0.00E+00	0.00E+00	0.00E+00	6.75E-02
Nickel	6.10	2.31	0.96	1.57	1.36	1.50	2.26E-03	1.53E-01	1.10E-01	1.34E-01	3.08E-04	1.98E-01
Selenium	2.50	45.90	2.69	0.43	0.29	0.78	4.38E-03	6.25E-02	1.66E+00	4.58E-02	5.95E-04	8.86E-01
Silver	0.43	0.65	4.51	0.41	0.14	0.39	2.19E-03	1.06E-02	1.63E-01	2.86E-02	2.98E-04	1.01E-01
Vanadium	27.40	15.30	2.47	0.51	1.05	1.57	1.31E-03	6.85E-01	6.04E-01	9.54E-02	1.78E-04	6.92E-01
Zinc	123.50	463.00	291.80	134.00	85.50	137.80	6.94E-02	3.09E+00	2.51E+01	1.08E+01	9.43E-03	1.95E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{Low-level } DRC_{soil\ invert} * 22\%) + (\text{Low-level } DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(\text{Low-level } DRC_{grass} * 19\%) + (\text{Low-level } DRC_{herb} * 19\%) + (\text{Low-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-23 EU-12 Estimated Daily Doses (EDDs) for American Robin Foraging in Eureka Gulch. Invertebrate and plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	22.71	8.63	1.50	0.30	0.31	0.18	2.96E-03	5.68E-01	3.44E-01	2.37E-02	4.02E-04	4.68E-01
Barium	88.01	64.20	25.13	25.28	46.62	29.16	1.45E-02	2.20E+00	3.00E+00	3.05E+00	1.97E-03	4.12E+00
Cadmium	6.10	74.50	5.43	0.59	2.86	6.37	2.15E-03	1.52E-01	2.73E+00	3.02E-01	2.92E-04	1.59E+00
Chromium	7.16	3.75	3.45	2.33	2.51	2.58	3.59E-03	1.79E-01	2.37E-01	2.24E-01	4.88E-04	3.20E-01
Copper	215.50	28.20	49.36	13.07	11.34	8.98	1.22E-02	5.39E+00	2.51E+00	1.01E+00	1.66E-03	4.46E+00
Lead	695.80	186.00	63.88	29.97	20.15	3.39	2.20E-03	1.74E+01	8.40E+00	1.60E+00	2.99E-04	1.37E+01
Manganese	6068.00	732.00	802.70	394.40	403.70	493.80	3.48E-01	1.52E+02	5.03E+01	3.92E+01	4.73E-02	1.21E+02
Mercury	0.10	0	0	0.13	0.13	0.13	0	2.53E-03	0.00E+00	1.13E-02	0.00E+00	6.93E-03
Molybdenum	3.51	0	0	0	0	0	0	8.77E-02	0.00E+00	0.00E+00	0.00E+00	4.39E-02
Nickel	9.36	1.48	1.24	1.28	1.36	1.18	1.99E-03	2.34E-01	8.97E-02	1.15E-01	2.71E-04	2.20E-01
Selenium	2.20	20.19	0.89	0.34	0.48	0.34	3.66E-03	5.50E-02	7.23E-01	3.49E-02	4.98E-04	4.07E-01
Silver	1.74	1.22	1.07	0.21	0.17	0.18	1.79E-03	4.36E-02	7.55E-02	1.67E-02	2.44E-04	6.80E-02
Vanadium	30.18	15.30	1.94	0.50	0.71	0.66	1.30E-03	7.55E-01	5.87E-01	5.66E-02	1.77E-04	6.99E-01
Zinc	1383.00	687.00	442.10	173.00	422.90	494.30	8.54E-01	3.46E+01	3.75E+01	3.32E+01	1.16E-01	5.27E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	28.07	9.32	2.53	0.96	0.88	0.39	4.06E-03	7.02E-01	4.00E-01	6.70E-02	5.53E-04	5.85E-01
Barium	128.40	77.50	61.81	45.29	79.92	73.74	1.64E-02	3.21E+00	4.60E+00	6.03E+00	2.23E-03	6.92E+00
Cadmium	9.85	74.50	9.72	1.07	4.14	10.65	4.06E-03	2.46E-01	2.87E+00	4.88E-01	5.53E-04	1.80E+00
Chromium	7.92	5.92	6.15	2.53	2.98	3.24	3.92E-03	1.98E-01	3.96E-01	2.65E-01	5.33E-04	4.30E-01
Copper	319.50	28.20	87.41	19.09	18.42	13.89	2.02E-02	7.99E+00	3.71E+00	1.55E+00	2.75E-03	6.62E+00
Lead	992.70	186.00	107.80	106.30	57.52	9.12	4.56E-03	2.48E+01	9.77E+00	5.15E+00	6.20E-04	1.99E+01
Manganese	8851.00	732.00	3056.00	554.10	1690.00	905.80	8.06E-01	2.21E+02	1.21E+02	9.50E+01	1.10E-01	2.19E+02
Mercury	0.15	0	0	0.13	0.13	0.13	0	3.83E-03	0.00E+00	1.14E-02	0.00E+00	7.61E-03
Molybdenum	5.05	0	0	0	0	0	0	1.26E-01	0.00E+00	0.00E+00	0.00E+00	6.31E-02
Nickel	10.77	2.31	2.91	2.01	2.42	2.79	2.64E-03	2.69E-01	1.71E-01	2.19E-01	3.59E-04	3.30E-01
Selenium	2.89	45.90	2.69	0.50	1.14	0.78	3.96E-03	7.22E-02	1.66E+00	7.34E-02	5.38E-04	9.05E-01
Silver	2.50	1.22	4.51	0.41	0.13	0.39	1.96E-03	6.24E-02	1.83E-01	2.82E-02	2.67E-04	1.37E-01
Vanadium	34.66	15.30	3.77	0.51	1.05	1.57	1.30E-03	8.67E-01	6.44E-01	9.54E-02	1.77E-04	8.03E-01
Zinc	3427.00	687.00	912.00	219.80	584.60	605.40	1.66E+00	8.57E+01	5.22E+01	4.29E+01	2.26E-01	9.05E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{High-level } DRC_{soil\ invert} * 22\%) + (\text{High-level } DRC_{GD\ invert} * 20\%)] * FI$

3 $Dose_{plant} = [(\text{High-level } DRC_{grass} * 19\%) + (\text{High-level } DRC_{herb} * 19\%) + (\text{High-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 Total EDD = $(Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-24 EU-13 Estimated Daily Doses (EDDs) for American Robin Foraging in Lower South Fork Animas River. Invertebrate and plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	31.15	8.63	1.50	0.30	0.31	0.18	2.69E-03	7.79E-01	3.44E-01	2.37E-02	3.66E-04	5.73E-01
Barium	126.50	64.20	25.13	25.28	46.62	29.16	2.22E-02	3.16E+00	3.00E+00	3.05E+00	3.02E-03	4.61E+00
Cadmium	12.50	74.50	5.43	0.59	2.86	6.37	1.19E-03	3.13E-01	2.73E+00	3.02E-01	1.62E-04	1.67E+00
Chromium	17.20	3.75	3.45	2.33	2.51	2.58	3.46E-03	4.30E-01	2.37E-01	2.24E-01	4.70E-04	4.46E-01
Copper	408.00	28.20	49.36	13.07	11.34	8.98	2.54E-02	1.02E+01	2.51E+00	1.01E+00	3.45E-03	6.86E+00
Lead	2652.00	186.00	63.88	29.97	20.15	3.39	2.03E-03	6.63E+01	8.40E+00	1.60E+00	2.77E-04	3.81E+01
Manganese	8200.00	732.00	802.70	394.40	403.70	493.80	2.73E-01	2.05E+02	5.03E+01	3.92E+01	3.71E-02	1.47E+02
Mercury	0.99	0	0	0.13	0.13	0.13	0	2.47E-02	0.00E+00	1.13E-02	0.00E+00	1.80E-02
Molybdenum	7.05	0	0	0	0	0	2.50E-03	1.76E-01	0.00E+00	0.00E+00	3.40E-04	8.83E-02
Nickel	37.65	1.48	1.24	1.28	1.36	1.18	1.73E-03	9.41E-01	8.97E-02	1.15E-01	2.35E-04	5.73E-01
Selenium	2.40	20.19	0.89	0.34	0.48	0.34	3.46E-03	6.00E-02	7.23E-01	3.49E-02	4.70E-04	4.09E-01
Silver	3.68	1.22	1.07	0.21	0.17	0.18	1.73E-03	9.19E-02	7.55E-02	1.67E-02	2.35E-04	9.21E-02
Vanadium	27.40	15.30	1.94	0.50	0.71	0.66	5.00E-03	6.85E-01	5.87E-01	5.66E-02	6.80E-04	6.65E-01
Zinc	3280.00	687.00	442.10	173.00	422.90	494.30	3.74E-01	8.20E+01	3.75E+01	3.32E+01	5.09E-02	7.64E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	38.60	9.32	2.53	0.96	0.88	0.39	4.06E-03	9.65E-01	4.00E-01	6.70E-02	5.53E-04	7.16E-01
Barium	140.00	77.50	61.81	45.29	79.92	73.74	2.22E-02	3.50E+00	4.60E+00	6.03E+00	3.02E-03	7.07E+00
Cadmium	14.80	74.50	9.72	1.07	4.14	10.65	1.55E-03	3.70E-01	2.87E+00	4.88E-01	2.10E-04	1.86E+00
Chromium	27.00	5.92	6.15	2.53	2.98	3.24	4.38E-03	6.75E-01	3.96E-01	2.65E-01	5.95E-04	6.68E-01
Copper	485.00	28.20	87.41	19.09	18.42	13.89	3.06E-02	1.21E+01	3.71E+00	1.55E+00	4.17E-03	8.69E+00
Lead	4390.00	186.00	107.80	106.30	57.52	9.12	3.57E-03	1.10E+02	9.77E+00	5.15E+00	4.86E-04	6.23E+01
Manganese	11100.00	732.00	3056.00	554.10	1690.00	905.80	3.25E-01	2.78E+02	1.21E+02	9.50E+01	4.42E-02	2.47E+02
Mercury	1.90	0	0	0.13	0.13	0.13	0	4.75E-02	0.00E+00	1.14E-02	0.00E+00	2.95E-02
Molybdenum	7.40	0	0	0	0	0	2.50E-03	1.85E-01	0.00E+00	0.00E+00	3.40E-04	9.27E-02
Nickel	63.70	2.31	2.91	2.01	2.42	2.79	2.19E-03	1.59E+00	1.71E-01	2.19E-01	2.98E-04	9.91E-01
Selenium	3.20	45.90	2.69	0.50	1.14	0.78	4.38E-03	8.00E-02	1.66E+00	7.34E-02	5.95E-04	9.09E-01
Silver	5.95	1.22	4.51	0.41	0.13	0.39	2.19E-03	1.49E-01	1.83E-01	2.82E-02	2.98E-04	1.80E-01
Vanadium	29.70	15.30	3.77	0.51	1.05	1.57	5.00E-03	7.43E-01	6.44E-01	9.54E-02	6.80E-04	7.41E-01
Zinc	3770.00	687.00	912.00	219.80	584.60	605.40	4.68E-01	9.43E+01	5.22E+01	4.29E+01	6.36E-02	9.47E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{High-level } DRC_{soil\ invert} * 22\%) + (\text{High-level } DRC_{GD\ invert} * 20\%)] * FI$

3 $Dose_{plant} = [(\text{High-level } DRC_{grass} * 19\%) + (\text{High-level } DRC_{herb} * 19\%) + (\text{High-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-25 EU-14 Estimated Daily Doses (EDDs) for American Robin Foraging in Animas River Below West Fork Animas River. Invertebrate and plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	57.03	8.63	1.50	0.30	0.31	0.18	2.53E-03	1.43E+00	3.44E-01	2.37E-02	3.44E-04	8.97E-01
Barium	73.51	64.20	25.13	25.28	46.62	29.16	1.77E-02	1.84E+00	3.00E+00	3.05E+00	2.40E-03	3.94E+00
Cadmium	6.66	74.50	5.43	0.59	2.86	6.37	4.16E-03	1.67E-01	2.73E+00	3.02E-01	5.66E-04	1.60E+00
Chromium	5.60	3.75	3.45	2.33	2.51	2.58	3.14E-03	1.40E-01	2.37E-01	2.24E-01	4.27E-04	3.01E-01
Copper	222.70	28.20	49.36	13.07	11.34	8.98	5.40E-02	5.57E+00	2.51E+00	1.01E+00	7.34E-03	4.55E+00
Lead	2768.00	186.00	63.88	29.97	20.15	3.39	1.21E-02	6.92E+01	8.40E+00	1.60E+00	1.65E-03	3.96E+01
Manganese	3977.00	732.00	802.70	394.40	403.70	493.80	3.74E+00	9.94E+01	5.03E+01	3.92E+01	5.08E-01	9.47E+01
Mercury	0.20	0	0	0.13	0.13	0.13	0	4.88E-03	0.00E+00	1.13E-02	0.00E+00	8.11E-03
Molybdenum	5.86	0	0	0	0	0	2.50E-03	1.47E-01	0.00E+00	0.00E+00	3.40E-04	7.34E-02
Nickel	5.09	1.48	1.24	1.28	1.36	1.18	3.06E-03	1.27E-01	8.97E-02	1.15E-01	4.16E-04	1.66E-01
Selenium	1.72	20.19	0.89	0.34	0.48	0.34	3.38E-03	4.30E-02	7.23E-01	3.49E-02	4.59E-04	4.01E-01
Silver	5.93	1.22	1.07	0.21	0.17	0.18	1.55E-03	1.48E-01	7.55E-02	1.67E-02	2.10E-04	1.20E-01
Vanadium	15.14	15.30	1.94	0.50	0.71	0.66	2.54E-03	3.79E-01	5.87E-01	5.66E-02	3.45E-04	5.11E-01
Zinc	1866.00	687.00	442.10	173.00	422.90	494.30	1.25E+00	4.67E+01	3.75E+01	3.32E+01	1.69E-01	5.87E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	83.05	9.32	2.53	0.96	0.88	0.39	4.58E-03	2.08E+00	4.00E-01	6.70E-02	6.23E-04	1.27E+00
Barium	134.00	77.50	61.81	45.29	79.92	73.74	1.87E-02	3.35E+00	4.60E+00	6.03E+00	2.54E-03	6.99E+00
Cadmium	9.95	74.50	9.72	1.07	4.14	10.65	4.90E-03	2.49E-01	2.87E+00	4.88E-01	6.66E-04	1.80E+00
Chromium	6.94	5.92	6.15	2.53	2.98	3.24	4.72E-03	1.74E-01	3.96E-01	2.65E-01	6.42E-04	4.18E-01
Copper	346.60	28.20	87.41	19.09	18.42	13.89	8.00E-02	8.67E+00	3.71E+00	1.55E+00	1.09E-02	6.97E+00
Lead	10677.00	186.00	107.80	106.30	57.52	9.12	2.49E-02	2.67E+02	9.77E+00	5.15E+00	3.39E-03	1.41E+02
Manganese	10200.00	732.00	3056.00	554.10	1690.00	905.80	6.25E+00	2.55E+02	1.21E+02	9.50E+01	8.50E-01	2.36E+02
Mercury	0.36	0	0	0.13	0.13	0.13	0	9.05E-03	0.00E+00	1.14E-02	0.00E+00	1.02E-02
Molybdenum	7.40	0	0	0	0	0	2.50E-03	1.85E-01	0.00E+00	0.00E+00	3.40E-04	9.27E-02
Nickel	6.41	2.31	2.91	2.01	2.42	2.79	4.01E-03	1.60E-01	1.71E-01	2.19E-01	5.45E-04	2.75E-01
Selenium	2.38	45.90	2.69	0.50	1.14	0.78	4.15E-03	5.95E-02	1.66E+00	7.34E-02	5.65E-04	8.99E-01
Silver	26.70	1.22	4.51	0.41	0.13	0.39	2.28E-03	6.68E-01	1.83E-01	2.82E-02	3.09E-04	4.39E-01
Vanadium	21.72	15.30	3.77	0.51	1.05	1.57	2.55E-03	5.43E-01	6.44E-01	9.54E-02	3.46E-04	6.42E-01
Zinc	3371.00	687.00	912.00	219.80	584.60	605.40	1.50E+00	8.43E+01	5.22E+01	4.29E+01	2.05E-01	8.98E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{High-level } DRC_{soil\ invert} * 22\%) + (\text{High-level } DRC_{GD\ invert} * 20\%)] * FI$

3 $Dose_{plant} = [(\text{High-level } DRC_{grass} * 19\%) + (\text{High-level } DRC_{herb} * 19\%) + (\text{High-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-26 EU-15 Estimated Daily Doses (EDDs) for American Robin Foraging in Lower West Fork Animas River. Invertebrate and plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	59.47	8.63	1.50	0.30	0.31	0.18	2.70E-03	1.49E+00	3.44E-01	2.37E-02	3.68E-04	9.27E-01
Barium	123.20	64.20	25.13	25.28	46.62	29.16	2.14E-02	3.08E+00	3.00E+00	3.05E+00	2.91E-03	4.56E+00
Cadmium	35.99	74.50	5.43	0.59	2.86	6.37	8.11E-03	9.00E-01	2.73E+00	3.02E-01	1.10E-03	1.97E+00
Chromium	5.22	3.75	3.45	2.33	2.51	2.58	3.28E-03	1.31E-01	2.37E-01	2.24E-01	4.45E-04	2.96E-01
Copper	586.50	28.20	49.36	13.07	11.34	8.98	3.30E-02	1.47E+01	2.51E+00	1.01E+00	4.48E-03	9.09E+00
Lead	1667.00	186.00	63.88	29.97	20.15	3.39	2.35E-02	4.17E+01	8.40E+00	1.60E+00	3.20E-03	2.58E+01
Manganese	13550.00	732.00	802.70	394.40	403.70	493.80	1.36E+01	3.39E+02	5.03E+01	3.92E+01	1.84E+00	2.15E+02
Mercury	0.70	0	0	0.13	0.13	0.13	0	1.74E-02	0.00E+00	1.13E-02	0.00E+00	1.44E-02
Molybdenum	29.94	0	0	0	0	0	0	7.49E-01	0.00E+00	0.00E+00	0.00E+00	3.74E-01
Nickel	11.76	1.48	1.24	1.28	1.36	1.18	8.28E-03	2.94E-01	8.97E-02	1.15E-01	1.13E-03	2.50E-01
Selenium	2.25	20.19	0.89	0.34	0.48	0.34	3.69E-03	5.62E-02	7.23E-01	3.49E-02	5.02E-04	4.07E-01
Silver	3.32	1.22	1.07	0.21	0.17	0.18	1.64E-03	8.29E-02	7.55E-02	1.67E-02	2.23E-04	8.76E-02
Vanadium	18.01	15.30	1.94	0.50	0.71	0.66	3.13E-03	4.50E-01	5.87E-01	5.66E-02	4.25E-04	5.47E-01
Zinc	5086.00	687.00	442.10	173.00	422.90	494.30	2.76E+00	1.27E+02	3.75E+01	3.32E+01	3.76E-01	9.91E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	142.90	9.32	2.53	0.96	0.88	0.39	5.00E-03	3.57E+00	4.00E-01	6.70E-02	6.80E-04	2.02E+00
Barium	280.40	77.50	61.81	45.29	79.92	73.74	2.14E-02	7.01E+00	4.60E+00	6.03E+00	2.91E-03	8.82E+00
Cadmium	216.00	74.50	9.72	1.07	4.14	10.65	9.96E-03	5.40E+00	2.87E+00	4.88E-01	1.35E-03	4.38E+00
Chromium	6.02	5.92	6.15	2.53	2.98	3.24	4.76E-03	1.50E-01	3.96E-01	2.65E-01	6.47E-04	4.06E-01
Copper	2795.00	28.20	87.41	19.09	18.42	13.89	4.22E-02	6.99E+01	3.71E+00	1.55E+00	5.73E-03	3.76E+01
Lead	6000.00	186.00	107.80	106.30	57.52	9.12	4.00E-02	1.50E+02	9.77E+00	5.15E+00	5.44E-03	8.25E+01
Manganese	49821.00	732.00	3056.00	554.10	1690.00	905.80	1.58E+01	1.25E+03	1.21E+02	9.50E+01	2.15E+00	7.32E+02
Mercury	1.39	0	0	0.13	0.13	0.13	0	3.46E-02	0.00E+00	1.14E-02	0.00E+00	2.30E-02
Molybdenum	59.06	0	0	0	0	0	0	1.48E+00	0.00E+00	0.00E+00	0.00E+00	7.38E-01
Nickel	41.84	2.31	2.91	2.01	2.42	2.79	1.07E-02	1.05E+00	1.71E-01	2.19E-01	1.46E-03	7.18E-01
Selenium	3.72	45.90	2.69	0.50	1.14	0.78	4.45E-03	9.30E-02	1.66E+00	7.34E-02	6.05E-04	9.15E-01
Silver	8.82	1.22	4.51	0.41	0.13	0.39	2.38E-03	2.20E-01	1.83E-01	2.82E-02	3.24E-04	2.16E-01
Vanadium	22.15	15.30	3.77	0.51	1.05	1.57	3.13E-03	5.54E-01	6.44E-01	9.54E-02	4.25E-04	6.47E-01
Zinc	30200.00	687.00	912.00	219.80	584.60	605.40	3.38E+00	7.55E+02	5.22E+01	4.29E+01	4.60E-01	4.25E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = [(High-level $DRC_{soil\ invert}$ * 22%) + (High-level $DRC_{GD\ invert}$ * 20%)] * FI

3 $Dose_{plant}$ = [(High-level DRC_{grass} * 19%) + (High-level DRC_{herb} * 19%) + (High-level DRC_{shrub} * 20%)] * FIR

4 $Dose_{water} = SW_{LWA} * WIR$

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-27 EU-16 Estimated Daily Doses (EDDs) for American Robin Foraging in Placer Gulch. Invertebrate and plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD[5]
Arsenic	33.11	8.63	1.50	0.30	0.31	0.18	3.06E-03	8.28E-01	3.44E-01	2.37E-02	4.16E-04	5.98E-01
Barium	133.60	64.20	25.13	25.28	46.62	29.16	2.13E-02	3.34E+00	3.00E+00	3.05E+00	2.89E-03	4.69E+00
Cadmium	6.06	74.50	5.43	0.59	2.86	6.37	3.19E-03	1.51E-01	2.73E+00	3.02E-01	4.34E-04	1.59E+00
Chromium	5.62	3.75	3.45	2.33	2.51	2.58	3.66E-03	1.41E-01	2.37E-01	2.24E-01	4.97E-04	3.01E-01
Copper	288.50	28.20	49.36	13.07	11.34	8.98	2.65E-02	7.21E+00	2.51E+00	1.01E+00	3.60E-03	5.37E+00
Lead	1738.00	186.00	63.88	29.97	20.15	3.39	2.58E-02	4.35E+01	8.40E+00	1.60E+00	3.51E-03	2.67E+01
Manganese	10923.00	732.00	802.70	394.40	403.70	493.80	1.82E+00	2.73E+02	5.03E+01	3.92E+01	2.48E-01	1.81E+02
Mercury	0.36	0	0	0.13	0.13	0.13	0	9.05E-03	0.00E+00	1.13E-02	0.00E+00	1.02E-02
Molybdenum	5.23	0	0	0	0	0	0	1.31E-01	0.00E+00	0.00E+00	0.00E+00	6.54E-02
Nickel	5.62	1.48	1.24	1.28	1.36	1.18	3.55E-03	1.41E-01	8.97E-02	1.15E-01	4.83E-04	1.73E-01
Selenium	2.24	20.19	0.89	0.34	0.48	0.34	3.75E-03	5.61E-02	7.23E-01	3.49E-02	5.10E-04	4.07E-01
Silver	3.91	1.22	1.07	0.21	0.17	0.18	1.83E-03	9.77E-02	7.55E-02	1.67E-02	2.49E-04	9.50E-02
Vanadium	17.03	15.30	1.94	0.50	0.71	0.66	1.30E-03	4.26E-01	5.87E-01	5.66E-02	1.76E-04	5.35E-01
Zinc	1129.00	687.00	442.10	173.00	422.90	494.30	1.29E+00	2.82E+01	3.75E+01	3.32E+01	1.76E-01	4.95E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	51.90	9.32	2.53	0.96	0.88	0.39	4.06E-03	1.30E+00	4.00E-01	6.70E-02	5.53E-04	8.82E-01
Barium	169.00	77.50	61.81	45.29	79.92	73.74	2.13E-02	4.23E+00	4.60E+00	6.03E+00	2.89E-03	7.43E+00
Cadmium	9.53	74.50	9.72	1.07	4.14	10.65	3.65E-03	2.38E-01	2.87E+00	4.88E-01	4.97E-04	1.80E+00
Chromium	6.88	5.92	6.15	2.53	2.98	3.24	4.38E-03	1.72E-01	3.96E-01	2.65E-01	5.95E-04	4.17E-01
Copper	497.30	28.20	87.41	19.09	18.42	13.89	3.34E-02	1.24E+01	3.71E+00	1.55E+00	4.54E-03	8.85E+00
Lead	3158.00	186.00	107.80	106.30	57.52	9.12	4.69E-02	7.90E+01	9.77E+00	5.15E+00	6.38E-03	4.69E+01
Manganese	19600.00	732.00	3056.00	554.10	1690.00	905.80	2.27E+00	4.90E+02	1.21E+02	9.50E+01	3.09E-01	3.53E+02
Mercury	0.77	0	0	0.13	0.13	0.13	0	1.93E-02	0.00E+00	1.14E-02	0.00E+00	1.53E-02
Molybdenum	7.80	0	0	0	0	0	0	1.95E-01	0.00E+00	0.00E+00	0.00E+00	9.75E-02
Nickel	6.50	2.31	2.91	2.01	2.42	2.79	4.06E-03	1.63E-01	1.71E-01	2.19E-01	5.53E-04	2.76E-01
Selenium	3.40	45.90	2.69	0.50	1.14	0.78	4.23E-03	8.50E-02	1.66E+00	7.34E-02	5.75E-04	9.11E-01
Silver	5.20	1.22	4.51	0.41	0.13	0.39	2.19E-03	1.30E-01	1.83E-01	2.82E-02	2.98E-04	1.71E-01
Vanadium	21.40	15.30	3.77	0.51	1.05	1.57	1.30E-03	5.35E-01	6.44E-01	9.54E-02	1.76E-04	6.37E-01
Zinc	1600.00	687.00	912.00	219.80	584.60	605.40	1.51E+00	4.00E+01	5.22E+01	4.29E+01	2.05E-01	6.76E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = [(High-level $DRC_{soil\ invert}$ * 22%) + (High-level $DRC_{GD\ invert}$ * 20%)] * FI

3 $Dose_{plant}$ = [(High-level DRC_{grass} * 19%) + (High-level DRC_{herb} * 19%) + (High-level DRC_{shrub} * 20%)] * FIR

4 $Dose_{water} = SW_{LWA} * WIR$

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-28 EU-17 Estimated Daily Doses (EDDs) for American Robin Foraging in Mainstem West Fork Animas River/California Gulch. Invertebrate and plant tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	28.83	8.63	0.78	0.18	0.31	0.18	2.87E-03	7.21E-01	3.21E-01	2.01E-02	3.90E-04	5.31E-01
Barium	48.70	64.20	25.13	25.28	40.71	24.18	2.12E-02	1.22E+00	3.00E+00	2.72E+00	2.88E-03	3.47E+00
Cadmium	1.27	12.60	2.32	0.31	0.66	1.35	8.73E-03	3.17E-02	5.06E-01	7.09E-02	1.19E-03	3.05E-01
Chromium	6.16	3.75	3.45	1.98	2.47	2.34	3.68E-03	1.54E-01	2.37E-01	2.05E-01	5.00E-04	2.98E-01
Copper	79.47	17.60	36.43	6.09	7.78	5.23	3.15E-02	1.99E+00	1.75E+00	5.76E-01	4.28E-03	2.16E+00
Lead	136.20	115.00	8.86	1.29	2.39	1.47	5.76E-03	3.41E+00	4.24E+00	1.55E-01	7.84E-04	3.90E+00
Manganese	4137.00	732.00	203.40	301.60	180.20	314.20	1.99E+01	1.03E+02	3.16E+01	2.42E+01	2.70E+00	8.09E+01
Mercury	0.05	0	0	0.13	0.13	0.13	0	1.13E-03	0.00E+00	1.13E-02	0.00E+00	6.23E-03
Molybdenum	4.55	0	0	0	0	0	0	1.14E-01	0.00E+00	0.00E+00	0.00E+00	5.69E-02
Nickel	5.84	1.48	0.66	1.06	0.80	0.97	9.96E-03	1.46E-01	7.16E-02	8.54E-02	1.36E-03	1.52E-01
Selenium	1.38	20.19	0.89	0.31	0.26	0.34	3.60E-03	3.45E-02	7.23E-01	2.75E-02	4.90E-04	3.93E-01
Silver	0.67	0.54	1.07	0.21	0.13	0.18	1.80E-03	1.68E-02	5.21E-02	1.55E-02	2.45E-04	4.23E-02
Vanadium	27.50	15.30	1.82	0.50	0.71	0.66	1.30E-03	6.88E-01	5.84E-01	5.66E-02	1.76E-04	6.64E-01
Zinc	276.80	356.00	210.20	79.53	65.19	105.50	2.60E+00	6.92E+00	1.88E+01	7.60E+00	3.54E-01	1.69E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	31.40	9.32	1.28	0.35	0.88	0.39	4.06E-03	7.85E-01	3.61E-01	4.87E-02	5.53E-04	5.98E-01
Barium	57.50	77.50	31.57	30.71	48.77	32.15	2.12E-02	1.44E+00	3.66E+00	3.37E+00	2.88E-03	4.23E+00
Cadmium	1.60	12.60	4.50	0.66	1.04	2.14	1.09E-02	4.00E-02	5.74E-01	1.18E-01	1.49E-03	3.67E-01
Chromium	6.78	5.92	6.15	2.53	2.74	2.70	4.20E-03	1.70E-01	3.96E-01	2.41E-01	5.71E-04	4.04E-01
Copper	156.00	17.60	78.95	7.68	9.52	6.19	3.64E-02	3.90E+00	3.08E+00	7.05E-01	4.96E-03	3.84E+00
Lead	162.00	115.00	18.30	3.03	8.38	4.14	1.71E-02	4.05E+00	4.53E+00	4.69E-01	2.32E-03	4.53E+00
Manganese	7020.00	732.00	262.60	534.90	304.90	905.80	2.51E+01	1.76E+02	3.34E+01	5.33E+01	3.42E+00	1.33E+02
Mercury	0.06	0	0	0.13	0.13	0.13	0	1.58E-03	0.00E+00	1.14E-02	0.00E+00	6.50E-03
Molybdenum	4.70	0	0	0	0	0	0	1.18E-01	0.00E+00	0.00E+00	0.00E+00	5.88E-02
Nickel	7.40	2.31	0.96	1.57	1.36	1.50	1.25E-02	1.85E-01	1.10E-01	1.34E-01	1.71E-03	2.15E-01
Selenium	1.90	45.90	2.69	0.43	0.29	0.78	3.99E-03	4.75E-02	1.66E+00	4.58E-02	5.43E-04	8.79E-01
Silver	1.24	0.65	4.51	0.41	0.14	0.39	2.00E-03	3.10E-02	1.63E-01	2.86E-02	2.72E-04	1.12E-01
Vanadium	32.50	15.30	2.47	0.51	1.05	1.57	1.30E-03	8.13E-01	6.04E-01	9.54E-02	1.76E-04	7.56E-01
Zinc	406.50	463.00	291.80	134.00	85.50	137.80	3.30E+00	1.02E+01	2.51E+01	1.08E+01	4.49E-01	2.33E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{Low-level } DRC_{soil\ invert} * 22\%) + (\text{Low-level } DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(\text{Low-level } DRC_{grass} * 19\%) + (\text{Low-level } DRC_{herb} * 19\%) + (\text{Low-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 Total EDD = $(Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-29 EU-18 Estimated Daily Doses (EDDs) for American Robin Foraging in North Fork Animas River Below Burrows Creek. Invertebrate and plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	31.80	8.63	1.13	0.30	0.31	0.18	2.66E-03	7.95E-01	3.32E-01	2.37E-02	3.62E-04	5.76E-01
Barium	57.12	64.20	25.13	25.28	46.62	29.16	2.55E-02	1.43E+00	3.00E+00	3.05E+00	3.46E-03	3.74E+00
Cadmium	1.53	74.50	3.68	0.39	0.98	6.37	5.27E-03	3.83E-02	2.68E+00	2.40E-01	7.17E-04	1.48E+00
Chromium	7.10	3.75	3.45	2.33	2.51	2.58	3.30E-03	1.78E-01	2.37E-01	2.24E-01	4.49E-04	3.20E-01
Copper	22.87	28.20	43.99	7.46	11.34	6.85	3.19E-02	5.72E-01	2.35E+00	7.73E-01	4.33E-03	1.85E+00
Lead	193.70	186.00	35.25	10.49	6.80	2.39	1.05E-02	4.84E+00	7.50E+00	5.88E-01	1.42E-03	6.47E+00
Manganese	2006.00	732.00	217.50	301.60	403.70	314.20	1.12E+00	5.02E+01	3.20E+01	3.08E+01	1.52E-01	5.65E+01
Mercury	0.04	0	0	0.13	0.13	0.13	0	8.83E-04	0.00E+00	1.13E-02	0.00E+00	6.11E-03
Molybdenum	4.53	0	0	0	0	0	0	1.13E-01	0.00E+00	0.00E+00	0.00E+00	5.67E-02
Nickel	4.10	1.48	1.24	1.28	1.36	1.16	3.00E-03	1.03E-01	8.97E-02	1.15E-01	4.08E-04	1.54E-01
Selenium	1.20	20.19	0.89	0.31	0.28	0.34	3.53E-03	3.00E-02	7.23E-01	2.81E-02	4.80E-04	3.91E-01
Silver	0.55	1.22	1.07	0.21	0.14	0.18	1.65E-03	1.38E-02	7.55E-02	1.58E-02	2.25E-04	5.26E-02
Vanadium	15.53	15.30	1.94	0.50	0.71	0.66	1.30E-03	3.88E-01	5.87E-01	5.67E-02	1.76E-04	5.16E-01
Zinc	210.50	687.00	210.20	97.14	99.42	413.60	9.52E-01	5.26E+00	3.02E+01	1.88E+01	1.29E-01	2.72E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	34.90	9.32	1.88	0.96	0.88	0.39	4.78E-03	8.73E-01	3.80E-01	6.70E-02	6.50E-04	6.60E-01
Barium	98.90	77.50	31.76	45.29	79.92	73.74	2.74E-02	2.47E+00	3.66E+00	6.03E+00	3.73E-03	6.08E+00
Cadmium	2.00	74.50	9.72	0.66	1.87	10.65	6.67E-03	5.00E-02	2.87E+00	4.08E-01	9.07E-04	1.66E+00
Chromium	12.00	5.92	6.15	2.53	2.98	3.24	4.64E-03	3.00E-01	3.96E-01	2.65E-01	6.31E-04	4.81E-01
Copper	28.60	28.20	87.41	8.69	18.42	8.86	7.67E-02	7.15E-01	3.71E+00	1.08E+00	1.04E-02	2.76E+00
Lead	276.00	186.00	82.04	46.24	27.70	4.50	1.54E-02	6.90E+00	8.97E+00	2.34E+00	2.09E-03	9.10E+00
Manganese	2660.00	732.00	377.10	534.90	1690.00	905.80	1.42E+00	6.65E+01	3.70E+01	9.45E+01	1.93E-01	9.91E+01
Mercury	0.05	0	0	0.13	0.13	0.13	0	1.15E-03	0.00E+00	1.15E-02	0.00E+00	6.32E-03
Molybdenum	4.70	0	0	0	0	0	0	1.18E-01	0.00E+00	0.00E+00	0.00E+00	5.88E-02
Nickel	5.50	2.31	2.91	2.01	2.42	2.79	3.52E-03	1.38E-01	1.71E-01	2.19E-01	4.78E-04	2.64E-01
Selenium	1.60	45.90	2.69	0.43	0.33	0.78	4.27E-03	4.00E-02	1.66E+00	4.72E-02	5.81E-04	8.76E-01
Silver	0.65	1.22	4.51	0.41	0.17	0.39	2.32E-03	1.63E-02	1.83E-01	2.93E-02	3.15E-04	1.14E-01
Vanadium	19.00	15.30	3.77	0.51	1.05	1.57	1.30E-03	4.75E-01	6.44E-01	9.54E-02	1.76E-04	6.07E-01
Zinc	270.00	687.00	291.80	139.50	168.30	584.00	1.13E+00	6.75E+00	3.28E+01	2.74E+01	1.54E-01	3.35E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = [(Mid-level $DRC_{soil\ invert}$ * 22%) + (Mid-level $DRC_{GD\ invert}$ * 20%)] * FIR

3 $Dose_{plant}$ = [(Mid-level DRC_{grass} * 19%) + (Mid-level DRC_{herb} * 19%) + (Mid-level DRC_{shrub} * 20%)] * FIR

4 $Dose_{water} = SW_{LWA} * WIR$

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-30 EU-19 Estimated Daily Doses (EDDs) for American Robin Foraging in Burrows Creek. Invertebrate and plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	59.90	8.63	1.50	0.30	0.31	0.18	3.51E-03	1.50E+00	3.44E-01	2.37E-02	4.78E-04	9.33E-01
Barium	70.42	64.20	25.13	25.28	46.62	29.16	2.62E-02	1.76E+00	3.00E+00	3.05E+00	3.56E-03	3.90E+00
Cadmium	3.80	74.50	5.43	0.59	2.86	6.37	1.38E-02	9.51E-02	2.73E+00	3.02E-01	1.87E-03	1.57E+00
Chromium	4.01	3.75	3.45	2.33	2.51	2.58	3.99E-03	1.00E-01	2.37E-01	2.24E-01	5.43E-04	2.81E-01
Copper	83.25	28.20	49.36	13.07	11.34	8.98	7.28E-02	2.08E+00	2.51E+00	1.01E+00	9.90E-03	2.81E+00
Lead	520.50	186.00	63.88	29.97	20.15	3.39	1.16E-02	1.30E+01	8.40E+00	1.60E+00	1.57E-03	1.15E+01
Manganese	3305.00	732.00	802.70	394.40	403.70	493.80	4.08E+00	8.26E+01	5.03E+01	3.92E+01	5.55E-01	8.63E+01
Mercury	0.06	0	0	0.13	0.13	0.13	0	1.41E-03	0.00E+00	1.13E-02	0.00E+00	6.38E-03
Molybdenum	13.12	0	0	0	0	0	0	3.28E-01	0.00E+00	0.00E+00	0.00E+00	1.64E-01
Nickel	4.05	1.48	1.24	1.28	1.36	1.18	9.33E-03	1.01E-01	8.97E-02	1.15E-01	1.27E-03	1.54E-01
Selenium	1.43	20.19	0.89	0.34	0.48	0.34	4.01E-03	3.57E-02	7.23E-01	3.49E-02	5.46E-04	3.97E-01
Silver	1.46	1.22	1.07	0.21	0.17	0.18	2.00E-03	3.65E-02	7.55E-02	1.67E-02	2.72E-04	6.44E-02
Vanadium	12.52	15.30	1.94	0.50	0.71	0.66	3.13E-03	3.13E-01	5.87E-01	5.66E-02	4.25E-04	4.79E-01
Zinc	279.70	687.00	442.10	173.00	422.90	494.30	2.02E+00	6.99E+00	3.75E+01	3.32E+01	2.75E-01	3.90E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	79.38	9.32	2.53	0.96	0.88	0.39	4.06E-03	1.98E+00	4.00E-01	6.70E-02	5.53E-04	1.23E+00
Barium	78.43	77.50	61.81	45.29	79.92	73.74	2.62E-02	1.96E+00	4.60E+00	6.03E+00	3.56E-03	6.30E+00
Cadmium	10.03	74.50	9.72	1.07	4.14	10.65	1.74E-02	2.51E-01	2.87E+00	4.88E-01	2.37E-03	1.80E+00
Chromium	4.73	5.92	6.15	2.53	2.98	3.24	4.16E-03	1.18E-01	3.96E-01	2.65E-01	5.66E-04	3.90E-01
Copper	198.30	28.20	87.41	19.09	18.42	13.89	8.16E-02	4.96E+00	3.71E+00	1.55E+00	1.11E-02	5.11E+00
Lead	880.10	186.00	107.80	106.30	57.52	9.12	1.40E-02	2.20E+01	9.77E+00	5.15E+00	1.90E-03	1.85E+01
Manganese	7521.00	732.00	3056.00	554.10	1690.00	905.80	4.66E+00	1.88E+02	1.21E+02	9.50E+01	6.34E-01	2.02E+02
Mercury	0.08	0	0	0.13	0.13	0.13	0	1.90E-03	0.00E+00	1.14E-02	0.00E+00	6.65E-03
Molybdenum	20.15	0	0	0	0	0	0	5.04E-01	0.00E+00	0.00E+00	0.00E+00	2.52E-01
Nickel	5.12	2.31	2.91	2.01	2.42	2.79	1.06E-02	1.28E-01	1.71E-01	2.19E-01	1.44E-03	2.59E-01
Selenium	1.91	45.90	2.69	0.50	1.14	0.78	4.17E-03	4.78E-02	1.66E+00	7.34E-02	5.67E-04	8.93E-01
Silver	2.25	1.22	4.51	0.41	0.13	0.39	2.08E-03	5.62E-02	1.83E-01	2.82E-02	2.83E-04	1.34E-01
Vanadium	14.67	15.30	3.77	0.51	1.05	1.57	3.13E-03	3.67E-01	6.44E-01	9.54E-02	4.25E-04	5.53E-01
Zinc	441.30	687.00	912.00	219.80	584.60	605.40	2.61E+00	1.10E+01	5.22E+01	4.29E+01	3.55E-01	5.32E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = [(High-level $DRC_{soil\ invert}$ * 22%) + (High-level $DRC_{GD\ invert}$ * 20%)] *

3 $Dose_{plant}$ = [(High-level DRC_{grass} * 19%) + (High-level DRC_{herb} * 19%) + (High-level DRC_{shrub} * 20%)] * FIR

4 $Dose_{water} = SW_{LWA} * WIR$

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-31 EU-R2 Estimated Daily Doses (EDDs) for American Robin Foraging in Maggie Gulch Reference Area. Invertebrate and plant tissue values represent the upland/reference floodplain dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	10.34	7.53	0.78	0.18	0.13	0.13	1.25E-03	2.59E-01	2.84E-01	1.30E-02	1.70E-04	2.78E-01
Barium	180.50	56.53	25.13	25.28	40.71	24.18	0.00E+00	4.51E+00	2.73E+00	2.72E+00	0.00E+00	4.98E+00
Cadmium	0.84	6.76	2.15	0.13	0.34	1.35	2.50E-04	2.11E-02	3.00E-01	5.63E-02	3.40E-05	1.89E-01
Chromium	3.74	3.75	3.45	1.98	2.47	2.34	2.50E-03	9.36E-02	2.37E-01	2.05E-01	3.40E-04	2.68E-01
Copper	27.47	11.92	36.43	5.33	7.26	5.23	1.25E-03	6.87E-01	1.55E+00	5.38E-01	1.70E-04	1.39E+00
Lead	66.68	6.96	4.75	1.29	0.67	1.47	3.16E-04	1.67E+00	3.88E-01	1.04E-01	4.29E-05	1.08E+00
Manganese	1400.00	339.10	203.40	204.30	117.40	271.80	1.30E-02	3.50E+01	1.80E+01	1.81E+01	1.76E-03	3.56E+01
Mercury	0.08	0	0	0.12	0.13	0.13	0	1.92E-03	0.00E+00	1.13E-02	0.00E+00	6.61E-03
Molybdenum	1.85	0	0	0	0	0	0	4.63E-02	0.00E+00	0.00E+00	0.00E+00	2.31E-02
Nickel	5.16	1.48	0.66	1.06	0.72	0.53	1.25E-03	1.29E-01	7.16E-02	6.93E-02	1.70E-04	1.35E-01
Selenium	0.73	20.19	0.74	0.30	0.25	0.25	2.50E-03	1.83E-02	7.18E-01	2.41E-02	3.40E-04	3.80E-01
Silver	0.50	0.45	1.07	0.15	0.13	0.13	0.00E+00	1.24E-02	4.89E-02	1.20E-02	0.00E+00	3.67E-02
Vanadium	18.30	5.58	1.82	0.50	0.55	0.50	2.54E-03	4.58E-01	2.49E-01	4.69E-02	3.45E-04	3.77E-01
Zinc	151.80	278.00	210.20	58.43	51.94	105.50	5.00E-03	3.80E+00	1.61E+01	6.58E+00	6.80E-04	1.33E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	11.94	9.32	1.15	0.35	0.13	0.13	1.25E-03	2.99E-01	3.57E-01	1.80E-02	1.70E-04	3.37E-01
Barium	252.90	77.50	31.57	30.71	48.77	32.15	0.00E+00	6.32E+00	3.66E+00	3.37E+00	0.00E+00	6.67E+00
Cadmium	1.18	9.14	3.16	0.34	0.67	2.14	2.50E-04	2.94E-02	4.14E-01	9.72E-02	3.40E-05	2.70E-01
Chromium	5.31	5.92	6.15	2.31	2.74	2.70	2.50E-03	1.33E-01	3.96E-01	2.35E-01	3.40E-04	3.82E-01
Copper	37.11	16.80	78.95	6.25	8.36	6.19	1.25E-03	9.28E-01	3.05E+00	6.28E-01	1.70E-04	2.30E+00
Lead	124.90	11.30	8.00	3.03	0.94	4.14	3.16E-04	3.12E+00	6.39E-01	2.47E-01	4.29E-05	2.00E+00
Manganese	1596.00	541.00	262.60	281.50	156.60	905.80	1.30E-02	3.99E+01	2.68E+01	4.14E+01	1.76E-03	5.41E+01
Mercury	0.19	0	0	0.13	0.13	0.13	0	4.85E-03	0.00E+00	1.14E-02	0.00E+00	8.13E-03
Molybdenum	2.00	0	0	0	0	0	0	5.00E-02	0.00E+00	0.00E+00	0.00E+00	2.50E-02
Nickel	5.61	2.31	0.96	1.57	1.25	0.97	1.25E-03	1.40E-01	1.10E-01	1.14E-01	1.70E-04	1.82E-01
Selenium	1.11	45.90	1.63	0.38	0.25	0.25	2.50E-03	2.77E-02	1.63E+00	2.66E-02	3.40E-04	8.43E-01
Silver	0.68	0.65	4.51	0.18	0.13	0.13	0.00E+00	1.70E-02	1.63E-01	1.31E-02	0.00E+00	9.67E-02
Vanadium	25.25	9.45	2.49	0.50	0.65	0.50	2.55E-03	6.31E-01	4.03E-01	4.99E-02	3.46E-04	5.42E-01
Zinc	203.00	463.00	254.60	74.77	78.85	137.80	5.00E-03	5.08E+00	2.39E+01	8.88E+00	6.80E-04	1.89E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(Ref.\ DRC_{soil\ invert} * 22\%) + (Ref.\ DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(Ref.\ DRC_{grass} * 19\%) + (Ref.\ DRC_{herb} * 19\%) + (Ref.\ DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $Total\ EDD = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-32 EU-R3 Estimated Daily Doses (EDDs) for American Robin Foraging in Picayune Gulch Reference Area. Invertebrate and plant tissue values represent the upland/reference floodplain dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	44.45	7.53	0.78	0.18	0.13	0.13	1.25E-03	1.11E+00	2.84E-01	1.30E-02	1.70E-04	7.04E-01
Barium	97.08	56.53	25.13	25.28	40.71	24.18	0.00E+00	2.43E+00	2.73E+00	2.72E+00	0.00E+00	3.94E+00
Cadmium	1.44	6.76	2.15	0.13	0.34	1.35	2.50E-04	3.59E-02	3.00E-01	5.63E-02	3.40E-05	1.96E-01
Chromium	4.81	3.75	3.45	1.98	2.47	2.34	2.50E-03	1.20E-01	2.37E-01	2.05E-01	3.40E-04	2.81E-01
Copper	35.28	11.92	36.43	5.33	7.26	5.23	1.25E-03	8.82E-01	1.55E+00	5.38E-01	1.70E-04	1.48E+00
Lead	140.00	6.96	4.75	1.29	0.67	1.47	2.50E-04	3.50E+00	3.88E-01	1.04E-01	3.40E-05	2.00E+00
Manganese	3108.00	339.10	203.40	204.30	117.40	271.80	1.51E-01	7.77E+01	1.80E+01	1.81E+01	2.05E-02	5.69E+01
Mercury	0.04	0	0	0.12	0.13	0.13	0	1.03E-03	0.00E+00	1.13E-02	0.00E+00	6.17E-03
Molybdenum	2.60	0	0	0	0	0	0	6.50E-02	0.00E+00	0.00E+00	0.00E+00	3.25E-02
Nickel	5.62	1.48	0.66	1.06	0.72	0.53	1.25E-03	1.41E-01	7.16E-02	6.93E-02	1.70E-04	1.41E-01
Selenium	0.60	20.19	0.74	0.30	0.25	0.25	2.50E-03	1.50E-02	7.18E-01	2.41E-02	3.40E-04	3.79E-01
Silver	1.24	0.45	1.07	0.15	0.13	0.13	1.25E-03	3.10E-02	4.89E-02	1.20E-02	1.70E-04	4.60E-02
Vanadium	19.83	5.58	1.82	0.50	0.55	0.50	0.00E+00	4.96E-01	2.49E-01	4.69E-02	0.00E+00	3.96E-01
Zinc	243.50	278.00	210.20	58.43	51.94	105.50	1.23E-02	6.09E+00	1.61E+01	6.58E+00	1.67E-03	1.44E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	55.80	9.32	1.15	0.35	0.13	0.13	1.25E-03	1.40E+00	3.57E-01	1.80E-02	1.70E-04	8.85E-01
Barium	121.00	77.50	31.57	30.71	48.77	32.15	0.00E+00	3.03E+00	3.66E+00	3.37E+00	0.00E+00	5.02E+00
Cadmium	1.52	9.14	3.16	0.34	0.67	2.14	2.50E-04	3.80E-02	4.14E-01	9.72E-02	3.40E-05	2.74E-01
Chromium	5.37	5.92	6.15	2.31	2.74	2.70	2.50E-03	1.34E-01	3.96E-01	2.35E-01	3.40E-04	3.83E-01
Copper	45.27	16.80	78.95	6.25	8.36	6.19	1.25E-03	1.13E+00	3.05E+00	6.28E-01	1.70E-04	2.40E+00
Lead	171.70	11.30	8.00	3.03	0.94	4.14	2.50E-04	4.29E+00	6.39E-01	2.47E-01	3.40E-05	2.59E+00
Manganese	5410.00	541.00	262.60	281.50	156.60	905.80	1.51E-01	1.35E+02	2.68E+01	4.14E+01	2.05E-02	1.02E+02
Mercury	0.06	0	0	0.13	0.13	0.13	0	1.40E-03	0.00E+00	1.14E-02	0.00E+00	6.40E-03
Molybdenum	2.60	0	0	0	0	0	0	6.50E-02	0.00E+00	0.00E+00	0.00E+00	3.25E-02
Nickel	5.87	2.31	0.96	1.57	1.25	0.97	1.25E-03	1.47E-01	1.10E-01	1.14E-01	1.70E-04	1.85E-01
Selenium	1.24	45.90	1.63	0.38	0.25	0.25	2.50E-03	3.11E-02	1.63E+00	2.66E-02	3.40E-04	8.44E-01
Silver	2.04	0.65	4.51	0.18	0.13	0.13	1.25E-03	5.11E-02	1.63E-01	1.31E-02	1.70E-04	1.14E-01
Vanadium	22.70	9.45	2.49	0.50	0.65	0.50	0.00E+00	5.68E-01	4.03E-01	4.99E-02	0.00E+00	5.10E-01
Zinc	263.00	463.00	254.60	74.77	78.85	137.80	1.23E-02	6.58E+00	2.39E+01	8.88E+00	1.67E-03	1.97E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(Ref.\ DRC_{soil\ invert} * 22\%) + (Ref.\ DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(Ref.\ DRC_{grass} * 19\%) + (Ref.\ DRC_{herb} * 19\%) + (Ref.\ DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $Total\ EDD = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-33 EU-R4 Estimated Daily Doses (EDDs) for American Robin Foraging in North Fork Animas River Reference Area. Invertebrate and plant tissue values represent the upland/reference floodplain dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	105.00	7.53	0.78	0.18	0.13	0.13	2.80E-03	2.63E+00	2.84E-01	1.30E-02	3.80E-04	1.46E+00
Barium	61.50	56.53	25.13	25.28	40.71	24.18	0.00E+00	1.54E+00	2.73E+00	2.72E+00	0.00E+00	3.49E+00
Cadmium	1.70	6.76	2.15	0.13	0.34	1.35	8.32E-04	4.25E-02	3.00E-01	5.63E-02	1.13E-04	1.99E-01
Chromium	2.90	3.75	3.45	1.98	2.47	2.34	3.36E-03	7.25E-02	2.37E-01	2.05E-01	4.58E-04	2.58E-01
Copper	81.50	11.92	36.43	5.33	7.26	5.23	2.02E-03	2.04E+00	1.55E+00	5.38E-01	2.75E-04	2.06E+00
Lead	334.00	6.96	4.75	1.29	0.67	1.47	1.08E-03	8.35E+00	3.88E-01	1.04E-01	1.47E-04	4.42E+00
Manganese	628.00	339.10	203.40	204.30	117.40	271.80	2.06E-02	1.57E+01	1.80E+01	1.81E+01	2.80E-03	2.59E+01
Mercury	0.07	0	0	0.12	0.13	0.13	0	1.80E-03	0.00E+00	1.13E-02	0.00E+00	6.56E-03
Molybdenum	10.20	0	0	0	0	0	0	2.55E-01	0.00E+00	0.00E+00	0.00E+00	1.28E-01
Nickel	2.40	1.48	0.66	1.06	0.72	0.53	1.63E-03	6.00E-02	7.16E-02	6.93E-02	2.22E-04	1.01E-01
Selenium	1.50	20.19	0.74	0.30	0.25	0.25	3.65E-03	3.75E-02	7.18E-01	2.41E-02	4.96E-04	3.90E-01
Silver	2.40	0.45	1.07	0.15	0.13	0.13	1.68E-03	6.00E-02	4.89E-02	1.20E-02	2.29E-04	6.06E-02
Vanadium	12.40	5.58	1.82	0.50	0.55	0.50	1.30E-03	3.10E-01	2.49E-01	4.69E-02	1.76E-04	3.03E-01
Zinc	480.00	278.00	210.20	58.43	51.94	105.50	1.30E-01	1.20E+01	1.61E+01	6.58E+00	1.77E-02	1.74E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	105.00	9.32	1.15	0.35	0.13	0.13	5.00E-03	2.63E+00	3.57E-01	1.80E-02	6.80E-04	1.50E+00
Barium	61.50	77.50	31.57	30.71	48.77	32.15	0.00E+00	1.54E+00	3.66E+00	3.37E+00	0.00E+00	4.28E+00
Cadmium	1.70	9.14	3.16	0.34	0.67	2.14	1.11E-03	4.25E-02	4.14E-01	9.72E-02	1.51E-04	2.77E-01
Chromium	2.90	5.92	6.15	2.31	2.74	2.70	5.00E-03	7.25E-02	3.96E-01	2.35E-01	6.80E-04	3.52E-01
Copper	81.50	16.80	78.95	6.25	8.36	6.19	2.58E-03	2.04E+00	3.05E+00	6.28E-01	3.51E-04	2.86E+00
Lead	334.00	11.30	8.00	3.03	0.94	4.14	1.51E-03	8.35E+00	6.39E-01	2.47E-01	2.06E-04	4.62E+00
Manganese	628.00	541.00	262.60	281.50	156.60	905.80	3.04E-02	1.57E+01	2.68E+01	4.14E+01	4.13E-03	4.20E+01
Mercury	0.07	0	0	0.13	0.13	0.13	0	1.80E-03	0.00E+00	1.14E-02	0.00E+00	6.60E-03
Molybdenum	10.20	0	0	0	0	0	0	2.55E-01	0.00E+00	0.00E+00	0.00E+00	1.28E-01
Nickel	2.40	2.31	0.96	1.57	1.25	0.97	2.50E-03	6.00E-02	1.10E-01	1.14E-01	3.40E-04	1.42E-01
Selenium	1.50	45.90	1.63	0.38	0.25	0.25	5.00E-03	3.75E-02	1.63E+00	2.66E-02	6.80E-04	8.48E-01
Silver	2.40	0.65	4.51	0.18	0.13	0.13	2.50E-03	6.00E-02	1.63E-01	1.31E-02	3.40E-04	1.18E-01
Vanadium	12.40	9.45	2.49	0.50	0.65	0.50	1.30E-03	3.10E-01	4.03E-01	4.99E-02	1.76E-04	3.82E-01
Zinc	480.00	463.00	254.60	74.77	78.85	137.80	1.63E-01	1.20E+01	2.39E+01	8.88E+00	2.21E-02	2.24E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(Ref.\ DRC_{soil\ invert} * 22\%) + (Ref.\ DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(Ref.\ DRC_{grass} * 19\%) + (Ref.\ DRC_{herb} * 19\%) + (Ref.\ DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $Total\ EDD = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-34 EU-20 Estimated Daily Doses (EDDs) for American Robin Foraging in Lower Mainstem Cement Creek. Invertebrate and plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	42.82	8.63	1.13	0.30	0.31	0.18	5.11E-03	1.07E+00	3.32E-01	2.37E-02	6.95E-04	7.14E-01
Barium	82.16	64.20	25.13	25.28	46.62	29.16	1.16E-02	2.05E+00	3.00E+00	3.05E+00	1.58E-03	4.05E+00
Cadmium	1.42	74.50	3.68	0.39	0.98	6.37	3.40E-03	3.54E-02	2.68E+00	2.40E-01	4.63E-04	1.48E+00
Chromium	4.69	3.75	3.45	2.33	2.51	2.58	3.73E-03	1.17E-01	2.37E-01	2.24E-01	5.07E-04	2.90E-01
Copper	81.13	28.20	43.99	7.46	11.34	6.85	5.92E-02	2.03E+00	2.35E+00	7.73E-01	8.04E-03	2.58E+00
Lead	587.20	186.00	35.25	10.49	6.80	2.39	2.07E-02	1.47E+01	7.50E+00	5.88E-01	2.81E-03	1.14E+01
Manganese	650.70	732.00	217.50	301.60	403.70	314.20	3.51E+00	1.63E+01	3.20E+01	3.08E+01	4.77E-01	3.98E+01
Mercury	0.08	0	0	0.13	0.13	0.13	0	1.90E-03	0.00E+00	1.13E-02	0.00E+00	6.62E-03
Molybdenum	3.86	0	0	0	0	0	2.50E-03	9.65E-02	0.00E+00	0.00E+00	3.40E-04	4.84E-02
Nickel	2.87	1.48	1.24	1.28	1.36	1.16	7.11E-03	7.17E-02	8.97E-02	1.15E-01	9.67E-04	1.39E-01
Selenium	2.24	20.19	0.89	0.31	0.28	0.34	3.93E-03	5.60E-02	7.23E-01	2.81E-02	5.34E-04	4.04E-01
Silver	1.45	1.22	1.07	0.21	0.14	0.18	1.87E-03	3.63E-02	7.55E-02	1.58E-02	2.54E-04	6.39E-02
Vanadium	22.99	15.30	1.94	0.50	0.71	0.66	4.33E-03	5.75E-01	5.87E-01	5.67E-02	5.88E-04	6.10E-01
Zinc	478.30	687.00	210.20	97.14	99.42	413.60	1.55E+00	1.20E+01	3.02E+01	1.88E+01	2.11E-01	3.06E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	50.49	9.32	1.88	0.96	0.88	0.39	5.73E-03	1.26E+00	3.80E-01	6.70E-02	7.79E-04	8.55E-01
Barium	102.90	77.50	31.76	45.29	79.92	73.74	1.22E-02	2.57E+00	3.66E+00	6.03E+00	1.65E-03	6.13E+00
Cadmium	1.86	74.50	9.72	0.66	1.87	10.65	3.84E-03	4.64E-02	2.87E+00	4.08E-01	5.22E-04	1.66E+00
Chromium	5.76	5.92	6.15	2.53	2.98	3.24	4.79E-03	1.44E-01	3.96E-01	2.65E-01	6.52E-04	4.03E-01
Copper	96.48	28.20	87.41	8.69	18.42	8.86	8.65E-02	2.41E+00	3.71E+00	1.08E+00	1.18E-02	3.61E+00
Lead	765.70	186.00	82.04	46.24	27.70	4.50	2.83E-02	1.91E+01	8.97E+00	2.34E+00	3.85E-03	1.52E+01
Manganese	761.90	732.00	377.10	534.90	1690.00	905.80	4.48E+00	1.90E+01	3.70E+01	9.45E+01	6.10E-01	7.56E+01
Mercury	0.14	0	0	0.13	0.13	0.13	0	3.58E-03	0.00E+00	1.15E-02	0.00E+00	7.54E-03
Molybdenum	5.38	0	0	0	0	0	2.50E-03	1.34E-01	0.00E+00	0.00E+00	3.40E-04	6.74E-02
Nickel	3.44	2.31	2.91	2.01	2.42	2.79	8.86E-03	8.60E-02	1.71E-01	2.19E-01	1.20E-03	2.38E-01
Selenium	2.61	45.90	2.69	0.43	0.33	0.78	4.28E-03	6.52E-02	1.66E+00	4.72E-02	5.82E-04	8.88E-01
Silver	2.61	1.22	4.51	0.41	0.17	0.39	2.31E-03	6.53E-02	1.83E-01	2.93E-02	3.14E-04	1.39E-01
Vanadium	26.30	15.30	3.77	0.51	1.05	1.57	5.37E-03	6.58E-01	6.44E-01	9.54E-02	7.30E-04	6.99E-01
Zinc	598.60	687.00	291.80	139.50	168.30	584.00	1.89E+00	1.50E+01	3.28E+01	2.74E+01	2.58E-01	3.77E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = [(Mid-level $DRC_{soil\ invert}$ * 22%) + (Mid-level $DRC_{GD\ invert}$ * 20%)] * FIR

3 $Dose_{plant}$ = [(Mid-level DRC_{grass} * 19%) + (Mid-level DRC_{herb} * 19%) + (Mid-level DRC_{shrub} * 20%)] * FIR

4 $Dose_{water} = SW_{LWA} * WIR$

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-35 EU-21 Estimated Daily Doses (EDDs) for American Robin Foraging in Prospect Gulch. Invertebrate and plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	35.66	8.63	1.13	0.30	0.31	0.18	5.71E-03	8.92E-01	3.32E-01	2.37E-02	7.76E-04	6.24E-01
Barium	174.90	64.20	25.13	25.28	46.62	29.16	8.15E-03	4.37E+00	3.00E+00	3.05E+00	1.11E-03	5.21E+00
Cadmium	0.61	74.50	3.68	0.39	0.98	6.37	2.42E-03	1.51E-02	2.68E+00	2.40E-01	3.30E-04	1.47E+00
Chromium	3.04	3.75	3.45	2.33	2.51	2.58	2.57E-03	7.59E-02	2.37E-01	2.24E-01	3.50E-04	2.69E-01
Copper	28.28	28.20	43.99	7.46	11.34	6.85	7.95E-02	7.07E-01	2.35E+00	7.73E-01	1.08E-02	1.92E+00
Lead	337.50	186.00	35.25	10.49	6.80	2.39	5.06E-02	8.44E+00	7.50E+00	5.88E-01	6.88E-03	8.27E+00
Manganese	223.30	732.00	217.50	301.60	403.70	314.20	5.16E-01	5.58E+00	3.20E+01	3.08E+01	7.02E-02	3.42E+01
Mercury	0.07	0	0	0.13	0.13	0.13	0	1.74E-03	0.00E+00	1.13E-02	0.00E+00	6.54E-03
Molybdenum	1.69	0	0	0	0	0	0	4.22E-02	0.00E+00	0.00E+00	0.00E+00	2.11E-02
Nickel	1.56	1.48	1.24	1.28	1.36	1.16	7.21E-03	3.89E-02	8.97E-02	1.15E-01	9.80E-04	1.22E-01
Selenium	2.00	20.19	0.89	0.31	0.28	0.34	2.63E-03	5.00E-02	7.23E-01	2.81E-02	3.57E-04	4.01E-01
Silver	1.15	1.22	1.07	0.21	0.14	0.18	1.29E-03	2.88E-02	7.55E-02	1.58E-02	1.75E-04	6.01E-02
Vanadium	16.30	15.30	1.94	0.50	0.71	0.66	2.34E-02	4.08E-01	5.87E-01	5.67E-02	3.18E-03	5.27E-01
Zinc	152.30	687.00	210.20	97.14	99.42	413.60	6.31E-01	3.81E+00	3.02E+01	1.88E+01	8.59E-02	2.64E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	42.80	9.32	1.88	0.96	0.88	0.39	1.66E-02	1.07E+00	3.80E-01	6.70E-02	2.26E-03	7.59E-01
Barium	275.70	77.50	31.76	45.29	79.92	73.74	8.15E-03	6.89E+00	3.66E+00	6.03E+00	1.11E-03	8.29E+00
Cadmium	1.57	74.50	9.72	0.66	1.87	10.65	4.00E-03	3.92E-02	2.87E+00	4.08E-01	5.44E-04	1.66E+00
Chromium	3.52	5.92	6.15	2.53	2.98	3.24	2.83E-03	8.79E-02	3.96E-01	2.65E-01	3.84E-04	3.75E-01
Copper	36.77	28.20	87.41	8.69	18.42	8.86	1.43E-01	9.19E-01	3.71E+00	1.08E+00	1.94E-02	2.86E+00
Lead	412.40	186.00	82.04	46.24	27.70	4.50	9.09E-02	1.03E+01	8.97E+00	2.34E+00	1.24E-02	1.08E+01
Manganese	316.40	732.00	377.10	534.90	1690.00	905.80	6.63E-01	7.91E+00	3.70E+01	9.45E+01	9.02E-02	6.97E+01
Mercury	0.09	0	0	0.13	0.13	0.13	0	2.31E-03	0.00E+00	1.15E-02	0.00E+00	6.90E-03
Molybdenum	2.11	0	0	0	0	0	0	5.27E-02	0.00E+00	0.00E+00	0.00E+00	2.63E-02
Nickel	2.02	2.31	2.91	2.01	2.42	2.79	1.13E-02	5.04E-02	1.71E-01	2.19E-01	1.54E-03	2.21E-01
Selenium	2.38	45.90	2.69	0.43	0.33	0.78	2.85E-03	5.95E-02	1.66E+00	4.72E-02	3.88E-04	8.85E-01
Silver	1.70	1.22	4.51	0.41	0.17	0.39	1.41E-03	4.24E-02	1.83E-01	2.93E-02	1.92E-04	1.27E-01
Vanadium	18.53	15.30	3.77	0.51	1.05	1.57	2.34E-02	4.63E-01	6.44E-01	9.54E-02	3.18E-03	6.03E-01
Zinc	383.60	687.00	291.80	139.50	168.30	584.00	1.10E+00	9.59E+00	3.28E+01	2.74E+01	1.50E-01	3.50E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{Mid-level } DRC_{soil\ invert} * 22\%) + (\text{Mid-level } DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(\text{Mid-level } DRC_{grass} * 19\%) + (\text{Mid-level } DRC_{herb} * 19\%) + (\text{Mid-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-36 EU-22 Estimated Daily Doses (EDDs) for American Robin Foraging in Mainstem Cement Creek. Invertebrate and plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	24.73	8.63	1.50	0.30	0.31	0.18	3.14E-03	6.18E-01	3.44E-01	2.37E-02	4.27E-04	4.93E-01
Barium	40.61	64.20	25.13	25.28	46.62	29.16	1.74E-02	1.02E+00	3.00E+00	3.05E+00	2.36E-03	3.53E+00
Cadmium	1.60	74.50	5.43	0.59	2.86	6.37	8.78E-03	3.99E-02	2.73E+00	3.02E-01	1.19E-03	1.54E+00
Chromium	5.43	3.75	3.45	2.33	2.51	2.58	3.53E-03	1.36E-01	2.37E-01	2.24E-01	4.80E-04	2.99E-01
Copper	97.42	28.20	49.36	13.07	11.34	8.98	1.09E-01	2.44E+00	2.51E+00	1.01E+00	1.49E-02	2.99E+00
Lead	863.90	186.00	63.88	29.97	20.15	3.39	2.19E-02	2.16E+01	8.40E+00	1.60E+00	2.98E-03	1.58E+01
Manganese	950.40	732.00	802.70	394.40	403.70	493.80	6.07E+00	2.38E+01	5.03E+01	3.92E+01	8.25E-01	5.70E+01
Mercury	0.06	0	0	0.13	0.13	0.13	0	1.43E-03	0.00E+00	1.13E-02	0.00E+00	6.38E-03
Molybdenum	4.77	0	0	0	0	0	2.50E-03	1.19E-01	0.00E+00	0.00E+00	3.40E-04	5.98E-02
Nickel	3.38	1.48	1.24	1.28	1.36	1.18	6.66E-03	8.46E-02	8.97E-02	1.15E-01	9.06E-04	1.45E-01
Selenium	2.37	20.19	0.89	0.34	0.48	0.34	3.72E-03	5.92E-02	7.23E-01	3.49E-02	5.06E-04	4.09E-01
Silver	1.09	1.22	1.07	0.21	0.17	0.18	1.80E-03	2.72E-02	7.55E-02	1.67E-02	2.45E-04	5.98E-02
Vanadium	27.38	15.30	1.94	0.50	0.71	0.66	2.14E-03	6.85E-01	5.87E-01	5.66E-02	2.91E-04	6.64E-01
Zinc	985.50	687.00	442.10	173.00	422.90	494.30	3.61E+00	2.46E+01	3.75E+01	3.32E+01	4.91E-01	4.79E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	33.76	9.32	2.53	0.96	0.88	0.39	4.81E-03	8.44E-01	4.00E-01	6.70E-02	6.55E-04	6.56E-01
Barium	52.12	77.50	61.81	45.29	79.92	73.74	2.23E-02	1.30E+00	4.60E+00	6.03E+00	3.04E-03	5.97E+00
Cadmium	2.53	74.50	9.72	1.07	4.14	10.65	1.07E-02	6.32E-02	2.87E+00	4.88E-01	1.46E-03	1.71E+00
Chromium	6.35	5.92	6.15	2.53	2.98	3.24	4.74E-03	1.59E-01	3.96E-01	2.65E-01	6.45E-04	4.10E-01
Copper	137.40	28.20	87.41	19.09	18.42	13.89	1.46E-01	3.44E+00	3.71E+00	1.55E+00	1.98E-02	4.35E+00
Lead	1729.00	186.00	107.80	106.30	57.52	9.12	3.26E-02	4.32E+01	9.77E+00	5.15E+00	4.43E-03	2.91E+01
Manganese	1393.00	732.00	3056.00	554.10	1690.00	905.80	8.10E+00	3.48E+01	1.21E+02	9.50E+01	1.10E+00	1.26E+02
Mercury	0.10	0	0	0.13	0.13	0.13	0	2.58E-03	0.00E+00	1.14E-02	0.00E+00	6.99E-03
Molybdenum	5.91	0	0	0	0	0	2.50E-03	1.48E-01	0.00E+00	0.00E+00	3.40E-04	7.40E-02
Nickel	4.54	2.31	2.91	2.01	2.42	2.79	9.32E-03	1.13E-01	1.71E-01	2.19E-01	1.27E-03	2.52E-01
Selenium	2.99	45.90	2.69	0.50	1.14	0.78	4.17E-03	7.49E-02	1.66E+00	7.34E-02	5.68E-04	9.06E-01
Silver	1.33	1.22	4.51	0.41	0.13	0.39	2.32E-03	3.34E-02	1.83E-01	2.82E-02	3.16E-04	1.22E-01
Vanadium	31.24	15.30	3.77	0.51	1.05	1.57	2.98E-03	7.81E-01	6.44E-01	9.54E-02	4.05E-04	7.61E-01
Zinc	3272.00	687.00	912.00	219.80	584.60	605.40	4.49E+00	8.18E+01	5.22E+01	4.29E+01	6.10E-01	8.87E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{High-level } DRC_{soil\ invert} * 22\%) + (\text{High-level } DRC_{GD\ invert} * 20\%)] * FI$

3 $Dose_{plant} = [(\text{High-level } DRC_{grass} * 19\%) + (\text{High-level } DRC_{herb} * 19\%) + (\text{High-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-37 EU-23 Estimated Daily Doses (EDDs) for American Robin Foraging in South Fork Cement Creek. Invertebrate and plant tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	17.01	8.63	0.78	0.18	0.31	0.18	3.05E-03	4.25E-01	3.21E-01	2.01E-02	4.15E-04	3.84E-01
Barium	70.68	64.20	25.13	25.28	40.71	24.18	1.43E-02	1.77E+00	3.00E+00	2.72E+00	1.95E-03	3.74E+00
Cadmium	1.13	12.60	2.32	0.31	0.66	1.35	2.60E-03	2.84E-02	5.06E-01	7.09E-02	3.53E-04	3.03E-01
Chromium	4.39	3.75	3.45	1.98	2.47	2.34	3.54E-03	1.10E-01	2.37E-01	2.05E-01	4.81E-04	2.76E-01
Copper	65.54	17.60	36.43	6.09	7.78	5.23	2.80E-02	1.64E+00	1.75E+00	5.76E-01	3.81E-03	1.98E+00
Lead	210.50	115.00	8.86	1.29	2.39	1.47	7.23E-03	5.26E+00	4.24E+00	1.55E-01	9.83E-04	4.83E+00
Manganese	811.60	732.00	203.40	301.60	180.20	314.20	3.07E+00	2.03E+01	3.16E+01	2.42E+01	4.17E-01	3.82E+01
Mercury	0.03	0	0	0.13	0.13	0.13	0	8.05E-04	0.00E+00	1.13E-02	0.00E+00	6.07E-03
Molybdenum	4.38	0	0	0	0	0	0	1.10E-01	0.00E+00	0.00E+00	0.00E+00	5.48E-02
Nickel	4.62	1.48	0.66	1.06	0.80	0.97	5.03E-03	1.15E-01	7.16E-02	8.54E-02	6.83E-04	1.37E-01
Selenium	1.88	20.19	0.89	0.31	0.26	0.34	3.75E-03	4.69E-02	7.23E-01	2.75E-02	5.09E-04	3.99E-01
Silver	0.82	0.54	1.07	0.21	0.13	0.18	1.79E-03	2.05E-02	5.21E-02	1.55E-02	2.43E-04	4.42E-02
Vanadium	23.21	15.30	1.82	0.50	0.71	0.66	1.41E-03	5.80E-01	5.84E-01	5.66E-02	1.91E-04	6.10E-01
Zinc	232.80	356.00	210.20	79.53	65.19	105.50	1.44E+00	5.82E+00	1.88E+01	7.60E+00	1.95E-01	1.62E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	20.26	9.32	1.28	0.35	0.88	0.39	4.87E-03	5.07E-01	3.61E-01	4.87E-02	6.63E-04	4.58E-01
Barium	98.35	77.50	31.57	30.71	48.77	32.15	1.63E-02	2.46E+00	3.66E+00	3.37E+00	2.21E-03	4.74E+00
Cadmium	3.63	12.60	4.50	0.66	1.04	2.14	6.14E-03	9.08E-02	5.74E-01	1.18E-01	8.36E-04	3.92E-01
Chromium	5.25	5.92	6.15	2.53	2.74	2.70	4.68E-03	1.31E-01	3.96E-01	2.41E-01	6.37E-04	3.85E-01
Copper	157.30	17.60	78.95	7.68	9.52	6.19	6.49E-02	3.93E+00	3.08E+00	7.05E-01	8.83E-03	3.86E+00
Lead	361.30	115.00	18.30	3.03	8.38	4.14	1.99E-02	9.03E+00	4.53E+00	4.69E-01	2.71E-03	7.02E+00
Manganese	1796.00	732.00	262.60	534.90	304.90	905.80	1.31E+01	4.49E+01	3.34E+01	5.33E+01	1.78E+00	6.67E+01
Mercury	0.04	0	0	0.13	0.13	0.13	0	1.09E-03	0.00E+00	1.14E-02	0.00E+00	6.26E-03
Molybdenum	5.38	0	0	0	0	0	0	1.34E-01	0.00E+00	0.00E+00	0.00E+00	6.72E-02
Nickel	9.10	2.31	0.96	1.57	1.36	1.50	1.23E-02	2.27E-01	1.10E-01	1.34E-01	1.67E-03	2.36E-01
Selenium	2.40	45.90	2.69	0.43	0.29	0.78	4.23E-03	5.99E-02	1.66E+00	4.58E-02	5.75E-04	8.85E-01
Silver	1.08	0.65	4.51	0.41	0.14	0.39	2.34E-03	2.69E-02	1.63E-01	2.86E-02	3.19E-04	1.10E-01
Vanadium	26.94	15.30	2.47	0.51	1.05	1.57	1.45E-03	6.74E-01	6.04E-01	9.54E-02	1.97E-04	6.86E-01
Zinc	581.90	463.00	291.80	134.00	85.50	137.80	6.74E+00	1.45E+01	2.51E+01	1.08E+01	9.17E-01	2.57E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{Low-level } DRC_{soil\ invert} * 22\%) + (\text{Low-level } DRC_{GD\ invert} * 20\%)] * FIR$

3 $Dose_{plant} = [(\text{Low-level } DRC_{grass} * 19\%) + (\text{Low-level } DRC_{herb} * 19\%) + (\text{Low-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-38 EU-24 Estimated Daily Doses (EDDs) for American Robin Foraging in Upper Cement Creek. Invertebrate and plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	FP Soil (mg/kg, DW)	Soil Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD[5]
Arsenic	33.33	8.63	1.50	0.30	0.31	0.18	2.31E-03	8.33E-01	3.44E-01	2.37E-02	3.14E-04	6.01E-01
Barium	79.16	64.20	25.13	25.28	46.62	29.16	2.11E-02	1.98E+00	3.00E+00	3.05E+00	2.88E-03	4.01E+00
Cadmium	6.31	74.50	5.43	0.59	2.86	6.37	8.62E-03	1.58E-01	2.73E+00	3.02E-01	1.17E-03	1.60E+00
Chromium	5.51	3.75	3.45	2.33	2.51	2.58	2.97E-03	1.38E-01	2.37E-01	2.24E-01	4.03E-04	3.00E-01
Copper	247.90	28.20	49.36	13.07	11.34	8.98	8.46E-02	6.20E+00	2.51E+00	1.01E+00	1.15E-02	4.87E+00
Lead	807.30	186.00	63.88	29.97	20.15	3.39	8.26E-03	2.02E+01	8.40E+00	1.60E+00	1.12E-03	1.51E+01
Manganese	8159.00	732.00	802.70	394.40	403.70	493.80	1.88E+00	2.04E+02	5.03E+01	3.92E+01	2.56E-01	1.47E+02
Mercury	0.06	0	0	0.13	0.13	0.13	0	1.47E-03	0.00E+00	1.13E-02	0.00E+00	6.41E-03
Molybdenum	3.93	0	0	0	0	0	0	9.82E-02	0.00E+00	0.00E+00	0.00E+00	4.91E-02
Nickel	6.19	1.48	1.24	1.28	1.36	1.18	5.62E-03	1.55E-01	8.97E-02	1.15E-01	7.65E-04	1.80E-01
Selenium	1.81	20.19	0.89	0.34	0.48	0.34	3.21E-03	4.52E-02	7.23E-01	3.49E-02	4.37E-04	4.02E-01
Silver	1.43	1.22	1.07	0.21	0.17	0.18	1.50E-03	3.58E-02	7.55E-02	1.67E-02	2.04E-04	6.41E-02
Vanadium	17.55	15.30	1.94	0.50	0.71	0.66	1.76E-03	4.39E-01	5.87E-01	5.66E-02	2.40E-04	5.41E-01
Zinc	753.20	687.00	442.10	173.00	422.90	494.30	1.92E+00	1.88E+01	3.75E+01	3.32E+01	2.61E-01	4.49E+01
	Reasonable Maximum Exposure (RME) Scenario											
Arsenic	38.97	9.32	2.53	0.96	0.88	0.39	3.91E-03	9.74E-01	4.00E-01	6.70E-02	5.32E-04	7.21E-01
Barium	103.30	77.50	61.81	45.29	79.92	73.74	2.73E-02	2.58E+00	4.60E+00	6.03E+00	3.71E-03	6.61E+00
Cadmium	18.75	74.50	9.72	1.07	4.14	10.65	1.06E-02	4.69E-01	2.87E+00	4.88E-01	1.45E-03	1.91E+00
Chromium	6.49	5.92	6.15	2.53	2.98	3.24	4.15E-03	1.62E-01	3.96E-01	2.65E-01	5.64E-04	4.12E-01
Copper	359.30	28.20	87.41	19.09	18.42	13.89	1.03E-01	8.98E+00	3.71E+00	1.55E+00	1.40E-02	7.13E+00
Lead	999.60	186.00	107.80	106.30	57.52	9.12	1.14E-02	2.50E+01	9.77E+00	5.15E+00	1.55E-03	2.00E+01
Manganese	13854.00	732.00	3056.00	554.10	1690.00	905.80	2.49E+00	3.46E+02	1.21E+02	9.50E+01	3.39E-01	2.81E+02
Mercury	0.09	0	0	0.13	0.13	0.13	0	2.16E-03	0.00E+00	1.14E-02	0.00E+00	6.78E-03
Molybdenum	4.79	0	0	0	0	0	0	1.20E-01	0.00E+00	0.00E+00	0.00E+00	5.98E-02
Nickel	8.78	2.31	2.91	2.01	2.42	2.79	8.01E-03	2.20E-01	1.71E-01	2.19E-01	1.09E-03	3.05E-01
Selenium	2.16	45.90	2.69	0.50	1.14	0.78	3.57E-03	5.41E-02	1.66E+00	7.34E-02	4.85E-04	8.96E-01
Silver	1.79	1.22	4.51	0.41	0.13	0.39	2.06E-03	4.48E-02	1.83E-01	2.82E-02	2.80E-04	1.28E-01
Vanadium	20.78	15.30	3.77	0.51	1.05	1.57	3.13E-03	5.20E-01	6.44E-01	9.54E-02	4.25E-04	6.30E-01
Zinc	1166.00	687.00	912.00	219.80	584.60	605.40	2.47E+00	2.92E+01	5.22E+01	4.29E+01	3.36E-01	6.23E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and all dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = [(\text{High-level } DRC_{soil\ invert} * 22\%) + (\text{High-level } DRC_{GD\ invert} * 20\%)] * FI$

3 $Dose_{plant} = [(\text{High-level } DRC_{grass} * 19\%) + (\text{High-level } DRC_{herb} * 19\%) + (\text{High-level } DRC_{shrub} * 20\%)] * FIR$

4 $Dose_{water} = SW_{LWA} * WIR$

5 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.081	kilograms
Soil ingestion rate (SIR) =	0.0250	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1360	L/kg BW/day
Food ingestion rate (FIR) =	0.1564	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Soil invert. diet =	22%
GD invert. diet =	20%
Grass diet =	19%
Herb diet =	19%
Shrub diet =	20%

Table C-39 EU-01 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Lower Mainstem Mineral Creek. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	31.40	6.33	3.54E-03	4.74E-01	1.47E+00	7.23E-04	9.75E-01	45.31	17.54	5.53E-03	6.84E-01	4.09E+00	1.13E-03	2.39E+00
Barium	120.00	38.25	2.37E-02	1.81E+00	8.92E+00	4.84E-03	5.37E+00	167.00	89.56	2.56E-02	2.52E+00	2.09E+01	5.21E-03	1.17E+01
Cadmium	1.63	3.24	5.47E-04	2.46E-02	7.55E-01	1.12E-04	3.90E-01	3.01	6.67	6.19E-04	4.55E-02	1.55E+00	1.26E-04	8.00E-01
Chromium	5.14	3.56	3.60E-03	7.76E-02	8.31E-01	7.34E-04	4.55E-01	7.21	6.74	4.58E-03	1.09E-01	1.57E+00	9.34E-04	8.41E-01
Copper	138.10	32.25	9.05E-03	2.09E+00	7.52E+00	1.85E-03	4.80E+00	256.60	42.62	1.39E-02	3.87E+00	9.94E+00	2.83E-03	6.91E+00
Lead	367.40	63.15	8.40E-03	5.55E+00	1.47E+01	1.71E-03	1.01E+01	603.90	131.80	1.98E-02	9.12E+00	3.07E+01	4.04E-03	1.99E+01
Manganese	1150.00	456.30	2.78E-01	1.74E+01	1.06E+02	5.67E-02	6.19E+01	1904.00	715.40	3.45E-01	2.88E+01	1.67E+02	7.03E-02	9.78E+01
Mercury	0.15	0	0	2.31E-03	0.00E+00	0.00E+00	1.16E-03	0.29	0	0	4.35E-03	0.00E+00	0.00E+00	2.17E-03
Molybdenum	3.20	0	2.50E-03	4.83E-02	0.00E+00	5.10E-04	2.44E-02	4.25	0	2.50E-03	6.42E-02	0.00E+00	5.10E-04	3.24E-02
Nickel	4.16	0.94	2.37E-03	6.28E-02	2.20E-01	4.84E-04	1.42E-01	5.50	1.58	3.02E-03	8.30E-02	3.68E-01	6.17E-04	2.26E-01
Selenium	1.87	0.93	3.88E-03	2.82E-02	2.17E-01	7.92E-04	1.23E-01	3.00	1.70	4.26E-03	4.53E-02	3.97E-01	8.69E-04	2.22E-01
Silver	0.80	0.55	1.78E-03	1.20E-02	1.29E-01	3.63E-04	7.05E-02	1.49	1.10	2.30E-03	2.25E-02	2.56E-01	4.68E-04	1.40E-01
Vanadium	34.20	1.95	1.83E-03	5.16E-01	4.54E-01	3.74E-04	4.86E-01	76.10	4.62	1.99E-03	1.15E+00	1.08E+00	4.06E-04	1.11E+00
Zinc	486.40	365.30	1.47E-01	7.34E+00	8.52E+01	2.99E-02	4.63E+01	709.60	565.60	1.63E-01	1.07E+01	1.32E+02	3.33E-02	7.13E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (\text{Mid-level } DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-40 EU-02 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Lower Mainstem Mineral Creek. Invertebrate tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	23.20	1.49	3.31E-03	3.50E-01	3.48E-01	6.76E-04	3.50E-01	37.91	5.92	5.00E-03	5.72E-01	1.38E+00	1.02E-03	9.77E-01
Barium	135.40	19.95	2.03E-02	2.04E+00	4.65E+00	4.14E-03	3.35E+00	185.00	31.20	2.11E-02	2.79E+00	7.27E+00	4.29E-03	5.04E+00
Cadmium	0.76	3.24	1.09E-03	1.14E-02	7.55E-01	2.21E-04	3.84E-01	1.32	6.67	1.28E-03	1.99E-02	1.55E+00	2.61E-04	7.87E-01
Chromium	3.46	3.21	3.59E-03	5.22E-02	7.48E-01	7.32E-04	4.01E-01	4.48	4.47	4.42E-03	6.76E-02	1.04E+00	9.02E-04	5.55E-01
Copper	43.84	32.25	1.48E-02	6.62E-01	7.52E+00	3.01E-03	4.09E+00	65.56	42.62	1.62E-02	9.90E-01	9.94E+00	3.31E-03	5.47E+00
Lead	231.10	12.26	9.62E-03	3.49E+00	2.86E+00	1.96E-03	3.18E+00	373.70	25.65	1.30E-02	5.64E+00	5.98E+00	2.64E-03	5.81E+00
Manganese	558.60	456.30	5.86E-01	8.43E+00	1.06E+02	1.20E-01	5.75E+01	797.00	715.40	7.51E-01	1.20E+01	1.67E+02	1.53E-01	8.95E+01
Mercury	0.08	0	0	1.22E-03	0.00E+00	0.00E+00	6.12E-04	0.16	0	0	2.36E-03	0.00E+00	0.00E+00	1.18E-03
Molybdenum	3.36	0	2.50E-03	5.07E-02	0.00E+00	5.10E-04	2.56E-02	4.95	0	2.50E-03	7.47E-02	0.00E+00	5.10E-04	3.76E-02
Nickel	2.02	0.86	3.14E-03	3.05E-02	2.00E-01	6.40E-04	1.16E-01	2.50	1.56	5.13E-03	3.78E-02	3.64E-01	1.05E-03	2.02E-01
Selenium	1.41	0.93	3.77E-03	2.13E-02	2.17E-01	7.68E-04	1.19E-01	2.23	1.70	5.08E-03	3.37E-02	3.97E-01	1.04E-03	2.16E-01
Silver	0.50	0.55	1.80E-03	7.47E-03	1.29E-01	3.66E-04	6.83E-02	0.80	1.10	2.21E-03	1.20E-02	2.56E-01	4.51E-04	1.34E-01
Vanadium	19.32	1.63	2.60E-03	2.92E-01	3.79E-01	5.30E-04	3.36E-01	23.87	2.52	2.83E-03	3.60E-01	5.86E-01	5.76E-04	4.74E-01
Zinc	336.80	365.30	2.56E-01	5.09E+00	8.52E+01	5.22E-02	4.52E+01	514.80	565.60	2.94E-01	7.77E+00	1.32E+02	6.00E-02	6.99E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (Low-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-41 EU-03 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Mainstem Mineral Creek. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	25.19	6.33	3.70E-03	3.80E-01	1.47E+00	7.55E-04	9.28E-01	42.12	17.54	6.58E-03	6.36E-01	4.09E+00	1.34E-03	2.36E+00
Barium	56.12	38.25	2.62E-02	8.47E-01	8.92E+00	5.35E-03	4.89E+00	82.35	89.56	2.65E-02	1.24E+00	2.09E+01	5.40E-03	1.11E+01
Cadmium	1.26	3.24	9.79E-04	1.90E-02	7.55E-01	2.00E-04	3.87E-01	2.30	6.67	1.16E-03	3.47E-02	1.55E+00	2.37E-04	7.95E-01
Chromium	4.50	3.56	3.52E-03	6.80E-02	8.31E-01	7.18E-04	4.50E-01	7.12	6.74	4.54E-03	1.08E-01	1.57E+00	9.26E-04	8.40E-01
Copper	47.27	32.25	1.29E-02	7.14E-01	7.52E+00	2.64E-03	4.12E+00	77.30	42.62	1.65E-02	1.17E+00	9.94E+00	3.36E-03	5.55E+00
Lead	331.60	63.15	2.26E-02	5.01E+00	1.47E+01	4.61E-03	9.87E+00	617.30	131.80	4.50E-02	9.32E+00	3.07E+01	9.18E-03	2.00E+01
Manganese	1919.00	456.30	2.10E-01	2.90E+01	1.06E+02	4.28E-02	6.77E+01	8120.00	715.40	2.50E-01	1.23E+02	1.67E+02	5.09E-02	1.45E+02
Mercury	0.05	0	0	7.78E-04	0.00E+00	0.00E+00	3.89E-04	0.09	0	0	1.33E-03	0.00E+00	0.00E+00	6.66E-04
Molybdenum	1.79	0	2.50E-03	2.70E-02	0.00E+00	5.10E-04	1.38E-02	2.38	0	2.50E-03	3.59E-02	0.00E+00	5.10E-04	1.82E-02
Nickel	3.06	0.94	1.90E-03	4.63E-02	2.20E-01	3.87E-04	1.33E-01	4.44	1.58	2.09E-03	6.70E-02	3.68E-01	4.26E-04	2.18E-01
Selenium	1.07	0.93	3.78E-03	1.62E-02	2.17E-01	7.72E-04	1.17E-01	1.50	1.70	4.16E-03	2.27E-02	3.97E-01	8.49E-04	2.10E-01
Silver	0.57	0.55	1.77E-03	8.55E-03	1.29E-01	3.61E-04	6.88E-02	0.82	1.10	2.27E-03	1.24E-02	2.56E-01	4.63E-04	1.35E-01
Vanadium	18.09	1.95	1.32E-03	2.73E-01	4.54E-01	2.70E-04	3.64E-01	22.71	4.62	1.33E-03	3.43E-01	1.08E+00	2.71E-04	7.10E-01
Zinc	117.40	365.30	3.06E-01	1.77E+00	8.52E+01	6.25E-02	4.35E+01	189.70	565.60	3.35E-01	2.86E+00	1.32E+02	6.83E-02	6.74E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (\text{Mid-level } DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-42 EU-3.5 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Browns Gulch. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	37.81	6.33	2.33E-03	5.71E-01	1.47E+00	4.75E-04	1.02E+00	78.88	17.54	5.65E-03	1.19E+00	4.09E+00	1.15E-03	2.64E+00
Barium	64.93	38.25	2.70E-02	9.80E-01	8.92E+00	5.51E-03	4.95E+00	78.90	89.56	2.70E-02	1.19E+00	2.09E+01	5.51E-03	1.10E+01
Cadmium	0.83	3.24	5.10E-03	1.25E-02	7.55E-01	1.04E-03	3.84E-01	1.14	6.67	1.01E-02	1.72E-02	1.55E+00	2.06E-03	7.87E-01
Chromium	4.61	3.56	2.63E-03	6.97E-02	8.31E-01	5.36E-04	4.50E-01	7.15	6.74	4.06E-03	1.08E-01	1.57E+00	8.29E-04	8.40E-01
Copper	38.73	32.25	4.69E-02	5.85E-01	7.52E+00	9.57E-03	4.06E+00	68.76	42.62	7.39E-02	1.04E+00	9.94E+00	1.51E-02	5.50E+00
Lead	605.60	63.15	5.62E-03	9.14E+00	1.47E+01	1.15E-03	1.19E+01	2743.00	131.80	1.12E-02	4.14E+01	3.07E+01	2.28E-03	3.61E+01
Manganese	1155.00	456.30	2.16E+00	1.74E+01	1.06E+02	4.41E-01	6.21E+01	1932.00	715.40	3.37E+00	2.92E+01	1.67E+02	6.87E-01	9.83E+01
Mercury	0.21	0	0	3.17E-03	0.00E+00	0.00E+00	1.59E-03	0.83	0	0	1.25E-02	0.00E+00	0.00E+00	6.26E-03
Molybdenum	1.62	0	0	2.45E-02	0.00E+00	0.00E+00	1.22E-02	2.38	0	0	3.59E-02	0.00E+00	0.00E+00	1.79E-02
Nickel	5.35	0.94	1.16E-02	8.08E-02	2.20E-01	2.36E-03	1.52E-01	7.98	1.58	1.81E-02	1.21E-01	3.68E-01	3.69E-03	2.46E-01
Selenium	1.19	0.93	2.98E-03	1.80E-02	2.17E-01	6.08E-04	1.18E-01	1.60	1.70	3.99E-03	2.42E-02	3.97E-01	8.14E-04	2.11E-01
Silver	1.66	0.55	1.38E-03	2.51E-02	1.29E-01	2.81E-04	7.70E-02	6.40	1.10	2.00E-03	9.67E-02	2.56E-01	4.07E-04	1.77E-01
Vanadium	18.69	1.95	2.00E-03	2.82E-01	4.54E-01	4.08E-04	3.68E-01	23.22	4.62	2.00E-03	3.51E-01	1.08E+00	4.08E-04	7.14E-01
Zinc	203.10	365.30	1.17E+00	3.07E+00	8.52E+01	2.39E-01	4.42E+01	369.00	565.60	2.31E+00	5.57E+00	1.32E+02	4.71E-01	6.90E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (\text{Mid-level } DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-43 EU-04 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Upper Mainstem Mineral Creek. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	111.70	6.33	1.28E-02	1.69E+00	1.47E+00	2.62E-03	1.58E+00	430.90	17.54	4.54E-02	6.51E+00	4.09E+00	9.25E-03	5.30E+00
Barium	75.31	38.25	3.73E-02	1.14E+00	8.92E+00	7.60E-03	5.03E+00	109.20	89.56	4.70E-02	1.65E+00	2.09E+01	9.58E-03	1.13E+01
Cadmium	1.28	4.64	5.95E-03	1.94E-02	1.08E+00	1.21E-03	5.52E-01	1.84	8.25	1.35E-02	2.78E-02	1.92E+00	2.75E-03	9.77E-01
Chromium	4.59	3.56	3.59E-03	6.94E-02	8.31E-01	7.32E-04	4.50E-01	5.35	6.74	4.39E-03	8.08E-02	1.57E+00	8.95E-04	8.27E-01
Copper	160.60	41.58	2.10E-01	2.43E+00	9.70E+00	4.29E-02	6.08E+00	394.70	73.11	4.84E-01	5.96E+00	1.70E+01	9.88E-02	1.16E+01
Lead	377.10	63.15	6.38E-02	5.69E+00	1.47E+01	1.30E-02	1.02E+01	1233.00	131.80	1.94E-01	1.86E+01	3.07E+01	3.96E-02	2.47E+01
Manganese	972.10	1407.00	2.08E+00	1.47E+01	3.28E+02	4.23E-01	1.72E+02	1199.00	8260.00	4.82E+00	1.81E+01	1.93E+03	9.83E-01	9.73E+02
Mercury	0.14	0	0	2.10E-03	0.00E+00	0.00E+00	1.05E-03	0.36	0	0	5.42E-03	0.00E+00	0.00E+00	2.71E-03
Molybdenum	1.09	0	0	1.65E-02	0.00E+00	0.00E+00	8.24E-03	1.44	0	0	2.17E-02	0.00E+00	0.00E+00	1.09E-02
Nickel	5.17	2.89	1.09E-02	7.81E-02	6.73E-01	2.23E-03	3.77E-01	6.66	11.75	2.53E-02	1.01E-01	2.74E+00	5.17E-03	1.42E+00
Selenium	1.04	0.93	3.78E-03	1.57E-02	2.17E-01	7.71E-04	1.17E-01	1.31	1.70	4.07E-03	1.98E-02	3.97E-01	8.31E-04	2.09E-01
Silver	0.59	0.55	1.80E-03	8.85E-03	1.29E-01	3.68E-04	6.90E-02	1.10	1.10	2.19E-03	1.66E-02	2.56E-01	4.47E-04	1.37E-01
Vanadium	17.10	1.95	1.59E-03	2.58E-01	4.54E-01	3.25E-04	3.56E-01	20.79	4.62	2.66E-03	3.14E-01	1.08E+00	5.43E-04	6.96E-01
Zinc	332.50	492.00	2.58E+00	5.02E+00	1.15E+02	5.27E-01	6.01E+01	851.40	862.30	5.70E+00	1.29E+01	2.01E+02	1.16E+00	1.08E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-44 EU-05 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in South Fork Mineral Creek. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	19.22	6.33	2.55E-03	2.90E-01	1.47E+00	5.19E-04	8.83E-01	27.19	17.54	4.51E-03	4.11E-01	4.09E+00	9.20E-04	2.25E+00
Barium	97.74	38.25	2.80E-02	1.48E+00	8.92E+00	5.71E-03	5.20E+00	112.00	89.56	3.04E-02	1.69E+00	2.09E+01	6.21E-03	1.13E+01
Cadmium	16.15	3.24	6.12E-03	2.44E-01	7.55E-01	1.25E-03	5.00E-01	141.70	6.67	2.19E-02	2.14E+00	1.55E+00	4.46E-03	1.85E+00
Chromium	5.50	3.56	3.07E-03	8.30E-02	8.31E-01	6.27E-04	4.57E-01	6.55	6.74	4.44E-03	9.89E-02	1.57E+00	9.07E-04	8.36E-01
Copper	346.40	32.25	2.72E-02	5.23E+00	7.52E+00	5.56E-03	6.38E+00	2836.00	42.62	1.05E-01	4.28E+01	9.94E+00	2.14E-02	2.64E+01
Lead	465.50	63.15	2.14E-02	7.03E+00	1.47E+01	4.37E-03	1.09E+01	1280.00	131.80	1.37E-01	1.93E+01	3.07E+01	2.79E-02	2.50E+01
Manganese	5748.00	456.30	6.44E-01	8.68E+01	1.06E+02	1.31E-01	9.67E+01	23416.00	715.40	2.16E+00	3.54E+02	1.67E+02	4.40E-01	2.60E+02
Mercury	0.04	0	0	6.31E-04	0.00E+00	0.00E+00	3.16E-04	0.09	0	0	1.35E-03	0.00E+00	0.00E+00	6.75E-04
Molybdenum	1.53	0	0	2.31E-02	0.00E+00	0.00E+00	1.16E-02	2.14	0	0	3.23E-02	0.00E+00	0.00E+00	1.61E-02
Nickel	9.57	0.94	3.87E-03	1.45E-01	2.20E-01	7.90E-04	1.83E-01	21.93	1.58	5.72E-03	3.31E-01	3.68E-01	1.17E-03	3.50E-01
Selenium	1.40	0.93	3.41E-03	2.11E-02	2.17E-01	6.96E-04	1.19E-01	2.09	1.70	3.89E-03	3.15E-02	3.97E-01	7.94E-04	2.15E-01
Silver	2.49	0.55	1.55E-03	3.76E-02	1.29E-01	3.17E-04	8.33E-02	8.46	1.10	2.22E-03	1.28E-01	2.56E-01	4.52E-04	1.92E-01
Vanadium	23.08	1.95	1.41E-03	3.49E-01	4.54E-01	2.88E-04	4.02E-01	31.34	4.62	1.68E-03	4.73E-01	1.08E+00	3.42E-04	7.75E-01
Zinc	1431.00	365.30	1.33E+00	2.16E+01	8.52E+01	2.72E-01	5.35E+01	5282.00	565.60	7.30E+00	7.98E+01	1.32E+02	1.49E+00	1.07E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (\text{Mid-level } DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-45 EU-06 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Middle Fork Mineral Creek. Invertebrate tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	12.06	1.49	2.38E-03	1.82E-01	3.48E-01	4.86E-04	2.65E-01	14.95	5.92	3.83E-03	2.26E-01	1.38E+00	7.81E-04	8.03E-01
Barium	77.78	19.95	1.73E-02	1.17E+00	4.65E+00	3.53E-03	2.91E+00	89.64	31.20	1.90E-02	1.35E+00	7.27E+00	3.87E-03	4.32E+00
Cadmium	0.79	3.24	1.10E-03	1.20E-02	7.55E-01	2.24E-04	3.84E-01	1.18	6.67	1.82E-03	1.78E-02	1.55E+00	3.72E-04	7.86E-01
Chromium	2.76	3.21	2.90E-03	4.17E-02	7.48E-01	5.91E-04	3.95E-01	3.30	4.47	3.96E-03	4.99E-02	1.04E+00	8.08E-04	5.46E-01
Copper	15.31	32.25	4.87E-03	2.31E-01	7.52E+00	9.93E-04	3.88E+00	17.90	42.62	1.01E-02	2.70E-01	9.94E+00	2.06E-03	5.11E+00
Lead	114.30	12.26	8.66E-04	1.73E+00	2.86E+00	1.77E-04	2.29E+00	131.90	25.65	1.98E-03	1.99E+00	5.98E+00	4.04E-04	3.99E+00
Manganese	1660.00	456.30	9.24E-01	2.51E+01	1.06E+02	1.88E-01	6.58E+01	2491.00	715.40	1.14E+00	3.76E+01	1.67E+02	2.32E-01	1.02E+02
Mercury	0.04	0	0	5.86E-04	0.00E+00	0.00E+00	2.93E-04	0.05	0	0	7.37E-04	0.00E+00	0.00E+00	3.68E-04
Molybdenum	5.51	0	0	8.32E-02	0.00E+00	0.00E+00	4.16E-02	8.52	0	0	1.29E-01	0.00E+00	0.00E+00	6.43E-02
Nickel	3.33	0.86	5.28E-03	5.03E-02	2.00E-01	1.08E-03	1.26E-01	4.74	1.56	1.09E-02	7.16E-02	3.64E-01	2.23E-03	2.19E-01
Selenium	1.88	0.93	3.17E-03	2.84E-02	2.17E-01	6.47E-04	1.23E-01	2.29	1.70	4.13E-03	3.46E-02	3.97E-01	8.42E-04	2.16E-01
Silver	0.52	0.55	1.45E-03	7.81E-03	1.29E-01	2.95E-04	6.84E-02	0.62	1.10	1.98E-03	9.39E-03	2.56E-01	4.04E-04	1.33E-01
Vanadium	23.35	1.63	4.11E-03	3.53E-01	3.79E-01	8.38E-04	3.66E-01	28.16	2.52	9.76E-03	4.25E-01	5.86E-01	1.99E-03	5.07E-01
Zinc	103.60	365.30	1.36E-01	1.56E+00	8.52E+01	2.77E-02	4.34E+01	124.20	565.60	1.69E-01	1.88E+00	1.32E+02	3.45E-02	6.69E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (\text{Low-level } DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-46 EU-R1 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Mill Creek Reference Area. Invertebrate tissue values represent the upland/reference floodplain dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	84.47	0.33	1.75E-03	1.28E+00	7.74E-02	3.56E-04	6.77E-01	229.00	0.50	3.62E-03	3.46E+00	1.17E-01	7.38E-04	1.79E+00
Barium	113.00	9.53	2.41E-02	1.71E+00	2.22E+00	4.92E-03	1.97E+00	171.00	12.10	2.41E-02	2.58E+00	2.82E+00	4.92E-03	2.70E+00
Cadmium	1.33	2.29	2.75E-04	2.00E-02	5.33E-01	5.60E-05	2.77E-01	2.10	4.86	4.12E-04	3.17E-02	1.13E+00	8.40E-05	5.82E-01
Chromium	4.10	3.21	2.69E-03	6.19E-02	7.48E-01	5.48E-04	4.05E-01	4.60	4.47	4.15E-03	6.95E-02	1.04E+00	8.47E-04	5.56E-01
Copper	221.40	31.18	1.44E-03	3.34E+00	7.27E+00	2.93E-04	5.31E+00	612.00	37.46	2.04E-03	9.24E+00	8.73E+00	4.15E-04	8.99E+00
Lead	406.50	1.46	9.29E-04	6.14E+00	3.41E-01	1.89E-04	3.24E+00	968.00	2.37	1.49E-03	1.46E+01	5.54E-01	3.04E-04	7.59E+00
Manganese	1415.00	105.40	3.89E-02	2.14E+01	2.46E+01	7.94E-03	2.30E+01	2680.00	139.10	7.72E-02	4.05E+01	3.24E+01	1.58E-02	3.65E+01
Mercury	0.11	0	0	1.66E-03	0.00E+00	0.00E+00	8.31E-04	0.29	0	0	4.38E-03	0.00E+00	0.00E+00	2.19E-03
Molybdenum	3.60	0	0	5.44E-02	0.00E+00	0.00E+00	2.72E-02	5.80	0	0	8.76E-02	0.00E+00	0.00E+00	4.38E-02
Nickel	4.37	0.56	1.29E-03	6.59E-02	1.30E-01	2.63E-04	9.80E-02	6.80	0.83	2.11E-03	1.03E-01	1.94E-01	4.31E-04	1.48E-01
Selenium	1.43	0.53	2.97E-03	2.16E-02	1.23E-01	6.06E-04	7.24E-02	2.50	1.15	4.07E-03	3.78E-02	2.67E-01	8.31E-04	1.53E-01
Silver	0.62	0.22	1.34E-03	9.36E-03	5.15E-02	2.74E-04	3.06E-02	1.20	0.33	2.08E-03	1.81E-02	7.79E-02	4.23E-04	4.82E-02
Vanadium	15.10	0.98	1.32E-03	2.28E-01	2.28E-01	2.69E-04	2.28E-01	22.20	1.25	1.32E-03	3.35E-01	2.90E-01	2.69E-04	3.13E-01
Zinc	301.00	224.90	3.14E-02	4.55E+00	5.24E+01	6.40E-03	2.85E+01	440.00	269.70	3.95E-02	6.64E+00	6.29E+01	8.05E-03	3.48E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (Ref.\ DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $Total\ EDD = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-47 EU-07 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Animas River Below Cunningham Creek. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	28.20	6.33	2.51E-03	4.26E-01	1.47E+00	5.13E-04	9.51E-01	64.50	17.54	4.67E-03	9.74E-01	4.09E+00	9.52E-04	2.53E+00
Barium	53.30	38.25	2.05E-02	8.05E-01	8.92E+00	4.17E-03	4.86E+00	82.83	89.56	2.09E-02	1.25E+00	2.09E+01	4.25E-03	1.11E+01
Cadmium	16.97	4.64	6.52E-04	2.56E-01	1.08E+00	1.33E-04	6.70E-01	94.30	8.25	7.74E-04	1.42E+00	1.92E+00	1.58E-04	1.67E+00
Chromium	5.22	3.56	3.32E-03	7.88E-02	8.31E-01	6.77E-04	4.55E-01	7.11	6.74	4.45E-03	1.07E-01	1.57E+00	9.08E-04	8.40E-01
Copper	666.30	41.58	6.36E-03	1.01E+01	9.70E+00	1.30E-03	9.88E+00	2510.00	73.11	9.43E-03	3.79E+01	1.70E+01	1.92E-03	2.75E+01
Lead	8787.00	63.15	5.82E-03	1.33E+02	1.47E+01	1.19E-03	7.37E+01	44200.00	131.80	1.68E-02	6.67E+02	3.07E+01	3.43E-03	3.49E+02
Manganese	1203.00	1407.00	3.26E-01	1.82E+01	3.28E+02	6.66E-02	1.73E+02	1619.00	8260.00	4.55E-01	2.44E+01	1.93E+03	9.29E-02	9.75E+02
Mercury	1.22	0	0	1.85E-02	0.00E+00	0.00E+00	9.24E-03	6.00	0	0	9.06E-02	0.00E+00	0.00E+00	4.53E-02
Molybdenum	26.60	0	2.50E-03	4.02E-01	0.00E+00	5.10E-04	2.01E-01	118.00	0	2.50E-03	1.78E+00	0.00E+00	5.10E-04	8.91E-01
Nickel	5.17	2.89	1.66E-03	7.80E-02	6.73E-01	3.38E-04	3.76E-01	7.61	11.75	2.03E-03	1.15E-01	2.74E+00	4.14E-04	1.43E+00
Selenium	2.80	0.93	3.47E-03	4.22E-02	2.17E-01	7.08E-04	1.30E-01	4.78	1.70	4.11E-03	7.21E-02	3.97E-01	8.38E-04	2.35E-01
Silver	25.43	0.55	1.66E-03	3.84E-01	1.29E-01	3.39E-04	2.57E-01	96.90	1.10	2.22E-03	1.46E+00	2.56E-01	4.54E-04	8.60E-01
Vanadium	17.12	1.95	2.55E-03	2.59E-01	4.54E-01	5.20E-04	3.57E-01	22.03	4.62	2.55E-03	3.33E-01	1.08E+00	5.20E-04	7.05E-01
Zinc	3082.00	492.00	2.42E-01	4.65E+01	1.15E+02	4.93E-02	8.07E+01	17300.00	862.30	3.32E-01	2.61E+02	2.01E+02	6.77E-02	2.31E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-48 EU-08 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Cunningham Creek. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	12.81	6.33	2.47E-03	1.93E-01	1.47E+00	5.04E-04	8.34E-01	18.24	17.54	4.02E-03	2.75E-01	4.09E+00	8.19E-04	2.18E+00
Barium	66.01	38.25	4.52E-02	9.97E-01	8.92E+00	9.21E-03	4.96E+00	101.90	89.56	4.52E-02	1.54E+00	2.09E+01	9.21E-03	1.12E+01
Cadmium	1.84	3.24	3.53E-04	2.77E-02	7.55E-01	7.20E-05	3.92E-01	2.32	6.67	4.30E-04	3.50E-02	1.55E+00	8.77E-05	7.95E-01
Chromium	3.89	3.56	3.24E-03	5.88E-02	8.31E-01	6.61E-04	4.45E-01	7.10	6.74	4.12E-03	1.07E-01	1.57E+00	8.40E-04	8.40E-01
Copper	99.95	32.25	2.21E-03	1.51E+00	7.52E+00	4.52E-04	4.51E+00	264.80	42.62	3.79E-03	4.00E+00	9.94E+00	7.73E-04	6.97E+00
Lead	797.20	63.15	4.60E-03	1.20E+01	1.47E+01	9.38E-04	1.34E+01	1222.00	131.80	2.55E-02	1.85E+01	3.07E+01	5.20E-03	2.46E+01
Manganese	1580.00	456.30	1.96E-02	2.39E+01	1.06E+02	3.99E-03	6.51E+01	2077.00	715.40	4.75E-02	3.14E+01	1.67E+02	9.69E-03	9.91E+01
Mercury	0.04	0	0	6.19E-04	0.00E+00	0.00E+00	3.10E-04	0.07	0	0	1.02E-03	0.00E+00	0.00E+00	5.09E-04
Molybdenum	4.43	0	2.50E-03	6.69E-02	0.00E+00	5.10E-04	3.37E-02	7.10	0	2.50E-03	1.07E-01	0.00E+00	5.10E-04	5.39E-02
Nickel	3.54	0.94	1.59E-03	5.34E-02	2.20E-01	3.25E-04	1.37E-01	4.64	1.58	2.07E-03	7.00E-02	3.68E-01	4.22E-04	2.19E-01
Selenium	0.79	0.93	3.35E-03	1.20E-02	2.17E-01	6.83E-04	1.15E-01	1.29	1.70	4.12E-03	1.94E-02	3.97E-01	8.41E-04	2.09E-01
Silver	1.44	0.55	1.62E-03	2.18E-02	1.29E-01	3.31E-04	7.54E-02	2.13	1.10	2.06E-03	3.22E-02	2.56E-01	4.20E-04	1.45E-01
Vanadium	16.19	1.95	2.56E-03	2.44E-01	4.54E-01	5.22E-04	3.50E-01	25.00	4.62	2.56E-03	3.78E-01	1.08E+00	5.22E-04	7.28E-01
Zinc	383.60	365.30	2.19E-02	5.79E+00	8.52E+01	4.47E-03	4.55E+01	488.60	565.60	2.95E-02	7.38E+00	1.32E+02	6.02E-03	6.96E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (\text{Mid-level } DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-49 EU-09 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Animas River Below Minnie Gulch. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	21.31	6.33	2.35E-03	3.22E-01	1.47E+00	4.80E-04	8.99E-01	26.08	17.54	4.06E-03	3.94E-01	4.09E+00	8.29E-04	2.24E+00
Barium	89.83	38.25	1.77E-02	1.36E+00	8.92E+00	3.62E-03	5.14E+00	101.60	89.56	1.87E-02	1.53E+00	2.09E+01	3.80E-03	1.12E+01
Cadmium	6.84	4.64	1.17E-03	1.03E-01	1.08E+00	2.39E-04	5.93E-01	9.47	8.25	1.75E-03	1.43E-01	1.92E+00	3.57E-04	1.03E+00
Chromium	3.63	3.56	3.12E-03	5.49E-02	8.31E-01	6.37E-04	4.43E-01	4.24	6.74	4.20E-03	6.40E-02	1.57E+00	8.57E-04	8.18E-01
Copper	446.90	41.58	1.20E-02	6.75E+00	9.70E+00	2.44E-03	8.22E+00	573.10	73.11	1.98E-02	8.65E+00	1.70E+01	4.04E-03	1.29E+01
Lead	3685.00	63.15	3.88E-03	5.56E+01	1.47E+01	7.92E-04	3.52E+01	5167.00	131.80	5.58E-03	7.80E+01	3.07E+01	1.14E-03	5.44E+01
Manganese	8873.00	1407.00	6.19E-01	1.34E+02	3.28E+02	1.26E-01	2.31E+02	12721.00	8260.00	8.48E-01	1.92E+02	1.93E+03	1.73E-01	1.06E+03
Mercury	0.21	0	0	3.22E-03	0.00E+00	0.00E+00	1.61E-03	0.32	0	0	4.79E-03	0.00E+00	0.00E+00	2.39E-03
Molybdenum	4.08	0	2.50E-03	6.15E-02	0.00E+00	5.10E-04	3.10E-02	6.06	0	2.50E-03	9.15E-02	0.00E+00	5.10E-04	4.60E-02
Nickel	4.27	2.89	1.69E-03	6.45E-02	6.73E-01	3.45E-04	3.69E-01	5.03	11.75	2.08E-03	7.59E-02	2.74E+00	4.23E-04	1.41E+00
Selenium	1.13	0.93	3.29E-03	1.71E-02	2.17E-01	6.71E-04	1.17E-01	1.30	1.70	3.92E-03	1.96E-02	3.97E-01	7.99E-04	2.09E-01
Silver	11.13	0.55	1.56E-03	1.68E-01	1.29E-01	3.19E-04	1.49E-01	15.65	1.10	2.10E-03	2.36E-01	2.56E-01	4.29E-04	2.47E-01
Vanadium	16.05	1.95	2.53E-03	2.42E-01	4.54E-01	5.17E-04	3.49E-01	18.60	4.62	2.54E-03	2.81E-01	1.08E+00	5.17E-04	6.79E-01
Zinc	1184.00	492.00	4.15E-01	1.79E+01	1.15E+02	8.47E-02	6.63E+01	1638.00	862.30	5.65E-01	2.47E+01	2.01E+02	1.15E-01	1.13E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-50 EU-10 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Animas River Below South Fork Animas River. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	40.84	6.33	2.20E-03	6.17E-01	1.47E+00	4.48E-04	1.05E+00	43.33	17.54	4.22E-03	6.54E-01	4.09E+00	8.62E-04	2.37E+00
Barium	83.41	38.25	1.63E-02	1.26E+00	8.92E+00	3.33E-03	5.09E+00	91.94	89.56	1.68E-02	1.39E+00	2.09E+01	3.43E-03	1.11E+01
Cadmium	12.96	4.64	2.19E-03	1.96E-01	1.08E+00	4.46E-04	6.39E-01	14.44	8.25	2.92E-03	2.18E-01	1.92E+00	5.95E-04	1.07E+00
Chromium	5.29	3.56	3.02E-03	7.99E-02	8.31E-01	6.15E-04	4.56E-01	5.74	6.74	3.81E-03	8.67E-02	1.57E+00	7.77E-04	8.30E-01
Copper	853.90	41.58	3.24E-02	1.29E+01	9.70E+00	6.62E-03	1.13E+01	1000.00	73.11	4.68E-02	1.51E+01	1.70E+01	9.54E-03	1.61E+01
Lead	5245.00	63.15	5.86E-03	7.92E+01	1.47E+01	1.20E-03	4.70E+01	6381.00	131.80	8.27E-03	9.64E+01	3.07E+01	1.69E-03	6.35E+01
Manganese	24316.00	1407.00	1.22E+00	3.67E+02	3.28E+02	2.49E-01	3.48E+02	36425.00	8260.00	1.41E+00	5.50E+02	1.93E+03	2.87E-01	1.24E+03
Mercury	0.20	0	0	3.08E-03	0.00E+00	0.00E+00	1.54E-03	0.26	0	0	3.88E-03	0.00E+00	0.00E+00	1.94E-03
Molybdenum	11.07	0	2.50E-03	1.67E-01	0.00E+00	5.10E-04	8.38E-02	18.10	0	2.50E-03	2.73E-01	0.00E+00	5.10E-04	1.37E-01
Nickel	5.66	2.89	1.85E-03	8.55E-02	6.73E-01	3.78E-04	3.79E-01	6.59	11.75	2.25E-03	9.94E-02	2.74E+00	4.59E-04	1.42E+00
Selenium	1.04	0.93	3.20E-03	1.57E-02	2.17E-01	6.54E-04	1.16E-01	1.20	1.70	3.85E-03	1.82E-02	3.97E-01	7.86E-04	2.08E-01
Silver	18.75	0.55	1.48E-03	2.83E-01	1.29E-01	3.02E-04	2.06E-01	24.44	1.10	1.91E-03	3.69E-01	2.56E-01	3.89E-04	3.13E-01
Vanadium	14.85	1.95	2.53E-03	2.24E-01	4.54E-01	5.16E-04	3.39E-01	16.15	4.62	2.53E-03	2.44E-01	1.08E+00	5.16E-04	6.61E-01
Zinc	2222.00	492.00	6.56E-01	3.36E+01	1.15E+02	1.34E-01	7.42E+01	2545.00	862.30	8.27E-01	3.84E+01	2.01E+02	1.69E-01	1.20E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-51 EU-11 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Upper South Fork Animas River. Invertebrate tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	24.50	1.49	3.03E-03	3.70E-01	3.48E-01	6.18E-04	3.59E-01	24.50	5.92	4.06E-03	3.70E-01	1.38E+00	8.29E-04	8.76E-01
Barium	72.30	19.95	1.48E-02	1.09E+00	4.65E+00	3.02E-03	2.87E+00	72.30	31.20	1.48E-02	1.09E+00	7.27E+00	3.02E-03	4.18E+00
Cadmium	0.64	3.24	4.06E-04	9.66E-03	7.55E-01	8.28E-05	3.83E-01	0.64	6.67	4.38E-04	9.66E-03	1.55E+00	8.93E-05	7.82E-01
Chromium	8.00	3.21	3.56E-03	1.21E-01	7.48E-01	7.27E-04	4.35E-01	8.00	4.47	4.38E-03	1.21E-01	1.04E+00	8.93E-04	5.81E-01
Copper	74.50	32.25	7.26E-03	1.12E+00	7.52E+00	1.48E-03	4.32E+00	74.50	42.62	1.21E-02	1.12E+00	9.94E+00	2.47E-03	5.53E+00
Lead	164.00	12.26	6.04E-04	2.48E+00	2.86E+00	1.23E-04	2.67E+00	164.00	25.65	8.33E-04	2.48E+00	5.98E+00	1.70E-04	4.23E+00
Manganese	1250.00	456.30	9.57E-02	1.89E+01	1.06E+02	1.95E-02	6.26E+01	1250.00	715.40	1.70E-01	1.89E+01	1.67E+02	3.47E-02	9.29E+01
Mercury	0.01	0	0	1.45E-04	0.00E+00	0.00E+00	7.25E-05	0.01	0	0	1.45E-04	0.00E+00	0.00E+00	7.25E-05
Molybdenum	5.40	0	0	8.15E-02	0.00E+00	0.00E+00	4.08E-02	5.40	0	0	8.15E-02	0.00E+00	0.00E+00	4.08E-02
Nickel	6.10	0.86	2.04E-03	9.21E-02	2.00E-01	4.17E-04	1.46E-01	6.10	1.56	2.26E-03	9.21E-02	3.64E-01	4.62E-04	2.28E-01
Selenium	2.50	0.93	3.75E-03	3.78E-02	2.17E-01	7.65E-04	1.28E-01	2.50	1.70	4.38E-03	3.78E-02	3.97E-01	8.93E-04	2.18E-01
Silver	0.43	0.55	1.78E-03	6.42E-03	1.29E-01	3.63E-04	6.77E-02	0.43	1.10	2.19E-03	6.42E-03	2.56E-01	4.46E-04	1.32E-01
Vanadium	27.40	1.63	1.31E-03	4.14E-01	3.79E-01	2.67E-04	3.96E-01	27.40	2.52	1.31E-03	4.14E-01	5.86E-01	2.67E-04	5.00E-01
Zinc	123.50	365.30	4.53E-02	1.86E+00	8.52E+01	9.24E-03	4.35E+01	123.50	565.60	6.94E-02	1.86E+00	1.32E+02	1.42E-02	6.69E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (\text{Low-level } DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-52 EU-12 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Eureka Gulch. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	22.71	6.33	2.96E-03	3.43E-01	1.47E+00	6.03E-04	9.09E-01	28.07	17.54	4.06E-03	4.24E-01	4.09E+00	8.29E-04	2.26E+00
Barium	88.01	38.25	1.45E-02	1.33E+00	8.92E+00	2.96E-03	5.13E+00	128.40	89.56	1.64E-02	1.94E+00	2.09E+01	3.35E-03	1.14E+01
Cadmium	6.10	4.64	2.15E-03	9.20E-02	1.08E+00	4.38E-04	5.88E-01	9.85	8.25	4.06E-03	1.49E-01	1.92E+00	8.29E-04	1.04E+00
Chromium	7.16	3.56	3.59E-03	1.08E-01	8.31E-01	7.32E-04	4.70E-01	7.92	6.74	3.92E-03	1.20E-01	1.57E+00	8.00E-04	8.46E-01
Copper	215.50	41.58	1.22E-02	3.25E+00	9.70E+00	2.50E-03	6.48E+00	319.50	73.11	2.02E-02	4.82E+00	1.70E+01	4.13E-03	1.09E+01
Lead	695.80	63.15	2.20E-03	1.05E+01	1.47E+01	4.48E-04	1.26E+01	992.70	131.80	4.56E-03	1.50E+01	3.07E+01	9.30E-04	2.29E+01
Manganese	6068.00	1407.00	3.48E-01	9.16E+01	3.28E+02	7.09E-02	2.10E+02	8851.00	8260.00	8.06E-01	1.34E+02	1.93E+03	1.64E-01	1.03E+03
Mercury	0.10	0	0	1.53E-03	0.00E+00	0.00E+00	7.63E-04	0.15	0	0	2.31E-03	0.00E+00	0.00E+00	1.16E-03
Molybdenum	3.51	0	0	5.30E-02	0.00E+00	0.00E+00	2.65E-02	5.05	0	0	7.62E-02	0.00E+00	0.00E+00	3.81E-02
Nickel	9.36	2.89	1.99E-03	1.41E-01	6.73E-01	4.06E-04	4.07E-01	10.77	11.75	2.64E-03	1.63E-01	2.74E+00	5.38E-04	1.45E+00
Selenium	2.20	0.93	3.66E-03	3.32E-02	2.17E-01	7.47E-04	1.25E-01	2.89	1.70	3.96E-03	4.36E-02	3.97E-01	8.07E-04	2.21E-01
Silver	1.74	0.55	1.79E-03	2.63E-02	1.29E-01	3.66E-04	7.77E-02	2.50	1.10	1.96E-03	3.77E-02	2.56E-01	4.00E-04	1.47E-01
Vanadium	30.18	1.95	1.30E-03	4.56E-01	4.54E-01	2.66E-04	4.55E-01	34.66	4.62	1.30E-03	5.23E-01	1.08E+00	2.66E-04	8.00E-01
Zinc	1383.00	492.00	8.54E-01	2.09E+01	1.15E+02	1.74E-01	6.79E+01	3427.00	862.30	1.66E+00	5.17E+01	2.01E+02	3.40E-01	1.27E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-53 EU-13 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Lower South Fork Animas River. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	31.15	6.33	2.69E-03	4.70E-01	1.47E+00	5.48E-04	9.73E-01	38.60	17.54	4.06E-03	5.83E-01	4.09E+00	8.29E-04	2.34E+00
Barium	126.50	38.25	2.22E-02	1.91E+00	8.92E+00	4.52E-03	5.42E+00	140.00	89.56	2.22E-02	2.11E+00	2.09E+01	4.52E-03	1.15E+01
Cadmium	12.50	4.64	1.19E-03	1.89E-01	1.08E+00	2.43E-04	6.36E-01	14.80	8.25	1.55E-03	2.23E-01	1.92E+00	3.15E-04	1.07E+00
Chromium	17.20	3.56	3.46E-03	2.60E-01	8.31E-01	7.05E-04	5.46E-01	27.00	6.74	4.38E-03	4.08E-01	1.57E+00	8.93E-04	9.90E-01
Copper	408.00	41.58	2.54E-02	6.16E+00	9.70E+00	5.18E-03	7.93E+00	485.00	73.11	3.06E-02	7.32E+00	1.70E+01	6.25E-03	1.22E+01
Lead	2652.00	63.15	2.03E-03	4.00E+01	1.47E+01	4.15E-04	2.74E+01	4390.00	131.80	3.57E-03	6.63E+01	3.07E+01	7.28E-04	4.85E+01
Manganese	8200.00	1407.00	2.73E-01	1.24E+02	3.28E+02	5.57E-02	2.26E+02	11100.00	8260.00	3.25E-01	1.68E+02	1.93E+03	6.63E-02	1.05E+03
Mercury	0.99	0	0	1.49E-02	0.00E+00	0.00E+00	7.44E-03	1.90	0	0	2.87E-02	0.00E+00	0.00E+00	1.43E-02
Molybdenum	7.05	0	2.50E-03	1.06E-01	0.00E+00	5.10E-04	5.35E-02	7.40	0	2.50E-03	1.12E-01	0.00E+00	5.10E-04	5.61E-02
Nickel	37.65	2.89	1.73E-03	5.69E-01	6.73E-01	3.53E-04	6.21E-01	63.70	11.75	2.19E-03	9.62E-01	2.74E+00	4.46E-04	1.85E+00
Selenium	2.40	0.93	3.46E-03	3.62E-02	2.17E-01	7.05E-04	1.27E-01	3.20	1.70	4.38E-03	4.83E-02	3.97E-01	8.93E-04	2.23E-01
Silver	3.68	0.55	1.73E-03	5.55E-02	1.29E-01	3.53E-04	9.23E-02	5.95	1.10	2.19E-03	8.98E-02	2.56E-01	4.46E-04	1.73E-01
Vanadium	27.40	1.95	5.00E-03	4.14E-01	4.54E-01	1.02E-03	4.34E-01	29.70	4.62	5.00E-03	4.48E-01	1.08E+00	1.02E-03	7.63E-01
Zinc	3280.00	492.00	3.74E-01	4.95E+01	1.15E+02	7.64E-02	8.22E+01	3770.00	862.30	4.68E-01	5.69E+01	2.01E+02	9.55E-02	1.29E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-54 EU-14 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Animas River Below West Fork Animas River. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	57.03	6.33	2.53E-03	8.61E-01	1.47E+00	5.16E-04	1.17E+00	83.05	17.54	4.58E-03	1.25E+00	4.09E+00	9.34E-04	2.67E+00
Barium	73.51	38.25	1.77E-02	1.11E+00	8.92E+00	3.60E-03	5.02E+00	134.00	89.56	1.87E-02	2.02E+00	2.09E+01	3.81E-03	1.15E+01
Cadmium	6.66	4.64	4.16E-03	1.01E-01	1.08E+00	8.48E-04	5.92E-01	9.95	8.25	4.90E-03	1.50E-01	1.92E+00	1.00E-03	1.04E+00
Chromium	5.60	3.56	3.14E-03	8.46E-02	8.31E-01	6.41E-04	4.58E-01	6.94	6.74	4.72E-03	1.05E-01	1.57E+00	9.64E-04	8.39E-01
Copper	222.70	41.58	5.40E-02	3.36E+00	9.70E+00	1.10E-02	6.53E+00	346.60	73.11	8.00E-02	5.23E+00	1.70E+01	1.63E-02	1.11E+01
Lead	2768.00	63.15	1.21E-02	4.18E+01	1.47E+01	2.47E-03	2.83E+01	10677.00	131.80	2.49E-02	1.61E+02	3.07E+01	5.09E-03	9.60E+01
Manganese	3977.00	1407.00	3.74E+00	6.01E+01	3.28E+02	7.63E-01	1.94E+02	10200.00	8260.00	6.25E+00	1.54E+02	1.93E+03	1.28E+00	1.04E+03
Mercury	0.20	0	0	2.94E-03	0.00E+00	0.00E+00	1.47E-03	0.36	0	0	5.47E-03	0.00E+00	0.00E+00	2.73E-03
Molybdenum	5.86	0	2.50E-03	8.85E-02	0.00E+00	5.10E-04	4.45E-02	7.40	0	2.50E-03	1.12E-01	0.00E+00	5.10E-04	5.61E-02
Nickel	5.09	2.89	3.06E-03	7.68E-02	6.73E-01	6.24E-04	3.75E-01	6.41	11.75	4.01E-03	9.68E-02	2.74E+00	8.17E-04	1.42E+00
Selenium	1.72	0.93	3.38E-03	2.59E-02	2.17E-01	6.89E-04	1.22E-01	2.38	1.70	4.15E-03	3.59E-02	3.97E-01	8.47E-04	2.17E-01
Silver	5.93	0.55	1.55E-03	8.95E-02	1.29E-01	3.16E-04	1.09E-01	26.70	1.10	2.28E-03	4.03E-01	2.56E-01	4.64E-04	3.30E-01
Vanadium	15.14	1.95	2.54E-03	2.29E-01	4.54E-01	5.18E-04	3.42E-01	21.72	4.62	2.55E-03	3.28E-01	1.08E+00	5.20E-04	7.03E-01
Zinc	1866.00	492.00	1.25E+00	2.82E+01	1.15E+02	2.54E-01	7.16E+01	3371.00	862.30	1.50E+00	5.09E+01	2.01E+02	3.07E-01	1.26E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-55 EU-15 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Lower West Fork Animas River. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	59.47	6.33	2.70E-03	8.98E-01	1.47E+00	5.51E-04	1.19E+00	142.90	17.54	5.00E-03	2.16E+00	4.09E+00	1.02E-03	3.12E+00
Barium	123.20	38.25	2.14E-02	1.86E+00	8.92E+00	4.37E-03	5.39E+00	280.40	89.56	2.14E-02	4.23E+00	2.09E+01	4.37E-03	1.26E+01
Cadmium	35.99	4.64	8.11E-03	5.43E-01	1.08E+00	1.65E-03	8.14E-01	216.00	8.25	9.96E-03	3.26E+00	1.92E+00	2.03E-03	2.59E+00
Chromium	5.22	3.56	3.28E-03	7.88E-02	8.31E-01	6.68E-04	4.55E-01	6.02	6.74	4.76E-03	9.09E-02	1.57E+00	9.71E-04	8.32E-01
Copper	586.50	41.58	3.30E-02	8.86E+00	9.70E+00	6.73E-03	9.28E+00	2795.00	73.11	4.22E-02	4.22E+01	1.70E+01	8.60E-03	2.96E+01
Lead	1667.00	63.15	2.35E-02	2.52E+01	1.47E+01	4.79E-03	2.00E+01	6000.00	131.80	4.00E-02	9.06E+01	3.07E+01	8.16E-03	6.07E+01
Manganese	13550.00	1407.00	1.36E+01	2.05E+02	3.28E+02	2.77E+00	2.68E+02	49821.00	8260.00	1.58E+01	7.52E+02	1.93E+03	3.23E+00	1.34E+03
Mercury	0.70	0	0	1.05E-02	0.00E+00	0.00E+00	5.26E-03	1.39	0	0	2.09E-02	0.00E+00	0.00E+00	1.05E-02
Molybdenum	29.94	0	0	4.52E-01	0.00E+00	0.00E+00	2.26E-01	59.06	0	0	8.92E-01	0.00E+00	0.00E+00	4.46E-01
Nickel	11.76	2.89	8.28E-03	1.78E-01	6.73E-01	1.69E-03	4.26E-01	41.84	11.75	1.07E-02	6.32E-01	2.74E+00	2.19E-03	1.69E+00
Selenium	2.25	0.93	3.69E-03	3.39E-02	2.17E-01	7.52E-04	1.26E-01	3.72	1.70	4.45E-03	5.62E-02	3.97E-01	9.07E-04	2.27E-01
Silver	3.32	0.55	1.64E-03	5.01E-02	1.29E-01	3.34E-04	8.96E-02	8.82	1.10	2.38E-03	1.33E-01	2.56E-01	4.85E-04	1.95E-01
Vanadium	18.01	1.95	3.13E-03	2.72E-01	4.54E-01	6.38E-04	3.63E-01	22.15	4.62	3.13E-03	3.34E-01	1.08E+00	6.38E-04	7.06E-01
Zinc	5086.00	492.00	2.76E+00	7.68E+01	1.15E+02	5.64E-01	9.60E+01	30200.00	862.30	3.38E+00	4.56E+02	2.01E+02	6.90E-01	3.29E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-56 EU-16 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Placer Gulch. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	33.11	6.33	3.06E-03	5.00E-01	1.47E+00	6.24E-04	9.88E-01	51.90	17.54	4.06E-03	7.84E-01	4.09E+00	8.29E-04	2.44E+00
Barium	133.60	38.25	2.13E-02	2.02E+00	8.92E+00	4.34E-03	5.47E+00	169.00	89.56	2.13E-02	2.55E+00	2.09E+01	4.34E-03	1.17E+01
Cadmium	6.06	4.64	3.19E-03	9.14E-02	1.08E+00	6.51E-04	5.87E-01	9.53	8.25	3.65E-03	1.44E-01	1.92E+00	7.45E-04	1.03E+00
Chromium	5.62	3.56	3.66E-03	8.49E-02	8.31E-01	7.46E-04	4.58E-01	6.88	6.74	4.38E-03	1.04E-01	1.57E+00	8.93E-04	8.38E-01
Copper	288.50	41.58	2.65E-02	4.36E+00	9.70E+00	5.40E-03	7.03E+00	497.30	73.11	3.34E-02	7.51E+00	1.70E+01	6.81E-03	1.23E+01
Lead	1738.00	63.15	2.58E-02	2.62E+01	1.47E+01	5.27E-03	2.05E+01	3158.00	131.80	4.69E-02	4.77E+01	3.07E+01	9.57E-03	3.92E+01
Manganese	10923.00	1407.00	1.82E+00	1.65E+02	3.28E+02	3.72E-01	2.47E+02	19600.00	8260.00	2.27E+00	2.96E+02	1.93E+03	4.63E-01	1.11E+03
Mercury	0.36	0	0	5.47E-03	0.00E+00	0.00E+00	2.73E-03	0.77	0	0	1.16E-02	0.00E+00	0.00E+00	5.82E-03
Molybdenum	5.23	0	0	7.90E-02	0.00E+00	0.00E+00	3.95E-02	7.80	0	0	1.18E-01	0.00E+00	0.00E+00	5.89E-02
Nickel	5.62	2.89	3.55E-03	8.49E-02	6.73E-01	7.24E-04	3.79E-01	6.50	11.75	4.06E-03	9.82E-02	2.74E+00	8.29E-04	1.42E+00
Selenium	2.24	0.93	3.75E-03	3.39E-02	2.17E-01	7.65E-04	1.26E-01	3.40	1.70	4.23E-03	5.13E-02	3.97E-01	8.63E-04	2.25E-01
Silver	3.91	0.55	1.83E-03	5.90E-02	1.29E-01	3.73E-04	9.40E-02	5.20	1.10	2.19E-03	7.85E-02	2.56E-01	4.46E-04	1.68E-01
Vanadium	17.03	1.95	1.30E-03	2.57E-01	4.54E-01	2.64E-04	3.56E-01	21.40	4.62	1.30E-03	3.23E-01	1.08E+00	2.64E-04	7.00E-01
Zinc	1129.00	492.00	1.29E+00	1.70E+01	1.15E+02	2.63E-01	6.60E+01	1600.00	862.30	1.51E+00	2.42E+01	2.01E+02	3.07E-01	1.13E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-57 EU-17 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Mainstem West Fork Animas River/California Gulch. Invertebrate tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	28.83	1.49	2.87E-03	4.35E-01	3.48E-01	5.85E-04	3.92E-01	31.40	5.92	4.06E-03	4.74E-01	1.38E+00	8.29E-04	9.28E-01
Barium	48.70	19.95	2.12E-02	7.35E-01	4.65E+00	4.32E-03	2.70E+00	57.50	31.20	2.12E-02	8.68E-01	7.27E+00	4.32E-03	4.07E+00
Cadmium	1.27	3.24	8.73E-03	1.91E-02	7.55E-01	1.78E-03	3.88E-01	1.60	6.67	1.09E-02	2.42E-02	1.55E+00	2.23E-03	7.90E-01
Chromium	6.16	3.21	3.68E-03	9.30E-02	7.48E-01	7.50E-04	4.21E-01	6.78	4.47	4.20E-03	1.02E-01	1.04E+00	8.56E-04	5.72E-01
Copper	79.47	32.25	3.15E-02	1.20E+00	7.52E+00	6.43E-03	4.36E+00	156.00	42.62	3.64E-02	2.36E+00	9.94E+00	7.43E-03	6.15E+00
Lead	136.20	12.26	5.76E-03	2.06E+00	2.86E+00	1.18E-03	2.46E+00	162.00	25.65	1.71E-02	2.45E+00	5.98E+00	3.48E-03	4.22E+00
Manganese	4137.00	456.30	1.99E+01	6.25E+01	1.06E+02	4.06E+00	8.65E+01	7020.00	715.40	2.51E+01	1.06E+02	1.67E+02	5.12E+00	1.39E+02
Mercury	0.05	0	0	6.80E-04	0.00E+00	0.00E+00	3.40E-04	0.06	0	0	9.51E-04	0.00E+00	0.00E+00	4.76E-04
Molybdenum	4.55	0	0	6.87E-02	0.00E+00	0.00E+00	3.44E-02	4.70	0	0	7.10E-02	0.00E+00	0.00E+00	3.55E-02
Nickel	5.84	0.86	9.96E-03	8.82E-02	2.00E-01	2.03E-03	1.45E-01	7.40	1.56	1.25E-02	1.12E-01	3.64E-01	2.56E-03	2.39E-01
Selenium	1.38	0.93	3.60E-03	2.08E-02	2.17E-01	7.35E-04	1.19E-01	1.90	1.70	3.99E-03	2.87E-02	3.97E-01	8.15E-04	2.13E-01
Silver	0.67	0.55	1.80E-03	1.01E-02	1.29E-01	3.68E-04	6.96E-02	1.24	1.10	2.00E-03	1.87E-02	2.56E-01	4.08E-04	1.38E-01
Vanadium	27.50	1.63	1.30E-03	4.15E-01	3.79E-01	2.64E-04	3.97E-01	32.50	2.52	1.30E-03	4.91E-01	5.86E-01	2.64E-04	5.39E-01
Zinc	276.80	365.30	2.60E+00	4.18E+00	8.52E+01	5.31E-01	4.49E+01	406.50	565.60	3.30E+00	6.14E+00	1.32E+02	6.73E-01	6.93E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (\text{Low-level } DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-58 EU-18 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in North Fork Animas River Below Burrows Creek. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	31.80	6.33	2.66E-03	4.80E-01	1.47E+00	5.44E-04	9.78E-01	34.90	17.54	4.78E-03	5.27E-01	4.09E+00	9.75E-04	2.31E+00
Barium	57.12	38.25	2.55E-02	8.63E-01	8.92E+00	5.20E-03	4.89E+00	98.90	89.56	2.74E-02	1.49E+00	2.09E+01	5.59E-03	1.12E+01
Cadmium	1.53	3.24	5.27E-03	2.31E-02	7.55E-01	1.08E-03	3.90E-01	2.00	6.67	6.67E-03	3.02E-02	1.55E+00	1.36E-03	7.93E-01
Chromium	7.10	3.56	3.30E-03	1.07E-01	8.31E-01	6.74E-04	4.69E-01	12.00	6.74	4.64E-03	1.81E-01	1.57E+00	9.46E-04	8.77E-01
Copper	22.87	32.25	3.19E-02	3.45E-01	7.52E+00	6.50E-03	3.94E+00	28.60	42.62	7.67E-02	4.32E-01	9.94E+00	1.57E-02	5.19E+00
Lead	193.70	63.15	1.05E-02	2.92E+00	1.47E+01	2.13E-03	8.83E+00	276.00	131.80	1.54E-02	4.17E+00	3.07E+01	3.14E-03	1.75E+01
Manganese	2006.00	456.30	1.12E+00	3.03E+01	1.06E+02	2.29E-01	6.85E+01	2660.00	715.40	1.42E+00	4.02E+01	1.67E+02	2.90E-01	1.04E+02
Mercury	0.04	0	0	5.33E-04	0.00E+00	0.00E+00	2.67E-04	0.05	0	0	6.95E-04	0.00E+00	0.00E+00	3.47E-04
Molybdenum	4.53	0	0	6.84E-02	0.00E+00	0.00E+00	3.42E-02	4.70	0	0	7.10E-02	0.00E+00	0.00E+00	3.55E-02
Nickel	4.10	0.94	3.00E-03	6.19E-02	2.20E-01	6.11E-04	1.41E-01	5.50	1.58	3.52E-03	8.31E-02	3.68E-01	7.17E-04	2.26E-01
Selenium	1.20	0.93	3.53E-03	1.81E-02	2.17E-01	7.19E-04	1.18E-01	1.60	1.70	4.27E-03	2.42E-02	3.97E-01	8.72E-04	2.11E-01
Silver	0.55	0.55	1.65E-03	8.31E-03	1.29E-01	3.37E-04	6.87E-02	0.65	1.10	2.32E-03	9.82E-03	2.56E-01	4.73E-04	1.33E-01
Vanadium	15.53	1.95	1.30E-03	2.35E-01	4.54E-01	2.64E-04	3.44E-01	19.00	4.62	1.30E-03	2.87E-01	1.08E+00	2.64E-04	6.82E-01
Zinc	210.50	365.30	9.52E-01	3.18E+00	8.52E+01	1.94E-01	4.43E+01	270.00	565.60	1.13E+00	4.08E+00	1.32E+02	2.31E-01	6.81E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (\text{Mid-level } DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-59 EU-19 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Burrows Creek. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	59.90	6.33	3.51E-03	9.04E-01	1.47E+00	7.17E-04	1.19E+00	79.38	17.54	4.06E-03	1.20E+00	4.09E+00	8.29E-04	2.64E+00
Barium	70.42	38.25	2.62E-02	1.06E+00	8.92E+00	5.33E-03	4.99E+00	78.43	89.56	2.62E-02	1.18E+00	2.09E+01	5.33E-03	1.10E+01
Cadmium	3.80	4.64	1.38E-02	5.74E-02	1.08E+00	2.81E-03	5.72E-01	10.03	8.25	1.74E-02	1.51E-01	1.92E+00	3.55E-03	1.04E+00
Chromium	4.01	3.56	3.99E-03	6.05E-02	8.31E-01	8.15E-04	4.46E-01	4.73	6.74	4.16E-03	7.14E-02	1.57E+00	8.49E-04	8.22E-01
Copper	83.25	41.58	7.28E-02	1.26E+00	9.70E+00	1.48E-02	5.48E+00	198.30	73.11	8.16E-02	2.99E+00	1.70E+01	1.66E-02	1.00E+01
Lead	520.50	63.15	1.16E-02	7.86E+00	1.47E+01	2.36E-03	1.13E+01	880.10	131.80	1.40E-02	1.33E+01	3.07E+01	2.85E-03	2.20E+01
Manganese	3305.00	1407.00	4.08E+00	4.99E+01	3.28E+02	8.32E-01	1.89E+02	7521.00	8260.00	4.66E+00	1.14E+02	1.93E+03	9.51E-01	1.02E+03
Mercury	0.06	0	0	8.53E-04	0.00E+00	0.00E+00	4.27E-04	0.08	0	0	1.14E-03	0.00E+00	0.00E+00	5.72E-04
Molybdenum	13.12	0	0	1.98E-01	0.00E+00	0.00E+00	9.91E-02	20.15	0	0	3.04E-01	0.00E+00	0.00E+00	1.52E-01
Nickel	4.05	2.89	9.33E-03	6.11E-02	6.73E-01	1.90E-03	3.68E-01	5.12	11.75	1.06E-02	7.73E-02	2.74E+00	2.15E-03	1.41E+00
Selenium	1.43	0.93	4.01E-03	2.15E-02	2.17E-01	8.19E-04	1.19E-01	1.91	1.70	4.17E-03	2.89E-02	3.97E-01	8.51E-04	2.13E-01
Silver	1.46	0.55	2.00E-03	2.20E-02	1.29E-01	4.07E-04	7.56E-02	2.25	1.10	2.08E-03	3.39E-02	2.56E-01	4.25E-04	1.45E-01
Vanadium	12.52	1.95	3.13E-03	1.89E-01	4.54E-01	6.38E-04	3.22E-01	14.67	4.62	3.13E-03	2.22E-01	1.08E+00	6.38E-04	6.50E-01
Zinc	279.70	492.00	2.02E+00	4.22E+00	1.15E+02	4.13E-01	5.97E+01	441.30	862.30	2.61E+00	6.66E+00	2.01E+02	5.33E-01	1.04E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-60 EU-R2 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Maggie Gulch Reference Area. Invertebrate tissue values represent the upland/reference floodplain dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	10.34	0.33	1.25E-03	1.56E-01	7.74E-02	2.55E-04	1.17E-01	11.94	0.50	1.25E-03	1.80E-01	1.17E-01	2.55E-04	1.49E-01
Barium	180.50	9.53	0.00E+00	2.73E+00	2.22E+00	0.00E+00	2.47E+00	252.90	12.10	0.00E+00	3.82E+00	2.82E+00	0.00E+00	3.32E+00
Cadmium	0.84	2.29	2.50E-04	1.27E-02	5.33E-01	5.10E-05	2.73E-01	1.18	4.86	2.50E-04	1.77E-02	1.13E+00	5.10E-05	5.75E-01
Chromium	3.74	3.21	2.50E-03	5.65E-02	7.48E-01	5.10E-04	4.03E-01	5.31	4.47	2.50E-03	8.01E-02	1.04E+00	5.10E-04	5.61E-01
Copper	27.47	31.18	1.25E-03	4.15E-01	7.27E+00	2.55E-04	3.84E+00	37.11	37.46	1.25E-03	5.60E-01	8.73E+00	2.55E-04	4.65E+00
Lead	66.68	1.46	3.16E-04	1.01E+00	3.41E-01	6.44E-05	6.74E-01	124.90	2.37	3.16E-04	1.89E+00	5.54E-01	6.44E-05	1.22E+00
Manganese	1400.00	105.40	1.30E-02	2.11E+01	2.46E+01	2.64E-03	2.29E+01	1596.00	139.10	1.30E-02	2.41E+01	3.24E+01	2.64E-03	2.83E+01
Mercury	0.08	0	0	1.16E-03	0.00E+00	0.00E+00	5.79E-04	0.19	0	0	2.93E-03	0.00E+00	0.00E+00	1.46E-03
Molybdenum	1.85	0	0	2.79E-02	0.00E+00	0.00E+00	1.40E-02	2.00	0	0	3.02E-02	0.00E+00	0.00E+00	1.51E-02
Nickel	5.16	0.56	1.25E-03	7.80E-02	1.30E-01	2.55E-04	1.04E-01	5.61	0.83	1.25E-03	8.47E-02	1.94E-01	2.55E-04	1.39E-01
Selenium	0.73	0.53	2.50E-03	1.11E-02	1.23E-01	5.10E-04	6.71E-02	1.11	1.15	2.50E-03	1.67E-02	2.67E-01	5.10E-04	1.42E-01
Silver	0.50	0.22	0.00E+00	7.50E-03	5.15E-02	0.00E+00	2.95E-02	0.68	0.33	0.00E+00	1.02E-02	7.79E-02	0.00E+00	4.41E-02
Vanadium	18.30	0.98	2.54E-03	2.76E-01	2.28E-01	5.18E-04	2.53E-01	25.25	1.25	2.55E-03	3.81E-01	2.90E-01	5.20E-04	3.36E-01
Zinc	151.80	224.90	5.00E-03	2.29E+00	5.24E+01	1.02E-03	2.74E+01	203.00	269.70	5.00E-03	3.07E+00	6.29E+01	1.02E-03	3.30E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (Ref.\ DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $Total\ EDD = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-61 EU-R3 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Picayune Gulch Reference Area. Invertebrate tissue values represent the upland/reference floodplain dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	44.45	0.33	1.25E-03	6.71E-01	7.74E-02	2.55E-04	3.74E-01	55.80	0.50	1.25E-03	8.43E-01	1.17E-01	2.55E-04	4.80E-01
Barium	97.08	9.53	0.00E+00	1.47E+00	2.22E+00	0.00E+00	1.84E+00	121.00	12.10	0.00E+00	1.83E+00	2.82E+00	0.00E+00	2.32E+00
Cadmium	1.44	2.29	2.50E-04	2.17E-02	5.33E-01	5.10E-05	2.78E-01	1.52	4.86	2.50E-04	2.30E-02	1.13E+00	5.10E-05	5.78E-01
Chromium	4.81	3.21	2.50E-03	7.26E-02	7.48E-01	5.10E-04	4.11E-01	5.37	4.47	2.50E-03	8.10E-02	1.04E+00	5.10E-04	5.61E-01
Copper	35.28	31.18	1.25E-03	5.33E-01	7.27E+00	2.55E-04	3.90E+00	45.27	37.46	1.25E-03	6.84E-01	8.73E+00	2.55E-04	4.71E+00
Lead	140.00	1.46	2.50E-04	2.11E+00	3.41E-01	5.10E-05	1.23E+00	171.70	2.37	2.50E-04	2.59E+00	5.54E-01	5.10E-05	1.57E+00
Manganese	3108.00	105.40	1.51E-01	4.69E+01	2.46E+01	3.08E-02	3.58E+01	5410.00	139.10	1.51E-01	8.17E+01	3.24E+01	3.08E-02	5.71E+01
Mercury	0.04	0	0	6.19E-04	0.00E+00	0.00E+00	3.10E-04	0.06	0	0	8.46E-04	0.00E+00	0.00E+00	4.23E-04
Molybdenum	2.60	0	0	3.93E-02	0.00E+00	0.00E+00	1.96E-02	2.60	0	0	3.93E-02	0.00E+00	0.00E+00	1.96E-02
Nickel	5.62	0.56	1.25E-03	8.49E-02	1.30E-01	2.55E-04	1.08E-01	5.87	0.83	1.25E-03	8.86E-02	1.94E-01	2.55E-04	1.41E-01
Selenium	0.60	0.53	2.50E-03	9.06E-03	1.23E-01	5.10E-04	6.61E-02	1.24	1.15	2.50E-03	1.88E-02	2.67E-01	5.10E-04	1.43E-01
Silver	1.24	0.22	1.25E-03	1.87E-02	5.15E-02	2.55E-04	3.53E-02	2.04	0.33	1.25E-03	3.09E-02	7.79E-02	2.55E-04	5.45E-02
Vanadium	19.83	0.98	0.00E+00	2.99E-01	2.28E-01	0.00E+00	2.64E-01	22.70	1.25	0.00E+00	3.43E-01	2.90E-01	0.00E+00	3.17E-01
Zinc	243.50	224.90	1.23E-02	3.68E+00	5.24E+01	2.51E-03	2.81E+01	263.00	269.70	1.23E-02	3.97E+00	6.29E+01	2.51E-03	3.34E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (Ref.\ DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $Total\ EDD = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-62 EU-R4 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in North Fork Animas River Reference Area. Invertebrate tissue values represent the upland/reference floodplain dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	105.00	0.33	2.80E-03	1.59E+00	7.74E-02	5.70E-04	8.32E-01	105.00	0.50	5.00E-03	1.59E+00	1.17E-01	1.02E-03	8.52E-01
Barium	61.50	9.53	0.00E+00	9.29E-01	2.22E+00	0.00E+00	1.58E+00	61.50	12.10	0.00E+00	9.29E-01	2.82E+00	0.00E+00	1.88E+00
Cadmium	1.70	2.29	8.32E-04	2.57E-02	5.33E-01	1.70E-04	2.80E-01	1.70	4.86	1.11E-03	2.57E-02	1.13E+00	2.26E-04	5.79E-01
Chromium	2.90	3.21	3.36E-03	4.38E-02	7.48E-01	6.86E-04	3.96E-01	2.90	4.47	5.00E-03	4.38E-02	1.04E+00	1.02E-03	5.43E-01
Copper	81.50	31.18	2.02E-03	1.23E+00	7.27E+00	4.12E-04	4.25E+00	81.50	37.46	2.58E-03	1.23E+00	8.73E+00	5.26E-04	4.98E+00
Lead	334.00	1.46	1.08E-03	5.04E+00	3.41E-01	2.21E-04	2.69E+00	334.00	2.37	1.51E-03	5.04E+00	5.54E-01	3.09E-04	2.80E+00
Manganese	628.00	105.40	2.06E-02	9.48E+00	2.46E+01	4.21E-03	1.70E+01	628.00	139.10	3.04E-02	9.48E+00	3.24E+01	6.19E-03	2.10E+01
Mercury	0.07	0	0	1.09E-03	0.00E+00	0.00E+00	5.44E-04	0.07	0	0	1.09E-03	0.00E+00	0.00E+00	5.44E-04
Molybdenum	10.20	0	0	1.54E-01	0.00E+00	0.00E+00	7.70E-02	10.20	0	0	1.54E-01	0.00E+00	0.00E+00	7.70E-02
Nickel	2.40	0.56	1.63E-03	3.62E-02	1.30E-01	3.33E-04	8.32E-02	2.40	0.83	2.50E-03	3.62E-02	1.94E-01	5.10E-04	1.15E-01
Selenium	1.50	0.53	3.65E-03	2.27E-02	1.23E-01	7.44E-04	7.30E-02	1.50	1.15	5.00E-03	2.27E-02	2.67E-01	1.02E-03	1.46E-01
Silver	2.40	0.22	1.68E-03	3.62E-02	5.15E-02	3.43E-04	4.41E-02	2.40	0.33	2.50E-03	3.62E-02	7.79E-02	5.10E-04	5.73E-02
Vanadium	12.40	0.98	1.30E-03	1.87E-01	2.28E-01	2.64E-04	2.08E-01	12.40	1.25	1.30E-03	1.87E-01	2.90E-01	2.64E-04	2.39E-01
Zinc	480.00	224.90	1.30E-01	7.25E+00	5.24E+01	2.65E-02	2.99E+01	480.00	269.70	1.63E-01	7.25E+00	6.29E+01	3.32E-02	3.51E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (Ref.\ DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $Total\ EDD = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-63 EU-20 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Lower Mainstem Cement Creek. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	42.82	6.33	5.11E-03	6.47E-01	1.47E+00	1.04E-03	1.06E+00	50.49	17.54	5.73E-03	7.62E-01	4.09E+00	1.17E-03	2.43E+00
Barium	82.16	38.25	1.16E-02	1.24E+00	8.92E+00	2.37E-03	5.08E+00	102.90	89.56	1.22E-02	1.55E+00	2.09E+01	2.48E-03	1.12E+01
Cadmium	1.42	3.24	3.40E-03	2.14E-02	7.55E-01	6.94E-04	3.89E-01	1.86	6.67	3.84E-03	2.80E-02	1.55E+00	7.84E-04	7.92E-01
Chromium	4.69	3.56	3.73E-03	7.09E-02	8.31E-01	7.61E-04	4.51E-01	5.76	6.74	4.79E-03	8.70E-02	1.57E+00	9.78E-04	8.30E-01
Copper	81.13	32.25	5.92E-02	1.23E+00	7.52E+00	1.21E-02	4.38E+00	96.48	42.62	8.65E-02	1.46E+00	9.94E+00	1.77E-02	5.71E+00
Lead	587.20	63.15	2.07E-02	8.87E+00	1.47E+01	4.22E-03	1.18E+01	765.70	131.80	2.83E-02	1.16E+01	3.07E+01	5.78E-03	2.11E+01
Manganese	650.70	456.30	3.51E+00	9.83E+00	1.06E+02	7.15E-01	5.85E+01	761.90	715.40	4.48E+00	1.15E+01	1.67E+02	9.14E-01	8.96E+01
Mercury	0.08	0	0	1.14E-03	0.00E+00	0.00E+00	5.72E-04	0.14	0	0	2.16E-03	0.00E+00	0.00E+00	1.08E-03
Molybdenum	3.86	0	2.50E-03	5.83E-02	0.00E+00	5.10E-04	2.94E-02	5.38	0	2.50E-03	8.12E-02	0.00E+00	5.10E-04	4.08E-02
Nickel	2.87	0.94	7.11E-03	4.33E-02	2.20E-01	1.45E-03	1.32E-01	3.44	1.58	8.86E-03	5.19E-02	3.68E-01	1.81E-03	2.11E-01
Selenium	2.24	0.93	3.93E-03	3.38E-02	2.17E-01	8.01E-04	1.26E-01	2.61	1.70	4.28E-03	3.94E-02	3.97E-01	8.73E-04	2.19E-01
Silver	1.45	0.55	1.87E-03	2.19E-02	1.29E-01	3.81E-04	7.55E-02	2.61	1.10	2.31E-03	3.94E-02	2.56E-01	4.71E-04	1.48E-01
Vanadium	22.99	1.95	4.33E-03	3.47E-01	4.54E-01	8.82E-04	4.01E-01	26.30	4.62	5.37E-03	3.97E-01	1.08E+00	1.09E-03	7.38E-01
Zinc	478.30	365.30	1.55E+00	7.22E+00	8.52E+01	3.16E-01	4.64E+01	598.60	565.60	1.89E+00	9.04E+00	1.32E+02	3.86E-01	7.07E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (\text{Mid-level } DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-64 EU-21 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Prospect Gulch. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	35.66	6.33	5.71E-03	5.38E-01	1.47E+00	1.16E-03	1.01E+00	42.80	17.54	1.66E-02	6.46E-01	4.09E+00	3.39E-03	2.37E+00
Barium	174.90	38.25	8.15E-03	2.64E+00	8.92E+00	1.66E-03	5.78E+00	275.70	89.56	8.15E-03	4.16E+00	2.09E+01	1.66E-03	1.25E+01
Cadmium	0.61	3.24	2.42E-03	9.14E-03	7.55E-01	4.94E-04	3.83E-01	1.57	6.67	4.00E-03	2.37E-02	1.55E+00	8.16E-04	7.90E-01
Chromium	3.04	3.56	2.57E-03	4.59E-02	8.31E-01	5.25E-04	4.39E-01	3.52	6.74	2.83E-03	5.31E-02	1.57E+00	5.77E-04	8.13E-01
Copper	28.28	32.25	7.95E-02	4.27E-01	7.52E+00	1.62E-02	3.98E+00	36.77	42.62	1.43E-01	5.55E-01	9.94E+00	2.91E-02	5.26E+00
Lead	337.50	63.15	5.06E-02	5.10E+00	1.47E+01	1.03E-02	9.92E+00	412.40	131.80	9.09E-02	6.23E+00	3.07E+01	1.85E-02	1.85E+01
Manganese	223.30	456.30	5.16E-01	3.37E+00	1.06E+02	1.05E-01	5.49E+01	316.40	715.40	6.63E-01	4.78E+00	1.67E+02	1.35E-01	8.59E+01
Mercury	0.07	0	0	1.05E-03	0.00E+00	0.00E+00	5.26E-04	0.09	0	0	1.39E-03	0.00E+00	0.00E+00	6.96E-04
Molybdenum	1.69	0	0	2.55E-02	0.00E+00	0.00E+00	1.27E-02	2.11	0	0	3.18E-02	0.00E+00	0.00E+00	1.59E-02
Nickel	1.56	0.94	7.21E-03	2.35E-02	2.20E-01	1.47E-03	1.23E-01	2.02	1.58	1.13E-02	3.04E-02	3.68E-01	2.30E-03	2.00E-01
Selenium	2.00	0.93	2.63E-03	3.02E-02	2.17E-01	5.36E-04	1.24E-01	2.38	1.70	2.85E-03	3.60E-02	3.97E-01	5.82E-04	2.17E-01
Silver	1.15	0.55	1.29E-03	1.74E-02	1.29E-01	2.62E-04	7.32E-02	1.70	1.10	1.41E-03	2.56E-02	2.56E-01	2.88E-04	1.41E-01
Vanadium	16.30	1.95	2.34E-02	2.46E-01	4.54E-01	4.77E-03	3.53E-01	18.53	4.62	2.34E-02	2.80E-01	1.08E+00	4.77E-03	6.81E-01
Zinc	152.30	365.30	6.31E-01	2.30E+00	8.52E+01	1.29E-01	4.38E+01	383.60	565.60	1.10E+00	5.79E+00	1.32E+02	2.25E-01	6.89E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (\text{Mid-level } DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-65 EU-22 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Mainstem Cement Creek. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	24.73	6.33	3.14E-03	3.73E-01	1.47E+00	6.41E-04	9.24E-01	33.76	17.54	4.81E-03	5.10E-01	4.09E+00	9.82E-04	2.30E+00
Barium	40.61	38.25	1.74E-02	6.13E-01	8.92E+00	3.54E-03	4.77E+00	52.12	89.56	2.23E-02	7.87E-01	2.09E+01	4.55E-03	1.08E+01
Cadmium	1.60	4.64	8.78E-03	2.41E-02	1.08E+00	1.79E-03	5.54E-01	2.53	8.25	1.07E-02	3.82E-02	1.92E+00	2.19E-03	9.81E-01
Chromium	5.43	3.56	3.53E-03	8.20E-02	8.31E-01	7.20E-04	4.57E-01	6.35	6.74	4.74E-03	9.58E-02	1.57E+00	9.68E-04	8.34E-01
Copper	97.42	41.58	1.09E-01	1.47E+00	9.70E+00	2.23E-02	5.59E+00	137.40	73.11	1.46E-01	2.07E+00	1.70E+01	2.97E-02	9.58E+00
Lead	863.90	63.15	2.19E-02	1.30E+01	1.47E+01	4.46E-03	1.39E+01	1729.00	131.80	3.26E-02	2.61E+01	3.07E+01	6.65E-03	2.84E+01
Manganese	950.40	1407.00	6.07E+00	1.44E+01	3.28E+02	1.24E+00	1.72E+02	1393.00	8260.00	8.10E+00	2.10E+01	1.93E+03	1.65E+00	9.74E+02
Mercury	0.06	0	0	8.61E-04	0.00E+00	0.00E+00	4.30E-04	0.10	0	0	1.56E-03	0.00E+00	0.00E+00	7.78E-04
Molybdenum	4.77	0	2.50E-03	7.20E-02	0.00E+00	5.10E-04	3.62E-02	5.91	0	2.50E-03	8.92E-02	0.00E+00	5.10E-04	4.49E-02
Nickel	3.38	2.89	6.66E-03	5.11E-02	6.73E-01	1.36E-03	3.63E-01	4.54	11.75	9.32E-03	6.85E-02	2.74E+00	1.90E-03	1.41E+00
Selenium	2.37	0.93	3.72E-03	3.57E-02	2.17E-01	7.58E-04	1.27E-01	2.99	1.70	4.17E-03	4.52E-02	3.97E-01	8.52E-04	2.21E-01
Silver	1.09	0.55	1.80E-03	1.64E-02	1.29E-01	3.67E-04	7.28E-02	1.33	1.10	2.32E-03	2.01E-02	2.56E-01	4.74E-04	1.39E-01
Vanadium	27.38	1.95	2.14E-03	4.13E-01	4.54E-01	4.36E-04	4.34E-01	31.24	4.62	2.98E-03	4.72E-01	1.08E+00	6.07E-04	7.75E-01
Zinc	985.50	492.00	3.61E+00	1.49E+01	1.15E+02	7.37E-01	6.52E+01	3272.00	862.30	4.49E+00	4.94E+01	2.01E+02	9.15E-01	1.26E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water and invertebrate tissues; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-66 EU-23 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in South Fork Cement Creek. Invertebrate tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	17.01	1.49	3.05E-03	2.57E-01	3.48E-01	6.23E-04	3.03E-01	20.26	5.92	4.87E-03	3.06E-01	1.38E+00	9.94E-04	8.44E-01
Barium	70.68	19.95	1.43E-02	1.07E+00	4.65E+00	2.92E-03	2.86E+00	98.35	31.20	1.63E-02	1.49E+00	7.27E+00	3.32E-03	4.38E+00
Cadmium	1.13	3.24	2.60E-03	1.71E-02	7.55E-01	5.30E-04	3.87E-01	3.63	6.67	6.14E-03	5.48E-02	1.55E+00	1.25E-03	8.05E-01
Chromium	4.39	3.21	3.54E-03	6.62E-02	7.48E-01	7.21E-04	4.08E-01	5.25	4.47	4.68E-03	7.92E-02	1.04E+00	9.56E-04	5.61E-01
Copper	65.54	32.25	2.80E-02	9.90E-01	7.52E+00	5.72E-03	4.26E+00	157.30	42.62	6.49E-02	2.38E+00	9.94E+00	1.32E-02	6.16E+00
Lead	210.50	12.26	7.23E-03	3.18E+00	2.86E+00	1.47E-03	3.02E+00	361.30	25.65	1.99E-02	5.46E+00	5.98E+00	4.07E-03	5.72E+00
Manganese	811.60	456.30	3.07E+00	1.23E+01	1.06E+02	6.26E-01	5.96E+01	1796.00	715.40	1.31E+01	2.71E+01	1.67E+02	2.67E+00	9.83E+01
Mercury	0.03	0	0	4.86E-04	0.00E+00	0.00E+00	2.43E-04	0.04	0	0	6.55E-04	0.00E+00	0.00E+00	3.28E-04
Molybdenum	4.38	0	0	6.62E-02	0.00E+00	0.00E+00	3.31E-02	5.38	0	0	8.12E-02	0.00E+00	0.00E+00	4.06E-02
Nickel	4.62	0.86	5.03E-03	6.97E-02	2.00E-01	1.03E-03	1.36E-01	9.10	1.56	1.23E-02	1.37E-01	3.64E-01	2.51E-03	2.52E-01
Selenium	1.88	0.93	3.75E-03	2.83E-02	2.17E-01	7.64E-04	1.23E-01	2.40	1.70	4.23E-03	3.62E-02	3.97E-01	8.63E-04	2.17E-01
Silver	0.82	0.55	1.79E-03	1.24E-02	1.29E-01	3.64E-04	7.07E-02	1.08	1.10	2.34E-03	1.62E-02	2.56E-01	4.78E-04	1.37E-01
Vanadium	23.21	1.63	1.41E-03	3.50E-01	3.79E-01	2.87E-04	3.65E-01	26.94	2.52	1.45E-03	4.07E-01	5.86E-01	2.95E-04	4.97E-01
Zinc	232.80	365.30	1.44E+00	3.52E+00	8.52E+01	2.93E-01	4.45E+01	581.90	565.60	6.74E+00	8.79E+00	1.32E+02	1.37E+00	7.10E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.} = (\text{Low-level } DRC_{flying\ invert} * 100\%) * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $\text{Total EDD} = (Dose_{soil} + Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-67 EU-24 Estimated Daily Doses (EDDs) for Cliff Swallow Foraging in Upper Cement Creek. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							Reasonable Maximum Exposure (RME) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)				Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]	FP Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{invert.}$[2]	$Dose_{water}$[3]	Total EDD[4]
Arsenic	33.33	6.33	2.31E-03	5.03E-01	1.47E+00	4.72E-04	9.89E-01	38.97	17.54	3.91E-03	5.88E-01	4.09E+00	7.98E-04	2.34E+00
Barium	79.16	38.25	2.11E-02	1.20E+00	8.92E+00	4.31E-03	5.06E+00	103.30	89.56	2.73E-02	1.56E+00	2.09E+01	5.56E-03	1.12E+01
Cadmium	6.31	4.64	8.62E-03	9.52E-02	1.08E+00	1.76E-03	5.90E-01	18.75	8.25	1.06E-02	2.83E-01	1.92E+00	2.17E-03	1.10E+00
Chromium	5.51	3.56	2.97E-03	8.31E-02	8.31E-01	6.05E-04	4.57E-01	6.49	6.74	4.15E-03	9.80E-02	1.57E+00	8.46E-04	8.35E-01
Copper	247.90	41.58	8.46E-02	3.74E+00	9.70E+00	1.72E-02	6.73E+00	359.30	73.11	1.03E-01	5.43E+00	1.70E+01	2.10E-02	1.12E+01
Lead	807.30	63.15	8.26E-03	1.22E+01	1.47E+01	1.68E-03	1.35E+01	999.60	131.80	1.14E-02	1.51E+01	3.07E+01	2.32E-03	2.29E+01
Manganese	8159.00	1407.00	1.88E+00	1.23E+02	3.28E+02	3.84E-01	2.26E+02	13854.00	8260.00	2.49E+00	2.09E+02	1.93E+03	5.08E-01	1.07E+03
Mercury	0.06	0	0	8.89E-04	0.00E+00	0.00E+00	4.45E-04	0.09	0	0	1.30E-03	0.00E+00	0.00E+00	6.51E-04
Molybdenum	3.93	0	0	5.93E-02	0.00E+00	0.00E+00	2.97E-02	4.79	0	0	7.23E-02	0.00E+00	0.00E+00	3.61E-02
Nickel	6.19	2.89	5.62E-03	9.34E-02	6.73E-01	1.15E-03	3.84E-01	8.78	11.75	8.01E-03	1.33E-01	2.74E+00	1.63E-03	1.44E+00
Selenium	1.81	0.93	3.21E-03	2.73E-02	2.17E-01	6.56E-04	1.22E-01	2.16	1.70	3.57E-03	3.27E-02	3.97E-01	7.27E-04	2.15E-01
Silver	1.43	0.55	1.50E-03	2.16E-02	1.29E-01	3.06E-04	7.53E-02	1.79	1.10	2.06E-03	2.70E-02	2.56E-01	4.21E-04	1.42E-01
Vanadium	17.55	1.95	1.76E-03	2.65E-01	4.54E-01	3.59E-04	3.60E-01	20.78	4.62	3.13E-03	3.14E-01	1.08E+00	6.38E-04	6.96E-01
Zinc	753.20	492.00	1.92E+00	1.14E+01	1.15E+02	3.92E-01	6.32E+01	1166.00	862.30	2.47E+00	1.76E+01	2.01E+02	5.04E-01	1.10E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water and invertebrate tissues

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0230	kilograms
Soil ingestion rate (SIR) =	0.0151	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2040	L/kg BW/day
Food ingestion rate (FIR) =	0.2332	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-68 EU-01 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Lower Mainstem Mineral Creek. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.94	1.25E-03	1.67E-01	1.99E-04	8.35E-02	1.78	1.25E-03	3.15E-01	1.99E-04	1.58E-01
Arsenic	6.33	5.42E-03	1.12E+00	8.62E-04	5.61E-01	17.54	8.21E-03	3.11E+00	1.31E-03	1.55E+00
Cadmium	3.24	3.44E-03	5.74E-01	5.46E-04	2.87E-01	6.67	3.65E-03	1.18E+00	5.80E-04	5.91E-01
Chromium	3.56	2.50E-03	6.31E-01	3.98E-04	3.16E-01	6.74	2.50E-03	1.19E+00	3.98E-04	5.97E-01
Copper	32.25	1.10E-01	5.71E+00	1.75E-02	2.87E+00	42.62	1.56E-01	7.55E+00	2.48E-02	3.79E+00
Lead	63.15	6.44E-03	1.12E+01	1.02E-03	5.59E+00	131.80	6.98E-03	2.33E+01	1.11E-03	1.17E+01
Manganese	456.30	6.66E+00	8.08E+01	1.06E+00	4.09E+01	715.40	9.78E+00	1.27E+02	1.56E+00	6.41E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	0.94	1.25E-03	1.67E-01	1.99E-04	8.37E-02	1.58	1.25E-03	2.79E-01	1.99E-04	1.40E-01
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.36	2.50E-03	6.36E-02	3.98E-04	3.20E-02	0.61	2.50E-03	1.08E-01	3.98E-04	5.41E-02
Zinc	365.30	1.09E+00	6.47E+01	1.73E-01	3.24E+01	565.60	1.23E+00	1.00E+02	1.96E-01	5.02E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (Mid-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-69 EU-02 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Lower Mainstem Mineral Creek. Invertebrate tissue values represent the low-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.75	1.31E-03	1.32E-01	2.09E-04	6.61E-02	1.42	1.42E-03	2.51E-01	2.26E-04	1.26E-01
Arsenic	1.49	2.07E-01	2.65E-01	3.28E-02	1.49E-01	5.92	9.68E-01	1.05E+00	1.54E-01	6.01E-01
Cadmium	3.24	1.70E-02	5.74E-01	2.70E-03	2.88E-01	6.67	4.50E-02	1.18E+00	7.15E-03	5.94E-01
Chromium	3.21	2.62E-03	5.69E-01	4.16E-04	2.85E-01	4.47	2.81E-03	7.91E-01	4.47E-04	3.96E-01
Copper	32.25	5.43E-01	5.71E+00	8.64E-02	2.90E+00	42.62	2.32E+00	7.55E+00	3.69E-01	3.96E+00
Lead	12.26	7.81E-02	2.17E+00	1.24E-02	1.09E+00	25.65	1.62E-01	4.54E+00	2.57E-02	2.28E+00
Manganese	456.30	6.44E+00	8.08E+01	1.02E+00	4.09E+01	715.40	1.07E+01	1.27E+02	1.70E+00	6.42E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	0.86	2.12E-02	1.52E-01	3.38E-03	7.78E-02	1.56	5.46E-02	2.77E-01	8.69E-03	1.43E-01
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.25	2.62E-03	4.43E-02	4.16E-04	2.24E-02	0.25	2.82E-03	4.43E-02	4.48E-04	2.24E-02
Zinc	365.30	6.11E+00	6.47E+01	9.72E-01	3.28E+01	565.60	1.21E+01	1.00E+02	1.93E+00	5.11E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (Low-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-70 EU-03 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Mainstem Mineral Creek. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.94	1.31E-03	1.67E-01	2.09E-04	8.35E-02	1.78	1.42E-03	3.15E-01	2.26E-04	1.58E-01
Arsenic	6.33	2.07E-01	1.12E+00	3.28E-02	5.77E-01	17.54	9.68E-01	3.11E+00	1.54E-01	1.63E+00
Cadmium	3.24	1.70E-02	5.74E-01	2.70E-03	2.88E-01	6.67	4.50E-02	1.18E+00	7.15E-03	5.94E-01
Chromium	3.56	2.62E-03	6.31E-01	4.16E-04	3.16E-01	6.74	2.81E-03	1.19E+00	4.47E-04	5.97E-01
Copper	32.25	5.43E-01	5.71E+00	8.64E-02	2.90E+00	42.62	2.32E+00	7.55E+00	3.69E-01	3.96E+00
Lead	63.15	7.81E-02	1.12E+01	1.24E-02	5.60E+00	131.80	1.62E-01	2.33E+01	2.57E-02	1.17E+01
Manganese	456.30	6.44E+00	8.08E+01	1.02E+00	4.09E+01	715.40	1.07E+01	1.27E+02	1.70E+00	6.42E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	0.94	2.12E-02	1.67E-01	3.38E-03	8.53E-02	1.58	5.46E-02	2.79E-01	8.69E-03	1.44E-01
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.36	2.62E-03	6.36E-02	4.16E-04	3.20E-02	0.61	2.82E-03	1.08E-01	4.48E-04	5.42E-02
Zinc	365.30	6.11E+00	6.47E+01	9.72E-01	3.28E+01	565.60	1.21E+01	1.00E+02	1.93E+00	5.11E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (Mid-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-71 EU-3.5 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Browns Gulch. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.94	1.25E-03	1.67E-01	1.99E-04	8.35E-02	1.78	1.25E-03	3.15E-01	1.99E-04	1.58E-01
Arsenic	6.33	2.09E-02	1.12E+00	3.32E-03	5.62E-01	17.54	2.20E-02	3.11E+00	3.49E-03	1.56E+00
Cadmium	3.24	1.72E-02	5.74E-01	2.73E-03	2.88E-01	6.67	1.90E-02	1.18E+00	3.02E-03	5.92E-01
Chromium	3.56	2.50E-03	6.31E-01	3.98E-04	3.16E-01	6.74	2.50E-03	1.19E+00	3.98E-04	5.97E-01
Copper	32.25	2.91E-01	5.71E+00	4.63E-02	2.88E+00	42.62	3.28E-01	7.55E+00	5.22E-02	3.80E+00
Lead	63.15	2.44E-02	1.12E+01	3.88E-03	5.60E+00	131.80	2.51E-02	2.33E+01	3.99E-03	1.17E+01
Manganese	456.30	6.00E+00	8.08E+01	9.54E-01	4.09E+01	715.40	6.38E+00	1.27E+02	1.01E+00	6.39E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	0.94	1.06E-02	1.67E-01	1.69E-03	8.45E-02	1.58	1.29E-02	2.79E-01	2.05E-03	1.41E-01
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.36	2.50E-03	6.36E-02	3.98E-04	3.20E-02	0.61	2.50E-03	1.08E-01	3.98E-04	5.41E-02
Zinc	365.30	5.44E+00	6.47E+01	8.64E-01	3.28E+01	565.60	5.81E+00	1.00E+02	9.24E-01	5.06E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (Mid-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-72 EU-04 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Upper Mainstem Mineral Creek. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	1.23	1.25E-03	2.18E-01	1.99E-04	1.09E-01	1.97	1.25E-03	3.49E-01	1.99E-04	1.75E-01
Arsenic	6.33	5.15E-01	1.12E+00	8.19E-02	6.01E-01	17.54	2.60E+00	3.11E+00	4.14E-01	1.76E+00
Cadmium	4.64	2.53E-02	8.23E-01	4.02E-03	4.13E-01	8.25	4.07E-02	1.46E+00	6.47E-03	7.34E-01
Chromium	3.56	2.79E-03	6.31E-01	4.44E-04	3.16E-01	6.74	3.32E-03	1.19E+00	5.28E-04	5.97E-01
Copper	41.58	1.14E+00	7.37E+00	1.81E-01	3.77E+00	73.11	1.84E+00	1.30E+01	2.93E-01	6.62E+00
Lead	63.15	7.89E-02	1.12E+01	1.25E-02	5.60E+00	131.80	1.31E-01	2.33E+01	2.08E-02	1.17E+01
Manganese	1407.00	9.43E+00	2.49E+02	1.50E+00	1.25E+02	8260.00	3.76E+01	1.46E+03	5.98E+00	7.35E+02
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	2.89	4.48E-02	5.11E-01	7.12E-03	2.59E-01	11.75	7.66E-02	2.08E+00	1.22E-02	1.05E+00
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.73	2.80E-03	1.29E-01	4.45E-04	6.46E-02	2.98	3.34E-03	5.28E-01	5.31E-04	2.64E-01
Zinc	492.00	1.08E+01	8.72E+01	1.72E+00	4.44E+01	862.30	1.81E+01	1.53E+02	2.89E+00	7.78E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-73 EU-05 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in South Fork Mineral Creek. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.94	1.85E-03	1.67E-01	2.94E-04	8.36E-02	1.78	3.05E-03	3.15E-01	4.85E-04	1.58E-01
Arsenic	6.33	5.10E-03	1.12E+00	8.11E-04	5.61E-01	17.54	1.28E-02	3.11E+00	2.04E-03	1.55E+00
Cadmium	3.24	3.91E-02	5.74E-01	6.22E-03	2.90E-01	6.67	6.78E-02	1.18E+00	1.08E-02	5.96E-01
Chromium	3.56	2.50E-03	6.31E-01	3.98E-04	3.16E-01	6.74	2.50E-03	1.19E+00	3.98E-04	5.97E-01
Copper	32.25	4.35E-01	5.71E+00	6.91E-02	2.89E+00	42.62	1.07E+00	7.55E+00	1.70E-01	3.86E+00
Lead	63.15	3.93E-01	1.12E+01	6.25E-02	5.62E+00	131.80	9.77E-01	2.33E+01	1.55E-01	1.18E+01
Manganese	456.30	4.72E+00	8.08E+01	7.50E-01	4.08E+01	715.40	6.77E+00	1.27E+02	1.08E+00	6.39E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	0.94	6.85E-03	1.67E-01	1.09E-03	8.42E-02	1.58	1.05E-02	2.79E-01	1.67E-03	1.41E-01
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.36	2.50E-03	6.36E-02	3.98E-04	3.20E-02	0.61	2.50E-03	1.08E-01	3.98E-04	5.41E-02
Zinc	365.30	8.41E+00	6.47E+01	1.34E+00	3.30E+01	565.60	1.35E+01	1.00E+02	2.15E+00	5.12E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (Mid-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-74 EU-06 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Middle Fork Mineral Creek. Invertebrate tissue values represent the low-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.75	1.25E-03	1.32E-01	1.99E-04	6.61E-02	1.42	1.25E-03	2.51E-01	1.99E-04	1.26E-01
Arsenic	1.49	1.25E-03	2.65E-01	1.99E-04	1.32E-01	5.92	1.25E-03	1.05E+00	1.99E-04	5.24E-01
Cadmium	3.24	6.82E-04	5.74E-01	1.08E-04	2.87E-01	6.67	1.40E-03	1.18E+00	2.23E-04	5.91E-01
Chromium	3.21	2.50E-03	5.69E-01	3.98E-04	2.85E-01	4.47	2.50E-03	7.91E-01	3.98E-04	3.96E-01
Copper	32.25	2.39E-03	5.71E+00	3.80E-04	2.86E+00	42.62	3.09E-03	7.55E+00	4.91E-04	3.78E+00
Lead	12.26	3.76E-03	2.17E+00	5.98E-04	1.09E+00	25.65	1.50E-02	4.54E+00	2.39E-03	2.27E+00
Manganese	456.30	3.13E+00	8.08E+01	4.98E-01	4.07E+01	715.40	4.89E+00	1.27E+02	7.77E-01	6.38E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	0.86	4.63E-03	1.52E-01	7.36E-04	7.65E-02	1.56	1.35E-02	2.77E-01	2.15E-03	1.39E-01
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.25	2.50E-03	4.43E-02	3.98E-04	2.23E-02	0.25	2.50E-03	4.43E-02	3.98E-04	2.23E-02
Zinc	365.30	4.02E-01	6.47E+01	6.39E-02	3.24E+01	565.60	6.08E-01	1.00E+02	9.67E-02	5.01E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (Low-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-75 EU-R1 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Mill Creek Reference Area. Invertebrate tissue values represent the vegetated upland/reference floodplain exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in Mineral Creek mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.47	1.31E-03	8.29E-02	2.09E-04	4.16E-02	0.69	1.42E-03	1.22E-01	2.26E-04	6.13E-02
Arsenic	0.33	2.07E-01	5.88E-02	3.28E-02	4.58E-02	0.50	9.68E-01	8.89E-02	1.54E-01	1.21E-01
Cadmium	2.29	1.70E-02	4.05E-01	2.70E-03	2.04E-01	4.86	4.50E-02	8.60E-01	7.15E-03	4.34E-01
Chromium	3.21	2.62E-03	5.69E-01	4.16E-04	2.85E-01	4.47	2.81E-03	7.91E-01	4.47E-04	3.96E-01
Copper	31.18	5.43E-01	5.52E+00	8.64E-02	2.81E+00	37.46	2.32E+00	6.64E+00	3.69E-01	3.50E+00
Lead	1.46	7.81E-02	2.59E-01	1.24E-02	1.36E-01	2.37	1.62E-01	4.21E-01	2.57E-02	2.23E-01
Manganese	105.40	6.44E+00	1.87E+01	1.02E+00	9.85E+00	139.10	1.07E+01	2.46E+01	1.70E+00	1.32E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	0.56	2.12E-02	9.87E-02	3.38E-03	5.10E-02	0.83	5.46E-02	1.47E-01	8.69E-03	7.80E-02
Selenium	0.53	2.50E-03	9.32E-02	3.98E-04	4.68E-02	1.15	2.50E-03	2.03E-01	3.98E-04	1.02E-01
Silver	0.22	1.25E-03	3.92E-02	1.99E-04	1.97E-02	0.33	1.25E-03	5.92E-02	1.99E-04	2.97E-02
Thallium	0.30	2.62E-03	5.26E-02	4.16E-04	2.65E-02	0.61	2.82E-03	1.08E-01	4.48E-04	5.42E-02
Zinc	224.90	6.11E+00	3.98E+01	9.72E-01	2.04E+01	269.70	1.21E+01	4.78E+01	1.93E+00	2.49E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (Ref. $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-76 EU-07 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Animas River Below Cunningham Creek. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	1.23	1.25E-03	2.18E-01	1.99E-04	1.09E-01	1.97	1.25E-03	3.49E-01	1.99E-04	1.75E-01
Arsenic	6.33	1.75E-03	1.12E+00	2.78E-04	5.60E-01	17.54	2.80E-03	3.11E+00	4.46E-04	1.55E+00
Cadmium	4.64	9.80E-03	8.23E-01	1.56E-03	4.12E-01	8.25	1.42E-01	1.46E+00	2.25E-02	7.42E-01
Chromium	3.56	2.50E-03	6.31E-01	3.98E-04	3.16E-01	6.74	2.50E-03	1.19E+00	3.98E-04	5.97E-01
Copper	41.58	2.37E-01	7.37E+00	3.76E-02	3.70E+00	73.11	1.15E+00	1.30E+01	1.83E-01	6.57E+00
Lead	63.15	3.46E-02	1.12E+01	5.50E-03	5.60E+00	131.80	1.48E-01	2.33E+01	2.35E-02	1.17E+01
Manganese	1407.00	1.45E+00	2.49E+02	2.30E-01	1.25E+02	8260.00	1.64E+00	1.46E+03	2.61E-01	7.32E+02
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	2.89	2.84E-03	5.11E-01	4.51E-04	2.56E-01	11.75	5.86E-03	2.08E+00	9.32E-04	1.04E+00
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.73	3.97E-03	1.29E-01	6.31E-04	6.47E-02	2.98	1.11E-02	5.28E-01	1.76E-03	2.65E-01
Zinc	492.00	2.11E+00	8.72E+01	3.35E-01	4.37E+01	862.30	7.26E+00	1.53E+02	1.15E+00	7.70E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-77 EU-08 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Cunningham Creek. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.94	1.25E-03	1.67E-01	1.99E-04	8.35E-02	1.78	1.25E-03	3.15E-01	1.99E-04	1.58E-01
Arsenic	6.33	1.25E-03	1.12E+00	1.99E-04	5.60E-01	17.54	1.25E-03	3.11E+00	1.99E-04	1.55E+00
Cadmium	3.24	9.66E-03	5.74E-01	1.54E-03	2.88E-01	6.67	1.18E-02	1.18E+00	1.88E-03	5.91E-01
Chromium	3.56	2.50E-03	6.31E-01	3.98E-04	3.16E-01	6.74	2.50E-03	1.19E+00	3.98E-04	5.97E-01
Copper	32.25	4.04E-02	5.71E+00	6.42E-03	2.86E+00	42.62	5.45E-02	7.55E+00	8.67E-03	3.78E+00
Lead	63.15	2.99E-02	1.12E+01	4.75E-03	5.60E+00	131.80	4.22E-02	2.33E+01	6.71E-03	1.17E+01
Manganese	456.30	3.20E-01	8.08E+01	5.09E-02	4.04E+01	715.40	4.01E-01	1.27E+02	6.38E-02	6.34E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	0.94	1.25E-03	1.67E-01	1.99E-04	8.37E-02	1.58	1.25E-03	2.79E-01	1.99E-04	1.40E-01
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.36	2.50E-03	6.36E-02	3.98E-04	3.20E-02	0.61	2.50E-03	1.08E-01	3.98E-04	5.41E-02
Zinc	365.30	1.78E+00	6.47E+01	2.82E-01	3.25E+01	565.60	2.19E+00	1.00E+02	3.48E-01	5.03E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (Mid-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-78 EU-09 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Animas River Below Minnie Gulch. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	1.23	1.41E-03	2.18E-01	2.24E-04	1.09E-01	1.97	1.70E-03	3.49E-01	2.71E-04	1.75E-01
Arsenic	6.33	2.19E-03	1.12E+00	3.48E-04	5.60E-01	17.54	4.90E-03	3.11E+00	7.78E-04	1.55E+00
Cadmium	4.64	6.16E-02	8.23E-01	9.79E-03	4.16E-01	8.25	2.17E-01	1.46E+00	3.45E-02	7.48E-01
Chromium	3.56	2.81E-03	6.31E-01	4.47E-04	3.16E-01	6.74	3.41E-03	1.19E+00	5.41E-04	5.97E-01
Copper	41.58	4.76E-01	7.37E+00	7.56E-02	3.72E+00	73.11	1.95E+00	1.30E+01	3.10E-01	6.63E+00
Lead	63.15	4.50E-01	1.12E+01	7.15E-02	5.63E+00	131.80	3.27E+00	2.33E+01	5.20E-01	1.19E+01
Manganese	1407.00	5.51E+01	2.49E+02	8.76E+00	1.29E+02	8260.00	1.40E+02	1.46E+03	2.23E+01	7.43E+02
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	2.89	3.36E-02	5.11E-01	5.34E-03	2.58E-01	11.75	1.28E-01	2.08E+00	2.04E-02	1.05E+00
Selenium	0.93	2.81E-03	1.65E-01	4.47E-04	8.25E-02	1.70	3.41E-03	3.02E-01	5.41E-04	1.51E-01
Silver	0.55	1.41E-03	9.78E-02	2.24E-04	4.90E-02	1.10	1.70E-03	1.95E-01	2.71E-04	9.76E-02
Thallium	0.73	2.81E-03	1.29E-01	4.47E-04	6.46E-02	2.98	3.41E-03	5.28E-01	5.41E-04	2.64E-01
Zinc	492.00	2.10E+01	8.72E+01	3.34E+00	4.52E+01	862.30	5.02E+01	1.53E+02	7.98E+00	8.04E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-79 EU-10 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Animas River Below South Fork Animas River. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	1.23	1.21E-03	2.18E-01	1.92E-04	1.09E-01	1.97	1.29E-03	3.49E-01	2.05E-04	1.75E-01
Arsenic	6.33	1.08E-03	1.12E+00	1.71E-04	5.60E-01	17.54	1.25E-03	3.11E+00	1.99E-04	1.55E+00
Cadmium	4.64	4.38E-03	8.23E-01	6.96E-04	4.12E-01	8.25	7.80E-03	1.46E+00	1.24E-03	7.31E-01
Chromium	3.56	2.25E-03	6.31E-01	3.58E-04	3.16E-01	6.74	2.50E-03	1.19E+00	3.98E-04	5.97E-01
Copper	41.58	1.26E-02	7.37E+00	2.00E-03	3.68E+00	73.11	2.14E-02	1.30E+01	3.40E-03	6.48E+00
Lead	63.15	1.75E-02	1.12E+01	2.78E-03	5.59E+00	131.80	3.17E-02	2.33E+01	5.05E-03	1.17E+01
Manganese	1407.00	1.46E+00	2.49E+02	2.33E-01	1.25E+02	8260.00	2.35E+00	1.46E+03	3.73E-01	7.32E+02
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	2.89	2.39E-03	5.11E-01	3.80E-04	2.56E-01	11.75	5.25E-03	2.08E+00	8.35E-04	1.04E+00
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.13E-03	9.78E-02	1.79E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.73	1.75E-03	1.29E-01	2.78E-04	6.45E-02	2.98	2.46E-03	5.28E-01	3.91E-04	2.64E-01
Zinc	492.00	5.71E-01	8.72E+01	9.08E-02	4.36E+01	862.30	6.87E-01	1.53E+02	1.09E-01	7.64E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-80 EU-11 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Upper South Fork Animas River. Invertebrate tissue values represent the low-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.75	1.50E-03	1.32E-01	2.39E-04	6.61E-02	1.42	1.67E-03	2.51E-01	2.65E-04	1.26E-01
Arsenic	1.49	1.13E-02	2.65E-01	1.80E-03	1.33E-01	5.92	2.81E-02	1.05E+00	4.47E-03	5.27E-01
Cadmium	3.24	5.26E-02	5.74E-01	8.37E-03	2.91E-01	6.67	1.07E-01	1.18E+00	1.70E-02	5.99E-01
Chromium	3.21	2.56E-03	5.69E-01	4.08E-04	2.85E-01	4.47	2.67E-03	7.91E-01	4.24E-04	3.96E-01
Copper	32.25	1.02E+00	5.71E+00	1.62E-01	2.94E+00	42.62	2.61E+00	7.55E+00	4.15E-01	3.98E+00
Lead	12.26	2.11E-01	2.17E+00	3.35E-02	1.10E+00	25.65	4.43E-01	4.54E+00	7.05E-02	2.31E+00
Manganese	456.30	9.98E+00	8.08E+01	1.59E+00	4.12E+01	715.40	6.58E+01	1.27E+02	1.05E+01	6.86E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	0.86	8.01E-03	1.52E-01	1.27E-03	7.67E-02	1.56	1.84E-02	2.77E-01	2.93E-03	1.40E-01
Selenium	0.93	2.97E-03	1.65E-01	4.72E-04	8.25E-02	1.70	3.47E-03	3.02E-01	5.52E-04	1.51E-01
Silver	0.55	1.32E-03	9.78E-02	2.10E-04	4.90E-02	1.10	1.44E-03	1.95E-01	2.28E-04	9.75E-02
Thallium	0.25	2.90E-03	4.43E-02	4.61E-04	2.24E-02	0.25	4.26E-03	4.43E-02	6.77E-04	2.25E-02
Zinc	365.30	1.36E+01	6.47E+01	2.16E+00	3.34E+01	565.60	3.17E+01	1.00E+02	5.05E+00	5.26E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (Low-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-81 EU-12 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Eureka Gulch. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	1.23	1.25E-03	2.18E-01	1.99E-04	1.09E-01	1.97	1.25E-03	3.49E-01	1.99E-04	1.75E-01
Arsenic	6.33	1.25E-03	1.12E+00	1.99E-04	5.60E-01	17.54	1.25E-03	3.11E+00	1.99E-04	1.55E+00
Cadmium	4.64	2.76E-02	8.23E-01	4.39E-03	4.14E-01	8.25	7.97E-02	1.46E+00	1.27E-02	7.37E-01
Chromium	3.56	2.50E-03	6.31E-01	3.98E-04	3.16E-01	6.74	2.50E-03	1.19E+00	3.98E-04	5.97E-01
Copper	41.58	1.09E+00	7.37E+00	1.74E-01	3.77E+00	73.11	1.58E+00	1.30E+01	2.51E-01	6.60E+00
Lead	63.15	6.14E-01	1.12E+01	9.76E-02	5.64E+00	131.80	1.99E+00	2.33E+01	3.16E-01	1.18E+01
Manganese	1407.00	1.07E+01	2.49E+02	1.71E+00	1.25E+02	8260.00	1.59E+01	1.46E+03	2.52E+00	7.33E+02
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	2.89	5.73E-03	5.11E-01	9.10E-04	2.56E-01	11.75	1.31E-02	2.08E+00	2.08E-03	1.04E+00
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.73	4.01E-03	1.29E-01	6.38E-04	6.47E-02	2.98	9.37E-03	5.28E-01	1.49E-03	2.65E-01
Zinc	492.00	8.59E+00	8.72E+01	1.37E+00	4.43E+01	862.30	2.30E+01	1.53E+02	3.66E+00	7.82E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-82 EU-13 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Lower South Fork Animas River. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	1.23	1.50E-03	2.18E-01	2.39E-04	1.09E-01	1.97	1.67E-03	3.49E-01	2.65E-04	1.75E-01
Arsenic	6.33	1.13E-02	1.12E+00	1.80E-03	5.61E-01	17.54	2.81E-02	3.11E+00	4.47E-03	1.56E+00
Cadmium	4.64	5.26E-02	8.23E-01	8.37E-03	4.16E-01	8.25	1.07E-01	1.46E+00	1.70E-02	7.39E-01
Chromium	3.56	2.56E-03	6.31E-01	4.08E-04	3.16E-01	6.74	2.67E-03	1.19E+00	4.24E-04	5.97E-01
Copper	41.58	1.02E+00	7.37E+00	1.62E-01	3.76E+00	73.11	2.61E+00	1.30E+01	4.15E-01	6.68E+00
Lead	63.15	2.11E-01	1.12E+01	3.35E-02	5.61E+00	131.80	4.43E-01	2.33E+01	7.05E-02	1.17E+01
Manganese	1407.00	9.98E+00	2.49E+02	1.59E+00	1.25E+02	8260.00	6.58E+01	1.46E+03	1.05E+01	7.37E+02
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	2.89	8.01E-03	5.11E-01	1.27E-03	2.56E-01	11.75	1.84E-02	2.08E+00	2.93E-03	1.04E+00
Selenium	0.93	2.97E-03	1.65E-01	4.72E-04	8.25E-02	1.70	3.47E-03	3.02E-01	5.52E-04	1.51E-01
Silver	0.55	1.32E-03	9.78E-02	2.10E-04	4.90E-02	1.10	1.44E-03	1.95E-01	2.28E-04	9.75E-02
Thallium	0.73	2.90E-03	1.29E-01	4.61E-04	6.46E-02	2.98	4.26E-03	5.28E-01	6.77E-04	2.64E-01
Zinc	492.00	1.36E+01	8.72E+01	2.16E+00	4.47E+01	862.30	3.17E+01	1.53E+02	5.05E+00	7.89E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-83 EU-14 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Animas River Below West Fork Animas River. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	1.23	2.27E-03	2.18E-01	3.61E-04	1.09E-01	1.97	4.62E-03	3.49E-01	7.34E-04	1.75E-01
Arsenic	6.33	7.23E-02	1.12E+00	1.15E-02	5.66E-01	17.54	1.01E-01	3.11E+00	1.61E-02	1.56E+00
Cadmium	4.64	8.73E-03	8.23E-01	1.39E-03	4.12E-01	8.25	1.18E-02	1.46E+00	1.88E-03	7.31E-01
Chromium	3.56	2.50E-03	6.31E-01	3.98E-04	3.16E-01	6.74	2.50E-03	1.19E+00	3.98E-04	5.97E-01
Copper	41.58	4.03E+00	7.37E+00	6.41E-01	4.00E+00	73.11	5.95E+00	1.30E+01	9.46E-01	6.95E+00
Lead	63.15	1.76E-02	1.12E+01	2.79E-03	5.59E+00	131.80	3.00E-02	2.33E+01	4.78E-03	1.17E+01
Manganese	1407.00	2.65E+00	2.49E+02	4.21E-01	1.25E+02	8260.00	3.14E+00	1.46E+03	4.99E-01	7.32E+02
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	2.89	1.25E-03	5.11E-01	1.99E-04	2.56E-01	11.75	1.25E-03	2.08E+00	1.99E-04	1.04E+00
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.73	3.75E-03	1.29E-01	5.96E-04	6.47E-02	2.98	9.91E-03	5.28E-01	1.58E-03	2.65E-01
Zinc	492.00	2.43E+00	8.72E+01	3.86E-01	4.38E+01	862.30	3.21E+00	1.53E+02	5.10E-01	7.66E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-84 EU-15 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Lower West Fork Animas River. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	1.23	1.25E-03	2.18E-01	1.99E-04	1.09E-01	1.97	1.25E-03	3.49E-01	1.99E-04	1.75E-01
Arsenic	6.33	4.81E-03	1.12E+00	7.64E-04	5.61E-01	17.54	1.18E-02	3.11E+00	1.87E-03	1.55E+00
Cadmium	4.64	2.52E-01	8.23E-01	4.01E-02	4.31E-01	8.25	1.09E+00	1.46E+00	1.73E-01	8.17E-01
Chromium	3.56	2.86E-03	6.31E-01	4.55E-04	3.16E-01	6.74	3.53E-03	1.19E+00	5.61E-04	5.97E-01
Copper	41.58	1.87E+00	7.37E+00	2.97E-01	3.83E+00	73.11	5.23E+00	1.30E+01	8.32E-01	6.89E+00
Lead	63.15	2.65E-01	1.12E+01	4.21E-02	5.61E+00	131.80	4.87E-01	2.33E+01	7.75E-02	1.17E+01
Manganese	1407.00	8.82E+00	2.49E+02	1.40E+00	1.25E+02	8260.00	1.31E+01	1.46E+03	2.08E+00	7.33E+02
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	2.89	1.48E-02	5.11E-01	2.35E-03	2.57E-01	11.75	6.69E-02	2.08E+00	1.06E-02	1.05E+00
Selenium	0.93	5.65E-03	1.65E-01	8.98E-04	8.27E-02	1.70	1.48E-02	3.02E-01	2.36E-03	1.52E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.73	1.88E-03	1.29E-01	2.98E-04	6.45E-02	2.98	2.26E-03	5.28E-01	3.59E-04	2.64E-01
Zinc	492.00	6.16E+01	8.72E+01	9.79E+00	4.85E+01	862.30	2.73E+02	1.53E+02	4.35E+01	9.81E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-85 EU-16 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Placer Gulch. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	1.23	1.25E-03	2.18E-01	1.99E-04	1.09E-01	1.97	1.25E-03	3.49E-01	1.99E-04	1.75E-01
Arsenic	6.33	1.25E-03	1.12E+00	1.99E-04	5.60E-01	17.54	1.25E-03	3.11E+00	1.99E-04	1.55E+00
Cadmium	4.64	1.02E-02	8.23E-01	1.62E-03	4.12E-01	8.25	1.55E-02	1.46E+00	2.47E-03	7.32E-01
Chromium	3.56	2.50E-03	6.31E-01	3.98E-04	3.16E-01	6.74	2.50E-03	1.19E+00	3.98E-04	5.97E-01
Copper	41.58	1.04E-02	7.37E+00	1.65E-03	3.68E+00	73.11	3.78E-02	1.30E+01	6.01E-03	6.48E+00
Lead	63.15	1.79E-01	1.12E+01	2.84E-02	5.61E+00	131.80	2.53E-01	2.33E+01	4.02E-02	1.17E+01
Manganese	1407.00	7.08E+00	2.49E+02	1.13E+00	1.25E+02	8260.00	9.46E+00	1.46E+03	1.50E+00	7.32E+02
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	2.89	8.51E-03	5.11E-01	1.35E-03	2.56E-01	11.75	1.14E-02	2.08E+00	1.81E-03	1.04E+00
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.73	1.88E-03	1.29E-01	2.98E-04	6.45E-02	2.98	2.50E-03	5.28E-01	3.98E-04	2.64E-01
Zinc	492.00	4.53E+00	8.72E+01	7.19E-01	4.39E+01	862.30	4.71E+00	1.53E+02	7.49E-01	7.68E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-86 EU-17 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Mainstem West Fork Animas River/California Gulch. Invertebrate tissue values represent the low-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.75	1.25E-03	1.32E-01	1.99E-04	6.61E-02	1.42	1.25E-03	2.51E-01	1.99E-04	1.26E-01
Arsenic	1.49	3.36E-03	2.65E-01	5.34E-04	1.33E-01	5.92	1.17E-02	1.05E+00	1.85E-03	5.25E-01
Cadmium	3.24	1.39E-02	5.74E-01	2.21E-03	2.88E-01	6.67	4.19E-02	1.18E+00	6.66E-03	5.94E-01
Chromium	3.21	2.50E-03	5.69E-01	3.98E-04	2.85E-01	4.47	2.50E-03	7.91E-01	3.98E-04	3.96E-01
Copper	32.25	2.98E-01	5.71E+00	4.74E-02	2.88E+00	42.62	2.00E+00	7.55E+00	3.18E-01	3.93E+00
Lead	12.26	5.80E-02	2.17E+00	9.23E-03	1.09E+00	25.65	1.01E-01	4.54E+00	1.60E-02	2.28E+00
Manganese	456.30	1.71E+00	8.08E+01	2.71E-01	4.06E+01	715.40	4.12E+00	1.27E+02	6.55E-01	6.37E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	0.86	2.04E-03	1.52E-01	3.24E-04	7.62E-02	1.56	4.32E-03	2.77E-01	6.86E-04	1.39E-01
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.25	3.48E-03	4.43E-02	5.54E-04	2.24E-02	0.25	7.98E-03	4.43E-02	1.27E-03	2.28E-02
Zinc	365.30	2.58E+00	6.47E+01	4.11E-01	3.26E+01	565.60	5.77E+00	1.00E+02	9.18E-01	5.06E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (Low-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-87 EU-18 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in North Fork Animas River Below Burrows Creek. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.94	1.50E-03	1.67E-01	2.39E-04	8.36E-02	1.78	1.67E-03	3.15E-01	2.65E-04	1.58E-01
Arsenic	6.33	1.13E-02	1.12E+00	1.80E-03	5.61E-01	17.54	2.81E-02	3.11E+00	4.47E-03	1.56E+00
Cadmium	3.24	5.26E-02	5.74E-01	8.37E-03	2.91E-01	6.67	1.07E-01	1.18E+00	1.70E-02	5.99E-01
Chromium	3.56	2.56E-03	6.31E-01	4.08E-04	3.16E-01	6.74	2.67E-03	1.19E+00	4.24E-04	5.97E-01
Copper	32.25	1.02E+00	5.71E+00	1.62E-01	2.94E+00	42.62	2.61E+00	7.55E+00	4.15E-01	3.98E+00
Lead	63.15	2.11E-01	1.12E+01	3.35E-02	5.61E+00	131.80	4.43E-01	2.33E+01	7.05E-02	1.17E+01
Manganese	456.30	9.98E+00	8.08E+01	1.59E+00	4.12E+01	715.40	6.58E+01	1.27E+02	1.05E+01	6.86E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	0.94	8.01E-03	1.67E-01	1.27E-03	8.43E-02	1.58	1.84E-02	2.79E-01	2.93E-03	1.41E-01
Selenium	0.93	2.97E-03	1.65E-01	4.72E-04	8.25E-02	1.70	3.47E-03	3.02E-01	5.52E-04	1.51E-01
Silver	0.55	1.32E-03	9.78E-02	2.10E-04	4.90E-02	1.10	1.44E-03	1.95E-01	2.28E-04	9.75E-02
Thallium	0.36	2.90E-03	6.36E-02	4.61E-04	3.20E-02	0.61	4.26E-03	1.08E-01	6.77E-04	5.43E-02
Zinc	365.30	1.36E+01	6.47E+01	2.16E+00	3.34E+01	565.60	3.17E+01	1.00E+02	5.05E+00	5.26E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (Mid-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-88 EU-19 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Burrows Creek. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	1.23	2.28E-03	2.18E-01	3.63E-04	1.09E-01	1.97	4.57E-03	3.49E-01	7.27E-04	1.75E-01
Arsenic	6.33	4.65E-03	1.12E+00	7.39E-04	5.61E-01	17.54	1.48E-02	3.11E+00	2.35E-03	1.55E+00
Cadmium	4.64	2.68E-02	8.23E-01	4.27E-03	4.13E-01	8.25	4.70E-02	1.46E+00	7.47E-03	7.34E-01
Chromium	3.56	2.50E-03	6.31E-01	3.98E-04	3.16E-01	6.74	2.50E-03	1.19E+00	3.98E-04	5.97E-01
Copper	41.58	9.50E-02	7.37E+00	1.51E-02	3.69E+00	73.11	1.58E-01	1.30E+01	2.51E-02	6.49E+00
Lead	63.15	1.60E-01	1.12E+01	2.54E-02	5.61E+00	131.80	8.30E-01	2.33E+01	1.32E-01	1.17E+01
Manganese	1407.00	5.61E-01	2.49E+02	8.92E-02	1.25E+02	8260.00	9.90E-01	1.46E+03	1.57E-01	7.32E+02
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	2.89	1.75E-03	5.11E-01	2.79E-04	2.56E-01	11.75	3.94E-03	2.08E+00	6.27E-04	1.04E+00
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.85E-03	9.78E-02	2.93E-04	4.90E-02	1.10	4.44E-03	1.95E-01	7.06E-04	9.78E-02
Thallium	0.73	2.50E-03	1.29E-01	3.98E-04	6.46E-02	2.98	2.50E-03	5.28E-01	3.98E-04	2.64E-01
Zinc	492.00	5.07E+00	8.72E+01	8.07E-01	4.40E+01	862.30	8.98E+00	1.53E+02	1.43E+00	7.71E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-89 EU-R2 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Maggie Gulch Reference Area. Invertebrate tissue values represent the vegetated upland/reference floodplain exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.47	1.50E-03	8.29E-02	2.39E-04	4.16E-02	0.69	1.50E-03	1.22E-01	2.39E-04	6.13E-02
Arsenic	0.33	1.13E-02	5.88E-02	1.80E-03	3.03E-02	0.50	1.13E-02	8.89E-02	1.80E-03	4.54E-02
Cadmium	2.29	5.26E-02	4.05E-01	8.37E-03	2.07E-01	4.86	5.26E-02	8.60E-01	8.37E-03	4.34E-01
Chromium	3.21	2.56E-03	5.69E-01	4.08E-04	2.85E-01	4.47	2.56E-03	7.91E-01	4.08E-04	3.96E-01
Copper	31.18	1.02E+00	5.52E+00	1.62E-01	2.84E+00	37.46	1.02E+00	6.64E+00	1.62E-01	3.40E+00
Lead	1.46	2.11E-01	2.59E-01	3.35E-02	1.46E-01	2.37	2.11E-01	4.21E-01	3.35E-02	2.27E-01
Manganese	105.40	9.98E+00	1.87E+01	1.59E+00	1.01E+01	139.10	9.98E+00	2.46E+01	1.59E+00	1.31E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	0.56	8.01E-03	9.87E-02	1.27E-03	5.00E-02	0.83	8.01E-03	1.47E-01	1.27E-03	7.42E-02
Selenium	0.53	2.97E-03	9.32E-02	4.72E-04	4.68E-02	1.15	2.97E-03	2.03E-01	4.72E-04	1.02E-01
Silver	0.22	1.32E-03	3.92E-02	2.10E-04	1.97E-02	0.33	1.32E-03	5.92E-02	2.10E-04	2.97E-02
Thallium	0.30	2.90E-03	5.26E-02	4.61E-04	2.65E-02	0.61	2.90E-03	1.08E-01	4.61E-04	5.42E-02
Zinc	224.90	1.36E+01	3.98E+01	2.16E+00	2.10E+01	269.70	1.36E+01	4.78E+01	2.16E+00	2.50E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.} = (Ref.\ DRC_{flying\ invert} * 100\%) * FIR$

2 $Dose_{water} = SW_{LWA} * WIR$

3 $Total\ EDD = (Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-90 EU-R3 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Picayune Gulch Reference Area. Invertebrate tissue values represent the vegetated upland/reference floodplain exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.47	1.25E-03	8.29E-02	1.99E-04	4.16E-02	0.69	1.25E-03	1.22E-01	1.99E-04	6.13E-02
Arsenic	0.33	4.35E-03	5.88E-02	6.92E-04	2.98E-02	0.50	5.07E-03	8.89E-02	8.06E-04	4.49E-02
Cadmium	2.29	2.50E-04	4.05E-01	3.98E-05	2.03E-01	4.86	2.50E-04	8.60E-01	3.98E-05	4.30E-01
Chromium	3.21	2.50E-03	5.69E-01	3.98E-04	2.85E-01	4.47	2.50E-03	7.91E-01	3.98E-04	3.96E-01
Copper	31.18	1.25E-03	5.52E+00	1.99E-04	2.76E+00	37.46	1.25E-03	6.64E+00	1.99E-04	3.32E+00
Lead	1.46	2.50E-04	2.59E-01	3.98E-05	1.29E-01	2.37	2.50E-04	4.21E-01	3.98E-05	2.10E-01
Manganese	105.40	2.10E+00	1.87E+01	3.34E-01	9.50E+00	139.10	2.19E+00	2.46E+01	3.48E-01	1.25E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	0.56	1.25E-03	9.87E-02	1.99E-04	4.94E-02	0.83	1.25E-03	1.47E-01	1.99E-04	7.37E-02
Selenium	0.53	2.50E-03	9.32E-02	3.98E-04	4.68E-02	1.15	2.50E-03	2.03E-01	3.98E-04	1.02E-01
Silver	0.22	1.25E-03	3.92E-02	1.99E-04	1.97E-02	0.33	1.25E-03	5.92E-02	1.99E-04	2.97E-02
Thallium	0.30	1.25E-03	5.26E-02	1.99E-04	2.64E-02	0.61	1.25E-03	1.08E-01	1.99E-04	5.40E-02
Zinc	224.90	1.73E-02	3.98E+01	2.75E-03	1.99E+01	269.70	2.07E-02	4.78E+01	3.29E-03	2.39E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (Ref. $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-91 EU-R4 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in North Fork Animas River Reference Area. Invertebrate tissue values represent the vegetated upland/reference floodplain exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.47	1.50E-03	8.29E-02	2.39E-04	4.16E-02	0.69	1.67E-03	1.22E-01	2.65E-04	6.13E-02
Arsenic	0.33	1.13E-02	5.88E-02	1.80E-03	3.03E-02	0.50	2.81E-02	8.89E-02	4.47E-03	4.67E-02
Cadmium	2.29	5.26E-02	4.05E-01	8.37E-03	2.07E-01	4.86	1.07E-01	8.60E-01	1.70E-02	4.39E-01
Chromium	3.21	2.56E-03	5.69E-01	4.08E-04	2.85E-01	4.47	2.67E-03	7.91E-01	4.24E-04	3.96E-01
Copper	31.18	1.02E+00	5.52E+00	1.62E-01	2.84E+00	37.46	2.61E+00	6.64E+00	4.15E-01	3.53E+00
Lead	1.46	2.11E-01	2.59E-01	3.35E-02	1.46E-01	2.37	4.43E-01	4.21E-01	7.05E-02	2.46E-01
Manganese	105.40	9.98E+00	1.87E+01	1.59E+00	1.01E+01	139.10	6.58E+01	2.46E+01	1.05E+01	1.76E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	0.56	8.01E-03	9.87E-02	1.27E-03	5.00E-02	0.83	1.84E-02	1.47E-01	2.93E-03	7.51E-02
Selenium	0.53	2.97E-03	9.32E-02	4.72E-04	4.68E-02	1.15	3.47E-03	2.03E-01	5.52E-04	1.02E-01
Silver	0.22	1.32E-03	3.92E-02	2.10E-04	1.97E-02	0.33	1.44E-03	5.92E-02	2.28E-04	2.97E-02
Thallium	0.30	2.90E-03	5.26E-02	4.61E-04	2.65E-02	0.61	4.26E-03	1.08E-01	6.77E-04	5.43E-02
Zinc	224.90	1.36E+01	3.98E+01	2.16E+00	2.10E+01	269.70	3.17E+01	4.78E+01	5.05E+00	2.64E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.} = (Ref.\ DRC_{flying\ invert} * 100\%) * FIR$

2 $Dose_{water} = SW_{LWA} * WIR$

3 $Total\ EDD = (Dose_{invert.} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-92 EU-20 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Lower Mainstem Cement Creek. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.94	1.25E-03	1.67E-01	1.99E-04	8.35E-02	1.78	1.25E-03	3.15E-01	1.99E-04	1.58E-01
Arsenic	6.33	4.45E-03	1.12E+00	7.08E-04	5.61E-01	17.54	6.70E-03	3.11E+00	1.06E-03	1.55E+00
Cadmium	3.24	4.42E-03	5.74E-01	7.02E-04	2.87E-01	6.67	2.14E-02	1.18E+00	3.40E-03	5.92E-01
Chromium	3.56	2.50E-03	6.31E-01	3.98E-04	3.16E-01	6.74	2.50E-03	1.19E+00	3.98E-04	5.97E-01
Copper	32.25	5.33E-01	5.71E+00	8.47E-02	2.90E+00	42.62	3.61E+00	7.55E+00	5.74E-01	4.06E+00
Lead	63.15	5.92E-03	1.12E+01	9.42E-04	5.59E+00	131.80	8.39E-03	2.33E+01	1.33E-03	1.17E+01
Manganese	456.30	7.16E+00	8.08E+01	1.14E+00	4.10E+01	715.40	1.06E+01	1.27E+02	1.68E+00	6.42E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	0.94	8.00E-03	1.67E-01	1.27E-03	8.43E-02	1.58	3.06E-02	2.79E-01	4.87E-03	1.42E-01
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.36	3.42E-03	6.36E-02	5.44E-04	3.21E-02	0.61	5.21E-03	1.08E-01	8.29E-04	5.44E-02
Zinc	365.30	2.37E+00	6.47E+01	3.77E-01	3.25E+01	565.60	3.80E+00	1.00E+02	6.04E-01	5.04E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (Mid-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-93 EU-21 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Prospect Gulch. Invertebrate tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.94	1.25E-03	1.67E-01	1.99E-04	8.35E-02	1.78	1.25E-03	3.15E-01	1.99E-04	1.58E-01
Arsenic	6.33	9.78E-03	1.12E+00	1.55E-03	5.61E-01	17.54	5.96E-02	3.11E+00	9.48E-03	1.56E+00
Cadmium	3.24	1.12E-02	5.74E-01	1.78E-03	2.88E-01	6.67	4.14E-02	1.18E+00	6.58E-03	5.94E-01
Chromium	3.56	2.50E-03	6.31E-01	3.98E-04	3.16E-01	6.74	2.50E-03	1.19E+00	3.98E-04	5.97E-01
Copper	32.25	1.45E-01	5.71E+00	2.30E-02	2.87E+00	42.62	5.30E-01	7.55E+00	8.43E-02	3.82E+00
Lead	63.15	1.35E-01	1.12E+01	2.14E-02	5.60E+00	131.80	7.88E-01	2.33E+01	1.25E-01	1.17E+01
Manganese	456.30	1.31E+00	8.08E+01	2.08E-01	4.05E+01	715.40	9.97E+00	1.27E+02	1.59E+00	6.42E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Nickel	0.94	1.43E-02	1.67E-01	2.27E-03	8.47E-02	1.58	6.76E-02	2.79E-01	1.08E-02	1.45E-01
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.50E-03	9.78E-02	2.39E-04	4.90E-02	1.10	1.98E-03	1.95E-01	3.14E-04	9.76E-02
Thallium	0.36	3.17E-03	6.36E-02	5.04E-04	3.21E-02	0.61	4.43E-03	1.08E-01	7.05E-04	5.43E-02
Zinc	365.30	4.48E+00	6.47E+01	7.13E-01	3.27E+01	565.60	2.02E+01	1.00E+02	3.21E+00	5.17E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in adit water and dietary items

Food chain modeling equations

1 $Dose_{invert.}$ = (Mid-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-94 EU-22 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Mainstem Cement Creek. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	1.23	1.67E-03	2.18E-01	2.65E-04	1.09E-01	1.97	2.10E-03	3.49E-01	3.33E-04	1.75E-01
Arsenic	6.33	1.45E-02	1.12E+00	2.31E-03	5.61E-01	17.54	6.15E-02	3.11E+00	9.78E-03	1.56E+00
Cadmium	4.64	3.25E-02	8.23E-01	5.17E-03	4.14E-01	8.25	7.33E-02	1.46E+00	1.17E-02	7.36E-01
Chromium	3.56	3.93E-03	6.31E-01	6.25E-04	3.16E-01	6.74	4.80E-03	1.19E+00	7.63E-04	5.97E-01
Copper	41.58	1.33E+00	7.37E+00	2.11E-01	3.79E+00	73.11	5.50E+00	1.30E+01	8.74E-01	6.91E+00
Lead	63.15	4.73E-02	1.12E+01	7.52E-03	5.60E+00	131.80	1.29E-01	2.33E+01	2.05E-02	1.17E+01
Manganese	1407.00	3.23E+01	2.49E+02	5.13E+00	1.27E+02	8.260.00	4.38E+01	1.46E+03	6.97E+00	7.35E+02
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	4.00E-03	0.00E+00	6.36E-04	3.18E-04	0	5.00E-03	0.00E+00	7.95E-04	3.98E-04
Nickel	2.89	3.96E-02	5.11E-01	6.29E-03	2.59E-01	11.75	4.56E-02	2.08E+00	7.25E-03	1.04E+00
Selenium	0.93	3.93E-03	1.65E-01	6.25E-04	8.26E-02	1.70	4.80E-03	3.02E-01	7.63E-04	1.51E-01
Silver	0.55	1.96E-03	9.78E-02	3.12E-04	4.91E-02	1.10	2.40E-03	1.95E-01	3.82E-04	9.76E-02
Thallium	0.73	3.50E-03	1.29E-01	5.56E-04	6.47E-02	2.98	6.49E-03	5.28E-01	1.03E-03	2.65E-01
Zinc	492.00	1.80E+01	8.72E+01	2.86E+00	4.50E+01	862.30	2.66E+01	1.53E+02	4.24E+00	7.85E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-95 EU-23 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in South Fork Cement Creek. Invertebrate tissue values represent the low-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	0.75	1.25E-03	1.32E-01	1.99E-04	6.61E-02	1.42	1.25E-03	2.51E-01	1.99E-04	1.26E-01
Arsenic	1.49	1.97E-03	2.65E-01	3.13E-04	1.32E-01	5.92	2.74E-03	1.05E+00	4.36E-04	5.25E-01
Cadmium	3.24	2.59E-03	5.74E-01	4.11E-04	2.87E-01	6.67	4.86E-03	1.18E+00	7.72E-04	5.91E-01
Chromium	3.21	2.81E-03	5.69E-01	4.47E-04	2.85E-01	4.47	3.41E-03	7.91E-01	5.41E-04	3.96E-01
Copper	32.25	3.35E-02	5.71E+00	5.32E-03	2.86E+00	42.62	8.92E-02	7.55E+00	1.42E-02	3.78E+00
Lead	12.26	4.11E-03	2.17E+00	6.53E-04	1.09E+00	25.65	6.09E-03	4.54E+00	9.68E-04	2.27E+00
Manganese	456.30	2.06E+00	8.08E+01	3.27E-01	4.06E+01	715.40	2.67E+00	1.27E+02	4.25E-01	6.36E+01
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	0.86	2.86E-03	1.52E-01	4.54E-04	7.63E-02	1.56	3.94E-03	2.77E-01	6.26E-04	1.39E-01
Selenium	0.93	2.81E-03	1.65E-01	4.47E-04	8.25E-02	1.70	3.41E-03	3.02E-01	5.41E-04	1.51E-01
Silver	0.55	1.41E-03	9.78E-02	2.24E-04	4.90E-02	1.10	1.70E-03	1.95E-01	2.71E-04	9.76E-02
Thallium	0.25	2.03E-03	4.43E-02	3.23E-04	2.23E-02	0.25	2.47E-03	4.43E-02	3.92E-04	2.23E-02
Zinc	365.30	6.84E-01	6.47E+01	1.09E-01	3.24E+01	565.60	8.77E-01	1.00E+02	1.39E-01	5.02E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (Low-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-96 EU-24 Estimated Daily Doses (EDDs) for Fringed Myotis Bat Foraging in Upper Cement Creek. Invertebrate tissue values represent the high-level dose response category (DRC) exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in mine adits and adit drainage paths.

COPEC	Central Tendency Exposure (CTE) Scenario					Reasonable Maximum Exposure (RME) Scenario				
	Exposure Point Concentrations		EDDs (mg/kg BW/day)			Exposure Point Concentrations		EDDs (mg/kg BW/day)		
	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]	Flying Invert. (mg/kg, DW)	Adit Water (mg/L)	$Dose_{invert.}$ [1]	$Dose_{water}$ [2]	Total EDD[3]
Antimony	1.23	1.25E-03	2.18E-01	1.99E-04	1.09E-01	1.97	1.25E-03	3.49E-01	1.99E-04	1.75E-01
Arsenic	6.33	4.04E-03	1.12E+00	6.43E-04	5.61E-01	17.54	1.05E-02	3.11E+00	1.67E-03	1.55E+00
Cadmium	4.64	3.54E-02	8.23E-01	5.62E-03	4.14E-01	8.25	5.51E-02	1.46E+00	8.77E-03	7.35E-01
Chromium	3.56	2.61E-03	6.31E-01	4.15E-04	3.16E-01	6.74	2.81E-03	1.19E+00	4.46E-04	5.97E-01
Copper	41.58	5.98E-01	7.37E+00	9.50E-02	3.73E+00	73.11	1.97E+00	1.30E+01	3.13E-01	6.63E+00
Lead	63.15	9.20E-02	1.12E+01	1.46E-02	5.60E+00	131.80	2.11E-01	2.33E+01	3.35E-02	1.17E+01
Manganese	1407.00	9.07E+00	2.49E+02	1.44E+00	1.25E+02	8260.00	1.60E+01	1.46E+03	2.55E+00	7.33E+02
Mercury	0	0	0.00E+00	0.00E+00	0.00E+00	0	0	0.00E+00	0.00E+00	0.00E+00
Molybdenum	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04	0	2.50E-03	0.00E+00	3.98E-04	1.99E-04
Nickel	2.89	6.09E-03	5.11E-01	9.68E-04	2.56E-01	11.75	8.43E-03	2.08E+00	1.34E-03	1.04E+00
Selenium	0.93	2.50E-03	1.65E-01	3.98E-04	8.25E-02	1.70	2.50E-03	3.02E-01	3.98E-04	1.51E-01
Silver	0.55	1.25E-03	9.78E-02	1.99E-04	4.90E-02	1.10	1.25E-03	1.95E-01	1.99E-04	9.75E-02
Thallium	0.73	2.18E-03	1.29E-01	3.46E-04	6.46E-02	2.98	2.36E-03	5.28E-01	3.75E-04	2.64E-01
Zinc	492.00	1.36E+01	8.72E+01	2.17E+00	4.47E+01	862.30	2.22E+01	1.53E+02	3.52E+00	7.81E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in dietary items; mercury not analyzed in adit water

Food chain modeling equations

1 $Dose_{invert.}$ = (High-level $DRC_{flying\ invert}$*100%) * FIR

2 $Dose_{water}$ = SW_{LWA} * WIR

3 Total EDD = ($Dose_{invert.}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0090	kilograms
Soil ingestion rate (SIR) =	0.0000	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1590	L/kg BW/day
Food ingestion rate (FIR) =	0.1772	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	100%

Table C-97 EU-01 Estimated Daily Doses (EDDs) for American Beaver Foraging in Lower Mainstem Mineral Creek. Plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Antimony	4.46	0.18	0.19	1.71E-03	3.79E-03	6.61E-03	1.25E-04	1.05E-02
Arsenic	31.40	0.31	0.18	3.54E-03	2.67E-02	7.13E-03	2.59E-04	3.41E-02
Cadmium	1.63	0.98	6.37	5.47E-04	1.38E-03	1.87E-01	3.99E-05	1.88E-01
Chromium	5.14	2.51	2.58	3.60E-03	4.37E-03	9.05E-02	2.63E-04	9.52E-02
Copper	138.10	11.34	6.85	9.05E-03	1.17E-01	2.74E-01	6.61E-04	3.92E-01
Lead	367.40	6.80	2.39	8.40E-03	3.12E-01	1.15E-01	6.14E-04	4.28E-01
Manganese	1150.00	403.70	314.20	2.78E-01	9.78E-01	1.17E+01	2.03E-02	1.27E+01
Mercury	0.15	0.13	0.13	0	1.30E-04	4.41E-03	0.00E+00	4.54E-03
Molybdenum	3.20	0	0	2.50E-03	2.72E-03	0.00E+00	1.83E-04	2.90E-03
Nickel	4.16	1.36	1.16	2.37E-03	3.54E-03	4.22E-02	1.73E-04	4.59E-02
Selenium	1.87	0.28	0.34	3.88E-03	1.59E-03	1.15E-02	2.83E-04	1.34E-02
Silver	0.80	0.14	0.18	1.78E-03	6.76E-04	5.94E-03	1.30E-04	6.75E-03
Thallium	0.65	0.28	0.34	3.60E-03	5.53E-04	1.15E-02	2.63E-04	1.23E-02
Zinc	486.40	99.42	413.60	1.47E-01	4.13E-01	1.24E+01	1.07E-02	1.28E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	8.83	0.42	0.47	1.96E-03	7.51E-03	1.61E-02	1.43E-04	2.38E-02
Arsenic	45.31	0.88	0.39	5.53E-03	3.85E-02	1.73E-02	4.03E-04	5.62E-02
Cadmium	3.01	1.87	10.65	6.19E-04	2.56E-03	3.14E-01	4.52E-05	3.16E-01
Chromium	7.21	2.98	3.24	4.58E-03	6.13E-03	1.13E-01	3.34E-04	1.19E-01
Copper	256.60	18.42	8.86	1.39E-02	2.18E-01	3.80E-01	1.01E-03	5.99E-01
Lead	603.90	27.70	4.50	1.98E-02	5.13E-01	3.23E-01	1.45E-03	8.37E-01
Manganese	1904.00	1690.00	905.80	3.45E-01	1.62E+00	3.75E+01	2.51E-02	3.91E+01
Mercury	0.29	0.13	0.13	0	2.45E-04	4.50E-03	0.00E+00	4.75E-03
Molybdenum	4.25	0	0	2.50E-03	3.62E-03	0.00E+00	1.83E-04	3.80E-03
Nickel	5.50	2.42	2.79	3.02E-03	4.67E-03	9.58E-02	2.21E-04	1.01E-01
Selenium	3.00	0.33	0.78	4.26E-03	2.55E-03	2.44E-02	3.11E-04	2.73E-02
Silver	1.49	0.17	0.39	2.30E-03	1.27E-03	1.23E-02	1.68E-04	1.37E-02
Thallium	0.73	0.33	0.78	4.78E-03	6.18E-04	2.44E-02	3.49E-04	2.54E-02
Zinc	709.60	168.30	584.00	1.63E-01	6.03E-01	1.77E+01	1.19E-02	1.83E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant} = [(\text{Mid-level } DRC_{herb} * 20\%) + (\text{Mid-level } DRC_{shrub} * 80\%)] * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-98 EU-02 Estimated Daily Doses (EDDs) for American Beaver Foraging in Lower Mainstem Mineral Creek. Plant tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Antimony	0.61	0.18	0.19	1.65E-03	5.22E-04	6.61E-03	1.20E-04	7.25E-03
Arsenic	23.20	0.31	0.18	3.31E-03	1.97E-02	7.13E-03	2.42E-04	2.71E-02
Cadmium	0.76	0.66	1.35	1.09E-03	6.44E-04	4.27E-02	7.92E-05	4.34E-02
Chromium	3.46	2.47	2.34	3.59E-03	2.94E-03	8.33E-02	2.62E-04	8.65E-02
Copper	43.84	7.78	5.23	1.48E-02	3.73E-02	2.02E-01	1.08E-03	2.41E-01
Lead	231.10	2.39	1.47	9.62E-03	1.96E-01	5.84E-02	7.03E-04	2.55E-01
Manganese	558.60	180.20	314.20	5.86E-01	4.75E-01	1.01E+01	4.28E-02	1.07E+01
Mercury	0.08	0.13	0.13	0	6.89E-05	4.41E-03	0.00E+00	4.48E-03
Molybdenum	3.36	0	0	2.50E-03	2.86E-03	0.00E+00	1.83E-04	3.04E-03
Nickel	2.02	0.80	0.97	3.14E-03	1.72E-03	3.30E-02	2.29E-04	3.49E-02
Selenium	1.41	0.26	0.34	3.77E-03	1.20E-03	1.14E-02	2.75E-04	1.28E-02
Silver	0.50	0.13	0.18	1.80E-03	4.21E-04	5.87E-03	1.31E-04	6.42E-03
Thallium	0.41	0.28	0.26	3.66E-03	3.49E-04	9.36E-03	2.67E-04	9.97E-03
Zinc	336.80	65.19	105.50	2.56E-01	2.86E-01	3.44E+00	1.87E-02	3.74E+00
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	0.81	0.42	0.47	2.12E-03	6.85E-04	1.61E-02	1.55E-04	1.70E-02
Arsenic	37.91	0.88	0.39	5.00E-03	3.22E-02	1.73E-02	3.65E-04	4.99E-02
Cadmium	1.32	1.04	2.14	1.28E-03	1.12E-03	6.78E-02	9.33E-05	6.90E-02
Chromium	4.48	2.74	2.70	4.42E-03	3.81E-03	9.56E-02	3.23E-04	9.98E-02
Copper	65.56	9.52	6.19	1.62E-02	5.57E-02	2.42E-01	1.19E-03	2.99E-01
Lead	373.70	8.38	4.14	1.30E-02	3.18E-01	1.76E-01	9.45E-04	4.95E-01
Manganese	797.00	304.90	905.80	7.51E-01	6.77E-01	2.77E+01	5.48E-02	2.85E+01
Mercury	0.16	0.13	0.13	0	1.33E-04	4.45E-03	0.00E+00	4.58E-03
Molybdenum	4.95	0	0	2.50E-03	4.21E-03	0.00E+00	1.83E-04	4.39E-03
Nickel	2.50	1.36	1.50	5.13E-03	2.13E-03	5.20E-02	3.74E-04	5.45E-02
Selenium	2.23	0.29	0.78	5.08E-03	1.90E-03	2.41E-02	3.71E-04	2.64E-02
Silver	0.80	0.14	0.39	2.21E-03	6.76E-04	1.21E-02	1.61E-04	1.29E-02
Thallium	0.61	0.33	0.29	4.67E-03	5.19E-04	1.04E-02	3.41E-04	1.12E-02
Zinc	514.80	85.50	137.80	2.94E-01	4.38E-01	4.49E+00	2.15E-02	4.95E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant} = [(\text{Low-level } DRC_{herb} * 20\%) + (\text{Low-level } DRC_{shrub} * 80\%)] * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-99 EU-03 Estimated Daily Doses (EDDs) for American Beaver Foraging in Mainstem Mineral Creek. Plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.39	0.18	0.19	1.61E-03	1.18E-03	6.61E-03	1.18E-04	7.90E-03
Arsenic	25.19	0.31	0.18	3.70E-03	2.14E-02	7.13E-03	2.70E-04	2.88E-02
Cadmium	1.26	0.98	6.37	9.79E-04	1.07E-03	1.87E-01	7.14E-05	1.88E-01
Chromium	4.50	2.51	2.58	3.52E-03	3.83E-03	9.05E-02	2.57E-04	9.46E-02
Copper	47.27	11.34	6.85	1.29E-02	4.02E-02	2.74E-01	9.44E-04	3.15E-01
Lead	331.60	6.80	2.39	2.26E-02	2.82E-01	1.15E-01	1.65E-03	3.99E-01
Manganese	1919.00	403.70	314.20	2.10E-01	1.63E+00	1.17E+01	1.53E-02	1.34E+01
Mercury	0.05	0.13	0.13	0	4.38E-05	4.41E-03	0.00E+00	4.45E-03
Molybdenum	1.79	0	0	2.50E-03	1.52E-03	0.00E+00	1.83E-04	1.70E-03
Nickel	3.06	1.36	1.16	1.90E-03	2.60E-03	4.22E-02	1.38E-04	4.50E-02
Selenium	1.07	0.28	0.34	3.78E-03	9.10E-04	1.15E-02	2.76E-04	1.27E-02
Silver	0.57	0.14	0.18	1.77E-03	4.81E-04	5.94E-03	1.29E-04	6.55E-03
Thallium	0.70	0.28	0.34	3.74E-03	5.92E-04	1.15E-02	2.73E-04	1.24E-02
Zinc	117.40	99.42	413.60	3.06E-01	9.98E-02	1.24E+01	2.24E-02	1.25E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	1.70	0.42	0.47	1.88E-03	1.44E-03	1.61E-02	1.37E-04	1.77E-02
Arsenic	42.12	0.88	0.39	6.58E-03	3.58E-02	1.73E-02	4.80E-04	5.36E-02
Cadmium	2.30	1.87	10.65	1.16E-03	1.96E-03	3.14E-01	8.49E-05	3.16E-01
Chromium	7.12	2.98	3.24	4.54E-03	6.05E-03	1.13E-01	3.31E-04	1.19E-01
Copper	77.30	18.42	8.86	1.65E-02	6.57E-02	3.80E-01	1.20E-03	4.47E-01
Lead	617.30	27.70	4.50	4.50E-02	5.25E-01	3.23E-01	3.28E-03	8.51E-01
Manganese	8120.00	1690.00	905.80	2.50E-01	6.90E+00	3.75E+01	1.82E-02	4.44E+01
Mercury	0.09	0.13	0.13	0	7.50E-05	4.50E-03	0.00E+00	4.58E-03
Molybdenum	2.38	0	0	2.50E-03	2.02E-03	0.00E+00	1.83E-04	2.20E-03
Nickel	4.44	2.42	2.79	2.09E-03	3.77E-03	9.58E-02	1.52E-04	9.97E-02
Selenium	1.50	0.33	0.78	4.16E-03	1.28E-03	2.44E-02	3.04E-04	2.60E-02
Silver	0.82	0.17	0.39	2.27E-03	7.00E-04	1.23E-02	1.66E-04	1.31E-02
Thallium	0.87	0.33	0.78	4.44E-03	7.39E-04	2.44E-02	3.24E-04	2.55E-02
Zinc	189.70	168.30	584.00	3.35E-01	1.61E-01	1.77E+01	2.45E-02	1.79E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant} = [(\text{Mid-level } DRC_{herb} * 20\%) + (\text{Mid-level } DRC_{shrub} * 80\%)] * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-100 EU-3.5 Estimated Daily Doses (EDDs) for American Beaver Foraging in Browns Gulch. Plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.73	0.18	0.19	1.45E-03	1.47E-03	6.61E-03	1.06E-04	8.18E-03
Arsenic	37.81	0.31	0.18	2.33E-03	3.21E-02	7.13E-03	1.70E-04	3.94E-02
Cadmium	0.83	0.98	6.37	5.10E-03	7.02E-04	1.87E-01	3.72E-04	1.88E-01
Chromium	4.61	2.51	2.58	2.63E-03	3.92E-03	9.05E-02	1.92E-04	9.46E-02
Copper	38.73	11.34	6.85	4.69E-02	3.29E-02	2.74E-01	3.42E-03	3.10E-01
Lead	605.60	6.80	2.39	5.62E-03	5.15E-01	1.15E-01	4.10E-04	6.31E-01
Manganese	1155.00	403.70	314.20	2.16E+00	9.82E-01	1.17E+01	1.58E-01	1.29E+01
Mercury	0.21	0.13	0.13	0	1.79E-04	4.41E-03	0.00E+00	4.59E-03
Molybdenum	1.62	0	0	0	1.38E-03	0.00E+00	0.00E+00	1.38E-03
Nickel	5.35	1.36	1.16	1.16E-02	4.55E-03	4.22E-02	8.44E-04	4.76E-02
Selenium	1.19	0.28	0.34	2.98E-03	1.01E-03	1.15E-02	2.17E-04	1.27E-02
Silver	1.66	0.14	0.18	1.38E-03	1.41E-03	5.94E-03	1.01E-04	7.45E-03
Thallium	0.60	0.28	0.34	2.68E-03	5.11E-04	1.15E-02	1.96E-04	1.22E-02
Zinc	203.10	99.42	413.60	1.17E+00	1.73E-01	1.24E+01	8.56E-02	1.26E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	2.66	0.42	0.47	1.98E-03	2.26E-03	1.61E-02	1.45E-04	1.85E-02
Arsenic	78.88	0.88	0.39	5.65E-03	6.70E-02	1.73E-02	4.12E-04	8.48E-02
Cadmium	1.14	1.87	10.65	1.01E-02	9.69E-04	3.14E-01	7.37E-04	3.16E-01
Chromium	7.15	2.98	3.24	4.06E-03	6.07E-03	1.13E-01	2.97E-04	1.19E-01
Copper	68.76	18.42	8.86	7.39E-02	5.84E-02	3.80E-01	5.39E-03	4.44E-01
Lead	2743.00	27.70	4.50	1.12E-02	2.33E+00	3.23E-01	8.16E-04	2.65E+00
Manganese	1932.00	1690.00	905.80	3.37E+00	1.64E+00	3.75E+01	2.46E-01	3.94E+01
Mercury	0.83	0.13	0.13	0	7.05E-04	4.50E-03	0.00E+00	5.21E-03
Molybdenum	2.38	0	0	0	2.02E-03	0.00E+00	0.00E+00	2.02E-03
Nickel	7.98	2.42	2.79	1.81E-02	6.79E-03	9.58E-02	1.32E-03	1.04E-01
Selenium	1.60	0.33	0.78	3.99E-03	1.36E-03	2.44E-02	2.91E-04	2.61E-02
Silver	6.40	0.17	0.39	2.00E-03	5.44E-03	1.23E-02	1.46E-04	1.79E-02
Thallium	0.63	0.33	0.78	4.03E-03	5.32E-04	2.44E-02	2.94E-04	2.53E-02
Zinc	369.00	168.30	584.00	2.31E+00	3.14E-01	1.77E+01	1.68E-01	1.82E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(Mid-level DRC_{herb} * 20%) + (Mid-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-101 EU-04 Estimated Daily Doses (EDDs) for American Beaver Foraging in Upper Mainstem Mineral Creek. Plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.68	0.18	0.24	1.87E-03	1.43E-03	7.96E-03	1.36E-04	9.53E-03
Arsenic	111.70	0.31	0.18	1.28E-02	9.49E-02	7.13E-03	9.38E-04	1.03E-01
Cadmium	1.28	2.86	6.37	5.95E-03	1.09E-03	2.00E-01	4.34E-04	2.02E-01
Chromium	4.59	2.51	2.58	3.59E-03	3.90E-03	9.05E-02	2.62E-04	9.47E-02
Copper	160.60	11.34	8.98	2.10E-01	1.37E-01	3.34E-01	1.54E-02	4.86E-01
Lead	377.10	20.15	3.39	6.38E-02	3.21E-01	2.38E-01	4.66E-03	5.63E-01
Manganese	972.10	403.70	493.80	2.08E+00	8.26E-01	1.68E+01	1.52E-01	1.78E+01
Mercury	0.14	0.13	0.13	0	1.18E-04	4.41E-03	0.00E+00	4.53E-03
Molybdenum	1.09	0	0	0	9.27E-04	0.00E+00	0.00E+00	9.27E-04
Nickel	5.17	1.36	1.18	1.09E-02	4.40E-03	4.28E-02	7.98E-04	4.80E-02
Selenium	1.04	0.48	0.34	3.78E-03	8.83E-04	1.29E-02	2.76E-04	1.40E-02
Silver	0.59	0.17	0.18	1.80E-03	4.98E-04	6.14E-03	1.32E-04	6.77E-03
Thallium	0.69	0.47	0.34	3.96E-03	5.83E-04	1.28E-02	2.89E-04	1.37E-02
Zinc	332.50	422.90	494.30	2.58E+00	2.83E-01	1.69E+01	1.89E-01	1.74E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	2.13	0.42	0.73	2.02E-03	1.81E-03	2.35E-02	1.48E-04	2.54E-02
Arsenic	430.90	0.88	0.39	4.54E-02	3.66E-01	1.73E-02	3.31E-03	3.87E-01
Cadmium	1.84	4.14	10.65	1.35E-02	1.57E-03	3.30E-01	9.83E-04	3.32E-01
Chromium	5.35	2.98	3.24	4.39E-03	4.55E-03	1.13E-01	3.20E-04	1.17E-01
Copper	394.70	18.42	13.89	4.84E-01	3.35E-01	5.22E-01	3.53E-02	8.93E-01
Lead	1233.00	57.52	9.12	1.94E-01	1.05E+00	6.63E-01	1.42E-02	1.73E+00
Manganese	1199.00	1690.00	905.80	4.82E+00	1.02E+00	3.75E+01	3.52E-01	3.89E+01
Mercury	0.36	0.13	0.13	0	3.05E-04	4.45E-03	0.00E+00	4.75E-03
Molybdenum	1.44	0	0	0	1.22E-03	0.00E+00	0.00E+00	1.22E-03
Nickel	6.66	2.42	2.79	2.53E-02	5.66E-03	9.58E-02	1.85E-03	1.03E-01
Selenium	1.31	1.14	0.78	4.07E-03	1.12E-03	3.02E-02	2.97E-04	3.16E-02
Silver	1.10	0.13	0.39	2.19E-03	9.33E-04	1.20E-02	1.60E-04	1.31E-02
Thallium	0.76	1.01	0.78	5.15E-03	6.44E-04	2.93E-02	3.76E-04	3.03E-02
Zinc	851.40	584.60	605.40	5.70E+00	7.24E-01	2.12E+01	4.16E-01	2.24E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(High-level DRC_{herb} * 20%) + (High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-102 EU-05 Estimated Daily Doses (EDDs) for American Beaver Foraging in South Fork Mineral Creek. Plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	0.96	0.18	0.19	1.65E-03	8.17E-04	6.61E-03	1.21E-04	7.54E-03
Arsenic	19.22	0.31	0.18	2.55E-03	1.63E-02	7.13E-03	1.86E-04	2.37E-02
Cadmium	16.15	0.98	6.37	6.12E-03	1.37E-02	1.87E-01	4.47E-04	2.01E-01
Chromium	5.50	2.51	2.58	3.07E-03	4.67E-03	9.05E-02	2.24E-04	9.54E-02
Copper	346.40	11.34	6.85	2.72E-02	2.94E-01	2.74E-01	1.99E-03	5.70E-01
Lead	465.50	6.80	2.39	2.14E-02	3.96E-01	1.15E-01	1.56E-03	5.13E-01
Manganese	5748.00	403.70	314.20	6.44E-01	4.89E+00	1.17E+01	4.70E-02	1.67E+01
Mercury	0.04	0.13	0.13	0	3.55E-05	4.41E-03	0.00E+00	4.45E-03
Molybdenum	1.53	0	0	0	1.30E-03	0.00E+00	0.00E+00	1.30E-03
Nickel	9.57	1.36	1.16	3.87E-03	8.14E-03	4.22E-02	2.83E-04	5.06E-02
Selenium	1.40	0.28	0.34	3.41E-03	1.19E-03	1.15E-02	2.49E-04	1.29E-02
Silver	2.49	0.14	0.18	1.55E-03	2.12E-03	5.94E-03	1.13E-04	8.18E-03
Thallium	0.69	0.28	0.34	3.34E-03	5.86E-04	1.15E-02	2.44E-04	1.23E-02
Zinc	1431.00	99.42	413.60	1.33E+00	1.22E+00	1.24E+01	9.73E-02	1.37E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	1.66	0.42	0.47	1.91E-03	1.41E-03	1.61E-02	1.40E-04	1.77E-02
Arsenic	27.19	0.88	0.39	4.51E-03	2.31E-02	1.73E-02	3.29E-04	4.07E-02
Cadmium	141.70	1.87	10.65	2.19E-02	1.20E-01	3.14E-01	1.60E-03	4.36E-01
Chromium	6.55	2.98	3.24	4.44E-03	5.56E-03	1.13E-01	3.24E-04	1.18E-01
Copper	2836.00	18.42	8.86	1.05E-01	2.41E+00	3.80E-01	7.65E-03	2.80E+00
Lead	1280.00	27.70	4.50	1.37E-01	1.09E+00	3.23E-01	9.97E-03	1.42E+00
Manganese	23416.00	1690.00	905.80	2.16E+00	1.99E+01	3.75E+01	1.58E-01	5.76E+01
Mercury	0.09	0.13	0.13	0	7.60E-05	4.50E-03	0.00E+00	4.58E-03
Molybdenum	2.14	0	0	0	1.82E-03	0.00E+00	0.00E+00	1.82E-03
Nickel	21.93	2.42	2.79	5.72E-03	1.86E-02	9.58E-02	4.17E-04	1.15E-01
Selenium	2.09	0.33	0.78	3.89E-03	1.78E-03	2.44E-02	2.84E-04	2.65E-02
Silver	8.46	0.17	0.39	2.22E-03	7.19E-03	1.23E-02	1.62E-04	1.96E-02
Thallium	1.39	0.33	0.78	5.24E-03	1.18E-03	2.44E-02	3.82E-04	2.60E-02
Zinc	5282.00	168.30	584.00	7.30E+00	4.49E+00	1.77E+01	5.33E-01	2.27E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(Mid-level DRC_{herb} * 20%) + (Mid-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-103 EU-06 Estimated Daily Doses (EDDs) for American Beaver Foraging in Middle Fork Mineral Creek. Plant tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.24	0.18	0.19	1.57E-03	1.06E-03	6.61E-03	1.15E-04	7.78E-03
Arsenic	12.06	0.31	0.18	2.38E-03	1.03E-02	7.13E-03	1.74E-04	1.76E-02
Cadmium	0.79	0.66	1.35	1.10E-03	6.74E-04	4.27E-02	8.02E-05	4.35E-02
Chromium	2.76	2.47	2.34	2.90E-03	2.35E-03	8.33E-02	2.11E-04	8.59E-02
Copper	15.31	7.78	5.23	4.87E-03	1.30E-02	2.02E-01	3.55E-04	2.16E-01
Lead	114.30	2.39	1.47	8.66E-04	9.72E-02	5.84E-02	6.32E-05	1.56E-01
Manganese	1660.00	180.20	314.20	9.24E-01	1.41E+00	1.01E+01	6.74E-02	1.16E+01
Mercury	0.04	0.13	0.13	0	3.30E-05	4.41E-03	0.00E+00	4.44E-03
Molybdenum	5.51	0	0	0	4.68E-03	0.00E+00	0.00E+00	4.68E-03
Nickel	3.33	0.80	0.97	5.28E-03	2.83E-03	3.30E-02	3.86E-04	3.62E-02
Selenium	1.88	0.26	0.34	3.17E-03	1.60E-03	1.14E-02	2.32E-04	1.32E-02
Silver	0.52	0.13	0.18	1.45E-03	4.39E-04	5.87E-03	1.06E-04	6.41E-03
Thallium	0.86	0.28	0.26	3.12E-03	7.31E-04	9.36E-03	2.28E-04	1.03E-02
Zinc	103.60	65.19	105.50	1.36E-01	8.81E-02	3.44E+00	9.91E-03	3.54E+00
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	1.49	0.42	0.47	1.77E-03	1.26E-03	1.61E-02	1.29E-04	1.75E-02
Arsenic	14.95	0.88	0.39	3.83E-03	1.27E-02	1.73E-02	2.80E-04	3.03E-02
Cadmium	1.18	1.04	2.14	1.82E-03	1.00E-03	6.78E-02	1.33E-04	6.89E-02
Chromium	3.30	2.74	2.70	3.96E-03	2.81E-03	9.56E-02	2.89E-04	9.87E-02
Copper	17.90	9.52	6.19	1.01E-02	1.52E-02	2.42E-01	7.39E-04	2.58E-01
Lead	131.90	8.38	4.14	1.98E-03	1.12E-01	1.76E-01	1.44E-04	2.88E-01
Manganese	2491.00	304.90	905.80	1.14E+00	2.12E+00	2.77E+01	8.29E-02	2.99E+01
Mercury	0.05	0.13	0.13	0	4.15E-05	4.45E-03	0.00E+00	4.49E-03
Molybdenum	8.52	0	0	0	7.24E-03	0.00E+00	0.00E+00	7.24E-03
Nickel	4.74	1.36	1.50	1.09E-02	4.03E-03	5.20E-02	7.98E-04	5.68E-02
Selenium	2.29	0.29	0.78	4.13E-03	1.95E-03	2.41E-02	3.01E-04	2.64E-02
Silver	0.62	0.14	0.39	1.98E-03	5.29E-04	1.21E-02	1.45E-04	1.28E-02
Thallium	0.99	0.33	0.29	4.95E-03	8.43E-04	1.04E-02	3.62E-04	1.16E-02
Zinc	124.20	85.50	137.80	1.69E-01	1.06E-01	4.49E+00	1.23E-02	4.61E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(Low-level DRC_{herb} * 20%) + (Low-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-104 EU-R1 Estimated Daily Doses (EDDs) for American Beaver Foraging in Mill Creek Reference Area. Plant tissue values represent the upland/reference floodplain dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.61	0.18	0.19	1.44E-03	1.37E-03	6.61E-03	1.05E-04	8.08E-03
Arsenic	84.47	0.13	0.13	1.75E-03	7.18E-02	4.41E-03	1.28E-04	7.63E-02
Cadmium	1.33	0.34	1.35	2.75E-04	1.13E-03	4.05E-02	2.01E-05	4.16E-02
Chromium	4.10	2.47	2.34	2.69E-03	3.49E-03	8.33E-02	1.96E-04	8.70E-02
Copper	221.40	7.26	5.23	1.44E-03	1.88E-01	1.99E-01	1.05E-04	3.87E-01
Lead	406.50	0.67	1.47	9.29E-04	3.46E-01	4.62E-02	6.78E-05	3.92E-01
Manganese	1415.00	117.40	271.80	3.89E-02	1.20E+00	8.50E+00	2.84E-03	9.71E+00
Mercury	0.11	0.13	0.13	0	9.35E-05	4.41E-03	0.00E+00	4.50E-03
Molybdenum	3.60	0	0	0	3.06E-03	0.00E+00	0.00E+00	3.06E-03
Nickel	4.37	0.72	0.53	1.29E-03	3.71E-03	2.01E-02	9.43E-05	2.39E-02
Selenium	1.43	0.25	0.25	2.97E-03	1.22E-03	8.82E-03	2.17E-04	1.03E-02
Silver	0.62	0.13	0.13	1.34E-03	5.27E-04	4.41E-03	9.81E-05	5.04E-03
Thallium	0.67	0.25	0.25	2.87E-03	5.72E-04	8.82E-03	2.10E-04	9.60E-03
Zinc	301.00	51.94	105.50	3.14E-02	2.56E-01	3.35E+00	2.29E-03	3.60E+00
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	2.80	0.42	0.47	2.04E-03	2.38E-03	1.61E-02	1.49E-04	1.87E-02
Arsenic	229.00	0.13	0.13	3.62E-03	1.95E-01	4.45E-03	2.64E-04	1.99E-01
Cadmium	2.10	0.67	2.14	4.12E-04	1.79E-03	6.52E-02	3.01E-05	6.70E-02
Chromium	4.60	2.74	2.70	4.15E-03	3.91E-03	9.56E-02	3.03E-04	9.98E-02
Copper	612.00	8.36	6.19	2.04E-03	5.20E-01	2.34E-01	1.49E-04	7.54E-01
Lead	968.00	0.94	4.14	1.49E-03	8.23E-01	1.23E-01	1.09E-04	9.46E-01
Manganese	2680.00	156.60	905.80	7.72E-02	2.28E+00	2.67E+01	5.64E-03	2.90E+01
Mercury	0.29	0.13	0.13	0	2.47E-04	4.45E-03	0.00E+00	4.69E-03
Molybdenum	5.80	0	0	0	4.93E-03	0.00E+00	0.00E+00	4.93E-03
Nickel	6.80	1.25	0.97	2.11E-03	5.78E-03	3.63E-02	1.54E-04	4.22E-02
Selenium	2.50	0.25	0.25	4.07E-03	2.13E-03	8.86E-03	2.97E-04	1.13E-02
Silver	1.20	0.13	0.13	2.08E-03	1.02E-03	4.45E-03	1.52E-04	5.62E-03
Thallium	0.77	0.25	0.25	5.06E-03	6.55E-04	8.86E-03	3.69E-04	9.88E-03
Zinc	440.00	78.85	137.80	3.95E-02	3.74E-01	4.45E+00	2.88E-03	4.82E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant} = [(Ref.\ DRC_{herb} * 20\%) + (Ref.\ DRC_{shrub} * 80\%)] * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $Total\ EDD = Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-105 EU-07 Estimated Daily Doses (EDDs) for American Beaver Foraging in Animas River Below Cunningham Creek. Plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Antimony	11.45	0.18	0.24	1.60E-03	9.73E-03	7.96E-03	1.17E-04	1.78E-02
Arsenic	28.20	0.31	0.18	2.51E-03	2.40E-02	7.13E-03	1.84E-04	3.13E-02
Cadmium	16.97	2.86	6.37	6.52E-04	1.44E-02	2.00E-01	4.76E-05	2.14E-01
Chromium	5.22	2.51	2.58	3.32E-03	4.43E-03	9.05E-02	2.42E-04	9.52E-02
Copper	666.30	11.34	8.98	6.36E-03	5.66E-01	3.34E-01	4.64E-04	9.00E-01
Lead	8787.00	20.15	3.39	5.82E-03	7.47E+00	2.38E-01	4.25E-04	7.71E+00
Manganese	1203.00	403.70	493.80	3.26E-01	1.02E+00	1.68E+01	2.38E-02	1.78E+01
Mercury	1.22	0.13	0.13	0	1.04E-03	4.41E-03	0.00E+00	5.45E-03
Molybdenum	26.60	0	0	2.50E-03	2.26E-02	0.00E+00	1.83E-04	2.28E-02
Nickel	5.17	1.36	1.18	1.66E-03	4.39E-03	4.28E-02	1.21E-04	4.73E-02
Selenium	2.80	0.48	0.34	3.47E-03	2.38E-03	1.29E-02	2.53E-04	1.55E-02
Silver	25.43	0.17	0.18	1.66E-03	2.16E-02	6.14E-03	1.21E-04	2.79E-02
Thallium	0.83	0.47	0.34	4.18E-03	7.06E-04	1.28E-02	3.05E-04	1.38E-02
Zinc	3082.00	422.90	494.30	2.42E-01	2.62E+00	1.69E+01	1.76E-02	1.96E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	46.80	0.42	0.73	1.90E-03	3.98E-02	2.35E-02	1.38E-04	6.34E-02
Arsenic	64.50	0.88	0.39	4.67E-03	5.48E-02	1.73E-02	3.41E-04	7.25E-02
Cadmium	94.30	4.14	10.65	7.74E-04	8.02E-02	3.30E-01	5.65E-05	4.10E-01
Chromium	7.11	2.98	3.24	4.45E-03	6.04E-03	1.13E-01	3.25E-04	1.19E-01
Copper	2510.00	18.42	13.89	9.43E-03	2.13E+00	5.22E-01	6.89E-04	2.66E+00
Lead	44200.00	57.52	9.12	1.68E-02	3.76E+01	6.63E-01	1.23E-03	3.82E+01
Manganese	1619.00	1690.00	905.80	4.55E-01	1.38E+00	3.75E+01	3.32E-02	3.89E+01
Mercury	6.00	0.13	0.13	0	5.10E-03	4.45E-03	0.00E+00	9.55E-03
Molybdenum	118.00	0	0	2.50E-03	1.00E-01	0.00E+00	1.83E-04	1.00E-01
Nickel	7.61	2.42	2.79	2.03E-03	6.47E-03	9.58E-02	1.48E-04	1.02E-01
Selenium	4.78	1.14	0.78	4.11E-03	4.06E-03	3.02E-02	3.00E-04	3.45E-02
Silver	96.90	0.13	0.39	2.22E-03	8.24E-02	1.20E-02	1.62E-04	9.45E-02
Thallium	2.30	1.01	0.78	6.58E-03	1.95E-03	2.93E-02	4.80E-04	3.17E-02
Zinc	17300.00	584.60	605.40	3.32E-01	1.47E+01	2.12E+01	2.42E-02	3.59E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(High-level DRC_{herb} * 20%) + (High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-106 EU-08 Estimated Daily Doses (EDDs) for American Beaver Foraging in Cunningham Creek. Plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Antimony	1.34	0.18	0.19	1.66E-03	1.14E-03	6.61E-03	1.21E-04	7.87E-03
Arsenic	12.81	0.31	0.18	2.47E-03	1.09E-02	7.13E-03	1.80E-04	1.82E-02
Cadmium	1.84	0.98	6.37	3.53E-04	1.56E-03	1.87E-01	2.58E-05	1.88E-01
Chromium	3.89	2.51	2.58	3.24E-03	3.31E-03	9.05E-02	2.37E-04	9.41E-02
Copper	99.95	11.34	6.85	2.21E-03	8.50E-02	2.74E-01	1.62E-04	3.59E-01
Lead	797.20	6.80	2.39	4.60E-03	6.78E-01	1.15E-01	3.36E-04	7.93E-01
Manganese	1580.00	403.70	314.20	1.96E-02	1.34E+00	1.17E+01	1.43E-03	1.31E+01
Mercury	0.04	0.13	0.13	0	3.49E-05	4.41E-03	0.00E+00	4.45E-03
Molybdenum	4.43	0	0	2.50E-03	3.77E-03	0.00E+00	1.83E-04	3.95E-03
Nickel	3.54	1.36	1.16	1.59E-03	3.01E-03	4.22E-02	1.16E-04	4.53E-02
Selenium	0.79	0.28	0.34	3.35E-03	6.73E-04	1.15E-02	2.44E-04	1.24E-02
Silver	1.44	0.14	0.18	1.62E-03	1.23E-03	5.94E-03	1.18E-04	7.29E-03
Thallium	0.41	0.28	0.34	3.21E-03	3.49E-04	1.15E-02	2.34E-04	1.21E-02
Zinc	383.60	99.42	413.60	2.19E-02	3.26E-01	1.24E+01	1.60E-03	1.27E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	3.73	0.42	0.47	2.06E-03	3.17E-03	1.61E-02	1.50E-04	1.94E-02
Arsenic	18.24	0.88	0.39	4.02E-03	1.55E-02	1.73E-02	2.93E-04	3.31E-02
Cadmium	2.32	1.87	10.65	4.30E-04	1.97E-03	3.14E-01	3.14E-05	3.16E-01
Chromium	7.10	2.98	3.24	4.12E-03	6.04E-03	1.13E-01	3.01E-04	1.19E-01
Copper	264.80	18.42	8.86	3.79E-03	2.25E-01	3.80E-01	2.76E-04	6.05E-01
Lead	1222.00	27.70	4.50	2.55E-02	1.04E+00	3.23E-01	1.86E-03	1.36E+00
Manganese	2077.00	1690.00	905.80	4.75E-02	1.77E+00	3.75E+01	3.47E-03	3.93E+01
Mercury	0.07	0.13	0.13	0	5.73E-05	4.50E-03	0.00E+00	4.56E-03
Molybdenum	7.10	0	0	2.50E-03	6.04E-03	0.00E+00	1.83E-04	6.22E-03
Nickel	4.64	2.42	2.79	2.07E-03	3.94E-03	9.58E-02	1.51E-04	9.99E-02
Selenium	1.29	0.33	0.78	4.12E-03	1.09E-03	2.44E-02	3.01E-04	2.58E-02
Silver	2.13	0.17	0.39	2.06E-03	1.81E-03	1.23E-02	1.50E-04	1.42E-02
Thallium	0.56	0.33	0.78	4.13E-03	4.75E-04	2.44E-02	3.02E-04	2.52E-02
Zinc	488.60	168.30	584.00	2.95E-02	4.15E-01	1.77E+01	2.16E-03	1.81E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant} = [(\text{Mid-level } DRC_{herb} * 20\%) + (\text{Mid-level } DRC_{shrub} * 80\%)] * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-107 EU-09 Estimated Daily Doses (EDDs) for American Beaver Foraging in Animas River Below Minnie Gulch. Plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Antimony	6.73	0.18	0.24	1.62E-03	5.72E-03	7.96E-03	1.18E-04	1.38E-02
Arsenic	21.31	0.31	0.18	2.35E-03	1.81E-02	7.13E-03	1.72E-04	2.54E-02
Cadmium	6.84	2.86	6.37	1.17E-03	5.81E-03	2.00E-01	8.54E-05	2.06E-01
Chromium	3.63	2.51	2.58	3.12E-03	3.09E-03	9.05E-02	2.28E-04	9.38E-02
Copper	446.90	11.34	8.98	1.20E-02	3.80E-01	3.34E-01	8.73E-04	7.14E-01
Lead	3685.00	20.15	3.39	3.88E-03	3.13E+00	2.38E-01	2.83E-04	3.37E+00
Manganese	8873.00	403.70	493.80	6.19E-01	7.54E+00	1.68E+01	4.52E-02	2.44E+01
Mercury	0.21	0.13	0.13	0	1.81E-04	4.41E-03	0.00E+00	4.59E-03
Molybdenum	4.08	0	0	2.50E-03	3.46E-03	0.00E+00	1.83E-04	3.65E-03
Nickel	4.27	1.36	1.18	1.69E-03	3.63E-03	4.28E-02	1.24E-04	4.66E-02
Selenium	1.13	0.48	0.34	3.29E-03	9.64E-04	1.29E-02	2.40E-04	1.41E-02
Silver	11.13	0.17	0.18	1.56E-03	9.46E-03	6.14E-03	1.14E-04	1.57E-02
Thallium	0.42	0.47	0.34	3.38E-03	3.60E-04	1.28E-02	2.47E-04	1.34E-02
Zinc	1184.00	422.90	494.30	4.15E-01	1.01E+00	1.69E+01	3.03E-02	1.80E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	11.73	0.42	0.73	1.95E-03	9.97E-03	2.35E-02	1.42E-04	3.36E-02
Arsenic	26.08	0.88	0.39	4.06E-03	2.22E-02	1.73E-02	2.97E-04	3.98E-02
Cadmium	9.47	4.14	10.65	1.75E-03	8.05E-03	3.30E-01	1.28E-04	3.38E-01
Chromium	4.24	2.98	3.24	4.20E-03	3.60E-03	1.13E-01	3.07E-04	1.16E-01
Copper	573.10	18.42	13.89	1.98E-02	4.87E-01	5.22E-01	1.44E-03	1.01E+00
Lead	5167.00	57.52	9.12	5.58E-03	4.39E+00	6.63E-01	4.07E-04	5.06E+00
Manganese	12721.00	1690.00	905.80	8.48E-01	1.08E+01	3.75E+01	6.19E-02	4.84E+01
Mercury	0.32	0.13	0.13	0	2.69E-04	4.45E-03	0.00E+00	4.72E-03
Molybdenum	6.06	0	0	2.50E-03	5.15E-03	0.00E+00	1.83E-04	5.33E-03
Nickel	5.03	2.42	2.79	2.08E-03	4.27E-03	9.58E-02	1.52E-04	1.00E-01
Selenium	1.30	1.14	0.78	3.92E-03	1.11E-03	3.02E-02	2.86E-04	3.16E-02
Silver	15.65	0.13	0.39	2.10E-03	1.33E-02	1.20E-02	1.53E-04	2.55E-02
Thallium	0.74	1.01	0.78	4.88E-03	6.30E-04	2.93E-02	3.57E-04	3.02E-02
Zinc	1638.00	584.60	605.40	5.65E-01	1.39E+00	2.12E+01	4.12E-02	2.27E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = High-level DRC_{herb} * 20%) + High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-108 EU-10 Estimated Daily Doses (EDDs) for American Beaver Foraging in Animas River Below South Fork Animas River. Plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Antimony	15.90	0.18	0.24	1.57E-03	1.35E-02	7.96E-03	1.15E-04	2.16E-02
Arsenic	40.84	0.31	0.18	2.20E-03	3.47E-02	7.13E-03	1.60E-04	4.20E-02
Cadmium	12.96	2.86	6.37	2.19E-03	1.10E-02	2.00E-01	1.60E-04	2.11E-01
Chromium	5.29	2.51	2.58	3.02E-03	4.50E-03	9.05E-02	2.20E-04	9.52E-02
Copper	853.90	11.34	8.98	3.24E-02	7.26E-01	3.34E-01	2.37E-03	1.06E+00
Lead	5245.00	20.15	3.39	5.86E-03	4.46E+00	2.38E-01	4.28E-04	4.70E+00
Manganese	24316.00	403.70	493.80	1.22E+00	2.07E+01	1.68E+01	8.92E-02	3.75E+01
Mercury	0.20	0.13	0.13	0	1.73E-04	4.41E-03	0.00E+00	4.58E-03
Molybdenum	11.07	0	0	2.50E-03	9.41E-03	0.00E+00	1.83E-04	9.59E-03
Nickel	5.66	1.36	1.18	1.85E-03	4.81E-03	4.28E-02	1.35E-04	4.78E-02
Selenium	1.04	0.48	0.34	3.20E-03	8.82E-04	1.29E-02	2.34E-04	1.40E-02
Silver	18.75	0.17	0.18	1.48E-03	1.59E-02	6.14E-03	1.08E-04	2.22E-02
Thallium	0.34	0.47	0.34	3.94E-03	2.87E-04	1.28E-02	2.88E-04	1.34E-02
Zinc	2222.00	422.90	494.30	6.56E-01	1.89E+00	1.69E+01	4.79E-02	1.89E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	18.88	0.42	0.73	1.92E-03	1.60E-02	2.35E-02	1.40E-04	3.97E-02
Arsenic	43.33	0.88	0.39	4.22E-03	3.68E-02	1.73E-02	3.08E-04	5.44E-02
Cadmium	14.44	4.14	10.65	2.92E-03	1.23E-02	3.30E-01	2.13E-04	3.42E-01
Chromium	5.74	2.98	3.24	3.81E-03	4.88E-03	1.13E-01	2.78E-04	1.18E-01
Copper	1000.00	18.42	13.89	4.68E-02	8.50E-01	5.22E-01	3.41E-03	1.38E+00
Lead	6381.00	57.52	9.12	8.27E-03	5.42E+00	6.63E-01	6.03E-04	6.09E+00
Manganese	36425.00	1690.00	905.80	1.41E+00	3.10E+01	3.75E+01	1.03E-01	6.86E+01
Mercury	0.26	0.13	0.13	0	2.18E-04	4.45E-03	0.00E+00	4.66E-03
Molybdenum	18.10	0	0	2.50E-03	1.54E-02	0.00E+00	1.83E-04	1.56E-02
Nickel	6.59	2.42	2.79	2.25E-03	5.60E-03	9.58E-02	1.64E-04	1.02E-01
Selenium	1.20	1.14	0.78	3.85E-03	1.02E-03	3.02E-02	2.81E-04	3.15E-02
Silver	24.44	0.13	0.39	1.91E-03	2.08E-02	1.20E-02	1.39E-04	3.29E-02
Thallium	0.37	1.01	0.78	5.93E-03	3.16E-04	2.93E-02	4.33E-04	3.00E-02
Zinc	2545.00	584.60	605.40	8.27E-01	2.16E+00	2.12E+01	6.04E-02	2.34E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = High-level DRC_{herb} * 20%) + High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-109 EU-11 Estimated Daily Doses (EDDs) for American Beaver Foraging in Upper South Fork Animas River. Plant tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.10	0.18	0.19	1.84E-03	9.35E-04	6.61E-03	1.35E-04	7.68E-03
Arsenic	24.50	0.31	0.18	3.03E-03	2.08E-02	7.13E-03	2.21E-04	2.82E-02
Cadmium	0.64	0.66	1.35	4.06E-04	5.44E-04	4.27E-02	2.96E-05	4.33E-02
Chromium	8.00	2.47	2.34	3.56E-03	6.80E-03	8.33E-02	2.60E-04	9.04E-02
Copper	74.50	7.78	5.23	7.26E-03	6.33E-02	2.02E-01	5.30E-04	2.66E-01
Lead	164.00	2.39	1.47	6.04E-04	1.39E-01	5.84E-02	4.41E-05	1.98E-01
Manganese	1250.00	180.20	314.20	9.57E-02	1.06E+00	1.01E+01	6.99E-03	1.12E+01
Mercury	0.01	0.13	0.13	0	8.16E-06	4.41E-03	0.00E+00	4.42E-03
Molybdenum	5.40	0	0	0	4.59E-03	0.00E+00	0.00E+00	4.59E-03
Nickel	6.10	0.80	0.97	2.04E-03	5.19E-03	3.30E-02	1.49E-04	3.83E-02
Selenium	2.50	0.26	0.34	3.75E-03	2.13E-03	1.14E-02	2.74E-04	1.38E-02
Silver	0.43	0.13	0.18	1.78E-03	3.61E-04	5.87E-03	1.30E-04	6.36E-03
Thallium	0.54	0.28	0.26	5.43E-03	4.59E-04	9.36E-03	3.96E-04	1.02E-02
Zinc	123.50	65.19	105.50	4.53E-02	1.05E-01	3.44E+00	3.31E-03	3.55E+00
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	1.10	0.42	0.47	2.19E-03	9.35E-04	1.61E-02	1.60E-04	1.72E-02
Arsenic	24.50	0.88	0.39	4.06E-03	2.08E-02	1.73E-02	2.97E-04	3.84E-02
Cadmium	0.64	1.04	2.14	4.38E-04	5.44E-04	6.78E-02	3.19E-05	6.84E-02
Chromium	8.00	2.74	2.70	4.38E-03	6.80E-03	9.56E-02	3.19E-04	1.03E-01
Copper	74.50	9.52	6.19	1.21E-02	6.33E-02	2.42E-01	8.84E-04	3.06E-01
Lead	164.00	8.38	4.14	8.33E-04	1.39E-01	1.76E-01	6.08E-05	3.15E-01
Manganese	1250.00	304.90	905.80	1.70E-01	1.06E+00	2.77E+01	1.24E-02	2.88E+01
Mercury	0.01	0.13	0.13	0	8.16E-06	4.45E-03	0.00E+00	4.45E-03
Molybdenum	5.40	0	0	0	4.59E-03	0.00E+00	0.00E+00	4.59E-03
Nickel	6.10	1.36	1.50	2.26E-03	5.19E-03	5.20E-02	1.65E-04	5.73E-02
Selenium	2.50	0.29	0.78	4.38E-03	2.13E-03	2.41E-02	3.19E-04	2.66E-02
Silver	0.43	0.14	0.39	2.19E-03	3.61E-04	1.21E-02	1.60E-04	1.26E-02
Thallium	0.54	0.33	0.29	7.51E-03	4.59E-04	1.04E-02	5.48E-04	1.14E-02
Zinc	123.50	85.50	137.80	6.94E-02	1.05E-01	4.49E+00	5.06E-03	4.60E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(Low-level DRC_{herb} * 20%) + (Low-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-110 EU-12 Estimated Daily Doses (EDDs) for American Beaver Foraging in Eureka Gulch. Plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.51	0.18	0.24	1.82E-03	1.28E-03	7.96E-03	1.33E-04	9.38E-03
Arsenic	22.71	0.31	0.18	2.96E-03	1.93E-02	7.13E-03	2.16E-04	2.66E-02
Cadmium	6.10	2.86	6.37	2.15E-03	5.18E-03	2.00E-01	1.57E-04	2.05E-01
Chromium	7.16	2.51	2.58	3.59E-03	6.09E-03	9.05E-02	2.62E-04	9.69E-02
Copper	215.50	11.34	8.98	1.22E-02	1.83E-01	3.34E-01	8.93E-04	5.18E-01
Lead	695.80	20.15	3.39	2.20E-03	5.91E-01	2.38E-01	1.60E-04	8.29E-01
Manganese	6068.00	403.70	493.80	3.48E-01	5.16E+00	1.68E+01	2.54E-02	2.20E+01
Mercury	0.10	0.13	0.13	0	8.59E-05	4.41E-03	0.00E+00	4.50E-03
Molybdenum	3.51	0	0	0	2.98E-03	0.00E+00	0.00E+00	2.98E-03
Nickel	9.36	1.36	1.18	1.99E-03	7.95E-03	4.28E-02	1.45E-04	5.09E-02
Selenium	2.20	0.48	0.34	3.66E-03	1.87E-03	1.29E-02	2.67E-04	1.50E-02
Silver	1.74	0.17	0.18	1.79E-03	1.48E-03	6.14E-03	1.31E-04	7.75E-03
Thallium	0.58	0.47	0.34	4.73E-03	4.90E-04	1.28E-02	3.45E-04	1.37E-02
Zinc	1383.00	422.90	494.30	8.54E-01	1.18E+00	1.69E+01	6.23E-02	1.82E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	1.85	0.42	0.73	1.97E-03	1.58E-03	2.35E-02	1.44E-04	2.52E-02
Arsenic	28.07	0.88	0.39	4.06E-03	2.39E-02	1.73E-02	2.97E-04	4.14E-02
Cadmium	9.85	4.14	10.65	4.06E-03	8.37E-03	3.30E-01	2.97E-04	3.39E-01
Chromium	7.92	2.98	3.24	3.92E-03	6.73E-03	1.13E-01	2.86E-04	1.20E-01
Copper	319.50	18.42	13.89	2.02E-02	2.72E-01	5.22E-01	1.48E-03	7.95E-01
Lead	992.70	57.52	9.12	4.56E-03	8.44E-01	6.63E-01	3.33E-04	1.51E+00
Manganese	8851.00	1690.00	905.80	8.06E-01	7.52E+00	3.75E+01	5.88E-02	4.51E+01
Mercury	0.15	0.13	0.13	0	1.30E-04	4.45E-03	0.00E+00	4.58E-03
Molybdenum	5.05	0	0	0	4.29E-03	0.00E+00	0.00E+00	4.29E-03
Nickel	10.77	2.42	2.79	2.64E-03	9.15E-03	9.58E-02	1.93E-04	1.05E-01
Selenium	2.89	1.14	0.78	3.96E-03	2.45E-03	3.02E-02	2.89E-04	3.29E-02
Silver	2.50	0.13	0.39	1.96E-03	2.12E-03	1.20E-02	1.43E-04	1.43E-02
Thallium	0.62	1.01	0.78	7.37E-03	5.24E-04	2.93E-02	5.38E-04	3.03E-02
Zinc	3427.00	584.60	605.40	1.66E+00	2.91E+00	2.12E+01	1.22E-01	2.43E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = (High-level DRC_{herb} * 20%) + (High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-111 EU-13 Estimated Daily Doses (EDDs) for American Beaver Foraging in Lower South Fork Animas River. Plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	5.80	0.18	0.24	1.73E-03	4.93E-03	7.96E-03	1.26E-04	1.30E-02
Arsenic	31.15	0.31	0.18	2.69E-03	2.65E-02	7.13E-03	1.96E-04	3.38E-02
Cadmium	12.50	2.86	6.37	1.19E-03	1.06E-02	2.00E-01	8.71E-05	2.11E-01
Chromium	17.20	2.51	2.58	3.46E-03	1.46E-02	9.05E-02	2.52E-04	1.05E-01
Copper	408.00	11.34	8.98	2.54E-02	3.47E-01	3.34E-01	1.85E-03	6.82E-01
Lead	2652.00	20.15	3.39	2.03E-03	2.25E+00	2.38E-01	1.48E-04	2.49E+00
Manganese	8200.00	403.70	493.80	2.73E-01	6.97E+00	1.68E+01	1.99E-02	2.38E+01
Mercury	0.99	0.13	0.13	0	8.38E-04	4.41E-03	0.00E+00	5.25E-03
Molybdenum	7.05	0	0	0	5.99E-03	0.00E+00	0.00E+00	5.99E-03
Nickel	37.65	1.36	1.18	1.73E-03	3.20E-02	4.28E-02	1.26E-04	7.50E-02
Selenium	2.40	0.48	0.34	3.46E-03	2.04E-03	1.29E-02	2.52E-04	1.52E-02
Silver	3.68	0.17	0.18	1.73E-03	3.12E-03	6.14E-03	1.26E-04	9.39E-03
Thallium	0.58	0.47	0.34	5.02E-03	4.89E-04	1.28E-02	3.67E-04	1.37E-02
Zinc	3280.00	422.90	494.30	3.74E-01	2.79E+00	1.69E+01	2.73E-02	1.98E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	10.10	0.42	0.73	2.19E-03	8.59E-03	2.35E-02	1.60E-04	3.22E-02
Arsenic	38.60	0.88	0.39	4.06E-03	3.28E-02	1.73E-02	2.97E-04	5.04E-02
Cadmium	14.80	4.14	10.65	1.55E-03	1.26E-02	3.30E-01	1.13E-04	3.43E-01
Chromium	27.00	2.98	3.24	4.38E-03	2.30E-02	1.13E-01	3.19E-04	1.36E-01
Copper	485.00	18.42	13.89	3.06E-02	4.12E-01	5.22E-01	2.24E-03	9.37E-01
Lead	4390.00	57.52	9.12	3.57E-03	3.73E+00	6.63E-01	2.61E-04	4.40E+00
Manganese	11100.00	1690.00	905.80	3.25E-01	9.44E+00	3.75E+01	2.37E-02	4.70E+01
Mercury	1.90	0.13	0.13	0	1.62E-03	4.45E-03	0.00E+00	6.06E-03
Molybdenum	7.40	0	0	0	6.29E-03	0.00E+00	0.00E+00	6.29E-03
Nickel	63.70	2.42	2.79	2.19E-03	5.41E-02	9.58E-02	1.60E-04	1.50E-01
Selenium	3.20	1.14	0.78	4.38E-03	2.72E-03	3.02E-02	3.19E-04	3.32E-02
Silver	5.95	0.13	0.39	2.19E-03	5.06E-03	1.20E-02	1.60E-04	1.72E-02
Thallium	0.61	1.01	0.78	6.08E-03	5.19E-04	2.93E-02	4.43E-04	3.02E-02
Zinc	3770.00	584.60	605.40	4.68E-01	3.20E+00	2.12E+01	3.42E-02	2.45E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(High-level DRC_{herb} * 20%) + (High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-112 EU-14 Estimated Daily Doses (EDDs) for American Beaver Foraging in Animas River Below West Fork Animas River. Plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	10.85	0.18	0.24	1.65E-03	9.22E-03	7.96E-03	1.20E-04	1.73E-02
Arsenic	57.03	0.31	0.18	2.53E-03	4.85E-02	7.13E-03	1.85E-04	5.58E-02
Cadmium	6.66	2.86	6.37	4.16E-03	5.66E-03	2.00E-01	3.04E-04	2.06E-01
Chromium	5.60	2.51	2.58	3.14E-03	4.76E-03	9.05E-02	2.29E-04	9.55E-02
Copper	222.70	11.34	8.98	5.40E-02	1.89E-01	3.34E-01	3.94E-03	5.27E-01
Lead	2768.00	20.15	3.39	1.21E-02	2.35E+00	2.38E-01	8.83E-04	2.59E+00
Manganese	3977.00	403.70	493.80	3.74E+00	3.38E+00	1.68E+01	2.73E-01	2.04E+01
Mercury	0.20	0.13	0.13	0	1.66E-04	4.41E-03	0.00E+00	4.58E-03
Molybdenum	5.86	0	0	0	4.98E-03	0.00E+00	0.00E+00	4.98E-03
Nickel	5.09	1.36	1.18	3.06E-03	4.32E-03	4.28E-02	2.23E-04	4.74E-02
Selenium	1.72	0.48	0.34	3.38E-03	1.46E-03	1.29E-02	2.47E-04	1.46E-02
Silver	5.93	0.17	0.18	1.55E-03	5.04E-03	6.14E-03	1.13E-04	1.13E-02
Thallium	0.53	0.47	0.34	3.23E-03	4.52E-04	1.28E-02	2.36E-04	1.35E-02
Zinc	1866.00	422.90	494.30	1.25E+00	1.59E+00	1.69E+01	9.09E-02	1.86E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	42.50	0.42	0.73	2.05E-03	3.61E-02	2.35E-02	1.50E-04	5.97E-02
Arsenic	83.05	0.88	0.39	4.58E-03	7.06E-02	1.73E-02	3.34E-04	8.82E-02
Cadmium	9.95	4.14	10.65	4.90E-03	8.46E-03	3.30E-01	3.58E-04	3.39E-01
Chromium	6.94	2.98	3.24	4.72E-03	5.90E-03	1.13E-01	3.45E-04	1.19E-01
Copper	346.60	18.42	13.89	8.00E-02	2.95E-01	5.22E-01	5.84E-03	8.23E-01
Lead	10677.00	57.52	9.12	2.49E-02	9.08E+00	6.63E-01	1.82E-03	9.74E+00
Manganese	10200.00	1690.00	905.80	6.25E+00	8.67E+00	3.75E+01	4.56E-01	4.66E+01
Mercury	0.36	0.13	0.13	0	3.08E-04	4.45E-03	0.00E+00	4.75E-03
Molybdenum	7.40	0	0	0	6.29E-03	0.00E+00	0.00E+00	6.29E-03
Nickel	6.41	2.42	2.79	4.01E-03	5.45E-03	9.58E-02	2.92E-04	1.02E-01
Selenium	2.38	1.14	0.78	4.15E-03	2.02E-03	3.02E-02	3.03E-04	3.25E-02
Silver	26.70	0.13	0.39	2.28E-03	2.27E-02	1.20E-02	1.66E-04	3.49E-02
Thallium	0.59	1.01	0.78	4.92E-03	5.00E-04	2.93E-02	3.59E-04	3.01E-02
Zinc	3371.00	584.60	605.40	1.50E+00	2.87E+00	2.12E+01	1.10E-01	2.42E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(High-level DRC_{herb} * 20%) + (High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-113 EU-15 Estimated Daily Doses (EDDs) for American Beaver Foraging in Lower West Fork Animas River. Plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	3.99	0.18	0.24	1.71E-03	3.39E-03	7.96E-03	1.25E-04	1.15E-02
Arsenic	59.47	0.31	0.18	2.70E-03	5.05E-02	7.13E-03	1.97E-04	5.79E-02
Cadmium	35.99	2.86	6.37	8.11E-03	3.06E-02	2.00E-01	5.92E-04	2.31E-01
Chromium	5.22	2.51	2.58	3.28E-03	4.44E-03	9.05E-02	2.39E-04	9.52E-02
Copper	586.50	11.34	8.98	3.30E-02	4.99E-01	3.34E-01	2.41E-03	8.35E-01
Lead	1667.00	20.15	3.39	2.35E-02	1.42E+00	2.38E-01	1.71E-03	1.66E+00
Manganese	13550.00	403.70	493.80	1.36E+01	1.15E+01	1.68E+01	9.90E-01	2.93E+01
Mercury	0.70	0.13	0.13	0	5.92E-04	4.41E-03	0.00E+00	5.00E-03
Molybdenum	29.94	0	0	0	2.54E-02	0.00E+00	0.00E+00	2.54E-02
Nickel	11.76	1.36	1.18	8.28E-03	1.00E-02	4.28E-02	6.05E-04	5.34E-02
Selenium	2.25	0.48	0.34	3.69E-03	1.91E-03	1.29E-02	2.69E-04	1.51E-02
Silver	3.32	0.17	0.18	1.64E-03	2.82E-03	6.14E-03	1.20E-04	9.08E-03
Thallium	0.74	0.47	0.34	3.35E-03	6.29E-04	1.28E-02	2.44E-04	1.37E-02
Zinc	5086.00	422.90	494.30	2.76E+00	4.32E+00	1.69E+01	2.02E-01	2.15E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	7.05	0.42	0.73	2.11E-03	5.99E-03	2.35E-02	1.54E-04	2.96E-02
Arsenic	142.90	0.88	0.39	5.00E-03	1.21E-01	1.73E-02	3.65E-04	1.39E-01
Cadmium	216.00	4.14	10.65	9.96E-03	1.84E-01	3.30E-01	7.27E-04	5.14E-01
Chromium	6.02	2.98	3.24	4.76E-03	5.12E-03	1.13E-01	3.47E-04	1.18E-01
Copper	2795.00	18.42	13.89	4.22E-02	2.38E+00	5.22E-01	3.08E-03	2.90E+00
Lead	6000.00	57.52	9.12	4.00E-02	5.10E+00	6.63E-01	2.92E-03	5.77E+00
Manganese	49821.00	1690.00	905.80	1.58E+01	4.23E+01	3.75E+01	1.15E+00	8.10E+01
Mercury	1.39	0.13	0.13	0	1.18E-03	4.45E-03	0.00E+00	5.62E-03
Molybdenum	59.06	0	0	0	5.02E-02	0.00E+00	0.00E+00	5.02E-02
Nickel	41.84	2.42	2.79	1.07E-02	3.56E-02	9.58E-02	7.83E-04	1.32E-01
Selenium	3.72	1.14	0.78	4.45E-03	3.16E-03	3.02E-02	3.25E-04	3.37E-02
Silver	8.82	0.13	0.39	2.38E-03	7.50E-03	1.20E-02	1.74E-04	1.97E-02
Thallium	1.02	1.01	0.78	5.05E-03	8.69E-04	2.93E-02	3.69E-04	3.05E-02
Zinc	30200.00	584.60	605.40	3.38E+00	2.57E+01	2.12E+01	2.47E-01	4.71E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(High-level DRC_{herb} * 20%) + (High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-114 EU-16 Estimated Daily Doses (EDDs) for American Beaver Foraging in Placer Gulch. Plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	2.88	0.18	0.24	1.86E-03	2.45E-03	7.96E-03	1.36E-04	1.05E-02
Arsenic	33.11	0.31	0.18	3.06E-03	2.81E-02	7.13E-03	2.23E-04	3.55E-02
Cadmium	6.06	2.86	6.37	3.19E-03	5.15E-03	2.00E-01	2.33E-04	2.05E-01
Chromium	5.62	2.51	2.58	3.66E-03	4.78E-03	9.05E-02	2.67E-04	9.56E-02
Copper	288.50	11.34	8.98	2.65E-02	2.45E-01	3.34E-01	1.93E-03	5.81E-01
Lead	1738.00	20.15	3.39	2.58E-02	1.48E+00	2.38E-01	1.88E-03	1.72E+00
Manganese	10923.00	403.70	493.80	1.82E+00	9.28E+00	1.68E+01	1.33E-01	2.62E+01
Mercury	0.36	0.13	0.13	0	3.08E-04	4.41E-03	0.00E+00	4.72E-03
Molybdenum	5.23	0	0	0	4.45E-03	0.00E+00	0.00E+00	4.45E-03
Nickel	5.62	1.36	1.18	3.55E-03	4.78E-03	4.28E-02	2.59E-04	4.79E-02
Selenium	2.24	0.48	0.34	3.75E-03	1.91E-03	1.29E-02	2.74E-04	1.51E-02
Silver	3.91	0.17	0.18	1.83E-03	3.32E-03	6.14E-03	1.33E-04	9.60E-03
Thallium	0.99	0.47	0.34	3.91E-03	8.45E-04	1.28E-02	2.86E-04	1.39E-02
Zinc	1129.00	422.90	494.30	1.29E+00	9.60E-01	1.69E+01	9.42E-02	1.80E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	5.38	0.42	0.73	2.11E-03	4.58E-03	2.35E-02	1.54E-04	2.82E-02
Arsenic	51.90	0.88	0.39	4.06E-03	4.41E-02	1.73E-02	2.97E-04	6.17E-02
Cadmium	9.53	4.14	10.65	3.65E-03	8.10E-03	3.30E-01	2.67E-04	3.38E-01
Chromium	6.88	2.98	3.24	4.38E-03	5.85E-03	1.13E-01	3.19E-04	1.19E-01
Copper	497.30	18.42	13.89	3.34E-02	4.23E-01	5.22E-01	2.44E-03	9.47E-01
Lead	3158.00	57.52	9.12	4.69E-02	2.68E+00	6.63E-01	3.42E-03	3.35E+00
Manganese	19600.00	1690.00	905.80	2.27E+00	1.67E+01	3.75E+01	1.66E-01	5.43E+01
Mercury	0.77	0.13	0.13	0	6.55E-04	4.45E-03	0.00E+00	5.10E-03
Molybdenum	7.80	0	0	0	6.63E-03	0.00E+00	0.00E+00	6.63E-03
Nickel	6.50	2.42	2.79	4.06E-03	5.53E-03	9.58E-02	2.97E-04	1.02E-01
Selenium	3.40	1.14	0.78	4.23E-03	2.89E-03	3.02E-02	3.09E-04	3.34E-02
Silver	5.20	0.13	0.39	2.19E-03	4.42E-03	1.20E-02	1.60E-04	1.66E-02
Thallium	1.34	1.01	0.78	4.70E-03	1.13E-03	2.93E-02	3.43E-04	3.07E-02
Zinc	1600.00	584.60	605.40	1.51E+00	1.36E+00	2.12E+01	1.10E-01	2.27E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(High-level DRC_{herb} * 20%) + (High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-115 EU-17 Estimated Daily Doses (EDDs) for American Beaver Foraging in Mainstem West Fork Animas River/Cailfornia Gulch. Plant tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.17	0.18	0.19	1.82E-03	9.90E-04	6.61E-03	1.33E-04	7.73E-03
Arsenic	28.83	0.31	0.18	2.87E-03	2.45E-02	7.13E-03	2.09E-04	3.18E-02
Cadmium	1.27	0.66	1.35	8.73E-03	1.08E-03	4.27E-02	6.37E-04	4.44E-02
Chromium	6.16	2.47	2.34	3.68E-03	5.24E-03	8.33E-02	2.68E-04	8.88E-02
Copper	79.47	7.78	5.23	3.15E-02	6.75E-02	2.02E-01	2.30E-03	2.72E-01
Lead	136.20	2.39	1.47	5.76E-03	1.16E-01	5.84E-02	4.21E-04	1.75E-01
Manganese	4137.00	180.20	314.20	1.99E+01	3.52E+00	1.01E+01	1.45E+00	1.51E+01
Mercury	0.05	0.13	0.13	0	3.83E-05	4.41E-03	0.00E+00	4.45E-03
Molybdenum	4.55	0	0	0	3.87E-03	0.00E+00	0.00E+00	3.87E-03
Nickel	5.84	0.80	0.97	9.96E-03	4.96E-03	3.30E-02	7.27E-04	3.87E-02
Selenium	1.38	0.26	0.34	3.60E-03	1.17E-03	1.14E-02	2.63E-04	1.28E-02
Silver	0.67	0.13	0.18	1.80E-03	5.70E-04	5.87E-03	1.32E-04	6.57E-03
Thallium	0.82	0.28	0.26	3.98E-03	7.00E-04	9.36E-03	2.91E-04	1.03E-02
Zinc	276.80	65.19	105.50	2.60E+00	2.35E-01	3.44E+00	1.90E-01	3.86E+00
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	1.60	0.42	0.47	2.00E-03	1.36E-03	1.61E-02	1.46E-04	1.76E-02
Arsenic	31.40	0.88	0.39	4.06E-03	2.67E-02	1.73E-02	2.97E-04	4.43E-02
Cadmium	1.60	1.04	2.14	1.09E-02	1.36E-03	6.78E-02	7.99E-04	7.00E-02
Chromium	6.78	2.74	2.70	4.20E-03	5.76E-03	9.56E-02	3.06E-04	1.02E-01
Copper	156.00	9.52	6.19	3.64E-02	1.33E-01	2.42E-01	2.66E-03	3.77E-01
Lead	162.00	8.38	4.14	1.71E-02	1.38E-01	1.76E-01	1.25E-03	3.15E-01
Manganese	7020.00	304.90	905.80	2.51E+01	5.97E+00	2.77E+01	1.83E+00	3.55E+01
Mercury	0.06	0.13	0.13	0	5.36E-05	4.45E-03	0.00E+00	4.50E-03
Molybdenum	4.70	0	0	0	4.00E-03	0.00E+00	0.00E+00	4.00E-03
Nickel	7.40	1.36	1.50	1.25E-02	6.29E-03	5.20E-02	9.16E-04	5.92E-02
Selenium	1.90	0.29	0.78	3.99E-03	1.62E-03	2.41E-02	2.92E-04	2.60E-02
Silver	1.24	0.14	0.39	2.00E-03	1.05E-03	1.21E-02	1.46E-04	1.33E-02
Thallium	0.99	0.33	0.29	6.41E-03	8.42E-04	1.04E-02	4.68E-04	1.17E-02
Zinc	406.50	85.50	137.80	3.30E+00	3.46E-01	4.49E+00	2.41E-01	5.08E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(Low-level DRC_{herb} * 20%) + (Low-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-116 EU-18 Estimated Daily Doses (EDDs) for American Beaver Foraging in North Fork Animas River Below Burrows Creek. Plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.09	0.18	0.19	1.73E-03	9.27E-04	6.61E-03	1.26E-04	7.66E-03
Arsenic	31.80	0.31	0.18	2.66E-03	2.70E-02	7.13E-03	1.94E-04	3.44E-02
Cadmium	1.53	0.98	6.37	5.27E-03	1.30E-03	1.87E-01	3.85E-04	1.88E-01
Chromium	7.10	2.51	2.58	3.30E-03	6.04E-03	9.05E-02	2.41E-04	9.68E-02
Copper	22.87	11.34	6.85	3.19E-02	1.94E-02	2.74E-01	2.33E-03	2.95E-01
Lead	193.70	6.80	2.39	1.05E-02	1.65E-01	1.15E-01	7.63E-04	2.81E-01
Manganese	2006.00	403.70	314.20	1.12E+00	1.71E+00	1.17E+01	8.18E-02	1.35E+01
Mercury	0.04	0.13	0.13	0	3.00E-05	4.41E-03	0.00E+00	4.44E-03
Molybdenum	4.53	0	0	0	3.85E-03	0.00E+00	0.00E+00	3.85E-03
Nickel	4.10	1.36	1.16	3.00E-03	3.49E-03	4.22E-02	2.19E-04	4.59E-02
Selenium	1.20	0.28	0.34	3.53E-03	1.02E-03	1.15E-02	2.57E-04	1.28E-02
Silver	0.55	0.14	0.18	1.65E-03	4.68E-04	5.94E-03	1.21E-04	6.53E-03
Thallium	0.65	0.28	0.34	3.81E-03	5.53E-04	1.15E-02	2.78E-04	1.23E-02
Zinc	210.50	99.42	413.60	9.52E-01	1.79E-01	1.24E+01	6.95E-02	1.26E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	1.50	0.42	0.47	2.12E-03	1.28E-03	1.61E-02	1.55E-04	1.76E-02
Arsenic	34.90	0.88	0.39	4.78E-03	2.97E-02	1.73E-02	3.49E-04	4.73E-02
Cadmium	2.00	1.87	10.65	6.67E-03	1.70E-03	3.14E-01	4.87E-04	3.16E-01
Chromium	12.00	2.98	3.24	4.64E-03	1.02E-02	1.13E-01	3.39E-04	1.23E-01
Copper	28.60	18.42	8.86	7.67E-02	2.43E-02	3.80E-01	5.60E-03	4.10E-01
Lead	276.00	27.70	4.50	1.54E-02	2.35E-01	3.23E-01	1.12E-03	5.58E-01
Manganese	2660.00	1690.00	905.80	1.42E+00	2.26E+00	3.75E+01	1.04E-01	3.99E+01
Mercury	0.05	0.13	0.13	0	3.91E-05	4.50E-03	0.00E+00	4.54E-03
Molybdenum	4.70	0	0	0	4.00E-03	0.00E+00	0.00E+00	4.00E-03
Nickel	5.50	2.42	2.79	3.52E-03	4.68E-03	9.58E-02	2.57E-04	1.01E-01
Selenium	1.60	0.33	0.78	4.27E-03	1.36E-03	2.44E-02	3.12E-04	2.61E-02
Silver	0.65	0.17	0.39	2.32E-03	5.53E-04	1.23E-02	1.69E-04	1.30E-02
Thallium	0.77	0.33	0.78	6.43E-03	6.55E-04	2.44E-02	4.69E-04	2.56E-02
Zinc	270.00	168.30	584.00	1.13E+00	2.30E-01	1.77E+01	8.26E-02	1.80E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(Mid-level DRC_{herb} * 20%) + (Mid-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-117 EU-19 Estimated Daily Doses (EDDs) for American Beaver Foraging in Burrows Creek. Plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	2.87	0.18	0.24	2.00E-03	2.44E-03	7.96E-03	1.46E-04	1.05E-02
Arsenic	59.90	0.31	0.18	3.51E-03	5.09E-02	7.13E-03	2.57E-04	5.83E-02
Cadmium	3.80	2.86	6.37	1.38E-02	3.23E-03	2.00E-01	1.00E-03	2.04E-01
Chromium	4.01	2.51	2.58	3.99E-03	3.41E-03	9.05E-02	2.92E-04	9.42E-02
Copper	83.25	11.34	8.98	7.28E-02	7.08E-02	3.34E-01	5.31E-03	4.10E-01
Lead	520.50	20.15	3.39	1.16E-02	4.42E-01	2.38E-01	8.44E-04	6.81E-01
Manganese	3305.00	403.70	493.80	4.08E+00	2.81E+00	1.68E+01	2.98E-01	1.99E+01
Mercury	0.06	0.13	0.13	0	4.80E-05	4.41E-03	0.00E+00	4.46E-03
Molybdenum	13.12	0	0	0	1.12E-02	0.00E+00	0.00E+00	1.12E-02
Nickel	4.05	1.36	1.18	9.33E-03	3.44E-03	4.28E-02	6.81E-04	4.69E-02
Selenium	1.43	0.48	0.34	4.01E-03	1.21E-03	1.29E-02	2.93E-04	1.44E-02
Silver	1.46	0.17	0.18	2.00E-03	1.24E-03	6.14E-03	1.46E-04	7.53E-03
Thallium	1.04	0.47	0.34	4.82E-03	8.87E-04	1.28E-02	3.52E-04	1.41E-02
Zinc	279.70	422.90	494.30	2.02E+00	2.38E-01	1.69E+01	1.48E-01	1.73E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	4.49	0.42	0.73	2.08E-03	3.81E-03	2.35E-02	1.52E-04	2.74E-02
Arsenic	79.38	0.88	0.39	4.06E-03	6.75E-02	1.73E-02	2.97E-04	8.51E-02
Cadmium	10.03	4.14	10.65	1.74E-02	8.53E-03	3.30E-01	1.27E-03	3.40E-01
Chromium	4.73	2.98	3.24	4.16E-03	4.02E-03	1.13E-01	3.04E-04	1.17E-01
Copper	198.30	18.42	13.89	8.16E-02	1.69E-01	5.22E-01	5.96E-03	6.97E-01
Lead	880.10	57.52	9.12	1.40E-02	7.48E-01	6.63E-01	1.02E-03	1.41E+00
Manganese	7521.00	1690.00	905.80	4.66E+00	6.39E+00	3.75E+01	3.40E-01	4.42E+01
Mercury	0.08	0.13	0.13	0	6.44E-05	4.45E-03	0.00E+00	4.51E-03
Molybdenum	20.15	0	0	0	1.71E-02	0.00E+00	0.00E+00	1.71E-02
Nickel	5.12	2.42	2.79	1.06E-02	4.35E-03	9.58E-02	7.71E-04	1.01E-01
Selenium	1.91	1.14	0.78	4.17E-03	1.63E-03	3.02E-02	3.04E-04	3.21E-02
Silver	2.25	0.13	0.39	2.08E-03	1.91E-03	1.20E-02	1.52E-04	1.41E-02
Thallium	1.71	1.01	0.78	6.50E-03	1.45E-03	2.93E-02	4.75E-04	3.12E-02
Zinc	441.30	584.60	605.40	2.61E+00	3.75E-01	2.12E+01	1.91E-01	2.18E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(High-level DRC_{herb} * 20%) + (High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-118 EU-R2 Estimated Daily Doses (EDDs) for American Beaver Foraging in Maggie Gulch Reference Area. Plant tissue values represent the upland/reference floodplain dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	0.78	0.18	0.19	1.25E-03	6.60E-04	6.61E-03	9.13E-05	7.36E-03
Arsenic	10.34	0.13	0.13	1.25E-03	8.79E-03	4.41E-03	9.13E-05	1.33E-02
Cadmium	0.84	0.34	1.35	2.50E-04	7.16E-04	4.05E-02	1.83E-05	4.12E-02
Chromium	3.74	2.47	2.34	2.50E-03	3.18E-03	8.33E-02	1.83E-04	8.67E-02
Copper	27.47	7.26	5.23	1.25E-03	2.33E-02	1.99E-01	9.13E-05	2.22E-01
Lead	66.68	0.67	1.47	3.16E-04	5.67E-02	4.62E-02	2.30E-05	1.03E-01
Manganese	1400.00	117.40	271.80	1.30E-02	1.19E+00	8.50E+00	9.45E-04	9.69E+00
Mercury	0.08	0.13	0.13	0	6.52E-05	4.41E-03	0.00E+00	4.48E-03
Molybdenum	1.85	0	0	0	1.57E-03	0.00E+00	0.00E+00	1.57E-03
Nickel	5.16	0.72	0.53	1.25E-03	4.39E-03	2.01E-02	9.13E-05	2.45E-02
Selenium	0.73	0.25	0.25	2.50E-03	6.23E-04	8.82E-03	1.83E-04	9.63E-03
Silver	0.50	0.13	0.13	1.25E-03	4.22E-04	4.41E-03	9.13E-05	4.92E-03
Thallium	0.42	0.25	0.25	2.50E-03	3.56E-04	8.82E-03	1.83E-04	9.36E-03
Zinc	151.80	51.94	105.50	5.00E-03	1.29E-01	3.35E+00	3.65E-04	3.47E+00
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	2.50	0.42	0.47	1.25E-03	2.13E-03	1.61E-02	9.13E-05	1.83E-02
Arsenic	11.94	0.13	0.13	1.25E-03	1.01E-02	4.45E-03	9.13E-05	1.47E-02
Cadmium	1.18	0.67	2.14	2.50E-04	9.99E-04	6.52E-02	1.83E-05	6.62E-02
Chromium	5.31	2.74	2.70	2.50E-03	4.51E-03	9.56E-02	1.83E-04	1.00E-01
Copper	37.11	8.36	6.19	1.25E-03	3.15E-02	2.34E-01	9.13E-05	2.65E-01
Lead	124.90	0.94	4.14	3.16E-04	1.06E-01	1.23E-01	2.30E-05	2.30E-01
Manganese	1596.00	156.60	905.80	1.30E-02	1.36E+00	2.67E+01	9.45E-04	2.80E+01
Mercury	0.19	0.13	0.13	0	1.65E-04	4.45E-03	0.00E+00	4.61E-03
Molybdenum	2.00	0	0	0	1.70E-03	0.00E+00	0.00E+00	1.70E-03
Nickel	5.61	1.25	0.97	1.25E-03	4.77E-03	3.63E-02	9.13E-05	4.11E-02
Selenium	1.11	0.25	0.25	2.50E-03	9.43E-04	8.86E-03	1.83E-04	9.98E-03
Silver	0.68	0.13	0.13	1.25E-03	5.76E-04	4.45E-03	9.13E-05	5.11E-03
Thallium	0.69	0.25	0.25	2.50E-03	5.84E-04	8.86E-03	1.83E-04	9.62E-03
Zinc	203.00	78.85	137.80	5.00E-03	1.73E-01	4.45E+00	3.65E-04	4.62E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant} = [(Ref.\ DRC_{herb} * 20\%) + (Ref.\ DRC_{shrub} * 80\%)] * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $Total\ EDD = Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-119 EU-R3 Estimated Daily Doses (EDDs) for American Beaver Foraging in Picayune Gulch Reference Area. Plant tissue values represent the upland/reference floodplain dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	0.92	0.18	0.19	1.25E-03	7.79E-04	6.61E-03	9.13E-05	7.48E-03
Arsenic	44.45	0.13	0.13	1.25E-03	3.78E-02	4.41E-03	9.13E-05	4.23E-02
Cadmium	1.44	0.34	1.35	2.50E-04	1.22E-03	4.05E-02	1.83E-05	4.17E-02
Chromium	4.81	2.47	2.34	2.50E-03	4.09E-03	8.33E-02	1.83E-04	8.76E-02
Copper	35.28	7.26	5.23	1.25E-03	3.00E-02	1.99E-01	9.13E-05	2.29E-01
Lead	140.00	0.67	1.47	2.50E-04	1.19E-01	4.62E-02	1.83E-05	1.65E-01
Manganese	3108.00	117.40	271.80	1.51E-01	2.64E+00	8.50E+00	1.10E-02	1.12E+01
Mercury	0.04	0.13	0.13	0	3.49E-05	4.41E-03	0.00E+00	4.45E-03
Molybdenum	2.60	0	0	0	2.21E-03	0.00E+00	0.00E+00	2.21E-03
Nickel	5.62	0.72	0.53	1.25E-03	4.78E-03	2.01E-02	9.13E-05	2.49E-02
Selenium	0.60	0.25	0.25	2.50E-03	5.10E-04	8.82E-03	1.83E-04	9.51E-03
Silver	1.24	0.13	0.13	1.25E-03	1.05E-03	4.41E-03	9.13E-05	5.56E-03
Thallium	0.33	0.25	0.25	2.50E-03	2.82E-04	8.82E-03	1.83E-04	9.29E-03
Zinc	243.50	51.94	105.50	1.23E-02	2.07E-01	3.35E+00	8.98E-04	3.55E+00
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	2.01	0.42	0.47	1.25E-03	1.71E-03	1.61E-02	9.13E-05	1.79E-02
Arsenic	55.80	0.13	0.13	1.25E-03	4.74E-02	4.45E-03	9.13E-05	5.20E-02
Cadmium	1.52	0.67	2.14	2.50E-04	1.29E-03	6.52E-02	1.83E-05	6.65E-02
Chromium	5.37	2.74	2.70	2.50E-03	4.56E-03	9.56E-02	1.83E-04	1.00E-01
Copper	45.27	8.36	6.19	1.25E-03	3.85E-02	2.34E-01	9.13E-05	2.72E-01
Lead	171.70	0.94	4.14	2.50E-04	1.46E-01	1.23E-01	1.83E-05	2.69E-01
Manganese	5410.00	156.60	905.80	1.51E-01	4.60E+00	2.67E+01	1.10E-02	3.13E+01
Mercury	0.06	0.13	0.13	0	4.76E-05	4.45E-03	0.00E+00	4.49E-03
Molybdenum	2.60	0	0	0	2.21E-03	0.00E+00	0.00E+00	2.21E-03
Nickel	5.87	1.25	0.97	1.25E-03	4.99E-03	3.63E-02	9.13E-05	4.13E-02
Selenium	1.24	0.25	0.25	2.50E-03	1.06E-03	8.86E-03	1.83E-04	1.01E-02
Silver	2.04	0.13	0.13	1.25E-03	1.74E-03	4.45E-03	9.13E-05	6.28E-03
Thallium	0.53	0.25	0.25	2.50E-03	4.48E-04	8.86E-03	1.83E-04	9.49E-03
Zinc	263.00	78.85	137.80	1.23E-02	2.24E-01	4.45E+00	8.98E-04	4.67E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant} = [(Ref.\ DRC_{herb} * 20\%) + (Ref.\ DRC_{shrub} * 80\%)] * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 $Total\ EDD = Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-120 EU-R4 Estimated Daily Doses (EDDs) for American Beaver Foraging in North Fork Animas River Reference Area. Plant tissue values represent the upland/reference floodplain dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.90	0.18	0.19	1.78E-03	1.62E-03	6.61E-03	1.30E-04	8.35E-03
Arsenic	105.00	0.13	0.13	2.80E-03	8.93E-02	4.41E-03	2.04E-04	9.39E-02
Cadmium	1.70	0.34	1.35	8.32E-04	1.45E-03	4.05E-02	6.07E-05	4.20E-02
Chromium	2.90	2.47	2.34	3.36E-03	2.47E-03	8.33E-02	2.46E-04	8.60E-02
Copper	81.50	7.26	5.23	2.02E-03	6.93E-02	1.99E-01	1.47E-04	2.68E-01
Lead	334.00	0.67	1.47	1.08E-03	2.84E-01	4.62E-02	7.90E-05	3.30E-01
Manganese	628.00	117.40	271.80	2.06E-02	5.34E-01	8.50E+00	1.51E-03	9.04E+00
Mercury	0.07	0.13	0.13	0	6.12E-05	4.41E-03	0.00E+00	4.47E-03
Molybdenum	10.20	0	0	0	8.67E-03	0.00E+00	0.00E+00	8.67E-03
Nickel	2.40	0.72	0.53	1.63E-03	2.04E-03	2.01E-02	1.19E-04	2.22E-02
Selenium	1.50	0.25	0.25	3.65E-03	1.28E-03	8.82E-03	2.66E-04	1.04E-02
Silver	2.40	0.13	0.13	1.68E-03	2.04E-03	4.41E-03	1.23E-04	6.57E-03
Thallium	0.76	0.25	0.25	3.27E-03	6.46E-04	8.82E-03	2.39E-04	9.71E-03
Zinc	480.00	51.94	105.50	1.30E-01	4.08E-01	3.35E+00	9.49E-03	3.76E+00
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	1.90	0.42	0.47	2.50E-03	1.62E-03	1.61E-02	1.83E-04	1.79E-02
Arsenic	105.00	0.13	0.13	5.00E-03	8.93E-02	4.45E-03	3.65E-04	9.41E-02
Cadmium	1.70	0.67	2.14	1.11E-03	1.45E-03	6.52E-02	8.10E-05	6.67E-02
Chromium	2.90	2.74	2.70	5.00E-03	2.47E-03	9.56E-02	3.65E-04	9.85E-02
Copper	81.50	8.36	6.19	2.58E-03	6.93E-02	2.34E-01	1.88E-04	3.03E-01
Lead	334.00	0.94	4.14	1.51E-03	2.84E-01	1.23E-01	1.11E-04	4.08E-01
Manganese	628.00	156.60	905.80	3.04E-02	5.34E-01	2.67E+01	2.22E-03	2.72E+01
Mercury	0.07	0.13	0.13	0	6.12E-05	4.45E-03	0.00E+00	4.51E-03
Molybdenum	10.20	0	0	0	8.67E-03	0.00E+00	0.00E+00	8.67E-03
Nickel	2.40	1.25	0.97	2.50E-03	2.04E-03	3.63E-02	1.83E-04	3.85E-02
Selenium	1.50	0.25	0.25	5.00E-03	1.28E-03	8.86E-03	3.65E-04	1.05E-02
Silver	2.40	0.13	0.13	2.50E-03	2.04E-03	4.45E-03	1.83E-04	6.67E-03
Thallium	0.76	0.25	0.25	5.00E-03	6.46E-04	8.86E-03	3.65E-04	9.87E-03
Zinc	480.00	78.85	137.80	1.63E-01	4.08E-01	4.45E+00	1.19E-02	4.87E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant} = [(Ref.\ DRC_{herb} * 20\%) + (Ref.\ DRC_{shrub} * 80\%)] * FIR$

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-121 EU-20 Estimated Daily Doses (EDDs) for American Beaver Foraging in Lower Mainstem Cement Creek. Plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	2.96	0.18	0.19	1.73E-03	2.52E-03	6.61E-03	1.27E-04	9.25E-03
Arsenic	42.82	0.31	0.18	5.11E-03	3.64E-02	7.13E-03	3.73E-04	4.39E-02
Cadmium	1.42	0.98	6.37	3.40E-03	1.20E-03	1.87E-01	2.48E-04	1.88E-01
Chromium	4.69	2.51	2.58	3.73E-03	3.99E-03	9.05E-02	2.72E-04	9.48E-02
Copper	81.13	11.34	6.85	5.92E-02	6.90E-02	2.74E-01	4.32E-03	3.47E-01
Lead	587.20	6.80	2.39	2.07E-02	4.99E-01	1.15E-01	1.51E-03	6.16E-01
Manganese	650.70	403.70	314.20	3.51E+00	5.53E-01	1.17E+01	2.56E-01	1.25E+01
Mercury	0.08	0.13	0.13	0	6.44E-05	4.41E-03	0.00E+00	4.48E-03
Molybdenum	3.86	0	0	0	3.28E-03	0.00E+00	0.00E+00	3.28E-03
Nickel	2.87	1.36	1.16	7.11E-03	2.44E-03	4.22E-02	5.19E-04	4.52E-02
Selenium	2.24	0.28	0.34	3.93E-03	1.90E-03	1.15E-02	2.87E-04	1.37E-02
Silver	1.45	0.14	0.18	1.87E-03	1.23E-03	5.94E-03	1.36E-04	7.31E-03
Thallium	0.56	0.28	0.34	4.22E-03	4.75E-04	1.15E-02	3.08E-04	1.23E-02
Zinc	478.30	99.42	413.60	1.55E+00	4.07E-01	1.24E+01	1.13E-01	1.29E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	4.04	0.42	0.47	1.98E-03	3.44E-03	1.61E-02	1.45E-04	1.97E-02
Arsenic	50.49	0.88	0.39	5.73E-03	4.29E-02	1.73E-02	4.18E-04	6.06E-02
Cadmium	1.86	1.87	10.65	3.84E-03	1.58E-03	3.14E-01	2.80E-04	3.16E-01
Chromium	5.76	2.98	3.24	4.79E-03	4.90E-03	1.13E-01	3.50E-04	1.18E-01
Copper	96.48	18.42	8.86	8.65E-02	8.20E-02	3.80E-01	6.32E-03	4.68E-01
Lead	765.70	27.70	4.50	2.83E-02	6.51E-01	3.23E-01	2.07E-03	9.75E-01
Manganese	761.90	1690.00	905.80	4.48E+00	6.48E-01	3.75E+01	3.27E-01	3.85E+01
Mercury	0.14	0.13	0.13	0	1.22E-04	4.50E-03	0.00E+00	4.62E-03
Molybdenum	5.38	0	0	0	4.57E-03	0.00E+00	0.00E+00	4.57E-03
Nickel	3.44	2.42	2.79	8.86E-03	2.92E-03	9.58E-02	6.47E-04	9.94E-02
Selenium	2.61	0.33	0.78	4.28E-03	2.22E-03	2.44E-02	3.12E-04	2.70E-02
Silver	2.61	0.17	0.39	2.31E-03	2.22E-03	1.23E-02	1.69E-04	1.47E-02
Thallium	0.65	0.33	0.78	5.88E-03	5.53E-04	2.44E-02	4.29E-04	2.54E-02
Zinc	598.60	168.30	584.00	1.89E+00	5.09E-01	1.77E+01	1.38E-01	1.83E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(Mid-level DRC_{herb} * 20%) + (Mid-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-122 EU-21 Estimated Daily Doses (EDDs) for American Beaver Foraging in Prospect Gulch. Plant tissue values represent the mid-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	3.69	0.18	0.19	1.30E-03	3.13E-03	6.61E-03	9.52E-05	9.84E-03
Arsenic	35.66	0.31	0.18	5.71E-03	3.03E-02	7.13E-03	4.16E-04	3.79E-02
Cadmium	0.61	0.98	6.37	2.42E-03	5.14E-04	1.87E-01	1.77E-04	1.87E-01
Chromium	3.04	2.51	2.58	2.57E-03	2.58E-03	9.05E-02	1.88E-04	9.33E-02
Copper	28.28	11.34	6.85	7.95E-02	2.40E-02	2.74E-01	5.80E-03	3.03E-01
Lead	337.50	6.80	2.39	5.06E-02	2.87E-01	1.15E-01	3.69E-03	4.06E-01
Manganese	223.30	403.70	314.20	5.16E-01	1.90E-01	1.17E+01	3.77E-02	1.19E+01
Mercury	0.07	0.13	0.13	0	5.92E-05	4.41E-03	0.00E+00	4.47E-03
Molybdenum	1.69	0	0	0	1.43E-03	0.00E+00	0.00E+00	1.43E-03
Nickel	1.56	1.36	1.16	7.21E-03	1.32E-03	4.22E-02	5.26E-04	4.41E-02
Selenium	2.00	0.28	0.34	2.63E-03	1.70E-03	1.15E-02	1.92E-04	1.34E-02
Silver	1.15	0.14	0.18	1.29E-03	9.79E-04	5.94E-03	9.39E-05	7.02E-03
Thallium	0.54	0.28	0.34	2.85E-03	4.59E-04	1.15E-02	2.08E-04	1.22E-02
Zinc	152.30	99.42	413.60	6.31E-01	1.29E-01	1.24E+01	4.61E-02	1.26E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	4.98	0.42	0.47	1.42E-03	4.23E-03	1.61E-02	1.04E-04	2.05E-02
Arsenic	42.80	0.88	0.39	1.66E-02	3.64E-02	1.73E-02	1.21E-03	5.49E-02
Cadmium	1.57	1.87	10.65	4.00E-03	1.33E-03	3.14E-01	2.92E-04	3.15E-01
Chromium	3.52	2.98	3.24	2.83E-03	2.99E-03	1.13E-01	2.06E-04	1.16E-01
Copper	36.77	18.42	8.86	1.43E-01	3.13E-02	3.80E-01	1.04E-02	4.22E-01
Lead	412.40	27.70	4.50	9.09E-02	3.51E-01	3.23E-01	6.63E-03	6.80E-01
Manganese	316.40	1690.00	905.80	6.63E-01	2.69E-01	3.75E+01	4.84E-02	3.78E+01
Mercury	0.09	0.13	0.13	0	7.84E-05	4.50E-03	0.00E+00	4.58E-03
Molybdenum	2.11	0	0	0	1.79E-03	0.00E+00	0.00E+00	1.79E-03
Nickel	2.02	2.42	2.79	1.13E-02	1.71E-03	9.58E-02	8.25E-04	9.83E-02
Selenium	2.38	0.33	0.78	2.85E-03	2.02E-03	2.44E-02	2.08E-04	2.67E-02
Silver	1.70	0.17	0.39	1.41E-03	1.44E-03	1.23E-02	1.03E-04	1.38E-02
Thallium	0.59	0.33	0.78	3.34E-03	5.02E-04	2.44E-02	2.44E-04	2.52E-02
Zinc	383.60	168.30	584.00	1.10E+00	3.26E-01	1.77E+01	8.06E-02	1.81E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(Mid-level DRC_{herb} * 20%) + (Mid-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-123 EU-22 Estimated Daily Doses (EDDs) for American Beaver Foraging in Mainstem Cement Creek. Plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	2.89	0.18	0.24	1.82E-03	2.46E-03	7.96E-03	1.33E-04	1.05E-02
Arsenic	24.73	0.31	0.18	3.14E-03	2.10E-02	7.13E-03	2.29E-04	2.84E-02
Cadmium	1.60	2.86	6.37	8.78E-03	1.36E-03	2.00E-01	6.41E-04	2.02E-01
Chromium	5.43	2.51	2.58	3.53E-03	4.62E-03	9.05E-02	2.58E-04	9.54E-02
Copper	97.42	11.34	8.98	1.09E-01	8.28E-02	3.34E-01	7.99E-03	4.24E-01
Lead	863.90	20.15	3.39	2.19E-02	7.34E-01	2.38E-01	1.60E-03	9.74E-01
Manganese	950.40	403.70	493.80	6.07E+00	8.08E-01	1.68E+01	4.43E-01	1.80E+01
Mercury	0.06	0.13	0.13	0	4.85E-05	4.41E-03	0.00E+00	4.46E-03
Molybdenum	4.77	0	0	0	4.05E-03	0.00E+00	0.00E+00	4.05E-03
Nickel	3.38	1.36	1.18	6.66E-03	2.87E-03	4.28E-02	4.86E-04	4.62E-02
Selenium	2.37	0.48	0.34	3.72E-03	2.01E-03	1.29E-02	2.71E-04	1.52E-02
Silver	1.09	0.17	0.18	1.80E-03	9.26E-04	6.14E-03	1.31E-04	7.20E-03
Thallium	0.59	0.47	0.34	4.78E-03	5.01E-04	1.28E-02	3.49E-04	1.37E-02
Zinc	985.50	422.90	494.30	3.61E+00	8.38E-01	1.69E+01	2.64E-01	1.80E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	4.06	0.42	0.73	2.06E-03	3.45E-03	2.35E-02	1.50E-04	2.71E-02
Arsenic	33.76	0.88	0.39	4.81E-03	2.87E-02	1.73E-02	3.51E-04	4.63E-02
Cadmium	2.53	4.14	10.65	1.07E-02	2.15E-03	3.30E-01	7.82E-04	3.33E-01
Chromium	6.35	2.98	3.24	4.74E-03	5.39E-03	1.13E-01	3.46E-04	1.18E-01
Copper	137.40	18.42	13.89	1.46E-01	1.17E-01	5.22E-01	1.06E-02	6.50E-01
Lead	1729.00	57.52	9.12	3.26E-02	1.47E+00	6.63E-01	2.38E-03	2.14E+00
Manganese	1393.00	1690.00	905.80	8.10E+00	1.18E+00	3.75E+01	5.91E-01	3.93E+01
Mercury	0.10	0.13	0.13	0	8.76E-05	4.45E-03	0.00E+00	4.53E-03
Molybdenum	5.91	0	0	0	5.02E-03	0.00E+00	0.00E+00	5.02E-03
Nickel	4.54	2.42	2.79	9.32E-03	3.86E-03	9.58E-02	6.80E-04	1.00E-01
Selenium	2.99	1.14	0.78	4.17E-03	2.54E-03	3.02E-02	3.05E-04	3.30E-02
Silver	1.33	0.13	0.39	2.32E-03	1.13E-03	1.20E-02	1.70E-04	1.33E-02
Thallium	0.63	1.01	0.78	6.86E-03	5.35E-04	2.93E-02	5.01E-04	3.03E-02
Zinc	3272.00	584.60	605.40	4.49E+00	2.78E+00	2.12E+01	3.27E-01	2.43E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(High-level DRC_{herb} * 20%) + (High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-124 EU-23 Estimated Daily Doses (EDDs) for American Beaver Foraging in South Fork Cement Creek. Plant tissue values represent the low-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.17	0.18	0.19	1.84E-03	9.91E-04	6.61E-03	1.35E-04	7.73E-03
Arsenic	17.01	0.31	0.18	3.05E-03	1.45E-02	7.13E-03	2.23E-04	2.18E-02
Cadmium	1.13	0.66	1.35	2.60E-03	9.64E-04	4.27E-02	1.90E-04	4.39E-02
Chromium	4.39	2.47	2.34	3.54E-03	3.73E-03	8.33E-02	2.58E-04	8.73E-02
Copper	65.54	7.78	5.23	2.80E-02	5.57E-02	2.02E-01	2.05E-03	2.60E-01
Lead	210.50	2.39	1.47	7.23E-03	1.79E-01	5.84E-02	5.28E-04	2.38E-01
Manganese	811.60	180.20	314.20	3.07E+00	6.90E-01	1.01E+01	2.24E-01	1.11E+01
Mercury	0.03	0.13	0.13	0	2.74E-05	4.41E-03	0.00E+00	4.44E-03
Molybdenum	4.38	0	0	0	3.73E-03	0.00E+00	0.00E+00	3.73E-03
Nickel	4.62	0.80	0.97	5.03E-03	3.93E-03	3.30E-02	3.67E-04	3.73E-02
Selenium	1.88	0.26	0.34	3.75E-03	1.59E-03	1.14E-02	2.73E-04	1.32E-02
Silver	0.82	0.13	0.18	1.79E-03	6.97E-04	5.87E-03	1.30E-04	6.69E-03
Thallium	0.53	0.28	0.26	3.80E-03	4.50E-04	9.36E-03	2.77E-04	1.01E-02
Zinc	232.80	65.19	105.50	1.44E+00	1.98E-01	3.44E+00	1.05E-01	3.74E+00
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	1.88	0.42	0.47	2.10E-03	1.60E-03	1.61E-02	1.53E-04	1.79E-02
Arsenic	20.26	0.88	0.39	4.87E-03	1.72E-02	1.73E-02	3.56E-04	3.49E-02
Cadmium	3.63	1.04	2.14	6.14E-03	3.09E-03	6.78E-02	4.49E-04	7.13E-02
Chromium	5.25	2.74	2.70	4.68E-03	4.46E-03	9.56E-02	3.42E-04	1.00E-01
Copper	157.30	9.52	6.19	6.49E-02	1.34E-01	2.42E-01	4.74E-03	3.80E-01
Lead	361.30	8.38	4.14	1.99E-02	3.07E-01	1.76E-01	1.46E-03	4.85E-01
Manganese	1796.00	304.90	905.80	1.31E+01	1.53E+00	2.77E+01	9.55E-01	3.02E+01
Mercury	0.04	0.13	0.13	0	3.69E-05	4.45E-03	0.00E+00	4.48E-03
Molybdenum	5.38	0	0	0	4.57E-03	0.00E+00	0.00E+00	4.57E-03
Nickel	9.10	1.36	1.50	1.23E-02	7.73E-03	5.20E-02	8.99E-04	6.06E-02
Selenium	2.40	0.29	0.78	4.23E-03	2.04E-03	2.41E-02	3.09E-04	2.65E-02
Silver	1.08	0.14	0.39	2.34E-03	9.15E-04	1.21E-02	1.71E-04	1.32E-02
Thallium	0.66	0.33	0.29	5.14E-03	5.64E-04	1.04E-02	3.75E-04	1.13E-02
Zinc	581.90	85.50	137.80	6.74E+00	4.95E-01	4.49E+00	4.92E-01	5.48E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(Low-level DRC_{herb} * 20%) + (Low-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-125 EU-24 Estimated Daily Doses (EDDs) for American Beaver Foraging in Upper Cement Creek. Plant tissue values represent the high-level dose response category (DRC) exposure point concentrations. Soil exposure point concentrations were derived from floodplain soil samples collected in this exposure unit. Surface water exposure point concentrations were derived from total recoverable metals surface water samples collected in this exposure unit.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	FP Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	2.07	0.18	0.24	1.57E-03	1.76E-03	7.96E-03	1.15E-04	9.83E-03
Arsenic	33.33	0.31	0.18	2.31E-03	2.83E-02	7.13E-03	1.69E-04	3.56E-02
Cadmium	6.31	2.86	6.37	8.62E-03	5.36E-03	2.00E-01	6.29E-04	2.06E-01
Chromium	5.51	2.51	2.58	2.97E-03	4.68E-03	9.05E-02	2.16E-04	9.54E-02
Copper	247.90	11.34	8.98	8.46E-02	2.11E-01	3.34E-01	6.17E-03	5.51E-01
Lead	807.30	20.15	3.39	8.26E-03	6.86E-01	2.38E-01	6.03E-04	9.25E-01
Manganese	8159.00	403.70	493.80	1.88E+00	6.94E+00	1.68E+01	1.37E-01	2.39E+01
Mercury	0.06	0.13	0.13	0	5.01E-05	4.41E-03	0.00E+00	4.46E-03
Molybdenum	3.93	0	0	0	3.34E-03	0.00E+00	0.00E+00	3.34E-03
Nickel	6.19	1.36	1.18	5.62E-03	5.26E-03	4.28E-02	4.11E-04	4.85E-02
Selenium	1.81	0.48	0.34	3.21E-03	1.54E-03	1.29E-02	2.35E-04	1.47E-02
Silver	1.43	0.17	0.18	1.50E-03	1.22E-03	6.14E-03	1.09E-04	7.47E-03
Thallium	0.73	0.47	0.34	3.38E-03	6.16E-04	1.28E-02	2.47E-04	1.37E-02
Zinc	753.20	422.90	494.30	1.92E+00	6.40E-01	1.69E+01	1.40E-01	1.77E+01
	Reasonable Maximum Exposure (RME) Scenario							
Antimony	3.70	0.42	0.73	1.76E-03	3.14E-03	2.35E-02	1.28E-04	2.67E-02
Arsenic	38.97	0.88	0.39	3.91E-03	3.31E-02	1.73E-02	2.86E-04	5.07E-02
Cadmium	18.75	4.14	10.65	1.06E-02	1.59E-02	3.30E-01	7.76E-04	3.47E-01
Chromium	6.49	2.98	3.24	4.15E-03	5.52E-03	1.13E-01	3.03E-04	1.18E-01
Copper	359.30	18.42	13.89	1.03E-01	3.05E-01	5.22E-01	7.51E-03	8.35E-01
Lead	999.60	57.52	9.12	1.14E-02	8.50E-01	6.63E-01	8.31E-04	1.51E+00
Manganese	13854.00	1690.00	905.80	2.49E+00	1.18E+01	3.75E+01	1.82E-01	4.95E+01
Mercury	0.09	0.13	0.13	0	7.33E-05	4.45E-03	0.00E+00	4.52E-03
Molybdenum	4.79	0	0	0	4.07E-03	0.00E+00	0.00E+00	4.07E-03
Nickel	8.78	2.42	2.79	8.01E-03	7.46E-03	9.58E-02	5.85E-04	1.04E-01
Selenium	2.16	1.14	0.78	3.57E-03	1.84E-03	3.02E-02	2.60E-04	3.23E-02
Silver	1.79	0.13	0.39	2.06E-03	1.52E-03	1.20E-02	1.51E-04	1.37E-02
Thallium	0.81	1.01	0.78	5.21E-03	6.89E-04	2.93E-02	3.81E-04	3.03E-02
Zinc	1166.00	584.60	605.40	2.47E+00	9.91E-01	2.12E+01	1.80E-01	2.24E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water; LWA = length-weighted average

Grey shaded entries indicate that exposure values are unavailable; mercury and molybdenum not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = EU_{FP\ soil} * SIR$

2 $Dose_{plant}$ = [(High-level DRC_{herb} * 20%) + (High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water} = SW_{LWA} * WIR$

4 Total EDD = $Dose_{soil} + Dose_{plant} + Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	20.3	kilograms
Soil ingestion rate (SIR) =	0.0009	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0730	L/kg BW/day
Food ingestion rate (FIR) =	0.0353	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-126 Estimated Daily Doses (EDDs) for Mountain Bluebird Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, **i**nvertebrate and plant tissue, and surface water values represent the high-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario										
	Exposure Point Concentrations						EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD[5]
Arsenic	49.27	6.33	1.50	8.63	0.18	4.02E-03	1.10E+00	9.94E-01	3.00E-03	7.59E-04	1.05E+00
Barium	152.20	38.25	25.13	64.20	29.16	2.05E-02	3.41E+00	7.78E+00	5.00E-01	3.88E-03	5.85E+00
Cadmium	9.55	4.64	5.43	74.50	6.37	5.11E-03	2.14E-01	4.27E+00	1.09E-01	9.66E-04	2.30E+00
Chromium	4.76	3.56	3.45	3.75	2.58	3.37E-03	1.07E-01	7.03E-01	4.42E-02	6.37E-04	4.27E-01
Copper	182.10	41.58	49.36	28.20	8.98	6.14E-02	4.08E+00	8.15E+00	1.54E-01	1.16E-02	6.20E+00
Lead	2198.00	63.15	63.88	186.00	3.39	1.82E-02	4.92E+01	1.83E+01	5.81E-02	3.45E-03	3.38E+01
Manganese	6666.00	1407.00	802.70	732.00	493.80	2.42E+00	1.49E+02	2.00E+02	8.47E+00	4.58E-01	1.79E+02
Mercury	0.09	0	0	0	0.13	0	1.98E-03	0.00E+00	2.14E-03	0.00E+00	2.06E-03
Molybdenum	12.28	0	0	0	0	2.50E-03	2.75E-01	0.00E+00	0.00E+00	4.73E-04	1.38E-01
Nickel	6.48	2.89	1.24	1.48	1.18	4.65E-03	1.45E-01	3.79E-01	2.02E-02	8.79E-04	2.73E-01
Selenium	0.93	0.93	0.89	20.19	0.34	3.45E-03	2.09E-02	1.09E+00	5.78E-03	6.53E-04	5.58E-01
Silver	7.69	0.55	1.07	1.22	0.18	1.66E-03	1.72E-01	1.79E-01	3.00E-03	3.15E-04	1.77E-01
Vanadium	12.79	1.95	1.94	15.30	0.66	2.77E-03	2.86E-01	1.01E+00	1.14E-02	5.24E-04	6.56E-01
Zinc	2010.00	492.00	442.10	687.00	494.30	1.45E+00	4.50E+01	1.02E+02	8.48E+00	2.75E-01	7.81E+01
	Reasonable Maximum Exposure (RME) Scenario										
Arsenic	65.47	17.54	2.53	9.32	0.39	7.32E-03	1.47E+00	1.94E+00	6.74E-03	1.38E-03	1.71E+00
Barium	206.70	89.56	61.81	77.50	73.74	2.28E-02	4.63E+00	1.50E+01	1.26E+00	4.31E-03	1.05E+01
Cadmium	20.01	8.25	9.72	74.50	10.65	7.08E-03	4.48E-01	4.86E+00	1.83E-01	1.34E-03	2.75E+00
Chromium	5.19	6.74	6.15	5.92	3.24	3.71E-03	1.16E-01	1.25E+00	5.56E-02	7.02E-04	7.09E-01
Copper	264.60	73.11	87.41	28.20	13.89	1.21E-01	5.92E+00	1.34E+01	2.38E-01	2.29E-02	9.78E+00
Lead	2940.00	131.80	107.80	186.00	9.12	2.16E-02	6.58E+01	2.67E+01	1.56E-01	4.09E-03	4.64E+01
Manganese	21678.00	8260.00	3056.00	732.00	905.80	3.16E+00	4.85E+02	8.83E+02	1.55E+01	5.98E-01	6.92E+02
Mercury	0.14	0	0	0	0.13	0	3.22E-03	0.00E+00	2.16E-03	0.00E+00	2.69E-03
Molybdenum	29.16	0	0	0	0	2.50E-03	6.53E-01	0.00E+00	0.00E+00	4.73E-04	3.27E-01
Nickel	14.93	11.75	2.91	2.31	2.79	7.23E-03	3.34E-01	1.21E+00	4.78E-02	1.37E-03	7.96E-01
Selenium	1.26	1.70	2.69	45.90	0.78	3.63E-03	2.83E-02	2.49E+00	1.34E-02	6.86E-04	1.27E+00
Silver	11.19	1.10	4.51	1.22	0.39	1.84E-03	2.51E-01	4.78E-01	6.74E-03	3.47E-04	3.68E-01
Vanadium	13.97	4.62	3.77	15.30	1.57	3.13E-03	3.13E-01	1.35E+00	2.69E-02	5.92E-04	8.45E-01
Zinc	5523.00	862.30	912.00	687.00	605.40	1.88E+00	1.24E+02	1.65E+02	1.04E+01	3.55E-01	1.50E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil}$ = High-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(High-level $DRC_{flying\ invert}$*35%) + (High-level $DRC_{GD\ invert}$*35%) + (High-level $DRC_{soil\ invert}$*22%)] * FIR

3 $Dose_{plant}$ = (High-level DRC_{shrub} * 8%) * FIR

4 $Dose_{water}$ = High-level DRC_{SW} * WIR

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0300	kilograms
Soil ingestion rate (SIR) =	0.0224	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1890	L/kg BW/day
Food ingestion rate (FIR) =	0.2143	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	35%
GD invert. diet =	35%
Soil invert. diet =	22%
Shrub diet =	8%

Table C-127 Estimated Daily Doses (EDDs) for Mountain Bluebird Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, **i**nvertebrate and plant tissue, and surface water values represent the mid-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario										
	Exposure Point Concentrations						EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	29.34	6.33	1.13	8.63	0.18	4.02E-03	6.57E-01	9.66E-01	3.00E-03	7.60E-04	8.13E-01
Barium	138.30	38.25	25.13	64.20	29.16	2.56E-02	3.10E+00	7.78E+00	5.00E-01	4.83E-03	5.69E+00
Cadmium	1.63	3.24	3.68	74.50	6.37	2.52E-03	3.64E-02	4.03E+00	1.09E-01	4.76E-04	2.09E+00
Chromium	6.59	3.56	3.45	3.75	2.58	3.50E-03	1.48E-01	7.03E-01	4.42E-02	6.61E-04	4.48E-01
Copper	69.23	32.25	43.99	28.20	6.85	3.38E-02	1.55E+00	7.05E+00	1.18E-01	6.40E-03	4.36E+00
Lead	1832.00	63.15	35.25	186.00	2.39	2.00E-02	4.10E+01	1.62E+01	4.09E-02	3.78E-03	2.86E+01
Manganese	1890.00	456.30	217.50	732.00	314.20	1.21E+00	4.23E+01	8.51E+01	5.39E+00	2.29E-01	6.65E+01
Mercury	0.03	0	0	0	0.13	0	6.27E-04	0.00E+00	2.14E-03	0.00E+00	1.39E-03
Molybdenum	2.42	0	0	0	0	2.50E-03	5.41E-02	0.00E+00	0.00E+00	4.73E-04	2.73E-02
Nickel	5.29	0.94	1.24	1.48	1.16	4.32E-03	1.18E-01	2.33E-01	1.98E-02	8.17E-04	1.86E-01
Selenium	0.82	0.93	0.89	20.19	0.34	3.69E-03	1.82E-02	1.09E+00	5.78E-03	6.98E-04	5.57E-01
Silver	4.91	0.55	1.07	1.22	0.18	1.75E-03	1.10E-01	1.79E-01	3.00E-03	3.31E-04	1.46E-01
Vanadium	19.89	1.95	1.94	15.30	0.66	3.61E-03	4.45E-01	1.01E+00	1.14E-02	6.82E-04	7.35E-01
Zinc	456.10	365.30	210.20	687.00	413.60	7.73E-01	1.02E+01	7.56E+01	7.09E+00	1.46E-01	4.65E+01
	Reasonable Maximum Exposure (RME) Scenario										
Arsenic	39.38	17.54	1.88	9.32	0.39	5.58E-03	8.82E-01	1.90E+00	6.74E-03	1.05E-03	1.39E+00
Barium	211.60	89.56	31.76	77.50	73.74	3.01E-02	4.74E+00	1.28E+01	1.26E+00	5.69E-03	9.38E+00
Cadmium	2.35	6.67	9.72	74.50	10.65	4.52E-03	5.25E-02	4.74E+00	1.83E-01	8.53E-04	2.49E+00
Chromium	7.70	6.74	6.15	5.92	3.24	4.00E-03	1.72E-01	1.25E+00	5.56E-02	7.56E-04	7.37E-01
Copper	97.56	42.62	87.41	28.20	8.86	5.96E-02	2.18E+00	1.11E+01	1.52E-01	1.13E-02	6.72E+00
Lead	3339.00	131.80	82.04	186.00	4.50	3.40E-02	7.48E+01	2.48E+01	7.72E-02	6.43E-03	4.98E+01
Manganese	2386.00	715.40	377.10	732.00	905.80	2.22E+00	5.34E+01	1.16E+02	1.55E+01	4.19E-01	9.29E+01
Mercury	0.12	0	0	0	0.13	0	2.69E-03	0.00E+00	2.19E-03	0.00E+00	2.44E-03
Molybdenum	3.52	0	0	0	0	2.50E-03	7.87E-02	0.00E+00	0.00E+00	4.73E-04	3.96E-02
Nickel	5.83	1.58	2.91	2.31	2.79	5.75E-03	1.30E-01	4.46E-01	4.78E-02	1.09E-03	3.12E-01
Selenium	1.16	1.70	2.69	45.90	0.78	3.90E-03	2.60E-02	2.49E+00	1.34E-02	7.36E-04	1.27E+00
Silver	8.40	1.10	4.51	1.22	0.39	1.96E-03	1.88E-01	4.78E-01	6.74E-03	3.71E-04	3.37E-01
Vanadium	22.44	4.62	3.77	15.30	1.57	5.65E-03	5.02E-01	1.35E+00	2.69E-02	1.07E-03	9.40E-01
Zinc	961.30	565.60	291.80	687.00	584.00	1.29E+00	2.15E+01	9.67E+01	1.00E+01	2.43E-01	6.42E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil}$ = Mid-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Mid-level $DRC_{flying\ invert}$*35%) + (Mid-level $DRC_{GD\ invert}$*35%) + (Mid-level $DRC_{soil\ invert}$*22%)] * FIR

3 $Dose_{plant}$ = (Mid-level DRC_{shrub} * 8%) * FIR

4 $Dose_{water}$ = Mid-level DRC_{SW} * WIR

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0300	kilograms
Soil ingestion rate (SIR) =	0.0224	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1890	L/kg BW/day
Food ingestion rate (FIR) =	0.2143	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	35%
GD invert. diet =	35%
Soil invert. diet =	22%
Shrub diet =	8%

Table C-128 Estimated Daily Doses (EDDs) for Mountain Bluebird Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, invertebrate and plant tissue, and surface water values represent the low-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario										
	Exposure Point Concentrations						EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Arsenic	42.64	1.49	0.78	8.63	0.18	3.23E-03	9.55E-01	5.78E-01	3.00E-03	6.10E-04	7.68E-01
Barium	171.60	19.95	25.13	64.20	24.18	1.74E-02	3.84E+00	6.41E+00	4.15E-01	3.28E-03	5.33E+00
Cadmium	1.61	3.24	2.32	12.60	1.35	2.64E-03	3.61E-02	1.01E+00	2.31E-02	4.99E-04	5.36E-01
Chromium	4.87	3.21	3.45	3.75	2.34	3.67E-03	1.09E-01	6.76E-01	4.00E-02	6.94E-04	4.13E-01
Copper	150.40	32.25	36.43	17.60	5.23	1.66E-02	3.37E+00	5.98E+00	8.96E-02	3.13E-03	4.72E+00
Lead	728.60	12.26	8.86	115.00	1.47	5.94E-03	1.63E+01	7.01E+00	2.52E-02	1.12E-03	1.17E+01
Manganese	835.80	456.30	203.40	732.00	314.20	4.43E+00	1.87E+01	8.40E+01	5.39E+00	8.38E-01	5.45E+01
Mercury	0.09	0	0	0	0.13	0	2.00E-03	0.00E+00	2.14E-03	0.00E+00	2.07E-03
Molybdenum	1.72	0	0	0	0	2.50E-03	3.86E-02	0.00E+00	0.00E+00	4.73E-04	1.95E-02
Nickel	3.17	0.86	0.66	1.48	0.97	4.98E-03	7.09E-02	1.84E-01	1.66E-02	9.42E-04	1.36E-01
Selenium	1.47	0.93	0.89	20.19	0.34	3.79E-03	3.30E-02	1.09E+00	5.78E-03	7.17E-04	5.64E-01
Silver	2.87	0.55	1.07	0.54	0.18	1.83E-03	6.42E-02	1.47E-01	3.00E-03	3.46E-04	1.07E-01
Vanadium	17.14	1.63	1.82	15.30	0.66	3.09E-03	3.84E-01	9.80E-01	1.14E-02	5.85E-04	6.88E-01
Zinc	368.20	365.30	210.20	356.00	105.50	8.19E-01	8.24E+00	6.00E+01	1.81E+00	1.55E-01	3.51E+01
	Reasonable Maximum Exposure (RME) Scenario										
Arsenic	57.42	5.92	1.28	9.32	0.39	3.94E-03	1.29E+00	9.80E-01	6.74E-03	7.45E-04	1.14E+00
Barium	195.10	31.20	31.57	77.50	32.15	1.86E-02	4.37E+00	8.36E+00	5.51E-01	3.52E-03	6.64E+00
Cadmium	2.52	6.67	4.50	12.60	2.14	4.37E-03	5.64E-02	1.43E+00	3.67E-02	8.26E-04	7.63E-01
Chromium	5.47	4.47	6.15	5.92	2.70	4.15E-03	1.22E-01	1.08E+00	4.63E-02	7.83E-04	6.23E-01
Copper	256.40	42.62	78.95	17.60	6.19	2.23E-02	5.74E+00	9.95E+00	1.06E-01	4.22E-03	7.90E+00
Lead	958.00	25.65	18.30	115.00	4.14	1.07E-02	2.14E+01	8.72E+00	7.10E-02	2.03E-03	1.51E+01
Manganese	1128.00	715.40	262.60	732.00	905.80	8.26E+00	2.53E+01	1.08E+02	1.55E+01	1.56E+00	7.51E+01
Mercury	0.40	0	0	0	0.13	0	8.98E-03	0.00E+00	2.16E-03	0.00E+00	5.57E-03
Molybdenum	2.45	0	0	0	0	2.50E-03	5.49E-02	0.00E+00	0.00E+00	4.73E-04	2.77E-02
Nickel	3.74	1.56	0.96	2.31	1.50	7.42E-03	8.38E-02	2.98E-01	2.57E-02	1.40E-03	2.05E-01
Selenium	1.87	1.70	2.69	45.90	0.78	3.99E-03	4.19E-02	2.49E+00	1.34E-02	7.54E-04	1.27E+00
Silver	3.63	1.10	4.51	0.65	0.39	2.07E-03	8.14E-02	4.51E-01	6.74E-03	3.91E-04	2.70E-01
Vanadium	19.12	2.52	2.47	15.30	1.57	5.06E-03	4.28E-01	1.10E+00	2.69E-02	9.57E-04	7.76E-01
Zinc	538.90	565.60	291.80	463.00	137.80	1.49E+00	1.21E+01	8.62E+01	2.36E+00	2.82E-01	5.04E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil}$ = Low-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Low-level $DRC_{flying\ invert}$*35%) + (Low-level $DRC_{GD\ invert}$*35%) + (Low-level $DRC_{soil\ invert}$*22%)] * FIR

3 $Dose_{plant}$ = (Low-level DRC_{shrub} * 8%) * FIR

4 $Dose_{water}$ = Low-level DRC_{SW} * WIR

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0300	kilograms
Soil ingestion rate (SIR) =	0.0224	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1890	L/kg BW/day
Food ingestion rate (FIR) =	0.2143	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	35%
GD invert. diet =	35%
Soil invert. diet =	22%
Shrub diet =	8%

Table C-129 Estimated Daily Doses (EDDs) for Mountain Bluebird Foraging in Vegetated Upland Habitats. Soil, **i**nvertebrate, and plant tissue, and surface water values represent vgetated upland habitat and reference exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario										
	Exposure Point Concentrations						EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	Flying Invert. (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD[5]
Arsenic	14.86	0.33	0.78	7.53	0.13	2.10E-03	3.33E-01	4.38E-01	2.14E-03	3.97E-04	3.87E-01
Barium	163.50	9.53	25.13	56.53	24.18	2.32E-02	3.66E+00	5.27E+00	4.15E-01	4.38E-03	4.67E+00
Cadmium	1.07	2.29	2.15	6.76	1.35	4.56E-04	2.40E-02	6.52E-01	2.31E-02	8.62E-05	3.49E-01
Chromium	5.92	3.21	3.45	3.75	2.34	2.97E-03	1.32E-01	6.76E-01	4.00E-02	5.62E-04	4.25E-01
Copper	29.23	31.18	36.43	11.92	5.23	1.62E-03	6.54E-01	5.63E+00	8.96E-02	3.07E-04	3.19E+00
Lead	174.30	1.46	4.75	6.96	1.47	7.78E-04	3.90E+00	7.94E-01	2.52E-02	1.47E-04	2.36E+00
Manganese	1355.00	105.40	203.40	339.10	271.80	3.20E-02	3.03E+01	3.92E+01	4.66E+00	6.04E-03	3.71E+01
Mercury	0.03	0	0	0	0.13	0	7.46E-04	0.00E+00	2.14E-03	0.00E+00	1.44E-03
Molybdenum	3.26	0	0	0	0	0	7.29E-02	0.00E+00	0.00E+00	0.00E+00	3.65E-02
Nickel	3.37	0.56	0.66	1.48	0.53	1.45E-03	7.54E-02	1.61E-01	9.10E-03	2.75E-04	1.23E-01
Selenium	0.93	0.53	0.74	20.19	0.25	3.15E-03	2.08E-02	1.05E+00	4.29E-03	5.95E-04	5.36E-01
Silver	1.10	0.22	1.07	0.45	0.13	1.49E-03	2.47E-02	1.18E-01	2.14E-03	2.81E-04	7.25E-02
Vanadium	18.01	0.98	1.82	5.58	0.50	1.31E-03	4.03E-01	4.73E-01	8.57E-03	2.47E-04	4.43E-01
Zinc	190.00	224.90	210.20	278.00	105.50	5.36E-02	4.25E+00	4.57E+01	1.81E+00	1.01E-02	2.59E+01
	Reasonable Maximum Exposure (RME) Scenario										
Arsenic	19.91	0.50	1.15	9.32	0.13	4.06E-03	4.46E-01	5.64E-01	2.16E-03	7.67E-04	5.06E-01
Barium	180.90	12.10	31.57	77.50	32.15	2.41E-02	4.05E+00	6.93E+00	5.51E-01	4.56E-03	5.77E+00
Cadmium	1.88	4.86	3.16	9.14	2.14	8.11E-04	4.21E-02	1.03E+00	3.67E-02	1.53E-04	5.56E-01
Chromium	6.23	4.47	6.15	5.92	2.70	4.43E-03	1.39E-01	1.08E+00	4.63E-02	8.37E-04	6.31E-01
Copper	34.06	37.46	78.95	16.80	6.19	1.95E-03	7.63E-01	9.52E+00	1.06E-01	3.68E-04	5.20E+00
Lead	225.00	2.37	8.00	11.30	4.14	1.07E-03	5.04E+00	1.31E+00	7.10E-02	2.02E-04	3.21E+00
Manganese	1964.00	139.10	262.60	541.00	905.80	6.01E-02	4.40E+01	5.56E+01	1.55E+01	1.14E-02	5.76E+01
Mercury	0.11	0	0	0	0.13	0	2.49E-03	0.00E+00	2.16E-03	0.00E+00	2.32E-03
Molybdenum	6.12	0	0	0	0	0	1.37E-01	0.00E+00	0.00E+00	0.00E+00	6.85E-02
Nickel	4.82	0.83	0.96	2.31	0.97	2.25E-03	1.08E-01	2.44E-01	1.67E-02	4.24E-04	1.84E-01
Selenium	1.29	1.15	1.63	45.90	0.25	3.72E-03	2.88E-02	2.37E+00	4.30E-03	7.03E-04	1.20E+00
Silver	2.23	0.33	4.51	0.65	0.13	2.21E-03	4.99E-02	3.94E-01	2.16E-03	4.19E-04	2.23E-01
Vanadium	19.34	1.25	2.49	9.45	0.50	1.32E-03	4.33E-01	7.26E-01	8.61E-03	2.49E-04	5.84E-01
Zinc	236.70	269.70	254.60	463.00	137.80	1.28E-01	5.30E+00	6.12E+01	2.36E+00	2.41E-02	3.44E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential environmental concern; DW = dry-weight; GD = ground-dwelling; SW = surface water; VU = vegetated upland

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil} = VU_{soil} * SIR$

2 $Dose_{invert.} = [(VU_{flying\ invert}*35\%) + (VU_{GD\ invert}*35\%) + (VU_{soil\ invert}*22\%)] * FIR$

3 $Dose_{plant} = (VU_{shrub} * 8\%) * FIR$

4 $Dose_{water} = VU_{SW} * WIR$

5 $Total\ EDD = (Dose_{soil} + Dose_{invert.} + Dose_{plant} + Dose_{water}) * SUF$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0300	kilograms
Soil ingestion rate (SIR) =	0.0224	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1890	L/kg BW/day
Food ingestion rate (FIR) =	0.2143	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
Flying invert. diet =	35%
GD invert. diet =	35%
Soil invert. diet =	22%
Shrub diet =	8%

Table C-130 Estimated Daily Doses (EDDs) for White-Tailed Ptarmigan Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, plant tissue, and surface water values represent the high-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Arsenic	49.27	0.31	0.18	4.02E-03	3.45E-02	9.46E-03	3.41E-04	4.43E-02
Barium	152.20	46.62	29.16	2.05E-02	1.07E-01	1.53E+00	1.75E-03	1.64E+00
Cadmium	9.55	2.86	6.37	5.11E-03	6.69E-03	2.65E-01	4.35E-04	2.73E-01
Chromium	4.76	2.51	2.58	3.37E-03	3.33E-03	1.20E-01	2.87E-04	1.24E-01
Copper	182.10	11.34	8.98	6.14E-02	1.27E-01	4.43E-01	5.22E-03	5.75E-01
Lead	2198.00	20.15	3.39	1.82E-02	1.54E+00	3.16E-01	1.55E-03	1.86E+00
Manganese	6666.00	403.70	493.80	2.42E+00	4.67E+00	2.23E+01	2.06E-01	2.72E+01
Mercury	0.09	0.13	0.13	0	6.20E-05	5.85E-03	0.00E+00	5.92E-03
Molybdenum	12.28	0	0	2.50E-03	8.60E-03	0.00E+00	2.13E-04	8.81E-03
Nickel	6.48	1.36	1.18	4.65E-03	4.54E-03	5.68E-02	3.95E-04	6.18E-02
Selenium	0.93	0.48	0.34	3.45E-03	6.52E-04	1.71E-02	2.94E-04	1.80E-02
Silver	7.69	0.17	0.18	1.66E-03	5.38E-03	8.15E-03	1.41E-04	1.37E-02
Vanadium	12.79	0.71	0.66	2.77E-03	8.95E-03	3.15E-02	2.35E-04	4.07E-02
Zinc	2010.00	422.90	494.30	1.45E+00	1.41E+00	2.25E+01	1.24E-01	2.40E+01
	Reasonable Maximum Exposure (RME) Scenario							
Arsenic	65.47	0.88	0.39	7.32E-03	4.58E-02	2.29E-02	6.22E-04	6.94E-02
Barium	206.70	79.92	73.74	2.28E-02	1.45E-01	3.51E+00	1.94E-03	3.66E+00
Cadmium	20.01	4.14	10.65	7.08E-03	1.40E-02	4.38E-01	6.02E-04	4.52E-01
Chromium	5.19	2.98	3.24	3.71E-03	3.63E-03	1.49E-01	3.16E-04	1.53E-01
Copper	264.60	18.42	13.89	1.21E-01	1.85E-01	6.93E-01	1.03E-02	8.88E-01
Lead	2940.00	57.52	9.12	2.16E-02	2.06E+00	8.80E-01	1.84E-03	2.94E+00
Manganese	21678.00	1690.00	905.80	3.16E+00	1.52E+01	4.98E+01	2.69E-01	6.52E+01
Mercury	0.14	0.13	0.13	0	1.01E-04	5.90E-03	0.00E+00	6.00E-03
Molybdenum	29.16	0	0	2.50E-03	2.04E-02	0.00E+00	2.13E-04	2.06E-02
Nickel	14.93	2.42	2.79	7.23E-03	1.05E-02	1.27E-01	6.15E-04	1.38E-01
Selenium	1.26	1.14	0.78	3.63E-03	8.83E-04	4.00E-02	3.09E-04	4.12E-02
Silver	11.19	0.13	0.39	1.84E-03	7.83E-03	1.59E-02	1.56E-04	2.39E-02
Vanadium	13.97	1.05	1.57	3.13E-03	9.78E-03	6.87E-02	2.66E-04	7.87E-02
Zinc	5523.00	584.60	605.40	1.88E+00	3.87E+00	2.82E+01	1.60E-01	3.22E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil}$ = High-level DRC_{soil} * SIR

2 $Dose_{plant}$ = [(High-level DRC_{herb} * 20%) + (High-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water}$ = High-level DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.3260	kilograms
Soil ingestion rate (SIR) =	0.0007	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0850	L/kg BW/day
Food ingestion rate (FIR) =	0.0468	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-131 Estimated Daily Doses (EDDs) for White-Tailed Ptarmigan Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, plant tissue, and surface water values represent the mid-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Arsenic	29.34	0.31	0.18	4.02E-03	2.05E-02	9.46E-03	3.42E-04	3.03E-02
Barium	138.30	46.62	29.16	2.56E-02	9.68E-02	1.53E+00	2.17E-03	1.63E+00
Cadmium	1.63	0.98	6.37	2.52E-03	1.14E-03	2.48E-01	2.14E-04	2.49E-01
Chromium	6.59	2.51	2.58	3.50E-03	4.62E-03	1.20E-01	2.97E-04	1.25E-01
Copper	69.23	11.34	6.85	3.38E-02	4.85E-02	3.63E-01	2.88E-03	4.14E-01
Lead	1832.00	6.80	2.39	2.00E-02	1.28E+00	1.53E-01	1.70E-03	1.44E+00
Manganese	1890.00	403.70	314.20	1.21E+00	1.32E+00	1.56E+01	1.03E-01	1.70E+01
Mercury	0.03	0.13	0.13	0	1.96E-05	5.85E-03	0.00E+00	5.87E-03
Molybdenum	2.42	0	0	2.50E-03	1.69E-03	0.00E+00	2.13E-04	1.90E-03
Nickel	5.29	1.36	1.16	4.32E-03	3.70E-03	5.60E-02	3.68E-04	6.01E-02
Selenium	0.82	0.28	0.34	3.69E-03	5.71E-04	1.53E-02	3.14E-04	1.62E-02
Silver	4.91	0.14	0.18	1.75E-03	3.44E-03	7.89E-03	1.49E-04	1.15E-02
Vanadium	19.89	0.71	0.66	3.61E-03	1.39E-02	3.15E-02	3.07E-04	4.57E-02
Zinc	456.10	99.42	413.60	7.73E-01	3.19E-01	1.64E+01	6.57E-02	1.68E+01
	Reasonable Maximum Exposure (RME) Scenario							
Arsenic	39.38	0.88	0.39	5.58E-03	2.76E-02	2.29E-02	4.74E-04	5.10E-02
Barium	211.60	79.92	73.74	3.01E-02	1.48E-01	3.51E+00	2.56E-03	3.66E+00
Cadmium	2.35	1.87	10.65	4.52E-03	1.64E-03	4.16E-01	3.84E-04	4.19E-01
Chromium	7.70	2.98	3.24	4.00E-03	5.39E-03	1.49E-01	3.40E-04	1.55E-01
Copper	97.56	18.42	8.86	5.96E-02	6.83E-02	5.04E-01	5.06E-03	5.78E-01
Lead	3339.00	27.70	4.50	3.40E-02	2.34E+00	4.28E-01	2.89E-03	2.77E+00
Manganese	2386.00	1690.00	905.80	2.22E+00	1.67E+00	4.98E+01	1.89E-01	5.16E+01
Mercury	0.12	0.13	0.13	0	8.40E-05	5.98E-03	0.00E+00	6.06E-03
Molybdenum	3.52	0	0	2.50E-03	2.46E-03	0.00E+00	2.13E-04	2.67E-03
Nickel	5.83	2.42	2.79	5.75E-03	4.08E-03	1.27E-01	4.89E-04	1.32E-01
Selenium	1.16	0.33	0.78	3.90E-03	8.11E-04	3.24E-02	3.31E-04	3.36E-02
Silver	8.40	0.17	0.39	1.96E-03	5.88E-03	1.63E-02	1.67E-04	2.23E-02
Vanadium	22.44	1.05	1.57	5.65E-03	1.57E-02	6.87E-02	4.80E-04	8.48E-02
Zinc	961.30	168.30	584.00	1.29E+00	6.73E-01	2.35E+01	1.09E-01	2.42E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil}$ = Mid-level DRC_{soil} * SIR

2 $Dose_{plant}$ = [(Mid-level DRC_{herb} * 20%) + (Mid-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water}$ = Mid-level DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.3260	kilograms
Soil ingestion rate (SIR) =	0.0007	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0850	L/kg BW/day
Food ingestion rate (FIR) =	0.0468	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-132 Estimated Daily Doses (EDDs) for White-Tailed Ptarmigan Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, plant tissue, and surface water values represent the low-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Arsenic	42.64	0.31	0.18	3.23E-03	2.98E-02	9.46E-03	2.74E-04	3.96E-02
Barium	171.60	40.71	24.18	1.74E-02	1.20E-01	1.29E+00	1.48E-03	1.41E+00
Cadmium	1.61	0.66	1.35	2.64E-03	1.13E-03	5.67E-02	2.24E-04	5.80E-02
Chromium	4.87	2.47	2.34	3.67E-03	3.41E-03	1.11E-01	3.12E-04	1.14E-01
Copper	150.40	7.78	5.23	1.66E-02	1.05E-01	2.69E-01	1.41E-03	3.75E-01
Lead	728.60	2.39	1.47	5.94E-03	5.10E-01	7.75E-02	5.05E-04	5.88E-01
Manganese	835.80	180.20	314.20	4.43E+00	5.85E-01	1.35E+01	3.77E-01	1.44E+01
Mercury	0.09	0.13	0.13	0	6.24E-05	5.85E-03	0.00E+00	5.92E-03
Molybdenum	1.72	0	0	2.50E-03	1.21E-03	0.00E+00	2.13E-04	1.42E-03
Nickel	3.17	0.80	0.97	4.98E-03	2.22E-03	4.38E-02	4.24E-04	4.64E-02
Selenium	1.47	0.26	0.34	3.79E-03	1.03E-03	1.51E-02	3.22E-04	1.64E-02
Silver	2.87	0.13	0.18	1.83E-03	2.01E-03	7.78E-03	1.56E-04	9.95E-03
Vanadium	17.14	0.71	0.66	3.09E-03	1.20E-02	3.15E-02	2.63E-04	4.37E-02
Zinc	368.20	65.19	105.50	8.19E-01	2.58E-01	4.56E+00	6.96E-02	4.89E+00
	Reasonable Maximum Exposure (RME) Scenario							
Arsenic	57.42	0.88	0.39	3.94E-03	4.02E-02	2.29E-02	3.35E-04	6.35E-02
Barium	195.10	48.77	32.15	1.86E-02	1.37E-01	1.66E+00	1.58E-03	1.80E+00
Cadmium	2.52	1.04	2.14	4.37E-03	1.76E-03	9.00E-02	3.71E-04	9.21E-02
Chromium	5.47	2.74	2.70	4.15E-03	3.83E-03	1.27E-01	3.52E-04	1.31E-01
Copper	256.40	9.52	6.19	2.23E-02	1.79E-01	3.21E-01	1.90E-03	5.02E-01
Lead	958.00	8.38	4.14	1.07E-02	6.71E-01	2.34E-01	9.13E-04	9.05E-01
Manganese	1128.00	304.90	905.80	8.26E+00	7.90E-01	3.68E+01	7.02E-01	3.83E+01
Mercury	0.40	0.13	0.13	0	2.81E-04	5.90E-03	0.00E+00	6.18E-03
Molybdenum	2.45	0	0	2.50E-03	1.72E-03	0.00E+00	2.13E-04	1.93E-03
Nickel	3.74	1.36	1.50	7.42E-03	2.62E-03	6.90E-02	6.31E-04	7.23E-02
Selenium	1.87	0.29	0.78	3.99E-03	1.31E-03	3.20E-02	3.39E-04	3.37E-02
Silver	3.63	0.14	0.39	2.07E-03	2.54E-03	1.61E-02	1.76E-04	1.88E-02
Vanadium	19.12	1.05	1.57	5.06E-03	1.34E-02	6.87E-02	4.30E-04	8.25E-02
Zinc	538.90	85.50	137.80	1.49E+00	3.77E-01	5.96E+00	1.27E-01	6.47E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil}$ = Low-level DRC_{soil} * SIR

2 $Dose_{plant}$ = [(Low-level DRC_{herb} * 20%) + (Low-level DRC_{shrub} * 80%)] * FIR

3 $Dose_{water}$ = Low-level DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.3260	kilograms
Soil ingestion rate (SIR) =	0.0007	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0850	L/kg BW/day
Food ingestion rate (FIR) =	0.0468	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-133 Estimated Daily Doses (EDDs) for White-Tailed Ptarmigan Foraging in Vegetated Upland Habitats. Soil, plant tissue, and surface water values represent vgetated upland habitat and reference exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario							
	Exposure Point Concentrations				EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Arsenic	14.86	0.13	0.13	2.10E-03	1.04E-02	5.85E-03	1.79E-04	1.64E-02
Barium	163.50	40.71	24.18	2.32E-02	1.14E-01	1.29E+00	1.97E-03	1.40E+00
Cadmium	1.07	0.34	1.35	4.56E-04	7.52E-04	5.37E-02	3.88E-05	5.45E-02
Chromium	5.92	2.47	2.34	2.97E-03	4.14E-03	1.11E-01	2.53E-04	1.15E-01
Copper	29.23	7.26	5.23	1.62E-03	2.05E-02	2.64E-01	1.38E-04	2.84E-01
Lead	174.30	0.67	1.47	7.78E-04	1.22E-01	6.13E-02	6.61E-05	1.83E-01
Manganese	1355.00	117.40	271.80	3.20E-02	9.49E-01	1.13E+01	2.72E-03	1.22E+01
Mercury	0.03	0.13	0.13	0	2.33E-05	5.85E-03	0.00E+00	5.88E-03
Molybdenum	3.26	0	0	0	2.28E-03	0.00E+00	0.00E+00	2.28E-03
Nickel	3.37	0.72	0.53	1.45E-03	2.36E-03	2.66E-02	1.24E-04	2.91E-02
Selenium	0.93	0.25	0.25	3.15E-03	6.51E-04	1.17E-02	2.67E-04	1.26E-02
Silver	1.10	0.13	0.13	1.49E-03	7.71E-04	5.85E-03	1.26E-04	6.75E-03
Vanadium	18.01	0.55	0.50	1.31E-03	1.26E-02	2.39E-02	1.11E-04	3.66E-02
Zinc	190.00	51.94	105.50	5.36E-02	1.33E-01	4.44E+00	4.55E-03	4.58E+00
	Reasonable Maximum Exposure (RME) Scenario							
Arsenic	19.91	0.13	0.13	4.06E-03	1.39E-02	5.90E-03	3.45E-04	2.02E-02
Barium	180.90	48.77	32.15	2.41E-02	1.27E-01	1.66E+00	2.05E-03	1.79E+00
Cadmium	1.88	0.67	2.14	8.11E-04	1.32E-03	8.65E-02	6.89E-05	8.79E-02
Chromium	6.23	2.74	2.70	4.43E-03	4.36E-03	1.27E-01	3.77E-04	1.32E-01
Copper	34.06	8.36	6.19	1.95E-03	2.38E-02	3.10E-01	1.65E-04	3.34E-01
Lead	225.00	0.94	4.14	1.07E-03	1.58E-01	1.64E-01	9.08E-05	3.21E-01
Manganese	1964.00	156.60	905.80	6.01E-02	1.37E+00	3.54E+01	5.11E-03	3.68E+01
Mercury	0.11	0.13	0.13	0	7.77E-05	5.90E-03	0.00E+00	5.98E-03
Molybdenum	6.12	0	0	0	4.29E-03	0.00E+00	0.00E+00	4.29E-03
Nickel	4.82	1.25	0.97	2.25E-03	3.38E-03	4.81E-02	1.91E-04	5.17E-02
Selenium	1.29	0.25	0.25	3.72E-03	9.02E-04	1.18E-02	3.16E-04	1.30E-02
Silver	2.23	0.13	0.13	2.21E-03	1.56E-03	5.90E-03	1.88E-04	7.65E-03
Vanadium	19.34	0.65	0.50	1.32E-03	1.35E-02	2.49E-02	1.12E-04	3.86E-02
Zinc	236.70	78.85	137.80	1.28E-01	1.66E-01	5.90E+00	1.08E-02	6.08E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in dietary items

Food chain modeling equations

1 $Dose_{soil}$ = Upland DRC_{soil} * SIR

2 $Dose_{plant}$ = [(Upland DRC_{herb} * 20%) + (Upland DRC_{shrub} * 80%)] * FIR

3 $Dose_{water}$ = Reference DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.3260	kilograms
Soil ingestion rate (SIR) =	0.0007	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0850	L/kg BW/day
Food ingestion rate (FIR) =	0.0468	kg DW/kg BW/day

Percent diet composition

Metric	Value
Herb diet =	20%
Shrub diet =	80%

Table C-134 Estimated Daily Doses (EDDs) for American Pika Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, plant tissue, and surface water values represent the high-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Grass (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Antimony	6.23	0.17	1.65E-03	5.86E-02	2.69E-02	2.07E-04	8.57E-02
Arsenic	49.27	0.30	4.02E-03	4.63E-01	4.71E-02	5.02E-04	5.11E-01
Cadmium	9.55	0.59	5.11E-03	8.98E-02	9.15E-02	6.39E-04	1.82E-01
Chromium	4.76	2.33	3.37E-03	4.47E-02	3.60E-01	4.22E-04	4.05E-01
Copper	182.10	13.07	6.14E-02	1.71E+00	2.02E+00	7.67E-03	3.74E+00
Lead	2198.00	29.97	1.82E-02	2.07E+01	4.64E+00	2.28E-03	2.53E+01
Manganese	6666.00	394.40	2.42E+00	6.27E+01	6.11E+01	3.03E-01	1.24E+02
Mercury	0.09	0.13	0	8.32E-04	1.94E-02	0.00E+00	2.02E-02
Molybdenum	12.28	0	2.50E-03	1.15E-01	0.00E+00	3.13E-04	1.16E-01
Nickel	6.48	1.28	4.65E-03	6.09E-02	1.98E-01	5.81E-04	2.60E-01
Selenium	0.93	0.34	3.45E-03	8.76E-03	5.30E-02	4.32E-04	6.22E-02
Silver	7.69	0.21	1.66E-03	7.23E-02	3.21E-02	2.08E-04	1.05E-01
Thallium	0.92	0.36	4.12E-03	8.65E-03	5.61E-02	5.15E-04	6.52E-02
Zinc	2010.00	173.00	1.45E+00	1.89E+01	2.68E+01	1.82E-01	4.59E+01
	Reasonable Maximum Exposure (RME) Scenario						
Antimony	12.34	0.24	1.74E-03	1.16E-01	3.66E-02	2.17E-04	1.53E-01
Arsenic	65.47	0.96	7.32E-03	6.15E-01	1.49E-01	9.15E-04	7.66E-01
Cadmium	20.01	1.07	7.08E-03	1.88E-01	1.65E-01	8.85E-04	3.54E-01
Chromium	5.19	2.53	3.71E-03	4.88E-02	3.92E-01	4.64E-04	4.41E-01
Copper	264.60	19.09	1.21E-01	2.49E+00	2.96E+00	1.52E-02	5.46E+00
Lead	2940.00	106.30	2.16E-02	2.76E+01	1.65E+01	2.70E-03	4.41E+01
Manganese	21678.00	554.10	3.16E+00	2.04E+02	8.58E+01	3.95E-01	2.90E+02
Mercury	0.14	0.13	0	1.35E-03	1.94E-02	0.00E+00	2.07E-02
Molybdenum	29.16	0	2.50E-03	2.74E-01	0.00E+00	3.13E-04	2.74E-01
Nickel	14.93	2.01	7.23E-03	1.40E-01	3.11E-01	9.04E-04	4.52E-01
Selenium	1.26	0.50	3.63E-03	1.19E-02	7.77E-02	4.54E-04	9.01E-02
Silver	11.19	0.41	1.84E-03	1.05E-01	6.27E-02	2.30E-04	1.68E-01
Thallium	1.36	0.85	4.98E-03	1.28E-02	1.31E-01	6.23E-04	1.45E-01
Zinc	5523.00	219.80	1.88E+00	5.19E+01	3.40E+01	2.35E-01	8.62E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in vegetation

Food chain modeling equations

1 $Dose_{soil}$ = High-level DRC_{soil} * SIR

2 $Dose_{plant}$ = (High-level DRC_{grass} * 100%) * FIR

3 $Dose_{water}$ = High-level DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.1000	kilograms
Soil ingestion rate (SIR) =	0.0094	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1250	L/kg BW/day
Food ingestion rate (FIR) =	0.1549	kg DW/kg BW/day

Percent diet composition

Metric	Value
Grass diet =	100%

Table C-135 Estimated Daily Doses (EDDs) for American Pika Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, plant tissue, and surface water values represent the mid-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Grass (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Antimony	1.63	0.14	1.53E-03	1.54E-02	2.17E-02	1.92E-04	3.72E-02
Arsenic	29.34	0.30	4.02E-03	2.76E-01	4.71E-02	5.03E-04	3.23E-01
Cadmium	1.63	0.39	2.52E-03	1.53E-02	6.07E-02	3.15E-04	7.63E-02
Chromium	6.59	2.33	3.50E-03	6.20E-02	3.60E-01	4.37E-04	4.23E-01
Copper	69.23	7.46	3.38E-02	6.51E-01	1.16E+00	4.23E-03	1.81E+00
Lead	1832.00	10.49	2.00E-02	1.72E+01	1.62E+00	2.50E-03	1.88E+01
Manganese	1890.00	301.60	1.21E+00	1.78E+01	4.67E+01	1.51E-01	6.46E+01
Mercury	0.03	0.13	0	2.63E-04	1.94E-02	0.00E+00	1.96E-02
Molybdenum	2.42	0	2.50E-03	2.27E-02	0.00E+00	3.13E-04	2.30E-02
Nickel	5.29	1.28	4.32E-03	4.97E-02	1.98E-01	5.40E-04	2.48E-01
Selenium	0.82	0.31	3.69E-03	7.66E-03	4.79E-02	4.62E-04	5.60E-02
Silver	4.91	0.21	1.75E-03	4.62E-02	3.21E-02	2.19E-04	7.85E-02
Thallium	0.82	0.28	3.74E-03	7.73E-03	4.31E-02	4.68E-04	5.13E-02
Zinc	456.10	97.14	7.73E-01	4.29E+00	1.50E+01	9.67E-02	1.94E+01
	Reasonable Maximum Exposure (RME) Scenario						
Antimony	3.29	0.17	1.60E-03	3.10E-02	2.59E-02	2.00E-04	5.70E-02
Arsenic	39.38	0.96	5.58E-03	3.70E-01	1.49E-01	6.98E-04	5.20E-01
Cadmium	2.35	0.66	4.52E-03	2.20E-02	1.02E-01	5.64E-04	1.25E-01
Chromium	7.70	2.53	4.00E-03	7.24E-02	3.92E-01	5.00E-04	4.65E-01
Copper	97.56	8.69	5.96E-02	9.17E-01	1.35E+00	7.44E-03	2.27E+00
Lead	3339.00	46.24	3.40E-02	3.14E+01	7.16E+00	4.25E-03	3.86E+01
Manganese	2386.00	534.90	2.22E+00	2.24E+01	8.28E+01	2.77E-01	1.06E+02
Mercury	0.12	0.13	0	1.13E-03	1.95E-02	0.00E+00	2.06E-02
Molybdenum	3.52	0	2.50E-03	3.31E-02	0.00E+00	3.13E-04	3.34E-02
Nickel	5.83	2.01	5.75E-03	5.48E-02	3.11E-01	7.19E-04	3.66E-01
Selenium	1.16	0.43	3.90E-03	1.09E-02	6.69E-02	4.87E-04	7.83E-02
Silver	8.40	0.41	1.96E-03	7.90E-02	6.27E-02	2.45E-04	1.42E-01
Thallium	1.20	0.33	4.37E-03	1.13E-02	5.11E-02	5.46E-04	6.29E-02
Zinc	961.30	139.50	1.29E+00	9.04E+00	2.16E+01	1.61E-01	3.08E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in vegetation

Food chain modeling equations

1 $Dose_{soil}$ = Mid-level DRC_{soil} * SIR

2 $Dose_{plant}$ = (Mid-level DRC_{grass} * 100%) * FIR

3 $Dose_{water}$ = Mid-level DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.1000	kilograms
Soil ingestion rate (SIR) =	0.0094	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1250	L/kg BW/day
Food ingestion rate (FIR) =	0.1549	kg DW/kg BW/day

Percent diet composition

Metric	Value
Grass diet =	100%

Table C-136 Estimated Daily Doses (EDDs) for American Pika Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, plant tissue, and surface water values represent the low-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Grass (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Antimony	2.62	0.14	1.89E-03	2.46E-02	2.17E-02	2.36E-04	4.66E-02
Arsenic	42.64	0.18	3.23E-03	4.01E-01	2.80E-02	4.03E-04	4.29E-01
Cadmium	1.61	0.31	2.64E-03	1.51E-02	4.77E-02	3.30E-04	6.32E-02
Chromium	4.87	1.98	3.67E-03	4.58E-02	3.06E-01	4.59E-04	3.52E-01
Copper	150.40	6.09	1.66E-02	1.41E+00	9.44E-01	2.07E-03	2.36E+00
Lead	728.60	1.29	5.94E-03	6.85E+00	2.00E-01	7.42E-04	7.05E+00
Manganese	835.80	301.60	4.43E+00	7.86E+00	4.67E+01	5.54E-01	5.51E+01
Mercury	0.09	0.13	0	8.38E-04	1.94E-02	0.00E+00	2.02E-02
Molybdenum	1.72	0	2.50E-03	1.62E-02	0.00E+00	3.13E-04	1.65E-02
Nickel	3.17	1.06	4.98E-03	2.98E-02	1.64E-01	6.23E-04	1.94E-01
Selenium	1.47	0.31	3.79E-03	1.39E-02	4.79E-02	4.74E-04	6.22E-02
Silver	2.87	0.21	1.83E-03	2.69E-02	3.21E-02	2.29E-04	5.92E-02
Thallium	0.81	0.34	3.09E-03	7.62E-03	5.22E-02	3.87E-04	6.02E-02
Zinc	368.20	79.53	8.19E-01	3.46E+00	1.23E+01	1.02E-01	1.59E+01
	Reasonable Maximum Exposure (RME) Scenario						
Antimony	3.87	0.17	1.98E-03	3.63E-02	2.59E-02	2.48E-04	6.25E-02
Arsenic	57.42	0.35	3.94E-03	5.40E-01	5.37E-02	4.93E-04	5.94E-01
Cadmium	2.52	0.66	4.37E-03	2.37E-02	1.02E-01	5.46E-04	1.27E-01
Chromium	5.47	2.53	4.15E-03	5.14E-02	3.92E-01	5.18E-04	4.44E-01
Copper	256.40	7.68	2.23E-02	2.41E+00	1.19E+00	2.79E-03	3.60E+00
Lead	958.00	3.03	1.07E-02	9.01E+00	4.69E-01	1.34E-03	9.48E+00
Manganese	1128.00	534.90	8.26E+00	1.06E+01	8.28E+01	1.03E+00	9.45E+01
Mercury	0.40	0.13	0	3.77E-03	1.95E-02	0.00E+00	2.33E-02
Molybdenum	2.45	0	2.50E-03	2.31E-02	0.00E+00	3.13E-04	2.34E-02
Nickel	3.74	1.57	7.42E-03	3.52E-02	2.44E-01	9.28E-04	2.80E-01
Selenium	1.87	0.43	3.99E-03	1.76E-02	6.69E-02	4.99E-04	8.50E-02
Silver	3.63	0.41	2.07E-03	3.42E-02	6.27E-02	2.58E-04	9.71E-02
Thallium	1.12	0.78	5.06E-03	1.05E-02	1.21E-01	6.33E-04	1.32E-01
Zinc	538.90	134.00	1.49E+00	5.07E+00	2.08E+01	1.87E-01	2.60E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in vegetation

Food chain modeling equations

1 $Dose_{soil}$ = Low-level DRC_{soil} * SIR

2 $Dose_{plant}$ = (Low-level DRC_{grass} * 100%) * FIR

3 $Dose_{water}$ = Low-level DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.1000	kilograms
Soil ingestion rate (SIR) =	0.0094	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1250	L/kg BW/day
Food ingestion rate (FIR) =	0.1549	kg DW/kg BW/day

Percent diet composition

Metric	Value
Grass diet =	100%

Table C-137 Estimated Daily Doses (EDDs) for American Pika Foraging in Vegetated Upland Habitats. Soil, plant tissue, and surface water values represent vgetated upland habitat and reference exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Grass (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	0.66	0.14	1.54E-03	6.18E-03	2.17E-02	1.93E-04	2.81E-02
Arsenic	14.86	0.18	2.10E-03	1.40E-01	2.80E-02	2.63E-04	1.68E-01
Cadmium	1.07	0.13	4.56E-04	1.01E-02	2.08E-02	5.70E-05	3.09E-02
Chromium	5.92	1.98	2.97E-03	5.56E-02	3.07E-01	3.72E-04	3.62E-01
Copper	29.23	5.33	1.62E-03	2.75E-01	8.26E-01	2.03E-04	1.10E+00
Lead	174.30	1.29	7.78E-04	1.64E+00	2.00E-01	9.72E-05	1.84E+00
Manganese	1355.00	204.30	3.20E-02	1.27E+01	3.16E+01	4.00E-03	4.44E+01
Mercury	0.03	0.12	0	3.13E-04	1.92E-02	0.00E+00	1.95E-02
Molybdenum	3.26	0	0	3.06E-02	0.00E+00	0.00E+00	3.06E-02
Nickel	3.37	1.06	1.45E-03	3.16E-02	1.64E-01	1.82E-04	1.95E-01
Selenium	0.93	0.30	3.15E-03	8.74E-03	4.58E-02	3.93E-04	5.50E-02
Silver	1.10	0.15	1.49E-03	1.03E-02	2.26E-02	1.86E-04	3.31E-02
Thallium	0.75	0.28	3.01E-03	7.03E-03	4.31E-02	3.76E-04	5.05E-02
Zinc	190.00	58.43	5.36E-02	1.79E+00	9.05E+00	6.69E-03	1.08E+01
	Reasonable Maximum Exposure (RME) Scenario						
Antimony	1.02	0.17	1.84E-03	9.62E-03	2.59E-02	2.30E-04	3.57E-02
Arsenic	19.91	0.35	4.06E-03	1.87E-01	5.37E-02	5.07E-04	2.41E-01
Cadmium	1.88	0.34	8.11E-04	1.77E-02	5.30E-02	1.01E-04	7.08E-02
Chromium	6.23	2.31	4.43E-03	5.85E-02	3.57E-01	5.54E-04	4.16E-01
Copper	34.06	6.25	1.95E-03	3.20E-01	9.68E-01	2.43E-04	1.29E+00
Lead	225.00	3.03	1.07E-03	2.12E+00	4.69E-01	1.34E-04	2.58E+00
Manganese	1964.00	281.50	6.01E-02	1.85E+01	4.36E+01	7.51E-03	6.21E+01
Mercury	0.11	0.13	0	1.04E-03	1.94E-02	0.00E+00	2.04E-02
Molybdenum	6.12	0	0	5.76E-02	0.00E+00	0.00E+00	5.76E-02
Nickel	4.82	1.57	2.25E-03	4.53E-02	2.44E-01	2.81E-04	2.89E-01
Selenium	1.29	0.38	3.72E-03	1.21E-02	5.87E-02	4.65E-04	7.13E-02
Silver	2.23	0.18	2.21E-03	2.10E-02	2.83E-02	2.77E-04	4.96E-02
Thallium	0.98	0.33	4.65E-03	9.17E-03	5.11E-02	5.81E-04	6.09E-02
Zinc	236.70	74.77	1.28E-01	2.22E+00	1.16E+01	1.60E-02	1.38E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in vegetation

Food chain modeling equations

1 $Dose_{soil}$ = Upland DRC_{soil} * SIR

2 $Dose_{plant}$ = (Upland DRC_{grass} * 100%) * FIR

3 $Dose_{water}$ = Reference DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.1000	kilograms
Soil ingestion rate (SIR) =	0.0094	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1250	L/kg BW/day
Food ingestion rate (FIR) =	0.1549	kg DW/kg BW/day

Percent diet composition

Metric	Value
Grass diet =	100%

Table C-138 Estimated Daily Doses (EDDs) for American Pika Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils. Soil, plant tissue, and surface water values represent the high-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Grass (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$[1]	$Dose_{plant}$[2]	$Dose_{water}$[3]	Total EDD[4]
Antimony	90.02	0.17	1.42E-03	8.46E-01	2.69E-02	1.77E-04	8.73E-01
Arsenic	138.20	0.30	4.16E-02	1.30E+00	4.71E-02	5.20E-03	1.35E+00
Cadmium	45.74	0.59	3.55E-02	4.30E-01	9.15E-02	4.43E-03	5.26E-01
Chromium	2.84	2.33	2.75E-03	2.67E-02	3.60E-01	3.44E-04	3.87E-01
Copper	827.60	13.07	8.08E-01	7.78E+00	2.02E+00	1.01E-01	9.90E+00
Lead	13275.00	29.97	1.29E-01	1.25E+02	4.64E+00	1.61E-02	1.29E+02
Manganese	7682.00	394.40	1.11E+01	7.22E+01	6.11E+01	1.39E+00	1.35E+02
Mercury	0.93	0.13	0	8.77E-03	1.94E-02	0.00E+00	2.81E-02
Molybdenum	42.05	0	2.75E-03	3.95E-01	0.00E+00	3.44E-04	3.96E-01
Nickel	4.72	1.28	1.38E-02	4.44E-02	1.98E-01	1.72E-03	2.44E-01
Selenium	4.35	0.34	2.89E-03	4.09E-02	5.30E-02	3.61E-04	9.42E-02
Silver	37.16	0.21	1.39E-03	3.49E-01	3.21E-02	1.73E-04	3.82E-01
Thallium	0.83	0.36	2.81E-03	7.80E-03	5.61E-02	3.51E-04	6.42E-02
Zinc	13261.00	173.00	1.14E+01	1.25E+02	2.68E+01	1.43E+00	1.53E+02
	Reasonable Maximum Exposure (RME) Scenario						
Antimony	125.30	0.24	1.51E-03	1.18E+00	3.66E-02	1.88E-04	1.21E+00
Arsenic	179.10	0.96	1.31E-01	1.68E+00	1.49E-01	1.63E-02	1.85E+00
Cadmium	80.00	1.07	7.45E-02	7.52E-01	1.65E-01	9.31E-03	9.26E-01
Chromium	4.08	2.53	2.88E-03	3.84E-02	3.92E-01	3.61E-04	4.31E-01
Copper	1373.00	19.09	1.44E+00	1.29E+01	2.96E+00	1.80E-01	1.60E+01
Lead	17269.00	106.30	2.37E-01	1.62E+02	1.65E+01	2.97E-02	1.79E+02
Manganese	48268.00	554.10	1.36E+01	4.54E+02	8.58E+01	1.70E+00	5.41E+02
Mercury	1.28	0.13	0	1.20E-02	1.94E-02	0.00E+00	3.14E-02
Molybdenum	71.08	0	2.99E-03	6.68E-01	0.00E+00	3.73E-04	6.69E-01
Nickel	13.23	2.01	2.21E-02	1.24E-01	3.11E-01	2.76E-03	4.38E-01
Selenium	6.73	0.50	3.13E-03	6.33E-02	7.77E-02	3.91E-04	1.41E-01
Silver	47.68	0.41	1.46E-03	4.48E-01	6.27E-02	1.83E-04	5.11E-01
Thallium	1.34	0.85	3.08E-03	1.26E-02	1.31E-01	3.85E-04	1.44E-01
Zinc	22551.00	219.80	2.10E+01	2.12E+02	3.40E+01	2.62E+00	2.49E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in grass

Food chain modeling equations

1 $Dose_{soil}$ = High-level DRC_{soil} * SIR

2 $Dose_{plant}$ = (High-level DRC_{grass} * 100%) * FIR

3 $Dose_{water}$ = High-level DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.1000	kilograms
Soil ingestion rate (SIR) =	0.0094	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1250	L/kg BW/day
Food ingestion rate (FIR) =	0.1549	kg DW/kg BW/day

Percent diet composition

Metric	Value
Grass diet =	100%

Table C-139 Estimated Daily Doses (EDDs) for American Pika Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils. Soil, plant tissue, and surface water values represent the mid-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Grass (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD [4]
Antimony	40.39	0.14	1.42E-03	3.80E-01	2.17E-02	1.77E-04	4.02E-01
Arsenic	892.20	0.30	4.16E-02	8.39E+00	4.71E-02	5.20E-03	8.44E+00
Cadmium	8.53	0.39	3.55E-02	8.02E-02	6.07E-02	4.43E-03	1.45E-01
Chromium	4.05	2.33	2.75E-03	3.81E-02	3.60E-01	3.44E-04	3.99E-01
Copper	737.10	7.46	8.08E-01	6.93E+00	1.16E+00	1.01E-01	8.19E+00
Lead	6421.00	10.49	1.29E-01	6.04E+01	1.62E+00	1.61E-02	6.20E+01
Manganese	2265.00	301.60	1.11E+01	2.13E+01	4.67E+01	1.39E+00	6.94E+01
Mercury	0.73	0.13	0	6.86E-03	1.94E-02	0.00E+00	2.62E-02
Molybdenum	24.87	0	2.75E-03	2.34E-01	0.00E+00	3.44E-04	2.34E-01
Nickel	2.82	1.28	1.38E-02	2.65E-02	1.98E-01	1.72E-03	2.26E-01
Selenium	4.53	0.31	2.89E-03	4.26E-02	4.79E-02	3.61E-04	9.08E-02
Silver	19.89	0.21	1.39E-03	1.87E-01	3.21E-02	1.73E-04	2.19E-01
Thallium	0.53	0.28	2.81E-03	4.96E-03	4.31E-02	3.51E-04	4.84E-02
Zinc	2619.00	97.14	1.14E+01	2.46E+01	1.50E+01	1.43E+00	4.11E+01
	Reasonable Maximum Exposure (RME) Scenario						
Antimony	71.60	0.17	1.51E-03	6.73E-01	2.59E-02	1.88E-04	6.99E-01
Arsenic	3400.00	0.96	1.31E-01	3.20E+01	1.49E-01	1.63E-02	3.21E+01
Cadmium	15.45	0.66	7.45E-02	1.45E-01	1.02E-01	9.31E-03	2.57E-01
Chromium	5.52	2.53	2.88E-03	5.19E-02	3.92E-01	3.61E-04	4.44E-01
Copper	1320.00	8.69	1.44E+00	1.24E+01	1.35E+00	1.80E-01	1.39E+01
Lead	9473.00	46.24	2.37E-01	8.90E+01	7.16E+00	2.97E-02	9.62E+01
Manganese	6534.00	534.90	1.36E+01	6.14E+01	8.28E+01	1.70E+00	1.46E+02
Mercury	2.13	0.13	0	2.01E-02	1.95E-02	0.00E+00	3.96E-02
Molybdenum	43.01	0	2.99E-03	4.04E-01	0.00E+00	3.73E-04	4.05E-01
Nickel	3.61	2.01	2.21E-02	3.39E-02	3.11E-01	2.76E-03	3.48E-01
Selenium	6.55	0.43	3.13E-03	6.16E-02	6.69E-02	3.91E-04	1.29E-01
Silver	24.33	0.41	1.46E-03	2.29E-01	6.27E-02	1.83E-04	2.92E-01
Thallium	0.72	0.33	3.08E-03	6.77E-03	5.11E-02	3.85E-04	5.83E-02
Zinc	4559.00	139.50	2.10E+01	4.29E+01	2.16E+01	2.62E+00	6.71E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in grass

Food chain modeling equations

1 $Dose_{soil}$ = Mid-level DRC_{soil} * SIR

2 $Dose_{plant}$ = (Mid-level DRC_{grass} * 100%) * FIR

3 $Dose_{water}$ = Mid-level DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.1000	kilograms
Soil ingestion rate (SIR) =	0.0094	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1250	L/kg BW/day
Food ingestion rate (FIR) =	0.1549	kg DW/kg BW/day

Percent diet composition

Metric	Value
Grass diet =	100%

Table C-140 Estimated Daily Doses (EDDs) for American Pika Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils. Soil, plant tissue, and surface water values represent the low-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario						
	Exposure Point Concentrations			EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Grass (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	26.56	0.14	1.42E-03	2.50E-01	2.17E-02	1.77E-04	2.72E-01
Arsenic	113.30	0.18	4.16E-02	1.07E+00	2.80E-02	5.20E-03	1.10E+00
Cadmium	5.80	0.31	3.55E-02	5.45E-02	4.77E-02	4.43E-03	1.07E-01
Chromium	3.95	1.98	2.75E-03	3.72E-02	3.06E-01	3.44E-04	3.43E-01
Copper	282.40	6.09	8.08E-01	2.65E+00	9.44E-01	1.01E-01	3.70E+00
Lead	4522.00	1.29	1.29E-01	4.25E+01	2.00E-01	1.61E-02	4.27E+01
Manganese	2282.00	301.60	1.11E+01	2.15E+01	4.67E+01	1.39E+00	6.95E+01
Mercury	0.44	0.13	0	4.12E-03	1.94E-02	0.00E+00	2.35E-02
Molybdenum	25.83	0	2.75E-03	2.43E-01	0.00E+00	3.44E-04	2.43E-01
Nickel	2.23	1.06	1.38E-02	2.09E-02	1.64E-01	1.72E-03	1.86E-01
Selenium	2.99	0.31	2.89E-03	2.81E-02	4.79E-02	3.61E-04	7.63E-02
Silver	16.08	0.21	1.39E-03	1.51E-01	3.21E-02	1.73E-04	1.83E-01
Thallium	1.49	0.34	2.81E-03	1.40E-02	5.22E-02	3.51E-04	6.66E-02
Zinc	2335.00	79.53	1.14E+01	2.19E+01	1.23E+01	1.43E+00	3.57E+01
	Reasonable Maximum Exposure (RME) Scenario						
Antimony	56.93	0.17	1.51E-03	5.35E-01	2.59E-02	1.88E-04	5.61E-01
Arsenic	146.50	0.35	1.31E-01	1.38E+00	5.37E-02	1.63E-02	1.45E+00
Cadmium	8.94	0.66	7.45E-02	8.40E-02	1.02E-01	9.31E-03	1.96E-01
Chromium	4.90	2.53	2.88E-03	4.60E-02	3.92E-01	3.61E-04	4.38E-01
Copper	406.80	7.68	1.44E+00	3.82E+00	1.19E+00	1.80E-01	5.19E+00
Lead	9092.00	3.03	2.37E-01	8.55E+01	4.69E-01	2.97E-02	8.60E+01
Manganese	6936.00	534.90	1.36E+01	6.52E+01	8.28E+01	1.70E+00	1.50E+02
Mercury	0.73	0.13	0	6.82E-03	1.95E-02	0.00E+00	2.63E-02
Molybdenum	52.21	0	2.99E-03	4.91E-01	0.00E+00	3.73E-04	4.91E-01
Nickel	2.81	1.57	2.21E-02	2.64E-02	2.44E-01	2.76E-03	2.73E-01
Selenium	4.12	0.43	3.13E-03	3.87E-02	6.69E-02	3.91E-04	1.06E-01
Silver	20.59	0.41	1.46E-03	1.94E-01	6.27E-02	1.83E-04	2.56E-01
Thallium	3.79	0.78	3.08E-03	3.56E-02	1.21E-01	3.85E-04	1.57E-01
Zinc	3742.00	134.00	2.10E+01	3.52E+01	2.08E+01	2.62E+00	5.86E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in grass

Food chain modeling equations

1 $Dose_{soil}$ = Low-level DRC_{soil} * SIR

2 $Dose_{plant}$ = (Low-level DRC_{grass} * 100%) * FIR

3 $Dose_{water}$ = Low-level DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.1000	kilograms
Soil ingestion rate (SIR) =	0.0094	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1250	L/kg BW/day
Food ingestion rate (FIR) =	0.1549	kg DW/kg BW/day

Percent diet composition

Metric	Value
Grass diet =	100%

Table C-141 Estimated Daily Doses (EDDs) for Yellow-Bellied Marmot Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, **i**nvertebrate and plant tissue, and surface water values represent the high-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario										
	Exposure Point Concentrations						EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD[5]
Antimony	6.23	1.26	0.70	0.17	0.18	1.65E-03	2.42E-02	2.57E-03	8.87E-03	1.44E-04	1.79E-02
Arsenic	49.27	1.50	8.63	0.30	0.31	4.02E-03	1.91E-01	1.33E-02	1.54E-02	3.49E-04	1.10E-01
Cadmium	9.55	5.43	74.50	0.59	2.86	5.11E-03	3.71E-02	1.05E-01	1.01E-01	4.45E-04	1.22E-01
Chromium	4.76	3.45	3.75	2.33	2.51	3.37E-03	1.85E-02	9.45E-03	1.22E-01	2.93E-04	7.49E-02
Copper	182.10	49.36	28.20	13.07	11.34	6.14E-02	7.07E-01	1.02E-01	5.97E-01	5.34E-03	7.06E-01
Lead	2198.00	63.88	186.00	29.97	20.15	1.82E-02	8.53E+00	3.28E-01	1.19E+00	1.59E-03	5.02E+00
Manganese	6666.00	802.70	732.00	394.40	403.70	2.42E+00	2.59E+01	2.01E+00	2.00E+01	2.11E-01	2.40E+01
Mercury	0.09	0	0	0.13	0.13	0	3.43E-04	0.00E+00	6.23E-03	0.00E+00	3.29E-03
Molybdenum	12.28	0	0	0	0	2.50E-03	4.76E-02	0.00E+00	0.00E+00	2.18E-04	2.39E-02
Nickel	6.48	1.24	1.48	1.28	1.36	4.65E-03	2.51E-02	3.57E-03	6.63E-02	4.05E-04	4.77E-02
Selenium	0.93	0.89	20.19	0.34	0.48	3.45E-03	3.62E-03	2.77E-02	2.13E-02	3.00E-04	2.65E-02
Silver	7.69	1.07	1.22	0.21	0.17	1.66E-03	2.98E-02	3.01E-03	9.16E-03	1.45E-04	2.11E-02
Thallium	0.92	0.83	0.25	0.36	0.47	4.12E-03	3.57E-03	1.42E-03	2.14E-02	3.58E-04	1.34E-02
Zinc	2010.00	442.10	687.00	173.00	422.90	1.45E+00	7.80E+00	1.48E+00	1.65E+01	1.27E-01	1.30E+01
	Reasonable Maximum Exposure (RME) Scenario										
Antimony	12.34	3.56	0.70	0.24	0.42	1.74E-03	4.79E-02	5.59E-03	1.76E-02	1.51E-04	3.56E-02
Arsenic	65.47	2.53	9.32	0.96	0.88	7.32E-03	2.54E-01	1.56E-02	4.54E-02	6.37E-04	1.58E-01
Cadmium	20.01	9.72	74.50	1.07	4.14	7.08E-03	7.76E-02	1.11E-01	1.50E-01	6.16E-04	1.69E-01
Chromium	5.19	6.15	5.92	2.53	2.98	3.71E-03	2.01E-02	1.58E-02	1.40E-01	3.23E-04	8.83E-02
Copper	264.60	87.41	28.20	19.09	18.42	1.21E-01	1.03E+00	1.52E-01	9.31E-01	1.06E-02	1.06E+00
Lead	2940.00	107.80	186.00	106.30	57.52	2.16E-02	1.14E+01	3.86E-01	3.77E+00	1.88E-03	7.78E+00
Manganese	21678.00	3056.00	732.00	554.10	1690.00	3.16E+00	8.41E+01	4.97E+00	6.34E+01	2.75E-01	7.64E+01
Mercury	0.14	0	0	0.13	0.13	0	5.59E-04	0.00E+00	6.27E-03	0.00E+00	3.41E-03
Molybdenum	29.16	0	0	0	0	2.50E-03	1.13E-01	0.00E+00	0.00E+00	2.18E-04	5.67E-02
Nickel	14.93	2.91	2.31	2.01	2.42	7.23E-03	5.79E-02	6.85E-03	1.13E-01	6.29E-04	8.93E-02
Selenium	1.26	2.69	45.90	0.50	1.14	3.63E-03	4.90E-03	6.38E-02	4.52E-02	3.16E-04	5.71E-02
Silver	11.19	4.51	1.22	0.41	0.13	1.84E-03	4.34E-02	7.51E-03	1.15E-02	1.60E-04	3.13E-02
Thallium	1.36	2.71	0.25	0.85	1.01	4.98E-03	5.27E-03	3.89E-03	4.75E-02	4.33E-04	2.85E-02
Zinc	5523.00	912.00	687.00	219.80	584.60	1.88E+00	2.14E+01	2.10E+00	2.25E+01	1.63E-01	2.31E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in invertebrates and vegetation

Food chain modeling equations

1 $Dose_{soil}$ = High-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(High-level $DRC_{soil\ invert}$*2.5%) + (High-level $DRC_{GD\ invert}$*2.5%)] * FIR

3 $Dose_{plant}$ = [(High-level DRC_{grass}*35%)+ (High-level DRC_{herb}*60%)] * FIR

4 $Dose_{water}$ = High-level DRC_{SW} * WIR

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	3.5000	kilograms
Soil ingestion rate (SIR) =	0.0039	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0870	L/kg BW/day
Food ingestion rate (FIR) =	0.0525	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
GD invert. diet =	2.5%
Soil invert. diet =	2.5%
Grass diet =	35%
Herb diet =	60%

Table C-142 Estimated Daily Doses (EDDs) for Yellow-Bellied Marmot Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, invertebrate and plant tissue, and surface water values represent the mid-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario										
	Exposure Point Concentrations						EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	1.63	1.26	0.70	0.14	0.18	1.53E-03	6.34E-03	2.57E-03	8.24E-03	1.33E-04	8.64E-03
Arsenic	29.34	1.13	8.63	0.30	0.31	4.02E-03	1.14E-01	1.28E-02	1.54E-02	3.50E-04	7.12E-02
Cadmium	1.63	3.68	74.50	0.39	0.98	2.52E-03	6.31E-03	1.03E-01	3.79E-02	2.19E-04	7.35E-02
Chromium	6.59	3.45	3.75	2.33	2.51	3.50E-03	2.56E-02	9.45E-03	1.22E-01	3.04E-04	7.85E-02
Copper	69.23	43.99	28.20	7.46	11.34	3.38E-02	2.69E-01	9.48E-02	4.94E-01	2.94E-03	4.30E-01
Lead	1832.00	35.25	186.00	10.49	6.80	2.00E-02	7.11E+00	2.90E-01	4.07E-01	1.74E-03	3.90E+00
Manganese	1890.00	217.50	732.00	301.60	403.70	1.21E+00	7.33E+00	1.25E+00	1.83E+01	1.05E-01	1.35E+01
Mercury	0.03	0	0	0.13	0.13	0	1.09E-04	0.00E+00	6.23E-03	0.00E+00	3.17E-03
Molybdenum	2.42	0	0	0	0	2.50E-03	9.37E-03	0.00E+00	0.00E+00	2.18E-04	4.80E-03
Nickel	5.29	1.24	1.48	1.28	1.36	4.32E-03	2.05E-02	3.57E-03	6.64E-02	3.76E-04	4.55E-02
Selenium	0.82	0.89	20.19	0.31	0.28	3.69E-03	3.16E-03	2.77E-02	1.46E-02	3.21E-04	2.29E-02
Silver	4.91	1.07	1.22	0.21	0.14	1.75E-03	1.91E-02	3.01E-03	8.28E-03	1.52E-04	1.53E-02
Thallium	0.82	0.83	0.25	0.28	0.28	3.74E-03	3.19E-03	1.42E-03	1.40E-02	3.25E-04	9.48E-03
Zinc	456.10	210.20	687.00	97.14	99.42	7.73E-01	1.77E+00	1.18E+00	4.92E+00	6.73E-02	3.97E+00
	Reasonable Maximum Exposure (RME) Scenario										
Antimony	3.29	3.56	0.70	0.17	0.42	1.60E-03	1.28E-02	5.59E-03	1.63E-02	1.40E-04	1.74E-02
Arsenic	39.38	1.88	9.32	0.96	0.88	5.58E-03	1.53E-01	1.47E-02	4.54E-02	4.86E-04	1.07E-01
Cadmium	2.35	9.72	74.50	0.66	1.87	4.52E-03	9.10E-03	1.11E-01	7.10E-02	3.93E-04	9.55E-02
Chromium	7.70	6.15	5.92	2.53	2.98	4.00E-03	2.99E-02	1.58E-02	1.40E-01	3.48E-04	9.32E-02
Copper	97.56	87.41	28.20	8.69	18.42	5.96E-02	3.79E-01	1.52E-01	7.40E-01	5.18E-03	6.38E-01
Lead	3339.00	82.04	186.00	46.24	27.70	3.40E-02	1.30E+01	3.52E-01	1.72E+00	2.96E-03	7.52E+00
Manganese	2386.00	377.10	732.00	534.90	1690.00	2.22E+00	9.26E+00	1.46E+00	6.31E+01	1.93E-01	3.70E+01
Mercury	0.12	0	0	0.13	0.13	0	4.66E-04	0.00E+00	6.28E-03	0.00E+00	3.38E-03
Molybdenum	3.52	0	0	0	0	2.50E-03	1.36E-02	0.00E+00	0.00E+00	2.18E-04	6.93E-03
Nickel	5.83	2.91	2.31	2.01	2.42	5.75E-03	2.26E-02	6.85E-03	1.13E-01	5.00E-04	7.16E-02
Selenium	1.16	2.69	45.90	0.43	0.33	3.90E-03	4.50E-03	6.38E-02	1.84E-02	3.39E-04	4.35E-02
Silver	8.40	4.51	1.22	0.41	0.17	1.96E-03	3.26E-02	7.51E-03	1.27E-02	1.71E-04	2.65E-02
Thallium	1.20	2.71	0.25	0.33	0.33	4.37E-03	4.65E-03	3.89E-03	1.65E-02	3.80E-04	1.27E-02
Zinc	961.30	291.80	687.00	139.50	168.30	1.29E+00	3.73E+00	1.28E+00	7.87E+00	1.12E-01	6.50E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in invertebrates and vegetation

Food chain modeling equations

1 $Dose_{soil}$ = Mid-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Mid-level $DRC_{soil\ invert}$*2.5%) + (Mid-level $DRC_{GD\ invert}$*2.5%)] * FIR

3 $Dose_{plant}$ = [(Mid-level DRC_{grass}*35%)+ (Mid-level DRC_{herb}*60%)] * FIR

4 $Dose_{water}$ = Mid-level DRC_{SW} * WIR

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	3.5000	kilograms
Soil ingestion rate (SIR) =	0.0039	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0870	L/kg BW/day
Food ingestion rate (FIR) =	0.0525	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
GD invert. diet =	2.5%
Soil invert. diet =	2.5%
Grass diet =	35%
Herb diet =	60%

Table C-143 Estimated Daily Doses (EDDs) for Yellow-Bellied Marmot Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, invertebrate and plant tissue, and surface water values represent the low-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario										
	Exposure Point Concentrations						EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	2.62	1.26	0.70	0.14	0.18	1.89E-03	1.02E-02	2.57E-03	8.24E-03	1.64E-04	1.06E-02
Arsenic	42.64	0.78	8.63	0.18	0.31	3.23E-03	1.65E-01	1.24E-02	1.31E-02	2.81E-04	9.56E-02
Cadmium	1.61	2.32	12.60	0.31	0.66	2.64E-03	6.25E-03	1.96E-02	2.64E-02	2.30E-04	2.62E-02
Chromium	4.87	3.45	3.75	1.98	2.47	3.67E-03	1.89E-02	9.45E-03	1.14E-01	3.19E-04	7.13E-02
Copper	150.40	36.43	17.60	6.09	7.78	1.66E-02	5.84E-01	7.09E-02	3.57E-01	1.44E-03	5.07E-01
Lead	728.60	8.86	115.00	1.29	2.39	5.94E-03	2.83E+00	1.63E-01	9.89E-02	5.17E-04	1.54E+00
Manganese	835.80	203.40	732.00	301.60	180.20	4.43E+00	3.24E+00	1.23E+00	1.12E+01	3.86E-01	8.04E+00
Mercury	0.09	0	0	0.13	0.13	0	3.46E-04	0.00E+00	6.23E-03	0.00E+00	3.29E-03
Molybdenum	1.72	0	0	0	0	2.50E-03	6.69E-03	0.00E+00	0.00E+00	2.18E-04	3.45E-03
Nickel	3.17	0.66	1.48	1.06	0.80	4.98E-03	1.23E-02	2.81E-03	4.45E-02	4.34E-04	3.00E-02
Selenium	1.47	0.89	20.19	0.31	0.26	3.79E-03	5.72E-03	2.77E-02	1.39E-02	3.30E-04	2.38E-02
Silver	2.87	1.07	0.54	0.21	0.13	1.83E-03	1.11E-02	2.11E-03	7.93E-03	1.59E-04	1.07E-02
Thallium	0.81	0.30	0.83	0.34	0.28	3.09E-03	3.15E-03	1.48E-03	1.50E-02	2.69E-04	9.92E-03
Zinc	368.20	210.20	356.00	79.53	65.19	8.19E-01	1.43E+00	7.43E-01	3.52E+00	7.13E-02	2.88E+00
	Reasonable Maximum Exposure (RME) Scenario										
Antimony	3.87	3.56	0.70	0.17	0.42	1.98E-03	1.50E-02	5.59E-03	1.63E-02	1.72E-04	1.85E-02
Arsenic	57.42	1.28	9.32	0.35	0.88	3.94E-03	2.23E-01	1.39E-02	3.40E-02	3.43E-04	1.36E-01
Cadmium	2.52	4.50	12.60	0.66	1.04	4.37E-03	9.77E-03	2.24E-02	4.50E-02	3.80E-04	3.88E-02
Chromium	5.47	6.15	5.92	2.53	2.74	4.15E-03	2.12E-02	1.58E-02	1.33E-01	3.61E-04	8.51E-02
Copper	256.40	78.95	17.60	7.68	9.52	2.23E-02	9.95E-01	1.27E-01	4.41E-01	1.94E-03	7.82E-01
Lead	958.00	18.30	115.00	3.03	8.38	1.07E-02	3.72E+00	1.75E-01	3.20E-01	9.34E-04	2.11E+00
Manganese	1128.00	262.60	732.00	534.90	304.90	8.26E+00	4.38E+00	1.31E+00	1.94E+01	7.19E-01	1.29E+01
Mercury	0.40	0	0	0.13	0.13	0	1.56E-03	0.00E+00	6.28E-03	0.00E+00	3.92E-03
Molybdenum	2.45	0	0	0	0	2.50E-03	9.52E-03	0.00E+00	0.00E+00	2.18E-04	4.87E-03
Nickel	3.74	0.96	2.31	1.57	1.36	7.42E-03	1.45E-02	4.30E-03	7.18E-02	6.46E-04	4.57E-02
Selenium	1.87	2.69	45.90	0.43	0.29	3.99E-03	7.26E-03	6.38E-02	1.69E-02	3.47E-04	4.41E-02
Silver	3.63	4.51	0.65	0.41	0.14	2.07E-03	1.41E-02	6.76E-03	1.19E-02	1.80E-04	1.65E-02
Thallium	1.12	0.61	2.71	0.78	0.33	5.06E-03	4.35E-03	4.36E-03	2.48E-02	4.41E-04	1.70E-02
Zinc	538.90	291.80	463.00	134.00	85.50	1.49E+00	2.09E+00	9.91E-01	5.16E+00	1.30E-01	4.18E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in invertebrates and vegetation

Food chain modeling equations

1 $Dose_{soil}$ = Low-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Low-level $DRC_{soil\ invert}$*2.5%) + (Low-level $DRC_{GD\ invert}$*2.5%)] * FIR

3 $Dose_{plant}$ = [(Low-level DRC_{grass}*35%)+ (Low-level DRC_{herb}*60%)] * FIR

4 $Dose_{water}$ = Low-level DRC_{SW} * WIR

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	3.5000	kilograms
Soil ingestion rate (SIR) =	0.0039	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0870	L/kg BW/day
Food ingestion rate (FIR) =	0.0525	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
GD invert. diet =	2.5%
Soil invert. diet =	2.5%
Grass diet =	35%
Herb diet =	60%

Table C-144 Estimated Daily Doses (EDDs) for Yellow-Bellied Marmot Foraging in Vegetated Upland Habitats. Soil, invertebrate, and plant tissue, and surface water values represent vgetated upland habitat and reference exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario										
	Exposure Point Concentrations						EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD[5]
Antimony	0.66	1.26	0.33	0.14	0.18	1.54E-03	2.55E-03	2.08E-03	8.24E-03	1.34E-04	6.50E-03
Arsenic	14.86	0.78	7.53	0.18	0.13	2.10E-03	5.77E-02	1.09E-02	7.26E-03	1.83E-04	3.80E-02
Cadmium	1.07	2.15	6.76	0.13	0.34	4.56E-04	4.17E-03	1.17E-02	1.32E-02	3.97E-05	1.45E-02
Chromium	5.92	3.45	3.75	1.98	2.47	2.97E-03	2.30E-02	9.45E-03	1.14E-01	2.59E-04	7.34E-02
Copper	29.23	36.43	11.92	5.33	7.26	1.62E-03	1.13E-01	6.35E-02	3.27E-01	1.41E-04	2.52E-01
Lead	174.30	4.75	6.96	1.29	0.67	7.78E-04	6.76E-01	1.54E-02	4.48E-02	6.76E-05	3.68E-01
Manganese	1355.00	203.40	339.10	204.30	117.40	3.20E-02	5.26E+00	7.12E-01	7.45E+00	2.78E-03	6.71E+00
Mercury	0.03	0	0	0.12	0.13	0	1.29E-04	0.00E+00	6.22E-03	0.00E+00	3.17E-03
Molybdenum	3.26	0	0	0	0	0	1.26E-02	0.00E+00	0.00E+00	0.00E+00	6.32E-03
Nickel	3.37	0.66	1.48	1.06	0.72	1.45E-03	1.31E-02	2.81E-03	4.20E-02	1.27E-04	2.90E-02
Selenium	0.93	0.74	20.19	0.30	0.25	3.15E-03	3.61E-03	2.75E-02	1.33E-02	2.74E-04	2.23E-02
Silver	1.10	1.07	0.45	0.15	0.13	1.49E-03	4.27E-03	1.99E-03	6.62E-03	1.29E-04	6.51E-03
Thallium	0.75	0.83	0.20	0.28	0.25	3.01E-03	2.90E-03	1.35E-03	1.30E-02	2.62E-04	8.75E-03
Zinc	190.00	210.20	278.00	58.43	51.94	5.36E-02	7.37E-01	6.41E-01	2.71E+00	4.66E-03	2.05E+00
	Reasonable Maximum Exposure (RME) Scenario										
Antimony	1.02	3.56	0.58	0.17	0.42	1.84E-03	3.97E-03	5.42E-03	1.63E-02	1.60E-04	1.29E-02
Arsenic	19.91	1.15	9.32	0.35	0.13	4.06E-03	7.73E-02	1.37E-02	1.03E-02	3.53E-04	5.08E-02
Cadmium	1.88	3.16	9.14	0.34	0.67	8.11E-04	7.30E-03	1.61E-02	2.75E-02	7.06E-05	2.55E-02
Chromium	6.23	6.15	5.92	2.31	2.74	4.43E-03	2.42E-02	1.58E-02	1.29E-01	3.85E-04	8.45E-02
Copper	34.06	78.95	16.80	6.25	8.36	1.95E-03	1.32E-01	1.26E-01	3.78E-01	1.69E-04	3.18E-01
Lead	225.00	8.00	11.30	3.03	0.94	1.07E-03	8.73E-01	2.53E-02	8.52E-02	9.30E-05	4.92E-01
Manganese	1964.00	262.60	541.00	281.50	156.60	6.01E-02	7.62E+00	1.05E+00	1.01E+01	5.23E-03	9.39E+00
Mercury	0.11	0	0	0.13	0.13	0	4.31E-04	0.00E+00	6.27E-03	0.00E+00	3.35E-03
Molybdenum	6.12	0	0	0	0	0	2.38E-02	0.00E+00	0.00E+00	0.00E+00	1.19E-02
Nickel	4.82	0.96	2.31	1.57	1.25	2.25E-03	1.87E-02	4.30E-03	6.83E-02	1.95E-04	4.57E-02
Selenium	1.29	1.63	45.90	0.38	0.25	3.72E-03	5.00E-03	6.24E-02	1.49E-02	3.24E-04	4.13E-02
Silver	2.23	4.51	0.65	0.18	0.13	2.21E-03	8.65E-03	6.76E-03	7.33E-03	1.93E-04	1.15E-02
Thallium	0.98	2.71	0.25	0.33	0.25	4.65E-03	3.79E-03	3.89E-03	1.40E-02	4.05E-04	1.10E-02
Zinc	236.70	254.60	463.00	74.77	78.85	1.28E-01	9.18E-01	9.42E-01	3.86E+00	1.11E-02	2.86E+00

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in invertebrates and vegetation

Food chain modeling equations

1 $Dose_{soil}$ = Upland-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Upland $DRC_{soil\ invert}$*2.5%) + (Upland $DRC_{GD\ invert}$*2.5%)] * FIR

3 $Dose_{plant}$ = [(Upland DRC_{grass}*35%)+ (Upland DRC_{herb}*60%)] * FIR

4 $Dose_{water}$ = Upland DRC_{SW} * WIR

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	3.5000	kilograms
Soil ingestion rate (SIR) =	0.0039	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0870	L/kg BW/day
Food ingestion rate (FIR) =	0.0525	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
GD invert. diet =	2.5%
Soil invert. diet =	2.5%
Grass diet =	35%
Herb diet =	60%

Table C-145 Estimated Daily Doses (EDDs) for Yellow-Bellied Marmot Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils. Soil, **i**nvertebrate and plant tissue, and surface water values represent the high-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario										
	Exposure Point Concentrations						EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	90.02	1.26	0.70	0.17	0.18	1.42E-03	3.49E-01	2.57E-03	8.87E-03	1.23E-04	1.80E-01
Arsenic	138.20	1.50	8.63	0.30	0.31	4.16E-02	5.36E-01	1.33E-02	1.54E-02	3.62E-03	2.84E-01
Cadmium	45.74	5.43	74.50	0.59	2.86	3.55E-02	1.77E-01	1.05E-01	1.01E-01	3.08E-03	1.93E-01
Chromium	2.84	3.45	3.75	2.33	2.51	2.75E-03	1.10E-02	9.45E-03	1.22E-01	2.39E-04	7.12E-02
Copper	827.60	49.36	28.20	13.07	11.34	8.08E-01	3.21E+00	1.02E-01	5.97E-01	7.03E-02	1.99E+00
Lead	13275.00	63.88	186.00	29.97	20.15	1.29E-01	5.15E+01	3.28E-01	1.19E+00	1.12E-02	2.65E+01
Manganese	7682.00	802.70	732.00	394.40	403.70	1.11E+01	2.98E+01	2.01E+00	2.00E+01	9.65E-01	2.64E+01
Mercury	0.93	0	0	0.13	0.13	0	3.62E-03	0.00E+00	6.23E-03	0.00E+00	4.93E-03
Molybdenum	42.05	0	0	0	0	2.75E-03	1.63E-01	0.00E+00	0.00E+00	2.39E-04	8.17E-02
Nickel	4.72	1.24	1.48	1.28	1.36	1.38E-02	1.83E-02	3.57E-03	6.63E-02	1.20E-03	4.47E-02
Selenium	4.35	0.89	20.19	0.34	0.48	2.89E-03	1.69E-02	2.77E-02	2.13E-02	2.51E-04	3.31E-02
Silver	37.16	1.07	1.22	0.21	0.17	1.39E-03	1.44E-01	3.01E-03	9.16E-03	1.21E-04	7.82E-02
Thallium	0.83	0.83	0.25	0.36	0.47	2.81E-03	3.22E-03	1.42E-03	2.14E-02	2.44E-04	1.31E-02
Zinc	13261.00	442.10	687.00	173.00	422.90	1.14E+01	5.15E+01	1.48E+00	1.65E+01	9.94E-01	3.52E+01
	Reasonable Maximum Exposure (RME) Scenario										
Antimony	125.30	3.56	0.70	0.24	0.42	1.51E-03	4.86E-01	5.59E-03	1.76E-02	1.31E-04	2.55E-01
Arsenic	179.10	2.53	9.32	0.96	0.88	1.31E-01	6.95E-01	1.56E-02	4.54E-02	1.14E-02	3.84E-01
Cadmium	80.00	9.72	74.50	1.07	4.14	7.45E-02	3.10E-01	1.11E-01	1.50E-01	6.48E-03	2.89E-01
Chromium	4.08	6.15	5.92	2.53	2.98	2.88E-03	1.58E-02	1.58E-02	1.40E-01	2.51E-04	8.61E-02
Copper	1373.00	87.41	28.20	19.09	18.42	1.44E+00	5.33E+00	1.52E-01	9.31E-01	1.25E-01	3.27E+00
Lead	17269.00	107.80	186.00	106.30	57.52	2.37E-01	6.70E+01	3.86E-01	3.77E+00	2.06E-02	3.56E+01
Manganese	48268.00	3056.00	732.00	554.10	1690.00	1.36E+01	1.87E+02	4.97E+00	6.34E+01	1.18E+00	1.28E+02
Mercury	1.28	0	0	0.13	0.13	0	4.96E-03	0.00E+00	6.27E-03	0.00E+00	5.61E-03
Molybdenum	71.08	0	0	0	0	2.99E-03	2.76E-01	0.00E+00	0.00E+00	2.60E-04	1.38E-01
Nickel	13.23	2.91	2.31	2.01	2.42	2.21E-02	5.13E-02	6.85E-03	1.13E-01	1.92E-03	8.66E-02
Selenium	6.73	2.69	45.90	0.50	1.14	3.13E-03	2.61E-02	6.38E-02	4.52E-02	2.72E-04	6.77E-02
Silver	47.68	4.51	1.22	0.41	0.13	1.46E-03	1.85E-01	7.51E-03	1.15E-02	1.27E-04	1.02E-01
Thallium	1.34	2.71	0.25	0.85	1.01	3.08E-03	5.19E-03	3.89E-03	4.75E-02	2.68E-04	2.84E-02
Zinc	22551.00	912.00	687.00	219.80	584.60	2.10E+01	8.75E+01	2.10E+00	2.25E+01	1.83E+00	5.69E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in invertebrates and vegetation

Food chain modeling equations

1 $Dose_{soil}$ = High-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(High-level $DRC_{soil\ invert}$*2.5%) + (High-level $DRC_{GD\ invert}$*2.5%)] * FIR

3 $Dose_{plant}$ = [(High-level DRC_{grass}*35%) + (High-level DRC_{herb}*60%)] * FIR

4 $Dose_{water}$ = High-level DRC_{SW} * WIR

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	3.5000	kilograms
Soil ingestion rate (SIR) =	0.0039	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0870	L/kg BW/day
Food ingestion rate (FIR) =	0.0525	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
GD invert. diet =	2.5%
Soil invert. diet =	2.5%
Grass diet =	35%
Herb diet =	60%

Table C-146 Estimated Daily Doses (EDDs) for Yellow-Bellied Marmot Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils. Soil, invertebrate and plant tissue, and surface water values represent the mid-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario										
	Exposure Point Concentrations						EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	40.39	1.26	0.70	0.14	0.18	1.42E-03	1.57E-01	2.57E-03	8.24E-03	1.23E-04	8.38E-02
Arsenic	892.20	1.13	8.63	0.30	0.31	4.16E-02	3.46E+00	1.28E-02	1.54E-02	3.62E-03	1.75E+00
Cadmium	8.53	3.68	74.50	0.39	0.98	3.55E-02	3.31E-02	1.03E-01	3.79E-02	3.08E-03	8.84E-02
Chromium	4.05	3.45	3.75	2.33	2.51	2.75E-03	1.57E-02	9.45E-03	1.22E-01	2.39E-04	7.35E-02
Copper	737.10	43.99	28.20	7.46	11.34	8.08E-01	2.86E+00	9.48E-02	4.94E-01	7.03E-02	1.76E+00
Lead	6421.00	35.25	186.00	10.49	6.80	1.29E-01	2.49E+01	2.90E-01	4.07E-01	1.12E-02	1.28E+01
Manganese	2265.00	217.50	732.00	301.60	403.70	1.11E+01	8.79E+00	1.25E+00	1.83E+01	9.65E-01	1.46E+01
Mercury	0.73	0	0	0.13	0.13	0	2.83E-03	0.00E+00	6.23E-03	0.00E+00	4.53E-03
Molybdenum	24.87	0	0	0	0	2.75E-03	9.65E-02	0.00E+00	0.00E+00	2.39E-04	4.84E-02
Nickel	2.82	1.24	1.48	1.28	1.36	1.38E-02	1.09E-02	3.57E-03	6.64E-02	1.20E-03	4.11E-02
Selenium	4.53	0.89	20.19	0.31	0.28	2.89E-03	1.76E-02	2.77E-02	1.46E-02	2.51E-04	3.01E-02
Silver	19.89	1.07	1.22	0.21	0.14	1.39E-03	7.72E-02	3.01E-03	8.28E-03	1.21E-04	4.43E-02
Thallium	0.53	0.83	0.25	0.28	0.28	2.81E-03	2.05E-03	1.42E-03	1.40E-02	2.44E-04	8.87E-03
Zinc	2619.00	210.20	687.00	97.14	99.42	1.14E+01	1.02E+01	1.18E+00	4.92E+00	9.94E-01	8.63E+00
	Reasonable Maximum Exposure (RME) Scenario										
Antimony	71.60	3.56	0.70	0.17	0.42	1.51E-03	2.78E-01	5.59E-03	1.63E-02	1.31E-04	1.50E-01
Arsenic	3400.00	1.88	9.32	0.96	0.88	1.31E-01	1.32E+01	1.47E-02	4.54E-02	1.14E-02	6.63E+00
Cadmium	15.45	9.72	74.50	0.66	1.87	7.45E-02	5.99E-02	1.11E-01	7.10E-02	6.48E-03	1.24E-01
Chromium	5.52	6.15	5.92	2.53	2.98	2.88E-03	2.14E-02	1.58E-02	1.40E-01	2.51E-04	8.89E-02
Copper	1320.00	87.41	28.20	8.69	18.42	1.44E+00	5.12E+00	1.52E-01	7.40E-01	1.25E-01	3.07E+00
Lead	9473.00	82.04	186.00	46.24	27.70	2.37E-01	3.68E+01	3.52E-01	1.72E+00	2.06E-02	1.94E+01
Manganese	6534.00	377.10	732.00	534.90	1690.00	1.36E+01	2.54E+01	1.46E+00	6.31E+01	1.18E+00	4.55E+01
Mercury	2.13	0	0	0.13	0.13	0	8.28E-03	0.00E+00	6.28E-03	0.00E+00	7.28E-03
Molybdenum	43.01	0	0	0	0	2.99E-03	1.67E-01	0.00E+00	0.00E+00	2.60E-04	8.36E-02
Nickel	3.61	2.91	2.31	2.01	2.42	2.21E-02	1.40E-02	6.85E-03	1.13E-01	1.92E-03	6.80E-02
Selenium	6.55	2.69	45.90	0.43	0.33	3.13E-03	2.54E-02	6.38E-02	1.84E-02	2.72E-04	5.39E-02
Silver	24.33	4.51	1.22	0.41	0.17	1.46E-03	9.44E-02	7.51E-03	1.27E-02	1.27E-04	5.74E-02
Thallium	0.72	2.71	0.25	0.33	0.33	3.08E-03	2.79E-03	3.89E-03	1.65E-02	2.68E-04	1.17E-02
Zinc	4559.00	291.80	687.00	139.50	168.30	2.10E+01	1.77E+01	1.28E+00	7.87E+00	1.83E+00	1.43E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in invertebrates and vegetation

Food chain modeling equations

1 $Dose_{soil}$ = Mid-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Mid-level $DRC_{soil\ invert}$*2.5%) + (Mid-level $DRC_{GD\ invert}$*2.5%)] * FIR

3 $Dose_{plant}$ = [(Mid-level DRC_{grass}*35%) + (Mid-level DRC_{herb}*60%)] * FIR

4 $Dose_{water}$ = Mid-level DRC_{SW} * WIR

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	3.5000	kilograms
Soil ingestion rate (SIR) =	0.0039	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0870	L/kg BW/day
Food ingestion rate (FIR) =	0.0525	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
GD invert. diet =	2.5%
Soil invert. diet =	2.5%
Grass diet =	35%
Herb diet =	60%

Table C-147 Estimated Daily Doses (EDDs) for Yellow-Bellied Marmot Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils. Soil, invertebrate and plant tissue, and surface water values represent the low-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario										
	Exposure Point Concentrations						EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	26.56	1.26	0.70	0.14	0.18	1.42E-03	1.03E-01	2.57E-03	8.24E-03	1.23E-04	5.70E-02
Arsenic	113.30	0.78	8.63	0.18	0.31	4.16E-02	4.40E-01	1.24E-02	1.31E-02	3.62E-03	2.34E-01
Cadmium	5.80	2.32	12.60	0.31	0.66	3.55E-02	2.25E-02	1.96E-02	2.64E-02	3.08E-03	3.58E-02
Chromium	3.95	3.45	3.75	1.98	2.47	2.75E-03	1.53E-02	9.45E-03	1.14E-01	2.39E-04	6.95E-02
Copper	282.40	36.43	17.60	6.09	7.78	8.08E-01	1.10E+00	7.09E-02	3.57E-01	7.03E-02	7.97E-01
Lead	4522.00	8.86	115.00	1.29	2.39	1.29E-01	1.75E+01	1.63E-01	9.89E-02	1.12E-02	8.91E+00
Manganese	2282.00	203.40	732.00	301.60	180.20	1.11E+01	8.85E+00	1.23E+00	1.12E+01	9.65E-01	1.11E+01
Mercury	0.44	0	0	0.13	0.13	0	1.70E-03	0.00E+00	6.23E-03	0.00E+00	3.97E-03
Molybdenum	25.83	0	0	0	0	2.75E-03	1.00E-01	0.00E+00	0.00E+00	2.39E-04	5.02E-02
Nickel	2.23	0.66	1.48	1.06	0.80	1.38E-02	8.63E-03	2.81E-03	4.45E-02	1.20E-03	2.86E-02
Selenium	2.99	0.89	20.19	0.31	0.26	2.89E-03	1.16E-02	2.77E-02	1.39E-02	2.51E-04	2.67E-02
Silver	16.08	1.07	0.54	0.21	0.13	1.39E-03	6.24E-02	2.11E-03	7.93E-03	1.21E-04	3.63E-02
Thallium	1.49	0.30	0.83	0.34	0.28	2.81E-03	5.79E-03	1.48E-03	1.50E-02	2.44E-04	1.12E-02
Zinc	2335.00	210.20	356.00	79.53	65.19	1.14E+01	9.06E+00	7.43E-01	3.52E+00	9.94E-01	7.16E+00
	Reasonable Maximum Exposure (RME) Scenario										
Antimony	56.93	3.56	0.70	0.17	0.42	1.51E-03	2.21E-01	5.59E-03	1.63E-02	1.31E-04	1.21E-01
Arsenic	146.50	1.28	9.32	0.35	0.88	1.31E-01	5.68E-01	1.39E-02	3.40E-02	1.14E-02	3.14E-01
Cadmium	8.94	4.50	12.60	0.66	1.04	7.45E-02	3.47E-02	2.24E-02	4.50E-02	6.48E-03	5.43E-02
Chromium	4.90	6.15	5.92	2.53	2.74	2.88E-03	1.90E-02	1.58E-02	1.33E-01	2.51E-04	8.39E-02
Copper	406.80	78.95	17.60	7.68	9.52	1.44E+00	1.58E+00	1.27E-01	4.41E-01	1.25E-01	1.14E+00
Lead	9092.00	18.30	115.00	3.03	8.38	2.37E-01	3.53E+01	1.75E-01	3.20E-01	2.06E-02	1.79E+01
Manganese	6936.00	262.60	732.00	534.90	304.90	1.36E+01	2.69E+01	1.31E+00	1.94E+01	1.18E+00	2.44E+01
Mercury	0.73	0	0	0.13	0.13	0	2.81E-03	0.00E+00	6.28E-03	0.00E+00	4.55E-03
Molybdenum	52.21	0	0	0	0	2.99E-03	2.03E-01	0.00E+00	0.00E+00	2.60E-04	1.01E-01
Nickel	2.81	0.96	2.31	1.57	1.36	2.21E-02	1.09E-02	4.30E-03	7.18E-02	1.92E-03	4.45E-02
Selenium	4.12	2.69	45.90	0.43	0.29	3.13E-03	1.60E-02	6.38E-02	1.69E-02	2.72E-04	4.85E-02
Silver	20.59	4.51	0.65	0.41	0.14	1.46E-03	7.99E-02	6.76E-03	1.19E-02	1.27E-04	4.94E-02
Thallium	3.79	0.61	2.71	0.78	0.33	3.08E-03	1.47E-02	4.36E-03	2.48E-02	2.68E-04	2.21E-02
Zinc	3742.00	291.80	463.00	134.00	85.50	2.10E+01	1.45E+01	9.91E-01	5.16E+00	1.83E+00	1.12E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in invertebrates and vegetation

Food chain modeling equations

1 $Dose_{soil}$ = Low-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Low-level $DRC_{soil\ invert}$*2.5%) + (Low-level $DRC_{GD\ invert}$*2.5%)] * FIR

3 $Dose_{plant}$ = [(Low-level DRC_{grass}*35%) + (Low-level DRC_{herb}*60%)] * FIR

4 $Dose_{water}$ = Low-level DRC_{SW} * WIR

5 Total EDD = ($Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$) * SUF

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	3.5000	kilograms
Soil ingestion rate (SIR) =	0.0039	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.0870	L/kg BW/day
Food ingestion rate (FIR) =	0.0525	kg DW/kg BW/day
Seasonal use factor (SUF) =	0.5	unitless

Percent diet composition

Metric	Value
GD invert. diet =	2.5%
Soil invert. diet =	2.5%
Grass diet =	35%
Herb diet =	60%

Table C-148 Estimated Daily Doses (EDDs) for Northern Pocket Gopher Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, plant tissue, and surface water values represent the high-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario								
	Exposure Point Concentrations					EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	6.23	0.17	0.18	0.24	1.65E-03	5.58E-02	2.21E-02	2.05E-04	7.81E-02
Arsenic	49.27	0.30	0.31	0.18	4.02E-03	4.41E-01	3.28E-02	4.98E-04	4.74E-01
Cadmium	9.55	0.59	2.86	6.37	5.11E-03	8.55E-02	3.61E-01	6.34E-04	4.47E-01
Chromium	4.76	2.33	2.51	2.58	3.37E-03	4.26E-02	2.89E-01	4.18E-04	3.32E-01
Copper	182.10	13.07	11.34	8.98	6.14E-02	1.63E+00	1.30E+00	7.61E-03	2.94E+00
Lead	2198.00	29.97	20.15	3.39	1.82E-02	1.97E+01	2.18E+00	2.26E-03	2.19E+01
Manganese	6666.00	394.40	403.70	493.80	2.42E+00	5.97E+01	4.88E+01	3.01E-01	1.09E+02
Mercury	0.09	0.13	0.13	0.13	0	7.92E-04	1.45E-02	0.00E+00	1.53E-02
Molybdenum	12.28	0	0	0	2.50E-03	1.10E-01	0.00E+00	3.10E-04	1.10E-01
Nickel	6.48	1.28	1.36	1.18	4.65E-03	5.80E-02	1.52E-01	5.77E-04	2.10E-01
Selenium	0.93	0.34	0.48	0.34	3.45E-03	8.34E-03	4.91E-02	4.28E-04	5.79E-02
Silver	7.69	0.21	0.17	0.18	1.66E-03	6.88E-02	2.07E-02	2.06E-04	8.98E-02
Thallium	0.92	0.36	0.47	0.34	4.12E-03	8.23E-03	4.89E-02	5.11E-04	5.76E-02
Zinc	2010.00	173.00	422.90	494.30	1.45E+00	1.80E+01	4.50E+01	1.80E-01	6.32E+01
	Reasonable Maximum Exposure (RME) Scenario								
Antimony	12.34	0.24	0.42	0.73	1.74E-03	1.10E-01	5.17E-02	2.15E-04	1.62E-01
Arsenic	65.47	0.96	0.88	0.39	7.32E-03	5.86E-01	9.28E-02	9.07E-04	6.80E-01
Cadmium	20.01	1.07	4.14	10.65	7.08E-03	1.79E-01	5.61E-01	8.78E-04	7.41E-01
Chromium	5.19	2.53	2.98	3.24	3.71E-03	4.65E-02	3.42E-01	4.60E-04	3.89E-01
Copper	264.60	19.09	18.42	13.89	1.21E-01	2.37E+00	2.05E+00	1.50E-02	4.43E+00
Lead	2940.00	106.30	57.52	9.12	2.16E-02	2.63E+01	6.69E+00	2.68E-03	3.30E+01
Manganese	21678.00	554.10	1690.00	905.80	3.16E+00	1.94E+02	1.52E+02	3.92E-01	3.46E+02
Mercury	0.14	0.13	0.13	0.13	0	1.29E-03	1.46E-02	0.00E+00	1.59E-02
Molybdenum	29.16	0	0	0	2.50E-03	2.61E-01	0.00E+00	3.10E-04	2.61E-01
Nickel	14.93	2.01	2.42	2.79	7.23E-03	1.34E-01	2.80E-01	8.97E-04	4.15E-01
Selenium	1.26	0.50	1.14	0.78	3.63E-03	1.13E-02	1.10E-01	4.50E-04	1.21E-01
Silver	11.19	0.41	0.13	0.39	1.84E-03	1.00E-01	2.75E-02	2.28E-04	1.28E-01
Thallium	1.36	0.85	1.01	0.78	4.98E-03	1.22E-02	1.09E-01	6.18E-04	1.21E-01
Zinc	5523.00	219.80	584.60	605.40	1.88E+00	4.94E+01	5.99E+01	2.33E-01	1.10E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in vegetation

Food chain modeling equations

1 $Dose_{soil}$ = High-level DRC_{soil} * SIR

2 $Dose_{plant}$ = [(High-level DRC_{grass} * 20%) + (High-level DRC_{herb} * 60%) + (High-level DRC_{shrub} * 20%)] * FIR

3 $Dose_{water}$ = High-level DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.1040	kilograms
Soil ingestion rate (SIR) =	0.0090	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1240	L/kg BW/day
Food ingestion rate (FIR) =	0.1162	kg DW/kg BW/day

Percent diet composition

Metric	Value
Grass diet =	20%
Herb diet =	60%
Shrub diet =	20%

Table C-149 Estimated Daily Doses (EDDs) for Northern Pocket Gopher Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, plant tissue, and surface water values represent the mid-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario								
	Exposure Point Concentrations					EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	1.63	0.14	0.18	0.19	1.53E-03	1.46E-02	2.02E-02	1.90E-04	3.50E-02
Arsenic	29.34	0.30	0.31	0.18	4.02E-03	2.63E-01	3.28E-02	4.99E-04	2.96E-01
Cadmium	1.63	0.39	0.98	6.37	2.52E-03	1.46E-02	2.25E-01	3.12E-04	2.40E-01
Chromium	6.59	2.33	2.51	2.58	3.50E-03	5.90E-02	2.89E-01	4.34E-04	3.48E-01
Copper	69.23	7.46	11.34	6.85	3.38E-02	6.20E-01	1.12E+00	4.20E-03	1.75E+00
Lead	1832.00	10.49	6.80	2.39	2.00E-02	1.64E+01	7.73E-01	2.48E-03	1.72E+01
Manganese	1890.00	301.60	403.70	314.20	1.21E+00	1.69E+01	4.25E+01	1.50E-01	5.95E+01
Mercury	0.03	0.13	0.13	0.13	0	2.51E-04	1.45E-02	0.00E+00	1.48E-02
Molybdenum	2.42	0	0	0	2.50E-03	2.16E-02	0.00E+00	3.10E-04	2.19E-02
Nickel	5.29	1.28	1.36	1.16	4.32E-03	4.73E-02	1.52E-01	5.36E-04	1.99E-01
Selenium	0.82	0.31	0.28	0.34	3.69E-03	7.29E-03	3.48E-02	4.58E-04	4.25E-02
Silver	4.91	0.21	0.14	0.18	1.75E-03	4.40E-02	1.88E-02	2.17E-04	6.30E-02
Thallium	0.82	0.28	0.28	0.34	3.74E-03	7.36E-03	3.40E-02	4.64E-04	4.19E-02
Zinc	456.10	97.14	99.42	413.60	7.73E-01	4.08E+00	1.88E+01	9.59E-02	2.30E+01
	Reasonable Maximum Exposure (RME) Scenario								
Antimony	3.29	0.17	0.42	0.47	1.60E-03	2.95E-02	4.41E-02	1.99E-04	7.37E-02
Arsenic	39.38	0.96	0.88	0.39	5.58E-03	3.52E-01	9.28E-02	6.92E-04	4.46E-01
Cadmium	2.35	0.66	1.87	10.65	4.52E-03	2.10E-02	3.93E-01	5.60E-04	4.15E-01
Chromium	7.70	2.53	2.98	3.24	4.00E-03	6.89E-02	3.42E-01	4.96E-04	4.11E-01
Copper	97.56	8.69	18.42	8.86	5.96E-02	8.73E-01	1.69E+00	7.38E-03	2.57E+00
Lead	3339.00	46.24	27.70	4.50	3.40E-02	2.99E+01	3.11E+00	4.22E-03	3.30E+01
Manganese	2386.00	534.90	1690.00	905.80	2.22E+00	2.14E+01	1.51E+02	2.75E-01	1.73E+02
Mercury	0.12	0.13	0.13	0.13	0	1.07E-03	1.47E-02	0.00E+00	1.58E-02
Molybdenum	3.52	0	0	0	2.50E-03	3.15E-02	0.00E+00	3.10E-04	3.18E-02
Nickel	5.83	2.01	2.42	2.79	5.75E-03	5.22E-02	2.80E-01	7.13E-04	3.33E-01
Selenium	1.16	0.43	0.33	0.78	3.90E-03	1.04E-02	5.13E-02	4.83E-04	6.22E-02
Silver	8.40	0.41	0.17	0.39	1.96E-03	7.52E-02	3.01E-02	2.43E-04	1.06E-01
Thallium	1.20	0.33	0.33	0.78	4.37E-03	1.07E-02	4.90E-02	5.42E-04	6.02E-02
Zinc	961.30	139.50	168.30	584.00	1.29E+00	8.60E+00	2.86E+01	1.60E-01	3.73E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in vegetation

Food chain modeling equations

1 $Dose_{soil}$ = Mid-level DRC_{soil} * SIR

2 $Dose_{plant}$ = [(Mid-level DRC_{grass} * 20%) + (Mid-level DRC_{herb} * 60%) + (Mid-level DRC_{shrub} * 20%)] * FIR

3 $Dose_{water}$ = Mid-level DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.1040	kilograms
Soil ingestion rate (SIR) =	0.0090	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1240	L/kg BW/day
Food ingestion rate (FIR) =	0.1162	kg DW/kg BW/day

Percent diet composition

Metric	Value
Grass diet =	20%
Herb diet =	60%
Shrub diet =	20%

Table C-150 Estimated Daily Doses (EDDs) for Northern Pocket Gopher Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas. Soil, plant tissue, and surface water values represent the low-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario								
	Exposure Point Concentrations					EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	2.62	0.14	0.18	0.19	1.89E-03	2.35E-02	2.02E-02	2.34E-04	4.39E-02
Arsenic	42.64	0.18	0.31	0.18	3.23E-03	3.82E-01	2.99E-02	4.00E-04	4.12E-01
Cadmium	1.61	0.31	0.66	1.35	2.64E-03	1.44E-02	8.44E-02	3.27E-04	9.92E-02
Chromium	4.87	1.98	2.47	2.34	3.67E-03	4.36E-02	2.72E-01	4.55E-04	3.16E-01
Copper	150.40	6.09	7.78	5.23	1.66E-02	1.35E+00	8.06E-01	2.05E-03	2.15E+00
Lead	728.60	1.29	2.39	1.47	5.94E-03	6.52E+00	2.31E-01	7.36E-04	6.75E+00
Manganese	835.80	301.60	180.20	314.20	4.43E+00	7.48E+00	2.69E+01	5.50E-01	3.49E+01
Mercury	0.09	0.13	0.13	0.13	0	7.98E-04	1.45E-02	0.00E+00	1.53E-02
Molybdenum	1.72	0	0	0	2.50E-03	1.54E-02	0.00E+00	3.10E-04	1.57E-02
Nickel	3.17	1.06	0.80	0.97	4.98E-03	2.84E-02	1.03E-01	6.18E-04	1.32E-01
Selenium	1.47	0.31	0.26	0.34	3.79E-03	1.32E-02	3.33E-02	4.70E-04	4.69E-02
Silver	2.87	0.21	0.13	0.18	1.83E-03	2.57E-02	1.80E-02	2.27E-04	4.39E-02
Thallium	0.81	0.34	0.28	0.26	3.09E-03	7.26E-03	3.33E-02	3.84E-04	4.10E-02
Zinc	368.20	79.53	65.19	105.50	8.19E-01	3.30E+00	8.85E+00	1.02E-01	1.22E+01
	Reasonable Maximum Exposure (RME) Scenario								
Antimony	3.87	0.17	0.42	0.47	1.98E-03	3.46E-02	4.41E-02	2.46E-04	7.89E-02
Arsenic	57.42	0.35	0.88	0.39	3.94E-03	5.14E-01	7.84E-02	4.89E-04	5.93E-01
Cadmium	2.52	0.66	1.04	2.14	4.37E-03	2.25E-02	1.38E-01	5.42E-04	1.61E-01
Chromium	5.47	2.53	2.74	2.70	4.15E-03	4.90E-02	3.13E-01	5.14E-04	3.62E-01
Copper	256.40	7.68	9.52	6.19	2.23E-02	2.29E+00	9.86E-01	2.77E-03	3.28E+00
Lead	958.00	3.03	8.38	4.14	1.07E-02	8.57E+00	7.51E-01	1.33E-03	9.33E+00
Manganese	1128.00	534.90	304.90	905.80	8.26E+00	1.01E+01	5.47E+01	1.02E+00	6.59E+01
Mercury	0.40	0.13	0.13	0.13	0	3.59E-03	1.46E-02	0.00E+00	1.82E-02
Molybdenum	2.45	0	0	0	2.50E-03	2.20E-02	0.00E+00	3.10E-04	2.23E-02
Nickel	3.74	1.57	1.36	1.50	7.42E-03	3.35E-02	1.66E-01	9.20E-04	2.01E-01
Selenium	1.87	0.43	0.29	0.78	3.99E-03	1.67E-02	4.81E-02	4.95E-04	6.54E-02
Silver	3.63	0.41	0.14	0.39	2.07E-03	3.25E-02	2.85E-02	2.56E-04	6.13E-02
Thallium	1.12	0.78	0.33	0.29	5.06E-03	1.00E-02	4.78E-02	6.28E-04	5.85E-02
Zinc	538.90	134.00	85.50	137.80	1.49E+00	4.82E+00	1.23E+01	1.85E-01	1.73E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in vegetation

Food chain modeling equations

1 $Dose_{soil}$ = Low-level DRC_{soil} * SIR

2 $Dose_{plant}$ = [(Low-level DRC_{grass} * 20%) + (Low-level DRC_{herb} * 60%) + (Low-level DRC_{shrub} * 20%)] * FIR

3 $Dose_{water}$ = Low-level DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.1040	kilograms
Soil ingestion rate (SIR) =	0.0090	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1240	L/kg BW/day
Food ingestion rate (FIR) =	0.1162	kg DW/kg BW/day

Percent diet composition

Metric	Value
Grass diet =	20%
Herb diet =	60%
Shrub diet =	20%

Table C-151 Estimated Daily Doses (EDDs) for Northern Pocket Gopher Foraging in Vegetated Upland Habitats. Soil, plant tissue, and surface water values represent vgetated upland habitat and reference exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario								
	Exposure Point Concentrations					EDDs (mg/kg BW/day)			
	Soil (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{plant}$ [2]	$Dose_{water}$ [3]	Total EDD[4]
Antimony	0.66	0.14	0.18	0.19	1.54E-03	5.88E-03	2.02E-02	1.91E-04	2.63E-02
Arsenic	14.86	0.18	0.13	0.13	2.10E-03	1.33E-01	1.58E-02	2.61E-04	1.49E-01
Cadmium	1.07	0.13	0.34	1.35	4.56E-04	9.61E-03	5.82E-02	5.65E-05	6.78E-02
Chromium	5.92	1.98	2.47	2.34	2.97E-03	5.30E-02	2.72E-01	3.69E-04	3.26E-01
Copper	29.23	5.33	7.26	5.23	1.62E-03	2.62E-01	7.52E-01	2.01E-04	1.01E+00
Lead	174.30	1.29	0.67	1.47	7.78E-04	1.56E+00	1.11E-01	9.64E-05	1.67E+00
Manganese	1355.00	204.30	117.40	271.80	3.20E-02	1.21E+01	1.93E+01	3.97E-03	3.14E+01
Mercury	0.03	0.12	0.13	0.13	0	2.98E-04	1.45E-02	0.00E+00	1.48E-02
Molybdenum	3.26	0	0	0	0	2.91E-02	0.00E+00	0.00E+00	2.91E-02
Nickel	3.37	1.06	0.72	0.53	1.45E-03	3.01E-02	8.70E-02	1.80E-04	1.17E-01
Selenium	0.93	0.30	0.25	0.25	3.15E-03	8.32E-03	3.01E-02	3.90E-04	3.88E-02
Silver	1.10	0.15	0.13	0.13	1.49E-03	9.85E-03	1.50E-02	1.84E-04	2.51E-02
Thallium	0.75	0.28	0.25	0.25	3.01E-03	6.69E-03	2.97E-02	3.73E-04	3.68E-02
Zinc	190.00	58.43	51.94	105.50	5.36E-02	1.70E+00	7.43E+00	6.64E-03	9.14E+00
	Reasonable Maximum Exposure (RME) Scenario								
Antimony	1.02	0.17	0.42	0.47	1.84E-03	9.16E-03	4.41E-02	2.29E-04	5.35E-02
Arsenic	19.91	0.35	0.13	0.13	4.06E-03	1.78E-01	1.98E-02	5.03E-04	1.98E-01
Cadmium	1.88	0.34	0.67	2.14	8.11E-04	1.68E-02	1.05E-01	1.01E-04	1.22E-01
Chromium	6.23	2.31	2.74	2.70	4.43E-03	5.57E-02	3.07E-01	5.49E-04	3.64E-01
Copper	34.06	6.25	8.36	6.19	1.95E-03	3.05E-01	8.72E-01	2.41E-04	1.18E+00
Lead	225.00	3.03	0.94	4.14	1.07E-03	2.01E+00	2.32E-01	1.32E-04	2.25E+00
Manganese	1964.00	281.50	156.60	905.80	6.01E-02	1.76E+01	3.85E+01	7.45E-03	5.61E+01
Mercury	0.11	0.13	0.13	0.13	0	9.93E-04	1.46E-02	0.00E+00	1.56E-02
Molybdenum	6.12	0	0	0	0	5.48E-02	0.00E+00	0.00E+00	5.48E-02
Nickel	4.82	1.57	1.25	0.97	2.25E-03	4.32E-02	1.46E-01	2.78E-04	1.90E-01
Selenium	1.29	0.38	0.25	0.25	3.72E-03	1.15E-02	3.21E-02	4.61E-04	4.41E-02
Silver	2.23	0.18	0.13	0.13	2.21E-03	1.99E-02	1.60E-02	2.75E-04	3.62E-02
Thallium	0.98	0.33	0.25	0.25	4.65E-03	8.74E-03	3.10E-02	5.77E-04	4.03E-02
Zinc	236.70	74.77	78.85	137.80	1.28E-01	2.12E+00	1.04E+01	1.58E-02	1.26E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in surface water; molybdenum not analyzed in vegetation

Food chain modeling equations

1 $Dose_{soil}$ = Upland DRC_{soil} * SIR

2 $Dose_{plant}$ = [(Upland DRC_{grass} * 20%) + (Upland DRC_{herb} * 60%) + (Upland DRC_{shrub} * 20%)] * FIR

3 $Dose_{water}$ = Upland DRC_{SW} * WIR

4 Total EDD = $Dose_{soil}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.1040	kilograms
Soil ingestion rate (SIR) =	0.0090	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1240	L/kg BW/day
Food ingestion rate (FIR) =	0.1162	kg DW/kg BW/day

Percent diet composition

Metric	Value
Grass diet =	20%
Herb diet =	60%
Shrub diet =	20%

Table C-152 Estimated Daily Doses (EDDs) for Montane Shrew Foraging in High-Level Dose Response Category (DRC) Floodplain Habitats. Soil, invertebrate and plant tissue, and surface water values represent the high-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario									
	Exposure Point Concentrations					EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Herb (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	6.91	1.26	0.70	0.18	1.65E-03	2.80E-01	1.18E-01	2.41E-03	3.68E-04	4.01E-01
Arsenic	43.59	1.50	8.63	0.31	4.02E-03	1.77E+00	6.11E-01	4.15E-03	8.96E-04	2.39E+00
Cadmium	9.09	5.43	74.50	2.86	5.11E-03	3.69E-01	4.82E+00	3.83E-02	1.14E-03	5.23E+00
Chromium	5.33	3.45	3.75	2.51	3.37E-03	2.16E-01	4.34E-01	3.36E-02	7.52E-04	6.85E-01
Copper	416.40	49.36	28.20	11.34	6.14E-02	1.69E+01	4.68E+00	1.52E-01	1.37E-02	2.17E+01
Lead	2644.00	63.88	186.00	20.15	1.82E-02	1.07E+02	1.51E+01	2.70E-01	4.07E-03	1.23E+02
Manganese	10136.00	802.70	732.00	403.70	2.42E+00	4.12E+02	9.26E+01	5.41E+00	5.41E-01	5.10E+02
Mercury	0.23	0	0	0.13	0	9.50E-03	0.00E+00	1.68E-03	0.00E+00	1.12E-02
Molybdenum	8.17	0	0	0	2.50E-03	3.32E-01	0.00E+00	0.00E+00	5.58E-04	3.32E-01
Nickel	6.29	1.24	1.48	1.36	4.65E-03	2.55E-01	1.64E-01	1.82E-02	1.04E-03	4.39E-01
Selenium	1.62	0.89	20.19	0.48	3.45E-03	6.59E-02	1.27E+00	6.41E-03	7.70E-04	1.34E+00
Silver	8.00	1.07	1.22	0.17	1.66E-03	3.25E-01	1.38E-01	2.28E-03	3.71E-04	4.65E-01
Thallium	0.61	0.83	0.25	0.47	4.12E-03	2.48E-02	6.51E-02	6.27E-03	9.18E-04	9.70E-02
Zinc	1565.00	442.10	687.00	422.90	1.45E+00	6.35E+01	6.81E+01	5.67E+00	3.24E-01	1.38E+02
	Reasonable Maximum Exposure (RME) Scenario									
Antimony	10.36	3.56	0.70	0.42	1.74E-03	4.21E-01	2.57E-01	5.64E-03	3.87E-04	6.84E-01
Arsenic	71.33	2.53	9.32	0.88	7.32E-03	2.90E+00	7.15E-01	1.18E-02	1.63E-03	3.62E+00
Cadmium	16.94	9.72	74.50	4.14	7.08E-03	6.88E-01	5.08E+00	5.55E-02	1.58E-03	5.82E+00
Chromium	6.31	6.15	5.92	2.98	3.71E-03	2.56E-01	7.28E-01	3.99E-02	8.28E-04	1.02E+00
Copper	488.00	87.41	28.20	18.42	1.21E-01	1.98E+01	6.97E+00	2.47E-01	2.70E-02	2.71E+01
Lead	4294.00	107.80	186.00	57.52	2.16E-02	1.74E+02	1.77E+01	7.71E-01	4.82E-03	1.93E+02
Manganese	15052.00	3056.00	732.00	1690.00	3.16E+00	6.11E+02	2.28E+02	2.26E+01	7.05E-01	8.63E+02
Mercury	0.46	0	0	0.13	0	1.87E-02	0.00E+00	1.69E-03	0.00E+00	2.04E-02
Molybdenum	10.40	0	0	0	2.50E-03	4.22E-01	0.00E+00	0.00E+00	5.58E-04	4.23E-01
Nickel	6.88	2.91	2.31	2.42	7.23E-03	2.79E-01	3.15E-01	3.24E-02	1.61E-03	6.28E-01
Selenium	1.79	2.69	45.90	1.14	3.63E-03	7.28E-02	2.93E+00	1.53E-02	8.10E-04	3.02E+00
Silver	13.27	4.51	1.22	0.13	1.84E-03	5.39E-01	3.45E-01	1.73E-03	4.10E-04	8.86E-01
Thallium	0.78	2.71	0.25	1.01	4.98E-03	3.15E-02	1.79E-01	1.36E-02	1.11E-03	2.25E-01
Zinc	2195.00	912.00	687.00	584.60	1.88E+00	8.91E+01	9.64E+01	7.83E+00	4.19E-01	1.94E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in invertebrates and plants

Food chain modeling equations

1 $Dose_{soil}$ = High-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(High-level $DRC_{GD\ invert}$ * 45%) + (High-level $DRC_{soil\ invert}$*45%)] * FIR

3 $Dose_{plant}$ = (High-level DRC_{herb} * 10%) * FIR

4 $Dose_{water}$ = High-level DRC_{SW} * WIR

5 Total EDD = $Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0150	kilograms
Soil ingestion rate (SIR) =	0.0406	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2230	L/kg BW/day
Food ingestion rate (FIR) =	0.1340	kg DW/kg BW/day

Percent diet composition

Metric	Value
GD invert. diet =	45%
Soil invert. diet =	45%
Herb diet =	10%

Table C-153 Estimated Daily Doses (EDDs) for Montane Shrew Foraging in Mid-Level Dose Response Category (DRC) Floodplain Habitats. Soil, invertebrate and plant tissue, and surface water values represent the mid-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario									
	Exposure Point Concentrations					EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Herb (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	2.40	1.26	0.70	0.18	1.53E-03	9.75E-02	1.18E-01	2.41E-03	3.42E-04	2.18E-01
Arsenic	31.04	1.13	8.63	0.31	4.02E-03	1.26E+00	5.89E-01	4.15E-03	8.97E-04	1.85E+00
Cadmium	4.04	3.68	74.50	0.98	2.52E-03	1.64E-01	4.71E+00	1.31E-02	5.62E-04	4.89E+00
Chromium	4.46	3.45	3.75	2.51	3.50E-03	1.81E-01	4.34E-01	3.36E-02	7.80E-04	6.50E-01
Copper	113.60	43.99	28.20	11.34	3.38E-02	4.61E+00	4.35E+00	1.52E-01	7.55E-03	9.13E+00
Lead	467.20	35.25	186.00	6.80	2.00E-02	1.90E+01	1.33E+01	9.11E-02	4.46E-03	3.24E+01
Manganese	1827.00	217.50	732.00	403.70	1.21E+00	7.42E+01	5.73E+01	5.41E+00	2.70E-01	1.37E+02
Mercury	0.08	0	0	0.13	0	3.24E-03	0.00E+00	1.68E-03	0.00E+00	4.92E-03
Molybdenum	2.51	0	0	0	2.50E-03	1.02E-01	0.00E+00	0.00E+00	5.58E-04	1.02E-01
Nickel	4.26	1.24	1.48	1.36	4.32E-03	1.73E-01	1.64E-01	1.83E-02	9.64E-04	3.56E-01
Selenium	1.64	0.89	20.19	0.28	3.69E-03	6.65E-02	1.27E+00	3.79E-03	8.24E-04	1.34E+00
Silver	1.44	1.07	1.22	0.14	1.75E-03	5.84E-02	1.38E-01	1.90E-03	3.91E-04	1.99E-01
Thallium	0.59	0.83	0.25	0.28	3.74E-03	2.41E-02	6.51E-02	3.79E-03	8.34E-04	9.38E-02
Zinc	499.90	210.20	687.00	99.42	7.73E-01	2.03E+01	5.41E+01	1.33E+00	1.72E-01	7.59E+01
	Reasonable Maximum Exposure (RME) Scenario									
Antimony	3.11	3.56	0.70	0.42	1.60E-03	1.26E-01	2.57E-01	5.64E-03	3.58E-04	3.89E-01
Arsenic	34.85	1.88	9.32	0.88	5.58E-03	1.41E+00	6.75E-01	1.18E-02	1.24E-03	2.10E+00
Cadmium	14.60	9.72	74.50	1.87	4.52E-03	5.93E-01	5.08E+00	2.50E-02	1.01E-03	5.70E+00
Chromium	4.96	6.15	5.92	2.98	4.00E-03	2.01E-01	7.28E-01	3.99E-02	8.93E-04	9.70E-01
Copper	99.63	87.41	28.20	18.42	5.96E-02	4.04E+00	6.97E+00	2.47E-01	1.33E-02	1.13E+01
Lead	567.70	82.04	186.00	27.70	3.40E-02	2.30E+01	1.62E+01	3.71E-01	7.58E-03	3.96E+01
Manganese	1933.00	377.10	732.00	1690.00	2.22E+00	7.85E+01	6.69E+01	2.26E+01	4.95E-01	1.69E+02
Mercury	0.15	0	0	0.13	0	6.13E-03	0.00E+00	1.69E-03	0.00E+00	7.82E-03
Molybdenum	2.90	0	0	0	2.50E-03	1.18E-01	0.00E+00	0.00E+00	5.58E-04	1.18E-01
Nickel	4.95	2.91	2.31	2.42	5.75E-03	2.01E-01	3.15E-01	3.24E-02	1.28E-03	5.49E-01
Selenium	1.85	2.69	45.90	0.33	3.90E-03	7.49E-02	2.93E+00	4.44E-03	8.69E-04	3.01E+00
Silver	2.74	4.51	1.22	0.17	1.96E-03	1.11E-01	3.45E-01	2.22E-03	4.38E-04	4.59E-01
Thallium	0.74	2.71	0.25	0.33	4.37E-03	3.02E-02	1.79E-01	4.44E-03	9.74E-04	2.14E-01
Zinc	625.10	291.80	687.00	168.30	1.29E+00	2.54E+01	5.90E+01	2.26E+00	2.87E-01	8.69E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in invertebrates and plants

Food chain modeling equations

1 $Dose_{soil}$ = Mid-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Mid-level $DRC_{GD\ invert}$ * 45%) + (Mid-level $DRC_{soil\ invert}$ * 45%)] * FIR

3 $Dose_{plant}$ = (Mid-level DRC_{herb} * 10%) * FIR

4 $Dose_{water}$ = Mid-level DRC_{SW} * WIR

5 Total EDD = $Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0150	kilograms
Soil ingestion rate (SIR) =	0.0406	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2230	L/kg BW/day
Food ingestion rate (FIR) =	0.1340	kg DW/kg BW/day

Percent diet composition

Metric	Value
GD invert. diet =	45%
Soil invert. diet =	45%
Herb diet =	10%

Table C-154 Estimated Daily Doses (EDDs) for Montane Shrew Foraging in Low-Level Dose Response Category (DRC) Floodplain Habitats. Soil, invertebrate and plant tissue, and surface water values represent the low-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario									
	Exposure Point Concentrations					EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Herb (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	1.12	1.26	0.70	0.18	1.89E-03	4.55E-02	1.18E-01	2.41E-03	4.21E-04	1.67E-01
Arsenic	16.86	0.78	8.63	0.31	3.23E-03	6.85E-01	5.67E-01	4.15E-03	7.20E-04	1.26E+00
Cadmium	0.92	2.32	12.60	0.66	2.64E-03	3.74E-02	9.00E-01	8.83E-03	5.89E-04	9.47E-01
Chromium	3.77	3.45	3.75	2.47	3.67E-03	1.53E-01	4.34E-01	3.31E-02	8.19E-04	6.21E-01
Copper	40.93	36.43	17.60	7.78	1.66E-02	1.66E+00	3.26E+00	1.04E-01	3.69E-03	5.03E+00
Lead	161.70	8.86	115.00	2.39	5.94E-03	6.57E+00	7.47E+00	3.20E-02	1.32E-03	1.41E+01
Manganese	1461.00	203.40	732.00	180.20	4.43E+00	5.93E+01	5.64E+01	2.41E+00	9.89E-01	1.19E+02
Mercury	0.04	0	0	0.13	0	1.73E-03	0.00E+00	1.68E-03	0.00E+00	3.40E-03
Molybdenum	4.76	0	0	0	2.50E-03	1.93E-01	0.00E+00	0.00E+00	5.58E-04	1.94E-01
Nickel	3.81	0.66	1.48	0.80	4.98E-03	1.55E-01	1.29E-01	1.07E-02	1.11E-03	2.95E-01
Selenium	1.79	0.89	20.19	0.26	3.79E-03	7.25E-02	1.27E+00	3.51E-03	8.46E-04	1.35E+00
Silver	0.61	1.07	0.54	0.13	1.83E-03	2.48E-02	9.71E-02	1.76E-03	4.09E-04	1.24E-01
Thallium	0.69	0.30	0.83	0.28	3.09E-03	2.80E-02	6.79E-02	3.73E-03	6.90E-04	1.00E-01
Zinc	189.20	210.20	356.00	65.19	8.19E-01	7.68E+00	3.41E+01	8.74E-01	1.83E-01	4.29E+01
	Reasonable Maximum Exposure (RME) Scenario									
Antimony	1.30	3.56	0.70	0.42	1.98E-03	5.27E-02	2.57E-01	5.64E-03	4.42E-04	3.16E-01
Arsenic	20.06	1.28	9.32	0.88	3.94E-03	8.14E-01	6.39E-01	1.18E-02	8.79E-04	1.47E+00
Cadmium	1.23	4.50	12.60	1.04	4.37E-03	5.00E-02	1.03E+00	1.40E-02	9.74E-04	1.10E+00
Chromium	4.27	6.15	5.92	2.74	4.15E-03	1.73E-01	7.28E-01	3.67E-02	9.24E-04	9.39E-01
Copper	54.86	78.95	17.60	9.52	2.23E-02	2.23E+00	5.82E+00	1.28E-01	4.98E-03	8.18E+00
Lead	203.30	18.30	115.00	8.38	1.07E-02	8.25E+00	8.04E+00	1.12E-01	2.39E-03	1.64E+01
Manganese	1968.00	262.60	732.00	304.90	8.26E+00	7.99E+01	6.00E+01	4.09E+00	1.84E+00	1.46E+02
Mercury	0.05	0	0	0.13	0	2.17E-03	0.00E+00	1.69E-03	0.00E+00	3.86E-03
Molybdenum	5.83	0	0	0	2.50E-03	2.37E-01	0.00E+00	0.00E+00	5.58E-04	2.37E-01
Nickel	4.80	0.96	2.31	1.36	7.42E-03	1.95E-01	1.97E-01	1.83E-02	1.65E-03	4.12E-01
Selenium	2.04	2.69	45.90	0.29	3.99E-03	8.27E-02	2.93E+00	3.82E-03	8.89E-04	3.02E+00
Silver	0.87	4.51	0.65	0.14	2.07E-03	3.53E-02	3.11E-01	1.92E-03	4.61E-04	3.48E-01
Thallium	0.78	0.61	2.71	0.33	5.06E-03	3.15E-02	2.00E-01	4.42E-03	1.13E-03	2.37E-01
Zinc	255.40	291.80	463.00	85.50	1.49E+00	1.04E+01	4.55E+01	1.15E+00	3.33E-01	5.74E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in invertebrates and plants

Food chain modeling equations

1 $Dose_{soil}$ = Low-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Low-level $DRC_{GD\ invert}$ * 45%) + (Low-level $DRC_{soil\ invert}$ * 45%)] * FIR

3 $Dose_{plant}$ = (Low-level DRC_{herb} * 10%) * FIR

4 $Dose_{water}$ = Low-level DRC_{SW} * WIR

5 Total EDD = $Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0150	kilograms
Soil ingestion rate (SIR) =	0.0406	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2230	L/kg BW/day
Food ingestion rate (FIR) =	0.1340	kg DW/kg BW/day

Percent diet composition

Metric	Value
GD invert. diet =	45%
Soil invert. diet =	45%
Herb diet =	10%

Table C-155 Estimated Daily Doses (EDDs) for Montane Shrew Foraging in Reference Floodplain Habitats. Soil, **i**nvertebrate and plant tissue, and surface water values represent the upland vegetated and reference floodplain DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario									
	Exposure Point Concentrations					EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Herb (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	1.08	1.26	0.33	0.18	1.54E-03	4.36E-02	9.56E-02	2.41E-03	3.44E-04	1.42E-01
Arsenic	42.73	0.78	7.53	0.13	2.10E-03	1.73E+00	5.01E-01	1.68E-03	4.69E-04	2.24E+00
Cadmium	1.18	2.15	6.76	0.34	4.56E-04	4.78E-02	5.37E-01	4.56E-03	1.02E-04	5.90E-01
Chromium	4.06	3.45	3.75	2.47	2.97E-03	1.65E-01	4.34E-01	3.31E-02	6.63E-04	6.33E-01
Copper	75.12	36.43	11.92	7.26	1.62E-03	3.05E+00	2.92E+00	9.73E-02	3.62E-04	6.06E+00
Lead	179.50	4.75	6.96	0.67	7.78E-04	7.29E+00	7.06E-01	8.93E-03	1.73E-04	8.00E+00
Manganese	1836.00	203.40	339.10	117.40	3.20E-02	7.45E+01	3.27E+01	1.57E+00	7.13E-03	1.09E+02
Mercury	0.07	0	0	0.13	0	2.98E-03	0.00E+00	1.68E-03	0.00E+00	4.65E-03
Molybdenum	3.90	0	0	0	0	1.58E-01	0.00E+00	0.00E+00	0.00E+00	1.58E-01
Nickel	4.93	0.66	1.48	0.72	1.45E-03	2.00E-01	1.29E-01	9.62E-03	3.24E-04	3.39E-01
Selenium	0.90	0.74	20.19	0.25	3.15E-03	3.65E-02	1.26E+00	3.35E-03	7.02E-04	1.30E+00
Silver	0.87	1.07	0.45	0.13	1.49E-03	3.54E-02	9.16E-02	1.68E-03	3.31E-04	1.29E-01
Thallium	0.47	0.83	0.20	0.25	3.01E-03	1.92E-02	6.21E-02	3.35E-03	6.71E-04	8.53E-02
Zinc	233.40	210.20	278.00	51.94	5.36E-02	9.48E+00	2.94E+01	6.96E-01	1.19E-02	3.96E+01
	Reasonable Maximum Exposure (RME) Scenario									
Antimony	1.80	3.56	0.58	0.42	1.84E-03	7.30E-02	2.49E-01	5.64E-03	4.11E-04	3.28E-01
Arsenic	112.90	1.15	9.32	0.13	4.06E-03	4.58E+00	6.32E-01	1.69E-03	9.05E-04	5.22E+00
Cadmium	1.41	3.16	9.14	0.67	8.11E-04	5.72E-02	7.42E-01	9.02E-03	1.81E-04	8.08E-01
Chromium	4.70	6.15	5.92	2.74	4.43E-03	1.91E-01	7.28E-01	3.67E-02	9.88E-04	9.56E-01
Copper	256.00	78.95	16.80	8.36	1.95E-03	1.04E+01	5.77E+00	1.12E-01	4.34E-04	1.63E+01
Lead	346.20	8.00	11.30	0.94	1.07E-03	1.41E+01	1.16E+00	1.26E-02	2.38E-04	1.52E+01
Manganese	2416.00	262.60	541.00	156.60	6.01E-02	9.81E+01	4.85E+01	2.10E+00	1.34E-02	1.49E+02
Mercury	0.14	0	0	0.13	0	5.52E-03	0.00E+00	1.69E-03	0.00E+00	7.21E-03
Molybdenum	6.20	0	0	0	0	2.52E-01	0.00E+00	0.00E+00	0.00E+00	2.52E-01
Nickel	5.53	0.96	2.31	1.25	2.25E-03	2.25E-01	1.97E-01	1.68E-02	5.01E-04	4.39E-01
Selenium	1.21	1.63	45.90	0.25	3.72E-03	4.89E-02	2.87E+00	3.36E-03	8.30E-04	2.92E+00
Silver	1.20	4.51	0.65	0.13	2.21E-03	4.85E-02	3.11E-01	1.69E-03	4.94E-04	3.61E-01
Thallium	0.79	2.71	0.25	0.25	4.65E-03	3.19E-02	1.79E-01	3.36E-03	1.04E-03	2.15E-01
Zinc	286.70	254.60	463.00	78.85	1.28E-01	1.16E+01	4.33E+01	1.06E+00	2.85E-02	5.60E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in invertebrates and plants

Food chain modeling equations

1 $Dose_{soil}$ = Reference DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Upland $DRC_{GD\ invert}$ * 45%) + (Upland $DRC_{soil\ invert}$ * 45%)] * FIR

3 $Dose_{plant}$ = (Upland DRC_{herb} * 10%) * FIR

4 $Dose_{water}$ = Upland DRC_{SW} * WIR

5 Total EDD = $Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0150	kilograms
Soil ingestion rate (SIR) =	0.0406	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.2230	L/kg BW/day
Food ingestion rate (FIR) =	0.1340	kg DW/kg BW/day

Percent diet composition

Metric	Value
GD invert. diet =	45%
Soil invert. diet =	45%
Herb diet =	10%

Table C-156 Estimated Daily Doses (EDDs) for Deer Mouse Foraging in High-Level Dose Response Category (DRC) Floodplain Habitats. Soil, invertebrate and plant tissue, and surface water values represent the high-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	6.91	1.26	0.70	0.17	0.18	0.24	1.65E-03	1.24E-02	6.32E-02	3.72E-02	2.48E-04	1.13E-01
Arsenic	43.59	1.50	8.63	0.30	0.31	0.18	4.02E-03	7.85E-02	3.40E-01	5.51E-02	6.03E-04	4.74E-01
Cadmium	9.09	5.43	74.50	0.59	2.86	6.37	5.11E-03	1.64E-02	2.70E+00	5.79E-01	7.67E-04	3.29E+00
Chromium	5.33	3.45	3.75	2.33	2.51	2.58	3.37E-03	9.59E-03	2.35E-01	4.84E-01	5.06E-04	7.30E-01
Copper	416.40	49.36	28.20	13.07	11.34	8.98	6.14E-02	7.50E-01	2.50E+00	2.22E+00	9.21E-03	5.48E+00
Lead	2644.00	63.88	186.00	29.97	20.15	3.39	1.82E-02	4.76E+00	8.31E+00	3.80E+00	2.73E-03	1.69E+01
Manganese	10136.00	802.70	732.00	394.40	403.70	493.80	2.42E+00	1.82E+01	5.00E+01	8.21E+01	3.64E-01	1.51E+02
Mercury	0.23	0	0	0.13	0.13	0.13	0	4.21E-04	0.00E+00	2.45E-02	0.00E+00	2.49E-02
Molybdenum	8.17	0	0	0	0	0	2.50E-03	1.47E-02	0.00E+00	0.00E+00	3.75E-04	1.51E-02
Nickel	6.29	1.24	1.48	1.28	1.36	1.18	4.65E-03	1.13E-02	8.91E-02	2.55E-01	6.97E-04	3.56E-01
Selenium	1.62	0.89	20.19	0.34	0.48	0.34	3.45E-03	2.92E-03	7.13E-01	8.10E-02	5.18E-04	7.98E-01
Silver	8.00	1.07	1.22	0.21	0.17	0.18	1.66E-03	1.44E-02	7.49E-02	3.54E-02	2.50E-04	1.25E-01
Thallium	0.61	0.83	0.25	0.36	0.47	0.34	4.12E-03	1.10E-03	3.45E-02	8.10E-02	6.18E-04	1.17E-01
Zinc	1565.00	442.10	687.00	173.00	422.90	494.30	1.45E+00	2.82E+00	3.72E+01	7.26E+01	2.18E-01	1.13E+02
	Reasonable Maximum Exposure (RME) Scenario											
Antimony	10.36	3.56	0.70	0.24	0.42	0.73	1.74E-03	1.86E-02	1.35E-01	8.47E-02	2.60E-04	2.39E-01
Arsenic	71.33	2.53	9.32	0.96	0.88	0.39	7.32E-03	1.28E-01	3.96E-01	1.57E-01	1.10E-03	6.82E-01
Cadmium	16.94	9.72	74.50	1.07	4.14	10.65	7.08E-03	3.05E-02	2.83E+00	9.05E-01	1.06E-03	3.77E+00
Chromium	6.31	6.15	5.92	2.53	2.98	3.24	3.71E-03	1.14E-02	3.94E-01	5.70E-01	5.57E-04	9.76E-01
Copper	488.00	87.41	28.20	19.09	18.42	13.89	1.21E-01	8.78E-01	3.70E+00	3.46E+00	1.82E-02	8.06E+00
Lead	4294.00	107.80	186.00	106.30	57.52	9.12	2.16E-02	7.73E+00	9.69E+00	1.19E+01	3.24E-03	2.93E+01
Manganese	15052.00	3056.00	732.00	554.10	1690.00	905.80	3.16E+00	2.71E+01	1.21E+02	2.41E+02	4.74E-01	3.89E+02
Mercury	0.46	0	0	0.13	0.13	0.13	0	8.30E-04	0.00E+00	2.46E-02	0.00E+00	2.55E-02
Molybdenum	10.40	0	0	0	0	0	2.50E-03	1.87E-02	0.00E+00	0.00E+00	3.75E-04	1.91E-02
Nickel	6.88	2.91	2.31	2.01	2.42	2.79	7.23E-03	1.24E-02	1.70E-01	4.67E-01	1.09E-03	6.50E-01
Selenium	1.79	2.69	45.90	0.50	1.14	0.78	3.63E-03	3.23E-03	1.64E+00	1.76E-01	5.45E-04	1.82E+00
Silver	13.27	4.51	1.22	0.41	0.13	0.39	1.84E-03	2.39E-02	1.83E-01	5.00E-02	2.76E-04	2.57E-01
Thallium	0.78	2.71	0.25	0.85	1.01	0.78	4.98E-03	1.40E-03	9.35E-02	1.81E-01	7.47E-04	2.76E-01
Zinc	2195.00	912.00	687.00	219.80	584.60	605.40	1.88E+00	3.95E+00	5.19E+01	9.62E+01	2.82E-01	1.52E+02

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in plants

Food chain modeling equations

1 $Dose_{soil}$ = High-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(High-level $DRC_{GD\ invert}$ * 12%) + (High-level $DRCsoil_{invert}$ * 13%)] * FIR

3 $Dose_{plant}$ = [(High-level DRC_{grass} * 20%) + (High-level DRC_{herb} * 40%) + (High-level DRC_{shrub} * 15%) * FIR

4 $Dose_{water}$ = High-level DRC_{SW} * WIR

5 Total EDD = $Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0210	kilograms
Soil ingestion rate (SIR) =	0.0018	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1500	L/kg BW/day
Food ingestion rate (FIR) =	0.2611	kg DW/kg BW/day

Percent diet composition

Metric	Value
GD invert. diet =	12%
Soil invert. diet =	13%
Grass diet =	20%
Herb diet =	40%
Shrub diet =	15%

Table C-157 Estimated Daily Doses (EDDs) for Deer Mouse Foraging in Mid-Level Dose Response Category (DRC) Floodplain Habitats. Soil, invertebrate and plant tissue, and surface water values represent the mid-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	2.40	1.26	0.70	0.14	0.18	0.19	1.53E-03	4.32E-03	6.32E-02	3.35E-02	2.30E-04	1.01E-01
Arsenic	31.04	1.13	8.63	0.30	0.31	0.18	4.02E-03	5.59E-02	3.28E-01	5.51E-02	6.04E-04	4.40E-01
Cadmium	4.04	3.68	74.50	0.39	0.98	6.37	2.52E-03	7.28E-03	2.64E+00	3.72E-01	3.78E-04	3.02E+00
Chromium	4.46	3.45	3.75	2.33	2.51	2.58	3.50E-03	8.03E-03	2.35E-01	4.84E-01	5.25E-04	7.28E-01
Copper	113.60	43.99	28.20	7.46	11.34	6.85	3.38E-02	2.04E-01	2.34E+00	1.84E+00	5.08E-03	4.39E+00
Lead	467.20	35.25	186.00	10.49	6.80	2.39	2.00E-02	8.41E-01	7.42E+00	1.35E+00	3.00E-03	9.61E+00
Manganese	1827.00	217.50	732.00	301.60	403.70	314.20	1.21E+00	3.29E+00	3.17E+01	7.02E+01	1.82E-01	1.05E+02
Mercury	0.08	0	0	0.13	0.13	0.13	0	1.44E-04	0.00E+00	2.45E-02	0.00E+00	2.46E-02
Molybdenum	2.51	0	0	0	0	0	2.50E-03	4.51E-03	0.00E+00	0.00E+00	3.75E-04	4.88E-03
Nickel	4.26	1.24	1.48	1.28	1.36	1.16	4.32E-03	7.66E-03	8.91E-02	2.54E-01	6.49E-04	3.52E-01
Selenium	1.64	0.89	20.19	0.31	0.28	0.34	3.69E-03	2.95E-03	7.13E-01	5.89E-02	5.54E-04	7.76E-01
Silver	1.44	1.07	1.22	0.21	0.14	0.18	1.75E-03	2.59E-03	7.49E-02	3.25E-02	2.63E-04	1.10E-01
Thallium	0.59	0.83	0.25	0.28	0.28	0.34	3.74E-03	1.07E-03	3.45E-02	5.73E-02	5.61E-04	9.34E-02
Zinc	499.90	210.20	687.00	97.14	99.42	413.60	7.73E-01	9.00E-01	2.99E+01	3.17E+01	1.16E-01	6.26E+01
	Reasonable Maximum Exposure (RME) Scenario											
Antimony	3.11	3.56	0.70	0.17	0.42	0.47	1.60E-03	5.59E-03	1.35E-01	7.09E-02	2.41E-04	2.12E-01
Arsenic	34.85	1.88	9.32	0.96	0.88	0.39	5.58E-03	6.27E-02	3.75E-01	1.57E-01	8.37E-04	5.96E-01
Cadmium	14.60	9.72	74.50	0.66	1.87	10.65	4.52E-03	2.63E-02	2.83E+00	6.47E-01	6.77E-04	3.51E+00
Chromium	4.96	6.15	5.92	2.53	2.98	3.24	4.00E-03	8.93E-03	3.94E-01	5.70E-01	6.00E-04	9.73E-01
Copper	99.63	87.41	28.20	8.69	18.42	8.86	5.96E-02	1.79E-01	3.70E+00	2.72E+00	8.93E-03	6.61E+00
Lead	567.70	82.04	186.00	46.24	27.70	4.50	3.40E-02	1.02E+00	8.88E+00	5.48E+00	5.10E-03	1.54E+01
Manganese	1933.00	377.10	732.00	534.90	1690.00	905.80	2.22E+00	3.48E+00	3.67E+01	2.40E+02	3.33E-01	2.80E+02
Mercury	0.15	0	0	0.13	0.13	0.13	0	2.72E-04	0.00E+00	2.48E-02	0.00E+00	2.50E-02
Molybdenum	2.90	0	0	0	0	0	2.50E-03	5.21E-03	0.00E+00	0.00E+00	3.75E-04	5.59E-03
Nickel	4.95	2.91	2.31	2.01	2.42	2.79	5.75E-03	8.91E-03	1.70E-01	4.67E-01	8.63E-04	6.46E-01
Selenium	1.85	2.69	45.90	0.43	0.33	0.78	3.90E-03	3.32E-03	1.64E+00	8.78E-02	5.84E-04	1.73E+00
Silver	2.74	4.51	1.22	0.41	0.17	0.39	1.96E-03	4.93E-03	1.83E-01	5.39E-02	2.95E-04	2.42E-01
Thallium	0.74	2.71	0.25	0.33	0.33	0.78	4.37E-03	1.34E-03	9.35E-02	8.25E-02	6.55E-04	1.78E-01
Zinc	625.10	291.80	687.00	139.50	168.30	584.00	1.29E+00	1.13E+00	3.25E+01	4.77E+01	1.93E-01	8.15E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in plants

Food chain modeling equations

1 $Dose_{soil}$ = Mid-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Mid-level $DRC_{GD\ invert}$ * 12%) + (Mid-level $DRCsoil_{invert}$ * 13%)] * FIR

3 $Dose_{plant}$ = [(Mid-level DRC_{grass} * 20%) + (Mid-level DRC_{herb} * 40%) + (Mid-level DRC_{shrub} * 15%) * FIR

4 $Dose_{water}$ = Mid-level DRC_{SW} * WIR

5 Total EDD = $Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0210	kilograms
Soil ingestion rate (SIR) =	0.0018	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1500	L/kg BW/day
Food ingestion rate (FIR) =	0.2611	kg DW/kg BW/day

Percent diet composition

Metric	Value
GD invert. diet =	12%
Soil invert. diet =	13%
Grass diet =	20%
Herb diet =	40%
Shrub diet =	15%

Table C-158 Estimated Daily Doses (EDDs) for Deer Mouse Foraging in Low-Level Dose Response Category (DRC) Floodplain Habitats. Soil, invertebrate and plant tissue, and surface water values represent the low-level DRC exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	1.12	1.26	0.70	0.14	0.18	0.19	1.89E-03	2.02E-03	6.32E-02	3.35E-02	2.83E-04	9.91E-02
Arsenic	16.86	0.78	8.63	0.18	0.31	0.18	3.23E-03	3.03E-02	3.17E-01	4.87E-02	4.84E-04	3.97E-01
Cadmium	0.92	2.32	12.60	0.31	0.66	1.35	2.64E-03	1.66E-03	5.00E-01	1.38E-01	3.96E-04	6.40E-01
Chromium	3.77	3.45	3.75	1.98	2.47	2.34	3.67E-03	6.78E-03	2.35E-01	4.52E-01	5.51E-04	6.95E-01
Copper	40.93	36.43	17.60	6.09	7.78	5.23	1.66E-02	7.37E-02	1.74E+00	1.34E+00	2.48E-03	3.15E+00
Lead	161.70	8.86	115.00	1.29	2.39	1.47	5.94E-03	2.91E-01	4.18E+00	3.74E-01	8.91E-04	4.85E+00
Manganese	1461.00	203.40	732.00	301.60	180.20	314.20	4.43E+00	2.63E+00	3.12E+01	4.69E+01	6.65E-01	8.14E+01
Mercury	0.04	0	0	0.13	0.13	0.13	0	7.67E-05	0.00E+00	2.45E-02	0.00E+00	2.46E-02
Molybdenum	4.76	0	0	0	0	0	2.50E-03	8.56E-03	0.00E+00	0.00E+00	3.75E-04	8.94E-03
Nickel	3.81	0.66	1.48	1.06	0.80	0.97	4.98E-03	6.85E-03	7.09E-02	1.76E-01	7.48E-04	2.55E-01
Selenium	1.79	0.89	20.19	0.31	0.26	0.34	3.79E-03	3.21E-03	7.13E-01	5.67E-02	5.69E-04	7.74E-01
Silver	0.61	1.07	0.54	0.21	0.13	0.18	1.83E-03	1.10E-03	5.19E-02	3.13E-02	2.75E-04	8.46E-02
Thallium	0.69	0.30	0.83	0.34	0.28	0.26	3.09E-03	1.24E-03	3.74E-02	5.69E-02	4.64E-04	9.60E-02
Zinc	189.20	210.20	356.00	79.53	65.19	105.50	8.19E-01	3.41E-01	1.87E+01	1.51E+01	1.23E-01	3.42E+01
	Reasonable Maximum Exposure (RME) Scenario											
Antimony	1.30	3.56	0.70	0.17	0.42	0.47	1.98E-03	2.33E-03	1.35E-01	7.09E-02	2.97E-04	2.09E-01
Arsenic	20.06	1.28	9.32	0.35	0.88	0.39	3.94E-03	3.61E-02	3.57E-01	1.25E-01	5.91E-04	5.18E-01
Cadmium	1.23	4.50	12.60	0.66	1.04	2.14	4.37E-03	2.22E-03	5.69E-01	2.27E-01	6.55E-04	7.99E-01
Chromium	4.27	6.15	5.92	2.53	2.74	2.70	4.15E-03	7.68E-03	3.94E-01	5.24E-01	6.22E-04	9.26E-01
Copper	54.86	78.95	17.60	7.68	9.52	6.19	2.23E-02	9.87E-02	3.07E+00	1.64E+00	3.35E-03	4.81E+00
Lead	203.30	18.30	115.00	3.03	8.38	4.14	1.07E-02	3.66E-01	4.48E+00	1.20E+00	1.61E-03	6.04E+00
Manganese	1968.00	262.60	732.00	534.90	304.90	905.80	8.26E+00	3.54E+00	3.31E+01	9.53E+01	1.24E+00	1.33E+02
Mercury	0.05	0	0	0.13	0.13	0.13	0	9.61E-05	0.00E+00	2.47E-02	0.00E+00	2.48E-02
Molybdenum	5.83	0	0	0	0	0	2.50E-03	1.05E-02	0.00E+00	0.00E+00	3.75E-04	1.09E-02
Nickel	4.80	0.96	2.31	1.57	1.36	1.50	7.42E-03	8.65E-03	1.09E-01	2.83E-01	1.11E-03	4.02E-01
Selenium	2.04	2.69	45.90	0.43	0.29	0.78	3.99E-03	3.66E-03	1.64E+00	8.30E-02	5.98E-04	1.73E+00
Silver	0.87	4.51	0.65	0.41	0.14	0.39	2.07E-03	1.57E-03	1.63E-01	5.15E-02	3.10E-04	2.16E-01
Thallium	0.78	0.61	2.71	0.78	0.33	0.29	5.06E-03	1.40E-03	1.11E-01	8.65E-02	7.60E-04	2.00E-01
Zinc	255.40	291.80	463.00	134.00	85.50	137.80	1.49E+00	4.60E-01	2.49E+01	2.13E+01	2.24E-01	4.69E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in plants

Food chain modeling equations

1 $Dose_{soil}$ = Low-level DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Low-level $DRC_{GD\ invert}$ * 12%) + (Low-level $DRCsoil_{invert}$ * 13%)] * FIR

3 $Dose_{plant}$ = [(Low-level DRC_{grass} * 20%) + (Low-level DRC_{herb} * 40%) + (Low-level DRC_{shrub} * 15%) * FIR

4 $Dose_{water}$ = Low-level DRC_{SW} * WIR

5 Total EDD = $Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0210	kilograms
Soil ingestion rate (SIR) =	0.0018	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1500	L/kg BW/day
Food ingestion rate (FIR) =	0.2611	kg DW/kg BW/day

Percent diet composition

Metric	Value
GD invert. diet =	12%
Soil invert. diet =	13%
Grass diet =	20%
Herb diet =	40%
Shrub diet =	15%

Table C-159 Estimated Daily Doses (EDDs) for Deer Mouse Foraging in Reference Floodplain Habitats. Soil, invertebrate and plant tissue, and surface water values represent the vegetated upland dose-response category (DRC) and reference floodplain exposure point concentrations. Surface water exposure point concentrations were derived from total recoverable metals surface water samples.

COPEC	Central Tendency Exposure (CTE) Scenario											
	Exposure Point Concentrations							EDDs (mg/kg BW/day)				
	Soil (mg/kg, DW)	GD Invert. (mg/kg, DW)	Soil Invert. (mg/kg, DW)	Grass (mg/kg, DW)	Herb (mg/kg, DW)	Shrub (mg/kg, DW)	Surface Water (mg/L)	$Dose_{soil}$ [1]	$Dose_{invert.}$ [2]	$Dose_{plant}$ [3]	$Dose_{water}$ [4]	Total EDD [5]
Antimony	1.08	1.26	0.33	0.14	0.18	0.19	1.54E-03	1.94E-03	5.06E-02	3.35E-02	2.32E-04	8.62E-02
Arsenic	42.73	0.78	7.53	0.18	0.13	0.13	2.10E-03	7.69E-02	2.80E-01	2.74E-02	3.15E-04	3.85E-01
Cadmium	1.18	2.15	6.76	0.13	0.34	1.35	4.56E-04	2.12E-03	2.97E-01	9.53E-02	6.84E-05	3.94E-01
Chromium	4.06	3.45	3.75	1.98	2.47	2.34	2.97E-03	7.32E-03	2.35E-01	4.53E-01	4.46E-04	6.96E-01
Copper	75.12	36.43	11.92	5.33	7.26	5.23	1.62E-03	1.35E-01	1.55E+00	1.24E+00	2.43E-04	2.92E+00
Lead	179.50	4.75	6.96	1.29	0.67	1.47	7.78E-04	3.23E-01	3.85E-01	1.95E-01	1.17E-04	9.03E-01
Manganese	1836.00	203.40	339.10	204.30	117.40	271.80	3.20E-02	3.30E+00	1.79E+01	3.36E+01	4.80E-03	5.48E+01
Mercury	0.07	0	0	0.12	0.13	0.13	0	1.32E-04	0.00E+00	2.44E-02	0.00E+00	2.46E-02
Molybdenum	3.90	0	0	0	0	0	0	7.02E-03	0.00E+00	0.00E+00	0.00E+00	7.02E-03
Nickel	4.93	0.66	1.48	1.06	0.72	0.53	1.45E-03	8.87E-03	7.09E-02	1.51E-01	2.18E-04	2.31E-01
Selenium	0.90	0.74	20.19	0.30	0.25	0.25	3.15E-03	1.62E-03	7.08E-01	5.14E-02	4.72E-04	7.62E-01
Silver	0.87	1.07	0.45	0.15	0.13	0.13	1.49E-03	1.57E-03	4.88E-02	2.56E-02	2.23E-04	7.61E-02
Thallium	0.47	0.83	0.20	0.28	0.25	0.25	3.01E-03	8.51E-04	3.28E-02	5.04E-02	4.51E-04	8.45E-02
Zinc	233.40	210.20	278.00	58.43	51.94	105.50	5.36E-02	4.20E-01	1.60E+01	1.26E+01	8.03E-03	2.91E+01
	Reasonable Maximum Exposure (RME) Scenario											
Antimony	1.80	3.56	0.58	0.17	0.42	0.47	1.84E-03	3.24E-03	1.31E-01	7.09E-02	2.77E-04	2.05E-01
Arsenic	112.90	1.15	9.32	0.35	0.13	0.13	4.06E-03	2.03E-01	3.53E-01	3.62E-02	6.09E-04	5.93E-01
Cadmium	1.41	3.16	9.14	0.34	0.67	2.14	8.11E-04	2.54E-03	4.09E-01	1.72E-01	1.22E-04	5.84E-01
Chromium	4.70	6.15	5.92	2.31	2.74	2.70	4.43E-03	8.46E-03	3.94E-01	5.12E-01	6.65E-04	9.15E-01
Copper	256.00	78.95	16.80	6.25	8.36	6.19	1.95E-03	4.61E-01	3.04E+00	1.44E+00	2.92E-04	4.95E+00
Lead	346.20	8.00	11.30	3.03	0.94	4.14	1.07E-03	6.23E-01	6.34E-01	4.18E-01	1.60E-04	1.68E+00
Manganese	2416.00	262.60	541.00	281.50	156.60	905.80	6.01E-02	4.35E+00	2.66E+01	6.65E+01	9.01E-03	9.75E+01
Mercury	0.14	0	0	0.13	0.13	0.13	0	2.45E-04	0.00E+00	2.46E-02	0.00E+00	2.49E-02
Molybdenum	6.20	0	0	0	0	0	0	1.12E-02	0.00E+00	0.00E+00	0.00E+00	1.12E-02
Nickel	5.53	0.96	2.31	1.57	1.25	0.97	2.25E-03	9.96E-03	1.09E-01	2.51E-01	3.37E-04	3.70E-01
Selenium	1.21	1.63	45.90	0.38	0.25	0.25	3.72E-03	2.17E-03	1.61E+00	5.58E-02	5.58E-04	1.67E+00
Silver	1.20	4.51	0.65	0.18	0.13	0.13	2.21E-03	2.15E-03	1.63E-01	2.77E-02	3.32E-04	1.93E-01
Thallium	0.79	2.71	0.25	0.33	0.25	0.25	4.65E-03	1.41E-03	9.35E-02	5.33E-02	6.98E-04	1.49E-01
Zinc	286.70	254.60	463.00	74.77	78.85	137.80	1.28E-01	5.16E-01	2.37E+01	1.75E+01	1.91E-02	4.18E+01

Units: mg/kg, DW = milligrams per kilogram on a dry-weight basis; mg/L = milligrams per liter; mg/kg BW/day = milligrams per kilogram of body weight per day; kg DW/kg BW/day = kilogram of dry-weight diet per kilogram body weight per day; L/kg BW/day = liters of water per kilogram body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; DW = dry-weight; GD = ground-dwelling; SW = surface water

Grey shaded entries indicate that exposure values are unavailable; mercury not analyzed in invertebrates and surface water; molybdenum not analyzed in plants

Food chain modeling equations

1 $Dose_{soil}$ = Reference DRC_{soil} * SIR

2 $Dose_{invert.}$ = [(Upland $DRC_{GD\ invert}$ * 12%) + (Upland $DRCsoil_{invert}$ * 13%)] * FIR

3 $Dose_{plant}$ = [(Upland DRC_{grass} * 20%) + (Upland DRC_{herb} * 40%) + (Upland DRC_{shrub} * 15%) * FIR

4 $Dose_{water}$ = Reference DRC_{SW} * WIR

5 Total EDD = $Dose_{soil}$ + $Dose_{invert.}$ + $Dose_{plant}$ + $Dose_{water}$

Food chain modeling parameters

Metric	Value	Units
Body weight (BW) =	0.0210	kilograms
Soil ingestion rate (SIR) =	0.0018	kg DW/kg BW/day
Water ingestion rate (WIR) =	0.1500	L/kg BW/day
Food ingestion rate (FIR) =	0.2611	kg DW/kg BW/day

Percent diet composition

Metric	Value
GD invert. diet =	12%
Soil invert. diet =	13%
Grass diet =	20%
Herb diet =	40%
Shrub diet =	15%

Appendix D

Hazard Quotient Derivation Tables and Results for Community-Level Ecological Receptors Associated with the Bonita Peak Mining District Terrestrial Baseline Ecological Risk Assessment

List of Appendix D Tables:

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Table D-1 High-Level Halo Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	7403.00	8180.00	narrative*		NA	NA	NA	NA
Antimony	6.23	12.34	11.00	58.00	0.6	1.1	0.11	0.21
Arsenic	49.27	65.47	18.00	91.00	2.7	3.6	0.54	0.72
Barium	152.20	206.70	110.00	260.00	1.4	1.9	0.59	0.80
Beryllium	1.74	2.43	2.50	10.00	0.7	1.0	0.17	0.24
Cadmium	9.55	20.01	32.00	160.00	0.3	0.6	0.06	0.13
Cobalt	8.64	12.56	13.00	20.00	0.7	1.0	0.43	0.63
Copper	182.10	264.60	70.00	490.00	2.6	3.8	0.37	0.54
Iron	23444.00	28281.00	narrative*		NA	NA	NA	NA
Lead	2198.00	2940.00	120.00	570.00	18.3	24.5	3.86	5.16
Manganese	6666.00	21678.00	220.00	1100.00	30.3	98.5	6.06	19.71
Molybdenum	12.28	29.16	2.00	2.00	6.1	14.6	6.14	14.58
Nickel	6.48	14.93	38.00	270.00	0.2	0.4	0.02	0.06
Selenium	0.93	1.26	0.52	3.00	1.8	2.4	0.31	0.42
Thallium	0.92	1.36	0.05	0.50	18.4	27.2	1.84	2.72
Vanadium	12.79	13.97	60.00	80.00	0.2	0.2	0.16	0.17
Zinc	2010.00	5523.00	160.00	810.00	12.6	34.5	2.48	6.82

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-2 Mid-Level Halo Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	9186.00	10406.00	narrative*		NA	NA	NA	NA
Antimony	1.63	3.29	11.00	58.00	0.1	0.3	0.03	0.06
Arsenic	29.34	39.38	18.00	91.00	1.6	2.2	0.32	0.43
Barium	138.30	211.60	110.00	260.00	1.3	1.9	0.53	0.81
Beryllium	1.87	2.53	2.50	10.00	0.7	1.0	0.19	0.25
Cadmium	1.63	2.35	32.00	160.00	0.1	0.1	0.01	0.01
Cobalt	9.04	10.51	13.00	20.00	0.7	0.8	0.45	0.53
Copper	69.23	97.56	70.00	490.00	1.0	1.4	0.14	0.20
Iron	31975.00	37305.00	narrative*		NA	NA	NA	NA
Lead	1832.00	3339.00	120.00	570.00	15.3	27.8	3.21	5.86
Manganese	1890.00	2386.00	220.00	1100.00	8.6	10.8	1.72	2.17
Molybdenum	2.42	3.52	2.00	2.00	1.2	1.8	1.21	1.76
Nickel	5.29	5.83	38.00	270.00	0.1	0.2	0.02	0.02
Selenium	0.82	1.16	0.52	3.00	1.6	2.2	0.27	0.39
Thallium	0.82	1.20	0.05	0.50	16.4	24.0	1.64	2.40
Vanadium	19.89	22.44	60.00	80.00	0.3	0.4	0.25	0.28
Zinc	456.10	961.30	160.00	810.00	2.9	6.0	0.56	1.19

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-3 Low-Level Halo Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	6360.00	7429.00	narrative*		NA	NA	NA	NA
Antimony	2.62	3.87	11.00	58.00	0.2	0.4	0.05	0.07
Arsenic	42.64	57.42	18.00	91.00	2.4	3.2	0.47	0.63
Barium	171.60	195.10	110.00	260.00	1.6	1.8	0.66	0.75
Beryllium	1.81	2.52	2.50	10.00	0.7	1.0	0.18	0.25
Cadmium	1.61	2.52	32.00	160.00	0.1	0.1	0.01	0.02
Cobalt	3.92	5.25	13.00	20.00	0.3	0.4	0.20	0.26
Copper	150.40	256.40	70.00	490.00	2.1	3.7	0.31	0.52
Iron	28461.00	36324.00	narrative*		NA	NA	NA	NA
Lead	728.60	958.00	120.00	570.00	6.1	8.0	1.28	1.68
Manganese	835.80	1128.00	220.00	1100.00	3.8	5.1	0.76	1.03
Molybdenum	1.72	2.45	2.00	2.00	0.9	1.2	0.86	1.23
Nickel	3.17	3.74	38.00	270.00	0.1	0.1	0.01	0.01
Selenium	1.47	1.87	0.52	3.00	2.8	3.6	0.49	0.62
Thallium	0.81	1.12	0.05	0.50	16.2	22.4	1.62	2.24
Vanadium	17.14	19.12	60.00	80.00	0.3	0.3	0.21	0.24
Zinc	368.20	538.90	160.00	810.00	2.3	3.4	0.45	0.67

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-4 Vegetated Upland Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	8863.00	9631.00	narrative*		NA	NA	NA	NA
Antimony	0.66	1.02	11.00	58.00	0.1	0.1	0.01	0.02
Arsenic	14.86	19.91	18.00	91.00	0.8	1.1	0.16	0.22
Barium	163.50	180.90	110.00	260.00	1.5	1.6	0.63	0.70
Beryllium	1.71	2.35	2.50	10.00	0.7	0.9	0.17	0.24
Cadmium	1.07	1.88	32.00	160.00	0.0	0.1	0.01	0.01
Cobalt	5.76	6.51	13.00	20.00	0.4	0.5	0.29	0.33
Copper	29.23	34.06	70.00	490.00	0.4	0.5	0.06	0.07
Iron	20537.00	23922.00	narrative*		NA	NA	NA	NA
Lead	174.30	225.00	120.00	570.00	1.5	1.9	0.31	0.39
Manganese	1355.00	1964.00	220.00	1100.00	6.2	8.9	1.23	1.79
Molybdenum	3.26	6.12	2.00	2.00	1.6	3.1	1.63	3.06
Nickel	3.37	4.82	38.00	270.00	0.1	0.1	0.01	0.02
Selenium	0.93	1.29	0.52	3.00	1.8	2.5	0.31	0.43
Thallium	0.75	0.98	0.05	0.50	15.0	19.5	1.50	1.95
Vanadium	18.01	19.34	60.00	80.00	0.3	0.3	0.23	0.24
Zinc	190.00	236.70	160.00	810.00	1.2	1.5	0.23	0.29

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-5 High-Level Floodplain Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	11859.00	12816.00	narrative*		NA	NA	NA	NA
Antimony	6.91	10.36	11.00	58.00	0.6	0.9	0.12	0.18
Arsenic	43.59	71.33	18.00	91.00	2.4	4.0	0.48	0.78
Barium	81.41	88.60	110.00	260.00	0.7	0.8	0.31	0.34
Beryllium	1.03	1.14	2.50	10.00	0.4	0.5	0.10	0.11
Cadmium	9.09	16.94	32.00	160.00	0.3	0.5	0.06	0.11
Cobalt	13.08	18.66	13.00	20.00	1.0	1.4	0.65	0.93
Copper	416.40	488.00	70.00	490.00	5.9	7.0	0.85	1.00
Iron	38838.00	50813.00	narrative*		NA	NA	NA	NA
Lead	2644.00	4294.00	120.00	570.00	22.0	35.8	4.64	7.53
Manganese	10136.00	15052.00	220.00	1100.00	46.1	68.4	9.21	13.68
Molybdenum	8.17	10.40	2.00	2.00	4.1	5.2	4.08	5.20
Nickel	6.29	6.88	38.00	270.00	0.2	0.2	0.02	0.03
Selenium	1.62	1.79	0.52	3.00	3.1	3.4	0.54	0.60
Thallium	0.61	0.78	0.05	0.50	12.2	15.5	1.22	1.55
Vanadium	17.99	19.11	60.00	80.00	0.3	0.3	0.22	0.24
Zinc	1565.00	2195.00	160.00	810.00	9.8	13.7	1.93	2.71

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-6 Mid-Level Floodplain Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	9904.00	10680.00	narrative*		NA	NA	NA	NA
Antimony	2.40	3.11	11.00	58.00	0.2	0.3	0.04	0.05
Arsenic	31.04	34.85	18.00	91.00	1.7	1.9	0.34	0.38
Barium	105.10	124.00	110.00	260.00	1.0	1.1	0.40	0.48
Beryllium	0.48	0.59	2.50	10.00	0.2	0.2	0.05	0.06
Cadmium	4.04	14.60	32.00	160.00	0.1	0.5	0.03	0.09
Cobalt	5.90	6.91	13.00	20.00	0.5	0.5	0.29	0.35
Copper	113.60	99.63	70.00	490.00	1.6	1.4	0.23	0.20
Iron	43025.00	46706.00	narrative*		NA	NA	NA	NA
Lead	467.20	567.70	120.00	570.00	3.9	4.7	0.82	1.00
Manganese	1827.00	1933.00	220.00	1100.00	8.3	8.8	1.66	1.76
Molybdenum	2.51	2.90	2.00	2.00	1.3	1.4	1.25	1.45
Nickel	4.26	4.95	38.00	270.00	0.1	0.1	0.02	0.02
Selenium	1.64	1.85	0.52	3.00	3.1	3.5	0.55	0.62
Thallium	0.59	0.74	0.05	0.50	11.9	14.9	1.19	1.49
Vanadium	20.21	22.25	60.00	80.00	0.3	0.4	0.25	0.28
Zinc	499.90	625.10	160.00	810.00	3.1	3.9	0.62	0.77

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-7 Low-Level Floodplain Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	13819.00	15435.00	narrative*		NA	NA	NA	NA
Antimony	1.12	1.30	11.00	58.00	0.1	0.1	0.02	0.02
Arsenic	16.86	20.06	18.00	91.00	0.9	1.1	0.19	0.22
Barium	82.64	94.97	110.00	260.00	0.8	0.9	0.32	0.37
Beryllium	0.76	1.62	2.50	10.00	0.3	0.6	0.08	0.16
Cadmium	0.92	1.23	32.00	160.00	0.0	0.0	0.01	0.01
Cobalt	12.47	16.58	13.00	20.00	1.0	1.3	0.62	0.83
Copper	40.93	54.86	70.00	490.00	0.6	0.8	0.08	0.11
Iron	54183.00	61692.00	narrative*		NA	NA	NA	NA
Lead	161.70	203.30	120.00	570.00	1.3	1.7	0.28	0.36
Manganese	1461.00	1968.00	220.00	1100.00	6.6	8.9	1.33	1.79
Molybdenum	4.76	5.83	2.00	2.00	2.4	2.9	2.38	2.92
Nickel	3.81	4.80	38.00	270.00	0.1	0.1	0.01	0.02
Selenium	1.79	2.04	0.52	3.00	3.4	3.9	0.60	0.68
Thallium	0.69	0.78	0.05	0.50	13.8	15.5	1.38	1.55
Vanadium	23.08	25.61	60.00	80.00	0.4	0.4	0.29	0.32
Zinc	189.20	255.40	160.00	810.00	1.2	1.6	0.23	0.32

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-8 Reference Floodplain Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	8916.00	10355.00	narrative*		NA	NA	NA	NA
Antimony	1.08	1.80	11.00	58.00	0.1	0.2	0.02	0.03
Arsenic	42.73	112.90	18.00	91.00	2.4	6.3	0.47	1.24
Barium	130.10	163.60	110.00	260.00	1.2	1.5	0.50	0.63
Beryllium	0.79	0.86	2.50	10.00	0.3	0.3	0.08	0.09
Cadmium	1.18	1.41	32.00	160.00	0.0	0.0	0.01	0.01
Cobalt	12.03	24.63	13.00	20.00	0.9	1.9	0.60	1.23
Copper	75.12	256.00	70.00	490.00	1.1	3.7	0.15	0.52
Iron	26814.00	30441.00	narrative*		NA	NA	NA	NA
Lead	179.50	346.20	120.00	570.00	1.5	2.9	0.31	0.61
Manganese	1836.00	2416.00	220.00	1100.00	8.3	11.0	1.67	2.20
Molybdenum	3.90	6.20	2.00	2.00	2.0	3.1	1.95	3.10
Nickel	4.93	5.53	38.00	270.00	0.1	0.1	0.02	0.02
Selenium	0.90	1.21	0.52	3.00	1.7	2.3	0.30	0.40
Thallium	0.47	0.79	0.05	0.50	9.5	15.7	0.95	1.57
Vanadium	17.58	20.48	60.00	80.00	0.3	0.3	0.22	0.26
Zinc	233.40	286.70	160.00	810.00	1.5	1.8	0.29	0.35

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-9 EU-01 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Lower Mainstem Mineral Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	13110.00	16636.00	narrative*		NA	NA	NA	NA
Antimony	4.46	8.83	11.00	58.00	0.4	0.8	0.08	0.15
Arsenic	31.40	45.31	18.00	91.00	1.7	2.5	0.35	0.50
Barium	120.00	167.00	110.00	260.00	1.1	1.5	0.46	0.64
Beryllium	0.43	0.55	2.50	10.00	0.2	0.2	0.04	0.05
Cadmium	1.63	3.01	32.00	160.00	0.1	0.1	0.01	0.02
Cobalt	8.52	12.00	13.00	20.00	0.7	0.9	0.43	0.60
Copper	138.10	256.60	70.00	490.00	2.0	3.7	0.28	0.52
Iron	62340.00	132000.00	narrative*		NA	NA	NA	NA
Lead	367.40	603.90	120.00	570.00	3.1	5.0	0.64	1.06
Manganese	1150.00	1904.00	220.00	1100.00	5.2	8.7	1.05	1.73
Molybdenum	3.20	4.25	2.00	2.00	1.6	2.1	1.60	2.13
Nickel	4.16	5.50	38.00	270.00	0.1	0.1	0.02	0.02
Selenium	1.87	3.00	0.52	3.00	3.6	5.8	0.62	1.00
Thallium	0.65	0.73	0.05	0.50	13.0	14.5	1.30	1.45
Vanadium	34.20	76.10	60.00	80.00	0.6	1.3	0.43	0.95
Zinc	486.40	709.60	160.00	810.00	3.0	4.4	0.60	0.88

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-10 EU-02 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Lower Mainstem Mineral Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	11460.00	12285.00	narrative*		NA	NA	NA	NA
Antimony	0.61	0.81	11.00	58.00	0.1	0.1	0.01	0.01
Arsenic	23.20	37.91	18.00	91.00	1.3	2.1	0.25	0.42
Barium	135.40	185.00	110.00	260.00	1.2	1.7	0.52	0.71
Beryllium	0.28	0.36	2.50	10.00	0.1	0.1	0.03	0.04
Cadmium	0.76	1.32	32.00	160.00	0.0	0.0	0.00	0.01
Cobalt	4.74	6.98	13.00	20.00	0.4	0.5	0.24	0.35
Copper	43.84	65.56	70.00	490.00	0.6	0.9	0.09	0.13
Iron	39340.00	51285.00	narrative*		NA	NA	NA	NA
Lead	231.10	373.70	120.00	570.00	1.9	3.1	0.41	0.66
Manganese	558.60	797.00	220.00	1100.00	2.5	3.6	0.51	0.72
Molybdenum	3.36	4.95	2.00	2.00	1.7	2.5	1.68	2.47
Nickel	2.02	2.50	38.00	270.00	0.1	0.1	0.01	0.01
Selenium	1.41	2.23	0.52	3.00	2.7	4.3	0.47	0.74
Thallium	0.41	0.61	0.05	0.50	8.2	12.2	0.82	1.22
Vanadium	19.32	23.87	60.00	80.00	0.3	0.4	0.24	0.30
Zinc	336.80	514.80	160.00	810.00	2.1	3.2	0.42	0.64

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-11 EU-03 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Middle Mainstem Mineral Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	10885.00	14100.00	narrative*		NA	NA	NA	NA
Antimony	1.39	1.70	11.00	58.00	0.1	0.2	0.02	0.03
Arsenic	25.19	42.12	18.00	91.00	1.4	2.3	0.28	0.46
Barium	56.12	82.35	110.00	260.00	0.5	0.7	0.22	0.32
Beryllium	0.57	0.82	2.50	10.00	0.2	0.3	0.06	0.08
Cadmium	1.26	2.30	32.00	160.00	0.0	0.1	0.01	0.01
Cobalt	6.13	9.19	13.00	20.00	0.5	0.7	0.31	0.46
Copper	47.27	77.30	70.00	490.00	0.7	1.1	0.10	0.16
Iron	83614.00	254271.00	narrative*		NA	NA	NA	NA
Lead	331.60	617.30	120.00	570.00	2.8	5.1	0.58	1.08
Manganese	1919.00	8120.00	220.00	1100.00	8.7	36.9	1.74	7.38
Molybdenum	1.79	2.38	2.00	2.00	0.9	1.2	0.90	1.19
Nickel	3.06	4.44	38.00	270.00	0.1	0.1	0.01	0.02
Selenium	1.07	1.50	0.52	3.00	2.1	2.9	0.36	0.50
Thallium	0.70	0.87	0.05	0.50	13.9	17.4	1.39	1.74
Vanadium	18.09	22.71	60.00	80.00	0.3	0.4	0.23	0.28
Zinc	117.40	189.70	160.00	810.00	0.7	1.2	0.14	0.23

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-12 EU-3.5 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Browns Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	12000.00	15342.00	narrative*		NA	NA	NA	NA
Antimony	1.73	2.66	11.00	58.00	0.2	0.2	0.03	0.05
Arsenic	37.81	78.88	18.00	91.00	2.1	4.4	0.42	0.87
Barium	64.93	78.90	110.00	260.00	0.6	0.7	0.25	0.30
Beryllium	0.36	0.47	2.50	10.00	0.1	0.2	0.04	0.05
Cadmium	0.83	1.14	32.00	160.00	0.0	0.0	0.01	0.01
Cobalt	9.08	13.42	13.00	20.00	0.7	1.0	0.45	0.67
Copper	38.73	68.76	70.00	490.00	0.6	1.0	0.08	0.14
Iron	41613.00	48009.00	narrative*		NA	NA	NA	NA
Lead	605.60	2743.00	120.00	570.00	5.0	22.9	1.06	4.81
Manganese	1155.00	1932.00	220.00	1100.00	5.3	8.8	1.05	1.76
Molybdenum	1.62	2.38	2.00	2.00	0.8	1.2	0.81	1.19
Nickel	5.35	7.98	38.00	270.00	0.1	0.2	0.02	0.03
Selenium	1.19	1.60	0.52	3.00	2.3	3.1	0.40	0.53
Thallium	0.60	0.63	0.05	0.50	12.0	12.5	1.20	1.25
Vanadium	18.69	23.22	60.00	80.00	0.3	0.4	0.23	0.29
Zinc	203.10	369.00	160.00	810.00	1.3	2.3	0.25	0.46

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-13 EU-04 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Upper Mainstem Mineral Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	14791.00	16850.00	narrative*		NA	NA	NA	NA
Antimony	1.68	2.13	11.00	58.00	0.2	0.2	0.03	0.04
Arsenic	111.70	430.90	18.00	91.00	6.2	23.9	1.23	4.74
Barium	75.31	109.20	110.00	260.00	0.7	1.0	0.29	0.42
Beryllium	0.57	0.71	2.50	10.00	0.2	0.3	0.06	0.07
Cadmium	1.28	1.84	32.00	160.00	0.0	0.1	0.01	0.01
Cobalt	9.39	11.70	13.00	20.00	0.7	0.9	0.47	0.59
Copper	160.60	394.70	70.00	490.00	2.3	5.6	0.33	0.81
Iron	38245.00	49572.00	narrative*		NA	NA	NA	NA
Lead	377.10	1233.00	120.00	570.00	3.1	10.3	0.66	2.16
Manganese	972.10	1199.00	220.00	1100.00	4.4	5.5	0.88	1.09
Molybdenum	1.09	1.44	2.00	2.00	0.5	0.7	0.55	0.72
Nickel	5.17	6.66	38.00	270.00	0.1	0.2	0.02	0.02
Selenium	1.04	1.31	0.52	3.00	2.0	2.5	0.35	0.44
Thallium	0.69	0.76	0.05	0.50	13.7	15.2	1.37	1.52
Vanadium	17.10	20.79	60.00	80.00	0.3	0.3	0.21	0.26
Zinc	332.50	851.40	160.00	810.00	2.1	5.3	0.41	1.05

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-14 EU-05 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in South Fork Mineral Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	11952.00	13739.00	narrative*		NA	NA	NA	NA
Antimony	0.96	1.66	11.00	58.00	0.1	0.2	0.02	0.03
Arsenic	19.22	27.19	18.00	91.00	1.1	1.5	0.21	0.30
Barium	97.74	112.00	110.00	260.00	0.9	1.0	0.38	0.43
Beryllium	1.00	1.63	2.50	10.00	0.4	0.7	0.10	0.16
Cadmium	16.15	141.70	32.00	160.00	0.5	4.4	0.10	0.89
Cobalt	9.11	13.84	13.00	20.00	0.7	1.1	0.46	0.69
Copper	346.40	2836.00	70.00	490.00	4.9	40.5	0.71	5.79
Iron	39480.00	87453.00	narrative*		NA	NA	NA	NA
Lead	465.50	1280.00	120.00	570.00	3.9	10.7	0.82	2.25
Manganese	5748.00	23416.00	220.00	1100.00	26.1	106.4	5.23	21.29
Molybdenum	1.53	2.14	2.00	2.00	0.8	1.1	0.77	1.07
Nickel	9.57	21.93	38.00	270.00	0.3	0.6	0.04	0.08
Selenium	1.40	2.09	0.52	3.00	2.7	4.0	0.47	0.70
Thallium	0.69	1.39	0.05	0.50	13.8	27.7	1.38	2.77
Vanadium	23.08	31.34	60.00	80.00	0.4	0.5	0.29	0.39
Zinc	1431.00	5282.00	160.00	810.00	8.9	33.0	1.77	6.52

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-15 EU-06 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors Middle Fork Mineral Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	15426.00	18142.00	narrative*		NA	NA	NA	NA
Antimony	1.24	1.49	11.00	58.00	0.1	0.1	0.02	0.03
Arsenic	12.06	14.95	18.00	91.00	0.7	0.8	0.13	0.16
Barium	77.78	89.64	110.00	260.00	0.7	0.8	0.30	0.34
Beryllium	0.49	0.63	2.50	10.00	0.2	0.3	0.05	0.06
Cadmium	0.79	1.18	32.00	160.00	0.0	0.0	0.00	0.01
Cobalt	18.97	29.80	13.00	20.00	1.5	2.3	0.95	1.49
Copper	15.31	17.90	70.00	490.00	0.2	0.3	0.03	0.04
Iron	68513.00	80176.00	narrative*		NA	NA	NA	NA
Lead	114.30	131.90	120.00	570.00	1.0	1.1	0.20	0.23
Manganese	1660.00	2491.00	220.00	1100.00	7.5	11.3	1.51	2.26
Molybdenum	5.51	8.52	2.00	2.00	2.8	4.3	2.75	4.26
Nickel	3.33	4.74	38.00	270.00	0.1	0.1	0.01	0.02
Selenium	1.88	2.29	0.52	3.00	3.6	4.4	0.63	0.76
Thallium	0.86	0.99	0.05	0.50	17.2	19.8	1.72	1.98
Vanadium	23.35	28.16	60.00	80.00	0.4	0.5	0.29	0.35
Zinc	103.60	124.20	160.00	810.00	0.6	0.8	0.13	0.15

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-16 EU-R1 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Mill Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	10210.00	14000.00	narrative*		NA	NA	NA	NA
Antimony	1.61	2.80	11.00	58.00	0.1	0.3	0.03	0.05
Arsenic	84.47	229.00	18.00	91.00	4.7	12.7	0.93	2.52
Barium	113.00	171.00	110.00	260.00	1.0	1.6	0.43	0.66
Beryllium	0.72	0.85	2.50	10.00	0.3	0.3	0.07	0.09
Cadmium	1.33	2.10	32.00	160.00	0.0	0.1	0.01	0.01
Cobalt	20.07	45.70	13.00	20.00	1.5	3.5	1.00	2.29
Copper	221.40	612.00	70.00	490.00	3.2	8.7	0.45	1.25
Iron	35033.00	44400.00	narrative*		NA	NA	NA	NA
Lead	406.50	968.00	120.00	570.00	3.4	8.1	0.71	1.70
Manganese	1415.00	2680.00	220.00	1100.00	6.4	12.2	1.29	2.44
Molybdenum	3.60	5.80	2.00	2.00	1.8	2.9	1.80	2.90
Nickel	4.37	6.80	38.00	270.00	0.1	0.2	0.02	0.03
Selenium	1.43	2.50	0.52	3.00	2.8	4.8	0.48	0.83
Thallium	0.67	0.77	0.05	0.50	13.5	15.4	1.35	1.54
Vanadium	15.10	22.20	60.00	80.00	0.3	0.4	0.19	0.28
Zinc	301.00	440.00	160.00	810.00	1.9	2.8	0.37	0.54

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-17 EU-07 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors Animas River Below Cunningham Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	12098.00	16529.00	narrative*		NA	NA	NA	NA
Antimony	11.45	46.80	11.00	58.00	1.0	4.3	0.20	0.81
Arsenic	28.20	64.50	18.00	91.00	1.6	3.6	0.31	0.71
Barium	53.30	82.83	110.00	260.00	0.5	0.8	0.21	0.32
Beryllium	0.78	1.09	2.50	10.00	0.3	0.4	0.08	0.11
Cadmium	16.97	94.30	32.00	160.00	0.5	2.9	0.11	0.59
Cobalt	12.98	28.73	13.00	20.00	1.0	2.2	0.65	1.44
Copper	666.30	2510.00	70.00	490.00	9.5	35.9	1.36	5.12
Iron	37217.00	41877.00	narrative*		NA	NA	NA	NA
Lead	8787.00	44200.00	120.00	570.00	73.2	368.3	15.42	77.54
Manganese	1203.00	1619.00	220.00	1100.00	5.5	7.4	1.09	1.47
Molybdenum	26.60	118.00	2.00	2.00	13.3	59.0	13.30	59.00
Nickel	5.17	7.61	38.00	270.00	0.1	0.2	0.02	0.03
Selenium	2.80	4.78	0.52	3.00	5.4	9.2	0.93	1.59
Thallium	0.83	2.30	0.05	0.50	16.6	45.9	1.66	4.59
Vanadium	17.12	22.03	60.00	80.00	0.3	0.4	0.21	0.28
Zinc	3082.00	17300.00	160.00	810.00	19.3	108.1	3.80	21.36

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-18 EU-08 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Cunningham Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	10512.00	12538.00	narrative*		NA	NA	NA	NA
Antimony	1.34	3.73	11.00	58.00	0.1	0.3	0.02	0.06
Arsenic	12.81	18.24	18.00	91.00	0.7	1.0	0.14	0.20
Barium	66.01	101.90	110.00	260.00	0.6	0.9	0.25	0.39
Beryllium	0.57	0.71	2.50	10.00	0.2	0.3	0.06	0.07
Cadmium	1.84	2.32	32.00	160.00	0.1	0.1	0.01	0.01
Cobalt	8.69	12.43	13.00	20.00	0.7	1.0	0.43	0.62
Copper	99.95	264.80	70.00	490.00	1.4	3.8	0.20	0.54
Iron	24383.00	28187.00	narrative*		NA	NA	NA	NA
Lead	797.20	1222.00	120.00	570.00	6.6	10.2	1.40	2.14
Manganese	1580.00	2077.00	220.00	1100.00	7.2	9.4	1.44	1.89
Molybdenum	4.43	7.10	2.00	2.00	2.2	3.6	2.22	3.55
Nickel	3.54	4.64	38.00	270.00	0.1	0.1	0.01	0.02
Selenium	0.79	1.29	0.52	3.00	1.5	2.5	0.26	0.43
Thallium	0.41	0.56	0.05	0.50	8.2	11.2	0.82	1.12
Vanadium	16.19	25.00	60.00	80.00	0.3	0.4	0.20	0.31
Zinc	383.60	488.60	160.00	810.00	2.4	3.1	0.47	0.60

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-19 EU-09 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Animas River Below Minnie Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	7268.00	8602.00	narrative*		NA	NA	NA	NA
Antimony	6.73	11.73	11.00	58.00	0.6	1.1	0.12	0.20
Arsenic	21.31	26.08	18.00	91.00	1.2	1.4	0.23	0.29
Barium	89.83	101.60	110.00	260.00	0.8	0.9	0.35	0.39
Beryllium	0.70	0.91	2.50	10.00	0.3	0.4	0.07	0.09
Cadmium	6.84	9.47	32.00	160.00	0.2	0.3	0.04	0.06
Cobalt	8.89	10.37	13.00	20.00	0.7	0.8	0.44	0.52
Copper	446.90	573.10	70.00	490.00	6.4	8.2	0.91	1.17
Iron	26429.00	28589.00	narrative*		NA	NA	NA	NA
Lead	3685.00	5167.00	120.00	570.00	30.7	43.1	6.46	9.06
Manganese	8873.00	12721.00	220.00	1100.00	40.3	57.8	8.07	11.56
Molybdenum	4.08	6.06	2.00	2.00	2.0	3.0	2.04	3.03
Nickel	4.27	5.03	38.00	270.00	0.1	0.1	0.02	0.02
Selenium	1.13	1.30	0.52	3.00	2.2	2.5	0.38	0.43
Thallium	0.42	0.74	0.05	0.50	8.5	14.8	0.85	1.48
Vanadium	16.05	18.60	60.00	80.00	0.3	0.3	0.20	0.23
Zinc	1184.00	1638.00	160.00	810.00	7.4	10.2	1.46	2.02

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-20 EU-10 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Animas River Below South Fork Animas River

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	6697.00	7542.00	narrative*		NA	NA	NA	NA
Antimony	15.90	18.88	11.00	58.00	1.4	1.7	0.27	0.33
Arsenic	40.84	43.33	18.00	91.00	2.3	2.4	0.45	0.48
Barium	83.41	91.94	110.00	260.00	0.8	0.8	0.32	0.35
Beryllium	1.30	1.46	2.50	10.00	0.5	0.6	0.13	0.15
Cadmium	12.96	14.44	32.00	160.00	0.4	0.5	0.08	0.09
Cobalt	10.40	1.99	13.00	20.00	0.8	0.2	0.52	0.10
Copper	853.90	1000.00	70.00	490.00	12.2	14.3	1.74	2.04
Iron	28625.00	30664.00	narrative*		NA	NA	NA	NA
Lead	5245.00	6381.00	120.00	570.00	43.7	53.2	9.20	11.19
Manganese	24316.00	36425.00	220.00	1100.00	110.5	165.6	22.11	33.11
Molybdenum	11.07	18.10	2.00	2.00	5.5	9.1	5.54	9.05
Nickel	5.66	6.59	38.00	270.00	0.1	0.2	0.02	0.02
Selenium	1.04	1.20	0.52	3.00	2.0	2.3	0.35	0.40
Thallium	0.34	0.37	0.05	0.50	6.8	7.4	0.68	0.74
Vanadium	14.85	16.15	60.00	80.00	0.2	0.3	0.19	0.20
Zinc	2222.00	2545.00	160.00	810.00	13.9	15.9	2.74	3.14

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-21 EU-11 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Upper South Fork Animas River

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	11000.00	11000.00	narrative*		NA	NA	NA	NA
Antimony	1.10	1.10	11.00	58.00	0.1	0.1	0.02	0.02
Arsenic	24.50	24.50	18.00	91.00	1.4	1.4	0.27	0.27
Barium	72.30	72.30	110.00	260.00	0.7	0.7	0.28	0.28
Beryllium	0.48	0.48	2.50	10.00	0.2	0.2	0.05	0.05
Cadmium	0.64	0.64	32.00	160.00	0.0	0.0	0.00	0.00
Cobalt	10.60	10.60	13.00	20.00	0.8	0.8	0.53	0.53
Copper	74.50	74.50	70.00	490.00	1.1	1.1	0.15	0.15
Iron	52000.00	52000.00	narrative*		NA	NA	NA	NA
Lead	164.00	164.00	120.00	570.00	1.4	1.4	0.29	0.29
Manganese	1250.00	1250.00	220.00	1100.00	5.7	5.7	1.14	1.14
Molybdenum	5.40	5.40	2.00	2.00	2.7	2.7	2.70	2.70
Nickel	6.10	6.10	38.00	270.00	0.2	0.2	0.02	0.02
Selenium	2.50	2.50	0.52	3.00	4.8	4.8	0.83	0.83
Thallium	0.54	0.54	0.05	0.50	10.8	10.8	1.08	1.08
Vanadium	27.40	27.40	60.00	80.00	0.5	0.5	0.34	0.34
Zinc	123.50	123.50	160.00	810.00	0.8	0.8	0.15	0.15

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-22 EU-12 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Eureka Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	19027.00	20511.00	narrative*		NA	NA	NA	NA
Antimony	1.51	1.85	11.00	58.00	0.1	0.2	0.03	0.03
Arsenic	22.71	28.07	18.00	91.00	1.3	1.6	0.25	0.31
Barium	88.01	128.40	110.00	260.00	0.8	1.2	0.34	0.49
Beryllium	0.80	1.02	2.50	10.00	0.3	0.4	0.08	0.10
Cadmium	6.10	9.85	32.00	160.00	0.2	0.3	0.04	0.06
Cobalt	14.98	17.12	13.00	20.00	1.2	1.3	0.75	0.86
Copper	215.50	319.50	70.00	490.00	3.1	4.6	0.44	0.65
Iron	49118.00	55443.00	narrative*		NA	NA	NA	NA
Lead	695.80	992.70	120.00	570.00	5.8	8.3	1.22	1.74
Manganese	6068.00	8851.00	220.00	1100.00	27.6	40.2	5.52	8.05
Molybdenum	3.51	5.05	2.00	2.00	1.8	2.5	1.75	2.52
Nickel	9.36	10.77	38.00	270.00	0.2	0.3	0.03	0.04
Selenium	2.20	2.89	0.52	3.00	4.2	5.6	0.73	0.96
Thallium	0.58	0.62	0.05	0.50	11.5	12.3	1.15	1.23
Vanadium	30.18	34.66	60.00	80.00	0.5	0.6	0.38	0.43
Zinc	1383.00	3427.00	160.00	810.00	8.6	21.4	1.71	4.23

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-23 EU-13 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Lower South Fork Animas River

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	13750.00	15800.00	narrative*		NA	NA	NA	NA
Antimony	5.80	10.10	11.00	58.00	0.5	0.9	0.10	0.17
Arsenic	31.15	38.60	18.00	91.00	1.7	2.1	0.34	0.42
Barium	126.50	140.00	110.00	260.00	1.2	1.3	0.49	0.54
Beryllium	0.79	0.97	2.50	10.00	0.3	0.4	0.08	0.10
Cadmium	12.50	14.80	32.00	160.00	0.4	0.5	0.08	0.09
Cobalt	19.80	20.80	13.00	20.00	1.5	1.6	0.99	1.04
Copper	408.00	485.00	70.00	490.00	5.8	6.9	0.83	0.99
Iron	79650.00	95800.00	narrative*		NA	NA	NA	NA
Lead	2652.00	4390.00	120.00	570.00	22.1	36.6	4.65	7.70
Manganese	8200.00	11100.00	220.00	1100.00	37.3	50.5	7.45	10.09
Molybdenum	7.05	7.40	2.00	2.00	3.5	3.7	3.53	3.70
Nickel	37.65	63.70	38.00	270.00	1.0	1.7	0.14	0.24
Selenium	2.40	3.20	0.52	3.00	4.6	6.2	0.80	1.07
Thallium	0.58	0.61	0.05	0.50	11.5	12.2	1.15	1.22
Vanadium	27.40	29.70	60.00	80.00	0.5	0.5	0.34	0.37
Zinc	3280.00	3770.00	160.00	810.00	20.5	23.6	4.05	4.65

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-24 EU-14 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Animas River Below West Fork Animas River

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	10483.00	12135.00	narrative*		NA	NA	NA	NA
Antimony	10.85	42.50	11.00	58.00	1.0	3.9	0.19	0.73
Arsenic	57.03	83.05	18.00	91.00	3.2	4.6	0.63	0.91
Barium	73.51	134.00	110.00	260.00	0.7	1.2	0.28	0.52
Beryllium	1.13	1.57	2.50	10.00	0.5	0.6	0.11	0.16
Cadmium	6.66	9.95	32.00	160.00	0.2	0.3	0.04	0.06
Cobalt	7.68	10.63	13.00	20.00	0.6	0.8	0.38	0.53
Copper	222.70	346.60	70.00	490.00	3.2	5.0	0.45	0.71
Iron	20767.00	23633.00	narrative*		NA	NA	NA	NA
Lead	2768.00	10677.00	120.00	570.00	23.1	89.0	4.86	18.73
Manganese	3977.00	10200.00	220.00	1100.00	18.1	46.4	3.62	9.27
Molybdenum	5.86	7.40	2.00	2.00	2.9	3.7	2.93	3.70
Nickel	5.09	6.41	38.00	270.00	0.1	0.2	0.02	0.02
Selenium	1.72	2.38	0.52	3.00	3.3	4.6	0.57	0.79
Thallium	0.53	0.59	0.05	0.50	10.6	11.8	1.06	1.18
Vanadium	15.14	21.72	60.00	80.00	0.3	0.4	0.19	0.27
Zinc	1866.00	3371.00	160.00	810.00	11.7	21.1	2.30	4.16

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-25 Floodplain EU-15 Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Lower West Fork Animas River

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	14186.00	16033.00	narrative*		NA	NA	NA	NA
Antimony	3.99	7.05	11.00	58.00	0.4	0.6	0.07	0.12
Arsenic	59.47	142.90	18.00	91.00	3.3	7.9	0.65	1.57
Barium	123.20	280.40	110.00	260.00	1.1	2.5	0.47	1.08
Beryllium	2.35	7.55	2.50	10.00	0.9	3.0	0.24	0.76
Cadmium	35.99	216.00	32.00	160.00	1.1	6.8	0.22	1.35
Cobalt	18.80	50.23	13.00	20.00	1.4	3.9	0.94	2.51
Copper	586.50	2795.00	70.00	490.00	8.4	39.9	1.20	5.70
Iron	33100.00	46179.00	narrative*		NA	NA	NA	NA
Lead	1667.00	6000.00	120.00	570.00	13.9	50.0	2.92	10.53
Manganese	13550.00	49821.00	220.00	1100.00	61.6	226.5	12.32	45.29
Molybdenum	29.94	59.06	2.00	2.00	15.0	29.5	14.97	29.53
Nickel	11.76	41.84	38.00	270.00	0.3	1.1	0.04	0.15
Selenium	2.25	3.72	0.52	3.00	4.3	7.2	0.75	1.24
Thallium	0.74	1.02	0.05	0.50	14.8	20.4	1.48	2.04
Vanadium	18.01	22.15	60.00	80.00	0.3	0.4	0.23	0.28
Zinc	5086.00	30200.00	160.00	810.00	31.8	188.8	6.28	37.28

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-26 EU-16 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Placer Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	17500.00	21200.00	narrative*		NA	NA	NA	NA
Antimony	2.88	5.38	11.00	58.00	0.3	0.5	0.05	0.09
Arsenic	33.11	51.90	18.00	91.00	1.8	2.9	0.36	0.57
Barium	133.60	169.00	110.00	260.00	1.2	1.5	0.51	0.65
Beryllium	2.33	2.80	2.50	10.00	0.9	1.1	0.23	0.28
Cadmium	6.06	9.53	32.00	160.00	0.2	0.3	0.04	0.06
Cobalt	12.80	13.40	13.00	20.00	1.0	1.0	0.64	0.67
Copper	288.50	497.30	70.00	490.00	4.1	7.1	0.59	1.01
Iron	26025.00	36396.00	narrative*		NA	NA	NA	NA
Lead	1738.00	3158.00	120.00	570.00	14.5	26.3	3.05	5.54
Manganese	10923.00	19600.00	220.00	1100.00	49.7	89.1	9.93	17.82
Molybdenum	5.23	7.80	2.00	2.00	2.6	3.9	2.62	3.90
Nickel	5.62	6.50	38.00	270.00	0.1	0.2	0.02	0.02
Selenium	2.24	3.40	0.52	3.00	4.3	6.5	0.75	1.13
Thallium	0.99	1.34	0.05	0.50	19.9	26.7	1.99	2.67
Vanadium	17.03	21.40	60.00	80.00	0.3	0.4	0.21	0.27
Zinc	1129.00	1600.00	160.00	810.00	7.1	10.0	1.39	1.98

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-27 EU-17 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Mainstem West Fork Animas River/California Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	18667.00	25400.00	narrative*		NA	NA	NA	NA
Antimony	1.17	1.60	11.00	58.00	0.1	0.1	0.02	0.03
Arsenic	28.83	31.40	18.00	91.00	1.6	1.7	0.32	0.35
Barium	48.70	57.50	110.00	260.00	0.4	0.5	0.19	0.22
Beryllium	3.25	6.10	2.50	10.00	1.3	2.4	0.33	0.61
Cadmium	1.27	1.60	32.00	160.00	0.0	0.1	0.01	0.01
Cobalt	12.25	15.20	13.00	20.00	0.9	1.2	0.61	0.76
Copper	79.47	156.00	70.00	490.00	1.1	2.2	0.16	0.32
Iron	28400.00	40100.00	narrative*		NA	NA	NA	NA
Lead	136.20	162.00	120.00	570.00	1.1	1.4	0.24	0.28
Manganese	4137.00	7020.00	220.00	1100.00	18.8	31.9	3.76	6.38
Molybdenum	4.55	4.70	2.00	2.00	2.3	2.4	2.28	2.35
Nickel	5.84	7.40	38.00	270.00	0.2	0.2	0.02	0.03
Selenium	1.38	1.90	0.52	3.00	2.7	3.7	0.46	0.63
Thallium	0.82	0.99	0.05	0.50	16.5	19.8	1.65	1.98
Vanadium	27.50	32.50	60.00	80.00	0.5	0.5	0.34	0.41
Zinc	276.80	406.50	160.00	810.00	1.7	2.5	0.34	0.50

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-28 EU-18 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in North Fork Animas River Below Burrows Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	13047.00	18600.00	narrative*		NA	NA	NA	NA
Antimony	1.09	1.50	11.00	58.00	0.1	0.1	0.02	0.03
Arsenic	31.80	34.90	18.00	91.00	1.8	1.9	0.35	0.38
Barium	57.12	98.90	110.00	260.00	0.5	0.9	0.22	0.38
Beryllium	0.67	0.77	2.50	10.00	0.3	0.3	0.07	0.08
Cadmium	1.53	2.00	32.00	160.00	0.0	0.1	0.01	0.01
Cobalt	5.33	6.50	13.00	20.00	0.4	0.5	0.27	0.33
Copper	22.87	28.60	70.00	490.00	0.3	0.4	0.05	0.06
Iron	18333.00	24200.00	narrative*		NA	NA	NA	NA
Lead	193.70	276.00	120.00	570.00	1.6	2.3	0.34	0.48
Manganese	2006.00	2660.00	220.00	1100.00	9.1	12.1	1.82	2.42
Molybdenum	4.53	4.70	2.00	2.00	2.3	2.4	2.27	2.35
Nickel	4.10	5.50	38.00	270.00	0.1	0.1	0.02	0.02
Selenium	1.20	1.60	0.52	3.00	2.3	3.1	0.40	0.53
Thallium	0.65	0.77	0.05	0.50	13.0	15.4	1.30	1.54
Vanadium	15.53	19.00	60.00	80.00	0.3	0.3	0.19	0.24
Zinc	210.50	270.00	160.00	810.00	1.3	1.7	0.26	0.33

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-29 EU-19 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Burrows Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	16808.00	22619.00	narrative*		NA	NA	NA	NA
Antimony	2.87	4.49	11.00	58.00	0.3	0.4	0.05	0.08
Arsenic	59.90	79.38	18.00	91.00	3.3	4.4	0.66	0.87
Barium	70.42	78.43	110.00	260.00	0.6	0.7	0.27	0.30
Beryllium	1.15	1.65	2.50	10.00	0.5	0.7	0.11	0.16
Cadmium	3.80	10.03	32.00	160.00	0.1	0.3	0.02	0.06
Cobalt	13.13	26.48	13.00	20.00	1.0	2.0	0.66	1.32
Copper	83.25	198.30	70.00	490.00	1.2	2.8	0.17	0.40
Iron	29665.00	45551.00	narrative*		NA	NA	NA	NA
Lead	520.50	880.10	120.00	570.00	4.3	7.3	0.91	1.54
Manganese	3305.00	7521.00	220.00	1100.00	15.0	34.2	3.00	6.84
Molybdenum	13.12	20.15	2.00	2.00	6.6	10.1	6.56	10.08
Nickel	4.05	5.12	38.00	270.00	0.1	0.1	0.01	0.02
Selenium	1.43	1.91	0.52	3.00	2.7	3.7	0.48	0.64
Thallium	1.04	1.71	0.05	0.50	20.9	34.1	2.09	3.41
Vanadium	12.52	14.67	60.00	80.00	0.2	0.2	0.16	0.18
Zinc	279.70	441.30	160.00	810.00	1.7	2.8	0.35	0.54

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-30 EU-R2 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Maggie Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	7877.00	10893.00	narrative*		NA	NA	NA	NA
Antimony	0.78	2.50	11.00	58.00	0.1	0.2	0.01	0.04
Arsenic	10.34	11.94	18.00	91.00	0.6	0.7	0.11	0.13
Barium	180.50	252.90	110.00	260.00	1.6	2.3	0.69	0.97
Beryllium	0.79	0.89	2.50	10.00	0.3	0.4	0.08	0.09
Cadmium	0.84	1.18	32.00	160.00	0.0	0.0	0.01	0.01
Cobalt	10.82	11.96	13.00	20.00	0.8	0.9	0.54	0.60
Copper	27.47	37.11	70.00	490.00	0.4	0.5	0.06	0.08
Iron	23333.00	27733.00	narrative*		NA	NA	NA	NA
Lead	66.68	124.90	120.00	570.00	0.6	1.0	0.12	0.22
Manganese	1400.00	1596.00	220.00	1100.00	6.4	7.3	1.27	1.45
Molybdenum	1.85	2.00	2.00	2.00	0.9	1.0	0.93	1.00
Nickel	5.16	5.61	38.00	270.00	0.1	0.1	0.02	0.02
Selenium	0.73	1.11	0.52	3.00	1.4	2.1	0.24	0.37
Thallium	0.42	0.69	0.05	0.50	8.4	13.7	0.84	1.37
Vanadium	18.30	25.25	60.00	80.00	0.3	0.4	0.23	0.32
Zinc	151.80	203.00	160.00	810.00	0.9	1.3	0.19	0.25

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-31 EU-R3 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Picayune Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	8885.00	11204.00	narrative*		NA	NA	NA	NA
Antimony	0.92	2.01	11.00	58.00	0.1	0.2	0.02	0.03
Arsenic	44.45	55.80	18.00	91.00	2.5	3.1	0.49	0.61
Barium	97.08	121.00	110.00	260.00	0.9	1.1	0.37	0.47
Beryllium	0.86	1.13	2.50	10.00	0.3	0.5	0.09	0.11
Cadmium	1.44	1.52	32.00	160.00	0.0	0.0	0.01	0.01
Cobalt	9.41	10.24	13.00	20.00	0.7	0.8	0.47	0.51
Copper	35.28	45.27	70.00	490.00	0.5	0.6	0.07	0.09
Iron	26075.00	30887.00	narrative*		NA	NA	NA	NA
Lead	140.00	171.70	120.00	570.00	1.2	1.4	0.25	0.30
Manganese	3108.00	5410.00	220.00	1100.00	14.1	24.6	2.83	4.92
Molybdenum	2.60	2.60	2.00	2.00	1.3	1.3	1.30	1.30
Nickel	5.62	5.87	38.00	270.00	0.1	0.2	0.02	0.02
Selenium	0.60	1.24	0.52	3.00	1.2	2.4	0.20	0.41
Thallium	0.33	0.53	0.05	0.50	6.6	10.5	0.66	1.05
Vanadium	19.83	22.70	60.00	80.00	0.3	0.4	0.25	0.28
Zinc	243.50	263.00	160.00	810.00	1.5	1.6	0.30	0.32

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-32 EU-R4 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Upper North Fork Animas River

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	11400.00	11400.00	narrative*		NA	NA	NA	NA
Antimony	1.90	1.90	11.00	58.00	0.2	0.2	0.03	0.03
Arsenic	105.00	105.00	18.00	91.00	5.8	5.8	1.15	1.15
Barium	61.50	61.50	110.00	260.00	0.6	0.6	0.24	0.24
Beryllium	0.68	0.68	2.50	10.00	0.3	0.3	0.07	0.07
Cadmium	1.70	1.70	32.00	160.00	0.1	0.1	0.01	0.01
Cobalt	4.40	4.40	13.00	20.00	0.3	0.3	0.22	0.22
Copper	81.50	81.50	70.00	490.00	1.2	1.2	0.17	0.17
Iron	26000.00	26000.00	narrative*		NA	NA	NA	NA
Lead	334.00	334.00	120.00	570.00	2.8	2.8	0.59	0.59
Manganese	628.00	628.00	220.00	1100.00	2.9	2.9	0.57	0.57
Molybdenum	10.20	10.20	2.00	2.00	5.1	5.1	5.10	5.10
Nickel	2.40	2.40	38.00	270.00	0.1	0.1	0.01	0.01
Selenium	1.50	1.50	0.52	3.00	2.9	2.9	0.50	0.50
Thallium	0.76	0.76	0.05	0.50	15.2	15.2	1.52	1.52
Vanadium	12.40	12.40	60.00	80.00	0.2	0.2	0.16	0.16
Zinc	480.00	480.00	160.00	810.00	3.0	3.0	0.59	0.59

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-33 EU-20 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Lower Mainstem Cement Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	9737.00	10706.00	narrative*		NA	NA	NA	NA
Antimony	2.96	4.04	11.00	58.00	0.3	0.4	0.05	0.07
Arsenic	42.82	50.49	18.00	91.00	2.4	2.8	0.47	0.55
Barium	82.16	102.90	110.00	260.00	0.7	0.9	0.32	0.40
Beryllium	0.29	0.39	2.50	10.00	0.1	0.2	0.03	0.04
Cadmium	1.42	1.86	32.00	160.00	0.0	0.1	0.01	0.01
Cobalt	4.58	5.44	13.00	20.00	0.4	0.4	0.23	0.27
Copper	81.13	96.48	70.00	490.00	1.2	1.4	0.17	0.20
Iron	49653.00	55063.00	narrative*		NA	NA	NA	NA
Lead	587.20	765.70	120.00	570.00	4.9	6.4	1.03	1.34
Manganese	650.70	761.90	220.00	1100.00	3.0	3.5	0.59	0.69
Molybdenum	3.86	5.38	2.00	2.00	1.9	2.7	1.93	2.69
Nickel	2.87	3.44	38.00	270.00	0.1	0.1	0.01	0.01
Selenium	2.24	2.61	0.52	3.00	4.3	5.0	0.75	0.87
Thallium	0.56	0.65	0.05	0.50	11.2	13.0	1.12	1.30
Vanadium	22.99	26.30	60.00	80.00	0.4	0.4	0.29	0.33
Zinc	478.30	598.60	160.00	810.00	3.0	3.7	0.59	0.74

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-34 EU-21 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Prospect Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	5856.00	6916.00	narrative*		NA	NA	NA	NA
Antimony	3.69	4.98	11.00	58.00	0.3	0.5	0.06	0.09
Arsenic	35.66	42.80	18.00	91.00	2.0	2.4	0.39	0.47
Barium	174.90	275.70	110.00	260.00	1.6	2.5	0.67	1.06
Beryllium	0.21	0.26	2.50	10.00	0.1	0.1	0.02	0.03
Cadmium	0.61	1.57	32.00	160.00	0.0	0.0	0.00	0.01
Cobalt	2.37	3.44	13.00	20.00	0.2	0.3	0.12	0.17
Copper	28.28	36.77	70.00	490.00	0.4	0.5	0.06	0.08
Iron	31540.00	35722.00	narrative*		NA	NA	NA	NA
Lead	337.50	412.40	120.00	570.00	2.8	3.4	0.59	0.72
Manganese	223.30	316.40	220.00	1100.00	1.0	1.4	0.20	0.29
Molybdenum	1.69	2.11	2.00	2.00	0.8	1.1	0.84	1.05
Nickel	1.56	2.02	38.00	270.00	0.0	0.1	0.01	0.01
Selenium	2.00	2.38	0.52	3.00	3.8	4.6	0.67	0.79
Thallium	0.54	0.59	0.05	0.50	10.8	11.8	1.08	1.18
Vanadium	16.30	18.53	60.00	80.00	0.3	0.3	0.20	0.23
Zinc	152.30	383.60	160.00	810.00	1.0	2.4	0.19	0.47

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-35 EU-22 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Mainstem Cement Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	10056.00	11298.00	narrative*		NA	NA	NA	NA
Antimony	2.89	4.06	11.00	58.00	0.3	0.4	0.05	0.07
Arsenic	24.73	33.76	18.00	91.00	1.4	1.9	0.27	0.37
Barium	40.61	52.12	110.00	260.00	0.4	0.5	0.16	0.20
Beryllium	0.38	0.75	2.50	10.00	0.2	0.3	0.04	0.08
Cadmium	1.60	2.53	32.00	160.00	0.0	0.1	0.01	0.02
Cobalt	5.55	7.88	13.00	20.00	0.4	0.6	0.28	0.39
Copper	97.42	137.40	70.00	490.00	1.4	2.0	0.20	0.28
Iron	82856.00	147330.00	narrative*		NA	NA	NA	NA
Lead	863.90	1729.00	120.00	570.00	7.2	14.4	1.52	3.03
Manganese	950.40	1393.00	220.00	1100.00	4.3	6.3	0.86	1.27
Molybdenum	4.77	5.91	2.00	2.00	2.4	3.0	2.38	2.95
Nickel	3.38	4.54	38.00	270.00	0.1	0.1	0.01	0.02
Selenium	2.37	2.99	0.52	3.00	4.6	5.8	0.79	1.00
Thallium	0.59	0.63	0.05	0.50	11.8	12.6	1.18	1.26
Vanadium	27.38	31.24	60.00	80.00	0.5	0.5	0.34	0.39
Zinc	985.50	3272.00	160.00	810.00	6.2	20.5	1.22	4.04

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-36 EU-23 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in South Fork Cement Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	11245.00	14823.00	narrative*		NA	NA	NA	NA
Antimony	1.17	1.88	11.00	58.00	0.1	0.2	0.02	0.03
Arsenic	17.01	20.26	18.00	91.00	0.9	1.1	0.19	0.22
Barium	70.68	98.35	110.00	260.00	0.6	0.9	0.27	0.38
Beryllium	0.71	2.18	2.50	10.00	0.3	0.9	0.07	0.22
Cadmium	1.13	3.63	32.00	160.00	0.0	0.1	0.01	0.02
Cobalt	5.47	7.05	13.00	20.00	0.4	0.5	0.27	0.35
Copper	65.54	157.30	70.00	490.00	0.9	2.2	0.13	0.32
Iron	46630.00	60228.00	narrative*		NA	NA	NA	NA
Lead	210.50	361.30	120.00	570.00	1.8	3.0	0.37	0.63
Manganese	811.60	1796.00	220.00	1100.00	3.7	8.2	0.74	1.63
Molybdenum	4.38	5.38	2.00	2.00	2.2	2.7	2.19	2.69
Nickel	4.62	9.10	38.00	270.00	0.1	0.2	0.02	0.03
Selenium	1.88	2.40	0.52	3.00	3.6	4.6	0.63	0.80
Thallium	0.53	0.66	0.05	0.50	10.6	13.3	1.06	1.33
Vanadium	23.21	26.94	60.00	80.00	0.4	0.4	0.29	0.34
Zinc	232.80	581.90	160.00	810.00	1.5	3.6	0.29	0.72

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-37 EU-24 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Plant Receptors in Upper Cement Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Aluminum	13574.00	15597.00	narrative*		NA	NA	NA	NA
Antimony	2.07	3.70	11.00	58.00	0.2	0.3	0.04	0.06
Arsenic	33.33	38.97	18.00	91.00	1.9	2.2	0.37	0.43
Barium	79.16	103.30	110.00	260.00	0.7	0.9	0.30	0.40
Beryllium	0.75	0.89	2.50	10.00	0.3	0.4	0.08	0.09
Cadmium	6.31	18.75	32.00	160.00	0.2	0.6	0.04	0.12
Cobalt	23.76	38.64	13.00	20.00	1.8	3.0	1.19	1.93
Copper	247.90	359.30	70.00	490.00	3.5	5.1	0.51	0.73
Iron	51737.00	93722.00	narrative*		NA	NA	NA	NA
Lead	807.30	999.60	120.00	570.00	6.7	8.3	1.42	1.75
Manganese	8159.00	13854.00	220.00	1100.00	37.1	63.0	7.42	12.59
Molybdenum	3.93	4.79	2.00	2.00	2.0	2.4	1.96	2.39
Nickel	6.19	8.78	38.00	270.00	0.2	0.2	0.02	0.03
Selenium	1.81	2.16	0.52	3.00	3.5	4.2	0.60	0.72
Thallium	0.73	0.81	0.05	0.50	14.5	16.2	1.45	1.62
Vanadium	17.55	20.78	60.00	80.00	0.3	0.3	0.22	0.26
Zinc	753.20	1166.00	160.00	810.00	4.7	7.3	0.93	1.44

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

NA = not available

* Aluminum and iron ESVs are based on chemical and physical soil conditions, not concentrations of metals in soil. As such, plant ESVs for aluminum and iron are based on narrative guidance provided in U.S. Environmental Protection Agency (2003a,b); see text for more details.

Table D-38 High-Level Halo Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	6.23	12.34	78.0	780	0.08	0.16	0.01	0.02
Arsenic	49.27	65.47	6.80	68.0	7.25	9.63	0.72	0.96
Barium	152.20	206.70	330	3200	0.46	0.63	0.05	0.06
Cadmium	9.55	20.01	140	760	0.07	0.14	0.01	0.03
Chromium	4.76	5.19	0.40	28.0	11.90	12.98	0.17	0.19
Copper	182.10	264.60	80.0	530	2.28	3.31	0.34	0.50
Lead	2198.00	2940.00	1700	8400	1.29	1.73	0.26	0.35
Manganese	6666.00	21678.00	450	4500	14.81	48.17	1.48	4.82
Mercury	0.09	0.14	0.05	0.50	1.77	2.88	0.18	0.29
Selenium	0.93	1.26	4.10	41.0	0.23	0.31	0.02	0.03
Zinc	2010.00	5523.00	120	930	16.75	46.03	2.16	5.94

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-39 Mid-Level Halo Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.63	3.29	78.0	780	0.02	0.04	0.00	0.00
Arsenic	29.34	39.38	6.80	68.0	4.31	5.79	0.43	0.58
Barium	138.30	211.60	330	3200	0.42	0.64	0.04	0.07
Cadmium	1.63	2.35	140	760	0.01	0.02	0.00	0.00
Chromium	6.59	7.70	0.40	28.0	16.49	19.26	0.24	0.28
Copper	69.23	97.56	80.0	530	0.87	1.22	0.13	0.18
Lead	1832.00	3339.00	1700	8400	1.08	1.96	0.22	0.40
Manganese	1890.00	2386.00	450	4500	4.20	5.30	0.42	0.53
Mercury	0.03	0.12	0.05	0.50	0.56	2.40	0.06	0.24
Selenium	0.82	1.16	4.10	41.0	0.20	0.28	0.02	0.03
Zinc	456.10	961.30	120	930	3.80	8.01	0.49	1.03

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-40 Low-Level Halo Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	2.62	3.87	78.0	780	0.03	0.05	0.00	0.00
Arsenic	42.64	57.42	6.80	68.0	6.27	8.44	0.63	0.84
Barium	171.60	195.10	330	3200	0.52	0.59	0.05	0.06
Cadmium	1.61	2.52	140	760	0.01	0.02	0.00	0.00
Chromium	4.87	5.47	0.40	28.0	12.17	13.68	0.17	0.20
Copper	150.40	256.40	80.0	530	1.88	3.21	0.28	0.48
Lead	728.60	958.00	1700	8400	0.43	0.56	0.09	0.11
Manganese	835.80	1128.00	450	4500	1.86	2.51	0.19	0.25
Mercury	0.09	0.40	0.05	0.50	1.78	8.02	0.18	0.80
Selenium	1.47	1.87	4.10	41.0	0.36	0.46	0.04	0.05
Zinc	368.20	538.90	120	930	3.07	4.49	0.40	0.58

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-41 Vegetated Upland Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	0.66	1.02	78.0	780	0.01	0.01	0.00	0.00
Arsenic	14.86	19.91	6.80	68.0	2.19	2.93	0.22	0.29
Barium	163.50	180.90	330	3200	0.50	0.55	0.05	0.06
Cadmium	1.07	1.88	140	760	0.01	0.01	0.00	0.00
Chromium	5.92	6.23	0.40	28.0	14.79	15.57	0.21	0.22
Copper	29.23	34.06	80.0	530	0.37	0.43	0.06	0.06
Lead	174.30	225.00	1700	8400	0.10	0.13	0.02	0.03
Manganese	1355.00	1964.00	450	4500	3.01	4.36	0.30	0.44
Mercury	0.03	0.11	0.05	0.50	0.67	2.22	0.07	0.22
Selenium	0.93	1.29	4.10	41.0	0.23	0.31	0.02	0.03
Zinc	190.00	236.70	120	930	1.58	1.97	0.20	0.25

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-42 High-Level Floodplain Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	6.91	10.36	78.0	780	0.09	0.13	0.01	0.01
Arsenic	43.59	71.33	6.80	68.0	6.41	10.49	0.64	1.05
Barium	81.41	88.60	330	3200	0.25	0.27	0.03	0.03
Cadmium	9.09	16.94	140	760	0.06	0.12	0.01	0.02
Chromium	5.33	6.31	0.40	28.0	13.31	15.78	0.19	0.23
Copper	416.40	488.00	80.0	530	5.21	6.10	0.79	0.92
Lead	2644.00	4294.00	1700	8400	1.56	2.53	0.31	0.51
Manganese	10136.00	15052.00	450	4500	22.52	33.45	2.25	3.34
Mercury	0.23	0.46	0.05	0.50	4.68	9.22	0.47	0.92
Selenium	1.62	1.79	4.10	41.0	0.40	0.44	0.04	0.04
Zinc	1565.00	2195.00	120	930	13.04	18.29	1.68	2.36

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-43 Mid-Level Floodplain Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	2.40	3.11	78.0	780	0.03	0.04	0.00	0.00
Arsenic	31.04	34.85	6.80	68.0	4.56	5.13	0.46	0.51
Barium	105.10	124.00	330	3200	0.32	0.38	0.03	0.04
Cadmium	4.04	14.60	140	760	0.03	0.10	0.01	0.02
Chromium	4.46	4.96	0.40	28.0	11.15	12.41	0.16	0.18
Copper	113.60	99.63	80.0	530	1.42	1.25	0.21	0.19
Lead	467.20	567.70	1700	8400	0.27	0.33	0.06	0.07
Manganese	1827.00	1933.00	450	4500	4.06	4.30	0.41	0.43
Mercury	0.08	0.15	0.05	0.50	1.60	3.02	0.16	0.30
Selenium	1.64	1.85	4.10	41.0	0.40	0.45	0.04	0.05
Zinc	499.90	625.10	120	930	4.17	5.21	0.54	0.67

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-44 Low-Level Floodplain Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.12	1.30	78.0	780	0.01	0.02	0.00	0.00
Arsenic	16.86	20.06	6.80	68.0	2.48	2.95	0.25	0.30
Barium	82.64	94.97	330	3200	0.25	0.29	0.03	0.03
Cadmium	0.92	1.23	140	760	0.01	0.01	0.00	0.00
Chromium	3.77	4.27	0.40	28.0	9.42	10.66	0.13	0.15
Copper	40.93	54.86	80.0	530	0.51	0.69	0.08	0.10
Lead	161.70	203.30	1700	8400	0.10	0.12	0.02	0.02
Manganese	1461.00	1968.00	450	4500	3.25	4.37	0.32	0.44
Mercury	0.04	0.05	0.05	0.50	0.85	1.07	0.09	0.11
Selenium	1.79	2.04	4.10	41.0	0.44	0.50	0.04	0.05
Zinc	189.20	255.40	120	930	1.58	2.13	0.20	0.27

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-45 Reference Floodplain Area Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.08	1.80	78.0	780	0.01	0.02	0.00	0.00
Arsenic	42.73	112.90	6.80	68.0	6.28	16.60	0.63	1.66
Barium	130.10	163.60	330	3200	0.39	0.50	0.04	0.05
Cadmium	1.18	1.41	140	760	0.01	0.01	0.00	0.00
Chromium	4.06	4.70	0.40	28.0	10.16	11.75	0.15	0.17
Copper	75.12	256.00	80.0	530	0.94	3.20	0.14	0.48
Lead	179.50	346.20	1700	8400	0.11	0.20	0.02	0.04
Manganese	1836.00	2416.00	450	4500	4.08	5.37	0.41	0.54
Mercury	0.07	0.14	0.05	0.50	1.47	2.72	0.15	0.27
Selenium	0.90	1.21	4.10	41.0	0.22	0.29	0.02	0.03
Zinc	233.40	286.70	120	930	1.95	2.39	0.25	0.31

mg/kg = milligram per kilogram (dry-weight)

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-46 EU-01 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Lower Mainstem Mineral Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	4.46	8.83	78.0	780	0.06	0.11	0.01	0.01
Arsenic	31.40	45.31	6.80	68.0	4.62	6.66	0.46	0.67
Barium	120.00	167.00	330	3200	0.36	0.51	0.04	0.05
Cadmium	1.63	3.01	140	760	0.01	0.02	0.00	0.00
Chromium	5.14	7.21	0.40	28.0	12.85	18.04	0.18	0.26
Copper	138.10	256.60	80.0	530	1.73	3.21	0.26	0.48
Lead	367.40	603.90	1700	8400	0.22	0.36	0.04	0.07
Manganese	1150.00	1904.00	450	4500	2.56	4.23	0.26	0.42
Mercury	0.15	0.29	0.05	0.50	3.06	5.76	0.31	0.58
Selenium	1.87	3.00	4.10	41.0	0.46	0.73	0.05	0.07
Zinc	486.40	709.60	120	930	4.05	5.91	0.52	0.76

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-47 EU-02 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Lower Mainstem Mineral Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	0.61	0.81	78.0	780	0.01	0.01	0.00	0.00
Arsenic	23.20	37.91	6.80	68.0	3.41	5.58	0.34	0.56
Barium	135.40	185.00	330	3200	0.41	0.56	0.04	0.06
Cadmium	0.76	1.32	140	760	0.01	0.01	0.00	0.00
Chromium	3.46	4.48	0.40	28.0	8.65	11.20	0.12	0.16
Copper	43.84	65.56	80.0	530	0.55	0.82	0.08	0.12
Lead	231.10	373.70	1700	8400	0.14	0.22	0.03	0.04
Manganese	558.60	797.00	450	4500	1.24	1.77	0.12	0.18
Mercury	0.08	0.16	0.05	0.50	1.62	3.12	0.16	0.31
Selenium	1.41	2.23	4.10	41.0	0.34	0.54	0.03	0.05
Zinc	336.80	514.80	120	930	2.81	4.29	0.36	0.55

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-48 EU-03 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Middle Mainstem Mineral Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.39	1.70	78.0	780	0.02	0.02	0.00	0.00
Arsenic	25.19	42.12	6.80	68.0	3.70	6.19	0.37	0.62
Barium	56.12	82.35	330	3200	0.17	0.25	0.02	0.03
Cadmium	1.26	2.30	140	760	0.01	0.02	0.00	0.00
Chromium	4.50	7.12	0.40	28.0	11.25	17.81	0.16	0.25
Copper	47.27	77.30	80.0	530	0.59	0.97	0.09	0.15
Lead	331.60	617.30	1700	8400	0.20	0.36	0.04	0.07
Manganese	1919.00	8120.00	450	4500	4.26	18.04	0.43	1.80
Mercury	0.05	0.09	0.05	0.50	1.03	1.76	0.10	0.18
Selenium	1.07	1.50	4.10	41.0	0.26	0.37	0.03	0.04
Zinc	117.40	189.70	120	930	0.98	1.58	0.13	0.20

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-49 EU-3.5 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Browns Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.73	2.66	78.0	780	0.02	0.03	0.00	0.00
Arsenic	37.81	78.88	6.80	68.0	5.56	11.60	0.56	1.16
Barium	64.93	78.90	330	3200	0.20	0.24	0.02	0.02
Cadmium	0.83	1.14	140	760	0.01	0.01	0.00	0.00
Chromium	4.61	7.15	0.40	28.0	11.53	17.87	0.16	0.26
Copper	38.73	68.76	80.0	530	0.48	0.86	0.07	0.13
Lead	605.60	2743.00	1700	8400	0.36	1.61	0.07	0.33
Manganese	1155.00	1932.00	450	4500	2.57	4.29	0.26	0.43
Mercury	0.21	0.83	0.05	0.50	4.20	16.58	0.42	1.66
Selenium	1.19	1.60	4.10	41.0	0.29	0.39	0.03	0.04
Zinc	203.10	369.00	120	930	1.69	3.08	0.22	0.40

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-50 EU-04 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Upper Mainstem Mineral Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.68	2.13	78.0	780	0.02	0.03	0.00	0.00
Arsenic	111.70	430.90	6.80	68.0	16.43	63.37	1.64	6.34
Barium	75.31	109.20	330	3200	0.23	0.33	0.02	0.03
Cadmium	1.28	1.84	140	760	0.01	0.01	0.00	0.00
Chromium	4.59	5.35	0.40	28.0	11.49	13.38	0.16	0.19
Copper	160.60	394.70	80.0	530	2.01	4.93	0.30	0.74
Lead	377.10	1233.00	1700	8400	0.22	0.73	0.04	0.15
Manganese	972.10	1199.00	450	4500	2.16	2.66	0.22	0.27
Mercury	0.14	0.36	0.05	0.50	2.78	7.18	0.28	0.72
Selenium	1.04	1.31	4.10	41.0	0.25	0.32	0.03	0.03
Zinc	332.50	851.40	120	930	2.77	7.10	0.36	0.92

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-51 EU-05 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in South Fork Mineral Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	0.96	1.66	78.0	780	0.01	0.02	0.00	0.00
Arsenic	19.22	27.19	6.80	68.0	2.83	4.00	0.28	0.40
Barium	97.74	112.00	330	3200	0.30	0.34	0.03	0.04
Cadmium	16.15	141.70	140	760	0.12	1.01	0.02	0.19
Chromium	5.50	6.55	0.40	28.0	13.75	16.37	0.20	0.23
Copper	346.40	2836.00	80.0	530	4.33	35.45	0.65	5.35
Lead	465.50	1280.00	1700	8400	0.27	0.75	0.06	0.15
Manganese	5748.00	23416.00	450	4500	12.77	52.04	1.28	5.20
Mercury	0.04	0.09	0.05	0.50	0.84	1.79	0.08	0.18
Selenium	1.40	2.09	4.10	41.0	0.34	0.51	0.03	0.05
Zinc	1431.00	5282.00	120	930	11.93	44.02	1.54	5.68

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-52 EU-06 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Middle Fork Mineral Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.24	1.49	78.0	780	0.02	0.02	0.00	0.00
Arsenic	12.06	14.95	6.80	68.0	1.77	2.20	0.18	0.22
Barium	77.78	89.64	330	3200	0.24	0.27	0.02	0.03
Cadmium	0.79	1.18	140	760	0.01	0.01	0.00	0.00
Chromium	2.76	3.30	0.40	28.0	6.91	8.26	0.10	0.12
Copper	15.31	17.90	80.0	530	0.19	0.22	0.03	0.03
Lead	114.30	131.90	1700	8400	0.07	0.08	0.01	0.02
Manganese	1660.00	2491.00	450	4500	3.69	5.54	0.37	0.55
Mercury	0.04	0.05	0.05	0.50	0.78	0.98	0.08	0.10
Selenium	1.88	2.29	4.10	41.0	0.46	0.56	0.05	0.06
Zinc	103.60	124.20	120	930	0.86	1.04	0.11	0.13

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-53 EU-R1 Floodplain EU Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Mill Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.61	2.80	78.0	780	0.02	0.04	0.00	0.00
Arsenic	84.47	229.00	6.80	68.0	12.42	33.68	1.24	3.37
Barium	113.00	171.00	330	3200	0.34	0.52	0.04	0.05
Cadmium	1.33	2.10	140	760	0.01	0.02	0.00	0.00
Chromium	4.10	4.60	0.40	28.0	10.25	11.50	0.15	0.16
Copper	221.40	612.00	80.0	530	2.77	7.65	0.42	1.15
Lead	406.50	968.00	1700	8400	0.24	0.57	0.05	0.12
Manganese	1415.00	2680.00	450	4500	3.14	5.96	0.31	0.60
Mercury	0.11	0.29	0.05	0.50	2.20	5.80	0.22	0.58
Selenium	1.43	2.50	4.10	41.0	0.35	0.61	0.03	0.06
Zinc	301.00	440.00	120	930	2.51	3.67	0.32	0.47

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-54 EU-07 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Animas River Below Cunningham Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	11.45	46.80	78.0	780	0.15	0.60	0.01	0.06
Arsenic	28.20	64.50	6.80	68.0	4.15	9.49	0.41	0.95
Barium	53.30	82.83	330	3200	0.16	0.25	0.02	0.03
Cadmium	16.97	94.30	140	760	0.12	0.67	0.02	0.12
Chromium	5.22	7.11	0.40	28.0	13.04	17.78	0.19	0.25
Copper	666.30	2510.00	80.0	530	8.33	31.38	1.26	4.74
Lead	8787.00	44200.00	1700	8400	5.17	26.00	1.05	5.26
Manganese	1203.00	1619.00	450	4500	2.67	3.60	0.27	0.36
Mercury	1.22	6.00	0.05	0.50	24.48	120.00	2.45	12.00
Selenium	2.80	4.78	4.10	41.0	0.68	1.17	0.07	0.12
Zinc	3082.00	17300.00	120	930	25.68	144.17	3.31	18.60

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-55 EU-08 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Cunningham Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.34	3.73	78.0	780	0.02	0.05	0.00	0.00
Arsenic	12.81	18.24	6.80	68.0	1.88	2.68	0.19	0.27
Barium	66.01	101.90	330	3200	0.20	0.31	0.02	0.03
Cadmium	1.84	2.32	140	760	0.01	0.02	0.00	0.00
Chromium	3.89	7.10	0.40	28.0	9.73	17.75	0.14	0.25
Copper	99.95	264.80	80.0	530	1.25	3.31	0.19	0.50
Lead	797.20	1222.00	1700	8400	0.47	0.72	0.09	0.15
Manganese	1580.00	2077.00	450	4500	3.51	4.62	0.35	0.46
Mercury	0.04	0.07	0.05	0.50	0.82	1.35	0.08	0.13
Selenium	0.79	1.29	4.10	41.0	0.19	0.31	0.02	0.03
Zinc	383.60	488.60	120	930	3.20	4.07	0.41	0.53

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-56 EU-09 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Animas River Below Minnie Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	6.73	11.73	78.0	780	0.09	0.15	0.01	0.02
Arsenic	21.31	26.08	6.80	68.0	3.13	3.84	0.31	0.38
Barium	89.83	101.60	330	3200	0.27	0.31	0.03	0.03
Cadmium	6.84	9.47	140	760	0.05	0.07	0.01	0.01
Chromium	3.63	4.24	0.40	28.0	9.08	10.60	0.13	0.15
Copper	446.90	573.10	80.0	530	5.59	7.16	0.84	1.08
Lead	3685.00	5167.00	1700	8400	2.17	3.04	0.44	0.62
Manganese	8873.00	12721.00	450	4500	19.72	28.27	1.97	2.83
Mercury	0.21	0.32	0.05	0.50	4.26	6.34	0.43	0.63
Selenium	1.13	1.30	4.10	41.0	0.28	0.32	0.03	0.03
Zinc	1184.00	1638.00	120	930	9.87	13.65	1.27	1.76

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-57 EU-10 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Animas River Below South Fork Animas River

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	15.90	18.88	78.0	780	0.20	0.24	0.02	0.02
Arsenic	40.84	43.33	6.80	68.0	6.01	6.37	0.60	0.64
Barium	83.41	91.94	330	3200	0.25	0.28	0.03	0.03
Cadmium	12.96	14.44	140	760	0.09	0.10	0.02	0.02
Chromium	5.29	5.74	0.40	28.0	13.24	14.36	0.19	0.21
Copper	853.90	1000.00	80.0	530	10.67	12.50	1.61	1.89
Lead	5245.00	6381.00	1700	8400	3.09	3.75	0.62	0.76
Manganese	24316.00	36425.00	450	4500	54.04	80.94	5.40	8.09
Mercury	0.20	0.26	0.05	0.50	4.08	5.14	0.41	0.51
Selenium	1.04	1.20	4.10	41.0	0.25	0.29	0.03	0.03
Zinc	2222.00	2545.00	120	930	18.52	21.21	2.39	2.74

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-58 EU-11 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Upper South Fork Animas River

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.10	1.10	78.0	780	0.01	0.01	0.00	0.00
Arsenic	24.50	24.50	6.80	68.0	3.60	3.60	0.36	0.36
Barium	72.30	72.30	330	3200	0.22	0.22	0.02	0.02
Cadmium	0.64	0.64	140	760	0.00	0.00	0.00	0.00
Chromium	8.00	8.00	0.40	28.0	20.00	20.00	0.29	0.29
Copper	74.50	74.50	80.0	530	0.93	0.93	0.14	0.14
Lead	164.00	164.00	1700	8400	0.10	0.10	0.02	0.02
Manganese	1250.00	1250.00	450	4500	2.78	2.78	0.28	0.28
Mercury	0.01	0.01	0.05	0.50	0.19	0.19	0.02	0.02
Selenium	2.50	2.50	4.10	41.0	0.61	0.61	0.06	0.06
Zinc	123.50	123.50	120	930	1.03	1.03	0.13	0.13

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-59 EU-12 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Eureka Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.51	1.85	78.0	780	0.02	0.02	0.00	0.00
Arsenic	22.71	28.07	6.80	68.0	3.34	4.13	0.33	0.41
Barium	88.01	128.40	330	3200	0.27	0.39	0.03	0.04
Cadmium	6.10	9.85	140	760	0.04	0.07	0.01	0.01
Chromium	7.16	7.92	0.40	28.0	17.91	19.79	0.26	0.28
Copper	215.50	319.50	80.0	530	2.69	3.99	0.41	0.60
Lead	695.80	992.70	1700	8400	0.41	0.58	0.08	0.12
Manganese	6068.00	8851.00	450	4500	13.48	19.67	1.35	1.97
Mercury	0.10	0.15	0.05	0.50	2.02	3.06	0.20	0.31
Selenium	2.20	2.89	4.10	41.0	0.54	0.70	0.05	0.07
Zinc	1383.00	3427.00	120	930	11.53	28.56	1.49	3.68

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-60 EU-13 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Lower South Fork Animas River

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	5.80	10.10	78.0	780	0.07	0.13	0.01	0.01
Arsenic	31.15	38.60	6.80	68.0	4.58	5.68	0.46	0.57
Barium	126.50	140.00	330	3200	0.38	0.42	0.04	0.04
Cadmium	12.50	14.80	140	760	0.09	0.11	0.02	0.02
Chromium	17.20	27.00	0.40	28.0	43.00	67.50	0.61	0.96
Copper	408.00	485.00	80.0	530	5.10	6.06	0.77	0.92
Lead	2652.00	4390.00	1700	8400	1.56	2.58	0.32	0.52
Manganese	8200.00	11100.00	450	4500	18.22	24.67	1.82	2.47
Mercury	0.99	1.90	0.05	0.50	19.72	38.00	1.97	3.80
Selenium	2.40	3.20	4.10	41.0	0.59	0.78	0.06	0.08
Zinc	3280.00	3770.00	120	930	27.33	31.42	3.53	4.05

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-61 EU-14 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Animas River Below West Fork Animas River

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	10.85	42.50	78.0	780	0.14	0.54	0.01	0.05
Arsenic	57.03	83.05	6.80	68.0	8.39	12.21	0.84	1.22
Barium	73.51	134.00	330	3200	0.22	0.41	0.02	0.04
Cadmium	6.66	9.95	140	760	0.05	0.07	0.01	0.01
Chromium	5.60	6.94	0.40	28.0	14.01	17.36	0.20	0.25
Copper	222.70	346.60	80.0	530	2.78	4.33	0.42	0.65
Lead	2768.00	10677.00	1700	8400	1.63	6.28	0.33	1.27
Manganese	3977.00	10200.00	450	4500	8.84	22.67	0.88	2.27
Mercury	0.20	0.36	0.05	0.50	3.90	7.24	0.39	0.72
Selenium	1.72	2.38	4.10	41.0	0.42	0.58	0.04	0.06
Zinc	1866.00	3371.00	120	930	15.55	28.09	2.01	3.62

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-62 EU-15 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Lower West Fork Animas River

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	3.99	7.05	78.0	780	0.05	0.09	0.01	0.01
Arsenic	59.47	142.90	6.80	68.0	8.75	21.01	0.87	2.10
Barium	123.20	280.40	330	3200	0.37	0.85	0.04	0.09
Cadmium	35.99	216.00	140	760	0.26	1.54	0.05	0.28
Chromium	5.22	6.02	0.40	28.0	13.05	15.05	0.19	0.21
Copper	586.50	2795.00	80.0	530	7.33	34.94	1.11	5.27
Lead	1667.00	6000.00	1700	8400	0.98	3.53	0.20	0.71
Manganese	13550.00	49821.00	450	4500	30.11	110.71	3.01	11.07
Mercury	0.70	1.39	0.05	0.50	13.94	27.70	1.39	2.77
Selenium	2.25	3.72	4.10	41.0	0.55	0.91	0.05	0.09
Zinc	5086.00	30200.00	120	930	42.38	251.67	5.47	32.47

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-63 EU-16 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Placer Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	2.88	5.38	78.0	780	0.04	0.07	0.00	0.01
Arsenic	33.11	51.90	6.80	68.0	4.87	7.63	0.49	0.76
Barium	133.60	169.00	330	3200	0.40	0.51	0.04	0.05
Cadmium	6.06	9.53	140	760	0.04	0.07	0.01	0.01
Chromium	5.62	6.88	0.40	28.0	14.05	17.20	0.20	0.25
Copper	288.50	497.30	80.0	530	3.61	6.22	0.54	0.94
Lead	1738.00	3158.00	1700	8400	1.02	1.86	0.21	0.38
Manganese	10923.00	19600.00	450	4500	24.27	43.56	2.43	4.36
Mercury	0.36	0.77	0.05	0.50	7.24	15.42	0.72	1.54
Selenium	2.24	3.40	4.10	41.0	0.55	0.83	0.05	0.08
Zinc	1129.00	1600.00	120	930	9.41	13.33	1.21	1.72

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-64 EU-17 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Mainstem West Fork Animas River/California Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.17	1.60	78.0	780	0.01	0.02	0.00	0.00
Arsenic	28.83	31.40	6.80	68.0	4.24	4.62	0.42	0.46
Barium	48.70	57.50	330	3200	0.15	0.17	0.02	0.02
Cadmium	1.27	1.60	140	760	0.01	0.01	0.00	0.00
Chromium	6.16	6.78	0.40	28.0	15.40	16.95	0.22	0.24
Copper	79.47	156.00	80.0	530	0.99	1.95	0.15	0.29
Lead	136.20	162.00	1700	8400	0.08	0.10	0.02	0.02
Manganese	4137.00	7020.00	450	4500	9.19	15.60	0.92	1.56
Mercury	0.05	0.06	0.05	0.50	0.90	1.26	0.09	0.13
Selenium	1.38	1.90	4.10	41.0	0.34	0.46	0.03	0.05
Zinc	276.80	406.50	120	930	2.31	3.39	0.30	0.44

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-65 EU-18 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in North Fork Animas River Below Burrows Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.09	1.50	78.0	780	0.01	0.02	0.00	0.00
Arsenic	31.80	34.90	6.80	68.0	4.68	5.13	0.47	0.51
Barium	57.12	98.90	330	3200	0.17	0.30	0.02	0.03
Cadmium	1.53	2.00	140	760	0.01	0.01	0.00	0.00
Chromium	7.10	12.00	0.40	28.0	17.75	30.00	0.25	0.43
Copper	22.87	28.60	80.0	530	0.29	0.36	0.04	0.05
Lead	193.70	276.00	1700	8400	0.11	0.16	0.02	0.03
Manganese	2006.00	2660.00	450	4500	4.46	5.91	0.45	0.59
Mercury	0.04	0.05	0.05	0.50	0.71	0.92	0.07	0.09
Selenium	1.20	1.60	4.10	41.0	0.29	0.39	0.03	0.04
Zinc	210.50	270.00	120	930	1.75	2.25	0.23	0.29

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-66 EU-19 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Burrows Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	2.87	4.49	78.0	780	0.04	0.06	0.00	0.01
Arsenic	59.90	79.38	6.80	68.0	8.81	11.67	0.88	1.17
Barium	70.42	78.43	330	3200	0.21	0.24	0.02	0.02
Cadmium	3.80	10.03	140	760	0.03	0.07	0.01	0.01
Chromium	4.01	4.73	0.40	28.0	10.02	11.83	0.14	0.17
Copper	83.25	198.30	80.0	530	1.04	2.48	0.16	0.37
Lead	520.50	880.10	1700	8400	0.31	0.52	0.06	0.10
Manganese	3305.00	7521.00	450	4500	7.34	16.71	0.73	1.67
Mercury	0.06	0.08	0.05	0.50	1.13	1.52	0.11	0.15
Selenium	1.43	1.91	4.10	41.0	0.35	0.47	0.03	0.05
Zinc	279.70	441.30	120	930	2.33	3.68	0.30	0.47

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-67 EU-R2 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Maggie Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	0.78	2.50	78.0	780	0.01	0.03	0.00	0.00
Arsenic	10.34	11.94	6.80	68.0	1.52	1.76	0.15	0.18
Barium	180.50	252.90	330	3200	0.55	0.77	0.06	0.08
Cadmium	0.84	1.18	140	760	0.01	0.01	0.00	0.00
Chromium	3.74	5.31	0.40	28.0	9.36	13.27	0.13	0.19
Copper	27.47	37.11	80.0	530	0.34	0.46	0.05	0.07
Lead	66.68	124.90	1700	8400	0.04	0.07	0.01	0.01
Manganese	1400.00	1596.00	450	4500	3.11	3.55	0.31	0.35
Mercury	0.08	0.19	0.05	0.50	1.53	3.88	0.15	0.39
Selenium	0.73	1.11	4.10	41.0	0.18	0.27	0.02	0.03
Zinc	151.80	203.00	120	930	1.27	1.69	0.16	0.22

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-68 EU-R3 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Picayne Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	0.92	2.01	78.0	780	0.01	0.03	0.00	0.00
Arsenic	44.45	55.80	6.80	68.0	6.54	8.21	0.65	0.82
Barium	97.08	121.00	330	3200	0.29	0.37	0.03	0.04
Cadmium	1.44	1.52	140	760	0.01	0.01	0.00	0.00
Chromium	4.81	5.37	0.40	28.0	12.03	13.42	0.17	0.19
Copper	35.28	45.27	80.0	530	0.44	0.57	0.07	0.09
Lead	140.00	171.70	1700	8400	0.08	0.10	0.02	0.02
Manganese	3108.00	5410.00	450	4500	6.91	12.02	0.69	1.20
Mercury	0.04	0.06	0.05	0.50	0.82	1.12	0.08	0.11
Selenium	0.60	1.24	4.10	41.0	0.15	0.30	0.01	0.03
Zinc	243.50	263.00	120	930	2.03	2.19	0.26	0.28

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-69 EU-R4 FloodplainSoil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Upper North Fork Animas River

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.90	1.90	78.0	780	0.02	0.02	0.00	0.00
Arsenic	105.00	105.00	6.80	68.0	15.44	15.44	1.54	1.54
Barium	61.50	61.50	330	3200	0.19	0.19	0.02	0.02
Cadmium	1.70	1.70	140	760	0.01	0.01	0.00	0.00
Chromium	2.90	2.90	0.40	28.0	7.25	7.25	0.10	0.10
Copper	81.50	81.50	80.0	530	1.02	1.02	0.15	0.15
Lead	334.00	334.00	1700	8400	0.20	0.20	0.04	0.04
Manganese	628.00	628.00	450	4500	1.40	1.40	0.14	0.14
Mercury	0.07	0.07	0.05	0.50	1.44	1.44	0.14	0.14
Selenium	1.50	1.50	4.10	41.0	0.37	0.37	0.04	0.04
Zinc	480.00	480.00	120	930	4.00	4.00	0.52	0.52

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-70 EU-20 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Lower Mainstem Cement Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	2.96	4.04	78.0	780	0.04	0.05	0.00	0.01
Arsenic	42.82	50.49	6.80	68.0	6.30	7.43	0.63	0.74
Barium	82.16	102.90	330	3200	0.25	0.31	0.03	0.03
Cadmium	1.42	1.86	140	760	0.01	0.01	0.00	0.00
Chromium	4.69	5.76	0.40	28.0	11.73	14.41	0.17	0.21
Copper	81.13	96.48	80.0	530	1.01	1.21	0.15	0.18
Lead	587.20	765.70	1700	8400	0.35	0.45	0.07	0.09
Manganese	650.70	761.90	450	4500	1.45	1.69	0.14	0.17
Mercury	0.08	0.14	0.05	0.50	1.52	2.86	0.15	0.29
Selenium	2.24	2.61	4.10	41.0	0.55	0.64	0.05	0.06
Zinc	478.30	598.60	120	930	3.99	4.99	0.51	0.64

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-71 EU-21 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Prospect Gulch

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	3.69	4.98	78.0	780	0.05	0.06	0.00	0.01
Arsenic	35.66	42.80	6.80	68.0	5.24	6.29	0.52	0.63
Barium	174.90	275.70	330	3200	0.53	0.84	0.05	0.09
Cadmium	0.61	1.57	140	760	0.00	0.01	0.00	0.00
Chromium	3.04	3.52	0.40	28.0	7.59	8.79	0.11	0.13
Copper	28.28	36.77	80.0	530	0.35	0.46	0.05	0.07
Lead	337.50	412.40	1700	8400	0.20	0.24	0.04	0.05
Manganese	223.30	316.40	450	4500	0.50	0.70	0.05	0.07
Mercury	0.07	0.09	0.05	0.50	1.39	1.84	0.14	0.18
Selenium	2.00	2.38	4.10	41.0	0.49	0.58	0.05	0.06
Zinc	152.30	383.60	120	930	1.27	3.20	0.16	0.41

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-72 EU-22 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Mainstem Cement Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	2.89	4.06	78.0	780	0.04	0.05	0.00	0.01
Arsenic	24.73	33.76	6.80	68.0	3.64	4.96	0.36	0.50
Barium	40.61	52.12	330	3200	0.12	0.16	0.01	0.02
Cadmium	1.60	2.53	140	760	0.01	0.02	0.00	0.00
Chromium	5.43	6.35	0.40	28.0	13.58	15.86	0.19	0.23
Copper	97.42	137.40	80.0	530	1.22	1.72	0.18	0.26
Lead	863.90	1729.00	1700	8400	0.51	1.02	0.10	0.21
Manganese	950.40	1393.00	450	4500	2.11	3.10	0.21	0.31
Mercury	0.06	0.10	0.05	0.50	1.14	2.06	0.11	0.21
Selenium	2.37	2.99	4.10	41.0	0.58	0.73	0.06	0.07
Zinc	985.50	3272.00	120	930	8.21	27.27	1.06	3.52

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-73 EU-23 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in South Fork Cement Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	1.17	1.88	78.0	780	0.01	0.02	0.00	0.00
Arsenic	17.01	20.26	6.80	68.0	2.50	2.98	0.25	0.30
Barium	70.68	98.35	330	3200	0.21	0.30	0.02	0.03
Cadmium	1.13	3.63	140	760	0.01	0.03	0.00	0.00
Chromium	4.39	5.25	0.40	28.0	10.97	13.12	0.16	0.19
Copper	65.54	157.30	80.0	530	0.82	1.97	0.12	0.30
Lead	210.50	361.30	1700	8400	0.12	0.21	0.03	0.04
Manganese	811.60	1796.00	450	4500	1.80	3.99	0.18	0.40
Mercury	0.03	0.04	0.05	0.50	0.64	0.87	0.06	0.09
Selenium	1.88	2.40	4.10	41.0	0.46	0.58	0.05	0.06
Zinc	232.80	581.90	120	930	1.94	4.85	0.25	0.63

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Table D-74 EU-24 Floodplain Soil Exposure Point Concentrations (EPCs) and Hazard Quotients (HQs) for Community-Level Soil Invertebrate Receptors in Upper Cement Creek

COPEC	EPCs (mg/kg)		ESVs (mg/kg)		No-Effect HQs		Low-Effect HQs	
	CTE	RME	No-Effect	Low-Effect	CTE	RME	CTE	RME
Antimony	2.07	3.70	78.0	780	0.03	0.05	0.00	0.00
Arsenic	33.33	38.97	6.80	68.0	4.90	5.73	0.49	0.57
Barium	79.16	103.30	330	3200	0.24	0.31	0.02	0.03
Cadmium	6.31	18.75	140	760	0.05	0.13	0.01	0.02
Chromium	5.51	6.49	0.40	28.0	13.76	16.23	0.20	0.23
Copper	247.90	359.30	80.0	530	3.10	4.49	0.47	0.68
Lead	807.30	999.60	1700	8400	0.47	0.59	0.10	0.12
Manganese	8159.00	13854.00	450	4500	18.13	30.79	1.81	3.08
Mercury	0.06	0.09	0.05	0.50	1.18	1.72	0.12	0.17
Selenium	1.81	2.16	4.10	41.0	0.44	0.53	0.04	0.05
Zinc	753.20	1166.00	120	930	6.28	9.72	0.81	1.25

mg/kg = milligram per kilogram (dry-weight)

EU = exposure unit

COPEC = contaminant of potential ecological concern

ESV = ecological screening value

CTE = central tendency exposure

RME = reasonable maximum exposure

Appendix E

Hazard Quotient Derivation Tables and Results for Wildlife Receptors Associated with the Bonita Peak Mining District Terrestrial Baseline Ecological Risk Assessment

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Table E-39 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Pika Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas

Table E-40 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Pika Foraging in Vegetated Upland Habitats

Table E-41 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Pika Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils

Table E-42 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Pika Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils

Table E-43 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Pika Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils

Table E-44 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Yellow-Bellied Marmot Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas

Table E-45 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Yellow-Bellied Marmot Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas

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Table E-47 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Yellow-Bellied Marmot Foraging in Vegetated Upland Habitats

Table E-48 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Yellow-Bellied Marmot Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils

Table E-49 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Yellow-Bellied Marmot Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils

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Table E-51 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Pocket Gopher Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas

Table E-52 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Pocket Gopher Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas

Table E-53 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Pocket Gopher Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas

Table E-54 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Pocket Gopher Foraging in Vegetated Upland Habitats

Table E-55 EU-01 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Lower Mainstem Mineral Creek

Table E-56 EU-02 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Lower Mainstem Mineral Creek

Table E-57 EU-03 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Mainstem Mineral Creek

Table E-58 EU-3.5 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Browns Gulch

Table E-59 EU-04 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Upper Mainstem Mineral Creek

Table E-60 EU-05 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in South Fork Mineral Creek

Table E-61 EU-06 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Middle Fork Mineral Creek

Table E-62 EU-R1 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Mill Creek Reference Area

Table E-63 EU-07 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Animas River Below Cunningham Creek

Table E-64 EU-08 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Cunningham Creek

Table E-65 EU-09 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Animas River Below Minnie Gulch

Table E-66 EU-10 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Animas River Below South Fork Animas River

Table E-67 EU-11 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Upper South Fork Animas River

Table E-68 EU-12 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Eureka Gulch

Table E-69 EU-13 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Lower South Fork Animas River

Table E-70 EU-14 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Animas River Below West Fork Animas River

Table E-71 EU-15 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Lower West Fork Animas River

Table E-72 EU-16 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Placer Gulch

Table E-73 EU-17 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Mainstem West Fork Animas River/California Gulch

Table E-74 EU-18 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in North Fork Animas River Below Burrows Creek

Table E-75 EU-19 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Burrows Creek

Table E-76 EU-R2 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Maggie Gulch Reference Area

Table E-77 EU-R3 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Picayune Gulch Reference Area

Table E-78 EU-R4 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in North Fork Animas River Reference Area

Table E-79 EU-20 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Lower Mainstem Cement Creek

Table E-80 EU-21 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Prospect Gulch

Table E-81 EU-22 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Mainstem Cement Creek

Table E-82 EU-23 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in South Fork Cement Creek

Table E-83 EU-24 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Upper Cement Creek

Table E-84 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Mountain Bluebird Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas

Table E-85 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Mountain Bluebird Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas

Table E-86 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Mountain Bluebird Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas

Table E-87 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Mountain Bluebird Foraging in Vegetated Upland Habitats

Table E-88 EU-01 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Lower Mainstem Mineral Creek

Table E-89 EU-02 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Lower Mainstem Mineral Creek

Table E-90 EU-03 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Mainstem Mineral Creek

Table E-91 EU-3.5 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Browns Gulch

Table E-92 EU-04 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Upper Mainstem Mineral Creek

Table E-93 EU-05 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in South Fork Mineral Creek

Table E-94 EU-06 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Middle Fork Mineral Creek

Table E-95 EU-R1 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Mill Creek Reference Area

Table E-96 EU-07 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Animas River Below Cunningham Creek

Table E-97 EU-08 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Cunningham Creek

Table E-98 EU-09 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Animas River Below Minnie Gulch

Table E-99 EU-10 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Animas River Below South Fork Animas River

Table E-100 EU-11 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Upper South Fork Animas River

Table E-101 EU-12 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Eureka Gulch

Table E-102 EU-13 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Lower South Fork Animas River

Table E-103 EU-14 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Animas River Below West Fork Animas River

Table E-104 EU-15 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Lower West Fork Animas River

Table E-105 EU-16 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Placer Gulch

Table E-106 EU-17 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Mainstem West Fork Animas River/California Gulch

Table E-107 EU-18 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in North Fork Animas River Below Burrows Creek

Table E-108 EU-19 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Burrows Creek

Table E-109 EU-R2 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Maggie Gulch Reference Area

Table E-110 EU-R3 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Picayune Gulch Reference Area

Table E-111 EU-R4 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in North Fork Animas River Reference Area

Table E-112 EU-20 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Lower Mainstem Cement Creek

Table E-113 EU-21 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Prospect Gulch

Table E-114 EU-22 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Mainstem Cement Creek

Table E-115 EU-23 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in South Fork Cement Creek

Table E-116 EU-24 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Upper Cement Creek

Table E-117 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Montane Shrew Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas

Table E-118 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Montane Shrew Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas

Table E-119 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Montane Shrew Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas

Table E-120 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Montane Shrew Foraging in Vegetated Upland Habitats

Table E-121 EU-01 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Lower Mainstem Mineral Creek

Table E-122 EU-02 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Lower Mainstem Mineral Creek

Table E-123 EU-03 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Mainstem Mineral Creek

Table E-124 EU-3.5 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Browns Gulch

Table E-125 EU-04 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Upper Mainstem Mineral Creek

Table E-126 EU-05 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in South Fork Mineral Creek

Table E-127 EU-06 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Middle Fork Mineral Creek

Table E-128 EU-R1 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Mill Creek Reference Area

Table E-129 EU-07 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Animas River Below Cunningham Creek

Table E-130 EU-08 Estimated Daily Dose (EDD) Hazard Quotients (HQs) American Robin Foraging in Cunningham Creek

Table E-131 EU-09 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Animas River Below Minnie Gulch

Table E-132 EU-10 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Animas River Below South Fork Animas River

Table E-133 EU-11 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Upper South Fork Animas River

Table E-134 EU-12 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Eureka Gulch

Table E-135 EU-13 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Lower South Fork Animas River

Table E-136 EU-14 Estimated Daily Dose (EDD) Hazard Quotients (HQs) American Robin Foraging in Animas River Below West Fork Animas River

Table E-137 EU-15 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Lower West Fork Animas River

Table E-138 EU-16 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Placer Gulch

Table E-139 EU-17 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Mainstem West Fork Animas River/California Gulch

Table E-140 EU-18 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in North Fork Animas River Below Burrows Creek

Table E-141 EU-19 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Burrows Creek

Table E-142 EU-R2 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Maggie Gulch Reference Area

Table E-143 EU-R3 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Picayune Gulch Reference Area

Table E-144 EU-R4 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in North Fork Animas River Reference Area

Table E-145 EU-20 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Lower Mainstem Cement Creek

Table E-146 EU-21 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Prospect Gulch

Table E-147 EU-22 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Mainstem Cement Creek

Table E-148 EU-23 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in South Fork Cement Creek

Table E-149 EU-24 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Upper Cement Creek

Table E-150 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Coyote Foraging in Terrestrial and Floodplain Habitats Throughout the Entire Bonita Peak Mining District Assessment Area

Table E-151 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Deer Mouse Foraging in High-Level Dose Response Category (DRC) Floodplain Habitats

Table E-152 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Deer Mouse Foraging in Mid-Level Dose Response Category (DRC) Floodplain Habitats

Table E-153 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Deer Mouse Foraging in Low-Level Dose Response Category (DRC) Floodplain Habitats

Table E-154 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Deer Mouse Foraging in Reference Floodplain Habitats

Table E-155 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Golden Eagle Foraging in Terrestrial and Floodplain Habitats Throughout the Entire Bonita Peak Mining District Assessment Area

Table E-156 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Goshawk Foraging in in Mineral Creek Watershed Terrestrial and Floodplain Habitats

Table E-157 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Goshawk Foraging in Cement Creek Watershed Terrestrial and Floodplain Habitats

Table E-158 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Goshawk Foraging in Animas River Watershed Terrestrial and Floodplain Habitats

Table E-159 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Lynx Foraging in Evergreen Forested Terrestrial Habitats Throughout the Entire Bonita Peak Mining District Assessment Area

Table E-1 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for White-Tailed Ptarmigan Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	4.43E-02	2.24	22.40	1.98E-02	1.98E-03	6.94E-02	2.24	22.40	3.10E-02	3.10E-03
Barium	1.64E+00	73.50	131.00	2.23E-02	1.25E-02	3.66E+00	73.50	131.00	4.98E-02	2.79E-02
Cadmium	2.73E-01	1.47	14.70	1.85E-01	1.85E-02	4.52E-01	1.47	14.70	3.08E-01	3.08E-02
Chromium	1.24E-01	2.66	26.60	4.65E-02	4.65E-03	1.53E-01	2.66	26.60	5.76E-02	5.76E-03
Copper	5.75E-01	4.05	12.10	1.42E-01	4.76E-02	8.88E-01	4.05	12.10	2.19E-01	7.34E-02
Lead	1.86E+00	1.63	3.26	1.14E+00	5.69E-01	2.94E+00	1.63	3.26	1.80E+00	9.02E-01
Manganese	2.72E+01	179.00	1790.00	1.52E-01	1.52E-02	6.52E+01	179.00	1790.00	3.64E-01	3.64E-02
Mercury	5.92E-03	0.45	0.90	1.31E-02	6.57E-03	6.00E-03	0.45	0.90	1.33E-02	6.67E-03
Molybdenum	8.81E-03	3.50	35.00	2.52E-03	2.52E-04	2.06E-02	3.50	35.00	5.89E-03	5.89E-04
Nickel	6.18E-02	6.71	67.10	9.21E-03	9.21E-04	1.38E-01	6.71	67.10	2.06E-02	2.06E-03
Selenium	1.80E-02	0.29	0.58	6.22E-02	3.12E-02	4.12E-02	0.29	0.58	1.42E-01	7.12E-02
Silver	1.37E-02	2.02	20.20	6.77E-03	6.77E-04	2.39E-02	2.02	20.20	1.18E-02	1.18E-03
Vanadium	4.07E-02	0.34	0.69	1.18E-01	5.91E-02	7.87E-02	0.34	0.69	2.29E-01	1.14E-01
Zinc	2.40E+01	66.10	661.00	3.63E-01	3.63E-02	3.22E+01	66.10	661.00	4.87E-01	4.87E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-2 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for White-Tailed Ptarmigan Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	3.03E-02	2.24	22.40	1.35E-02	1.35E-03	5.10E-02	2.24	22.40	2.28E-02	2.28E-03
Barium	1.63E+00	73.50	131.00	2.22E-02	1.24E-02	3.66E+00	73.50	131.00	4.98E-02	2.80E-02
Cadmium	2.49E-01	1.47	14.70	1.69E-01	1.69E-02	4.19E-01	1.47	14.70	2.85E-01	2.85E-02
Chromium	1.25E-01	2.66	26.60	4.70E-02	4.70E-03	1.55E-01	2.66	26.60	5.83E-02	5.83E-03
Copper	4.14E-01	4.05	12.10	1.02E-01	3.42E-02	5.78E-01	4.05	12.10	1.43E-01	4.78E-02
Lead	1.44E+00	1.63	3.26	8.82E-01	4.41E-01	2.77E+00	1.63	3.26	1.70E+00	8.49E-01
Manganese	1.70E+01	179.00	1790.00	9.49E-02	9.49E-03	5.16E+01	179.00	1790.00	2.88E-01	2.88E-02
Mercury	5.87E-03	0.45	0.90	1.31E-02	6.53E-03	6.06E-03	0.45	0.90	1.35E-02	6.73E-03
Molybdenum	1.90E-03	3.50	35.00	5.44E-04	5.44E-05	2.67E-03	3.50	35.00	7.64E-04	7.64E-05
Nickel	6.01E-02	6.71	67.10	8.96E-03	8.96E-04	1.32E-01	6.71	67.10	1.96E-02	1.96E-03
Selenium	1.62E-02	0.29	0.58	5.57E-02	2.79E-02	3.36E-02	0.29	0.58	1.16E-01	5.80E-02
Silver	1.15E-02	2.02	20.20	5.68E-03	5.68E-04	2.23E-02	2.02	20.20	1.11E-02	1.11E-03
Vanadium	4.57E-02	0.34	0.69	1.33E-01	6.64E-02	8.48E-02	0.34	0.69	2.47E-01	1.23E-01
Zinc	1.68E+01	66.10	661.00	2.54E-01	2.54E-02	2.42E+01	66.10	661.00	3.67E-01	3.67E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-3 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for White-Tailed Ptarmigan Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	**CTE Exposure Scenario**					**RME Exposure Scenario**				
	Total EDD (mg/kg BW/day)	**No-Effect TRV (mg/kg BW/day)**	**Low-Effect TRV (mg/kg BW/day)**	**No-effect HQ**	**Low-effect HQ**	**Total EDD (mg/kg BW/day)**	**No-Effect TRV (mg/kg BW/day)**	**Low-Effect TRV (mg/kg BW/day)**	**No-effect HQ**	**Low-effect HQ**
Arsenic	3.96E-02	2.24	22.40	1.77E-02	1.77E-03	6.35E-02	2.24	22.40	2.83E-02	2.83E-03
Barium	1.41E+00	73.50	131.00	1.92E-02	1.08E-02	1.80E+00	73.50	131.00	2.45E-02	1.37E-02
Cadmium	5.80E-02	1.47	14.70	3.95E-02	3.95E-03	9.21E-02	1.47	14.70	6.27E-02	6.27E-03
Chromium	1.14E-01	2.66	26.60	4.30E-02	4.30E-03	1.31E-01	2.66	26.60	4.93E-02	4.93E-03
Copper	3.75E-01	4.05	12.10	9.27E-02	3.10E-02	5.02E-01	4.05	12.10	1.24E-01	4.15E-02
Lead	5.88E-01	1.63	3.26	3.61E-01	1.80E-01	9.05E-01	1.63	3.26	5.55E-01	2.78E-01
Manganese	1.44E+01	179.00	1790.00	8.06E-02	8.06E-03	3.83E+01	179.00	1790.00	2.14E-01	2.14E-02
Mercury	5.92E-03	0.45	0.90	1.31E-02	6.57E-03	6.18E-03	0.45	0.90	1.37E-02	6.87E-03
Molybdenum	1.42E-03	3.50	35.00	4.05E-04	4.05E-05	1.93E-03	3.50	35.00	5.52E-04	5.52E-05
Nickel	4.64E-02	6.71	67.10	6.92E-03	6.92E-04	7.23E-02	6.71	67.10	1.08E-02	1.08E-03
Selenium	1.64E-02	0.29	0.58	5.67E-02	2.84E-02	3.37E-02	0.29	0.58	1.16E-01	5.81E-02
Silver	9.95E-03	2.02	20.20	4.92E-03	4.92E-04	1.88E-02	2.02	20.20	9.30E-03	9.30E-04
Vanadium	4.37E-02	0.34	0.69	1.27E-01	6.36E-02	8.25E-02	0.34	0.69	2.40E-01	1.20E-01
Zinc	4.89E+00	66.10	661.00	7.40E-02	7.40E-03	6.47E+00	66.10	661.00	9.78E-02	9.78E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-4 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for White-Tailed Ptarmigan Foraging in Vegetated Upland Habitats

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.64E-02	2.24	22.40	7.34E-03	7.34E-04	2.02E-02	2.24	22.40	9.01E-03	9.01E-04
Barium	1.40E+00	73.50	131.00	1.91E-02	1.07E-02	1.79E+00	73.50	131.00	2.44E-02	1.37E-02
Cadmium	5.45E-02	1.47	14.70	3.71E-02	3.71E-03	8.79E-02	1.47	14.70	5.98E-02	5.98E-03
Chromium	1.15E-01	2.66	26.60	4.32E-02	4.32E-03	1.32E-01	2.66	26.60	4.95E-02	4.95E-03
Copper	2.84E-01	4.05	12.10	7.02E-02	2.35E-02	3.34E-01	4.05	12.10	8.25E-02	2.76E-02
Lead	1.83E-01	1.63	3.26	1.13E-01	5.63E-02	3.21E-01	1.63	3.26	1.97E-01	9.86E-02
Manganese	1.22E+01	179.00	1790.00	6.83E-02	6.83E-03	3.68E+01	179.00	1790.00	2.05E-01	2.05E-02
Mercury	5.88E-03	0.45	0.90	1.31E-02	6.53E-03	5.98E-03	0.45	0.90	1.33E-02	6.64E-03
Molybdenum	2.28E-03	3.50	35.00	6.51E-04	6.51E-05	4.29E-03	3.50	35.00	1.22E-03	1.22E-04
Nickel	2.91E-02	6.71	67.10	4.34E-03	4.34E-04	5.17E-02	6.71	67.10	7.70E-03	7.70E-04
Selenium	1.26E-02	0.29	0.58	4.35E-02	2.18E-02	1.30E-02	0.29	0.58	4.47E-02	2.24E-02
Silver	6.75E-03	2.02	20.20	3.34E-03	3.34E-04	7.65E-03	2.02	20.20	3.79E-03	3.79E-04
Vanadium	3.66E-02	0.34	0.69	1.07E-01	5.33E-02	3.86E-02	0.34	0.69	1.12E-01	5.60E-02
Zinc	4.58E+00	66.10	661.00	6.92E-02	6.92E-03	6.08E+00	66.10	661.00	9.19E-02	9.19E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-5 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Moose Foraging in Mineral Creek Watershed Floodplain Habitats

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	2.12E-03	0.06	0.59	3.59E-02	3.59E-03	4.72E-03	0.06	0.59	8.00E-02	8.00E-03
Arsenic	1.79E-02	1.04	1.66	1.72E-02	1.08E-02	4.81E-02	1.04	1.66	4.62E-02	2.90E-02
Cadmium	3.09E-02	0.77	7.70	4.01E-02	4.01E-03	5.87E-02	0.77	7.70	7.62E-02	7.62E-03
Chromium	1.95E-02	2.40	24.00	8.11E-03	8.11E-04	2.38E-02	2.40	24.00	9.90E-03	9.90E-04
Copper	1.02E-01	5.60	9.34	1.83E-02	1.10E-02	3.20E-01	5.60	9.34	5.72E-02	3.43E-02
Lead	1.45E-01	4.70	8.90	3.08E-02	1.63E-02	3.76E-01	4.70	8.90	8.00E-02	4.23E-02
Manganese	3.13E+00	51.50	515.00	6.08E-02	6.08E-03	8.82E+00	51.50	515.00	1.71E-01	1.71E-02
Mercury	5.80E-01	1.00	14.10	5.80E-01	4.11E-02	1.83E+00	1.00	14.10	1.83E+00	1.30E-01
Molybdenum	1.13E-03	0.26	2.60	4.34E-03	4.34E-04	1.59E-03	0.26	2.60	6.13E-03	6.13E-04
Nickel	8.96E-03	1.70	3.40	5.27E-03	2.63E-03	1.84E-02	1.70	3.40	1.08E-02	5.40E-03
Selenium	2.97E-03	0.14	0.22	2.08E-02	1.38E-02	5.66E-03	0.14	0.22	3.96E-02	2.63E-02
Silver	1.62E-03	6.02	60.20	2.69E-04	2.69E-05	3.44E-03	6.02	60.20	5.72E-04	5.72E-05
Thallium	2.69E-03	0.01	0.07	3.79E-01	3.79E-02	5.25E-03	0.01	0.07	7.40E-01	7.40E-02
Zinc	2.26E+00	75.40	754.00	2.99E-02	2.99E-03	3.36E+00	75.40	754.00	4.45E-02	4.45E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-6 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Moose Foraging in Cement Creek Watershed Floodplain Habitats

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	2.51E-03	0.06	0.59	4.26E-02	4.26E-03	5.40E-03	0.06	0.59	9.15E-02	9.15E-03
Arsenic	1.38E-02	1.04	1.66	1.33E-02	8.32E-03	1.80E-02	1.04	1.66	1.73E-02	1.08E-02
Cadmium	4.19E-02	0.77	7.70	5.44E-02	5.44E-03	7.03E-02	0.77	7.70	9.13E-02	9.13E-03
Chromium	2.02E-02	2.40	24.00	8.40E-03	8.40E-04	2.50E-02	2.40	24.00	1.04E-02	1.04E-03
Copper	9.24E-02	5.60	9.34	1.65E-02	9.90E-03	1.30E-01	5.60	9.34	2.32E-02	1.39E-02
Lead	2.30E-01	4.70	8.90	4.89E-02	2.58E-02	3.52E-01	4.70	8.90	7.49E-02	3.96E-02
Manganese	3.49E+00	51.50	515.00	6.77E-02	6.77E-03	7.86E+00	51.50	515.00	1.53E-01	1.53E-02
Mercury	9.20E-04	1.00	14.10	9.20E-04	6.52E-05	9.51E-04	1.00	14.10	9.51E-04	6.75E-05
Molybdenum	1.51E-03	0.26	2.60	5.82E-03	5.82E-04	1.93E-03	0.26	2.60	7.42E-03	7.42E-04
Nickel	9.79E-03	1.70	3.40	5.76E-03	2.88E-03	2.11E-02	1.70	3.40	1.24E-02	6.21E-03
Selenium	3.38E-03	0.14	0.22	2.36E-02	1.57E-02	6.75E-03	0.14	0.22	4.72E-02	3.14E-02
Silver	1.81E-03	6.02	60.20	3.00E-04	3.00E-05	3.65E-03	6.02	60.20	6.06E-04	6.06E-05
Thallium	1.06E-02	0.01	0.07	1.49E+00	1.49E-01	1.51E-02	0.01	0.07	2.12E+00	2.12E-01
Zinc	3.14E+00	75.40	754.00	4.17E-02	4.17E-03	4.36E+00	75.40	754.00	5.78E-02	5.78E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-7 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Moose Foraging in Animas River Watershed Floodplain Habitats

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	3.54E-02	0.06	0.59	6.00E-01	6.00E-02	8.28E-03	0.06	0.59	1.40E-01	1.40E-02
Arsenic	1.18E-02	1.04	1.66	1.14E-02	7.12E-03	1.73E-02	1.04	1.66	1.66E-02	1.04E-02
Cadmium	3.66E-02	0.77	7.70	4.75E-02	4.75E-03	6.31E-02	0.77	7.70	8.20E-02	8.20E-03
Chromium	2.01E-02	2.40	24.00	8.39E-03	8.39E-04	2.49E-02	2.40	24.00	1.04E-02	1.04E-03
Copper	1.31E-01	5.60	9.34	2.33E-02	1.40E-02	2.38E-01	5.60	9.34	4.25E-02	2.55E-02
Lead	6.16E-01	4.70	8.90	1.31E-01	6.92E-02	1.78E+00	4.70	8.90	3.80E-01	2.00E-01
Manganese	4.63E+00	51.50	515.00	8.99E-02	8.99E-03	9.66E+00	51.50	515.00	1.88E-01	1.88E-02
Mercury	9.79E-04	1.00	14.10	9.79E-04	6.94E-05	1.12E-03	1.00	14.10	1.12E-03	7.91E-05
Molybdenum	2.14E-03	0.26	2.60	8.23E-03	8.23E-04	4.99E-03	0.26	2.60	1.92E-02	1.92E-03
Nickel	9.90E-03	1.70	3.40	5.82E-03	2.91E-03	2.00E-02	1.70	3.40	1.18E-02	5.88E-03
Selenium	3.02E-03	0.14	0.22	2.11E-02	1.40E-02	5.90E-03	0.14	0.22	4.12E-02	2.74E-02
Silver	3.12E-03	6.02	60.20	5.18E-04	5.18E-05	7.92E-03	6.02	60.20	1.32E-03	1.32E-04
Thallium	2.71E-03	0.01	0.07	3.82E-01	3.82E-02	5.51E-03	0.01	0.07	7.76E-01	7.76E-02
Zinc	2.98E+00	75.40	754.00	3.95E-02	3.95E-03	4.33E+00	75.40	754.00	5.74E-02	5.74E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-8 EU-01 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Lower Mainstem Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.05E-02	0.06	0.59	1.78E-01	1.78E-02	2.38E-02	0.06	0.59	4.03E-01	4.03E-02
Arsenic	3.41E-02	1.04	1.66	3.28E-02	2.05E-02	5.62E-02	1.04	1.66	5.40E-02	3.39E-02
Cadmium	1.88E-01	0.77	7.70	2.44E-01	2.44E-02	3.16E-01	0.77	7.70	4.11E-01	4.11E-02
Chromium	9.52E-02	2.40	24.00	3.96E-02	3.96E-03	1.19E-01	2.40	24.00	4.96E-02	4.96E-03
Copper	3.92E-01	5.60	9.34	6.99E-02	4.19E-02	5.99E-01	5.60	9.34	1.07E-01	6.42E-02
Lead	4.28E-01	4.70	8.90	9.11E-02	4.81E-02	8.37E-01	4.70	8.90	1.78E-01	9.41E-02
Manganese	1.27E+01	51.50	515.00	2.47E-01	2.47E-02	3.91E+01	51.50	515.00	7.60E-01	7.60E-02
Mercury	4.54E-03	1.00	14.10	4.54E-03	3.22E-04	4.75E-03	1.00	14.10	4.75E-03	3.37E-04
Molybdenum	2.90E-03	0.26	2.60	1.12E-02	1.12E-03	3.80E-03	0.26	2.60	1.46E-02	1.46E-03
Nickel	4.59E-02	1.70	3.40	2.70E-02	1.35E-02	1.01E-01	1.70	3.40	5.92E-02	2.96E-02
Selenium	1.34E-02	0.14	0.22	9.36E-02	6.23E-02	2.73E-02	0.14	0.22	1.91E-01	1.27E-01
Silver	6.75E-03	6.02	60.20	1.12E-03	1.12E-04	1.37E-02	6.02	60.20	2.28E-03	2.28E-04
Thallium	1.23E-02	0.01	0.07	1.74E+00	1.74E-01	2.54E-02	0.01	0.07	3.58E+00	3.58E-01
Zinc	1.28E+01	75.40	754.00	1.70E-01	1.70E-02	1.83E+01	75.40	754.00	2.43E-01	2.43E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-9 EU-02 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Lower Mainstem Mineral Creek

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	7.25E-03	0.06	0.59	1.23E-01	1.23E-02	1.70E-02	0.06	0.59	2.88E-01	2.88E-02
Arsenic	2.71E-02	1.04	1.66	2.60E-02	1.63E-02	4.99E-02	1.04	1.66	4.80E-02	3.00E-02
Cadmium	4.34E-02	0.77	7.70	5.64E-02	5.64E-03	6.90E-02	0.77	7.70	8.96E-02	8.96E-03
Chromium	8.65E-02	2.40	24.00	3.61E-02	3.61E-03	9.98E-02	2.40	24.00	4.16E-02	4.16E-03
Copper	2.41E-01	5.60	9.34	4.30E-02	2.58E-02	2.99E-01	5.60	9.34	5.33E-02	3.20E-02
Lead	2.55E-01	4.70	8.90	5.44E-02	2.87E-02	4.95E-01	4.70	8.90	1.05E-01	5.56E-02
Manganese	1.07E+01	51.50	515.00	2.07E-01	2.07E-02	2.85E+01	51.50	515.00	5.53E-01	5.53E-02
Mercury	4.48E-03	1.00	14.10	4.48E-03	3.18E-04	4.58E-03	1.00	14.10	4.58E-03	3.25E-04
Molybdenum	3.04E-03	0.26	2.60	1.17E-02	1.17E-03	4.39E-03	0.26	2.60	1.69E-02	1.69E-03
Nickel	3.49E-02	1.70	3.40	2.05E-02	1.03E-02	5.45E-02	1.70	3.40	3.21E-02	1.60E-02
Selenium	1.28E-02	0.14	0.22	8.98E-02	5.97E-02	2.64E-02	0.14	0.22	1.84E-01	1.23E-01
Silver	6.42E-03	6.02	60.20	1.07E-03	1.07E-04	1.29E-02	6.02	60.20	2.15E-03	2.15E-04
Thallium	9.97E-03	0.01	0.07	1.40E+00	1.40E-01	1.12E-02	0.01	0.07	1.58E+00	1.58E-01
Zinc	3.74E+00	75.40	754.00	4.96E-02	4.96E-03	4.95E+00	75.40	754.00	6.57E-02	6.57E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-10 EU-03 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Mainstem Mineral Creek

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	7.90E-03	0.06	0.59	1.34E-01	1.34E-02	1.77E-02	0.06	0.59	3.00E-01	3.00E-02
Arsenic	2.88E-02	1.04	1.66	2.77E-02	1.74E-02	5.36E-02	1.04	1.66	5.15E-02	3.23E-02
Cadmium	1.88E-01	0.77	7.70	2.44E-01	2.44E-02	3.16E-01	0.77	7.70	4.10E-01	4.10E-02
Chromium	9.46E-02	2.40	24.00	3.94E-02	3.94E-03	1.19E-01	2.40	24.00	4.95E-02	4.95E-03
Copper	3.15E-01	5.60	9.34	5.62E-02	3.37E-02	4.47E-01	5.60	9.34	7.98E-02	4.79E-02
Lead	3.99E-01	4.70	8.90	8.49E-02	4.48E-02	8.51E-01	4.70	8.90	1.81E-01	9.56E-02
Manganese	1.34E+01	51.50	515.00	2.60E-01	2.60E-02	4.44E+01	51.50	515.00	8.63E-01	8.63E-02
Mercury	4.45E-03	1.00	14.10	4.45E-03	3.16E-04	4.58E-03	1.00	14.10	4.58E-03	3.25E-04
Molybdenum	1.70E-03	0.26	2.60	6.56E-03	6.56E-04	2.20E-03	0.26	2.60	8.48E-03	8.48E-04
Nickel	4.50E-02	1.70	3.40	2.65E-02	1.32E-02	9.97E-02	1.70	3.40	5.87E-02	2.93E-02
Selenium	1.27E-02	0.14	0.22	8.88E-02	5.91E-02	2.60E-02	0.14	0.22	1.82E-01	1.21E-01
Silver	6.55E-03	6.02	60.20	1.09E-03	1.09E-04	1.31E-02	6.02	60.20	2.18E-03	2.18E-04
Thallium	1.24E-02	0.01	0.07	1.74E+00	1.74E-01	2.55E-02	0.01	0.07	3.59E+00	3.59E-01
Zinc	1.25E+01	75.40	754.00	1.66E-01	1.66E-02	1.79E+01	75.40	754.00	2.37E-01	2.37E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-11 EU-3.5 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Browns Gulch

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.18E-03	0.06	0.59	1.39E-01	1.39E-02	1.85E-02	0.06	0.59	3.14E-01	3.14E-02
Arsenic	3.94E-02	1.04	1.66	3.79E-02	2.38E-02	8.48E-02	1.04	1.66	8.15E-02	5.11E-02
Cadmium	1.88E-01	0.77	7.70	2.44E-01	2.44E-02	3.16E-01	0.77	7.70	4.10E-01	4.10E-02
Chromium	9.46E-02	2.40	24.00	3.94E-02	3.94E-03	1.19E-01	2.40	24.00	4.95E-02	4.95E-03
Copper	3.10E-01	5.60	9.34	5.53E-02	3.32E-02	4.44E-01	5.60	9.34	7.93E-02	4.75E-02
Lead	6.31E-01	4.70	8.90	1.34E-01	7.08E-02	2.65E+00	4.70	8.90	5.65E-01	2.98E-01
Manganese	1.29E+01	51.50	515.00	2.50E-01	2.50E-02	3.94E+01	51.50	515.00	7.65E-01	7.65E-02
Mercury	4.59E-03	1.00	14.10	4.59E-03	3.26E-04	5.21E-03	1.00	14.10	5.21E-03	3.69E-04
Molybdenum	1.38E-03	0.26	2.60	5.30E-03	5.30E-04	2.02E-03	0.26	2.60	7.77E-03	7.77E-04
Nickel	4.76E-02	1.70	3.40	2.80E-02	1.40E-02	1.04E-01	1.70	3.40	6.11E-02	3.06E-02
Selenium	1.27E-02	0.14	0.22	8.91E-02	5.93E-02	2.61E-02	0.14	0.22	1.82E-01	1.21E-01
Silver	7.45E-03	6.02	60.20	1.24E-03	1.24E-04	1.79E-02	6.02	60.20	2.97E-03	2.97E-04
Thallium	1.22E-02	0.01	0.07	1.72E+00	1.72E-01	2.53E-02	0.01	0.07	3.56E+00	3.56E-01
Zinc	1.26E+01	75.40	754.00	1.68E-01	1.68E-02	1.82E+01	75.40	754.00	2.41E-01	2.41E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-12 EU-04 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Upper Mainstem Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	9.53E-03	0.06	0.59	1.61E-01	1.61E-02	2.54E-02	0.06	0.59	4.31E-01	4.31E-02
Arsenic	1.03E-01	1.04	1.66	9.90E-02	6.21E-02	3.87E-01	1.04	1.66	3.72E-01	2.33E-01
Cadmium	2.02E-01	0.77	7.70	2.62E-01	2.62E-02	3.32E-01	0.77	7.70	4.32E-01	4.32E-02
Chromium	9.47E-02	2.40	24.00	3.95E-02	3.95E-03	1.17E-01	2.40	24.00	4.89E-02	4.89E-03
Copper	4.86E-01	5.60	9.34	8.67E-02	5.20E-02	8.93E-01	5.60	9.34	1.59E-01	9.56E-02
Lead	5.63E-01	4.70	8.90	1.20E-01	6.33E-02	1.73E+00	4.70	8.90	3.67E-01	1.94E-01
Manganese	1.78E+01	51.50	515.00	3.45E-01	3.45E-02	3.89E+01	51.50	515.00	7.55E-01	7.55E-02
Mercury	4.53E-03	1.00	14.10	4.53E-03	3.21E-04	4.75E-03	1.00	14.10	4.75E-03	3.37E-04
Molybdenum	9.27E-04	0.26	2.60	3.57E-03	3.57E-04	1.22E-03	0.26	2.60	4.70E-03	4.70E-04
Nickel	4.80E-02	1.70	3.40	2.82E-02	1.41E-02	1.03E-01	1.70	3.40	6.08E-02	3.04E-02
Selenium	1.40E-02	0.14	0.22	9.82E-02	6.53E-02	3.16E-02	0.14	0.22	2.21E-01	1.47E-01
Silver	6.77E-03	6.02	60.20	1.12E-03	1.12E-04	1.31E-02	6.02	60.20	2.18E-03	2.18E-04
Thallium	1.37E-02	0.01	0.07	1.93E+00	1.93E-01	3.03E-02	0.01	0.07	4.27E+00	4.27E-01
Zinc	1.74E+01	75.40	754.00	2.31E-01	2.31E-02	2.24E+01	75.40	754.00	2.97E-01	2.97E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-13 EU-05 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in South Fork Mineral Creek

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	7.54E-03	0.06	0.59	1.28E-01	1.28E-02	1.77E-02	0.06	0.59	3.00E-01	3.00E-02
Arsenic	2.37E-02	1.04	1.66	2.27E-02	1.42E-02	4.07E-02	1.04	1.66	3.92E-02	2.45E-02
Cadmium	2.01E-01	0.77	7.70	2.61E-01	2.61E-02	4.36E-01	0.77	7.70	5.66E-01	5.66E-02
Chromium	9.54E-02	2.40	24.00	3.98E-02	3.98E-03	1.18E-01	2.40	24.00	4.93E-02	4.93E-03
Copper	5.70E-01	5.60	9.34	1.02E-01	6.10E-02	2.80E+00	5.60	9.34	5.00E-01	3.00E-01
Lead	5.13E-01	4.70	8.90	1.09E-01	5.76E-02	1.42E+00	4.70	8.90	3.02E-01	1.60E-01
Manganese	1.67E+01	51.50	515.00	3.23E-01	3.23E-02	5.76E+01	51.50	515.00	1.12E+00	1.12E-01
Mercury	4.45E-03	1.00	14.10	4.45E-03	3.15E-04	4.58E-03	1.00	14.10	4.58E-03	3.25E-04
Molybdenum	1.30E-03	0.26	2.60	5.01E-03	5.01E-04	1.82E-03	0.26	2.60	6.98E-03	6.98E-04
Nickel	5.06E-02	1.70	3.40	2.98E-02	1.49E-02	1.15E-01	1.70	3.40	6.76E-02	3.38E-02
Selenium	1.29E-02	0.14	0.22	9.06E-02	6.02E-02	2.65E-02	0.14	0.22	1.85E-01	1.23E-01
Silver	8.18E-03	6.02	60.20	1.36E-03	1.36E-04	1.96E-02	6.02	60.20	3.26E-03	3.26E-04
Thallium	1.23E-02	0.01	0.07	1.74E+00	1.74E-01	2.60E-02	0.01	0.07	3.66E+00	3.66E-01
Zinc	1.37E+01	75.40	754.00	1.82E-01	1.82E-02	2.27E+01	75.40	754.00	3.01E-01	3.01E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-14 EU-06 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Middle Fork Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	7.78E-03	0.06	0.59	1.32E-01	1.32E-02	1.75E-02	0.06	0.59	2.97E-01	2.97E-02
Arsenic	1.76E-02	1.04	1.66	1.69E-02	1.06E-02	3.03E-02	1.04	1.66	2.91E-02	1.82E-02
Cadmium	4.35E-02	0.77	7.70	5.64E-02	5.64E-03	6.89E-02	0.77	7.70	8.95E-02	8.95E-03
Chromium	8.59E-02	2.40	24.00	3.58E-02	3.58E-03	9.87E-02	2.40	24.00	4.11E-02	4.11E-03
Copper	2.16E-01	5.60	9.34	3.85E-02	2.31E-02	2.58E-01	5.60	9.34	4.60E-02	2.76E-02
Lead	1.56E-01	4.70	8.90	3.31E-02	1.75E-02	2.88E-01	4.70	8.90	6.13E-02	3.24E-02
Manganese	1.16E+01	51.50	515.00	2.26E-01	2.26E-02	2.99E+01	51.50	515.00	5.81E-01	5.81E-02
Mercury	4.44E-03	1.00	14.10	4.44E-03	3.15E-04	4.49E-03	1.00	14.10	4.49E-03	3.18E-04
Molybdenum	4.68E-03	0.26	2.60	1.80E-02	1.80E-03	7.24E-03	0.26	2.60	2.78E-02	2.78E-03
Nickel	3.62E-02	1.70	3.40	2.13E-02	1.06E-02	5.68E-02	1.70	3.40	3.34E-02	1.67E-02
Selenium	1.32E-02	0.14	0.22	9.22E-02	6.14E-02	2.64E-02	0.14	0.22	1.84E-01	1.23E-01
Silver	6.41E-03	6.02	60.20	1.06E-03	1.06E-04	1.28E-02	6.02	60.20	2.12E-03	2.12E-04
Thallium	1.03E-02	0.01	0.07	1.45E+00	1.45E-01	1.16E-02	0.01	0.07	1.63E+00	1.63E-01
Zinc	3.54E+00	75.40	754.00	4.69E-02	4.69E-03	4.61E+00	75.40	754.00	6.12E-02	6.12E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-15 EU-R1 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Mill Creek Reference Area

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.08E-03	0.06	0.59	1.37E-01	1.37E-02	1.87E-02	0.06	0.59	3.16E-01	3.16E-02
Arsenic	7.63E-02	1.04	1.66	7.34E-02	4.60E-02	1.99E-01	1.04	1.66	1.92E-01	1.20E-01
Cadmium	4.16E-02	0.77	7.70	5.40E-02	5.40E-03	6.70E-02	0.77	7.70	8.70E-02	8.70E-03
Chromium	8.70E-02	2.40	24.00	3.63E-02	3.63E-03	9.98E-02	2.40	24.00	4.16E-02	4.16E-03
Copper	3.87E-01	5.60	9.34	6.91E-02	4.14E-02	7.54E-01	5.60	9.34	1.35E-01	8.07E-02
Lead	3.92E-01	4.70	8.90	8.34E-02	4.40E-02	9.46E-01	4.70	8.90	2.01E-01	1.06E-01
Manganese	9.71E+00	51.50	515.00	1.88E-01	1.88E-02	2.90E+01	51.50	515.00	5.62E-01	5.62E-02
Mercury	4.50E-03	1.00	14.10	4.50E-03	3.19E-04	4.69E-03	1.00	14.10	4.69E-03	3.33E-04
Molybdenum	3.06E-03	0.26	2.60	1.18E-02	1.18E-03	4.93E-03	0.26	2.60	1.90E-02	1.90E-03
Nickel	2.39E-02	1.70	3.40	1.40E-02	7.02E-03	4.22E-02	1.70	3.40	2.48E-02	1.24E-02
Selenium	1.03E-02	0.14	0.22	7.17E-02	4.77E-02	1.13E-02	0.14	0.22	7.89E-02	5.25E-02
Silver	5.04E-03	6.02	60.20	8.37E-04	8.37E-05	5.62E-03	6.02	60.20	9.33E-04	9.33E-05
Thallium	9.60E-03	0.01	0.07	1.35E+00	1.35E-01	9.88E-03	0.01	0.07	1.39E+00	1.39E-01
Zinc	3.60E+00	75.40	754.00	4.78E-02	4.78E-03	4.82E+00	75.40	754.00	6.40E-02	6.40E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-16 EU-07 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Animas River Below Cunningham Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.78E-02	0.06	0.59	3.02E-01	3.02E-02	6.34E-02	0.06	0.59	1.07E+00	1.07E-01
Arsenic	3.13E-02	1.04	1.66	3.01E-02	1.88E-02	7.25E-02	1.04	1.66	6.97E-02	4.36E-02
Cadmium	2.14E-01	0.77	7.70	2.79E-01	2.79E-02	4.10E-01	0.77	7.70	5.33E-01	5.33E-02
Chromium	9.52E-02	2.40	24.00	3.97E-02	3.97E-03	1.19E-01	2.40	24.00	4.95E-02	4.95E-03
Copper	9.00E-01	5.60	9.34	1.61E-01	9.64E-02	2.66E+00	5.60	9.34	4.74E-01	2.84E-01
Lead	7.71E+00	4.70	8.90	1.64E+00	8.66E-01	3.82E+01	4.70	8.90	8.14E+00	4.30E+00
Manganese	1.78E+01	51.50	515.00	3.46E-01	3.46E-02	3.89E+01	51.50	515.00	7.56E-01	7.56E-02
Mercury	5.45E-03	1.00	14.10	5.45E-03	3.87E-04	9.55E-03	1.00	14.10	9.55E-03	6.77E-04
Molybdenum	2.28E-02	0.26	2.60	8.77E-02	8.77E-03	1.00E-01	0.26	2.60	3.86E-01	3.86E-02
Nickel	4.73E-02	1.70	3.40	2.78E-02	1.39E-02	1.02E-01	1.70	3.40	6.02E-02	3.01E-02
Selenium	1.55E-02	0.14	0.22	1.09E-01	7.22E-02	3.45E-02	0.14	0.22	2.41E-01	1.61E-01
Silver	2.79E-02	6.02	60.20	4.63E-03	4.63E-04	9.45E-02	6.02	60.20	1.57E-02	1.57E-03
Thallium	1.38E-02	0.01	0.07	1.95E+00	1.95E-01	3.17E-02	0.01	0.07	4.46E+00	4.46E-01
Zinc	1.96E+01	75.40	754.00	2.60E-01	2.60E-02	3.59E+01	75.40	754.00	4.77E-01	4.77E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-17 EU-08 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Cunningham Creek

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	7.87E-03	0.06	0.59	1.33E-01	1.33E-02	1.94E-02	0.06	0.59	3.30E-01	3.30E-02
Arsenic	1.82E-02	1.04	1.66	1.75E-02	1.10E-02	3.31E-02	1.04	1.66	3.18E-02	1.99E-02
Cadmium	1.88E-01	0.77	7.70	2.45E-01	2.45E-02	3.16E-01	0.77	7.70	4.10E-01	4.10E-02
Chromium	9.41E-02	2.40	24.00	3.92E-02	3.92E-03	1.19E-01	2.40	24.00	4.95E-02	4.95E-03
Copper	3.59E-01	5.60	9.34	6.40E-02	3.84E-02	6.05E-01	5.60	9.34	1.08E-01	6.48E-02
Lead	7.93E-01	4.70	8.90	1.69E-01	8.91E-02	1.36E+00	4.70	8.90	2.90E-01	1.53E-01
Manganese	1.31E+01	51.50	515.00	2.54E-01	2.54E-02	3.93E+01	51.50	515.00	7.63E-01	7.63E-02
Mercury	4.45E-03	1.00	14.10	4.45E-03	3.15E-04	4.56E-03	1.00	14.10	4.56E-03	3.23E-04
Molybdenum	3.95E-03	0.26	2.60	1.52E-02	1.52E-03	6.22E-03	0.26	2.60	2.39E-02	2.39E-03
Nickel	4.53E-02	1.70	3.40	2.67E-02	1.33E-02	9.99E-02	1.70	3.40	5.88E-02	2.94E-02
Selenium	1.24E-02	0.14	0.22	8.69E-02	5.78E-02	2.58E-02	0.14	0.22	1.81E-01	1.20E-01
Silver	7.29E-03	6.02	60.20	1.21E-03	1.21E-04	1.42E-02	6.02	60.20	2.36E-03	2.36E-04
Thallium	1.21E-02	0.01	0.07	1.70E+00	1.70E-01	2.52E-02	0.01	0.07	3.55E+00	3.55E-01
Zinc	1.27E+01	75.40	754.00	1.69E-01	1.69E-02	1.81E+01	75.40	754.00	2.40E-01	2.40E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-18 EU-09 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Animas River Below Minnie Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.38E-02	0.06	0.59	2.34E-01	2.34E-02	3.36E-02	0.06	0.59	5.69E-01	5.69E-02
Arsenic	2.54E-02	1.04	1.66	2.44E-02	1.53E-02	3.98E-02	1.04	1.66	3.82E-02	2.39E-02
Cadmium	2.06E-01	0.77	7.70	2.67E-01	2.67E-02	3.38E-01	0.77	7.70	4.39E-01	4.39E-02
Chromium	9.38E-02	2.40	24.00	3.91E-02	3.91E-03	1.16E-01	2.40	24.00	4.85E-02	4.85E-03
Copper	7.14E-01	5.60	9.34	1.28E-01	7.65E-02	1.01E+00	5.60	9.34	1.80E-01	1.08E-01
Lead	3.37E+00	4.70	8.90	7.17E-01	3.79E-01	5.06E+00	4.70	8.90	1.08E+00	5.68E-01
Manganese	2.44E+01	51.50	515.00	4.73E-01	4.73E-02	4.84E+01	51.50	515.00	9.39E-01	9.39E-02
Mercury	4.59E-03	1.00	14.10	4.59E-03	3.26E-04	4.72E-03	1.00	14.10	4.72E-03	3.34E-04
Molybdenum	3.65E-03	0.26	2.60	1.40E-02	1.40E-03	5.33E-03	0.26	2.60	2.05E-02	2.05E-03
Nickel	4.66E-02	1.70	3.40	2.74E-02	1.37E-02	1.00E-01	1.70	3.40	5.89E-02	2.95E-02
Selenium	1.41E-02	0.14	0.22	9.85E-02	6.55E-02	3.16E-02	0.14	0.22	2.21E-01	1.47E-01
Silver	1.57E-02	6.02	60.20	2.61E-03	2.61E-04	2.55E-02	6.02	60.20	4.23E-03	4.23E-04
Thallium	1.34E-02	0.01	0.07	1.89E+00	1.89E-01	3.02E-02	0.01	0.07	4.26E+00	4.26E-01
Zinc	1.80E+01	75.40	754.00	2.38E-01	2.38E-02	2.27E+01	75.40	754.00	3.00E-01	3.00E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-19 EU-10 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Animas River Below South Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	2.16E-02	0.06	0.59	3.66E-01	3.66E-02	3.97E-02	0.06	0.59	6.72E-01	6.72E-02
Arsenic	4.20E-02	1.04	1.66	4.04E-02	2.53E-02	5.44E-02	1.04	1.66	5.23E-02	3.28E-02
Cadmium	2.11E-01	0.77	7.70	2.74E-01	2.74E-02	3.42E-01	0.77	7.70	4.45E-01	4.45E-02
Chromium	9.52E-02	2.40	24.00	3.97E-02	3.97E-03	1.18E-01	2.40	24.00	4.90E-02	4.90E-03
Copper	1.06E+00	5.60	9.34	1.90E-01	1.14E-01	1.38E+00	5.60	9.34	2.46E-01	1.47E-01
Lead	4.70E+00	4.70	8.90	9.99E-01	5.28E-01	6.09E+00	4.70	8.90	1.30E+00	6.84E-01
Manganese	3.75E+01	51.50	515.00	7.29E-01	7.29E-02	6.86E+01	51.50	515.00	1.33E+00	1.33E-01
Mercury	4.58E-03	1.00	14.10	4.58E-03	3.25E-04	4.66E-03	1.00	14.10	4.66E-03	3.31E-04
Molybdenum	9.59E-03	0.26	2.60	3.69E-02	3.69E-03	1.56E-02	0.26	2.60	5.99E-02	5.99E-03
Nickel	4.78E-02	1.70	3.40	2.81E-02	1.41E-02	1.02E-01	1.70	3.40	5.97E-02	2.99E-02
Selenium	1.40E-02	0.14	0.22	9.79E-02	6.51E-02	3.15E-02	0.14	0.22	2.20E-01	1.46E-01
Silver	2.22E-02	6.02	60.20	3.69E-03	3.69E-04	3.29E-02	6.02	60.20	5.47E-03	5.47E-04
Thallium	1.34E-02	0.01	0.07	1.89E+00	1.89E-01	3.00E-02	0.01	0.07	4.23E+00	4.23E-01
Zinc	1.89E+01	75.40	754.00	2.50E-01	2.50E-02	2.34E+01	75.40	754.00	3.11E-01	3.11E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-20 EU-11 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Upper South Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	7.68E-03	0.06	0.59	1.30E-01	1.30E-02	1.72E-02	0.06	0.59	2.92E-01	2.92E-02
Arsenic	2.82E-02	1.04	1.66	2.71E-02	1.70E-02	3.84E-02	1.04	1.66	3.69E-02	2.31E-02
Cadmium	4.33E-02	0.77	7.70	5.62E-02	5.62E-03	6.84E-02	0.77	7.70	8.88E-02	8.88E-03
Chromium	9.04E-02	2.40	24.00	3.77E-02	3.77E-03	1.03E-01	2.40	24.00	4.28E-02	4.28E-03
Copper	2.66E-01	5.60	9.34	4.76E-02	2.85E-02	3.06E-01	5.60	9.34	5.46E-02	3.28E-02
Lead	1.98E-01	4.70	8.90	4.21E-02	2.22E-02	3.15E-01	4.70	8.90	6.71E-02	3.54E-02
Manganese	1.12E+01	51.50	515.00	2.18E-01	2.18E-02	2.88E+01	51.50	515.00	5.59E-01	5.59E-02
Mercury	4.42E-03	1.00	14.10	4.42E-03	3.13E-04	4.45E-03	1.00	14.10	4.45E-03	3.16E-04
Molybdenum	4.59E-03	0.26	2.60	1.77E-02	1.77E-03	4.59E-03	0.26	2.60	1.77E-02	1.77E-03
Nickel	3.83E-02	1.70	3.40	2.25E-02	1.13E-02	5.73E-02	1.70	3.40	3.37E-02	1.69E-02
Selenium	1.38E-02	0.14	0.22	9.62E-02	6.40E-02	2.66E-02	0.14	0.22	1.86E-01	1.24E-01
Silver	6.36E-03	6.02	60.20	1.06E-03	1.06E-04	1.26E-02	6.02	60.20	2.10E-03	2.10E-04
Thallium	1.02E-02	0.01	0.07	1.44E+00	1.44E-01	1.14E-02	0.01	0.07	1.60E+00	1.60E-01
Zinc	3.55E+00	75.40	754.00	4.70E-02	4.70E-03	4.60E+00	75.40	754.00	6.11E-02	6.11E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-21 EU-12 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Eureka Gulch

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	9.38E-03	0.06	0.59	1.59E-01	1.59E-02	2.52E-02	0.06	0.59	4.27E-01	4.27E-02
Arsenic	2.66E-02	1.04	1.66	2.56E-02	1.61E-02	4.14E-02	1.04	1.66	3.99E-02	2.50E-02
Cadmium	2.05E-01	0.77	7.70	2.67E-01	2.67E-02	3.39E-01	0.77	7.70	4.40E-01	4.40E-02
Chromium	9.69E-02	2.40	24.00	4.04E-02	4.04E-03	1.20E-01	2.40	24.00	4.98E-02	4.98E-03
Copper	5.18E-01	5.60	9.34	9.25E-02	5.54E-02	7.95E-01	5.60	9.34	1.42E-01	8.51E-02
Lead	8.29E-01	4.70	8.90	1.76E-01	9.32E-02	1.51E+00	4.70	8.90	3.21E-01	1.69E-01
Manganese	2.20E+01	51.50	515.00	4.27E-01	4.27E-02	4.51E+01	51.50	515.00	8.75E-01	8.75E-02
Mercury	4.50E-03	1.00	14.10	4.50E-03	3.19E-04	4.58E-03	1.00	14.10	4.58E-03	3.25E-04
Molybdenum	2.98E-03	0.26	2.60	1.15E-02	1.15E-03	4.29E-03	0.26	2.60	1.65E-02	1.65E-03
Nickel	5.09E-02	1.70	3.40	3.00E-02	1.50E-02	1.05E-01	1.70	3.40	6.18E-02	3.09E-02
Selenium	1.50E-02	0.14	0.22	1.05E-01	6.99E-02	3.29E-02	0.14	0.22	2.30E-01	1.53E-01
Silver	7.75E-03	6.02	60.20	1.29E-03	1.29E-04	1.43E-02	6.02	60.20	2.37E-03	2.37E-04
Thallium	1.37E-02	0.01	0.07	1.92E+00	1.92E-01	3.03E-02	0.01	0.07	4.27E+00	4.27E-01
Zinc	1.82E+01	75.40	754.00	2.41E-01	2.41E-02	2.43E+01	75.40	754.00	3.22E-01	3.22E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-22 EU-13 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Lower South Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.30E-02	0.06	0.59	2.21E-01	2.21E-02	3.22E-02	0.06	0.59	5.46E-01	5.46E-02
Arsenic	3.38E-02	1.04	1.66	3.25E-02	2.04E-02	5.04E-02	1.04	1.66	4.85E-02	3.04E-02
Cadmium	2.11E-01	0.77	7.70	2.74E-01	2.74E-02	3.43E-01	0.77	7.70	4.45E-01	4.45E-02
Chromium	1.05E-01	2.40	24.00	4.39E-02	4.39E-03	1.36E-01	2.40	24.00	5.66E-02	5.66E-03
Copper	6.82E-01	5.60	9.34	1.22E-01	7.31E-02	9.37E-01	5.60	9.34	1.67E-01	1.00E-01
Lead	2.49E+00	4.70	8.90	5.30E-01	2.80E-01	4.40E+00	4.70	8.90	9.35E-01	4.94E-01
Manganese	2.38E+01	51.50	515.00	4.62E-01	4.62E-02	4.70E+01	51.50	515.00	9.12E-01	9.12E-02
Mercury	5.25E-03	1.00	14.10	5.25E-03	3.72E-04	6.06E-03	1.00	14.10	6.06E-03	4.30E-04
Molybdenum	5.99E-03	0.26	2.60	2.30E-02	2.30E-03	6.29E-03	0.26	2.60	2.42E-02	2.42E-03
Nickel	7.50E-02	1.70	3.40	4.41E-02	2.20E-02	1.50E-01	1.70	3.40	8.83E-02	4.41E-02
Selenium	1.52E-02	0.14	0.22	1.06E-01	7.06E-02	3.32E-02	0.14	0.22	2.32E-01	1.54E-01
Silver	9.39E-03	6.02	60.20	1.56E-03	1.56E-04	1.72E-02	6.02	60.20	2.86E-03	2.86E-04
Thallium	1.37E-02	0.01	0.07	1.93E+00	1.93E-01	3.02E-02	0.01	0.07	4.26E+00	4.26E-01
Zinc	1.98E+01	75.40	754.00	2.62E-01	2.62E-02	2.45E+01	75.40	754.00	3.24E-01	3.24E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-23 EU-14 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Animas River Below West Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.73E-02	0.06	0.59	2.93E-01	2.93E-02	5.97E-02	0.06	0.59	1.01E+00	1.01E-01
Arsenic	5.58E-02	1.04	1.66	5.36E-02	3.36E-02	8.82E-02	1.04	1.66	8.48E-02	5.31E-02
Cadmium	2.06E-01	0.77	7.70	2.68E-01	2.68E-02	3.39E-01	0.77	7.70	4.40E-01	4.40E-02
Chromium	9.55E-02	2.40	24.00	3.98E-02	3.98E-03	1.19E-01	2.40	24.00	4.95E-02	4.95E-03
Copper	5.27E-01	5.60	9.34	9.41E-02	5.64E-02	8.23E-01	5.60	9.34	1.47E-01	8.81E-02
Lead	2.59E+00	4.70	8.90	5.51E-01	2.91E-01	9.74E+00	4.70	8.90	2.07E+00	1.09E+00
Manganese	2.04E+01	51.50	515.00	3.97E-01	3.97E-02	4.66E+01	51.50	515.00	9.05E-01	9.05E-02
Mercury	4.58E-03	1.00	14.10	4.58E-03	3.25E-04	4.75E-03	1.00	14.10	4.75E-03	3.37E-04
Molybdenum	4.98E-03	0.26	2.60	1.92E-02	1.92E-03	6.29E-03	0.26	2.60	2.42E-02	2.42E-03
Nickel	4.74E-02	1.70	3.40	2.79E-02	1.39E-02	1.02E-01	1.70	3.40	5.97E-02	2.99E-02
Selenium	1.46E-02	0.14	0.22	1.02E-01	6.79E-02	3.25E-02	0.14	0.22	2.27E-01	1.51E-01
Silver	1.13E-02	6.02	60.20	1.88E-03	1.88E-04	3.49E-02	6.02	60.20	5.79E-03	5.79E-04
Thallium	1.35E-02	0.01	0.07	1.90E+00	1.90E-01	3.01E-02	0.01	0.07	4.24E+00	4.24E-01
Zinc	1.86E+01	75.40	754.00	2.47E-01	2.47E-02	2.42E+01	75.40	754.00	3.21E-01	3.21E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-24 EU-15 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Lower West Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.15E-02	0.06	0.59	1.95E-01	1.95E-02	2.96E-02	0.06	0.59	5.02E-01	5.02E-02
Arsenic	5.79E-02	1.04	1.66	5.56E-02	3.49E-02	1.39E-01	1.04	1.66	1.34E-01	8.38E-02
Cadmium	2.31E-01	0.77	7.70	3.00E-01	3.00E-02	5.14E-01	0.77	7.70	6.68E-01	6.68E-02
Chromium	9.52E-02	2.40	24.00	3.97E-02	3.97E-03	1.18E-01	2.40	24.00	4.92E-02	4.92E-03
Copper	8.35E-01	5.60	9.34	1.49E-01	8.94E-02	2.90E+00	5.60	9.34	5.18E-01	3.11E-01
Lead	1.66E+00	4.70	8.90	3.52E-01	1.86E-01	5.77E+00	4.70	8.90	1.23E+00	6.48E-01
Manganese	2.93E+01	51.50	515.00	5.69E-01	5.69E-02	8.10E+01	51.50	515.00	1.57E+00	1.57E-01
Mercury	5.00E-03	1.00	14.10	5.00E-03	3.55E-04	5.62E-03	1.00	14.10	5.62E-03	3.99E-04
Molybdenum	2.54E-02	0.26	2.60	9.79E-02	9.79E-03	5.02E-02	0.26	2.60	1.93E-01	1.93E-02
Nickel	5.34E-02	1.70	3.40	3.14E-02	1.57E-02	1.32E-01	1.70	3.40	7.77E-02	3.89E-02
Selenium	1.51E-02	0.14	0.22	1.05E-01	7.01E-02	3.37E-02	0.14	0.22	2.35E-01	1.57E-01
Silver	9.08E-03	6.02	60.20	1.51E-03	1.51E-04	1.97E-02	6.02	60.20	3.27E-03	3.27E-04
Thallium	1.37E-02	0.01	0.07	1.93E+00	1.93E-01	3.05E-02	0.01	0.07	4.30E+00	4.30E-01
Zinc	2.15E+01	75.40	754.00	2.85E-01	2.85E-02	4.71E+01	75.40	754.00	6.25E-01	6.25E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-25 EU-16 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Placer Gulch

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.05E-02	0.06	0.59	1.79E-01	1.79E-02	2.82E-02	0.06	0.59	4.78E-01	4.78E-02
Arsenic	3.55E-02	1.04	1.66	3.41E-02	2.14E-02	6.17E-02	1.04	1.66	5.93E-02	3.72E-02
Cadmium	2.05E-01	0.77	7.70	2.67E-01	2.67E-02	3.38E-01	0.77	7.70	4.39E-01	4.39E-02
Chromium	9.56E-02	2.40	24.00	3.98E-02	3.98E-03	1.19E-01	2.40	24.00	4.94E-02	4.94E-03
Copper	5.81E-01	5.60	9.34	1.04E-01	6.22E-02	9.47E-01	5.60	9.34	1.69E-01	1.01E-01
Lead	1.72E+00	4.70	8.90	3.65E-01	1.93E-01	3.35E+00	4.70	8.90	7.13E-01	3.77E-01
Manganese	2.62E+01	51.50	515.00	5.09E-01	5.09E-02	5.43E+01	51.50	515.00	1.05E+00	1.05E-01
Mercury	4.72E-03	1.00	14.10	4.72E-03	3.35E-04	5.10E-03	1.00	14.10	5.10E-03	3.62E-04
Molybdenum	4.45E-03	0.26	2.60	1.71E-02	1.71E-03	6.63E-03	0.26	2.60	2.55E-02	2.55E-03
Nickel	4.79E-02	1.70	3.40	2.82E-02	1.41E-02	1.02E-01	1.70	3.40	5.98E-02	2.99E-02
Selenium	1.51E-02	0.14	0.22	1.05E-01	7.01E-02	3.34E-02	0.14	0.22	2.33E-01	1.55E-01
Silver	9.60E-03	6.02	60.20	1.59E-03	1.59E-04	1.66E-02	6.02	60.20	2.76E-03	2.76E-04
Thallium	1.39E-02	0.01	0.07	1.96E+00	1.96E-01	3.07E-02	0.01	0.07	4.33E+00	4.33E-01
Zinc	1.80E+01	75.40	754.00	2.39E-01	2.39E-02	2.27E+01	75.40	754.00	3.01E-01	3.01E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-26 EU-17 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Mainstem West Fork Animas River/California Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	7.73E-03	0.06	0.59	1.31E-01	1.31E-02	1.76E-02	0.06	0.59	2.99E-01	2.99E-02
Arsenic	3.18E-02	1.04	1.66	3.06E-02	1.92E-02	4.43E-02	1.04	1.66	4.26E-02	2.67E-02
Cadmium	4.44E-02	0.77	7.70	5.77E-02	5.77E-03	7.00E-02	0.77	7.70	9.09E-02	9.09E-03
Chromium	8.88E-02	2.40	24.00	3.70E-02	3.70E-03	1.02E-01	2.40	24.00	4.24E-02	4.24E-03
Copper	2.72E-01	5.60	9.34	4.86E-02	2.92E-02	3.77E-01	5.60	9.34	6.73E-02	4.04E-02
Lead	1.75E-01	4.70	8.90	3.71E-02	1.96E-02	3.15E-01	4.70	8.90	6.70E-02	3.54E-02
Manganese	1.51E+01	51.50	515.00	2.93E-01	2.93E-02	3.55E+01	51.50	515.00	6.90E-01	6.90E-02
Mercury	4.45E-03	1.00	14.10	4.45E-03	3.16E-04	4.50E-03	1.00	14.10	4.50E-03	3.19E-04
Molybdenum	3.87E-03	0.26	2.60	1.49E-02	1.49E-03	4.00E-03	0.26	2.60	1.54E-02	1.54E-03
Nickel	3.87E-02	1.70	3.40	2.28E-02	1.14E-02	5.92E-02	1.70	3.40	3.48E-02	1.74E-02
Selenium	1.28E-02	0.14	0.22	8.95E-02	5.95E-02	2.60E-02	0.14	0.22	1.82E-01	1.21E-01
Silver	6.57E-03	6.02	60.20	1.09E-03	1.09E-04	1.33E-02	6.02	60.20	2.21E-03	2.21E-04
Thallium	1.03E-02	0.01	0.07	1.46E+00	1.46E-01	1.17E-02	0.01	0.07	1.65E+00	1.65E-01
Zinc	3.86E+00	75.40	754.00	5.12E-02	5.12E-03	5.08E+00	75.40	754.00	6.74E-02	6.74E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-27 EU-18 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in North Fork Animas River Below Burrows Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	7.66E-03	0.06	0.59	1.30E-01	1.30E-02	1.76E-02	0.06	0.59	2.98E-01	2.98E-02
Arsenic	3.44E-02	1.04	1.66	3.30E-02	2.07E-02	4.73E-02	1.04	1.66	4.55E-02	2.85E-02
Cadmium	1.88E-01	0.77	7.70	2.45E-01	2.45E-02	3.16E-01	0.77	7.70	4.10E-01	4.10E-02
Chromium	9.68E-02	2.40	24.00	4.03E-02	4.03E-03	1.23E-01	2.40	24.00	5.13E-02	5.13E-03
Copper	2.95E-01	5.60	9.34	5.27E-02	3.16E-02	4.10E-01	5.60	9.34	7.32E-02	4.39E-02
Lead	2.81E-01	4.70	8.90	5.97E-02	3.15E-02	5.58E-01	4.70	8.90	1.19E-01	6.27E-02
Manganese	1.35E+01	51.50	515.00	2.62E-01	2.62E-02	3.99E+01	51.50	515.00	7.74E-01	7.74E-02
Mercury	4.44E-03	1.00	14.10	4.44E-03	3.15E-04	4.54E-03	1.00	14.10	4.54E-03	3.22E-04
Molybdenum	3.85E-03	0.26	2.60	1.48E-02	1.48E-03	4.00E-03	0.26	2.60	1.54E-02	1.54E-03
Nickel	4.59E-02	1.70	3.40	2.70E-02	1.35E-02	1.01E-01	1.70	3.40	5.93E-02	2.96E-02
Selenium	1.28E-02	0.14	0.22	8.94E-02	5.95E-02	2.61E-02	0.14	0.22	1.83E-01	1.21E-01
Silver	6.53E-03	6.02	60.20	1.08E-03	1.08E-04	1.30E-02	6.02	60.20	2.16E-03	2.16E-04
Thallium	1.23E-02	0.01	0.07	1.74E+00	1.74E-01	2.56E-02	0.01	0.07	3.60E+00	3.60E-01
Zinc	1.26E+01	75.40	754.00	1.67E-01	1.67E-02	1.80E+01	75.40	754.00	2.39E-01	2.39E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-28 EU-19 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Burrows Creek

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.05E-02	0.06	0.59	1.79E-01	1.79E-02	2.74E-02	0.06	0.59	4.65E-01	4.65E-02
Arsenic	5.83E-02	1.04	1.66	5.61E-02	3.51E-02	8.51E-02	1.04	1.66	8.18E-02	5.12E-02
Cadmium	2.04E-01	0.77	7.70	2.65E-01	2.65E-02	3.40E-01	0.77	7.70	4.41E-01	4.41E-02
Chromium	9.42E-02	2.40	24.00	3.93E-02	3.93E-03	1.17E-01	2.40	24.00	4.87E-02	4.87E-03
Copper	4.10E-01	5.60	9.34	7.32E-02	4.39E-02	6.97E-01	5.60	9.34	1.24E-01	7.46E-02
Lead	6.81E-01	4.70	8.90	1.45E-01	7.65E-02	1.41E+00	4.70	8.90	3.01E-01	1.59E-01
Manganese	1.99E+01	51.50	515.00	3.86E-01	3.86E-02	4.42E+01	51.50	515.00	8.59E-01	8.59E-02
Mercury	4.46E-03	1.00	14.10	4.46E-03	3.16E-04	4.51E-03	1.00	14.10	4.51E-03	3.20E-04
Molybdenum	1.12E-02	0.26	2.60	4.29E-02	4.29E-03	1.71E-02	0.26	2.60	6.59E-02	6.59E-03
Nickel	4.69E-02	1.70	3.40	2.76E-02	1.38E-02	1.01E-01	1.70	3.40	5.94E-02	2.97E-02
Selenium	1.44E-02	0.14	0.22	1.01E-01	6.69E-02	3.21E-02	0.14	0.22	2.24E-01	1.49E-01
Silver	7.53E-03	6.02	60.20	1.25E-03	1.25E-04	1.41E-02	6.02	60.20	2.34E-03	2.34E-04
Thallium	1.41E-02	0.01	0.07	1.98E+00	1.98E-01	3.12E-02	0.01	0.07	4.39E+00	4.39E-01
Zinc	1.73E+01	75.40	754.00	2.30E-01	2.30E-02	2.18E+01	75.40	754.00	2.89E-01	2.89E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-29 EU-R2 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Maggie Gulch Reference Area										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	7.36E-03	0.06	0.59	1.25E-01	1.25E-02	1.83E-02	0.06	0.59	3.11E-01	3.11E-02
Arsenic	1.33E-02	1.04	1.66	1.28E-02	8.01E-03	1.47E-02	1.04	1.66	1.41E-02	8.85E-03
Cadmium	4.12E-02	0.77	7.70	5.35E-02	5.35E-03	6.62E-02	0.77	7.70	8.60E-02	8.60E-03
Chromium	8.67E-02	2.40	24.00	3.61E-02	3.61E-03	1.00E-01	2.40	24.00	4.18E-02	4.18E-03
Copper	2.22E-01	5.60	9.34	3.97E-02	2.38E-02	2.65E-01	5.60	9.34	4.74E-02	2.84E-02
Lead	1.03E-01	4.70	8.90	2.19E-02	1.16E-02	2.30E-01	4.70	8.90	4.89E-02	2.58E-02
Manganese	9.69E+00	51.50	515.00	1.88E-01	1.88E-02	2.80E+01	51.50	515.00	5.44E-01	5.44E-02
Mercury	4.48E-03	1.00	14.10	4.48E-03	3.17E-04	4.61E-03	1.00	14.10	4.61E-03	3.27E-04
Molybdenum	1.57E-03	0.26	2.60	6.05E-03	6.05E-04	1.70E-03	0.26	2.60	6.54E-03	6.54E-04
Nickel	2.45E-02	1.70	3.40	1.44E-02	7.22E-03	4.11E-02	1.70	3.40	2.42E-02	1.21E-02
Selenium	9.63E-03	0.14	0.22	6.73E-02	4.48E-02	9.98E-03	0.14	0.22	6.98E-02	4.64E-02
Silver	4.92E-03	6.02	60.20	8.18E-04	8.18E-05	5.11E-03	6.02	60.20	8.50E-04	8.50E-05
Thallium	9.36E-03	0.01	0.07	1.32E+00	1.32E-01	9.62E-03	0.01	0.07	1.36E+00	1.36E-01
Zinc	3.47E+00	75.40	754.00	4.61E-02	4.61E-03	4.62E+00	75.40	754.00	6.13E-02	6.13E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-30 EU-R3 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Picayune Gulch Reference Area										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	7.48E-03	0.06	0.59	1.27E-01	1.27E-02	1.79E-02	0.06	0.59	3.04E-01	3.04E-02
Arsenic	4.23E-02	1.04	1.66	4.07E-02	2.55E-02	5.20E-02	1.04	1.66	5.00E-02	3.13E-02
Cadmium	4.17E-02	0.77	7.70	5.41E-02	5.41E-03	6.65E-02	0.77	7.70	8.64E-02	8.64E-03
Chromium	8.76E-02	2.40	24.00	3.65E-02	3.65E-03	1.00E-01	2.40	24.00	4.18E-02	4.18E-03
Copper	2.29E-01	5.60	9.34	4.09E-02	2.45E-02	2.72E-01	5.60	9.34	4.86E-02	2.91E-02
Lead	1.65E-01	4.70	8.90	3.52E-02	1.86E-02	2.69E-01	4.70	8.90	5.73E-02	3.03E-02
Manganese	1.12E+01	51.50	515.00	2.17E-01	2.17E-02	3.13E+01	51.50	515.00	6.08E-01	6.08E-02
Mercury	4.45E-03	1.00	14.10	4.45E-03	3.15E-04	4.49E-03	1.00	14.10	4.49E-03	3.19E-04
Molybdenum	2.21E-03	0.26	2.60	8.50E-03	8.50E-04	2.21E-03	0.26	2.60	8.50E-03	8.50E-04
Nickel	2.49E-02	1.70	3.40	1.47E-02	7.33E-03	4.13E-02	1.70	3.40	2.43E-02	1.22E-02
Selenium	9.51E-03	0.14	0.22	6.65E-02	4.43E-02	1.01E-02	0.14	0.22	7.06E-02	4.70E-02
Silver	5.56E-03	6.02	60.20	9.23E-04	9.23E-05	6.28E-03	6.02	60.20	1.04E-03	1.04E-04
Thallium	9.29E-03	0.01	0.07	1.31E+00	1.31E-01	9.49E-03	0.01	0.07	1.34E+00	1.34E-01
Zinc	3.55E+00	75.40	754.00	4.71E-02	4.71E-03	4.67E+00	75.40	754.00	6.20E-02	6.20E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-31 EU-R4 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in North Fork Animas River Reference Area										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.35E-03	0.06	0.59	1.42E-01	1.42E-02	1.79E-02	0.06	0.59	3.04E-01	3.04E-02
Arsenic	9.39E-02	1.04	1.66	9.03E-02	5.65E-02	9.41E-02	1.04	1.66	9.04E-02	5.67E-02
Cadmium	4.20E-02	0.77	7.70	5.45E-02	5.45E-03	6.67E-02	0.77	7.70	8.66E-02	8.66E-03
Chromium	8.60E-02	2.40	24.00	3.59E-02	3.59E-03	9.85E-02	2.40	24.00	4.10E-02	4.10E-03
Copper	2.68E-01	5.60	9.34	4.79E-02	2.87E-02	3.03E-01	5.60	9.34	5.41E-02	3.24E-02
Lead	3.30E-01	4.70	8.90	7.03E-02	3.71E-02	4.08E-01	4.70	8.90	8.67E-02	4.58E-02
Manganese	9.04E+00	51.50	515.00	1.75E-01	1.75E-02	2.72E+01	51.50	515.00	5.28E-01	5.28E-02
Mercury	4.47E-03	1.00	14.10	4.47E-03	3.17E-04	4.51E-03	1.00	14.10	4.51E-03	3.20E-04
Molybdenum	8.67E-03	0.26	2.60	3.33E-02	3.33E-03	8.67E-03	0.26	2.60	3.33E-02	3.33E-03
Nickel	2.22E-02	1.70	3.40	1.31E-02	6.53E-03	3.85E-02	1.70	3.40	2.26E-02	1.13E-02
Selenium	1.04E-02	0.14	0.22	7.25E-02	4.82E-02	1.05E-02	0.14	0.22	7.34E-02	4.88E-02
Silver	6.57E-03	6.02	60.20	1.09E-03	1.09E-04	6.67E-03	6.02	60.20	1.11E-03	1.11E-04
Thallium	9.71E-03	0.01	0.07	1.37E+00	1.37E-01	9.87E-03	0.01	0.07	1.39E+00	1.39E-01
Zinc	3.76E+00	75.40	754.00	4.99E-02	4.99E-03	4.87E+00	75.40	754.00	6.45E-02	6.45E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-32 EU-20 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Lower Mainstem Cement Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	9.25E-03	0.06	0.59	1.57E-01	1.57E-02	1.97E-02	0.06	0.59	3.34E-01	3.34E-02
Arsenic	4.39E-02	1.04	1.66	4.22E-02	2.64E-02	6.06E-02	1.04	1.66	5.83E-02	3.65E-02
Cadmium	1.88E-01	0.77	7.70	2.44E-01	2.44E-02	3.16E-01	0.77	7.70	4.10E-01	4.10E-02
Chromium	9.48E-02	2.40	24.00	3.95E-02	3.95E-03	1.18E-01	2.40	24.00	4.91E-02	4.91E-03
Copper	3.47E-01	5.60	9.34	6.19E-02	3.71E-02	4.68E-01	5.60	9.34	8.37E-02	5.02E-02
Lead	6.16E-01	4.70	8.90	1.31E-01	6.92E-02	9.75E-01	4.70	8.90	2.08E-01	1.10E-01
Manganese	1.25E+01	51.50	515.00	2.43E-01	2.43E-02	3.85E+01	51.50	515.00	7.47E-01	7.47E-02
Mercury	4.48E-03	1.00	14.10	4.48E-03	3.17E-04	4.62E-03	1.00	14.10	4.62E-03	3.28E-04
Molybdenum	3.28E-03	0.26	2.60	1.26E-02	1.26E-03	4.57E-03	0.26	2.60	1.76E-02	1.76E-03
Nickel	4.52E-02	1.70	3.40	2.66E-02	1.33E-02	9.94E-02	1.70	3.40	5.85E-02	2.92E-02
Selenium	1.37E-02	0.14	0.22	9.58E-02	6.37E-02	2.70E-02	0.14	0.22	1.89E-01	1.25E-01
Silver	7.31E-03	6.02	60.20	1.21E-03	1.21E-04	1.47E-02	6.02	60.20	2.43E-03	2.43E-04
Thallium	1.23E-02	0.01	0.07	1.73E+00	1.73E-01	2.54E-02	0.01	0.07	3.58E+00	3.58E-01
Zinc	1.29E+01	75.40	754.00	1.71E-01	1.71E-02	1.83E+01	75.40	754.00	2.43E-01	2.43E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-33 EU-21 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Prospect Gulch

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	9.84E-03	0.06	0.59	1.67E-01	1.67E-02	2.05E-02	0.06	0.59	3.47E-01	3.47E-02
Arsenic	3.79E-02	1.04	1.66	3.64E-02	2.28E-02	5.49E-02	1.04	1.66	5.28E-02	3.31E-02
Cadmium	1.87E-01	0.77	7.70	2.43E-01	2.43E-02	3.15E-01	0.77	7.70	4.10E-01	4.10E-02
Chromium	9.33E-02	2.40	24.00	3.89E-02	3.89E-03	1.16E-01	2.40	24.00	4.82E-02	4.82E-03
Copper	3.03E-01	5.60	9.34	5.42E-02	3.25E-02	4.22E-01	5.60	9.34	7.53E-02	4.52E-02
Lead	4.06E-01	4.70	8.90	8.64E-02	4.56E-02	6.80E-01	4.70	8.90	1.45E-01	7.64E-02
Manganese	1.19E+01	51.50	515.00	2.32E-01	2.32E-02	3.78E+01	51.50	515.00	7.34E-01	7.34E-02
Mercury	4.47E-03	1.00	14.10	4.47E-03	3.17E-04	4.58E-03	1.00	14.10	4.58E-03	3.25E-04
Molybdenum	1.43E-03	0.26	2.60	5.52E-03	5.52E-04	1.79E-03	0.26	2.60	6.89E-03	6.89E-04
Nickel	4.41E-02	1.70	3.40	2.59E-02	1.30E-02	9.83E-02	1.70	3.40	5.78E-02	2.89E-02
Selenium	1.34E-02	0.14	0.22	9.37E-02	6.23E-02	2.67E-02	0.14	0.22	1.87E-01	1.24E-01
Silver	7.02E-03	6.02	60.20	1.17E-03	1.17E-04	1.38E-02	6.02	60.20	2.29E-03	2.29E-04
Thallium	1.22E-02	0.01	0.07	1.72E+00	1.72E-01	2.52E-02	0.01	0.07	3.55E+00	3.55E-01
Zinc	1.26E+01	75.40	754.00	1.66E-01	1.66E-02	1.81E+01	75.40	754.00	2.40E-01	2.40E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-34 EU-22 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Mainstem Cement Creek

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.05E-02	0.06	0.59	1.79E-01	1.79E-02	2.71E-02	0.06	0.59	4.59E-01	4.59E-02
Arsenic	2.84E-02	1.04	1.66	2.73E-02	1.71E-02	4.63E-02	1.04	1.66	4.46E-02	2.79E-02
Cadmium	2.02E-01	0.77	7.70	2.62E-01	2.62E-02	3.33E-01	0.77	7.70	4.32E-01	4.32E-02
Chromium	9.54E-02	2.40	24.00	3.98E-02	3.98E-03	1.18E-01	2.40	24.00	4.93E-02	4.93E-03
Copper	4.24E-01	5.60	9.34	7.58E-02	4.54E-02	6.50E-01	5.60	9.34	1.16E-01	6.95E-02
Lead	9.74E-01	4.70	8.90	2.07E-01	1.09E-01	2.14E+00	4.70	8.90	4.54E-01	2.40E-01
Manganese	1.80E+01	51.50	515.00	3.50E-01	3.50E-02	3.93E+01	51.50	515.00	7.63E-01	7.63E-02
Mercury	4.46E-03	1.00	14.10	4.46E-03	3.16E-04	4.53E-03	1.00	14.10	4.53E-03	3.22E-04
Molybdenum	4.05E-03	0.26	2.60	1.56E-02	1.56E-03	5.02E-03	0.26	2.60	1.93E-02	1.93E-03
Nickel	4.62E-02	1.70	3.40	2.72E-02	1.36E-02	1.00E-01	1.70	3.40	5.90E-02	2.95E-02
Selenium	1.52E-02	0.14	0.22	1.06E-01	7.06E-02	3.30E-02	0.14	0.22	2.31E-01	1.54E-01
Silver	7.20E-03	6.02	60.20	1.20E-03	1.20E-04	1.33E-02	6.02	60.20	2.21E-03	2.21E-04
Thallium	1.37E-02	0.01	0.07	1.92E+00	1.92E-01	3.03E-02	0.01	0.07	4.27E+00	4.27E-01
Zinc	1.80E+01	75.40	754.00	2.39E-01	2.39E-02	2.43E+01	75.40	754.00	3.23E-01	3.23E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-35 EU-23 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in South Fork Cement Creek

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	7.73E-03	0.06	0.59	1.31E-01	1.31E-02	1.79E-02	0.06	0.59	3.03E-01	3.03E-02
Arsenic	2.18E-02	1.04	1.66	2.10E-02	1.31E-02	3.49E-02	1.04	1.66	3.35E-02	2.10E-02
Cadmium	4.39E-02	0.77	7.70	5.70E-02	5.70E-03	7.13E-02	0.77	7.70	9.26E-02	9.26E-03
Chromium	8.73E-02	2.40	24.00	3.64E-02	3.64E-03	1.00E-01	2.40	24.00	4.18E-02	4.18E-03
Copper	2.60E-01	5.60	9.34	4.65E-02	2.79E-02	3.80E-01	5.60	9.34	6.79E-02	4.07E-02
Lead	2.38E-01	4.70	8.90	5.06E-02	2.67E-02	4.85E-01	4.70	8.90	1.03E-01	5.44E-02
Manganese	1.11E+01	51.50	515.00	2.15E-01	2.15E-02	3.02E+01	51.50	515.00	5.87E-01	5.87E-02
Mercury	4.44E-03	1.00	14.10	4.44E-03	3.15E-04	4.48E-03	1.00	14.10	4.48E-03	3.18E-04
Molybdenum	3.73E-03	0.26	2.60	1.43E-02	1.43E-03	4.57E-03	0.26	2.60	1.76E-02	1.76E-03
Nickel	3.73E-02	1.70	3.40	2.19E-02	1.10E-02	6.06E-02	1.70	3.40	3.57E-02	1.78E-02
Selenium	1.32E-02	0.14	0.22	9.25E-02	6.15E-02	2.65E-02	0.14	0.22	1.85E-01	1.23E-01
Silver	6.69E-03	6.02	60.20	1.11E-03	1.11E-04	1.32E-02	6.02	60.20	2.19E-03	2.19E-04
Thallium	1.01E-02	0.01	0.07	1.42E+00	1.42E-01	1.13E-02	0.01	0.07	1.59E+00	1.59E-01
Zinc	3.74E+00	75.40	754.00	4.96E-02	4.96E-03	5.48E+00	75.40	754.00	7.27E-02	7.27E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-36 EU-24 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Beaver Foraging in Upper Cement Creek

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	9.83E-03	0.06	0.59	1.67E-01	1.67E-02	2.67E-02	0.06	0.59	4.53E-01	4.53E-02
Arsenic	3.56E-02	1.04	1.66	3.43E-02	2.15E-02	5.07E-02	1.04	1.66	4.88E-02	3.05E-02
Cadmium	2.06E-01	0.77	7.70	2.68E-01	2.68E-02	3.47E-01	0.77	7.70	4.50E-01	4.50E-02
Chromium	9.54E-02	2.40	24.00	3.98E-02	3.98E-03	1.18E-01	2.40	24.00	4.93E-02	4.93E-03
Copper	5.51E-01	5.60	9.34	9.83E-02	5.89E-02	8.35E-01	5.60	9.34	1.49E-01	8.94E-02
Lead	9.25E-01	4.70	8.90	1.97E-01	1.04E-01	1.51E+00	4.70	8.90	3.22E-01	1.70E-01
Manganese	2.39E+01	51.50	515.00	4.63E-01	4.63E-02	4.95E+01	51.50	515.00	9.60E-01	9.60E-02
Mercury	4.46E-03	1.00	14.10	4.46E-03	3.16E-04	4.52E-03	1.00	14.10	4.52E-03	3.21E-04
Molybdenum	3.34E-03	0.26	2.60	1.28E-02	1.28E-03	4.07E-03	0.26	2.60	1.56E-02	1.56E-03
Nickel	4.85E-02	1.70	3.40	2.85E-02	1.43E-02	1.04E-01	1.70	3.40	6.11E-02	3.05E-02
Selenium	1.47E-02	0.14	0.22	1.02E-01	6.82E-02	3.23E-02	0.14	0.22	2.26E-01	1.50E-01
Silver	7.47E-03	6.02	60.20	1.24E-03	1.24E-04	1.37E-02	6.02	60.20	2.27E-03	2.27E-04
Thallium	1.37E-02	0.01	0.07	1.93E+00	1.93E-01	3.03E-02	0.01	0.07	4.27E+00	4.27E-01
Zinc	1.77E+01	75.40	754.00	2.35E-01	2.35E-02	2.24E+01	75.40	754.00	2.97E-01	2.97E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-37 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Pika Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.57E-02	0.06	0.59	1.45E+00	1.45E-01	1.53E-01	0.06	0.59	2.59E+00	2.59E-01
Arsenic	5.11E-01	1.04	1.66	4.91E-01	3.08E-01	7.66E-01	1.04	1.66	7.36E-01	4.61E-01
Cadmium	1.82E-01	0.77	7.70	2.36E-01	2.36E-02	3.54E-01	0.77	7.70	4.60E-01	4.60E-02
Chromium	4.05E-01	2.40	24.00	1.69E-01	1.69E-02	4.41E-01	2.40	24.00	1.84E-01	1.84E-02
Copper	3.74E+00	5.60	9.34	6.69E-01	4.01E-01	5.46E+00	5.60	9.34	9.75E-01	5.84E-01
Lead	2.53E+01	4.70	8.90	5.38E+00	2.84E+00	4.41E+01	4.70	8.90	9.38E+00	4.96E+00
Manganese	1.24E+02	51.50	515.00	2.41E+00	2.41E-01	2.90E+02	51.50	515.00	5.63E+00	5.63E-01
Mercury	2.02E-02	1.00	14.10	2.02E-02	1.43E-03	2.07E-02	1.00	14.10	2.07E-02	1.47E-03
Molybdenum	1.16E-01	0.26	2.60	4.45E-01	4.45E-02	2.74E-01	0.26	2.60	1.06E+00	1.06E-01
Nickel	2.60E-01	1.70	3.40	1.53E-01	7.63E-02	4.52E-01	1.70	3.40	2.66E-01	1.33E-01
Selenium	6.22E-02	0.14	0.22	4.35E-01	2.89E-01	9.01E-02	0.14	0.22	6.30E-01	4.19E-01
Silver	1.05E-01	6.02	60.20	1.74E-02	1.74E-03	1.68E-01	6.02	60.20	2.79E-02	2.79E-03
Thallium	6.52E-02	0.01	0.07	9.19E+00	9.19E-01	1.45E-01	0.01	0.07	2.04E+01	2.04E+00
Zinc	4.59E+01	75.40	754.00	6.08E-01	6.08E-02	8.62E+01	75.40	754.00	1.14E+00	1.14E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-38 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Pika Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	3.72E-02	0.06	0.59	6.31E-01	6.31E-02	5.70E-02	0.06	0.59	9.66E-01	9.66E-02
Arsenic	3.23E-01	1.04	1.66	3.11E-01	1.95E-01	5.20E-01	1.04	1.66	5.00E-01	3.13E-01
Cadmium	7.63E-02	0.77	7.70	9.91E-02	9.91E-03	1.25E-01	0.77	7.70	1.62E-01	1.62E-02
Chromium	4.23E-01	2.40	24.00	1.76E-01	1.76E-02	4.65E-01	2.40	24.00	1.94E-01	1.94E-02
Copper	1.81E+00	5.60	9.34	3.23E-01	1.94E-01	2.27E+00	5.60	9.34	4.05E-01	2.43E-01
Lead	1.88E+01	4.70	8.90	4.01E+00	2.12E+00	3.86E+01	4.70	8.90	8.20E+00	4.33E+00
Manganese	6.46E+01	51.50	515.00	1.25E+00	1.25E-01	1.06E+02	51.50	515.00	2.05E+00	2.05E-01
Mercury	1.96E-02	1.00	14.10	1.96E-02	1.39E-03	2.06E-02	1.00	14.10	2.06E-02	1.46E-03
Molybdenum	2.30E-02	0.26	2.60	8.85E-02	8.85E-03	3.34E-02	0.26	2.60	1.28E-01	1.28E-02
Nickel	2.48E-01	1.70	3.40	1.46E-01	7.30E-02	3.66E-01	1.70	3.40	2.15E-01	1.08E-01
Selenium	5.60E-02	0.14	0.22	3.91E-01	2.60E-01	7.83E-02	0.14	0.22	5.47E-01	3.64E-01
Silver	7.85E-02	6.02	60.20	1.30E-02	1.30E-03	1.42E-01	6.02	60.20	2.36E-02	2.36E-03
Thallium	5.13E-02	0.01	0.07	7.22E+00	7.22E-01	6.29E-02	0.01	0.07	8.86E+00	8.86E-01
Zinc	1.94E+01	75.40	754.00	2.58E-01	2.58E-02	3.08E+01	75.40	754.00	4.09E-01	4.09E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-39 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Pika Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	4.66E-02	0.06	0.59	7.89E-01	7.89E-02	6.25E-02	0.06	0.59	1.06E+00	1.06E-01
Arsenic	4.29E-01	1.04	1.66	4.13E-01	2.59E-01	5.94E-01	1.04	1.66	5.71E-01	3.58E-01
Cadmium	6.32E-02	0.77	7.70	8.20E-02	8.20E-03	1.27E-01	0.77	7.70	1.64E-01	1.64E-02
Chromium	3.52E-01	2.40	24.00	1.47E-01	1.47E-02	4.44E-01	2.40	24.00	1.85E-01	1.85E-02
Copper	2.36E+00	5.60	9.34	4.21E-01	2.53E-01	3.60E+00	5.60	9.34	6.43E-01	3.86E-01
Lead	7.05E+00	4.70	8.90	1.50E+00	7.92E-01	9.48E+00	4.70	8.90	2.02E+00	1.06E+00
Manganese	5.51E+01	51.50	515.00	1.07E+00	1.07E-01	9.45E+01	51.50	515.00	1.83E+00	1.83E-01
Mercury	2.02E-02	1.00	14.10	2.02E-02	1.43E-03	2.33E-02	1.00	14.10	2.33E-02	1.65E-03
Molybdenum	1.65E-02	0.26	2.60	6.35E-02	6.35E-03	2.34E-02	0.26	2.60	8.99E-02	8.99E-03
Nickel	1.94E-01	1.70	3.40	1.14E-01	5.70E-02	2.80E-01	1.70	3.40	1.65E-01	8.23E-02
Selenium	6.22E-02	0.14	0.22	4.35E-01	2.89E-01	8.50E-02	0.14	0.22	5.94E-01	3.95E-01
Silver	5.92E-02	6.02	60.20	9.84E-03	9.84E-04	9.71E-02	6.02	60.20	1.61E-02	1.61E-03
Thallium	6.02E-02	0.01	0.07	8.48E+00	8.48E-01	1.32E-01	0.01	0.07	1.87E+01	1.87E+00
Zinc	1.59E+01	75.40	754.00	2.11E-01	2.11E-02	2.60E+01	75.40	754.00	3.45E-01	3.45E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-40 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Pika Foraging in Vegetated Upland Habitats

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	2.81E-02	0.06	0.59	4.75E-01	4.75E-02	3.57E-02	0.06	0.59	6.05E-01	6.05E-02
Arsenic	1.68E-01	1.04	1.66	1.62E-01	1.01E-01	2.41E-01	1.04	1.66	2.32E-01	1.45E-01
Cadmium	3.09E-02	0.77	7.70	4.01E-02	4.01E-03	7.08E-02	0.77	7.70	9.19E-02	9.19E-03
Chromium	3.62E-01	2.40	24.00	1.51E-01	1.51E-02	4.16E-01	2.40	24.00	1.74E-01	1.74E-02
Copper	1.10E+00	5.60	9.34	1.97E-01	1.18E-01	1.29E+00	5.60	9.34	2.30E-01	1.38E-01
Lead	1.84E+00	4.70	8.90	3.91E-01	2.07E-01	2.58E+00	4.70	8.90	5.50E-01	2.90E-01
Manganese	4.44E+01	51.50	515.00	8.62E-01	8.62E-02	6.21E+01	51.50	515.00	1.21E+00	1.21E-01
Mercury	1.95E-02	1.00	14.10	1.95E-02	1.38E-03	2.04E-02	1.00	14.10	2.04E-02	1.45E-03
Molybdenum	3.06E-02	0.26	2.60	1.18E-01	1.18E-02	5.76E-02	0.26	2.60	2.21E-01	2.21E-02
Nickel	1.95E-01	1.70	3.40	1.15E-01	5.75E-02	2.89E-01	1.70	3.40	1.70E-01	8.51E-02
Selenium	5.50E-02	0.14	0.22	3.84E-01	2.56E-01	7.13E-02	0.14	0.22	4.98E-01	3.31E-01
Silver	3.31E-02	6.02	60.20	5.51E-03	5.51E-04	4.96E-02	6.02	60.20	8.23E-03	8.23E-04
Thallium	5.05E-02	0.01	0.07	7.11E+00	7.11E-01	6.09E-02	0.01	0.07	8.57E+00	8.57E-01
Zinc	1.08E+01	75.40	754.00	1.44E-01	1.44E-02	1.38E+01	75.40	754.00	1.83E-01	1.83E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-41 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Pika Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.73E-01	0.06	0.59	1.48E+01	1.48E+00	1.21E+00	0.06	0.59	2.06E+01	2.06E+00
Arsenic	1.35E+00	1.04	1.66	1.30E+00	8.14E-01	1.85E+00	1.04	1.66	1.78E+00	1.11E+00
Cadmium	5.26E-01	0.77	7.70	6.83E-01	6.83E-02	9.26E-01	0.77	7.70	1.20E+00	1.20E-01
Chromium	3.87E-01	2.40	24.00	1.61E-01	1.61E-02	4.31E-01	2.40	24.00	1.79E-01	1.79E-02
Copper	9.90E+00	5.60	9.34	1.77E+00	1.06E+00	1.60E+01	5.60	9.34	2.86E+00	1.72E+00
Lead	1.29E+02	4.70	8.90	2.75E+01	1.45E+01	1.79E+02	4.70	8.90	3.80E+01	2.01E+01
Manganese	1.35E+02	51.50	515.00	2.62E+00	2.62E-01	5.41E+02	51.50	515.00	1.05E+01	1.05E+00
Mercury	2.81E-02	1.00	14.10	2.81E-02	2.00E-03	3.14E-02	1.00	14.10	3.14E-02	2.23E-03
Molybdenum	3.96E-01	0.26	2.60	1.52E+00	1.52E-01	6.69E-01	0.26	2.60	2.57E+00	2.57E-01
Nickel	2.44E-01	1.70	3.40	1.44E-01	7.18E-02	4.38E-01	1.70	3.40	2.58E-01	1.29E-01
Selenium	9.42E-02	0.14	0.22	6.59E-01	4.38E-01	1.41E-01	0.14	0.22	9.89E-01	6.58E-01
Silver	3.82E-01	6.02	60.20	6.34E-02	6.34E-03	5.11E-01	6.02	60.20	8.49E-02	8.49E-03
Thallium	6.42E-02	0.01	0.07	9.04E+00	9.04E-01	1.44E-01	0.01	0.07	2.03E+01	2.03E+00
Zinc	1.53E+02	75.40	754.00	2.03E+00	2.03E-01	2.49E+02	75.40	754.00	3.30E+00	3.30E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-42 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Pika Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	4.02E-01	0.06	0.59	6.81E+00	6.81E-01	6.99E-01	0.06	0.59	1.18E+01	1.18E+00
Arsenic	8.44E+00	1.04	1.66	8.11E+00	5.08E+00	3.21E+01	1.04	1.66	3.09E+01	1.94E+01
Cadmium	1.45E-01	0.77	7.70	1.89E-01	1.89E-02	2.57E-01	0.77	7.70	3.34E-01	3.34E-02
Chromium	3.99E-01	2.40	24.00	1.66E-01	1.66E-02	4.44E-01	2.40	24.00	1.85E-01	1.85E-02
Copper	8.19E+00	5.60	9.34	1.46E+00	8.76E-01	1.39E+01	5.60	9.34	2.49E+00	1.49E+00
Lead	6.20E+01	4.70	8.90	1.32E+01	6.97E+00	9.62E+01	4.70	8.90	2.05E+01	1.08E+01
Manganese	6.94E+01	51.50	515.00	1.35E+00	1.35E-01	1.46E+02	51.50	515.00	2.83E+00	2.83E-01
Mercury	2.62E-02	1.00	14.10	2.62E-02	1.86E-03	3.96E-02	1.00	14.10	3.96E-02	2.81E-03
Molybdenum	2.34E-01	0.26	2.60	9.00E-01	9.00E-02	4.05E-01	0.26	2.60	1.56E+00	1.56E-01
Nickel	2.26E-01	1.70	3.40	1.33E-01	6.66E-02	3.48E-01	1.70	3.40	2.04E-01	1.02E-01
Selenium	9.08E-02	0.14	0.22	6.35E-01	4.22E-01	1.29E-01	0.14	0.22	9.01E-01	5.99E-01
Silver	2.19E-01	6.02	60.20	3.64E-02	3.64E-03	2.92E-01	6.02	60.20	4.84E-02	4.84E-03
Thallium	4.84E-02	0.01	0.07	6.81E+00	6.81E-01	5.83E-02	0.01	0.07	8.21E+00	8.21E-01
Zinc	4.11E+01	75.40	754.00	5.45E-01	5.45E-02	6.71E+01	75.40	754.00	8.90E-01	8.90E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-43 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Pika Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	2.72E-01	0.06	0.59	4.60E+00	4.60E-01	5.61E-01	0.06	0.59	9.51E+00	9.51E-01
Arsenic	1.10E+00	1.04	1.66	1.06E+00	6.62E-01	1.45E+00	1.04	1.66	1.39E+00	8.72E-01
Cadmium	1.07E-01	0.77	7.70	1.39E-01	1.39E-02	1.96E-01	0.77	7.70	2.54E-01	2.54E-02
Chromium	3.43E-01	2.40	24.00	1.43E-01	1.43E-02	4.38E-01	2.40	24.00	1.83E-01	1.83E-02
Copper	3.70E+00	5.60	9.34	6.61E-01	3.96E-01	5.19E+00	5.60	9.34	9.27E-01	5.56E-01
Lead	4.27E+01	4.70	8.90	9.09E+00	4.80E+00	8.60E+01	4.70	8.90	1.83E+01	9.66E+00
Manganese	6.95E+01	51.50	515.00	1.35E+00	1.35E-01	1.50E+02	51.50	515.00	2.91E+00	2.91E-01
Mercury	2.35E-02	1.00	14.10	2.35E-02	1.67E-03	2.63E-02	1.00	14.10	2.63E-02	1.87E-03
Molybdenum	2.43E-01	0.26	2.60	9.35E-01	9.35E-02	4.91E-01	0.26	2.60	1.89E+00	1.89E-01
Nickel	1.86E-01	1.70	3.40	1.10E-01	5.48E-02	2.73E-01	1.70	3.40	1.60E-01	8.02E-02
Selenium	7.63E-02	0.14	0.22	5.34E-01	3.55E-01	1.06E-01	0.14	0.22	7.41E-01	4.93E-01
Silver	1.83E-01	6.02	60.20	3.05E-02	3.05E-03	2.56E-01	6.02	60.20	4.26E-02	4.26E-03
Thallium	6.66E-02	0.01	0.07	9.37E+00	9.37E-01	1.57E-01	0.01	0.07	2.21E+01	2.21E+00
Zinc	3.57E+01	75.40	754.00	4.73E-01	4.73E-02	5.86E+01	75.40	754.00	7.77E-01	7.77E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-44 Estimated Daily Dose (EDD) Hazard Quotients (HQs) forYellow-Bellied Marmot Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.79E-02	0.06	0.59	3.03E-01	3.03E-02	3.56E-02	0.06	0.59	6.04E-01	6.04E-02
Arsenic	1.10E-01	1.04	1.66	1.06E-01	6.63E-02	1.58E-01	1.04	1.66	1.52E-01	9.51E-02
Cadmium	1.22E-01	0.77	7.70	1.58E-01	1.58E-02	1.69E-01	0.77	7.70	2.20E-01	2.20E-02
Chromium	7.49E-02	2.40	24.00	3.12E-02	3.12E-03	8.83E-02	2.40	24.00	3.68E-02	3.68E-03
Copper	7.06E-01	5.60	9.34	1.26E-01	7.55E-02	1.06E+00	5.60	9.34	1.89E-01	1.13E-01
Lead	5.02E+00	4.70	8.90	1.07E+00	5.64E-01	7.78E+00	4.70	8.90	1.66E+00	8.74E-01
Manganese	2.40E+01	51.50	515.00	4.67E-01	4.67E-02	7.64E+01	51.50	515.00	1.48E+00	1.48E-01
Mercury	3.29E-03	1.00	14.10	3.29E-03	2.33E-04	3.41E-03	1.00	14.10	3.41E-03	2.42E-04
Molybdenum	2.39E-02	0.26	2.60	9.20E-02	9.20E-03	5.67E-02	0.26	2.60	2.18E-01	2.18E-02
Nickel	4.77E-02	1.70	3.40	2.81E-02	1.40E-02	8.93E-02	1.70	3.40	5.25E-02	2.63E-02
Selenium	2.65E-02	0.14	0.22	1.85E-01	1.23E-01	5.71E-02	0.14	0.22	3.99E-01	2.66E-01
Silver	2.11E-02	6.02	60.20	3.50E-03	3.50E-04	3.13E-02	6.02	60.20	5.20E-03	5.20E-04
Thallium	1.34E-02	0.01	0.07	1.88E+00	1.88E-01	2.85E-02	0.01	0.07	4.02E+00	4.02E-01
Zinc	1.30E+01	75.40	754.00	1.72E-01	1.72E-02	2.31E+01	75.40	754.00	3.06E-01	3.06E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-45 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Yellow-Bellied Marmot Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.64E-03	0.06	0.59	1.46E-01	1.46E-02	1.74E-02	0.06	0.59	2.95E-01	2.95E-02
Arsenic	7.12E-02	1.04	1.66	6.84E-02	4.29E-02	1.07E-01	1.04	1.66	1.03E-01	6.43E-02
Cadmium	7.35E-02	0.77	7.70	9.55E-02	9.55E-03	9.55E-02	0.77	7.70	1.24E-01	1.24E-02
Chromium	7.85E-02	2.40	24.00	3.27E-02	3.27E-03	9.32E-02	2.40	24.00	3.88E-02	3.88E-03
Copper	4.30E-01	5.60	9.34	7.68E-02	4.61E-02	6.38E-01	5.60	9.34	1.14E-01	6.83E-02
Lead	3.90E+00	4.70	8.90	8.31E-01	4.39E-01	7.52E+00	4.70	8.90	1.60E+00	8.45E-01
Manganese	1.35E+01	51.50	515.00	2.62E-01	2.62E-02	3.70E+01	51.50	515.00	7.18E-01	7.18E-02
Mercury	3.17E-03	1.00	14.10	3.17E-03	2.25E-04	3.38E-03	1.00	14.10	3.38E-03	2.39E-04
Molybdenum	4.80E-03	0.26	2.60	1.84E-02	1.84E-03	6.93E-03	0.26	2.60	2.67E-02	2.67E-03
Nickel	4.55E-02	1.70	3.40	2.67E-02	1.34E-02	7.16E-02	1.70	3.40	4.21E-02	2.10E-02
Selenium	2.29E-02	0.14	0.22	1.60E-01	1.06E-01	4.35E-02	0.14	0.22	3.04E-01	2.02E-01
Silver	1.53E-02	6.02	60.20	2.53E-03	2.53E-04	2.65E-02	6.02	60.20	4.40E-03	4.40E-04
Thallium	9.48E-03	0.01	0.07	1.33E+00	1.33E-01	1.27E-02	0.01	0.07	1.79E+00	1.79E-01
Zinc	3.97E+00	75.40	754.00	5.26E-02	5.26E-03	6.50E+00	75.40	754.00	8.62E-02	8.62E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-46 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Yellow-Bellied Marmot Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.06E-02	0.06	0.59	1.79E-01	1.79E-02	1.85E-02	0.06	0.59	3.14E-01	3.14E-02
Arsenic	9.56E-02	1.04	1.66	9.19E-02	5.76E-02	1.36E-01	1.04	1.66	1.30E-01	8.17E-02
Cadmium	2.62E-02	0.77	7.70	3.41E-02	3.41E-03	3.88E-02	0.77	7.70	5.04E-02	5.04E-03
Chromium	7.13E-02	2.40	24.00	2.97E-02	2.97E-03	8.51E-02	2.40	24.00	3.55E-02	3.55E-03
Copper	5.07E-01	5.60	9.34	9.05E-02	5.42E-02	7.82E-01	5.60	9.34	1.40E-01	8.38E-02
Lead	1.54E+00	4.70	8.90	3.29E-01	1.74E-01	2.11E+00	4.70	8.90	4.48E-01	2.37E-01
Manganese	8.04E+00	51.50	515.00	1.56E-01	1.56E-02	1.29E+01	51.50	515.00	2.51E-01	2.51E-02
Mercury	3.29E-03	1.00	14.10	3.29E-03	2.33E-04	3.92E-03	1.00	14.10	3.92E-03	2.78E-04
Molybdenum	3.45E-03	0.26	2.60	1.33E-02	1.33E-03	4.87E-03	0.26	2.60	1.87E-02	1.87E-03
Nickel	3.00E-02	1.70	3.40	1.77E-02	8.83E-03	4.57E-02	1.70	3.40	2.69E-02	1.34E-02
Selenium	2.38E-02	0.14	0.22	1.67E-01	1.11E-01	4.41E-02	0.14	0.22	3.09E-01	2.05E-01
Silver	1.07E-02	6.02	60.20	1.77E-03	1.77E-04	1.65E-02	6.02	60.20	2.74E-03	2.74E-04
Thallium	9.92E-03	0.01	0.07	1.40E+00	1.40E-01	1.70E-02	0.01	0.07	2.39E+00	2.39E-01
Zinc	2.88E+00	75.40	754.00	3.82E-02	3.82E-03	4.18E+00	75.40	754.00	5.55E-02	5.55E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-47 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Yellow-Bellied Marmot Foraging in Vegetated Upland Habitats										
COC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	6.50E-03	0.06	0.59	1.10E-01	1.10E-02	1.29E-02	0.06	0.59	2.19E-01	2.19E-02
Arsenic	3.80E-02	1.04	1.66	3.65E-02	2.29E-02	5.08E-02	1.04	1.66	4.89E-02	3.06E-02
Cadmium	1.45E-02	0.77	7.70	1.89E-02	1.89E-03	2.55E-02	0.77	7.70	3.31E-02	3.31E-03
Chromium	7.34E-02	2.40	24.00	3.06E-02	3.06E-03	8.45E-02	2.40	24.00	3.52E-02	3.52E-03
Copper	2.52E-01	5.60	9.34	4.50E-02	2.70E-02	3.18E-01	5.60	9.34	5.68E-02	3.41E-02
Lead	3.68E-01	4.70	8.90	7.83E-02	4.14E-02	4.92E-01	4.70	8.90	1.05E-01	5.53E-02
Manganese	6.71E+00	51.50	515.00	1.30E-01	1.30E-02	9.39E+00	51.50	515.00	1.82E-01	1.82E-02
Mercury	3.17E-03	1.00	14.10	3.17E-03	2.25E-04	3.35E-03	1.00	14.10	3.35E-03	2.37E-04
Molybdenum	6.32E-03	0.26	2.60	2.43E-02	2.43E-03	1.19E-02	0.26	2.60	4.57E-02	4.57E-03
Nickel	2.90E-02	1.70	3.40	1.71E-02	8.53E-03	4.57E-02	1.70	3.40	2.69E-02	1.35E-02
Selenium	2.23E-02	0.14	0.22	1.56E-01	1.04E-01	4.13E-02	0.14	0.22	2.89E-01	1.92E-01
Silver	6.51E-03	6.02	60.20	1.08E-03	1.08E-04	1.15E-02	6.02	60.20	1.91E-03	1.91E-04
Thallium	8.75E-03	0.01	0.07	1.23E+00	1.23E-01	1.10E-02	0.01	0.07	1.55E+00	1.55E-01
Zinc	2.05E+00	75.40	754.00	2.71E-02	2.71E-03	2.86E+00	75.40	754.00	3.80E-02	3.80E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-48 Estimated Daily Dose (EDD) Hazard Quotients (HQs) forYellow-Bellied Marmot Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.80E-01	0.06	0.59	3.06E+00	3.06E-01	2.55E-01	0.06	0.59	4.32E+00	4.32E-01
Arsenic	2.84E-01	1.04	1.66	2.73E-01	1.71E-01	3.84E-01	1.04	1.66	3.69E-01	2.31E-01
Cadmium	1.93E-01	0.77	7.70	2.51E-01	2.51E-02	2.89E-01	0.77	7.70	3.75E-01	3.75E-02
Chromium	7.12E-02	2.40	24.00	2.97E-02	2.97E-03	8.61E-02	2.40	24.00	3.59E-02	3.59E-03
Copper	1.99E+00	5.60	9.34	3.55E-01	2.13E-01	3.27E+00	5.60	9.34	5.84E-01	3.50E-01
Lead	2.65E+01	4.70	8.90	5.64E+00	2.98E+00	3.56E+01	4.70	8.90	7.57E+00	4.00E+00
Manganese	2.64E+01	51.50	515.00	5.12E-01	5.12E-02	1.28E+02	51.50	515.00	2.49E+00	2.49E-01
Mercury	4.93E-03	1.00	14.10	4.93E-03	3.49E-04	5.61E-03	1.00	14.10	5.61E-03	3.98E-04
Molybdenum	8.17E-02	0.26	2.60	3.14E-01	3.14E-02	1.38E-01	0.26	2.60	5.31E-01	5.31E-02
Nickel	4.47E-02	1.70	3.40	2.63E-02	1.32E-02	8.66E-02	1.70	3.40	5.09E-02	2.55E-02
Selenium	3.31E-02	0.14	0.22	2.31E-01	1.54E-01	6.77E-02	0.14	0.22	4.73E-01	3.15E-01
Silver	7.82E-02	6.02	60.20	1.30E-02	1.30E-03	1.02E-01	6.02	60.20	1.70E-02	1.70E-03
Thallium	1.31E-02	0.01	0.07	1.85E+00	1.85E-01	2.84E-02	0.01	0.07	4.00E+00	4.00E-01
Zinc	3.52E+01	75.40	754.00	4.67E-01	4.67E-02	5.69E+01	75.40	754.00	7.55E-01	7.55E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-49 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Yellow-Bellied Marmot Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.38E-02	0.06	0.59	1.42E+00	1.42E-01	1.50E-01	0.06	0.59	2.54E+00	2.54E-01
Arsenic	1.75E+00	1.04	1.66	1.68E+00	1.05E+00	6.63E+00	1.04	1.66	6.38E+00	4.00E+00
Cadmium	8.84E-02	0.77	7.70	1.15E-01	1.15E-02	1.24E-01	0.77	7.70	1.61E-01	1.61E-02
Chromium	7.35E-02	2.40	24.00	3.06E-02	3.06E-03	8.89E-02	2.40	24.00	3.71E-02	3.71E-03
Copper	1.76E+00	5.60	9.34	3.14E-01	1.88E-01	3.07E+00	5.60	9.34	5.48E-01	3.29E-01
Lead	1.28E+01	4.70	8.90	2.73E+00	1.44E+00	1.94E+01	4.70	8.90	4.13E+00	2.18E+00
Manganese	1.46E+01	51.50	515.00	2.84E-01	2.84E-02	4.55E+01	51.50	515.00	8.84E-01	8.84E-02
Mercury	4.53E-03	1.00	14.10	4.53E-03	3.22E-04	7.28E-03	1.00	14.10	7.28E-03	5.16E-04
Molybdenum	4.84E-02	0.26	2.60	1.86E-01	1.86E-02	8.36E-02	0.26	2.60	3.21E-01	3.21E-02
Nickel	4.11E-02	1.70	3.40	2.42E-02	1.21E-02	6.80E-02	1.70	3.40	4.00E-02	2.00E-02
Selenium	3.01E-02	0.14	0.22	2.10E-01	1.40E-01	5.39E-02	0.14	0.22	3.77E-01	2.51E-01
Silver	4.43E-02	6.02	60.20	7.36E-03	7.36E-04	5.74E-02	6.02	60.20	9.53E-03	9.53E-04
Thallium	8.87E-03	0.01	0.07	1.25E+00	1.25E-01	1.17E-02	0.01	0.07	1.65E+00	1.65E-01
Zinc	8.63E+00	75.40	754.00	1.14E-01	1.14E-02	1.43E+01	75.40	754.00	1.90E-01	1.90E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-50 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Yellow-Bellied Marmot Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas and Preferentially Exposed to Waste Pile Soils

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	5.70E-02	0.06	0.59	9.66E-01	9.66E-02	1.21E-01	0.06	0.59	2.06E+00	2.06E-01
Arsenic	2.34E-01	1.04	1.66	2.25E-01	1.41E-01	3.14E-01	1.04	1.66	3.02E-01	1.89E-01
Cadmium	3.58E-02	0.77	7.70	4.65E-02	4.65E-03	5.43E-02	0.77	7.70	7.05E-02	7.05E-03
Chromium	6.95E-02	2.40	24.00	2.90E-02	2.90E-03	8.39E-02	2.40	24.00	3.50E-02	3.50E-03
Copper	7.97E-01	5.60	9.34	1.42E-01	8.53E-02	1.14E+00	5.60	9.34	2.03E-01	1.22E-01
Lead	8.91E+00	4.70	8.90	1.90E+00	1.00E+00	1.79E+01	4.70	8.90	3.81E+00	2.01E+00
Manganese	1.11E+01	51.50	515.00	2.16E-01	2.16E-02	2.44E+01	51.50	515.00	4.74E-01	4.74E-02
Mercury	3.97E-03	1.00	14.10	3.97E-03	2.81E-04	4.55E-03	1.00	14.10	4.55E-03	3.23E-04
Molybdenum	5.02E-02	0.26	2.60	1.93E-01	1.93E-02	1.01E-01	0.26	2.60	3.90E-01	3.90E-02
Nickel	2.86E-02	1.70	3.40	1.68E-02	8.41E-03	4.45E-02	1.70	3.40	2.62E-02	1.31E-02
Selenium	2.67E-02	0.14	0.22	1.87E-01	1.24E-01	4.85E-02	0.14	0.22	3.39E-01	2.25E-01
Silver	3.63E-02	6.02	60.20	6.03E-03	6.03E-04	4.94E-02	6.02	60.20	8.20E-03	8.20E-04
Thallium	1.12E-02	0.01	0.07	1.58E+00	1.58E-01	2.21E-02	0.01	0.07	3.11E+00	3.11E-01
Zinc	7.16E+00	75.40	754.00	9.49E-02	9.49E-03	1.12E+01	75.40	754.00	1.49E-01	1.49E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-51 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Pocket Gopher Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	7.81E-02	0.06	0.59	1.32E+00	1.32E-01	1.62E-01	0.06	0.59	2.75E+00	2.75E-01
Arsenic	4.74E-01	1.04	1.66	4.56E-01	2.86E-01	6.80E-01	1.04	1.66	6.53E-01	4.09E-01
Cadmium	4.47E-01	0.77	7.70	5.81E-01	5.81E-02	7.41E-01	0.77	7.70	9.62E-01	9.62E-02
Chromium	3.32E-01	2.40	24.00	1.38E-01	1.38E-02	3.89E-01	2.40	24.00	1.62E-01	1.62E-02
Copper	2.94E+00	5.60	9.34	5.25E-01	3.15E-01	4.43E+00	5.60	9.34	7.92E-01	4.75E-01
Lead	2.19E+01	4.70	8.90	4.65E+00	2.46E+00	3.30E+01	4.70	8.90	7.02E+00	3.71E+00
Manganese	1.09E+02	51.50	515.00	2.11E+00	2.11E-01	3.46E+02	51.50	515.00	6.72E+00	6.72E-01
Mercury	1.53E-02	1.00	14.10	1.53E-02	1.09E-03	1.59E-02	1.00	14.10	1.59E-02	1.13E-03
Molybdenum	1.10E-01	0.26	2.60	4.24E-01	4.24E-02	2.61E-01	0.26	2.60	1.00E+00	1.00E-01
Nickel	2.10E-01	1.70	3.40	1.24E-01	6.19E-02	4.15E-01	1.70	3.40	2.44E-01	1.22E-01
Selenium	5.79E-02	0.14	0.22	4.05E-01	2.69E-01	1.21E-01	0.14	0.22	8.48E-01	5.64E-01
Silver	8.98E-02	6.02	60.20	1.49E-02	1.49E-03	1.28E-01	6.02	60.20	2.12E-02	2.12E-03
Thallium	5.76E-02	0.01	0.07	8.12E+00	8.12E-01	1.21E-01	0.01	0.07	1.71E+01	1.71E+00
Zinc	6.32E+01	75.40	754.00	8.38E-01	8.38E-02	1.10E+02	75.40	754.00	1.45E+00	1.45E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-52 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Pocket Gopher Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	3.50E-02	0.06	0.59	5.93E-01	5.93E-02	7.37E-02	0.06	0.59	1.25E+00	1.25E-01
Arsenic	2.96E-01	1.04	1.66	2.84E-01	1.78E-01	4.46E-01	1.04	1.66	4.29E-01	2.69E-01
Cadmium	2.40E-01	0.77	7.70	3.12E-01	3.12E-02	4.15E-01	0.77	7.70	5.39E-01	5.39E-02
Chromium	3.48E-01	2.40	24.00	1.45E-01	1.45E-02	4.11E-01	2.40	24.00	1.71E-01	1.71E-02
Copper	1.75E+00	5.60	9.34	3.12E-01	1.87E-01	2.57E+00	5.60	9.34	4.59E-01	2.75E-01
Lead	1.72E+01	4.70	8.90	3.65E+00	1.93E+00	3.30E+01	4.70	8.90	7.02E+00	3.71E+00
Manganese	5.95E+01	51.50	515.00	1.16E+00	1.16E-01	1.73E+02	51.50	515.00	3.36E+00	3.36E-01
Mercury	1.48E-02	1.00	14.10	1.48E-02	1.05E-03	1.58E-02	1.00	14.10	1.58E-02	1.12E-03
Molybdenum	2.19E-02	0.26	2.60	8.44E-02	8.44E-03	3.18E-02	0.26	2.60	1.22E-01	1.22E-02
Nickel	1.99E-01	1.70	3.40	1.17E-01	5.87E-02	3.33E-01	1.70	3.40	1.96E-01	9.80E-02
Selenium	4.25E-02	0.14	0.22	2.97E-01	1.98E-01	6.22E-02	0.14	0.22	4.35E-01	2.89E-01
Silver	6.30E-02	6.02	60.20	1.05E-02	1.05E-03	1.06E-01	6.02	60.20	1.75E-02	1.75E-03
Thallium	4.19E-02	0.01	0.07	5.89E+00	5.89E-01	6.02E-02	0.01	0.07	8.48E+00	8.48E-01
Zinc	2.30E+01	75.40	754.00	3.05E-01	3.05E-02	3.73E+01	75.40	754.00	4.95E-01	4.95E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-53 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Pocket Gopher Foraging Foraging in Low-Level Dose Response Category (DRC) Waste Pile										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	4.39E-02	0.06	0.59	7.44E-01	7.44E-02	7.89E-02	0.06	0.59	1.34E+00	1.34E-01
Arsenic	4.12E-01	1.04	1.66	3.96E-01	2.48E-01	5.93E-01	1.04	1.66	5.70E-01	3.57E-01
Cadmium	9.92E-02	0.77	7.70	1.29E-01	1.29E-02	1.61E-01	0.77	7.70	2.09E-01	2.09E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	3.62E-01	2.40	24.00	1.51E-01	1.51E-02
Copper	2.15E+00	5.60	9.34	3.85E-01	2.31E-01	3.28E+00	5.60	9.34	5.86E-01	3.52E-01
Lead	6.75E+00	4.70	8.90	1.44E+00	7.59E-01	9.33E+00	4.70	8.90	1.98E+00	1.05E+00
Manganese	3.49E+01	51.50	515.00	6.78E-01	6.78E-02	6.59E+01	51.50	515.00	1.28E+00	1.28E-01
Mercury	1.53E-02	1.00	14.10	1.53E-02	1.09E-03	1.82E-02	1.00	14.10	1.82E-02	1.29E-03
Molybdenum	1.57E-02	0.26	2.60	6.05E-02	6.05E-03	2.23E-02	0.26	2.60	8.57E-02	8.57E-03
Nickel	1.32E-01	1.70	3.40	7.75E-02	3.87E-02	2.01E-01	1.70	3.40	1.18E-01	5.91E-02
Selenium	4.69E-02	0.14	0.22	3.28E-01	2.18E-01	6.54E-02	0.14	0.22	4.57E-01	3.04E-01
Silver	4.39E-02	6.02	60.20	7.29E-03	7.29E-04	6.13E-02	6.02	60.20	1.02E-02	1.02E-03
Thallium	4.10E-02	0.01	0.07	5.77E+00	5.77E-01	5.85E-02	0.01	0.07	8.24E+00	8.24E-01
Zinc	1.22E+01	75.40	754.00	1.62E-01	1.62E-02	1.73E+01	75.40	754.00	2.29E-01	2.29E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-54 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Pocket Gopher Foraging in Vegetated Upland Habitats										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	2.63E-02	0.06	0.59	4.45E-01	4.45E-02	5.35E-02	0.06	0.59	9.06E-01	9.06E-02
Arsenic	1.49E-01	1.04	1.66	1.43E-01	8.98E-02	1.98E-01	1.04	1.66	1.91E-01	1.20E-01
Cadmium	6.78E-02	0.77	7.70	8.81E-02	8.81E-03	1.22E-01	0.77	7.70	1.58E-01	1.58E-02
Chromium	3.26E-01	2.40	24.00	1.36E-01	1.36E-02	3.64E-01	2.40	24.00	1.52E-01	1.52E-02
Copper	1.01E+00	5.60	9.34	1.81E-01	1.08E-01	1.18E+00	5.60	9.34	2.10E-01	1.26E-01
Lead	1.67E+00	4.70	8.90	3.55E-01	1.88E-01	2.25E+00	4.70	8.90	4.78E-01	2.52E-01
Manganese	3.14E+01	51.50	515.00	6.09E-01	6.09E-02	5.61E+01	51.50	515.00	1.09E+00	1.09E-01
Mercury	1.48E-02	1.00	14.10	1.48E-02	1.05E-03	1.56E-02	1.00	14.10	1.56E-02	1.11E-03
Molybdenum	2.91E-02	0.26	2.60	1.12E-01	1.12E-02	5.48E-02	0.26	2.60	2.11E-01	2.11E-02
Nickel	1.17E-01	1.70	3.40	6.90E-02	3.45E-02	1.90E-01	1.70	3.40	1.12E-01	5.58E-02
Selenium	3.88E-02	0.14	0.22	2.72E-01	1.81E-01	4.41E-02	0.14	0.22	3.09E-01	2.05E-01
Silver	2.51E-02	6.02	60.20	4.16E-03	4.16E-04	3.62E-02	6.02	60.20	6.01E-03	6.01E-04
Thallium	3.68E-02	0.01	0.07	5.18E+00	5.18E-01	4.03E-02	0.01	0.07	5.68E+00	5.68E-01
Zinc	9.14E+00	75.40	754.00	1.21E-01	1.21E-02	1.26E+01	75.40	754.00	1.67E-01	1.67E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-55 EU-01 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Lower Mainstem Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	9.75E-01	2.24	22.40	4.35E-01	4.35E-02	2.39E+00	2.24	22.40	1.07E+00	1.07E-01
Barium	5.37E+00	73.50	131.00	7.30E-02	4.10E-02	1.17E+01	73.50	131.00	1.59E-01	8.93E-02
Cadmium	3.90E-01	1.47	14.70	2.65E-01	2.65E-02	8.00E-01	1.47	14.70	5.44E-01	5.44E-02
Chromium	4.55E-01	2.66	26.60	1.71E-01	1.71E-02	8.41E-01	2.66	26.60	3.16E-01	3.16E-02
Copper	4.80E+00	4.05	12.10	1.19E+00	3.97E-01	6.91E+00	4.05	12.10	1.71E+00	5.71E-01
Lead	1.01E+01	1.63	3.26	6.22E+00	3.11E+00	1.99E+01	1.63	3.26	1.22E+01	6.11E+00
Manganese	6.19E+01	179.00	1790.00	3.46E-01	3.46E-02	9.78E+01	179.00	1790.00	5.46E-01	5.46E-02
Mercury	1.16E-03	0.45	0.90	2.57E-03	1.28E-03	2.17E-03	0.45	0.90	4.83E-03	2.42E-03
Molybdenum	2.44E-02	3.50	35.00	6.98E-03	6.98E-04	3.24E-02	3.50	35.00	9.25E-03	9.25E-04
Nickel	1.42E-01	6.71	67.10	2.11E-02	2.11E-03	2.26E-01	6.71	67.10	3.36E-02	3.36E-03
Selenium	1.23E-01	0.29	0.58	4.24E-01	2.12E-01	2.22E-01	0.29	0.58	7.64E-01	3.83E-01
Silver	7.05E-02	2.02	20.20	3.49E-02	3.49E-03	1.40E-01	2.02	20.20	6.92E-02	6.92E-03
Vanadium	4.86E-01	0.34	0.69	1.41E+00	7.06E-01	1.11E+00	0.34	0.69	3.24E+00	1.62E+00
Zinc	4.63E+01	66.10	661.00	7.00E-01	7.00E-02	7.13E+01	66.10	661.00	1.08E+00	1.08E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-56 EU-02 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Lower Mainstem Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	3.50E-01	2.24	22.40	1.56E-01	1.56E-02	9.77E-01	2.24	22.40	4.36E-01	4.36E-02
Barium	3.35E+00	73.50	131.00	4.56E-02	2.56E-02	5.04E+00	73.50	131.00	6.85E-02	3.84E-02
Cadmium	3.84E-01	1.47	14.70	2.61E-01	2.61E-02	7.87E-01	1.47	14.70	5.36E-01	5.36E-02
Chromium	4.01E-01	2.66	26.60	1.51E-01	1.51E-02	5.55E-01	2.66	26.60	2.09E-01	2.09E-02
Copper	4.09E+00	4.05	12.10	1.01E+00	3.38E-01	5.47E+00	4.05	12.10	1.35E+00	4.52E-01
Lead	3.18E+00	1.63	3.26	1.95E+00	9.74E-01	5.81E+00	1.63	3.26	3.57E+00	1.78E+00
Manganese	5.75E+01	179.00	1790.00	3.21E-01	3.21E-02	8.95E+01	179.00	1790.00	5.00E-01	5.00E-02
Mercury	6.12E-04	0.45	0.90	1.36E-03	6.80E-04	1.18E-03	0.45	0.90	2.62E-03	1.31E-03
Molybdenum	2.56E-02	3.50	35.00	7.32E-03	7.32E-04	3.76E-02	3.50	35.00	1.07E-02	1.07E-03
Nickel	1.16E-01	6.71	67.10	1.72E-02	1.72E-03	2.02E-01	6.71	67.10	3.00E-02	3.00E-03
Selenium	1.19E-01	0.29	0.58	4.12E-01	2.06E-01	2.16E-01	0.29	0.58	7.44E-01	3.73E-01
Silver	6.83E-02	2.02	20.20	3.38E-02	3.38E-03	1.34E-01	2.02	20.20	6.66E-02	6.66E-03
Vanadium	3.36E-01	0.34	0.69	9.76E-01	4.88E-01	4.74E-01	0.34	0.69	1.38E+00	6.89E-01
Zinc	4.52E+01	66.10	661.00	6.83E-01	6.83E-02	6.99E+01	66.10	661.00	1.06E+00	1.06E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-57 EU-03 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Mainstem Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	9.28E-01	2.24	22.40	4.14E-01	4.14E-02	2.36E+00	2.24	22.40	1.06E+00	1.06E-01
Barium	4.89E+00	73.50	131.00	6.65E-02	3.73E-02	1.11E+01	73.50	131.00	1.51E-01	8.45E-02
Cadmium	3.87E-01	1.47	14.70	2.63E-01	2.63E-02	7.95E-01	1.47	14.70	5.41E-01	5.41E-02
Chromium	4.50E-01	2.66	26.60	1.69E-01	1.69E-02	8.40E-01	2.66	26.60	3.16E-01	3.16E-02
Copper	4.12E+00	4.05	12.10	1.02E+00	3.40E-01	5.55E+00	4.05	12.10	1.37E+00	4.59E-01
Lead	9.87E+00	1.63	3.26	6.05E+00	3.03E+00	2.00E+01	1.63	3.26	1.23E+01	6.14E+00
Manganese	6.77E+01	179.00	1790.00	3.78E-01	3.78E-02	1.45E+02	179.00	1790.00	8.09E-01	8.09E-02
Mercury	3.89E-04	0.45	0.90	8.64E-04	4.32E-04	6.66E-04	0.45	0.90	1.48E-03	7.40E-04
Molybdenum	1.38E-02	3.50	35.00	3.94E-03	3.94E-04	1.82E-02	3.50	35.00	5.20E-03	5.20E-04
Nickel	1.33E-01	6.71	67.10	1.99E-02	1.99E-03	2.18E-01	6.71	67.10	3.24E-02	3.24E-03
Selenium	1.17E-01	0.29	0.58	4.03E-01	2.02E-01	2.10E-01	0.29	0.58	7.25E-01	3.63E-01
Silver	6.88E-02	2.02	20.20	3.41E-02	3.41E-03	1.35E-01	2.02	20.20	6.67E-02	6.67E-03
Vanadium	3.64E-01	0.34	0.69	1.06E+00	5.29E-01	7.10E-01	0.34	0.69	2.06E+00	1.03E+00
Zinc	4.35E+01	66.10	661.00	6.58E-01	6.58E-02	6.74E+01	66.10	661.00	1.02E+00	1.02E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-58 EU-3.5 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Browns Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.02E+00	2.24	22.40	4.57E-01	4.57E-02	2.64E+00	2.24	22.40	1.18E+00	1.18E-01
Barium	4.95E+00	73.50	131.00	6.74E-02	3.78E-02	1.10E+01	73.50	131.00	1.50E-01	8.43E-02
Cadmium	3.84E-01	1.47	14.70	2.62E-01	2.62E-02	7.87E-01	1.47	14.70	5.35E-01	5.35E-02
Chromium	4.50E-01	2.66	26.60	1.69E-01	1.69E-02	8.40E-01	2.66	26.60	3.16E-01	3.16E-02
Copper	4.06E+00	4.05	12.10	1.00E+00	3.35E-01	5.50E+00	4.05	12.10	1.36E+00	4.54E-01
Lead	1.19E+01	1.63	3.26	7.32E+00	3.66E+00	3.61E+01	1.63	3.26	2.21E+01	1.11E+01
Manganese	6.21E+01	179.00	1790.00	3.47E-01	3.47E-02	9.83E+01	179.00	1790.00	5.49E-01	5.49E-02
Mercury	1.59E-03	0.45	0.90	3.52E-03	1.76E-03	6.26E-03	0.45	0.90	1.39E-02	6.95E-03
Molybdenum	1.22E-02	3.50	35.00	3.50E-03	3.50E-04	1.79E-02	3.50	35.00	5.13E-03	5.13E-04
Nickel	1.52E-01	6.71	67.10	2.26E-02	2.26E-03	2.46E-01	6.71	67.10	3.67E-02	3.67E-03
Selenium	1.18E-01	0.29	0.58	4.06E-01	2.03E-01	2.11E-01	0.29	0.58	7.27E-01	3.64E-01
Silver	7.70E-02	2.02	20.20	3.81E-02	3.81E-03	1.77E-01	2.02	20.20	8.75E-02	8.75E-03
Vanadium	3.68E-01	0.34	0.69	1.07E+00	5.35E-01	7.14E-01	0.34	0.69	2.08E+00	1.04E+00
Zinc	4.42E+01	66.10	661.00	6.69E-01	6.69E-02	6.90E+01	66.10	661.00	1.04E+00	1.04E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-59 EU-04 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Upper Mainstem Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.58E+00	2.24	22.40	7.06E-01	7.06E-02	5.30E+00	2.24	22.40	2.37E+00	2.37E-01
Barium	5.03E+00	73.50	131.00	6.85E-02	3.84E-02	1.13E+01	73.50	131.00	1.53E-01	8.60E-02
Cadmium	5.52E-01	1.47	14.70	3.75E-01	3.75E-02	9.77E-01	1.47	14.70	6.64E-01	6.64E-02
Chromium	4.50E-01	2.66	26.60	1.69E-01	1.69E-02	8.27E-01	2.66	26.60	3.11E-01	3.11E-02
Copper	6.08E+00	4.05	12.10	1.50E+00	5.03E-01	1.16E+01	4.05	12.10	2.85E+00	9.55E-01
Lead	1.02E+01	1.63	3.26	6.27E+00	3.13E+00	2.47E+01	1.63	3.26	1.52E+01	7.58E+00
Manganese	1.72E+02	179.00	1790.00	9.59E-01	9.59E-02	9.73E+02	179.00	1790.00	5.43E+00	5.43E-01
Mercury	1.05E-03	0.45	0.90	2.33E-03	1.17E-03	2.71E-03	0.45	0.90	6.02E-03	3.01E-03
Molybdenum	8.24E-03	3.50	35.00	2.35E-03	2.35E-04	1.09E-02	3.50	35.00	3.10E-03	3.10E-04
Nickel	3.77E-01	6.71	67.10	5.61E-02	5.61E-03	1.42E+00	6.71	67.10	2.12E-01	2.12E-02
Selenium	1.17E-01	0.29	0.58	4.02E-01	2.01E-01	2.09E-01	0.29	0.58	7.20E-01	3.61E-01
Silver	6.90E-02	2.02	20.20	3.41E-02	3.41E-03	1.37E-01	2.02	20.20	6.77E-02	6.77E-03
Vanadium	3.56E-01	0.34	0.69	1.04E+00	5.18E-01	6.96E-01	0.34	0.69	2.02E+00	1.01E+00
Zinc	6.01E+01	66.10	661.00	9.10E-01	9.10E-02	1.08E+02	66.10	661.00	1.63E+00	1.63E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-60 EU-05 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in South Fork Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	8.83E-01	2.24	22.40	3.94E-01	3.94E-02	2.25E+00	2.24	22.40	1.00E+00	1.00E-01
Barium	5.20E+00	73.50	131.00	7.08E-02	3.97E-02	1.13E+01	73.50	131.00	1.54E-01	8.62E-02
Cadmium	5.00E-01	1.47	14.70	3.40E-01	3.40E-02	1.85E+00	1.47	14.70	1.26E+00	1.26E-01
Chromium	4.57E-01	2.66	26.60	1.72E-01	1.72E-02	8.36E-01	2.66	26.60	3.14E-01	3.14E-02
Copper	6.38E+00	4.05	12.10	1.57E+00	5.27E-01	2.64E+01	4.05	12.10	6.52E+00	2.18E+00
Lead	1.09E+01	1.63	3.26	6.67E+00	3.34E+00	2.50E+01	1.63	3.26	1.54E+01	7.68E+00
Manganese	9.67E+01	179.00	1790.00	5.40E-01	5.40E-02	2.60E+02	179.00	1790.00	1.45E+00	1.45E-01
Mercury	3.16E-04	0.45	0.90	7.01E-04	3.51E-04	6.75E-04	0.45	0.90	1.50E-03	7.50E-04
Molybdenum	1.16E-02	3.50	35.00	3.31E-03	3.31E-04	1.61E-02	3.50	35.00	4.61E-03	4.61E-04
Nickel	1.83E-01	6.71	67.10	2.72E-02	2.72E-03	3.50E-01	6.71	67.10	5.22E-02	5.22E-03
Selenium	1.19E-01	0.29	0.58	4.11E-01	2.06E-01	2.15E-01	0.29	0.58	7.40E-01	3.71E-01
Silver	8.33E-02	2.02	20.20	4.13E-02	4.13E-03	1.92E-01	2.02	20.20	9.52E-02	9.52E-03
Vanadium	4.02E-01	0.34	0.69	1.17E+00	5.84E-01	7.75E-01	0.34	0.69	2.25E+00	1.13E+00
Zinc	5.35E+01	66.10	661.00	8.10E-01	8.10E-02	1.07E+02	66.10	661.00	1.61E+00	1.61E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-61 EU-06 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Middle Fork Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	2.65E-01	2.24	22.40	1.19E-01	1.19E-02	8.03E-01	2.24	22.40	3.59E-01	3.59E-02
Barium	2.91E+00	73.50	131.00	3.97E-02	2.23E-02	4.32E+00	73.50	131.00	5.87E-02	3.29E-02
Cadmium	3.84E-01	1.47	14.70	2.61E-01	2.61E-02	7.86E-01	1.47	14.70	5.35E-01	5.35E-02
Chromium	3.95E-01	2.66	26.60	1.49E-01	1.49E-02	5.46E-01	2.66	26.60	2.05E-01	2.05E-02
Copper	3.88E+00	4.05	12.10	9.57E-01	3.20E-01	5.11E+00	4.05	12.10	1.26E+00	4.22E-01
Lead	2.29E+00	1.63	3.26	1.41E+00	7.03E-01	3.99E+00	1.63	3.26	2.45E+00	1.22E+00
Manganese	6.58E+01	179.00	1790.00	3.68E-01	3.68E-02	1.02E+02	179.00	1790.00	5.72E-01	5.72E-02
Mercury	2.93E-04	0.45	0.90	6.51E-04	3.25E-04	3.68E-04	0.45	0.90	8.19E-04	4.09E-04
Molybdenum	4.16E-02	3.50	35.00	1.19E-02	1.19E-03	6.43E-02	3.50	35.00	1.84E-02	1.84E-03
Nickel	1.26E-01	6.71	67.10	1.88E-02	1.88E-03	2.19E-01	6.71	67.10	3.26E-02	3.26E-03
Selenium	1.23E-01	0.29	0.58	4.23E-01	2.12E-01	2.16E-01	0.29	0.58	7.45E-01	3.73E-01
Silver	6.84E-02	2.02	20.20	3.39E-02	3.39E-03	1.33E-01	2.02	20.20	6.59E-02	6.59E-03
Vanadium	3.66E-01	0.34	0.69	1.06E+00	5.32E-01	5.07E-01	0.34	0.69	1.47E+00	7.37E-01
Zinc	4.34E+01	66.10	661.00	6.56E-01	6.56E-02	6.69E+01	66.10	661.00	1.01E+00	1.01E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-62 EU-R1 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Mill Creek Reference Area										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	6.77E-01	2.24	22.40	3.02E-01	3.02E-02	1.79E+00	2.24	22.40	7.98E-01	7.98E-02
Barium	1.97E+00	73.50	131.00	2.68E-02	1.50E-02	2.70E+00	73.50	131.00	3.68E-02	2.06E-02
Cadmium	2.77E-01	1.47	14.70	1.88E-01	1.88E-02	5.82E-01	1.47	14.70	3.96E-01	3.96E-02
Chromium	4.05E-01	2.66	26.60	1.52E-01	1.52E-02	5.56E-01	2.66	26.60	2.09E-01	2.09E-02
Copper	5.31E+00	4.05	12.10	1.31E+00	4.39E-01	8.99E+00	4.05	12.10	2.22E+00	7.43E-01
Lead	3.24E+00	1.63	3.26	1.99E+00	9.94E-01	7.59E+00	1.63	3.26	4.65E+00	2.33E+00
Manganese	2.30E+01	179.00	1790.00	1.28E-01	1.28E-02	3.65E+01	179.00	1790.00	2.04E-01	2.04E-02
Mercury	8.31E-04	0.45	0.90	1.85E-03	9.23E-04	2.19E-03	0.45	0.90	4.87E-03	2.43E-03
Molybdenum	2.72E-02	3.50	35.00	7.77E-03	7.77E-04	4.38E-02	3.50	35.00	1.25E-02	1.25E-03
Nickel	9.80E-02	6.71	67.10	1.46E-02	1.46E-03	1.48E-01	6.71	67.10	2.21E-02	2.21E-03
Selenium	7.24E-02	0.29	0.58	2.50E-01	1.25E-01	1.53E-01	0.29	0.58	5.28E-01	2.64E-01
Silver	3.06E-02	2.02	20.20	1.51E-02	1.51E-03	4.82E-02	2.02	20.20	2.39E-02	2.39E-03
Vanadium	2.28E-01	0.34	0.69	6.64E-01	3.32E-01	3.13E-01	0.34	0.69	9.10E-01	4.55E-01
Zinc	2.85E+01	66.10	661.00	4.31E-01	4.31E-02	3.48E+01	66.10	661.00	5.26E-01	5.26E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-63 EU-07 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Animas River Below Cunningham Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	9.51E-01	2.24	22.40	4.24E-01	4.24E-02	2.53E+00	2.24	22.40	1.13E+00	1.13E-01
Barium	4.86E+00	73.50	131.00	6.62E-02	3.71E-02	1.11E+01	73.50	131.00	1.51E-01	8.45E-02
Cadmium	6.70E-01	1.47	14.70	4.56E-01	4.56E-02	1.67E+00	1.47	14.70	1.14E+00	1.14E-01
Chromium	4.55E-01	2.66	26.60	1.71E-01	1.71E-02	8.40E-01	2.66	26.60	3.16E-01	3.16E-02
Copper	9.88E+00	4.05	12.10	2.44E+00	8.16E-01	2.75E+01	4.05	12.10	6.78E+00	2.27E+00
Lead	7.37E+01	1.63	3.26	4.52E+01	2.26E+01	3.49E+02	1.63	3.26	2.14E+02	1.07E+02
Manganese	1.73E+02	179.00	1790.00	9.67E-01	9.67E-02	9.75E+02	179.00	1790.00	5.45E+00	5.45E-01
Mercury	9.24E-03	0.45	0.90	2.05E-02	1.03E-02	4.53E-02	0.45	0.90	1.01E-01	5.03E-02
Molybdenum	2.01E-01	3.50	35.00	5.75E-02	5.75E-03	8.91E-01	3.50	35.00	2.55E-01	2.55E-02
Nickel	3.76E-01	6.71	67.10	5.60E-02	5.60E-03	1.43E+00	6.71	67.10	2.13E-01	2.13E-02
Selenium	1.30E-01	0.29	0.58	4.48E-01	2.24E-01	2.35E-01	0.29	0.58	8.10E-01	4.06E-01
Silver	2.57E-01	2.02	20.20	1.27E-01	1.27E-02	8.60E-01	2.02	20.20	4.26E-01	4.26E-02
Vanadium	3.57E-01	0.34	0.69	1.04E+00	5.18E-01	7.05E-01	0.34	0.69	2.05E+00	1.03E+00
Zinc	8.07E+01	66.10	661.00	1.22E+00	1.22E-01	2.31E+02	66.10	661.00	3.50E+00	3.50E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-64 EU-08 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Cunningham Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	8.34E-01	2.24	22.40	3.72E-01	3.72E-02	2.18E+00	2.24	22.40	9.75E-01	9.75E-02
Barium	4.96E+00	73.50	131.00	6.75E-02	3.79E-02	1.12E+01	73.50	131.00	1.53E-01	8.56E-02
Cadmium	3.92E-01	1.47	14.70	2.66E-01	2.66E-02	7.95E-01	1.47	14.70	5.41E-01	5.41E-02
Chromium	4.45E-01	2.66	26.60	1.67E-01	1.67E-02	8.40E-01	2.66	26.60	3.16E-01	3.16E-02
Copper	4.51E+00	4.05	12.10	1.11E+00	3.73E-01	6.97E+00	4.05	12.10	1.72E+00	5.76E-01
Lead	1.34E+01	1.63	3.26	8.21E+00	4.10E+00	2.46E+01	1.63	3.26	1.51E+01	7.54E+00
Manganese	6.51E+01	179.00	1790.00	3.64E-01	3.64E-02	9.91E+01	179.00	1790.00	5.54E-01	5.54E-02
Mercury	3.10E-04	0.45	0.90	6.88E-04	3.44E-04	5.09E-04	0.45	0.90	1.13E-03	5.65E-04
Molybdenum	3.37E-02	3.50	35.00	9.64E-03	9.64E-04	5.39E-02	3.50	35.00	1.54E-02	1.54E-03
Nickel	1.37E-01	6.71	67.10	2.04E-02	2.04E-03	2.19E-01	6.71	67.10	3.27E-02	3.27E-03
Selenium	1.15E-01	0.29	0.58	3.95E-01	1.98E-01	2.09E-01	0.29	0.58	7.19E-01	3.60E-01
Silver	7.54E-02	2.02	20.20	3.73E-02	3.73E-03	1.45E-01	2.02	20.20	7.16E-02	7.16E-03
Vanadium	3.50E-01	0.34	0.69	1.02E+00	5.08E-01	7.28E-01	0.34	0.69	2.12E+00	1.06E+00
Zinc	4.55E+01	66.10	661.00	6.88E-01	6.88E-02	6.96E+01	66.10	661.00	1.05E+00	1.05E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-65 EU-09 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Animas River Below Minnie Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	8.99E-01	2.24	22.40	4.01E-01	4.01E-02	2.24E+00	2.24	22.40	1.00E+00	1.00E-01
Barium	5.14E+00	73.50	131.00	6.99E-02	3.92E-02	1.12E+01	73.50	131.00	1.53E-01	8.56E-02
Cadmium	5.93E-01	1.47	14.70	4.03E-01	4.03E-02	1.03E+00	1.47	14.70	7.03E-01	7.03E-02
Chromium	4.43E-01	2.66	26.60	1.67E-01	1.67E-02	8.18E-01	2.66	26.60	3.08E-01	3.08E-02
Copper	8.22E+00	4.05	12.10	2.03E+00	6.80E-01	1.29E+01	4.05	12.10	3.17E+00	1.06E+00
Lead	3.52E+01	1.63	3.26	2.16E+01	1.08E+01	5.44E+01	1.63	3.26	3.34E+01	1.67E+01
Manganese	2.31E+02	179.00	1790.00	1.29E+00	1.29E-01	1.06E+03	179.00	1790.00	5.92E+00	5.92E-01
Mercury	1.61E-03	0.45	0.90	3.57E-03	1.79E-03	2.39E-03	0.45	0.90	5.32E-03	2.66E-03
Molybdenum	3.10E-02	3.50	35.00	8.86E-03	8.86E-04	4.60E-02	3.50	35.00	1.31E-02	1.31E-03
Nickel	3.69E-01	6.71	67.10	5.50E-02	5.50E-03	1.41E+00	6.71	67.10	2.10E-01	2.10E-02
Selenium	1.17E-01	0.29	0.58	4.04E-01	2.02E-01	2.09E-01	0.29	0.58	7.19E-01	3.60E-01
Silver	1.49E-01	2.02	20.20	7.35E-02	7.35E-03	2.47E-01	2.02	20.20	1.22E-01	1.22E-02
Vanadium	3.49E-01	0.34	0.69	1.01E+00	5.07E-01	6.79E-01	0.34	0.69	1.97E+00	9.87E-01
Zinc	6.63E+01	66.10	661.00	1.00E+00	1.00E-01	1.13E+02	66.10	661.00	1.71E+00	1.71E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-66 EU-10 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Animas River Below South Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.05E+00	2.24	22.40	4.67E-01	4.67E-02	2.37E+00	2.24	22.40	1.06E+00	1.06E-01
Barium	5.09E+00	73.50	131.00	6.93E-02	3.89E-02	1.11E+01	73.50	131.00	1.52E-01	8.50E-02
Cadmium	6.39E-01	1.47	14.70	4.35E-01	4.35E-02	1.07E+00	1.47	14.70	7.28E-01	7.28E-02
Chromium	4.56E-01	2.66	26.60	1.71E-01	1.71E-02	8.30E-01	2.66	26.60	3.12E-01	3.12E-02
Copper	1.13E+01	4.05	12.10	2.79E+00	9.34E-01	1.61E+01	4.05	12.10	3.97E+00	1.33E+00
Lead	4.70E+01	1.63	3.26	2.88E+01	1.44E+01	6.35E+01	1.63	3.26	3.90E+01	1.95E+01
Manganese	3.48E+02	179.00	1790.00	1.94E+00	1.94E-01	1.24E+03	179.00	1790.00	6.92E+00	6.92E-01
Mercury	1.54E-03	0.45	0.90	3.42E-03	1.71E-03	1.94E-03	0.45	0.90	4.31E-03	2.16E-03
Molybdenum	8.38E-02	3.50	35.00	2.40E-02	2.40E-03	1.37E-01	3.50	35.00	3.91E-02	3.91E-03
Nickel	3.79E-01	6.71	67.10	5.65E-02	5.65E-03	1.42E+00	6.71	67.10	2.12E-01	2.12E-02
Selenium	1.16E-01	0.29	0.58	4.02E-01	2.01E-01	2.08E-01	0.29	0.58	7.17E-01	3.59E-01
Silver	2.06E-01	2.02	20.20	1.02E-01	1.02E-02	3.13E-01	2.02	20.20	1.55E-01	1.55E-02
Vanadium	3.39E-01	0.34	0.69	9.87E-01	4.93E-01	6.61E-01	0.34	0.69	1.92E+00	9.60E-01
Zinc	7.42E+01	66.10	661.00	1.12E+00	1.12E-01	1.20E+02	66.10	661.00	1.81E+00	1.81E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-67 EU-11 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Upper South Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	3.59E-01	2.24	22.40	1.60E-01	1.60E-02	8.76E-01	2.24	22.40	3.91E-01	3.91E-02
Barium	2.87E+00	73.50	131.00	3.91E-02	2.19E-02	4.18E+00	73.50	131.00	5.69E-02	3.19E-02
Cadmium	3.83E-01	1.47	14.70	2.60E-01	2.60E-02	7.82E-01	1.47	14.70	5.32E-01	5.32E-02
Chromium	4.35E-01	2.66	26.60	1.64E-01	1.64E-02	5.81E-01	2.66	26.60	2.19E-01	2.19E-02
Copper	4.32E+00	4.05	12.10	1.07E+00	3.57E-01	5.53E+00	4.05	12.10	1.37E+00	4.57E-01
Lead	2.67E+00	1.63	3.26	1.64E+00	8.18E-01	4.23E+00	1.63	3.26	2.59E+00	1.30E+00
Manganese	6.26E+01	179.00	1790.00	3.50E-01	3.50E-02	9.29E+01	179.00	1790.00	5.19E-01	5.19E-02
Mercury	7.25E-05	0.45	0.90	1.61E-04	8.05E-05	7.25E-05	0.45	0.90	1.61E-04	8.05E-05
Molybdenum	4.08E-02	3.50	35.00	1.16E-02	1.16E-03	4.08E-02	3.50	35.00	1.16E-02	1.16E-03
Nickel	1.46E-01	6.71	67.10	2.18E-02	2.18E-03	2.28E-01	6.71	67.10	3.40E-02	3.40E-03
Selenium	1.28E-01	0.29	0.58	4.40E-01	2.20E-01	2.18E-01	0.29	0.58	7.51E-01	3.76E-01
Silver	6.77E-02	2.02	20.20	3.35E-02	3.35E-03	1.32E-01	2.02	20.20	6.52E-02	6.52E-03
Vanadium	3.96E-01	0.34	0.69	1.15E+00	5.76E-01	5.00E-01	0.34	0.69	1.45E+00	7.27E-01
Zinc	4.35E+01	66.10	661.00	6.58E-01	6.58E-02	6.69E+01	66.10	661.00	1.01E+00	1.01E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-68 EU-12 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Eureka Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	9.09E-01	2.24	22.40	4.06E-01	4.06E-02	2.26E+00	2.24	22.40	1.01E+00	1.01E-01
Barium	5.13E+00	73.50	131.00	6.97E-02	3.91E-02	1.14E+01	73.50	131.00	1.55E-01	8.71E-02
Cadmium	5.88E-01	1.47	14.70	4.00E-01	4.00E-02	1.04E+00	1.47	14.70	7.05E-01	7.05E-02
Chromium	4.70E-01	2.66	26.60	1.77E-01	1.77E-02	8.46E-01	2.66	26.60	3.18E-01	3.18E-02
Copper	6.48E+00	4.05	12.10	1.60E+00	5.35E-01	1.09E+01	4.05	12.10	2.70E+00	9.04E-01
Lead	1.26E+01	1.63	3.26	7.74E+00	3.87E+00	2.29E+01	1.63	3.26	1.40E+01	7.01E+00
Manganese	2.10E+02	179.00	1790.00	1.17E+00	1.17E-01	1.03E+03	179.00	1790.00	5.75E+00	5.75E-01
Mercury	7.63E-04	0.45	0.90	1.69E-03	8.47E-04	1.16E-03	0.45	0.90	2.57E-03	1.28E-03
Molybdenum	2.65E-02	3.50	35.00	7.57E-03	7.57E-04	3.81E-02	3.50	35.00	1.09E-02	1.09E-03
Nickel	4.07E-01	6.71	67.10	6.07E-02	6.07E-03	1.45E+00	6.71	67.10	2.16E-01	2.16E-02
Selenium	1.25E-01	0.29	0.58	4.32E-01	2.16E-01	2.21E-01	0.29	0.58	7.61E-01	3.81E-01
Silver	7.77E-02	2.02	20.20	3.85E-02	3.85E-03	1.47E-01	2.02	20.20	7.29E-02	7.29E-03
Vanadium	4.55E-01	0.34	0.69	1.32E+00	6.61E-01	8.00E-01	0.34	0.69	2.33E+00	1.16E+00
Zinc	6.79E+01	66.10	661.00	1.03E+00	1.03E-01	1.27E+02	66.10	661.00	1.91E+00	1.91E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-69 EU-13 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Lower South Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	9.73E-01	2.24	22.40	4.34E-01	4.34E-02	2.34E+00	2.24	22.40	1.04E+00	1.04E-01
Barium	5.42E+00	73.50	131.00	7.37E-02	4.13E-02	1.15E+01	73.50	131.00	1.56E-01	8.78E-02
Cadmium	6.36E-01	1.47	14.70	4.33E-01	4.33E-02	1.07E+00	1.47	14.70	7.30E-01	7.30E-02
Chromium	5.46E-01	2.66	26.60	2.05E-01	2.05E-02	9.90E-01	2.66	26.60	3.72E-01	3.72E-02
Copper	7.93E+00	4.05	12.10	1.96E+00	6.55E-01	1.22E+01	4.05	12.10	3.01E+00	1.01E+00
Lead	2.74E+01	1.63	3.26	1.68E+01	8.40E+00	4.85E+01	1.63	3.26	2.98E+01	1.49E+01
Manganese	2.26E+02	179.00	1790.00	1.26E+00	1.26E-01	1.05E+03	179.00	1790.00	5.85E+00	5.85E-01
Mercury	7.44E-03	0.45	0.90	1.65E-02	8.27E-03	1.43E-02	0.45	0.90	3.19E-02	1.59E-02
Molybdenum	5.35E-02	3.50	35.00	1.53E-02	1.53E-03	5.61E-02	3.50	35.00	1.60E-02	1.60E-03
Nickel	6.21E-01	6.71	67.10	9.25E-02	9.25E-03	1.85E+00	6.71	67.10	2.76E-01	2.76E-02
Selenium	1.27E-01	0.29	0.58	4.37E-01	2.19E-01	2.23E-01	0.29	0.58	7.69E-01	3.85E-01
Silver	9.23E-02	2.02	20.20	4.57E-02	4.57E-03	1.73E-01	2.02	20.20	8.58E-02	8.58E-03
Vanadium	4.34E-01	0.34	0.69	1.26E+00	6.32E-01	7.63E-01	0.34	0.69	2.22E+00	1.11E+00
Zinc	8.22E+01	66.10	661.00	1.24E+00	1.24E-01	1.29E+02	66.10	661.00	1.95E+00	1.95E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-70 EU-14 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Animas River Below West Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.17E+00	2.24	22.40	5.22E-01	5.22E-02	2.67E+00	2.24	22.40	1.19E+00	1.19E-01
Barium	5.02E+00	73.50	131.00	6.82E-02	3.83E-02	1.15E+01	73.50	131.00	1.56E-01	8.74E-02
Cadmium	5.92E-01	1.47	14.70	4.03E-01	4.03E-02	1.04E+00	1.47	14.70	7.05E-01	7.05E-02
Chromium	4.58E-01	2.66	26.60	1.72E-01	1.72E-02	8.39E-01	2.66	26.60	3.15E-01	3.15E-02
Copper	6.53E+00	4.05	12.10	1.61E+00	5.40E-01	1.11E+01	4.05	12.10	2.75E+00	9.21E-01
Lead	2.83E+01	1.63	3.26	1.73E+01	8.67E+00	9.60E+01	1.63	3.26	5.89E+01	2.94E+01
Manganese	1.94E+02	179.00	1790.00	1.09E+00	1.09E-01	1.04E+03	179.00	1790.00	5.81E+00	5.81E-01
Mercury	1.47E-03	0.45	0.90	3.27E-03	1.64E-03	2.73E-03	0.45	0.90	6.07E-03	3.04E-03
Molybdenum	4.45E-02	3.50	35.00	1.27E-02	1.27E-03	5.61E-02	3.50	35.00	1.60E-02	1.60E-03
Nickel	3.75E-01	6.71	67.10	5.59E-02	5.59E-03	1.42E+00	6.71	67.10	2.11E-01	2.11E-02
Selenium	1.22E-01	0.29	0.58	4.19E-01	2.10E-01	2.17E-01	0.29	0.58	7.48E-01	3.74E-01
Silver	1.09E-01	2.02	20.20	5.41E-02	5.41E-03	3.30E-01	2.02	20.20	1.63E-01	1.63E-02
Vanadium	3.42E-01	0.34	0.69	9.93E-01	4.97E-01	7.03E-01	0.34	0.69	2.04E+00	1.02E+00
Zinc	7.16E+01	66.10	661.00	1.08E+00	1.08E-01	1.26E+02	66.10	661.00	1.91E+00	1.91E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-71 EU-15 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Lower West Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.19E+00	2.24	22.40	5.30E-01	5.30E-02	3.12E+00	2.24	22.40	1.39E+00	1.39E-01
Barium	5.39E+00	73.50	131.00	7.34E-02	4.12E-02	1.26E+01	73.50	131.00	1.71E-01	9.59E-02
Cadmium	8.14E-01	1.47	14.70	5.54E-01	5.54E-02	2.59E+00	1.47	14.70	1.76E+00	1.76E-01
Chromium	4.55E-01	2.66	26.60	1.71E-01	1.71E-02	8.32E-01	2.66	26.60	3.13E-01	3.13E-02
Copper	9.28E+00	4.05	12.10	2.29E+00	7.67E-01	2.96E+01	4.05	12.10	7.32E+00	2.45E+00
Lead	2.00E+01	1.63	3.26	1.22E+01	6.12E+00	6.07E+01	1.63	3.26	3.72E+01	1.86E+01
Manganese	2.68E+02	179.00	1790.00	1.50E+00	1.50E-01	1.34E+03	179.00	1790.00	7.49E+00	7.49E-01
Mercury	5.26E-03	0.45	0.90	1.17E-02	5.85E-03	1.05E-02	0.45	0.90	2.32E-02	1.16E-02
Molybdenum	2.26E-01	3.50	35.00	6.46E-02	6.46E-03	4.46E-01	3.50	35.00	1.27E-01	1.27E-02
Nickel	4.26E-01	6.71	67.10	6.35E-02	6.35E-03	1.69E+00	6.71	67.10	2.51E-01	2.51E-02
Selenium	1.26E-01	0.29	0.58	4.33E-01	2.17E-01	2.27E-01	0.29	0.58	7.83E-01	3.92E-01
Silver	8.96E-02	2.02	20.20	4.43E-02	4.43E-03	1.95E-01	2.02	20.20	9.66E-02	9.66E-03
Vanadium	3.63E-01	0.34	0.69	1.06E+00	5.28E-01	7.06E-01	0.34	0.69	2.05E+00	1.03E+00
Zinc	9.60E+01	66.10	661.00	1.45E+00	1.45E-01	3.29E+02	66.10	661.00	4.98E+00	4.98E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-72 EU-16 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Placer Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	9.88E-01	2.24	22.40	4.41E-01	4.41E-02	2.44E+00	2.24	22.40	1.09E+00	1.09E-01
Barium	5.47E+00	73.50	131.00	7.44E-02	4.18E-02	1.17E+01	73.50	131.00	1.59E-01	8.95E-02
Cadmium	5.87E-01	1.47	14.70	4.00E-01	4.00E-02	1.03E+00	1.47	14.70	7.03E-01	7.03E-02
Chromium	4.58E-01	2.66	26.60	1.72E-01	1.72E-02	8.38E-01	2.66	26.60	3.15E-01	3.15E-02
Copper	7.03E+00	4.05	12.10	1.74E+00	5.81E-01	1.23E+01	4.05	12.10	3.03E+00	1.02E+00
Lead	2.05E+01	1.63	3.26	1.26E+01	6.28E+00	3.92E+01	1.63	3.26	2.41E+01	1.20E+01
Manganese	2.47E+02	179.00	1790.00	1.38E+00	1.38E-01	1.11E+03	179.00	1790.00	6.21E+00	6.21E-01
Mercury	2.73E-03	0.45	0.90	6.07E-03	3.04E-03	5.82E-03	0.45	0.90	1.29E-02	6.47E-03
Molybdenum	3.95E-02	3.50	35.00	1.13E-02	1.13E-03	5.89E-02	3.50	35.00	1.68E-02	1.68E-03
Nickel	3.79E-01	6.71	67.10	5.65E-02	5.65E-03	1.42E+00	6.71	67.10	2.12E-01	2.12E-02
Selenium	1.26E-01	0.29	0.58	4.33E-01	2.17E-01	2.25E-01	0.29	0.58	7.74E-01	3.88E-01
Silver	9.40E-02	2.02	20.20	4.66E-02	4.66E-03	1.68E-01	2.02	20.20	8.30E-02	8.30E-03
Vanadium	3.56E-01	0.34	0.69	1.03E+00	5.17E-01	7.00E-01	0.34	0.69	2.04E+00	1.02E+00
Zinc	6.60E+01	66.10	661.00	9.99E-01	9.99E-02	1.13E+02	66.10	661.00	1.71E+00	1.71E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-73 EU-17 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Mainstem West Fork Animas River/California Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	3.92E-01	2.24	22.40	1.75E-01	1.75E-02	9.28E-01	2.24	22.40	4.14E-01	4.14E-02
Barium	2.70E+00	73.50	131.00	3.67E-02	2.06E-02	4.07E+00	73.50	131.00	5.54E-02	3.11E-02
Cadmium	3.88E-01	1.47	14.70	2.64E-01	2.64E-02	7.90E-01	1.47	14.70	5.38E-01	5.38E-02
Chromium	4.21E-01	2.66	26.60	1.58E-01	1.58E-02	5.72E-01	2.66	26.60	2.15E-01	2.15E-02
Copper	4.36E+00	4.05	12.10	1.08E+00	3.61E-01	6.15E+00	4.05	12.10	1.52E+00	5.08E-01
Lead	2.46E+00	1.63	3.26	1.51E+00	7.54E-01	4.22E+00	1.63	3.26	2.59E+00	1.29E+00
Manganese	8.65E+01	179.00	1790.00	4.83E-01	4.83E-02	1.39E+02	179.00	1790.00	7.76E-01	7.76E-02
Mercury	3.40E-04	0.45	0.90	7.55E-04	3.78E-04	4.76E-04	0.45	0.90	1.06E-03	5.29E-04
Molybdenum	3.44E-02	3.50	35.00	9.82E-03	9.82E-04	3.55E-02	3.50	35.00	1.01E-02	1.01E-03
Nickel	1.45E-01	6.71	67.10	2.16E-02	2.16E-03	2.39E-01	6.71	67.10	3.57E-02	3.57E-03
Selenium	1.19E-01	0.29	0.58	4.11E-01	2.06E-01	2.13E-01	0.29	0.58	7.35E-01	3.68E-01
Silver	6.96E-02	2.02	20.20	3.45E-02	3.45E-03	1.38E-01	2.02	20.20	6.82E-02	6.82E-03
Vanadium	3.97E-01	0.34	0.69	1.15E+00	5.77E-01	5.39E-01	0.34	0.69	1.57E+00	7.83E-01
Zinc	4.49E+01	66.10	661.00	6.80E-01	6.80E-02	6.93E+01	66.10	661.00	1.05E+00	1.05E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-74 EU-18 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in North Fork Animas River Below Burrows Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	9.78E-01	2.24	22.40	4.37E-01	4.37E-02	2.31E+00	2.24	22.40	1.03E+00	1.03E-01
Barium	4.89E+00	73.50	131.00	6.66E-02	3.74E-02	1.12E+01	73.50	131.00	1.52E-01	8.54E-02
Cadmium	3.90E-01	1.47	14.70	2.65E-01	2.65E-02	7.93E-01	1.47	14.70	5.39E-01	5.39E-02
Chromium	4.69E-01	2.66	26.60	1.76E-01	1.76E-02	8.77E-01	2.66	26.60	3.30E-01	3.30E-02
Copper	3.94E+00	4.05	12.10	9.72E-01	3.25E-01	5.19E+00	4.05	12.10	1.28E+00	4.29E-01
Lead	8.83E+00	1.63	3.26	5.41E+00	2.71E+00	1.75E+01	1.63	3.26	1.07E+01	5.35E+00
Manganese	6.85E+01	179.00	1790.00	3.82E-01	3.82E-02	1.04E+02	179.00	1790.00	5.79E-01	5.79E-02
Mercury	2.67E-04	0.45	0.90	5.92E-04	2.96E-04	3.47E-04	0.45	0.90	7.72E-04	3.86E-04
Molybdenum	3.42E-02	3.50	35.00	9.78E-03	9.78E-04	3.55E-02	3.50	35.00	1.01E-02	1.01E-03
Nickel	1.41E-01	6.71	67.10	2.11E-02	2.11E-03	2.26E-01	6.71	67.10	3.36E-02	3.36E-03
Selenium	1.18E-01	0.29	0.58	4.06E-01	2.03E-01	2.11E-01	0.29	0.58	7.27E-01	3.64E-01
Silver	6.87E-02	2.02	20.20	3.40E-02	3.40E-03	1.33E-01	2.02	20.20	6.60E-02	6.60E-03
Vanadium	3.44E-01	0.34	0.69	1.00E+00	5.01E-01	6.82E-01	0.34	0.69	1.98E+00	9.92E-01
Zinc	4.43E+01	66.10	661.00	6.70E-01	6.70E-02	6.81E+01	66.10	661.00	1.03E+00	1.03E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-75 EU-19 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Burrows Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.19E+00	2.24	22.40	5.31E-01	5.31E-02	2.64E+00	2.24	22.40	1.18E+00	1.18E-01
Barium	4.99E+00	73.50	131.00	6.79E-02	3.81E-02	1.10E+01	73.50	131.00	1.50E-01	8.42E-02
Cadmium	5.72E-01	1.47	14.70	3.89E-01	3.89E-02	1.04E+00	1.47	14.70	7.07E-01	7.07E-02
Chromium	4.46E-01	2.66	26.60	1.68E-01	1.68E-02	8.22E-01	2.66	26.60	3.09E-01	3.09E-02
Copper	5.48E+00	4.05	12.10	1.35E+00	4.53E-01	1.00E+01	4.05	12.10	2.48E+00	8.29E-01
Lead	1.13E+01	1.63	3.26	6.93E+00	3.46E+00	2.20E+01	1.63	3.26	1.35E+01	6.75E+00
Manganese	1.89E+02	179.00	1790.00	1.06E+00	1.06E-01	1.02E+03	179.00	1790.00	5.70E+00	5.70E-01
Mercury	4.27E-04	0.45	0.90	9.48E-04	4.74E-04	5.72E-04	0.45	0.90	1.27E-03	6.36E-04
Molybdenum	9.91E-02	3.50	35.00	2.83E-02	2.83E-03	1.52E-01	3.50	35.00	4.35E-02	4.35E-03
Nickel	3.68E-01	6.71	67.10	5.48E-02	5.48E-03	1.41E+00	6.71	67.10	2.10E-01	2.10E-02
Selenium	1.19E-01	0.29	0.58	4.12E-01	2.06E-01	2.13E-01	0.29	0.58	7.35E-01	3.68E-01
Silver	7.56E-02	2.02	20.20	3.74E-02	3.74E-03	1.45E-01	2.02	20.20	7.20E-02	7.20E-03
Vanadium	3.22E-01	0.34	0.69	9.36E-01	4.68E-01	6.50E-01	0.34	0.69	1.89E+00	9.44E-01
Zinc	5.97E+01	66.10	661.00	9.03E-01	9.03E-02	1.04E+02	66.10	661.00	1.58E+00	1.58E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-76 EU-R2 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Maggie Gulch Reference Area										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.17E-01	2.24	22.40	5.22E-02	5.22E-03	1.49E-01	2.24	22.40	6.64E-02	6.64E-03
Barium	2.47E+00	73.50	131.00	3.37E-02	1.89E-02	3.32E+00	73.50	131.00	4.52E-02	2.53E-02
Cadmium	2.73E-01	1.47	14.70	1.86E-01	1.86E-02	5.75E-01	1.47	14.70	3.91E-01	3.91E-02
Chromium	4.03E-01	2.66	26.60	1.51E-01	1.51E-02	5.61E-01	2.66	26.60	2.11E-01	2.11E-02
Copper	3.84E+00	4.05	12.10	9.49E-01	3.18E-01	4.65E+00	4.05	12.10	1.15E+00	3.84E-01
Lead	6.74E-01	1.63	3.26	4.13E-01	2.07E-01	1.22E+00	1.63	3.26	7.48E-01	3.74E-01
Manganese	2.29E+01	179.00	1790.00	1.28E-01	1.28E-02	2.83E+01	179.00	1790.00	1.58E-01	1.58E-02
Mercury	5.79E-04	0.45	0.90	1.29E-03	6.43E-04	1.46E-03	0.45	0.90	3.25E-03	1.63E-03
Molybdenum	1.40E-02	3.50	35.00	3.99E-03	3.99E-04	1.51E-02	3.50	35.00	4.31E-03	4.31E-04
Nickel	1.04E-01	6.71	67.10	1.55E-02	1.55E-03	1.39E-01	6.71	67.10	2.08E-02	2.08E-03
Selenium	6.71E-02	0.29	0.58	2.31E-01	1.16E-01	1.42E-01	0.29	0.58	4.91E-01	2.46E-01
Silver	2.95E-02	2.02	20.20	1.46E-02	1.46E-03	4.41E-02	2.02	20.20	2.18E-02	2.18E-03
Vanadium	2.53E-01	0.34	0.69	7.34E-01	3.67E-01	3.36E-01	0.34	0.69	9.77E-01	4.88E-01
Zinc	2.74E+01	66.10	661.00	4.14E-01	4.14E-02	3.30E+01	66.10	661.00	4.99E-01	4.99E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-77 EU-R3 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Picayune Gulch Reference Area										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	3.74E-01	2.24	22.40	1.67E-01	1.67E-02	4.80E-01	2.24	22.40	2.14E-01	2.14E-02
Barium	1.84E+00	73.50	131.00	2.51E-02	1.41E-02	2.32E+00	73.50	131.00	3.16E-02	1.77E-02
Cadmium	2.78E-01	1.47	14.70	1.89E-01	1.89E-02	5.78E-01	1.47	14.70	3.93E-01	3.93E-02
Chromium	4.11E-01	2.66	26.60	1.54E-01	1.54E-02	5.61E-01	2.66	26.60	2.11E-01	2.11E-02
Copper	3.90E+00	4.05	12.10	9.63E-01	3.22E-01	4.71E+00	4.05	12.10	1.16E+00	3.89E-01
Lead	1.23E+00	1.63	3.26	7.53E-01	3.76E-01	1.57E+00	1.63	3.26	9.65E-01	4.83E-01
Manganese	3.58E+01	179.00	1790.00	2.00E-01	2.00E-02	5.71E+01	179.00	1790.00	3.19E-01	3.19E-02
Mercury	3.10E-04	0.45	0.90	6.88E-04	3.44E-04	4.23E-04	0.45	0.90	9.40E-04	4.70E-04
Molybdenum	1.96E-02	3.50	35.00	5.61E-03	5.61E-04	1.96E-02	3.50	35.00	5.61E-03	5.61E-04
Nickel	1.08E-01	6.71	67.10	1.60E-02	1.60E-03	1.41E-01	6.71	67.10	2.11E-02	2.11E-03
Selenium	6.61E-02	0.29	0.58	2.28E-01	1.14E-01	1.43E-01	0.29	0.58	4.94E-01	2.48E-01
Silver	3.53E-02	2.02	20.20	1.75E-02	1.75E-03	5.45E-02	2.02	20.20	2.70E-02	2.70E-03
Vanadium	2.64E-01	0.34	0.69	7.67E-01	3.84E-01	3.17E-01	0.34	0.69	9.20E-01	4.60E-01
Zinc	2.81E+01	66.10	661.00	4.25E-01	4.25E-02	3.34E+01	66.10	661.00	5.06E-01	5.06E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-78 EU-R4 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in North Fork Animas River Reference Area										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	8.32E-01	2.24	22.40	3.71E-01	3.71E-02	8.52E-01	2.24	22.40	3.80E-01	3.80E-02
Barium	1.58E+00	73.50	131.00	2.14E-02	1.20E-02	1.88E+00	73.50	131.00	2.55E-02	1.43E-02
Cadmium	2.80E-01	1.47	14.70	1.90E-01	1.90E-02	5.79E-01	1.47	14.70	3.94E-01	3.94E-02
Chromium	3.96E-01	2.66	26.60	1.49E-01	1.49E-02	5.43E-01	2.66	26.60	2.04E-01	2.04E-02
Copper	4.25E+00	4.05	12.10	1.05E+00	3.51E-01	4.98E+00	4.05	12.10	1.23E+00	4.12E-01
Lead	2.69E+00	1.63	3.26	1.65E+00	8.26E-01	2.80E+00	1.63	3.26	1.72E+00	8.58E-01
Manganese	1.70E+01	179.00	1790.00	9.51E-02	9.51E-03	2.10E+01	179.00	1790.00	1.17E-01	1.17E-02
Mercury	5.44E-04	0.45	0.90	1.21E-03	6.04E-04	5.44E-04	0.45	0.90	1.21E-03	6.04E-04
Molybdenum	7.70E-02	3.50	35.00	2.20E-02	2.20E-03	7.70E-02	3.50	35.00	2.20E-02	2.20E-03
Nickel	8.32E-02	6.71	67.10	1.24E-02	1.24E-03	1.15E-01	6.71	67.10	1.72E-02	1.72E-03
Selenium	7.30E-02	0.29	0.58	2.52E-01	1.26E-01	1.46E-01	0.29	0.58	5.02E-01	2.51E-01
Silver	4.41E-02	2.02	20.20	2.18E-02	2.18E-03	5.73E-02	2.02	20.20	2.84E-02	2.84E-03
Vanadium	2.08E-01	0.34	0.69	6.04E-01	3.02E-01	2.39E-01	0.34	0.69	6.94E-01	3.47E-01
Zinc	2.99E+01	66.10	661.00	4.52E-01	4.52E-02	3.51E+01	66.10	661.00	5.31E-01	5.31E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-79 EU-20 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Lower Mainstem Cement Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.06E+00	2.24	22.40	4.74E-01	4.74E-02	2.43E+00	2.24	22.40	1.08E+00	1.08E-01
Barium	5.08E+00	73.50	131.00	6.91E-02	3.88E-02	1.12E+01	73.50	131.00	1.53E-01	8.56E-02
Cadmium	3.89E-01	1.47	14.70	2.64E-01	2.64E-02	7.92E-01	1.47	14.70	5.39E-01	5.39E-02
Chromium	4.51E-01	2.66	26.60	1.70E-01	1.70E-02	8.30E-01	2.66	26.60	3.12E-01	3.12E-02
Copper	4.38E+00	4.05	12.10	1.08E+00	3.62E-01	5.71E+00	4.05	12.10	1.41E+00	4.72E-01
Lead	1.18E+01	1.63	3.26	7.24E+00	3.62E+00	2.11E+01	1.63	3.26	1.30E+01	6.49E+00
Manganese	5.85E+01	179.00	1790.00	3.27E-01	3.27E-02	8.96E+01	179.00	1790.00	5.01E-01	5.01E-02
Mercury	5.72E-04	0.45	0.90	1.27E-03	6.36E-04	1.08E-03	0.45	0.90	2.40E-03	1.20E-03
Molybdenum	2.94E-02	3.50	35.00	8.40E-03	8.40E-04	4.08E-02	3.50	35.00	1.17E-02	1.17E-03
Nickel	1.32E-01	6.71	67.10	1.97E-02	1.97E-03	2.11E-01	6.71	67.10	3.14E-02	3.14E-03
Selenium	1.26E-01	0.29	0.58	4.33E-01	2.17E-01	2.19E-01	0.29	0.58	7.54E-01	3.77E-01
Silver	7.55E-02	2.02	20.20	3.74E-02	3.74E-03	1.48E-01	2.02	20.20	7.34E-02	7.34E-03
Vanadium	4.01E-01	0.34	0.69	1.17E+00	5.83E-01	7.38E-01	0.34	0.69	2.14E+00	1.07E+00
Zinc	4.64E+01	66.10	661.00	7.01E-01	7.01E-02	7.07E+01	66.10	661.00	1.07E+00	1.07E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-80 EU-21 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Prospect Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.01E+00	2.24	22.40	4.50E-01	4.50E-02	2.37E+00	2.24	22.40	1.06E+00	1.06E-01
Barium	5.78E+00	73.50	131.00	7.86E-02	4.41E-02	1.25E+01	73.50	131.00	1.70E-01	9.56E-02
Cadmium	3.83E-01	1.47	14.70	2.60E-01	2.60E-02	7.90E-01	1.47	14.70	5.37E-01	5.37E-02
Chromium	4.39E-01	2.66	26.60	1.65E-01	1.65E-02	8.13E-01	2.66	26.60	3.05E-01	3.05E-02
Copper	3.98E+00	4.05	12.10	9.83E-01	3.29E-01	5.26E+00	4.05	12.10	1.30E+00	4.35E-01
Lead	9.92E+00	1.63	3.26	6.08E+00	3.04E+00	1.85E+01	1.63	3.26	1.13E+01	5.67E+00
Manganese	5.49E+01	179.00	1790.00	3.07E-01	3.07E-02	8.59E+01	179.00	1790.00	4.80E-01	4.80E-02
Mercury	5.26E-04	0.45	0.90	1.17E-03	5.85E-04	6.96E-04	0.45	0.90	1.55E-03	7.73E-04
Molybdenum	1.27E-02	3.50	35.00	3.64E-03	3.64E-04	1.59E-02	3.50	35.00	4.55E-03	4.55E-04
Nickel	1.23E-01	6.71	67.10	1.83E-02	1.83E-03	2.00E-01	6.71	67.10	2.98E-02	2.98E-03
Selenium	1.24E-01	0.29	0.58	4.26E-01	2.14E-01	2.17E-01	0.29	0.58	7.47E-01	3.74E-01
Silver	7.32E-02	2.02	20.20	3.62E-02	3.62E-03	1.41E-01	2.02	20.20	6.99E-02	6.99E-03
Vanadium	3.53E-01	0.34	0.69	1.02E+00	5.12E-01	6.81E-01	0.34	0.69	1.98E+00	9.90E-01
Zinc	4.38E+01	66.10	661.00	6.63E-01	6.63E-02	6.89E+01	66.10	661.00	1.04E+00	1.04E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-81 EU-22 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Mainstem Cement Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	9.24E-01	2.24	22.40	4.13E-01	4.13E-02	2.30E+00	2.24	22.40	1.03E+00	1.03E-01
Barium	4.77E+00	73.50	131.00	6.49E-02	3.64E-02	1.08E+01	73.50	131.00	1.47E-01	8.27E-02
Cadmium	5.54E-01	1.47	14.70	3.77E-01	3.77E-02	9.81E-01	1.47	14.70	6.68E-01	6.68E-02
Chromium	4.57E-01	2.66	26.60	1.72E-01	1.72E-02	8.34E-01	2.66	26.60	3.14E-01	3.14E-02
Copper	5.59E+00	4.05	12.10	1.38E+00	4.62E-01	9.58E+00	4.05	12.10	2.36E+00	7.91E-01
Lead	1.39E+01	1.63	3.26	8.52E+00	4.26E+00	2.84E+01	1.63	3.26	1.74E+01	8.72E+00
Manganese	1.72E+02	179.00	1790.00	9.60E-01	9.60E-02	9.74E+02	179.00	1790.00	5.44E+00	5.44E-01
Mercury	4.30E-04	0.45	0.90	9.56E-04	4.78E-04	7.78E-04	0.45	0.90	1.73E-03	8.64E-04
Molybdenum	3.62E-02	3.50	35.00	1.04E-02	1.04E-03	4.49E-02	3.50	35.00	1.28E-02	1.28E-03
Nickel	3.63E-01	6.71	67.10	5.41E-02	5.41E-03	1.41E+00	6.71	67.10	2.09E-01	2.09E-02
Selenium	1.27E-01	0.29	0.58	4.36E-01	2.19E-01	2.21E-01	0.29	0.58	7.64E-01	3.82E-01
Silver	7.28E-02	2.02	20.20	3.60E-02	3.60E-03	1.39E-01	2.02	20.20	6.86E-02	6.86E-03
Vanadium	4.34E-01	0.34	0.69	1.26E+00	6.31E-01	7.75E-01	0.34	0.69	2.25E+00	1.13E+00
Zinc	6.52E+01	66.10	661.00	9.86E-01	9.86E-02	1.26E+02	66.10	661.00	1.90E+00	1.90E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-82 EU-23 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in South Fork Cement Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	3.03E-01	2.24	22.40	1.35E-01	1.35E-02	8.44E-01	2.24	22.40	3.77E-01	3.77E-02
Barium	2.86E+00	73.50	131.00	3.89E-02	2.18E-02	4.38E+00	73.50	131.00	5.96E-02	3.34E-02
Cadmium	3.87E-01	1.47	14.70	2.63E-01	2.63E-02	8.05E-01	1.47	14.70	5.48E-01	5.48E-02
Chromium	4.08E-01	2.66	26.60	1.53E-01	1.53E-02	5.61E-01	2.66	26.60	2.11E-01	2.11E-02
Copper	4.26E+00	4.05	12.10	1.05E+00	3.52E-01	6.16E+00	4.05	12.10	1.52E+00	5.09E-01
Lead	3.02E+00	1.63	3.26	1.85E+00	9.26E-01	5.72E+00	1.63	3.26	3.51E+00	1.75E+00
Manganese	5.96E+01	179.00	1790.00	3.33E-01	3.33E-02	9.83E+01	179.00	1790.00	5.49E-01	5.49E-02
Mercury	2.43E-04	0.45	0.90	5.40E-04	2.70E-04	3.28E-04	0.45	0.90	7.28E-04	3.64E-04
Molybdenum	3.31E-02	3.50	35.00	9.45E-03	9.45E-04	4.06E-02	3.50	35.00	1.16E-02	1.16E-03
Nickel	1.36E-01	6.71	67.10	2.02E-02	2.02E-03	2.52E-01	6.71	67.10	3.76E-02	3.76E-03
Selenium	1.23E-01	0.29	0.58	4.24E-01	2.12E-01	2.17E-01	0.29	0.58	7.48E-01	3.75E-01
Silver	7.07E-02	2.02	20.20	3.50E-02	3.50E-03	1.37E-01	2.02	20.20	6.76E-02	6.76E-03
Vanadium	3.65E-01	0.34	0.69	1.06E+00	5.30E-01	4.97E-01	0.34	0.69	1.44E+00	7.22E-01
Zinc	4.45E+01	66.10	661.00	6.73E-01	6.73E-02	7.10E+01	66.10	661.00	1.07E+00	1.07E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-83 EU-24 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Cliff Swallow Foraging in Upper Cement Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	9.89E-01	2.24	22.40	4.42E-01	4.42E-02	2.34E+00	2.24	22.40	1.04E+00	1.04E-01
Barium	5.06E+00	73.50	131.00	6.88E-02	3.86E-02	1.12E+01	73.50	131.00	1.53E-01	8.57E-02
Cadmium	5.90E-01	1.47	14.70	4.01E-01	4.01E-02	1.10E+00	1.47	14.70	7.51E-01	7.51E-02
Chromium	4.57E-01	2.66	26.60	1.72E-01	1.72E-02	8.35E-01	2.66	26.60	3.14E-01	3.14E-02
Copper	6.73E+00	4.05	12.10	1.66E+00	5.56E-01	1.12E+01	4.05	12.10	2.78E+00	9.29E-01
Lead	1.35E+01	1.63	3.26	8.26E+00	4.13E+00	2.29E+01	1.63	3.26	1.41E+01	7.03E+00
Manganese	2.26E+02	179.00	1790.00	1.26E+00	1.26E-01	1.07E+03	179.00	1790.00	5.97E+00	5.97E-01
Mercury	4.45E-04	0.45	0.90	9.88E-04	4.94E-04	6.51E-04	0.45	0.90	1.45E-03	7.23E-04
Molybdenum	2.97E-02	3.50	35.00	8.47E-03	8.47E-04	3.61E-02	3.50	35.00	1.03E-02	1.03E-03
Nickel	3.84E-01	6.71	67.10	5.72E-02	5.72E-03	1.44E+00	6.71	67.10	2.14E-01	2.14E-02
Selenium	1.22E-01	0.29	0.58	4.22E-01	2.11E-01	2.15E-01	0.29	0.58	7.42E-01	3.72E-01
Silver	7.53E-02	2.02	20.20	3.73E-02	3.73E-03	1.42E-01	2.02	20.20	7.03E-02	7.03E-03
Vanadium	3.60E-01	0.34	0.69	1.05E+00	5.23E-01	6.96E-01	0.34	0.69	2.02E+00	1.01E+00
Zinc	6.32E+01	66.10	661.00	9.57E-01	9.57E-02	1.10E+02	66.10	661.00	1.66E+00	1.66E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-84 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Mountain Bluebird Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.05E+00	2.24	22.40	4.69E-01	4.69E-02	1.71E+00	2.24	22.40	7.63E-01	7.63E-02
Barium	5.85E+00	73.50	131.00	7.95E-02	4.46E-02	1.05E+01	73.50	131.00	1.42E-01	7.98E-02
Cadmium	2.30E+00	1.47	14.70	1.56E+00	1.56E-01	2.75E+00	1.47	14.70	1.87E+00	1.87E-01
Chromium	4.27E-01	2.66	26.60	1.61E-01	1.61E-02	7.09E-01	2.66	26.60	2.67E-01	2.67E-02
Copper	6.20E+00	4.05	12.10	1.53E+00	5.12E-01	9.78E+00	4.05	12.10	2.41E+00	8.08E-01
Lead	3.38E+01	1.63	3.26	2.07E+01	1.04E+01	4.64E+01	1.63	3.26	2.84E+01	1.42E+01
Manganese	1.79E+02	179.00	1790.00	1.00E+00	1.00E-01	6.92E+02	179.00	1790.00	3.87E+00	3.87E-01
Mercury	2.06E-03	0.45	0.90	4.58E-03	2.29E-03	2.69E-03	0.45	0.90	5.98E-03	2.99E-03
Molybdenum	1.38E-01	3.50	35.00	3.93E-02	3.93E-03	3.27E-01	3.50	35.00	9.33E-02	9.33E-03
Nickel	2.73E-01	6.71	67.10	4.06E-02	4.06E-03	7.96E-01	6.71	67.10	1.19E-01	1.19E-02
Selenium	5.58E-01	0.29	0.58	1.92E+00	9.64E-01	1.27E+00	0.29	0.58	4.37E+00	2.19E+00
Silver	1.77E-01	2.02	20.20	8.78E-02	8.78E-03	3.68E-01	2.02	20.20	1.82E-01	1.82E-02
Vanadium	6.56E-01	0.34	0.69	1.91E+00	9.53E-01	8.45E-01	0.34	0.69	2.46E+00	1.23E+00
Zinc	7.81E+01	66.10	661.00	1.18E+00	1.18E-01	1.50E+02	66.10	661.00	2.27E+00	2.27E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-85 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Mountain Bluebird Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	8.13E-01	2.24	22.40	3.63E-01	3.63E-02	1.39E+00	2.24	22.40	6.22E-01	6.22E-02
Barium	5.69E+00	73.50	131.00	7.74E-02	4.34E-02	9.38E+00	73.50	131.00	1.28E-01	7.16E-02
Cadmium	2.09E+00	1.47	14.70	1.42E+00	1.42E-01	2.49E+00	1.47	14.70	1.69E+00	1.69E-01
Chromium	4.48E-01	2.66	26.60	1.68E-01	1.68E-02	7.37E-01	2.66	26.60	2.77E-01	2.77E-02
Copper	4.36E+00	4.05	12.10	1.08E+00	3.60E-01	6.72E+00	4.05	12.10	1.66E+00	5.55E-01
Lead	2.86E+01	1.63	3.26	1.76E+01	8.78E+00	4.98E+01	1.63	3.26	3.06E+01	1.53E+01
Manganese	6.65E+01	179.00	1790.00	3.71E-01	3.71E-02	9.29E+01	179.00	1790.00	5.19E-01	5.19E-02
Mercury	1.39E-03	0.45	0.90	3.08E-03	1.54E-03	2.44E-03	0.45	0.90	5.42E-03	2.71E-03
Molybdenum	2.73E-02	3.50	35.00	7.80E-03	7.80E-04	3.96E-02	3.50	35.00	1.13E-02	1.13E-03
Nickel	1.86E-01	6.71	67.10	2.78E-02	2.78E-03	3.12E-01	6.71	67.10	4.66E-02	4.66E-03
Selenium	5.57E-01	0.29	0.58	1.92E+00	9.62E-01	1.27E+00	0.29	0.58	4.37E+00	2.19E+00
Silver	1.46E-01	2.02	20.20	7.24E-02	7.24E-03	3.37E-01	2.02	20.20	1.67E-01	1.67E-02
Vanadium	7.35E-01	0.34	0.69	2.14E+00	1.07E+00	9.40E-01	0.34	0.69	2.73E+00	1.37E+00
Zinc	4.65E+01	66.10	661.00	7.04E-01	7.04E-02	6.42E+01	66.10	661.00	9.72E-01	9.72E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-86 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Mountain Bluebird Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	7.68E-01	2.24	22.40	3.43E-01	3.43E-02	1.14E+00	2.24	22.40	5.07E-01	5.07E-02
Barium	5.33E+00	73.50	131.00	7.26E-02	4.07E-02	6.64E+00	73.50	131.00	9.04E-02	5.07E-02
Cadmium	5.36E-01	1.47	14.70	3.64E-01	3.64E-02	7.63E-01	1.47	14.70	5.19E-01	5.19E-02
Chromium	4.13E-01	2.66	26.60	1.55E-01	1.55E-02	6.23E-01	2.66	26.60	2.34E-01	2.34E-02
Copper	4.72E+00	4.05	12.10	1.17E+00	3.90E-01	7.90E+00	4.05	12.10	1.95E+00	6.53E-01
Lead	1.17E+01	1.63	3.26	7.16E+00	3.58E+00	1.51E+01	1.63	3.26	9.28E+00	4.64E+00
Manganese	5.45E+01	179.00	1790.00	3.04E-01	3.04E-02	7.51E+01	179.00	1790.00	4.20E-01	4.20E-02
Mercury	2.07E-03	0.45	0.90	4.60E-03	2.30E-03	5.57E-03	0.45	0.90	1.24E-02	6.19E-03
Molybdenum	1.95E-02	3.50	35.00	5.58E-03	5.58E-04	2.77E-02	3.50	35.00	7.92E-03	7.92E-04
Nickel	1.36E-01	6.71	67.10	2.03E-02	2.03E-03	2.05E-01	6.71	67.10	3.05E-02	3.05E-03
Selenium	5.64E-01	0.29	0.58	1.95E+00	9.74E-01	1.27E+00	0.29	0.58	4.40E+00	2.20E+00
Silver	1.07E-01	2.02	20.20	5.31E-02	5.31E-03	2.70E-01	2.02	20.20	1.34E-01	1.34E-02
Vanadium	6.88E-01	0.34	0.69	2.00E+00	1.00E+00	7.76E-01	0.34	0.69	2.25E+00	1.13E+00
Zinc	3.51E+01	66.10	661.00	5.31E-01	5.31E-02	5.04E+01	66.10	661.00	7.63E-01	7.63E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-87 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Mountain Bluebird Foraging in Vegetated Upland Habitats

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	3.87E-01	2.24	22.40	1.73E-01	1.73E-02	5.06E-01	2.24	22.40	2.26E-01	2.26E-02
Barium	4.67E+00	73.50	131.00	6.36E-02	3.57E-02	5.77E+00	73.50	131.00	7.85E-02	4.40E-02
Cadmium	3.49E-01	1.47	14.70	2.38E-01	2.38E-02	5.56E-01	1.47	14.70	3.78E-01	3.78E-02
Chromium	4.25E-01	2.66	26.60	1.60E-01	1.60E-02	6.31E-01	2.66	26.60	2.37E-01	2.37E-02
Copper	3.19E+00	4.05	12.10	7.87E-01	2.64E-01	5.20E+00	4.05	12.10	1.28E+00	4.30E-01
Lead	2.36E+00	1.63	3.26	1.45E+00	7.24E-01	3.21E+00	1.63	3.26	1.97E+00	9.85E-01
Manganese	3.71E+01	179.00	1790.00	2.07E-01	2.07E-02	5.76E+01	179.00	1790.00	3.22E-01	3.22E-02
Mercury	1.44E-03	0.45	0.90	3.21E-03	1.60E-03	2.32E-03	0.45	0.90	5.16E-03	2.58E-03
Molybdenum	3.65E-02	3.50	35.00	1.04E-02	1.04E-03	6.85E-02	3.50	35.00	1.96E-02	1.96E-03
Nickel	1.23E-01	6.71	67.10	1.83E-02	1.83E-03	1.84E-01	6.71	67.10	2.75E-02	2.75E-03
Selenium	5.36E-01	0.29	0.58	1.85E+00	9.26E-01	1.20E+00	0.29	0.58	4.15E+00	2.08E+00
Silver	7.25E-02	2.02	20.20	3.59E-02	3.59E-03	2.23E-01	2.02	20.20	1.10E-01	1.10E-02
Vanadium	4.43E-01	0.34	0.69	1.29E+00	6.43E-01	5.84E-01	0.34	0.69	1.70E+00	8.48E-01
Zinc	2.59E+01	66.10	661.00	3.92E-01	3.92E-02	3.44E+01	66.10	661.00	5.21E-01	5.21E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-88 EU-01 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Lower Mainstem Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.35E-02	0.06	0.59	1.42E+00	1.42E-01	1.58E-01	0.06	0.59	2.67E+00	2.67E-01
Arsenic	5.61E-01	1.04	1.66	5.39E-01	3.38E-01	1.55E+00	1.04	1.66	1.49E+00	9.36E-01
Cadmium	2.87E-01	0.77	7.70	3.73E-01	3.73E-02	5.91E-01	0.77	7.70	7.67E-01	7.67E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	2.87E+00	5.60	9.34	5.12E-01	3.07E-01	3.79E+00	5.60	9.34	6.76E-01	4.06E-01
Lead	5.59E+00	4.70	8.90	1.19E+00	6.29E-01	1.17E+01	4.70	8.90	2.48E+00	1.31E+00
Manganese	4.09E+01	51.50	515.00	7.95E-01	7.95E-02	6.41E+01	51.50	515.00	1.25E+00	1.25E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	8.37E-02	1.70	3.40	4.92E-02	2.46E-02	1.40E-01	1.70	3.40	8.22E-02	4.11E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	3.20E-02	0.01	0.07	4.51E+00	4.51E-01	5.41E-02	0.01	0.07	7.63E+00	7.63E-01
Zinc	3.24E+01	75.40	754.00	4.30E-01	4.30E-02	5.02E+01	75.40	754.00	6.66E-01	6.66E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-89 EU-02 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Lower Mainstem Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	6.61E-02	0.06	0.59	1.12E+00	1.12E-01	1.26E-01	0.06	0.59	2.13E+00	2.13E-01
Arsenic	1.49E-01	1.04	1.66	1.43E-01	8.96E-02	6.01E-01	1.04	1.66	5.78E-01	3.62E-01
Cadmium	2.88E-01	0.77	7.70	3.74E-01	3.74E-02	5.94E-01	0.77	7.70	7.72E-01	7.72E-02
Chromium	2.85E-01	2.40	24.00	1.19E-01	1.19E-02	3.96E-01	2.40	24.00	1.65E-01	1.65E-02
Copper	2.90E+00	5.60	9.34	5.18E-01	3.10E-01	3.96E+00	5.60	9.34	7.07E-01	4.24E-01
Lead	1.09E+00	4.70	8.90	2.32E-01	1.23E-01	2.28E+00	4.70	8.90	4.86E-01	2.57E-01
Manganese	4.09E+01	51.50	515.00	7.95E-01	7.95E-02	6.42E+01	51.50	515.00	1.25E+00	1.25E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	7.78E-02	1.70	3.40	4.58E-02	2.29E-02	1.43E-01	1.70	3.40	8.39E-02	4.20E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	2.24E-02	0.01	0.07	3.15E+00	3.15E-01	2.24E-02	0.01	0.07	3.15E+00	3.15E-01
Zinc	3.28E+01	75.40	754.00	4.36E-01	4.36E-02	5.11E+01	75.40	754.00	6.77E-01	6.77E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-90 EU-03 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Mainstem Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.35E-02	0.06	0.59	1.42E+00	1.42E-01	1.58E-01	0.06	0.59	2.67E+00	2.67E-01
Arsenic	5.77E-01	1.04	1.66	5.54E-01	3.47E-01	1.63E+00	1.04	1.66	1.57E+00	9.82E-01
Cadmium	2.88E-01	0.77	7.70	3.74E-01	3.74E-02	5.94E-01	0.77	7.70	7.72E-01	7.72E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	2.90E+00	5.60	9.34	5.18E-01	3.10E-01	3.96E+00	5.60	9.34	7.07E-01	4.24E-01
Lead	5.60E+00	4.70	8.90	1.19E+00	6.29E-01	1.17E+01	4.70	8.90	2.49E+00	1.31E+00
Manganese	4.09E+01	51.50	515.00	7.95E-01	7.95E-02	6.42E+01	51.50	515.00	1.25E+00	1.25E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	8.53E-02	1.70	3.40	5.02E-02	2.51E-02	1.44E-01	1.70	3.40	8.47E-02	4.24E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	3.20E-02	0.01	0.07	4.51E+00	4.51E-01	5.42E-02	0.01	0.07	7.63E+00	7.63E-01
Zinc	3.28E+01	75.40	754.00	4.36E-01	4.36E-02	5.11E+01	75.40	754.00	6.77E-01	6.77E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-91 EU-3.5 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Browns Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.35E-02	0.06	0.59	1.42E+00	1.42E-01	1.58E-01	0.06	0.59	2.67E+00	2.67E-01
Arsenic	5.62E-01	1.04	1.66	5.40E-01	3.38E-01	1.56E+00	1.04	1.66	1.50E+00	9.37E-01
Cadmium	2.88E-01	0.77	7.70	3.74E-01	3.74E-02	5.92E-01	0.77	7.70	7.69E-01	7.69E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	2.88E+00	5.60	9.34	5.14E-01	3.08E-01	3.80E+00	5.60	9.34	6.79E-01	4.07E-01
Lead	5.60E+00	4.70	8.90	1.19E+00	6.29E-01	1.17E+01	4.70	8.90	2.48E+00	1.31E+00
Manganese	4.09E+01	51.50	515.00	7.94E-01	7.94E-02	6.39E+01	51.50	515.00	1.24E+00	1.24E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	8.45E-02	1.70	3.40	4.97E-02	2.48E-02	1.41E-01	1.70	3.40	8.28E-02	4.14E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	3.20E-02	0.01	0.07	4.51E+00	4.51E-01	5.41E-02	0.01	0.07	7.63E+00	7.63E-01
Zinc	3.28E+01	75.40	754.00	4.35E-01	4.35E-02	5.06E+01	75.40	754.00	6.71E-01	6.71E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-92 EU-04 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Upper Mainstem Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.09E-01	0.06	0.59	1.85E+00	1.85E-01	1.75E-01	0.06	0.59	2.96E+00	2.96E-01
Arsenic	6.01E-01	1.04	1.66	5.78E-01	3.62E-01	1.76E+00	1.04	1.66	1.69E+00	1.06E+00
Cadmium	4.13E-01	0.77	7.70	5.37E-01	5.37E-02	7.34E-01	0.77	7.70	9.53E-01	9.53E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	3.77E+00	5.60	9.34	6.74E-01	4.04E-01	6.62E+00	5.60	9.34	1.18E+00	7.09E-01
Lead	5.60E+00	4.70	8.90	1.19E+00	6.29E-01	1.17E+01	4.70	8.90	2.49E+00	1.31E+00
Manganese	1.25E+02	51.50	515.00	2.43E+00	2.43E-01	7.35E+02	51.50	515.00	1.43E+01	1.43E+00
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	2.59E-01	1.70	3.40	1.52E-01	7.62E-02	1.05E+00	1.70	3.40	6.16E-01	3.08E-01
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	6.46E-02	0.01	0.07	9.10E+00	9.10E-01	2.64E-01	0.01	0.07	3.72E+01	3.72E+00
Zinc	4.44E+01	75.40	754.00	5.89E-01	5.89E-02	7.78E+01	75.40	754.00	1.03E+00	1.03E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-93 EU-05 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in South Fork Mainstem Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.36E-02	0.06	0.59	1.42E+00	1.42E-01	1.58E-01	0.06	0.59	2.68E+00	2.68E-01
Arsenic	5.61E-01	1.04	1.66	5.39E-01	3.38E-01	1.55E+00	1.04	1.66	1.49E+00	9.37E-01
Cadmium	2.90E-01	0.77	7.70	3.77E-01	3.77E-02	5.96E-01	0.77	7.70	7.74E-01	7.74E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	2.89E+00	5.60	9.34	5.16E-01	3.10E-01	3.86E+00	5.60	9.34	6.89E-01	4.13E-01
Lead	5.62E+00	4.70	8.90	1.20E+00	6.32E-01	1.18E+01	4.70	8.90	2.50E+00	1.32E+00
Manganese	4.08E+01	51.50	515.00	7.92E-01	7.92E-02	6.39E+01	51.50	515.00	1.24E+00	1.24E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	8.42E-02	1.70	3.40	4.95E-02	2.48E-02	1.41E-01	1.70	3.40	8.27E-02	4.13E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	3.20E-02	0.01	0.07	4.51E+00	4.51E-01	5.41E-02	0.01	0.07	7.63E+00	7.63E-01
Zinc	3.30E+01	75.40	754.00	4.38E-01	4.38E-02	5.12E+01	75.40	754.00	6.79E-01	6.79E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-94 EU-06 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Middle Fork Mineral Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	6.61E-02	0.06	0.59	1.12E+00	1.12E-01	1.26E-01	0.06	0.59	2.13E+00	2.13E-01
Arsenic	1.32E-01	1.04	1.66	1.27E-01	7.98E-02	5.24E-01	1.04	1.66	5.04E-01	3.16E-01
Cadmium	2.87E-01	0.77	7.70	3.73E-01	3.73E-02	5.91E-01	0.77	7.70	7.67E-01	7.67E-02
Chromium	2.85E-01	2.40	24.00	1.19E-01	1.19E-02	3.96E-01	2.40	24.00	1.65E-01	1.65E-02
Copper	2.86E+00	5.60	9.34	5.10E-01	3.06E-01	3.78E+00	5.60	9.34	6.74E-01	4.04E-01
Lead	1.09E+00	4.70	8.90	2.31E-01	1.22E-01	2.27E+00	4.70	8.90	4.84E-01	2.55E-01
Manganese	4.07E+01	51.50	515.00	7.90E-01	7.90E-02	6.38E+01	51.50	515.00	1.24E+00	1.24E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	7.65E-02	1.70	3.40	4.50E-02	2.25E-02	1.39E-01	1.70	3.40	8.20E-02	4.10E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	2.23E-02	0.01	0.07	3.15E+00	3.15E-01	2.23E-02	0.01	0.07	3.15E+00	3.15E-01
Zinc	3.24E+01	75.40	754.00	4.30E-01	4.30E-02	5.01E+01	75.40	754.00	6.65E-01	6.65E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-95 EU-R1 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Mill Creek Reference Area										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	4.16E-02	0.06	0.59	7.04E-01	7.04E-02	6.13E-02	0.06	0.59	1.04E+00	1.04E-01
Arsenic	4.58E-02	1.04	1.66	4.41E-02	2.76E-02	1.21E-01	1.04	1.66	1.17E-01	7.32E-02
Cadmium	2.04E-01	0.77	7.70	2.65E-01	2.65E-02	4.34E-01	0.77	7.70	5.63E-01	5.63E-02
Chromium	2.85E-01	2.40	24.00	1.19E-01	1.19E-02	3.96E-01	2.40	24.00	1.65E-01	1.65E-02
Copper	2.81E+00	5.60	9.34	5.01E-01	3.00E-01	3.50E+00	5.60	9.34	6.25E-01	3.75E-01
Lead	1.36E-01	4.70	8.90	2.89E-02	1.52E-02	2.23E-01	4.70	8.90	4.75E-02	2.51E-02
Manganese	9.85E+00	51.50	515.00	1.91E-01	1.91E-02	1.32E+01	51.50	515.00	2.56E-01	2.56E-02
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	5.10E-02	1.70	3.40	3.00E-02	1.50E-02	7.80E-02	1.70	3.40	4.59E-02	2.29E-02
Selenium	4.68E-02	0.14	0.22	3.27E-01	2.18E-01	1.02E-01	0.14	0.22	7.12E-01	4.73E-01
Silver	1.97E-02	6.02	60.20	3.27E-03	3.27E-04	2.97E-02	6.02	60.20	4.93E-03	4.93E-04
Thallium	2.65E-02	0.01	0.07	3.73E+00	3.73E-01	5.42E-02	0.01	0.07	7.63E+00	7.63E-01
Zinc	2.04E+01	75.40	754.00	2.71E-01	2.71E-02	2.49E+01	75.40	754.00	3.30E-01	3.30E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-96 EU-07 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Animas River Below Cunningham Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.09E-01	0.06	0.59	1.85E+00	1.85E-01	1.75E-01	0.06	0.59	2.96E+00	2.96E-01
Arsenic	5.60E-01	1.04	1.66	5.39E-01	3.38E-01	1.55E+00	1.04	1.66	1.49E+00	9.36E-01
Cadmium	4.12E-01	0.77	7.70	5.35E-01	5.35E-02	7.42E-01	0.77	7.70	9.63E-01	9.63E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	3.70E+00	5.60	9.34	6.61E-01	3.96E-01	6.57E+00	5.60	9.34	1.17E+00	7.03E-01
Lead	5.60E+00	4.70	8.90	1.19E+00	6.29E-01	1.17E+01	4.70	8.90	2.49E+00	1.31E+00
Manganese	1.25E+02	51.50	515.00	2.42E+00	2.42E-01	7.32E+02	51.50	515.00	1.42E+01	1.42E+00
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	2.56E-01	1.70	3.40	1.51E-01	7.53E-02	1.04E+00	1.70	3.40	6.12E-01	3.06E-01
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	6.47E-02	0.01	0.07	9.11E+00	9.11E-01	2.65E-01	0.01	0.07	3.73E+01	3.73E+00
Zinc	4.37E+01	75.40	754.00	5.80E-01	5.80E-02	7.70E+01	75.40	754.00	1.02E+00	1.02E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-97 EU-08 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Cunningham Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.35E-02	0.06	0.59	1.42E+00	1.42E-01	1.58E-01	0.06	0.59	2.67E+00	2.67E-01
Arsenic	5.60E-01	1.04	1.66	5.39E-01	3.38E-01	1.55E+00	1.04	1.66	1.49E+00	9.36E-01
Cadmium	2.88E-01	0.77	7.70	3.74E-01	3.74E-02	5.91E-01	0.77	7.70	7.68E-01	7.68E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	2.86E+00	5.60	9.34	5.11E-01	3.06E-01	3.78E+00	5.60	9.34	6.75E-01	4.05E-01
Lead	5.60E+00	4.70	8.90	1.19E+00	6.29E-01	1.17E+01	4.70	8.90	2.48E+00	1.31E+00
Manganese	4.04E+01	51.50	515.00	7.85E-01	7.85E-02	6.34E+01	51.50	515.00	1.23E+00	1.23E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	8.37E-02	1.70	3.40	4.92E-02	2.46E-02	1.40E-01	1.70	3.40	8.22E-02	4.11E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	3.20E-02	0.01	0.07	4.51E+00	4.51E-01	5.41E-02	0.01	0.07	7.63E+00	7.63E-01
Zinc	3.25E+01	75.40	754.00	4.31E-01	4.31E-02	5.03E+01	75.40	754.00	6.67E-01	6.67E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-98 EU-09 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Animas River Below Minnie Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.09E-01	0.06	0.59	1.85E+00	1.85E-01	1.75E-01	0.06	0.59	2.96E+00	2.96E-01
Arsenic	5.60E-01	1.04	1.66	5.39E-01	3.38E-01	1.55E+00	1.04	1.66	1.49E+00	9.36E-01
Cadmium	4.16E-01	0.77	7.70	5.41E-01	5.41E-02	7.48E-01	0.77	7.70	9.71E-01	9.71E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	3.72E+00	5.60	9.34	6.64E-01	3.98E-01	6.63E+00	5.60	9.34	1.18E+00	7.10E-01
Lead	5.63E+00	4.70	8.90	1.20E+00	6.33E-01	1.19E+01	4.70	8.90	2.54E+00	1.34E+00
Manganese	1.29E+02	51.50	515.00	2.50E+00	2.50E-01	7.43E+02	51.50	515.00	1.44E+01	1.44E+00
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	2.58E-01	1.70	3.40	1.52E-01	7.60E-02	1.05E+00	1.70	3.40	6.18E-01	3.09E-01
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.76E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	6.46E-02	0.01	0.07	9.10E+00	9.10E-01	2.64E-01	0.01	0.07	3.72E+01	3.72E+00
Zinc	4.52E+01	75.40	754.00	6.00E-01	6.00E-02	8.04E+01	75.40	754.00	1.07E+00	1.07E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-99 EU-10 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Animas River Below South Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.09E-01	0.06	0.59	1.85E+00	1.85E-01	1.75E-01	0.06	0.59	2.96E+00	2.96E-01
Arsenic	5.60E-01	1.04	1.66	5.39E-01	3.38E-01	1.55E+00	1.04	1.66	1.49E+00	9.36E-01
Cadmium	4.12E-01	0.77	7.70	5.35E-01	5.35E-02	7.31E-01	0.77	7.70	9.49E-01	9.49E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	3.68E+00	5.60	9.34	6.58E-01	3.94E-01	6.48E+00	5.60	9.34	1.16E+00	6.94E-01
Lead	5.59E+00	4.70	8.90	1.19E+00	6.29E-01	1.17E+01	4.70	8.90	2.48E+00	1.31E+00
Manganese	1.25E+02	51.50	515.00	2.42E+00	2.42E-01	7.32E+02	51.50	515.00	1.42E+01	1.42E+00
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	2.56E-01	1.70	3.40	1.50E-01	7.52E-02	1.04E+00	1.70	3.40	6.12E-01	3.06E-01
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	6.45E-02	0.01	0.07	9.09E+00	9.09E-01	2.64E-01	0.01	0.07	3.72E+01	3.72E+00
Zinc	4.36E+01	75.40	754.00	5.79E-01	5.79E-02	7.64E+01	75.40	754.00	1.01E+00	1.01E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-100 EU-11 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Upper South Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	6.61E-02	0.06	0.59	1.12E+00	1.12E-01	1.26E-01	0.06	0.59	2.13E+00	2.13E-01
Arsenic	1.33E-01	1.04	1.66	1.28E-01	8.03E-02	5.27E-01	1.04	1.66	5.06E-01	3.17E-01
Cadmium	2.91E-01	0.77	7.70	3.78E-01	3.78E-02	5.99E-01	0.77	7.70	7.78E-01	7.78E-02
Chromium	2.85E-01	2.40	24.00	1.19E-01	1.19E-02	3.96E-01	2.40	24.00	1.65E-01	1.65E-02
Copper	2.94E+00	5.60	9.34	5.25E-01	3.15E-01	3.98E+00	5.60	9.34	7.11E-01	4.26E-01
Lead	1.10E+00	4.70	8.90	2.35E-01	1.24E-01	2.31E+00	4.70	8.90	4.91E-01	2.59E-01
Manganese	4.12E+01	51.50	515.00	8.00E-01	8.00E-02	6.86E+01	51.50	515.00	1.33E+00	1.33E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	7.67E-02	1.70	3.40	4.51E-02	2.26E-02	1.40E-01	1.70	3.40	8.22E-02	4.11E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	2.24E-02	0.01	0.07	3.15E+00	3.15E-01	2.25E-02	0.01	0.07	3.17E+00	3.17E-01
Zinc	3.34E+01	75.40	754.00	4.43E-01	4.43E-02	5.26E+01	75.40	754.00	6.98E-01	6.98E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-101 EU-12 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Eureka Gulch

COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.09E-01	0.06	0.59	1.85E+00	1.85E-01	1.75E-01	0.06	0.59	2.96E+00	2.96E-01
Arsenic	5.60E-01	1.04	1.66	5.39E-01	3.38E-01	1.55E+00	1.04	1.66	1.49E+00	9.36E-01
Cadmium	4.14E-01	0.77	7.70	5.37E-01	5.37E-02	7.37E-01	0.77	7.70	9.57E-01	9.57E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	3.77E+00	5.60	9.34	6.73E-01	4.04E-01	6.60E+00	5.60	9.34	1.18E+00	7.07E-01
Lead	5.64E+00	4.70	8.90	1.20E+00	6.34E-01	1.18E+01	4.70	8.90	2.52E+00	1.33E+00
Manganese	1.25E+02	51.50	515.00	2.44E+00	2.44E-01	7.33E+02	51.50	515.00	1.42E+01	1.42E+00
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	2.56E-01	1.70	3.40	1.51E-01	7.53E-02	1.04E+00	1.70	3.40	6.13E-01	3.06E-01
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	6.47E-02	0.01	0.07	9.11E+00	9.11E-01	2.65E-01	0.01	0.07	3.73E+01	3.73E+00
Zinc	4.43E+01	75.40	754.00	5.87E-01	5.87E-02	7.82E+01	75.40	754.00	1.04E+00	1.04E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-102 EU-13 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Lower South Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.09E-01	0.06	0.59	1.85E+00	1.85E-01	1.75E-01	0.06	0.59	2.96E+00	2.96E-01
Arsenic	5.61E-01	1.04	1.66	5.40E-01	3.38E-01	1.56E+00	1.04	1.66	1.50E+00	9.37E-01
Cadmium	4.16E-01	0.77	7.70	5.40E-01	5.40E-02	7.39E-01	0.77	7.70	9.60E-01	9.60E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	3.76E+00	5.60	9.34	6.72E-01	4.03E-01	6.68E+00	5.60	9.34	1.19E+00	7.16E-01
Lead	5.61E+00	4.70	8.90	1.19E+00	6.30E-01	1.17E+01	4.70	8.90	2.49E+00	1.32E+00
Manganese	1.25E+02	51.50	515.00	2.44E+00	2.44E-01	7.37E+02	51.50	515.00	1.43E+01	1.43E+00
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	2.56E-01	1.70	3.40	1.51E-01	7.54E-02	1.04E+00	1.70	3.40	6.13E-01	3.07E-01
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	6.46E-02	0.01	0.07	9.10E+00	9.10E-01	2.64E-01	0.01	0.07	3.72E+01	3.72E+00
Zinc	4.47E+01	75.40	754.00	5.92E-01	5.92E-02	7.89E+01	75.40	754.00	1.05E+00	1.05E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-103 EU-14 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Animas River Below West Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.09E-01	0.06	0.59	1.85E+00	1.85E-01	1.75E-01	0.06	0.59	2.96E+00	2.96E-01
Arsenic	5.66E-01	1.04	1.66	5.44E-01	3.41E-01	1.56E+00	1.04	1.66	1.50E+00	9.41E-01
Cadmium	4.12E-01	0.77	7.70	5.35E-01	5.35E-02	7.31E-01	0.77	7.70	9.50E-01	9.50E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	4.00E+00	5.60	9.34	7.15E-01	4.29E-01	6.95E+00	5.60	9.34	1.24E+00	7.44E-01
Lead	5.59E+00	4.70	8.90	1.19E+00	6.29E-01	1.17E+01	4.70	8.90	2.48E+00	1.31E+00
Manganese	1.25E+02	51.50	515.00	2.42E+00	2.42E-01	7.32E+02	51.50	515.00	1.42E+01	1.42E+00
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	2.56E-01	1.70	3.40	1.50E-01	7.52E-02	1.04E+00	1.70	3.40	6.12E-01	3.06E-01
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	6.47E-02	0.01	0.07	9.11E+00	9.11E-01	2.65E-01	0.01	0.07	3.73E+01	3.73E+00
Zinc	4.38E+01	75.40	754.00	5.81E-01	5.81E-02	7.66E+01	75.40	754.00	1.02E+00	1.02E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-104 EU-15 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Lower West Fork Animas River										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.09E-01	0.06	0.59	1.85E+00	1.85E-01	1.75E-01	0.06	0.59	2.96E+00	2.96E-01
Arsenic	5.61E-01	1.04	1.66	5.39E-01	3.38E-01	1.55E+00	1.04	1.66	1.49E+00	9.36E-01
Cadmium	4.31E-01	0.77	7.70	5.60E-01	5.60E-02	8.17E-01	0.77	7.70	1.06E+00	1.06E-01
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	3.83E+00	5.60	9.34	6.84E-01	4.10E-01	6.89E+00	5.60	9.34	1.23E+00	7.38E-01
Lead	5.61E+00	4.70	8.90	1.19E+00	6.31E-01	1.17E+01	4.70	8.90	2.49E+00	1.32E+00
Manganese	1.25E+02	51.50	515.00	2.43E+00	2.43E-01	7.33E+02	51.50	515.00	1.42E+01	1.42E+00
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	2.57E-01	1.70	3.40	1.51E-01	7.55E-02	1.05E+00	1.70	3.40	6.15E-01	3.08E-01
Selenium	8.27E-02	0.14	0.22	5.79E-01	3.85E-01	1.52E-01	0.14	0.22	1.06E+00	7.07E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	6.45E-02	0.01	0.07	9.09E+00	9.09E-01	2.64E-01	0.01	0.07	3.72E+01	3.72E+00
Zinc	4.85E+01	75.40	754.00	6.43E-01	6.43E-02	9.81E+01	75.40	754.00	1.30E+00	1.30E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-105 EU-16 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Placer Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.09E-01	0.06	0.59	1.85E+00	1.85E-01	1.75E-01	0.06	0.59	2.96E+00	2.96E-01
Arsenic	5.60E-01	1.04	1.66	5.39E-01	3.38E-01	1.55E+00	1.04	1.66	1.49E+00	9.36E-01
Cadmium	4.12E-01	0.77	7.70	5.35E-01	5.35E-02	7.32E-01	0.77	7.70	9.50E-01	9.50E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	3.68E+00	5.60	9.34	6.58E-01	3.94E-01	6.48E+00	5.60	9.34	1.16E+00	6.94E-01
Lead	5.61E+00	4.70	8.90	1.19E+00	6.30E-01	1.17E+01	4.70	8.90	2.49E+00	1.31E+00
Manganese	1.25E+02	51.50	515.00	2.43E+00	2.43E-01	7.32E+02	51.50	515.00	1.42E+01	1.42E+00
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	2.56E-01	1.70	3.40	1.51E-01	7.54E-02	1.04E+00	1.70	3.40	6.13E-01	3.06E-01
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	6.45E-02	0.01	0.07	9.09E+00	9.09E-01	2.64E-01	0.01	0.07	3.72E+01	3.72E+00
Zinc	4.39E+01	75.40	754.00	5.83E-01	5.83E-02	7.68E+01	75.40	754.00	1.02E+00	1.02E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-106 EU-17 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Mainstem West Fork Animas River/California Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	6.61E-02	0.06	0.59	1.12E+00	1.12E-01	1.26E-01	0.06	0.59	2.13E+00	2.13E-01
Arsenic	1.33E-01	1.04	1.66	1.27E-01	7.99E-02	5.25E-01	1.04	1.66	5.05E-01	3.16E-01
Cadmium	2.88E-01	0.77	7.70	3.74E-01	3.74E-02	5.94E-01	0.77	7.70	7.71E-01	7.71E-02
Chromium	2.85E-01	2.40	24.00	1.19E-01	1.19E-02	3.96E-01	2.40	24.00	1.65E-01	1.65E-02
Copper	2.88E+00	5.60	9.34	5.14E-01	3.08E-01	3.93E+00	5.60	9.34	7.02E-01	4.21E-01
Lead	1.09E+00	4.70	8.90	2.32E-01	1.23E-01	2.28E+00	4.70	8.90	4.85E-01	2.56E-01
Manganese	4.06E+01	51.50	515.00	7.87E-01	7.87E-02	6.37E+01	51.50	515.00	1.24E+00	1.24E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	7.62E-02	1.70	3.40	4.49E-02	2.24E-02	1.39E-01	1.70	3.40	8.16E-02	4.08E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	2.24E-02	0.01	0.07	3.16E+00	3.16E-01	2.28E-02	0.01	0.07	3.21E+00	3.21E-01
Zinc	3.26E+01	75.40	754.00	4.32E-01	4.32E-02	5.06E+01	75.40	754.00	6.71E-01	6.71E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-107 EU-18 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in North Fork Animas River Below Burrows Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.36E-02	0.06	0.59	1.42E+00	1.42E-01	1.58E-01	0.06	0.59	2.67E+00	2.67E-01
Arsenic	5.61E-01	1.04	1.66	5.40E-01	3.38E-01	1.56E+00	1.04	1.66	1.50E+00	9.37E-01
Cadmium	2.91E-01	0.77	7.70	3.78E-01	3.78E-02	5.99E-01	0.77	7.70	7.78E-01	7.78E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	2.94E+00	5.60	9.34	5.25E-01	3.15E-01	3.98E+00	5.60	9.34	7.11E-01	4.26E-01
Lead	5.61E+00	4.70	8.90	1.19E+00	6.30E-01	1.17E+01	4.70	8.90	2.49E+00	1.32E+00
Manganese	4.12E+01	51.50	515.00	8.00E-01	8.00E-02	6.86E+01	51.50	515.00	1.33E+00	1.33E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	8.43E-02	1.70	3.40	4.96E-02	2.48E-02	1.41E-01	1.70	3.40	8.30E-02	4.15E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	3.20E-02	0.01	0.07	4.51E+00	4.51E-01	5.43E-02	0.01	0.07	7.65E+00	7.65E-01
Zinc	3.34E+01	75.40	754.00	4.43E-01	4.43E-02	5.26E+01	75.40	754.00	6.98E-01	6.98E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-108 EU-19 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Burrows Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.09E-01	0.06	0.59	1.85E+00	1.85E-01	1.75E-01	0.06	0.59	2.96E+00	2.96E-01
Arsenic	5.61E-01	1.04	1.66	5.39E-01	3.38E-01	1.55E+00	1.04	1.66	1.50E+00	9.37E-01
Cadmium	4.13E-01	0.77	7.70	5.37E-01	5.37E-02	7.34E-01	0.77	7.70	9.53E-01	9.53E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	3.69E+00	5.60	9.34	6.59E-01	3.95E-01	6.49E+00	5.60	9.34	1.16E+00	6.95E-01
Lead	5.61E+00	4.70	8.90	1.19E+00	6.30E-01	1.17E+01	4.70	8.90	2.50E+00	1.32E+00
Manganese	1.25E+02	51.50	515.00	2.42E+00	2.42E-01	7.32E+02	51.50	515.00	1.42E+01	1.42E+00
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	2.56E-01	1.70	3.40	1.50E-01	7.52E-02	1.04E+00	1.70	3.40	6.12E-01	3.06E-01
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.15E-03	8.15E-04	9.78E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	6.46E-02	0.01	0.07	9.10E+00	9.10E-01	2.64E-01	0.01	0.07	3.72E+01	3.72E+00
Zinc	4.40E+01	75.40	754.00	5.83E-01	5.83E-02	7.71E+01	75.40	754.00	1.02E+00	1.02E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-109 EU-R2 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Maggie Gulch Reference Area										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	4.16E-02	0.06	0.59	7.05E-01	7.05E-02	6.13E-02	0.06	0.59	1.04E+00	1.04E-01
Arsenic	3.03E-02	1.04	1.66	2.91E-02	1.83E-02	4.54E-02	1.04	1.66	4.36E-02	2.73E-02
Cadmium	2.07E-01	0.77	7.70	2.69E-01	2.69E-02	4.34E-01	0.77	7.70	5.64E-01	5.64E-02
Chromium	2.85E-01	2.40	24.00	1.19E-01	1.19E-02	3.96E-01	2.40	24.00	1.65E-01	1.65E-02
Copper	2.84E+00	5.60	9.34	5.08E-01	3.04E-01	3.40E+00	5.60	9.34	6.07E-01	3.64E-01
Lead	1.46E-01	4.70	8.90	3.11E-02	1.64E-02	2.27E-01	4.70	8.90	4.83E-02	2.55E-02
Manganese	1.01E+01	51.50	515.00	1.97E-01	1.97E-02	1.31E+01	51.50	515.00	2.55E-01	2.55E-02
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	5.00E-02	1.70	3.40	2.94E-02	1.47E-02	7.42E-02	1.70	3.40	4.37E-02	2.18E-02
Selenium	4.68E-02	0.14	0.22	3.27E-01	2.18E-01	1.02E-01	0.14	0.22	7.12E-01	4.74E-01
Silver	1.97E-02	6.02	60.20	3.27E-03	3.27E-04	2.97E-02	6.02	60.20	4.93E-03	4.93E-04
Thallium	2.65E-02	0.01	0.07	3.74E+00	3.74E-01	5.42E-02	0.01	0.07	7.63E+00	7.63E-01
Zinc	2.10E+01	75.40	754.00	2.79E-01	2.79E-02	2.50E+01	75.40	754.00	3.31E-01	3.31E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-110 EU-R3 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Picayune Gulch Reference Area										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	4.16E-02	0.06	0.59	7.04E-01	7.04E-02	6.13E-02	0.06	0.59	1.04E+00	1.04E-01
Arsenic	2.98E-02	1.04	1.66	2.86E-02	1.79E-02	4.49E-02	1.04	1.66	4.31E-02	2.70E-02
Cadmium	2.03E-01	0.77	7.70	2.63E-01	2.63E-02	4.30E-01	0.77	7.70	5.59E-01	5.59E-02
Chromium	2.85E-01	2.40	24.00	1.19E-01	1.19E-02	3.96E-01	2.40	24.00	1.65E-01	1.65E-02
Copper	2.76E+00	5.60	9.34	4.93E-01	2.96E-01	3.32E+00	5.60	9.34	5.93E-01	3.55E-01
Lead	1.29E-01	4.70	8.90	2.75E-02	1.45E-02	2.10E-01	4.70	8.90	4.47E-02	2.36E-02
Manganese	9.50E+00	51.50	515.00	1.85E-01	1.85E-02	1.25E+01	51.50	515.00	2.43E-01	2.43E-02
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	4.94E-02	1.70	3.40	2.91E-02	1.45E-02	7.37E-02	1.70	3.40	4.34E-02	2.17E-02
Selenium	4.68E-02	0.14	0.22	3.27E-01	2.18E-01	1.02E-01	0.14	0.22	7.12E-01	4.73E-01
Silver	1.97E-02	6.02	60.20	3.27E-03	3.27E-04	2.97E-02	6.02	60.20	4.93E-03	4.93E-04
Thallium	2.64E-02	0.01	0.07	3.72E+00	3.72E-01	5.40E-02	0.01	0.07	7.61E+00	7.61E-01
Zinc	1.99E+01	75.40	754.00	2.64E-01	2.64E-02	2.39E+01	75.40	754.00	3.17E-01	3.17E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-111 EU-R4 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in North Fork Animas River Reference Area										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	4.16E-02	0.06	0.59	7.05E-01	7.05E-02	6.13E-02	0.06	0.59	1.04E+00	1.04E-01
Arsenic	3.03E-02	1.04	1.66	2.91E-02	1.83E-02	4.67E-02	1.04	1.66	4.49E-02	2.81E-02
Cadmium	2.07E-01	0.77	7.70	2.69E-01	2.69E-02	4.39E-01	0.77	7.70	5.70E-01	5.70E-02
Chromium	2.85E-01	2.40	24.00	1.19E-01	1.19E-02	3.96E-01	2.40	24.00	1.65E-01	1.65E-02
Copper	2.84E+00	5.60	9.34	5.08E-01	3.04E-01	3.53E+00	5.60	9.34	6.30E-01	3.77E-01
Lead	1.46E-01	4.70	8.90	3.11E-02	1.64E-02	2.46E-01	4.70	8.90	5.22E-02	2.76E-02
Manganese	1.01E+01	51.50	515.00	1.97E-01	1.97E-02	1.76E+01	51.50	515.00	3.41E-01	3.41E-02
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	5.00E-02	1.70	3.40	2.94E-02	1.47E-02	7.51E-02	1.70	3.40	4.42E-02	2.21E-02
Selenium	4.68E-02	0.14	0.22	3.27E-01	2.18E-01	1.02E-01	0.14	0.22	7.12E-01	4.74E-01
Silver	1.97E-02	6.02	60.20	3.27E-03	3.27E-04	2.97E-02	6.02	60.20	4.93E-03	4.93E-04
Thallium	2.65E-02	0.01	0.07	3.74E+00	3.74E-01	5.43E-02	0.01	0.07	7.65E+00	7.65E-01
Zinc	2.10E+01	75.40	754.00	2.79E-01	2.79E-02	2.64E+01	75.40	754.00	3.50E-01	3.50E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-112 EU-20 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Lower Mainstem Cement Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.35E-02	0.06	0.59	1.42E+00	1.42E-01	1.58E-01	0.06	0.59	2.67E+00	2.67E-01
Arsenic	5.61E-01	1.04	1.66	5.39E-01	3.38E-01	1.55E+00	1.04	1.66	1.49E+00	9.36E-01
Cadmium	2.87E-01	0.77	7.70	3.73E-01	3.73E-02	5.92E-01	0.77	7.70	7.69E-01	7.69E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	2.90E+00	5.60	9.34	5.18E-01	3.10E-01	4.06E+00	5.60	9.34	7.25E-01	4.35E-01
Lead	5.59E+00	4.70	8.90	1.19E+00	6.29E-01	1.17E+01	4.70	8.90	2.48E+00	1.31E+00
Manganese	4.10E+01	51.50	515.00	7.96E-01	7.96E-02	6.42E+01	51.50	515.00	1.25E+00	1.25E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	8.43E-02	1.70	3.40	4.96E-02	2.48E-02	1.42E-01	1.70	3.40	8.36E-02	4.18E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	3.21E-02	0.01	0.07	4.52E+00	4.52E-01	5.44E-02	0.01	0.07	7.66E+00	7.66E-01
Zinc	3.25E+01	75.40	754.00	4.32E-01	4.32E-02	5.04E+01	75.40	754.00	6.68E-01	6.68E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-113 EU-21 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Prospect Gulch										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.35E-02	0.06	0.59	1.42E+00	1.42E-01	1.58E-01	0.06	0.59	2.67E+00	2.67E-01
Arsenic	5.61E-01	1.04	1.66	5.39E-01	3.38E-01	1.56E+00	1.04	1.66	1.50E+00	9.39E-01
Cadmium	2.88E-01	0.77	7.70	3.74E-01	3.74E-02	5.94E-01	0.77	7.70	7.71E-01	7.71E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	2.87E+00	5.60	9.34	5.12E-01	3.07E-01	3.82E+00	5.60	9.34	6.82E-01	4.09E-01
Lead	5.60E+00	4.70	8.90	1.19E+00	6.30E-01	1.17E+01	4.70	8.90	2.50E+00	1.32E+00
Manganese	4.05E+01	51.50	515.00	7.87E-01	7.87E-02	6.42E+01	51.50	515.00	1.25E+00	1.25E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	0.00E+00	0.26	2.60	0.00E+00	0.00E+00	0.00E+00	0.26	2.60	0.00E+00	0.00E+00
Nickel	8.47E-02	1.70	3.40	4.99E-02	2.49E-02	1.45E-01	1.70	3.40	8.53E-02	4.27E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.76E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	3.21E-02	0.01	0.07	4.51E+00	4.51E-01	5.43E-02	0.01	0.07	7.65E+00	7.65E-01
Zinc	3.27E+01	75.40	754.00	4.34E-01	4.34E-02	5.17E+01	75.40	754.00	6.86E-01	6.86E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-114 EU-22 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Mainstem Cement Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.09E-01	0.06	0.59	1.85E+00	1.85E-01	1.75E-01	0.06	0.59	2.96E+00	2.96E-01
Arsenic	5.61E-01	1.04	1.66	5.40E-01	3.38E-01	1.56E+00	1.04	1.66	1.50E+00	9.39E-01
Cadmium	4.14E-01	0.77	7.70	5.38E-01	5.38E-02	7.36E-01	0.77	7.70	9.56E-01	9.56E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	3.79E+00	5.60	9.34	6.77E-01	4.06E-01	6.91E+00	5.60	9.34	1.23E+00	7.40E-01
Lead	5.60E+00	4.70	8.90	1.19E+00	6.29E-01	1.17E+01	4.70	8.90	2.49E+00	1.31E+00
Manganese	1.27E+02	51.50	515.00	2.47E+00	2.47E-01	7.35E+02	51.50	515.00	1.43E+01	1.43E+00
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	3.18E-04	0.26	2.60	1.22E-03	1.22E-04	3.98E-04	0.26	2.60	1.53E-03	1.53E-04
Nickel	2.59E-01	1.70	3.40	1.52E-01	7.61E-02	1.04E+00	1.70	3.40	6.14E-01	3.07E-01
Selenium	8.26E-02	0.14	0.22	5.78E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.03E-01
Silver	4.91E-02	6.02	60.20	8.15E-03	8.15E-04	9.76E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	6.47E-02	0.01	0.07	9.11E+00	9.11E-01	2.65E-01	0.01	0.07	3.73E+01	3.73E+00
Zinc	4.50E+01	75.40	754.00	5.97E-01	5.97E-02	7.85E+01	75.40	754.00	1.04E+00	1.04E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-115 EU-23 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in South Fork Cement Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	6.61E-02	0.06	0.59	1.12E+00	1.12E-01	1.26E-01	0.06	0.59	2.13E+00	2.13E-01
Arsenic	1.32E-01	1.04	1.66	1.27E-01	7.98E-02	5.25E-01	1.04	1.66	5.04E-01	3.16E-01
Cadmium	2.87E-01	0.77	7.70	3.73E-01	3.73E-02	5.91E-01	0.77	7.70	7.67E-01	7.67E-02
Chromium	2.85E-01	2.40	24.00	1.19E-01	1.19E-02	3.96E-01	2.40	24.00	1.65E-01	1.65E-02
Copper	2.86E+00	5.60	9.34	5.11E-01	3.06E-01	3.78E+00	5.60	9.34	6.75E-01	4.05E-01
Lead	1.09E+00	4.70	8.90	2.31E-01	1.22E-01	2.27E+00	4.70	8.90	4.84E-01	2.55E-01
Manganese	4.06E+01	51.50	515.00	7.88E-01	7.88E-02	6.36E+01	51.50	515.00	1.23E+00	1.23E-01
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	7.63E-02	1.70	3.40	4.49E-02	2.24E-02	1.39E-01	1.70	3.40	8.16E-02	4.08E-02
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.76E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	2.23E-02	0.01	0.07	3.14E+00	3.14E-01	2.23E-02	0.01	0.07	3.15E+00	3.15E-01
Zinc	3.24E+01	75.40	754.00	4.30E-01	4.30E-02	5.02E+01	75.40	754.00	6.65E-01	6.65E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-116 EU-24 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Fringed Myotis Bat Foraging in Upper Cement Creek										
COPEC	CTE exposure scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.09E-01	0.06	0.59	1.85E+00	1.85E-01	1.75E-01	0.06	0.59	2.96E+00	2.96E-01
Arsenic	5.61E-01	1.04	1.66	5.39E-01	3.38E-01	1.55E+00	1.04	1.66	1.49E+00	9.36E-01
Cadmium	4.14E-01	0.77	7.70	5.38E-01	5.38E-02	7.35E-01	0.77	7.70	9.54E-01	9.54E-02
Chromium	3.16E-01	2.40	24.00	1.32E-01	1.32E-02	5.97E-01	2.40	24.00	2.49E-01	2.49E-02
Copper	3.73E+00	5.60	9.34	6.66E-01	3.99E-01	6.63E+00	5.60	9.34	1.18E+00	7.10E-01
Lead	5.60E+00	4.70	8.90	1.19E+00	6.29E-01	1.17E+01	4.70	8.90	2.49E+00	1.31E+00
Manganese	1.25E+02	51.50	515.00	2.43E+00	2.43E-01	7.33E+02	51.50	515.00	1.42E+01	1.42E+00
Mercury	0.00E+00	1.00	14.10	0.00E+00	0.00E+00	0.00E+00	1.00	14.10	0.00E+00	0.00E+00
Molybdenum	1.99E-04	0.26	2.60	7.64E-04	7.64E-05	1.99E-04	0.26	2.60	7.64E-04	7.64E-05
Nickel	2.56E-01	1.70	3.40	1.51E-01	7.53E-02	1.04E+00	1.70	3.40	6.13E-01	3.06E-01
Selenium	8.25E-02	0.14	0.22	5.77E-01	3.84E-01	1.51E-01	0.14	0.22	1.06E+00	7.02E-01
Silver	4.90E-02	6.02	60.20	8.14E-03	8.14E-04	9.75E-02	6.02	60.20	1.62E-02	1.62E-03
Thallium	6.46E-02	0.01	0.07	9.09E+00	9.09E-01	2.64E-01	0.01	0.07	3.72E+01	3.72E+00
Zinc	4.47E+01	75.40	754.00	5.92E-01	5.92E-02	7.81E+01	75.40	754.00	1.04E+00	1.04E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-117 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Montane Shrew Foraging in High-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	4.01E-01	0.06	0.59	6.80E+00	6.80E-01	6.84E-01	0.06	0.59	1.16E+01	1.16E+00
Arsenic	2.39E+00	1.04	1.66	2.29E+00	1.44E+00	3.62E+00	1.04	1.66	3.48E+00	2.18E+00
Cadmium	5.23E+00	0.77	7.70	6.79E+00	6.79E-01	5.82E+00	0.77	7.70	7.56E+00	7.56E-01
Chromium	6.85E-01	2.40	24.00	2.85E-01	2.85E-02	1.02E+00	2.40	24.00	4.27E-01	4.27E-02
Copper	2.17E+01	5.60	9.34	3.88E+00	2.33E+00	2.71E+01	5.60	9.34	4.83E+00	2.90E+00
Lead	1.23E+02	4.70	8.90	2.61E+01	1.38E+01	1.93E+02	4.70	8.90	4.10E+01	2.17E+01
Manganese	5.10E+02	51.50	515.00	9.90E+00	9.90E-01	8.63E+02	51.50	515.00	1.68E+01	1.68E+00
Mercury	1.12E-02	1.00	14.10	1.12E-02	7.93E-04	2.04E-02	1.00	14.10	2.04E-02	1.45E-03
Molybdenum	3.32E-01	0.26	2.60	1.28E+00	1.28E-01	4.23E-01	0.26	2.60	1.63E+00	1.63E-01
Nickel	4.39E-01	1.70	3.40	2.58E-01	1.29E-01	6.28E-01	1.70	3.40	3.70E-01	1.85E-01
Selenium	1.34E+00	0.14	0.22	9.40E+00	6.25E+00	3.02E+00	0.14	0.22	2.11E+01	1.40E+01
Silver	4.65E-01	6.02	60.20	7.73E-02	7.73E-03	8.86E-01	6.02	60.20	1.47E-01	1.47E-02
Thallium	9.70E-02	0.01	0.07	1.37E+01	1.37E+00	2.25E-01	0.01	0.07	3.17E+01	3.17E+00
Zinc	1.38E+02	75.40	754.00	1.83E+00	1.83E-01	1.94E+02	75.40	754.00	2.57E+00	2.57E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-118 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Montane Shrew Foraging in Mid-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	2.18E-01	0.06	0.59	3.70E+00	3.70E-01	3.89E-01	0.06	0.59	6.59E+00	6.59E-01
Arsenic	1.85E+00	1.04	1.66	1.78E+00	1.12E+00	2.10E+00	1.04	1.66	2.02E+00	1.27E+00
Cadmium	4.89E+00	0.77	7.70	6.35E+00	6.35E-01	5.70E+00	0.77	7.70	7.40E+00	7.40E-01
Chromium	6.50E-01	2.40	24.00	2.71E-01	2.71E-02	9.70E-01	2.40	24.00	4.04E-01	4.04E-02
Copper	9.13E+00	5.60	9.34	1.63E+00	9.77E-01	1.13E+01	5.60	9.34	2.01E+00	1.21E+00
Lead	3.24E+01	4.70	8.90	6.89E+00	3.64E+00	3.96E+01	4.70	8.90	8.42E+00	4.45E+00
Manganese	1.37E+02	51.50	515.00	2.66E+00	2.66E-01	1.69E+02	51.50	515.00	3.27E+00	3.27E-01
Mercury	4.92E-03	1.00	14.10	4.92E-03	3.49E-04	7.82E-03	1.00	14.10	7.82E-03	5.55E-04
Molybdenum	1.02E-01	0.26	2.60	3.93E-01	3.93E-02	1.18E-01	0.26	2.60	4.54E-01	4.54E-02
Nickel	3.56E-01	1.70	3.40	2.09E-01	1.05E-01	5.49E-01	1.70	3.40	3.23E-01	1.62E-01
Selenium	1.34E+00	0.14	0.22	9.39E+00	6.24E+00	3.01E+00	0.14	0.22	2.11E+01	1.40E+01
Silver	1.99E-01	6.02	60.20	3.30E-02	3.30E-03	4.59E-01	6.02	60.20	7.63E-02	7.63E-03
Thallium	9.38E-02	0.01	0.07	1.32E+01	1.32E+00	2.14E-01	0.01	0.07	3.02E+01	3.02E+00
Zinc	7.59E+01	75.40	754.00	1.01E+00	1.01E-01	8.69E+01	75.40	754.00	1.15E+00	1.15E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-119 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Montane Shrew Foraging in Low-Level Dose Response Category (DRC) Waste Pile Halo Areas										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.67E-01	0.06	0.59	2.82E+00	2.82E-01	3.16E-01	0.06	0.59	5.35E+00	5.35E-01
Arsenic	1.26E+00	1.04	1.66	1.21E+00	7.57E-01	1.47E+00	1.04	1.66	1.41E+00	8.83E-01
Cadmium	9.47E-01	0.77	7.70	1.23E+00	1.23E-01	1.10E+00	0.77	7.70	1.42E+00	1.42E-01
Chromium	6.21E-01	2.40	24.00	2.59E-01	2.59E-02	9.39E-01	2.40	24.00	3.91E-01	3.91E-02
Copper	5.03E+00	5.60	9.34	8.98E-01	5.38E-01	8.18E+00	5.60	9.34	1.46E+00	8.76E-01
Lead	1.41E+01	4.70	8.90	2.99E+00	1.58E+00	1.64E+01	4.70	8.90	3.49E+00	1.84E+00
Manganese	1.19E+02	51.50	515.00	2.31E+00	2.31E-01	1.46E+02	51.50	515.00	2.83E+00	2.83E-01
Mercury	3.40E-03	1.00	14.10	3.40E-03	2.41E-04	3.86E-03	1.00	14.10	3.86E-03	2.74E-04
Molybdenum	1.94E-01	0.26	2.60	7.45E-01	7.45E-02	2.37E-01	0.26	2.60	9.13E-01	9.13E-02
Nickel	2.95E-01	1.70	3.40	1.74E-01	8.69E-02	4.12E-01	1.70	3.40	2.43E-01	1.21E-01
Selenium	1.35E+00	0.14	0.22	9.43E+00	6.27E+00	3.02E+00	0.14	0.22	2.11E+01	1.40E+01
Silver	1.24E-01	6.02	60.20	2.06E-02	2.06E-03	3.48E-01	6.02	60.20	5.79E-02	5.79E-03
Thallium	1.00E-01	0.01	0.07	1.41E+01	1.41E+00	2.37E-01	0.01	0.07	3.34E+01	3.34E+00
Zinc	4.29E+01	75.40	754.00	5.69E-01	5.69E-02	5.74E+01	75.40	754.00	7.61E-01	7.61E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-120 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Montane Shrew Foraging in Vegetated Upland Habitats										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.42E-01	0.06	0.59	2.41E+00	2.41E-01	3.28E-01	0.06	0.59	5.56E+00	5.56E-01
Arsenic	2.24E+00	1.04	1.66	2.15E+00	1.35E+00	5.22E+00	1.04	1.66	5.02E+00	3.14E+00
Cadmium	5.90E-01	0.77	7.70	7.66E-01	7.66E-02	8.08E-01	0.77	7.70	1.05E+00	1.05E-01
Chromium	6.33E-01	2.40	24.00	2.64E-01	2.64E-02	9.56E-01	2.40	24.00	3.98E-01	3.98E-02
Copper	6.06E+00	5.60	9.34	1.08E+00	6.49E-01	1.63E+01	5.60	9.34	2.91E+00	1.74E+00
Lead	8.00E+00	4.70	8.90	1.70E+00	8.99E-01	1.52E+01	4.70	8.90	3.24E+00	1.71E+00
Manganese	1.09E+02	51.50	515.00	2.11E+00	2.11E-01	1.49E+02	51.50	515.00	2.89E+00	2.89E-01
Mercury	4.65E-03	1.00	14.10	4.65E-03	3.30E-04	7.21E-03	1.00	14.10	7.21E-03	5.11E-04
Molybdenum	1.58E-01	0.26	2.60	6.09E-01	6.09E-02	2.52E-01	0.26	2.60	9.69E-01	9.69E-02
Nickel	3.39E-01	1.70	3.40	1.99E-01	9.97E-02	4.39E-01	1.70	3.40	2.58E-01	1.29E-01
Selenium	1.30E+00	0.14	0.22	9.11E+00	6.06E+00	2.92E+00	0.14	0.22	2.04E+01	1.36E+01
Silver	1.29E-01	6.02	60.20	2.14E-02	2.14E-03	3.61E-01	6.02	60.20	6.00E-02	6.00E-03
Thallium	8.53E-02	0.01	0.07	1.20E+01	1.20E+00	2.15E-01	0.01	0.07	3.03E+01	3.03E+00
Zinc	3.96E+01	75.40	754.00	5.26E-01	5.26E-02	5.60E+01	75.40	754.00	7.43E-01	7.43E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-121 EU-01 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Lower Mainstem Mineral Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	5.71E-01	2.24	22.40	2.55E-01	2.55E-02	7.90E-01	2.24	22.40	3.53E-01	3.53E-02
Barium	4.52E+00	73.50	131.00	6.16E-02	3.45E-02	6.93E+00	73.50	131.00	9.43E-02	5.29E-02
Cadmium	1.48E+00	1.47	14.70	1.01E+00	1.01E-01	1.68E+00	1.47	14.70	1.14E+00	1.14E-01
Chromium	2.95E-01	2.66	26.60	1.11E-01	1.11E-02	4.21E-01	2.66	26.60	1.58E-01	1.58E-02
Copper	3.29E+00	4.05	12.10	8.12E-01	2.72E-01	5.60E+00	4.05	12.10	1.38E+00	4.63E-01
Lead	8.64E+00	1.63	3.26	5.30E+00	2.65E+00	1.32E+01	1.63	3.26	8.10E+00	4.05E+00
Manganese	4.58E+01	179.00	1790.00	2.56E-01	2.56E-02	8.96E+01	179.00	1790.00	5.00E-01	5.00E-02
Mercury	7.58E-03	0.45	0.90	1.69E-02	8.43E-03	9.35E-03	0.45	0.90	2.08E-02	1.04E-02
Molybdenum	4.02E-02	3.50	35.00	1.15E-02	1.15E-03	5.33E-02	3.50	35.00	1.52E-02	1.52E-03
Nickel	1.54E-01	6.71	67.10	2.30E-02	2.30E-03	2.64E-01	6.71	67.10	3.93E-02	3.93E-03
Selenium	3.99E-01	0.29	0.58	1.38E+00	6.89E-01	8.93E-01	0.29	0.58	3.08E+00	1.54E+00
Silver	5.57E-02	2.02	20.20	2.76E-02	2.76E-03	1.25E-01	2.02	20.20	6.18E-02	6.18E-03
Vanadium	7.50E-01	0.34	0.69	2.18E+00	1.09E+00	1.32E+00	0.34	0.69	3.84E+00	1.92E+00
Zinc	3.06E+01	66.10	661.00	4.63E-01	4.63E-02	3.90E+01	66.10	661.00	5.90E-01	5.90E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-122 EU-02 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Lower Mainstem Mineral Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	4.61E-01	2.24	22.40	2.06E-01	2.06E-02	6.79E-01	2.24	22.40	3.03E-01	3.03E-02
Barium	4.55E+00	73.50	131.00	6.19E-02	3.47E-02	5.83E+00	73.50	131.00	7.93E-02	4.45E-02
Cadmium	2.98E-01	1.47	14.70	2.03E-01	2.03E-02	3.63E-01	1.47	14.70	2.47E-01	2.47E-02
Chromium	2.65E-01	2.66	26.60	9.95E-02	9.95E-03	3.75E-01	2.66	26.60	1.41E-01	1.41E-02
Copper	1.71E+00	4.05	12.10	4.22E-01	1.41E-01	2.71E+00	4.05	12.10	6.69E-01	2.24E-01
Lead	5.08E+00	1.63	3.26	3.12E+00	1.56E+00	7.17E+00	1.63	3.26	4.40E+00	2.20E+00
Manganese	3.49E+01	179.00	1790.00	1.95E-01	1.95E-02	5.34E+01	179.00	1790.00	2.98E-01	2.98E-02
Mercury	6.68E-03	0.45	0.90	1.49E-02	7.43E-03	7.67E-03	0.45	0.90	1.70E-02	8.52E-03
Molybdenum	4.22E-02	3.50	35.00	1.20E-02	1.20E-03	6.20E-02	3.50	35.00	1.77E-02	1.77E-03
Nickel	1.04E-01	6.71	67.10	1.55E-02	1.55E-03	1.54E-01	6.71	67.10	2.29E-02	2.29E-03
Selenium	3.93E-01	0.29	0.58	1.36E+00	6.79E-01	8.83E-01	0.29	0.58	3.05E+00	1.53E+00
Silver	4.01E-02	2.02	20.20	1.99E-02	1.99E-03	1.06E-01	2.02	20.20	5.25E-02	5.25E-03
Vanadium	5.62E-01	0.34	0.69	1.63E+00	8.17E-01	6.48E-01	0.34	0.69	1.88E+00	9.42E-01
Zinc	1.74E+01	66.10	661.00	2.64E-01	2.64E-02	2.44E+01	66.10	661.00	3.69E-01	3.69E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-123 EU-03 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Middle Mainstem Mineral Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	4.93E-01	2.24	22.40	2.20E-01	2.20E-02	7.50E-01	2.24	22.40	3.35E-01	3.35E-02
Barium	3.73E+00	73.50	131.00	5.07E-02	2.84E-02	5.88E+00	73.50	131.00	7.99E-02	4.49E-02
Cadmium	1.48E+00	1.47	14.70	1.00E+00	1.00E-01	1.67E+00	1.47	14.70	1.13E+00	1.13E-01
Chromium	2.87E-01	2.66	26.60	1.08E-01	1.08E-02	4.20E-01	2.66	26.60	1.58E-01	1.58E-02
Copper	2.15E+00	4.05	12.10	5.31E-01	1.78E-01	3.36E+00	4.05	12.10	8.30E-01	2.78E-01
Lead	8.19E+00	1.63	3.26	5.03E+00	2.51E+00	1.34E+01	1.63	3.26	8.20E+00	4.10E+00
Manganese	5.54E+01	179.00	1790.00	3.09E-01	3.09E-02	1.67E+02	179.00	1790.00	9.34E-01	9.34E-02
Mercury	6.31E-03	0.45	0.90	1.40E-02	7.02E-03	6.85E-03	0.45	0.90	1.52E-02	7.61E-03
Molybdenum	2.26E-02	3.50	35.00	6.45E-03	6.45E-04	2.99E-02	3.50	35.00	8.54E-03	8.54E-04
Nickel	1.41E-01	6.71	67.10	2.10E-02	2.10E-03	2.50E-01	6.71	67.10	3.73E-02	3.73E-03
Selenium	3.89E-01	0.29	0.58	1.34E+00	6.72E-01	8.75E-01	0.29	0.58	3.02E+00	1.51E+00
Silver	5.29E-02	2.02	20.20	2.62E-02	2.62E-03	1.17E-01	2.02	20.20	5.77E-02	5.77E-03
Vanadium	5.48E-01	0.34	0.69	1.59E+00	7.97E-01	6.54E-01	0.34	0.69	1.90E+00	9.50E-01
Zinc	2.60E+01	66.10	661.00	3.93E-01	3.93E-02	3.25E+01	66.10	661.00	4.92E-01	4.92E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-124 EU-3.5 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Browns Gulch										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	6.51E-01	2.24	22.40	2.91E-01	2.91E-02	1.21E+00	2.24	22.40	5.40E-01	5.40E-02
Barium	3.84E+00	73.50	131.00	5.22E-02	2.93E-02	5.83E+00	73.50	131.00	7.94E-02	4.45E-02
Cadmium	1.47E+00	1.47	14.70	1.00E+00	1.00E-01	1.65E+00	1.47	14.70	1.12E+00	1.12E-01
Chromium	2.89E-01	2.66	26.60	1.08E-01	1.08E-02	4.20E-01	2.66	26.60	1.58E-01	1.58E-02
Copper	2.05E+00	4.05	12.10	5.06E-01	1.69E-01	3.26E+00	4.05	12.10	8.05E-01	2.69E-01
Lead	1.16E+01	1.63	3.26	7.13E+00	3.56E+00	3.99E+01	1.63	3.26	2.45E+01	1.23E+01
Manganese	4.60E+01	179.00	1790.00	2.57E-01	2.57E-02	9.01E+01	179.00	1790.00	5.03E-01	5.03E-02
Mercury	8.30E-03	0.45	0.90	1.84E-02	9.22E-03	1.61E-02	0.45	0.90	3.58E-02	1.79E-02
Molybdenum	2.03E-02	3.50	35.00	5.79E-03	5.79E-04	2.97E-02	3.50	35.00	8.49E-03	8.49E-04
Nickel	1.70E-01	6.71	67.10	2.53E-02	2.53E-03	2.96E-01	6.71	67.10	4.41E-02	4.41E-03
Selenium	3.91E-01	0.29	0.58	1.35E+00	6.75E-01	8.76E-01	0.29	0.58	3.02E+00	1.51E+00
Silver	6.65E-02	2.02	20.20	3.29E-02	3.29E-03	1.86E-01	2.02	20.20	9.22E-02	9.22E-03
Vanadium	5.56E-01	0.34	0.69	1.62E+00	8.08E-01	6.60E-01	0.34	0.69	1.92E+00	9.60E-01
Zinc	2.71E+01	66.10	661.00	4.10E-01	4.10E-02	3.49E+01	66.10	661.00	5.27E-01	5.27E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-125 EU-04 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Upper Mainstem Mineral Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.58E+00	2.24	22.40	7.06E-01	7.06E-02	5.62E+00	2.24	22.40	2.51E+00	2.51E-01
Barium	3.97E+00	73.50	131.00	5.40E-02	3.03E-02	6.68E+00	73.50	131.00	9.09E-02	5.10E-02
Cadmium	1.53E+00	1.47	14.70	1.04E+00	1.04E-01	1.70E+00	1.47	14.70	1.16E+00	1.16E-01
Chromium	2.88E-01	2.66	26.60	1.08E-01	1.08E-02	3.98E-01	2.66	26.60	1.50E-01	1.50E-02
Copper	3.78E+00	4.05	12.10	9.34E-01	3.13E-01	7.59E+00	4.05	12.10	1.88E+00	6.28E-01
Lead	9.72E+00	1.63	3.26	5.96E+00	2.98E+00	2.29E+01	1.63	3.26	1.40E+01	7.02E+00
Manganese	5.70E+01	179.00	1790.00	3.19E-01	3.19E-02	1.23E+02	179.00	1790.00	6.89E-01	6.89E-02
Mercury	7.41E-03	0.45	0.90	1.65E-02	8.23E-03	1.02E-02	0.45	0.90	2.26E-02	1.13E-02
Molybdenum	1.36E-02	3.50	35.00	3.90E-03	3.90E-04	1.80E-02	3.50	35.00	5.14E-03	5.14E-04
Nickel	1.68E-01	6.71	67.10	2.50E-02	2.50E-03	2.80E-01	6.71	67.10	4.17E-02	4.17E-03
Selenium	3.92E-01	0.29	0.58	1.35E+00	6.77E-01	8.85E-01	0.29	0.58	3.05E+00	1.53E+00
Silver	5.35E-02	2.02	20.20	2.65E-02	2.65E-03	1.19E-01	2.02	20.20	5.91E-02	5.91E-03
Vanadium	5.36E-01	0.34	0.69	1.56E+00	7.79E-01	6.30E-01	0.34	0.69	1.83E+00	9.16E-01
Zinc	3.97E+01	66.10	661.00	6.00E-01	6.00E-02	5.85E+01	66.10	661.00	8.86E-01	8.86E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-126 EU-05 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in South Fork Mineral Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	4.18E-01	2.24	22.40	1.87E-01	1.87E-02	5.63E-01	2.24	22.40	2.52E-01	2.52E-02
Barium	4.25E+00	73.50	131.00	5.78E-02	3.24E-02	6.25E+00	73.50	131.00	8.50E-02	4.77E-02
Cadmium	1.66E+00	1.47	14.70	1.13E+00	1.13E-01	3.41E+00	1.47	14.70	2.32E+00	2.32E-01
Chromium	3.00E-01	2.66	26.60	1.13E-01	1.13E-02	4.13E-01	2.66	26.60	1.55E-01	1.55E-02
Copper	5.89E+00	4.05	12.10	1.45E+00	4.87E-01	3.79E+01	4.05	12.10	9.35E+00	3.13E+00
Lead	9.87E+00	1.63	3.26	6.05E+00	3.03E+00	2.17E+01	1.63	3.26	1.33E+01	6.65E+00
Manganese	1.03E+02	179.00	1790.00	5.77E-01	5.77E-02	3.59E+02	179.00	1790.00	2.00E+00	2.00E-01
Mercury	6.19E-03	0.45	0.90	1.38E-02	6.88E-03	6.87E-03	0.45	0.90	1.53E-02	7.63E-03
Molybdenum	1.92E-02	3.50	35.00	5.48E-03	5.48E-04	2.67E-02	3.50	35.00	7.63E-03	7.63E-04
Nickel	2.22E-01	6.71	67.10	3.31E-02	3.31E-03	4.69E-01	6.71	67.10	6.99E-02	6.99E-03
Selenium	3.93E-01	0.29	0.58	1.36E+00	6.79E-01	8.82E-01	0.29	0.58	3.04E+00	1.52E+00
Silver	7.69E-02	2.02	20.20	3.81E-02	3.81E-03	2.12E-01	2.02	20.20	1.05E-01	1.05E-02
Vanadium	6.11E-01	0.34	0.69	1.77E+00	8.87E-01	7.62E-01	0.34	0.69	2.21E+00	1.11E+00
Zinc	4.25E+01	66.10	661.00	6.43E-01	6.43E-02	9.66E+01	66.10	661.00	1.46E+00	1.46E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-127 EU-06 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Middle Fork Mineral Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	3.22E-01	2.24	22.40	1.44E-01	1.44E-02	3.92E-01	2.24	22.40	1.75E-01	1.75E-02
Barium	3.83E+00	73.50	131.00	5.21E-02	2.92E-02	4.63E+00	73.50	131.00	6.30E-02	3.54E-02
Cadmium	2.99E-01	1.47	14.70	2.03E-01	2.03E-02	3.61E-01	1.47	14.70	2.45E-01	2.45E-02
Chromium	2.56E-01	2.66	26.60	9.62E-02	9.62E-03	3.60E-01	2.66	26.60	1.35E-01	1.35E-02
Copper	1.35E+00	4.05	12.10	3.34E-01	1.12E-01	2.11E+00	4.05	12.10	5.22E-01	1.75E-01
Lead	3.62E+00	1.63	3.26	2.22E+00	1.11E+00	4.15E+00	1.63	3.26	2.55E+00	1.27E+00
Manganese	4.87E+01	179.00	1790.00	2.72E-01	2.72E-02	7.46E+01	179.00	1790.00	4.17E-01	4.17E-02
Mercury	6.16E-03	0.45	0.90	1.37E-02	6.84E-03	6.33E-03	0.45	0.90	1.41E-02	7.03E-03
Molybdenum	6.89E-02	3.50	35.00	1.97E-02	1.97E-03	1.06E-01	3.50	35.00	3.04E-02	3.04E-03
Nickel	1.21E-01	6.71	67.10	1.80E-02	1.80E-03	1.82E-01	6.71	67.10	2.71E-02	2.71E-03
Selenium	3.99E-01	0.29	0.58	1.38E+00	6.89E-01	8.84E-01	0.29	0.58	3.05E+00	1.53E+00
Silver	4.04E-02	2.02	20.20	2.00E-02	2.00E-03	1.04E-01	2.02	20.20	5.14E-02	5.14E-03
Vanadium	6.12E-01	0.34	0.69	1.78E+00	8.90E-01	7.02E-01	0.34	0.69	2.04E+00	1.02E+00
Zinc	1.45E+01	66.10	661.00	2.20E-01	2.20E-02	1.95E+01	66.10	661.00	2.95E-01	2.95E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-128 EU-R1 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Mill Creek Reference Area										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.20E+00	2.24	22.40	5.38E-01	5.38E-02	3.05E+00	2.24	22.40	1.36E+00	1.36E-01
Barium	4.14E+00	73.50	131.00	5.63E-02	3.16E-02	5.65E+00	73.50	131.00	7.69E-02	4.31E-02
Cadmium	1.95E-01	1.47	14.70	1.32E-01	1.32E-02	2.82E-01	1.47	14.70	1.92E-01	1.92E-02
Chromium	2.73E-01	2.66	26.60	1.02E-01	1.02E-02	3.73E-01	2.66	26.60	1.40E-01	1.40E-02
Copper	3.81E+00	4.05	12.10	9.41E-01	3.15E-01	9.49E+00	4.05	12.10	2.34E+00	7.84E-01
Lead	5.33E+00	1.63	3.26	3.27E+00	1.63E+00	1.25E+01	1.63	3.26	7.70E+00	3.85E+00
Manganese	3.57E+01	179.00	1790.00	2.00E-01	2.00E-02	6.76E+01	179.00	1790.00	3.78E-01	3.78E-02
Mercury	7.03E-03	0.45	0.90	1.56E-02	7.81E-03	9.33E-03	0.45	0.90	2.07E-02	1.04E-02
Molybdenum	4.50E-02	3.50	35.00	1.29E-02	1.29E-03	7.25E-02	3.50	35.00	2.07E-02	2.07E-03
Nickel	1.25E-01	6.71	67.10	1.87E-02	1.87E-03	1.97E-01	6.71	67.10	2.94E-02	2.94E-03
Selenium	3.89E-01	0.29	0.58	1.34E+00	6.72E-01	8.60E-01	0.29	0.58	2.97E+00	1.49E+00
Silver	3.83E-02	2.02	20.20	1.90E-02	1.90E-03	1.03E-01	2.02	20.20	5.12E-02	5.12E-03
Vanadium	3.37E-01	0.34	0.69	9.79E-01	4.90E-01	5.04E-01	0.34	0.69	1.47E+00	7.33E-01
Zinc	1.51E+01	66.10	661.00	2.29E-01	2.29E-02	2.19E+01	66.10	661.00	3.31E-01	3.31E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-129 EU-07 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Animas River Below Cunningham Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	5.36E-01	2.24	22.40	2.40E-01	2.40E-02	1.04E+00	2.24	22.40	4.64E-01	4.64E-02
Barium	3.69E+00	73.50	131.00	5.02E-02	2.82E-02	6.35E+00	73.50	131.00	8.64E-02	4.85E-02
Cadmium	1.73E+00	1.47	14.70	1.18E+00	1.18E-01	2.86E+00	1.47	14.70	1.94E+00	1.94E-01
Chromium	2.96E-01	2.66	26.60	1.11E-01	1.11E-02	4.20E-01	2.66	26.60	1.58E-01	1.58E-02
Copper	1.01E+01	4.05	12.10	2.49E+00	8.34E-01	3.40E+01	4.05	12.10	8.40E+00	2.81E+00
Lead	1.15E+02	1.63	3.26	7.05E+01	3.52E+01	5.60E+02	1.63	3.26	3.44E+02	1.72E+02
Manganese	5.98E+01	179.00	1790.00	3.34E-01	3.34E-02	1.28E+02	179.00	1790.00	7.16E-01	7.16E-02
Mercury	2.10E-02	0.45	0.90	4.66E-02	2.33E-02	8.07E-02	0.45	0.90	1.79E-01	8.97E-02
Molybdenum	3.33E-01	3.50	35.00	9.50E-02	9.50E-03	1.48E+00	3.50	35.00	4.21E-01	4.21E-02
Nickel	1.67E-01	6.71	67.10	2.49E-02	2.49E-03	2.90E-01	6.71	67.10	4.32E-02	4.32E-03
Selenium	4.14E-01	0.29	0.58	1.43E+00	7.15E-01	9.29E-01	0.29	0.58	3.20E+00	1.60E+00
Silver	3.64E-01	2.02	20.20	1.80E-01	1.80E-02	1.32E+00	2.02	20.20	6.52E-01	6.52E-02
Vanadium	5.36E-01	0.34	0.69	1.56E+00	7.79E-01	6.45E-01	0.34	0.69	1.88E+00	9.38E-01
Zinc	7.39E+01	66.10	661.00	1.12E+00	1.12E-01	2.64E+02	66.10	661.00	3.99E+00	3.99E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-130 EU-08 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Cunninham Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	3.38E-01	2.24	22.40	1.51E-01	1.51E-02	4.52E-01	2.24	22.40	2.02E-01	2.02E-02
Barium	3.85E+00	73.50	131.00	5.24E-02	2.94E-02	6.12E+00	73.50	131.00	8.33E-02	4.67E-02
Cadmium	1.48E+00	1.47	14.70	1.01E+00	1.01E-01	1.67E+00	1.47	14.70	1.13E+00	1.13E-01
Chromium	2.80E-01	2.66	26.60	1.05E-01	1.05E-02	4.20E-01	2.66	26.60	1.58E-01	1.58E-02
Copper	2.81E+00	4.05	12.10	6.94E-01	2.32E-01	5.70E+00	4.05	12.10	1.41E+00	4.71E-01
Lead	1.40E+01	1.63	3.26	8.60E+00	4.30E+00	2.09E+01	1.63	3.26	1.28E+01	6.42E+00
Manganese	5.11E+01	179.00	1790.00	2.86E-01	2.86E-02	9.17E+01	179.00	1790.00	5.12E-01	5.12E-02
Mercury	6.18E-03	0.45	0.90	1.37E-02	6.87E-03	6.59E-03	0.45	0.90	1.46E-02	7.32E-03
Molybdenum	5.56E-02	3.50	35.00	1.59E-02	1.59E-03	8.89E-02	3.50	35.00	2.54E-02	2.54E-03
Nickel	1.47E-01	6.71	67.10	2.18E-02	2.18E-03	2.53E-01	6.71	67.10	3.77E-02	3.77E-03
Selenium	3.86E-01	0.29	0.58	1.33E+00	6.66E-01	8.72E-01	0.29	0.58	3.01E+00	1.51E+00
Silver	6.38E-02	2.02	20.20	3.16E-02	3.16E-03	1.33E-01	2.02	20.20	6.58E-02	6.58E-03
Vanadium	5.25E-01	0.34	0.69	1.52E+00	7.62E-01	6.83E-01	0.34	0.69	1.98E+00	9.92E-01
Zinc	2.93E+01	66.10	661.00	4.43E-01	4.43E-02	3.62E+01	66.10	661.00	5.48E-01	5.48E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-131 EU-09 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Animas River Below Minnie Gulch										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	4.50E-01	2.24	22.40	2.01E-01	2.01E-02	5.60E-01	2.24	22.40	2.50E-01	2.50E-02
Barium	4.15E+00	73.50	131.00	5.64E-02	3.17E-02	6.59E+00	73.50	131.00	8.96E-02	5.03E-02
Cadmium	1.60E+00	1.47	14.70	1.09E+00	1.09E-01	1.80E+00	1.47	14.70	1.22E+00	1.22E-01
Chromium	2.76E-01	2.66	26.60	1.04E-01	1.04E-02	3.84E-01	2.66	26.60	1.44E-01	1.44E-02
Copper	7.35E+00	4.05	12.10	1.81E+00	6.07E-01	9.79E+00	4.05	12.10	2.42E+00	8.09E-01
Lead	5.11E+01	1.63	3.26	3.13E+01	1.57E+01	7.21E+01	1.63	3.26	4.42E+01	2.21E+01
Manganese	1.56E+02	179.00	1790.00	8.70E-01	8.70E-02	2.67E+02	179.00	1790.00	1.49E+00	1.49E-01
Mercury	8.33E-03	0.45	0.90	1.85E-02	9.26E-03	9.66E-03	0.45	0.90	2.15E-02	1.07E-02
Molybdenum	5.11E-02	3.50	35.00	1.46E-02	1.46E-03	7.59E-02	3.50	35.00	2.17E-02	2.17E-03
Nickel	1.56E-01	6.71	67.10	2.33E-02	2.33E-03	2.58E-01	6.71	67.10	3.84E-02	3.84E-03
Selenium	3.93E-01	0.29	0.58	1.36E+00	6.79E-01	8.85E-01	0.29	0.58	3.05E+00	1.53E+00
Silver	1.85E-01	2.02	20.20	9.17E-02	9.17E-03	3.01E-01	2.02	20.20	1.49E-01	1.49E-02
Vanadium	5.23E-01	0.34	0.69	1.52E+00	7.60E-01	6.03E-01	0.34	0.69	1.75E+00	8.76E-01
Zinc	5.02E+01	66.10	661.00	7.59E-01	7.59E-02	6.80E+01	66.10	661.00	1.03E+00	1.03E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-132 EU-10 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Animas River Below South Fork Animas River										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	6.94E-01	2.24	22.40	3.10E-01	3.10E-02	7.75E-01	2.24	22.40	3.46E-01	3.46E-02
Barium	4.07E+00	73.50	131.00	5.53E-02	3.10E-02	6.47E+00	73.50	131.00	8.80E-02	4.94E-02
Cadmium	1.68E+00	1.47	14.70	1.14E+00	1.14E-01	1.86E+00	1.47	14.70	1.26E+00	1.26E-01
Chromium	2.97E-01	2.66	26.60	1.12E-01	1.12E-02	4.03E-01	2.66	26.60	1.51E-01	1.51E-02
Copper	1.24E+01	4.05	12.10	3.07E+00	1.03E+00	1.51E+01	4.05	12.10	3.74E+00	1.25E+00
Lead	7.06E+01	1.63	3.26	4.33E+01	2.16E+01	8.72E+01	1.63	3.26	5.35E+01	2.68E+01
Manganese	3.49E+02	179.00	1790.00	1.95E+00	1.95E-01	5.63E+02	179.00	1790.00	3.15E+00	3.15E-01
Mercury	8.22E-03	0.45	0.90	1.83E-02	9.13E-03	8.91E-03	0.45	0.90	1.98E-02	9.90E-03
Molybdenum	1.39E-01	3.50	35.00	3.96E-02	3.96E-03	2.26E-01	3.50	35.00	6.47E-02	6.47E-03
Nickel	1.73E-01	6.71	67.10	2.58E-02	2.58E-03	2.77E-01	6.71	67.10	4.13E-02	4.13E-03
Selenium	3.92E-01	0.29	0.58	1.35E+00	6.77E-01	8.84E-01	0.29	0.58	3.05E+00	1.53E+00
Silver	2.81E-01	2.02	20.20	1.39E-01	1.39E-02	4.11E-01	2.02	20.20	2.04E-01	2.04E-02
Vanadium	5.08E-01	0.34	0.69	1.48E+00	7.38E-01	5.72E-01	0.34	0.69	1.66E+00	8.31E-01
Zinc	6.31E+01	66.10	661.00	9.55E-01	9.55E-02	7.94E+01	66.10	661.00	1.20E+00	1.20E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-133 EU-11 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Upper South Fork Animas River										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	4.77E-01	2.24	22.40	2.13E-01	2.13E-02	5.11E-01	2.24	22.40	2.28E-01	2.28E-02
Barium	3.76E+00	73.50	131.00	5.12E-02	2.87E-02	4.42E+00	73.50	131.00	6.01E-02	3.37E-02
Cadmium	2.97E-01	1.47	14.70	2.02E-01	2.02E-02	3.54E-01	1.47	14.70	2.41E-01	2.41E-02
Chromium	3.21E-01	2.66	26.60	1.21E-01	1.21E-02	4.19E-01	2.66	26.60	1.58E-01	1.58E-02
Copper	2.09E+00	4.05	12.10	5.17E-01	1.73E-01	2.82E+00	4.05	12.10	6.97E-01	2.33E-01
Lead	4.25E+00	1.63	3.26	2.60E+00	1.30E+00	4.55E+00	1.63	3.26	2.79E+00	1.40E+00
Manganese	4.35E+01	179.00	1790.00	2.43E-01	2.43E-02	5.90E+01	179.00	1790.00	3.30E-01	3.30E-02
Mercury	5.79E-03	0.45	0.90	1.29E-02	6.43E-03	5.84E-03	0.45	0.90	1.30E-02	6.48E-03
Molybdenum	6.75E-02	3.50	35.00	1.93E-02	1.93E-03	6.75E-02	3.50	35.00	1.93E-02	1.93E-03
Nickel	1.55E-01	6.71	67.10	2.31E-02	2.31E-03	1.98E-01	6.71	67.10	2.96E-02	2.96E-03
Selenium	4.07E-01	0.29	0.58	1.40E+00	7.02E-01	8.86E-01	0.29	0.58	3.06E+00	1.53E+00
Silver	3.92E-02	2.02	20.20	1.94E-02	1.94E-03	1.01E-01	2.02	20.20	5.02E-02	5.02E-03
Vanadium	6.63E-01	0.34	0.69	1.93E+00	9.63E-01	6.92E-01	0.34	0.69	2.01E+00	1.01E+00
Zinc	1.48E+01	66.10	661.00	2.23E-01	2.23E-02	1.95E+01	66.10	661.00	2.95E-01	2.95E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-134 EU-12 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Eureka Gulch										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	4.68E-01	2.24	22.40	2.09E-01	2.09E-02	5.85E-01	2.24	22.40	2.61E-01	2.61E-02
Barium	4.12E+00	73.50	131.00	5.61E-02	3.15E-02	6.92E+00	73.50	131.00	9.42E-02	5.28E-02
Cadmium	1.59E+00	1.47	14.70	1.08E+00	1.08E-01	1.80E+00	1.47	14.70	1.23E+00	1.23E-01
Chromium	3.20E-01	2.66	26.60	1.20E-01	1.20E-02	4.30E-01	2.66	26.60	1.62E-01	1.62E-02
Copper	4.46E+00	4.05	12.10	1.10E+00	3.68E-01	6.62E+00	4.05	12.10	1.64E+00	5.47E-01
Lead	1.37E+01	1.63	3.26	8.40E+00	4.20E+00	1.99E+01	1.63	3.26	1.22E+01	6.10E+00
Manganese	1.21E+02	179.00	1790.00	6.74E-01	6.74E-02	2.19E+02	179.00	1790.00	1.22E+00	1.22E-01
Mercury	6.93E-03	0.45	0.90	1.54E-02	7.70E-03	7.61E-03	0.45	0.90	1.69E-02	8.46E-03
Molybdenum	4.39E-02	3.50	35.00	1.25E-02	1.25E-03	6.31E-02	3.50	35.00	1.80E-02	1.80E-03
Nickel	2.20E-01	6.71	67.10	3.27E-02	3.27E-03	3.30E-01	6.71	67.10	4.91E-02	4.91E-03
Selenium	4.07E-01	0.29	0.58	1.40E+00	7.02E-01	9.05E-01	0.29	0.58	3.12E+00	1.56E+00
Silver	6.80E-02	2.02	20.20	3.37E-02	3.37E-03	1.37E-01	2.02	20.20	6.78E-02	6.78E-03
Vanadium	6.99E-01	0.34	0.69	2.03E+00	1.02E+00	8.03E-01	0.34	0.69	2.34E+00	1.17E+00
Zinc	5.27E+01	66.10	661.00	7.97E-01	7.97E-02	9.05E+01	66.10	661.00	1.37E+00	1.37E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-135 EU-13 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Lower South Fork Animas River										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	5.73E-01	2.24	22.40	2.56E-01	2.56E-02	7.16E-01	2.24	22.40	3.20E-01	3.20E-02
Barium	4.61E+00	73.50	131.00	6.27E-02	3.52E-02	7.07E+00	73.50	131.00	9.61E-02	5.39E-02
Cadmium	1.67E+00	1.47	14.70	1.14E+00	1.14E-01	1.86E+00	1.47	14.70	1.27E+00	1.27E-01
Chromium	4.46E-01	2.66	26.60	1.68E-01	1.68E-02	6.68E-01	2.66	26.60	2.51E-01	2.51E-02
Copper	6.86E+00	4.05	12.10	1.69E+00	5.67E-01	8.69E+00	4.05	12.10	2.15E+00	7.18E-01
Lead	3.81E+01	1.63	3.26	2.34E+01	1.17E+01	6.23E+01	1.63	3.26	3.82E+01	1.91E+01
Manganese	1.47E+02	179.00	1790.00	8.23E-01	8.23E-02	2.47E+02	179.00	1790.00	1.38E+00	1.38E-01
Mercury	1.80E-02	0.45	0.90	4.00E-02	2.00E-02	2.95E-02	0.45	0.90	6.54E-02	3.27E-02
Molybdenum	8.83E-02	3.50	35.00	2.52E-02	2.52E-03	9.27E-02	3.50	35.00	2.65E-02	2.65E-03
Nickel	5.73E-01	6.71	67.10	8.54E-02	8.54E-03	9.91E-01	6.71	67.10	1.48E-01	1.48E-02
Selenium	4.09E-01	0.29	0.58	1.41E+00	7.07E-01	9.09E-01	0.29	0.58	3.13E+00	1.57E+00
Silver	9.21E-02	2.02	20.20	4.56E-02	4.56E-03	1.80E-01	2.02	20.20	8.91E-02	8.91E-03
Vanadium	6.65E-01	0.34	0.69	1.93E+00	9.66E-01	7.41E-01	0.34	0.69	2.16E+00	1.08E+00
Zinc	7.64E+01	66.10	661.00	1.16E+00	1.16E-01	9.47E+01	66.10	661.00	1.43E+00	1.43E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-136 EU-14 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Animas River Below West Fork Animas River										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	8.97E-01	2.24	22.40	4.00E-01	4.00E-02	1.27E+00	2.24	22.40	5.68E-01	5.68E-02
Barium	3.94E+00	73.50	131.00	5.36E-02	3.01E-02	6.99E+00	73.50	131.00	9.51E-02	5.34E-02
Cadmium	1.60E+00	1.47	14.70	1.09E+00	1.09E-01	1.80E+00	1.47	14.70	1.23E+00	1.23E-01
Chromium	3.01E-01	2.66	26.60	1.13E-01	1.13E-02	4.18E-01	2.66	26.60	1.57E-01	1.57E-02
Copper	4.55E+00	4.05	12.10	1.12E+00	3.76E-01	6.97E+00	4.05	12.10	1.72E+00	5.76E-01
Lead	3.96E+01	1.63	3.26	2.43E+01	1.21E+01	1.41E+02	1.63	3.26	8.65E+01	4.32E+01
Manganese	9.47E+01	179.00	1790.00	5.29E-01	5.29E-02	2.36E+02	179.00	1790.00	1.32E+00	1.32E-01
Mercury	8.11E-03	0.45	0.90	1.80E-02	9.01E-03	1.02E-02	0.45	0.90	2.27E-02	1.14E-02
Molybdenum	7.34E-02	3.50	35.00	2.10E-02	2.10E-03	9.27E-02	3.50	35.00	2.65E-02	2.65E-03
Nickel	1.66E-01	6.71	67.10	2.48E-02	2.48E-03	2.75E-01	6.71	67.10	4.10E-02	4.10E-03
Selenium	4.01E-01	0.29	0.58	1.38E+00	6.92E-01	8.99E-01	0.29	0.58	3.10E+00	1.55E+00
Silver	1.20E-01	2.02	20.20	5.95E-02	5.95E-03	4.39E-01	2.02	20.20	2.18E-01	2.18E-02
Vanadium	5.11E-01	0.34	0.69	1.49E+00	7.43E-01	6.42E-01	0.34	0.69	1.87E+00	9.33E-01
Zinc	5.87E+01	66.10	661.00	8.89E-01	8.89E-02	8.98E+01	66.10	661.00	1.36E+00	1.36E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-137 EU-15 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Lower West Fork Animas River										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	9.27E-01	2.24	22.40	4.14E-01	4.14E-02	2.02E+00	2.24	22.40	9.02E-01	9.02E-02
Barium	4.56E+00	73.50	131.00	6.21E-02	3.48E-02	8.82E+00	73.50	131.00	1.20E-01	6.73E-02
Cadmium	1.97E+00	1.47	14.70	1.34E+00	1.34E-01	4.38E+00	1.47	14.70	2.98E+00	2.98E-01
Chromium	2.96E-01	2.66	26.60	1.11E-01	1.11E-02	4.06E-01	2.66	26.60	1.53E-01	1.53E-02
Copper	9.09E+00	4.05	12.10	2.25E+00	7.52E-01	3.76E+01	4.05	12.10	9.28E+00	3.10E+00
Lead	2.58E+01	1.63	3.26	1.59E+01	7.93E+00	8.25E+01	1.63	3.26	5.06E+01	2.53E+01
Manganese	2.15E+02	179.00	1790.00	1.20E+00	1.20E-01	7.32E+02	179.00	1790.00	4.09E+00	4.09E-01
Mercury	1.44E-02	0.45	0.90	3.20E-02	1.60E-02	2.30E-02	0.45	0.90	5.11E-02	2.56E-02
Molybdenum	3.74E-01	3.50	35.00	1.07E-01	1.07E-02	7.38E-01	3.50	35.00	2.11E-01	2.11E-02
Nickel	2.50E-01	6.71	67.10	3.73E-02	3.73E-03	7.18E-01	6.71	67.10	1.07E-01	1.07E-02
Selenium	4.07E-01	0.29	0.58	1.40E+00	7.03E-01	9.15E-01	0.29	0.58	3.16E+00	1.58E+00
Silver	8.76E-02	2.02	20.20	4.34E-02	4.34E-03	2.16E-01	2.02	20.20	1.07E-01	1.07E-02
Vanadium	5.47E-01	0.34	0.69	1.59E+00	7.96E-01	6.47E-01	0.34	0.69	1.88E+00	9.40E-01
Zinc	9.91E+01	66.10	661.00	1.50E+00	1.50E-01	4.25E+02	66.10	661.00	6.43E+00	6.43E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-138 EU-16 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Placer Gulch

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	5.98E-01	2.24	22.40	2.67E-01	2.67E-02	8.82E-01	2.24	22.40	3.94E-01	3.94E-02
Barium	4.69E+00	73.50	131.00	6.39E-02	3.58E-02	7.43E+00	73.50	131.00	1.01E-01	5.67E-02
Cadmium	1.59E+00	1.47	14.70	1.08E+00	1.08E-01	1.80E+00	1.47	14.70	1.22E+00	1.22E-01
Chromium	3.01E-01	2.66	26.60	1.13E-01	1.13E-02	4.17E-01	2.66	26.60	1.57E-01	1.57E-02
Copper	5.37E+00	4.05	12.10	1.33E+00	4.44E-01	8.85E+00	4.05	12.10	2.18E+00	7.31E-01
Lead	2.67E+01	1.63	3.26	1.64E+01	8.20E+00	4.69E+01	1.63	3.26	2.88E+01	1.44E+01
Manganese	1.81E+02	179.00	1790.00	1.01E+00	1.01E-01	3.53E+02	179.00	1790.00	1.97E+00	1.97E-01
Mercury	1.02E-02	0.45	0.90	2.27E-02	1.13E-02	1.53E-02	0.45	0.90	3.41E-02	1.70E-02
Molybdenum	6.54E-02	3.50	35.00	1.87E-02	1.87E-03	9.75E-02	3.50	35.00	2.79E-02	2.79E-03
Nickel	1.73E-01	6.71	67.10	2.58E-02	2.58E-03	2.76E-01	6.71	67.10	4.12E-02	4.12E-03
Selenium	4.07E-01	0.29	0.58	1.40E+00	7.03E-01	9.11E-01	0.29	0.58	3.14E+00	1.57E+00
Silver	9.50E-02	2.02	20.20	4.71E-02	4.71E-03	1.71E-01	2.02	20.20	8.45E-02	8.45E-03
Vanadium	5.35E-01	0.34	0.69	1.56E+00	7.78E-01	6.37E-01	0.34	0.69	1.85E+00	9.27E-01
Zinc	4.95E+01	66.10	661.00	7.49E-01	7.49E-02	6.76E+01	66.10	661.00	1.02E+00	1.02E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-139 EU-17 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Mainstem West Fork Animas River/California Gulch										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	5.31E-01	2.24	22.40	2.37E-01	2.37E-02	5.98E-01	2.24	22.40	2.67E-01	2.67E-02
Barium	3.47E+00	73.50	131.00	4.72E-02	2.65E-02	4.23E+00	73.50	131.00	5.76E-02	3.23E-02
Cadmium	3.05E-01	1.47	14.70	2.08E-01	2.08E-02	3.67E-01	1.47	14.70	2.49E-01	2.49E-02
Chromium	2.98E-01	2.66	26.60	1.12E-01	1.12E-02	4.04E-01	2.66	26.60	1.52E-01	1.52E-02
Copper	2.16E+00	4.05	12.10	5.32E-01	1.78E-01	3.84E+00	4.05	12.10	9.49E-01	3.18E-01
Lead	3.90E+00	1.63	3.26	2.39E+00	1.20E+00	4.53E+00	1.63	3.26	2.78E+00	1.39E+00
Manganese	8.09E+01	179.00	1790.00	4.52E-01	4.52E-02	1.33E+02	179.00	1790.00	7.42E-01	7.42E-02
Mercury	6.23E-03	0.45	0.90	1.39E-02	6.93E-03	6.50E-03	0.45	0.90	1.45E-02	7.23E-03
Molybdenum	5.69E-02	3.50	35.00	1.63E-02	1.63E-03	5.88E-02	3.50	35.00	1.68E-02	1.68E-03
Nickel	1.52E-01	6.71	67.10	2.27E-02	2.27E-03	2.15E-01	6.71	67.10	3.21E-02	3.21E-03
Selenium	3.93E-01	0.29	0.58	1.35E+00	6.78E-01	8.79E-01	0.29	0.58	3.03E+00	1.52E+00
Silver	4.23E-02	2.02	20.20	2.09E-02	2.09E-03	1.12E-01	2.02	20.20	5.52E-02	5.52E-03
Vanadium	6.64E-01	0.34	0.69	1.93E+00	9.65E-01	7.56E-01	0.34	0.69	2.20E+00	1.10E+00
Zinc	1.69E+01	66.10	661.00	2.55E-01	2.55E-02	2.33E+01	66.10	661.00	3.52E-01	3.52E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-140 EU-18 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in North Fork Animas River Below Burrows Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	5.76E-01	2.24	22.40	2.57E-01	2.57E-02	6.60E-01	2.24	22.40	2.95E-01	2.95E-02
Barium	3.74E+00	73.50	131.00	5.09E-02	2.85E-02	6.08E+00	73.50	131.00	8.28E-02	4.64E-02
Cadmium	1.48E+00	1.47	14.70	1.01E+00	1.01E-01	1.66E+00	1.47	14.70	1.13E+00	1.13E-01
Chromium	3.20E-01	2.66	26.60	1.20E-01	1.20E-02	4.81E-01	2.66	26.60	1.81E-01	1.81E-02
Copper	1.85E+00	4.05	12.10	4.56E-01	1.53E-01	2.76E+00	4.05	12.10	6.81E-01	2.28E-01
Lead	6.47E+00	1.63	3.26	3.97E+00	1.98E+00	9.10E+00	1.63	3.26	5.59E+00	2.79E+00
Manganese	5.65E+01	179.00	1790.00	3.16E-01	3.16E-02	9.91E+01	179.00	1790.00	5.54E-01	5.54E-02
Mercury	6.11E-03	0.45	0.90	1.36E-02	6.79E-03	6.32E-03	0.45	0.90	1.41E-02	7.03E-03
Molybdenum	5.67E-02	3.50	35.00	1.62E-02	1.62E-03	5.88E-02	3.50	35.00	1.68E-02	1.68E-03
Nickel	1.54E-01	6.71	67.10	2.29E-02	2.29E-03	2.64E-01	6.71	67.10	3.93E-02	3.93E-03
Selenium	3.91E-01	0.29	0.58	1.35E+00	6.75E-01	8.76E-01	0.29	0.58	3.02E+00	1.51E+00
Silver	5.26E-02	2.02	20.20	2.61E-02	2.61E-03	1.14E-01	2.02	20.20	5.66E-02	5.66E-03
Vanadium	5.16E-01	0.34	0.69	1.50E+00	7.50E-01	6.07E-01	0.34	0.69	1.77E+00	8.83E-01
Zinc	2.72E+01	66.10	661.00	4.11E-01	4.11E-02	3.35E+01	66.10	661.00	5.08E-01	5.08E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-141 EU-19 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Burrows Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	9.33E-01	2.24	22.40	4.16E-01	4.16E-02	1.23E+00	2.24	22.40	5.47E-01	5.47E-02
Barium	3.90E+00	73.50	131.00	5.31E-02	2.98E-02	6.30E+00	73.50	131.00	8.57E-02	4.81E-02
Cadmium	1.57E+00	1.47	14.70	1.07E+00	1.07E-01	1.80E+00	1.47	14.70	1.23E+00	1.23E-01
Chromium	2.81E-01	2.66	26.60	1.06E-01	1.06E-02	3.90E-01	2.66	26.60	1.47E-01	1.47E-02
Copper	2.81E+00	4.05	12.10	6.93E-01	2.32E-01	5.11E+00	4.05	12.10	1.26E+00	4.22E-01
Lead	1.15E+01	1.63	3.26	7.06E+00	3.53E+00	1.85E+01	1.63	3.26	1.13E+01	5.66E+00
Manganese	8.63E+01	179.00	1790.00	4.82E-01	4.82E-02	2.02E+02	179.00	1790.00	1.13E+00	1.13E-01
Mercury	6.38E-03	0.45	0.90	1.42E-02	7.09E-03	6.65E-03	0.45	0.90	1.48E-02	7.39E-03
Molybdenum	1.64E-01	3.50	35.00	4.69E-02	4.69E-03	2.52E-01	3.50	35.00	7.20E-02	7.20E-03
Nickel	1.54E-01	6.71	67.10	2.29E-02	2.29E-03	2.59E-01	6.71	67.10	3.87E-02	3.87E-03
Selenium	3.97E-01	0.29	0.58	1.37E+00	6.86E-01	8.93E-01	0.29	0.58	3.08E+00	1.54E+00
Silver	6.44E-02	2.02	20.20	3.19E-02	3.19E-03	1.34E-01	2.02	20.20	6.62E-02	6.62E-03
Vanadium	4.79E-01	0.34	0.69	1.39E+00	6.96E-01	5.53E-01	0.34	0.69	1.61E+00	8.04E-01
Zinc	3.90E+01	66.10	661.00	5.89E-01	5.89E-02	5.32E+01	66.10	661.00	8.05E-01	8.05E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-142 EU-R2 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Maggie Gulch Reference Area										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	2.78E-01	2.24	22.40	1.24E-01	1.24E-02	3.37E-01	2.24	22.40	1.50E-01	1.50E-02
Barium	4.98E+00	73.50	131.00	6.78E-02	3.80E-02	6.67E+00	73.50	131.00	9.08E-02	5.09E-02
Cadmium	1.89E-01	1.47	14.70	1.28E-01	1.28E-02	2.70E-01	1.47	14.70	1.84E-01	1.84E-02
Chromium	2.68E-01	2.66	26.60	1.01E-01	1.01E-02	3.82E-01	2.66	26.60	1.44E-01	1.44E-02
Copper	1.39E+00	4.05	12.10	3.43E-01	1.15E-01	2.30E+00	4.05	12.10	5.68E-01	1.90E-01
Lead	1.08E+00	1.63	3.26	6.62E-01	3.31E-01	2.00E+00	1.63	3.26	1.23E+00	6.15E-01
Manganese	3.56E+01	179.00	1790.00	1.99E-01	1.99E-02	5.41E+01	179.00	1790.00	3.02E-01	3.02E-02
Mercury	6.61E-03	0.45	0.90	1.47E-02	7.35E-03	8.13E-03	0.45	0.90	1.81E-02	9.03E-03
Molybdenum	2.31E-02	3.50	35.00	6.61E-03	6.61E-04	2.50E-02	3.50	35.00	7.14E-03	7.14E-04
Nickel	1.35E-01	6.71	67.10	2.01E-02	2.01E-03	1.82E-01	6.71	67.10	2.72E-02	2.72E-03
Selenium	3.80E-01	0.29	0.58	1.31E+00	6.57E-01	8.43E-01	0.29	0.58	2.91E+00	1.46E+00
Silver	3.67E-02	2.02	20.20	1.81E-02	1.81E-03	9.67E-02	2.02	20.20	4.79E-02	4.79E-03
Vanadium	3.77E-01	0.34	0.69	1.10E+00	5.48E-01	5.42E-01	0.34	0.69	1.58E+00	7.88E-01
Zinc	1.33E+01	66.10	661.00	2.01E-01	2.01E-02	1.89E+01	66.10	661.00	2.86E-01	2.86E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-143 EU-R3 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Picayune Gulch Reference Area										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	7.04E-01	2.24	22.40	3.14E-01	3.14E-02	8.85E-01	2.24	22.40	3.95E-01	3.95E-02
Barium	3.94E+00	73.50	131.00	5.36E-02	3.01E-02	5.02E+00	73.50	131.00	6.84E-02	3.84E-02
Cadmium	1.96E-01	1.47	14.70	1.33E-01	1.33E-02	2.74E-01	1.47	14.70	1.87E-01	1.87E-02
Chromium	2.81E-01	2.66	26.60	1.06E-01	1.06E-02	3.83E-01	2.66	26.60	1.44E-01	1.44E-02
Copper	1.48E+00	4.05	12.10	3.67E-01	1.23E-01	2.40E+00	4.05	12.10	5.94E-01	1.99E-01
Lead	2.00E+00	1.63	3.26	1.22E+00	6.12E-01	2.59E+00	1.63	3.26	1.59E+00	7.94E-01
Manganese	5.69E+01	179.00	1790.00	3.18E-01	3.18E-02	1.02E+02	179.00	1790.00	5.68E-01	5.68E-02
Mercury	6.17E-03	0.45	0.90	1.37E-02	6.85E-03	6.40E-03	0.45	0.90	1.42E-02	7.11E-03
Molybdenum	3.25E-02	3.50	35.00	9.29E-03	9.29E-04	3.25E-02	3.50	35.00	9.29E-03	9.29E-04
Nickel	1.41E-01	6.71	67.10	2.10E-02	2.10E-03	1.85E-01	6.71	67.10	2.76E-02	2.76E-03
Selenium	3.79E-01	0.29	0.58	1.31E+00	6.54E-01	8.44E-01	0.29	0.58	2.91E+00	1.46E+00
Silver	4.60E-02	2.02	20.20	2.28E-02	2.28E-03	1.14E-01	2.02	20.20	5.63E-02	5.63E-03
Vanadium	3.96E-01	0.34	0.69	1.15E+00	5.75E-01	5.10E-01	0.34	0.69	1.48E+00	7.42E-01
Zinc	1.44E+01	66.10	661.00	2.18E-01	2.18E-02	1.97E+01	66.10	661.00	2.98E-01	2.98E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-144 EU-R4 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in North Fork Animas River Reference Area										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.46E+00	2.24	22.40	6.52E-01	6.52E-02	1.50E+00	2.24	22.40	6.70E-01	6.70E-02
Barium	3.49E+00	73.50	131.00	4.75E-02	2.67E-02	4.28E+00	73.50	131.00	5.82E-02	3.27E-02
Cadmium	1.99E-01	1.47	14.70	1.36E-01	1.36E-02	2.77E-01	1.47	14.70	1.88E-01	1.88E-02
Chromium	2.58E-01	2.66	26.60	9.69E-02	9.69E-03	3.52E-01	2.66	26.60	1.32E-01	1.32E-02
Copper	2.06E+00	4.05	12.10	5.09E-01	1.70E-01	2.86E+00	4.05	12.10	7.05E-01	2.36E-01
Lead	4.42E+00	1.63	3.26	2.71E+00	1.36E+00	4.62E+00	1.63	3.26	2.83E+00	1.42E+00
Manganese	2.59E+01	179.00	1790.00	1.45E-01	1.45E-02	4.20E+01	179.00	1790.00	2.34E-01	2.34E-02
Mercury	6.56E-03	0.45	0.90	1.46E-02	7.28E-03	6.60E-03	0.45	0.90	1.47E-02	7.33E-03
Molybdenum	1.28E-01	3.50	35.00	3.64E-02	3.64E-03	1.28E-01	3.50	35.00	3.64E-02	3.64E-03
Nickel	1.01E-01	6.71	67.10	1.50E-02	1.50E-03	1.42E-01	6.71	67.10	2.12E-02	2.12E-03
Selenium	3.90E-01	0.29	0.58	1.34E+00	6.74E-01	8.48E-01	0.29	0.58	2.92E+00	1.46E+00
Silver	6.06E-02	2.02	20.20	3.00E-02	3.00E-03	1.18E-01	2.02	20.20	5.86E-02	5.86E-03
Vanadium	3.03E-01	0.34	0.69	8.81E-01	4.41E-01	3.82E-01	0.34	0.69	1.11E+00	5.55E-01
Zinc	1.74E+01	66.10	661.00	2.63E-01	2.63E-02	2.24E+01	66.10	661.00	3.39E-01	3.39E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-145 EU-20 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Lower Mainstem Cement Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	7.14E-01	2.24	22.40	3.19E-01	3.19E-02	8.55E-01	2.24	22.40	3.82E-01	3.82E-02
Barium	4.05E+00	73.50	131.00	5.51E-02	3.09E-02	6.13E+00	73.50	131.00	8.34E-02	4.68E-02
Cadmium	1.48E+00	1.47	14.70	1.01E+00	1.01E-01	1.66E+00	1.47	14.70	1.13E+00	1.13E-01
Chromium	2.90E-01	2.66	26.60	1.09E-01	1.09E-02	4.03E-01	2.66	26.60	1.52E-01	1.52E-02
Copper	2.58E+00	4.05	12.10	6.37E-01	2.13E-01	3.61E+00	4.05	12.10	8.90E-01	2.98E-01
Lead	1.14E+01	1.63	3.26	6.99E+00	3.49E+00	1.52E+01	1.63	3.26	9.34E+00	4.67E+00
Manganese	3.98E+01	179.00	1790.00	2.22E-01	2.22E-02	7.56E+01	179.00	1790.00	4.22E-01	4.22E-02
Mercury	6.62E-03	0.45	0.90	1.47E-02	7.35E-03	7.54E-03	0.45	0.90	1.67E-02	8.37E-03
Molybdenum	4.84E-02	3.50	35.00	1.38E-02	1.38E-03	6.74E-02	3.50	35.00	1.92E-02	1.92E-03
Nickel	1.39E-01	6.71	67.10	2.06E-02	2.06E-03	2.38E-01	6.71	67.10	3.55E-02	3.55E-03
Selenium	4.04E-01	0.29	0.58	1.39E+00	6.97E-01	8.88E-01	0.29	0.58	3.06E+00	1.53E+00
Silver	6.39E-02	2.02	20.20	3.16E-02	3.16E-03	1.39E-01	2.02	20.20	6.88E-02	6.88E-03
Vanadium	6.10E-01	0.34	0.69	1.77E+00	8.86E-01	6.99E-01	0.34	0.69	2.03E+00	1.02E+00
Zinc	3.06E+01	66.10	661.00	4.63E-01	4.63E-02	3.77E+01	66.10	661.00	5.70E-01	5.70E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-146 EU-21 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Prospect Gulch

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	6.24E-01	2.24	22.40	2.79E-01	2.79E-02	7.59E-01	2.24	22.40	3.39E-01	3.39E-02
Barium	5.21E+00	73.50	131.00	7.09E-02	3.98E-02	8.29E+00	73.50	131.00	1.13E-01	6.33E-02
Cadmium	1.47E+00	1.47	14.70	9.98E-01	9.98E-02	1.66E+00	1.47	14.70	1.13E+00	1.13E-01
Chromium	2.69E-01	2.66	26.60	1.01E-01	1.01E-02	3.75E-01	2.66	26.60	1.41E-01	1.41E-02
Copper	1.92E+00	4.05	12.10	4.74E-01	1.59E-01	2.86E+00	4.05	12.10	7.07E-01	2.37E-01
Lead	8.27E+00	1.63	3.26	5.07E+00	2.54E+00	1.08E+01	1.63	3.26	6.63E+00	3.32E+00
Manganese	3.42E+01	179.00	1790.00	1.91E-01	1.91E-02	6.97E+01	179.00	1790.00	3.90E-01	3.90E-02
Mercury	6.54E-03	0.45	0.90	1.45E-02	7.27E-03	6.90E-03	0.45	0.90	1.53E-02	7.67E-03
Molybdenum	2.11E-02	3.50	35.00	6.03E-03	6.03E-04	2.63E-02	3.50	35.00	7.53E-03	7.53E-04
Nickel	1.22E-01	6.71	67.10	1.82E-02	1.82E-03	2.21E-01	6.71	67.10	3.29E-02	3.29E-03
Selenium	4.01E-01	0.29	0.58	1.38E+00	6.92E-01	8.85E-01	0.29	0.58	3.05E+00	1.53E+00
Silver	6.01E-02	2.02	20.20	2.98E-02	2.98E-03	1.27E-01	2.02	20.20	6.31E-02	6.31E-03
Vanadium	5.27E-01	0.34	0.69	1.53E+00	7.66E-01	6.03E-01	0.34	0.69	1.75E+00	8.77E-01
Zinc	2.64E+01	66.10	661.00	4.00E-01	4.00E-02	3.50E+01	66.10	661.00	5.29E-01	5.29E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-147 EU-22 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Mainstem Cement Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	4.93E-01	2.24	22.40	2.20E-01	2.20E-02	6.56E-01	2.24	22.40	2.93E-01	2.93E-02
Barium	3.53E+00	73.50	131.00	4.80E-02	2.70E-02	5.97E+00	73.50	131.00	8.12E-02	4.56E-02
Cadmium	1.54E+00	1.47	14.70	1.05E+00	1.05E-01	1.71E+00	1.47	14.70	1.16E+00	1.16E-01
Chromium	2.99E-01	2.66	26.60	1.12E-01	1.12E-02	4.10E-01	2.66	26.60	1.54E-01	1.54E-02
Copper	2.99E+00	4.05	12.10	7.37E-01	2.47E-01	4.35E+00	4.05	12.10	1.08E+00	3.60E-01
Lead	1.58E+01	1.63	3.26	9.69E+00	4.85E+00	2.91E+01	1.63	3.26	1.78E+01	8.92E+00
Manganese	5.70E+01	179.00	1790.00	3.19E-01	3.19E-02	1.26E+02	179.00	1790.00	7.03E-01	7.03E-02
Mercury	6.38E-03	0.45	0.90	1.42E-02	7.09E-03	6.99E-03	0.45	0.90	1.55E-02	7.77E-03
Molybdenum	5.98E-02	3.50	35.00	1.71E-02	1.71E-03	7.40E-02	3.50	35.00	2.11E-02	2.11E-03
Nickel	1.45E-01	6.71	67.10	2.16E-02	2.16E-03	2.52E-01	6.71	67.10	3.76E-02	3.76E-03
Selenium	4.09E-01	0.29	0.58	1.41E+00	7.06E-01	9.06E-01	0.29	0.58	3.13E+00	1.57E+00
Silver	5.98E-02	2.02	20.20	2.96E-02	2.96E-03	1.22E-01	2.02	20.20	6.06E-02	6.06E-03
Vanadium	6.64E-01	0.34	0.69	1.93E+00	9.66E-01	7.61E-01	0.34	0.69	2.21E+00	1.11E+00
Zinc	4.79E+01	66.10	661.00	7.25E-01	7.25E-02	8.87E+01	66.10	661.00	1.34E+00	1.34E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-148 EU-23 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in South Fork Cement Creek

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	3.84E-01	2.24	22.40	1.71E-01	1.71E-02	4.58E-01	2.24	22.40	2.05E-01	2.05E-02
Barium	3.74E+00	73.50	131.00	5.09E-02	2.86E-02	4.74E+00	73.50	131.00	6.45E-02	3.62E-02
Cadmium	3.03E-01	1.47	14.70	2.06E-01	2.06E-02	3.92E-01	1.47	14.70	2.67E-01	2.67E-02
Chromium	2.76E-01	2.66	26.60	1.04E-01	1.04E-02	3.85E-01	2.66	26.60	1.45E-01	1.45E-02
Copper	1.98E+00	4.05	12.10	4.89E-01	1.64E-01	3.86E+00	4.05	12.10	9.53E-01	3.19E-01
Lead	4.83E+00	1.63	3.26	2.96E+00	1.48E+00	7.02E+00	1.63	3.26	4.31E+00	2.15E+00
Manganese	3.82E+01	179.00	1790.00	2.13E-01	2.13E-02	6.67E+01	179.00	1790.00	3.73E-01	3.73E-02
Mercury	6.07E-03	0.45	0.90	1.35E-02	6.75E-03	6.26E-03	0.45	0.90	1.39E-02	6.95E-03
Molybdenum	5.48E-02	3.50	35.00	1.57E-02	1.57E-03	6.72E-02	3.50	35.00	1.92E-02	1.92E-03
Nickel	1.37E-01	6.71	67.10	2.04E-02	2.04E-03	2.36E-01	6.71	67.10	3.52E-02	3.52E-03
Selenium	3.99E-01	0.29	0.58	1.38E+00	6.89E-01	8.85E-01	0.29	0.58	3.05E+00	1.53E+00
Silver	4.42E-02	2.02	20.20	2.19E-02	2.19E-03	1.10E-01	2.02	20.20	5.42E-02	5.42E-03
Vanadium	6.10E-01	0.34	0.69	1.77E+00	8.87E-01	6.86E-01	0.34	0.69	2.00E+00	9.98E-01
Zinc	1.62E+01	66.10	661.00	2.45E-01	2.45E-02	2.57E+01	66.10	661.00	3.89E-01	3.89E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-149 EU-24 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for American Robin Foraging in Upper Cement Creek										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	6.01E-01	2.24	22.40	2.68E-01	2.68E-02	7.21E-01	2.24	22.40	3.22E-01	3.22E-02
Barium	4.01E+00	73.50	131.00	5.46E-02	3.06E-02	6.61E+00	73.50	131.00	8.99E-02	5.04E-02
Cadmium	1.60E+00	1.47	14.70	1.09E+00	1.09E-01	1.91E+00	1.47	14.70	1.30E+00	1.30E-01
Chromium	3.00E-01	2.66	26.60	1.13E-01	1.13E-02	4.12E-01	2.66	26.60	1.55E-01	1.55E-02
Copper	4.87E+00	4.05	12.10	1.20E+00	4.02E-01	7.13E+00	4.05	12.10	1.76E+00	5.89E-01
Lead	1.51E+01	1.63	3.26	9.26E+00	4.63E+00	2.00E+01	1.63	3.26	1.22E+01	6.12E+00
Manganese	1.47E+02	179.00	1790.00	8.20E-01	8.20E-02	2.81E+02	179.00	1790.00	1.57E+00	1.57E-01
Mercury	6.41E-03	0.45	0.90	1.42E-02	7.12E-03	6.78E-03	0.45	0.90	1.51E-02	7.53E-03
Molybdenum	4.91E-02	3.50	35.00	1.40E-02	1.40E-03	5.98E-02	3.50	35.00	1.71E-02	1.71E-03
Nickel	1.80E-01	6.71	67.10	2.69E-02	2.69E-03	3.05E-01	6.71	67.10	4.55E-02	4.55E-03
Selenium	4.02E-01	0.29	0.58	1.39E+00	6.94E-01	8.96E-01	0.29	0.58	3.09E+00	1.55E+00
Silver	6.41E-02	2.02	20.20	3.17E-02	3.17E-03	1.28E-01	2.02	20.20	6.34E-02	6.34E-03
Vanadium	5.41E-01	0.34	0.69	1.57E+00	7.87E-01	6.30E-01	0.34	0.69	1.83E+00	9.16E-01
Zinc	4.49E+01	66.10	661.00	6.79E-01	6.79E-02	6.23E+01	66.10	661.00	9.42E-01	9.42E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-150 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Coyote Foraging in Terrestrial and Floodplain Habitats Throughout the Entire Bonita Peak Mining District Assessment Area

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	4.31E-03	0.06	0.59	7.30E-02	7.30E-03	1.11E-02	0.06	0.59	1.89E-01	1.89E-02
Arsenic	1.54E-02	1.04	1.66	1.48E-02	9.29E-03	2.11E-02	1.04	1.66	2.03E-02	1.27E-02
Cadmium	1.47E-02	0.77	7.70	1.91E-02	1.91E-03	2.11E-02	0.77	7.70	2.74E-02	2.74E-03
Chromium	3.67E-02	2.40	24.00	1.53E-02	1.53E-03	4.57E-02	2.40	24.00	1.90E-02	1.90E-03
Copper	4.41E-01	5.60	9.34	7.88E-02	4.72E-02	5.75E-01	5.60	9.34	1.03E-01	6.16E-02
Lead	4.31E-01	4.70	8.90	9.17E-02	4.84E-02	5.31E-01	4.70	8.90	1.13E-01	5.96E-02
Manganese	2.62E+00	51.50	515.00	5.08E-02	5.08E-03	3.84E+00	51.50	515.00	7.46E-02	7.46E-03
Mercury	1.07E-02	1.00	14.10	1.07E-02	7.60E-04	3.36E-02	1.00	14.10	3.36E-02	2.39E-03
Molybdenum	2.55E-03	0.26	2.60	9.81E-03	9.81E-04	4.64E-03	0.26	2.60	1.78E-02	1.78E-03
Nickel	3.93E-02	1.70	3.40	2.31E-02	1.16E-02	4.81E-02	1.70	3.40	2.83E-02	1.42E-02
Selenium	1.90E-02	0.14	0.22	1.33E-01	8.83E-02	2.40E-02	0.14	0.22	1.68E-01	1.12E-01
Silver	4.21E-03	6.02	60.20	6.99E-04	6.99E-05	1.49E-02	6.02	60.20	2.47E-03	2.47E-04
Thallium	5.73E-03	0.01	0.07	8.07E-01	8.07E-02	1.20E-02	0.01	0.07	1.69E+00	1.69E-01
Zinc	3.64E+00	75.40	754.00	4.83E-02	4.83E-03	3.95E+00	75.40	754.00	5.24E-02	5.24E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-151 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Deer Mouse Foraging in High-Level Dose Response Category (DRC) Floodplain Habitats										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.13E-01	0.06	0.59	1.92E+00	1.92E-01	2.39E-01	0.06	0.59	4.05E+00	4.05E-01
Arsenic	4.74E-01	1.04	1.66	4.56E-01	2.86E-01	6.82E-01	1.04	1.66	6.56E-01	4.11E-01
Cadmium	3.29E+00	0.77	7.70	4.28E+00	4.28E-01	3.77E+00	0.77	7.70	4.90E+00	4.90E-01
Chromium	7.30E-01	2.40	24.00	3.04E-01	3.04E-02	9.76E-01	2.40	24.00	4.07E-01	4.07E-02
Copper	5.48E+00	5.60	9.34	9.79E-01	5.87E-01	8.06E+00	5.60	9.34	1.44E+00	8.63E-01
Lead	1.69E+01	4.70	8.90	3.59E+00	1.90E+00	2.93E+01	4.70	8.90	6.24E+00	3.30E+00
Manganese	1.51E+02	51.50	515.00	2.93E+00	2.93E-01	3.89E+02	51.50	515.00	7.55E+00	7.55E-01
Mercury	2.49E-02	1.00	14.10	2.49E-02	1.77E-03	2.55E-02	1.00	14.10	2.55E-02	1.81E-03
Molybdenum	1.51E-02	0.26	2.60	5.80E-02	5.80E-03	1.91E-02	0.26	2.60	7.34E-02	7.34E-03
Nickel	3.56E-01	1.70	3.40	2.09E-01	1.05E-01	6.50E-01	1.70	3.40	3.82E-01	1.91E-01
Selenium	7.98E-01	0.14	0.22	5.58E+00	3.71E+00	1.82E+00	0.14	0.22	1.27E+01	8.48E+00
Silver	1.25E-01	6.02	60.20	2.08E-02	2.08E-03	2.57E-01	6.02	60.20	4.26E-02	4.26E-03
Thallium	1.17E-01	0.01	0.07	1.65E+01	1.65E+00	2.76E-01	0.01	0.07	3.89E+01	3.89E+00
Zinc	1.13E+02	75.40	754.00	1.50E+00	1.50E-01	1.52E+02	75.40	754.00	2.02E+00	2.02E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-152 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Deer Mouse Foraging in Mid-Level Dose Response Category (DRC) Floodplain Habitats										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	1.01E-01	0.06	0.59	1.72E+00	1.72E-01	2.12E-01	0.06	0.59	3.59E+00	3.59E-01
Arsenic	4.40E-01	1.04	1.66	4.23E-01	2.65E-01	5.96E-01	1.04	1.66	5.73E-01	3.59E-01
Cadmium	3.02E+00	0.77	7.70	3.93E+00	3.93E-01	3.51E+00	0.77	7.70	4.55E+00	4.55E-01
Chromium	7.28E-01	2.40	24.00	3.03E-01	3.03E-02	9.73E-01	2.40	24.00	4.06E-01	4.06E-02
Copper	4.39E+00	5.60	9.34	7.83E-01	4.70E-01	6.61E+00	5.60	9.34	1.18E+00	7.08E-01
Lead	9.61E+00	4.70	8.90	2.05E+00	1.08E+00	1.54E+01	4.70	8.90	3.28E+00	1.73E+00
Manganese	1.05E+02	51.50	515.00	2.05E+00	2.05E-01	2.80E+02	51.50	515.00	5.44E+00	5.44E-01
Mercury	2.46E-02	1.00	14.10	2.46E-02	1.75E-03	2.50E-02	1.00	14.10	2.50E-02	1.77E-03
Molybdenum	4.88E-03	0.26	2.60	1.88E-02	1.88E-03	5.59E-03	0.26	2.60	2.15E-02	2.15E-03
Nickel	3.52E-01	1.70	3.40	2.07E-01	1.03E-01	6.46E-01	1.70	3.40	3.80E-01	1.90E-01
Selenium	7.76E-01	0.14	0.22	5.42E+00	3.61E+00	1.73E+00	0.14	0.22	1.21E+01	8.06E+00
Silver	1.10E-01	6.02	60.20	1.83E-02	1.83E-03	2.42E-01	6.02	60.20	4.01E-02	4.01E-03
Thallium	9.34E-02	0.01	0.07	1.31E+01	1.31E+00	1.78E-01	0.01	0.07	2.51E+01	2.51E+00
Zinc	6.26E+01	75.40	754.00	8.30E-01	8.30E-02	8.15E+01	75.40	754.00	1.08E+00	1.08E-01

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-153 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Deer Mouse Foraging in Low-Level Dose Response Category (DRC) Floodplain Habitats										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	9.91E-02	0.06	0.59	1.68E+00	1.68E-01	2.09E-01	0.06	0.59	3.54E+00	3.54E-01
Arsenic	3.97E-01	1.04	1.66	3.82E-01	2.39E-01	5.18E-01	1.04	1.66	4.99E-01	3.12E-01
Cadmium	6.40E-01	0.77	7.70	8.31E-01	8.31E-02	7.99E-01	0.77	7.70	1.04E+00	1.04E-01
Chromium	6.95E-01	2.40	24.00	2.90E-01	2.90E-02	9.26E-01	2.40	24.00	3.86E-01	3.86E-02
Copper	3.15E+00	5.60	9.34	5.63E-01	3.37E-01	4.81E+00	5.60	9.34	8.59E-01	5.15E-01
Lead	4.85E+00	4.70	8.90	1.03E+00	5.45E-01	6.04E+00	4.70	8.90	1.29E+00	6.79E-01
Manganese	8.14E+01	51.50	515.00	1.58E+00	1.58E-01	1.33E+02	51.50	515.00	2.58E+00	2.58E-01
Mercury	2.46E-02	1.00	14.10	2.46E-02	1.74E-03	2.48E-02	1.00	14.10	2.48E-02	1.76E-03
Molybdenum	8.94E-03	0.26	2.60	3.44E-02	3.44E-03	1.09E-02	0.26	2.60	4.18E-02	4.18E-03
Nickel	2.55E-01	1.70	3.40	1.50E-01	7.50E-02	4.02E-01	1.70	3.40	2.36E-01	1.18E-01
Selenium	7.74E-01	0.14	0.22	5.41E+00	3.60E+00	1.73E+00	0.14	0.22	1.21E+01	8.04E+00
Silver	8.46E-02	6.02	60.20	1.40E-02	1.40E-03	2.16E-01	6.02	60.20	3.60E-02	3.60E-03
Thallium	9.60E-02	0.01	0.07	1.35E+01	1.35E+00	2.00E-01	0.01	0.07	2.81E+01	2.81E+00
Zinc	3.42E+01	75.40	754.00	4.54E-01	4.54E-02	4.69E+01	75.40	754.00	6.22E-01	6.22E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-154 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Deer Mouse Foraging in Reference Floodplain Habitats										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Antimony	8.62E-02	0.06	0.59	1.46E+00	1.46E-01	2.05E-01	0.06	0.59	3.48E+00	3.48E-01
Arsenic	3.85E-01	1.04	1.66	3.70E-01	2.32E-01	5.93E-01	1.04	1.66	5.70E-01	3.57E-01
Cadmium	3.94E-01	0.77	7.70	5.12E-01	5.12E-02	5.84E-01	0.77	7.70	7.58E-01	7.58E-02
Chromium	6.96E-01	2.40	24.00	2.90E-01	2.90E-02	9.15E-01	2.40	24.00	3.81E-01	3.81E-02
Copper	2.92E+00	5.60	9.34	5.22E-01	3.13E-01	4.95E+00	5.60	9.34	8.83E-01	5.30E-01
Lead	9.03E-01	4.70	8.90	1.92E-01	1.01E-01	1.68E+00	4.70	8.90	3.57E-01	1.88E-01
Manganese	5.48E+01	51.50	515.00	1.06E+00	1.06E-01	9.75E+01	51.50	515.00	1.89E+00	1.89E-01
Mercury	2.46E-02	1.00	14.10	2.46E-02	1.74E-03	2.49E-02	1.00	14.10	2.49E-02	1.76E-03
Molybdenum	7.02E-03	0.26	2.60	2.70E-02	2.70E-03	1.12E-02	0.26	2.60	4.29E-02	4.29E-03
Nickel	2.31E-01	1.70	3.40	1.36E-01	6.79E-02	3.70E-01	1.70	3.40	2.17E-01	1.09E-01
Selenium	7.62E-01	0.14	0.22	5.33E+00	3.54E+00	1.67E+00	0.14	0.22	1.17E+01	7.76E+00
Silver	7.61E-02	6.02	60.20	1.26E-02	1.26E-03	1.93E-01	6.02	60.20	3.21E-02	3.21E-03
Thallium	8.45E-02	0.01	0.07	1.19E+01	1.19E+00	1.49E-01	0.01	0.07	2.10E+01	2.10E+00
Zinc	2.91E+01	75.40	754.00	3.85E-01	3.85E-02	4.18E+01	75.40	754.00	5.54E-01	5.54E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: EU = exposure unit; COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-155 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Golden Eagle Foraging in Terrestrial and Floodplain Habitats Throughout the Entire Bonita Peak Mining District Assessment Area

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	7.95E-03	2.24	22.40	3.55E-03	3.55E-04	1.07E-02	2.24	22.40	4.78E-03	4.78E-04
Barium	9.33E-02	73.50	131.00	1.27E-03	7.12E-04	1.04E-01	73.50	131.00	1.41E-03	7.92E-04
Cadmium	7.87E-03	1.47	14.70	5.35E-03	5.35E-04	1.07E-02	1.47	14.70	7.26E-03	7.26E-04
Chromium	2.32E-02	2.66	26.60	8.72E-03	8.72E-04	2.42E-02	2.66	26.60	9.10E-03	9.10E-04
Copper	3.22E-01	4.05	12.10	7.96E-02	2.66E-02	3.35E-01	4.05	12.10	8.27E-02	2.77E-02
Lead	3.53E-01	1.63	3.26	2.16E-01	1.08E-01	4.27E-01	1.63	3.26	2.62E-01	1.31E-01
Manganese	1.29E+00	179.00	1790.00	7.22E-03	7.22E-04	1.95E+00	179.00	1790.00	1.09E-02	1.09E-03
Mercury	1.37E-02	0.45	0.90	3.05E-02	1.52E-02	4.33E-02	0.45	0.90	9.62E-02	4.81E-02
Molybdenum	1.33E-03	3.50	35.00	3.80E-04	3.80E-05	2.48E-03	3.50	35.00	7.08E-04	7.08E-05
Nickel	3.52E-02	6.71	67.10	5.25E-03	5.25E-04	4.20E-02	6.71	67.10	6.26E-03	6.26E-04
Selenium	1.62E-02	0.29	0.58	5.57E-02	2.79E-02	1.84E-02	0.29	0.58	6.33E-02	3.17E-02
Silver	6.13E-04	2.02	20.20	3.04E-04	3.04E-05	1.22E-03	2.02	20.20	6.03E-04	6.03E-05
Vanadium	1.25E-02	0.34	0.69	3.63E-02	1.82E-02	1.35E-02	0.34	0.69	3.92E-02	1.96E-02
Zinc	2.88E+00	66.10	661.00	4.36E-02	4.36E-03	2.98E+00	66.10	661.00	4.50E-02	4.50E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-156 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Goshawk Foraging in Mineral Creek Watershed Terrestrial and Floodplain Habitats

COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.84E-02	2.24	22.40	8.19E-03	8.19E-04	2.54E-02	2.24	22.40	1.13E-02	1.13E-03
Barium	2.27E-01	73.50	131.00	3.09E-03	1.74E-03	2.53E-01	73.50	131.00	3.44E-03	1.93E-03
Cadmium	2.55E-02	1.47	14.70	1.73E-02	1.73E-03	3.48E-02	1.47	14.70	2.36E-02	2.36E-03
Chromium	7.45E-02	2.66	26.60	2.80E-02	2.80E-03	7.77E-02	2.66	26.60	2.92E-02	2.92E-03
Copper	1.06E+00	4.05	12.10	2.61E-01	8.74E-02	1.10E+00	4.05	12.10	2.71E-01	9.08E-02
Lead	1.03E+00	1.63	3.26	6.34E-01	3.17E-01	1.21E+00	1.63	3.26	7.40E-01	3.70E-01
Manganese	3.42E+00	179.00	1790.00	1.91E-02	1.91E-03	5.15E+00	179.00	1790.00	2.88E-02	2.88E-03
Mercury	1.23E-01	0.45	0.90	2.73E-01	1.37E-01	3.88E-01	0.45	0.90	8.63E-01	4.32E-01
Molybdenum	2.69E-03	3.50	35.00	7.67E-04	7.67E-05	4.91E-03	3.50	35.00	1.40E-03	1.40E-04
Nickel	1.16E-01	6.71	67.10	1.73E-02	1.73E-03	1.38E-01	6.71	67.10	2.06E-02	2.06E-03
Selenium	5.35E-02	0.29	0.58	1.85E-01	9.24E-02	6.07E-02	0.29	0.58	2.09E-01	1.05E-01
Silver	1.35E-03	2.02	20.20	6.70E-04	6.70E-05	2.66E-03	2.02	20.20	1.32E-03	1.32E-04
Vanadium	3.24E-02	0.34	0.69	9.41E-02	4.71E-02	3.51E-02	0.34	0.69	1.02E-01	5.10E-02
Zinc	9.50E+00	66.10	661.00	1.44E-01	1.44E-02	9.80E+00	66.10	661.00	1.48E-01	1.48E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-157 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Goshawk Foraging in Cement Creek Watershed Terrestrial and Floodplain Habitats										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.88E-02	2.24	22.40	8.38E-03	8.38E-04	2.47E-02	2.24	22.40	1.10E-02	1.10E-03
Barium	2.27E-01	73.50	131.00	3.09E-03	1.73E-03	2.53E-01	73.50	131.00	3.44E-03	1.93E-03
Cadmium	2.56E-02	1.47	14.70	1.74E-02	1.74E-03	3.38E-02	1.47	14.70	2.30E-02	2.30E-03
Chromium	7.45E-02	2.66	26.60	2.80E-02	2.80E-03	7.77E-02	2.66	26.60	2.92E-02	2.92E-03
Copper	1.06E+00	4.05	12.10	2.63E-01	8.80E-02	1.10E+00	4.05	12.10	2.71E-01	9.08E-02
Lead	1.09E+00	1.63	3.26	6.66E-01	3.33E-01	1.27E+00	1.63	3.26	7.76E-01	3.88E-01
Manganese	3.57E+00	179.00	1790.00	2.00E-02	2.00E-03	5.33E+00	179.00	1790.00	2.98E-02	2.98E-03
Mercury	1.81E-04	0.45	0.90	4.03E-04	2.01E-04	6.08E-04	0.45	0.90	1.35E-03	6.75E-04
Molybdenum	2.69E-03	3.50	35.00	7.68E-04	7.68E-05	4.91E-03	3.50	35.00	1.40E-03	1.40E-04
Nickel	1.16E-01	6.71	67.10	1.73E-02	1.73E-03	1.38E-01	6.71	67.10	2.05E-02	2.05E-03
Selenium	5.37E-02	0.29	0.58	1.85E-01	9.28E-02	6.08E-02	0.29	0.58	2.10E-01	1.05E-01
Silver	1.45E-03	2.02	20.20	7.16E-04	7.16E-05	2.76E-03	2.02	20.20	1.36E-03	1.36E-04
Vanadium	3.25E-02	0.34	0.69	9.45E-02	4.72E-02	3.50E-02	0.34	0.69	1.02E-01	5.09E-02
Zinc	9.58E+00	66.10	661.00	1.45E-01	1.45E-02	9.87E+00	66.10	661.00	1.49E-01	1.49E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-158 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Northern Goshawk Foraging in Animas River Watershed Terrestrial and Floodplain Habitats										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/day)	No-Effect TRV (mg/kg BW/day)	Low-Effect TRV (mg/kg BW/day)	No-effect HQ	Low-effect HQ
Arsenic	1.84E-02	2.24	22.40	8.20E-03	8.20E-04	2.43E-02	2.24	22.40	1.08E-02	1.08E-03
Barium	2.27E-01	73.50	131.00	3.09E-03	1.73E-03	2.52E-01	73.50	131.00	3.43E-03	1.93E-03
Cadmium	2.61E-02	1.47	14.70	1.77E-02	1.77E-03	3.49E-02	1.47	14.70	2.37E-02	2.37E-03
Chromium	7.46E-02	2.66	26.60	2.80E-02	2.80E-03	7.78E-02	2.66	26.60	2.93E-02	2.93E-03
Copper	1.06E+00	4.05	12.10	2.63E-01	8.80E-02	1.10E+00	4.05	12.10	2.71E-01	9.09E-02
Lead	1.10E+00	1.63	3.26	6.72E-01	3.36E-01	1.33E+00	1.63	3.26	8.14E-01	4.07E-01
Manganese	3.74E+00	179.00	1790.00	2.09E-02	2.09E-03	5.70E+00	179.00	1790.00	3.19E-02	3.19E-03
Mercury	1.98E-04	0.45	0.90	4.39E-04	2.20E-04	6.37E-04	0.45	0.90	1.42E-03	7.08E-04
Molybdenum	2.77E-03	3.50	35.00	7.91E-04	7.91E-05	5.16E-03	3.50	35.00	1.47E-03	1.47E-04
Nickel	1.16E-01	6.71	67.10	1.74E-02	1.74E-03	1.39E-01	6.71	67.10	2.07E-02	2.07E-03
Selenium	5.36E-02	0.29	0.58	1.85E-01	9.26E-02	6.08E-02	0.29	0.58	2.10E-01	1.05E-01
Silver	1.48E-03	2.02	20.20	7.34E-04	7.34E-05	2.97E-03	2.02	20.20	1.47E-03	1.47E-04
Vanadium	3.22E-02	0.34	0.69	9.37E-02	4.69E-02	3.48E-02	0.34	0.69	1.01E-01	5.05E-02
Zinc	9.55E+00	66.10	661.00	1.44E-01	1.44E-02	9.81E+00	66.10	661.00	1.48E-01	1.48E-02

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Table E-159 Estimated Daily Dose (EDD) Hazard Quotients (HQs) for Canada Lynx Foraging in Evergreen Forested Terrestrial Throughout the Entire Bonita Peak										
COPEC	CTE Exposure Scenario					RME Exposure Scenario				
	Total EDD (mg/kg BW/d)	No-Effect TRV (mg/kg BW/d)	Low-Effect TRV (mg/kg BW/d)	No-effect HQ	Low-effect HQ	Total EDD (mg/kg BW/d)	No-Effect TRV (mg/kg BW/d)	Low-Effect TRV (mg/kg BW/d)	No-effect HQ	Low-effect HQ
Antimony	5.17E-04	0.06	0.59	8.75E-03	8.75E-04	7.44E-04	0.06	0.59	1.26E-02	1.26E-03
Arsenic	5.99E-03	1.04	1.66	5.76E-03	3.61E-03	7.76E-03	1.04	1.66	7.46E-03	4.68E-03
Cadmium	8.14E-03	0.77	7.70	1.06E-02	1.06E-03	9.45E-03	0.77	7.70	1.23E-02	1.23E-03
Chromium	3.12E-02	2.40	24.00	1.30E-02	1.30E-03	3.30E-02	2.40	24.00	1.38E-02	1.38E-03
Copper	4.12E-01	5.60	9.34	7.36E-02	4.41E-02	4.30E-01	5.60	9.34	7.69E-02	4.61E-02
Lead	3.42E-01	4.70	8.90	7.27E-02	3.84E-02	4.54E-01	4.70	8.90	9.65E-02	5.10E-02
Manganese	1.64E+00	51.50	515.00	3.19E-02	3.19E-03	2.52E+00	51.50	515.00	4.88E-02	4.88E-03
Mercury	9.69E-05	1.00	14.10	9.69E-05	6.88E-06	6.04E-04	1.00	14.10	6.04E-04	4.29E-05
Molybdenum	7.26E-04	0.26	2.60	2.79E-03	2.79E-04	1.02E-03	0.26	2.60	3.93E-03	3.93E-04
Nickel	4.26E-02	1.70	3.40	2.50E-02	1.25E-02	4.83E-02	1.70	3.40	2.84E-02	1.42E-02
Selenium	2.19E-02	0.14	0.22	1.53E-01	1.02E-01	2.53E-02	0.14	0.22	1.77E-01	1.18E-01
Silver	6.43E-04	6.02	60.20	1.07E-04	1.07E-05	9.87E-04	6.02	60.20	1.64E-04	1.64E-05
Thallium	4.57E-03	0.01	0.07	6.44E-01	6.44E-02	6.26E-03	0.01	0.07	8.82E-01	8.82E-02
Zinc	3.75E+00	75.40	754.00	4.97E-02	4.97E-03	3.93E+00	75.40	754.00	5.21E-02	5.21E-03

Units: mg/kg BW/day = milligrams per kilogram of body weight per day

Acronyms: COPEC = contaminant of potential ecological concern; RME = reasonable maximum exposure; CTE = central tendency exposure; TRV = toxicity reference value

Attachment

Draft Terrestrial Baseline Ecological Risk Assessment Response to Comments

Sunnyside Gold Corporation Comments

General Comments

1. **Lead Toxicity and Bioavailability.** The [baseline ecological risk assessment] BERA identifies lead as the primary risk driver for wildlife receptors at the Site. The incidental ingestion of lead in soils accounts for a large majority of the estimated exposure to wildlife receptors and is the largest single contributor to risk at the Site (based on the exposure calculations provided in Section 3 of the BERA). Lead contamination in soils is known to be less than 100% bioavailable based on [U.S. Environmental Protection Agency] USEPA (2007) guidance and has been shown to be consistently less than 100% based on a recent review by Li et al. (2020). Despite available data, the BERA assumes that lead is 100% bioavailable and provides no quantitative discussion of how that conservative assumption could affect the exposure estimation and risk characterization. When the overly-conservative assumption of 100% soil bioavailability is coupled with the decision to use the most conservative toxicity reference values (TRV) to characterize risk to birds and mammals the compounded conservatisms reduce the utility of the conclusions reached for lead risk to little more than a screening-level assessment. Additional discussion is needed in the BERA to more fully describe the potential for effects from lead based on the uncertainties inherent when using multiple highly-conservative measures. More detail is provided in Specific Comments #18 and #19.

   <u>Agency Response to General Comment #1</u>: EPA respectfully acknowledges the comment regarding bioavailability assumptions but has decided not to revise the terrestrial BERA exposure estimates with respect to metals bioavailability. EPA agrees that the current 100% bioavailability assumption is conservative and likely overestimates risks to wildlife receptors. However, the bioavailability of lead and other metals is not well known and uncharacterized for respective wildlife species and Bonita Peak Mining District (BPMD) exposure media. The review by Li et al. (2020) focuses on in vitro *(laboratory simulations) and* in vivo *bioassays using mice and swine models, and thus, this review provides little information on avian wildlife and site-specific factors that might affect bioavailability at BPMD. EPA has decided to take a conservative approach in estimating BPMD wildlife exposure risks to reduce the chance of overlooking any risks that could occur from exposure to BPMD contamination sources. This was specifically discussed in the current terrestrial BERA Uncertainty Analysis Section 5.6. To reinforce this point, the uncertainty text was revised to add more detail on potential wildlife risk estimate biases associated with bioavailability assumptions.*

   The BPMD terrestrial BERA was conducted as described in the BERA work plan (EPA, 2017e), which states that that metals in soil, water, and dietary items are assumed to be 100% bioavailable when ingested by wildlife receptors. The work plan was reviewed by and subsequently finalized after soliciting comments from the Biological Technical Assistance Group (BTAG). Additionally, the BPMD aquatic BERA, which is the analog to the terrestrial BERA, also assumed that 100% of metals exposure is bioavailable to wildlife receptors. Given that this assumption was identified in the work plan and used in the aquatic BERA for this site, EPA cites the precedent for not revising current risk estimates with respect to lower bioavailability estimates.

   EPA respectfully acknowledges the recommendation but will not revise wildlife TRVs currently used in the terrestrial BERAs. The existing set of wildlife TRVs reflect EPA Region 8's current

position on TRV selection methods and utilization for BPMD wildlife risk analyses. Respective TRVs were selected in cooperation with U.S. Fish and Wildlife staff and are commonly used in many ecological risk assessments across the country. These are the same TRVs used in the aquatic BERA when assessing wildlife risks. Use of the same set of wildlife TRVs allows for harmonization of all wildlife risk assessment methods conducted for the BPMD. Note that the uncertainty bullet in Section 5.6 of the terrestrial BERA acknowledges that the avian dietary TRV for lead is highly conservative and provides justification for its use in assessing risks to wildlife receptors with unknown sensitivity to lead exposure; it should also be noted that the avian TRVs for lead that were used in the BERA are from EPA's EcoSSL (EPA 2003; 2005), which were derived from studies that account for bioavailability.

EPA acknowledges that the terrestrial BERA is conservative as assumptions and decisions on exposure modeling and TRV selection were also conservative. In order to offset some of the conservatism built into the BERA, EPA refined wildlife exposure estimates to better reflect exposure regimes that are unique to the site. Specifically, seasonal use factors were applied to the risk estimates to account for the portion of the year in which BPMD is covered with snow and ice, thereby limiting wildlife foraging activities. In fact, some of the receptors included in the terrestrial BERA are seasonal migrants or hibernate between the months of October to March, or approximately 6-months of the year. As a result, the BERA exposure estimates for seasonal migrants and hibernators have been revised to reflect this scenario via use of seasonal use factors incorporated into respective exposure models. Seasonal use factors were only used to refine exposure estimates for migratory wildlife and true hibernators. As such, exposure estimates for receptors that are still active in winter burrows (beaver, American pika, and deer mouse) or actively forage during winter months (Canada lynx, coyote, and white-tailed ptarmigan) were not adjusted using seasonal use factors. Final risk estimates reflect the application of seasonal use factors for selected wildlife receptors. The BERA also specifically identifies this as a refinement that was not identified in the BERA work plan.

Finally, EPA has revised the BERA to provide examples of refined exposure estimates to reflect interim remedial actions that are planned in floodplain areas associated with the potential for human exposure to soils with higher concentrations of metals, specifically lead. These actions pertain to two campsites located in floodplain exposure units EU-07 and EU-14 where lead concentrations are elevated over other samples used to estimate incidental soil ingestion (e.g., CMP4 at EU-7 (44,200 mg/kg) and CMP7 at EU-14 (11,800 mg/kg). Samples from these two campsites drive elevated risks for these exposure units. As such, remediation of campsite soils has potential to reduce incidental soil exposure to lead in wildlife. Campsite soil remediation also creates uncertainties associated with using highly influential and elevated metals concentrations to model exposure in receptors represented in EU-07 and EU-14. The BERA was revised to include an uncertainties bullet that provides quantitative examples of how removing CMP4 and CMP7 soil samples affects risk estimates for American robin, the most at-risk receptor, in EU-07 and EU-14.

2. **Sampling Locations.** No map(s) or table(s) are provided in the document to show or describe the samples collected or even where they were collected. The data are provided in Appendix A but there is no mechanism to allow the reader to see where the samples have been collected spatially. With such a complex set of data being used from multiple sources, the reader should be provided with spatial representations of what data have been collected. Maps should be provided in the report or in an appendix showing all sampling locations of all media for the data used in the assessment. The

maps should show sample type, sampling location, and the floodplain EU/Mine Halo from which it was sampled.

Agency Response to General Comment #2: A series of figures that show locations of all surface water, soil, and dietary item samples are now included in the BERA to address this comment. These figures are labeled Figure 3.1a to 3.1h (surface water and floodplain soil sample locations) and Figure 3.2a to 3.2d (vegetation, upland soil and invertebrates sampling locations).

3. **DRC Designations.** While the [dose-response category] DRC designations are provided in Tables 3.1 and 3.2 of the report, no maps are provided to help the reader easily identify the DRC for each floodplain EU and/or mine halo area. Maps showing the DRC designation for each exposure unit and mine halo should be added to the report.

   Agency Response to General Comment #3: A series of figures that show DRCs for each mine halo and floodplain exposure unit are now included in the BERA to address this comment. These figures are labeled Figure 3.3a to 3.3h (mine waste pile halo areas), Figure 3.4 (mine feature DRCs), and Figure 3.5 (floodplain exposure unit DRCs).

4. **Exposure Point Concentrations (EPCs) Used in Exposure Calculations.** The information provided in Appendices B, C, D, and E is exceptionally complicated and does not provide the reader with a clearly defined set of EPCs used for the calculation of risk in each floodplain EU or DRC. As currently presented, the reader must find the EPCs in each of the 159 Appendix C tables and then cross reference them with one of the 34 tables in Appendix B to determine the origin of the EPCs. An example of EPC summary tables for several receptors are attached. Tables like the examples should be provided in the main report to allow the reader to clearly understand the data used to estimate exposure and risk in each EU or DRC.

   Agency Response to General Comment #4: Requested EPC tables are now included and referenced in the main BERA report text. These tables are formatted as requested in the provided summary example.

5. **Substitution of EPCs to Fit DRCs.** The final bullet point of Section 3.3 discusses assigning data to certain DRCs based on the *a priori* identification of sampling sites by DRC using the SLERA results if the actual data collected from the DRCs did not fit the pre-conceived model. This approach serves only to make the exposure calculations match the DRC model, but provides no valid estimation of risk since the data in the high DRCs was not actually collected from the high DRCs. In addition, where such substitutions are made are never clearly identified in the report. Tables B-27 and B-31 are referenced in the text, but neither table indicates where substitutions were made. Any EPC substitutions must be clearly identified and their effect on the risk characterization must be specifically discussed in the uncertainty section for all risks characterized using artificially elevated EPCs.

   Agency Response to General Comment #5: Substitutions were conducted to generate meaningful DRC dietary item exposure statistics and provide conservative estimation of risks. As identified in the comment, substitutions were made when preliminary invertebrate and plant tissue EPCs did not match the expected positive dose-response relationship with respect to increasing DRC. First, it is important to note that all exposure units were classified into high-, med-, and low-

level DRCs using concentrations of lead measured in exposure unit soils. As suggested in the terrestrial SLERA (EPA, 2018d), lead drives the majority of ecological risks to wildlife in the BPMD. Additionally, other metals generally trend with lead in BPMD floodplain and halo area soils (Table B-19 and Table B-24, respectively). While it was anticipated that lead and other metals concentrations measured in invertebrate and plant tissue samples would follow the same dose-response profile as lead, this was not always the case. This might be an artifact of low bioaccumulation potential of metals into dietary items from soil and/or variability in sampling results. Also, some dietary items such as soil invertebrates, where not found in high-level DRC sampling areas. As such, substitutions are needed to fill in missing EPCs.

EPA disagrees that such substitutions do not provide valid estimates of dietary exposure risks. Conceptually, this scenario is akin to achieving the maximum level of accumulation, or the asymptote of an accumulation curve. Additionally, such substitutions are more common for the non-key metals (i.e., those metals not driving risks) with low concentrations and bioaccumulation potential. Lastly, for most receptors, the vast majority of exposure risks are driven by concentrations of metals in soil via incidental soil ingestion and not from dietary item exposures. Therefore, concentrations of metals in dietary items have little influence for most receptors and those that have elevated risks estimates.

EPA agrees that dietary item EPC substitutions should be clearly identified in the final BERA. Appendix B Tables B-27 and B-31 were revised to show which dietary item EPCs were substituted into respective DRCs for each metal, invertebrate type, and vegetation type. EPA also agrees that the effects of such substitutions on the risk characterization should be specifically discussed in the uncertainty section. The BERA now contains a specific uncertainties bullet that discusses the effect of substitutions on risk characterization results.

6. **Calculation of Risks Using Aggregated Data in Areas Where Site-Specific Data Are Available.** Given the availability of data, it is agreed that aggregation of data using the DRC approach is useful. However, for those receptors where risks can be estimated on individual mine halos and in individual floodplain EUs (i.e. small home range receptors}, the data from that exposure area should be used in preference to the DRC-based aggregate data when available. Risks from each halo or EU with site-specific data should be calculated using the site-specific data as a comparison point to the DRC-based risk calculations and the conclusions reached should be compared between the two methods.

   It is understood that not all data exist in every EU, but risks should be calculated using as much site-specific data as possible, using DRC-based data to substitute for site-specific data only where no site-specific data exist. Section 3.9.5 indicates that Cbiota = EUdiet where EUdiet = RME and CTE concentrations in each dietary item for each floodplain EU which would indicate that risks are calculated using site-specific prey data where available. However, the text of that section and the actual risk calculations use DRC-based EPCs for prey. The same approach should be used for the mine halo assessments. Using aggregated data to assess risk in areas where site-specific data exists does not provide a reliable estimate of risk in those areas. For example, the flying invertebrate concentration of lead measured in EU-09 was 2.15 mg/kg (Table A-6). The EPC used for assessing risks to receptors eating flying invertebrates in EU-09 was equal to 63.15 mg/kg, over 29 times higher than the measured concentration. The EPC was derived using various data substitution schemes: flying invertebrate data aggregated over both upland and floodplain DRCs and then substituted for the mid DRC because the actual high DRC concentration was lower than the mid

DRC concentration. This resulted in a large over-estimation of risk in that EU using data that have no relationship with the actual data from that floodplain EU. The substituted data coupled with the lead bioavailability assumptions discussed in Specific Comments #13 and #19, along with the conservative lead TRV discussed in Specific Comment #18 resulted in one of the highest HQs calculated at the Site. Because most of the highest risks calculated at the Site are based on lead exposure to birds that ingest invertebrates and plants (the two places where the most data substitution occurred) risk estimates to those receptors may be unreliable even before the uncertainties related to lead bioavailability and the lead TRV are taken into consideration.

Agency Response to General Comment #6: EPA respectfully acknowledges the comment regarding use of aggregated data and substitutions for flying invertebrates but has decided not to revise the terrestrial BERA. It was determined from the BERA that ingestion of key metals such as lead in soil often constitutes well over 90% of the total exposure risk with the remaining percentage from dietary items and surface water exposure for most evaluated receptors. As a result, it is moot whether using more specific EU data, for example flying insect data, would significantly change calculated HQs. As discussed in the response to Comment #5 above, the bullet added to the Uncertainty Analysis regarding substitutions is also germane to this comment. Also note that use of the four DRCs as EUs for small home-range wildlife receptors was prescribed in the approved BERA work plan (EPA 2017e).

Specific Comments

1. **Executive Summary. Page 9.** The first full paragraph indicates that there are 25 floodplain and 5 reference floodplain EUs. The third paragraph indicates that risks were evaluated in 29 floodplain EUs. Please address the inconsistency.

   Agency Response to Specific Comment #1: This inconsistency pertains to the Bear Creek reference EU in Mineral Creek; this EU was not included in HQ derivation tables for the floodplain EU medium and small home range receptors because no floodplain soils were collected there. However, Bear Creek floodplain habitat, surface water EPCs, and reference DRC-assigned soil and dietary items were incorporated into exposure estimates for large and very large home range receptors. This comment is addressed by adding a footnote to the identified text that describes this process, for clarification. The total number of floodplain EUs (n = 29) in the third paragraph is correct and remains unchanged.

2. **Section 1.1. Page 23. Next to last paragraph.** The last sentence of this paragraph indicates that the application of the BERA results is limited to all individual sources of contamination. If the site specific assessments are completed where data are available, the utility of the BERA would be increased in those areas which would aid in making risk management decisions.

   Agency Response to Specific Comment #2: EPA respectfully acknowledges this comment but has decided not to revise the terrestrial BERA. The identified statement was made to emphasize that the BPMD is complex, very large, and contains many sources of contamination. The BERA provides a means to assess risks over large areas that are ecologically important but does not specifically assess risks to individual sources. However, it does provide risk managers with an efficient means of assessing potential risks at individual sources of contamination, such as a specific mine waste pile, using DRC-specific risk results. For example, additional soil sampling at a source area might result in the determination that a mine feature has a low-level of metals

contamination. Risk managers can then reference the low-level DRC risk results to assess potential risks to smaller home range receptors. As noted above for general comment #5, exposure modeling methodology was detailed in the BERA work plan (EPA 2017). EPA does not see a compelling reason to change stated methodology at this point in the process.

3. **Section 1.2. Page 24.** The second sentence indicates that one of the outcomes of the BERA is to generate information to help evaluate and select cleanup options. This conflicts with the previous section that says the BERA provides limited utility to addressing all individual sources of contamination.

   Agency Response to Specific Comment #3: EPA disagrees that there is a conflict between identified statements, both are correct as written. Section 1.2 speaks to the general utility of the BERA within the RI/FS process, as a means to prioritize and guide site remedial actions, whereas, Section 1.1 indicates that this particular BERA provides a big picture of site-wide risks within a very large assessment area. EPA does not see the need to revise the BERA to address this comment.

4. **Section 1.5. Page 25.** The reference to Figure 1.3 in the first paragraph implies that the DRCs for each floodplain EU are included in the figure. They are not. Please see the general comment regarding the addition of figures showing the DRCs to the report.

   Agency Response to Specific Comment #4: Figure 1.3 does not identify floodplain DRCs. Section 1.5 text was revised accordingly. Note that floodplain EU DRCs are now shown in the new Figure 3.5.

5. **Section 3.2.1. Page 53.** The last paragraph in the section indicates that data from adit water are not available for each EU and that watershed-specific EPCs were calculated. This is different from the data substitutions done for all other exposure media which are done based on DRC-based data substitutions for the bat. Please provide an explanation for the difference in the report and discuss the potential bias in the uncertainty section.

   Agency Response to Specific Comment #5: EPA agrees that the treatment of adit water data is different than that used for dietary item data substitutions. As discussed in Section 3.2.1, adit water data were not available for each EU. Therefore, watershed-scale EPCs were used for estimating adit water exposure for EUs with missing adit monitoring data. Note that adit monitoring data were only used for bat, pika and marmot surface water exposures. For pika and marmot, there would be limited impacts on the results because risks are largely driven by soil ingestion. For bats, adit water is a more important exposure component because there is no soil ingestion. However, it would not greatly impact the results because HQs for bats are low throughout. An uncertainty bullet describing uncertainties associated with availability of adit water data is already included in Section 5.6. However, it is not possible to identify potential biases that substitutions would have on risk outcomes because it is not known whether metals concentrations in actual, missing adit water locations are greater or less than watershed substituted concentrations.

6. **Section 3.2. All Soil Sections.** Please provide consistent discussion about whether or not each soil dataset is sieved (provide fraction sieved to) or unsieved. This information is not provided in all cases. Please also add a discussion to the uncertainty section addressing potential effects to exposure

calculations using materials of different grain size. In addition, there appear to be many different sample collection techniques used (5-point vs. 30-point composites, grab samples, etc.). Please provide more information about how many of each sample type were included in the dataset. In addition, the effect of aggregating data from different sampling techniques should be discussed in the uncertainty section of the report.

Agency Response to Specific Comment #6: EPA agrees that the BERA could be improved with addition of more information on various soil sampling methods. Section 3.2.2 text and the tables in Appendix A were revised to clarify which soil samples were sieved. A bullet was also added to the Uncertainty Analysis as requested, to describe potential uncertainties associated with sieving and different sample collection methods.

7. **Section 3.2.4. Page 55.** This section indicates that flying invertebrate data from upland and floodplain EUs were aggregated to produce EPCs for DRCs of both site types. Please provide a discussion and analysis of how the data differed between the two groups in the uncertainty section so that the reader can assess if there is any bias toward the upland or floodplain EUs based on the substitution.

   Agency Response to Specific Comment #7: EPA agrees that the aggregation of invertebrate samples collected from upland halo areas and floodplain EUs into a single dataset used to derive EPCs creates uncertainty regarding characterizing wildlife dietary exposures. This single group of functional group-specific invertebrate EPCs is used to estimate terrestrial and semi-aquatic wildlife receptors. This decision was made to increase sample size and statistical power needed to generate EPC metrics.

8. **Section 3.2.6. Page 56.** The second paragraph indicates that composite soil samples were collected from the 0 - 6 inch interval in the first sentence and the 0 -2 inch interval in the second sentence. Please clarify.

   Agency Response to Specific Comment #8: All waste rock samples were collected within 0- to 6-inches below ground surface. The text was revised to address this discrepancy.

9. **Section 3.3. 2nd Bullet on Page 57.** Please indicate which media contain multiple samples from the same sampling location and, except for water samples, how it is appropriate to consider each sample as a unique measure if collected from the same location. Calculating a mean concentration where multiple (non water) samples were collected from a single sampling location would be a more appropriate measure for assessing exposure than using both as a unique measure.

   Agency Response to Specific Comment #9: The cited text was revised to address this comment. Note that this bullet pertains to surface water samples only.

10. **Section 3.3. 4th Bullet on Page 57.** Please provide a discussion of the potential effects of periodic changes in chemical concentrations on risk estimations in the uncertainty section.

    Agency Response to Specific Comment #10: As shown in the BPMD aquatic BERA, concentrations of metals in surface water can change depending on hydroperiod. Thus, the hydroperiod weighting scheme that is described in this section and used to estimate wildlife surface water exposures was employed to normalize or mimic real-world exposure scenarios

associated with seasonal changes in surface water metals concentrations. As such, water year EPCs reduce respective uncertainties and provide more realistic surface water exposure scenarios than averaging metals concentrations over the entire dataset. Therefore, no addition to the Uncertainty Analysis is required.

11. **Section 3.6.2. Page 61.** The third sentence of the section appears to be incomplete.

    Agency Response to Specific Comment #11: The correct sentence should be: "It is assumed that the level of contamination in halo areas ***is proportional to*** *the level of contamination in respective waste piles." The text has been corrected.*

12. **Section 3.6.2. Page 62.** The use of the most conservative acreage ratio to assess risk to all mine halos is overly conservative. Where available, use mine-specific sizes or use a measure of central tendency for all to avoid over-estimation.

    Agency Response to Specific Comment #12: EPA respectfully acknowledges the comment regarding use of the most conservative acreage ratio but has decided not to revise the terrestrial BERA. EPA does not see the need for this refinement since it would only lower (slightly) halo area exposure and respective risk outcomes for the large and very large home range receptors which are all very low. Furthermore, the use of the most conservative acreage to assess risk to all mine halos was performed as described in the BTAG-reviewed BERA workplan (EPA 2017). Note, however, that there are potentially hundreds of mines in the BPMD that were not included in the NPL or incorporated into the large home range receptor exposure estimates. Most may be smaller than the 42 mine features used to model wildlife exposures but still might have impacted halo areas. As such, use of the largest acreage ratio is a way to incorporate potential exposures to non-NPL mine feature halo areas.

13. **Section 3.8. Page 64.** The last paragraph in the section discusses the assumption of 100% bioavailability from soils. The second sentence indicates that it is better to overestimate risk than to use limited data to estimate a lower bioavailability. There is no question that the risk assessment should err on the side of conservatism, however, when the single measure driving the bulk of the risks at the Site is at question, the conservatism should not be dismissed lightly.

    While it is noted here and in Section 5.7 that using 100% soil bioavailability may overestimate risks, additional consideration of soil bioavailability is needed, particularly from lead. As indicated in Section 5.7, soil ingestion often contributes over 90% of the EDD for wildlife receptors. While it is not specifically discussed in the report, the Appendix C tables indicate that lead exposure via soils is also heavily driving the exposure for receptors with the highest levels of risk. Given the obvious importance of the soil ingestion pathway on the main conclusions of the report, more attention to the discussion of the potential effects of lead bioavailability on the conclusions should be provided. This discussion should include information regarding the relative contribution of lead in the soil ingestion pathway to overall lead exposure for each receptor. The discussion should also include a quantitative consideration of the effect of lead bioavailability at a range of lead soil bioavailability.

    Agency Response to Specific Comment #13: EPA respectfully acknowledges the comment regarding bioavailability assumptions but has decided not to revise the terrestrial BERA exposure estimates with respect to bioavailability. However, the uncertainties bullet associated with the 100% bioavailability assumption has been revised to discuss how risk estimates would

change when lower bioavailability is assumed. Please see the response to previous Comment #1 above for more details.

14. **Section 3.9.7. Small Home Range Receptors.** It is unclear why medium home range receptors in the floodplain are assessed on an EU-by-EU basis, but small home range receptors are assessed on a DRC basis. The individual floodplain EUs are likely too small to support entire populations of medium home range receptors, but could support entire populations of small home range receptors. This comment also pertains to the discussion of risks to medium and small home range receptors in Section 5. Risks to medium receptors are more appropriately described on a DRC basis and small home range receptors should be discussed on an EU-by-EU basis, including individual mine halos using the data available in each halo as discussed in the 5th bullet of the general comment.

    Agency Response to Specific Comment #14: EPA respectfully acknowledges the comment regarding receptor home range assumptions but has decided not to revise the terrestrial BERA. The BERA provides two ways to evaluate medium and small range receptor risks; specifically, the use of DRCs and floodplain EUs. This allows for an estimate of risks for similar species using a range of hypothetical exposure scenarios. This range of scenarios is useful for risk managers when making remedial decisions at the site. Note that the current methodology was presented in the BTAG-reviewed BERA work plan (EPA 2017e) and SAP/QAPP (2017b).

15. **Section 4.2. Page 77. Last paragraph on page.** The paragraph discusses cementing of soils in waste piles. A statement should be added to the discussion that makes it clear that physical effects potentially affecting plant growth are not related to metals toxicity.

    Agency Response to Specific Comment #15: EPA agrees that cemented soils may limit plant growth irrespective of metals toxicity. Section 4.2 text was revised for clarification.

16. **Section 4.2. Page 77 and 78.** The discussions of the mechanisms for plant and invertebrate toxicities are very simplistic and generalized. They should be expanded to discuss potential mechanisms of toxic effects specific to the metals being considered as COPECs.

    Agency Response to Specific Comment #16: EPA respectfully acknowledges the comment regarding the request for more information on mechanisms of metals toxicity in plants and invertebrates but has decided not to revise the terrestrial BERA. Section 4.2 already provides this information in the same level of detail used to discuss metals toxicity in wildlife.

17. **Section 5.3. Page 82.** The first sentence on the page indicates that the HQs shown in Table 5.1 generally follow an increasing dose response pattern. First, there is no response measured in the plant community. The data can only be said to have a general increase in HQs since actual response in the plant community was not measured. Second, standard practice in BERAs is to provide HQs truncated to whole numbers or at most one decimal point. There are potentially orders of magnitude of uncertainty in the HQs calculated and they should not be presented with more precision than the data allow, and certainly not to the 0.01 level of precision. Finally, the HQs do not show clear increases with increasing DRCs. Using lead as an example, high and mid level halos have the same HQ and low, mid, and reference have the same HQs in floodplain DRCs. The calculated HQs should be revised to show only the precision that the data allows and the section should be revised to more accurately discuss the HQs presented in the table. **NOTE: The HQ precision comment here applies to all HQs presented in the BERA.**

<u>Agency Response to Specific Comment #17</u>: EPA agrees that Section 5.3 can be revised to better describe trends in concentrations and not responses. EPA also agrees that the scope of the BERA and related uncertainties limit the level of precision in HQ estimates. As such, all HQs reported in the BERA are now rounded to the nearest whole number. However, all HQs reported in BERA appendices were not changed for transparency.

18. **Section 5.6 Page 96. Last bullet point.** The bullet point discusses the use of the most conservative LOAEL TRV for lead. The bullet correctly indicates that risks will be over-predicted using the TRV, but opines that the use of the TRV is justified to be protective of any sensitive bird species. The BERA, however, provides no information about what bird species that are particularly sensitive to lead may be present in the terrestrial areas of the BPMD. Since the bulk of the risk described in the BERA is attributed to lead, a more complete review of lead toxicity and the effect of using the most conservative TRV as the sole descriptor of risk should be provided.

    The 3.28 mg/kg BW /day TRV is representative of the paired TRV from the single study result from which the screening-level NOAEL TRV was derived (Edens and Garlich 1983). This single study result was selected from 43 total study results from 28 referenced studies of effects to avian growth and/or reproduction that were critically reviewed and identified by EPA as being of sufficient quality for use in derivation of the EcoSSL TRV for lead.

    Of the 43 study results, four LOAEL TRVs were equal to or less than the LOAEL TRV selected for use. Of those four, three study results were from the same reference (Edens and Garlich 1983) and one was from a second study by Meluzzi et al. (1996). The Edens and Garlich study showed a statistically significant reduction in egg laying for chickens and Japanese quail when provided with the low oral doses of lead in the form of Lead(II) acetate. The Meluzzi et al. (1996) study observed a decrease in egg weight for chickens fed Lead(II) oxide added to their food.

    The dose rates from these two studies (as calculated by EcoSSL) represent, by far, the lowest dose rates observed in the database as having an effect on bird reproduction due to lead exposure and represent the most conservative approach to assessing risk.

    Aside from the results from those two studies, the LOAEL TRVs for growth and reproductive endpoints are less than the geometric mean LOAEL TRV presented in the BERA Work Plan in 24 of 26 tests for growth and reproduction endpoints in the EcoSSL database. As noted in the LANL ECORISK database, it is likely that many TRV datasets in the EcoSSL database with such wide ranges of LOAEL TRVs, including some very low values, may be due to high relative bioavailability of many inorganic salts used in laboratory testing versus forms of metals to which wildlife are exposed in the ecosystem. Because of this variability in the TRVs, geometric mean approaches to TRVs are better estimators of potential effects than single studies. This is particularly true in the lead example presented here, where aside from the two highly conservative studies used to derive the TRVs, lead LOAEL TRVs in 92% of all other tests are less than the geometric mean LOAEL TRV of the EcoSSL data. In the case of lead and based on the review of the available data, the geometric mean LOAEL TRV would be a better and more useful predictor of potential effects to birds than the most conservative TRV available.

    Additionally, using comparisons of egg laying rates in bird species specifically bred to increase egg laying rates to levels never encountered in wild bird species is highly uncertain. Chickens and

Japanese quail are specifically bred to produce non-fertilized eggs at the highest rate possible for commercial agricultural purposes. In the Edens and Garlich (1983) study endpoint used for the TRV, egg laying in chickens was reduced by 6% at the LOAEL dose. The reduction resulted in a rate of 0.74 eggs laid per chicken per day versus 0.8 eggs laid per chicken per day at the NOAEL dose or a drop from 293 to 270 unfertilized eggs laid per bird annually. The birds listed as most at risk in the BERA (American robin, cliff swallow, and mountain bluebird) in contrast lay between 2 and 6 eggs per brood and raise only 1 or 2 broods annually (Birds of North America, Cornell University).

Data for a total of 5 wild bird species were available in the EcoSSL database, but most had NOAEL TRVs only. Only 3 wild bird endpoints had bounded NOAEL and LOAEL TRVs available. Two bounded LOAEL TRVs were available for the American kestrel, and equaled 125 mg/ kg BW/ day for growth and 625 mg/kg BW/day for survival. A bounded LOAEL TRV for survival was also available for a pigeon and was equal to 25 mg/kg BW/day.

At a minimum, additional information regarding the uncertainty of the lead TRV should be discussed in the uncertainty section. Use of the most sensitive TRV available may be justified, but it may also significantly over-estimate the potential for risk. This is especially important when the large majority of the risk is represented by a single COPEC as is the case in this assessment. The degree of potential overestimation should be more clearly discussed to allow the readers to accurately gauge the effect of the use of the most conservative available TRV in the assessment when making risk management decisions.

> *Agency Response to Specific Comment #18: EPA respectfully acknowledges the recommendation but will not revise wildlife TRVs currently used in the terrestrial BERAs. More information on this response is provided in general comment #1. The BERA already contains an uncertainty bullet that addresses uncertainties and potential biases associated with the avian TRV for lead.*

19. **Section 5.6 Page 99. First bullet point.** The discussion of the effect of the conservative assumption of 100% soil bioavailability (particularly for lead) needs much more discussion in the report in general and in this section specifically. It is telling that often over 90% of the total exposure is based on incidental soil ingestion rather than on the ingestion of lead accumulated in prey items. In the example of lead in EU-09 presented in the general comment, if the flying invertebrate data specific to EU-09 is used instead of the artificially elevated high-DRC concentration, the soil ingestion pathway accounts for 99.1% of the total exposure and risk for the cliff swallow receptor. EU-09 had one of the three highest HQs for that receptor calculated in the BERA yet was based entirely on data not representative of the EU and on the highly conservative assumption that lead is 100% bioavailable in incidentally ingested soils. In a recent review, Li et al. (2020) observed that lead bioaccessibility in a number of animal studies ranged from less than 3% to 59% in 140 samples from contaminated sites.

    While it is understood that site-specific data on soil bioavailability is preferred for use in risk assessments, given the importance of the soil ingestion pathway in the risk characterization at this Site, additional discussion of the effects of lead bioavailability in soils is necessary for the readers to fully understand the potential for risk from lead. Quantitative and qualitative discussions of the effect of reduced soil bioavailability and bioaccessibility should be provided in the uncertainty section to provide the reader with a more complete picture of the actual effect of assuming the most conservative position for soil bioavailability on risk. This coupled with the highly conservative lead TRV discussed in Specific Comment #18 and the non-representative data substitutions used for

several exposure media represent the most important lines-of-evidence presented in the BERA and should be greatly expanded upon to provide the proper context of the risk conclusions.

Agency Response to Specific Comment #19: EPA respectfully acknowledges the comment regarding bioavailability assumptions but has decided not to revise the terrestrial BERA exposure estimates with respect to bioavailability. Please see the response to previous Comment #1 above.

20. **Section 6. Page 100.** The third paragraph is confusing as written. It starts by identifying the areas of greatest risk and concludes by saying that 'However, these risks are much lower than those ... '

    Agency Response to Specific Comment #20: EPA agrees that the identified sentence is confusing and has revised it in the final BERA.

21. **Section 6. Page 101. 5th full paragraph.** The paragraph discusses that the most at risk birds are due to dietary exposure yet doesn't mention that the risk is generally driven by incidental soil ingestion in much higher proportions than from food items. This should be discussed more clearly and weighed against the information requested in Specific Comments# 18 and #19.

    Agency Response to Specific Comment #21: EPA agrees that the identified paragraph would be improved with a discussion regarding risks associated with incidental soil ingestion. The final BERA was revised accordingly.

New Mexico Environmental Department and Office of Natural Resources Trustee Comments

1. **EPA excludes New Mexico from the site area in the BPMD risk assessments and other Superfund activities, even though scientific reports by both EPA and the New Mexico Environment Department (NMED) demonstrate that contaminants from the BPMD site impacted rivers in New Mexico. This is inconsistent with the Superfund statute and with EPA's prior definition of the BPMD Superfund site.**

   Superfund's definition of "facility" includes "any site or area where a hazardous substance has been deposited, stored, disposed of, or placed, or otherwise come to be located."[1] This definition clearly covers a situation like the BPMD, where contaminants from the site have migrated downstream to New Mexico and other jurisdictions.

   EPA's report on metals in the Animas and San Juan Rivers states,

   "This river system has a long history of leaking mine waste contamination from hundreds of old and abandoned mines throughout the region. Acid mine waste contamination historically has settled along these river banks and in the sediment beds. High river flow or snow melt can remobilize the contaminants, impacting water quality throughout the river system to Lake Powell."[2]

   A recent NMED investigation of the multiple sources of lead in the Animas River in New Mexico supports EPA's conclusion in 2017 that lead originating in the BPMD impacts the river system from Colorado to Lake Powell, Utah.[3] NMED's investigation analyzed water quality data for dissolved lead concentrations in the Animas River. The data was gathered by NMED, USGS or EPA between 2000 and 2019 at 20 different monitoring locations between the New Mexico-Southern Ute border and the San Juan River. Based on this investigation, NMED has determined that the Animas River from Estes Arroyo to the Southern Ute Indian Reservation boundary is impaired for Aquatic Life Use pursuant to New Mexico Surface Water Quality Standards (20.6.4 New Mexico Administrative Code). Based on NMED's analysis, probable sources of lead in these portions of the Animas River include sediment deposits resulting from the Gold King Mine Spill and legacy floodplain sediment contamination in the Bonita Peak Mining District.

   EPA has stated that,

   "the Bonita Peak Mining District (National Priorities List, NPL) site presently extends from the San Juan caldera, down the Animas and San Juan Rivers, through New Mexico, and into Lake Powell in Utah."[4]

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[1] Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. § 9601(9).
[2] Sullivan, Cyterski, Knightes, Kraemer, Washington, Prieto and Avant, 2017, Analysis of the Transport and Fate of Metals Released from the Gold King Mine in the Animas and San Juan Rivers, EPA/600/R-16/296, https://cfpub.epa.gov/si/si_public_record_report.cfm?Lab=NERL&dirEntryID=325950.
[3] Barrios, McQuillan, Longmire, Reid and Yurdin, 2020, Investigation into Lead Concentrations in the Animas River in New Mexico, abstract accepted for presentation, N.M. Water Resources Research Institute, 5th Annual Conference, Animas and San Juan Watersheds Week: Managing and Improving Water Quality in a Multijurisdictional Watershed, June 15-19, 2020, https://animas.nmwrri.nmsu.edu/2020/.
[4] *New Mexico v. EPA*, No. 1:16-cv-00465, (D. N.M.), ECF Doc. 183 at 14.

Moreover, EPA has previously recognized that "[u]ntil the site investigation process has been completed and a remedial action (if any) selected, the EPA [cannot] describe the ultimate dimensions of the site,"[5] and, further, that:

The "Remedial investigation is an iterative process that builds upon and is directed by information throughout the Site study areas. Until such investigatory work is completed, the scope of the Site . . . cannot be fully defined."[6]

By artificially limiting the scope of the Human Health Risk Assessment and the aquatic and terrestrial BERAs, EPA risks short-circuiting this iterative process, thereby pre-determining the scope of the NPL site without an evidentiary basis. EPA has not justified the limited scope of the risk assessments in light of its previous positions.

> *Agency Response #1: EPA respectfully acknowledges the comment regarding the limited scope of the assessment area but has decided not to revise the terrestrial BERA. The pathways of potential contamination from the BPMD to far downgradient habitats are through surface water and sediment transport. As such, exposure risks stemming from these pathways were evaluated in the aquatic BERA. The aquatic BERA evaluated risks to wildlife receptors exposed to surface water and sediments in Animas River reaches that extended downstream through Durango. In these downstream reaches, wildlife dietary-based HQs are less than 1 for most receptors and metals which is much lower than HQs for BPMD exposure units. American dipper was most at risk from lead (CTE, low-effect HQ =2) exposure near Durango; however, exposure assumptions and TRVs used to generate dipper HQs are highly conservative. Given these results, it appears that there would be little to gain from extending the scope of the terrestrial BERA to an area larger than that which was identified in the BERA work plan (EPA 2017e). Lastly, the risk assessments conducted at this site only provide a fraction of information that is considered when making decisions during the RI/FS process. As such, the scope of the risk assessments does not limit the geographic scope of ongoing RI/FS activities.*

2. Metals in the Animas River present risks to public health and environment in New Mexico.

The City of Farmington and other public drinking water systems in New Mexico use the Animas River as a water source. Concentrations of lead in the Animas River periodically exceed EPA's drinking water action level of 15 ug/L, especially during periods of surging flow in spring runoff and summer monsoons. Lead contamination originating from the BPMD, is a significant source water protection issue and creates concern about the ability of public water system to deliver safe reliable drinking water to their consumers. Based upon the positive correlation between turbidity and lead concentrations, the City of Farmington installed turbidity sondes with supervisory control and data acquisition (SCADA) at its drinking water intakes.[7] The SCADA system is programmed to close drinking water intakes when turbidity levels measured in the Animas River approach levels correlating with the EPA Action Level for lead in drinking water. However, while smaller public drinking water systems in New Mexico also divert Animas River water, they do not have sondes and

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[5] *Support Document for the Revised National Priorities List Final Rule – Bonita Peak Mining District,* September 2016, at 10

[6] Declaration of Rebecca Thomas, In re: Gold King Mine Release in San Juan County Colorado on August 5, 2015, No. 18-md-2824 (D. N.M.), ECF Doc. 44-5 at 3.

[7] McQuillan, Agnew, Sypher, Montoia and Peterson, 2016, Turbidity as an Indicator of Heavy-Metal Contamination in the Animas and San Juan Rivers. Proceedings, New Mexico Water Resources Research Institute, Environmental Conditions of the Animas and San Juan Watersheds, With Emphasis on Gold King Mine and Other Mine Waste Issues, Farmington, NM, May 17-18, 2016, https://animas.nmwrri.nmsu.edu/2016/abstracts/oral-presentations/ (Abstract 21)

SCADA systems installed to close their intakes during periods of high turbidity and associated high metals.

Lead concentrations in the Animas River in New Mexico also periodically exceed New Mexico's hardness-based stream standard to protect aquatic life. These exceedances may result in listing the Animas River in New Mexico as impaired for metals due to lead contamination.

> *Agency Response #2: EPA respectfully acknowledges the comment regarding concentrations of lead measured in New Mexico drinking water intakes. However, there are no identifiable action items associated with this comment that are relevant to the terrestrial BERA.*

3. EPA inappropriately shifts EPA's financial responsibility under Superfund for BPMD costs to states, tribes and local governments in contravention of federal and EPA stated commitments to cooperation and shared accountability.

EPA's failure to include downstream communities and governments contravenes the stated fundamental principles of federalism in Executive Order 13132, including the policymaking criteria requiring "strict adherence to constitutional principles" that direct federal agencies to "closely examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States" such that "[t]o the extent practicable, State and local officials shall be consulted before any such action is implemented."[8] EPA must include New Mexico and other downstream communities impacted by the BPMD in the site area of the terrestrial BERA, and must consult with all affected groups as stakeholders in the Superfund process. EPA's failure to include downstream communities and governments contravenes the stated fundamental principles of federalism in Executive Order 13132, including the policymaking criteria requiring "strict adherence to constitutional principles" that direct federal agencies to "closely examine the constitutional and statutory authority supporting any action that would limit the policymaking discretion of the States" such that "[t]o the extent practicable, State and local officials shall be consulted before any such action is implemented."[8] EPA must include New Mexico and other downstream communities impacted by the BPMD in the site area of the terrestrial BERA, and must consult with all affected groups as stakeholders in the Superfund process.

EPA's failure to include downstream affected communities impacted by the effects of BPMD also conflicts with the agency's stated focus on cooperative federalism. The EPA website on cooperative federalism emphasizes the rights and responsibilities of local jurisdictions, claiming that "EPA is embracing cooperative federalism and working collaboratively with states, local government, and tribes to implement laws that protect human health and the environment" by enhancing shared accountability and increasing collaboration through joint governance and working with impacted stakeholders.[9] However, by limiting the extent of the site area of the terrestrial BERA, EPA excludes New Mexico and other downstream communities and governments from participating as stakeholders in the Superfund activities and remedies, and further, has required those communities to incur costs to prevent and address public health and environmental impacts from the BPMD.

EPA's actions to date on the BPMD Superfund site are not sufficiently protective of human health, source waters used for public supply, plant communities, soil invertebrates, and wildlife receptors in New Mexico. Consequently, NMED and local governments must fund and conduct actions that EPA

[8] Executive Order 13132 Federalism, 64 FR 43255, Sec. 3(a).
[9] https://www.epa.gov/home/cooperative-federalism-epa

fails to take in order to protect public health and the environment. As such, EPA has inappropriately shifted its financial Superfund responsibility to states, tribes and local governments in contravention of the principle of cooperative federalism and EPA's stated commitment to cooperation and shared accountability. It is profoundly ironic that the City of Farmington, for example, must expend its own funds to protect its drinking water system from contaminants originating from the EPA-led BPMD Superfund site, in order to follow EPA's Source Water Protection Program requirements and to comply with EPA's Drinking Water Standards. EPA must fund and conduct investigations and remediation such that New Mexico local governments can provide safe drinking water. New Mexico communities should not incur additional costs of protecting their public drinking water systems from contaminants originating in the BPMD.

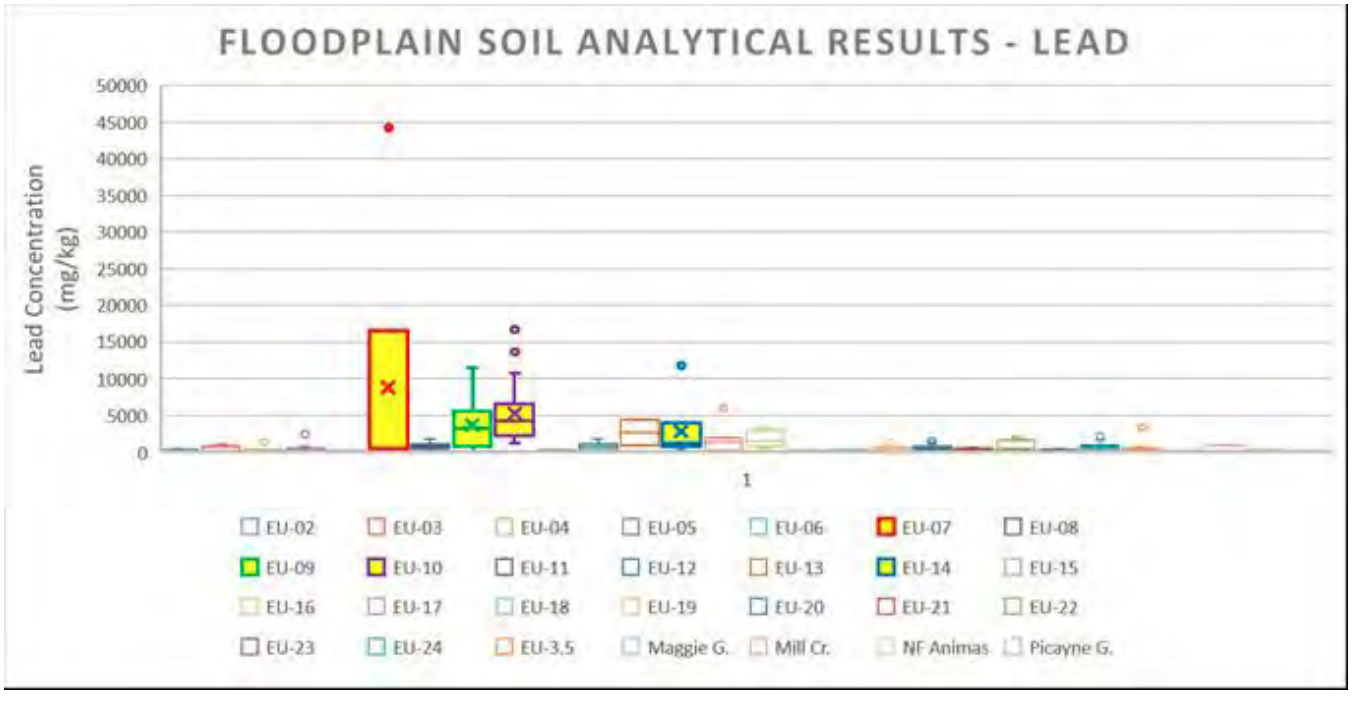
> *Agency Response #3: EPA respectfully acknowledges the comment regarding financial responsibility issues. However, there are no identifiable action items associated with this comment that are relevant to the terrestrial BERA.*

4. The BPMD terrestrial BERA contains a number of technical deficiencies that must be corrected and addressed.

The terrestrial BERA does not address the potential for risks to ecosystems located in New Mexico and in other downstream jurisdictions. The downstream spatial extent of the terrestrial BERA is confined to a geographic area north of Silverton, Colorado and does not include the entire potential BPMD Superfund site, and certainly not the entire Animas River. As a result of this limited spatial extent, the terrestrial BERA does not provide a downstream geographic boundary where elevated concentrations of metals that are common in the BPMD mine wastes, such as lead, no longer pose a risk to terrestrial, aquatic, and semi-aquatic wildlife species. New Mexico disagrees with the conclusion that "Together, this BERA and the final aquatic BERA (EPA 2019a) provide a comprehensive assessment of ecological risks from BPMD contamination throughout the BPMD and the Animas River." (terrestrial BERA Page 22)

The study area should include the floodplain downstream of the lowest exposure unit (EU) on the Animas River (EU07 – Arrastra Creek upstream to Cunningham Creek). By far, EU07 had the highest floodplain soil analytical result identified in Table A3. See box plot below (Mainstem Animas River EUs are in yellow shades). The study area must include the EU representing Silverton and other potentially impacted floodplain areas where soil lead concentrations increase downstream (from EU14 to EU07).

Downstream of Arrastra Creek, the Animas River valley opens and decreases in gradient. This causes a depositional environment resulting in a thickening of the alluvium. Since this area receives sediment deposition from all three of the major drainages investigated in the terrestrial BERA, it is important to characterize metals concentrations at this location, and other similar geomorphic features downstream, that may become repositories for heavy metals.



The lowermost section of the Animas River floodplain (EU07) evaluated in the Terrestrial BERA is assigned a "high-level" dose response category (Table 3.2) and exhibited higher risk for plant community, and swallow and robin bird species (Tables ES.1 and 6.1). This higher risk in the lowermost section of floodplain indicates downstream risk to terrestrial species. Therefore, the full geographic extent of the area in which hazardous substances may pose risk is not fully characterized.

With respect to the toxicity testing, the use of only short-term acute and sub-chronic toxicity tests is inadequate in the terrestrial BERA in that it limits analysis of the long-term chronic effects from exposure to BPMD-sourced contaminants. In downstream areas where the risk from acute toxicity may decrease, the potential for chronic toxicity may still exist for both aquatic and terrestrial biota. EPA should revise the terrestrial BERA to include examination of these potential risks.

> *<u>Agency Response #4</u>: EPA respectfully acknowledges the comment regarding the limited scope of the assessment area but has decided not to revise the terrestrial BERA. The current geographical scope of the assessment area is based on the three subwatersheds that make up the majority of the heavily mineralized Silverton Caldara and immediate surrounding areas. These watersheds contain terrestrial and semi-aquatic habitats that are potentially used by wildlife for foraging and refuge. This is the terrestrial portion of the BPMD and is about 150 square miles in area. As discussed in NMED comment #1 above, the pathways by which BPMD contamination would reach downstream Animas River receptors is via surface water and sediment transport. Risks to wildlife receptors from surface water and sediment exposures in aquatic habitats well downstream of the BPMD are evaluated in the aquatic BERA.*
>
> *EPA acknowledges that the average lead concentration in EU-07 is elevated above upgradient floodplain exposure units. However, this average is highly influenced by a single composite soil sample collected in an undeveloped campsite. EPA has decided to interim remedial actions to reduce metals concentrations in this and another campsite located in floodplain exposure units EU-7 and EU-14. Removal of the EU-07 campsite sample results in an average lead concentration of 1,705 mg/kg, which is much lower than the two upgradient exposure units in the*

Animas River floodplain at and below the Eureka/South Fork Animas River confluence. The BERA was revised to include an uncertainties bullet that describes and provides examples of how removing highly contaminated campsite soils results affects risk estimates for robin. It should also be noted that the Animas River floodplain becomes increasingly developed downstream of EU-07 to and through the Town of Silverton. Developed and populated areas do not often support diverse wildlife communities. Nevertheless, an uncertainty bullet was added to the terrestrial BERA that discusses potential for terrestrial and semi-terrestrial wildlife risks in habitats downgradient from the current assessment area.

With respect to the comment regarding toxicity testing, EPA acknowledges that there is a potential for both acute and chronic exposure to BPMD contaminants. Acute toxicity may be associated with exposure to highly contaminated surface water, soil, and dietary items near source areas with high metals concentrations and chronic toxicity would likely be more relevant in areas with lower metal concentrations further from sources areas. It should be noted that risks were evaluated with respect to sub-chronic and chronic toxicity studies. EPA acknowledges that use of such studies may introduce uncertainties in assessing acute toxicity risks. As such, an uncertainty bullet was added to Section 5.6 to discuss this point.

5. **The BPMD site threatens human health and the environment in areas of New Mexico that contain a high percentage of minority and low-income populations. The terrestrial BERA is the latest example of how EPA's actions on the BPMD Superfund site fail to comply with Executive Order 12898 requiring that all federal agencies achieve environmental justice for vulnerable populations that would be disproportionately affected by programs of the United States.**

EPA's Environmental Justice Screening and Mapping Tool (EJSCREEN) shows that, along the San Juan River in New Mexico, below the confluence with the Animas River, the minority population is predominantly in the 95-100 percentile, and the low-income population is predominantly in the 80-90 and 90-95 percentiles. These percentiles stand out because by comparison, these San Juan and Animas River communities are among the 5-20% in the U.S. with the highest percentages of minority and low-income populations.

Minority and low-income populations living along the San Juan River may be more susceptible to environmental pollutants that are being transported through rivers in New Mexico from the BPMD site to Lake Powell. EPA, however, has excluded New Mexico from consideration in the Human Health Risk Assessment, the Aquatic BERA, and in the most recent Terrestrial BERA. EPA's exclusion of vulnerable populations in New Mexico from these Risk Assessments violates Executive Order 12898, as well as EPA's own policy on environmental justice.

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority and Low-Income Populations, February 11, 1994, states that "…. each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionally high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations of the United States."[10]

[10] https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf

EPA's 2020-21 National Program Guidance for the Office of Land and Emergency Management requires that EPA "integrate environmental justice into its programs" and "mobilize resources to address the needs of disproportionately overburdened and underserved communities."[11]

EPA must immediately give proper consideration to all BPMD stakeholders downstream from Colorado with emphasis on the vulnerable populations in New Mexico. The BPMD Human Health Risk Assessment, the Aquatic BERA, and the Terrestrial BERA each must be re-written to correct the environmental justice deficiencies. The risk assessments must evaluate all possible exposure pathways and quantify BPMD-specific and cumulative impacts to vulnerable populations in New Mexico.

> *<u>Agency Response #5:</u> EPA respectfully acknowledges the comment regarding potential impacts to vulnerable populations. However, there are no identifiable action items associated with this comment that are relevant to the terrestrial BERA.*

[11] https://www.epa.gov/sites/production/files/2019-06/documents/fy-20-21-olem-np-guidance.pdf

United Stated Department of the Interior Comments

General Comment

1. Our concern is with the lack of background data in the report and the uncertainties that this introduces to the entire report. In general, we draw your attention to p.43, paragraph 5:

5) Naturally mineralized soils and rock. *Soils and rock within the BPMD contain high levels of naturally occurring metals. Over time, these geologic materials weather and can erode into waterways. They likely contribute to a relatively metals-rich baseline, background condition within natural areas of the BPMD. As noted in multiple sections of this BERA, identification and characterization of background conditions at this site represent a considerable challenge since, in part much of the assessment area has been impacted by known and uncharacterized mine features. In addition, the BPMD covered a large area that contains a wide range of geological features and mineral types that contribute to highly variable background conditions throughout the study area (Mast et al., 2007).*

We also recognize the report's recommendation that further background work should be done at the Feasibility Study phase. We suggest that this document remain "draft" until EPA obtains additional background information during the Feasibility Study phase. The BLM agrees with the approach presented on pages 28-29, that states as follows:

"Given the large assessment area, the myriad of mine features within it, and the complex underlying geology, characterization of background conditions over the entire assessment area is high uncertain, highly variable, and best accomplished using location-specific analysis (Mast et al., 2007)…"

BLM has taken this approach in its 2019 Supplemental Site Investigation and will continue to pursue background at BLM lead sites.

> *Agency Response to General Comment #1: EPA respectfully acknowledges the comment regarding the need for additional background work but will finalize the BERA before additional background information is collected. The BERA evaluates risks from exposure to metals in soils and dietary items collected in terrestrial vegetated upland areas located throughout the BPMD. It also evaluates risks from exposure to metals in surface water, soils, and dietary items collected in reference floodplain reaches located throughout the BPMD. Respective exposure areas are expected to have little to no mining impacts and reasonably characterize potential background conditions. This assessment methodology compares potential background risks to cumulative site risks, including discussing and identifying naturally occurring elements that exceed risk-based screening levels on a scale that is within a reasonable scope of a site-wide BERA. Note however, that EPA plans to conduct quantitative analyses of background contributions on a site-by-site basis during later stages of the RI/FS process. This analysis will use environmental data collected on a finer geographic scale than that used in the BERA.*

Specific Comments

1. We understand that soil, vegetation, and terrestrial invertebrate sampling has been conducted to inform the soil and food web exposure estimates. This is a critically important aspect of the risk

assessment because of extensive mineralized geologythroughout the BPMD. However, we are concerned that the methodology of simply proportioning background samples by drainage without documenting soil type/classification or considering inter-drainage variability in soil type is insufficient to support accurate risk assessment results.

Specifically, p.19, last bullet:

"Risk characterization results indicate potential for risk in vegetated upland exposure areas and reference floodplain EUs for plant and invertebrate communities, cliff swallow, mountain bluebird, montane shrew, American robin, and deer mouse. These risks are likely driven by natural sources of metals present in hydrothermally altered, propylitized rock that are common throughout the BPMD. This situation represents a major uncertainty which would have to be considered as part of any future risk management decision-making: ideally, via site-specific background conditions analyses and depending on remedial actions being considered…"

However, the geology of the BPMD is well known and mapped. For example, Figure 1 in the U.S. Geological Survey (USGS) report *Characterization of Background Water Quality* maps four geologic alteration assemblages within the BPMD. This figure clearly shows that there is substantial inter-drainage variability in geology.

- Detailed surface geology maps should be used to allocate background sampling of soil, vegetation, and terrestrial invertebrates by soil type.
- For higher trophic level - wider ranging species, surface geology maps should be used to proportion exposure frequency across different soil types according to their relative prevalence.

<u>Agency Response to Specific Comment #1</u>: EPA agrees that there is inter-drainage variability in geology among the three subwatersheds that make up the BPMD BERA assessment area. The BERA uses metals concentrations in surface water, soil, and dietary item samples collected over a spatially diverse area to estimate receptor exposures. This includes upland vegetated areas and reference floodplain reaches that can be used to characterize potential background conditions. Upland vegetated sampling areas located above known contamination sources in alpine meadow and subalpine forest habitats, which provided diverse exposure information on different vegetated upland habitats located throughout the BPMD assessment area. As discussed in general comment #1 above, exposure data collected from these areas provides reasonable dataset in which to estimate exposures in an area as large as the BPMD assessment area. It is also stated above that the evaluation of background conditions will be conducted on a finer geographic scale than that used in the BERA to better characterize variability that likely exists throughout the BPMD. Lastly, EPA does not see the need to refine large and very large home range receptor exposure estimates according to surficial geology or soil type since respective HQs are well below 1. As such any refinements would not likely substantially change or result in elevated risk estimates. For these reasons, EPA has decided not to revise the terrestrial BERA as suggested in this comment.

2. It was anticipated, from previous existing information such as the Terrestrial SLERA, that many flood plain areas and upland mine waste piles (and in some cases nearby affected areas) would be shown to present an ecological risk for species having smaller home ranges. However, the broader ecological significance of such an anticipated finding is unclear as it applies specifically to the

proposed upland assessments for "medium" home range receptors. Given the small percentage of upland areas within the BPMD containing mine waste, it seems unlikely that localized risk near abandoned mine sites would result in significant basin-wide, population-level impacts to wildlife. Also as stated in the Terrestrial BERA, "…waste piles do not support plants…" (p.86), and dietary items were from halo area sources.

The Assessment Endpoint pertaining to the medium home range Measurement Endpoints should explicitly focus on the broader ecological impacts, if any, and any top-line summary of this Assessment Endpoint should clearly emphasize this focus.

<u>Agency Response to Specific Comment #2</u>: EPA agrees that the BERA would be improved with a discussion on how medium home range receptor risks relate to respective exposure units. This is especially relevant for medium home range receptors that are evaluated using the three mine site halo DRCs (high-, mid-, and low-level). An uncertainty bullet will be added to Section 5.6 that discusses whether localized risks at respective mine site would result in significant BPMD population-level impacts to medium home range wildlife.

3. We disagree with the reporting of the Joe John and Lark Mines as having waste rock piles. In 2010, BLM removed the waste rock and tailings from the Joe John Mine and consolidated them into an engineered repository with the tailings and waste rock from the Lark Mine at the Lark Mine location. There are no remaining waste rock piles at these two sites, and BLM is unsure what EPA is referencing as waste rock. This work was done by BLM using our CERCLA lead agency authority using an EECA and Action Memorandum decision document. We note that the Henrietta Mine, also with a constructed repository done by the mine order, is mistakenly included in the Animas River portion of Table 3.3, instead of the Cement Creek portion. That error will change the table calculated values. In addition, there is no waste rock pile at the Forest Queen mine location. There is a nearby scree slide, that is naturally occurring. We believe this may have been mistaken for a mining-related waste rock pile.

<u>Agency Response to Specific Comment #3</u>: Joe Johns and Lark Mines were included in large and very large home range receptor exposure modeling; specifically, as low-level waste pile halo areas. These two mine features are included in the BPMD National Priorities List and were sampled for total recoverable metals in July 2016. Total lead in composite samples collected from the non-vegetated surface of each pile associated with each mine were 1,350 mg/kg and 502 mg/kg, respectively (BERA Appendix A, Table A-8). These lead concentrations are greater than those measured in vegetated upland area soils, indicating the potential for residual metals contamination remaining after they were remediated. Also, these two piles were evaluated in the summer of 2018 using visual delineation criteria such as lack of vegetation and soil particle grain sizes and colors. The Joe Johns Mine pile delineation area was relatively small (0.2 acres) but the Lark Mine pile was large (3.8 acres). As such, Lark Mine contributed a larger proportion of the Cement Creek watershed within the low-level DRC halo area and subsequent wildlife receptor exposure (Table 3.3). Given that these two mines have nonvegetated piles with elevated metals concentrations, years after remediation occurred, they will not be removed from large and very large home range receptor exposure estimates. It is also important to note that large and very large home range receptor risk estimates are very low (CTE, low-effect HQ <0.3). Therefore, removing them from consideration would have very little impact on wildlife exposure and subsequent risk outcomes.

EPA agrees that Henrietta Mine was misplaced and should be included in the Cement Creek watershed. As such, large and very large home range receptor area use factors were revised accordingly. All supporting text and tables will be revised to reflect this correction. Note that revised risk estimates remained low and relatively unchanged for respective receptors; specifically, lynx, coyote, golden eagle, moose, and northern goshawk.

Similar to Joe Johns and Lark Mines, Forest Queen Mine was subject to waste rock sampling in August 2015 and a waste pile delineation survey in the summer of 2018. The lead concentration measured in one composite sample was relatively high (6,610 mg/kg), leading to a mid-level DRC designation (Table 3.1). The delineated pile was relatively small (0.16 acres); therefore, it contributed very little to the large and very large home range receptor exposure estimate. Given that there was a pile of elevated soils at this mine, it was not removed from the wildlife exposure modeling.

State of Colorado Comments

General Comments

1. Comprehensive assessment which compliments the aquatic ERA nicely.

   Agency Response to General Comment #1: EPA acknowledges this comment. No action items are associated with this comment.

2. Agree with including the beaver and consider including another keystone species as well like the prairie dog (listed as food source in Tables 3.8 and 3.9, if supported by site observations).

   Agency Response to General Comment #2: EPA respectfully acknowledges the comment regarding the potential addition of the prairie dog, but will not revise the BERA accordingly, as habitat for this species does not exist within the assessment area. Note that the BERA already evaluates risks to the northern pocket gopher, which is a reasonable surrogate for prairie dog.

3. **Section 3.2.3:** Consider including how the borders of the upland areas were delineated if not based on lead XRF readings used at transects of the halo areas.

   Agency Response to General Comment #3: EPA respectfully acknowledges the comment to consider including information on how upland areas were delineated from mine waste pile and halo areas and has revised Section 3.2.3 to reference Section 3.6. This section contains subsections that clearly describe how each of the areas are delineated from one another.

4. **Section 3.2.4:** Were the invertebrates counted or inventoried prior to tissue analysis in order to calculate a diversity index like Shannon's?

   Agency Response to General Comment #4: Invertebrates were not inventoried with enough detail and therefore, it is not possible to calculate diversity metrics.

5. **Section 3.6:** Consider also a brief discussion if large home-range receptors have an Area Use Factor (AUF) of 1.0 as was done in the SLERA.

   Agency Response to General Comment #5: EPA respectfully acknowledges the comment to consider adding a discussion on the use of an AUF of 1.0 for large home range receptors but this cannot be readily accomplished using current exposure models. Large and very large home range receptor exposure models use AUFs to scale multiple habitat types (e.g., halo areas, floodplains, and vegetated upland areas) to respective home ranges. In each exposure model AUFs sum to 1. Therefore, AUFs are not used to scale down the full estimated daily dose for these receptors as commonly done in risk assessments. Note that the BERA provides a wide range of medium and small home range receptors that can be used to evaluate risks under different exposure scenarios that are not tailored using AUFs.

6. **Section 3.6.2:** Consider including the distance between transects of halo areas and what XRF lead reading/concentration was used as the cutoff for delineating boundaries.

Agency Response to General Comment #6: EPA agrees that the BERA would be improved by adding additional information on how halo areas were delineated. Section 3.6.2 was revised accordingly.

7. **Section 5:** Agree with the evaluating multiple exposure scenarios (RME and CTE) and range of HQs yet mainly presenting the results of one scenario and one set of HQs (low-effect CTE)
   - Consider presenting summary of findings or including a brief discussion of the no-effect RME scenario because that is the most conservative approach.
   - Consider rephrasing this concept around risk and HQs (also in the executive summary) for clarity: "The terrestrial BERA assumes that the potential for risk increases from the most conservative HQ to the least conservative HQ." The low-effect CTE would show the lowest risk.

   Agency Response to General Comment #7: EPA agrees that the BERA would be improved with additional discussion/text regarding evaluation and interpretation of risks using RME and CTE exposure scenarios and no- and low-effect TRVs. Such discussions/text was added throughout Section 5 where appropriate.

Editorial comments:

1. Add a bullet to the deer mouse section (p19 of PDF or p17 of document numeration).

   Agency Response to Editorial Comment #1: Agreed; the text was revised as requested.

2. Either a word is missing or spelling error in the second to last sentence of the bullet about risk analysis assuming 100% bioavailability: "If such information was available, site-specific….".

   Agency Response to Editorial Comment #2: Agreed; the text was revised as requested.

3. Remove extra space when referencing Table 3.5 (p70 of PDF or p68 of document numeration).

   Agency Response to Editorial Comment #3: Agreed; the text was revised as requested.

4. Consider placing figures and summary tables near their references in text with a basic map of the EUs at minimum would be helpful considering the complexity of the site.

   Agency Response to Editorial Comment #4: EPA aggress that embedding tables into the text when referenced may help readers navigate the complexity of the site but will not revised the current format. The current format of including all tables and figures at the end of the document is consistent with previous EPA Region 8 risk assessment reports. This is done so that they can be easily referenced in one place which is helpful when tables and figures are referenced multiple times in the same report. Regarding the addition of a map showing locations of exposure units, EPA agrees that this recommendation would be helpful. As such, two map figures have been added to the BERA that show locations and respective DRCs for each mine feature (Figure 3.4) and floodplain exposure unit (Figure 3.5).

5. Section 3.6.2 1st paragraph: “It is assumed that the level of contamination in halo areas is ed proportional to the level of contamination in respective waste piles.” Delete the word ‘ed’.

Agency Response to Editorial Comment #5: Agreed; the text was revised as requested.

6. Delete extra ‘.’ (period) at the top of the page in the last sentence of the paragraph (p64 of PDF or p62 of document numeration).

Agency Response to Editorial Comment #6: Agreed; the text was revised as requested.

Utah Department of Environmental Quality

1. Similar to our comments on the Aquatic Baseline Ecological Risk Assessment, we remain concerned with the limited scope of the risk assessment, particularly for floodplains. Specifically, the assessment does not consider risk to terrestrial resources in the watershed downstream of Silverton, Colorado. Clearly, the nature and extent of the impacts has not been completely characterized as evidenced by potential ecological risks identified at the most downstream floodplain exposure units assessed. We recommend that the assessment for Animas River floodplains be extended downstream until no risk to receptors is found. The report would also benefit from additional explanation as to why only the Bonita Peak Mining District (BPMD) was chosen as the geographic extent of the assessment.

   Agency Response to comment 1: EPA respectfully acknowledges the comment regarding the limited scope of the assessment area but has decided not to revise the terrestrial BERA. The current geographical scope of the assessment area is based on the three subwatersheds that make up the majority of the heavily mineralized Silverton Caldara and immediate surrounding areas. These watersheds contain terrestrial and semi-aquatic habitats that are potentially used by wildlife for foraging and refuge. This is the terrestrial portion of the BPMD and is about 150 square miles in area. As discussed in NMED comment #1 above, the pathway in which BPMD contamination would reach downstream Animas River receptors is via surface water and sediment transport. The aquatic BERA evaluated risks to wildlife receptors exposed to sediments in Animas River reaches that extended downstream through Durango. In these downstream reaches, wildlife dietary-based HQs are less than 1 for most receptors and metals, which is much lower than HQs for similar receptors and BPMD exposure units evaluated in the terrestrial BERA. American dipper was most at risk from lead (CTE, low-effect HQ =2) near Durango; however, exposure assumptions and TRVs used to generate dipper HQs are highly conservative. Given these results, it appears that there would be little to gain from extending the scope of the terrestrial BERA to an area larger than that which was identified in the BERA work plan (EPA 2017). Nevertheless, an uncertainties bullet was added to Section 5.6 that discusses potential for terrestrial and semi-terrestrial wildlife risks in habitats downgradient from the current assessment area.

2. In addition to our comments above, UDWQ would like to note that we continue to be disappointed in the BPMD stakeholder process in general. As the final repository for discharge that originates from the BPMD (i.e., Lake Powell) we have no formal say in how the remediation process is executed and are continually excluded from the decision-making process. For example, we were given no opportunity to comment on the Human Health Risk Assessment completed in June of 2019 (which also exhibited a limited geographic scope) nor were we able to participate in the development of the Adaptive Management Site Management Plan. After a brief review of Chapter 2 and Chapter 4 of this document which were distributed to us informally by another stakeholder, it is evident that the document excludes Utah from any and all plans moving forward. We are also curious as to the existence of other chapters of the plan and when or if those will be made available for public comment. Lastly, we were recently made aware of a Community Involvement Plan completed in September of 2019. On page 1-1, the plan states that "The main body of this CIP covers Colorado and Utah, which are within EPA Region 8"; however, there is no mention of Utah throughout the rest of the document and we were never notified that this plan existed.

<u>Agency Response to comment 2:</u> EPA respectfully acknowledges the comment regarding lack of communication between UDWQ and EPA. UDWQ has and is considered a valuable stakeholder in the aquatic and terrestrial BERA BTAG. However, there are no identifiable action items associated with this comment that are relevant to finalizing the terrestrial BERA.

3. While UDWQ recognizes that the BPMD Community Advisory Group (CAG) meetings are available and open to the public to receive stakeholder feedback, we feel that a more formal role for Utah should be created. We would also like to point out the continued lack of communication to Utah when discharge events do occur in the BPMD such as the Gladstone Treatment Plant failure in March 2019. In these situations, we are typically notified by other downstream users that an event has occurred (e.g., New Mexico) rather than the EPA.

   <u>Agency Response to comment 3:</u> EPA respectfully acknowledges the comment regarding lack of communication between UDWQ and EPA. However, there are no identifiable action items associated with this comment that are relevant to finalizing the terrestrial BERA.

4. While UDWQ appreciates the opportunity to comment on this document, we continue to be disappointed at the lack of attempt to understand impacts of the Bonita Peak Mining District (BPMD) to downstream stakeholders. As a result, we request a formal invitation to participate in the stakeholder process such that we can be aware of all activities occurring in the BPMD and provide valuable input to the decision-making process.

   <u>Agency Response to comment 4:</u> EPA respectfully acknowledges the comment regarding including UDWQ in the BPMD stakeholder process. However, there are no identifiable action items associated with this comment that are relevant to finalizing the terrestrial BERA.