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Third Five-Year Review Report for Silver Bow Creek/Butte Area Superfund Site

Volume 6: Butte Priority Soils Operable Unit

June 2011

Final

REMEDIAL ACTION CONTRACT
FOR REMEDIAL, ENFORCEMENT OVERSIGHT, AND NON-TIME-CRITICAL REMOVAL ACTIVITIES AT SITES OF RELEASE OR THREATENED RELEASE OF HAZARDOUS SUBSTANCES
IN EPA REGION 8

U. S. EPA CONTRACT NO. EP-W-05-049

FINAL

Third Five-Year Review for the Silver Bow Creek/Butte Area NPL Site Butte, Montana

Volume 6: Butte Priority Soils Operable Unit

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Acronyms

ACMC	Anaconda Copper Mining Company
ARAR	Applicable or Relevant and Appropriate Requirements
ARCO	Atlantic Richfield Company
BABCGWA	Butte Alluvial and Bedrock Controlled Groundwater Area
BMFOU	Butte Mine Flooding Operable Unit
BMP	Best Management Practices
BPSOU	Butte Priority Soils Operable Unit
BRES	Butte Reclamation Evaluation System
BSB	Butte-Silver Bow County
CD	consent decree
CDM	CDM Federal Programs Corporation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CERCLIS	Comprehensive Environmental Response, Compensation, and Liability Act Information System
CFWEP	Clark Fork Watershed Education Program
CGWA	controlled groundwater area
COC	contaminants of concern
CTEC	Citizens Technical Environmental Committee
DEQ	Montana Department of Environmental Quality
DNRC	Department of Natural Resources and Conservation
EBL	elevated blood lead
EPA	U.S. Environmental Protection Agency
ERA	emergency response action
GIS	geographic information system
HEPA	High Efficiency Particulate Air
IC	institutional control
ICIP	institutional control implementation plan
LAO	Lower Area One
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
MCA	Montana Code Annotated
MCL	maximum contaminant level
MPTP	Montana Pole Treatment Plant
MSD	Metro Storm Drain
NPL	National Priorities List
N-TCRA	non-time critical removal action
O&M	operations and maintenance
OU	operable unit
PbB	blood lead
PRP	Potentially Responsible Party
RAO	Remedial Action Objectives
RCRA	Resource Conservation and Recovery Act

RG	Remedial Goals
RI/FS	Remedial Investigation/Feasibility Study
RMAP	Residential Metals Abatement Program
ROD	Record of Decision
RPM	Remedial Project Manager
SD	settling defendants
Site	Silver Bow Creek/Butte Area Superfund Site
SOW	statement of work
TCRA	time critical removal action
TCLP	Toxicity Characteristics Leaching Procedure
TI	technical impracticability
µg/dL	micrograms per deciliter
USGS	United States Geologic Survey
WIC	Women's, Infant's and Children's
WWTP	wastewater treatment plant

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Section 1
Introduction

The U.S. Environmental Protection Agency (EPA) Region 8 has conducted a five-year review of the response actions implemented at the Silver Bow Creek/Butte Area Superfund Site (Site), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Information System (CERCLIS) ID: MTD980502777 in Silver Bow and Deer Lodge Counties, Montana. This review covers activities conducted from January 2005 through December 2009.

This volume of the report focuses on Butte Priority Soils Operable Unit (BPSOU) – separate volumes have been prepared for the other Site operable units (OUs). This is the third five-year review for the Site and the first five-year review for the BPSOU. The BPSOU is one of seven remedial operable units comprising the Site.

The Record of Decision (ROD) for BPSOU was issued in September 2006, and the OU is currently undergoing remedial design and some remedial action implementation. The purpose of this volume of the five-year review is to provide a protectiveness statement for the BPSOU. In addition, the five-year review report identifies issues which keep the remedy from being protective in the long term and makes recommendations to address them.

The BPSOU volume of the five-year review reports on work completed by removal actions, as well as remedial actions in progress. A great deal of work has been completed at the BPSOU through removal actions. These were consistent to the extent practicable with the ROD. Portions of the remedy that have been substantially implemented since the ROD include the residential metals abatement program and source area/land reclamation.

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Section 2
Site Chronology

Table 2-1 presents important site events and relevant dates for the BSPOU. The identified events are selective, not comprehensive.

Table 2-1
Chronology of Site Events

Event	Operable Unit	Date
Placer gold discovered in Silver Bow Creek	00	1864
Large scale underground mining in Butte	03/08	1875 - 1955
Major smelting period in Butte	03/08	1879 - 1900
Open pit mining at Berkeley Pit	03	1955 - 1982
Discovery of mining-related contamination along Silver Bow Creek between Butte and Warm Springs, Montana	01	9/1/1979
Hazard Ranking System Package Completed	00	12/1/1982
Silver Bow Creek Site proposed for the National Priorities List (NPL)	00	12/30/1982
Butte Portion added to the NPL	08	7/22/87
Silver Bow Creek Site (Original Portion) Phase 1 Remedial Investigation Final Report	00	January 1987
Walkerville Time Critical Removal Action (TCRA) Completed	08	February 1988
Timber Butte TCRA Completed	08	1989
Priority Soils TCRA Completed	08	1991
Colorado Smelter TCRA Completed	08	1992
Anselmo Mine Yard and Late Acquisition/Silver Hill TCRA Completed	08	1992
Lower Area One (LAO) Manganese Removal	08	1992
Walkerville Fund Lead TCRA Completed	08	1994
Walkerville Residential Removal	08	2000
Stormwater TCRA	08	Ongoing
Railroad Beds TCRA	08	2004
LAO Non-Time Critical Removal Action (N-TCRA)	08	Ongoing
BPS Residential Soils/Source Areas N-TCRA	08	Ongoing
Final Phase II Remedial Investigation Report Completed	08	April 2002
Final Phase II Feasibility Study Report Completed	08	April 2004
Proposed Plan for BPSOU	08	December 2004
Record of Decision BPSOU and ongoing work under order amendments as design is completed for certain components	08	September 2006
Consent Decree or Unilateral Administrative Order for Full Remedy Implementation at BPSOU	08	Expected 2011

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Section 3
Background

The following section provides a selective site background of the BPSOU. A complete summary of the site background is included in the *Record of Decision Butte Priority Soils Operable Unit Silver Bow Creek/Butte Area NPL Site* (EPA 2006a).

3.1 Location and Setting

The Silver Bow Creek/Butte Area NPL Site, which includes the BPSOU, represents one of four contiguous Superfund Sites in the upper Clark Fork River Basin that extend 140 miles from the headwaters of Silver Bow Creek north of Butte to the Milltown Reservoir near Missoula, Montana as shown in Figure 3-1. The approximate BPSOU boundary and site location are shown in Figure 3-2.

The BPSOU covers an area of approximately five square miles and is located a few miles west of the continental divide at an elevation range of approximately 5,400 to 6,400 feet above mean sea level. The BPSOU is centered on the "Butte Hill", which is the location of the historic Butte Mining District. Contaminants at the site, including arsenic and heavy metals such as copper, lead, mercury, and zinc, are the result of 120 years of hard rock mining, smelting, milling, and other processing activities. Mining and ore-processing wastes in Butte represent the primary source materials. These wastes come in several different forms, including mill tailings, waste rock, slag, smelter fallout, and mixed combinations of each. Arsenic and metals contained in or released from these wastes to soil, surface water, and groundwater, pose significant risks to human and ecological receptors without appropriate remediation as described in the BPSOU ROD.

3.2 Physical Characteristics

The BPSOU encompasses the northwestern portion of the Summit Valley, which is characterized by gently sloping terrain, generally sloping toward the north in the southern portion of the valley and toward the west in the northern portion of the valley. Mountains bound the valley on the east, south, and north with highest elevations reaching over 10,000 feet in the Highland Mountains south of Butte.

Granitic rocks of the Boulder Batholith underlie the Butte area. They are primarily quartz monzonite intersected by porphyritic dikes and plugs. The rocks are fractured and faulted and extensively mineralized. This mineralization was the target of local mining. The communities of Butte and Walkerville were established close to the mining and milling centers as a matter of convenience. Operations of mines, mills, concentrators, and smelters generated tailings, related wastes, and a variety of other materials that were deposited on-location, in the midst of residential areas.

The two primary streams in the valley are Blacktail Creek, which begins in the Highland Mountains to the south, and Silver Bow Creek, which is now considered to begin at the confluence of Blacktail Creek and the Metro Storm Drain (MSD). Prior to

mining, Silver Bow Creek originated in the mountains northeast of the BPSOU. As mining production increased, mills and smelters were located along the creek. To accommodate mineral processing activities, Silver Bow Creek was rerouted as needed and was used for waste disposal. Tailings impoundments were constructed in the floodplain and wastes were discharged directly into the creek. With the advent of open pit mining, most of the original Silver Bow Creek channel and floodplain were completely obliterated by the Berkeley Pit and Yankee Doodle Tailings Pond. What remains was converted into a conveyance ditch and is known as the MSD. Many of the waste deposits along the MSD remain in place.

3.3 Land and Resource Use

The BPSOU is situated in a predominantly urban setting, and includes residential neighborhoods, schools, and parks, as well as commercial and industrial areas. Land use within the BPSOU is subject to regulation by the Butte-Silver Bow (BSB) County government through local ordinances. The northern portion of the BPSOU is typified by residential and commercial development and inactive mining operations. Light industrial activity, scattered residences, and the Silver Bow Creek floodplain characterize the central portion of the BPSOU. The southern portion is characterized by residential areas, inactive mining operations, cemeteries, and undeveloped land. The population of Butte peaked in 1920 at 60,313 people. The 2000 U.S. Census reports Butte's population to be 33,829 and a 2006 U.S. Census estimate reports a population of 32,110.

3.4 History of Contamination

The following provides a brief summary of the history of contamination at the BPSOU:

- 1870 – Dozens of silver and copper mining claims had been located and developed, prompting construction of mines, mills, and smelters capable of refining arsenic-laden copper ores.

- 1881 – At this time, there were over 300 operating copper mines, at least 10 silver mines, five smelters, and over 4,000 posted claims

- 1890 – In response to poor air quality for many years, the city of Butte passed ordinance 186, which made it illegal to roast ore with the city limits.

- 1910 – Butte had become the largest producer of copper in North America and large quantities of mine waste and tailings were disposed of in ponds or dumped in Silver Bow Creek. Mining companies were merged into the Anaconda Copper Mining Company (ACMC).

- 1920s – Milling and smelting continued in Butte; however, as the copper smelting capacity at Anaconda grew, Butte became primarily a mining center. Even so, Butte's smelters and mills produced air emissions that contaminated yards and attics throughout the BPSOU, as well as large quantities of waste such as tailings

and slag. Butte's mines also produced waste and overburden piles throughout Walkerville and Butte.

- 1955 – Open pit mining began in Butte with the formation of the Berkeley Pit. Previously, all mining in Butte was completed entirely underground.

- 1964 – The completion of the Weed Concentrator (now known as the Montana Resources Concentrator) reduced the amount of ore sent to Anaconda; however, it also produced large quantities of waste in the active mining area and discharged large volumes of contaminated water to the MSD.

- 1977 – ARCO, now known as Atlantic Richfield Company, merged with ACMC. Open pit mining operations were conducted in the Berkeley Pit until 1982 and in the Continental Pit until 1983 when all mining operations were suspended by ARCO, the successor to ACMC.

- 1984 – ARCO closed the Anaconda Smelter.

- 1990s – Atlantic Richfield becomes a wholly owned subsidiary of the BP collection of companies.

3.5 Regulatory History Summary

The following provides a brief summary of the regulatory history at the BPSOU:

- 1983 – EPA designated the original Silver Bow Creek as a Superfund site in September 1983.

- 1987 – Recognizing the importance of Butte as a source of contamination to Silver Bow Creek, EPA concluded that Butte and Silver Bow Creek should be treated as one site under CERCLA. EPA subsequently modified the existing Silver Bow Creek Site to include the Butte area and the formal name changed to the "Silver Bow Creek/Butte Area NPL Site". The BPSOU was one of four remedial OUs formed in the Butte Area.

- 1989 – EPA separated the BPSOU investigation activities into Phase I and Phase II. Phase I activities focused on high-priority human health risks and resulted in the implementation of numerous TCRAs and Emergency Response Actions (ERAs) identified in Section 2 and summarized in the ROD. Phase II activities included conducting the full remedial investigation/feasibility study (RI/FS) for the entire OU.

- 1991 – EPA developed the Statement of Work (SOW) for the Phase II RI/FS. The SOW served as the substantive basis for the Phase II RI/FS Work Plan. A consent order to conduct a RI/FS at the BPSOU was signed by ARCO and other BPSOU Potentially Responsible Parties (PRPs) in June 1992. EPA also continued to sign

action memorandums and issued administrative orders for initial actions during this period.

- 2004 – The proposed plan for the BPSOU was completed.
- 2006 – EPA signed the Record of Decision for the BPSOU Silver Bow Creek/Butte Area NPL site.

Additional site background and history details are provided in the *Record of Decision Butte Priority Soils Operable Unit Silver Bow Creek/Butte Area NPL Site, September 2006* (EPA 2006a).

3.6 Basis for Taking Action

Screening studies and risk assessments have been conducted in Butte since the early 1990s to identify contaminants of concern and to quantify actual and potential human health and environmental risks from contaminants of concern (COCs) in tailings, waste, soils, indoor dust, surface water and groundwater. The COCs at the site, and the media for which actions levels were established for each COC, are presented in Table 3-1.

Table 3-1
Summary of Contaminants of Concern for the BPSOU

Chemical	Solid Media	Groundwater	Surface Water
Aluminum			X
Arsenic	X	X	X
Cadmium		X	X
Copper		X	X
Iron			X
Lead	X	X	X
Mercury	X	X	X
Silver			X
Zinc		X	X

For humans, primary exposure pathways at the BPSOU include:

- Ingestion of surface soils (for residents, commercial workers, and railroad workers);
- Ingestion of interior dust (for residents and commercial workers);
- Dermal exposure to surface water (for recreational visitors); and
- Ingestion of surface water (for recreational visitors); and

- Ingestion of alluvial groundwater were calculated, although no current exposures occur.

Assessments of ecological risks focused on aquatic habitat in Silver Bow Creek (terrestrial habitat is limited in the urban environment of the BPSOU and was not evaluated in an ecological risk assessment). Animals in the aquatic environment may be exposed to toxic levels of contamination in the following ways:

- Fish and benthic macroinvertebrates may be exposed by breathing or touching surface water and sediment and by ingestion of prey or sediment.

- Waterfowl may be exposed by direct ingestion of surface water and sediments or by ingestion of contaminated prey.

Previous response actions and the residential lead abatement program have significantly reduced some but not all of the human health risks. Metal-laden mine waste within the BPSOU continues to threaten local groundwater and surface water resources. As a result, the selected remedy (described in the 2006 ROD) adopts the previous response actions to eliminate or mitigate remaining human and ecological risks. The response actions selected in the BPSOU ROD are necessary to protect the public health, welfare, or the environment from actual or threatened releases of hazardous substances into the environment.

The selected remedy includes, but is not limited to, the following major critical elements to address remaining risks:

- A site-wide operations and maintenance program for reclaimed sites to ensure the continued evaluation, maintenance, and permanence of the caps over mine waste.

- Alluvial groundwater collection and treatment along with appropriate institutional controls (ICs), applicable or relevant and appropriate requirements (ARAR) waivers for groundwater, and monitoring.

- Additional source removal, capping of mine waste and land reclamation for contaminated solid media.

- Plans for a Residential Metals Abatement Program (RMAP) that takes a multi-pathway approach to addressing arsenic, lead, and mercury in yards and homes. All residential properties will be sampled within the BPSOU and remediated if elevated metals are detected.

- A phased storm water management program combining initial action, aggressive monitoring, source area stabilization, and engineering controls to minimize impacts from storm water runoff, meet ARARs, and return Silver Bow Creek to its beneficial uses.

- Elevated arsenic and metals occur in stream-bed and bank sediments in Silver Bow Creek at concentrations that present significant risks to aquatic biota. These sediments are most notable within the slag canyon west of Montana Street and within the upper reaches of the Silver Bow Creek channel in Lower Area One (LAO) and the lower reach of Blacktail Creek. The Selected Remedy will remove contaminated sediments from the stream channel bottom and stream banks, and adjacent floodplain from above the confluence through the slag canyon to the reconstructed floodplain in LAO.

Section 4
Remedial Actions

Summaries of the remedial actions selected, their implementation, and operations and maintenance (O&M) activities for the BPSOU are presented below.

4.1 Remedy Selection

4.1.1 Solid Media

The overall remedial action objectives (RAOs) established for the BPSOU solid media are:

- Prevent the ingestion of, direct contact with, and the inhalation of, contaminated soils, indoor dust, waste rock, and/or tailings or other process waste that would results in an unacceptable risk to human health assuming current or reasonably anticipated future land uses.

- Prevent releases of contaminated solid media to the extent that they will not result in an unacceptable risk to aquatic environmental receptors.

- Prevent releases of contaminated water from solid media that would result in exceedances of the Montana State Water Quality Standards for surface water.

- Prevent releases of contaminated water from solid media that would result in exceedances of the Montana State Water Quality Standards for groundwater, except where ARAR waivers are appropriate and other means to protect from associated risks are available.

- Remediate contaminated solid media to the extent that it will not result in an unacceptable risk to human health and/or aquatic environment receptors.

- Prevent release of contaminated water from solid media that would result in degradation of surface water, in accordance with the surface water Remedial Goals (RG).

Major components of the selected remedy for the BPSOU solid media are:

Residential Contamination

- Continuation and expansion of the existing Butte-Silver Bow Lead Intervention and Abatement Program, in a way that requires all residential properties be sampled assessed, and abated if action levels are exceeded for arsenic, lead, and mercury. The expanded program is called the RMAP, and was developed after extensive remedial design efforts. The final RMAP was recently approved by EPA and Montana Department of Environmental Quality (DEQ). That program is being implemented by the potentially responsible parties under order from EPA.

- The RMAP requires a multi-pathway approach to address arsenic, lead, and mercury in yard soil, indoor dust (living space and direct exposure to non-living space dust), interior and/or exterior lead paint and lead solder in household drinking water pipes.

- Homes adjacent to the BPSOU that have lead, arsenic, or mercury in attic dust will also be addressed in the same manner as homes within the OU (the RMAP defines the area for which attics with elevated levels will be addressed in Appendix A to the RMAP. The area is known as the Residential Metals Expanded Area).

- Properties that refuse property access or properties without current exposure pathways, or vacant properties will be flagged and tracked in the RMAP database for future action.

- The RMAP requires developing and implementing community awareness and educational programs in conjunction with a medical monitoring program.

Non-Residential Contamination

- Non-residential contaminated solid media includes waste rock piles, smelter wastes, milling wastes, and contaminated soils. Contaminated solid media may be present in commercial areas, open areas, non-active mining areas, etc.

- Contaminated solid media shall be addressed through a combination of source removal, capping, and land reclamation. After many years of work under pre-ROD removal actions, and extensive remedial design work post-ROD under order amendments from EPA, virtually all of these areas in BPSOU have now been addressed and have working caps and revegetation.

- Reclaimed areas, including cover soil caps, must achieve the performance standards described by EPA in the Butte Reclamation Evaluation System (BRES). This system is a site-specific tool to evaluate the stability, integrity, and degree of human and environmental protectiveness afforded by EPA-sanctioned response actions, or other past reclamation action initiated on lands impacted by mining within the OU.

- Non-Residential sites with contaminated solid media are grouped into different categories for remedial action.

4.1.2 Groundwater

The RAOs established for the BPSOU groundwater are:

- Prevent ingestion of or direct contact with contaminated groundwater that would result in unacceptable risk to human health.

- Prevent groundwater discharge that would lead to violations of surface water ARARs and RGs for the BPSOU.

- Prevent degradation of groundwater that exceeds current standards.

The BPSOU groundwater remedy is summarized as follows:

- **LAO Removal and Waste Left in Place:** Extensive removal of near stream waste in the LAO and MSD area has occurred, and some additional removal is required. Waste and contaminated soils will be left in place in LAO and MSD. Infiltration barriers or other measures may be placed to reduce metals loading to the groundwater in the area overlying the Parrott Tailings. The sediment basin/former wetland demonstration project shall also be reclaimed according to the intended future land use.

- **Groundwater Capture and Treatment – MSD Area:** Contaminated alluvial groundwater in the MSD shall be captured, pumped, and treated at the treatment facility at LAO using lime precipitation technology. Effluent from the treatment facility will be discharged to Silver Bow Creek in compliance with ARARs. Due to issues regarding long-term performance of the subdrain, this remedy will require upgrade to the MSD system and a five-year shakedown period to determine effectiveness of the system.

- **Groundwater Capture and Treatment – LAO:** Contaminated alluvial groundwater at LAO and base flow from Missoula Gulch shall be intercepted in a hydraulic control channel, and routed to the LAO treatment lagoon facility. Butte Mine Flooding Operable Unit (BMFOU) West Camp System will be routed to the hydraulic control channel at LAO for treatment.

- **Groundwater Treatment Facility:** The LAO treatment lagoon facility shall be used for the treatment and discharge of contaminated ground and surface waters. The existing lagoon treatment system at LAO has demonstrated that treatment discharge data for the system has been meeting state water quality standards for copper, cadmium, and zinc at the point of discharge. Arsenic standards have been met on all but a few occasions. Because issues regarding long-term performance and sludge removal and disposal have not been fully addressed, the Selected Remedy also includes the following:

    1. An engineering review shall be conducted to require LAO treatment lagoon facility upgrades. A five-year shakedown period will be required to demonstrate successful water treatment and full compliance with the standards, when operating under a wide range of conditions, including design conditions. All required modifications must go through the formal EPA design, review, and approval process.

    2. To prevent the discharge of untreated water into Silver Bow Creek, the design will be required to include contingencies for how to manage and store collected groundwater during extended periods of upset (e.g., flooding, equipment malfunction or failure, extended periods of freezing, etc.).

3. Using the Butte Reduction Works area, near the lagoon treatment system, for sludge drying and sludge management is not allowed, since it is a dedicated open space area more suitable for public use.

4. If during the shakedown period, performance standards cannot be met, a conventional lime treatment system shall be designed and built at LAO. The conventional system shall use lime treatment technology to treat the captured contaminated water and meet all discharge standards.

- **Groundwater Monitoring:** Additional groundwater capture and hydraulic control systems may be implemented if the MSD and LAO capture system is found to adversely affect surface water quality. A comprehensive groundwater monitoring plan shall be prepared and implemented for the entire alluvial aquifer to ensure that groundwater capture systems are effective, to determine that contaminated groundwater is not leaving the technical impracticability (TI) Zone or discharging to surface water above standards; and to provide additional information as necessary on the movement, quality, and quantity groundwater. The groundwater monitoring program will include installing additional monitoring wells, regular measurement of water quality and water level in a monitoring network, and shall provide thorough monitoring that includes, but is not limited to, groundwater in upper and lower MSD, groundwater near the southern extent of the TI Zone, between the MSD and LAO groundwater capture systems, and in the area adjacent to, and downgradient of the lagoon system.

- **Controlled Groundwater Area:** The ROD contains provisions describing the decision to waive ARAR compliance in the alluvial aquifer TI Zone. A controlled groundwater area shall be established for the alluvial aquifer to prevent domestic use of this water and to prevent any well development that would exacerbate or spread existing contamination. Other ICs, such as county laws or regulations regarding domestic use of groundwater in the area, may also be required.

Much of the ground water work required by the ROD is undergoing remedial design and major parts of the required work have not yet been implemented.

4.1.3 Surface Water

The RAOs established for BPSOU surface water are:

- Prevent ingestion or direct contact with contaminated surface water that would results in an unacceptable risk to human health.

- Return surface water to a quality that supports its beneficial uses.

- Prevent source areas from releasing contaminants to surface water that would cause the receiving water to violate surface water ARARs and RGs for the OU and prevent degradation of downstream surface water sources, including during storm events.

- Ensure that point source discharge from any water treatment facility (e.g. water treatment plant, wetland, etc.) meet ARARs.

- Prevent further degradation of surface water.

- Meet the more restrictive of chronic aquatic life or human health standards for surface water identified in Circular DEQ-7 through the application of B-1 class standards.

The BPSOU surface water remedy is summarized as follows:

- Implementation of the Surface Water Management Program, which utilizes best management practices (BMPs), developed on an iterative and yearly basis, to address contaminated storm water runoff and improve storm water quality.

- Excavation and removal to a repository of contaminated sediments and other waste from the stream bed, banks, and adjacent floodplain along Blacktail Creek and Silver Bow Creek, from just above the confluence of Blacktail Creek and MSD to the beginning of the reconstructed Silver Bow Creek floodplain at LAO. Following removal of the in-stream sediments, further evaluation of surface water quality in this area will be conducted. If groundwater inflow is found to adversely affect surface water quality, additional hydraulic controls and groundwater capture shall be implemented.

- Capturing and treating storm water runoff up to a specified maximum storm event, if BMPs implemented under the Surface Water Management Program do not achieve the goal of meeting surface water standards in Silver Bow Creek, Grove Gulch, and Blacktail Creek during storm events.

- Hydraulic control, capture, and treatment of contaminated groundwater to prevent its discharge to Silver Bow Creek surface water, as described in the previous section.

- In-stream flow augmentation as appropriate. Flow augmentation will not be considered until the major remedial component described in this ROD are designed and implemented.

Much of the surface water work required by the ROD is undergoing remedial design and major parts of the required work have not yet been implemented.

4.1.4 Institutional Controls

The Selected Remedy includes the following minimum ICs:

- A controlled groundwater area will be established in the Alluvial Aquifer TI Zone to prevent domestic use of contaminated water, exacerbation or spreading of existing contamination, or release of highly contaminated groundwater to surface water resources through irrigation.

- County zoning and permit requirements will be implemented to ensure that capped waste areas, discrete areas of waste left in place, and other control measures such as storm water control are not disturbed, mismanaged, or inappropriately developed and that waste taken from these areas is disposed of at the Butte Waste Repository, or if identified as a hazardous waste disposed of at a Resource Conservation and Recovery Act (RCRA) Subtitle C facility.

- Deed notices and covenants will be required for all areas where wastes were capped and left in place or where engineered controls were constructed or other discrete wastes were left in place.

Where private landowners require fencing or use posting for legitimate reasons relating to the prevention of remedy disruption, the Selected Remedy requires the installation of these fences or signs.

Substantial progress has been made in developing the required ICs and/or plans for ICs.

The above summary of the ROD describes only the major actions required in the selected remedy. A complete description of all the remedy requirements is contained in the *Record of Decision Butte Priority Soils Operable Unit Silver Bow Creek/Butte Area NPL Site* report from September 2006.

4.2 Remedy Implementation

4.2.1 Work Completed under Removal Authority

The following italicized text is from Section 2 of the 2006 BPSOU ROD summarizing response actions from the late 1980s through 2004.

> *EPA designated the original Silver Bow Creek Site as a Superfund site in September 1983. A fund lead RI for Silver Bow Creek was started in 1984. During the course of this initial RI, the importance of Butte as a source of contamination to Silver Bow Creek was formally recognized. Preliminary results from the Silver Bow Creek RI indicated that upstream sources (i.e., ubiquitous mining-related wastes throughout Butte) were partly responsible for the contamination observed in the creek. After a thorough analysis of the relationship between the two sites (Butte and Silver Bow Creek), EPA concluded that they should be treated as one site under CERCLA. EPA subsequently modified the existing Silver Bow Creek Site to include the Butte area and the formal name was changed to the "Silver Bow Creek/Butte Area NPL Site" in 1987. The BPSOU was one of four remedial OUs formed in the Butte Area.*

EPA undertook several removal actions (TCRAs and ERAs) within the BPSOU from the late 1980s through 2004. Virtually all of this work was done by the PRPs under unilateral or administrative consent orders. Prior to the final FS and remedial decision process, 422 acres of land within the BPSOU have undergone extensive response actions. The work was completed from the late 1980s through 2004. The final actions for two ongoing ERAs (LAO and one for residential soils/source areas) were

established in the ROD. These response actions were undertaken to address the immediate human health and environmental problems at BPSOU.

Response actions were designed and constructed in a manner intended to be consistent with any final remedy. Response actions conducted at the BPSOU are summarized below.

Walkerville TCRA (1988). *Addressed mine waste dumps (e.g., Lexington Mine Yard) and residential soil areas contaminated with lead above 2,000 milligrams per kilogram (mg/kg) or mercury above 10 mg/kg in Walkerville. Nearly 300,000 cubic yards of material were removed from 10 sites. One mile of rock-lined ditch was also constructed to control surface water runoff from the recontoured waste piles. EPA also removed contaminated soil from six earthen basements and 33 residential yards.*

Timber Butte TCRA (1989). *Approximately 40,000 cubic yards of contaminated soil were removed and consolidated in an on-site repository that was recontoured, covered with fill soil, and revegetated. Drainage was improved with recontouring and the installation of drainage ditches. Contaminated soil was removed from two residential yards and the yards were recontoured, covered with soil, and revegetated.*

Butte Priority Soils TCRA (1990 and 1991). *Mitigated risks from a number of mine waste dumps, a concentrate spill, and seven residential yards located in Butte and Walkerville. Response actions were taken at 30 waste dumps (100,000 cubic yards) that were either capped or removed. In addition, a railroad bed and seven residential yards were reclaimed. These actions included removing waste, adding lime rock, capping with soil, application of fertilizer, and seeding each site.*

Colorado Smelter TCRA (1992). *Addressed wastes associated with the Colorado Smelter. Approximately 40,000 cubic yards of mine waste were removed and consolidated in an on-site repository. The site was reclaimed and drainage channels were installed.*

Anselmo Mine Yard and Late Acquisition/Silver Hill TCRA (1992). *Addressed a mine yard and several mine dumps in Butte. The work involved excavation of mine waste, recontouring, capping, and revegetation. Terracing, rock-lined ditches, and other drainage control measures were used for storm water management purposes.*

Walkerville II TCRA (1994). *EPA conducted further removal activities in Walkerville to address four additional dump areas with elevated soil lead levels. In 1994 and 1995, 12 more waste dumps were removed or capped in place.*

Railroad Beds TCRA (1999 - 2004). *Addressed railroad beds and adjacent residential yards at the OU that contain elevated concentrations of metals and arsenic. The railroad beds were constructed using mining-related waste or contaminated by spillage during transport of ore or ore concentrates. The TCRA included significant storm water drainage improvements.*

Storm Water TCRA (1997 - present). *Begun in 1997 to address storm water problems in Butte. To control storm water flow and minimize soil erosion and transport of contaminated sediment to Silver Bow Creek, storm water conveyance structures were built and large areas of barren land and contaminated soil were reclaimed with cover soil and revegetation.Storm water channels and detention ponds were placed in critical areas to minimize erosion and reduce the release and transport of contaminants from historic mining areas.*

This response action also included reclamation of the Alice Dump and the removal of about 50 cubic yards of soils contaminated with elemental mercury in the Dexter Street area. The Alice Dump is a large waste rock dump located in upper Missoula Gulch that contained about 2 million cubic yards of contaminated soil and waste rock. At Dexter Street, a limited quantity of the mercury-contaminated soils failed Toxicity Characteristic Leaching Procedure (TCLP) and required disposal at an EPA-approved RCRA hazardous waste disposal facility. The remaining soils were disposed of at an on-site waste repository.

Walkerville TCRA (2000). *Residential properties in Walkerville that had not been previously sampled were sampled and cleanups implemented at those residences with elevated arsenic, lead, and/or mercury above action levels. Approximately 40 properties were addressed.*

Lower Area One ERA (1992 - present). *The LAO ERA focused on the removal of accessible mine waste and contaminated soils along Silver Bow Creek and across the floodplains associated with Silver Bow Creek in the area of the historic Colorado Tailings and Butte Reduction Works facilities. In May 1992, ARCO signed a Consent Order with EPA to implement EPA's selected response action alternative for the LAO ERA. Per the work plan, the response action was to be accomplished in three phases. Phase I, which was divided into Segments I and II, included the excavation, transportation, and disposal of tailings and other contaminated materials from LAO, partial backfilling of the site with clean materials, and construction of a new Silver Bow Creek channel. Phase II was an equilibration and monitoring period that involved the collection of ground and surface water data needed to determine the appropriate final response action at LAO. Phase III consists of the design and implementation of the final response actions relating to LAO, as described in this ROD.*

The first step in the removal was Phase I, Segment I activities consisting of the excavation and transport via railroad of the "dry" contaminated material above the water table to the Opportunity Ponds near Anaconda. A total of 270,600 cubic yards of materials were excavated from 1993 to 1994 during Phase I, Segment I. During 1995, EPA and ARCO initiated Phase I, Segment II pilot-scale excavation activities consisting of the removal of wet contaminated materials below the water table. The pilot-scale operation demonstrated that dewatering could be achieved by trenches to intercept groundwater and, in 1996, full-scale dewatering and excavation of saturated materials began. To expedite the cleanup, a proposal was made in the summer of 1996 to haul the contaminated materials by truck to the nearby Clark Tailings site rather than continue to transport to the Opportunity Ponds by rail. Following public comment and subsequent approval of the proposed Clark Tailings repository and future use plan in spring 1997, excavated waste materials were transported

to the Clark Tailings area throughout the summer and fall of 1997. By the end of 1997, Phase I activities had removed a total of 1.2 million cubic yards of mine waste and contaminated soils from Silver Bow Creek and the associated floodplains in the area of the Colorado Tailings and Butte Reduction Works. The area was then backfilled with imported material and grasses, forbs, and trees were planted to establish a diverse and nature vegetative cover. The stream channel was reconstructed in accordance with rigid engineering standards to maintain an elevated stream channel to insure a losing stream. Waste removal during the LAO ERA was completed to a predetermined excavation limit established on the basis of the natural pre-existing land contours. Although the excavation limit ensured that the majority of the waste and contaminated soil was removed, waste was left in some areas that were below the excavation limit. In addition, in-situ waste and contaminated soils remain under the Metro Sewage Treatment Plant facility, and the historic aqueduct and slag walls. A hydraulic control channel was constructed parallel to the floodplain to collect groundwater. The captured groundwater is treated in the Treatment Lagoon Demonstration Project before discharge back to Silver Bow Creek.

Phase II of the LAO ERA has been completed during which the hydrologic equilibration and monitoring of ground and surface water occurred and water treatability studies were performed. Phase III, which includes final reclamation and land use planning for this area, will be decided and performed as a component of this ROD. For example, the selection of a collection and treatment requirement for groundwater for this area is included in this ROD.

Butte Priority Soils OU ERA Residential Soils/Source Areas (1994-Present). *EPA implemented a program to remediate residential metals and arsenic that focused on certain residential areas with soil-lead concentrations above the residential lead action level (1,200 mg/kg) and the arsenic level of 250 mg/kg. Under this action, EPA, DEQ, Butte-Silver Bow, and ARCO integrated the removal of residential lead contaminated soils associated with mine-related wastes and the removal or mitigation of lead contaminants from non-Superfund sources. This provided BSB with funding and the flexibility to implement a comprehensive public health program while meeting EPA's initial removal action requirement. The BSB Lead Intervention and Abatement Program goal is to reduce the level of lead exposure incurred by children 0–6 years, pregnant women and nursing mothers in a manner that results in long-term health benefits. Butte-Silver Bow's program targets all sources of lead, including interior and exterior lead based paint, interior lead dust, water and residential soils for certain residential areas.*

The source area portion of this action included the remediation of areas that were above the lead action level of 2,300 mg/kg.

Other Actions

Lower Area One Manganese Removal (1992). *This removal action was used to remove manganese ore stockpiles in LAO within the floodplain of Silver Bow Creek. The piles were located east of the Metro Sewage Plant and west of Montana Street in LAO. The Defense Logistics Agency and EPA conducted the manganese removal. The stockpiles included ore and process tailings remaining after efforts by the Department of Defense to process manganese ore at the Butte Reductions Works Plant during World War II.*

A total of 261,000 cubic yards were moved to a private repository in Whiskey Gulch, west of the BPSOU (Bureau of Reclamation 1992). The action was a critical ancillary action to the LAO ERA.

Old Butte Landfill/ Clark Mill Tailings (1998). *A RCRA corrective action and permitting process was completed at this site southwest of Butte, in combination with EPA mandated Superfund action. The site consisted of a 60-acre impoundment with approximately 1 million cubic yards of mill tailings immediately adjacent to, and partially mixed with, the old Butte Municipal Landfill. The mixed nature of the wastes necessitated a combined Superfund and RCRA response action be performed under RCRA jurisdiction.*

At the Clark Mill Tailings, approximately 800,000 cubic yards of the Colorado Tailings removed from LAO were placed in the repository constructed at this site. The final RCRA repository cover was designed in 1997 and constructed in 1997 and 1998. The overall design included the subsequent construction of a recreational complex on top of the repository that included several irrigated ball fields, play areas, and park buildings. The recreational complex was opened in 2001. This area is permitted by DEQ under its solid waste authorities.

4.2.2 Ongoing Remedy Implementation Activities

This section details the status of key components of the selected remedy. Additional details on these components are provided in Section 6.

Solid Media Components:

- ***Residential Contamination.*** The RMAP was approved in 2010 by DEQ and EPA and is currently being implemented. Some form of residential yard cleanup has been ongoing since the 1990s. No significant changes to the current program are anticipated in future remedial design efforts. Therefore, this program is reviewed in Section 6.

- ***Non-Residential Contamination***. Most major source areas in the BPSOU have been reclaimed under prior removal actions or post-ROD implementation under approved work plans. Their integrity must now be evaluated and maintained.

- ***Maintenance of Reclaimed Areas***. The BRES, described and included in the ROD, is being implemented to evaluate the condition of the source area

caps. Because the BRES is being implemented, and because most of the source areas were reclaimed over 10 years ago, it is EPA's decision that the maintenance of the source areas be included in this five-year review.

Groundwater Components:

- ***Waste Left in Place***. The ROD states that certain contaminated soils and waste will be left in place in LAO and MSD. Infiltration barriers, other upgrades or source control measures, and the reclamation of the former wetland demonstration project are part of the remedial design process which is ongoing. Because these aspects of the remedy have not yet been implemented, this component is not fully evaluated in this five-year review.

- ***Metro Storm Drain Groundwater Capture and Treatment***. The ROD states that the MSD groundwater will be captured and pumped to the treatment facility at LAO for treatment. Currently this groundwater is being captured by a subdrain (French drain) installed under the MSD storm water channel. The performance of the subdrain is being evaluated and will be improved as necessary during remedial design. Because this component is part of the ongoing remedial design efforts and is not yet fully implemented, it is not fully evaluated in this five-year review.

- ***Lower Area One Groundwater Capture and Treatment***: The ROD specifies that the contaminated alluvial groundwater at LAO, along with Missoula Gulch base flow, and the BMFOU West Camp groundwater will be routed to the hydraulic control channel and Butte Treatment Lagoons for treatment. All of these groundwater components have been captured and routed to the groundwater treatment facility. The performance of the capture system is being evaluated and will be improved as necessary during remedial design, and is working within standards at the present time. Because this component is part of the ongoing remedial design efforts and is not yet fully implemented, it is not fully evaluated in this five-year review.

- ***Groundwater Treatment Facility***: The existing lagoon system at LAO (also known as the "Butte Treatment Lagoons"), as currently built, are a full-scale pilot system (required under the LAO removal action) and are not considered the final treatment facility. The existing pilot system will be upgraded to a fully-functional, modern, robust treatment facility. Because this component is part of the ongoing remedial design efforts and is not yet fully implemented, the treatment facility itself it is not fully evaluated in this five-year review. Water quality data from the treatment lagoons facility effluent will be presented to show the general effectiveness of the treatment process.

- ***Groundwater Monitoring***: The ROD calls for a comprehensive groundwater monitoring program throughout the alluvial aquifer to ensure the groundwater control and capture system is effective. The details of this monitoring program are being developed as part of the ongoing remedial design efforts and it is not evaluated in this five-year review. An interim groundwater monitoring plan is in place and is being implemented, giving the agencies substantial data to assess groundwater components of the remedy.

- ***Controlled Groundwater Area***: The ROD calls for the establishment of a controlled groundwater area for the BPSOU alluvial aquifer. As discussed in the BMFOU portion of this five-year review, a single controlled groundwater area – the Butte Alluvial and Bedrock Controlled Groundwater Area (BABCGWA) – was established in 2009. This component is included in the review of ICs in this five-year review.

Surface Water Components:

- ***Implementation of the Surface Water Management Program***. This is a program of BMPs to reduce loading of contamination to surface water (particularly during storm events) and improve water quality in Silver Bow Creek. This is intended to be an ongoing and evolving program to identify sources of water quality degradation in Silver Bow Creek (monitoring, compliance analysis, and loading analysis), and to implement the appropriate storm water BMPs to best address the problem. Due to the varying nature and extent of storm water contamination throughout the BPSOU, this portion of the remedy was intentionally non-prescriptive.

  Surface water monitoring has been ongoing on an interim basis. Early BMPs such as curb and gutter programs, catch basin improvements, and storm water system cleanouts, have been implemented. Additional data on stormwater has also been collected and evaluated as part of the remedial design and implementation process. The Surface Water Management Program has not been finalized. Some surface water data are available to show current water quality and trends in Silver Bow Creek.

- ***Contaminated Sediment Removal.*** This portion of the selected remedy has not been implemented.

- ***Capturing and Treating Storm Water Runoff***. It is too early in the implementation of the remedy to identify whether this contingency measure will need to be implemented.

- ***Hydraulic Control, Capture, and Treatment of Contaminated Groundwater:*** Groundwater capture and treatment is a key component of Silver Bow Creek remediation. This component is evaluated to the extent that surface water quality data are available**.**

- ***In-Stream Flow Augmentation***: This portion of the ROD is a contingent remedy to be implemented in the future if needed and is not evaluated in the five-year review.

Institutional Controls:

- ***Controlled Groundwater Area.*** A controlled groundwater area – the BABCGWA – was established in 2009 to serve the BMFOU and BPSOU.

- ***County Zoning and Permit Requirements***. An Institutional Controls Implementation Plan (ICIP) has been prepared by BSB and Atlantic Richfield and is near approval by the agencies.

- ***Deed notices on properties where waste was left in place or where engineering controls were constructed.*** An ICIP has been prepared by BSB and Atlantic Richfield and is near approval by the agencies

4.3 System Operations and Maintenance

There are many different O&M-type activities that are ongoing at the BPSOU. Some of these programs are more developed than others. Because the details of these programs have not been officially set in via a final work plan, many of them have been ongoing under interim conditions.

In general, ongoing O&M components at the BPSOU consist of the following:

- Ensuring permanence of the caps over mine waste through maintenance of cap integrity. This includes the BRES and implementation of any corrective actions triggered through these inspections and evaluations.

- Implementing the ongoing RMAP to address arsenic, lead, and mercury in yards and homes.

- Maintaining the stormwater structures (diversions, detention basins) built during the Stormwater and Railroad Beds TCRAs.

- Operating the Butte Treatment Lagoons groundwater treatment system.

- Operating the hydraulic controls and capture systems to collect contaminated alluvial groundwater in LAO and MSD.

- Ongoing groundwater monitoring.

- Ongoing surface water monitoring.

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Section 5
Progress Since Last Review

This is the first five-year review for the BPSOU.

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Section 6
Five-Year Review Evaluation

The BPSOU five-year review team was lead by Roger Hoogerheide, the EPA Remedial Project Manager (RPM) for the five-year review, and included EPA and State of Montana project managers of the OUs covered in the review, and technical staff from EPA's contractor, CDM, with expertise in areas of civil and environmental engineering and community involvement.

The review was initiated in October 2009 and included the following components:

- Community involvement
- Local interviews
- Document review
- Data review
- Institutional controls review
- Site Inspection

The schedule for completing this review extended through December 2010.

6.1 Community Involvement and Notification

Display ads were placed in the local papers (the Montana Standard and the Butte Weekly). The first ad announced the start of the five-year review process and ran in the Butte Weekly and the Montana Standard on September 30, 2009.

The agencies participated in three public meetings hosted by the Citizens Technical Environmental Committee (CTEC) regarding the five-year review process. The meetings were held on November 17, 2009, February 24, 2010, and March 3, 2010.

These advertisements and details of the public meetings are summarized in the community involvement and interviews memorandum included in Appendix A of Volume 1 of this five-year review report.

EPA released a draft of the five-year review report for public review and comment from December 12, 2010 through January 31, 2011. A public meeting was held on January 11, 2011. Comments received on the BPSOU are included in Appendix G.

6.2 Local Interviews

Interviews were conducted from January through March 2010 with several groups of people which included members of the general public, site neighbors, members of special interest groups such as the Citizen Action Group and Technical Action Committees, representatives of local government, and oversight personnel with direct

knowledge of the project. The final list of interviewees included 94 individuals. Considering the interview questions were fairly broad in nature and were not specific to any particular OU, the responses have been summarized separately in the community involvement and interviews memorandum (Appendix A of Volume 1).

6.3 Document Review

In preparing this five-year review, the following documents were reviewed:

- Final Multi-Pathway Residential Metals Abatement Program Plan (April 2010)
- Record of Decision Butte Priority Soils Operable Unit Silver Bow Creek/Butte Area NPL Site (September 2006)
- Butte Reclamation Evaluation System (BRES) Field Evaluations of Reclaimed Sites 2007 and 2008 – Final 2007 and 2008 BRES Recommendations Report (April 2009)
- Butte Reclamation Evaluation System (BRES) Field Evaluation of Reclaimed Sites and Final Recommendations Report 2009 (October 2009)
- 2004-2005 Construction Completion Report, Butte-Silver Bow Health Department Memorandum of Understanding-135 (November 3, 2005)
- 2005-2006 Construction Completion Report, Butte-Silver Bow Health Department Memorandum of Understanding-135 (September 12, 2006)
- 2006-2007 Construction Completion Report, Butte-Silver Bow Health Department Residential Metals Program (December 18, 2007)
- 2007-2008 Construction Completion Report, Butte-Silver Bow Health Department Residential Metals Program (January 2009)
- 2008-2009 Construction Completion Report, Butte-Silver Bow Health Department Residential Metals Program (January 2010)
- Final Surface Water Characterization Report, Butte Priority Soils Operable Unit (October 2008)
- Monitoring Report for 2008 Streamside Tailings Operable Unit Silver Bow Creek/Butte Area NPL Site (May 2009)
- Manganese Evaluation for Silver Bow Creek/Butte Area NPL site (July 2010)
- Butte Silver Bow's Municipal Storm Water System Improvement Plan (March 2009)
- Allocation and Settlement Agreement and Mutual Release of Claims By and Between the city and County of Butte-Silver Bow and Atlantic Richfield Company. (2006)

- Group 1 Settling Defendants' (Atlantic Richfield and Butte-Silver Bow) Draft Institutional Controls Implementation Plan (2009)
- Institutional Controls Strategic Plan Framework Document (May 1993)
- Amended Notice of Violation and Administrative Order on Consent. Docket No. WQ-07-07. MPDES Permit requirements under the Montana Water Quality Act, City and County of Butte-Silver Bow, Silver Bow County, Montana (FID #1364). (DEQ. August 28, 2009).
- Montana's Basin Closures and Controlled Groundwater Areas. Prepared by the Montana Water Resources Division, Water Rights Bureau, Department of Natural Resources and Conservation (DNRC) Helena. (December 2003)
- Water-Quality, Bed-Sediment, and Biological Data (October 2007 through September 2008) and Statistical Summaries of Long-Term Data for Streams in the Clark Fork Basin, Montana. U.S. Geological Survey. 2009.

ARARs identified in the 2006 ROD were reviewed to determine whether any changes have occurred since the signing of RODs that could impact the protectiveness of the remedy of the site. The results of this review are discussed in Section 7.0, under Question B: Are the Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used at the Time of the Remedy Selection Still Valid?

6.4 Data Review

6.4.1 Solid Media

6.4.1.1 Residential Metals Abatement Program

During the RI/FS process, EPA and the potentially responsible parties conducted extensive sampling, contaminant screening, and human health and environmental risk assessments. The results of the screening and risk assessments are presented in Section 3.6 of this report. The action levels set for arsenic, lead, and mercury in solid media are presented in Table 6-1.

The BPSOU ROD set action levels for contaminants of concern (arsenic, lead, and mercury for solid media) and requires residential areas within the BPSOU to be cleaned up if action levels are exceeded. The program to accomplish this ROD component is called the RMAP, which was recently approved by EPA in consultation with DEQ. The purpose of the RMAP is to ensure public and environmental heath of the residents of the BPSOU and the Adjacent Area (that is, the area identified in Appendix A to the final RMAP) by effectively identifying and mitigating potentially harmful exposures to sources of lead, arsenic, and mercury (BSB 2010).

Table 6-1
Soil, Dust, and Vapor Action Levels in Residential Areas

Contaminant of Concern	Exposure Scenario	Concentration
Lead	Residential	1,200 mg/kg
	Non-Residential	2,300 mg/kg
Arsenic	Residential	250 mg/kg
	Commercial	500 mg/kg
	Recreational	1,000 mg/kg
Mercury	Residential	147 mg/kg
	Residential (vapor)	0.43 micrograms per cubic meter ($\mu g/m^3$)

From Table 12-1 in the 2006 BPSOU ROD

This program requires an assessment of all residential properties within the BPSOU to occur in 10 years and all contaminated residential properties within the BPSOU to be remediated in 20 years. During the implementation of remedial design and the development of the *Final Multi-Pathway Residential Metals Abatement Program Plan* (BSB 2010), the time frames described above were requested by the implementing PRPs to address both mining and non-mining related lead, arsenic, and mercury contamination at all residential properties that exceed action levels within the BPSOU site, as well as attic dust in the defined Adjacent Area. By including the non-mining related contamination, the time frames for completion of the assessments and remediation were increased from those noted in the ROD by 2 and 5 years, respectfully. EPA, in consultation with DEQ, determined that such changes were reasonable, added to the overall protection of human health through implementation of the Multi-Pathway Program, and met basic requirements for cleanup of mining related contaminants above actions levels in yard soils and indoor dust.

Yard and attic cleanup actions are conducted on an annual basis and summarized in annual Construction Completion Reports. These reports are prepared by the Butte-Silver Bow Health Department RMAP which is implementing the RMAP on the behalf of the PRPs. The following sections describe the prioritized criteria, yard removal procedures, and a summary of both the removal and medical programs as part of RMAP.

Property Prioritization

As described in the BSB RMAP, residential properties are prioritized for remediation based on the following criteria, arranged from highest priority to lowest priority level:

- Homes occupied by one or more children with a blood lead (PbB) equal to or greater than 10 micrograms per deciliter (µg/dL) (which is considered to be an elevated blood lead [EBL]);

- Homes occupied by an individual with elevated urinary arsenic;

- Home occupied by an individual with elevated blood mercury;
- Secondary residences or subsequent homes occupied by children with elevated blood lead;
- Homes previously occupied by children with an EBL, even if no child is currently living at the address;
- Homes with very young children (e.g., less than one year) and PbB of 5 to 9 µg/dL;
- Homes with no children but with one or more sources (paint, water, soil, house dust) with a lead concentration which exceeds the 95th percentile as determined by the 1990 BSB Environmental Health Lead Study (BSB 1992). Particular attention should be given to homes built prior to 1940;
- Designated playgrounds;
- Informal play areas frequented by children with or without property owner's permission; and
- All other actual or potential residential areas.

Residential Yard Remediation (Exterior Program)
In accordance with the RMAP, an inspection and sampling program is implemented to determine whether soil throughout the property contains elevated levels of arsenic, mercury, and lead. If soil sample results are above the action level, then a yard-specific removal plan must be developed that identifies the location of the contamination, inventories site features that impact removal action, specific dates for the removal to occur, etc.

The selected remedy for the soil sampling initially required sampling at a depth of 0 to 2 inches. However, in order to better define the presence of contamination for the constituents of concern, expanded sampling in three increments (0 to 2 inches, 2 to 6 inches, and 6 to 12 inches) are sampled instead according to the RMAP. These three sampling depths will determine if contamination is present only at the surface or is at depth. If the contamination is only surficial, then ICs would not be necessary for the property after cleanup. If contamination is at depth and is not removed, ICs may be needed depending on the use of the property.

From 1990 through December 2009, a total of 1,464 yards have been sampled within the BPSOU (out of 4,000 total properties estimated as reported in Section 5.2.1 of the 2006 ROD) – first under removal authority and now under remedial authority.

Contaminated soil which exceeds action levels is removed from residential areas to a maximum depth of 12 inches or to the soil bedrock interface (if bedrock is encountered before the 12-inch depth), and to a depth of 24 inches in vegetable garden areas. Previously, a removal depth of 18 inches was prescribed in the ROD;

however, this was recently changed in the RMAP to be consistent with national EPA guidance as defined in the Superfund Lead Contaminated Residential Sites Handbook, August 2003 (EPA 2003).

From 1990 through December 2009, a total of 377 yards were determined to have exceeded action levels and have been abated within the BPSOU – first under removal authority and now under remedial authority.

At each removal location, prior to backfilling, a layer of lightweight geotextile fabric is placed over the exposed surface as a marker of the extent of soil removal/replacement and as a visual indicator that the underlying soil may contain arsenic, lead, or mercury concentrations above action levels. Backfill material may include replacement soil for yard and garden areas, pit-run gravel base for driveways, sod and/or seeding.

Other Media Abatement (Interior Program)
Other media abatement, included as part of the interior residential abatement program, includes sampling/inspection and abatement activities related to indoor dust, earthen basements, attic insulation, lead paint, and lead within pipes. If contamination is present and/or above the action level, then abatement plan must be developed that identifies the location of the contamination, inventories site features that impact removal action, specific dates for the removal to occur, etc.

Indoor dust that exceeds the action level for arsenic, lead, or mercury is thoroughly cleaned with a remediation grade/High Efficiency Particulate Air (HEPA) filter vacuum. Carpets are removed and replaced. Non-living spaces are also cleaned if an action level in those areas is exceeded and there is either a pathway allowing dust into the living space or the property owner is planning a remodel that will disturb the non-living space dust. In total, 396 houses/living spaces have been sampled for contaminated indoor dust from 1990 to December 2009 and 29 required an interior cleaning.

Soils from earthen basements that exceed actions levels are encapsulated with a surfactant, as appropriate for the space.

Attic insulation is removed in conjunction with any contaminated attic dust. In total, 444 attics have been sampled from 1990 to December 2009 and 92 attics have been abated.

Deteriorated and peeling lead paint is abated by painting walls and other surfaces with non-lead based paint. In total, 816 houses/living spaces have been inspected for lead-based paint from 1990 to December 2009 and 149 required abatement of lead-based paint.

If water testing indicates that lead within the plumbing system of a house (e.g., lead solder at pipe joints) exceeds the safe drinking water standards, piping is replaced.

To date, no houses have been identified with elevated lead in the plumbing system, and no pipe replacement has occurred.

Medical Monitoring Program
In addition to the removal actions conducted at properties, a clinical and educational intervention program is completed each year.

Blood lead screening is available to all residents of Butte-Silver Bow. Testing is conducted by the Butte Women's, Infant's, and Children's program (WIC) which is located at the Health Department. Testing is available to walk-in clients, by appointment, or by physician and RMAP referrals. In addition to blood testing, families are educated about potential lead exposures in and around their homes.

Since the inception of the program, a total of 8,568 total blood lead tests were conducted. Table 6-2 provides a summary of the number of blood lead test conducted by year with the corresponding number of blood level test results greater than 9.9 µg/dL. As shown in the table below, the number of blood lead test greater than 9.9 µg/dL has decreased significantly from 1990 to present. In the past two years, none of the tests had results greater than 9.9 µg/dL.

Table 6-2
Blood Lead Test Results by Year

Year	Number of Blood Lead Tests	Number of Blood Lead Tests > 9.9 µg/dL	Percentage of Tests with > 9.9 µg/dL
1990-1994	1044	84	8
1995	186	13	7
1996	156	11	7
1998	270	17	6.3
1999	418	14	3.3
2000-2001	447	15	3.4
2001-2002	304	15	4.9
2002-2003	759	15	2
2003-2004	921	13	1.4
2004-2005	691	4	0.6
2005-2006	762	3	0.4
2006-2007	675	3	0.4
2007-2008	940	2	0.2
2008-2009	995	0	0

Concerns Raised During Community Interviews
Several community members questioned whether or not limiting the analysis of soil samples to lead, mercury, and arsenic was protective. There were concerns that other heavy metals known to be present in Butte such as cadmium, manganese, copper, and zinc may be present at levels of concern, independent of elevated lead, mercury, or arsenic.

When the initial screening study for BPSOU soils was conducted in 1987, 23 metals and arsenic were analyzed in soil samples. These metals and arsenic were further evaluated in the site risk assessments. Based on the information obtained in the contaminant screening and risk assessments, concerning risk pathways and soil contamination relationships, EPA developed the list of COCs for the site. EPA risk assessors reviewed these actions as part of the five-year review process, and determined that the screening and risk assessments, as well as the current contaminants of concern and action levels remained valid and are protective of human health and the environment.

There was particular concern about manganese and soil contamination raised during the public input process. Because of these concerns, manganese was specifically re-evaluated during this five-year review. EPA's risk assessor found that dermal absorption and exposure had been considered in accordance with EPA Region 8 practices, which are to not quantitatively evaluate dermal exposure from metals, due to studies showing little transmission of inorganics such as metals to human receptors via dermal exposure pathways. EPA's risk assessor believes a screening risk value of 12,609 parts per million in soils is appropriate and valid for manganese. Based on a review of site data, no residential exposure areas (such as yards or playgrounds) exceed this value at the BPSOU. Accordingly, further risk evaluation of actions levels for manganese is not warranted. Manganese is not a COC for solid media at the BPSOU.

Other screening levels considered during the human health risk assessments described generally in Section 3.6 and more specifically in the 2006 ROD were also re-evaluated and EPA concluded other metals were also appropriately screened from the list of solid media contaminants of concern. Accordingly, EPA concluded that the use of the three contaminants of concern for solid media – arsenic, lead, and mercury – and their respective action levels will ensure that human health is protected at the BPSOU.

6.4.1.2 Non-Residential (Source Area) Contamination

Butte Reclamation Evaluation System

When the BPSOU ROD was completed, according to Section 5.2.2.1 of the ROD, over 422 acres of source areas had been reclaimed. Since that time, additional source areas have been reclaimed (e.g., the Granite Mountain Memorial Area). There are over 200 source areas in the BPSOU that have been capped and reclaimed and need to be maintained in perpetuity.

The BRES is identified in the ROD as the program used to evaluate the integrity of all reclaimed land, soil cover caps, or other forms of engineered caps covering mine-waste material left-in-place at the BPSOU. The BRES is also the program by which corrective actions are identified and implemented. All source areas are to be evaluated on a four-year cycle, allowing for evaluation, corrective action implementation, and site healing prior to reevaluation again in four years. This system establishes evaluation procedures for performance standards to direct the

long-term monitoring, maintenance, and corrective action of response actions to which it applies. The BRES will ensure that response actions and future remedial actions are maintained at a level that provides for the continuous protection of human health and the environment and compliance with ARARs.

Under BRES procedures, source areas are often divided into smaller units called polygons. Polygons are used when different areas of a site have different land uses (e.g., field vs. drainage ditch or sloping vs. flat, etc.), and should be evaluated as distinct units. For example, the top of a reclaimed waste dump may be a polygon that meets standards, but the side slope, which is a separate polygon, may be a different polygon that requires a corrective action due to an erosion gully. A corrective action would only be required on that polygon, not the entire site. The BRES method requires the evaluation of vegetation condition, site stability (erosion condition), and other parameters important to ensuring that the reclaimed areas are performing as expected and thereby remaining protective of human health and the environment and compliant with ARARs.

The parameters evaluated during the BRES field work are:

- Site edge condition;
- Exposed waste;
- Bulk soil failure;
- Barren areas;
- Gullies;
- Vegetation cover (scored by polygon); and
- Erosion (scored by polygon).

Site evaluation forms for all the BRES monitored sites are included in Appendix D.

Following a site evaluations, the evaluator then uses the decision logic diagrams provided in the BRES document (EPA 2006b) to determine what, if any, additional reclamation work is needed. These recommendations fall into one of three general categories:

- Develop a vegetation and/or reclamation improvement plan and implement that plan.
- Perform an engineering assessment and implement possible engineered (soil stability) controls.
- Monitor again at the next BRES evaluation in four years.

Corrective actions plans are then developed, approved, and implemented the year following the evaluation. All source areas will undergo another full BRES evaluation three years following the corrective action work (allowing sufficient time for reclamation work to heal prior to reevaluation).

The technical recommendations for each of the sites/polygons are used by BSB, DEQ, and EPA to guide further site investigations and maintenance actions. The site team reviews site specific BRES data for each sites/polygons that have trigger items and incorporate any site specific modifying criteria deemed necessary for making decisions that are logical from a management standpoint. The site team may decide on a different recommendation after taking into consideration the modifying criteria (i.e., land ownership, severity of trigger items, land use, etc.). EPA has final approval authority, in consultation with DEQ, for all corrective action plans.

2007 and 2008 BRES Field Evaluations

The 2007 field season was the first time the BRES was used to evaluate previously reclaimed sites within BPSOU. Activities performed during the first season of the BRES implementation included: the development of the BRES tracking database, pre-evaluation office preparation for the field work, field evaluator training, and actual field evaluations of reclaimed sites.

The 2008 field season was similar to the 2007 field season with the exception that there were ten field evaluators from the Clark Fork Watershed Education Program (CFWEP) used to assist with performing the BRES evaluations. The CFWEP were contracted by BSB to assist BSB personnel with the 2008 BRES field evaluations. Additional details regarding the 2007 and 2008 BRES field evaluations are provided in the *Butte Reclamation Evaluation System (BRES) Field Evaluations of Reclaimed Sites 2007 and 2008 – Final 2007 and 2008 BRES Recommendations Report* (CDM 2009).

During the 2007 and 2008 BRES field season, a group of previously reclaimed sites located throughout the entire BPSOU were selected to be evaluated. Table 6-3 provides a summary of the 2007 and 2008 BRES Field Evaluation.

The "number of triggers" summarized in Table 6-3 is a count of the number of times a particular trigger item was discovered. Because one site could have more than one trigger item, the total number of trigger items (234) exceeds the number of sites (100). The next column, "triggers per site or polygon" is the number of triggers divided by the number of sites and indicates the likelihood that a particular trigger item will be encountered (e.g., 61 percent of the sites had a site edge condition). The "trigger type frequency" is the number of triggers in a specific category divided by the total number of triggers, and is an indication of how likely that particular category of trigger occurred (e.g., if a trigger item was found, it was a barren area 25 percent of the time). This can indicate if any particular type of trigger item is more problematic throughout the BPSOU than others.

Table 6-3
2007 and 2008 BRES Field Evaluation Summary

Trigger Item	Number of Sites/ Polygons	Number of Triggers	Triggers per Site or Polygon	Recommended Corrective Action	Trigger Type Frequency
Site Edge Condition	100 Sites	61	61%	M	26%
Exposed Waste		60	60%	EV	26%
Bulk Soil Failure		14	14%	EV	6%
Barren Areas		58	58%	VI	25%
Gullies		41	41%	EV	17%
Total		234	---	---	100%
Polygon-Specific					
Vegetation	140 Polygons	43	31%	VI	74%
Erosion		15	11%	EV	26%
Total		58	---	---	100%

M = Monitoring
EV = Engineering Evaluation
VI = Vegetation Improvement
Number of Triggers = number of times a trigger item was discovered
Triggers per Site/Polygon = number of triggers divided by number of sites or number of polygons
Trigger Type Frequency = number of triggers divided by number of total triggers

It is recommended that these percentages be calculated in subsequent five-year reviews. As this is the first time these sites have undergone a BRES evaluation, any improving, stable, or deteriorating trends over time cannot be discerned. As these sites are monitored over time and corrective actions are taken, these percentages measuring the frequency of trigger items encountered should decrease. This will be a useful metric for measuring the long-term maintenance of these reclaimed caps.

The next scheduled BRES field evaluation for the sites inspected during the 2007 and 2008 field evaluations will be in 2011 and 2012, respectively. The effectiveness of the recommended corrective actions presented above will be evaluated at that time.

2009 BRES Field Evaluations

The 2009 field season was similar to the 2007 and 2008 field season with the exception that five local teachers and six students, trained during the 2009 field season by the CFWEP and CDM, were used to assist with performing the BRES evaluations. Following training, the evaluators formed groups of two, which included one teacher and one student. Four of the groups included members who were BRES field evaluators in 2008. Additional details regarding the 2009 BRES field evaluations are provided in the *Butte Reclamation Evaluation System (BRES) Field Evaluation of Reclaimed Sites and Final Recommendations Report 2009* (CFWEP 2009).

During the 2009 BRES field season, a group of previously reclaimed sites located throughout the entire BPSOU were selected to be evaluated. These sites included

standard reclaimed source area sites, recreational use sites reclaimed as walking trails and a number of other sites along the railroad tracks, many of which were reclaimed as stormwater conveyance and catchment areas. Table 6-4 provides a summary of the 2009 BRES Field Evaluation.

The next scheduled BRES field evaluation for the sites inspected during the 2009 field evaluations will be in 2013. The effectiveness of the recommended corrective actions presented above will be evaluated at that time.

According to Tables 6-3 and 6-4, a significant number of the evaluated sites require a corrective action to meet the performance standard in the BRES. BSB has submitted a limited number of BRES corrective action work plans for these sites; however, BSB indicated that O&M-type work had been completed on some of these sites outside of the formal EPA-approval process. These activities include weed spraying, fence mending, planting of native species, shrubs, and trees, and the addition of soil on sites where it was needed. Some of the BRES recommendations for corrective actions at source areas were implemented, but not systematically documented.

Table 6-4
2009 BRES Field Evaluation Summary

Trigger Item	Number of Sites/ Polygons	Number of Triggers	Triggers per Site or Polygon	Recommended Corrective Action	Trigger Type Frequency
Site Edge Condition	206 Sites	119	58%	M	43%
Exposed Waste		75	36%	EV	27%
Bulk Soil Failure		6	3%	EV	2%
Barren Areas		51	25%	VI	18%
Gullies		29	14%	EV	10%
Total		280	---	---	100%
Polygon-Specific					
Vegetation	221 Polygons	41	19%	VI/RI	79%
Erosion		11	5%	EV	21%
Total		52	---	---	100%

M = Monitoring
EV = Engineering Evaluation
VI = Vegetation Improvement
Number of Triggers = number of times a trigger item was discovered
Triggers per Site/Polygon = number of triggers divided by number of sites or number of polygons
Trigger Type Frequency = number of triggers divided by number of total triggers

There were many sites requiring an engineering evaluation prior to a corrective action (see Tables 6-3 and 6-4). BSB is either not taking the necessary corrective actions on these sites or is not sufficiently documenting the work. An example of a corrective action form is included in Appendix E. The information captured on these forms is insufficient for a site needing significant corrective action work.

At present, EPA and BSB are developing a new form that will be used in developing and documenting corrective actions for the source area sites to address this problem. These forms will clearly document what and where all of the corrective actions were taken and will serve as a work plan and construction completion report. These documents will be placed in EPA's formal records and in the EPA Butte office, and EPA will ensure that appropriate follow-up action is taken and documented in each case.

Thus, many BRES-recommended corrective actions have not yet been implemented on these source areas. This is contrary to the schedule set forth in the BRES - that sites with trigger items receive the appropriate corrective action the following calendar year, so that any reclamation work would have three years to heal prior to the next BRES evaluation. For the first set of sites evaluated in 2007, this window of opportunity has passed. These sites are to be evaluated in 2011 but corrective action work has not yet been completed.

During community interviews, concerns about the condition and maintenance of the reclaimed caps were brought up frequently. People were not only worried about eroding caps resulting in exposed mine waste, but also that the high quality soil was eroding and being lost to the storm sewer system and to the stream. It was also discussed that storm water run-on from improper storm water routing upgradient of source areas was an issue that could cause erosion and cap failure.

EPA personnel continually conduct site visits to source areas located throughout Butte and Walkerville. There have been no outright cap failures. Furthermore, there has been no severe erosion problems associated with the Source Areas, despite the problems identified above. EPA has been working with BSB and the other PRPs to ensure corrective actions will be documented and completed on all BRES sites as soon as possible. The EPA is also meeting with BSB storm water personnel to conduct visits of storm water structures to make sure they are working properly.

6.4.2 Groundwater

The initial cleanup work for LAO was completed in 1997 under removal authority when substantial volumes of tailings and contaminated soil were from the area. Removing the tailings from the active stream floodplain mitigated the threat of a catastrophic failure or release of those tailings downstream, and also improved chronic releases to the stream of hazardous substances. Since the removal action at LAO, different treatability studies were performed on contaminated site groundwater. It was known that groundwater capture, control, and treatment would be a required site remedial component, particularly because inaccessible mine waste (e.g., under the municipal wastewater treatment plant) was left in place. Over time, a capture system known as the hydraulic control channel, and a capture system at MSD were implemented. These captured waters are then transported to the Butte Treatment Lagoon system for treatment and discharge into Silver Bow Creek. The pilot-scale Butte Treatment Lagoons were expanded to handle the BPSOU alluvial groundwater, as well as the West Camp groundwater. The BPSOU ROD incorporated

these elements into the groundwater treatment and capture component of the selected remedial action.

The effectiveness of current alluvial groundwater capture continues to be evaluated by EPA through the installation of additional groundwater monitoring wells, tracer studies and pumping tests in the MSD, and a dense network of surface water monitoring locations in Blacktail and Silver Bow Creeks. For example, increases in copper concentrations and loading measured at the lower end of the slag canyon in Silver Bow Creek resulted in the need for an extension of the hydraulic control channel farther to the east. This extension now captures groundwater with high copper concentrations that was entering Silver Bow Creek. This important action to improve base flow water quality was implemented in 2010. Evaluating the effectiveness of groundwater capture through a review of water levels and surface water chemistry will be part of future five-year review reports.

The Butte Treatment Lagoons have been operating for some time and have a substantial body of data associated with the performance of the lagoons, so that the performance of the Butte Treatment Lagoons system will be presented to show the anticipated effluent water quality from the final treatment system.

At the Butte Treatment Lagoons, groundwater is treated with lime and then flows through one of three series of three settling ponds. By operating the settling ponds in parallel, one set of ponds can be taken offline for maintenance, while allowing the other two to keep operating. The series of settling ponds facilitate settling of nearly all precipitates in the first pond, and then polishing of remaining suspended precipitates in the final two ponds.

The treatment chemistry is not fundamentally different than that of a conventional lime treatment facility. The primary difference is that settling ponds are used for the settling of sludge, rather than using clarifiers. In addition, the sludge generated is not recycled as it is in a high-density sludge process (like at the Horseshoe Bend Treatment plant for the Berkeley Pit). Recycling of sludge is used in conventional plants to speed metals precipitation and ensure efficient use of lime.

The ROD states that the Butte Treatment Lagoon system would be used for treatment of BPSOU groundwater, as long as issues concerning long-term performance and sludge removal and disposal are adequately addressed. The ROD cites more effective treatment of cadmium as compared to conventional treatment plants as one of the primary reasons for its selection.

Because the upgrades to the Butte Treatment Lagoon system are in the design phase, performance issues related to the internal workings of the system are not discussed in this five-year review. Thus, the data presented are limited to the influent and effluent discharge chemistry of the current treatment system.

Figures 6-1 through 6-5 show influent and effluent chemistry over time for arsenic, cadmium, copper, lead, and zinc. Discharge standards are calculated according to

DEQ-7 water quality criteria at the hardness of the discharge. Because the hardness is frequently greater than 400 milligrams per liter (mg/L) as $CaCO_3$, the standard is calculated at this maximum allowed hardness. Typically the hardness only decreases below 400 mg/L as $CaCO_3$ during spring, when collected groundwater is diluted slightly by infiltrating snowmelt and spring rains.

As the graphs show, the treatment system usually removes the COCs to well below required discharge standards. EPA believes that this indicates the initial success of the selection of this system for treatment of contaminated water. The few times that exceedances have occurred have been directly related to interruptions in the lime addition system (e.g., lime delivery system clogging, etc.). As noted, issues that can affect long-term operation and reliability (chemical addition, sludge removal, contingencies for upsets) are being addressed in remedial design, and a permanent and sustainable treatment system should result. The full system will again be evaluated in the next five-year review.

6.4.3 Surface Water

The selected remedy for surface water at BPSOU, as summarized in Section 4 of this report, is a combination of several elements, some of which have already been implemented. Three general action elements were defined to meet these objectives (detailed requirements are described in the ROD [EPA 2006a]):

- Surface Water Management Program. This program uses BMPs and engineered controls to address runoff of contaminated storm water. This has been partially implemented by construction of some caps at additional source areas, diversion ditches, a curb and gutter program, storage system cleanouts, and stormwater ponds in select areas. More BMPs and engineered controls are required to meet ARARs and ROD objectives.

- Source control along streams. Removal of wastes, contaminated soil, and sediments along the surface water bodies in the OU is required as described in the Butte Site ROD. In addition to the removals previously conducted at LAO, streambank removal actions are required from above the confluence with Blacktail Creek and MSD to the beginning of the reconstructed Silver Bow Creek channel. This action has not yet been implemented, but will be as remedial design continues.

- Capture and treatment of contaminated ground water. Capture systems have been implemented at MSD and LAO with the captured water being treated at the Butte Treatment Lagoons. These capture systems are undergoing evaluation, re-design, and upgrades as part of the remedial action to ensure long-term permanence and ARAR compliance. Of particular importance is ensuring contaminated groundwater is not bypassing the LAO and MSD capture systems and causing exceedances in Silver Bow Creek.

Contingency elements will not be implemented until the remedies above are in place.

Remedial Activities since Issuance of the ROD

The BPSOU ROD described the response activities undertaken at BPSOU up to 2006 (EPA 2006a). The primary pre-2007 activities that impacted surface water quality were:

- Removal of waste and reconstruction of the Silver Bow Creek channel from Butte Reduction Works to the surface water sampling location on Silver Bow Creek below the wastewater treatment plant (SS-07);
- Installation of the hydraulic control channel and construction of the Butte Treatment Lagoons System at LAO;
- Installation of the MSD subdrain and reconstruction of the MSD channel;
- Reclamation of source areas throughout the OU; and
- Installation of storm water controls.

Since that time, the following activities have been undertaken as described in the *Final Surface Water Characterization Report Butte Priority Soils Operable Unit* (CDM 2008):

- Operation of the MSD and hydraulic control channel collection systems;
- Operation of the LAO treatment lagoons;
- Inspections of reclaimed areas; and
- Monitoring of base flow and storm flow surface water.

6.4.3.1 Performance Standards

The ROD defined performance standards for surface water as narrative and numeric water quality standards described in Section 8 and Appendix A of the ROD. The most pertinent numeric standards for the Butte Site surface water COCs are shown in Table 6-5.

Table 6-5
Numeric Water Quality Standards at the BPSOU

Contaminant	Human Health Standard (µg/L)	Chronic Aquatic Standard (µg/L)	Acute Aquatic Standard (µg/L)	Notes
Aluminum	--	87	750	Dissolved fraction
Arsenic	10	150	340	
Cadmium	5	0.097	0.52	Hardness-dependent
Copper	1,300	2.85	3.79	Hardness-dependent
Iron	--	1,000	--	
Lead	15	0.545	13.98	Hardness-dependent
Mercury	0.05	0.91	1.7	
Silver	100	--	0.374	Hardness-dependent
Zinc	2,000	37	37	Hardness-dependent

Note: All standards are based on total recoverable analysis except for aluminum.

µg/L = micrograms per liter

Hardness-dependent chronic and acute aquatic life standards are variable based on formulae contained in Circular DEQ-7, February 2006 edition. Values in this table are calculated at a hardness of 25 mg/L. Any result greater than the acute standard is an exceedance. A four-day average of results greater than the chronic standard is an exceedance. Results indicated as base flow are assumed to be equivalent to a four-day average. Base flow results are compared to chronic standards since base flow should be representative of a longer than four-day average of COC concentrations. Storm water results are compared to acute standards since this represents a discrete value that is rapidly changing.

A map showing the surface water sampling stations in the BPSOU is shown on Figure 6-6 and listed as follows:

In-Stream Stations:

- SS-01 (Blacktail Creek at Harrison Avenue, United States Geological Survey [USGS] station 123231230)
- SS-04 (Blacktail Creek above Metro Storm Drain, USGS station 12323240)
- SS-05 (Silver Bow Creek below MSD and Buffalo Gulch)
- SS-05A (Silver Bow Creek below "slag canyon")
- SS-06A (Silver Bow Creek below new channel below Catch Basin 9)
- SS-06G (Silver Bow Creek below treatment lagoon effluent)

- SS-07 (Silver Bow Creek below wastewater treatment plant)
- GG-01 (Grove Gulch)

Surface water standards do not apply to MSD, Buffalo Gulch, and Missoula Gulch.

The data show that these actions have significantly improved surface water quality, when comparing water quality data from the 1980s to today's water quality data. Concentrations have improved an order of magnitude in this time period, and this progress is more specifically described in section 6.4.3.4 below. Fish are now found in Silver Bow Creek in the Butte and BPSOU area.

A comprehensive characterization study of current surface water in the BPSOU was conducted in October 2008. That study presents a summary and interpretation of surface water quality data collected at the BPSOU of the Silver Bow Creek/Butte Area NPL Site since 2005, as required by the BPSOU ROD. The report is titled *Final Surface Water Characterization Report Butte Priority Soils Operable Unit Silver Bow Creek/Butte Area National Priorities List Site* (CDM 2008). The following sections provide a brief summary of the compliance analysis conducted at the site.

Copper exhibits the highest rate of exceedances during base and high flow, and has been the most challenging of the COCs to bring into compliance. Therefore, the discussion and analysis will focus primarily on copper. As copper exceedances are mitigated, it is expected that concentrations of the other mining-related COCs will also decrease. Zinc is also briefly discussed as it has higher concentrations, particularly during storm events. Other surface water COCs are presented in the 2008 report; however, because their exceedances are less frequent or non-existent as compared to copper and zinc, their results have not been elaborated upon.

6.4.3.2 Base Flow Conditions

Copper

Base flow copper concentrations at SS-07 have been sampled periodically as shown on Figure 6-7 since September 2005 and are compared with the DEQ-7 chronic surface water standard. Dissolved copper during base flow has generally stabilized since August 2006 varying from around 0.01 mg/L. Total recoverable copper during base flow has stabilized between 0.011 and 0.028 mg/L since August 2006. The gap between dissolved and total recoverable has remained indicating colloids or suspended fine sediments containing copper are still present in Silver Bow Creek. In most instances, total recoverable copper concentrations remained above the chronic standard for the period shown.

Base flow copper concentrations since 2005 at SS-06G are shown in Figure 6-8. Dissolved copper concentrations are relatively stable ranging from 0.0017 to 0.017 mg/L after August 2006. Total recoverable copper is greater than dissolved and shows a seasonal fluctuation with higher concentrations generally during winter months.

Base flow copper concentrations since 2005 at SS-06A are shown in Figure 6-9. Similar to SS-06G, total recoverable copper is greater than dissolved and shows a seasonal fluctuation with higher concentrations during winter months. At this station, the total recoverable copper predominantly exceeded the chronic standard. Dissolved copper was predominantly below the chronic standard.

Base flow copper concentrations since 2005 at SS-05A are shown in Figure 6-10. Dissolved copper concentrations are relatively stable ranging from 0.0018 to 0.0137 mg/L after August 2006. Total recoverable copper is greater than dissolved by up to two times the dissolved concentration. Seasonality is not readily apparent at this location. In 2009, dissolved copper was well below the chronic standard and total recoverable copper was approximately equal to the chronic standard.

Base flow copper concentrations at station SS-05 since 2005 are shown on Figure 6-11. Dissolved copper concentrations are low with the exceptions of March 2, 2006 and May 9, 2007. The March 2, 2006 elevated copper values are consistent throughout all stations for that day, possibly indicting a runoff event that was categorized as base flow. The May 9, 2007 dissolved concentration is approximately double the total recoverable concentration indicating an error in the data. The total recoverable copper concentrations are near the chronic standard with the exception of March 2006. Since the remedial action goal is to meet water quality standards at all times, further work is needed upstream of SS-05 to meet the remedial action goals. The primary sources upstream of SS-05 are Buffalo Gulch and MSD and possibly uncaptured groundwater influx. On November 18, 2009, the data shows an elevated spike of total recoverable copper. During this sampling event, a beaver dam was breached by BSB personnel above the SS-04 station. The results of this dam breach are evident at this sampling location, as well as SS-04. Total copper measured above the dam site, as SS-01, reflected a more typical copper value. Thus this data point does not indicate a seasonal winter-time impact, but is more reflective of the turbidity caused by the release of this beaver dam.

Station SS-04 is upstream of the BPSOU. Base flow copper concentrations since 2005 are shown on Figure 6-12. Dissolved copper concentrations have been very stable since August 2006 remaining below 0.007 mg/L. Total recoverable copper concentrations are lower than at SS-05 with most values falling below 0.010 mg/L, with a couple exceptions. Seasonal peaks occurred in December 2006, December 2007, and November 2008. The large spike in total recoverable copper was the result of the beaver dam breach described above.

Station SS-01 is upstream of Grove Gulch and represents water quality entering the OU (Figure 6-13). Other than one sampling event in 2006, all copper concentrations are moderately low and were below the chronic standard during the majority of sampling events. There is less separation between total recoverable and dissolved values.

Copper concentrations at Grove Gulch station GG-01 since 2005 are shown in Figure 6-14. At times, there is no flow at GG-01, so the sample set is smaller than stations on the mainstem. The three samples collected from September 2005 to May 2006 exceeded the chronic standard for total recoverable copper while more recent samples did not exceed. Additionally, there is little difference between total recoverable and dissolved copper results in the 2007-2008 data.

A bar and whisker graphical summary of statistics of the compliance ratio for total recoverable copper since 2005 is shown in Figure 6-15. The compliance ratio is calculated by dividing the analyte concentration by the compliance standard. A ratio calculated greater than one indicates an exceedance of the standard. This simplification is needed to allow presentation of statistics when the standard varies based on water hardness. The upstream end of the system at SS-01 contains total recoverable copper at approximately half of the chronic aquatic standard. Results from downstream stations SS-04, SS-05 and SS-05A indicate that a significant total recoverable copper load enters the stream through this reach. Total recoverable copper concentrations at SS-05A are normally about 1.5 times the standard. From SS-05A to SS-07 there is little change in the compliance ratio. This indicates the primary sources affecting compliance with the copper standard lie between SS-04 and SS-05A. Median dissolved copper compliance ratios were less than 1 for all in-stream monitoring stations; however, maximum concentrations all exceed the ratio of 1 as shown Figure 6-16.

The difference between dissolved and total recoverable copper increases in a downstream direction indicating that copper entering the surface water during base flow contains or generates a suspended solid fraction containing copper. Seasonality of total recoverable copper concentrations is seen at most stations, with peak concentrations occurring during late fall or early winter. The cause is currently under investigation.

Zinc

Base flow zinc concentrations at station SS-07 since 2005 are shown on Figure 6-17. Prior to February 2007, some of the samples show a distinct difference between total recoverable and dissolved fractions including two results where dissolved was greater than total recoverable (this could be a data entry error where total and dissolved results were switched). After February 2007, the difference was insignificant. A decline in zinc is shown from 2005 to December 2009 with the only exceedances occurring prior to 2007. Samples collected since 2007 are well below the chronic standard for zinc.

Zinc concentrations in surface water at SS-06G since 2005 are shown on Figure 6-18. A seasonal pattern is present with highest total recoverable zinc concentrations occurring during the winter, with the exception of a total recoverable zinc result from October 2008. No exceedances occurred during the period as shown on the figure.

Zinc concentrations in surface water at SS-06A since 2005 are shown on Figure 6-19. The seasonal pattern seen in SS-06G is also apparent in SS-06A. Only one exceedance for total recoverable zinc was observed on September 12, 2006.

Figure 6-20 shows zinc concentrations at SS-05A since 2005. The seasonality of total recoverable zinc values is only obvious during the winter of 2006-2007 when one exceedance occurred.

Zinc concentrations in surface water at SS-05 since 2005 are shown on Figure 6-21. The pattern is similar to SS-06A with no exceedances during the period shown.

Figure 6-22 shows zinc concentrations at SS-04 since 2005. The seasonal pattern for total recoverable zinc is clear at this station during the winters of 2005-2006 and 2006-2007. Most recently, this seasonal pattern is less apparent where most of the results were either nondetected or qualified as estimated. No exceedances occurred during the period shown, with the exception of one sampling event on November 18, 2009 when a beaver dam was breached by BSB personnel.

At station SS-01 shown in Figure 6-23, the results are similar to SS-04 with the more recent results being nondetected or qualified as estimated. The effects from the beaver dam breach are not apparent at this sampling station.

Zinc concentrations at GG-01 are shown on Figure 6-24. Only one result has equaled the chronic standard for zinc for the period. Since June 2006, all results have been far below the standard.

A graphical summary of the total recoverable zinc compliance ratio since 2005 is shown in Figure 6-25. Many of the results at the upstream stations are nondetected and the detection limit was substituted for the result during calculations, so the statistics for these stations are probably skewed slightly high. Exceedances of the chronic standards are rare for zinc at base flow conditions. The compliance ratios for total recoverable zinc are well below unity for all statistics except for the maximum. Median and maximum dissolved zinc concentrations are in compliance as shown in Figure 6-26.

6.4.3.3 Storm Water Conditions

For the compliance analysis of storm water, only data since 2005 were evaluated because they represent the data collected since implementation of the most recent major BMPs (i.e., MSD reconstruction). There were 42 storm events that were monitored from 2005 to 2009. No data were collected during the winter months due to freezing conditions.

The following analysis evaluates in-stream COC concentrations against the acute aquatic life standards. Because storm water data are inherently variable, the data are presented to highlight the median concentrations and to show the ranges in the data.

The explanation of how the dataset was utilized and how the statistics were calculated (i.e., which samples were included and not included and why) can be found in the text of the 2008 surface water interpretation report. These details are not repeated here.

Copper

Storm flow copper concentrations at station SS-07 since 2005 are shown on Figure 6-27. Total recoverable copper concentrations significantly exceed the acute aquatic standard during all sampling events during the report period. Large fluctuations in concentration are evident between sampling events. Dissolved copper concentrations also exceed the standard; however, these exceedances are not as significant.

Copper concentrations in surface storm water at SS-06G since 2005 are shown on Figure 6-28. Concentrations for total recoverable and dissolved copper are similar to SS-07 and exceed the acute standard on most dates.

Copper concentrations in surface storm water at SS-06A since 2007 are shown on Figure 6-29. The yearly results fluctuated significantly through each sampling period but ultimately exceeded the acute standard on most occasions.

Copper concentrations in surface storm water at SS-05A since 2005 are shown on Figure 6-30. Total recoverable and dissolved concentrations exceeded the acute standard on all but a few sampling events.

Copper concentrations in surface storm water at SS-05 since 2005 are shown on Figure 6-31. Total recoverable and dissolved copper generally exceeded the acute standard. Total recoverable copper exceeded on all but two occasions, whereas dissolved copper exceeded on all but four occasions.

Copper concentrations in surface storm water at SS-04 since 2005 are shown on Figure 6-32. During the 2005 sampling events, only one total recoverable copper sample was below the acute standard; in 2006 all samples exceeded; in 2007 two samples were below the standard; and in 2008 and 2009, all samples exceeded the standard. In general, dissolved copper was below the standard with the exception of several sampling events through the period shown.

Copper concentrations in surface storm water at SS-01 since 2007 are shown on Figure 6-33. A storm water monitoring station was not established until 2007. All total recoverable copper concentrations were above the acute aquatic standard. All dissolved copper concentrations, except for a few samples, were above the standard.

Copper concentrations in surface storm water at GG-01 since 2005 are shown on Figure 6-34. All total recoverable copper concentrations were above the acute aquatic standard, except one in 2005. All dissolved copper concentrations were below the standard, except one in 2008.

Figure 6-35 shows the box and whisker plot of in-stream copper storm water data since 2005. Median total recoverable copper compliance ratios exceed 1 for all in-stream monitoring stations, and frequently are between 5 to 20 times the standard. Maximum compliance ratios are several hundred times the standard. Minimum compliance ratios are also generally greater than one, indicating that downstream of SS−05, Silver Bow Creek is almost never in compliance with the acute aquatic life standard. Median dissolved copper compliance ratios exceed 1 for all in-stream monitoring stations except for SS-04, as shown in Figure 6-36.

For completeness, summary statistics of all the BPSOU COCs (aluminum, arsenic, cadmium, copper, lead, mercury, silver, and zinc) for the different stations are also presented in the *Final Surface Water Characterization Report Butte Priority Soils Operable Unit Silver Bow Creek/Butte Area National Priorities List Site* (CDM 2008). Examination of the statistics for COCs other than copper, cadmium, and zinc indicates that mercury, silver, and lead also show occasional exceedances. Arsenic rarely shows exceedances of the 340 micrograms per liter (µg/L) acute aquatic life standard.

Zinc

Storm flow zinc concentrations at station SS-07 since 2005 are shown on Figure 6-37. Total recoverable zinc exceeded the acute standard on all but one occasion in 2007 whereas dissolved zinc concentrations did not exceed the standard.

Zinc concentrations in surface storm water at SS-06G since 2005 are shown on Figure 6-38. Total recoverable zinc concentrations exceed the acute standard on most occasions. Dissolved concentrations of zinc were below the standard during all sampling events.

Zinc concentrations in surface storm water at SS-06A are shown on Figure 6-39. Samples were only collected in 2007 at this location. Total recoverable zinc was below the acute standard on several occasions in 2007 and 2008, but exceeded the standard on all occasions in 2009. Dissolved zinc concentrations were below the standard during all sampling events, with the exception of three samples in 2009.

Zinc concentrations in surface storm water at SS-05A since 2005 are shown on Figure 6-40. Total recoverable zinc was above the acute standard on all occasions in 2005 and during the majority of sampling events from 2006 through 2009. Dissolved zinc concentrations were below the standard most of the time, with a few exceedances in 2008 and 2009.

Zinc concentrations in surface storm water at SS-05 since 2005 are shown on Figure 6-41. Total recoverable zinc generally exceeded the acute standard with a few exceptions. Dissolved zinc concentrations were below the standard with the exception of several exceedances in 2007, 2008, and 2009.

Zinc concentrations in surface storm water at SS-04 since 2005 are shown on Figure 6-42. SS-04 is the first upstream sampling location where the majority of the total recoverable zinc concentrations are below the acute standard; however, several

sampling events did exceed the standard. All dissolved zinc concentrations were below the acute standard.

Zinc concentrations in surface storm water at SS-01 since 2007 are shown on Figure 6-43. Total recoverable zinc concentrations fluctuated above and below the standard from 2007 through 2009. All dissolved zinc concentrations were below the acute standard, with the exception of one event in 2009.

Zinc concentrations in storm water at GG-01 since 2005 are shown on Figure 6-44. All total recoverable zinc concentrations were below the acute aquatic standard, except two. These two samples were just slightly above the standard. All dissolved zinc concentrations were below the standard.

Figure 6-45 shows the box and whisker plot of in-stream total recoverable zinc storm water data since 2005. For zinc, median total recoverable compliance ratios exceed 1 for stations SS-05 and downstream through SS-07. Median dissolved zinc concentrations are in compliance as shown on Figure 6-46.

6.4.3.4 Silver Bow Creek Historic Concentrations

Surface water station SS-07 (USGS station 12323250) is the farthest downstream point of compliance before Silver Bow Creek exits the OU and also historically has had the worst water quality of any station on the perennial streams in the OU. Historic concentrations for arsenic, cadmium, copper, iron, lead, manganese, and zinc from 1993 through 2009 are presented in Figures 6-47 through 6-53. These data were obtained through a query of the online USGS database. The approximate dates of significant removal action milestones that improved water quality are also shown on these figures for reference.

It is important to note that station SS-07 was chosen for this data presentation due to its long period of record. However, station SS-07 is located just below the outfall of the municipal wastewater treatment plant. The discharge from the wastewater treatment plant contains metals, and, depending on the flow, it can affect water quality at this station. Thus, not all water quality exceedances at this station in recent years are attributable to residual wastes or groundwater inflow along the Silver Bow Creek floodplain. Some of the exceedances may be in part due to the wastewater treatment plant discharge.

COC concentrations in Silver Bow Creek have decreased dramatically since 1993 due to removal actions, storm water controls, and the control, capture, and treatment of alluvial groundwater in the MSD and at LAO. The milestones shown on the graphs correspond not only to when major construction activities occurred, but also when additional groundwater was routed to the treatment system. Chronic aquatic life standards, while not met all of the time for all COCs, are starting to be met. This is a significant accomplishment.

Arsenic

Figure 6-47 presents the historical concentrations of total recoverable and dissolved arsenic, as well as significant milestones. Starting in 1993, total recoverable arsenic concentrations have significantly exceeded the human health standard of 10 µg/L. Following completion of the LAO ERA, total recoverable concentrations began to decrease. A decreasing trend continued following treatment of all groundwater at LAO. Following completion of the MSD and treatment of all groundwater from the MSD, the concentrations of arsenic have generally been below the human health standard. Seasonal fluctuations have become apparent starting in 2006, with higher concentrations observed in the summer months and lower concentrations in the winter months. The summer concentrations have slightly exceeded the human health standard since 2006 with the exception of the summer of 2007. Dissolved concentrations showed a similar trend; however, dissolved concentrations were typically below the human health standard for much of the historical period, with the exception of a few isolated exceedances.

Cadmium

Figure 6-48 presents the historical concentrations of total recoverable and dissolved cadmium, as well as significant milestones. Starting in 1993, total recoverable and dissolved concentrations of cadmium fluctuated above and below the acute aquatic and human health standard; however, they consistently exceeded the chronic aquatic standard. Following completion of the LAO ERA, cadmium concentrations were typically below the acute aquatic standard but still generally above the chronic standard. Following the treatment of all MSD groundwater, all cadmium concentrations were below both human health and acute and chronic aquatic standards.

Copper

Figure 6-49 presents the historical concentrations of total recoverable and dissolved copper, as well as significant milestones. Starting in 1993, total recoverble and dissolved copper concentrations were significant higher than the chronic and acute aquatic standard. The completion of the LAO ERA reduced total copper concentrations significantly; however, the concentrations still exceeded the standards. Following the treatment of all MSD groundwater, total recoverable copper concentrationss have stabilized; however, continue to exceed the acute and chronic standard on most occassions. The dissolved copper concentrations have generally remained below the acute and chronic standard with the exception of a few instances.

Iron

Figure 6-50 presents the historical concentrations of total recoverable and dissolved iron, as well as significant milestones. Until the completion of the LAO ERA in 1998, total recoverable iron was greater than the human health standard. Seasonal fluctuations are evident, particularly post-1998 with a more prenounced pattern post-2005, following treatment of all MSD groundwater. During this report period, total iron concentrations have been below the chronic aquatic standard and above the human health standard mainly during winter and spring months. Dissolved iron

concentrations have been below both the chronic aquatic and human health standard since 1993.

Lead

Figure 6-51 presents the historical concentrations of total recoverable and dissolved lead, as well as significant milestones. Starting in 1993, total recoverable lead concentrations exceeded the human health and chronic aquatic standards much of the time, with several exceedances of the acute aquatic standard. Following completion of the LAO ERA, total recoverable lead concentrations declined until the reconstruction of the MSD. In 2003, total recoverable lead was below the human health and acute aquatic standard; however, continued to exceed the chronic standard occasionally. In 2005, there was a sudden spike in total recoverable lead; however, the lead concentration has since stabilized through 2009. This spike was likely related to construction activities in the Metro Storm Drain.Total recoverable lead concentrations continue to remain below human and acute aquatic standards, but have exceeded the chronic aquatic standard on only a couple occassions. Dissolved lead concentrations have been below all standards from 1993 through 2009.

Manganese

Figure 6-52 presents the historical concentrations of total recoverable and dissolved manganese, as well as significant milestones. Since 1993, concentrations of total recoverable and dissolved manganese were similar, with little gap between the concentrations. Manganese concentrations have steadily declined since 1993 until 2003 following the reconstruction of the MSD. Concentrations rose slightly until treatment of all MSD groundwater began in 2005. Since then, concentrations of manganese have stabilized. Dissolved manganese concentrations were below the secondary standard only on several occassions post-2005.

Zinc

Figure 6-53 presents the historical concentrations of total recoverable and dissolved zinc, as well as significant milestones. Since 1993, concentrations of total recoverable and dissolved zinc were similar, with little gap between the values. Zinc concentrations held steady through construction of the LAO, until completion in 1998. Following completion of the LAO ERA, zinc concentrations declined until 2003 during reconstruction of the MSD at which point concentrations rose slightly. Following treatment of the all MSD groundwater, zinc concentrations dropped significantly and have remained below the human health and acute and chronic aquatic standards.

6.4.3.5 Municipal Storm Water System Improvement Plan

Although the municipal storm water system in Butte as a whole (which addresses many sources of contamination and pollutants – not just mining waste) is not comprehensively addressed in the ROD, it has long been identified as a key part of the recovery of Silver Bow Creek. In 2009, BSB County published a comprehensive inventory and improvement plan of Butte's underground storm sewer system (BSB 2009). Until this point, reliable, specific documentation of the location, sizes, extent,

and conditions of the storm sewer system were not readily available. A geographic information system (GIS) database of the system was developed, which will be invaluable. Understanding the storm sewer system is a critical component for BSB in its effort at prioritizing and designing future underground storm water improvements.

BSB, with funding from ARCO, is replacing the upper portion of the Butte Anaconda Brewery underground storm water system. The project has a cost of approximately 1 million dollars. In addition, BSB is preparing an ordinance that will levy a fee on each property owner that will be used to implement and maintain the stormwater system for the Butte area. BSB will continue to prioritize storm water structure replacement and/or maintenance based on the Municipal Storm Water System Improvement Plan.

EPA continues to gather data on the BSB storm water conveyance system to determine its impact on the water quality of Silver Bow Creek, and to assist BSB in its improvement efforts. If mining waste contamination or site-specific improvements in the storm water conveyance system are identified in the Superfund BMP process, those efforts may come under the ROD's BMP program. Otherwise, the county's improvement program will be conducted independent of the Superfund process in a cooperative manner. EPA and BSB County are both expecting that continued storm water conveyance system improvements will lead to improved water quality in Silver Bow Creek.

6.4.3.6 Fish Population Monitoring

In the fall of 2008, a live caged fish study was conducted to better understand if fish are capable of surviving in Silver Bow Creek as described in detail in the *Monitoring Report for 2008, Streamside Tailings Operable Unit Silver Bow Creek/Butte Area NPL Site* (Bighorn Environmental et al. 2009). As a result of metals concentrations generally decreasing over the past decade to levels at or below chronic toxicity levels, a 30-day chronic caged fish study was chosen to evaluate the affecting fish survival rate. Young-of-the-year fish (westslope cutthroat trout from Washoe State Fish Hatchery in Anaconda) were used for the study because they are typically more vulnerable to poor water quality conditions. They are also more readily available from the hatchery and can be replicated at higher densities in the cages. This study was conducted at various stations along Silver Bow Creek, not just along the reach flowing through the BPSOU. For the purposes of this report, mainstem sites located above SS-06G and below SS-07 will be discussed as these are within the BPSOU. Metal contaminants of concern included: arsenic, lead, cadmium, copper, and zinc.

During the first week of the study, no mortalities were reported, indicating that stress and acclimation procedures were not factors affecting fish survival. Water temperatures remained approximately 20 degrees Celsius, which is considered to be a physiological threshold temperature that can cause stress in trout.

A relatively small rain event occurred in the watershed on August 7th that resulted in increased flow of approximately 8 cubic feet per second in Silver Bow Creek that

crested by August 11th. Even though this rain event was not significant, it enabled the mobilization of metals which increased copper and zinc concentrations in Silver Bow Creek above acute levels, particularly at SS-07. On August 8th, significant mortalities were observed in the caged fish at SS-07 and by August 11th, a 100 percent mortality rate was reported. Concentrations of both copper and zinc had increased to levels well above acute standards during this period. Total ammonia nitrogen concentrations were frequently above chronic standards and exceeded acute standards on August 9th and 11th. However, during the study, no mortalities were observed at SS-06G, the site immediately above the Butte sewage treatment outfall.

Notably, there was a difference in metals concentrations between SS-06G and SS-07 suggesting that additional metals loading occurs between these two locations; most likely the wastewater treatment plant (WWTP) outfall. Ammonia concentrations measured at SS-07 are a concern for water quality and survival of fish; however, the results reported during this study were not much different than results from previous studies conducted on Silver Bow Creek. The researchers concluded it was not possible to determine the ultimate cause of the fish mortalities.

Butte-Silver Bow is currently under order pursuant to the Clean Water Act (Administrative Order on Consent, Docket No. WQ-07-07) to upgrade the WWTP (DEQ 2009 – see Appendix F) for treatment of nutrients. New effluent limits for total nitrogen, total phosphorous, and chlorine became effective January 1, 2009 and applied to discharges between June 1 through September 30 of each year. The upgrades to the treatment plant were not completed by January 1, 2009. The Order establishes a compliance schedule for BSB to implement the upgrades to the WWTP. Again, EPA and BSB County are expecting further improvements to the overall water quality in Silver Bow Creek, based on these important efforts.

6.5 Review of Institutional Controls

EPA completed the ROD for BPSOU in September 2006. The EPA is currently in consent decree (CD) negotiations with the settling defendants (SDs). The Group 1 SDs (ARCO, BSB, and other parties) have prepared a draft ICIP as part of remedial design and this report was tentatively approved by the agencies and submitted to the public for comment (BSB/ARCO 2009). The current draft version of the draft ICIP can be found at information repositories and the Butte office of the EPA. EPA is currently evaluating public comments and may request changes to the document before it is finally approved.

Discussed below are the ICs identified in the BPSOU ROD and the draft ICIP, and those in use today to protect remediated areas from disturbance and to protect public health.

The Group 2 SDs (the railroad group) are also preparing an ICs implementation plan for their active railroad properties; however, this plan is not complete and was not available for review. Abandoned railbeds that have been reclaimed will be treated the same way as other reclaimed source areas in the BPSOU.

This section of the five-year review is intended to present the ICs implemented to date at the BPSOU (the groundwater control area and the "hook-up" ordinance) as well as the draft ICIP plan that was tentatively approved by the agencies, and to discuss the ICs that will be codified upon finalization of the CD. Because the CD negotiations are ongoing, the ICs presented for BPSOU may change.

6.5.1 Institutional Controls and Instruments

EPA and BSB recognized early that ICs for the BPSOU would eventually be needed to protect the integrity of the remedy and thereby protect human health and the environment. The EPA has been working with ARCO and the county to refine the components of an IC program for several years and that program has been defined in the ROD and is partially reflected in the draft ICIP.

The goal of the BPSOU ICs program is to prevent unacceptable human and environmental exposure to ore-processing contaminants remaining within the OU following remedial activities and other work, some of which may occur in the future. ICs are being used at the BPSOU to: 1) protect the remedial (and removal) components that have been implemented to address contaminated soil, groundwater, and surface water; 2) ensure the protection of public health and the environment during the development of property where contaminated source material was not addressed as part of remedial actions; and 3) continue community health testing and awareness programs.

EPA identified the following minimum required ICs in the ROD for the BPSOU (EPA 2006a):

1. A controlled groundwater area has been established in the BABCGWA ruling by the DNRC. The purpose of this ruling and regulation is to prevent domestic use of contaminated water, exacerbation or spreading of existing contamination, or release of highly contaminated groundwater to surface water resources through irrigation. The BABCGWA prevents new well development, except for CERCLA monitoring wells, well systems that treat contaminated water prior to use, and the use of existing domestic and commercial wells. To the extent a controlled groundwater area will not prevent the use of existing wells, an education and well abandonment program will be implemented to persuade owners not to use contaminated water and to voluntarily take existing wells out of service in exchange, for example, for being hooked up to public water. An administrative entity will be identified under remedial design/remedial action to monitor and enforce these restrictions. This IC is in place and functioning.

2. County zoning and permit requirements will be implemented to ensure that capped waste areas, discrete areas of waste left in place, and other control measures such as stormwater controls are not disturbed, mismanaged, or inappropriately developed and that waste taken from these areas is disposed of at the Butte Mine Waste Repository, or if identified as a hazardous waste

disposed of at an RCRA Subtitle C facility. These controls and permits are best implemented with adequate funding for appropriate redevelopment and re-use of affected sites. This IC is not yet in place. An initial county action to require the hookup of domestic water users to the county's public water supply system is in place and is functioning. Other county efforts are in development.

3. Deed notices will be required for all areas where wastes were capped and left in place or where engineered controls were constructed or other discrete wastes were left in place. The deed notices will notify current and subsequent landowners of the presence of these wastes or engineered controls and ensure that these wastes are not disturbed. In addition, fencing and signs may be required to ensure the integrity of caps and engineered controls. This IC is reflected in the draft ICIP plan, and much of this work has been implemented by ARCO and the county.

4. Where private landowners require fencing or use posting for legitimate reasons relating to the prevention of remedy disruption, the selected remedy requires the installation of these fences or signs. This IC will be monitored and enforced by EPA in the future.

In 2009, the Group 1 SDs prepared the draft ICIP, which identifies the public and private ICs that are being used, or will be implemented, to meet EPA's requirements for a comprehensive ICs program (BSB/ARCO 2009). The draft ICIP specifically addresses the following IC instruments.

A. Public ICs

- Controlled groundwater area designation;
- Hook-up ordinance/education and well abandonment program;
- Excavation and dirt-moving protocols ordinance;
- Stormwater management ordinance;
- Database and GIS; and
- Zoning ordinance.

B. Private ICs

- Access rights and restrictive covenants for ARCO/BSB property and third party private property.

6.5.2 Implementation

In addition to the information obtained from the controlling documents, interviews were conducted with the following individuals to determine which ICs or other protocols have been implemented and are being effective in protecting the remedy:

- Ted Duaime. Montana Bureau of Mines and Geology (MBMG). December 22, 2009.
- Tom Malloy. BSB Planning Department. December 22, 2009.
- Rob Jordan. ARCO land manager. December 29, 2009.
- Sara Sparks. EPA Remedial Program Manager for BPSOU. January 2010.
- Dan Powers. BSB Health Department. January 2010.

The implementation of ICs for the BPSOU is discussed below and a summary is provided in Table 6-6.

6.5.2.1 Site Access

Because the boundary of the BPSOU includes a large portion of the City of Butte, property ownership includes the full gamut of entities expected in a large mining community: private ownerships, commercial and industrial properties representing all types of businesses including former and active mining companies and railroads, state property, and property owned by BSB. Access rights are fully described in Section II – Private ICs of the draft ICIP, as well as granted in the Superfund statute, and are summarized below.

The draft ICIP states that the Group 1 SDs and others have created, or facilitated the creation of, private ICs that provide access easements or agreements (collectively, "access rights") for the benefit of the EPA, the DEQ, and any party performing response actions. Access rights are presently in place for much of the BPSOU where response actions have or will occur, including source area property and other real property where stormwater conveyance and management structures are present. According to the draft ICIP, most of the ARCO/BSB properties are currently subject to reserved access rights that provide access for addressing environmental conditions including response actions required under the CD. In addition, pursuant to the ARCO/BSB allocation agreement, it has been agreed that ARCO will convey to BSB substantial property located within the BPSOU, including certain source area properties and properties on which CERCLA stormwater structures are located.

With respect to third-party properties, the draft ICIP states that reserved access rights have been included in various conveyances of source area property to third parties and will be included in future land conveyances. It further states that if access to implement the CD is needed to any source area property owned by a third party, the SDs will use their best efforts to secure from the third parties an agreement to provide access for the purpose of conducting all activities related to the implementation of the

CD, including access for future operation and maintenance. This will be the approach used for some properties that were conveyed to third parties prior to realizing that perpetual access would be needed. As part of the CD, these properties are being systematically identified so that access agreements can be filed. According to the draft ICIP, access easements are intended to be filed in BSB property records and will run with the title of the land. As part of the RMAP, BSB has obtained, and will continue to seek, access rights and/or agreements to properties for any required additional response actions that may be necessary to protect human health.

6.5.2.2 Land and Water Use Restrictions

Groundwater Use Restrictions

Controlled Groundwater Areas – A CGWA was designated by the DNRC for the Old Butte Landfill/Clark Tailings site in December 1999. This area is located in the southern portion of the BPSOU (Figure 6-54).

On October 30, 2009, the DNRC designated the Butte Alluvial and Bedrock Controlled Groundwater Area (BABCGWA) No. 76G-30043832 (BSB 2009). The basis for the BABCGWA is that water quality in portions of the alluvial and bedrock aquifers, based on available information, are not suitable for a specific beneficial use as defined by Montana Code Annotated (MCA) 85-2-102(2)(a): a use of water for the benefit of the appropriator, other persons, or the public, including but not limited to agricultural (including stock water), domestic, fish and wildlife, industrial, irrigation, mining, municipal, power, and recreation uses. The final order for the BABCGWA contains specific findings of fact and conclusions of law that support DNRC's order. Key elements of the order include:

- New groundwater wells, except Superfund or other environmental monitoring/treatment wells necessary for environmental cleanup purposes, are generally prohibited.
- Existing wells for irrigation or industrial use may be replaced at the owner's expense, but only if the conditions stated in the order are satisfied.
- Wells used for drinking water supply must meet the applicable human health standards or cease being used for such purposes.
- The boundaries of the CGWA may be amended with the express written approval of the DNRC, the EPA, and DEQ.

The establishment of this CGWA meets the requirements of the RODs and enforcement instrument for both the BPSOU and BMFOU. Additionally, the Montana Pole Treating Plant (MPTP) CERCLA site is located within the BABCGWA and this designation also satisfies the MPTP CD requirement for groundwater well restrictions and the creation of a CGWA for that site.

Hook-Up Ordinance/Education/Well Abandonment - BSB has adopted a "hook-up" ordinance that requires all prospective potable water users to hook into the BSB water system where municipal service is available—i.e., within 300 feet of an existing water main. This ordinance enhances the BABCGWA and private covenants by requiring the majority of local water users to obtain their domestic water supply from the BSB municipal water system instead of from local wells. To the extent a CGWA will not prevent the use of existing wells, the BSB Water Quality District is to implement, in conjunction with the BSB Public Works Water Division, the EPA, the DEQ, and the DNRC, an education, testing, and well abandonment program designed to a) discourage inappropriate uses of groundwater from existing wells and b) encourage owners to take existing wells out of service voluntarily (BSB/ARCO 2009).

Earth Moving Ordinance

The county intends to file a resolution and draft, and enact an ordinance to enforce procedures used during earth moving activities (BSB/ARCO 2009). The ordinance is intended to help protect human health and the environment in Butte, and the long-term effectiveness of remediated areas during property development or re-use. As stated in the allocation agreement between BSB and ARCO, this ordinance would reiterate that other current zoning ordinances and designations apply, along with building codes, stormwater management ordinances and/or requirements, groundwater control area requirements, provisions for municipal infrastructure (public water, sewer, and utilities), weed control regulations, and the laws of the State of Montana applicable to building and construction (BSB/ARCO 2006). The ordinance would enforce the provisions of BSB's Excavation and Dirt-Moving Protocols for All Dirt-Work to be Performed In and Near the Butte-area Superfund Sites (discussed below). Also, the ordinance would indicate that BSB personnel would be available to answer questions and provide guidance to applicants proposing to develop or re-develop reclaimed property.

BSB has developed and is using a set of procedures to ensure that property development is protective of human health, the environment, and the implemented remedy. Key components of this process are discussed below.

Excavation and Dirt-Moving Protocol - In March 2009, BSB revised the former Reclaimed Areas Guidebook and republished the protocols for earth-moving in the *Excavation and Dirt-Moving Protocols for All Dirt-work to be Performed In and Near the Butte-area Superfund Sites* (BSBC/ARCO 2009). EPA approved the republished protocol document in June 2009.

During the building permit application process, the county planning department provides these protocols to the property owner and/or developer to help them identify and properly handle mine wastes when and if they are encountered (Malloy 2009). In addition to protecting human health and the environment, goals of this program are to ensure that soils contaminated with mine-wastes are not imported to a clean site or exported to any other site (other than the repository), and that contaminated soils are properly capped with clean soil and revegetated during

property development. The earth moving protocols document provides a step-by-step set of instructions to meet these goals. The document also provides protocol for transporting material and placing that material in the mine waste repository and provides BSB contact information, if mine waste is suspected of being encountered during the construction.

County Assistance and Inspections - BSB personnel are responsible for providing oversight during earth moving activities to ensure that waste and contaminated soil material are managed and handled according to established protocol. Mr. Malloy indicated that BSB personnel are available to provide this oversight and to assist with sampling material suspected of being contaminated; he also indicated that the county has a laboratory contract established for sample analyses.

Upon completion of construction, the BSB inspector must attest to whether the clean coversoil cap placed overtop waste or contaminated soil material remaining on the property meets the minimum required depth and physicochemical criteria and that the area has been seeded as required under the Butte Hill Reclamation Specifications. The inspector also determines whether stormwater BMPs have been implemented properly and are thereby likely to remain effective in preventing unacceptable erosion of the coversoil. All final site work must meet the established protocol and specifications before BSB approves the notice of occupancy.

Table 6-6
Implementation and Effectiveness of Institutional Controls at BPSOU

	Institutional Control and Instrument (as identified in the controlling documents)	Instrument Implementation and Use	Effectiveness of the Institutional Control in Supporting the Remedy
Controlling Document	ROD and Group 1 IC Plan		
Responsible Entity	BSB County and other Group 1 SDs		
Access	Access easements for lands owned by the Group 1 SDs to allow the access to perform Superfund-related monitoring and maintenance activities.	This is currently implemented for the Group 1 SD owned property through the existing administrative orders and will in the future through the CD or Unilateral Administrative Order (UAO).	This IC is currently effective.
	Access easements for property not owned by the SDs (i.e., third party private lands).	Most, but not all, third party private lands currently have access agreements. BSB and ARCO (the principal Group 1 SDs) are working to identify these properties and the draft ICIP indicates that they will seek agreements with the owners for access rights that would run with the property deed.	This IC is currently effective for most third-party private properties.
Land and Water Use Restrictions	Controlled Groundwater Area (CGWA)	Two DNRC-designated CGWAs are currently in place that restricts well drilling and groundwater use in areas overlying contaminated aquifers.	This IC is implemented and effective.
	Hook-up ordinance	An ordinance is in place that requires all prospective water users to hook into the BSB municipal water system, where it's available.	This IC enhances the effectiveness of the CGWA and private covenants already in place.
	Earth moving ordinance	Although not yet filed/enacted, this ordinance will compel land owners and developers to comply with the *Excavation and Dirt-Moving Protocols for All Dirt-Work to be Performed In and Near the Butte-area Superfund Sites.*	The *Protocols* document is currently being used and is effective. The enactment of the ordinance will provide enforcement capabilities to ensure human health is protected.
	Stormwater management ordinance	Although not yet filed/enacted, this ordinance will outline the procedures, protocols and/or requirements to implement and enforce effective storm water management. The ordinance will allow BSB perpetual access to inspect and maintain water conveyance structures and enact penalties for anyone damaging these structures.	This IC is anticipated to be effective.
	Restrictive covenants	Restrictive covenants prohibiting the unauthorized disruption of source area caps or other controls or engineered structures are presently in place for much of the BPSOU where response actions have or will occur. According to the draft ICIP, the restrictive covenants have or will be filed in BSB property records and run with the title of the land. An examination of property records for the Ophir Mine site did not reveal restrictive covenants. BSB and ARCO (the principal Group 1 SDs) are working to identify the remaining properties where these are needed and to get the covenants into the property records.	This IC is currently effective for all BSB/ARCO property and is anticipated to be effective for third-party property.
	Zoning ordinance	According to the draft ICIP, BSB plans to adopt amendments to the existing zoning ordinance that complement the other ICs, such as the controlled groundwater areas, the excavation/dirt-moving protocols, and the stormwater management regulations, to ensure land use development is consistent with remedial actions and their associated maintenance.	These amendments to the existing zoning ordinance are expected to enhance the effectiveness of BPSOU ICs.
Informational Devices	Community awareness and education.	This is fully implemented as part of the county Health Department's RMAP.	This IC is implemented and effective.
	Medical monitoring.	This is fully implemented as part of the county Health Department's RMAP.	This IC is currently in place and effective.
	Land information management and availability.	The BSB Database/GIS contains data and other information for all remedial areas. This information is available to land owners, developers, and prospective buyers upon request.	This IC is currently in place and effective.
	Fencing and land-use posting.	As part of BSB's on-going operations and maintenance program for reclaimed areas, fencing and land-use signage are installed as necessary to prevent impacts to reclaimed caps. This is an ongoing activity for both public and private lands.	This IC is currently in place and effective.

Preventing Improper Use of Contaminated Fill - The use of mining and ore-processing wastes as backfill material has been a common practice at historic mining communities such as Butte. BSB now requires developers to disclose the location of fill intended to be brought to the site being developed. The established protocol requires that this material be certified as not contaminated and, if used for coversoil, that it meets the Butte Hill Reclamation Specifications.

Home Renovation Protocol and Assistance - When a building permit is requested for a home renovation, the homeowner is provided with the earth moving protocols plus guidelines specific for renovations. The latter are part of the Health Department's RMAP. Upon issuing a building permit that involves an attic renovation, health department personnel will inspect the attic and sample and analyze material (e.g., attic dust) suspected of being contaminated. If contaminated material is present, BSB will arrange for the attic to be cleaned of contaminated dust prior to the renovations taking place. The county will also arrange for and manage the disposal of contaminated dust at the mine waste repository.

Stormwater Management Ordinance

Stream channels have been repeatedly reconfigured throughout the history of mining in Butte to keep water out of mining areas and, in some cases, to transport process waste away from milling areas. As part of the on-going effort to reduce contaminant transport to Silver Bow Creek, certain drainages on the Butte Hill, the MSD channel, and the Silver Bow Creek stream channel in LAO have been constructed to carry the design stormwater flow and their banks have been re-engineered and reinforced to ensure their long-term stability.

The allocation and settlement agreement between BSB and ARCO states that BSB will propose and support the adoption of a stormwater management ordinance to protect stormwater BMPs. As such, the draft ICIP states that BSB will file a resolution and draft and enact an ordinance which outlines the procedures, protocols and/or requirements to implement and enforce effective stormwater management within the Butte site. Key components of the stormwater ordinance are to include:

- Nationally-accepted design standards;
- Requirements that site-specific stormwater design plans be prepared and certified by registered engineers;
- Requirements that will allow maintenance and inspections by BSB personnel, including perpetual easements granted to BSB to conduct the inspections; and
- Provisions for enforcement against violators and appropriate penalties.

The draft Stormwater Management Ordinance was submitted to EPA and DEQ for review and comment prior to proposing a final ordinance for formal adoption by BSB. This ordinance is about to be enacted, or recently was enacted.

According to Rob Jordan, ARCO land manager, ARCO is currently in the process of transferring the remaining source area property owned by ARCO to BSB, so BSB will have control of nearly all properties in the BSPOU with stormwater structures (Jordan 2009). ARCO is also working toward getting access agreements and covenants established for the few remaining private pieces of property that have stormwater structures. Access was discussed above and restrictive land-use covenants are discussed below.

Restrictive Covenants

The draft ICIP separates the discussion of restrictive covenants based on land ownership: property owned by ARCO or BSB and property owned by a third party. According to the draft ICIP, restrictive covenants are presently in place for much of the BPSOU where response actions have or will occur, including source area property and other real property where stormwater conveyance and management structures are present. These covenants prohibit the unauthorized disruption of caps or other controls or engineered structures. Restrictive covenants have or will be filed in BSB property records and run with the title of the land.

According to the draft ICIP, restrictive covenants include the following typical provisions:

- a general covenant prohibiting the property owner from hindering, interfering with, or otherwise modifying any remedial actions that have been undertaken on the property;
- a covenant requiring the property owner to perform any property maintenance that may be required on the property; and
- a provision that permits the EPA and DEQ to enforce the obligations against the property owner.

The first restrictive covenant listed above addresses the need to protect the implemented remedy, which includes remediated source area caps, water conveyance structures, and monitoring wells. This protection is especially important for third-party private property. For example, during the preparation of the groundwater monitoring plan, EPA noted more than 450 wells within or in close proximity to the BPSOU. The plan identified approximately 144 wells that are potentially useful for monitoring; these are currently being sampled as part of the program and are shown on Figure 6-62. Most of these wells are located on ARCO or BSB property. However, as was the case for the BMFOU, some of these wells are located on third-party property and therefore require closer scrutiny to ensure their functionality for future groundwater monitoring. Restrictive covenants associated with the deeds to these properties would provide BSB another tool to enforce the protection of these well heads.

All source area property and other real property presently owned by ARCO on which any CERCLA stormwater structure is located is, or upon conveyance to BSB pursuant

to the ARCO/BSB allocation agreement, subject to covenants that restrict the use and development of the property to the appropriate land use. These are commonly referred to as either developable property covenants or dedicated use property covenants depending on the current and anticipated use of a particular piece of property. The draft ICIP provides representative examples of these. According to Rob Jordan, ARCO land manager, restrictive covenants have been or are in the process of being recorded at the county clerk and recorder's office for property being transferred from ARCO to BSB. As such, these covenants will be permanently associated with the property deed (Jordan 2009).

Over time, ARCO has conveyed certain source area property to third parties. In those conveyances, according to the draft ICIP, ARCO has included appropriate developable or dedicated use property covenants, as well as appropriate enforcement rights and remedies for EPA and DEQ, in the conveyance deeds. In future conveyances, quitclaim deeds will be used as the mechanism to apply restrictive covenants when property is conveyed.

Zoning Ordinance

BSB has adopted an updated Growth Policy, the city-county's future land use classification plan. The county plans to continue development of draft amendments to the existing zoning ordinance to implement land use changes specified in the updated Growth Policy. This includes re-zoning certain properties to open space to be consistent with future land use classifications and remedial action plans. According to the draft ICIP, amendments will also be drafted and adopted to complement the other ICs, such as the CGWAs, the excavation/dirt-moving protocols, and the stormwater management regulations to ensure land use development is consistent with remedial actions and their associated maintenance.

6.5.2.3 Informational Devices

Community Awareness and Education

An extensive community awareness and education program to manage lead, arsenic, and/or mercury exposure within Butte is an integral part of the county's RMAP (BSB 2010). This part of the program includes a range of education components to enhance and maintain community awareness of potential sources of and exposure risks to lead, arsenic, and mercury in and around homes (in soil and dust). The plan also describes approaches residents can take to avoid or limit their exposure. The community awareness and education program includes advertising and outreach, periodic mailings to property owners and residents, and distributing free educational materials to various target groups.

An important aspect of the education and outreach components addresses portions of homes that are seldom, if ever, visited. Addressing dust in non-living portions of a residence only when remodeling or other activities create an exposure pathway is based on the findings of the human health risk assessment completed in Walkerville (UOS 2003). The objective of this aspect of the program is to ensure that contaminated

dust is appropriately handled and disposed of by a responsible entity; in most cases this will be by an approved contractor. Educational materials are designed to ensure that home owners, remodeling contractors, and weatherization workers: (1) are aware of the potential presence of lead, arsenic, and/or mercury in the seldom-accessed portions of homes, (2) understand the importance of restricting access to those areas, (3) take measures to avoid tracking dust from those areas into the interior living space when access does occur, and (4) are provided with the proper contact information prior to implementing any remodeling effort.

Educational materials are provided to residents by BSB at the time any work is implemented (whether interior or exterior) as well as when building permits are sought for remodeling projects. The recommendations made to residents are based on the results of environmental sampling at their homes and specific information collected by BSB staff about their daily habits and activities. In addition to the education and outreach to the residents, BSB is specifically targeting remodeling contractors and weatherization workers as they may be exposed during their work. Education and awareness materials are also posted and available at local hardware and home improvement stores throughout Butte, in order to inform home owners performing their own "do-it-yourself" projects of potential risks (Powers 2010). Also, abatement protocols are designed to ensure that contaminated attic dust is not tracked into living spaces or inappropriately covered by insulation during remodeling.

Based upon discussions with BSB staff and the RPM, the community awareness and education program is fully implemented as a part of the RMAP (Malloy 2009, Sparks 2010).

Medical Monitoring

The County's RMAP includes medical monitoring and participation is encouraged through community outreach and education. Medical monitoring uses blood-lead and urinary-arsenic data to identify individuals who have concentrations of those elements above risk-based thresholds. The home of an affected person (or persons) undergoes immediate sampling and evaluation. Residential remediation is then performed if sampling determines that yard soil, interior living-space dust, or mercury vapor action levels are exceeded.

In cases of high arsenic concentrations in dust or soil, individuals may be tested for urinary arsenic levels. Exposure mitigation in the home will occur when residents have urinary arsenic levels exceeding risk-based criteria. Follow-up testing is conducted to confirm that the remedy has been successful and to determine what additional measures are required to reduce an unacceptable exposure.

As with the community awareness and education program, the medical monitoring program is fully implemented as a part of the RMAP (Malloy 2009, Sparks 2010).

Land Information Management and Availability

The BSB computer database/network allows the storage and retrieval of CERCLA-related data and information among BSB departments for all properties within the BPSOU. This network system allows the health, planning, and building permit departments to coordinate on the inter-related components of the ICs program (Malloy 2009). As demonstrated successfully throughout the country, state, county, and city governments have implemented computerized systems to track the status of properties that have undergone environmental sampling and restoration. Among other things, the county-administered database is used to keep track of properties sampled and properties cleaned up/not cleaned up as part of the selected remedy for the BPSOU. With the information contained in the system, a property owner or prospective buyer/developer who contacts the county can be advised of the status of the property and whether or not the property may need to be sampled during development. CERCLA-related information the county can provide includes analytical results and maps showing sampled locations, areas of remaining (in-situ) wastes, and the boundaries of remediated areas (Malloy 2009). According to the draft ICIP, the database/GIS provides:

- All data and other information obtained in connection with response actions performed within the Butte site by ARCO or BSB or any other person or governmental entity.
- All data and other information obtained in connection with operation and maintenance activities within the Butte site, performed by ARCO or BSB, Data will be recorded, stored, and managed in a separate database.
- All data and pertinent information compiled as part of the implementation of the BRES.
- All data and other information obtained regarding health in connection with the implementation of the Multi-Pathway Program by ARCO or BSB, subject to privacy access policies related to health information.
- All data and information relating to applicable requirements under the Growth Policy and/or Zoning Ordinance.
- All data and information relating to CGWAs.
- All data and information relating to applicable real property use restrictions, covenants and obligations.

For this operable unit, BSB provides GIS services and maps to EPA, DEQ, and ARCO and their employees, agents, representatives, and contractors upon request and at no additional charge or expense (BSB/ARCO 2009). According to the BSB reclamation specialist, the database/GIS is operational and providing the necessary information (Malloy 2009). In addition, AR is working on upgrades to this system.

Fencing and Land-Use Posting

The Selected Remedy for the BPSOU requires the installation of fencing or use-posting to prevent adverse impacts to the remedy. Where private landowners require fences or signage for legitimate reasons relating to the prevention of these impacts, the SDs are required to provide them (EPA 2006a).

According to the draft ICIP, the Group 1 SDs will construct and install appropriate signage or fencing upon request by EPA, to support the work required under the CD. This does not apply to property owned or controlled by the Group 2 SDs (railroad group) (BSB/ARCO 2009). Examples of where signage or fencing may be required include the need to address safety issues associated with construction or where community interest supports the need for explanatory signs. Additionally, fencing may be appropriate to prevent unauthorized use and to control access to source areas or stormwater conveyance/retention structures.

During the interviews, BSB personnel and the RPM indicated that the installation of appropriate signage and fencing has occurred as needed throughout the course of removal and remedial work at the BPSOU (Malloy 2009, Sparks 2010).

6.6 Site Inspection

EPA and stakeholder representatives attended a site inspection of key features at the BPSOU on October 6, 2009. The site tour consisted of an overview of the groundwater collection and treatment system at LAO, and a tour of representative reclaimed source areas on the Butte Hill. Site photos can be found in Appendix A. Three sites were visited: The Minnie Irvine which was stable with minor issues, the Little Mina which was stable but requiring vegetation improvement due to weeds and some barren areas, and the Otisco which is a State of Montana Abandoned Mines Program site which had a reclaimed cap which now is in poor condition. All source area sites are being inspected in turn through the BRES program. Appendix D includes the BRES inspection field forms for all of the source areas evaluated to date.

At LAO, the site inspection consisted of a tour of the lime addition building and the open ponds used for settling and polishing the treated water. Sludge is currently removed using a floating dredge and then allowed to settle and dry in a nearby location. Because the system is a full-scale pilot and is undergoing design improvements, the scope of the inspection was limited to the field tour, and items on the five-year review inspection checklist were not yet relevant. This should be reevaluated in the next five-year review.

Section 7
Technical Assessment

7.1 Question A: Is The Remedy Functioning As Intended By The Decision Documents?

Yes, with the qualifications as noted below.

Remedial Action Performance

Solid Media

Residential Yard/RMAP Assessment. The implementation of the RMAP continues to remove contaminated soil, dust, and other material from residential properties throughout Butte. Several non-fundamental modifications to the selected remedy for residential cleanup have been incorporated into the RMAP. These changes include modification of the sampling depth from a single depth interval of 0 to 2 inches to a multi-depth interval of 0 to 2 inches, 2 to 6 inches, and 6 to 12 inches; the removal depth from residential yards areas has been modified from 18 inches to 12 inches to be consistent with national EPA guidance (EPA 2003); and including an additional 2 years and 5 years to the assessment and remediation of residential properties, respectively. Due to these changes, it is recommended that an ESD be prepared to capture these changes to the ROD.

The RMAP is being implemented as written. Continued progress on a yearly basis, in accordance with the schedule contained in the RMAP, is being accomplished.

The yard/attic removal and cleanup program has shown signs of success based on blood lead test results. Blood lead concentrations indicate a steady decline from 1990 through December 2009. In 2008 and 2009, 995 blood tests were performed and none of the tests had results greater than 9.9 µg/dL. Furthermore, the Butte-Silver Bow Health Department is in the process of systematically sampling every residential property within the BPSOU.

Source Area Maintenance/BRES Assessment. The BRES monitoring and maintenance program has been assessing the performance of previously reclaimed non-residential areas throughout Butte since the start of the program in 2007. The BRES evaluations are ongoing. They have identified trigger items needing corrective measures up to 61 percent of the time (see Tables 6-4 and 6-5). Follow-up measures and their progress have not been traced. Minor repairs and corrections are taking place (such as reseeding, gully repairs, and fence mending), however the regulators are not receiving plans for work which requires engineering. Some actions are not taking place within the specified timeframe.

Limited documentation is available that identifies progress towards implementing the recommendations provided by the BRES program. It is recommended that adequate tracking be established to maintain records showing that corrective actions have been taken to maintain the caps and meet the program schedule. Engineered BMP

solutions for stormwater should also be tracked. At a minimum, these records should use the existing aerial photographs of each site to clearly document specific locations where corrective actions were implemented. If significant construction work is done, as-built drawings should be included in the records. This information will then become a record for the following BRES evaluation cycle.

Concerns raised during community interviews and review of the BRES field forms (see Appendix D) highlighted the link between the BRES and the Surface Water Management Program. On many source areas, cap erosion was occurring due to storm water runon/runoff issues that were originating outside of the immediate site boundaries. If a source area is determined to have erosion problems due to storm water routing, an engineering evaluation is required. Appendix A of the BRES document indicates that the BRES and the Surface Water Management Program are interactive. Therefore, the engineering evaluation will need to coordinate with any municipal storm water construction to address such issues.

Surface Water

Major portions of the selected remedy for surface water have not yet been fully implemented. Mine waste and tailings were removed from the active floodplain of Silver Bow Creek in 1997 (through the LAO removal action), along with capture and treatment of contaminated groundwater and other remedial actions (such as further removal of sediments and streamside waste as indicated in the ROD). These have largely mitigated the threat of a catastrophic failure or release of those tailings downstream, and also improved chronic releases to the stream of hazardous substances. Water quality improvements have been achieved, as the figures in Section 6 show. During base flow, Silver Bow Creek is now meeting the chronic aquatic water quality standards for metals such as cadmium and zinc most of the time, and is moving toward compliance for copper.

Storm water still severely impacts Silver Bow Creek with mining-related COCs, particularly copper, from the Butte Hill. This causes exceedances of acute aquatic life standards. The highest concentrations of dissolved copper appear to be during spring snowmelt events. It is suspected that soluble copper-laden salts accumulate during the fall and winter months and are flushed from the system during these first snowmelt events.

The frequency and magnitude of the copper exceedances during runoff events are as much as ten to hundreds of times above the acute aquatic life standards. The largest increase in COC concentrations occurs between mainstem stations SS-04 and SS-05, which includes storm sewer tributary inputs from MSD and Buffalo Gulch (the east side of the Butte Hill). Additionally, there are significant COC inputs from the reach extending from SS-05 to SS-05A that passes through the slag canyon area. From the data presented in Section 6, it appears that these high COC concentrations are maintained as Silver Bow Creek flows downstream through the operable unit. However, downstream of the slag canyon area (station SS-06A through SS-07), there

does not appear to be any significant regular additions of COCs during storm events. This is likely because storm water detention basins in Missoula Gulch are able to control storm water for most storms, and only release water during larger events.

The graphs presented in Section 6 clearly show that copper is most problematic. Median total recoverable copper concentrations in storm water in Silver Bow Creek, from SS-05 downstream to SS-07, are typically greater than 10 times the acute standard. In the same reach, the mean values for dissolved copper generally exceed the acute standard by at least 1.5 times. Median total recoverable zinc concentrations are less than 3.8 times the standard. It is anticipated that as copper exceedances are mitigated, concentrations of the other mining related COCs will also decrease.

Discharge of the municipal wastewater treatment plant (SS-STP) just upstream of SS-07 has a significant impact on water quality in Silver Bow Creek and is not subject to the Superfund remedy. BSB is currently upgrading the wastewater treatment plant under an Administrative Order on Consent (DEQ 2009), and improvements are expected to be complete by 2017.

The BSB storm water conveyance system is also a clear source of contamination to Silver Bow Creek. Improvements to both of these water sources are needed to improve overall water quality in Silver Bow Creek. New storm water BMPs targeting the Butte Hill are currently in the preliminary evaluation phase.

To reduce sediment problems associated with Superfund and non-Superfund source areas, BSB and Atlantic Richfield are implementing Curb and Gutter Programs that will be installed throughout the Butte Hill. Miles of curb and gutter have been or will be installed in 2010 and 2011 to reduce storm water runon/runoff problems.

Groundwater

Portions of the selected remedy, such as performance of the Butte Treatment Lagoons system, do provide a positive outlook about groundwater control and capture, considering the system usually treats and removes COCs to well below the required discharge standards. In the short-term, the system has been functioning well with few interruptions. Long-term operation and issues that may impact performance, such as chemical addition, sludge removal, contingencies for upsets, etc., are being addressed in remedial design. Designing a fully functional and effective capture system is important for the success of the BPSOU remedy. The optimization of the groundwater capture system is in progress.

Implementation of Institutional Controls and Other Measures

An area of controlled groundwater access and educational ICs are in place and provide interim protectiveness while a more comprehensive IC plan is pending approval. It is anticipated that once the ICs are fully implemented that they will be effective in maintaining the protectiveness of the remedy.

7.2 Question B: Are The Exposure Assumptions, Toxicity Data, Cleanup Levels, and Remedial Action Objectives Used At The Time of Remedy Selection Still Valid?

Yes. The exposure assumptions, toxicity data, cleanup levels, and RAOs used at the time of remedy selection are still valid.

Changes in Standards and TBCs

An ARAR review was conducted for the BPSOU as a part of this five-year review. In accordance with the preamble to the National Contingency Plan, ARARs are frozen at the time of the ROD unless "a new or modified requirement calls into question the protectiveness of the selected remedy" (55 federal register [FR] 8757 [March 8, 1990]). The findings of the ARARs review are found in the ARARs Review Technical Memorandum (CDM 2010a), which is attached to Volume I of the overall five year review report.

Since signing of the ROD in September 2006 for the BPSOU, both the State and Federal aquatic and human health standards have not changed. The current State of Montana water quality standards (Circular DEQ-7, published in 2008) are reflective of the surface water quality standards identified in Section 8, Table 8-2 of the BPSOU ROD.

Changes in Exposure Pathway and Exposure Assumptions

Based on the evaluation included in the review of the human health and ecological risk assessments, no additional exposure pathways were identified during this review that should be addressed in order to evaluate remedy protectiveness.

A review of exposure assumptions used in the BPSOU site risk assessments compared to current guidance indicates that previous exposure assumptions remain conservative and reasonable in evaluating risk and developing risk-based cleanup levels (see Tables 7-1 and 7-2).

Table 7-1
Comparison of Toxicity Values Used for the BPSOU

COC	Noncancer Oral RfD (mg/kg-day)				Oral Cancer Slope Factor (mg/kg/day)-1			
	Baseline Risk Assessments		2010		Baseline Risk Assessments		2010	
	Value	Ref	Value	Ref	Value	Ref	Value	Ref
Arsenic	3.00E-04	1,4	3.00E-04	6	1.5	1,4	1.5	6
Lead	NA	--	NA	--	NA	--	NA	--
Manganese	Not evaluated	--	1.4E-01	6	Not evaluated	--	NA	--
Mercuric Chloride	3.00E-04	3,5	3.00E-04	6	NA	--	NA	--
Elemental Mercury	NA	--	1.6E-04	7	NA	--	NA	--
	Non-cancer Inhalation Criteria				Cancer Inhalation Criteria			
	(mg/kg-day)		mg/m^3		(mg/kg/day)-1		$\mu g/m^3$	
Arsenic	NA	--	1.5E-05	6	15	1,4	4.3E-03	6
Lead	NA	--	NA	--	NA	--	NA	--
Manganese	Not evaluated		5.0E-05	6	Not evaluated		NA	--
Mercuric Chloride	NA	--	3.0E-05	7	NA	--	NA	--
Elemental Mercury	8.6E-05	3,5	3.0E-04	6	NA	--	NA	--

References (Ref)
NA = Not Available

1 EPA 1997. Butte Priority Soils Operable Unit. Baseline Risk Assessment for Arsenic.
2 IEUBK Model was used to evaluate exposure to lead
3 EPA 2003. Final Human Health Risk Assessment, Walkerville Residential Site
4 IRIS 1991. EPA Integrated Risk Information System Database (IRIS).
5 IRIS 2003. EPA Integrated Risk Information System Database (IRIS).
6 IRIS 2010 EPA Integrated Risk Information System Database (IRIS). Online database at: http://www.epa.gov/IRIS/search.htm
7 EPA Regional Screening Level Table December 2009

Note: Although manganese was not a COC at the time of the risk assessment it is presented on this table due to the lower inhalation reference dose currently available.

Table 7-2
IEUBK Assumptions

	1994 HHRA		2010 IEUBK	
Air Data				
Vary Air Conc. By Year	No, not varied		No, not varied	
Outdoor Air Lead Concentration	0.2 µg/m^3		0.1 µg/m^3	
Indoor Air Lead Concentration (Percentage of Outdoor Air	30%		30%	
Lung Absorption	32%		32%	
Age Specific Data for Air Pathway:				
Age Range	**Ventilation Rate**	**Time Spent Outdoors**	**Ventilation Rate**	**Time Spent Outdoors**
0-1	2.0 m^3/day	1 hr/day	2.0 m^3/day	1 hr/day
1-2	3.0 m^3/day	2 hr/day	3.0 m^3/day	2 hr/day
2-3	5.0 m^3/day	3 hr/day	5.0 m^3/day	3 hr/day
3-4	5.0 m^3/day	4 hr/day	5.0 m^3/day	4 hr/day
4-5	5.0 m^3/day	4 hr/day	5.0 m^3/day	4 hr/day
5-6	7.0 m^3/day	4 hr/day	7.0 m^3/day	4 hr/day
6-7	7.0 m^3/day	4 hr/day	7.0 m^3/day	4 hr/day
	Walkerville RA	Alternate		
Drinking Water Rate				
Lead Concentration in Drinking Water Constant	4 µg Pb /L	Water Data not Varied	4 µg Pb /L	
Age Specific Data for Water Pathway:				
Age Range:	**Water Consumption**		**Water Consumption**	
0-1	0.20 l/day		0.20 l/day	
1-2	0.50 l/day		0.50 l/day	
2-3	0.52 l/day		0.52 l/day	
3-4	0.53 l/day		0.53 l/day	
4-5	0.55 l/day		0.55 l/day	
5-6	0.58 l/day		0.58 l/day	
6-7	0.59 l/day		0.59 l/day	
Use Alternate Water Values?	No		No	
Soil Data				
Percentage of soil/dust intake	**45% soil ingestion**	**55%dust Ingestion**	**45% soil ingestion**	**55%dust Ingestion**
Age Range	**Total Soil + Dust Intake**		**Total Soil + Dust Intake**	
0-1	0.043		0.085	
1-2	0.108		0.135	
2-3	0.108		0.135	
3-4	0.108		0.135	
4-5	0.085		0.1	
5-6	0.075		0.09	
6-7	0.070		0.085	
Soil to dust transfer Factor	0.24 (Site Specific)		0.24 (Site Specific)	
GI Values/Bioavailability Information				
Absorption Fraction for Soil	See below		30% default (12% site specific)	
Absorption Fraction for Dust	See below		30%	
Absorption Fraction for Water			50%	
Absorption Fraction for Diet			50%	

Table 7-2
IEUBK Assumptions

	1994 HHRA		2010 IEUBK	
GI Method Bioavailability	Non-linear Passive Method: Soil			
Passive Absorption Coefficient	0.02			
Active Absorption Coefficient	0.1			
Absorption Half-Saturation Coefficient (µg/L)	1000			
Residence Time in GI tract (days)	1			
GI Method Bioavailability	Non-linear Passive Method: Dust			
Passive Absorption Coefficient	0.05			
Active Absorption Coefficient	0.25			
Absorption Half-Saturation Coefficient (µg/L)	1000			
Residence Time in GI tract (days)	1			
Dietary Lead Intake				
Age Range:	**Dietary Lead Intake (µg/day)[1]**	**Dietary Lead Intake (µg/day)[2]**	**Model default Dietary Lead Intake (µg/day)**	
0-1	5.88	1.82	2.26	
1-2	5.92	1.90	1.96	
2-3	6.79	1.87	2.13	
3-4	6.57	1.80	2.04	
4-5	6.36	1.73	1.95	
5-6	6.75	1.83	2.05	
6-7	7.48	2.20	2.22	
Distribution values:				
GSD	1.68		1.6 Default (1.68 Site Specific)	
Cutoff	10 µg Pb/dl		10 µg Pb/dl	

Notes:
1. Model Defaults used in the 1994 Lead Risk Assessment
2. Region 8 Dietary Lead Intake rates based on Total Diet Studies by Gunderson (1995) and Bolger et. al. (1996). These values were used in the Walkerville HHRA.

hr/day = hours per day
L/day =liters per day
µg/m^3 = micrograms per cubic meter
µg Pb /L = micrograms lead per liter
µg Pb/dL = micrograms lead per deciliter
µg/day = micrograms per day

Changes in Toxicity and Other Contaminant Characteristics

Non-cancer toxicity criteria (references doses and reference concentrations) and cancer slope factors and inhalation unit risks were examined for any changes that may affect protectiveness of the remedy. The review found:

- Criteria for oral exposure pathways have not changed.
- Criteria for inhalation exposure to **arsenic** have changed, but do not significantly change calculated arsenic action levels.

- Criteria for inhalation exposure to **mercury** have changed; a recalculation of the action level using current recommendations results in a slight increase in the mercury action level in air from 0.43 µg/m^3 to 0.63 µg/m^3.

- The criteria for inhalation exposure to **manganese** changed. EPA's risk assessor reviewed the screening level evaluation of manganese exposure and concluded that the screening level of 12,609 parts per million for manganese remains protective and appropriate.

The exposure assumptions for exposure to **lead** were evaluated separately from the other COCs through evaluation and use of the most recent version of the IEUBK model. The PRG for lead was recalculated using the most updated version of the IEUBK model (Version 1.1 Build 11) with site-specific parameters included – 12 percent bioavailability of lead in soil, a soil-to-dust transfer coefficient of 0.24 and a geometric standard deviation of 1.68. The recalculated estimated PRG was 1,174 mg/kg, a value essentially the same as the current remediation goals of 1,200 mg/kg. According to the *Superfund Lead-Contaminated Residential Sites Handbook* (EPA 2003), a model-derived soil lead remedial goal calculated to be between 400 mg/kg to 1,200 mg/kg does not require further review by the Lead Sites Consultation Group.

The results of blood lead tests collected as part of the voluntary medical monitoring program have shown a downward trend for several years, with no blood lead levels reported above 10 ug/dL in the last two years. These data suggest that exposures to lead are decreasing in response to the Superfund actions at the BPSOU.

Thus, this review concludes that the actions levels for lead, arsenic, and mercury established in past risk assessments are still appropriate and protective of human health.

Expected Progress Towards Meeting RAOs

At the BPSOU, most exposure pathways that could result in unacceptable risks are being controlled to the extent possible considering the interim state of remedy implementation. Despite several past response actions completed at the BPSOU, covering more than 400 acres, not all remediation components or goals have been achieved. The RMAP has not addressed all residential yards yet, potential exposure to lead and arsenic in residential soil and interior dust may continue to pose a risk to human health in areas that have not yet been sampled or cleaned up. The program anticipates completing these goals within ten years of the Effective Date of the Consent Decree or about 2020. In the interim, parcels have been prioritized to remediate places with sensitive populations first. For non-residential areas, engineering controls effectively isolate identified waste materials, thus preventing human and environmental exposures.

The Butte CGWA protects human health and the environment by preventing the consumption and spread of contamination from groundwater. In addition BSB has adopted an ordinance requiring the majority of local water users to obtain their

domestic water supply from the BSB municipal water system instead of from local wells. To the extent a CGWA will not prevent the use of existing wells, the BSB Water Quality District is to implement an education, testing, and well abandonment program.

Arsenic and metal contaminants in alluvial groundwater are now largely prevented from reaching Silver Bow Creek through a comprehensive groundwater control, capture, and treatment system, with the result that chronic water quality standards are being met most of the time during base flow conditions. Isolated, lesser sources of contaminant loading to Silver Bow Creek from groundwater are being identified and addressed. The capture system requires further evaluation and optimization to address current ground water conditions. Storm water continues to be a significant source of contaminant loading to Silver Bow Creek during runoff events.

Finally, ecological monitoring may need to be updated to track the success of the remedy in attaining the goal of a self-sustaining fishery. Inputs of mine-related waste from the BPSOU may be of concern for ecological receptors. Methods for conducting ecological risks assessments have advanced considerably since the last assessments within the BPSOU.

7.3 Question C: Has Any Other Information Come To Light That Could Call Into Question The Protectiveness Of The Remedy?

No, there is no other information at this time that calls into question the protectiveness of the remedy.

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Section 8
Issues

Based on information collected during preparation of this BPSOU five-year review report, the following issues were identified and summarized in Table 8-1.

Table 8-1
BPSOU Issues Summary

Issue No.	Issue	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
1	Changes have been made to the Selected Remedy for Solid Media (sampling depths and removal depth)	No	No. These changes make the program more effective and/or bring the program into consistency with other residential yard cleanup programs.
2	Some corrective actions identified during BRES monitoring are not taking place in a timely manner. Corrective action work plans are not being developed and sent to EPA for approval before implementation. Corrective actions need to be implemented on an annual basis to maintain cap integrity.	No. Caps generally remain in-place as a barrier between mine waste and humans.	Yes – If previously reclaimed areas deteriorate, a potential exposure pathway may be generated that could increase human health and environmental risks.
3	There are gross exceedances of acute aquatic life standards in Silver Bow Creek during storm events. Copper exceedances of acute aquatic life standards are tens and hundreds of times greater than the standard.	Yes	Yes. If runoff from the BPSOU cannot be improved, this could prevent establishment of a self-sustaining fishery and impact downstream OUs.
4	The BSB storm sewer system is aging and contributing to contamination in Silver Bow Creek. Monitoring of storm system point sources from Superfund and non-Superfund sources will be required as BMP's are implemented, to determine where the need exists for additional work on the storm water system.	Yes. The storm water system may be a source of contaminants and a conveyor of these contaminants to Silver Bow Creek.	Yes. It is recognized that the storm water conveyance system is not completely a Superfund issue, but monitoring, coordination with BSB on its implementation of its improvement plan, and continued BMP evaluation for specific mine waste-related issues is important for achievement of remedial goals.

Table 8-1
BPSOU Issues Summary

Issue No.	Issue	Affects Current Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
5	Interim institutional controls are in place. Specific, key ICs include: (1) earth moving protocols (not in place); (2) storm water ordinance (in place); (3) zoning ordinances (in place); (4) restrictive covenants on caps and other engineered structures (in place); and, (5) controlled groundwater area (in place).	No. Initial IC implementation efforts are encouraging and should be pursued.	Yes. The ICs will be critical to ensure waste-left-in place is not disturbed, that excavated mine waste is properly disposed of, and that storm water structures function as designed. Finalization of the ICIP plans is important.
6	Ecological monitoring does not track the success of the remedy in attaining the goal of a self-sustaining fishery in Silver Bow Creek.	No	Yes. Ecological monitoring may show issues not detected by current monitoring programs.

Section 9
Recommendations and Follow-Up Actions

Table 9-1 presents recommendations and follow-up actions for the BPSOU.

Table 9-1
Recommendations and Follow-Up Actions

Issue	Recommendation and Follow-Up Action	Party Responsible	Oversight Agency	Milestone Date
1	Issue a decision document to acknowledge changes in sampling and removal depths for residential properties.	EPA/DEQ	EPA/DEQ	December 31, 2011
2	Develop a program to follow up on BRES-related recommended corrective actions and other O&M for reclaimed areas. Include corrective action tracking, annual work plans, updates to the source area database and an annual audit of the schedule and accomplishments.	BSB	EPA/DEQ	December 31, 2011
3	Construct new BMPs on the Butte Hill to control runoff. Continue water quality monitoring during storm events to measure progress and long- term trends in storm water quality. Include careful monitoring and coordination with BSB with the storm water conveyance system in this process.	Atlantic Richfield/BSB	EPA/DEQ	December 31, 2014
4	Evaluate and optimize municipal storm water collection system in concert with upgrades to the Superfund collection and treatment system.	Atlantic Richfield/BSB	EPA/DEQ	December 31, 2014
5	Implement an enforceable Institutional Control Plan.	Atlantic Richfield/BSB	EPA/DEQ	December 31, 2014
6	Update the monitoring plan to include ecological monitoring.	Atlantic Richfield	EPA/DEQ	December 31, 2014

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Section 10
Protectiveness Statement

The remedy at OU8 is not protective because aquatic life standards are not met in the stream. Environmental exposures continue. Short-term protectiveness is provided for all other potential exposures by the recently enacted CGWA, information/educational ICs, and engineering and access controls of source areas. To ensure protectiveness, remedy implementation must be completed, and municipal storm water contributions to Silver Bow Creek must be abated.

Releases of arsenic and heavy metal contaminants in alluvial groundwater to Silver Bow Creek have been reduced through a comprehensive groundwater control, capture, and treatment system, such that water quality standards are being met much of the time during base flow conditions. The design of a more effective capture system is very important for completion of the surface water component of the remedy. Storm water continues to be a significant source of contaminant loading to Silver Bow Creek during runoff events, and additional remedial actions are necessary.

The RMAP program will continue to obtain access to residential properties within the BPSOU that have not previously been sampled to complete indoor and outdoor assessments (i.e., residential yard soil, indoor and outdoor dust, attic dust, lead-based paint, drinking water, and mercury vapor) and perform clean up actions where necessary. The program anticipates completing these goals by about 2020.

For non-residential areas, engineering and institutional controls effectively isolate identified waste materials, thus preventing human and environmental exposures. Protection of human health is expected to be strengthened as the BRES evaluation and cover maintenance programs are improved and mature, and as the IC Plan is fully implemented, tested, and enforced. It is important that follow-up on BRES findings be tracked and implemented.

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Section 11
Next Review

The next five-year review for the BPSOU is required by September 30, 2015, five years from the date of this review.

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Section 12
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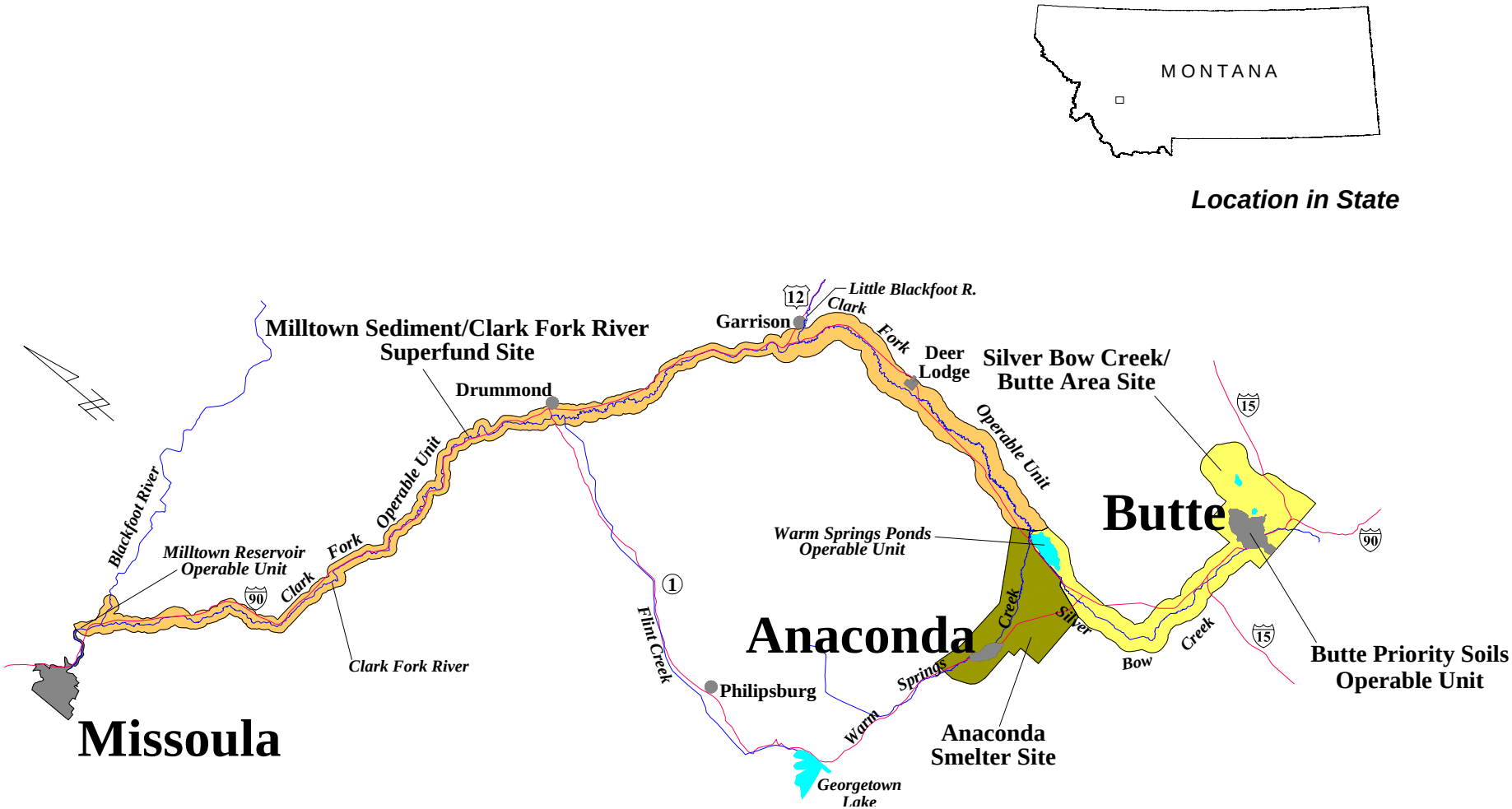

Figure 3-1.
Upper Clark Fork Basin NPL Sites
Silver Bow Creek/Butte Area NPL Site
Five-Year Review, 2010

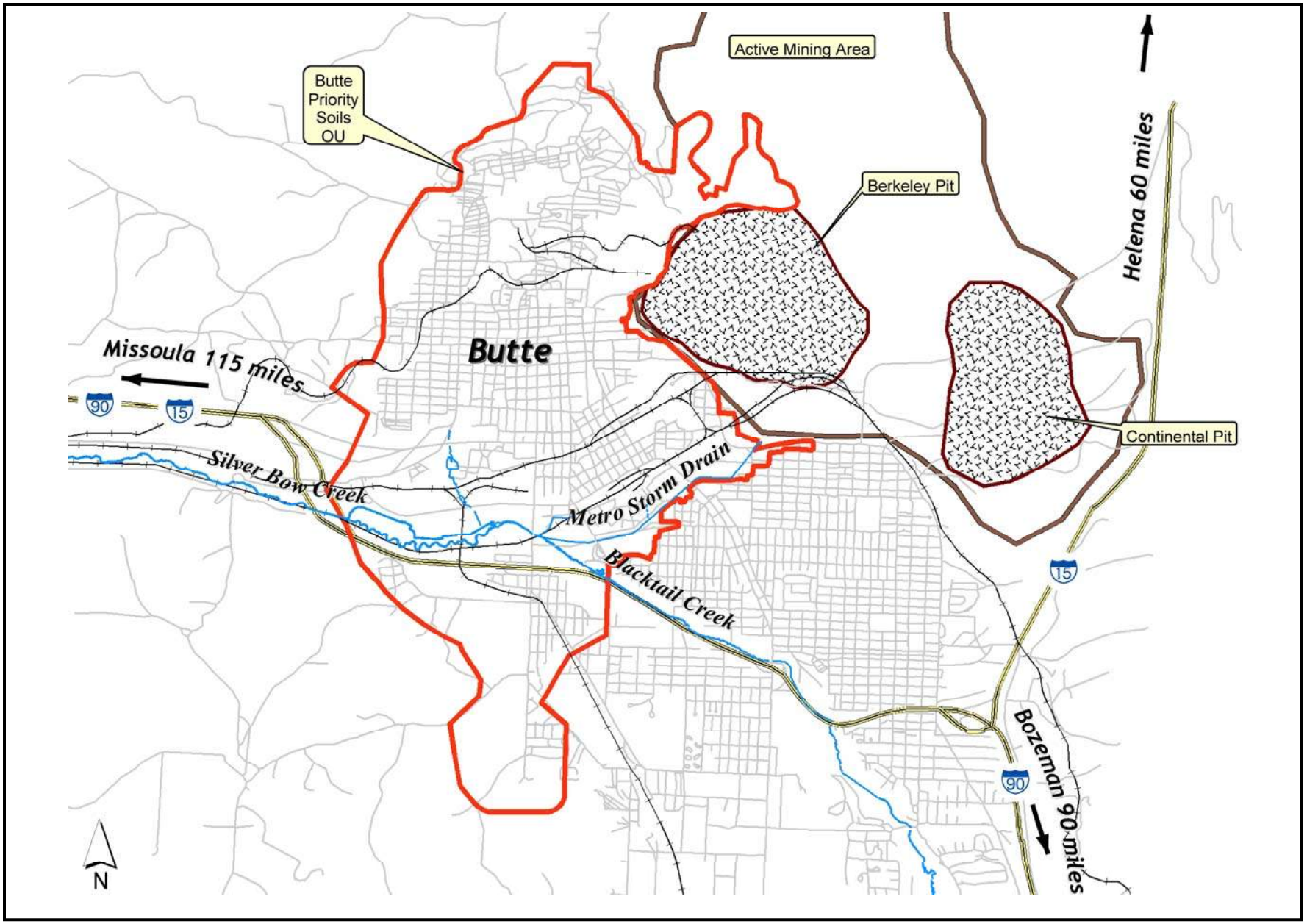

Figure 3-2.
Butte Priority Soils OU Site Map
Silver Bow Creek/Butte Area NPL Site
Five-Year Review, 2010

Figure 6-1
Butte Treatment Lagoons Performance - Arsenic
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

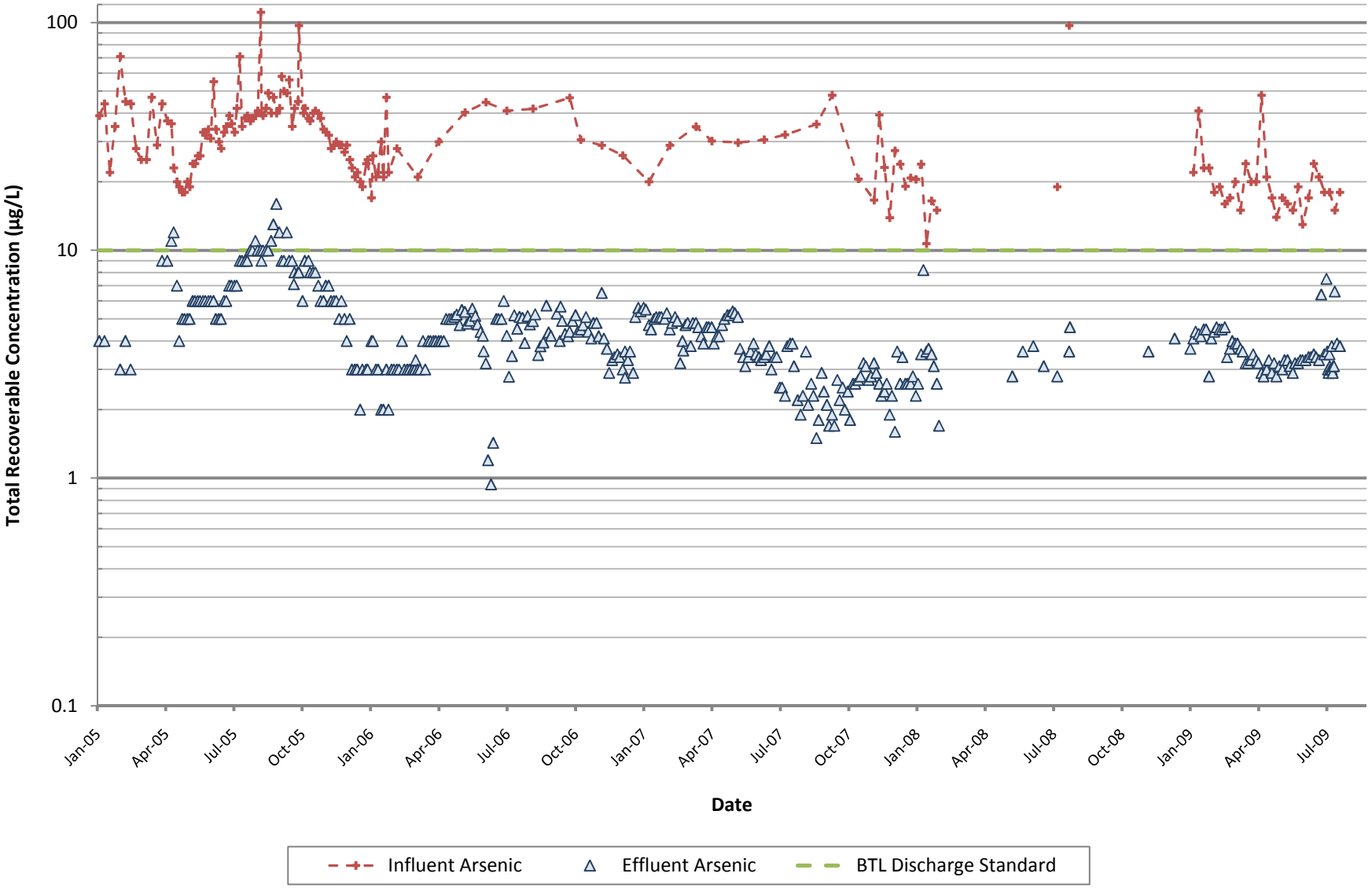

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Figure 6-2
Butte Treatment Lagoons Performance - Cadmium
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

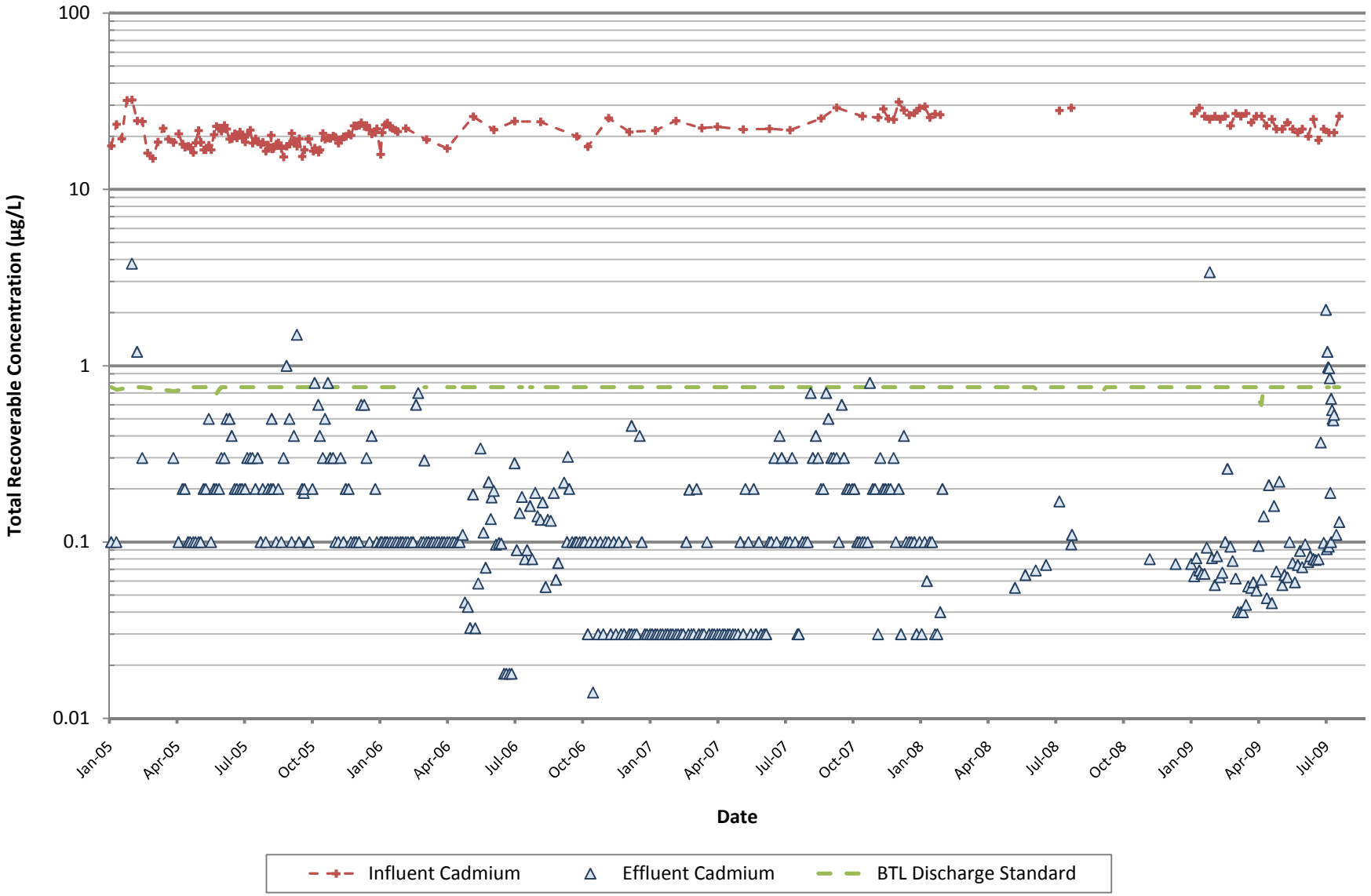

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Figure 6-3
Butte Treatment Lagoons Performance - Copper
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

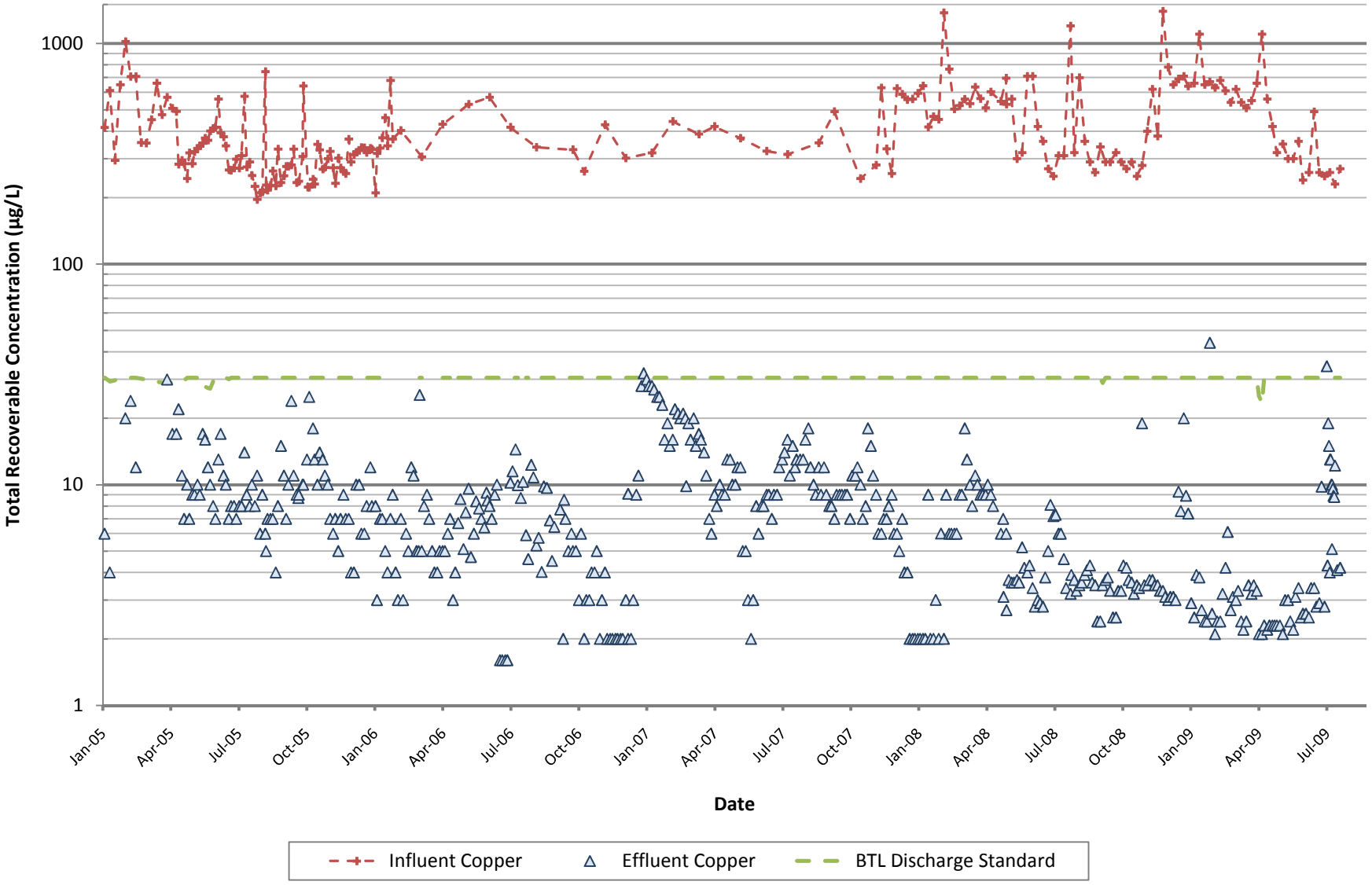

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Figure 6-4
Butte Treatment Lagoons Performance - Lead
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

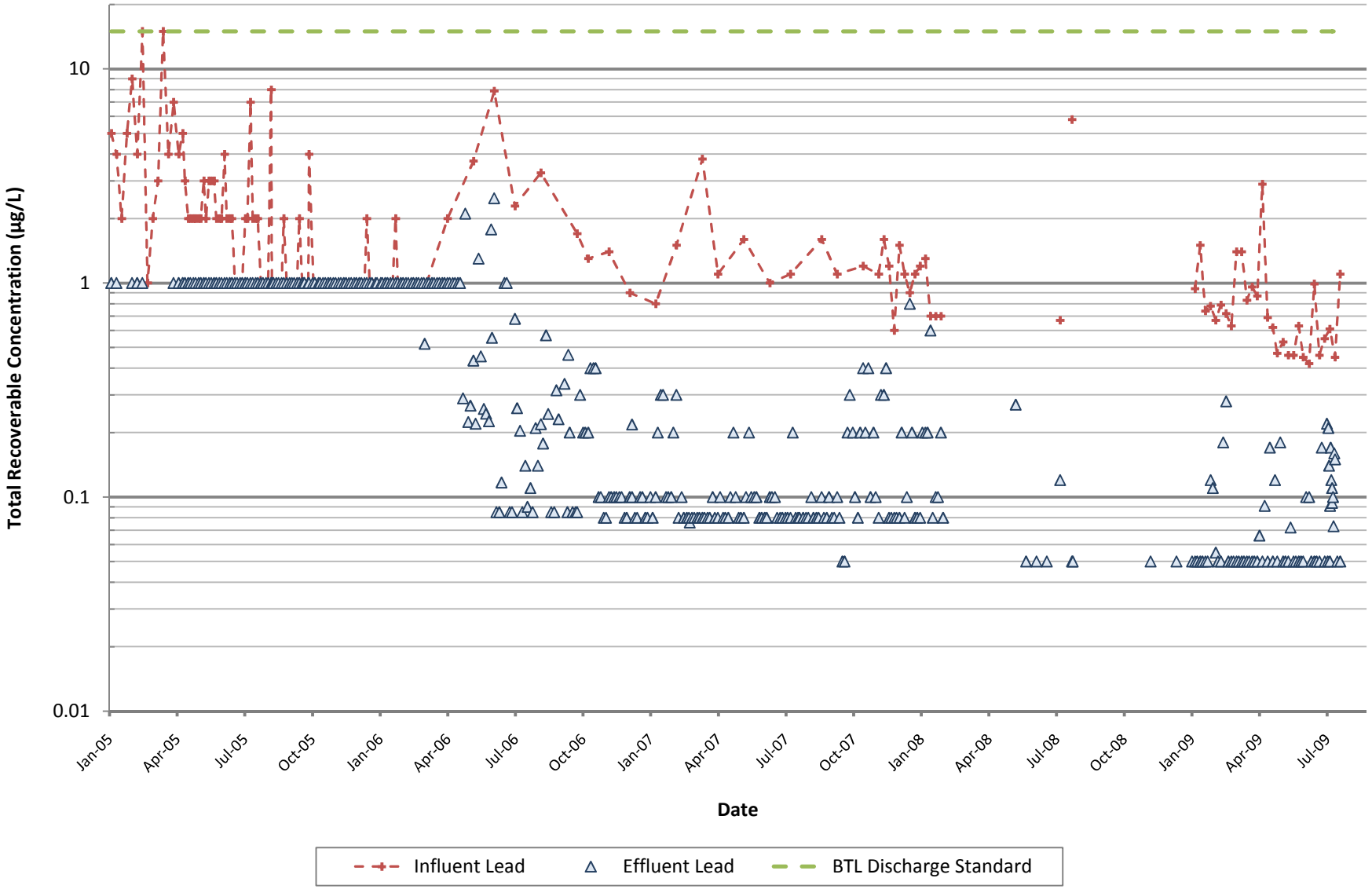

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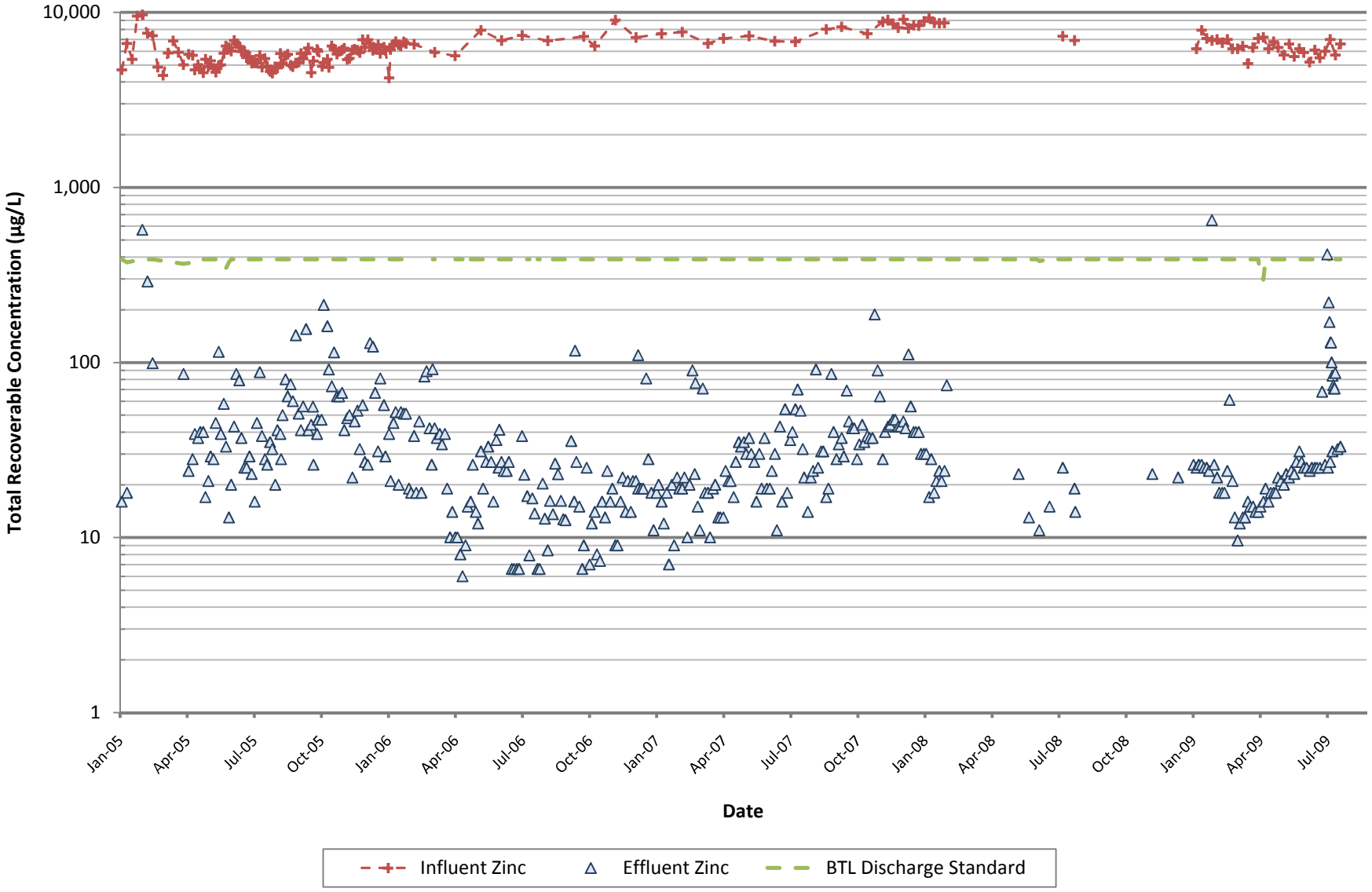
Figure 6-5
Butte Treatment Lagoons Performance - Zinc
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review



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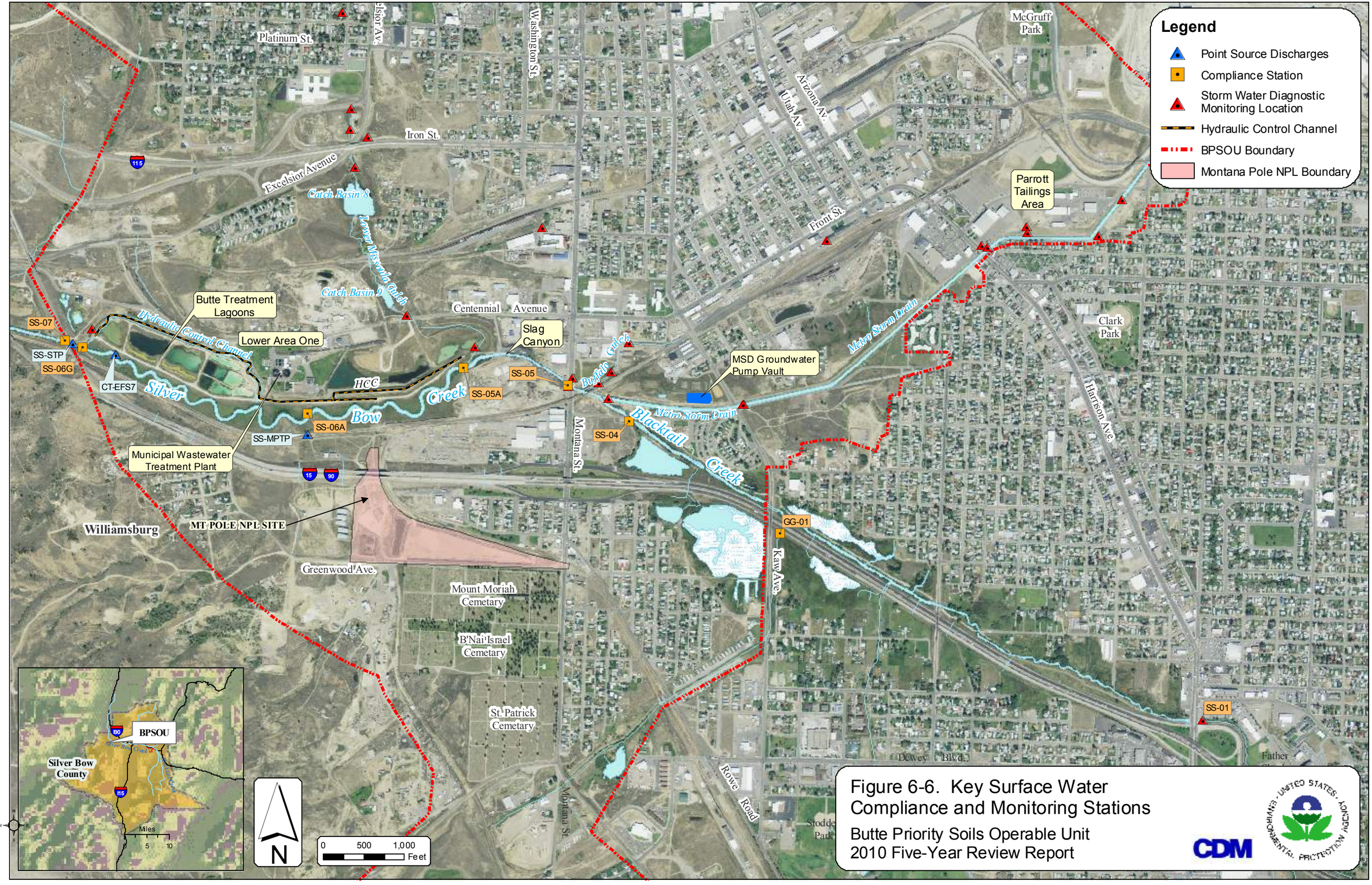

Figure 6-6. Key Surface Water Compliance and Monitoring Stations

Butte Priority Soils Operable Unit
2010 Five-Year Review Report

Figure 6-7
Base Flow Copper Concentrations and Chronic Standard at SS-07
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

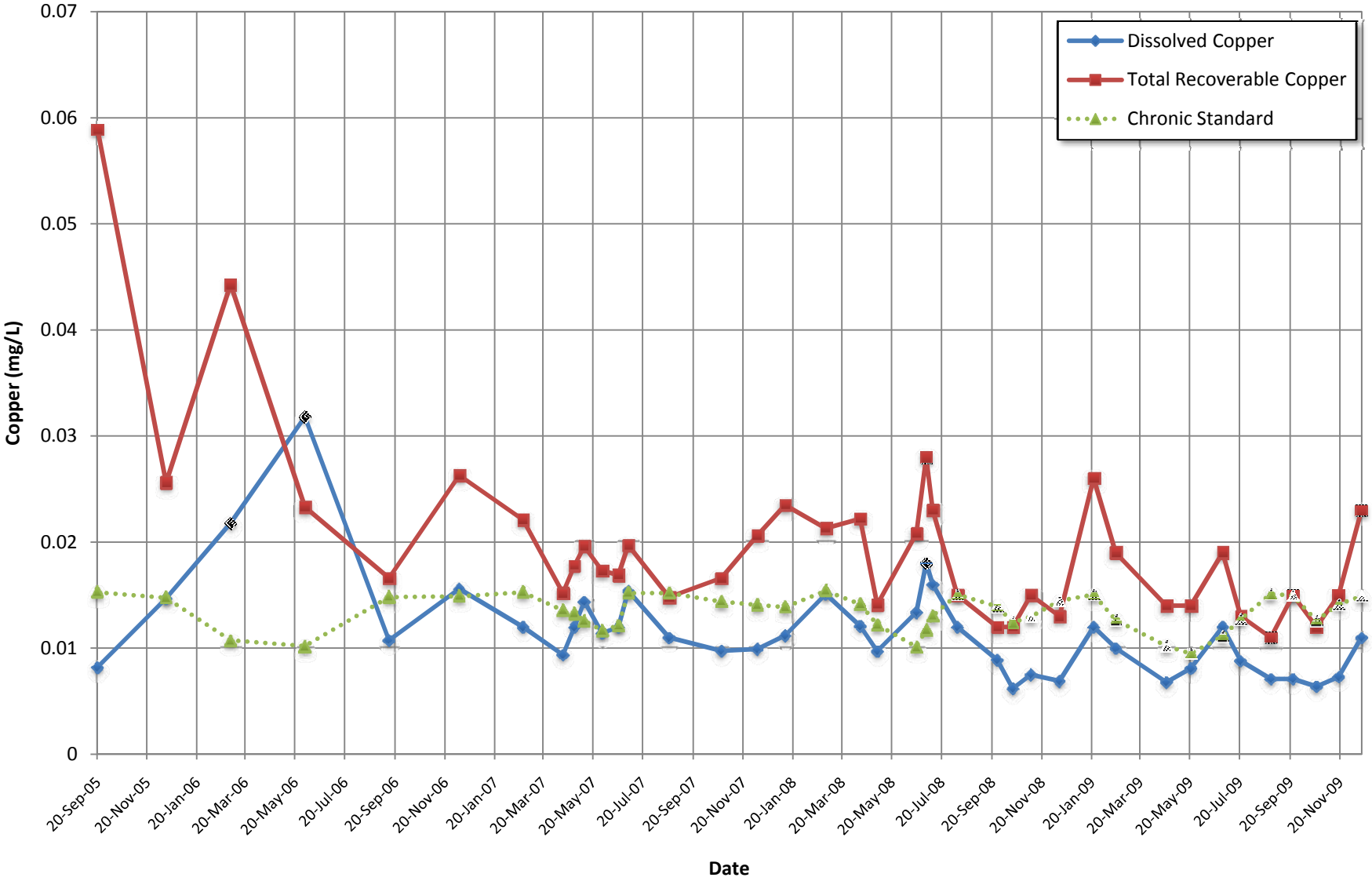

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Figure 6-8
Base Flow Copper Concentrations and Chronic Standard at SS-06G
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

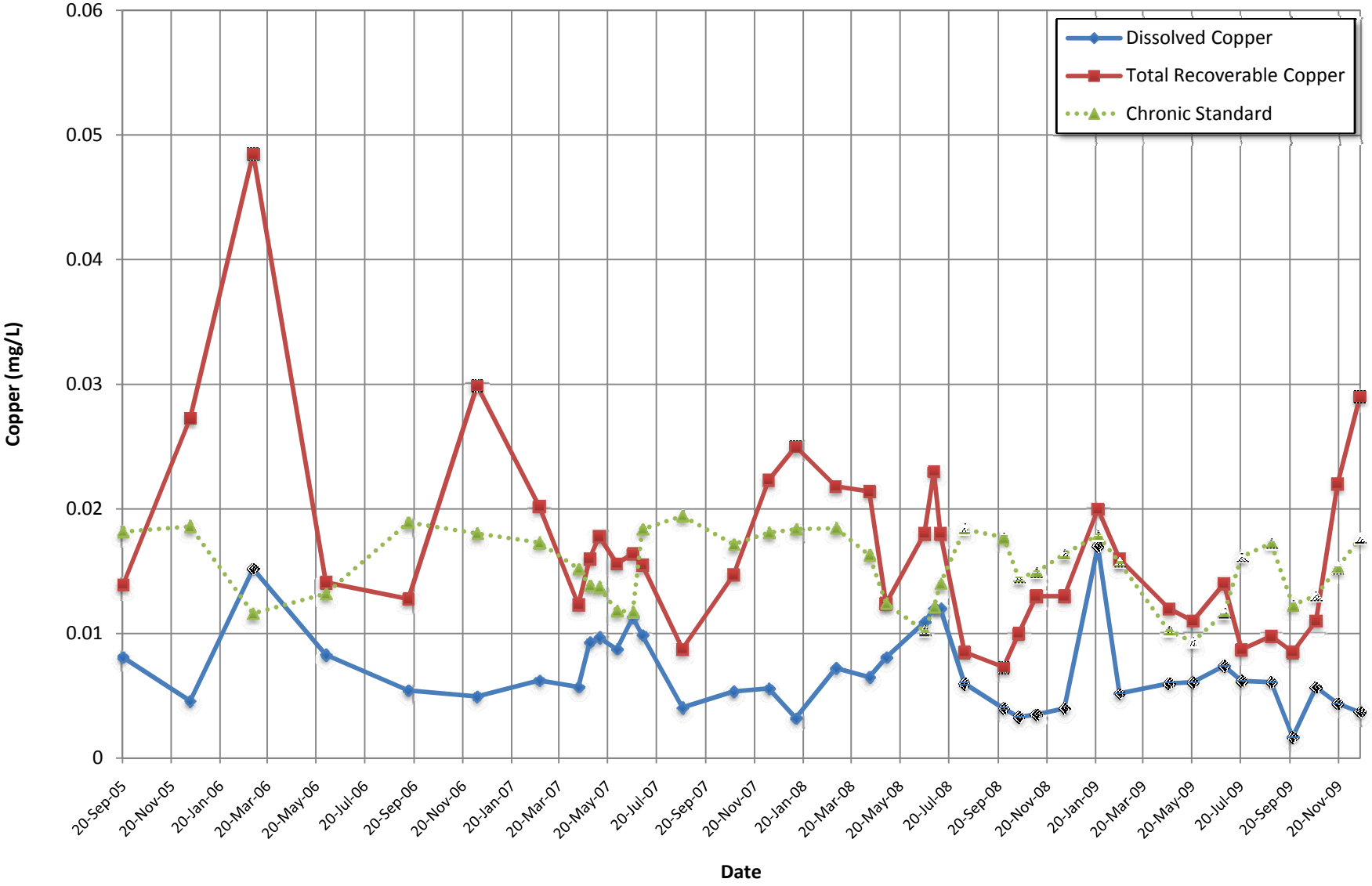

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Figure 6-9
Base Flow Copper Concentrations and Chronic Standard at SS-06A
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

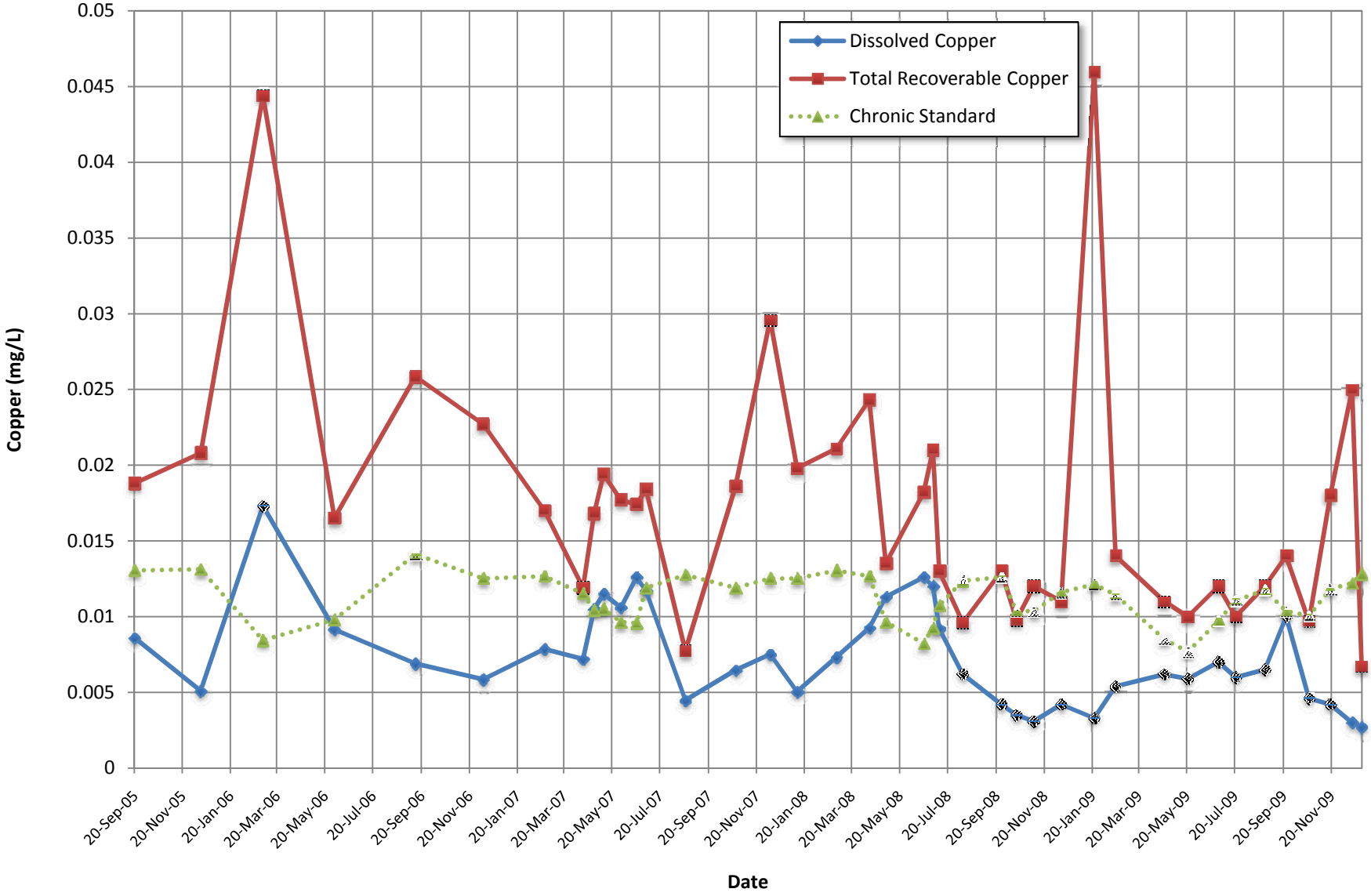

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Figure 6-10
Base Flow Copper Concentrations and Chronic Standard at SS-05A
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

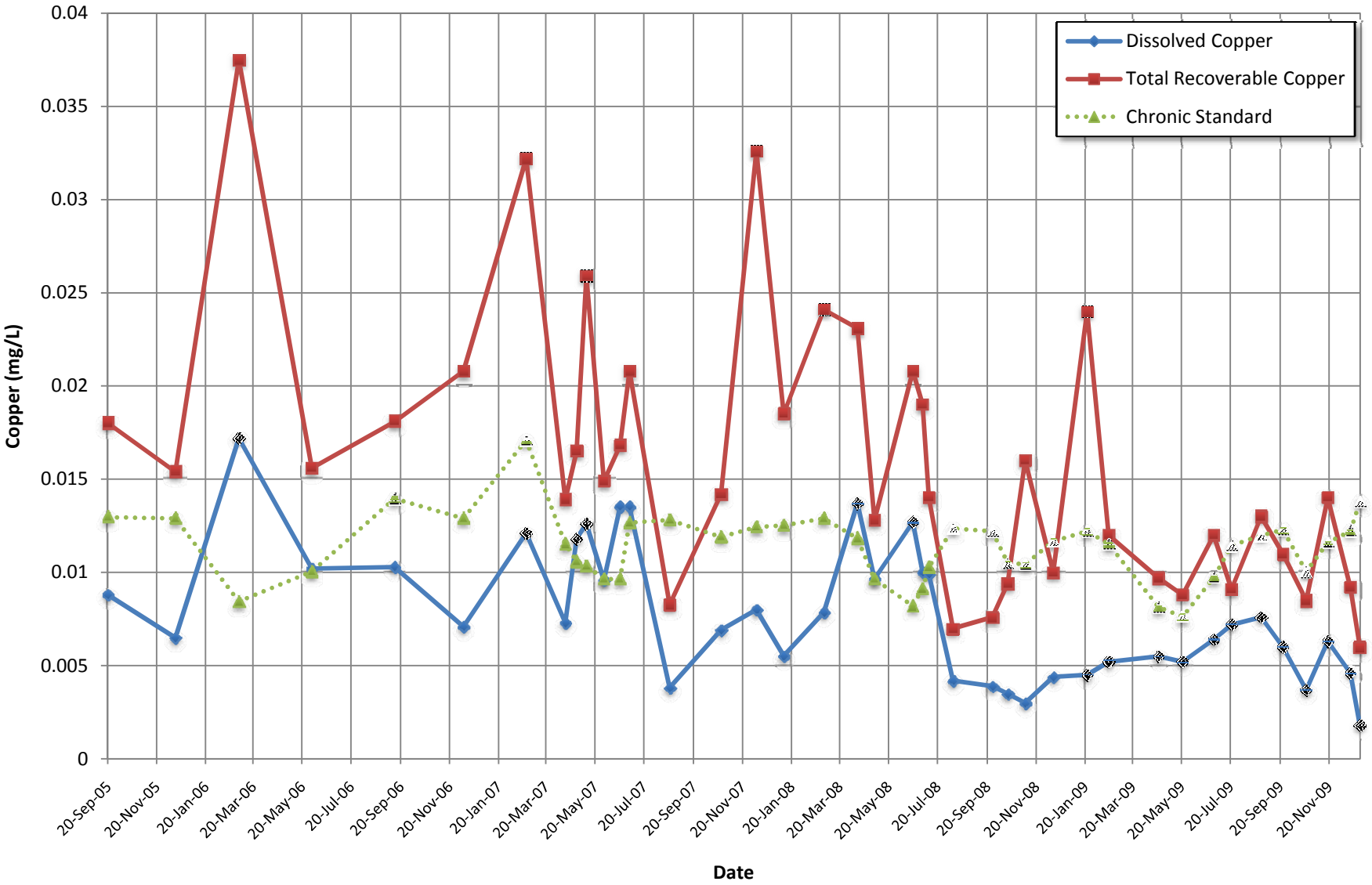

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Figure 6-11
Base Flow Copper Concentrations and Chronic Standard at SS-05
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

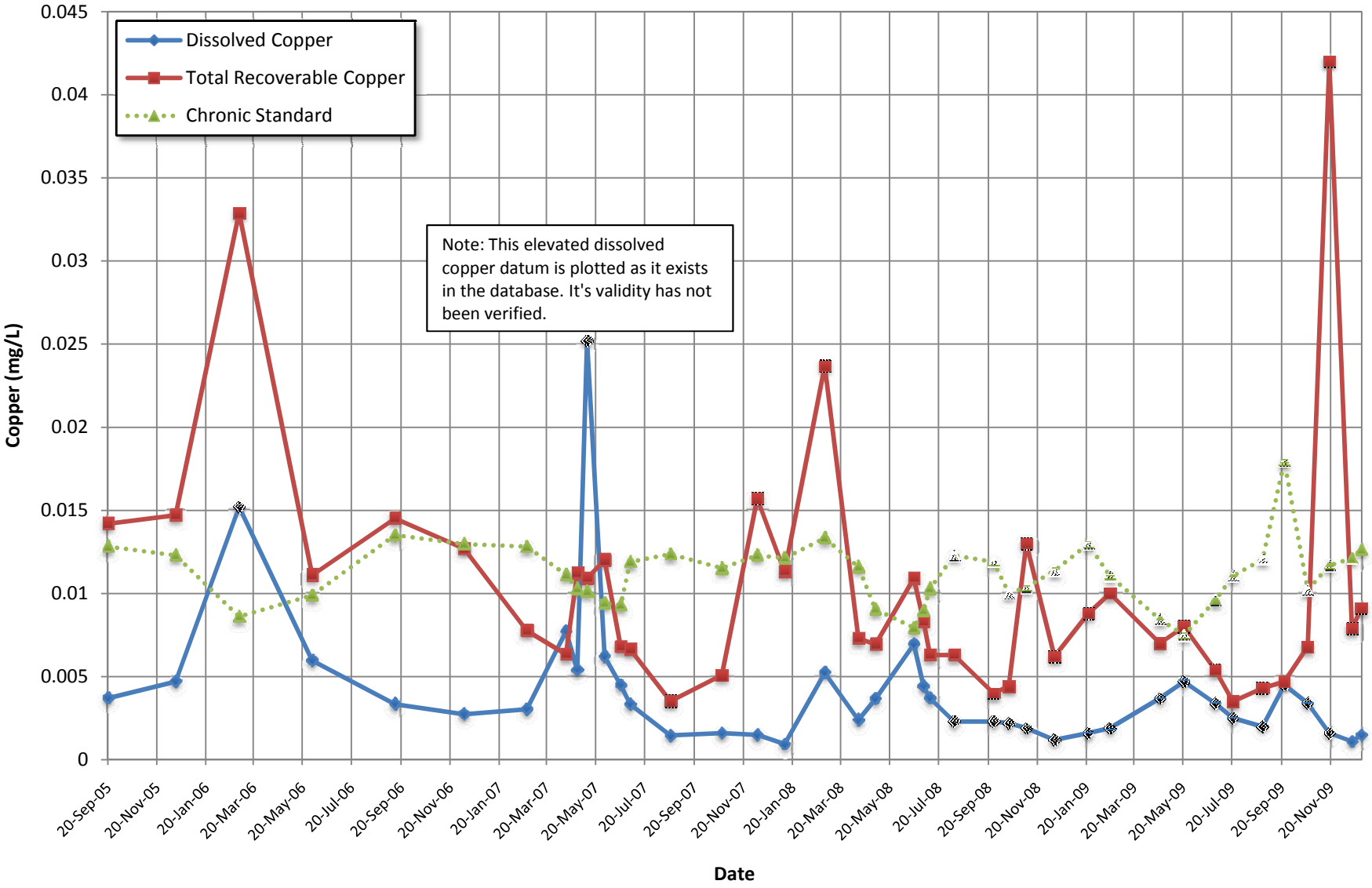

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Figure 6-12
Base Flow Copper Concentrations and Chronic Standard at SS-04
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

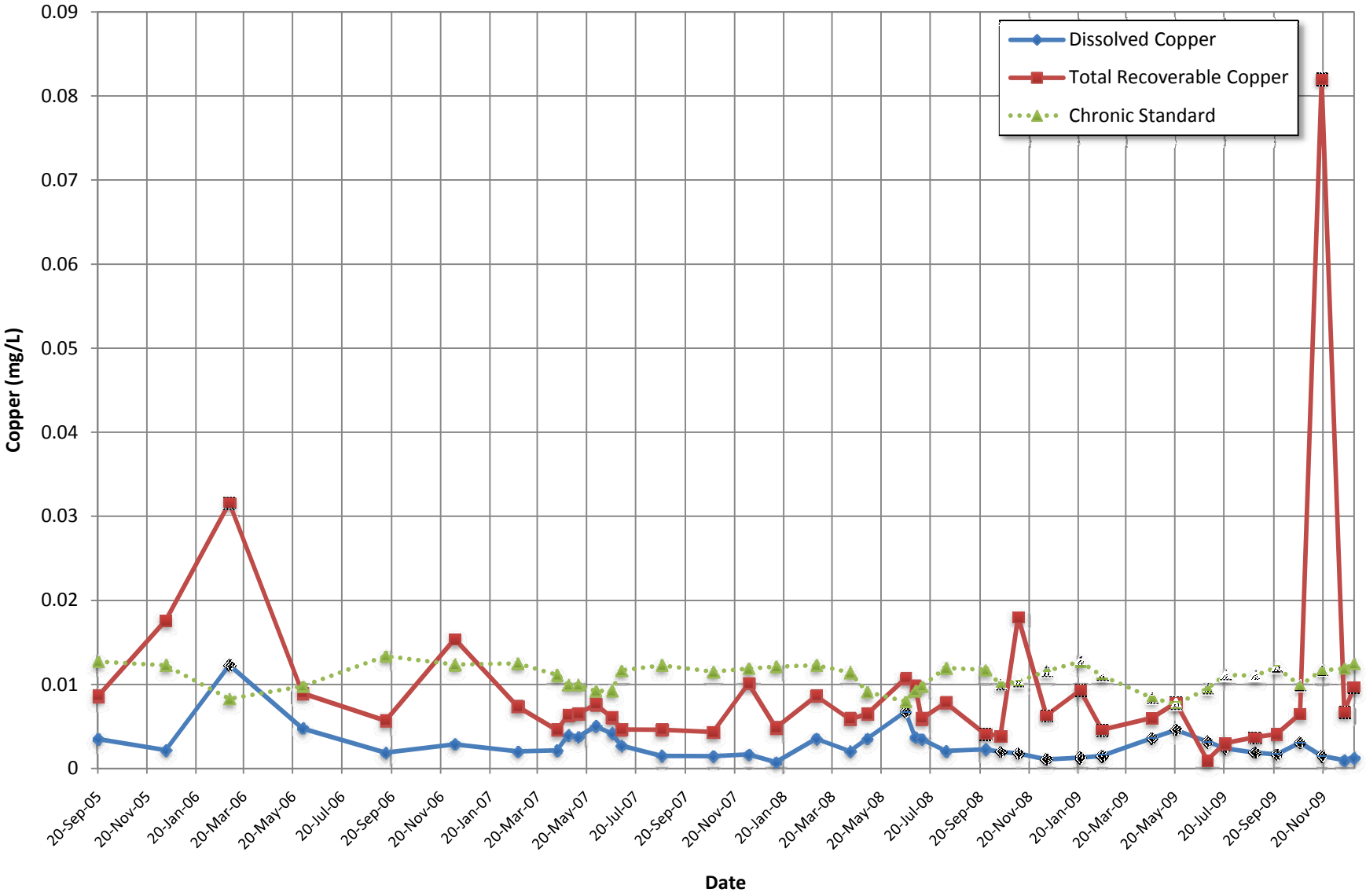

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Figure 6-13
Base Flow Copper Concentrations and Chronic Standard at SS-01
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

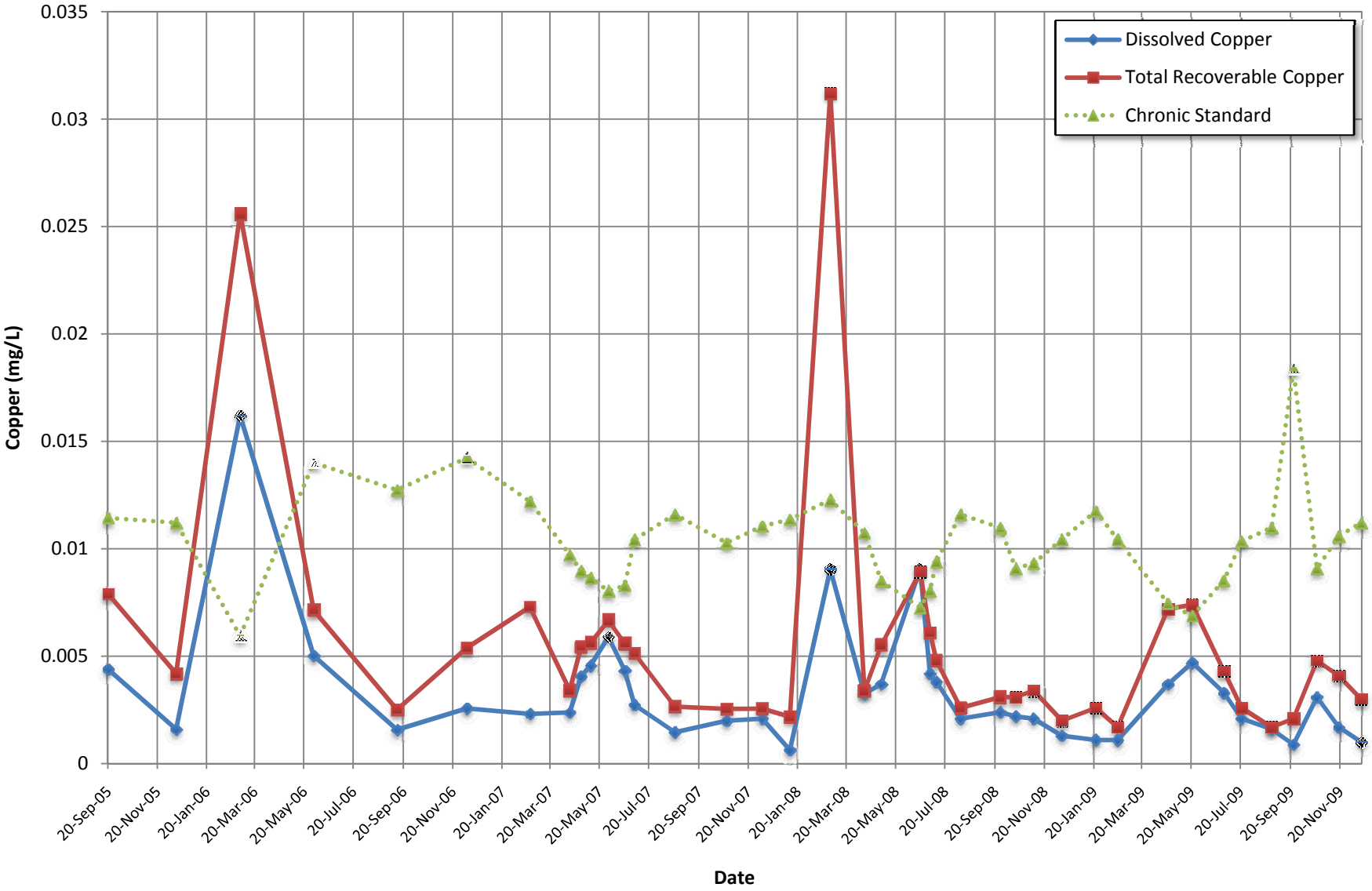

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Figure 6-14
Base Flow Copper Concentrations and Chronic Standard at GG-01
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

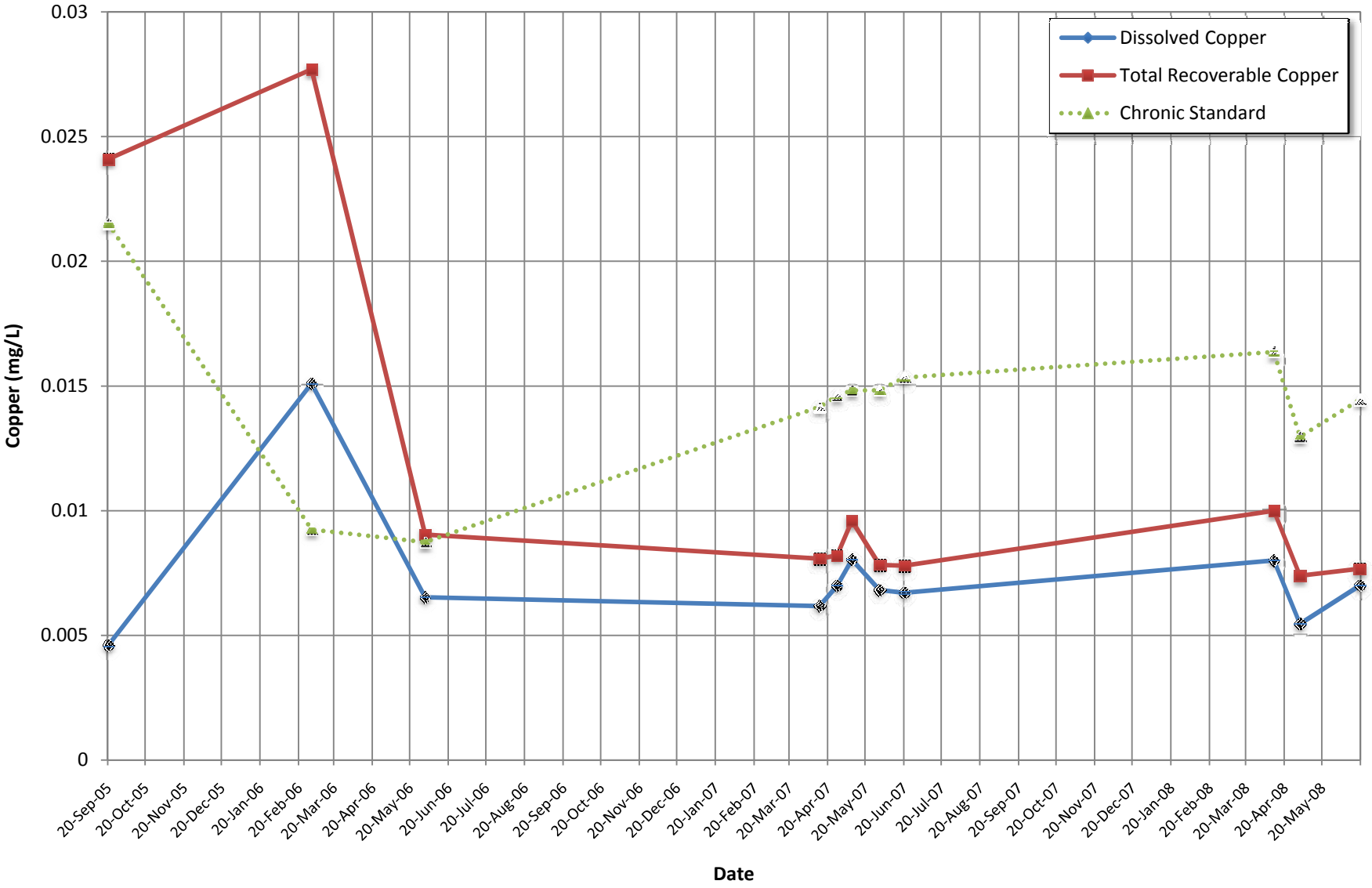

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Figure 6-15
Base Flow Total Recoverable Copper Compliance Ratio - Chronic Standard
September 2005 to December 2009
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

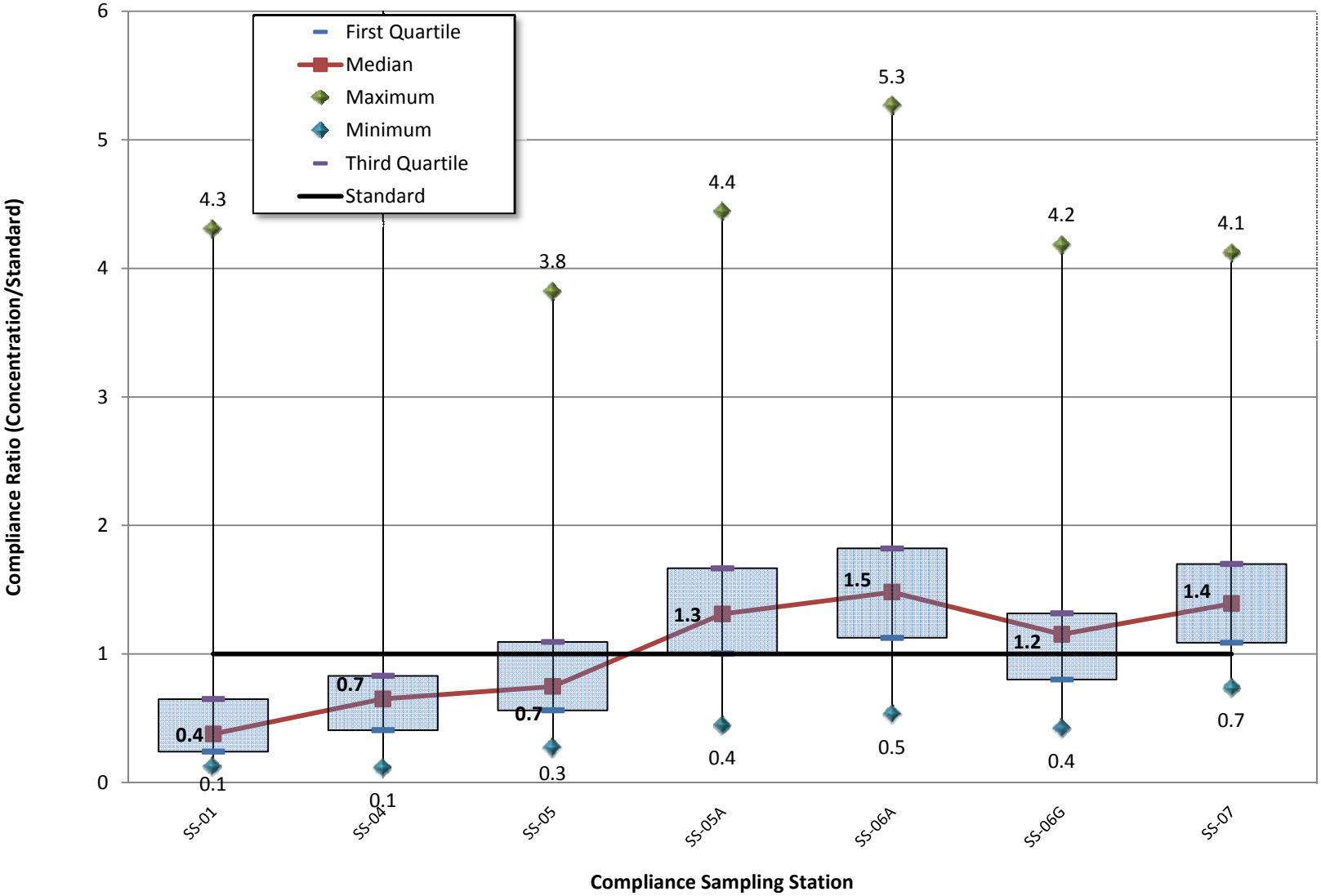

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Figure 6-16
Base Flow Dissolved Copper Compliance Ratio - Chronic Standard
September 2005 to December 2009
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

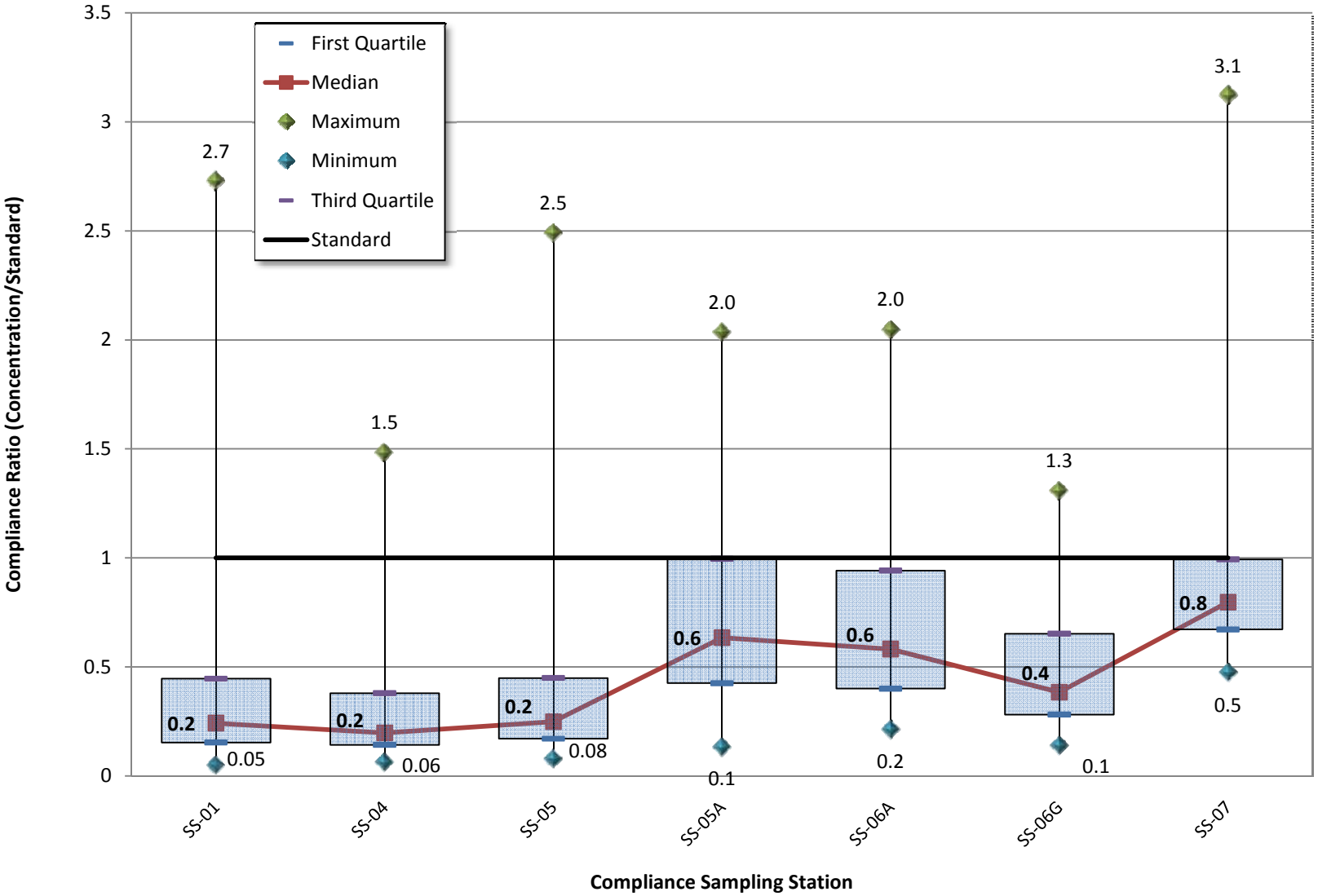

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Figure 6-17
Base Flow Zinc Concentrations and Chronic Standard at SS-07
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

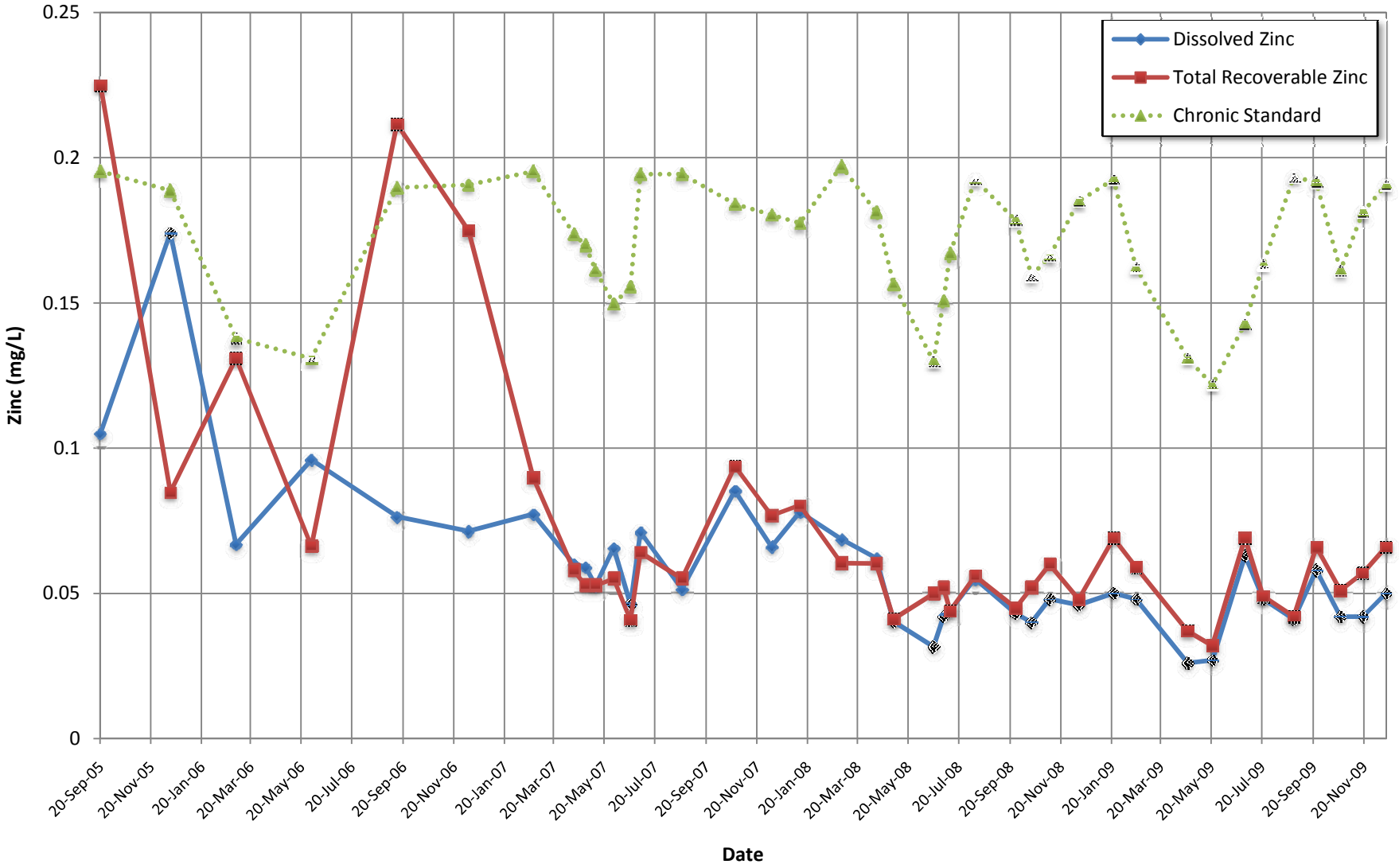

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Figure 6-18
Base Flow Zinc Concentrations and Chronic Standard at SS-06G
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

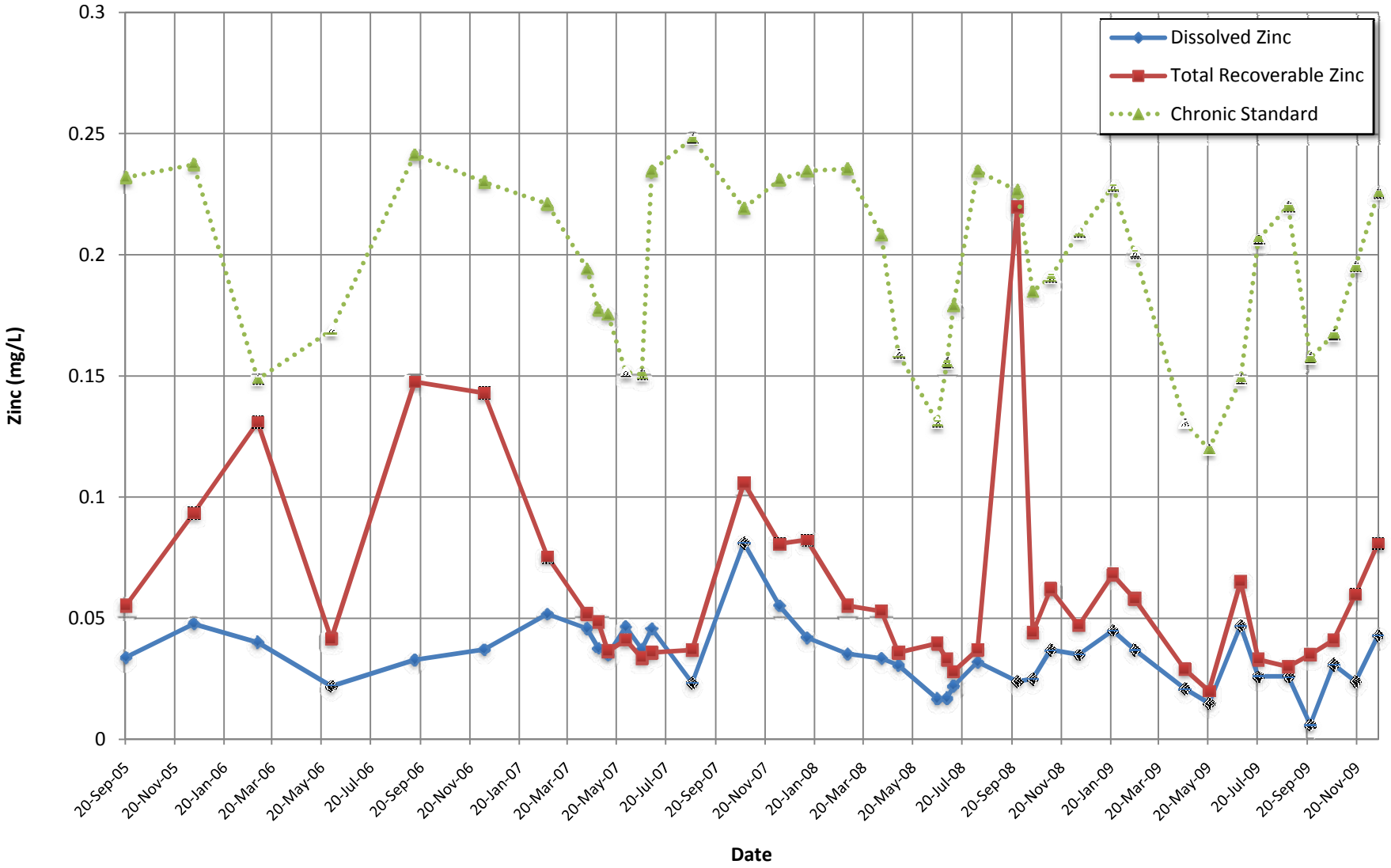

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Figure 6-19
Base Flow Zinc Concentrations and Chronic Standard at SS-06A
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

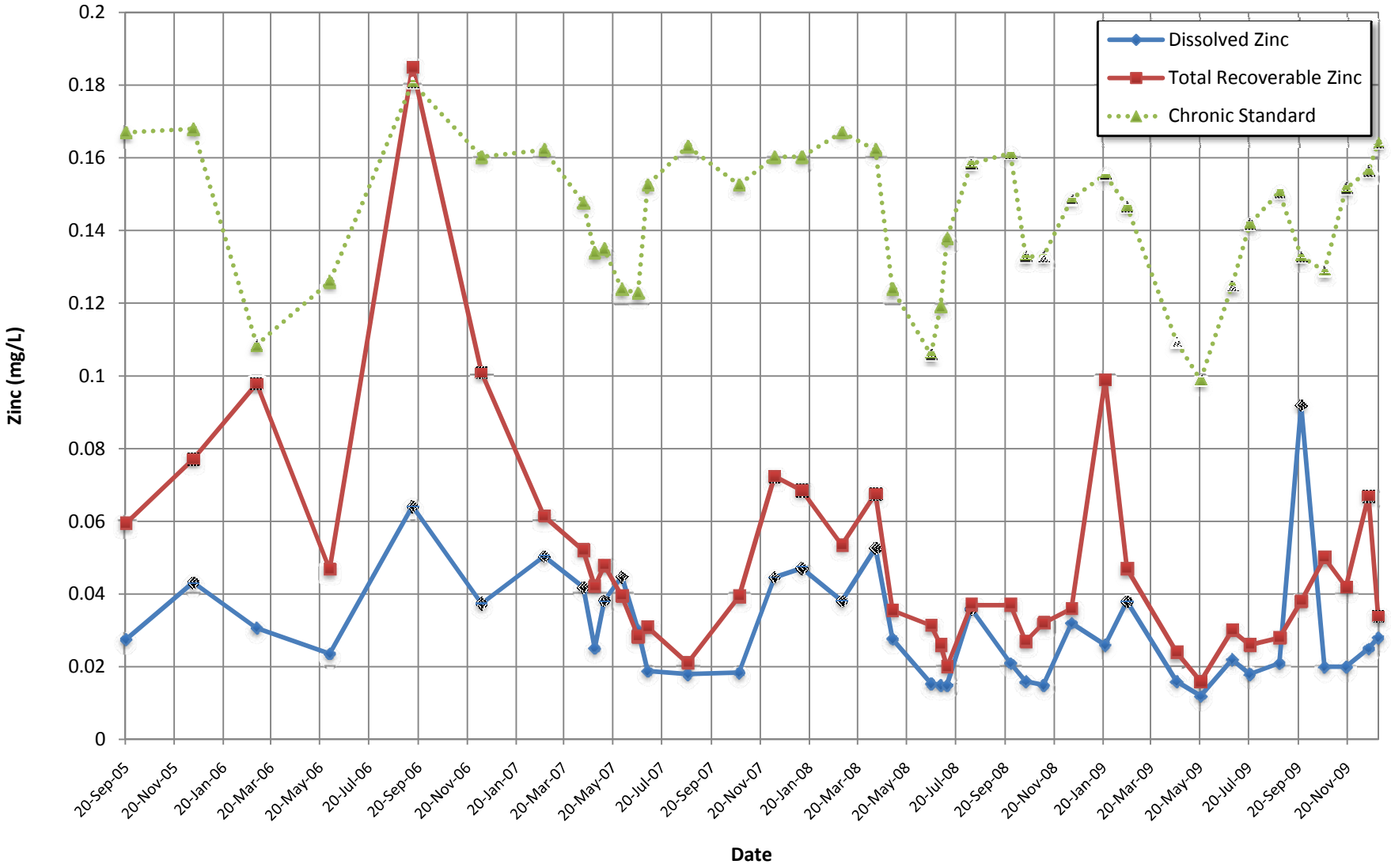

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Figure 6-20
Base Flow Zinc Concentrations and Chronic Standard at SS-05A
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

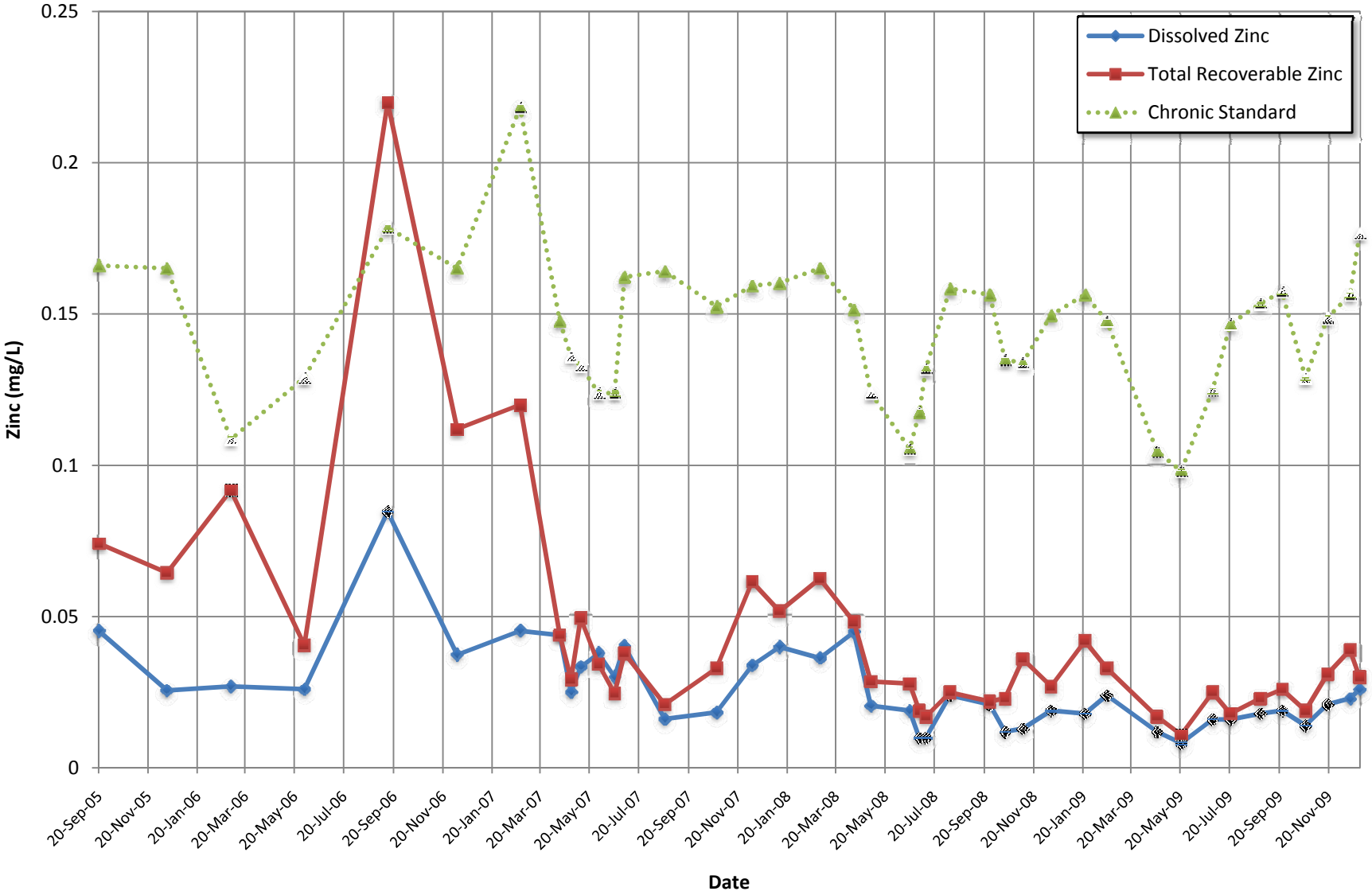

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Figure 6-21
Base Flow Zinc Concentrations and Chronic Standard at SS-05
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

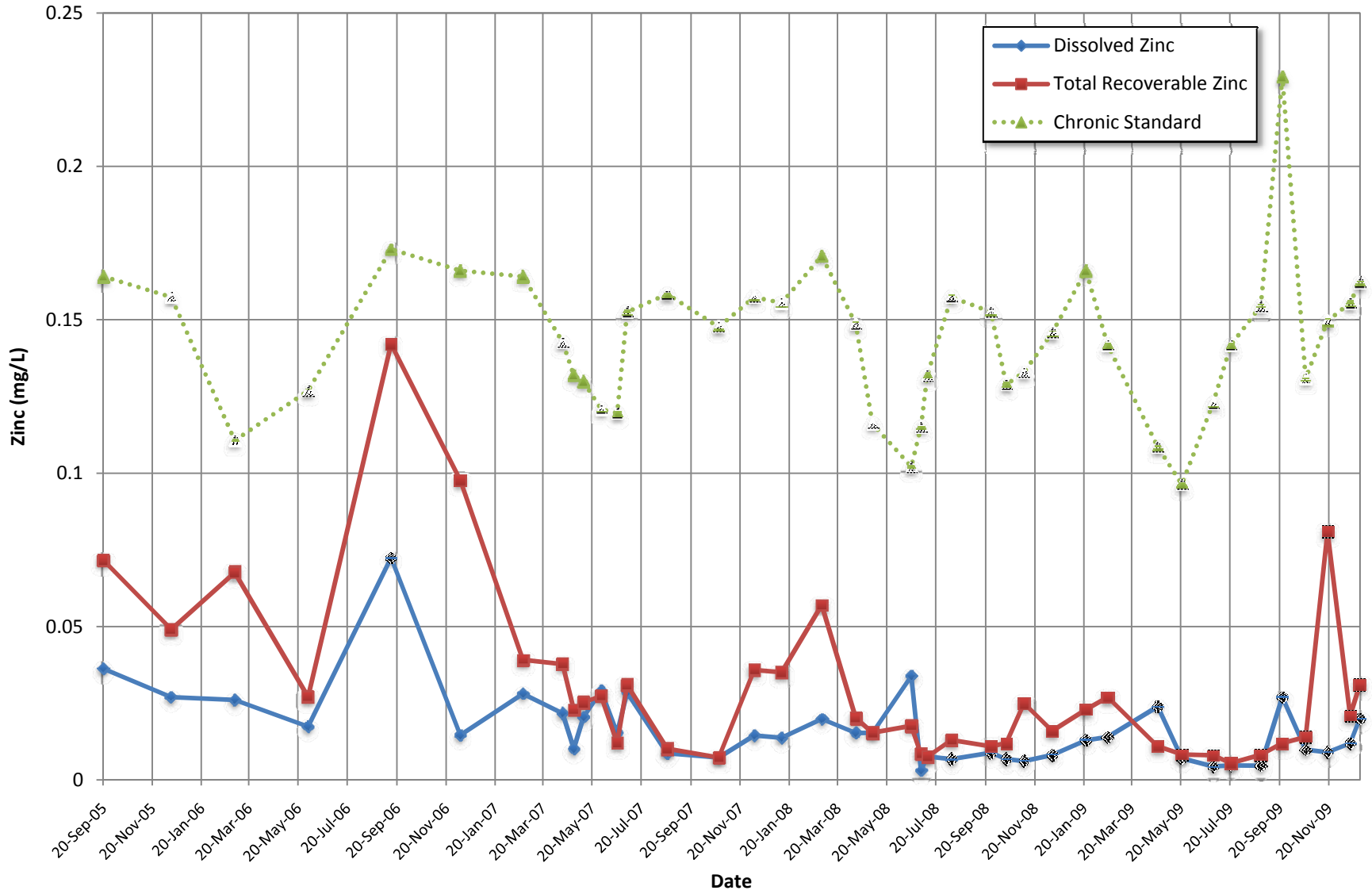

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Figure 6-22
Base Flow Zinc Concentrations and Chronic Standard at SS-04
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

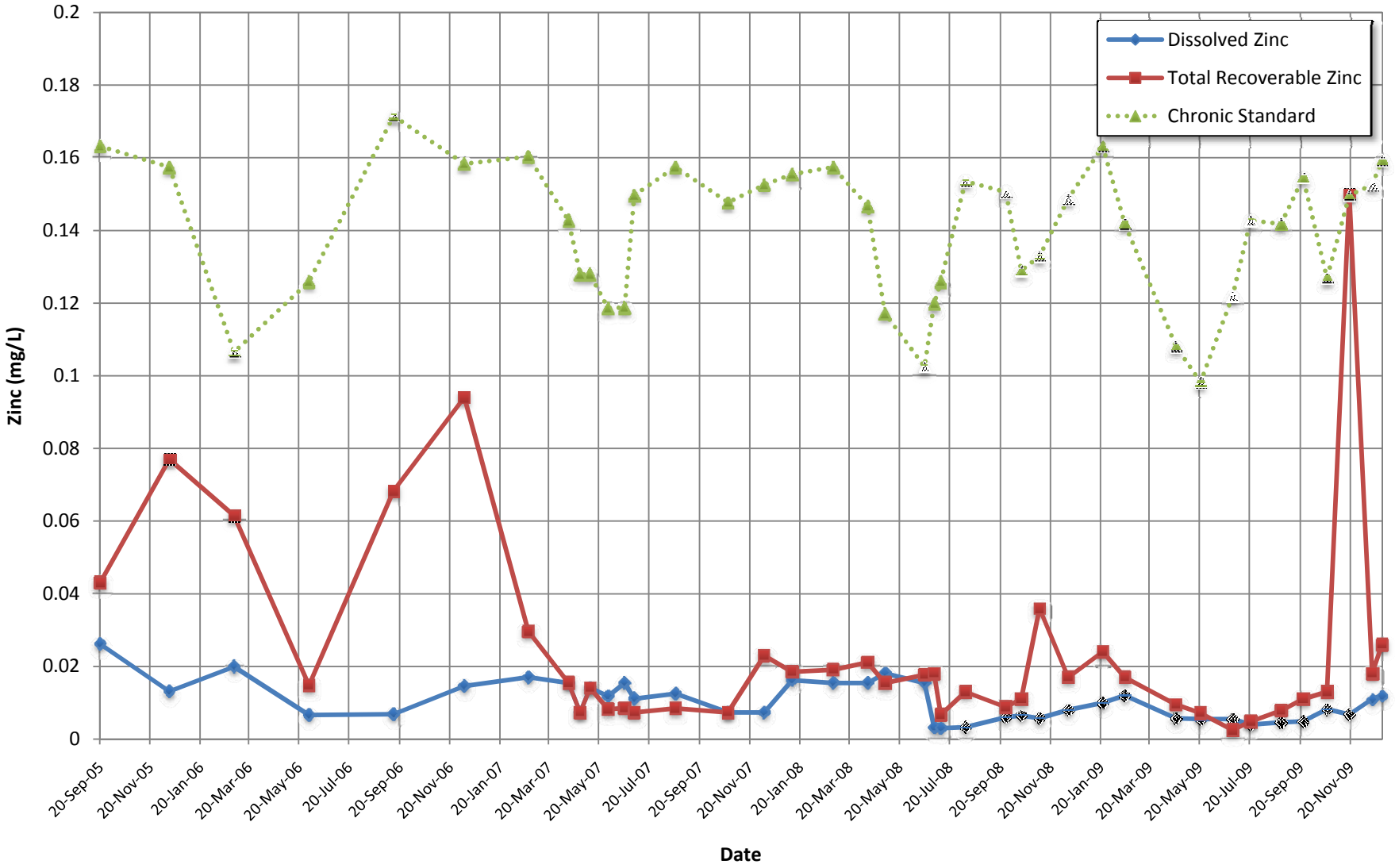

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Figure 6-23
Base Flow Zinc Concentrations and Chronic Standard at SS-01
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

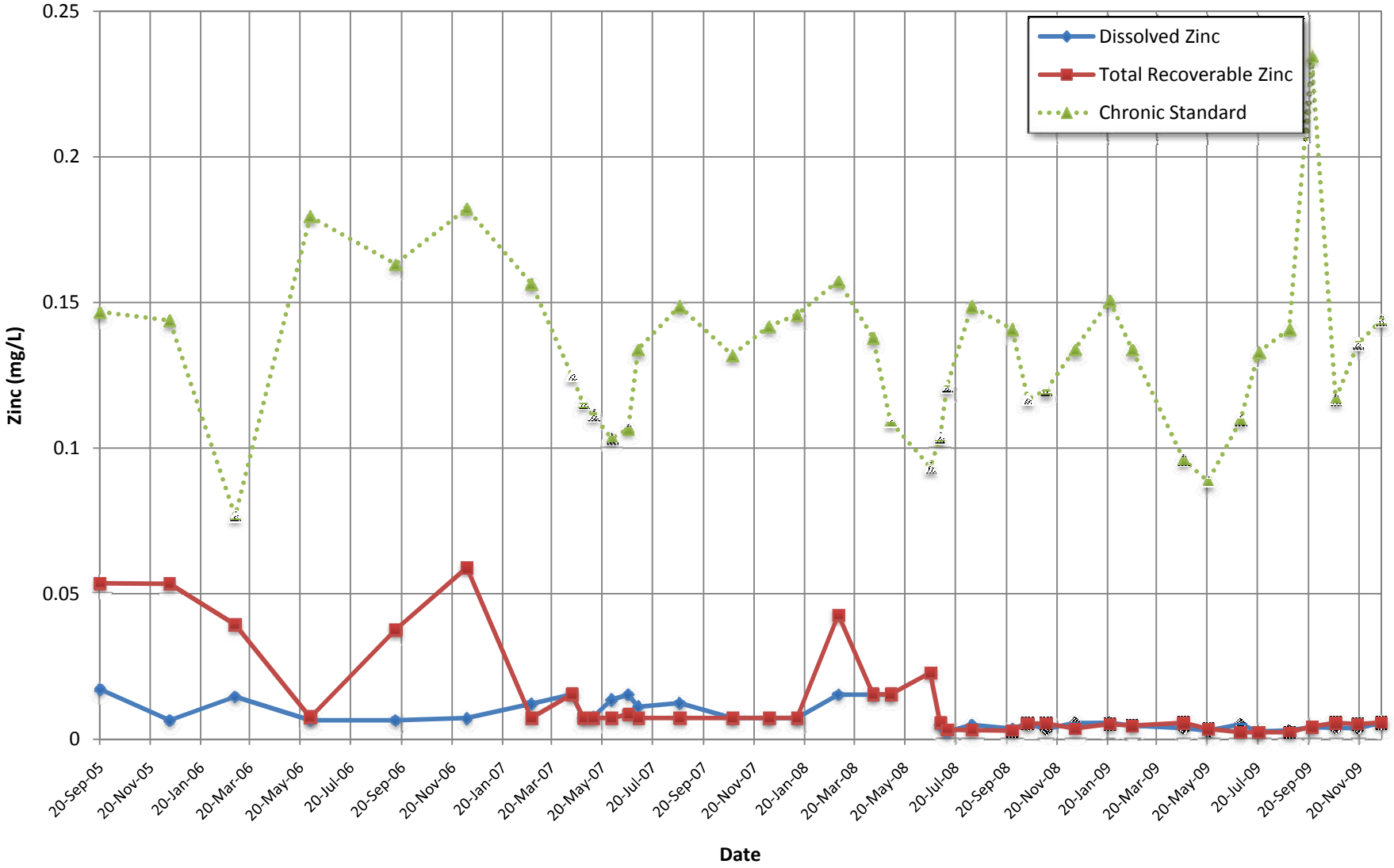

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Figure 6-24
Base Flow Zinc Concentrations and Chronic Standard at GG-01
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

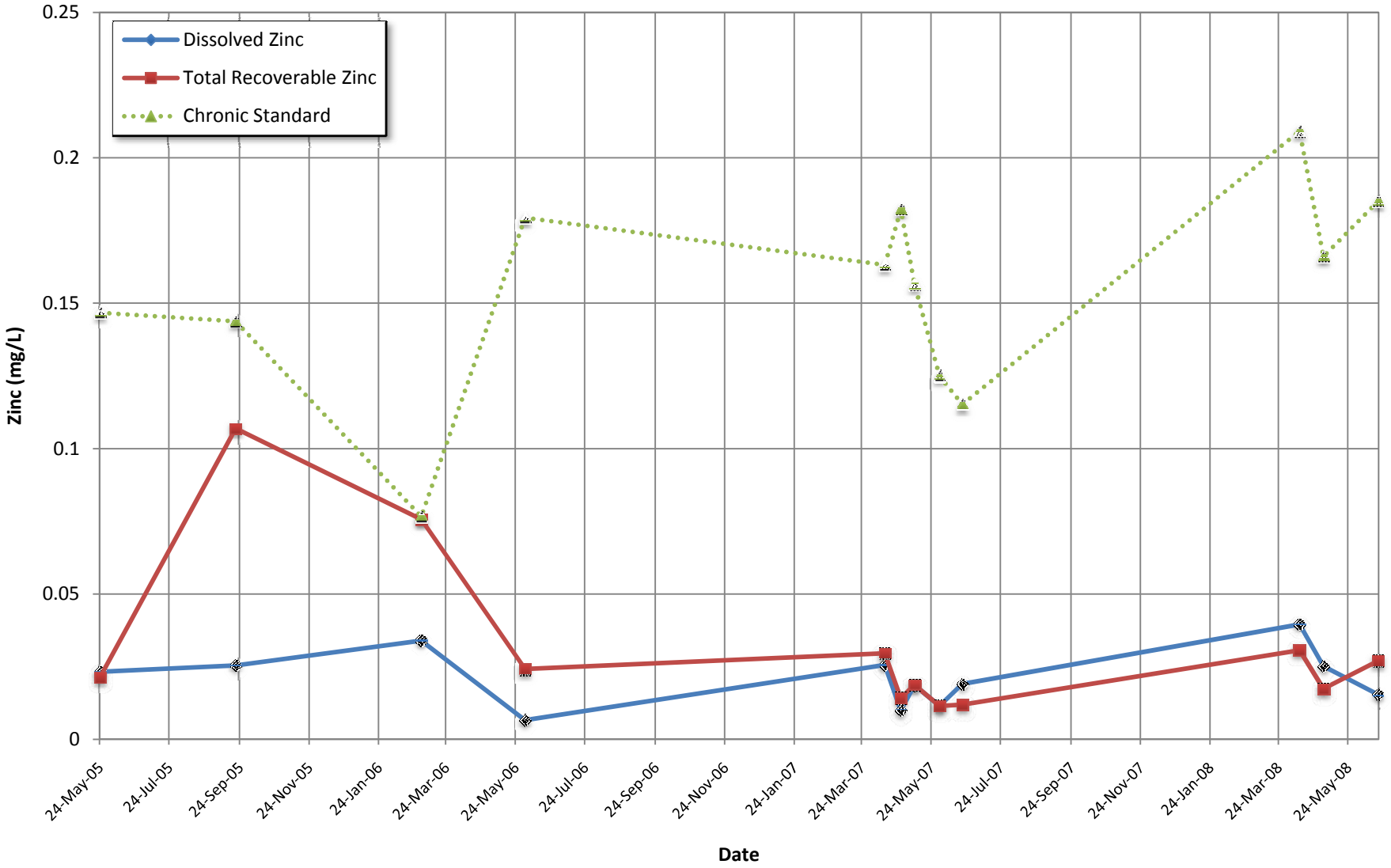

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Figure 6-25
Base Flow Total Recoverable Zinc Compliance Ratio - Chronic Standard
September 2005 to December 2009
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

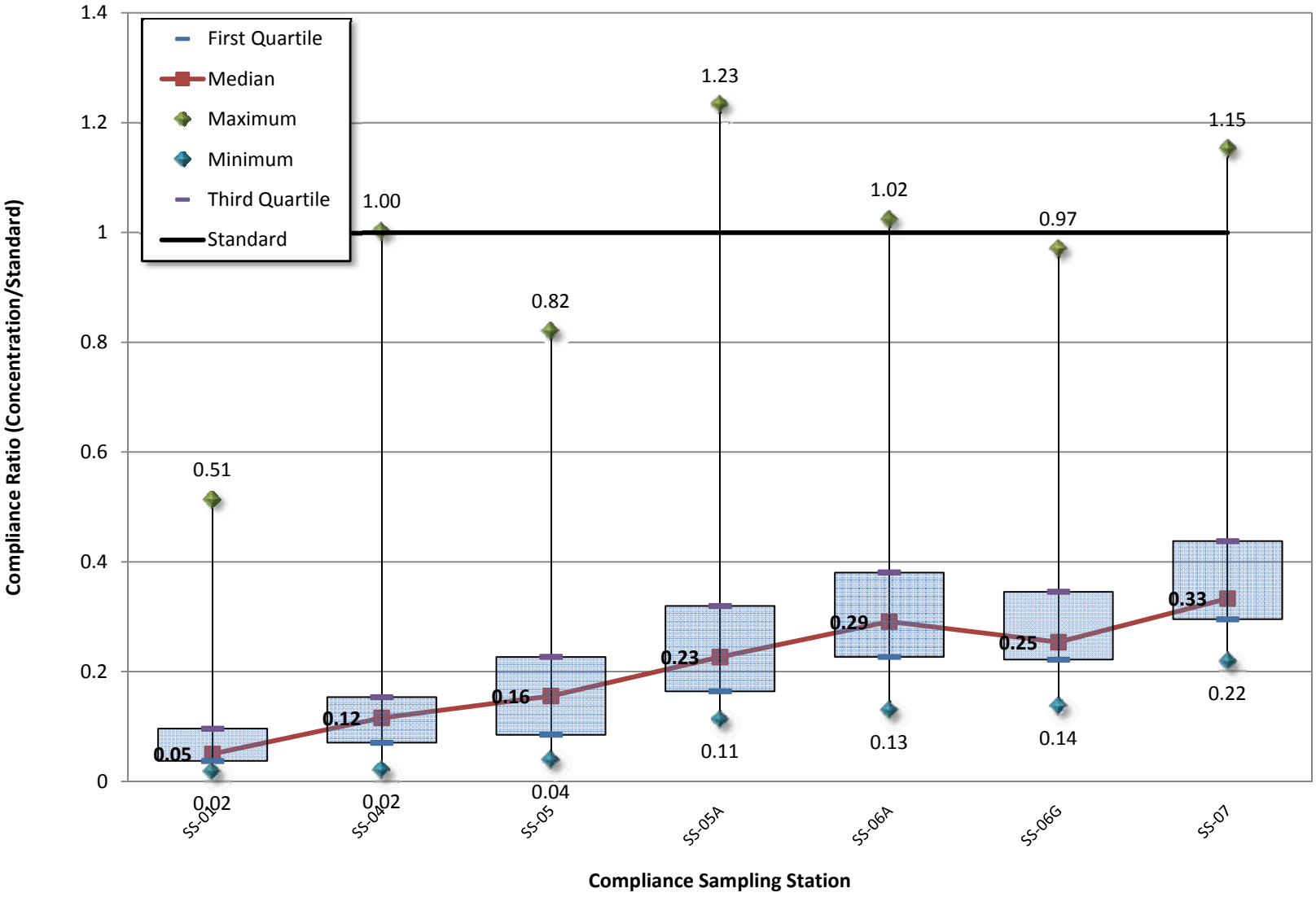

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Figure 6-26
Base Flow Dissolved Zinc Compliance Ratio - Chronic Standard
September 2005 to December 2009
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

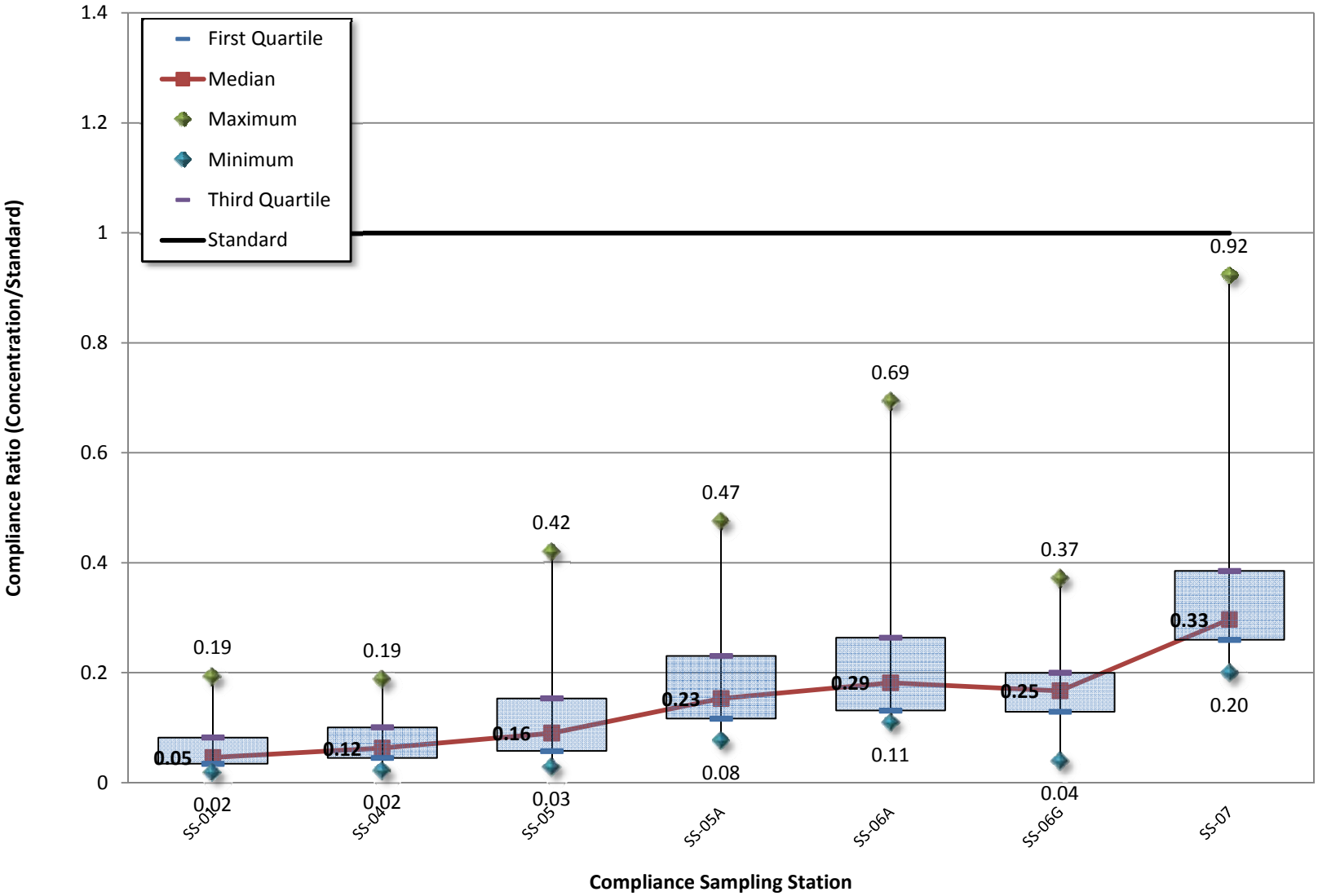

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Figure 6-27
Storm Flow Copper Concentrations and Acute Standard at SS-07
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

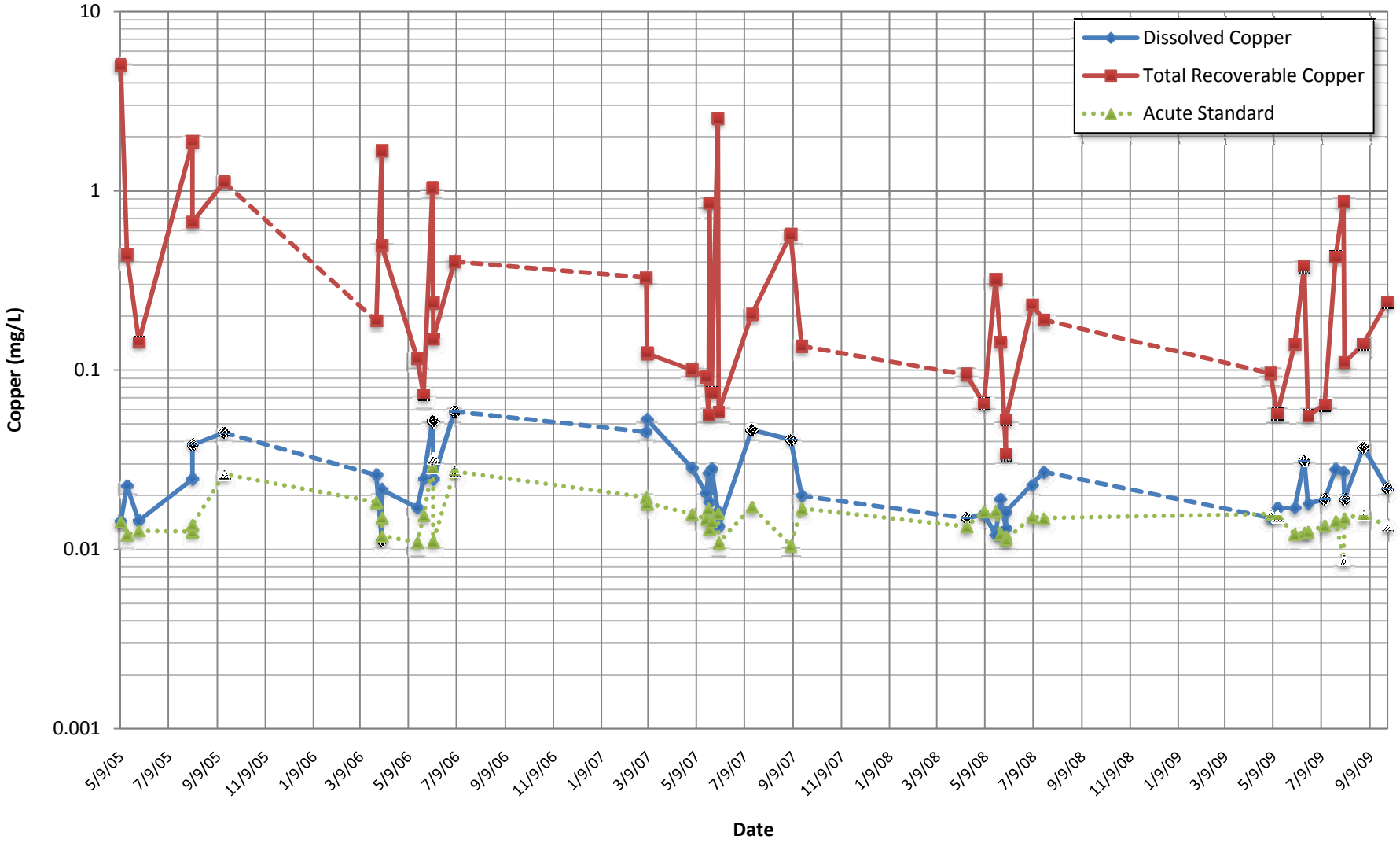

Figure 6-28
Storm Flow Copper Concentrations and Acute Standard at SS-06G
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

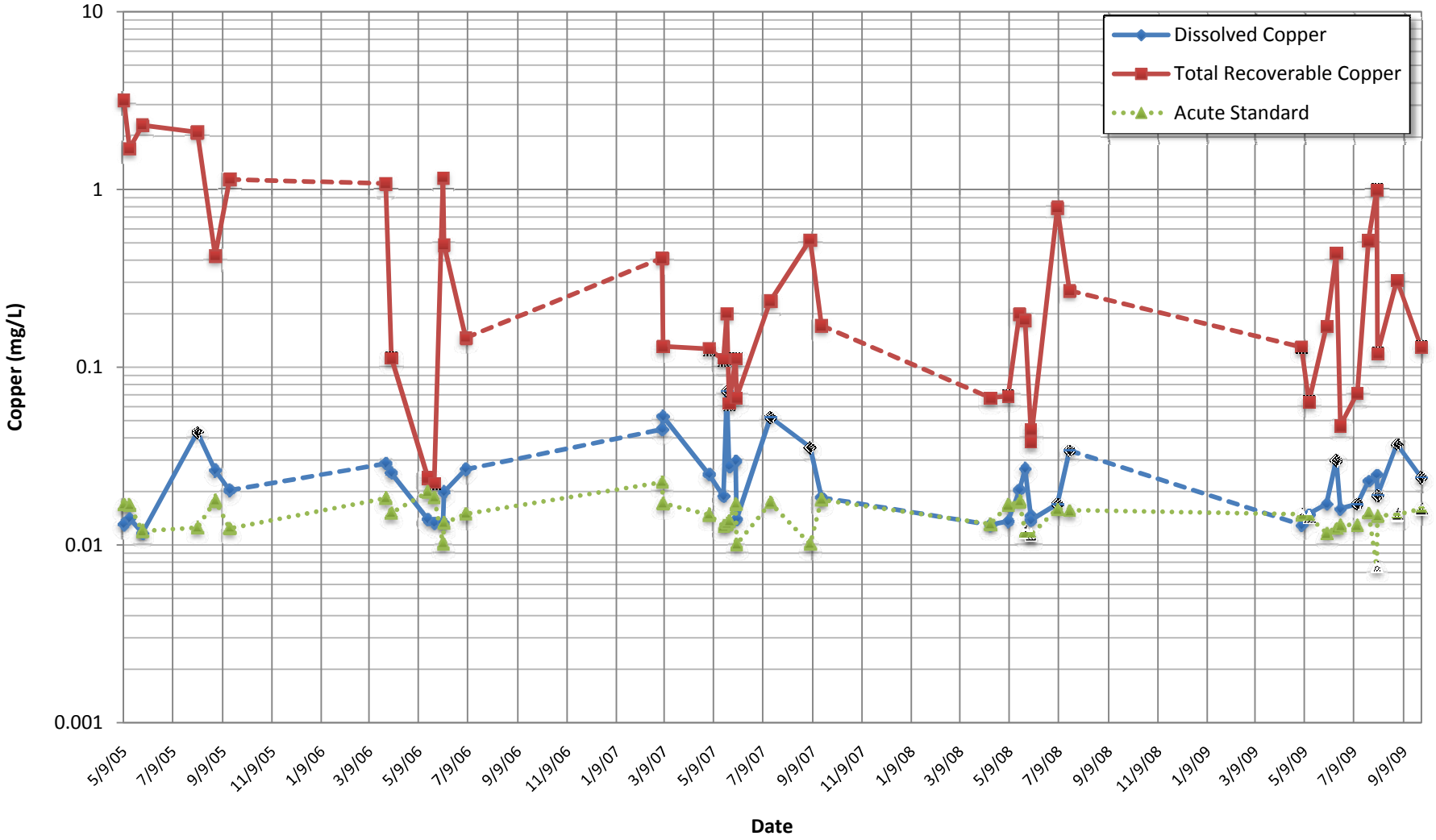

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Figure 6-29
Storm Flow Copper Concentrations and Acute Standard at SS-06A
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

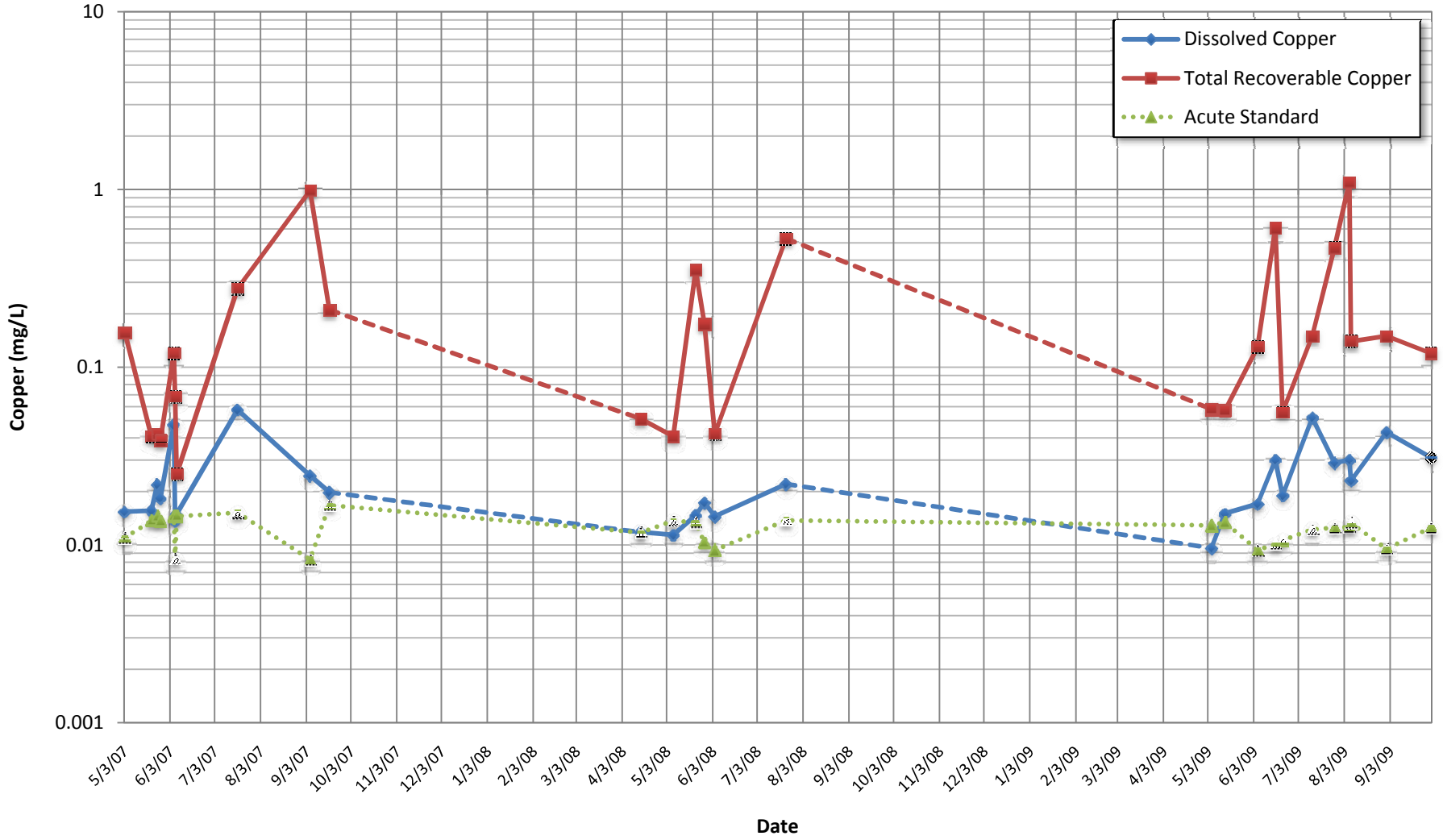

Figure 6-30
Storm Flow Copper Concentrations and Acute Standard at SS-05A
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

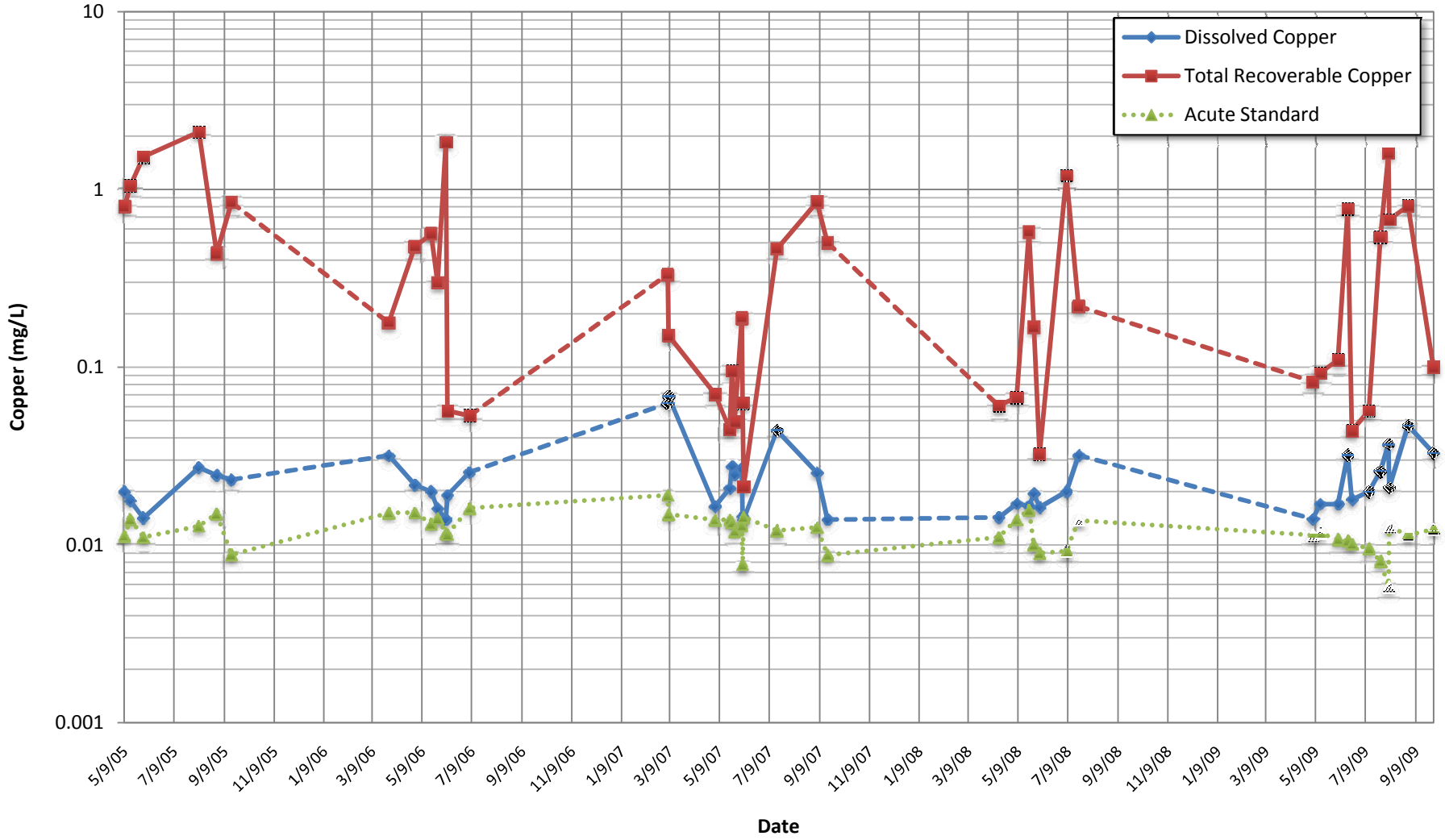

Figure 6-31
Storm Flow Copper Concentrations and Acute Standard at SS-05
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

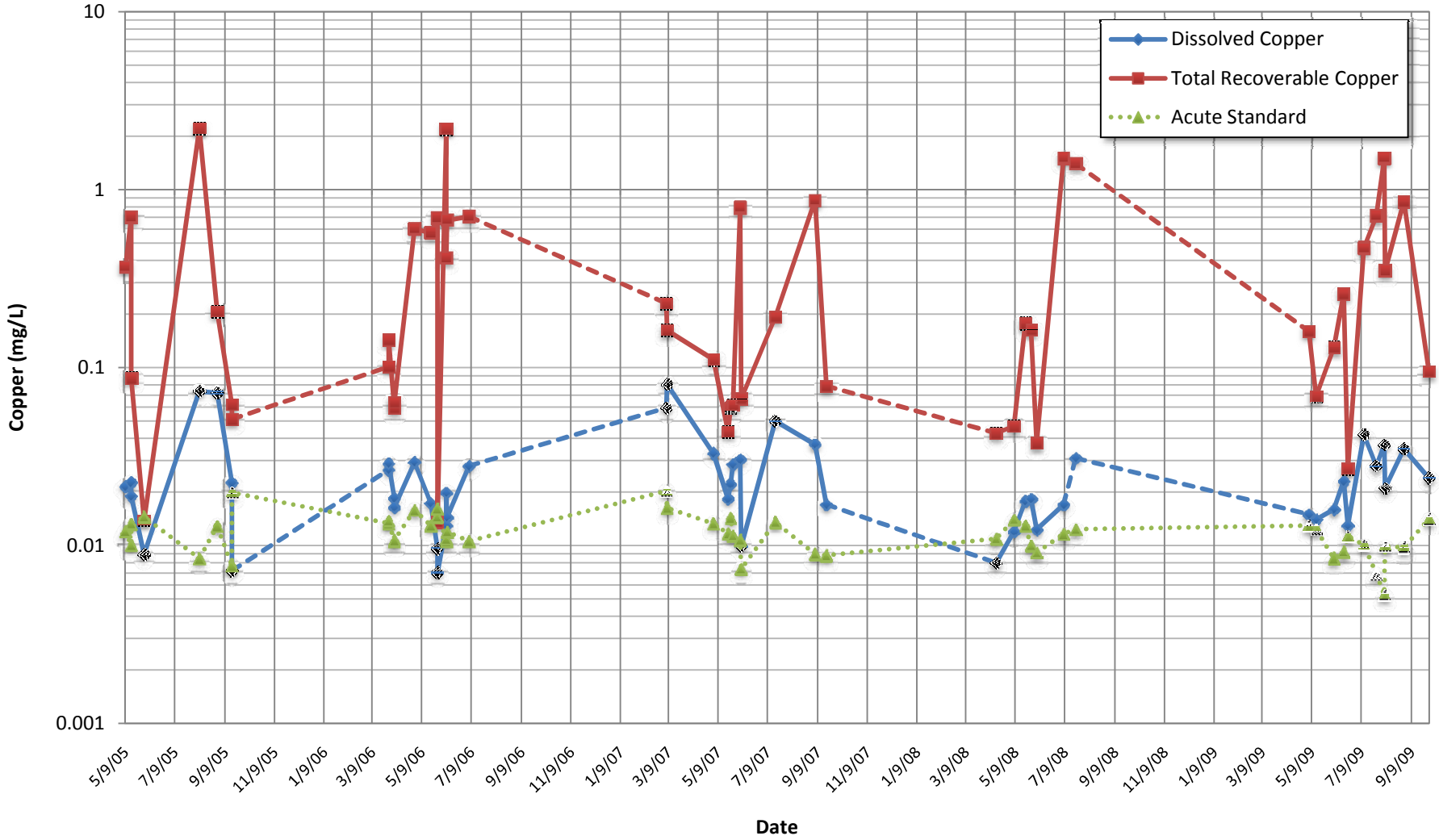

Figure 6-32
Storm Flow Copper Concentrations and Acute Standard at SS-04
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

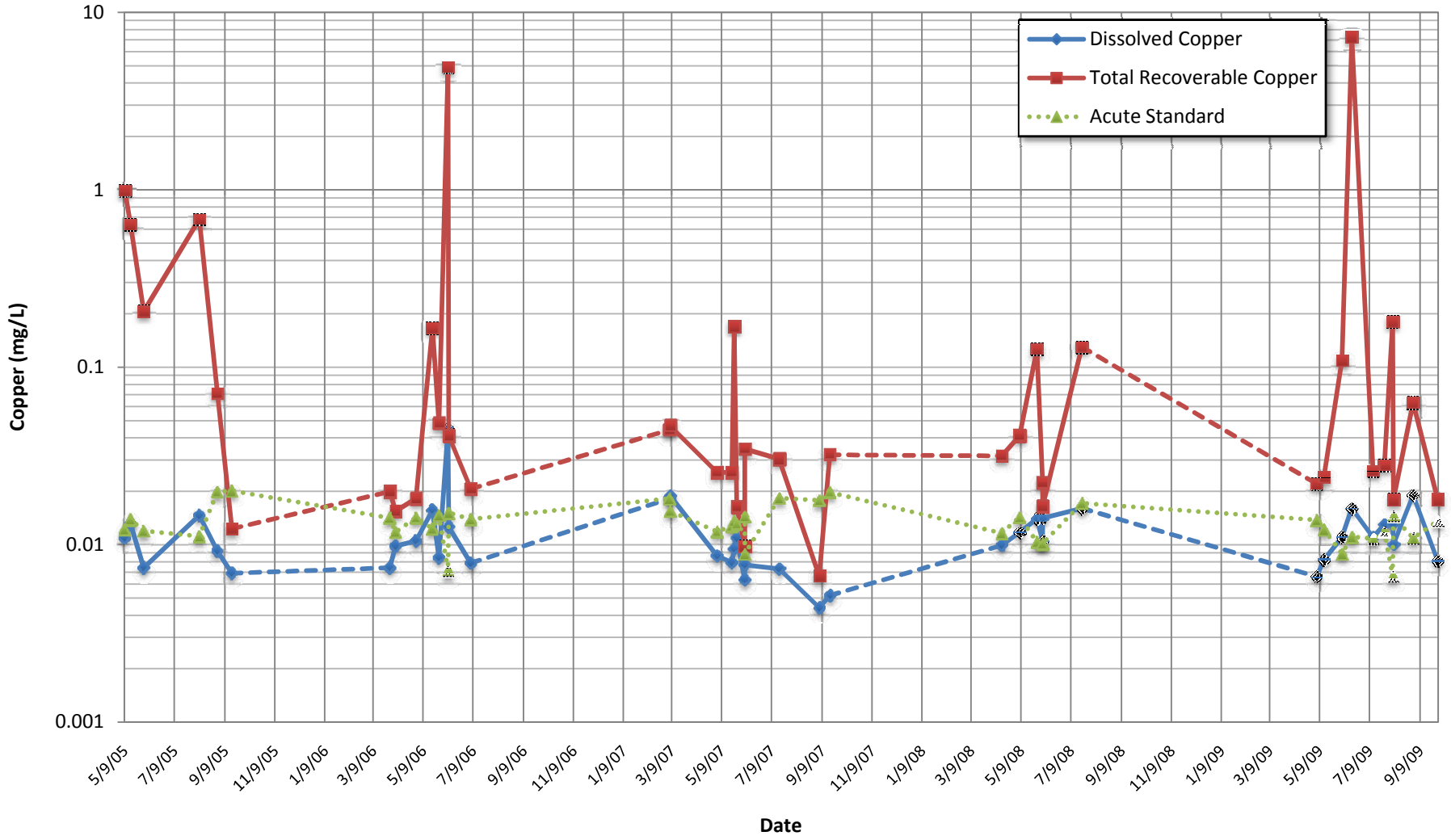

Figure 6-33
Storm Flow Copper Concentrations and Acute Standard at SS-01
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

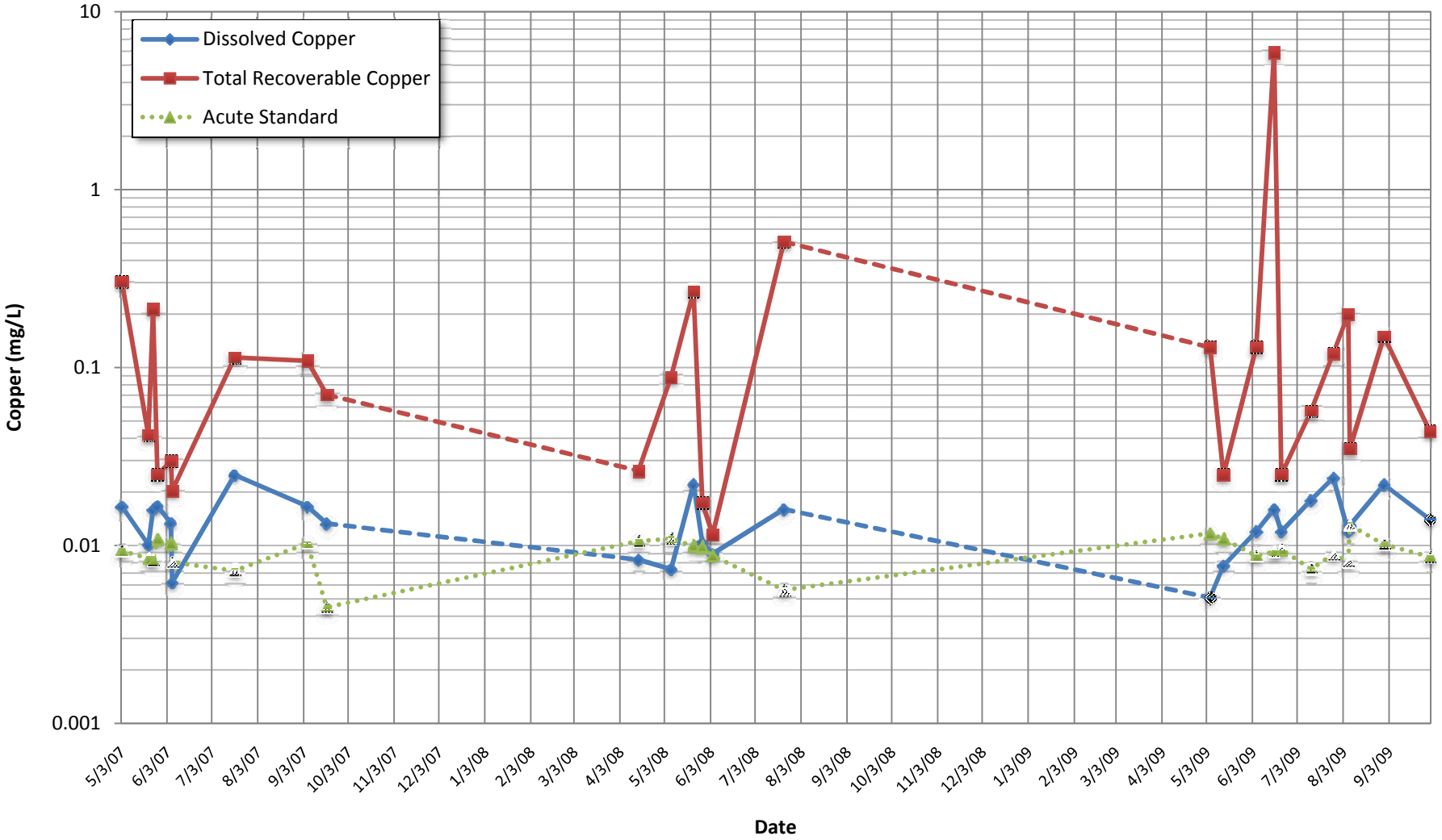

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Figure 6-34
Storm Flow Copper Concentrations and Acute Standard at GG-01
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

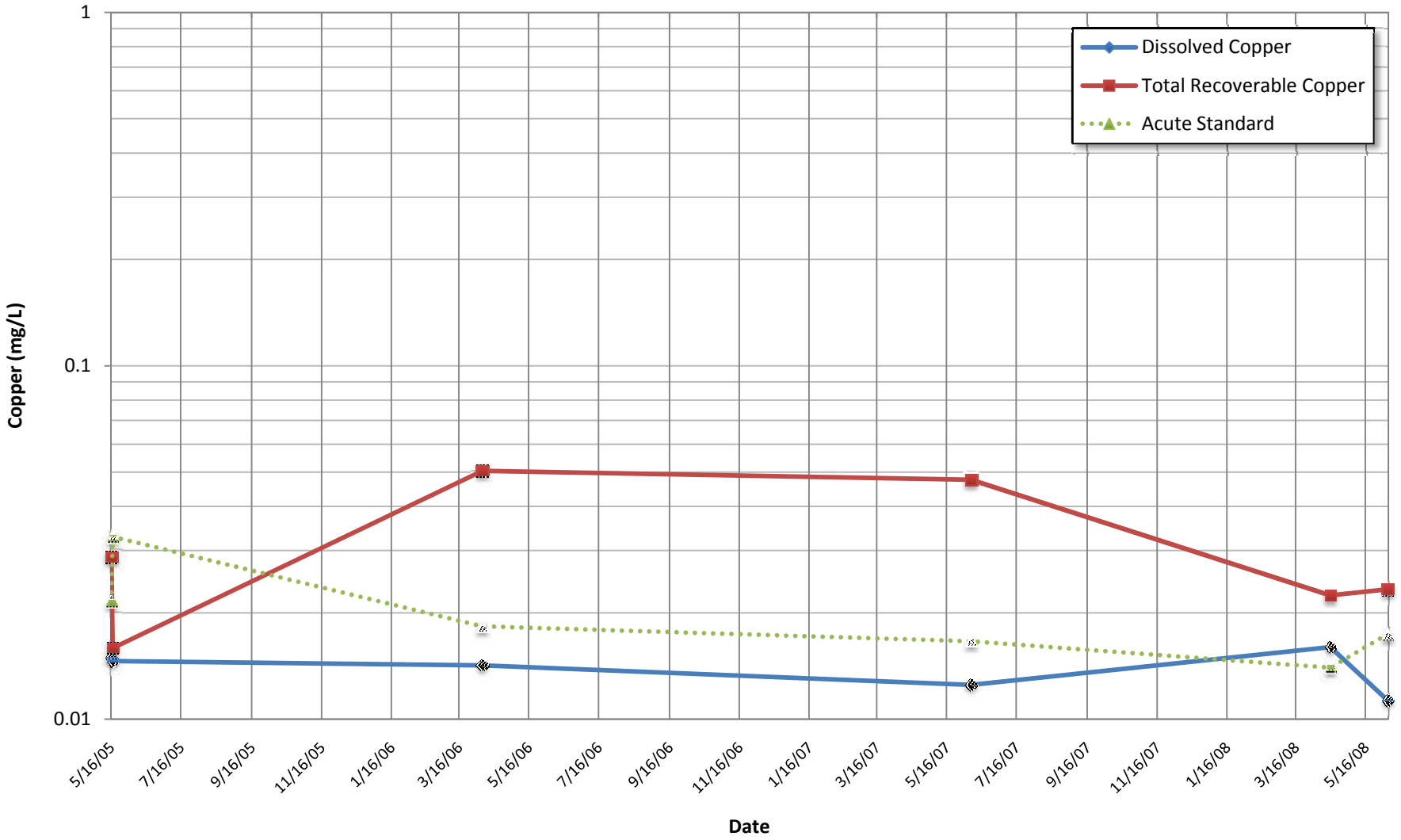

Figure 6-35
Storm Flow Total Recoverable Copper Compliance Ratio - Acute Standard
2005 through 2009
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

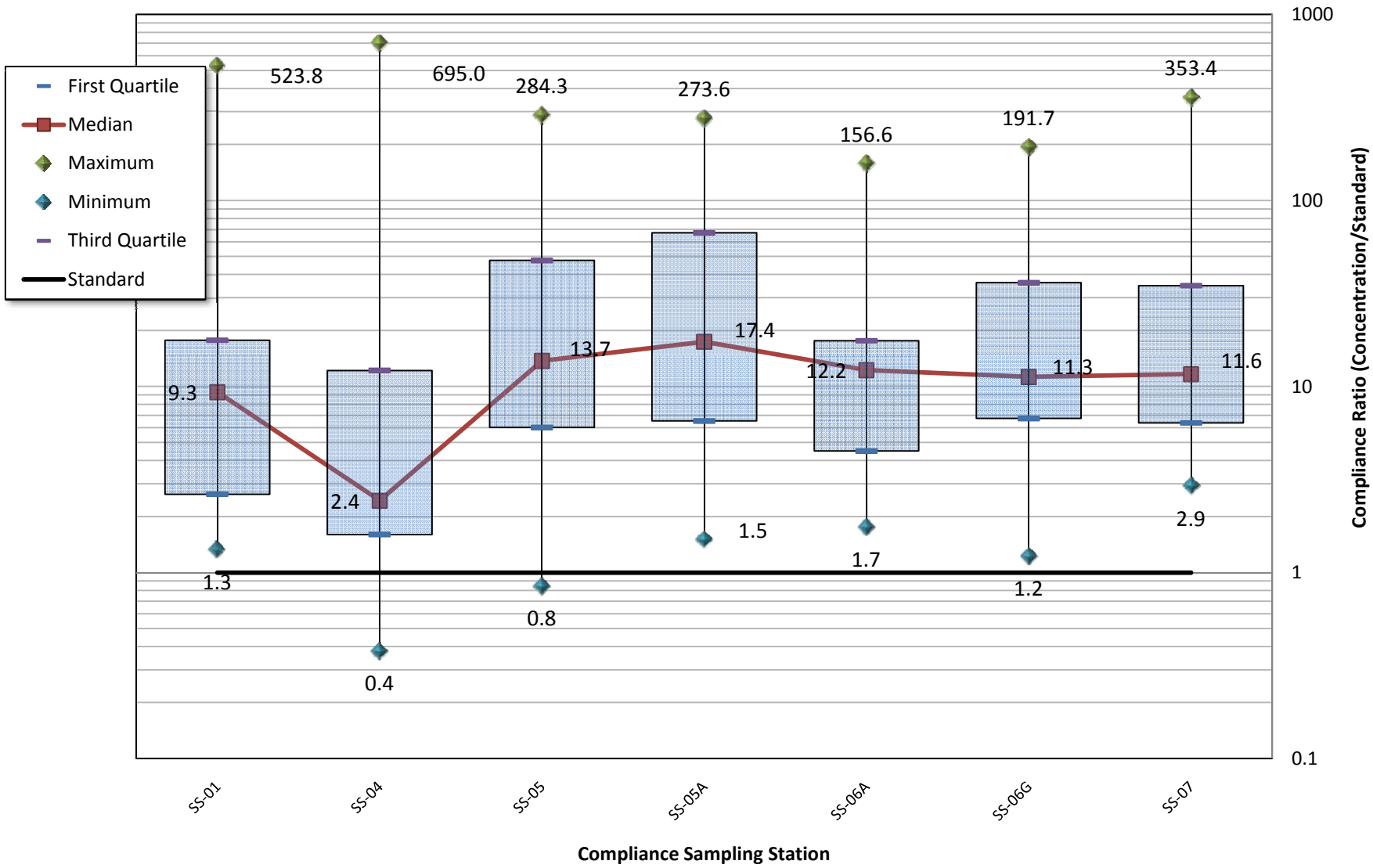

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Figure 6-36
Storm Flow Dissolved Copper Compliance Ratio - Acute Standard
2005 through 2009
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

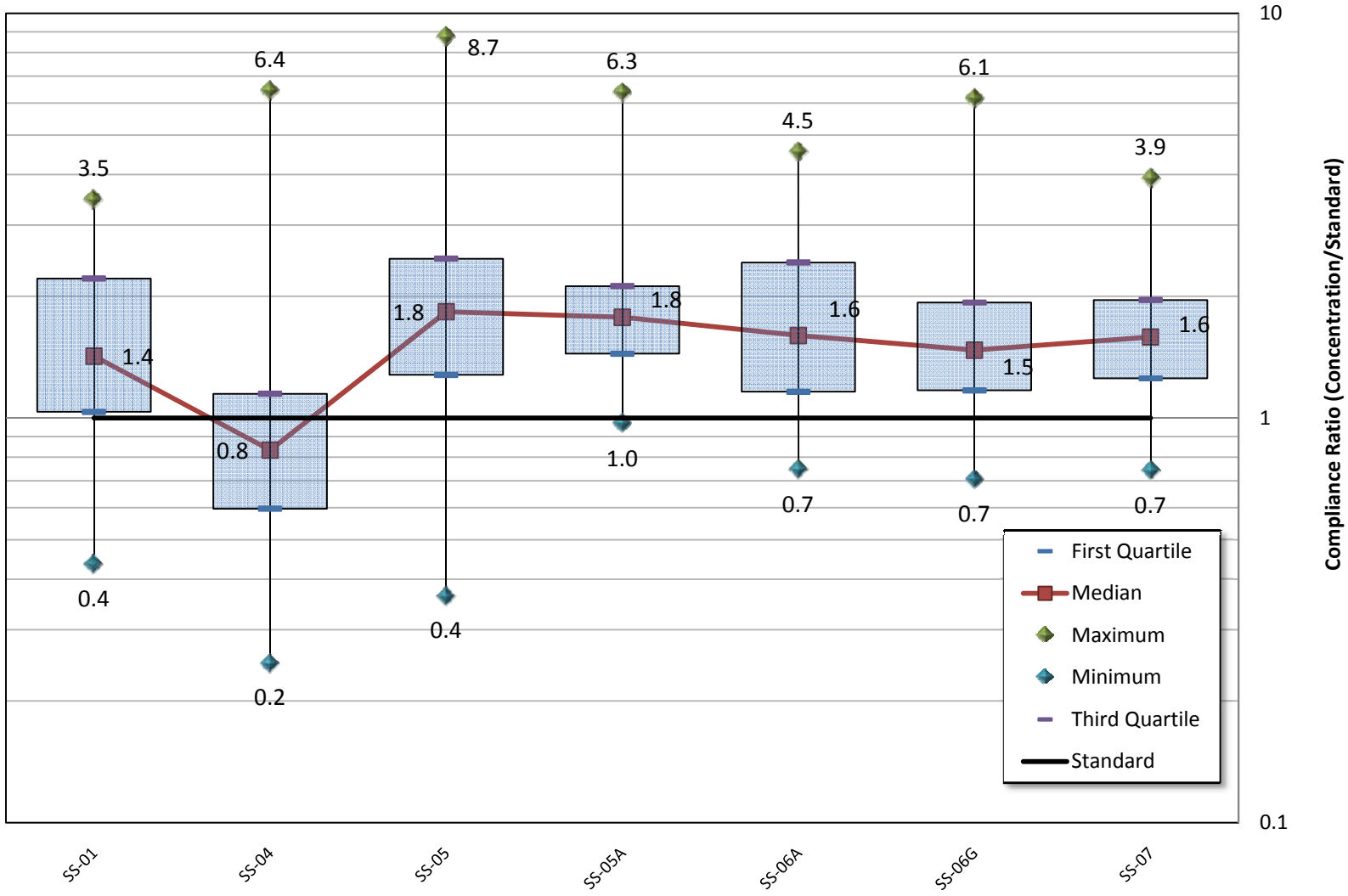

Figure 6-37
Storm Flow Zinc Concentrations and Acute Standard at SS-07
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

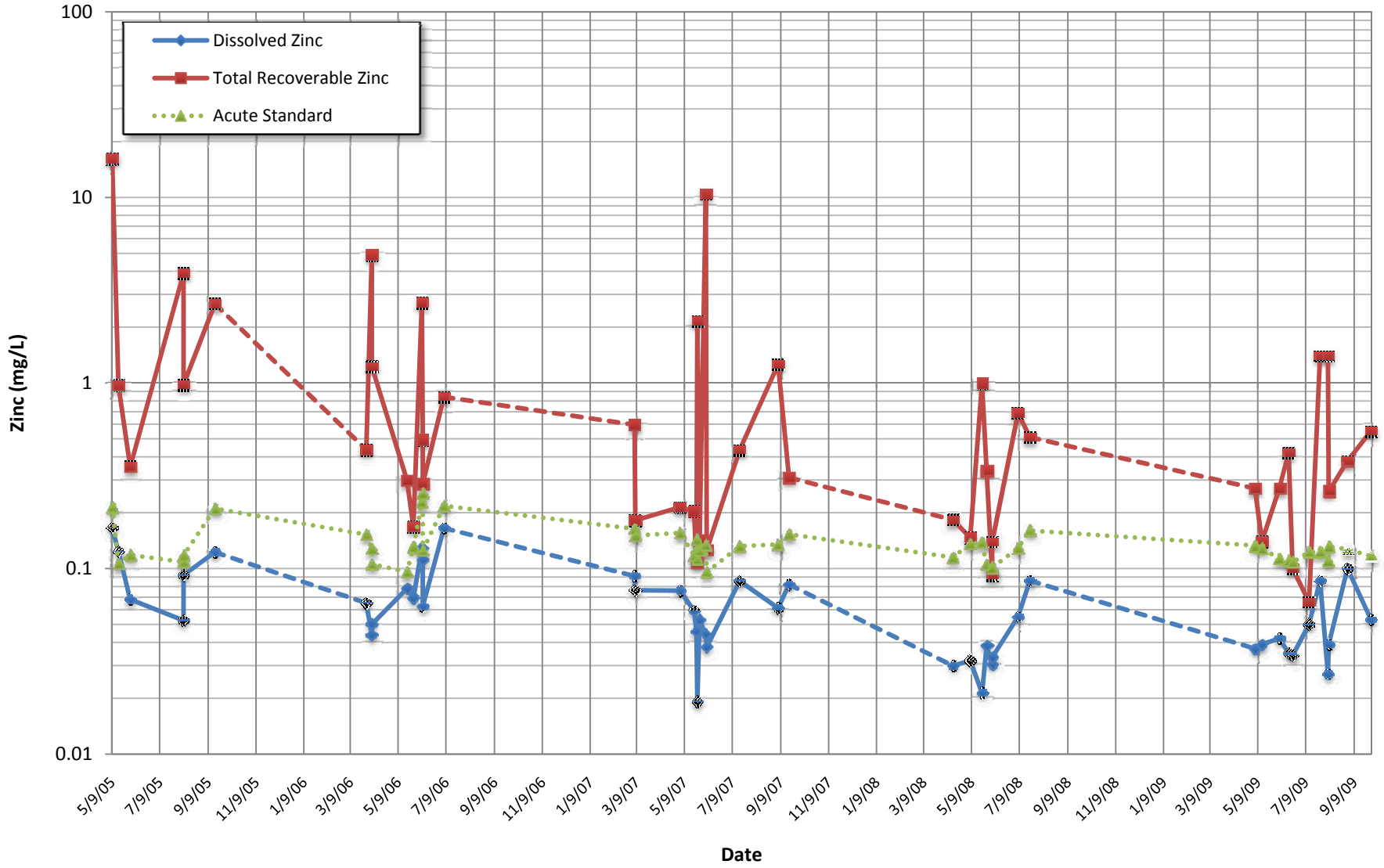

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Figure 6-38
Storm Flow Zinc Concentrations and Acute Standard at SS-06G
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

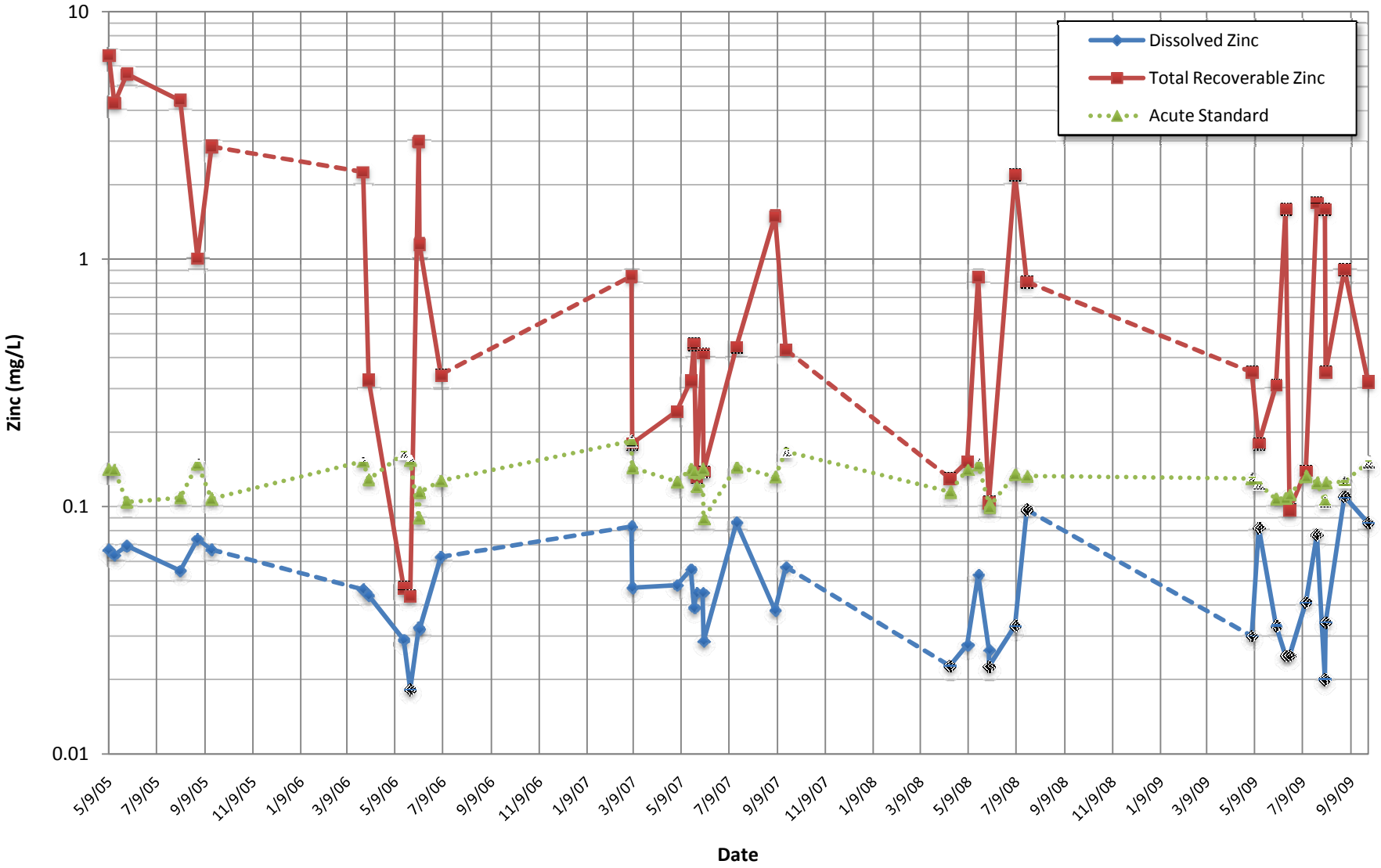

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Figure 6-39
Storm Flow Zinc Concentrations and Acute Standard at SS-06A
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

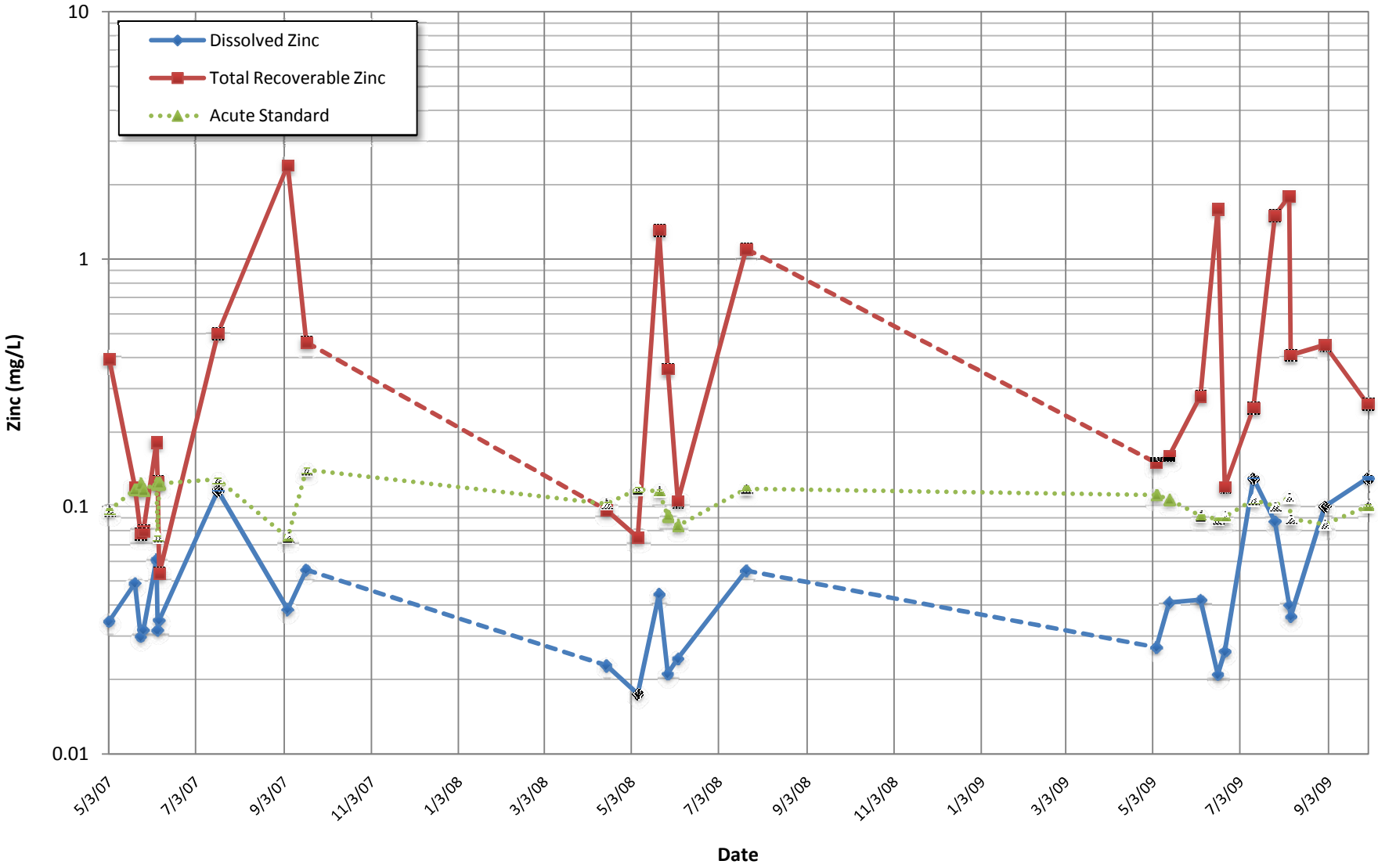

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Figure 6-40
Storm Flow Zinc Concentrations and Acute Standard at SS-05A
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

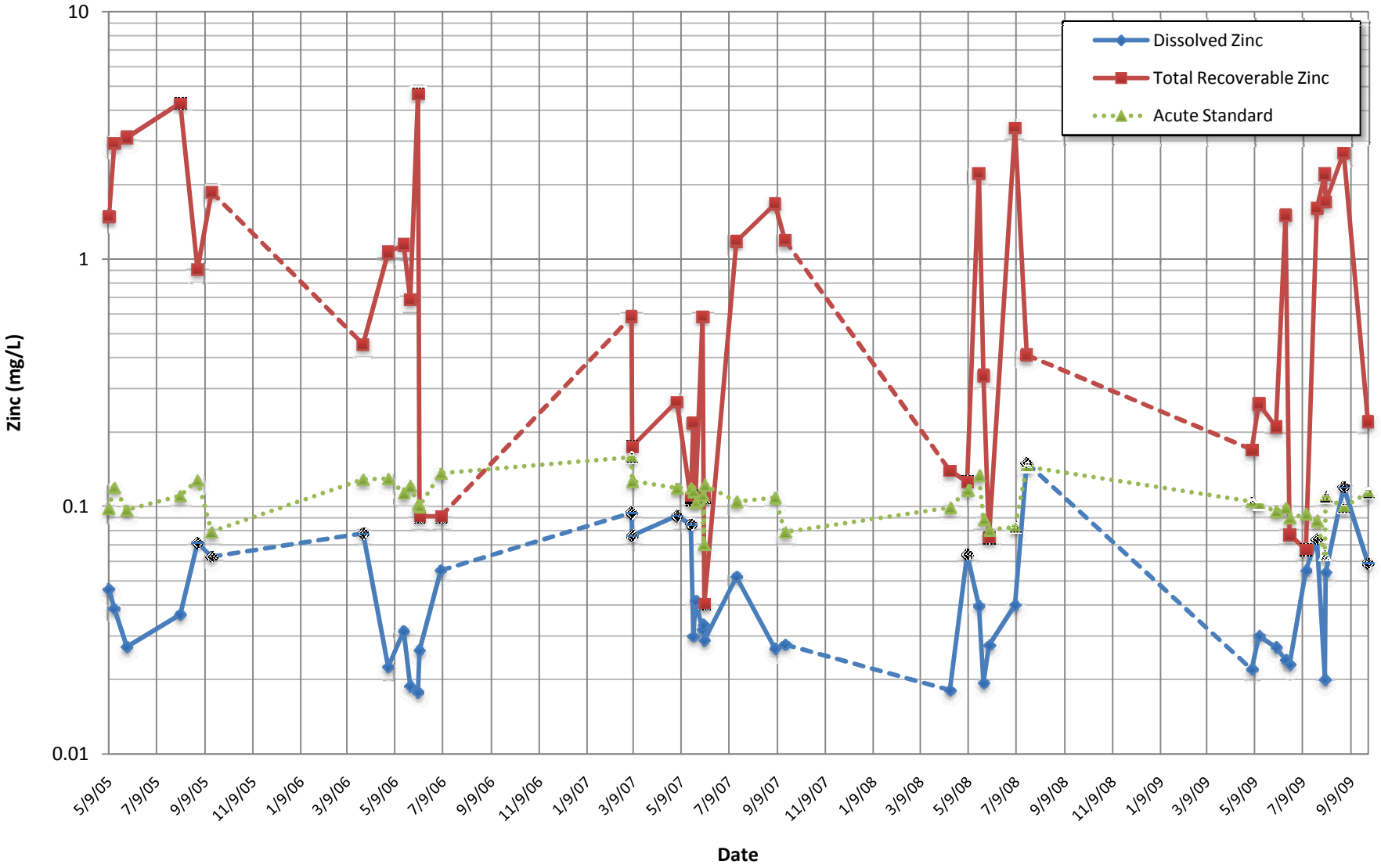

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Figure 6-41
Storm Flow Zinc Concentrations and Acute Standard at SS-05
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

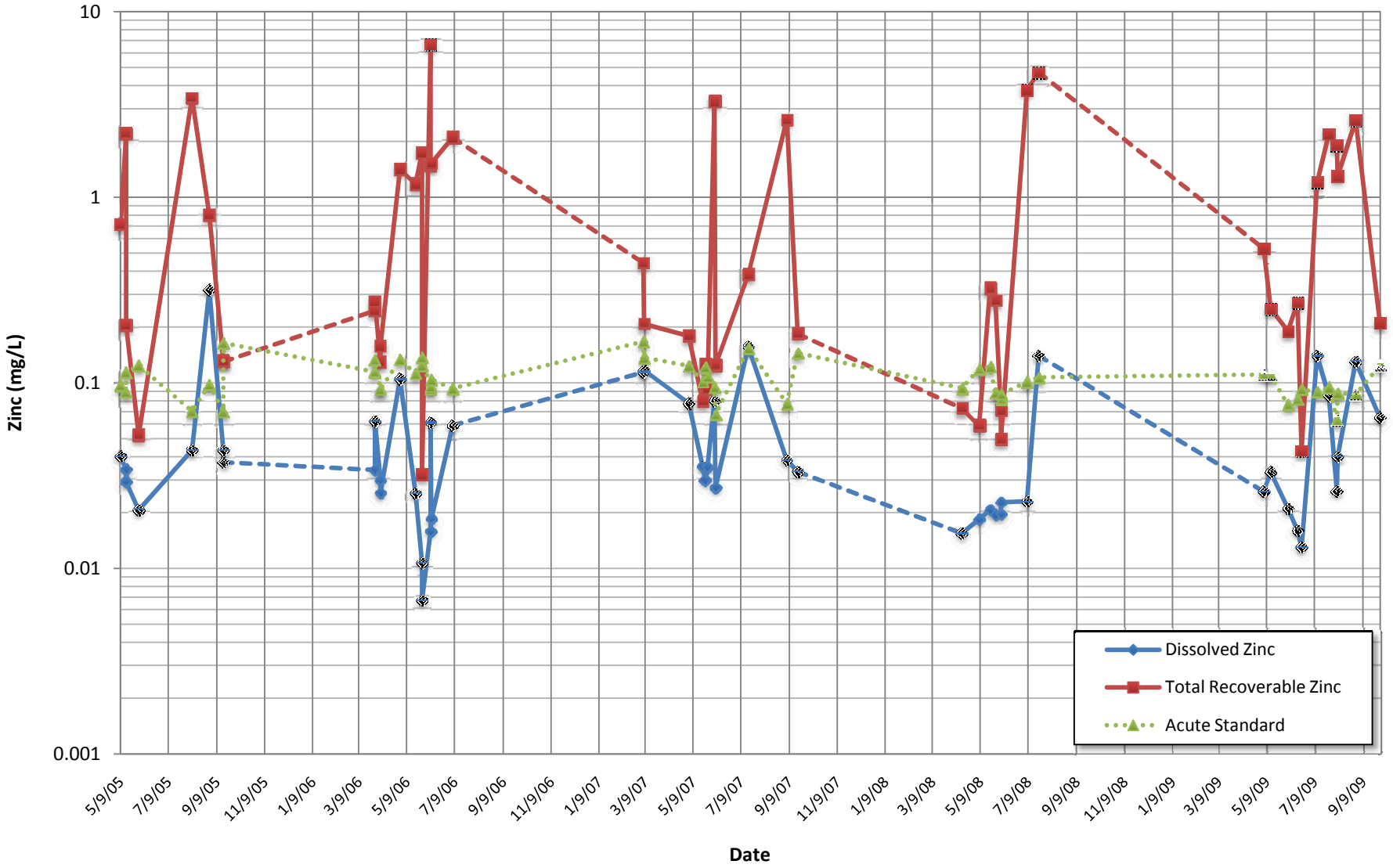

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Figure 6-42
Storm Flow Zinc Concentrations and Acute Standard at SS-04
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

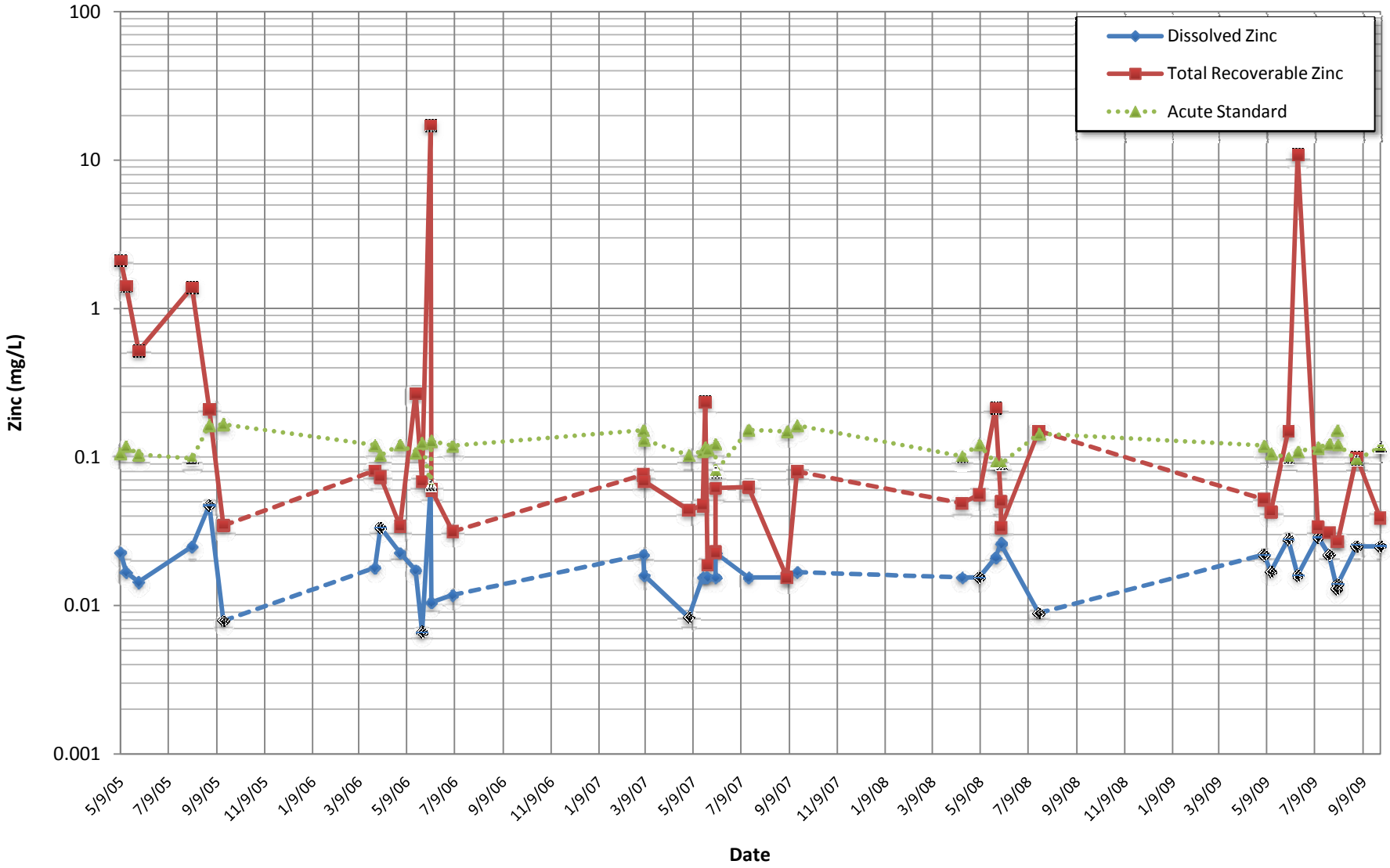

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Figure 6-43
Storm Flow Zinc Concentrations and Acute Standard at SS-01
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

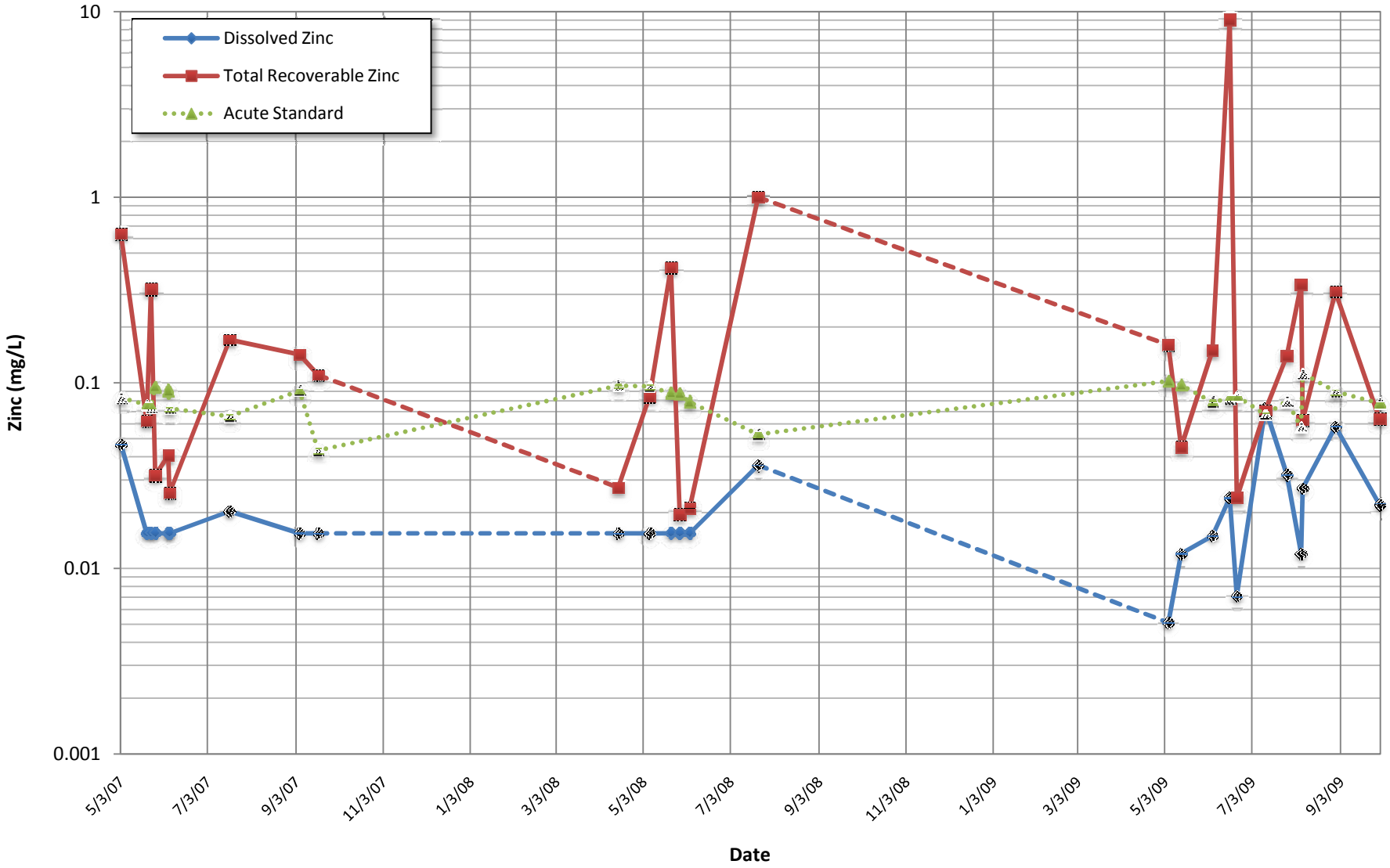

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Figure 6-44
Storm Flow Zinc Concentrations and Acute Standard at GG-01
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

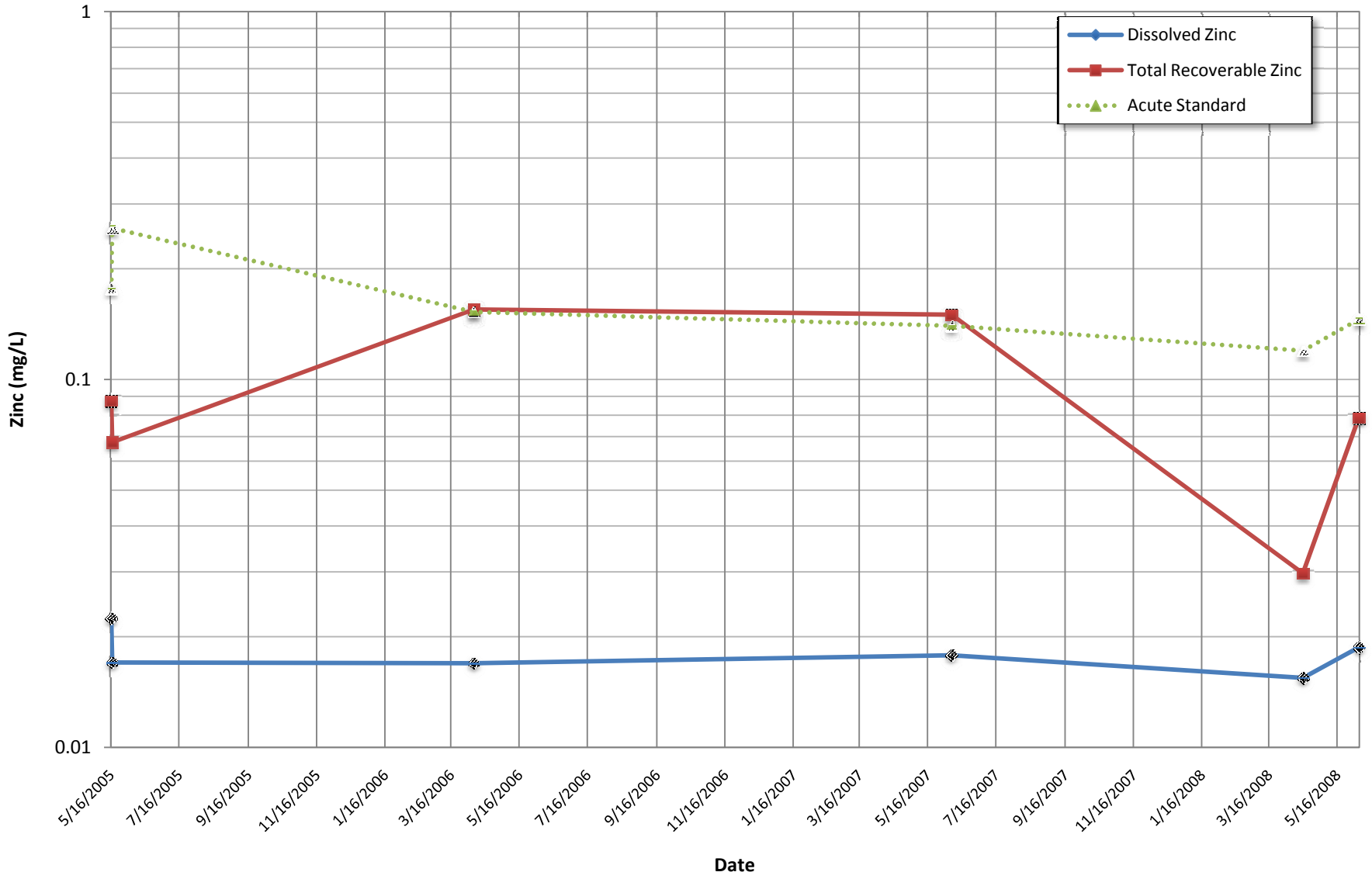

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Figure 6-45
Storm Flow Total Recoverable Zinc Compliance Ratio - Acute Standard
2005 through 2009
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

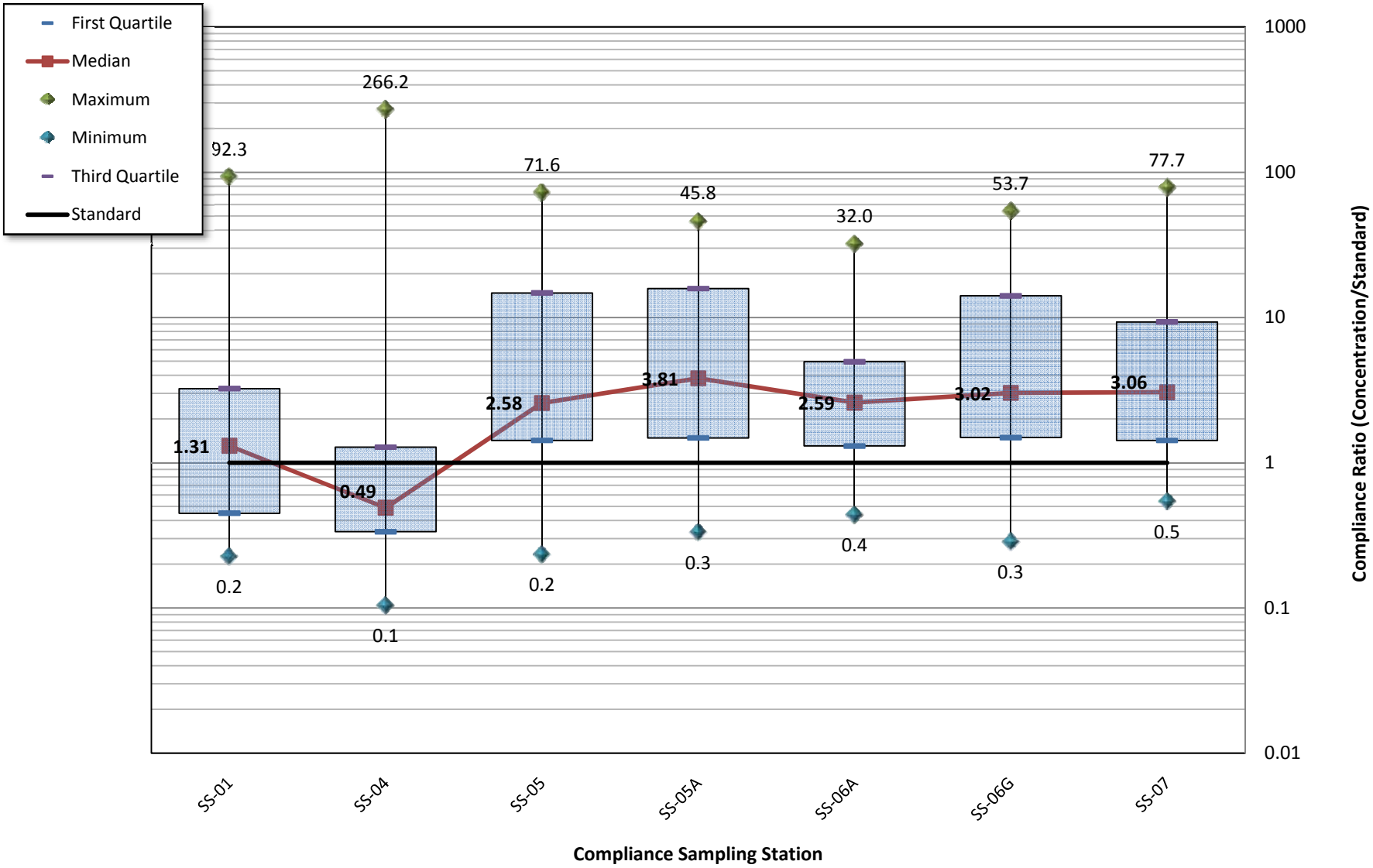

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Figure 6-46
Storm Flow Dissolved Zinc Compliance Ratio - Acute Standard
2005 through 2009
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

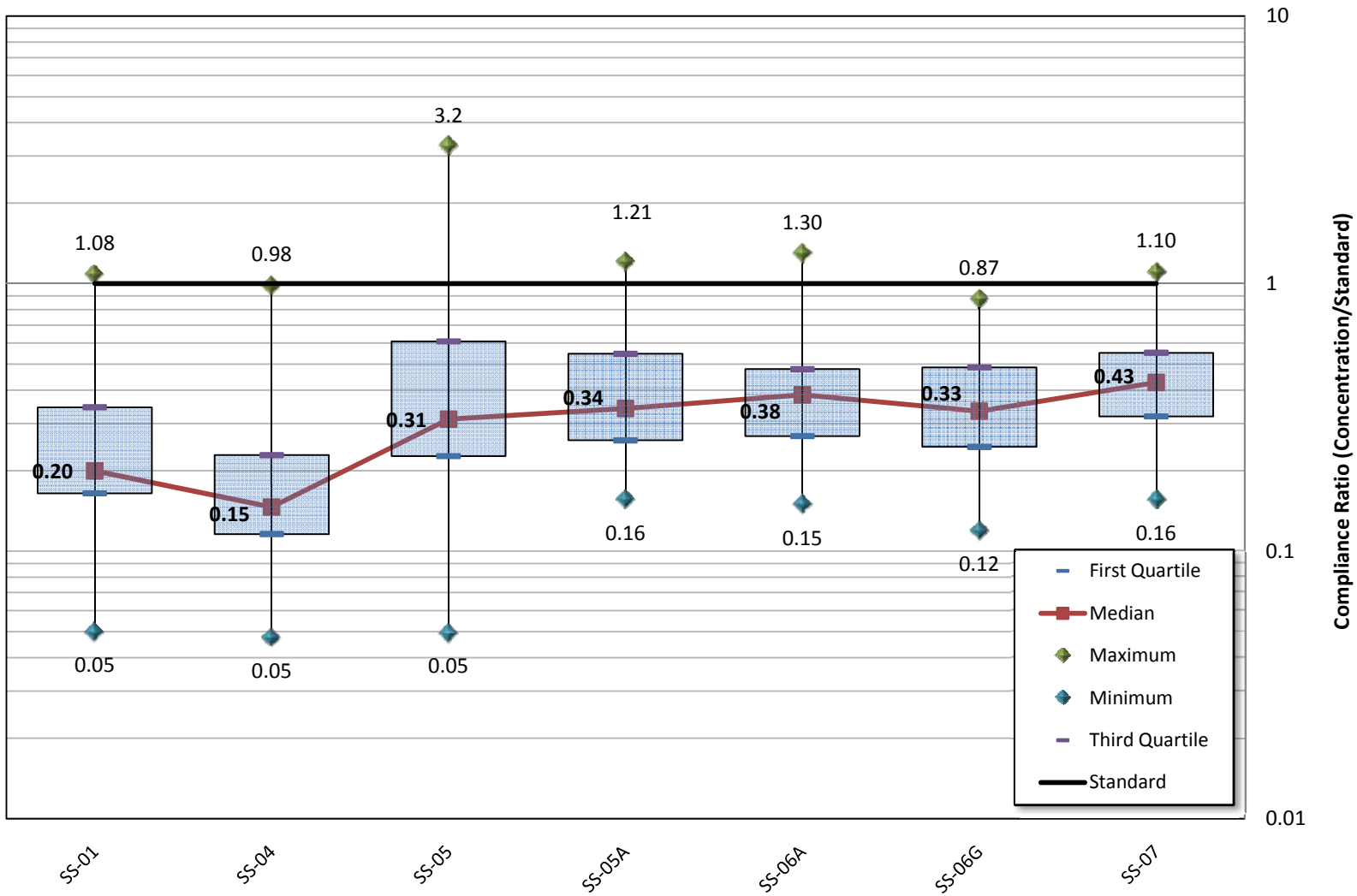

Figure 6-47
Arsenic Concentrations at Station 12323250 (SS-07)
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

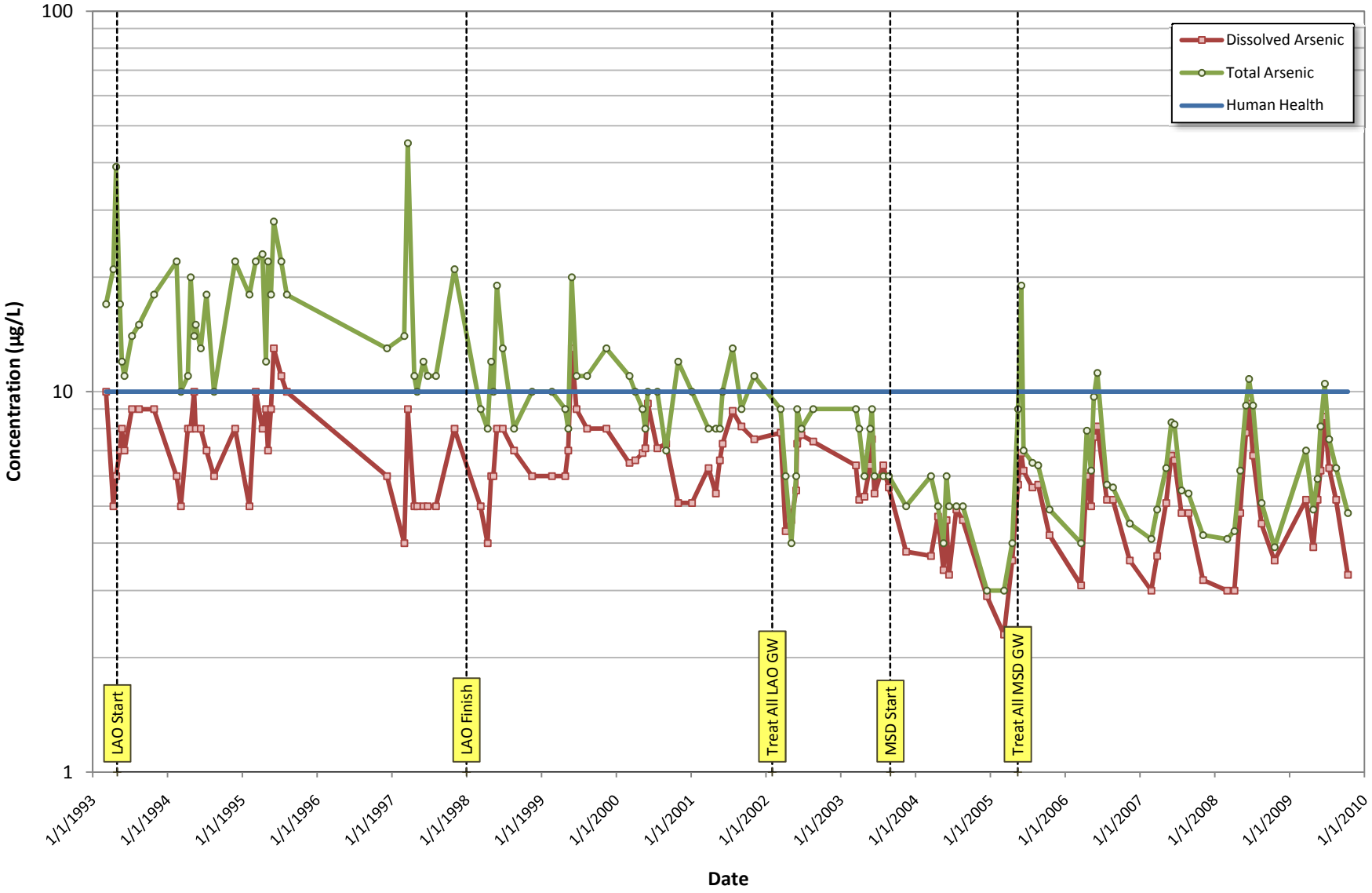

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Figure 6-48
Cadmium Concentrations at Station 12323250 (SS-07)
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

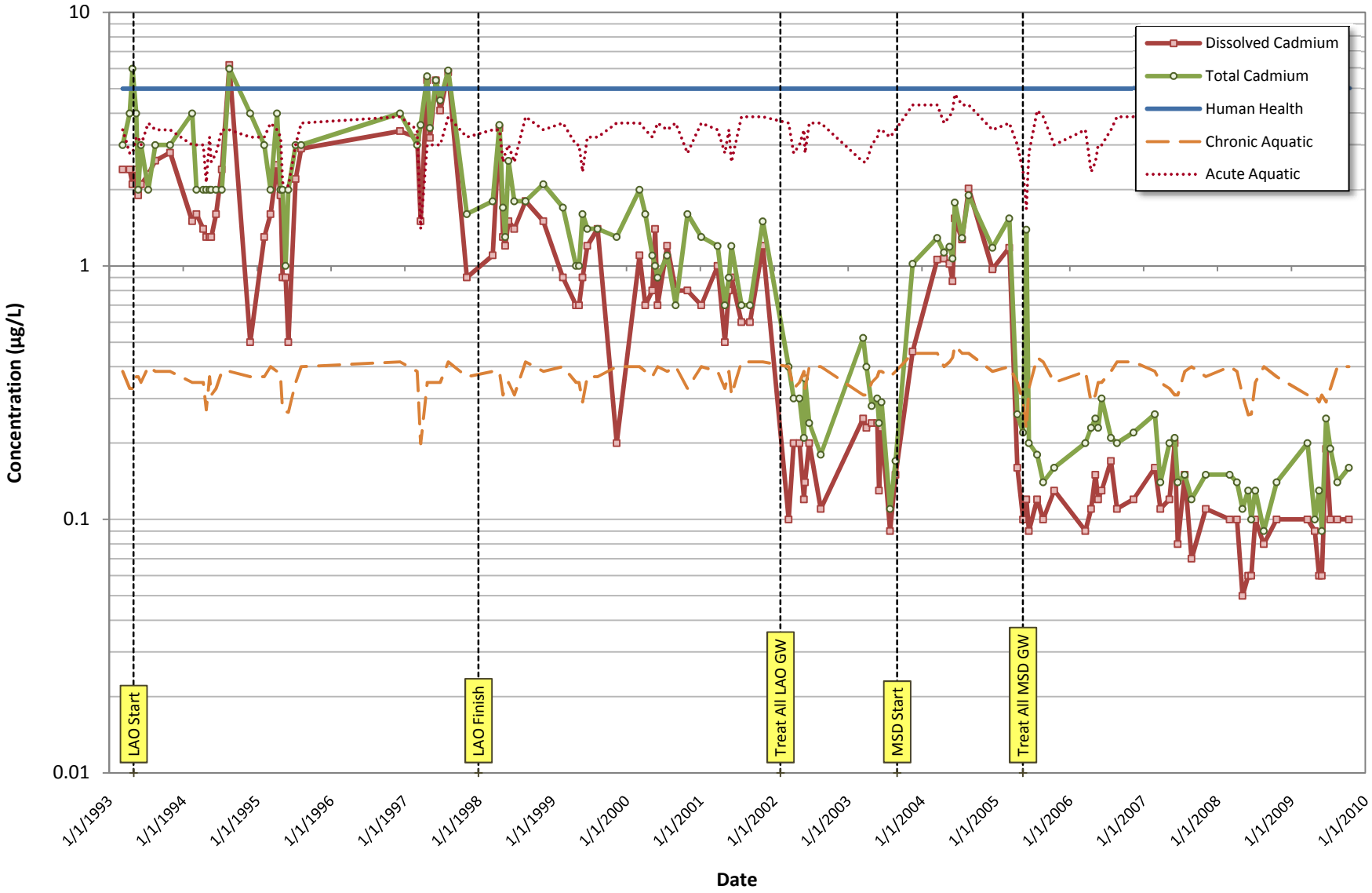

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Figure 6-49
Copper Concentrations at Station 12323250 (SS-07)
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

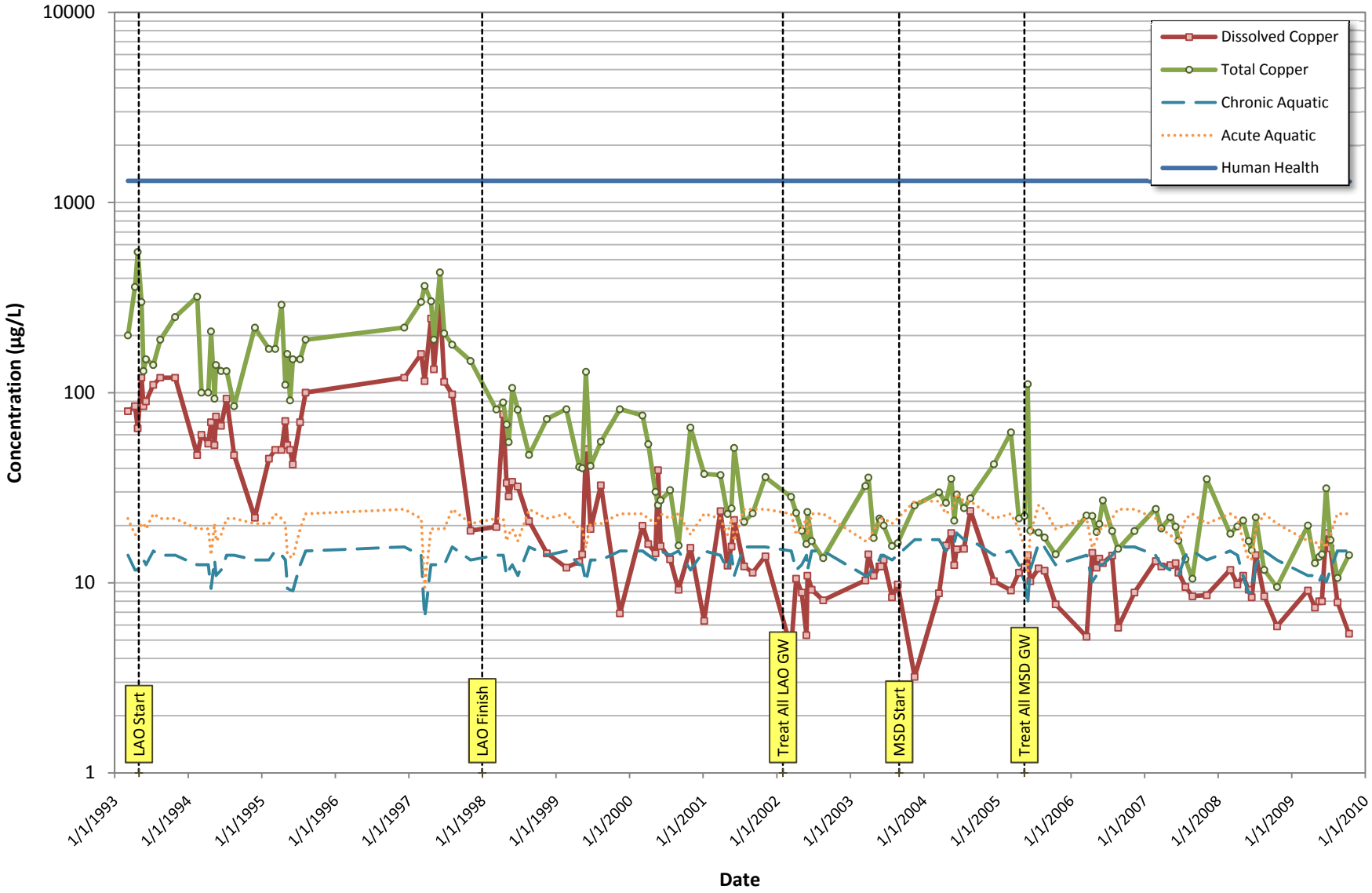

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Figure 6-50
Iron Concentrations at Station 12323250 (SS-07)
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

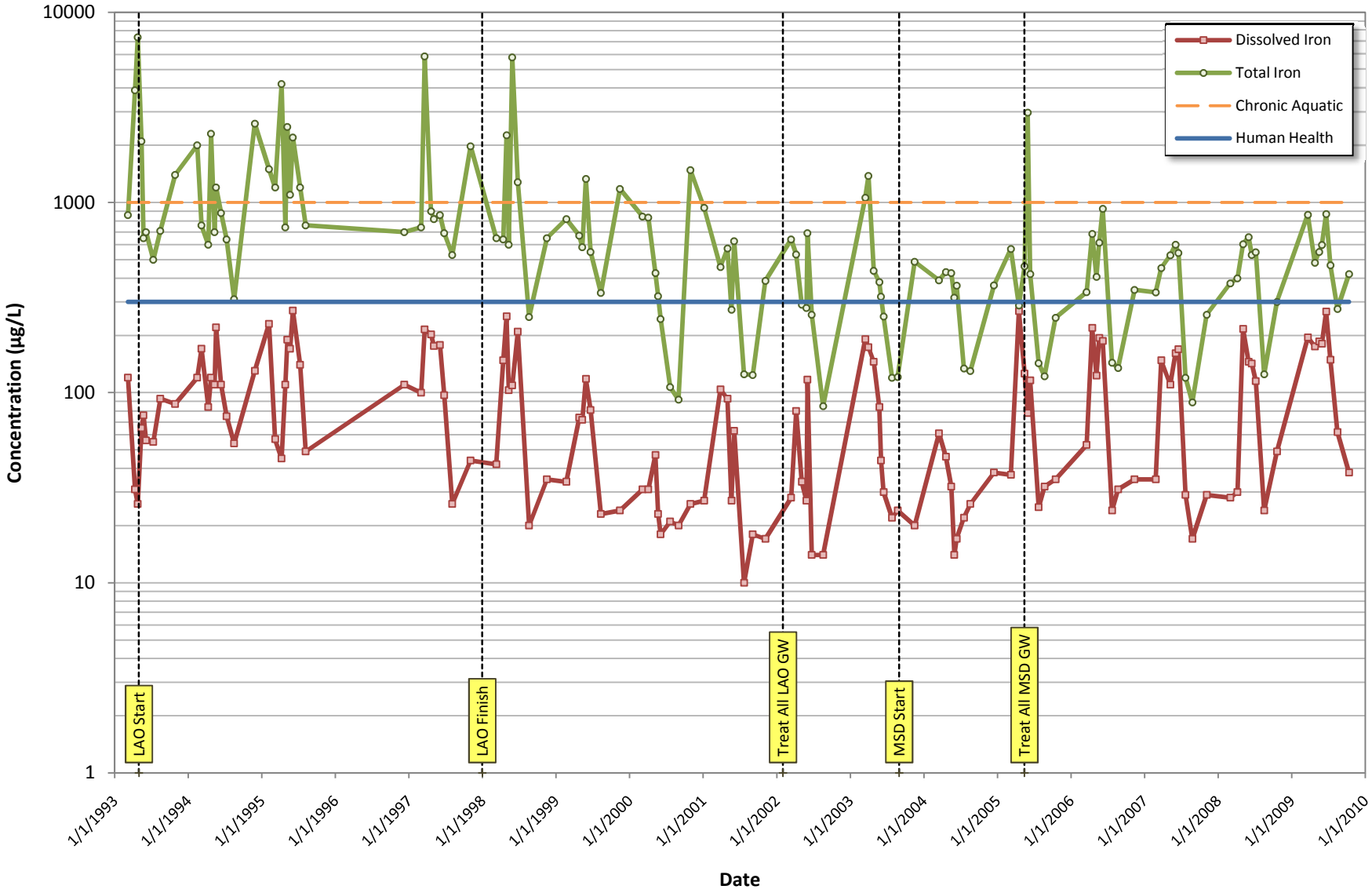

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Figure 4-51
Lead Concentrations at Station 12323250 (SS-07)
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

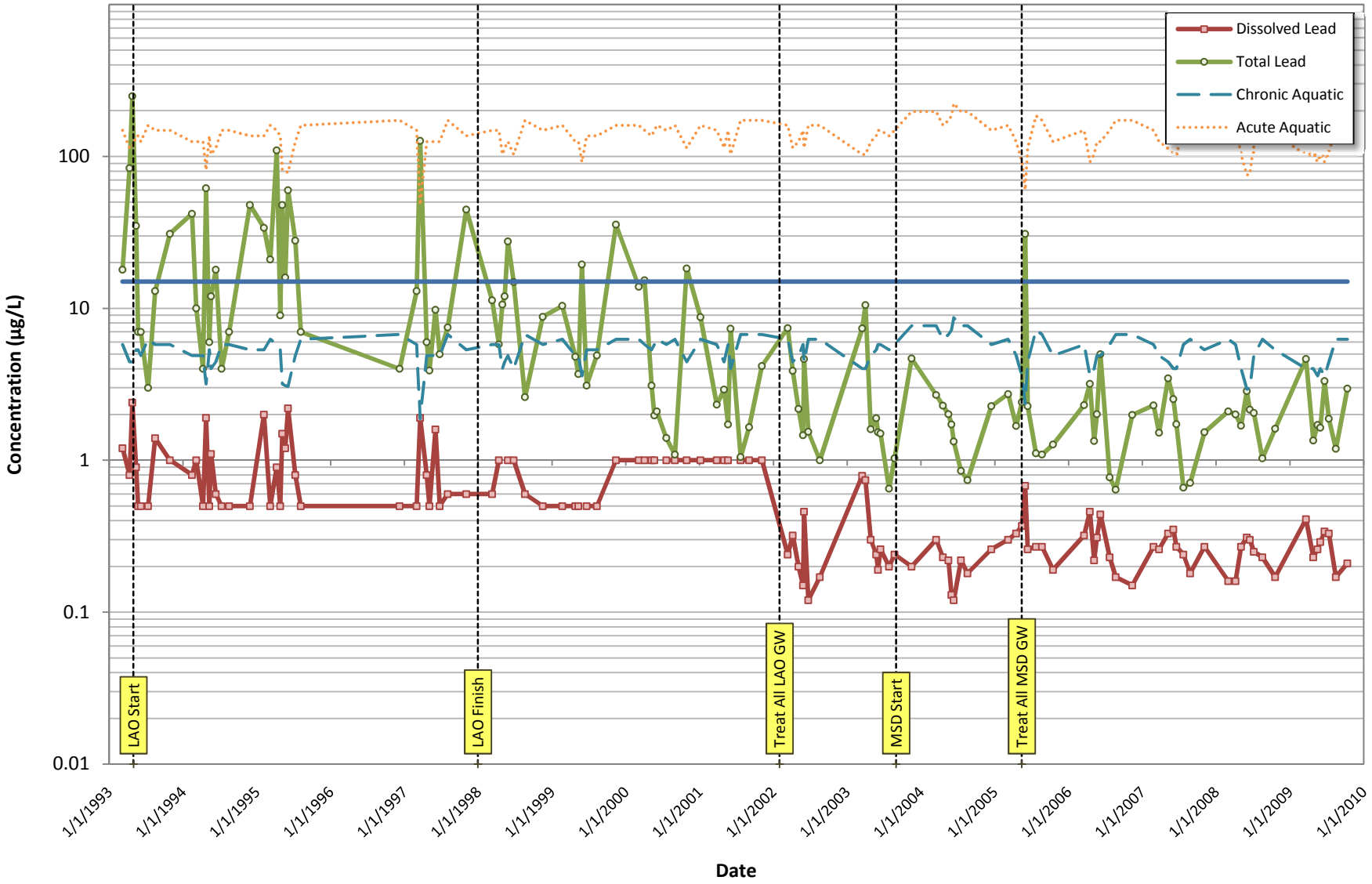

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Figure 6-52
Manganese Concentrations at Station 12323250 (SS-07)
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review

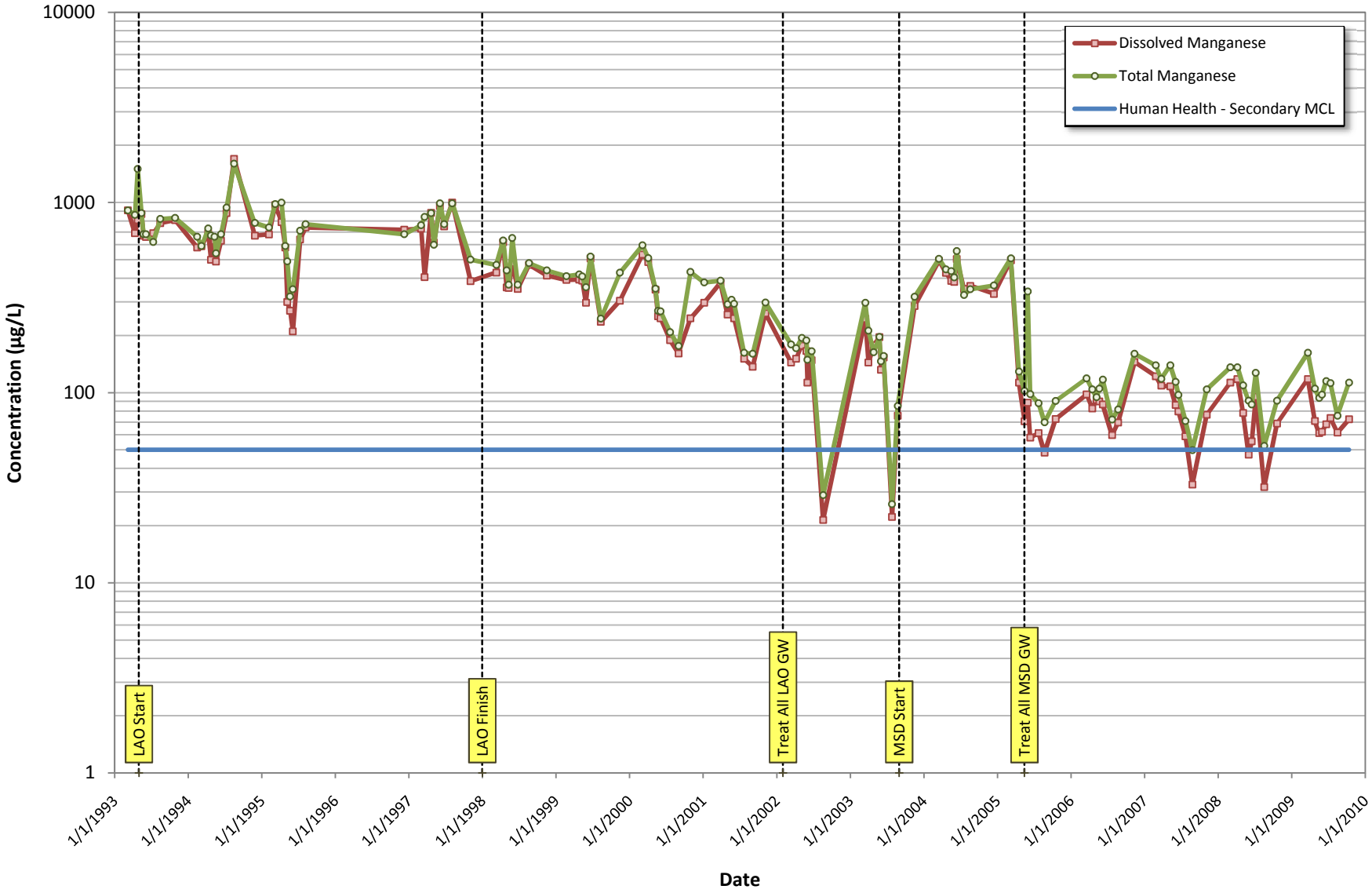

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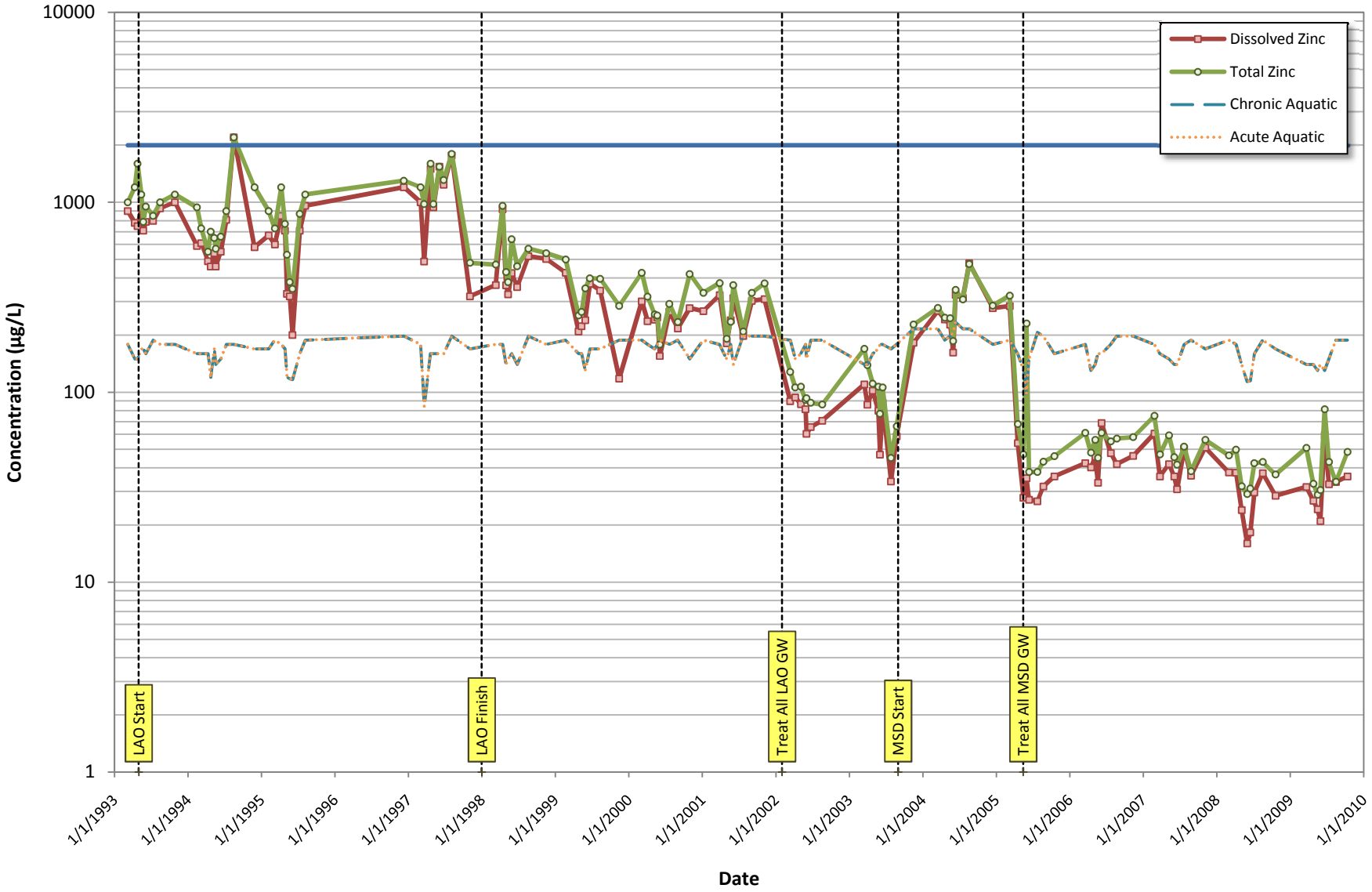
Figure 6-53
Zinc Concentrations at Station 12323250 (SS-07)
Silver Bow Creek/Butte Area Superfund Site, Five-Year Review



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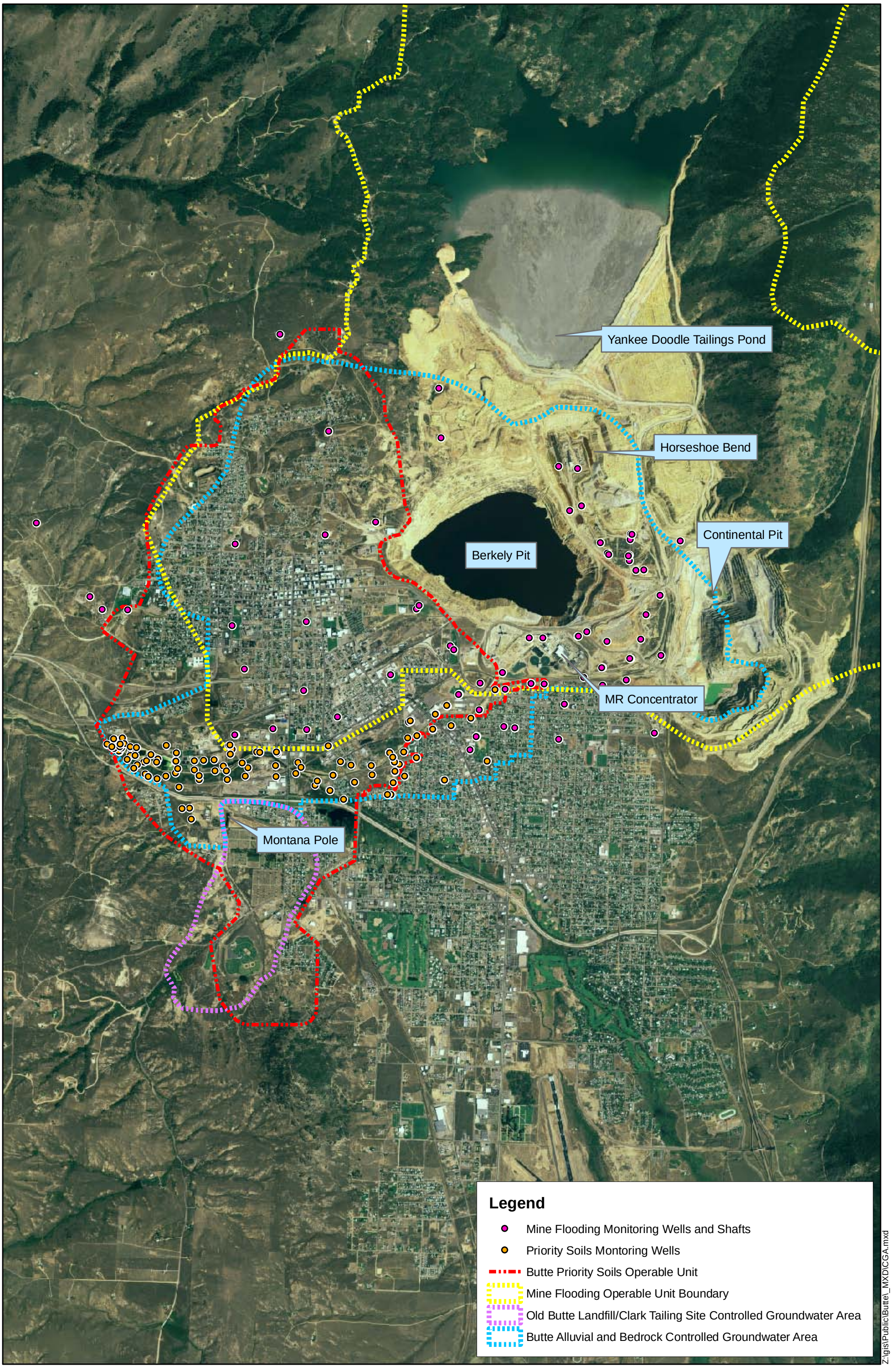


Figure 6-54. Butte Mine Flooding and Priority Soils Operable Units,
Butte, Montana

Appendix A

Site Inspection Photographs

Photographs Taken During Site Inspection: October 6, 2009

Photo 1. Lower Area One Flow Distributor

Photo 2. Lower Area One B1 Cell

Photo 3. Lower Area One B1 Cell Sludge Dredging Barge

Photo 4. Lower Area One C1 Cell

Photographs Taken During Site Inspection: October 6, 2009

Photo 5. Sludge Drying Bed at Lower Area One

Photo 6. Little Minah Cap, Active Reclamation of Mountain Con mine dump in the background.

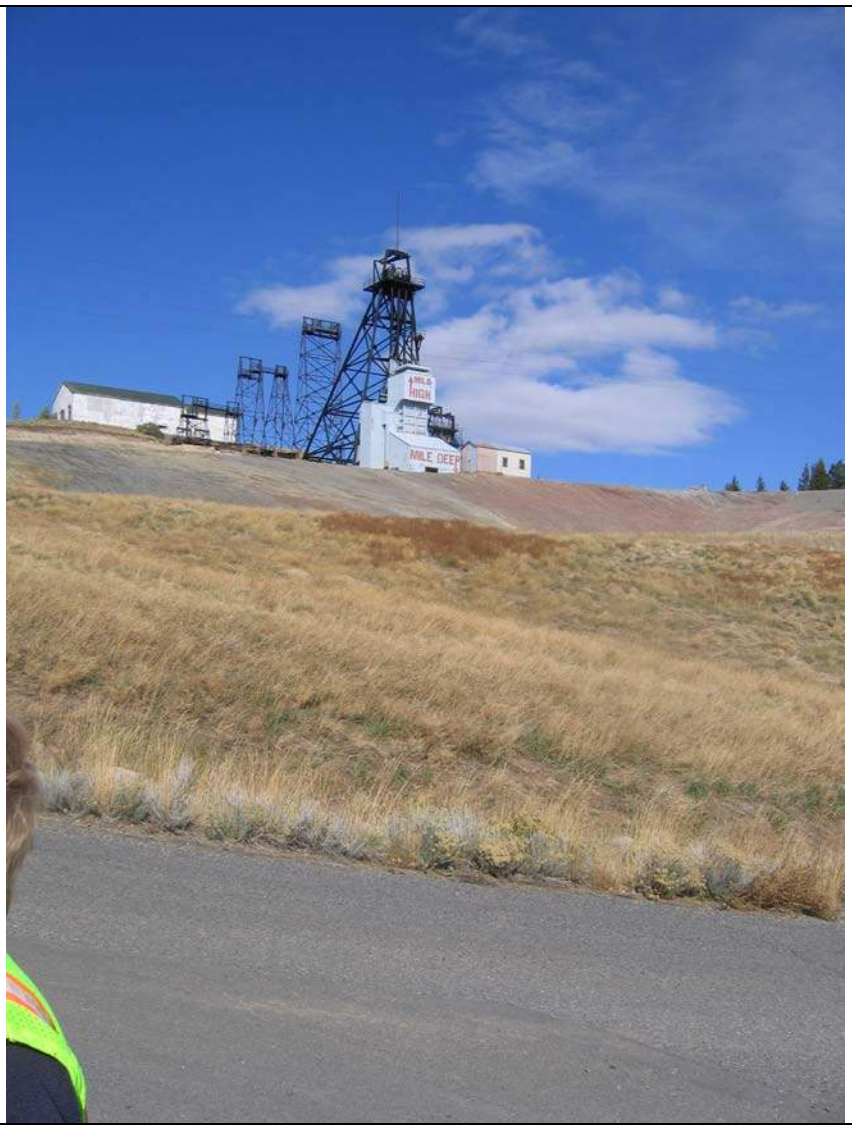


Photo 7. Mountain Con headframe and recontoured waste dump with Little Minah dump reclamation in the foreground.

Photographs Taken During Site Inspection: October 6, 2009

Photo 8. Little Minah Dump Reclamation, barren or weedy areas requiring vegetation improvement.

Photo 9. Concrete Cover over the Otisco Shaft

Photo 10. Otisco cap showing barren areas and exposed mine waste. Site was reclaimed prior to establishment of soil requirements for vegetative growth.

Photo 11. Looking Northeast over the Otisco shaft cover.

Photo 12. Otisco Shaft cover compromised. (Note that a physical hazard such as a mine shaft is not addressed under CERCLA.)

Photographs Taken During Site Inspection: October 6, 2009

Photo 13. Site inspection tour group at the Minnie Irvine dump (in background).

Appendix B

Residential Metals Abatement Program Access Agreement

RESIDENTIAL ACCESS AGREEMENT

_____ ("Owner") and Butte-Silver Bow County ("BSB") enter into this Residential Access Agreement ("Agreement") this ____ day of _____.

RECITALS

A. BSB has received funding to conduct certain sampling and abatement activities on certain residential properties located in Butte-Silver Bow County.

B. BSB desires to conduct sampling and abatement activities on certain residential property owned by Owner on the terms and conditions set forth herein.

C. Owner is willing to permit BSB to conduct certain sampling and abatement activities on residential property owned by Owner on the terms and conditions set forth herein.

THEREFORE, in consideration of the mutual covenants and promises contained in this Agreement, Owner and BSB agrees as follows:

1. GRANT OF ACCESS. Owner hereby grants to BSB, EPA (Environmental Protection Agency), MDEQ (Montana Department of Environmental Quality), ATLANTIC RICHFIELD, and their representatives the right to enter Owner's real property, as further described in Exhibit 1 hereto (the "Property") for the purpose of conducting the sampling and abatement activities described in paragraph 2 below. Owner warrants and represents to BSB that, to the best of the Owner's knowledge, Owner possesses ownership in the Property, except as follows:

   _____

   _____

   and has the right to grant access to BSB to conduct the described activities.

2. WORK TO BE PERFORMED. Owner agrees to permit BSB and their respective representatives to conduct the sampling and abatement activities described in the Work Plan attached hereto as Exhibit 2 (the "Work") on the Owner's Property. The Work will consist of the following phases:

a.) Initial assessment phase consisting of site and structure analysis, development of abatement strategy, and materials estimate.

b.) Activities related to the excavation and removal of soils, monitoring and sampling of environmental media and conducting other information gathering activities such as field investigation, data collection, soil boring, testing and periodic monitoring.

c.) Work phase consisting of the actual residential abatement process.

d.) Follow up sampling procedure to take place approximately one year after completion of the abatement project.

BSB will make every reasonable effort to minimize any inconvenience to Owner during the performance of the Work on the Property, and will work closely with Owner to address any concerns Owner may have about the Work. Unless otherwise agreed in writing by Owner and BSB, or required by EPA, all tools, equipment or other property taken or placed upon the Property by or at the direction of BSB shall remain the property of BSB and may be removed by BSB at any time within a reasonable period after completion of the Work.

3. FUTURE ACCESS. Owner hereby grants access to the Property at all reasonable times to BSB, EPA, MDEQ, ATLANTIC RICHFIELD and their representatives for the purpose of: (a) monitoring Property Owner's compliance with the Covenants set forth in Exhibit 4, (b) conducting any investigation, monitoring, sampling, or other activities with respect to the Property, or (c) undertaking any action that is deemed necessary or advisable with respect to the Property to address environmental conditions thereon.

4. RECORDATION. Owner agrees to permit BSB to create a photographic/video record to document the initial condition of specific areas of the Property, as well as, the post-Work condition of the Property. Copies will be made available for review upon owner's request.

5. INDEMINIFICATION OF OWNER. BSB agrees to indemnify and hold harmless Owner from any and all actions, claims, demands, liabilities, losses, damages or expenses, including damage to property or for loss of use of property, which may be imposed on or incurred by Owner as a result of BSB's negligent, reckless, or willful acts or omissions while on the Property, except to the extent that such actions, claims, demands, liabilities, losses, damages or expenses result from the acts or omissions of the Owner. Owner and BSB agree that the Work described in Exhibit 2 shall not give rise to a claim for indemnification under this provision.

6. COVENANT NOT TO SUE AND RELEASE. Owner covenants not to sue BSB and Atlantic Richfield Company ("ATLANTIC RICHFIELD") for, and releases BSB and ATLANTIC RICHFIELD from any liability for actions, claims, demands, losses, damages, expenses, injunctive relief, indemnification or any other relief or liabilities, including, but not limited to, damages to property or for loss of use of property, arising out of or related to Work described in Exhibit 2, provided that the Work is conducted in accordance with Exhibit 2.

7. COVENANTS, NOTICE OF COVENANTS AND NOTICE OF COMPLETION. Owner hereby agrees to abide by and impose the Covenants set forth in Exhibit 4. Contemporaneous with the execution of this Agreement, in order to provide notice of the Covenants and the Work performed, Owner also hereby agrees to execute the Notice of Covenants attached hereto as Exhibit 5. It is understood and agreed that the Work Plan attached hereto as Exhibit 2, together with any written modifications thereto, that are agreed upon by BSB and Owner following the execution of the Agreement, shall be attached to and made part of the Notice of Covenants. It is further understood and agreed that BSB shall promptly record the executed Notice of Covenants in the Butte-Silver bow County real property records following the completion of the Work phase of the residential abatement process.

8. SALE, LEASE, OR OTHER CONVEYANCE OF PROPERTY. Owner agrees that if he/she sells, leases, or otherwise conveys any portion of his/her right, title, or interest in any portion of the Property that all the Covenants set forth in Exhibit 4 shall be included in or attached to the deed, lease, or other conveyance document. The Owner agrees that such Covenants shall be binding on all subsequent owners. If, for any reason, the Owner fails to either abide by the Covenants or include the Covenants in a subsequent sale, lease, or other conveyance of all or any part of the Property, then the indemnification provisions of this Agreement shall be void and of no further force and effect.

9. NOTICE. BSB shall provide Owner with either written or oral notice seven (7) days prior to first commencing the work described in Exhibit 2 on the Property.

10. DELIVERY OF NOTICE. All notices by or pertaining this Agreement shall be in writing and shall be sent to Owner and BSB at the respective addresses below. Either Owner or BSB may designate a different address for receipt of notice by providing written notice of such change to the other. All notices shall be sent by certified mail, return receipt requested to:

BSB: Rick Larson
Butte-Silver Bow County
Childhood Lead Prevention Program
25 West Front Street, Butte, Montana 59701

OWNER: _____
_____
_____
_____

11. RESTORATION OF PROPERTY. Upon completion of the Work described in Exhibit 2, BSB will, with the exception of the necessary abatement improvements, return the Property to the condition it was in at the time BSB first entered the Property under this Agreement to the extent practicable, provided that such restoration is not inconsistent with the Work described in Exhibit 2.

12. SOIL SAMPLES. BSB agrees to use its' best efforts to provide, upon Owner's prior written request, a portion of any sample taken on Owner's Property. A "SAMPLE REQUEST" form, attached as Exhibit 3 for Owner's use to request a sample portion has been provided to Owner by BSB.

13. MISCELLANEOUS

a. Effect of Agreement. Except as otherwise expressly provided in this Agreement, nothing in this Agreement is intended or shall be construed as a waiver of any right, claim, or defense by any party to this Agreement against the other or against any other person or entity under CERCLA or any other law, or as creating any right or benefit in favor of any person or entity. This Agreement and the rights and obligations created hereby shall be binding upon and inure to the benefit of Owner and BSB and their respective assigns and successors in interest.

b. Negation of Agency Relationship. The Agreement shall not be construed to create, either expressly or by implication the relationship of agency or partnership between Owner and BSB. Neither Owner nor BSB is authorized to act on behalf of the other in any manner related to the subject matter of this Agreement, and neither shall be liable for acts, errors, or omissions of the other entered into, committed, or performed with respect to or in the performance of this Agreement.

c. Termination. Except with respect to paragraph three (3) on page one, this Agreement will terminate following BSB's written notification that work described in Exhibit 2 is complete.

d. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Montana and will be in the State of Montana.

e. Construction. Whenever possible, each provision hereof will be interpreted in such a manor as to be effective and valid under applicable law, but if any provision hereof is held to be prohibited by or invalid under applicable law, such provision will be ineffective only to the extent of such prohibition or such invalidity, without invalidating the remainder of such provision or the remaining provisions hereof.

f. Entire Agreement. This Agree embodies the entire agreement of Owner and BSB with respect to the subject matter hereof, and no prior oral or written representation shall serve to modify or amend this Agreement. This Agreement may not be modified, except by written agreement signed and duly authorized by Owner and BSB.

IN WITNESS WHREOF, Owner and BSB have executed this Agreement effective as of the first date written above.

OWNER:

_____ Date _____

Title: Owner

BUTTE-SILVER BOW:

_____ Date _____

Title: Environmental Health Specialist

0

EXHIBIT 1 TO RESIDENTIAL ACCESS AGREEMENT

DESCRIPTION OF PROPERTY

That certain real property as more fully described in the attached deed dated

_____.

Recorded at Roll _____, Card _____ in the records of Silver Bow County, Montana.

EXHIBIT 2 TO RESIDENTIAL ACCESS AGREEMENT

WORK PLAN

EXHIBIT 3 TO RESIDENTIAL ACCESS AGREEMENT

SAMPLE REQUEST

I, the undersigned, am the owner, his/her legal representative, or otherwise control the Property described herein. I have granted access to BSB and their representatives, to enter the Property and to take samples of environmental media from the Property.

I hereby request BSB provide to me a report of the results of that sampling.

Signature of person making request (if made on behalf of another person or company, please identify that party also):

_____ Date_____
Signature

Print Name: _____

The following is the address at which the requesting party may be contacted and/or the sample portion delivered:

_____

_____

_____

Phone_____

EXHIBIT 4 TO RESIDENTIAL ACCESS AGREEMENT

COVENANTS

A. CREATION OF CONVENANTS. The following covenants shall burden the Property (described as Exhibit A) and are intended to be covenants of the Property Owner and the Property Owner's successors in interest, assigns, and transferees:

1. No Mining. There shall be no exploration for or mining, milling, processing, drilling, or any other method of development and/or production of any veins, loads, or mineral deposits (including, without limitation, hard rock minerals, sand, gravel, clay or other similar naturally occurring substances) on the Property. All other uses of the Property shall be permitted in accordance with and in a manner consistent with the requirements of applicable laws.

2. Future Development. The Property Owner shall secure written approval and requisite permits from BSB prior to allowing any development of any kind on the Property, including, without limitation, ground water well drilling or any action that will alter, disturb or otherwise interfere with the Work (described in Exhibit B) performed on the Property. BSB shall approve the proposed development if the Property Owner provides acceptable assurances that the proposed development will be undertaken in accordance with the requirements of all applicable laws including, without limitation, the requirements of the Butte-Silver Bow Reclaimed Areas Guidebook and any applicable ground water control area.

3. Maintenance. In order to protect and preserve the Work performed on the Property, the Property Owner will keep the Property in good repair, normal wear and tear expected, and will notify BSB of any problems that may arise with the Work. Owner further agrees to provide access to the Property at reasonable times in the future to verify compliance with this Covenant.

4. Sale, Lease, or Other Conveyance. The Property Owner will disclose the nature of the Work performed on the Property and the terms of these Covenants to any future purchaser, lessee or other occupant of the Property. If the Property Owner sells, leases, or otherwise conveys any portion of his/her right, title or interest in any portion of the Property, the Covenants set forth herein shall be included in or attached to the deed, lease or other conveyance documents. The Property Owner shall also notify BSB of any sale, lease, or other conveyance of the Property.

5. Obligation to Comply with Residential Access Agreement. The terms and conditions of that certain Residential Access Agreement dated _____ shall be binding upon the Property Owners, successors, and assigns and all future purchasers, lessees, or other occupants of the Property.

B. BENEFITED PROPERTIES - BENEFITS. The Benefited Properties shall include all properties adjacent to or contiguous with the Property. The benefits from the Covenants include: (i) the reduction or minimization of potential risk associated with environmental conditions on, or, under, near, or associated with the Property, and (ii) the maintenance, use, and potential development of the Property in such a manner to allow economic benefits to accrue to the Benefited Properties.

C. ENFORCEMENT RIGHTS - COVENANTS. BSB, EPA, MDEQ, and each of the Owners (as the same may appear from time to time) of the Benefited Properties shall have the right, but not the obligation, to enforce the Covenants. Each Covenant shall be enforceable, in perpetuity, to the fullest extent permitted by Montana law. All remedies available, at law, or in equity, shall be available for the enforcement of the Covenants. The selection of remedies shall be within the sole discretion of the party entitled to enforce the Covenants. The prevailing party in any action to enforce the Covenants shall be entitled to reasonable attorney's fees and costs incurred in such action.

EXHIBIT 5 TO RESIDENTIAL ACCESS AGREEMENT

NOTICE OF COVENANTS

The following property owner(s) hereby agree to have the "Covenants" attached and denoted as Exhibit 'A' imposed upon their property and to run with the land.

Legal description: _____

IN WITNESS WHEREOF, _____ has executed this notice at Butte, Montana on the _____ day of _____.

_____
NAME OF PROPERTY OWNER (S)

STATE OF MONTANA)
: ss
County of Butte-Silver Bow)

On this _____ day of _____, 200____, before me,

_____, a Notary Public for the State of Montana,
Notary

personally appeared _____, and is personally known to me or
Property Owner (s)

thru government-issued identification, the person(s) described in and whose name(s) is/are subscribed to the within instrument, and acknowledged to me that he/she/they executed the same.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my notarial seal the day and year in this certificate above written.

_____
SIGNATURE OF NOTARY PUBLIC

SEAL

_____
PRINT NAME OF NOTARY PUBLIC

FOR THE STATE OF _____

RESIDING AT _____

MY COMMISSION EXPIRES _____

EXHIBIT 6 TO RESIDENTIAL ACCESS AGREEMENT

STATEMENT OF COMPLETION

Owner hereby acknowledges, by signing this Statement of Completion, that work performed by BSB Lead Hazard Control Program was conducted as stated in the Work Plan (Exhibit 2) and completed to the satisfaction of the Owner.

We, the undersigned, agree to the terms of this agreement.

SIGNED: _____
Owner

DATE: _____

SIGNED: _____
BSB Representative

DATE: _____

Appendix C

Reclaimed Mine Sites (Source Areas) Visited during Site Inspection Tour

BRES FIELD FORM

Site ID: #2 Site Name: MINNIE IRVINE Field Date: 7/25/02

Team Members (Circle your name): SHANGAY, RENNICK

Number of Polygons: 2 Slope: 0 to 15 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45	40				
*Undesirable (weedy) species	3	10				
*Noxious weeds	2	5				
Litter	15	15				
Rocks > 2"	2	2				
Bare Ground	33	28				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	48	45				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:

0-20% = RI (Reclamation Improvement)

21-39 % = VI (Vegetation Implementation)

40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D	I				
Crested wheatgrass	-	I				
Slender wheatgrass	-	D				
Yellow sweetclover	-	-				
Alfalfa	F	I				
RABBIT BRUSH	I					
BASIN WILDRYE	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3	3				
Surface Rock Movement	2	2				
Pedestalling	14	9				
Flow Patterns	3	3				
Rills Depth	0	6				
Rills Frequency	0	2				
Gullies Depth	0	3				
Gullies Frequency	0	3				
Soil Movement	3	5				
TOTAL BLM Score:	25	36				

BLM score:

0-55 = M (Monitor)

56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	F				
Dalmation toadflax	-	-				
Cheatgrass	I	F				
Baby's breath	-	I				
Kochia	-	-				
Thistle	-	-				
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items

Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y_____ N ✓ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☐ more weeds
- ☐ steeper slope
- ☐ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other_____

Estimate width of affected edge _____

4. Exposed Waste Material? Y_____ N ✓

- Estimated pH_____
- Approximate area _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N ✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ✓ N_____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 6

Do barren areas cover over 25% of any polygon? Y_____ N ✓

7. Gullies (over 6" in depth):

Y ✓ N_____

Are any gullies actively eroding? Y ✓ N_____

Number of gullies 4

Comments.

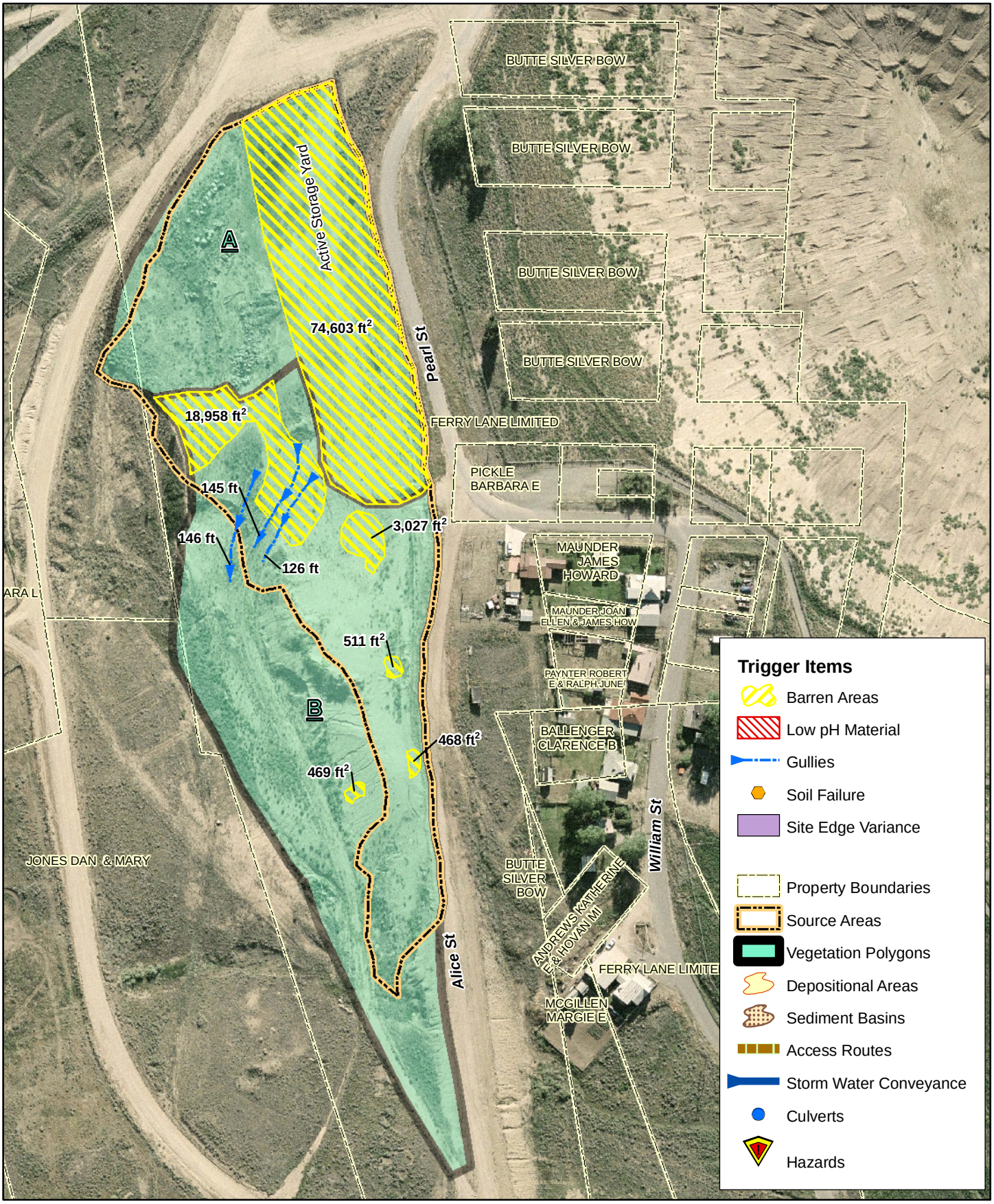
- THIS SITE LOOKS AS IF IT WAS RECLAIMED @ TWO - DIFFERENT TIMES. WE BROKE OUT POLYGONS A AND B TO REPRESENT THE TWO DIFFERENT RECLAMATION EVENTS. DIFFERENT SEED MIXES
- THERE ARE SEVERAL BARREN AREAS LOCATED @ THIS SITE. MOSTLY IN AREA WHERE HAUL TRUCK TRAFFIC AND STEEP SLOPES.
- DID NOT EVALUATE THE ACTIVE SOIL STOCK PILE / EQUIPMENT YARD AREA.
- EXTENDED SITE BOUNDARY TO THE BOTTOM OF THE GULCH TO CAPTURE THE EXTENT OF THE RECLAIMED AREA (NORTH) ALSO EXTEND SITE BOUNDARY TO WEST TOWARD GATE @ BOTTOM GULCH
- AIRPHOTO DOES NOT REPRESENT THE CURRENT VEGETATION CONDITIONS.
- Soil texture appears very Sandy with little to no organics or silts or clay

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#2 - Minnie Irvine



BRES FIELD FORM

Site ID: #59 Site Name: Little Mine Field Date: 7-8-08

Team Members (Circle your name): Gordon Ryan Campbell

Number of Polygons: 3 Slope: 0 to 10 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Below Mtn. Frame.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25	35	30			
*Undesirable (weedy) species	40	5	20			
*Noxious weeds	5	0	3			
Litter	10	20	20			
Rocks > 2"	5	15	12			
Bare Ground	15	25	15			
TOTAL (above 6 items must total 100%)	100	100	100			
ADJUSTED LIVE % = Live + 5%Undesirable	30	40	35			

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X	I	X			
Crested wheatgrass	I	I	D			
Slender wheatgrass	I	D	I			
Yellow sweetclover	X	X	I			
Alfalfa	I	X	X			

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11	6	8			
Surface Rock Movement	5	8	11			
Pedestalling	3	6	3			
Flow Patterns	6	9	3			
Rills Depth	1	2	3			
Rills Frequency	2	7	6			
Gullies Depth	X	7	X			
Gullies Frequency	X	2	X			
Soil Movement	5	5	3			
TOTAL BLM Score:	33	52	37			

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	~~I~~	X	I			
Dalmation toadflax	X	X	I			
Cheatgrass	F	X	I			
Baby's breath	X	X	X			
Kochia	X	X	X			
Thistle	X	X	X			
Leafy Spurge	X	X	X			
Salsify	I	I	F			

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N (check applicable items)

- X **lime rock barrier**
- **more weeds**
- X **increased erosion**
- X **gullies**
- X **depositional area**
- **steeper slope**
- **less vegetation**
- **other**

Estimate width of affected edge (in feet)

4. Exposed Waste Material? Y X N

- Estimated pH 4.0
- Approximate area (in square feet) 115
- Number of areas with exposed waste 1

5. Is there evidence of: Y N X

- **bulk soil failure**
- **land slumps**
- **subsidence**

6. Barren Areas: Y X N

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 7

Do barren areas cover over 25% of any polygon? Y N X

7. Gullies (over 6" in depth):

Y X N

Are any gullies actively eroding? Y X N

Number of gullies 1

Comments.

3 polygons
- waste on northeast edge from Mine
- significant waste deposited at Colvert collection area.
- recommend weed control on polygon C.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#59 - Little Mina

[Master 2008]

#123

BRES FIELD FORM

Site ID: ___ Site Name: Otisco Dump Field Date: 7/15/08

Team Members (Circle your name): (Jeanne Larson) Charlie Larson Andy

Number of Polygons: 1 Slope: 0 to 20 Aspect (circle all relevant): N S W E NW NE SW (SE)

Area Description: Area east end of Iron St - East of Christie

Transfer to site sketch

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	2					
*Undesirable (weedy) species	2					
*Noxious weeds	10					
Litter	15					
Rocks > 2"	40					
Bare Ground	31					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	4					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	11					
Pedestalling	0					
Flow Patterns	6					
Rills Depth	6					
Rills Frequency	6					
Gullies Depth	2					
Gullies Frequency	2					
Soil Movement	11					
TOTAL BLM Score:	52					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- X **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** more growth outside site boundary

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___

- Estimated pH 4.0
- Approximate area (in square feet) ___ - whole site
- Number of areas with exposed waste ___

85-90 %

5. Is there evidence of: Y ___ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y X N ___ See Map

7. Gullies (over 6" in depth):
Y X N ___
Are any gullies actively eroding? Y X N ___
Number of gullies 2

Comments.

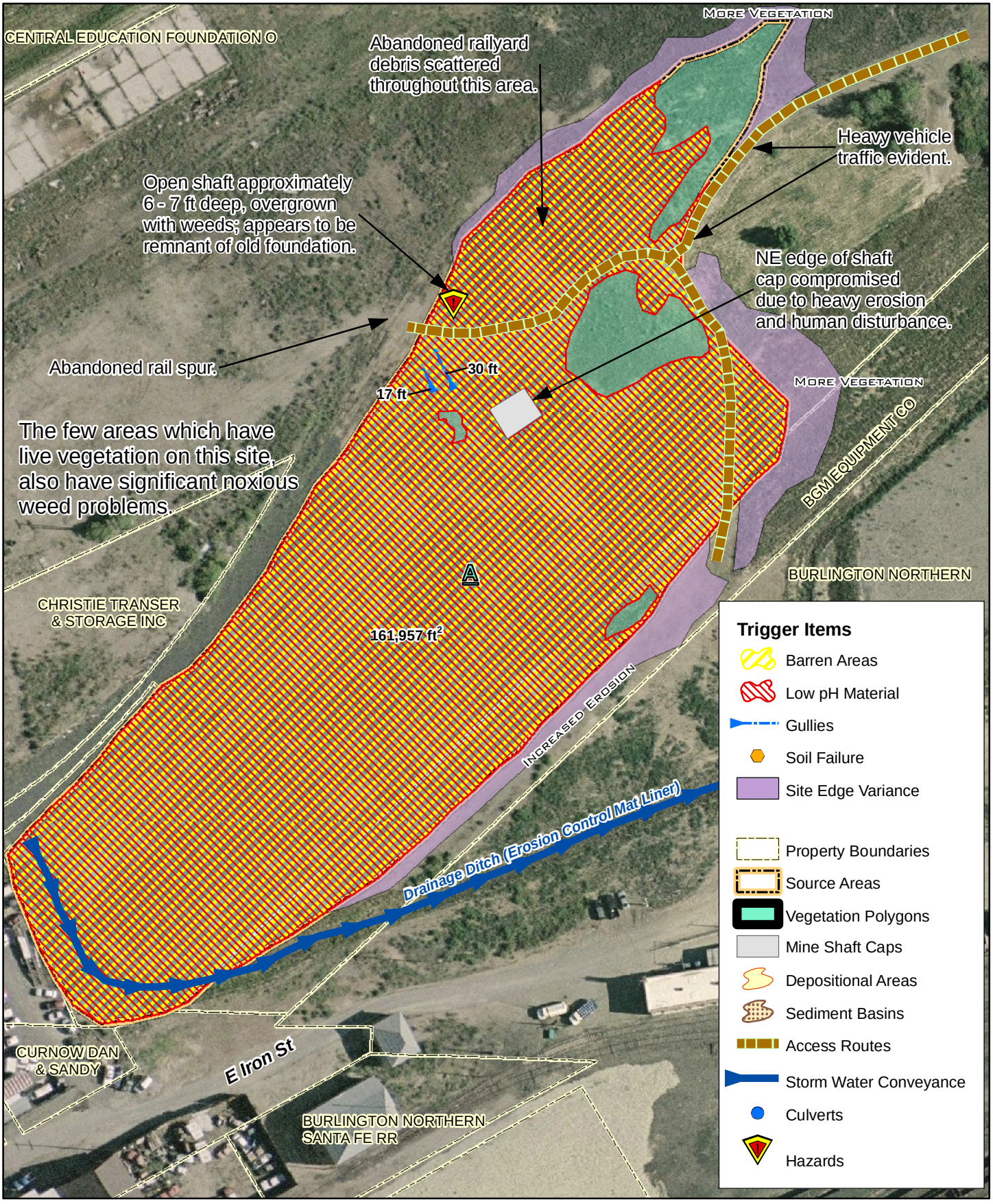
- Past reclamation efforts can be considered a total failure
- Majority of site presents exposed waste with pH of 4.0
- Open shaft presents significant hazard - approximately 100 ft NW of primary shaft cap - see map
- Site littered with abandoned rail yard debri
- Primary shaft cap compromised by heavy erosion and possible manual excavation
- Heavy vehicle traffic evident across NE section of site
- Exposed liner along length of ditch running from SW end of site eastward
- Recommend reevaluation of site security for entire area

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#123 - Otisco Dump



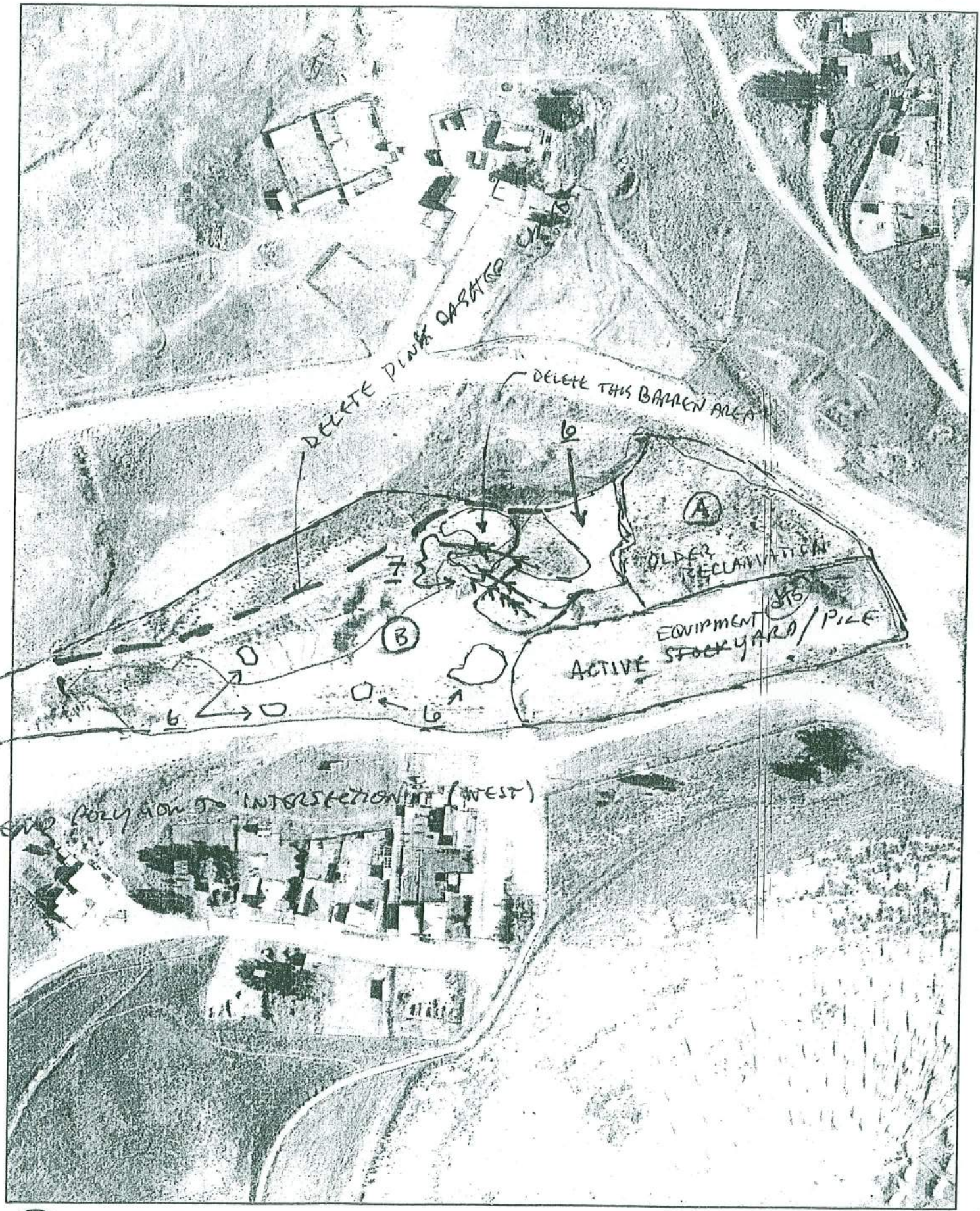
Appendix D

2007 through 2009 BRES Field Evaluation Forms

Note to DEQ: Due to the size of this appendix, these will be provided with the public review draft and final draft. See Appendix C for the representative examples.

BRES_2007 Field Forms

2 - Minnie Irvine



N

0 55 110 220 330 440 550 660 Feet

CDM

BRES FIELD FORM

Site ID: #2 Site Name: MINNIE IRVINE Field Date: 7/25/02

Team Members (Circle your name): SHANGAY, RENNICK

Number of Polygons: 2 Slope: 0 to 15 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45	40				
*Undesirable (weedy) species	3	10				
*Noxious weeds	2	5				
Litter	15	15				
Rocks > 2"	2	2				
Bare Ground	33	28				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	48	45				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:

0-20% = RI (Reclamation Improvement)

21-39 % = VI (Vegetation Implementation)

40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D	I				
Crested wheatgrass	-	I				
Slender wheatgrass	-	D				
Yellow sweetclover	-	-				
Alfalfa	F	I				
RABBIT BRUSH	I					
BASIN WILDRYE	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3	3				
Surface Rock Movement	2	2				
Pedestalling	14	9				
Flow Patterns	3	3				
Rills Depth	0	6				
Rills Frequency	0	2				
Gullies Depth	0	3				
Gullies Frequency	0	3				
Soil Movement	3	5				
TOTAL BLM Score:	25	36				

BLM score:

0-55 = M (Monitor)

56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F	F				
Dalmation toadflax	-	-				
Cheatgrass	I	F				
Baby's breath	-	I				
Kochia	-	-				
Thistle	-	-				
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items

Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y_____ N__✓__ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge _____

4. Exposed Waste Material? Y_____ N__✓__

- Estimated pH_____
- Approximate area _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N__✓__

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y__✓__ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 6

Do barren areas cover over 25% of any polygon? Y____ N__✓__

7. Gullies (over 6" in depth):

Y__✓__ N_____

Are any gullies actively eroding? Y__✓__ N____

Number of gullies 4

Comments.

- THIS SITE LOOKS AS IF IT WAS RECLAIMED @ TWO - DIFFERENT TIMES. WE BROKE OUT POLYGONS A AND B TO REPRESENT THE TWO DIFFERENT RECLAMATION EVENTS. DIFFERENT SEED MIXES
- THERE ARE SEVERAL BARREN AREAS LOCATED @ THIS SITE. MOSTLY IN AREA WHERE THERE WAS HAUL TRUCK TRAFFIC AND STEEP SLOPES.
- DID NOT EVALUATE THE ACTIVE SOIL STOCK PILE / EQUIPMENT YARD AREA.
- EXTENDED SITE BOUNDARY TO THE BOTTOM OF THE GULCH TO CAPTURE THE EXTENT OF THE RECLAIMED AREA (NORTH) ALSO EXTEND SITE BOUNDARY TO WEST TOWARD GATE @ BOTTOM GULCH
- AIRPHOTO DOES NOT REPRESENT THE CURRENT VEGETATION CONDITIONS.
- Soil texture appears very Sandy with little to no organics or silts or clay

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#4 - Amy Dump

Feet

0 15 30 60 90 120 150 180

CDM

BRES FIELD FORM

Site ID: #4 Site Name: Amy Dump Field Date: 7/19/07

Team Members (Circle your name): STANIGHT, MALLOY

Number of Polygons: 1 Slope: 0 to 40 Aspect (circle all relevant): (N) (S) (W) E (NW) NE (SW) SE

Area Description: NON-FENCE AREA WEST OF THE ALICE DUMP. THIS SITE IS ADJACENT TO UNRECLAIMED AREAS. NEAR BY DIRT BIKE USE.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	8					
*Noxious weeds	2					
Litter	43					
Rocks > 2"	2					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	F					
Other RABBIT BRUSH (D/S)	~~I~~ F					
Other HORSE BRUSH	~~F~~ I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2					
Surface Rock Movement	3					
Pedestalling	2					
Flow Patterns	2					
Rills Depth	7					
Rills Frequency	2					
Gullies Depth	7					
Gullies Frequency	2					
Soil Movement	3					
TOTAL BLM Score:	27					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath						
Kochia						
Thistle						
Other MUSTARD	I					
Other WHITE TOP	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y X N_____ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☐ more weeds
- ☒ steeper slope
- ☒ increased erosion
- ☒ less vegetation
- ☒ gullies
- ☒ other STEEP UNRECLAIMED

Estimate width of affected edge 20'

4. Exposed Waste Material? Y ✓ N_____

- Estimated pH_____
- Approximate area 2000 ft²
- Number of areas with exposed waste 1 No. Side

5. Is there evidence of: Y X N_____

- ☒ bulk soil failure
- ☒ land slumps
- ☐ subsidence

6. Barren Areas: Y_____ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y_____ N_____

7. Gullies (over 6" in depth):
Y X N_____
Are any gullies actively eroding? Y X N_____
Number of gullies 4

Comments.

- EXPOSED MATERIAL (WASTE) ALONG NORTH SIDE OF RECLAMATION ON STEEP SLOPE GOING TOWARDS DITCH APPEARS THAT THE COVERSOIL CAP WAS FEATHERED TOWARDS STEEP SLOPE. RUNOFF FROM ~~DITCH~~ STEEP SLOPE ENTERS DITCH

- LARGE AMOUNTS OF RUBBER RABBIT BRUSH OF SLOPE FACING SOUTHWEST.

- CONSTRUCTION FENCE ON WEST SIDE OF SITE (USE TO KEEP DIRT BIKES OFF THE SITE) NEED SOME MAINTENANCE. FENCE IS STARTING TO FALL OVER.

Recommend curbs & gutters on E. Side road

Bulk Soil feature and land slump on old motorcycle trail with four active gullies. This area was reclaimed after original reclamation and after land slumps and soil failure.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#5 - Alice Dump

① = POLYGON 1 "ONLY ONE" 5/30/2007 dts - cdm

0 50 100 200 300 400 500 600 Feet

CDM

BRES FIELD FORM

Site Name: ALICE DUMP **Date:** 5/30/2007

Team Members (Circle your name): STANIGHT

Number of Polygons: 1 Slope: 0-20° Aspect: 360°-VARIES Area Description: CITY PARK W/ PARK BENCH AND TABLES (OPEN SPACE)

Polygon Evaluation	A	B	C
Vegetation (% live)	M		
Erosion (BLM score)	M		
% live weedy species			

Vegetation: % of ground covered by:	POLYGON A	B	C
Live (desirable) species	45		
*Live (undesirable weedy) species	5		
*Noxious weeds	5		
TOTAL % LIVE	50		
Litter	30		
Rocks > 2" BARE GROUND	5 10		
*Up to 5% of undesirable species and 0% of noxious weeds may count toward live cover.			

Erosion (BLM Form)	POLYGON 1	2	3
Surface Litter	2		
Surface Rock Movement	1		
Pedestalling	2		
Flow Patterns	2		
Rills	1		
Gullies	0		
Soil Movement	1		

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon?
Y_____ N_____ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☐ more weeds
- ☐ steeper slope
- ☐ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other_____

Estimate width of affected edge _____

4. Exposed Waste Material? Y_____ N ✓

- Estimated pH_____
- Approximate area _____
- Number of areas with exposed waste _____

1. Percent live: please check appropriate category:

1	☐ 0-20	☐ 21-39	☒ 40-100
2	☐ 0-20	☐ 21-39	☐ 40-100
3	☐ 0-20	☐ 21-39	☐ 40-100

2. Total BLM score 1 9, 2 ___, 3 ___. Please check appropriate category.

1	☒ 0-55	☐ 56-100
2	☐ 0-55	☐ 56-100
3	☐ 0-55	☐ 56-100

5. Is there evidence of: Y_____ N ✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

Species Present:	Dominant	Frequent	Infreq.
Sheep fescue	X		
Crested wheatgrass	X		
Slender wheatgrass		X	
Yellow sweetclover			X
Alfalfa		X	
Other:			X
BASIN WILD RYEGRASS			
RUBBER RABBIT	X		
			X

Use polygon number in boxes

Weeds Present:	Dominant	Frequent	Infreq.
Spotted knapweed			X
Dalmation toadflax			
Cheatgrass			X
Baby's breath			
Kochia			
Thistle			
Other:			

Use polygon number in boxes

6. Barren Areas: Y ✓ N_____

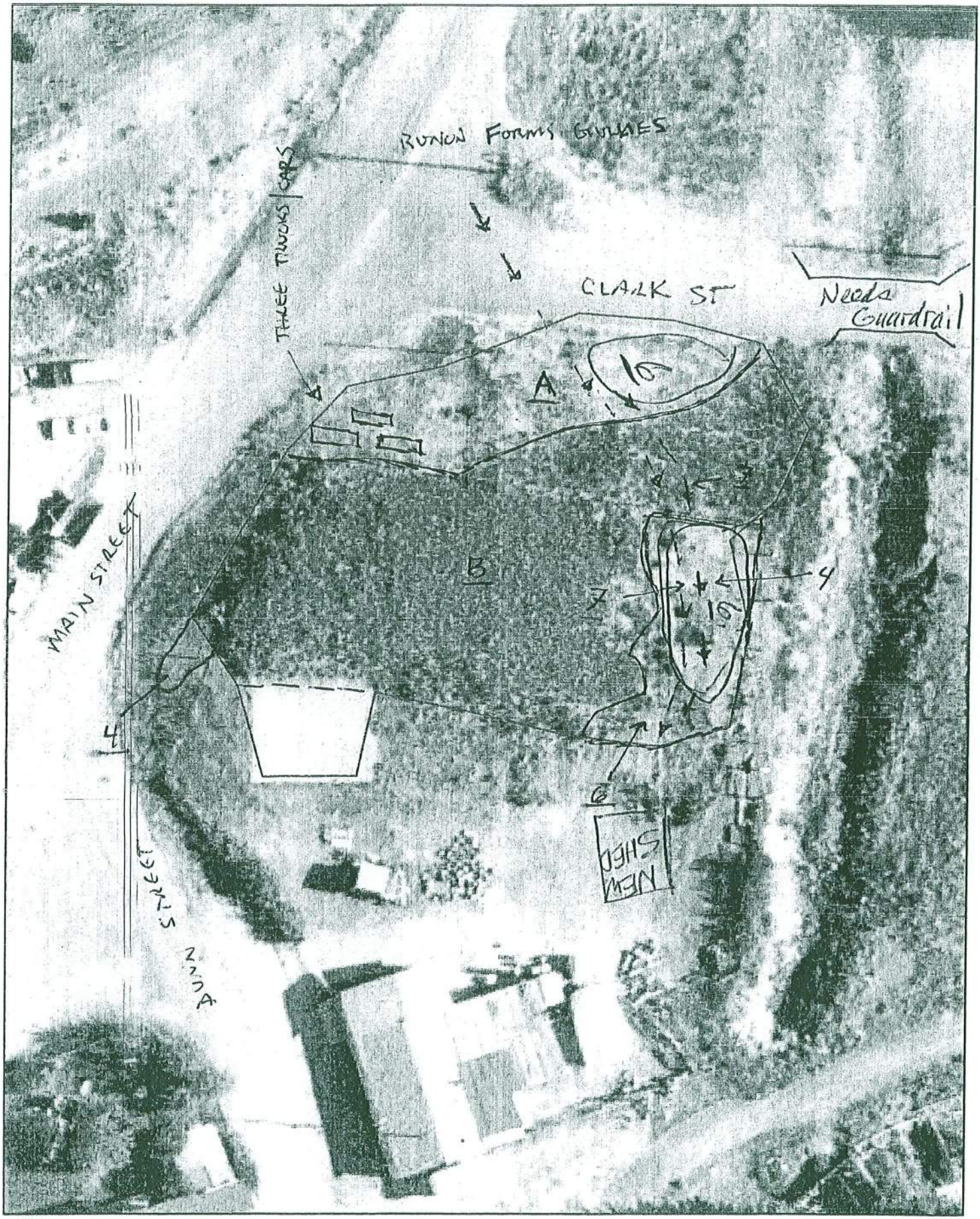
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of polygon? Y_____ N_____
Polygon barren area(s) located in (circle) 1 2 3

7. Gullies (over 6" in depth):
Y_____ N ✓
Are any gullies actively eroding?
Y_____ N_____
Number of gullies _____

COMMENTS: BARREN AREA IS LOCATE IN NORTH SIDE SITE, NEXT/ON PRIVATE PROPERTY. APPEARS THAT ADJACENT PROPERTY OWNER IS MAINTAINING WOOD -

#8 - Belle of Butte



0 5 10 20 30 40 50 60 Feet

CDM

BRES FIELD FORM

Site ID: __ Site Name: BELLE OF BUTTE Field Date: 7/24/07

Team Members (Circle your name): SHANIGHT, MALLOY

Number of Polygons: 2 Slope: 0 to 15 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: SE Corner of Clark and Main Streets

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	23	45				
*Undesirable (weedy) species	10	5				
*Noxious weeds	5	2				
Litter	10	40				
Rocks > 2" TM 50	2	1				
Bare Ground TM 60	60	7				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	28	50				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:

0-20% = RI (Reclamation Improvement)

21-39 % = VI (Vegetation Implementation)

40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue		I				
Crested wheatgrass		D				
Slender wheatgrass	D	F				
Yellow sweetclover						
Alfalfa		I				
Other BASIN WILDRYE		I				
Other REDTOP		I				
Other Unknown Berry Bush		I				
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter Movement	8	6				
Surface Rock Movement	8	2				
Pedestalling	6	6				
Flow Patterns	6	3				
Rills Depth	3	4				
Rills Frequency	3	2				
Gullies Depth	0	4				
Gullies Frequency	0	3				
Soil Movement	5	3				
TOTAL BLM Score:	39	33				

BLM score:

0-55 = M (Monitor)

56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax		I				
Cheatgrass		I				
Baby's breath						
Kochia						
Thistle						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☑ **more weeds**
- ☑ **steeper slope**
- ☑ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other** ____

Estimate width of affected edge 10 ft

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH ____
- Approximate area ____
- Number of areas with exposed waste 2

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ____

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2

Do barren areas cover over 25% of any polygon? Y ____ N ✓

7. Gullies (over 6" in depth):

Y ✓ N ____

Are any gullies actively eroding? Y ✓ N ____

Number of gullies 3

Comments. Runon Issues - Recommend Curbs and Gutters

3 Vehicles parked on site - need to resolve

Perimeter fence in disrepair - wood posts
Consider complete fence removal
Need to determine ownership

Site boundary should be changed to include Street ~~be~~ edge and not to include Belle of Butte Shaft cap. (?)

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#9 - Clark Street Dump

N

0 5 10 20 30 40 50 60 Feet

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

CDM

BRES FIELD FORM

Site ID: #9 Site Name: CLARK STREET DUMP Field Date: 7/25/07

Team Members (Circle your name): RENNICK, SHANIGHT

Number of Polygons: 1 Slope: 0 to 10 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	50					
*Undesirable (weedy) species	5					
*Noxious weeds	1					
Litter	40					
Rocks > 2" °	0					
Bare Ground	4					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	55					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted ~~Live~~ %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	F					
~~Other~~ THICKSPIKE	D					
~~Other~~ BASIN WILDRYE	I					
~~Other~~ SMOOTH BROME	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	2					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	2					
TOTAL BLM Score:	(11)					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y ✓ N_____ (check applicable items)

- ☑ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge _____

4. Exposed Waste Material? Y_____ N ✓
- Estimated pH_____
- Approximate area _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N ✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N ✓
- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon? Y____N____

7. Gullies (over 6" in depth):
Y_____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
INDIAN RICEGRASS						
Use D (Dominant), F (Frequent), or I (Infrequent).						

#11 - Magna Charta Lessee Dumps

Feet

0 50 100 200 300 400 500 600

CDM

BRES FIELD FORM

Site ID: #11 Site Name: MAGNA CARTA LESSEE DUMP Field Date: 7/25/07

Team Members (Circle your name): SHAMGAR, RENNICK

Number of Polygons: 2 Slope: 0 to 15 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	55	65				
*Undesirable (weedy) species	10	3				
*Noxious weeds	10	2				
Litter	12	25				
Rocks > 2"	1	1				
Bare Ground	12	4				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	60	68				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue		D				
Crested wheatgrass	F	F				
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	D					
Other RABBIT BRUSH	I	I				
Other THICKSPICE	I	F				
Other GOLDASTER	I	I				
Other PUSSY TOES	I	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3	3				
Surface Rock Movement	5	2				
Pedestalling	14	9				
Flow Patterns	9	2				
Rills Depth	0	0				
Rills Frequency	0	0				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	14	2				
TOTAL BLM Score:	42	18				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F	I				
Dalmation toadflax	I	I				
Cheatgrass	F	I				
Baby's breath						
Kochia						
Thistle						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y ✓ N _____ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☑ more weeds
- ☐ steeper slope
- ☑ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other _____

Estimate width of affected edge _____

4. Exposed Waste Material? Y _____ N ✓

- Estimated pH _____
- Approximate area _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y _____ N ✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ✓ N _____

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2

Do barren areas cover over 25% of any polygon? Y _____ N ✓

7. Gullies (over 6" in depth):

Y _____ N ✓

Are any gullies actively eroding? Y _____ N _____

Number of gullies _____

Comments.

- RECLAMATION IN POLYGON A WAS RECLAIMED W/ A COARSER GRAINED COVERMATERIAL. ALFALFA IS DOMINANT SPECIES W/ SHEEP FESCUE BEING FREQUENT. THE FESCUE APPEARS TO BE STRESSED BUT IS STARTING TO DIE BACK IN RECENT YEARS. THE ALFALFA IS KEEP THE SITE IN THE MONITOR CATAGORY. THE CHEATGRASS IS A SIGN OF LARGE UNVEGETATED AREAS. IT COULD BE POSSIBLE THAT THEY SEEDED DIRECTLY INTO NATIVE SOIL. CHECK HISTORY. IMPORTED COVERSOIL.
- RECLAMATION IN POLYGON B WAS RECLAIMED W/ A ~~BETTER TORSON THAN B~~. MILK VETCH PROVIDES A LARGE AMOUNT OF DESIRABLE VEG COVER.
- RIVERROCK DITCH ALONG NORTH EDGE OF SITE HAS A LARGE AMOUNT OF WEEDS GROWING IN IT. ALTHOUGHT NOT MUCH SEDIMENT.
- LARGE WEST BARREN AREA MAY HAVE BEEN THE OLD HAUL ROAD. LOOKS AS IF THERE MAYBE WASTE MATERIAL
- ADJUSTED SITE BOUNDARY IN POLYGON B.
- EASTERN BOUNDARY BORDERS UNRECLAIMED AREA. UNRECLAIMED AREA MOSTLY RUNONS TOWARD RIVERROCK DITCH.

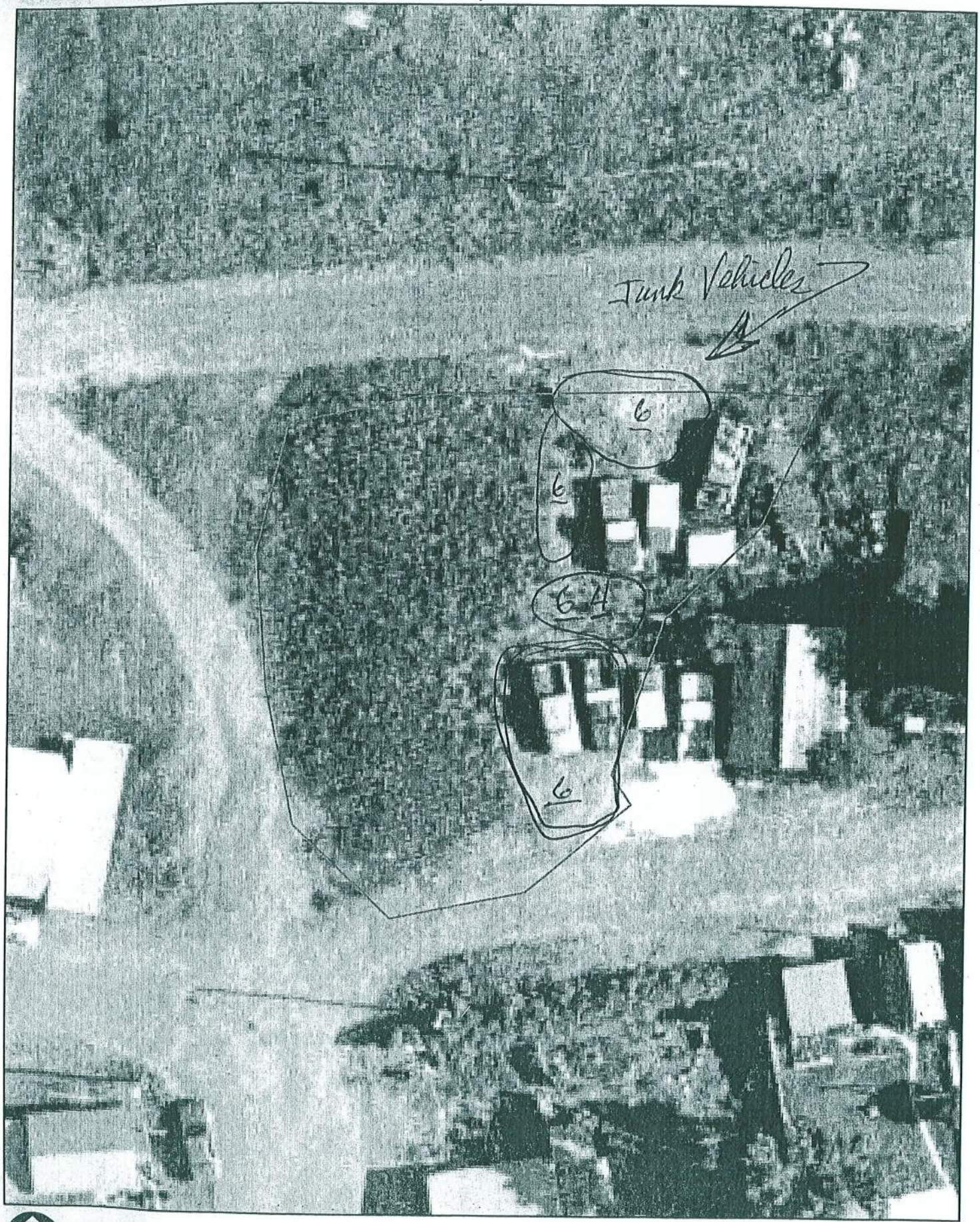
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
SALSIFY	I	I				
MILK VETCH	I	F				

Use D (Dominant), F (Frequent), or I (Infrequent).

#16 - Curry

Ownership / Street names



N

0 5 10 20 30 40 50 60 Feet

CDM

Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

BRES FIELD FORM

Site ID: 16 Site Name: CURRY Field Date: 07-17-07

Team Members (Circle your name): Malley Sheridan

Number of Polygons: 1 Slope: 2 to 15 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Corner lot w/ Junk Vehicles - ? Ownership ?

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	50					
*Undesirable (weedy) species	10					
*Noxious weeds	2					
Litter	30 ~~3~~ 35					
Rocks > 2"	3					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	55					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	D					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	I					
~~Mouse ear~~ HOUSEBRUSH	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter Movement	3					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	2					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	16					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	-					
Cheatgrass	I					
Baby's breath	I					
Kochia	-					
Thistle	-					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y____ N X (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☐ more weeds
- ☐ steeper slope
- ☐ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other____

Estimate width of affected edge ~

4. Exposed Waste Material? Y ✓ N____

- Estimated pH NA
- Approximate area 100 ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N X

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ✓ N____

- At Least 75 ft² • Not a rock outcrop ✓
- Less than 10 % total cover (live & litter)

Number of barren areas 4
Do barren areas cover over 25% of any polygon? Y____ N X

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

#18 - Walkerville Ballfield

(A) = Polygon A
(B) = Polygon B

5/30/2007
dts - CDM

N

0 50 100 200 300 400 500 600 Feet

CDM

BRES FIELD FORM

Site Name: WALKERVILLE #19 BATTLEFIELD **Date:** 5/30/07

Team Members (Circle your name): _____

Number of Polygons: 2 Slope: 0-15° Aspect: SOUTH Area Description: SOUTH ALICE PIT, PART OF SITE ON NORTHSIDE ALICE PIT FENCE

Polygon Evaluation	A	B	C
Vegetation (% live)	M	VI	
Erosion (BLM score)	M	M	
% live weedy species			

Vegetation: % of ground covered by:	POLYGON A	B	C
Live (desirable) species	40	30	
*Live (undesirable weedy) species	5	5	
*Noxious weeds	5	10	
TOTAL % LIVE	45	35	
Litter	30	20	
Rocks > 2" / BARE GROUND	5 / 15	5 / 30	

*Up to 5% of undesirable species and 0% of noxious weeds may count toward live cover.

Erosion (BLM Form)	POLYGON A	B	C
Surface Litter	2	6	
Surface Rock Movement	2	5	
Pedestalling	6	14	
Flow Patterns	3	6	
Rills	0	2	
Gullies	0	0	
Soil Movement	5	5	

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon?
Y____ N✓ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☐ more weeds
- ☐ steeper slope
- ☐ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other_____

Estimate width of affected edge _____

4. Exposed Waste Material? Y✓ N____ 2

- Estimated pH____
- Approximate area _____ BARREN AREA
- Number of areas with exposed waste _____

1. Percent live: please check appropriate category:

1	☐ 0-20	☐ 21-39	☒ 40-100
2	☐ 0-20	☒ 21-39	☐ 40-100
3	☐ 0-20	☐ 21-39	☐ 40-100

2. Total BLM score 1 18, 2 38, 3 ____. Please check appropriate category.

1	☒ 0-55	☐ 56-100
2	☒ 0-55	☐ 56-100
3	☐ 0-55	☐ 56-100

5. Is there evidence of: Y____ N✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

Species Present:	Dominant	Frequent	Infreq.
Sheep fescue	1, 2		
Crested wheatgrass	1,	2	
Slender wheatgrass			1,
Yellow sweetclover			1,
Alfalfa			1, 2
Other: RUBBER RABBIT BUR SAGE			1, 2 / 1,

Use polygon number in boxes

Weeds Present:	Dominant	Frequent	Infreq.
Spotted knapweed		2	1,
Dalmation toadflax			
Cheatgrass			1, 2
Baby's breath			
Kochia			
Thistle			
Other:			

Use polygon number in boxes

6. Barren Areas: Y✓ N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3
Do barren areas cover over 25% of polygon? Y____ N✓
Polygon barren area(s) located in (circle) (1) 2 3

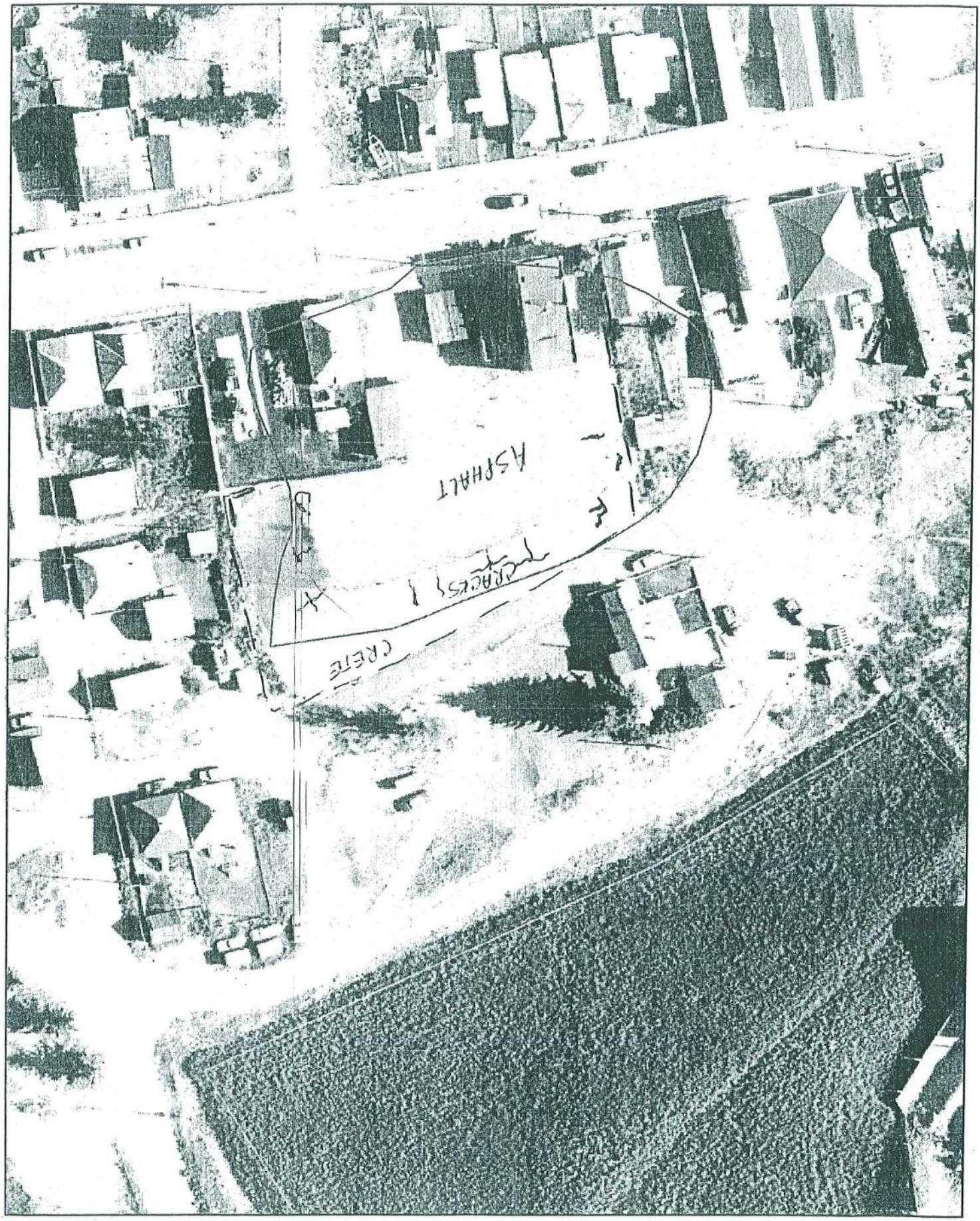
7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding?
Y____ N____
Number of gullies _____

COMMENTS: 2-POLYGONS B/C >20 POINT BLM CHANGE

TALK W/ SARA'S ABOUT SITE BOUNDARY ISSUES...

#19 - Blue Wing Dump

"~" LINES ON ASPHALT / CONCRETE INDICATE LOCATIONS OF CRACKS.



N

0 15 30 60 90 120 150 180 Feet

CDM

#19

BRES FIELD FORM

Site ID: __ Site Name: BLUE WING DUMP Field Date: 7/24/07

Team Members (Circle your name): SHANIGHT

Number of Polygons: 0 Slope: 0 to 45 Aspect (circle all relevant): N (S) (W) (E) NW NE SW SE

Area Description: ASPHALT AND CONCRETE CAP. NOXIOUS WEEDS GROWING @ TO OF CONCRETE CAP AND IN CRACKS.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y ✓ N ____ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☒ more weeds
- ☒ steeper slope
- ☐ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other ____

Estimate width of affected edge 5-FT-MAX

4. Exposed Waste Material? Y ____ N ✓
- Estimated pH ____
- Approximate area ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓
- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ____ N ✓
- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Butte Reclamation Evaluation System (BRES)
Raw Data Field Form for Engineered Caps

Date 7/24/2007 Site Name/Number BLUE WING DUMP
Field Team Members DAVID T. SHANIGHT
Area Description BLUE WING DUMP (SITE ID # 19) → BASKETBALL COURT

Rock Cap – NO OBSERVED ROCK CAPS TMM N.A.
Type of rock (limestone, pit run gravel, etc.)_____ Design thickness_____
Surface staining: None_____ Moderate_____ Excessive_____ Describe stain pattern/color_____

Displaced rock: None_____ Moderate_____ Excessive_____ Pattern of displacement: Localized_____ Universal_____
Describe movement (storm water rills, steep slope instability, vehicular, etc.)_____

Does rock cap have a geotextile liner? Yes_____ No_____ If yes, describe condition of liner (good, exposed, torn, poorly anchored, etc.)_____
Exposed subgrade materials? Yes_____ No_____ Describe exposed subgrade if noted (area, localized, dispersed, etc.)____

General comments regarding rock cap:_____

UK = UNKNOWN

Concrete or Shotcrete Cap
Did design specify for sulfate resistant concrete? Yes_____ No_____ Unknown ✓ Design thickness_____
Type of reinforcing (fiber, re-bar, welded wire fabric.)_____ Control joints? Yes ✓ No_____
Surface staining: None ✓ Moderate_____ Excessive_____ Describe stain pattern/color_____

Surface cracking: None_____ Moderate ✓ Excessive_____ Describe the approximate frequency, length, and average thickness of the cracks if noted. 0.5 cm ON WESTSIDE ON SLOPE MINOR

Surface spalling: None ✓ Moderate_____ Excessive_____ Describe the spalling pattern if noted._____

Exposed subgrade materials? Yes_____ No ✓ Describe exposed subgrade if noted (area, localized, dispersed, etc.)____

Evidence of undercutting at edges of cap? None ✓ Moderate_____ Excessive_____ Describe undercutting of subgrade soil at edges of cap if noted_____
General comments regarding concrete/shotcreet cap: SOME OF CONTROL JOINTS COULD USE SOME CRACK SEALANT. LOCATE ON THE SE AND NE CORNER Also seal cracks in middle of large South Slabs

UK = UNKNOWN

Asphalt Cap
Design Thickness UK Is there a layer of base course under asphalt? Yes_____ No_____ Base course thickness_____
Surface cracking: None ✓ Moderate_____ Excessive_____ Describe the frequency, length, and average thickness of the cracks if noted._____

Holes in asphalt? Yes_____ No ✓ Describe number, size, shape of holes in asphalt if noted._____

Exposed subgrade materials? Yes_____ No ✓ Describe exposed subgrade if noted (area, localized, dispersed, etc.)____

Evidence of undercutting at edges of cap? None ✓ Moderate_____ Excessive_____ Describe undercutting of subgrade soil at edges of cap if noted_____
General comments regarding asphalt cap: VEGETATION / NOXIOUS WEEDS GROWING IN THE CRACKS BETWEEN THE ASPHALT AND CONCRETE. – Recommend Kill vegetation and asphalt / tar over asphalt / crete interface

? Ownership ?

#20 - Walkerville Playground

Per Bernard Harrington, large Storm sewer ? runs under nearby ?

N

Feet

04.59 18 27 36 45 54

CDM

OWNERSHIP: WALLGRVILLE, ARCO, BSB ???

BRES FIELD FORM

Site ID: 20 Site Name: WALLGRVILLE PLAYGROUND Field Date: 7/17/07

Team Members (Circle your name): MALLOY, SHANNON

Number of Polygons: 1 Slope: 0 to 5 Aspect (circle all relevant) N S W E NW NE SW SE

Area Description: DIRT BASKETBALL COURT, PLAYGROUND

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5					
*Undesirable (weedy) species	20					
*Noxious weeds	10					
Litter	10					
Rocks > 2"	0					
Bare Ground	~~55~~ 55					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	10					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:

0-20% = RI (Reclamation Improvement)

21-39 % = VI (Vegetation Implementation)

40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	—					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	8					
Pedestalling	3					
Flow Patterns	9					
Rills Depth	5					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	33					

BLM score:

0-55 = M (Monitor)

56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax						
Cheatgrass	D					
Baby's breath						
Kochia						
Thistle						
WHITE TOP	D					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items

Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y ✓ N ____ (check applicable items)

- ☐ lime rock barrier
- ☒ depositional area
- ☒ more weeds
- ☒ steeper slope
- ☒ increased erosion
- ☐ less vegetation
- ☒ gullies
- ☒ other RANCH

Estimate width of affected edge 20'+

4. Exposed Waste Material? Y ____ N X

~~SHOULD SAMPLE~~

- Estimated pH ____
- Approximate area ____ 22
- Number of areas with exposed waste ____ UNABLE TO DETERMINE

5. Is there evidence of: Y ____ N X

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ✓ N ____

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1 BIG ONE

Do barren areas cover over 25% of any polygon? Y X N ____

7. Gullies (over 6" in depth):

Y ____ N ✓

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

Comments.

- OLD PLAYGROUND EQUIPMENT AND FENCE
- UNRECLAIMED ~~DUMPS~~ BACKGROUND UPGRADIENT OF SITE (ETS)
- 3 HEALTHY SPRUCE TREE GROWING ONSITE ADJACENT TO DALY STREET
- DIRT BIKE PATH THRU SITE
- STORMWATER RUNON ISSUES OFF DUNN ST.
- PEOPLE ARE DRIVING CARS / TRUCK ON THE SITE
- GULLIES RUNON TO SITE FROM UPGRADIENT SLOPE.

not added yet

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#25 - Venus Dump Ownership/

#25

BRES FIELD FORM

Site ID: __ **Site Name:** VENUS DUMP **Field Date:** 7/17/07

Team Members (Circle your name): SHANIGAT, MALLOY

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N (S) W E NW NE (SW) SE

Area Description: RUNS ADJACENT TO WALLERVILLE AND DALY; UPGRADIENT OF AN UNRECLAIMED / BARE GROUND AREA.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	50					
*Undesirable (weedy) species	5					
*Noxious weeds	5					
Litter	25					
Rocks > 2"	5					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	55					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	D					
Slender wheatgrass	D					
Yellow sweetclover						
Alfalfa	F					
Other BASIN WILD RYE	I					
Other SMOOTH BROME						
Other CRABAPPLE	I					
Other COTTONWOOD	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter MOVE	3					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	14					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath	I					
Kochia						
Thistle						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y_____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge _____

4. Exposed Waste Material? Y ✓ N X

- Estimated pH_____
- Approximate area 400 ft² Near barren
- Number of areas with exposed waste 1

Tmm

5. Is there evidence of: Y_____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N_____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y___ N X

7. Gullies (over 6" in depth):
Y_____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

- RIPRAP DITCH RUNS THRU SITE → RUNOFF FROM

- HEALTHY STAND OF COTTONWOODS AND ASH TREES ONSITE, ALSO SPRUCE

- EASTSIDE FLAT AREA USE BY ADJACENT PROPERTY OWNER TO PARK TRUCKS AND CAMPER. NEED TO CHECK OWNERSHIP

- LARGE BARREN AREA ON WEST SIDE OF GULCH LOCATED DOWN GRADIENT TO SITE

- STORM DRAIN ENTERS SIDE FROM WALKERVILLE DRIVE – LOCATE ON WEST SIDE SITE

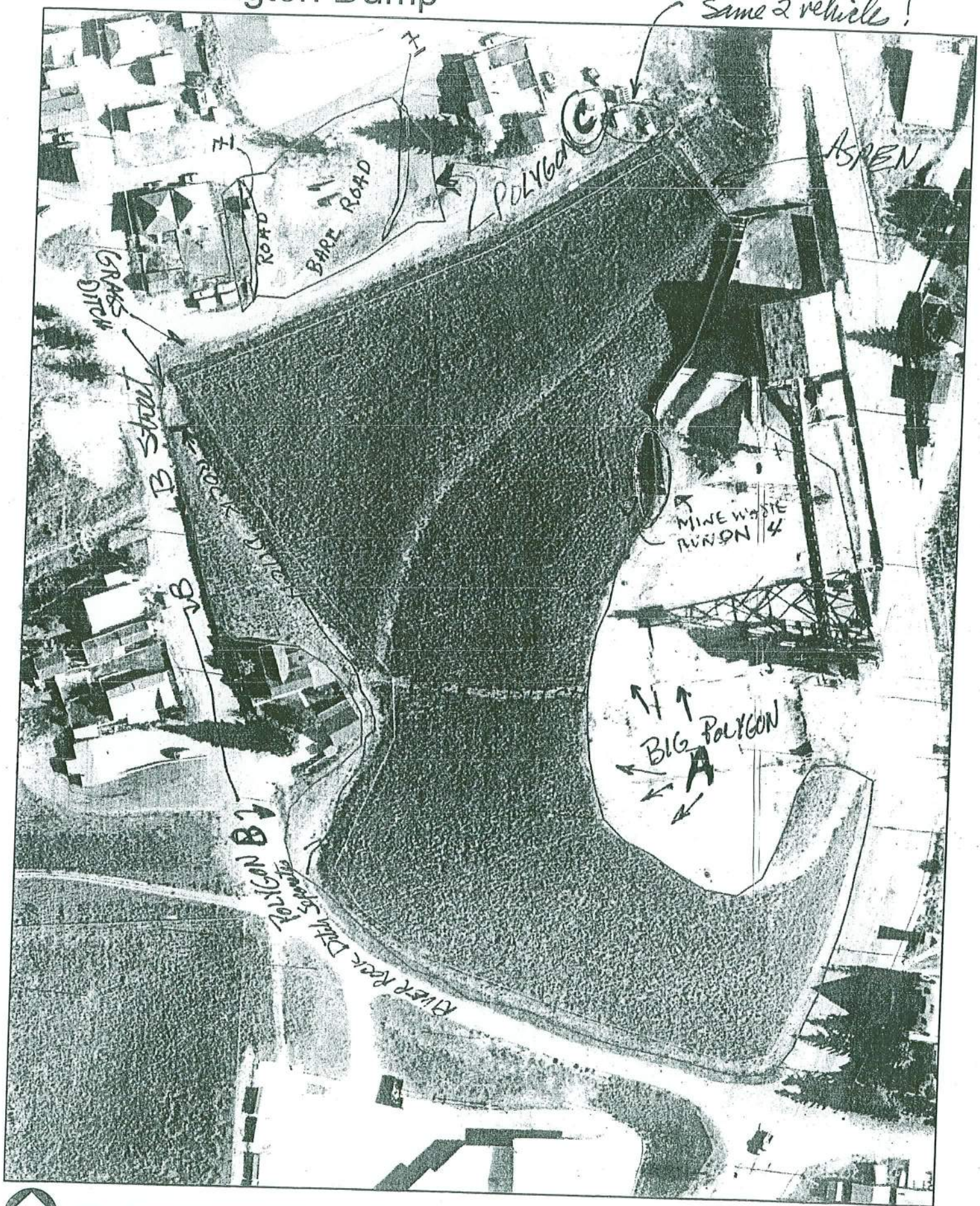
N. Side at bottom of gulch has SW Culvert & SW RIP RAP DITCH CONVERGE – Recommend Routine O & M include Gulch bottom Sediment inspection and removal if appropriate.
RIVER Rock SW DITCHES (3)

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
SPRUCE	I					
MATRIMONY VINE	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

#29 - Lexington Dump



#29

BRES FIELD FORM

Site ID: ___ Site Name: LEXINGTON Field Date: 7/19/07

Team Members (Circle your name): SHANIGHT Malloy

Number of Polygons: 3 Slope: 0 to 30 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Polygon A FENCED, POLYGON B LOCATE NEAR B STREET POLYGON C MOSTLY UNVEGETATED

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45	30	10			
*Undesirable (weedy) species	5	5	25 TMM ←25			
*Noxious weeds	5	5	10			
Litter	38	30	5			
Rocks > 2"	2	2	5			
Bare Ground	5	28	45			
TOTAL (above 6 items must total 100%)	100	100	100			
ADJUSTED LIVE % = Live + 5% Undesirable	50	38	15			

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:

0-20% = RI (Reclamation Improvement)

21-39 % = VI (Vegetation Implementation)

40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F	F	I			
Crested wheatgrass	D	D	I			
Slender wheatgrass	I	I				
Yellow sweetclover						
Alfalfa	F	I	I			
RABBIT BRUSH	I	I				
Other Aspen			I			
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter Movement	TM	8	11			
Surface Rock Movement	TM	5	11			
Pedestalling	6	3	9			
Flow Patterns	3	3	12			
Rills Depth	0	0	7			
Rills Frequency	0	0	2			
Gullies Depth	0	0	5			
Gullies Frequency	0	0	3			
Soil Movement	3	5	8			
TOTAL BLM Score:	17	24	68			

BLM score:

0-55 = M (Monitor)

56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I	F			
Dalmation toadflax						
Cheatgrass	F	I	D			
Baby's breath		I				
Kochia			I			
Thistle						
Specify	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items

Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y X N ___ (check applicable items)

- X lime rock barrier
- X depositional area
- X more weeds
- X steeper slope
- X increased erosion
- X less vegetation
- X gullies
- ☐ other ___

Estimate width of affected edge 10'

4. Exposed Waste Material? Y ✓ N ___

- Estimated pH ___
- Approximate area 400 ft²
- Number of areas with exposed waste 5

5. Is there evidence of: Y ___ N X

☐ bulk soil failure ☐ land slumps ☐ subsidence

6. Barren Areas: Y ✓ N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas Most of Polygon C

Do barren areas cover over 25% of any polygon? Y ✓ N ___

7. Gullies (over 6" in depth):

Y ✓ N ___

Are any gullies actively eroding? Y ✓ N ___

Number of gullies 4

Comments.

- MINE WASTE MATERIAL RUNNING ON FROM MINE YARD EASTSIDE OF POLYGON A. ← Some

Polygon C has bare spots from parked vehicles (none now) and visible vehicle "roads" – consider fencing.

Polygon A has runoff from mine yard. Suggest trench & pond in mine yard.

- POLYGON C APPEARS TO HAVE STRESSED VEGETATION.

⊕ See Melloy's Notes attached

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Lex

Inside Lex perimeter fence
needs runoff ditch to internal
sed pond/area

lotsa Gopher holes on N. Face Poly 4

Site Boundary Does not include/address Upper Missouri
Gulch ~~River~~ Rock lined ditch E to Main St or } Which
W to B St. } site does?

Polygon C has 1 old aspen BIG, w/ a dozen + Saplings
Suggest drip line irrigation to enhance aspen growth

B St. Storm water inlet needs curbs & gutters

#30 - Atlantic-1

30

BRES FIELD FORM

Site ID: ___ Site Name: ATLANTIC-1 Field Date: 7/25/07

Team Members (Circle your name): SHAMGAR, RENNICK, MALLOY

Number of Polygons: 1 Slope: 0 to 10 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	50					
*Undesirable (weedy) species	5					
*Noxious weeds	2					
Litter	30					
Rocks > 2"	1					
Bare Ground	12					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	55					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	D					
Slender wheatgrass	F					
Yellow sweetclover	—					
Alfalfa	F					
BASIN WILDRYE	I					
RABBIT BRUSH	I					
COVER	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	1					
Rills Depth	~~6~~					
Rills Frequency	2 ~~2~~					
Gullies Depth	~~4~~					
Gullies Frequency	2					
Soil Movement	2					
TOTAL BLM Score:	25					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	—					
Cheatgrass	I					
Baby's breath	—					
Kochia	—					
Thistle	—					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y ✓ N ___ (check applicable items)

- ☑ lime rock barrier
- ☐ depositional area
- ☑ more weeds
- ☑ steeper slope
- ☑ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other ___

Estimate width of affected edge 25'

4. Exposed Waste Material? Y ✓ N ___

- Estimated pH ___
- Approximate area 3
- Number of areas with exposed waste 1

5. Is there evidence of: Y ___ N ✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ✓ N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3
Do barren areas cover over 25% of any polygon?
Y ___ N ✓

7. Gullies (over 6" in depth):
Y ✓ N ___
Are any gullies actively eroding? Y ✓ N ___
Number of gullies 2

(Constructed in 2006 by ARCO as part of the Granite Mountain Road reconstruction)

Comments.

THE DRAINAGE DITCH ON THE SOUTHSIDE OF THE SITE, ALONG ALEXANDER STREET IS ERODING AT A RAPID RATE. THE SIDE SLOPE OF THE DRAINAGE DITCH IS UNVEGETATED AND MAY HAVE EXPOSED WASTE.

- KEEP AN EYE ON THE NORTHWEST SIDE OF SITE. FESCUE APPEARS TO BE STRESSED.

- RECOMMEND CURB AND GUTTER, AND MONITOR DITCH ALONG ALEXANDER STREET.

Sed Basin at Alexander & Main Streets needs routine O&M. Also side walls of Sed Basin are now barren decomposed Granite. Needs cover soil and seeding

Consider Trees in dozer basins.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#31 - Waste Dump #5

N

0 10 20 40 60 80 100 120 Feet

CDM

BRES FIELD FORM

Site ID: #5 Site Name: WASTE DUMP #5 Field Date: 7/30/07

Team Members (Circle your name): MARLOW, SHANIGHT

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: LOCATE ADJACENT TO DAWATE PROPERTY. PRIVATE PROPERTY OWNER MOWS THE LAWN VERY SHORT

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	15					
*Undesirable (weedy) species	2					
*Noxious weeds	1					
Litter	5					
Rocks > 2"	2					
Bare Ground	75					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	(17)					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	–					
Slender wheatgrass	–					
Yellow sweetclover	–					
Alfalfa	F					
ASPEN	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	8					
Pedestalling	9					
Flow Patterns	10					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	(39)					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	–					
Cheatgrass	I					
Baby's breath	–					
Kochia	–					
Thistle						
Leafy Spurge						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ NX

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: YX NX

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ NX
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

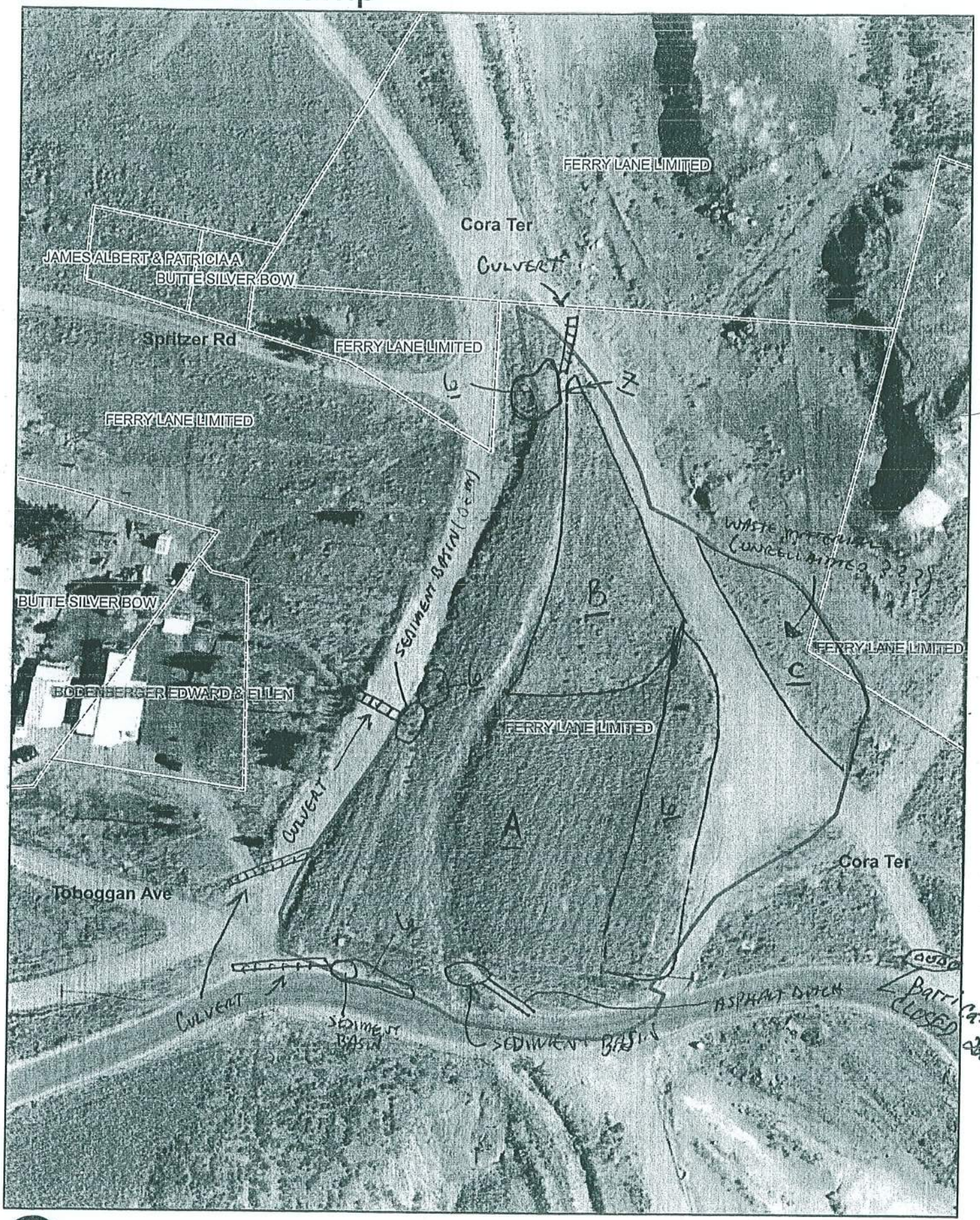
- SUGGEST TALKING W/ ADJACENT PROPERTY OWNER ABOUT MOWING THE SITE. FESCUE APPEARS TO BEING MOWED PRIOR TO BEING TO SEED. ALL VEGETATION LOOKS LIKE IT HAS BEEN KILLED DUE TO MOWING. NO POWLER PLANTS ONSITE.
- INTERSEEDING ALONG WITH WATERING POSSIBLE RECLAMATION IMPROVEMENT
- POSSIBLE WASTE MATERIAL LOCATED ~~AT~~ (P3) EAST OF SITE IN ASPEN GROVE. RECLAMATION DOES NOT GO TO EAST ROAD
- OLD STEEL CULVERT DRAINS PART OF EAST ROAD. PARTIALLY FILLED IN ON DOWNSLOPE SIDE.
- PRIVATE PROPERTY OWNER GARAGE, CARS, ETC MAYBE LOCATED ON BSB PROPERTY ?? CHECK SURVEY BOUNDARY.
- ADJUSTED RECLAMATION BOUNDARY ON AIR PHOTO ...
- COARSE ~~GRAINED~~ OVERBURDEN MATERIAL

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#32 - Corra 2 Dump



0 25 50 100 150 200 250 300 Feet

CDM

BRES FIELD FORM

Site ID: #32 Site Name: COBRA-2 DUMP Field Date: 7/30/07

Team Members (Circle your name): SHANIGAN, MALLOY

Number of Polygons: 3 Slope: 0 to 10 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: LOCATED @ AN INTERSECTION OF SEVERAL ROADS

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	55	10	35			
*Undesirable (weedy) species	3	15	3			
*Noxious weeds	2	5	2			
Litter	35	10	30			
Rocks > 2"	1	5	5			
Bare Ground	54	55	35			
TOTAL (above 6 items must total 100%)	100	100	100			
ADJUSTED LIVE % = Live + 5%Undesirable	58	15	38			

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:

0-20% = RI (Reclamation Improvement)

21-39 % = VI (Vegetation Implementation)

40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F	D	D			
Crested wheatgrass	D	I	I			
Slender wheatgrass		I				
Yellow sweetclover	I					
Alfalfa	F					
Rabbit Brush	I	F (TM)				
Blue Spruce	I	I				
Silver Sage	-	F				
SMOOTH BROME	I	I (TM)				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter MOVEMENT	3	6	11			
Surface Rock Movement	1	11	11			
Pedestalling	6	14	11			
Flow Patterns	1	6	6			
Rills Depth	0	2	3			
Rills Frequency	0	2	3			
Gullies Depth	0	0	0			
Gullies Frequency	0	0	0			
Soil Movement	2	8	10			
TOTAL BLM Score:	13	49	56			

BLM score:

0-55 = M (Monitor)

56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I		I			
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle		I				
Leafy Spurge						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ lime rock barrier
- ☒ depositional area
- ☒ more weeds
- ☒ steeper slope
- ☒ increased erosion
- ☒ less vegetation
- ☒ gullies
- ☐ other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH ____ POLYGON'S B AND C
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y X N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 4

Do barren areas cover over 25% of any polygon? Y ✓ N ____ POLYGON "C"

7. Gullies (over 6" in depth): Y ✓ N ____

Are any gullies actively eroding? Y ____ N ____

Number of gullies 1 POLYGON B

Comments.

- CULVERT / SEDIMENT BASIN ON WESTSIDE SITE 75% FILLED IN, NEEDS OEM
- EASTSIDE POLYGON "A" IS BARREN, MAY HAVE BEEN RECENTLY RE-GRADED.
- RECENT ROAD WORK HAS FILLED IN ONE OF THE SEDIMENT BASINS.
- GENERAL NOTE... WE DID NOT EVALUATE THE ADJACENT ROAD BED.

Polygon B has coarse grained sandy granitic soil
B - fescue is severely pedestalling and stressed

Moose Ditch has rivers B rock and sediment
" " South culvert clean and maintained ✓
" " north " " " " ✓

East side road (Cowa Terrace) has runoff across site into Moose Ditch — DO NOT put curb or gutter.

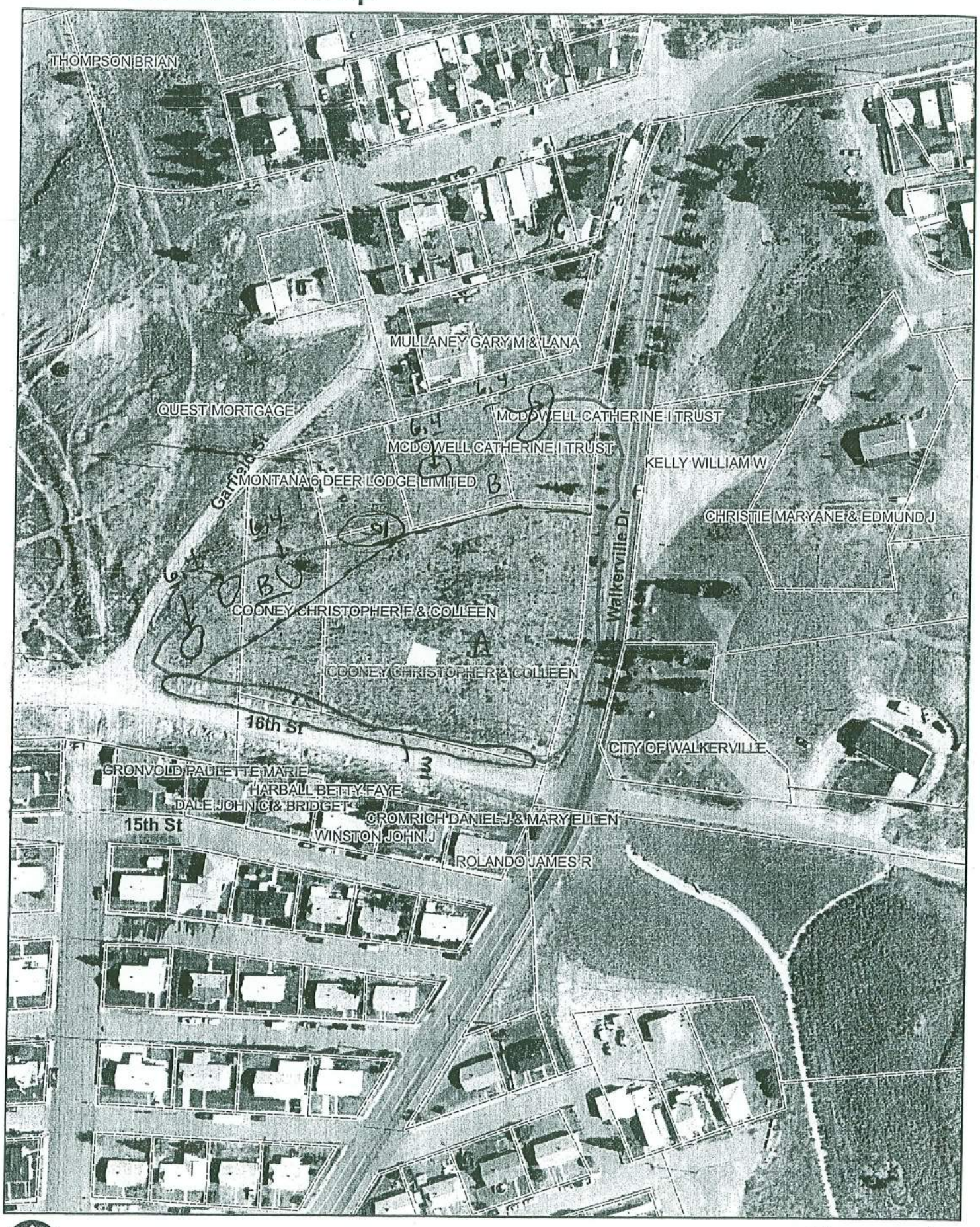
- EXPOSED WASTE IN POLYGONS "B AND C"
- GULLY ON NORTHEAST SIDE DRAINS OFF ROAD IN MOOSE DITCH. GULLY IS CUTTING INTO COVERSOIL CAP.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#34 - Eveline Dump



#54

BRES FIELD FORM

Site ID: __ Site Name: EVELINE DUMP Field Date: 7/31/07

Team Members (Circle your name): _____

Number of Polygons: 2 Slope: 0 to 25 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: LOCATED ON KNOBS. MIXED OWNERSHIP. POLYGON "B" APPEARS NOT TO BE RECLAIMED.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40	30				
*Undesirable (weedy) species	5	3				
*Noxious weeds	2	2				
Litter	8	5				
Rocks > 2"	2	10				
Bare Ground	43	50				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	45	33				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:

0-20% = RI (Reclamation Improvement)

21-39 % = VI (Vegetation Implementation)

40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	F					
Slender wheatgrass	-					
Yellow sweetclover	-					
Alfalfa	I					
Rice Grass	I					
Smooth Brome	I					
RABBIT BRUSH	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	8					
Pedestalling	11					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	11					
TOTAL BLM Score:	44					

~~BLM score:~~

0-55 = M (Monitor)

56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☐ more weeds
- ☐ steeper slope
- ☐ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y X N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 5

Do barren areas cover over 25% of any polygon?
Y X N___ POLYGON "B"

7. Gullies (over 6" in depth):
Y_____ N ✓

Are any gullies actively eroding? Y____ N____

Number of gullies _____

Comments.

- POLYGON "B" APPEARS TO NOT BEEN RECLAIMED. GREATER THAN 25% BARREN AREAS IN POLYGON "B", LOOKS LIKE ~~DESERT~~ DESERT PAVEMENT.

- STEEP SLOPE ALONG RYAN ROAD IS UNVEGETATED. AND ERODING ONTO THE ROAD - POSSIBLE WASTE MATERIAL. RED SITE BOUNDARY DOES NOT INCLUDE ERODING AREAS. (MAYBE OUTCROP)

- POLYGON "A" IS COARSE GRAINED MATERIAL

~~Eveline~~ Shaft Cap appears in tact - Side edges are good

Culvert under Walkerville Drive put on Storm Water O&M list

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#34E - Eveline East

7/31/2007

0 15 30 60 90 120 150 180 Feet

CDM

#546

BRES FIELD FORM

Site ID: __ **Site Name:** EVELINE EAST **Field Date:** 7/31/07

Team Members (Circle your name): SHAUGHT, MALCOLM

Number of Polygons: 1 Slope: 0 to 10 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: LOCATED ADJACENT TO PARK MINERS PARK, PERCHED UP ON A KNOB. MIXED OWNERSHIP

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	50					
*Undesirable (weedy) species	3					
*Noxious weeds	2					
Litter	23					
Rocks > 2"	2					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	53					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	F					
Slender wheatgrass	-					
Yellow sweetclover	-					
Alfalfa	I					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter Movement	6					
Surface Rock Movement	5					
Pedestalling	9					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	11					
TOTAL BLM Score:	31					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	-					
Cheatgrass	I					
Baby's breath	I					
Kochia	-					
Thistle	-					
Leafy Spurge	-					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N__X__ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☐ more weeds
- ☐ steeper slope
- ☐ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N__X__

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N__X__

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y____ N__X__

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y____N____

7. Gullies (over 6" in depth):

Y____ N__X__
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

- LOOKS AS IF THERE WAS WEED CONTROL IN THE LAST YEAR.
- WE DID NOT INCLUDE THE RESIDENTIAL DRIVEWAY AND LAWN ON THE EASTSIDE OF THE SITE USING THE BRES EVALUATION
- SEVERAL BARREN AREAS LOCATED NW, NE, E OF THE SITE, POSSIBLE WASTE MATERIAL.
- THE EDMUNDS'S ARE MOWING THEIR PROPERTY AND POSSIBLY KILLING SOME OF THE FESCUE by cutting Too short.
- THE CAROLINES HAVE A DOZEN TREES AND SHRUBS GROWING IN WELL MANICURED LAWN.
- THERE IS A AREA @ THE NORTH END OF THE SITE THAT APPEARS TO BE MORE RECENT REVEGETATION; COULD HAVE POSSIBLY BEEN REVEGETATED DURING THE VENUS RECLAMATION (30' x 40')

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#37 - Josephine Shaft

BRES FIELD FORM

Site ID: __ Site Name: JOSEPHINE SHAFT Field Date: 7/26/07

Team Members (Circle your name): SHANAGHT, GRIFFEN, MALLOY

Number of Polygons: 2 Slope: 0 to 15 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: TWO RECLAMATION TYPES

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40	55				
*Undesirable (weedy) species	30	2				
*Noxious weeds	2	3				
Litter	12	30				
Rocks > 2"	2	1				
Bare Ground	12	9				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	45	57				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass		D				
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	F					
Cut Leaf Daisy						
SILVER SAGE	I					
RABBIT BRUSH	I					
THICKSPIKE	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter Movement	3	1				
Surface Rock Movement	8	1				
Pedestalling	14	2				
Flow Patterns	3	3				
Rills Depth	0	0				
Rills Frequency	0	0				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	8	2				
TOTAL BLM Score:	36	6				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	I				
Cheatgrass	F	I				
Baby's breath	I	I				
Kochia						
Thistle						
Leafy Spurge						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ____ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☑ more weeds
- ☐ steeper slope
- ☑ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N ✓
- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓
- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ____ N ____
- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

- TWO RECLAMATION TYPES. POLYGON "A" IS COMPOSED OF COARSE GRAINED COVERSOIL. POLYGON "B" FINE GRAINED COVERSOIL.

- SHEEP ~~FESCUE~~ FESCUE APPEARS STRESSED IN POLYGON "A" AND LARGER FESCUE IS DYING.

Recommend Polygon A Soils be enhanced w/ Compost & good Soil and in-Seeding

- THE BARREN AREA ALONG THE NORTHSIDE OF THE SITE ALONG ALEXANDER STREET IS ERODING COVERSOIL / WASTE MATERIAL INTO THE ALEXANDER DITCH. THE SEDIMENTS IN THE DITCH HAS ALMOST 75% FILLED IN THE CULVERT AT THE SEAL TERRACE AND ALEXANDER STREET ~~FENCE~~. CONFLUENCE.

- SOUTHEASTERN EDGE OF THE SITE MAY HAVE BEEN SPRAYED ~~WITHIN~~ FOR WEEDS, LESS ALFALFA, THIS AREA ~~HAS~~ LESS VEG (LESS ALFALFA) THAN POLYGON "A"

- KEEP EYE OUT FOR LAND SLUMPS ON SOUTHERN EDGE OF ~~THE~~ OTR POLYGON "B"

- EASTERN EDGE OF SITE HAS NOT BEEN REVEGETATED / RECLAIMED APPEARS TO HAVE WASTE ROCK / WASTE MATERIAL MAY EXTEND BOUNDARY TO INCLUDE. (TALK WITH EPA)

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
SMOOTH BROME						

Use D (Dominant), F (Frequent), or I (Infrequent).

#38 - Sister Dump

BRES FIELD FORM

Site ID: 38 Site Name: Sisters Dump Field Date: 07-26-07

Team Members (Circle your name): Mallon, Shanight, Joe Griffin

Number of Polygons: 2 Slope: 0 to 15 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Between Seal Terrace & O'Neill St

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	60	50				
*Undesirable (weedy) species	3	5				
*Noxious weeds	2	3				
Litter	30	10				
Rocks > 2"	2	2				
Bare Ground	3	30				
TOTAL (above 6 items must total 100%)		100				
ADJUSTED LIVE % = Live + 5%Undesirable	63	(55)				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F	D				
Crested wheatgrass	F	I				
Slender wheatgrass	I	I				
Yellow sweetclover	I	—				
Alfalfa	F	I				
LODGEPOLE PINE	I	I				
SALSIFY	I	I			?	
Great Basin Wild Rye	I	I				
Rabbit Brush	I	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter Movement	3	6				
Surface Rock Movement	2	5				
Pedestalling	2	14				
Flow Patterns	1	3				
Rills Depth	0	6				
Rills Frequency	0	2				
Gullies Depth	0	6				
Gullies Frequency	0	2				
Soil Movement	1	5				
TOTAL BLM Score:	9	49 (TM)				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	I				
Cheatgrass	I	F				
Baby's breath	I	I				
Kochia	—	—				
Thistle	—	—				
Leafy Spurge	—	—				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N X (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☐ more weeds
- ☐ steeper slope
- ☐ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X
- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X
- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y X N____
- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 6
Do barren areas cover over 25% of any polygon? Y____ N X

7. Gullies (over 6" in depth): See maps
Y X N____
Are any gullies actively eroding? Y X N____
Number of gullies 3

Comments.

- Eastern border loaded with Knapweed outside site boundary. Lots of knapweed adjacent to site

- SITE BORDERS BUFFALO GULCH. BUFFALO ~~CREEK~~ IS ERODING ONTO THE SITE. LARGE AMOUNT OF HEAD CUTTING @ SOUTHERN END OF SITE.
- THERE ARE TWO RECLAMATION TYPES @ THIS SITE. POLYGON "A" IS COMPOSED OF FINER GRAIN MATERIAL THAN POLYGON "B".

- POLYGON "B" MOST OVERGRAZED SHEEP FESCUE. POLYGON "A" IS COMPOSED OF MOSTLY CRESTED WHEAT GRASS.

- POLYGON "B" THE FESCUE APPEARS TO BE STRESSED AND THE OTHER PLANTS ARE DYING.

- SUGGEST EXTENDING SITE BOUNDARY ~~TO~~ TO SEAL TERRACE

- HAUL ROAD IS INCLUDED IN POLYGON "A"

- OUTSIDE SITE BOUNDARY, NORTHEAST ARE ROCK OUTCROPS W/ ERODABLE MATERIAL

- ~~PARKING~~ GATE AREA NEAR SOUTHERN EDGE OF THE SITE IS BARREN.

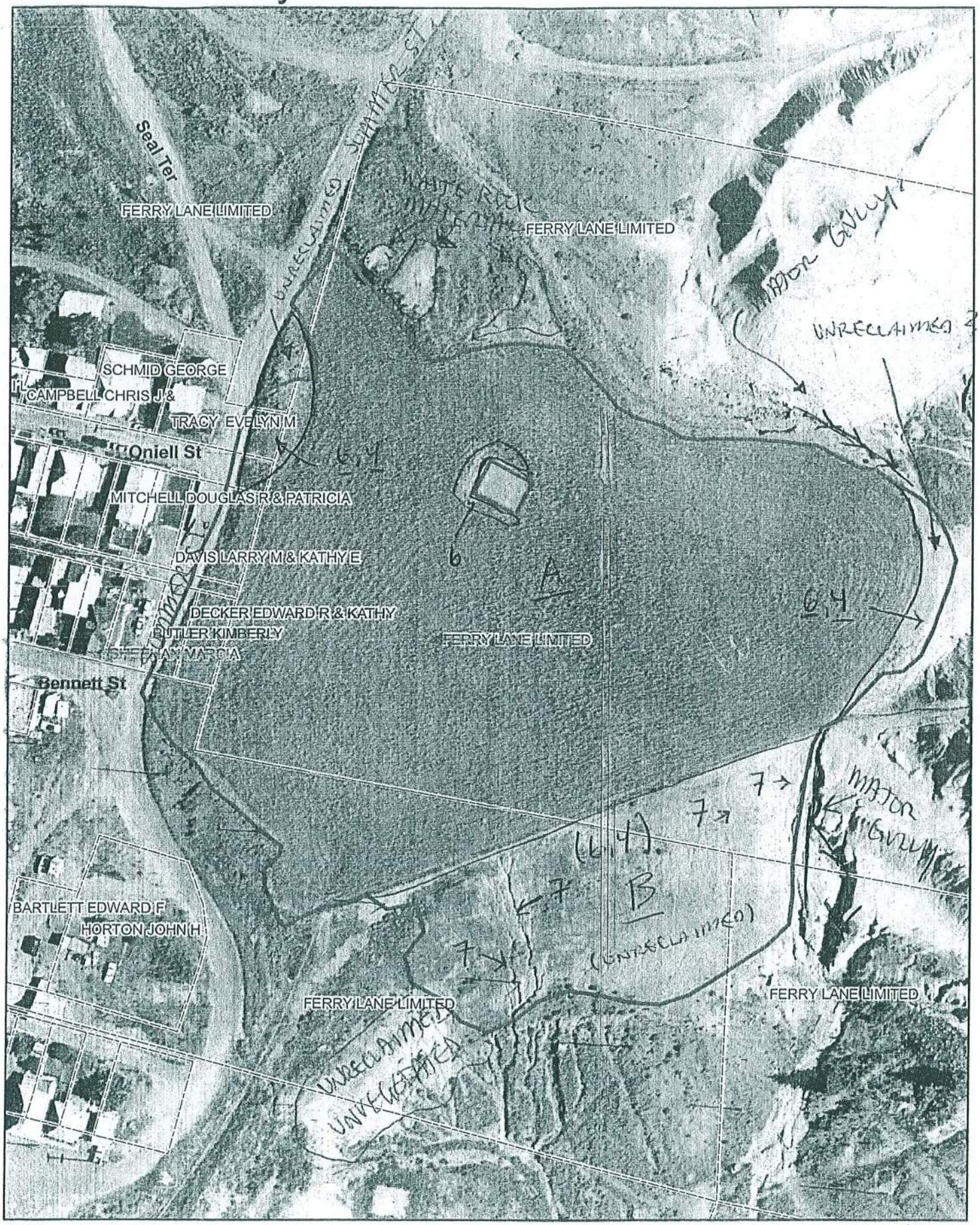
- LARGE AMOUNT OF SEDIMENTS LOCATE DOWN-GRADIENT OF THE SITE (NEAR 48" CONCRETE CULVERT. NEEDS O & M.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Purple Bell	~~I~~	I				
Giant Sage	~~I~~	—				
SMOOTH BROME		I				
TIMOTHY		I				
FIREWEED		I				
WESTERN WHEAT		I				
REDTOP		~~I~~				

Use D (Dominant), F (Frequent), or I (Infrequent).

#41- West Gray Rock



N

0 25 50 100 150 200 250 300 Feet

CDM

#41

BRES FIELD FORM

Site ID:__ Site Name: WEST GRAY ROCK Field Date: 7/31/07

Team Members (Circle your name): MALLOY, SHANCHY

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: MOST OF THE SITE IS RECLAIMED, SOUTH, SE, AND NW UNRECLAIMED.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	55	5				
*Undesirable (weedy) species	5	10				
*Noxious weeds	2	5				
Litter	33	5				
Rocks > 2"	2	2				
Bare Ground	5	73				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	60	10				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:

0-20% = RI (Reclamation Improvement)

21-39 % = VI (Vegetation Implementation)

40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F	D				
Crested wheatgrass	D	-				
Slender wheatgrass	-	-				
Yellow sweetclover	-	-				
Alfalfa	I	-				
SILVER SAGE	I	-				
SNAKEWEED	I	-				
RABBIT BRUSH	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON B (A)	A (B)	C	D	E	F
Surface Litter Movement	11	6				
Surface Rock Movement	11	5				
Pedestalling	9	6				
Flow Patterns	12	2				
Rills Depth	6	0				
Rills Frequency	6	0				
Gullies Depth	5	0				
Gullies Frequency	5	0				
Soil Movement	11	5				
TOTAL BLM Score:	76	24				

BLM score:

0-55 = M (Monitor)

56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	F				
Dalmation toadflax	I					
Cheatgrass	I	F				
Baby's breath	-	I				
Kochia	-	-				
Thistle	-	-				
Leafy Spurge	-	-				
SALSIFY	I	-				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N____ (check applicable items)

- ☐ lime rock barrier
- ☒ depositional area
- ☒ more weeds
- ☒ steeper slope
- ☒ increased erosion
- ☒ less vegetation
- ☒ gullies
- ☐ other____

Estimate width of affected edge (in feet) LARGE

4. Exposed Waste Material? Y ✓ N____

- Estimated pH____
- Approximate area (in square feet) ____ (UNRECLAIMED AREAS)
- Number of areas with exposed waste 3 - BIG

5. Is there evidence of: Y____ N____

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ✓ N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3

Do barren areas cover over 25% of any polygon?
Y ✓ N____ POLYGON "B"

7. Gullies (over 6" in depth):
Y ✓ N____
Are any gullies actively eroding? Y ✓ N____
Number of gullies 10

Comments.

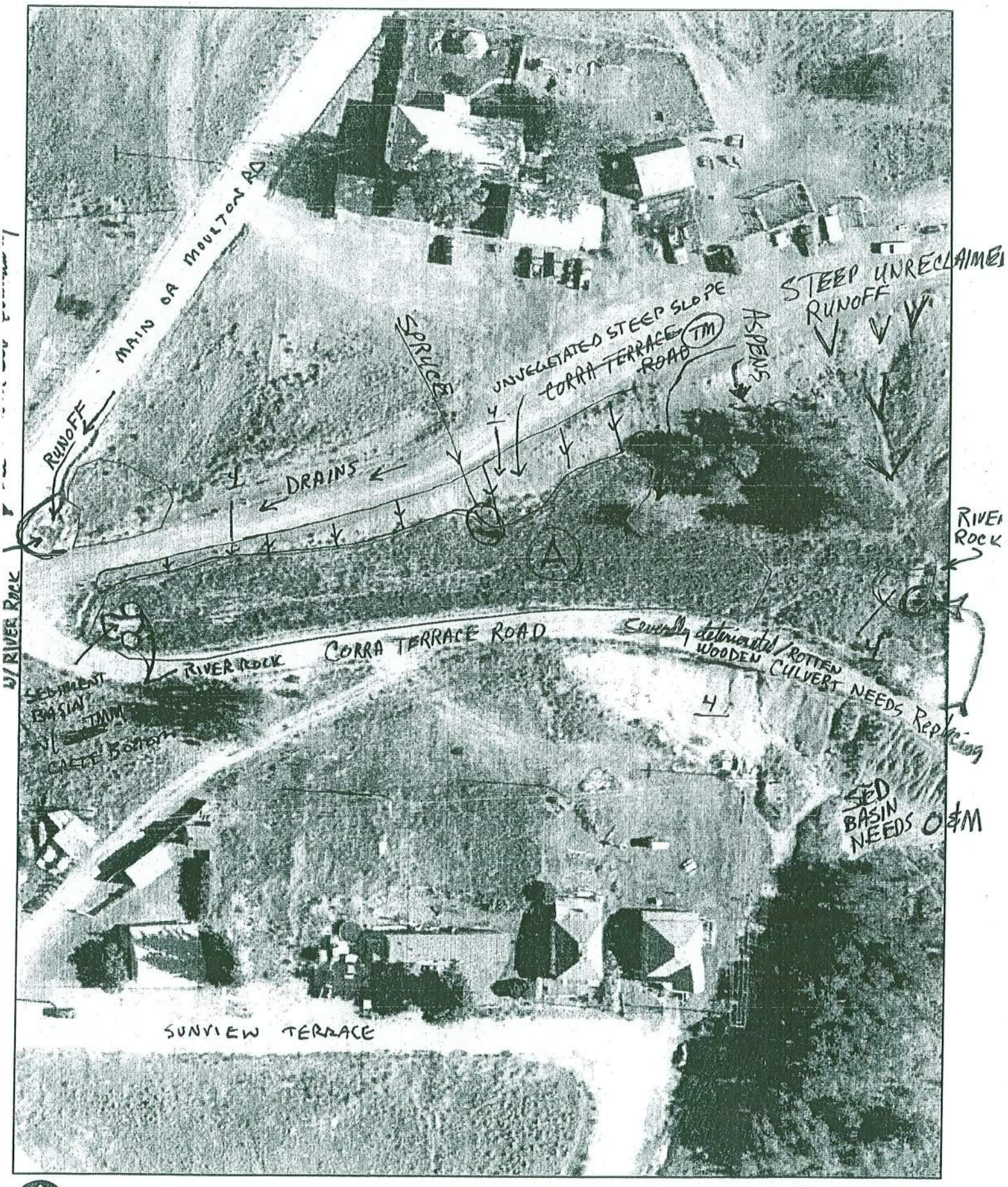
- POLYGON "B" APPEARS NEVER TO HAVE BEEN RECLAIMED. (GMMIA
- EAST SIDE OF SHAFT CONCRETE CAP HAS BEEN ACTIVELY ERODING. RECOMMEND FILLING AND REVEGETATING. BARREN AREAS LOCATED ADJACENT TO CONCRETE CAP.
- BARREN AREAS LOCATE ON EAST AND WEST SIDE OF POLYGON "A". APPEARS TO HAVE WASTE MATERIAL LOCATED IN THESE BARREN AREAS ALSO. MAY HAVE NEVER BEEN RECLAIMED.
- OUTSIDE SITE BOUNDARY ALONG NORTHSIDE OF THE SITE IS STARTING TO SHOW SIGNS OF EROSION INTO THE MOOSE CK DITCH. SUGGEST REPAIRING MOOSE DITCH WHEN RECLAIMING THE EAST GRAVEL ROCK DUMPS, ETC. | GMMIA
- GULLY ALONG EAST SIDE OF SITE IS | HAS UNDERCUT CHAIN LINK FENCE | GMMIA
- SITE IS SURROUNDED BY UNRECLAIMED / UNVEGETATED AREAS ✓
- ASPHALT DRAINAGE SWALE ALONG SUMMER STREET IS KEEPING WATER OF THE SITE. SWALE IS FILLING IN W/ SEDIMENTS. | SWO&M

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#177 - North Alice Culvert



0 15 30 60 90 120 150 180 Feet

CDM

BRES FIELD FORM

Site ID: __ **Site Name:** North Alice Culvert **Field Date:** 7/24/07

Team Members (Circle your name): SHANIGHT, MALLOY

Number of Polygons: 1 Slope: 0 to 30 Aspect (circle all relevant): N SW F NW NE SW SE

Area Description: LOCATED INBETWEEN TWO RAILROAD GRADES

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	20					
*Noxious weeds	15					
Litter	20					
Rocks > 2"	5					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:

0-20% = RI (Reclamation Improvement)

21-39 % = VI (Vegetation Implementation)

40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	I					
SPRUCE TREE	I					
RABBIT BRUSH	I					
WILLOW	I					
ASPEN	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter Movement	6					
Surface Rock Movement	5					
Pedestalling	3					
Flow Patterns	2					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	28					

BLM score:

0-55 = M (Monitor)

56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath						
Kochia						
Thistle						
Other SALSIFY	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items

Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **depositional area**
- ☑ **more weeds**
- ☑ **steeper slope**
- ☑ **increased erosion**
- ☑ **less vegetation**
- ☑ **gullies**
- ☑ **other** UN RECLAIMED

Estimate width of affected edge ____

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH ____
- Approximate area ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon? Y ____ N ____

7. Gullies (over 6" in depth):

Y ____ N ✓

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

Comments.

- THE UNVEGETATED STEEP SLOPE IS ERODING SOIL / WASTE-LIKE MATERIAL INTO THE RECLAIMED PORTION OF THE SITE.

- SEDIMENT BASIN LOCATE @ WEST SIDE OF SITE

- UPPER RAILROAD GRADE HAS NOT BEEN RECLAIMED

- LOWER RAILROAD GRADE DOES NOT RUN ONTO THE SITE

- SEDIMENT BASIN LOCATED on Main St. Should be enlarged to include sediment catch basin for O&M Should be in Site Boundary

- REMOVE CONSTRUCTION FENCE AND T-POSTS @ THE WEST END OF THE ALICE CULVERT

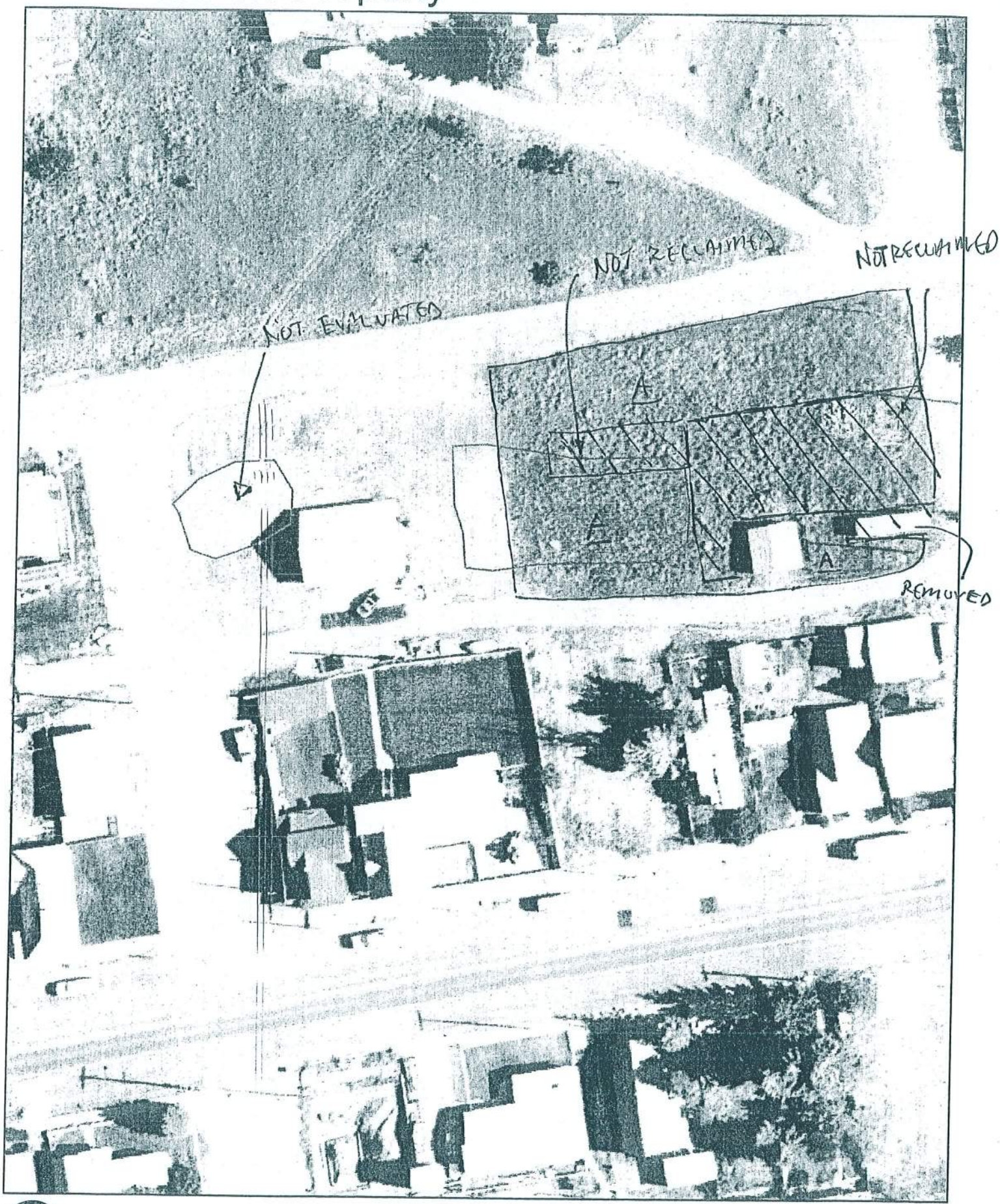
- BERM LOCATED @ WEST END OF CULVERT TO PREVENT VEHICLES FROM ENTERING DITCH.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
SMOOTH BROME	I					
FOXTAIL	I					
RASPBERRIES	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

#178 Leathers Property



N

0 15 30 60 90 120 150 180 Feet

CDM

#178

BRES FIELD FORM

Site ID: __ Site Name: LEATHERS PROPERTY Field Date: 7/25/07

Team Members (Circle your name): SHANIGAT, DENNICK

Number of Polygons: 1 Slope: 0 to 5 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: PART OF THE SITE IS LOCATED ON A RESIDENTIAL LOT AND WILL NOT BE EVALUATED.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	10					
*Noxious weeds	7					
Litter	33					
Rocks > 2"	1					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	(45)					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	D					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	F					
RABBIT BRUSH						
GREEN NEEDLE GRASS	I					
SILVER SAGE	I					
POA	D					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	1					
Surface Rock Movement	1					
Pedestalling	2					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	1					
TOTAL BLM Score:	(5)					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
MUSTARD						
SMUSIFY	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon? Y____ N____

7. Gullies (over 6" in depth):

Y____ N✓

Are any gullies actively eroding? Y____ N____

Number of gullies ____

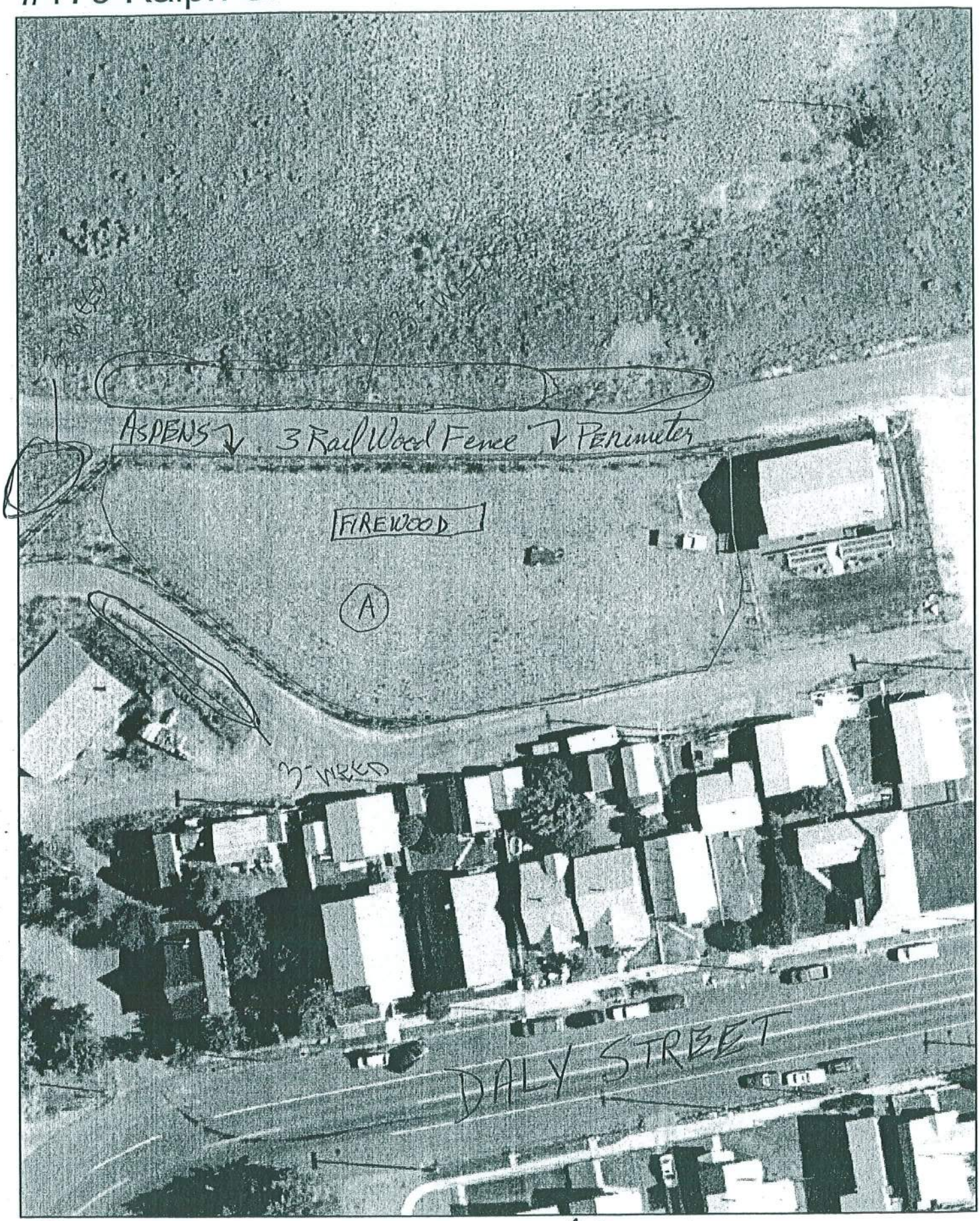
Comments.

- ELECTRIC FENCE SURROUNDS POLYGON A
- SOME GRAZING BY HORSES, ELECTRIC FENCE
- DID NOT EVALUATE WEST POLYGON ON THE MAP, MOSTLY LOCATED ON A RESIDENTIAL PROPERTY.
- ADJUSTED POLYGON "A" BOUNDARY TO INCLUDE THE EXTENT OF THE RECLAMATION

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
SMOOTH BROME	I					
Use D (Dominant), F (Frequent), or I (Infrequent).						

#179 Ralph Sr



N

0 15 30 60 90 120 150 180 Feet

ADD Street names
ADD Ownership

CDM

Weed Surveys; Photos

BRES FIELD FORM

Site ID: __ **Site Name:** RALPH SR. **Field Date:** 7/17/07

Team Members (Circle your name): MALLOY, SHANIGAT

Number of Polygons: 1 Slope: 0 to 15 Aspect (circle all relevant): N (S) W E NW NE SW SE

Area Description: PRIVATE LAND OWNER - THERE ASPENS WITH DRIP SYSTEM

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	~~40~~ M					
*Undesirable (weedy) species	5					
*Noxious weeds	2					
Litter	26					
Rocks > 2"	1					
Bare Ground	26					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:

0-20% = RI (Reclamation Improvement)

21-39 % = VI (Vegetation Implementation)

40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	F					
~~ASPENS~~ (~50)	I					
~~Other~~ LILAC (2)	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter Movement	8					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns Frequency	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	24					

BLM score:

0-55 = M (Monitor)

56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	-					
Cheatgrass	F					
Baby's breath	-					
Kochia	-					
Thistle	-					
~~Other~~ SALTY	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items

Identify trigger areas (using #) on air photo

3. Site Edges: Are polygon edges (outer edges of site only) significantly different than remainder of the polygon? Y ✓ N____ (check applicable items)

LOCATED ADJACENT TO SITE

- ☐ lime rock barrier
- ☒ more weeds
- ☐ increased erosion
- ☐ gullies
- ☐ depositional area
- ☐ steeper slope
- ☐ less vegetation
- ☐ other____

Estimate width of affected edge ____

4. Exposed Waste Material? Y____ N ✓

- Estimated pH____
- Approximate area ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon? Y____N____

7. Gullies (over 6" in depth):

Y____ N ✓

Are any gullies actively eroding? Y____ N____

Number of gullies ____

Comments. SITE HAS BEEN MOWED IN 2007 TO 3-INCHES ABOVE GROUNDS SURFACE.

- 50' x 8' PILE OF WOOD (FIRE) STACKED ON PROPERTY
- 1 - JUNK CAR

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

BRES_2008 Field Forms

MASTER

BRES FIELD FORM Site ID: 15 Site Name: Rising Star Dumps West Field Date: 7-10-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 3 to 1 Aspect (circle all relevant): N (S) W E NW NE SW SE

Area Description: horse pasture above Walkerville

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	15					
*Undesirable (weedy) species	15					
*Noxious weeds	25					
Litter	10					
Rocks > 2"	5					
Bare Ground	30					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	20					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	X					
Rubber Rabbit	I					
Bitterroot	I					
Smooth Brome	I					
Canada Blue	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	11					
Pedestalling	1 → 11					
Flow Patterns	→ 12					
Rills Depth	4					
Rills Frequency	5					
Gullies Depth	5					
Gullies Frequency	2					
Soil Movement	11					
TOTAL BLM Score:	→ 67					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	I					
Leafy Spurge	X					
Mustard	F					
Sedge	F					
Red Sorrel	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ✓ **less vegetation**
- ✓ **gullies**
- ✓ **other** exposed waste

Estimate width of affected edge (in feet) 300

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4-5.5
- Approximate area (in square feet) 800
- Number of areas with exposed waste 6

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2

Do barren areas cover over 25% of any polygon? Y ____ N ✓

7. Gullies (over 6" in depth):

Y ✓ N ____

Are any gullies actively eroding? Y ✓ N ____

Number of gullies 2

Comments.

- Site used for horse grazing
- overgrown knapweed
- severe erosion
- several areas of exposed waste
- 2 gullies on site
- very little live desirables
- horse trails worn through site

Short Term Recomendations:

- Spray weeds
- Reclamation Improvement
- Engineering Evaluation
- close gate
- Consider spot spraying to conserve native species. (bitterroot, sage, globemallow & rubber rabbit.)

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Butter & Eggs	I					
Scarlet Globemallow	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

MASTER

#15 - Rising Star Dumps West

Feet
0 100 200 300 400

CDM

BRES FIELD FORM

Site ID: 15E Site Name: Rising Star Dump Field Date: 7-10-08

Team Members (Circle your name): Ryan Campbell Larson

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Between 4th & Ferry Lane Street

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	X					
*Undesirable (weedy) species	X					
*Noxious weeds	X					
Litter	X					
Rocks > 2"	X					
Bare Ground	X					
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X					
Crested wheatgrass	X					
Slender wheatgrass	X					
Yellow sweetclover	X					
Alfalfa	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	6					
Rills Depth	5					
Rills Frequency	4					
Gullies Depth	X					
Gullies Frequency	X					
Soil Movement	2					
TOTAL BLM Score:	19					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	X					
Dalmation toadflax	X					
Cheatgrass	X					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ___ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ___ N X

- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ___ N X

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N X
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

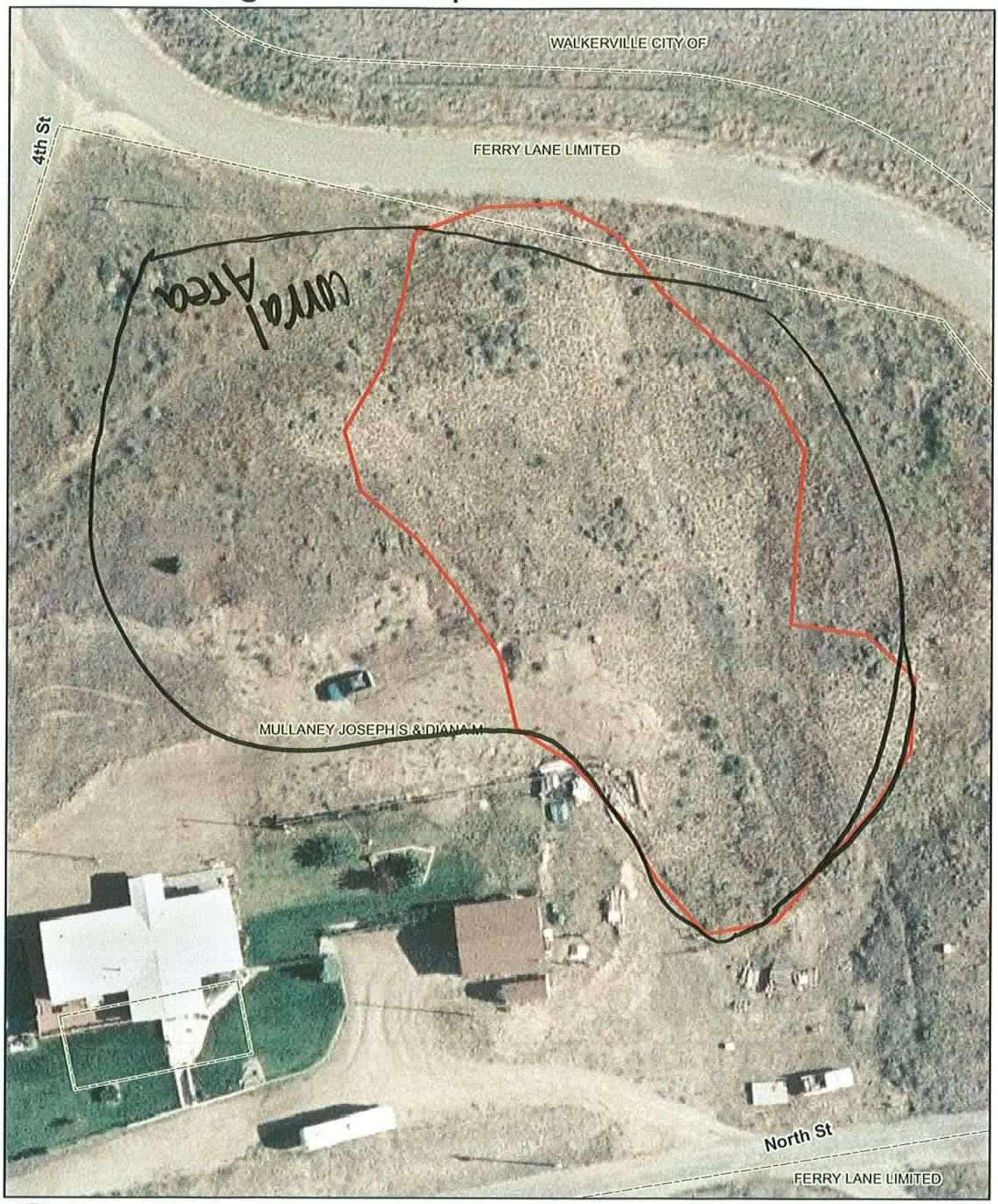
- 1 polygon
- majority of (entire) property is used for (private owner) horse access
- horses eat vegetation down - present veg. is grass and seed + manure.
- stable and corral have been added since this picture.
- outside the site - surrounding area has thick vegetation.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#15E - Rising Star Dumps East



BRES FIELD FORM Site ID: #17 Site Name: Paymaster Field Date: 7-9-08

Team Members (Circle your name): Gordon Ryan Campbell

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Sherman School above site

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	10					
*Noxious weeds	3					
Litter	25					
Rocks > 2"	2					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	50					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	1					
Rills Depth	X					
Rills Frequency	X					
Gullies Depth	X					
Gullies Frequency	X					
Soil Movement	8					
TOTAL BLM Score:	22					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	X					
Cheatgrass	X					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ___ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ___ N X

- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y X N ___

- ☐ **bulk soil failure**
- X **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ___ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N X
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

- 1 polygon
- truck + trailer on site
- vegetation looks good.
- over 50% of site has been claimed (developed) by adjacent land owner - not accessible for evaluation

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

AG 7/9/08

#17 - Paymaster

#17 - Paymaster

BRES FIELD FORM Site ID: #24 Site Name: Twilight East Field Date: 7/10/08

Team Members (Circle your name): Campbell, Ryan, Larson + Larson

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Next to Exeter Street / Mullaney Property + next to it

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	5					
*Noxious weeds	15					
Litter	23					
Rocks > 2"	2					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	50					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	1					
Pedestalling	6					
Flow Patterns	2					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	3					
Gullies Frequency	3					
Soil Movement	3					
TOTAL BLM Score:	21					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

(M)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Rubber Rabbit	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y X N____
Are any gullies actively eroding? Y____ N X
Number of gullies 1

Comments. ° 1 Polygon

° Mullaney's Property (east side/near house) is mowed grass + well groomed.

° The gully ~~starts~~ on ~~south~~ the bottom of sight + J is healing.

° On Whaley's Property (outside sight) there is evidence of Subsidance.

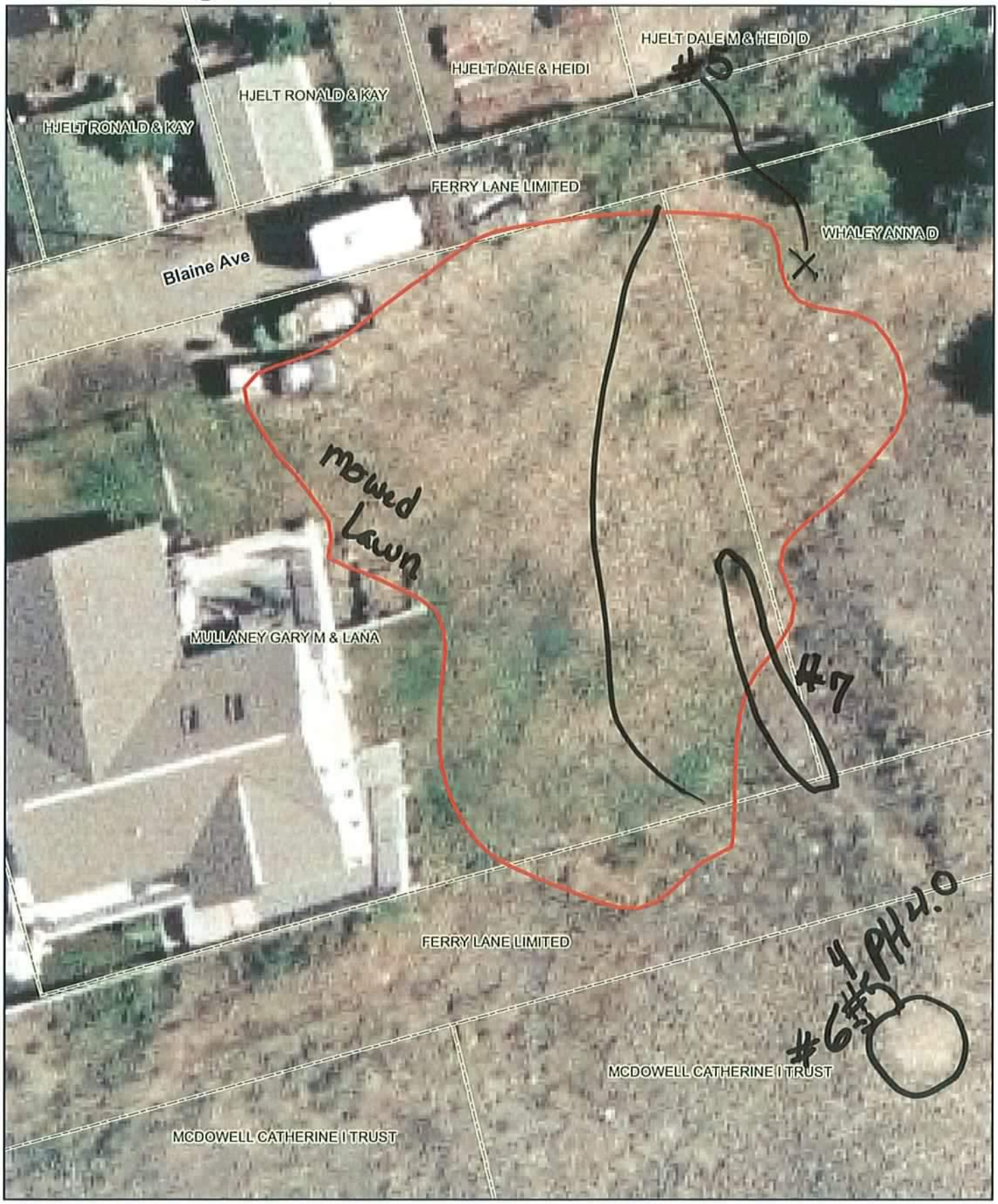
° On the South-east slope (below sight) there is a barren / waste (PH 4.0) Area.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#24 - Twilight East



N

0 10 20 30 40 Feet

CDM

BRES FIELD FORM

Site ID:__ **Site Name:** _____ **Field Date:** _____

Team Members (Circle your name): _____

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	10					
*Noxious weeds	5					
Litter	25					
Rocks > 2"	0					
Bare Ground	25					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	9					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	1					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	34					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N__X__ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N__X__

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N__X__

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N__X__

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N__X__
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Sheep fescue, seems stressed but still growth

Significant erosion & gullic formation adjacent to site on the west side.

this site is part of Missoula gulch

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#26 - Cripple Dump

Barren area

Master

BRES FIELD FORM

Site ID: 27 **Site Name:** Wappello Dump **Field Date:** 7-9-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 3 to 1 Aspect (circle all relevant): N S W E (NW) NE SW SE

Area Description: Adjacent to Upper Missoula Gulch.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable	*see Comments					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	14					
Pedestalling	9					
Flow Patterns	9					
Rills Depth	6					
Rills Frequency	5					
Gullies Depth	7					
Gullies Frequency	2					
Soil Movement	8					
TOTAL BLM Score:	63					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ____ N ✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4.5
- Approximate area (in square feet) most of site
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ✓ N ____

7. Gullies (over 6" in depth):
Y ✓ N ____
Are any gullies actively eroding? Y ✓ N ____
Number of gullies 1

Comments.

Sloped area on North slope above upper Missoula gulch. Mostly bare of desirable vegetation.
- Many areas of exposed waste. (4.5 pH)
- Severe erosion. (approx. 5 rills/Gullies active)

Short term Reccomendation:

- Reclamation Improvement
- Engineering Evaluation.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER

#27 - Wappello Dump

- PH 4.5

Master

BRES FIELD FORM

Site ID: 35 **Site Name:** Del Monte **Field Date:** 7-9-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 3 to 1 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South of 116th street. Miners Park

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	15					
*Noxious weeds	3					
Litter	30					
Rocks > 2"	2					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	F					
Aspen	I					
Baltic Rush	I					
Great Basin	I					
Smooth Brome	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	11					
Flow Patterns	12					
Rills Depth	1					
Rills Frequency	1					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	35					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Bind weed	I					
Salsaby	I					
Mustards	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N ✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓
- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓
- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

- Site has good vegetation - however there are several areas (small) that fall into the 10-20% improvement category.

- Matrumony vine on site edge

Short term Recommendations:

- Monitor areas of low vegetation for erosion, noxious & undesirables.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Prickly lettuce	I					
Canada Blue	I					
Western Wheat	I					
Phacelia	I					
Tumble Mustard	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

#35 - Del Monte

BRES FIELD FORM Site ID: 36 Site Name: LA PLATTA Field Date: 7/11/08

Team Members (Circle your name): L. KILMER, J. HUNT, R. RYAN, (M. VINCENT)

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	33					
*Undesirable (weedy) species	5					
*Noxious weeds	5					
Litter	40					
Rocks > 2"	2					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	38					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
~~Slender~~ wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	F					
CANADA BLUE	F					
RUBBER RABBIT BRUSH	I					
ALYSSUM	I					
YARROW	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	1					
Gullies Depth	6					
Gullies Frequency	2					
Soil Movement	5					
TOTAL BLM Score:	39					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
CAMAON	I					
MUSTARD	I					
SALSIFY	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ___ (check applicable items)

- [ ] **lime rock barrier**
- [ ] **depositional area**
- [ ] **more weeds**
- [✓] **steeper slope**
- [✓] **increased erosion**
- [ ] **less vegetation**
- [✓] **gullies**
- [✓] **other** EXPOSED WASTE (SE CORNER)

Estimate width of affected edge (in feet) 20' (N) – 15' (S)

4. Exposed Waste Material? Y ✓ N ___

- Estimated pH 4.5 to 6.5
- Approximate area (in square feet) ___
- Number of areas with exposed waste 7

5. Is there evidence of: Y ✓* N ___

- [ ] **bulk soil failure**
- [ ] **land slumps**
- [✓] **subsidence** * SMALL DEPRESSIONS COULD BE ASSOCIATED W/ SUBSIDENCE

6. Barren Areas: Y ✓ N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 6
Do barren areas cover over 25% of any polygon?
Y ___ N ✓

7. Gullies (over 6" in depth):
Y ✓ N ___
Are any gullies actively eroding? Y ✓ N ___
Number of gullies 3

Comments.

- LARGE AREAS OF BEDROCK OUTCROPS, SURROUNDED BY BARREN AREAS. ALL OUTCROPS ↓ pH (4.5 TO 6.0) AREAS ARE PRIMARILY CANADA BLUEGRASS & ALYSSUM (YELLOW)
- ROCK-LINED DITCH IS DOMINANT W/ SPOTTED KNAPWEED AND OTHER WEEDY SPECIES
- HORSE CORRAL W/ TWO HORSES. MANURE & DEBRIS STOCKPILED AROUND CORRALS. SITE SHOWS MINIMAL SIGNS OF GRAZING W/ A FEW HORSE TRAILS
- ONE STEEP, ERODING GULLY ALONG ROCK-DITCH OFF BENNET ST.
  ANOTHER GULLY ~20' ALONG N. SITE EDGE (ROAD)
- N. SITE EDGE IS AN OLD ROAD/TRAIL THAT HAS EROSION (RILLS, GULLY) AND WEEDS/LOW VEGETATION
  - ↳ ALL SITE EDGES HAVE ↑ EROSION, ↓ VEGETATION AND NOXIOUS WEEDS/WEEDY SPECIES

SHORT TERM RECOMMENDATIONS

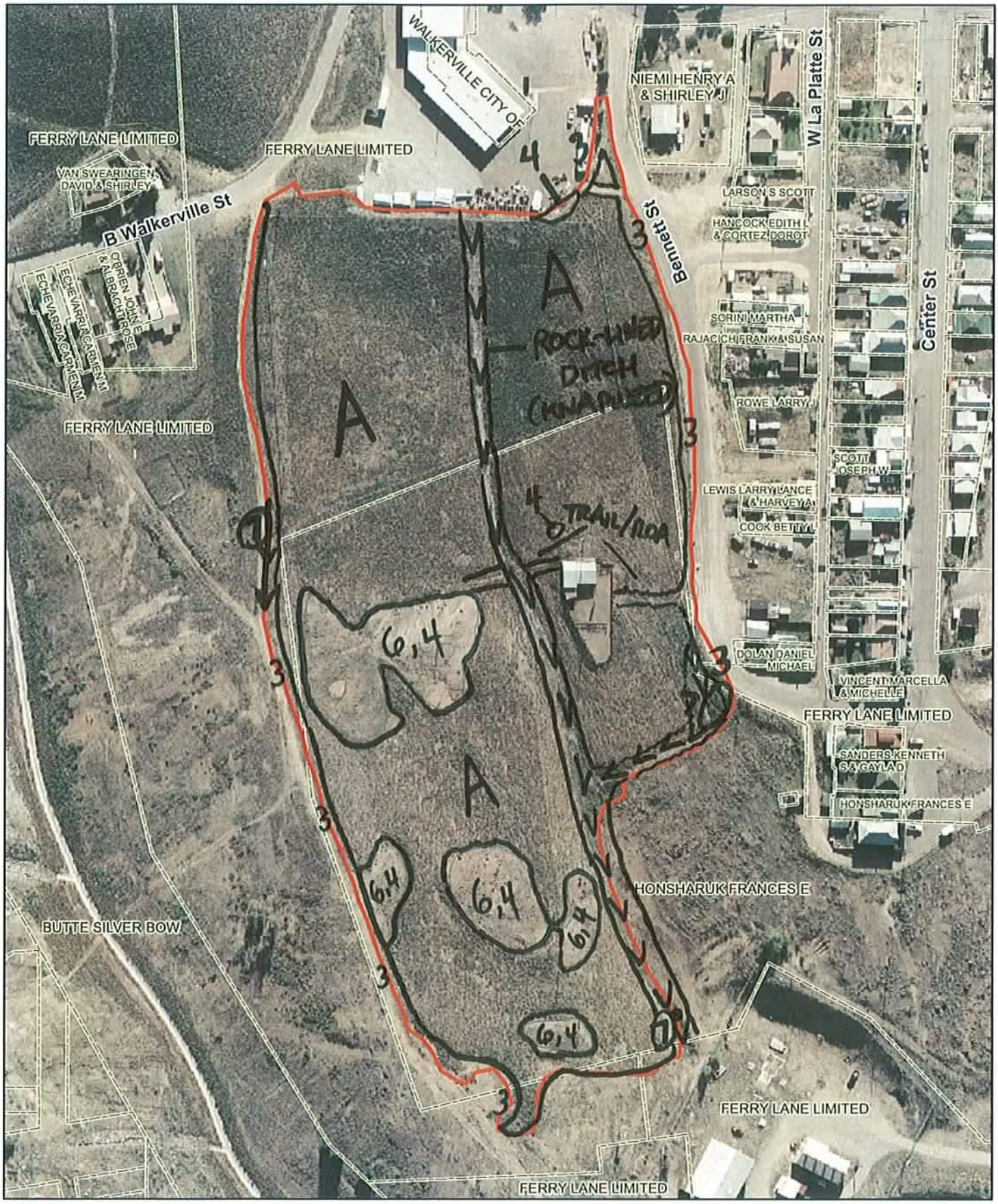
- SPRAY NOXIOUS WEEDS/WEEDY SPECIES IN DITCHES AND ALONG EDGES.
- FIX EXPOSED WASTE ON SE OF SITE EDGE
- REPAIR GULLIES
- STABILIZE EROSION & CONTAIN ACIDIC RUNOFF FROM BEDROCK AREAS BY RECLAIMING BARREN EDGES W/ BERMS.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
ASPEN *	I					
ASTER	I					
CURRANT *	I					
FIREWEED *	I					
ABSINTHE WORMWOOD	I					
LAMBSQUARTERS	I					
* IN LONG, ROCK-LINED						
DITCH						

Use D (Dominant), F (Frequent), or I (Infrequent).

#36 - La Platta



0 100 200 300 400 Feet

BRES FIELD FORM

Site ID: 45 **Site Name:** Garfield **Field Date:** 7/5/08

Team Members (Circle your name): Gordon, Campbell, Shanight, Ryan

Number of Polygons: 1 Slope: 0 to 10 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: located adjacent to Missoula Ave. and Clark Street

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	52					
*Undesirable (weedy) species	10					
*Noxious weeds	2					
Litter	28					
Rocks > 2"	3					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	57					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	1					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	1					
Gullies Frequency	1					
Soil Movement	2					
TOTAL BLM Score:	12					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N X

- Estimated pH 6.5
- Approximate area (in square feet) 110
- Number of areas with exposed waste 0

5. Is there evidence of: Y ____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N X

7. Gullies (over 6" in depth):
Y X N ____
Are any gullies actively eroding? Y ____ N X
Number of gullies ____

Comments.

1 polygon

vegetation and ergsion appears to be the same on the west and east side of the concrete ditch.

- SOME SOIL DEPOSITS LOCATED @ THE END OF THE EASTSIDE RIP RAP DITCH.
- SOME MINOR RUNOFF FROM 5TH STREET (SEDIMENTS).

Barren area located on the west side of the site has a ph of approximately 6.5

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#45 - Garfield

Clark St
GREEN THOMAS K
DOTSON JOHN WILLIAM & OELEIS K
8th St
DIAZ RAOUL F, THERESA M & RAOU
FERRY LANE LIMITED
5th St
Missoula Ave
BUTTE SILVER BOW
0
50
100
150
200
Feet

BRES FIELD FORM

Site ID: __ **Site Name:** _____ **Field Date:** _____

Team Members (Circle your name): _____

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A (B)	POLYGON B (A)	C	D	E	F
Live (desirable) species	45	40				
*Undesirable (weedy) species	5	5				
*Noxious weeds	3	3				
Litter	35	35				
Rocks > 2"	2	2				
Bare Ground	10	15				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	50	45				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue		I				
Crested wheatgrass		D				
Slender wheatgrass		I				
Yellow sweetclover		X				
Alfalfa		F				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	3				
Surface Rock Movement	2	2				
Pedestalling	6	6				
Flow Patterns	3	1				
Rills Depth	0	0				
Rills Frequency	0	0				
Gullies Depth	0	0				
Gullies Frequency	0	1				
Soil Movement	5	5				
TOTAL BLM Score:	22	18				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A (B)	B (A)	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	X				
Cheatgrass	I	I				
Baby's breath	X	X				
Kochia	X	X				
Thistle	X	X				
Leafy Spurge	X	X				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- [ ] **lime rock barrier**
- [X] **depositional area**
- [ ] **more weeds**
- [ ] **steeper slope**
- [X] **increased erosion**
- [ ] **less vegetation**
- [ ] **gullies**
- [ ] **other**_____

Poly B

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- [ ] **bulk soil failure**
- [ ] **land slumps**
- [ ] **subsidence**

6. Barren Areas: Y X N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2 B
Do barren areas cover over 25% of any polygon?
Y____ N A

7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. Recommend mowing SE poly

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#46 - Missoula Mine

Master

BRES FIELD FORM

Site ID: 48 **Site Name:** Old Glory West **Field Date:** 7/7/08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 3 to 1 Aspect (circle all relevant): N S W (E) NW NE SW SE

Area Description: facing east surrounded by residential

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	15					
*Noxious weeds	5					
Litter	25					
Rocks > 2"	0					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
~~Slender~~ wheatgrass	1					
Yellow sweetclover	1					
Alfalfa	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	4					
TOTAL BLM Score:	29					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	1					
Dalmation toadflax	1					
Cheatgrass	F					
Baby's breath	N/A					
Kochia	N/A					
Thistle	N/A					
Leafy Spurge	N/A					
Salsafy	1					
Mustard	1					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N ✓ (check applicable items)

- [ ] **lime rock barrier**
- [ ] **depositional area**
- [ ] **more weeds**
- [ ] **steeper slope**
- [ ] **increased erosion**
- [ ] **less vegetation**
- [ ] **gullies**
- [ ] **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓
- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓
- [ ] **bulk soil failure**
- [ ] **land slumps**
- [ ] **subsidence**

6. Barren Areas: Y____ N ✓
- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

- Stable site

- Site edges/adjacent edges have undesirable weedy and noxious weeds

Short Term Recomendations:

- Spray noxious weeds on site edges

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

#48 - Old Glory West (Incl.)

Master

BRES FIELD FORM

Site ID: 49 **Site Name:** Old Glory **Field Date:** 7-7-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 4 to 1 Aspect (circle all relevant): (N S W E) NW NE SW SE

Area Description: Residential Skate rink. West of Mountain Con

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	20					
*Undesirable (weedy) species	20					
*Noxious weeds	5					
Litter	35					
Rocks > 2"	0					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	25					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	8					
Pedestalling	9					
Flow Patterns	6					
Rills Depth	4					
Rills Frequency	3					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	46					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	X					
Kochia	F					
Thistle	X					
Leafy Spurge	N/A					
Salsafy	I					
Mustard	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ____ (check applicable items)

- ✓ **lime rock barrier**
- ☐ **more weeds**
- ✓ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** ____

Estimate width of affected edge (in feet) 10

4. Exposed Waste Material? Y ____ N ✓
- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ____
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y ____ N ✓

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

- Recently Mowed
- Ice Skating Rink in center of site. Berm surrounding rink & 10 ft. edge around berm has kocia & other undesirable species & signs of erosion

Short term Recomendations:

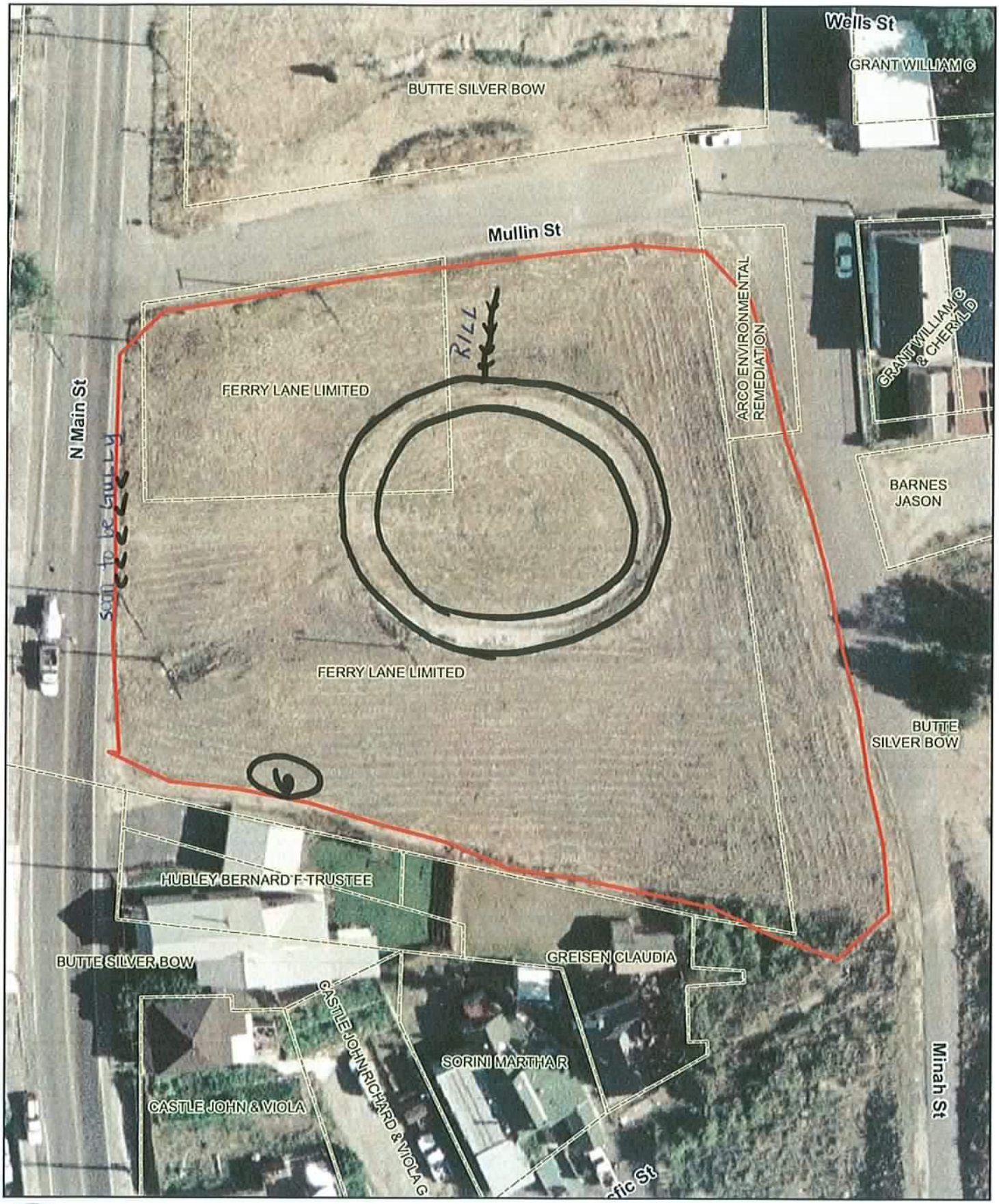
- Spray for weeds along interior berm
- Curb & cutter to save site from run on

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#49 - Old Glory Master



BRES FIELD FORM Site ID: 50 Site Name: Zelia Field Date: 7-7-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 3 to 1 Aspect (circle all relevant): N S (W) E NW NE SW SE

Area Description: Small west facing slope below Mountain Conn

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	33					
*Undesirable (weedy) species	12					
*Noxious weeds	10					
Litter	38					
Rocks > 2"	5					
Bare Ground	2					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	38					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	2					
Pedestalling	11					
Flow Patterns	1					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	22					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	I					
Kochia	I					
Thistle	I					
Leafy Spurge	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ____ (check applicable items)

- ✓ **lime rock barrier**
- ☐ **depositional area**
- ✓ **more weeds**
- ✓ **steeper slope** burm
- ✓ **increased erosion**
- ✓ **less vegetation**
- ☐ **gullies**
- ☐ **other** ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4
- Approximate area (in square feet) 16 ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Master

Comments.

- Noxious weeds are mostly on edge of site.
- Surrounding area is high in noxious weeds especially Spotted knapweed & Dalmation toad flax
- Very small reclaimed site at end of street. Site boundries do not match aerial view.

Short Term Recommendations:

- Weed Control
- Small waste area
- Field GPS
- Possible erosion control of a adjacent gully

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Zeila Site No. 50
Quality Control Cover Frames
7/9/2008

Live	UWS	Noxious	Litter	Rock	Bare	TOTAL HITS
220	23	18	236	2	1	500
44%	5.00%	3.00%	47%	0.50%	0.50%	100%
Adjusted Live	49%					

#50 - Zelia

Wells St
BUTTE SILVER BOW
GRANT WILLIAM
GRANT WILLIAM
BUTTE SILVER BOW
BEAVIS LINDA & LISA
Mullin St
BUTTE SILVER BOW
BUTTE SILVER BOW
BUTTE SILVER BOW
BUTTE SILVER BOW
2
4
3
BURN
Feet
0
10
20
30
40

MASTER

BRES FIELD FORM

Site ID: 52 **Site Name:** Moscow Dump **Field Date:** 7-7-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 2 Slope: 0 to 25% Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Barren Area South of Missoula Ave. Residential

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5	40				
*Undesirable (weedy) species	8	5				
*Noxious weeds	2	5				
Litter	2	40				
Rocks > 2"	1	0				
Bare Ground	82	10				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	10	45				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I	I				
Crested wheatgrass	I	F				
~~Slender~~ wheatgrass	I	F				
Yellow sweetclover	I	X				
Alfalfa	I	F				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	8					
Pedestalling	2					
Flow Patterns	1					
Rills Depth	7					
Rills Frequency	2					
Gullies Depth	7					
Gullies Frequency	1					
Soil Movement	14					
TOTAL BLM Score:	45	<32				

BLM score: based on NW Indicate
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	I				
Cheatgrass	F	F				
Baby's breath	N/A	N/A				
Kochia	N/A	N/A				
Thistle	N/A	N/A				
Leafy Spurge	N/A	N/A				
Mustard	I	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ____ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ✓ more weeds
- ☐ steeper slope
- ☐ increased erosion
- ✓ less vegetation
- ☐ gullies
- ☐ other ____

Estimate width of affected edge (in feet) 20'

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4
- Approximate area (in square feet) scattered
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ✓ N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas majority A
Do barren areas cover over 25% of any polygon?
Y ✓ N ____

7. Gullies (over 6" in depth):
Y ✓ N ____
Are any gullies actively eroding? Y ✓ N ____
Number of gullies 1
250' long

Comments.

2 polygons dilineated

A- Barren Area

B- Vegetation on West Side could be re-allined with Site # 159 (NW Sindicate)

Short Term Reccomendations:

- Fix gully on Road

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER

#52 - Moscow Dump

MASTER

BRES FIELD FORM

Site ID: 53 Site Name: Poulin Dump Field Date: 7-11-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 3 to 1 Aspect (circle all relevant): N (S) W E NW NE SW SE

Area Description: NW side above Buffalo Road.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	20					
*Noxious weeds	10					
Litter	35					
Rocks > 2"	2					
Bare Ground	8					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
~~Slender~~ wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	I					
Great Basin	I					
Aspen	I					
Willow	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	11					
Flow Patterns	9					
Rills Depth	3					
Rills Frequency	2					
Gullies Depth	3					
Gullies Frequency	1					
Soil Movement	5					
TOTAL BLM Score:	47					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	I					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Salsify	I					
Mustard	I					
Prickly lettuce	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- lime rock barrier
- ✓ more weeds North
- increased erosion
- ✓ gullies West
- depositional area
- ✓ steeper slope west
- ✓ less vegetation West
- other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4.0-5.5
- Approximate area (in square feet) 1300
- Number of areas with exposed waste 20

5. Is there evidence of: Y ____ N ✓

- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y ✓ N ____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 5

Do barren areas cover over 25% of any polygon? Y ____ N ✓

7. Gullies (over 6" in depth):

Y ✓ N ____

Are any gullies actively eroding? Y ____ N ✓

Number of gullies 1

Comments.

1 Polygon - VI category

- numerous areas of exposed waste
- knapweed growing of N boundry
- numerous barren areas.

Short Term Recomendations:
- address exposed waste areas
- Western site edge for erosion
- Northern site edge has quantities of knapweed
-

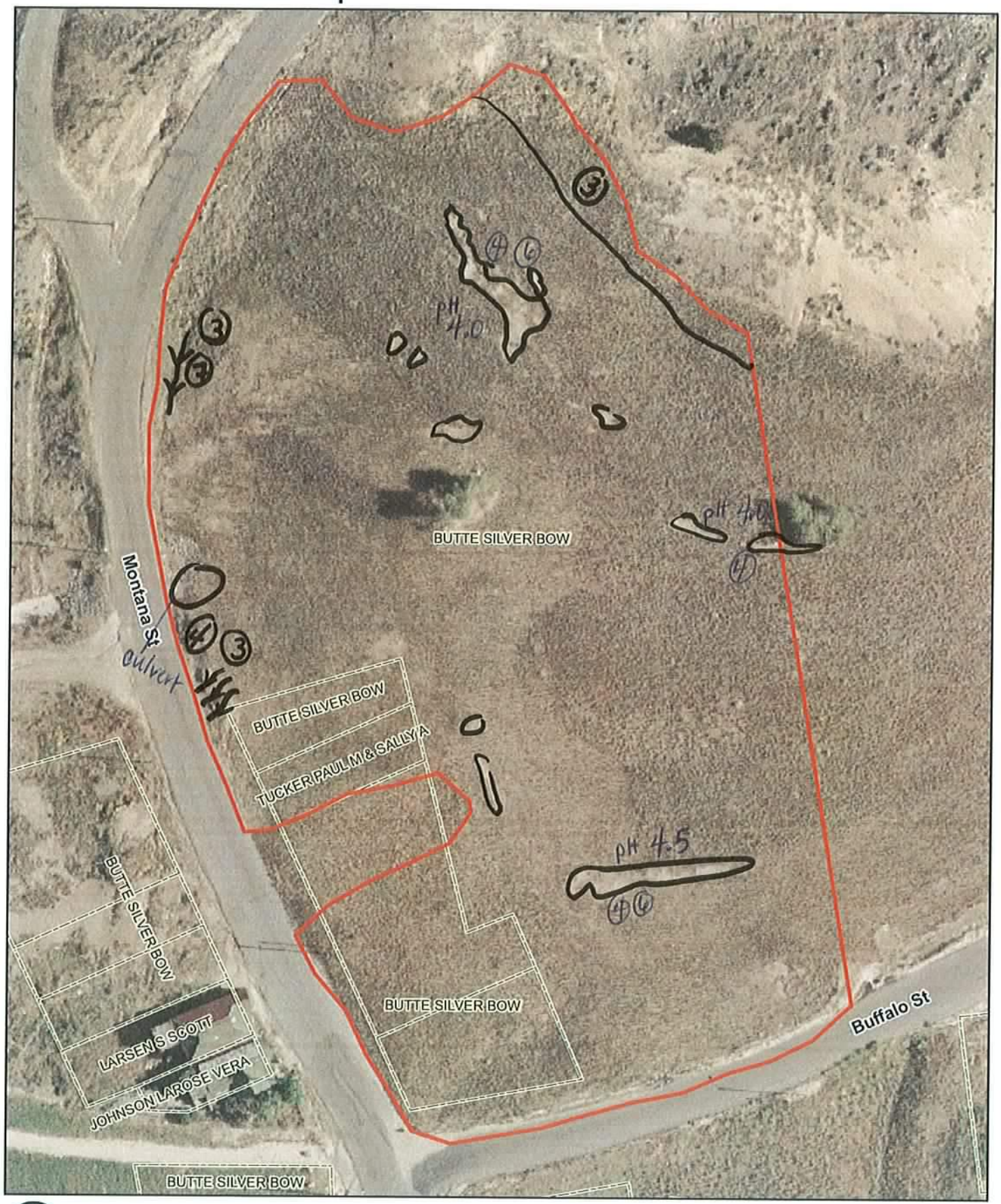
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

MASTER

#53 - Poulin Dump



MASTER

BRES FIELD FORM

Site ID 54 Site Name: Spence Dump Field Date: 7-8-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: N. of Buffalo Street

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	8					
*Noxious weeds	2					
Litter	45					
Rocks > 2"	1					
Bare Ground	4					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	1					
Crested wheatgrass	D					
Slender wheatgrass	1					
Yellow sweetclover	X					
Alfalfa	X					
Aspen	1					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	11					
Flow Patterns	9					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	34					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	1					
Dalmation toadflax	1					
Cheatgrass	1					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Salsafy	1					
Mustard	1					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ✓ more weeds
- ☐ steeper slope
- ☐ increased erosion
- ✓ less vegetation
- ☐ gullies
- ✓ other berm

* South Side

Estimate width of affected edge (in feet) 10

4. Exposed Waste Material? Y ____ N ✓

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ____ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon? Y ____ N ____

7. Gullies (over 6" in depth):

Y ____ N ✓

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

Comments.

(N)
NXW mainly at top of site on flat area above slope (cheatgrass concentration on southern border of site along berm)
- Rill/Gully on North side of site that could effect erosion of site.

Short Term Reccomendations:

- mow within 3-4 years

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER

#54 - Spence ump

N

0 25 50 75 100 Feet

CDM

Veg. Revised #55

BRES FIELD FORM

Site ID: __ Site Name: Kennedy Field Date: 7-11-08

Team Members (Circle your name): _____

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Revised Veg Only

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	26					
*Noxious weeds	2					
Litter	35					
Rocks > 2"	2					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X					
Crested wheatgrass	D					
~~Slender~~ wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	11					
Flow Patterns	6					
Rills Depth	X					
Rills Frequency	X					
Gullies Depth	X					
Gullies Frequency	X					
Soil Movement	8					
TOTAL BLM Score:	30					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	X					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Salsify	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N____ (check applicable items)

- **lime rock barrier**
- **depositional area**
- **more weeds**
- **steeper slope**
- **increased erosion**
- **less vegetation**
- **gullies**
- **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N____

- **bulk soil failure**
- **land slumps**
- **subsidence**

6. Barren Areas: Y____ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):

Y____ N____
Are any gullies actively eroding? Y____ N____
Number of gullies ____

BRES FIELD FORM

Site ID: #55 Site Name: Kennedy Dump Field Date: 7-8-08

Team Members (Circle your name): Ryan Campbell Shanight

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	7					
*Noxious weeds	1					
Litter	35					
Rocks > 2"	2					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	50					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	D					
Slender wheatgrass	X					
Yellow sweetclover	X					
Alfalfa	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	11					
Flow Patterns	6					
Rills Depth	X					
Rills Frequency	X					
Gullies Depth	X					
Gullies Frequency	X					
Soil Movement	5					
TOTAL BLM Score:	30					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	X					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N____ (check applicable items)

- **lime rock barrier**
- **depositional area**
- **more weeds**
- **steeper slope**
- **increased erosion**
- **less vegetation**
- **gullies**
- **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N____

- **bulk soil failure**
- **land slumps**
- **subsidence**

6. Barren Areas: Y____ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):

Y____ N____
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments. 1 polygon
ph of 4.8 has erosion has washed away cover soil in NE barren area
vegetation good
barren areas tesd 4.0 and 5.5
Berm located on Buffalo street next to site

Additional Vegetation:

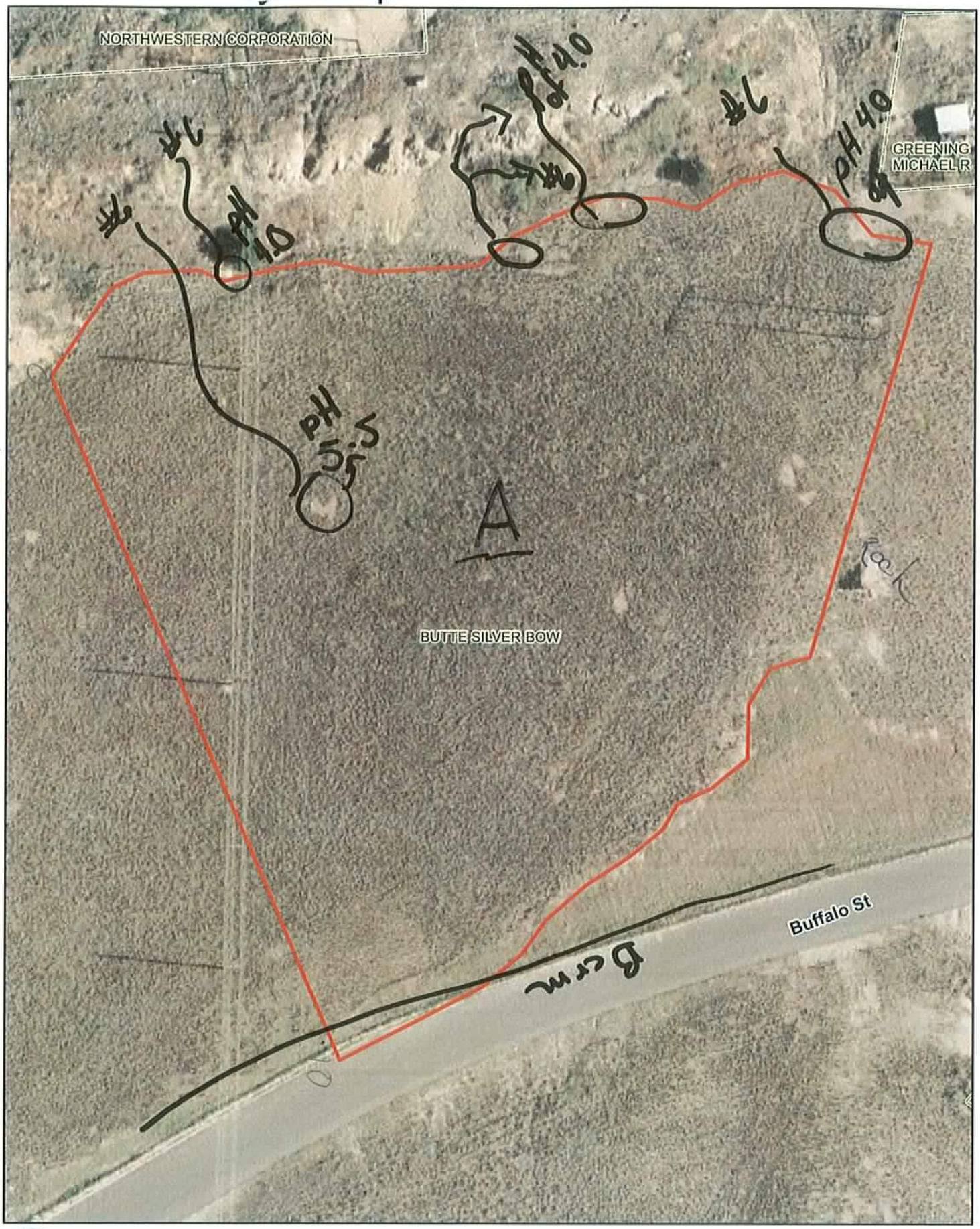
Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Kennedy Site No. 55
Quality Control Cover Frames
7/10/2008

Live	UWS	Noxious	Litter	Rock	Bare	TOTAL HITS
225	44	6	400	3	72	750
30%	5.00%	1.00%	53%	1.00%	10.00%	100%
Adjusted Live	35%					

#55 - Kennec Dump



N

0 25 50 75 100 Feet

CDM

Master

BRES FIELD FORM

Site ID: 36 Site Name: Buffalo Jump Field Date: _____

Team Members (Circle your name): J Hunt L. Kilmer

Number of Polygons: 1 Slope: 0° to 40° Aspect (circle all relevant): N (S) W E NW NE SW (SE)

Area Description: West of Mountain Con. Corner of Main & Buffalo

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	30					
*Noxious weeds	3					
Litter	20					
Rocks > 2"	2					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	X					
Rabbit Rubber	I					
Willow	I					.

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	8					
Pedestalling	9					
Flow Patterns	12					
Rills Depth	3					
Rills Frequency	2					
Gullies Depth	3					
Gullies Frequency	2					
Soil Movement	11					
TOTAL BLM Score:	58					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	D					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Salsafy	I					
Mustard	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #') on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ____ N ✓ (check applicable items)

- lime rock barrier
- depositional area
- more weeds
- steeper slope
- increased erosion
- less vegetation
- gullies
- other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4.5
- Approximate area (in square feet) 300+ft²
- Number of areas with exposed waste 3

5. Is there evidence of: Y ✓ N ____

- ✓ bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y ✓ N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3
Do barren areas cover over 25% of any polygon?
Y ____ N ✓

7. Gullies (over 6" in depth):
Y ✓ N ____
Are any gullies actively eroding? Y ✓ N ____
Number of gullies 1

Comments.

- Cheatgrass is deminant
- Access path on northern edge of site
- Mining cap is starting to cave in.

Short Term Reccomendations:

- Clean out NE culvert & drain all run off from Main is diverted to site South of culvert
- Rill from Main into site pH of exposed area is 4.5
- Bulk Soil Failure on Western edge of site below rock needs attention.
- South east culvert maintainence
- abondened power pole in SE corner

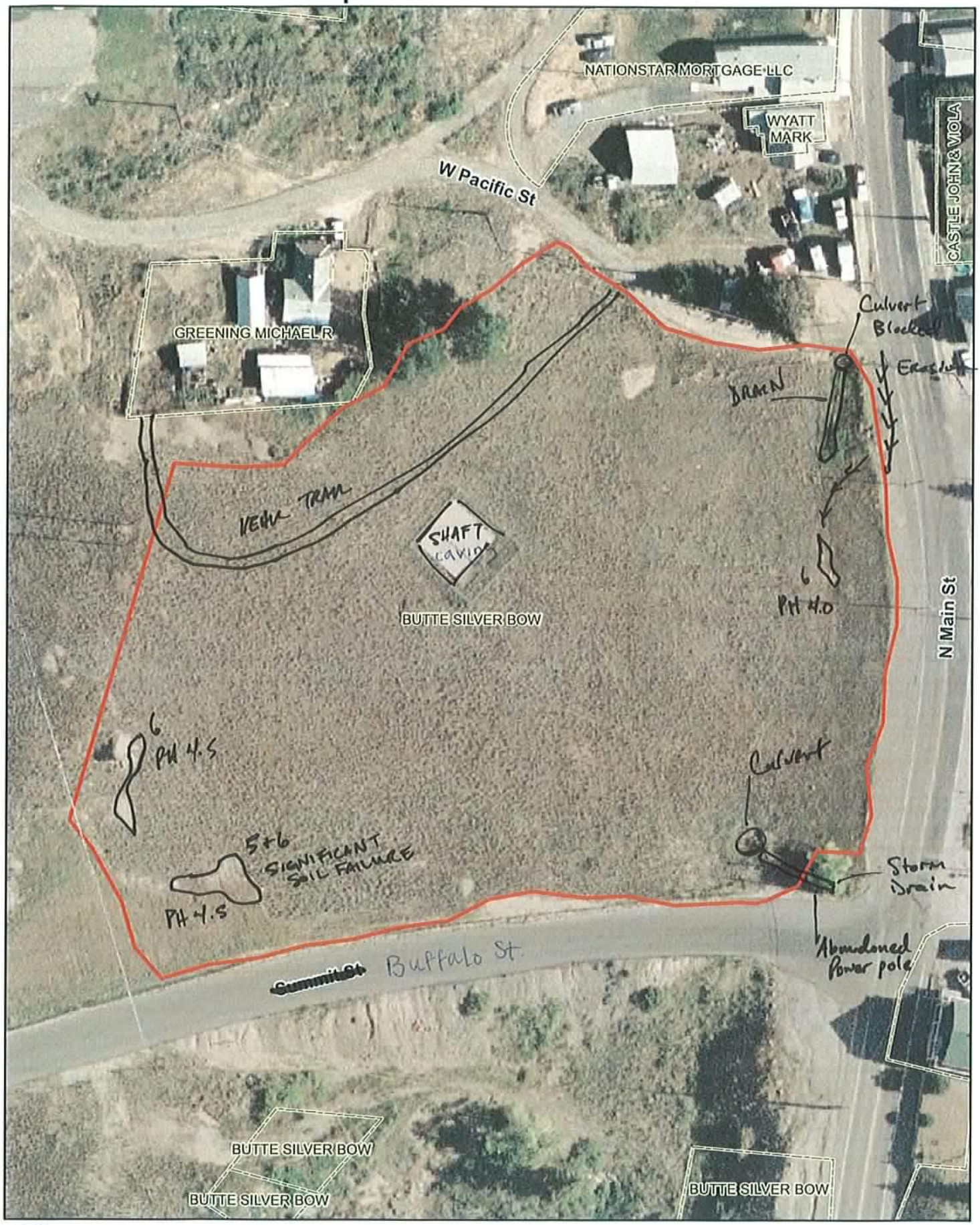
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

#56 - Buffalo . ump



N

0 25 50 75 100 Feet

CDM

BRES FIELD FORM

Site ID: #59 Site Name: Little Mine Field Date: 7-8-08

Team Members (Circle your name): Gordon Ryan Campbell

Number of Polygons: 3 Slope: 0 to 10 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Below Mtn. Frame.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25	35	30			
*Undesirable (weedy) species	40	5	20			
*Noxious weeds	5	0	3			
Litter	10	20	20			
Rocks > 2"	5	15	12			
Bare Ground	15	25	15			
TOTAL (above 6 items must total 100%)	100	100	100			
ADJUSTED LIVE % = Live + 5%Undesirable	30	40	35			

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X	I	X			
Crested wheatgrass	I	I	D			
Slender wheatgrass	I	D	I			
Yellow sweetclover	X	X	I			
Alfalfa	I	X	X			

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11	6	8			
Surface Rock Movement	5	8	11			
Pedestalling	3	6	3			
Flow Patterns	6	9	3			
Rills Depth	1	2	3			
Rills Frequency	2	7	6			
Gullies Depth	X	7	X			
Gullies Frequency	X	2	X			
Soil Movement	5	5	3			
TOTAL BLM Score:	33	52	37			

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	~~I~~	X	I			
Dalmation toadflax	X	X	I			
Cheatgrass	F	X	I			
Baby's breath	X	X	X			
Kochia	X	X	X			
Thistle	X	X	X			
Leafy Spurge	X	X	X			
Salsify	I	I	F			

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N (check applicable items)

- X **lime rock barrier**
- **more weeds**
- X **increased erosion**
- X **gullies**
- X **depositional area**
- **steeper slope**
- **less vegetation**
- **other**

Estimate width of affected edge (in feet)

4. Exposed Waste Material? Y X N

- Estimated pH 4.0
- Approximate area (in square feet) 115
- Number of areas with exposed waste 1

5. Is there evidence of: Y N X

- **bulk soil failure**
- **land slumps**
- **subsidence**

6. Barren Areas: Y X N

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 7

Do barren areas cover over 25% of any polygon? Y N X

7. Gullies (over 6" in depth):

Y X N

Are any gullies actively eroding? Y X N

Number of gullies 1

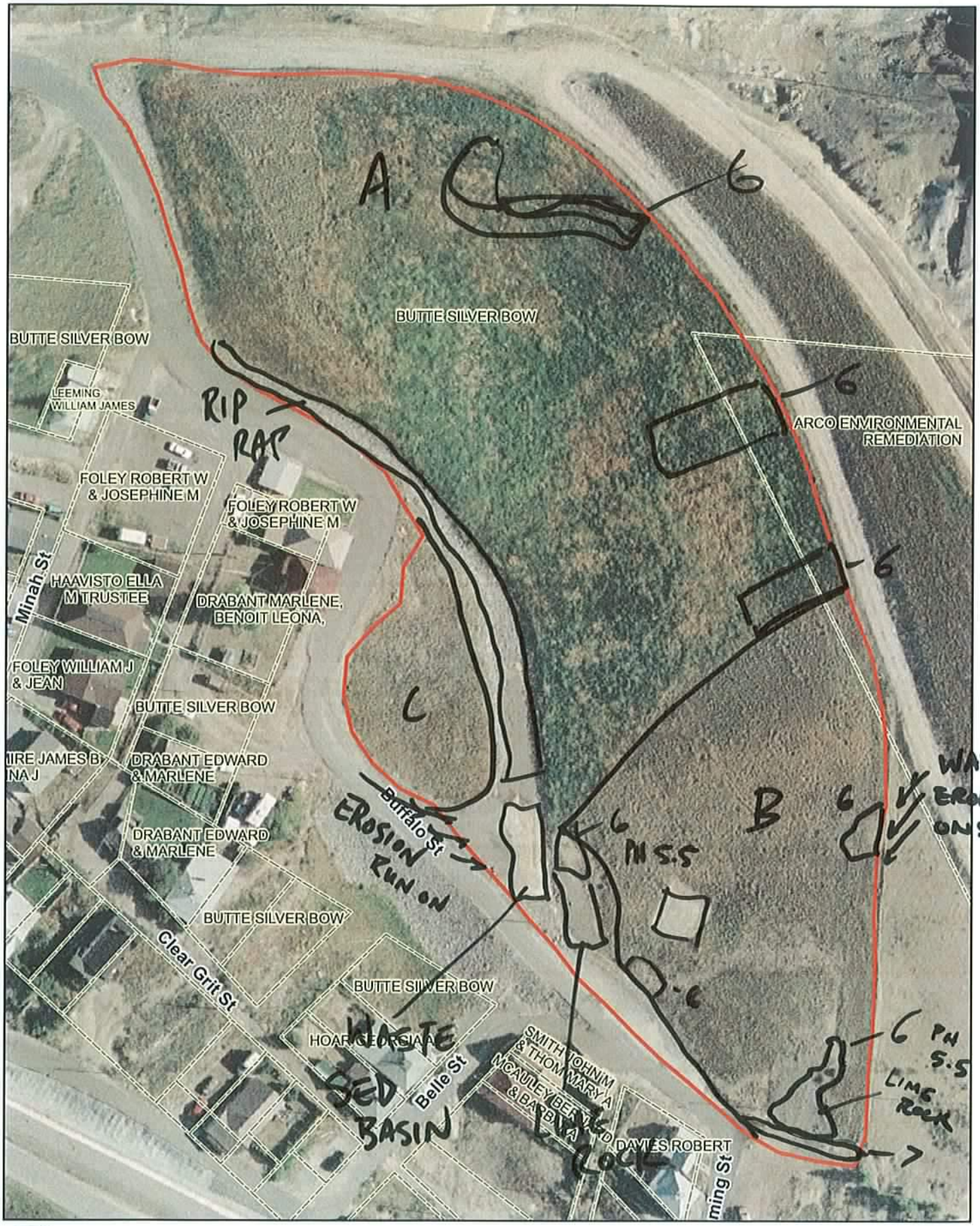
Comments.

3 polygons
- waste on northeast edge from Mine
- significant waste deposited at Colvert collection area.
- recommend weed control on polygon C.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#59 - Little M..a


A
6
BUTTE SILVER BOW
BUTTE SILVER BOW
LEEMING WILLIAM JAMES
RIP RAP
ARCO ENVIRONMENTAL REMEDIATION
FOLEY ROBERT W & JOSEPHINE M
FOLEY ROBERT W & JOSEPHINE M
Minah St
HAAVISTO ELLA M TRUSTEE
DRABANT MARLENE, BENOIT LEONA,
FOLEY WILLIAM J & JEAN
BUTTE SILVER BOW
C
DRABANT EDWARD & MARLENE
Buffalo St
EROSION
RUN ON
B
PH 5.5
WASTE
ERODE
ON SITE
DRABANT EDWARD & MARLENE
BUTTE SILVER BOW
Clear Grit St
BUTTE SILVER BOW
WASTE
HOAR GEORGIA A
SED BASIN
Belle St
SMITH JOHN M & THOM MARY A
MCAULEY BERNARD & BARBARA
DAVIES ROBERT
PH 5.5
LIME ROCK
7
ming St
Feet
0
50
100
150
200
CDM

#59 - Little M[illegible]

BUTTE SILVER BOW
BUTTE SILVER BOW
LEEMING WILLIAM JAMES
ARCO ENVIRONMENTAL REMEDIATION
FOLEY ROBERT W & JOSEPHINE M
FOLEY ROBERT W & JOSEPHINE M
Minah St
HAAVISTO ELLA M TRUSTEE
DRABANT MARLENE, BENOIT LEONA,
FOLEY WILLIAM J & JEAN
BUTTE SILVER BOW
IRE JAMES B NA J
DRABANT EDWARD & MARLENE
Buffalo St
DRABANT EDWARD & MARLENE
BUTTE SILVER BOW
Clear Grit St
BUTTE SILVER BOW
HOAR GEORGIA A
Belle St
SMITH JOHN M & THOM MARY A
MCAULEY BERNARD & BARBARA
DAVIES ROBERT
ming St
N
0
50
100
150
200
Feet
CDM

#59 - Little M.. a

BUTTE SILVER BOW
BUTTE SILVER BOW
LEEMING WILLIAM JAMES
ARCO ENVIRONMENTAL REMEDIATION
FOLEY ROBERT W & JOSEPHINE M
FOLEY ROBERT W & JOSEPHINE M
Minah St
HAAVISTO ELLA M TRUSTEE
DRABANT MARLENE, BENOIT LEONA,
FOLEY WILLIAM J & JEAN
BUTTE SILVER BOW
IRE JAMES B NA J
DRABANT EDWARD & MARLENE
Buffalo St
DRABANT EDWARD & MARLENE
BUTTE SILVER BOW
Clear Grit St
BUTTE SILVER BOW
HOAR GEORGIA A
Belle St
SMITH JOHN M & THOM MARY A
McAULEY BERNARD & BARBARA
DAVIES ROBERT
ming St
N
0
50
100
150
200
Feet
CDM

Master

BRES FIELD FORM

Site ID: 06 Site Name: West Ruby Dump Field Date: 7/8/08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 2 Slope: 0 to 3-1 Aspect (circle all relevant): N (S) W E NW NE SW SE

Area Description: Residential. South facing Slope

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	I				
Cheatgrass	I	I				
Baby's breath	X	X				
Kochia	X	X				
Thistle	X	X				
Leafy Spurge	X	X				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ____ N ✓ (check applicable items)

- **lime rock barrier**
- **more weeds**
- **increased erosion**
- **gullies**
- **depositional area**
- **steeper slope**
- **less vegetation**
- **other** ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N ✓
- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓
- **bulk soil failure**
- **land slumps**
- **subsidence**

6. Barren Areas: Y ____ N ✓
- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

Polygon A:
- lime rock barrier never seeded
- adjacent land owners parking vehicles on Southern tip.
- sediment deposit 6.0 pH
- adjacent site 5.5 pH
- lime rock cap disturbed by vehicle damage & some waste may be exposed.

Polygon B-
- River Rock Rip Rap along edge and slope. Vegetation includes noxious weeds, pine trees & willow.

Short Term Recomendations:
- Spray weeds
- check disturbed lime rock barrier.

NORTH RUBY STREET HAS SIX 15 ft by 2-IN CRACKS IN ASPHALT PAVEMENT.

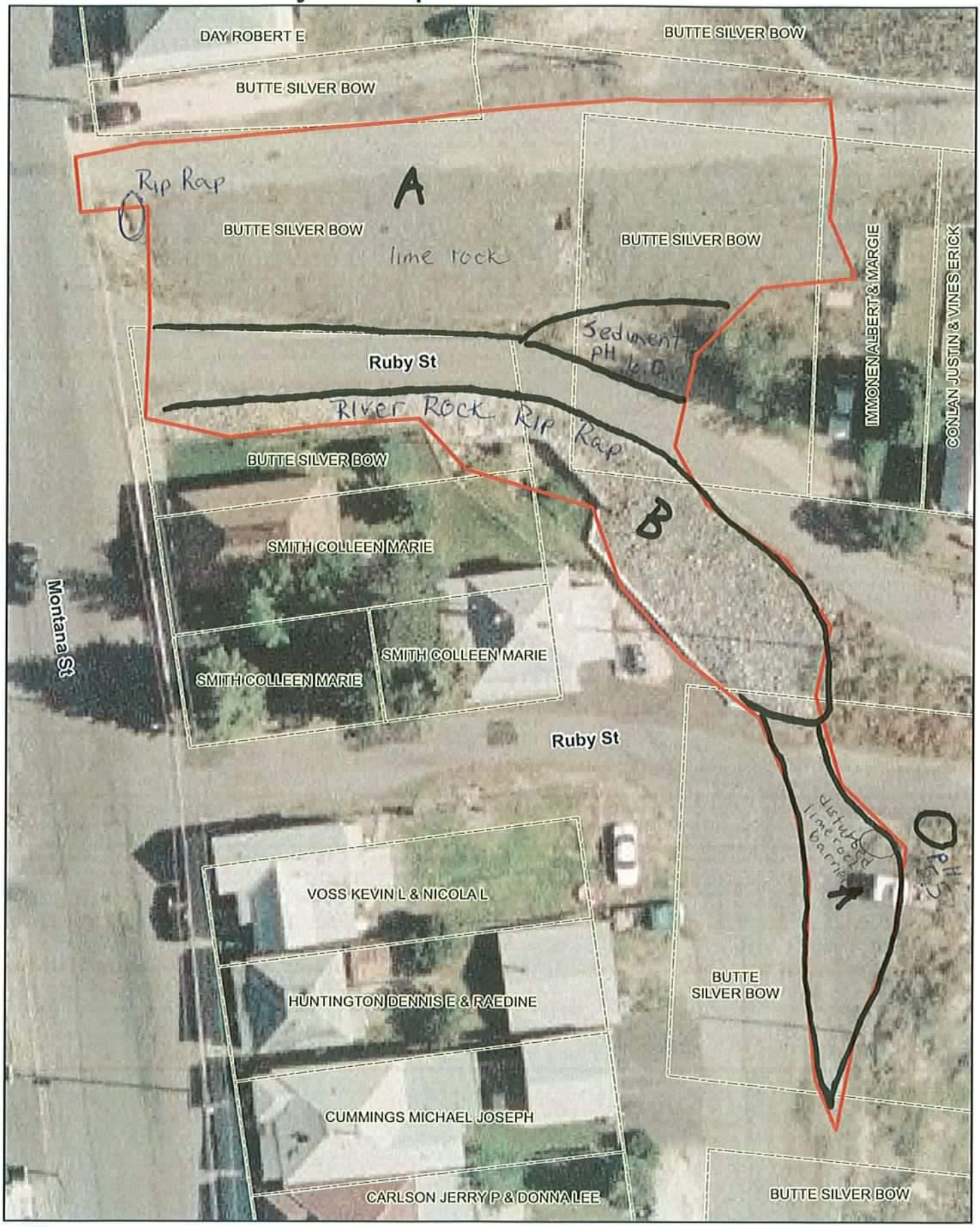
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

MASTER

#66 - West Ruby Dump



N

0 20 40 60 80 Feet

CDM

BRES FIELD FORM Site ID: #67 Site Name: Silver Hill Dump Field Date: 7-8-08

Team Members (Circle your name): Ryan Shanight Campbell

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Headwaters Buffalo Gulch

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	50					
*Undesirable (weedy) species	5					
*Noxious weeds	1					
Litter	36					
Rocks > 2"	3					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	55					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	X					
Yellow sweetclover	X					
Alfalfa	F					
Smooth Brome	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	1					
Pedestalling	6					
Flow Patterns	1					
Rills Depth	X					
Rills Frequency	X					
Gullies Depth	X					
Gullies Frequency	X					
Soil Movement	1					
TOTAL BLM Score:	11					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	X					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ___ (check applicable items)

- lime rock barrier
- depositional area
- more weeds
- steeper slope
- increased erosion
- X less vegetation
- gullies
- other ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ___ N X
- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N X
- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y X N ___
- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y ___ N X

7. Gullies (over 6" in depth):
Y ___ N X
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

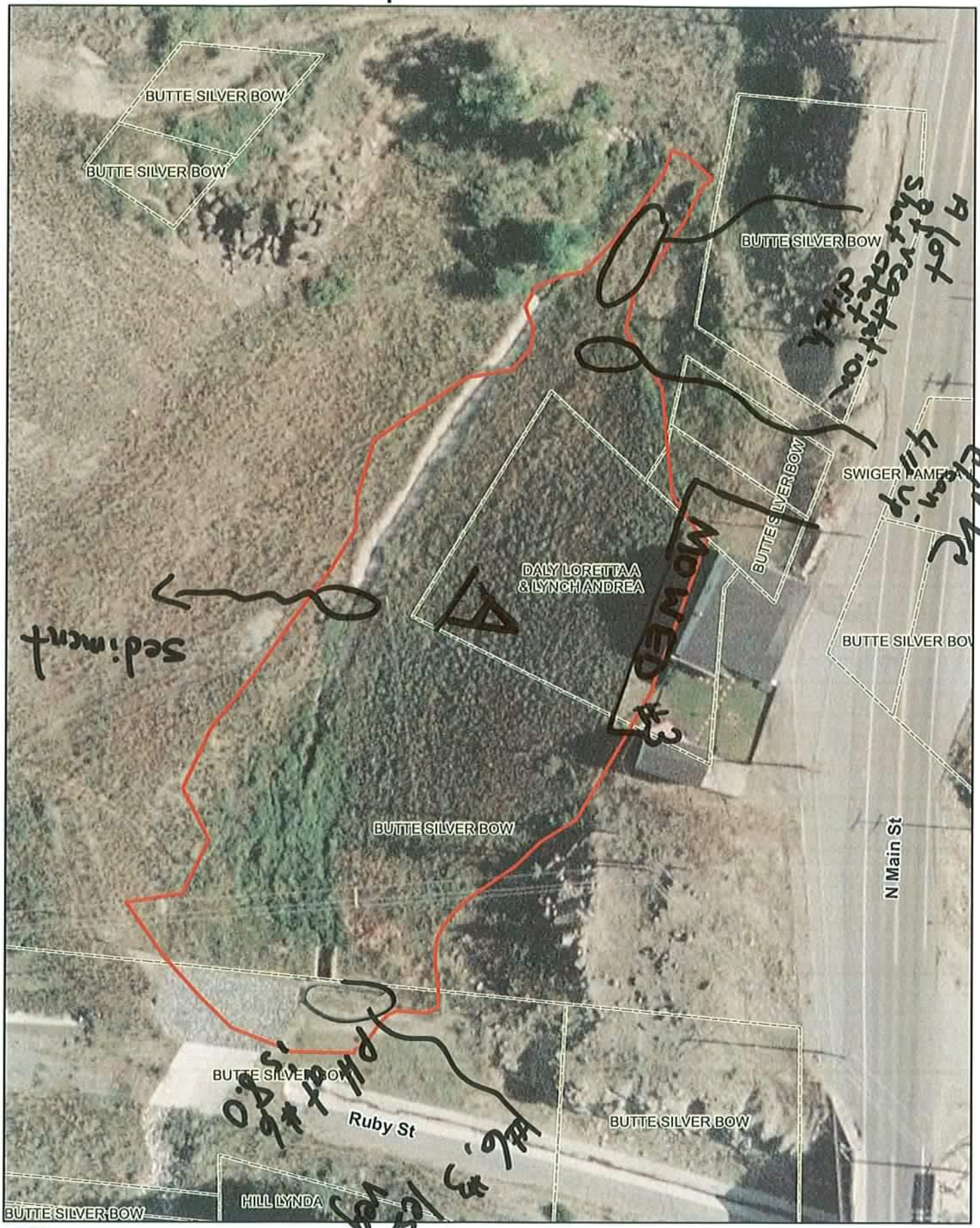
- Site security fence needs repair
- Spill way in good condition
- 4" PVC clean-up located on NE side of site
- Some sediment deposit at the end of shot crete ditch.
- Eastern property owner mows portion of the site
- Site sediment basin fence needs repair

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#67 - Silver H... Dump



BRES FIELD FORM Site ID: #70 Site Name: Anselmo D Field Date: 7-8-08

Team Members (Circle your name): (Ryan), Gordon, Campbell

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW (SE)

Area Description: Anselmo mine, walking trail along entire site

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	42					
*Undesirable (weedy) species	5					
*Noxious weeds	~~3~~					
Litter	35					
Rocks > 2"	5					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	47					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	8					
Pedestalling	9					
Flow Patterns	~~9~~					
Rills Depth	3					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	11					
TOTAL BLM Score:	48					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- lime rock barrier
- X depositional area
- more weeds
- steeper slope
- X increased erosion
- less vegetation
- gullies
- other ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ___ N X
- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y X N ___
- bulk soil failure
- X land slumps
- X subsidence

6. Barren Areas: Y X N ___
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 9
Do barren areas cover over 25% of any polygon? Y ___ N X

7. Gullies (over 6" in depth):
Y ___ N X
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

Deep holes adjacent to Alsdmo headframe property

site needs to be mowed.

1 polygon

significant sediment deposits on site edges

run-off from ATV trail

has significant land slumping

recommend engineering controls.

Significant erosion onto site on N.E. corner

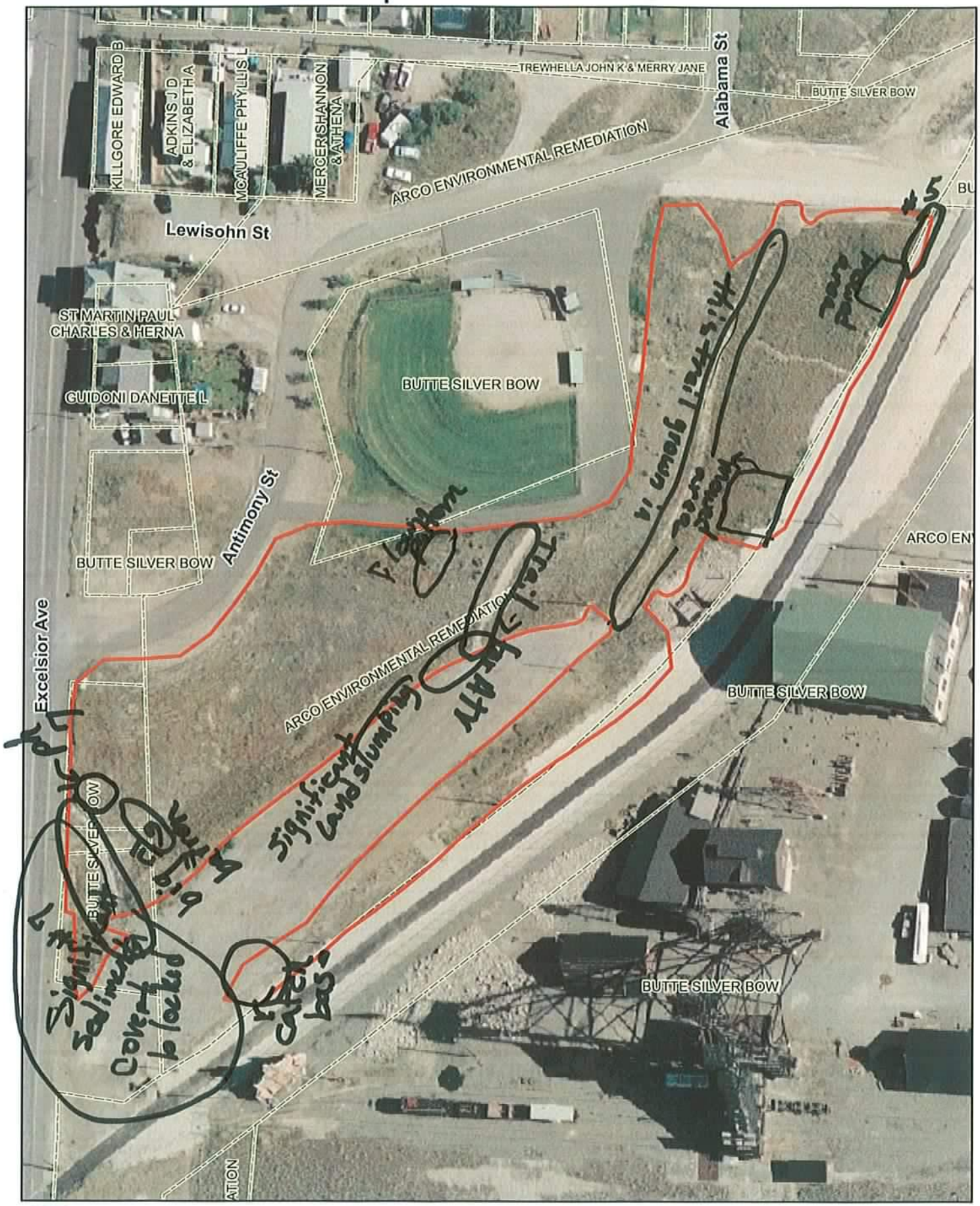
exposed liner along walking trail on east site edge

northeast area of site has several deep holes with thick cover - presents safety issue

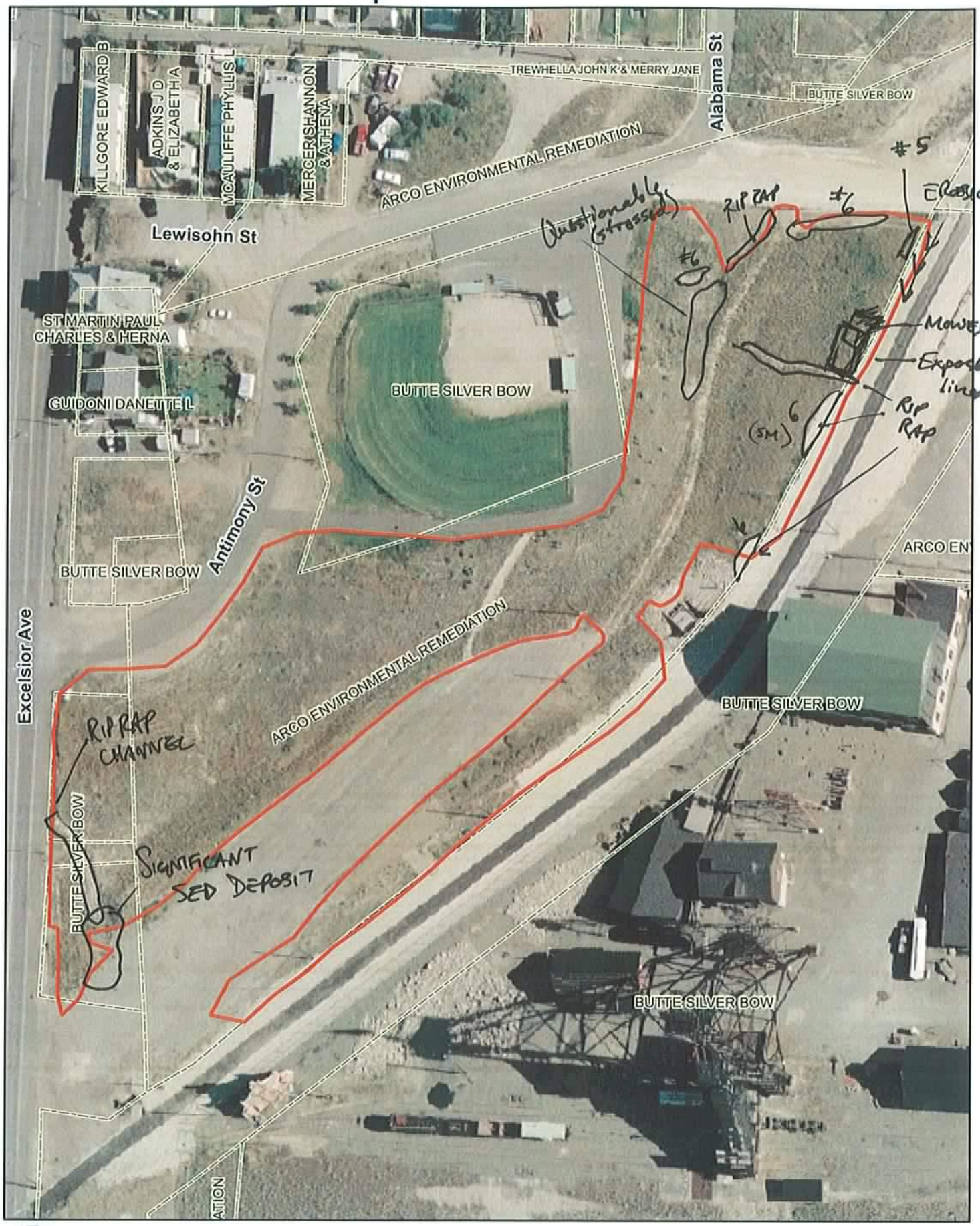
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#70 - Anselm. Dump



#70 - Anselm Dump



Muster 2008

#71

BRES FIELD FORM

Site ID: ___ Site Name: Anselmo Mine Yard Field Date: 7/17/08

Team Members (Circle your name): (Jeanne Larsen) Charlie Larsen, Andy

Number of Polygons: 3 Slope: 0 to 30 Aspect (circle all relevant): N S W E NW NE (SW) (SE)

Area Description: Anselmo mine off Excelsior St.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	28	25 ~~18~~	45			
*Undesirable (weedy) species	30	2	20			
*Noxious weeds	5	1	10			
Litter	24	2	20			
Rocks > 2"	2	1	3			
Bare Ground	11	~~5~~ 6	2			
TOTAL (above 6 items must total 100%)	100	100	~~500~~ 100			
ADJUSTED LIVE % = Live + 5%Undesirable	33	27	50			

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X	D	X			
Crested wheatgrass	D	X	D			
Slender wheatgrass	I	X	I			
Yellow sweetclover	I	X	I			
Alfalfa	I	X	F			
Sage wart	I	X	X			
other desirable grass	X	F	X			
Canadian Blue	X	F	I			
Rubber Rabbit	X	X	I			

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11	1	~~16~~			
Surface Rock Movement	11	2	N'			
Pedestalling	9	0	9			
Flow Patterns	9	0	~~9~~ 3			
Rills Depth	4	2	6			
Rills Frequency	2	7	1			
Gullies Depth	0	0	0			
Gullies Frequency	0	0	0			
Soil Movement	11	3	14			
TOTAL BLM Score:	57	15	40			

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F	X	F			
Dalmation toadflax	F	D	F			
Cheatgrass	D	X	F			
Baby's breath	I	X	~~I~~			
Kochia	X	X	X			
Thistle	X	X	X			
Leafy Spurge	X	X	X			

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- [ ] lime rock barrier
- [ ] depositional area
- [X] more weeds (A, C)
- [ ] steeper slope
- [ ] increased erosion
- [ ] less vegetation
- [ ] gullies
- [ ] other ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___

- Estimated pH 9.5 (A)
- Approximate area (in square feet) ~~@~~ 200
- Number of areas with exposed waste 6

5. Is there evidence of: Y ___ N X

- [ ] bulk soil failure
- [ ] land slumps
- [ ] subsidence

6. Barren Areas: Y X N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 6

Do barren areas cover over 25% of any polygon? Y ___ N X

7. Gullies (over 6" in depth):

Y ___ N X

Are any gullies actively eroding? Y ___ N ___

Number of gullies ___

Comments.

- Storage of scrap metal & debris on North edge Polygon A - detrimental to desired growth
- Walking paths through section of Polygon A - outside west fence boundary - resulting in significant rills & sediment deposit along north edge of Caledonia St.
- Exposed areas of waste on Polygon A

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

BRES FIELD FORM

Site ID: 71 Site Name: Anselmo Vineyard Field Date: 7/17/08

Team Members (Circle your name): Randi Phelps Sarah Hamblock Ruth Rudd

Number of Polygons: 3 Slope: 0 to 35 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	20	25	45			
*Undesirable (weedy) species	15	20	5			
*Noxious weeds	5	5	1			
Litter	20	30	47			
Rocks > 2"	2	3	0			
Bare Ground	38	17	2			
TOTAL (above 6 items must total 100%)	100	100	100			
ADJUSTED LIVE % = Live + 5%Undesirable	25	30	50			

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I	X	X			
Crested wheatgrass	D	D	F			
Slender wheatgrass	X	X	X			
Yellow sweetclover	I	X	X			
Alfalfa	I	I	F			
Basin Rye		I				
Rubber Rabbit		I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0	0	0			
Surface Rock Movement	8	8	1			
Pedestalling	14	9	9			
Flow Patterns	12	9	3			
Rills Depth	0	3	0			
Rills Frequency	1	1	1			
Gullies Depth	0	0	0			
Gullies Frequency	0	0	0			
Soil Movement	14	11	14			
TOTAL BLM Score:	01	46	41			

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	F	F				
Cheatgrass	D	D				
Baby's breath	I	I				
Kochia	X	X				
Thistle	X	X				
Leafy Spurge	X	X				
Salsify	I	I				
Mustard	I	I				
Prickly lettuce	I	X				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ____ N X (check applicable items)

- lime rock barrier
- more weeds
- increased erosion
- gullies
- depositional area
- steeper slope
- less vegetation
- other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 4.0-5.5
- Approximate area (in square feet) varies
- Number of areas with exposed waste 7

5. Is there evidence of: Y ____ N X

- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y X N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2
Do barren areas cover over 25% of any polygon?
Y ____ N X

7. Gullies (over 6" in depth):
Y ____ N X
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments. • large barren areas with exposed waste and run off is killing everything underneath
• every area that was tested for pH was very low

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Mullan	I	X				

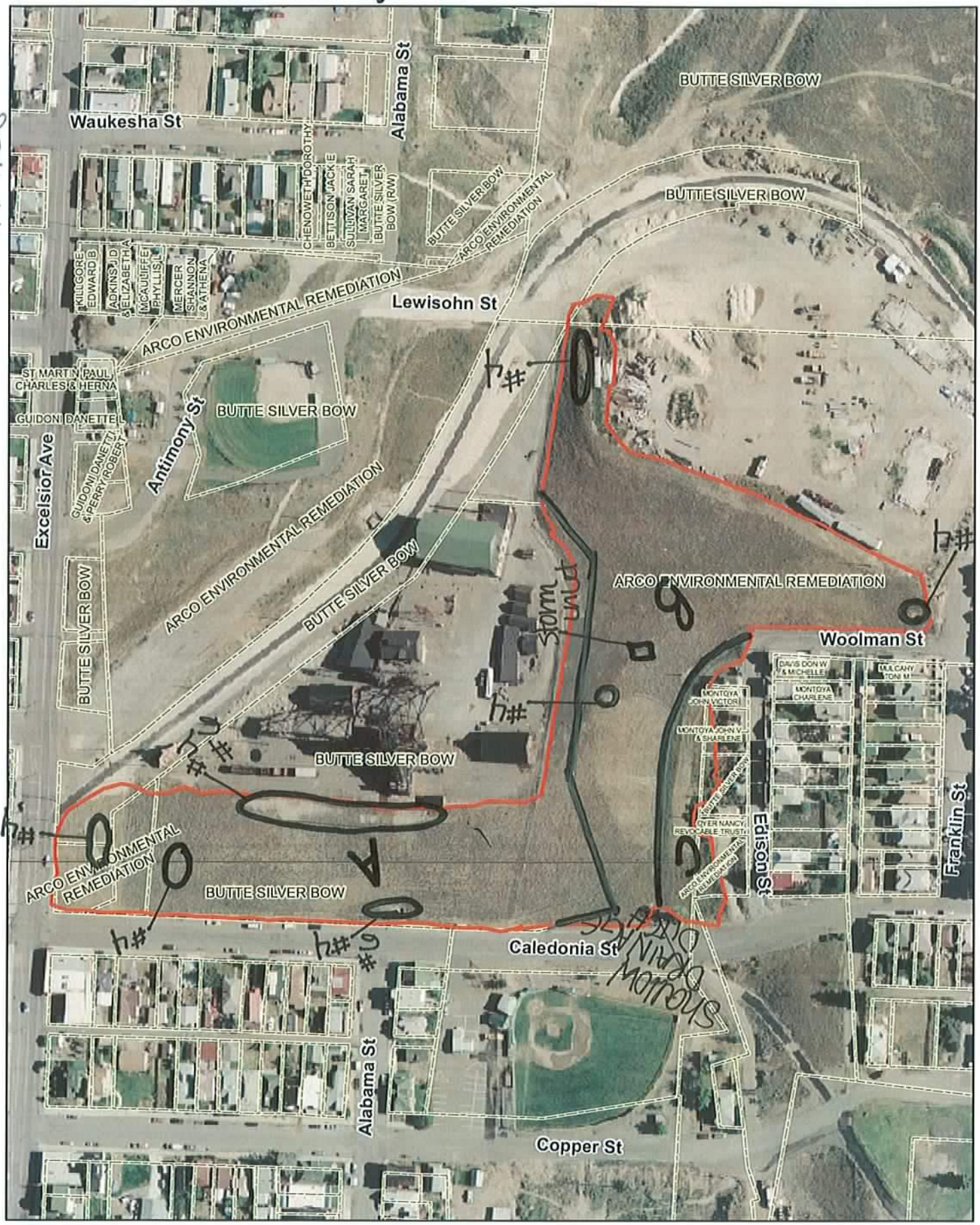
Use D (Dominant), F (Frequent), or I (Infrequent).

Master 2008

#71 - Anselmo Vineyard

Feet
0 50 100 150 200 250

#71 - Anselm[illegible] Mineyard



#71 - Anselm[illegible] Mineyard

Master

BRES FIELD FORM

Site ID: 71 N **Site Name:** Anselmo-Timber Yard Slope **Field Date:** 7-8-08

Team Members (Circle your name): J. Hunt L Kilmer

Number of Polygons: 2 Slope: 0° to 30° Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: NW of Anselmo headframe. Next to walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	28	37				
*Undesirable (weedy) species	15	20				
*Noxious weeds	2	2				
Litter	20	25				
Rocks > 2"	5	3				
Bare Ground	30	13				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	33	42				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I	F				
Crested wheatgrass	D	F				
Slender wheatgrass	I	I				
Yellow sweetclover	X	X				
Alfalfa	X	D				
Rabbit Rubber	X	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	6				
Surface Rock Movement	5	5				
Pedestalling	9	6				
Flow Patterns	6	9				
Rills Depth	5	2				
Rills Frequency	2	2				
Gullies Depth	2	1				
Gullies Frequency	2	1				
Soil Movement	5	8				
TOTAL BLM Score:	42	40				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	I				
Cheatgrass	I	F				
Baby's breath	X	X				
Kochia	X	X				
Thistle	X	X				
Leafy Spurge	X	X				
Mustard	I	I				
Salsafy	I	I				
Dandlions	X	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ____ N ✓ (check applicable items)

- lime rock barrier
- depositional area
- more weeds
- steeper slope
- increased erosion
- less vegetation
- gullies
- other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y A N B

- Estimated pH 4.5
- Approximate area (in square feet) varies
- Number of areas with exposed waste varies

5. Is there evidence of: Y B N A

B bulk soil failure | land slumps | subsidence

6. Barren Areas: Y ✓ N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas >20
Do barren areas cover over 25% of any polygon?
Y ____ N ✓

7. Gullies (over 6" in depth):
Y ✓ N ____
Are any gullies actively eroding? Y A N B
Number of gullies 3

Comments.

- check barren areas for exposed waste

Short term Recommendations:

- Address gullies
- monitor for ATV

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

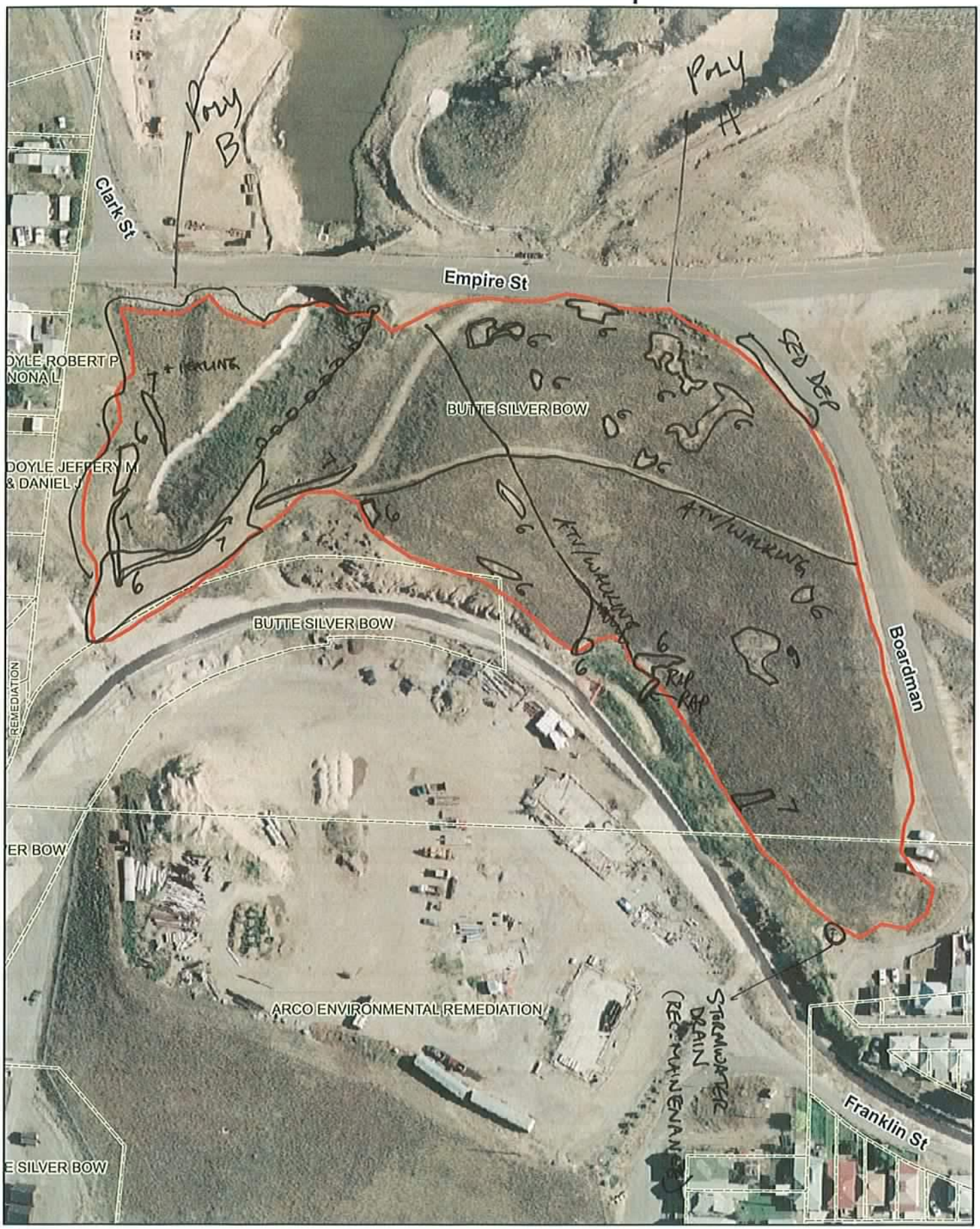
Use D (Dominant), F (Frequent), or I (Infrequent).

Anselmo Timber Yard Slope No. 71N
Quality Control Cover Frames
7/11/2008

Live	UWS	Noxious	Litter	Rock	Bare	TOTAL HITS		
76	28	7	129	1	59	300	***Polygon A***	
25%	9%	2%	43.00%	1.00%	20.00%	100%	**Adjusted Live**	**30%**
103	16	4	126	5	46	300	***Polygon B***	
34%	5%	1%	43%	1%	16%	100%	**Adjusted Live**	**39%**

#71N - Ansel...o - Timber Yard Sl...e

Master



BRES FIELD FORM

Site ID: #72 Site Name: New Era - Downey Shafts Field Date: 7-9-08

Team Members (Circle your name): Gordon Ryan Campbell

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW (SE)

Area Description: Below Empire Street

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	15					
*Noxious weeds	2					
Litter	20					
Rocks > 2"	13					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	50					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	F					
Alfalfa	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	8					
Pedestalling	14					
Flow Patterns	9					
Rills Depth	3					
Rills Frequency	2					
Gullies Depth	3					
Gullies Frequency	2					
Soil Movement	5					
TOTAL BLM Score:	57					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Rubber Rabbit	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ____ (check applicable items)

- lime rock barrier
- X depositional area
- more weeds
- steeper slope
- X increased erosion
- less vegetation
- X gullies
- other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N X

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N X

- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y ____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y ____ N ____

7. Gullies (over 6" in depth): Y X N ____
Are any gullies actively eroding? Y X N ____
Number of gullies 2

Comments.

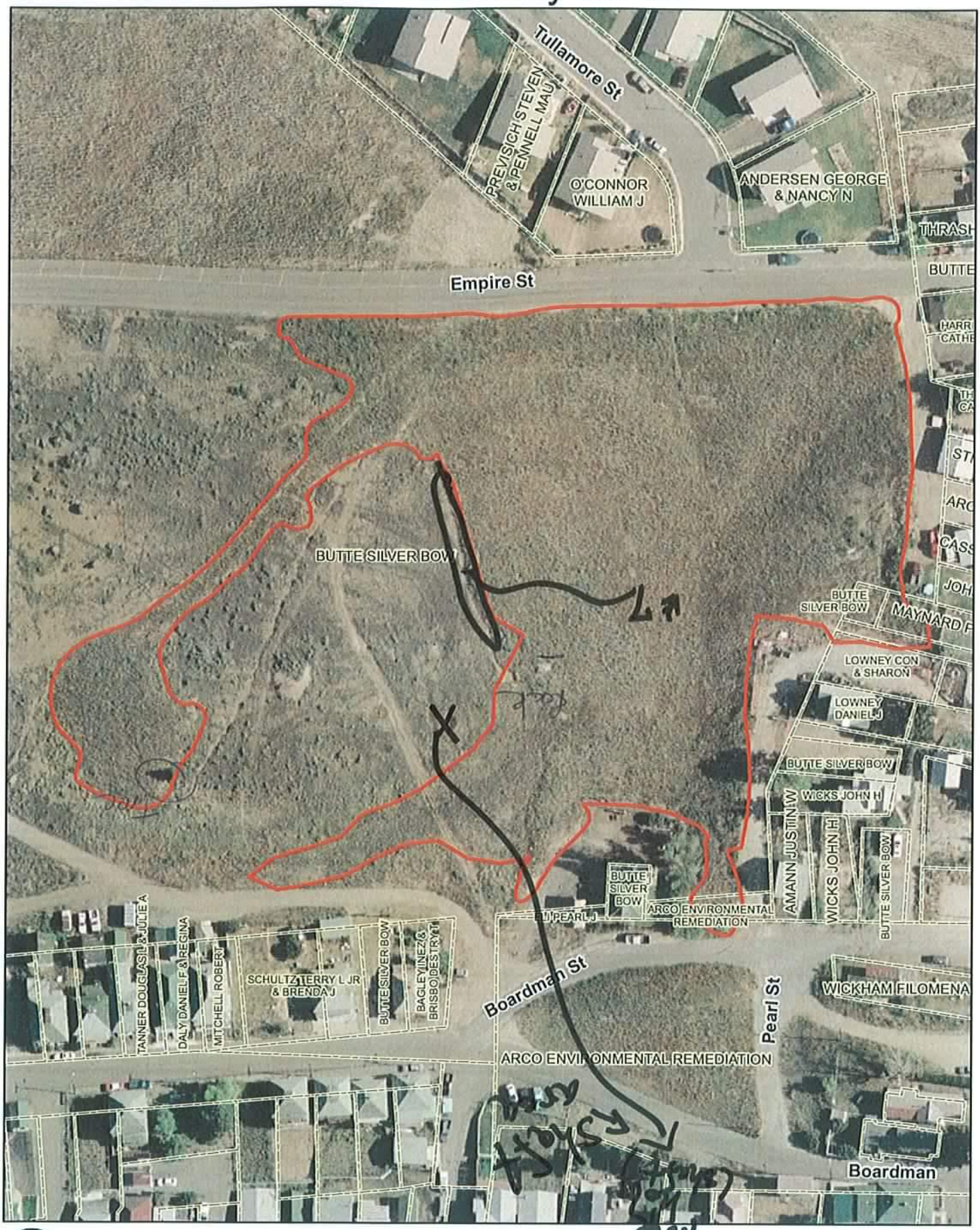
- 1 polygon
- significant erosion off Empire Street onto site, primary cause of gullies + erosion
- significant sediment deposit and erosion at southeast site boundary adj. to Maynard property.
- Abandoned mine shaft present not on site, but 1 requires safety evaluation * (see map)

Additional Vegetation:

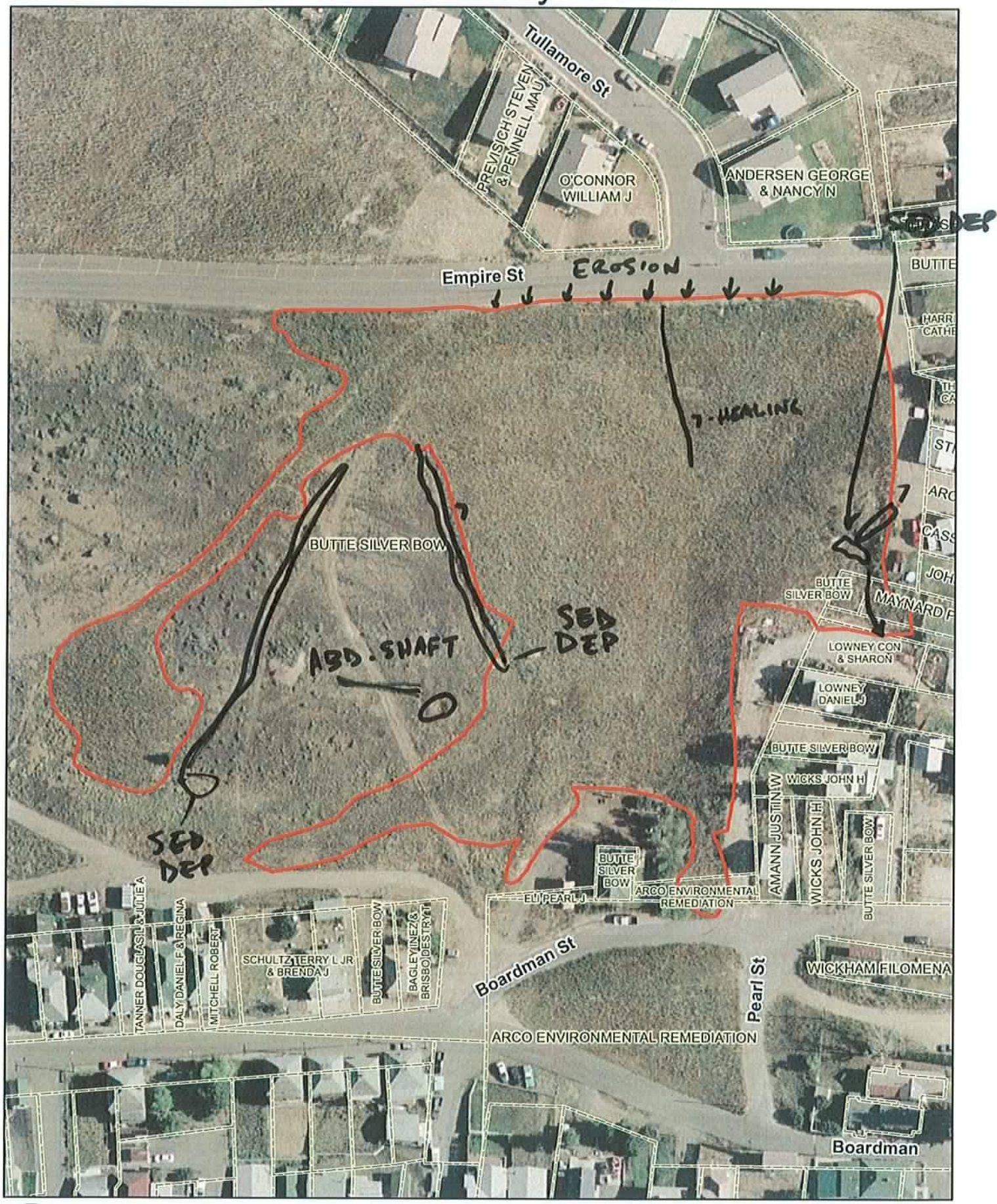
Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#72 - New E[illegible]1 & 2 - Downey S[illegible]fts



#72 - New Er l & 2 - Downey Sl its



Master 2008

BRES FIELD FORM

Site ID: 73 Site Name: Jasper Dump Field Date: 7/14/05

Team Members (Circle your name): Joanne Larson, Charlie Larson, Bob

Number of Polygons: ___ Slope: 0 to 10% Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Woolman St 'meets' walking trail (small wedge)

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	20					
*Undesirable (weedy) species	15					
*Noxious weeds	5					
Litter	26					
Rocks > 2"	5					
Bare Ground	35					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	25					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	D					
~~Slender~~ wheatgrass	X					
Yellow sweetclover	I					
Alfalfa	F					
Basin Rye Grass	I					
Intermediate Wheatgrass	I					
Rubber Rabbit Brush	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	1					
Surface Rock Movement	1					
Pedestalling	6					
Flow Patterns	1					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	2					
TOTAL BLM Score:	11					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	D					
Baby's breath	I					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
mulan	I					
Mustard F	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ___ N X (check applicable items)

- **lime rock barrier**
- **depositional area**
- **more weeds**
- **steeper slope**
- **increased erosion**
- **less vegetation**
- **gullies**
- **other** ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___

- Estimated pH 4.5
- Approximate area (in square feet) 60 ft²
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N X

- **bulk soil failure**
- **land slumps**
- **subsidence**

6. Barren Areas: Y ___ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N X
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

- Site boundary is questionable according to photo. Appears to extend farther west than shown on photo
- Site may have been seeded twice - north part of site has much more desirable vegetation than rest of site
- Waste material (pH 4.5) on site

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master 2008

#73 - Jasper Dump

N

Feet
0 6 12 18 24 30

CDM

#73 - Jasper Dump

N

Feet
0 6 12 18 24 30

CDM

MASTER

BRES FIELD FORM

Site ID: F74 Site Name: WEST GAGNON PUMP Field Date: 07/15/08

Team Members (Circle your name): RUPPEL, CAMPBELL, HAMBLOCK, SHANIGHT

Number of Polygons: 1 Slope: 0° to 15° Aspect (circle all relevant): N S (W) E NW NE SW SE

Area Description: OBLONG SURROUNDED BY CHEAT GRASS

2 - AIRPHOTO FOR THIS SITE IN 08

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	33					
*Undesirable (weedy) species	6					
*Noxious weeds	4					
Litter	17					
Rocks > 2"	2					
Bare Ground	38					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	38					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	I					
RUBBER RABBIT	I					
SPRUCE	I					
ASPEN	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	11					
Flow Patterns	9					
Rills Depth	5					
Rills Frequency	2					
Gullies Depth	6					
Gullies Frequency	2					
Soil Movement	5					
TOTAL BLM Score:	51					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	I					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
MATRIMONY VINE	I					
MUSTARD	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ____ (check applicable items)

- X **lime rock barrier**
- X **more weeds**
- X **increased erosion**
- X **gullies**
- X **depositional area**
- X **steeper slope**
- Y **less vegetation**
- **other** ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 4.0 - 4.5
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y X N ____

- X **bulk soil failure**
- **land slumps**
- **subsidence**

6. Barren Areas: Y X N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2

Do barren areas cover over 25% of any polygon? Y ____ N X

7. Gullies (over 6" in depth):

Y X N ____

Are any gullies actively eroding? Y / N ____

Number of gullies /

Comments.

- ASPHALT CURB RUNS ALL AROUND (MOST) OF SITE
- SOUTHERN EDGE ASPHALT CURB NEEDS MAJOR REPAIR. COVER SOIL CAP IS EXPERIENCING BULK SOIL FAILURE. WESTERN TIP HAS EXPOSED WASTE. GULLY RUNS ALONG SAME 50 FT PATH
- MAJOR RILL ON SLOPE OF WESTERN CORNER OF SITE
- EXPOSED WASTE / GULLY ON SOUTH SIDE BETWEEN POLYGON & ASPHALT ALLEY
- STORM DRAIN IN SOUTHERN ALLEY APPEAR TO BE CLOGED
- PATH HAS FORMED A 25 FT GULLEY AT THE TOP. RUN ON STARTS @ WASHINGTON STREET
- ALL pH TESTS THAT WERE CONDUCTED ARE IN BARREN AREAS
- SITE EDGES ARE PRIMARILY CAUSED BY RUNON AND OFF ISSUES
- VERY LITTLE LITTER @ THIS SITE
- MOSTLY FESCUE GRASSES

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

- RECOMMEND CURB AND GUTTER REPAIRS AROUND SITE.
- PATH MAINTENANCE
- STORM WATER CONTROLS AROUND/ALONG PAVED ALLEY.

West Gagnon Dump Site No. 74
Quality Control Cover Frames
7/15/2008

Live	UWS	Noxious	Litter	Rock	Bare	TOTAL HITS
207	66	4	257	3	63	600
34%	**11.00%**	**1.00%**	**43%**	**1.00%**	**10.00%**	**100%**
Adjusted Live	**39%**					

MASTER 1/2

#74 - ~~Buffalo~~ outh

- more knapweed towards bottom
- Asphalt bikes

15 JULY 08

MASTER 2/2

#74 - ~~Buffalo~~ outh

IS July 08

CDM

Master

BRES FIELD FORM

Site ID: 75 Site Name: National Dump Field Date: 7/14/08

Team Members (Circle your name): Whole Group - Jeanine Larson scribe

Number of Polygons: 1 Slope: 0 to 30 % Aspect (circle all relevant): N S W (E) NW NE SW SE

Area Description: West of Montana St directly west of Original

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	10					
*Noxious weeds	3					
Litter	40					
Rocks > 2"	1					
Bare Ground	21					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	X					
Yellow sweetclover	I					
Alfalfa	X					
Basin Rg Grass	I					
Sage wort	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	8 (not 2)					
Rills Depth	6					
Rills Frequency	1					
Gullies Depth	X					
Gullies Frequency	X					
Soil Movement	5					
TOTAL BLM Score:	28					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	I					
Cheatgrass	D					
Baby's breath	I					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Salsify ?	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ____ (check applicable items)

- X **lime rock barrier**
- **depositional area**
- **more weeds**
- **steeper slope**
- X **increased erosion**
- **less vegetation**
- **gullies**
- **other** ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 7.5
- Approximate area (in square feet) 100 ft²
- Number of areas with exposed waste 2

5. Is there evidence of: Y ____ N X

- **bulk soil failure**
- **land slumps**
- **subsidence**

6. Barren Areas: Y X N ____

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon? Y ____ N ____

7. Gullies (over 6" in depth):

Y ____ N X

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

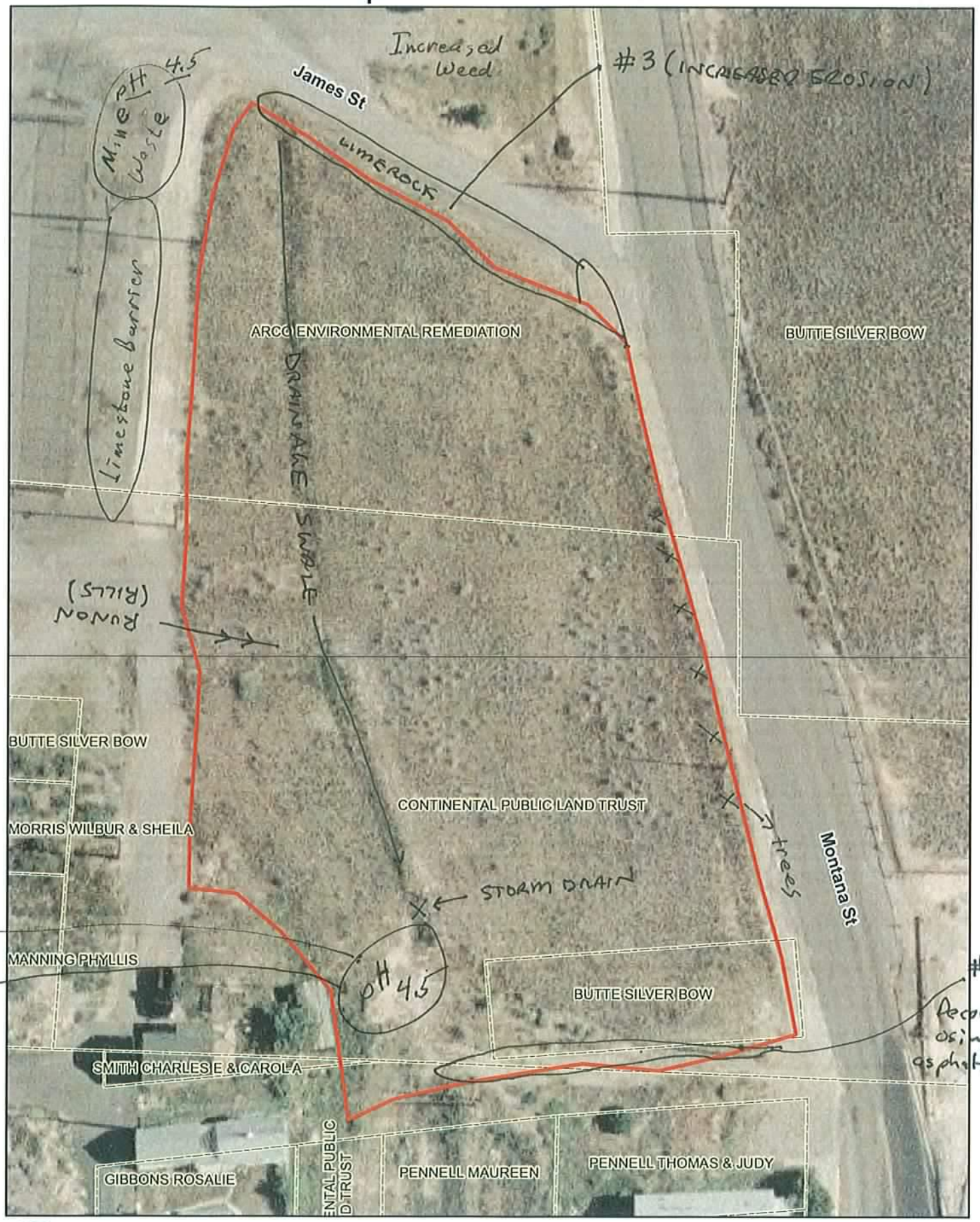
Comments.

- Property owner to north has noxious weeds
- Trees do not appear in photo
- Surface water ~~*~~ run on from up-gradient street - starting to form rills
- Lots of trash on site
- Areas of exposed waste on up gradient side of site (near "basket ball court").

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#75 - National Dump



BRES FIELD FORM

Site ID: #76 Site Name: Waste Dump #20 Field Date: 7-9-08

Team Members (Circle your name): Ryan Gordon Campbell

Number of Polygons: 2 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Next to Montana + Bordman

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35	8				
*Undesirable (weedy) species	20	15				
*Noxious weeds	5	10				
Litter	30	2				
Rocks > 2"	7	45				
Bare Ground	3	20				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	40	13				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I	X				
Crested wheatgrass	F	X				
Slender wheatgrass	F	X				
Yellow sweetclover	X	I				
Alfalfa	F	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	8				
Surface Rock Movement	5	11				
Pedestalling	2	X				
Flow Patterns	6	12				
Rills Depth	3	2				
Rills Frequency	2	3				
Gullies Depth	3	X				
Gullies Frequency	2	X				
Soil Movement	11	14				
TOTAL BLM Score:	40	50				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	I				
Cheatgrass	F	I				
Baby's breath	X	X				
Kochia	X	X				
Thistle	X	X				
Leafy Spurge	X	X				
Salsify	I	X				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ___ (check applicable items)

- X **lime rock barrier**
- X **depositional area**
- **more weeds**
- **steeper slope**
- X **increased erosion**
- **less vegetation**
- X **gullies**
- **other** ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___

- Estimated pH 4.
- Approximate area (in square feet) 10
- Number of areas with exposed waste 1

5. Is there evidence of: Y X N ___

- **bulk soil failure**
- X **land slumps**
- **subsidence**

6. Barren Areas: Y X N ___

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y ___ N X

7. Gullies (over 6" in depth):
Y X N ___
Are any gullies actively eroding? Y X N ___
Number of gullies 2

Comments.

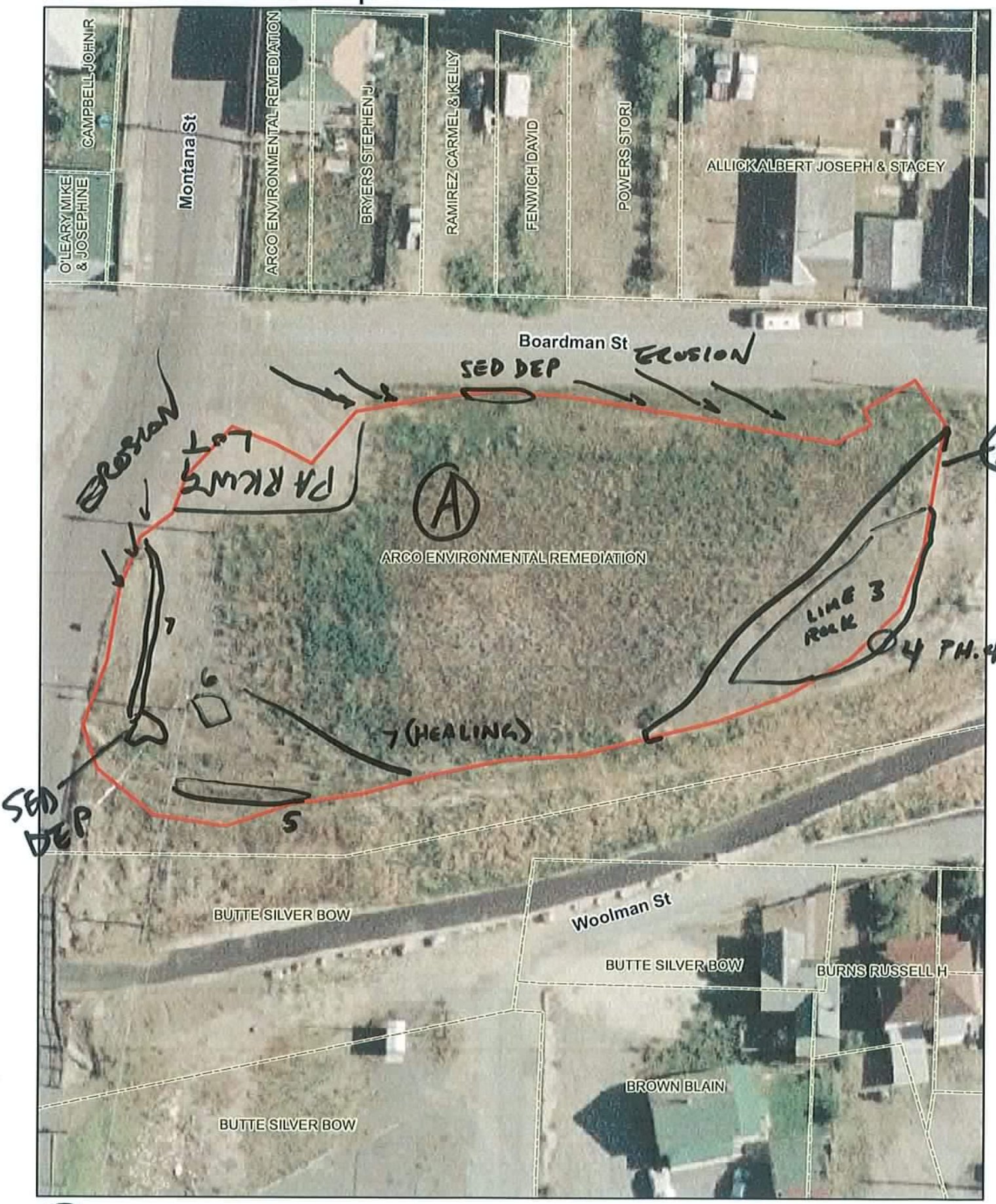
- 2 polygons
- northwest corner appears to be used for parking
- significant erosion occuring on north + west site edges.
- Polygon B majority cover limerock not top soil evident.
- exposed waste located at southeast corner of polygon B.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#76 - Waste Dump #20



BRES FIELD FORM Site ID: 79 Site Name: LATE AQUISITION Field Date: 07/15/08

Team Members (Circle your name): (RUPPEL), TRAMBLOCK, STANIGHT, CAMPBELL

Number of Polygons: 1 Slope: 0° to 30° Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: ADJACENT TO WALKING PATH SOUTH OF RUBY ST.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	43					
*Undesirable (weedy) species	3					
*Noxious weeds	2					
Litter	35					
Rocks > 2"	2					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	46					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	11					
Flow Patterns	6					
Rills Depth	4					
Rills Frequency	2					
Gullies Depth	6					
Gullies Frequency	1					
Soil Movement	5					
TOTAL BLM Score:	48					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	X					
Kochia	I					
Thistle						
Leafy Spurge						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N (check applicable items)

- lime rock barrier
- depositional area
- more weeds
- steeper slope
- increased erosion
- less vegetation
- gullies
- other U pole

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N
- Estimated pH 4.0
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N X
- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y X N
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3
Do barren areas cover over 25% of any polygon? Y ____ N X

7. Gullies (over 6" in depth):
Y X N
Are any gullies actively eroding? Y X N
Number of gullies 1

Comments.

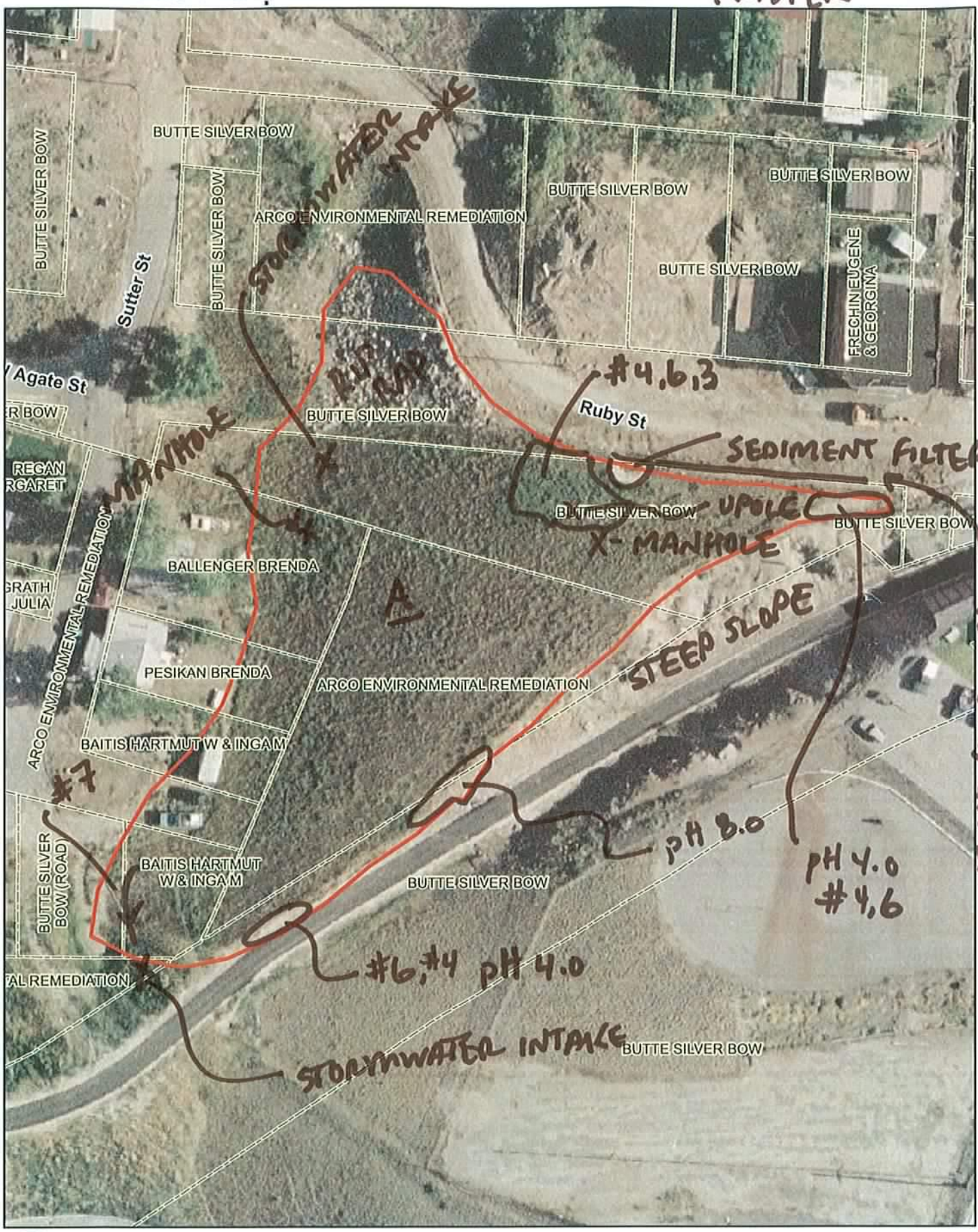
- Northwestern Energy recently installed power pole + guy wires in NE Portion of site. Activity has exposed mine waste.
- Exposed waste is exposed adjacent to walking path.
- Storm water from Sutter St. + carries large amount of sediment into site. (gully formation)
- Storm water intake on NW side of site - has rock + debris located in it.
- Truck Parked on SW side of site
- DURING INSTALLATION OF NEW CURB AND GUTTER, WASTED MATERIAL WAS EXPOSED ALONG RUBY STREET
- LARGE AMOUNT OF WASTE MATERIAL LOCATED NEXT TO FENCE (NE SIDE).

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#79 - Late Acquisition



Master 2008

40 Parking Lot

BRES FIELD FORM

Site ID: __ **Site Name:** West Steward **Field Date:** 7/19/08

Team Members (Circle your name): Jeanne Larson Charlie Larson

Number of Polygons: 1 Slope: 5 to 30 Aspect (circle all relevant): N S W E NW NE (SW) (SE)

Area Description: Small site between walking trail + Steward Parking Lot

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	15 10					
*Noxious weeds	2					
Litter	20					
Rocks > 2"	5					
Bare Ground	23					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	I					
Slender wheatgrass	X					
Yellow sweetclover	X					
Alfalfa	I					
Bunch Rye Grass	I					
Rubber Rabbit brush						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	30					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	I					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Mullen	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ____ (check applicable items)

- lime rock barrier
- depositional area
- X more weeds
- steeper slope
- increased erosion
- less vegetation
- gullies
- other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 7
- Approximate area (in square feet) 100
- Number of areas with exposed waste 2

5. Is there evidence of: Y ____ N X

- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y ____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N X
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

- One polygon
- Exposed waste on site
- Gullie of site at North end of farm
- Walking path established through site
- Pile concrete debri located on SE corner of site
- Excessive weeds on south east corner of site

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER!

BRES FIELD FORM

Site ID: 80 Site Name: West Steward Parking Lot Field Date: 7/18/08

Team Members (Circle your name): Hamblock, Ruppel, Phelps

Number of Polygons: 1 Slope: 0 to 20° Aspect (circle all relevant): N S W E NW NE (SW) SE

Area Description: Adjacent walking trail and residential area

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	2					
*Noxious weeds	3					
Litter	35					
Rocks > 2"	5					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	37					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	X					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	11					
Flow Patterns	6					
Rills Depth	X					
Rills Frequency	X					
Gullies Depth	X					
Gullies Frequency	X					
Soil Movement	14					
TOTAL BLM Score:	44					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax	F					
Cheatgrass	I					
Baby's breath	I					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ____ (check applicable items)

- [ ] lime rock barrier
- [ ] depositional area
- [X] more weeds SE corner
- [ ] steeper slope
- [ ] increased erosion
- [ ] less vegetation
- [ ] gullies
- [X] other Residential Dumping

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 4.0 - 4.5
- Approximate area (in square feet) 20
- Number of areas with exposed waste 3

5. Is there evidence of: Y ____ N X

- [ ] bulk soil failure
- [ ] land slumps
- [ ] subsidence

6. Barren Areas: Y ____ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N X
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

- Property owners adjacent to site are dumping waste behind their house into the SE corner of the site.
- Large berm borders site edge by fence for drainage

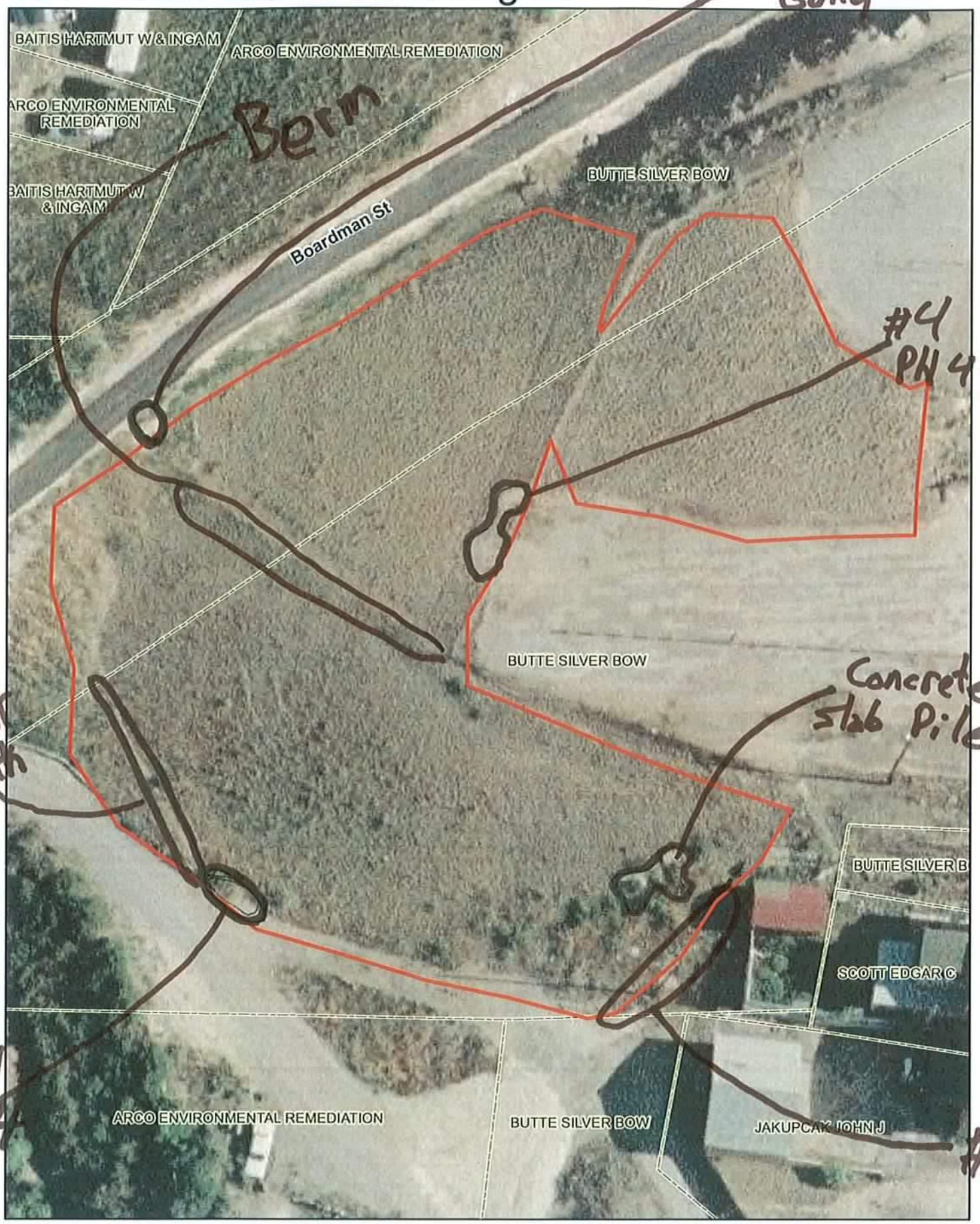
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#80 - West St[illegible]vard Parking Lot

Master 2008



N

0 20 40 60 80 Feet

CDM

#80 - West Side Ward Parking Lot

MASTER
7/18/08

0 20 40 60 80 Feet

CDM

BRES FIELD FORM Site ID: #81 Site Name: Clear Grit Dump Field Date: 7-9-08

Team Members (Circle your name): Gordon Ryan Campbell

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Main and Minah

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	50					
*Undesirable (weedy) species	30					
*Noxious weeds	5					
Litter	20					
Rocks > 2"	3					
Bare Ground	2					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	55					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X					
Crested wheatgrass	I					
Slender wheatgrass	D					
Yellow sweetclover	X					
Alfalfa	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	5					
Pedestalling	2					
Flow Patterns	9					
Rills Depth	5					
Rills Frequency	1					
Gullies Depth	X					
Gullies Frequency	X					
Soil Movement	14					
TOTAL BLM Score:	55					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	X					
Dalmation toadflax	X					
Cheatgrass	F					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Salsify	F					
Mustard	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ____ (check applicable items)

- X **lime rock barrier**
- **more weeds**
- X **increased erosion**
- **gullies**
- X **depositional area**
- X **steeper slope**
- **less vegetation**
- **other** ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 5
- Approximate area (in square feet) 10
- Number of areas with exposed waste 1

5. Is there evidence of: Y X N ____

- **bulk soil failure**
- X **land slumps**
- **subsidence**

6. Barren Areas: Y ____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N X
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments. • polygon

• possible exposed waste at west edge of site along Main – manually translocated pt 5.0

• eastern corner along walking trail has exposed waste of pt 4.0

• limerock barrier extends length of site boundary from Main to Wyoming along ClearCrit.

• Significant mowed area southeast corner (see map)

• drainage ditch along Minah street extends from Colvert to SE corner soil slumping off into ditch.

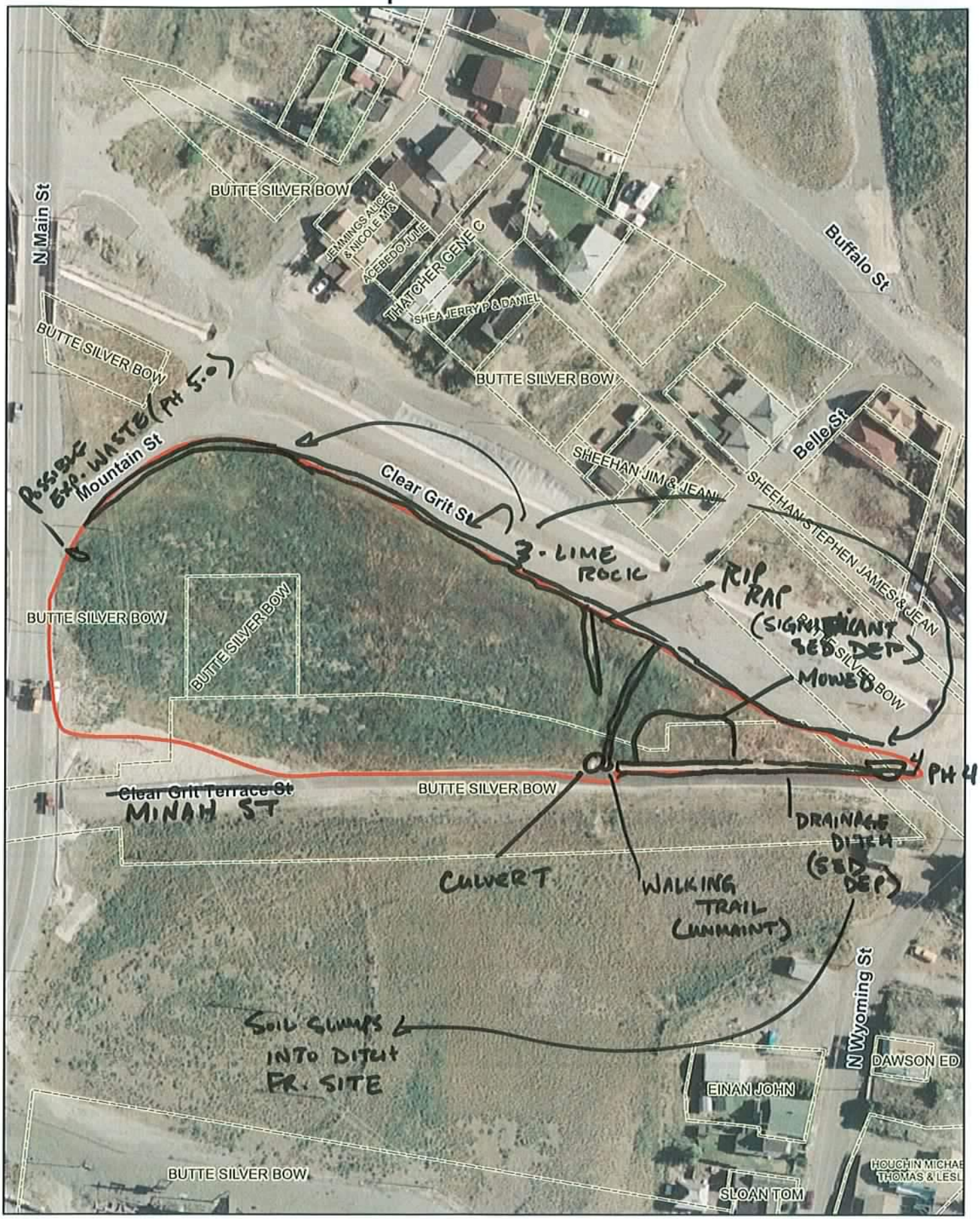
• directly east of Colvert walking trail currently unmaintained

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#81 - Clear G . Dump



MASTER

BRES FIELD FORM

Site ID: 82 Site Name: Cellar Dirt Dump Field Date: 7-10-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 0 to 3-1 Aspect (circle all relevant): N (S) W E NW NE SW SE

Area Description: East of Steward Mine

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	15					
*Noxious weeds	2					
Litter	40					
Rocks > 2"	1					
Bare Ground	7					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	1					
Yellow sweetclover	1					
Alfalfa	F					
Rubber Rabbit	1					
Canada Blue	1					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	11					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	28					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	1					
Dalmation toadflax	1					
Cheatgrass	1					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Salsify	1					
Mustard	1					
Prickly lettuce	1					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- lime rock barrier
- ✓ more weeds
- increased erosion
- gullies
- depositional area
- steeper slope
- ✓ less vegetation
- ✓ other exposed waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4.
- Approximate area (in square feet) 400 ft²
- Number of areas with exposed waste 2

5. Is there evidence of: Y ____ N ✓

- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y ✓ N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3

Do barren areas cover over 25% of any polygon? Y ____ N ✓

7. Gullies (over 6" in depth):

Y ____ N ✓

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

Comments.

- South edge of Steward mine yard has exposed waste along fence
- SW corner of site has cut barbed wire
- Site is currently being mowed.

Short term Recomendations:

- NWE needs to reclaim construction area
- Access road
- Barren Area
- Exposed Waste
- Remove downed Power Poles
- Knapweed on east property adjacent to site.
- plugged storm drain on NW edge

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

BRES FIELD FORM Site ID: #82 Site Name: Cellar Dirt Dump Field Date: 7-10-08

Team Members (Circle your name): Ryan Campbell Shanight

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Surrounding the headframe, downgrading walking trail.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	41					
*Undesirable (weedy) species	12					
*Noxious weeds	1					
Litter	32					
Rocks > 2"	2					
Bare Ground	12					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	47					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	D					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	1					
Pedestalling	9					
Flow Patterns	3					
Rills Depth	1					
Rills Frequency	2					
Gullies Depth	6					
Gullies Frequency	1					
Soil Movement	2					
TOTAL BLM Score:	33					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	X					
Dalmation toadflax	I					
Cheatgrass	D					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Salsify	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N____ (check applicable items)

- **lime rock barrier**
- **depositional area**
- **more weeds**
- **steeper slope**
- **increased erosion**
- **less vegetation**
- **gullies**
- **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N____

- **bulk soil failure**
- **land slumps**
- **subsidence**

6. Barren Areas: Y____ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

- 1 polygon
- Berm in northern portion of site is possibly used to contain run-on from main Street.
- Gullie on Northeastern side of site has been caused by run-on by Wyoming Street.
- Large patches of cheat grass on site.
- Chain-Link fence surrounding mine yard could use repair.
- There is no sediment containment from mine yard into ditch. Some barrow areas within this ditch.
- waste material surrounding pole and guy wire
- waste eroding from mine yard onto site
- possible exposed waste Located on private property in Southwest side of site.

Additional Vegetation:

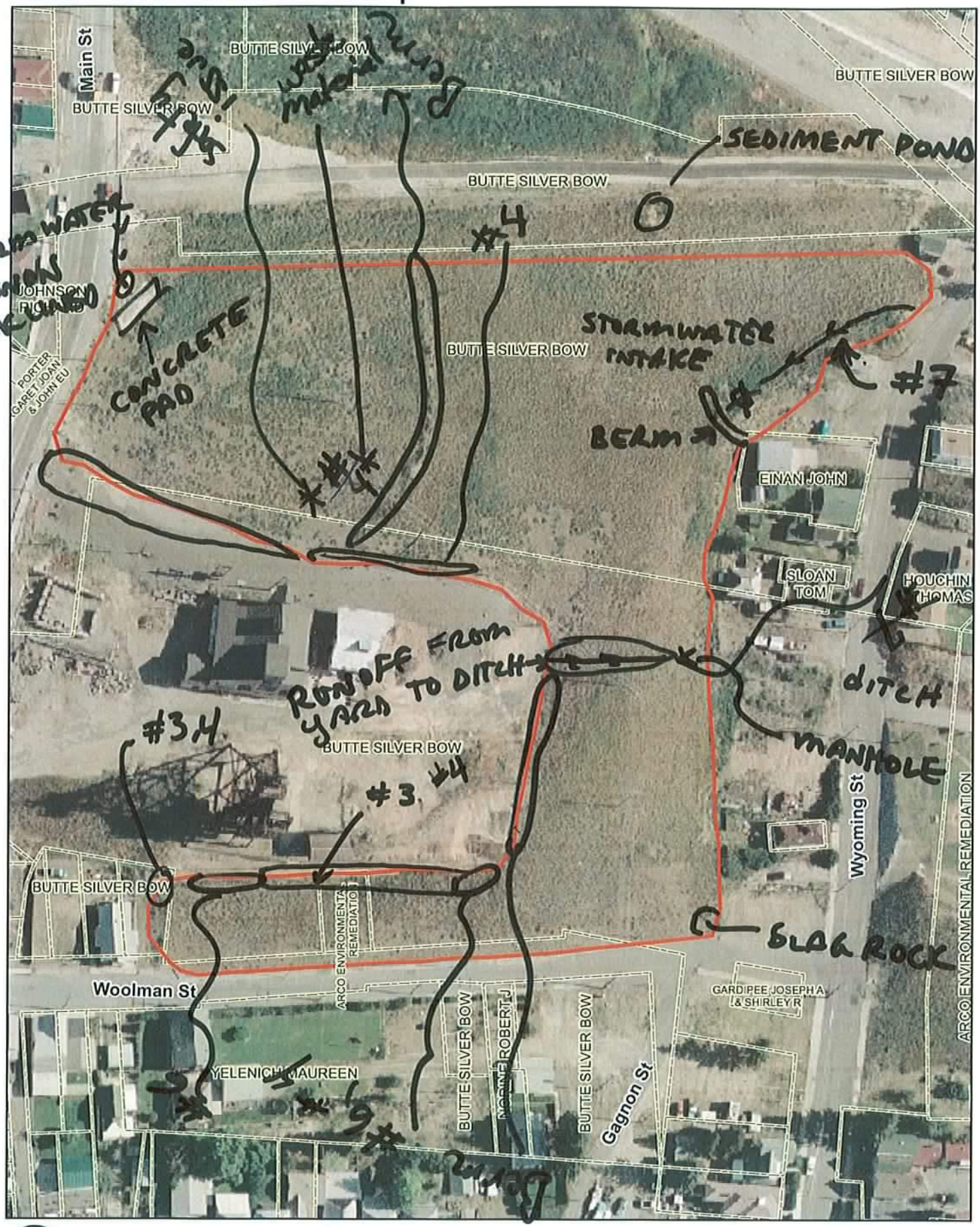
Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

MASTER

#82 - Cellar L..t Dump

#82 - Cellar D... Dump



0 50 100 150 200 Feet

CDM

Master

BRES FIELD FORM Site ID: 84 Site Name: Mandan Park Play Area Field Date: 7-11-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 4 to 1 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South of Mandan Park E of Wyoming Street

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	16					
*Noxious weeds	3					
Litter	30					
Rocks > 2"	1					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	F					
Great Basin	I					
Kentucky Blue	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	25					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	X					
Dalmation toadflax	X					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Matrumony	I					
Salsify	I					
Prickly Lettuce	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ____ N ✓ (check applicable items)

- lime rock barrier
- depositional area
- more weeds
- steeper slope
- increased erosion
- less vegetation
- gullies
- other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N ✓

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y ____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

1 Polygon

- Adjacent site has knapweed and dalmatian toadflax.

Short term Recomendations:

- Monitor
- Matrimony vine on Southern end
- cheatgrass on N. edge

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER

#84 - Mandar. ark Play Area

BRES FIELD FORM

Site ID: C10 Site Name: Livestock Dump #31 Field Date: 7/16/08

Team Members (Circle your name): Randi Phelps John Reagan

Number of Polygons: 2 Slope: 0 to 35 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Site includes a residential yard

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A (B)	B (A)	C	D	E	F
Live (desirable) species	12	35				
*Undesirable (weedy) species	35	5				
*Noxious weeds	10	1				
Litter	13	48				
Rocks > 2"	10	1				
Bare Ground	30	10				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	17	40				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A (B)	B (A)	C	D	E	F
Sheep fescue	X	X				
Crested wheatgrass	F	D				
Slender wheatgrass	F	I				
Yellow sweetclover	X	X				
Alfalfa	I	X				
M						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A (B)	B (A)	C	D	E	F
Surface Litter	1	2				
Surface Rock Movement	8	9				
Pedestalling	3	0				
Flow Patterns	6	6				
Rills Depth	4	0				
Rills Frequency	1	0				
Gullies Depth	1	0				
Gullies Frequency	1	0				
Soil Movement	5	1				
TOTAL BLM Score:	30	17				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A (B)	B (A)	C	D	E	F
Spotted knapweed	F	D				
Dalmation toadflax	X	X				
Cheatgrass	F	I				
Baby's breath	X	X				
Kochia	X	X				
Thistle	X	X				
Leafy Spurge	X	X				
Mustard	I	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** more vegetation side polygon B

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N X

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1 Polygon B
Do barren areas cover over 25% of any polygon?
Y X N ____

7. Gullies (over 6" in depth):
Y X N X
Are any gullies actively eroding? Y ____ N X
Number of gullies 1

Comments. • Recent water + sewer main construction on Quarte St.
• Polygon B is located within a residential yard + was evaluated due to its poor condition
• Asphalt pad located adjacent to alley
• Noxious weeds polygon B are out of control (residential area!)
• Curb + gutter located on Western + Northern edge/end of site

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

MASTER!
7/16/08

#90 - Waste Dump #37

N

0 20 40 60 80 100 Feet

CDM

BRES FIELD FORM Site ID: 91 Site Name: Robert Emmett Dump Field Date: 7/15/08

Team Members (Circle your name): Randi Phelps John Reagan

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: across from park in residential area

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	5					
*Noxious weeds	1					
Litter	50					
Rocks > 2"	1					
Bare Ground	8					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	X					
Sage Wart	I					
Canada Blue	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	2					
Pedestalling	9					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	26					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	X					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Mustard	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

#91 - Robert Emmett Dumps

BRES FIELD FORM

Site ID: 93 **Site Name:** ~~Soudan~~ - Old Hill **Field Date:** 7/14/08

Team Members (Circle your name): Randi Phelps John Reagan

Number of Polygons: 2 Slope: 0 to 45 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: covered mine dump in residential area

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30	5				
*Undesirable (weedy) species	20	7				
*Noxious weeds	10	2				
Litter	30	1				
Rocks > 2"	5	50				
Bare Ground	5	35				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	35	10				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X	X				
Crested wheatgrass	I	I				
Slender wheatgrass	F	X				
Yellow sweetclover	I	X				
Alfalfa	X	X				
BROME	F	X				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2	1				
Surface Rock Movement	3	1				
Pedestalling	0	0				
Flow Patterns	0	0				
Rills Depth	4	0				
Rills Frequency	1	0				
Gullies Depth	3	0				
Gullies Frequency	1	0				
Soil Movement	8	0				
TOTAL BLM Score:	34	2				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	I				
Cheatgrass	F	F				
Baby's breath	I	I				
Kochia	X	X				
Thistle	X	X				
Leafy Spurge	X	X				
Mustard	I	X				
Absinth Wam	I	X				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH ~4.0
- Approximate area (in square feet) varies
- Number of areas with exposed waste 5

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2
Do barren areas cover over 25% of any polygon?
Y X N____

7. Gullies (over 6" in depth):
Y X N____
Are any gullies actively eroding? Y X N____
Number of gullies 1

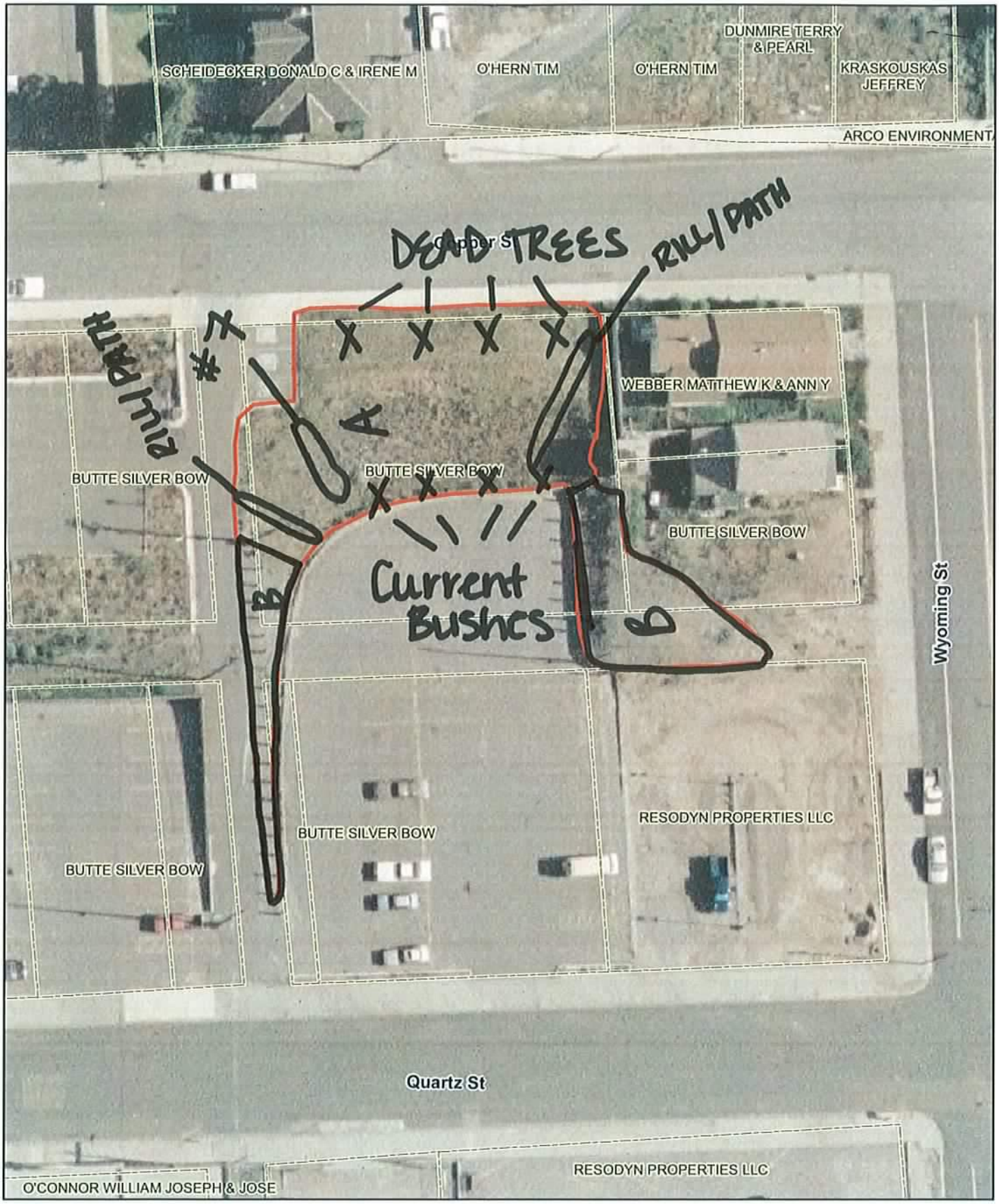
Comments.

- Entire site shows lots of foot traffic + trampling
- Weeds needs to be spot-sprayed
- Waste material needs to be covered
-

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#93 - Soudan - Gold Hill



N

0 20 40 60 80 100 Feet

CDM

BRES FIELD FORM

Site ID: 9 **Site Name:** Rialto Dump **Field Date:** 7/14/08

Team Members (Circle your name): (Randi Phelps) John Reagan

Number of Polygons: 1 Slope: 0 to 45 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Sloped dump site in the middle of residential area

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	20					
*Noxious weeds	3					
Litter	24					
Rocks > 2"	5					
Bare Ground	23					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	50					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	X					
Yellow sweetclover	X					
Alfalfa	I					
Rabbit Brush	I					
Sage Wart	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	11					
Pedestalling	9					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	45					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass						
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Salsify	I					
Mustard	I					
Matromony Vine	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** waste

Estimate width of affected edge (in feet) 85

4. Exposed Waste Material? Y X N_____

- Estimated pH 7
- Approximate area (in square feet) 85
- Number of areas with exposed waste 1

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y___ N___

7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

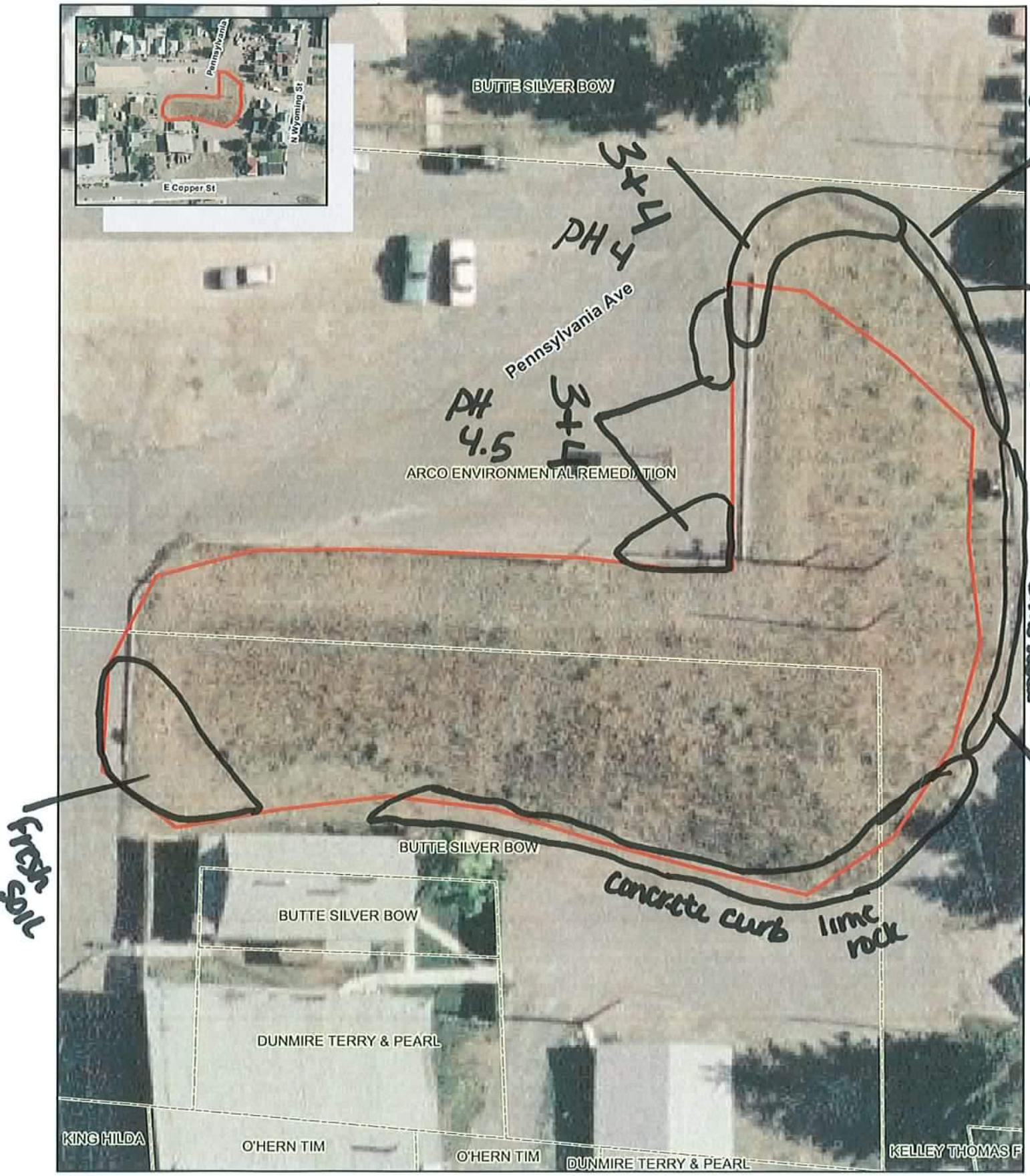
Comments.

- Polygon should extend to street edges
- Asphalt ditch needs repair.
- Gully on east (outside polygon boundary) is eroding into mine waste.
- Two piles of mine waste inside curb on parking lot.
- Vegetation on S side has been mowed ~~by~~ by neighbor.
- S side vegetation is more sparse than W. side.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#94 - Rialto Dump



Master 2008

BRES FIELD FORM

Site ID: 96 Site Name: Washoe Dump Field Date: 7/15/08

Team Members (Circle your name): Jeanne Larson, Charlie Larson, Andy

Number of Polygons: 1 Slope: 0 to 30 Aspect (circle all relevant): N S W E NE SW SE

Area Description: N - NE Capri Motel Arizona / Quartz

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	25					
*Noxious weeds	5					
Litter	25					
Rocks > 2"	5					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	~~8~~ 20 15					
Surface Rock Movement	8					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	3					
Rills Frequency	2					
Gullies Depth	20 65					
Gullies Frequency	3					
Soil Movement	3					
TOTAL BLM Score:	45					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	X					
Cheatgrass	D					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Mustard	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- X **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- X **less vegetation**
- ☐ **gullies**
- ☐ **other** rills

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N

- Estimated pH 4.0
- Approximate area (in square feet) 400 ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y N

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

- Not on site see map comments

6. Barren Areas: Y N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y N

7. Gullies (over 6" in depth):
Y X N
Are any gullies actively eroding? Y X N
Number of gullies 3

Comments.

- Sidewalk composed of native rock along east edge
- Site edges full of weeds - exposed dirt
- Waste material both on site and off site - adjacent to Capri Motel
- Waste material subject to heavy erosion
- Site boundary with Capri Motel fencing needs maintenance / repair
- Significant Erosion on west edge of site near parking lot

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master 2008

#96 - Washoe Dump

N

0 20 40 60 80 100 Feet

CDM

Master 2008

BRES FIELD FORM

Site ID: **Site Name:** Barrs Shop South Slope **Field Date:** 7/17/08

Team Members (Circle your name): Charlie Jeanne Indy Matt

Number of Polygons: 3 Slope: 15 to 90 Aspect (circle all relevant): N (S) W E NW NE (SW) SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30	15	35			
*Undesirable (weedy) species	10	2	10			
*Noxious weeds	3	10	10			
Litter	45	20	30			
Rocks > 2"	3	10	3			
Bare Ground	9	43	12			
TOTAL (above 6 items must total 100%)	100	100	100			
ADJUSTED LIVE % = Live + 5%Undesirable	35	17	40			

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I	I	I			
Crested wheatgrass	D	I	F			
Slender wheatgrass	I	X	F			
Yellow sweetclover	F	X	I			
Alfalfa	F	I	F			
Rye Grass	I	X				
Bluebunch Wheatgrass		D				
Smooth Brome			F			

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	14	8	6			
Surface Rock Movement	8	14	1			
Pedestalling	9	14	2			
Flow Patterns	3	12	1			
Rills Depth	0	3	0			
Rills Frequency	0	7	0			
Gullies Depth	0	0	0			
Gullies Frequency	0	0	0			
Soil Movement	3	14	5			
TOTAL BLM Score:	37	72	15			

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F	X	I			
Dalmation toadflax	F	F	I			
Cheatgrass	D	F	F			
Baby's breath	I	X	X			
Kochia	I	X	I			
Thistle	X	X				
Leafy Spurge	I	X				
Curly Dock	I	X				
Tumble mustard	I	X				
Absenth Wormwood	I	X				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **more weeds** C
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** _____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 4
- Approximate area (in square feet) Varies
- Number of areas with exposed waste 7

5. Is there evidence of: Y ____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon? Y ____ N ____

7. Gullies (over 6" in depth):

Y ____ N X

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

Comments. Three polygons
- Knapweed: Along North edge of Polygon A
- Consider consolodating polygons on NW part of site due to land cover similarity.

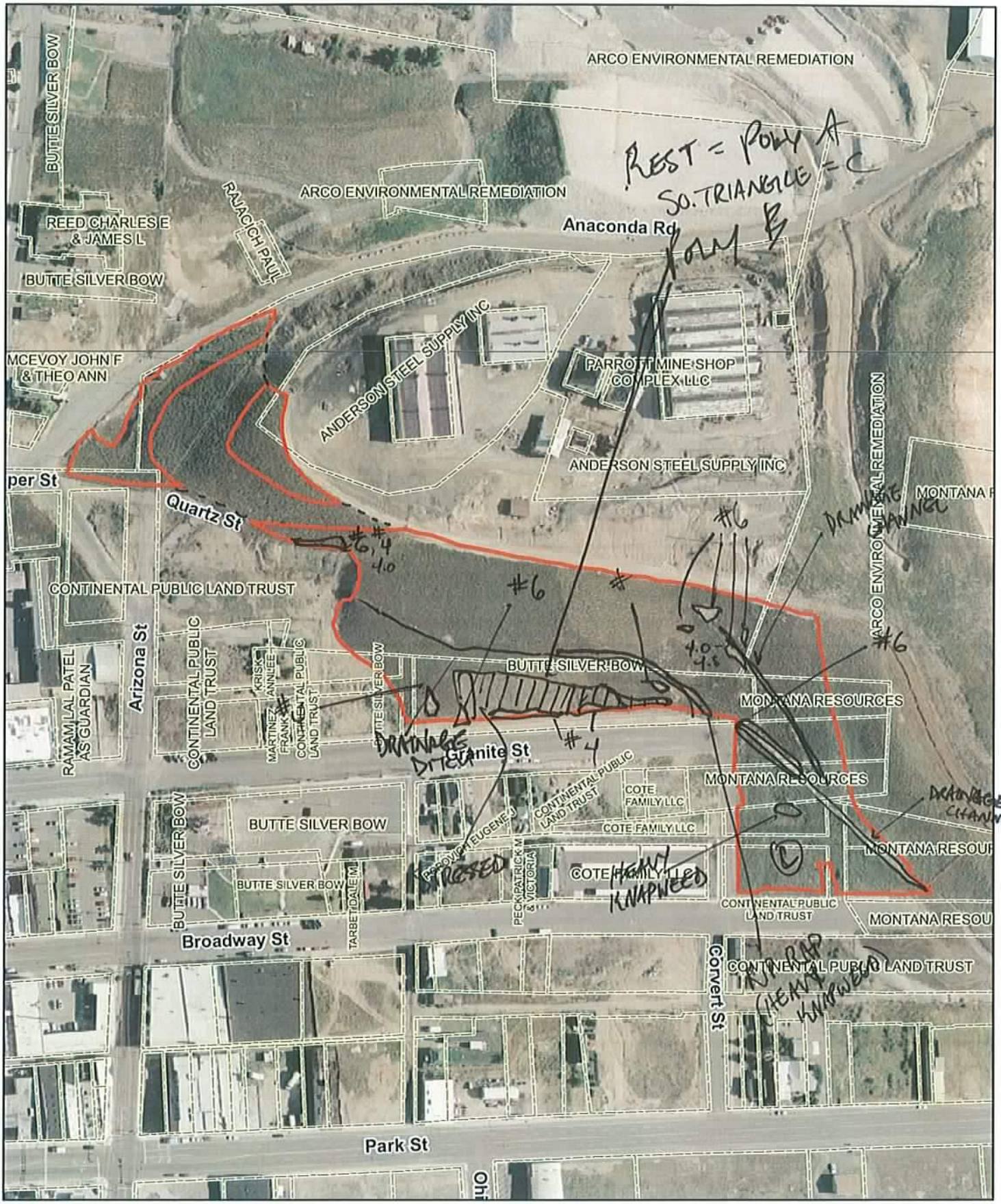
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Common		I				
Rabbit Brush	I					
Matrimony Vine			I			

Use D (Dominant), F (Frequent), or I (Infrequent).

Master 2008

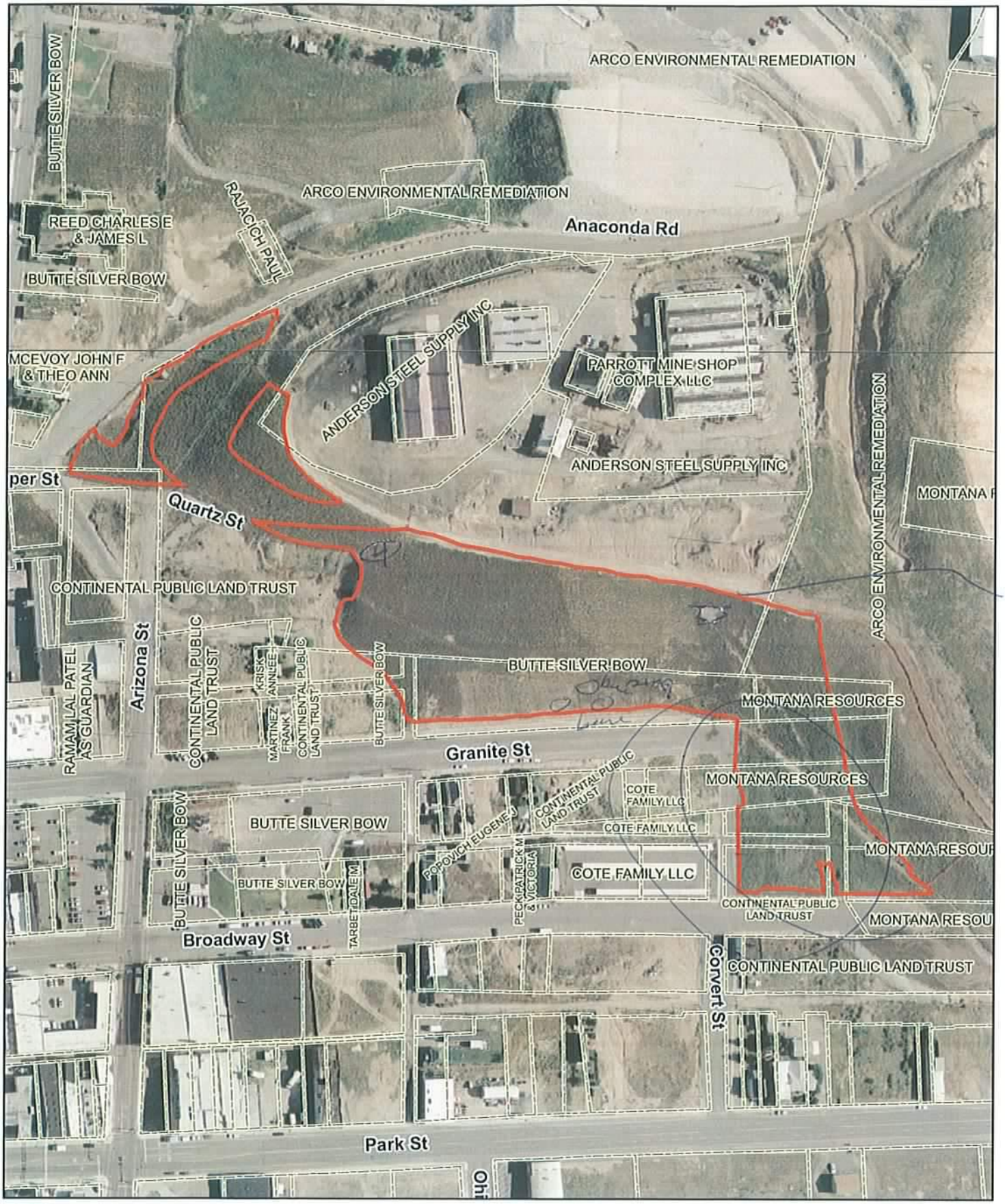
#97S - Parrot Shop South Slope



0 100 200 300 400 500 Feet

CDM

#97S - Parrot Shop South Slope



Master

100

BRES FIELD FORM

Site ID: ___ Site Name: Capri Motel - Artic Dump Field Date: 7/15/08

Team Members (Circle your name): (Jeanne Larson) Charlie Larson, Andy

Number of Polygons: 1 Slope: 0 to 10 ¹ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: NW corner Arizona / Granite

See ~~##~~ comments on back

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X					
Crested wheatgrass	X					
Slender wheatgrass	X					
Yellow sweetclover	X					
Alfalfa	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):

Y____ N____
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Site used as parking lot -
Does not meet requirement for
typical BRES evaluation

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master 2008

#100 - Capri Motel - Artic Dump

N

0 20 40 60 80 100 Feet

CDM

MASTER

BRES FIELD FORM

Site ID: #101 Site Name: BLUE SKY MINE Field Date: 07/16/03

Team Members (Circle your name): TAMBLOCK RUPPEL GORDON

Number of Polygons: 1 Slope: 0 to 10 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: CORNER OF GRANITE & CORBERT

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	15					
*Noxious weeds	10					
Litter	20					
Rocks > 2"	3					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	50					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	F					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	10					
Surface Rock Movement	5					
Pedestalling	3					
Flow Patterns	0					
Rills Depth	1					
Rills Frequency	1					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	24					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax	F					
Cheatgrass	F					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
SALSIFY	I					
MUSTARD	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2
Do barren areas cover over 25% of any polygon?
Y____ N X

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

- Utility Vehicles traffic evident on Southern edge of site along with significant sed. most deposit
- erosion run on from Entrance Street west of Cement Beams compromising West edge

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER

#101 - Blue Jay Mine

MASTER

BRES FIELD FORM Site ID: 114 Site Name: Emma Shaft Field Date: 7/13/06

Team Members (Circle your name): Hamblock, Campbell, Ruppel, Shanight

Number of Polygons: 1 Slope: 0 to 10° Aspect (circle all relevant): N (S) W E NW NE SW SE

Area Description: Park with gazebo, park benches, picnic tables

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

- Entire site vegetated with bluegrass.
- Site is irrigated with a sprinkler system.
- Concrete cap appears to be in great condition.
- Site is in great condition
- No vegetation or erosion estimates were made
- No trigger items found.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#114 - Emma Shaft

MASTER IS JULY 2008

BRES FIELD FORM

#115

Site ID:__ Site Name: BUTTE NEW ENGLAND Field Date: 7/14/08

Team Members (Circle your name): SHANIGHT, HAMBLOCK, RUPPEL

Number of Polygons: 2 Slope: 0 to 25° Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: NEXT TO THE MAC

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5	10				
*Undesirable (weedy) species	5	5				
*Noxious weeds	2	20				
Litter	5	25				
Rocks > 2"	12	8				
Bare Ground	66	12				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	10	15				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D	I				
Crested wheatgrass	X	D				
Slender wheatgrass	X	X				
Yellow sweetclover	I	F				
Alfalfa	X	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2	8				
Surface Rock Movement	5	5				
Pedestalling	9	11				
Flow Patterns	12	6				
Rills Depth	2	2				
Rills Frequency	2	2				
Gullies Depth	0	6				
Gullies Frequency	0	2				
Soil Movement	2	3				
TOTAL BLM Score:	34	45				

BLM score:
0-55 = M (Monitor) M M
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F	D				
Dalmation toadflax	D	F				
Cheatgrass	X	I				
Baby's breath	X	I				
Kochia	X	X				
Thistle	X	X				
Leafy Spurge	X	X				
LEPIDIUM	X	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N (check applicable items)

- [ ] **lime rock barrier**
- [ ] **depositional area**
- [ ] **more weeds**
- [ ] **steeper slope**
- [ ] **increased erosion**
- [ ] **less vegetation**
- [ ] **gullies**
- [x] **other**

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N
- Estimated pH SEE MAP
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y X 7 N
- [x] **bulk soil failure**
- [ ] **land slumps**
- [ ] **subsidence** ?. NORTH SIDE OF MAC

6. Barren Areas: Y X N
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ≈ 7
Do barren areas cover over 25% of any polygon?
Y X N POLYGON A

7. Gullies (over 6" in depth):
Y X N
Are any gullies actively eroding? Y X N
Number of gullies 2

Comments.

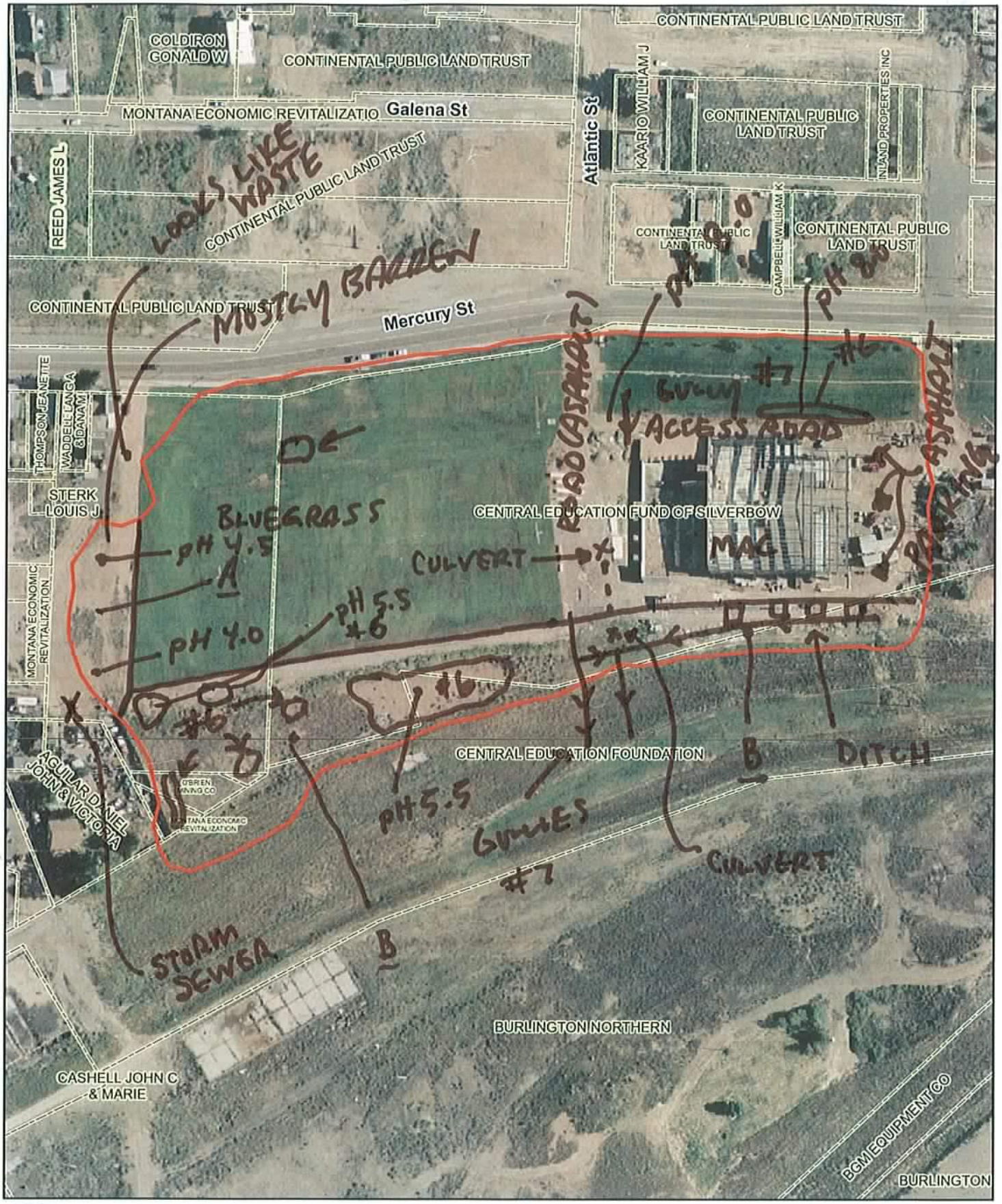
- BLUEGRASS LAWN AREA WAS NOT EVALUATED FOR VEG/COVER AND EROSION
- DOWNSPOUTS FROM ROOF OF MAC DRAIN INTO RIPRAP DITCHES
- NORTHSIDE MAC USED AS SERVICE ROAD NO POLYGON DELINEATED IN THIS AREA. APPEARS TO HAVE LITTLE VEGETATION
- WESTSIDE SITE/POLYGON "A" APPEARS TO HAVE NEVER BEEN RECLAIMED, LOW pH
- CULVERT ON WESTSIDE BUILDING DRAINS (SW) WATER OFF OF ROAD INTO DITCH, ALSO SOME WATER THAT DRAINS OFF OF THE WESTSIDE OF BUILDING IS FORMING GULLIES IN THE RECLAIMED AREA.
- SOUTHSIDE SLOPE OF FIELD NOW HAS VEGETATION GROWING ON IT (NO VEG ON AIRPHOTO)
- SEVERAL WASTE LIKE PILES LOCATED ~~at~~ ADJACENT TO SOUTHSIDE FIELD.
- SOUTH SITE EDGE, MOST SOUTHERN BOUNDRY HAS BETTER VEGETATION THAN REST OF POLYGON B (YARROW)

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#115 - Butte New England



N

0 100 200 300 400 Feet

□ = RIPRAP (DRAINS DOWN SPOUTS)

CDM

BRES FIELD FORM

Site ID: 116 Site Name: Belmont Mine Yard Field Date: 7/15/08

Team Members (Circle your name): Randi Phelps John Reagan

Number of Polygons: 2 Slope: 0 to 35 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Belmont Mine Dump (manicured irrigated lawn; adj. MAC + south to Senior Center) & reclaimed slopes

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	50	25				
*Undesirable (weedy) species	5	25				
*Noxious weeds	0	10				
Litter	45	30				
Rocks > 2"	0	5				
Bare Ground	0	5				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	55	30				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	NA	I				
Crested wheatgrass	NA	F				
Slender wheatgrass	NA	I				
Yellow sweetclover	NA	X				
Alfalfa	NA	I				
Kentucky Blue	D	X				
Canada Rye		F				
Sage Wort		I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	NA	2				
Surface Rock Movement	NA	2				
Pedestalling	NA	9				
Flow Patterns	NA	6				
Rills Depth	NA	5				
Rills Frequency	NA	3				
Gullies Depth	NA	7				
Gullies Frequency	NA	7				
Soil Movement	NA	8				
TOTAL BLM Score:		49				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	X	F				
Dalmation toadflax	X	I				
Cheatgrass	X	F				
Baby's breath	X	I				
Kochia	X	I				
Thistle	X	X				
Leafy Spurge	X	X				
Absentn Wormwood	X	I				
Mustard	X	F				
Fox Tail	X	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N (check applicable items)

- [ ] **lime rock barrier**
- [ ] **depositional area**
- [X] **more weeds**
- [ ] **steeper slope**
- [X] **increased erosion**
- [ ] **less vegetation**
- [X] **gullies**
- [ ] **other** _____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N

- Estimated pH 4.5
- Approximate area (in square feet) varies
- Number of areas with exposed waste 6

5. Is there evidence of: Y N X

- [ ] **bulk soil failure**
- [ ] **land slumps**
- [ ] **subsidence**

6. Barren Areas: Y N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y N

7. Gullies (over 6" in depth): on SW end of Polygon B - parking area

Y X N
Are any gullies actively eroding? Y X N
Number of gullies 6

Comments.

- South face has been amended with wood chips + hydroseeding.
- Yard under headframe is full of noxious weeds.
- Poly B needs attention to the weeds
- Manicured lawn of Poly A is poorly watered + in bad shape.
- SW portion of Poly A is parking lot covered with asphalt.
- The 25' band along the Polygon A + B boundary is overtaken by noxious weeds.
- Gullies on West of Poly B are from drawing off the parking lot.

Recommendations

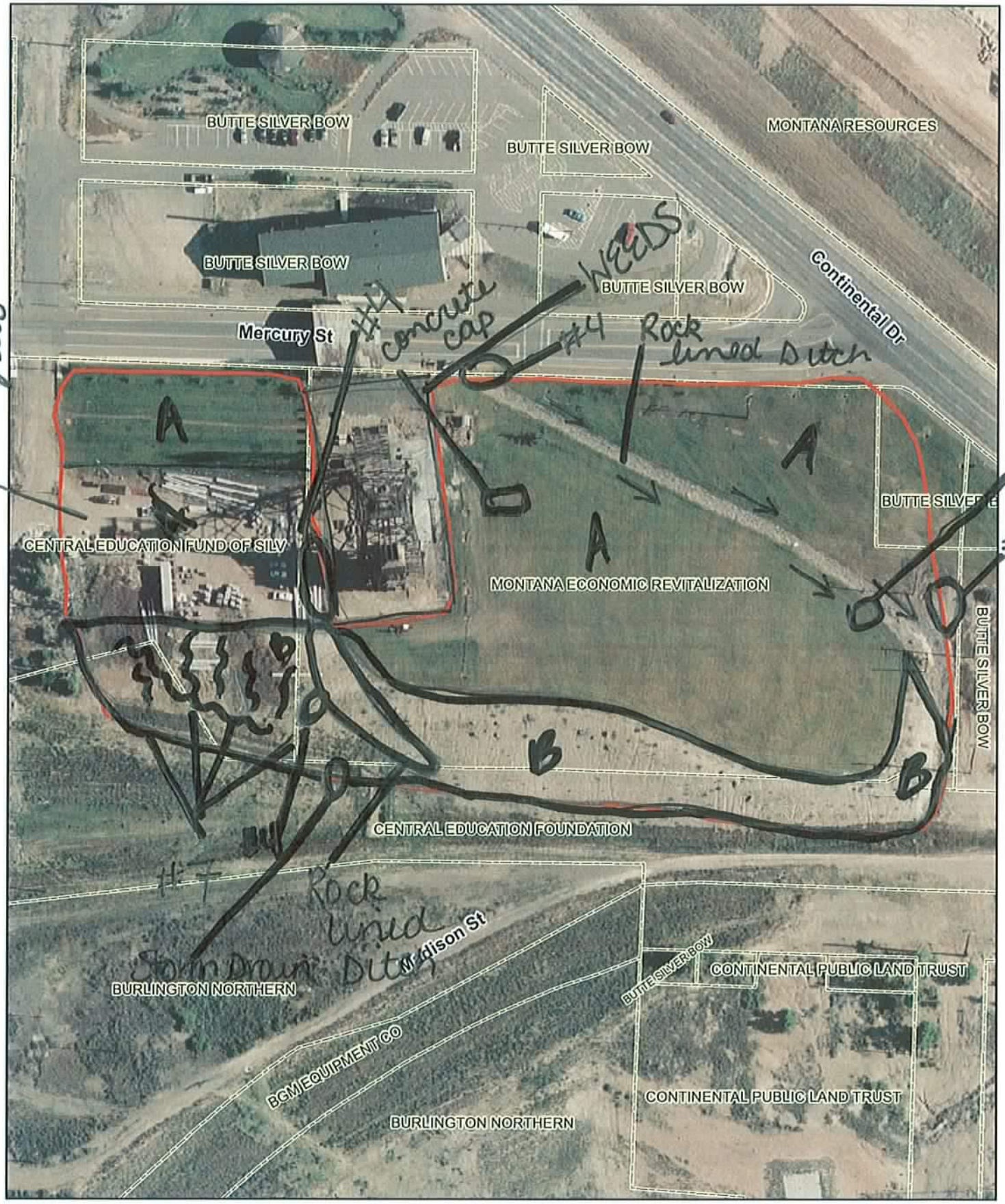
- Noxious weeds need to be sprayed.
- Drainage off parking lot needs to be dealt with so that it doesn't ~~~~ erode the site edges.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Dandelions	I	I				
Salsify	X					
Canada Blue	X	I				
Golden Currant	X	I				
Potentilla	X	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

#116 - Belmont Mine Yard



N

0 50 100 150 200 250 Feet

CDM

BRES FIELD FORM Site ID: 17 ~~Site Name:~~ Anderson Shaft Field Date: 7/15/08

Team Members (Circle your name): Randi Phelps John Reagan

Number of Polygons: 1 Slope: 0 to 5 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Mostly flat with exposed mine waste (barren)

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	9					
*Undesirable (weedy) species	2					
*Noxious weeds	5					
Litter	10					
Rocks > 2"	26					
Bare Ground	49					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	11					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	I					
Canada Blue	I					
Big Basin Rye	I					
Absinth Wormwood	I					
Tufted Hair	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	1					
Surface Rock Movement	1					
Pedestalling	3					
Flow Patterns	1					
Rills Depth	1					
Rills Frequency	1					
Gullies Depth	7					
Gullies Frequency	1					
Soil Movement	14					
TOTAL BLM Score:	30					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	F					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Mustard	I					
Other						
other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4.0
- Approximate area (in square feet) 1/2 site
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1/2 site
Do barren areas cover over 25% of any polygon?
Y X N____

7. Gullies (over 6" in depth):
Y X N____
Are any gullies actively eroding? Y X N____
Number of gullies 1

Comments.

- This site is primarily exposed mineral soil. There is no evidence of cap material.

Recommendations

- This site need to be completely redone with a new cap.
- Noxious weeds need to be managed in the interim.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Birds foot trefoil	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

#117 - Anderson Shaft

Master 2008 | 117 E

BRES FIELD FORM

Site ID: __ Site Name: Anderson shaft NE Field Date: 7/15/08

Team Members (Circle your name): Jeanne Larson, Charlie Larson, Andy

Number of Polygons: 1 Slope: 0 to 10% Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South Junction of Madison / Continental

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	7					
*Undesirable (weedy) species	3					
*Noxious weeds	15					
Litter	5					
Rocks > 2"	20					
Bare Ground	50					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	10					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	X					
Slender wheatgrass	D					
Yellow sweetclover	X					
Alfalfa	X					
Canadian Blue Grass	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	14					
Surface Rock Movement	14					
Pedestalling	3					
Flow Patterns	12					
Rills Depth	7					
Rills Frequency	6					
Gullies Depth	7					
Gullies Frequency	6					
Soil Movement	14					
TOTAL BLM Score:	93					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax	F					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N \ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☐ more weeds
- ☐ steeper slope
- X increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4.0
- Approximate area (in square feet) whole site
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y X N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3 major - smaller ones scattered on site
Do barren areas cover over 25% of any polygon? Y X N____

7. Gullies (over 6" in depth):

Y X N____
Are any gullies actively eroding? Y X N____
Number of gullies 2

Comments.

- Any past reclamation efforts on site are questionable and/or negligible
- Heavy erosion across site attributed to big large vehicle traffic
- Heavy water flow onto site from Madison St
- Dirt piles recently deposited on North edge of site along Madison (pH ok)

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

master 2008

#117E - Anderson Shaft NE

N

0 25 50 75 100 Feet

CDM

Master 2008

BRES FIELD FORM

Site ID: 120 Site Name: Bonanza Dump Field Date: 7/16/08

Team Members (Circle your name): Jeanne Larson, Charlie Larson, Andy

Number of Polygons: ___ Slope: 0 to 20° Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Intersection of Excelsior + I 15 – Bike trails

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	7 / 5	32 / 30	43			
*Undesirable (weedy) species	5	3	2			
*Noxious weeds	45	6	3			
Litter	3	20	35			
Rocks > 2"	10	30	2			
Bare Ground	30	9	15			
TOTAL (above 6 items must total 100%)	100	100	100			
ADJUSTED LIVE % = Live + 5%Undesirable	12	35	45			

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	~~I~~	D	I			
Crested wheatgrass	I	I	D			
Slender wheatgrass	X	I	I			
Yellow sweetclover	D	I	I			
Alfalfa	X	X	X			
Rubber Rabbit Brush	I	I	I			
Basin Rye Grass	I	I	X			

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2	2	8			
Surface Rock Movement	8	2	2			
Pedestalling	0	3	3			
Flow Patterns	6	6	3			
Rills Depth	3	3	6			
Rills Frequency	3	2	2			
Gullies Depth	6	7	0			
Gullies Frequency	2	1	0			
Soil Movement	5	3	3			
TOTAL BLM Score:	35	29	27			

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D	D	D			
Dalmation toadflax	X	X	X			
Cheatgrass	I	X	I			
Baby's breath	F	F	I			
Kochia	X	X	X			
Thistle	X	X	X			
Leafy Spurge	X	X	X			
Mustard	I	I	X			
Hoary Cress (Whitetop) Matrimony vine?	I	X	X			

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- X **lime rock barrier**
- X **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** desirable vegetation greater than onsite

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___

- Estimated pH 4.0
- Approximate area (in square feet) 200 ft²
- Number of areas with exposed waste 5

5. Is there evidence of: Y ___ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2 (C, B)

Do barren areas cover over 25% of any polygon? Y ___ N ___

7. Gullies (over 6" in depth):

Y X N ___

Are any gullies actively eroding? Y X N ___

Number of gullies 3

Comments.

- Polygons = 3
- Polygon A is BMX / bike area
- Polygon A has waste scattered throughout in small amounts
- Polygon B area is adjacent to A on east side mines section north of site fence along on ramp
- Polygon C is eastern most tip of site and easement area north of Polygon B
- Noxious weeds are heavy around all site edges
- Heavy vehicle traffic evident on Polygon B
- Heavy erosion along slope on west side of Polygon A creating significant sediment deposit along ditch

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

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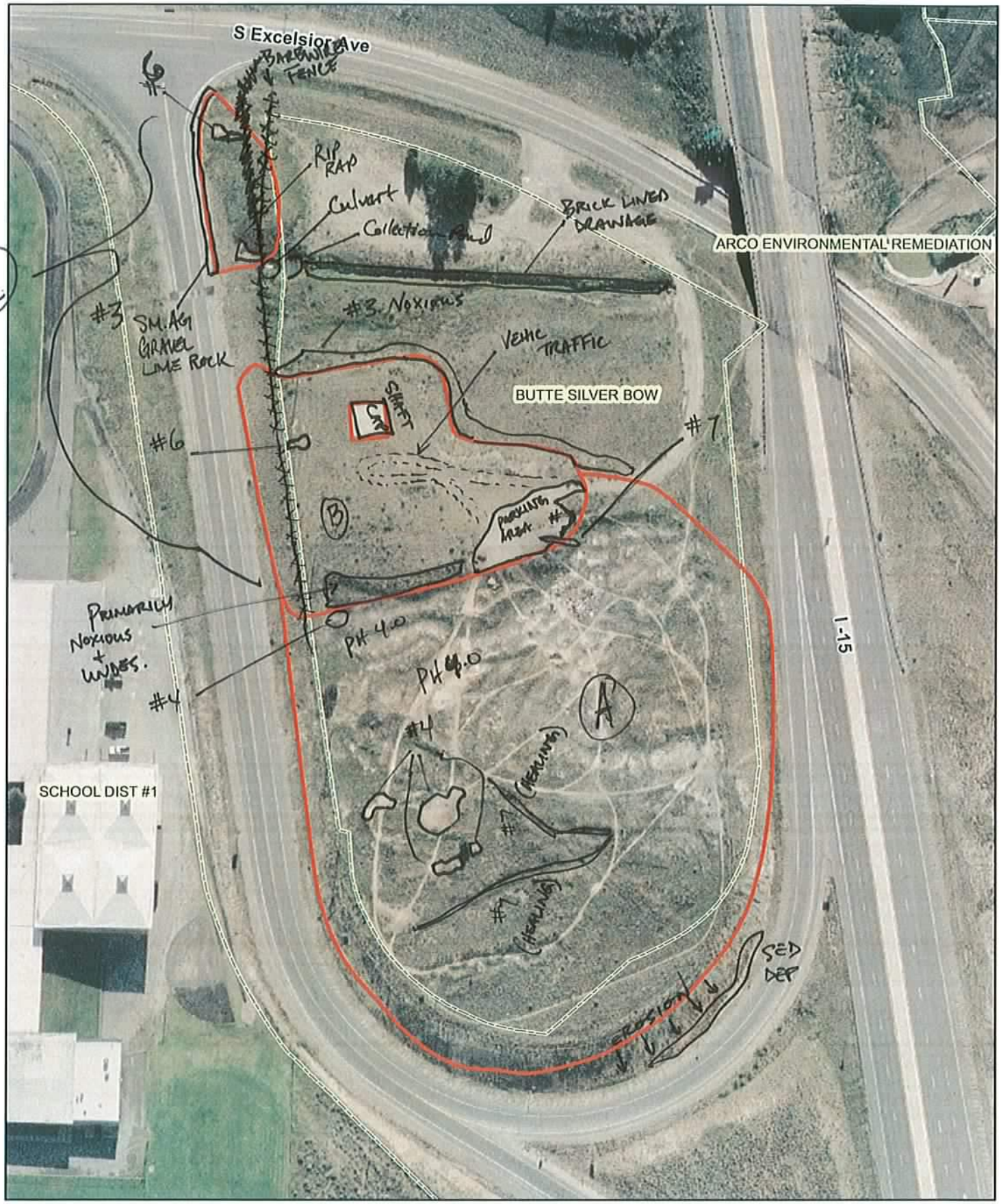
#120 - Bonanza Dump



N

0 50 100 150 200 250 Feet

CDM

Master

BRES FIELD FORM

Site ID: 121 Site Name: Iravona Dump Field Date: 7/16/08

Team Members (Circle your name): Randi Phelps John Reagan

Number of Polygons: 2 Slope: 0 to 20 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Covered mine dump surrounding the Iravona readframe in residential area

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30	25				
*Undesirable (weedy) species	5	7				
*Noxious weeds	4	4				
Litter	30	24				
Rocks > 2"	10	15				
Bare Ground	21	25				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	35	30				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D	D				
Crested wheatgrass	I	I				
Slender wheatgrass	I	I				
Yellow sweetclover	I	I				
Alfalfa	I	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	1	8				
Surface Rock Movement	1	11				
Pedestalling	7	14				
Flow Patterns	1	9				
Rills Depth	0	0				
Rills Frequency	0	0				
Gullies Depth	0	7				
Gullies Frequency	0	1				
Soil Movement	2	11				
TOTAL BLM Score:	12	61				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F	F				
Dalmation toadflax	X	X				
Cheatgrass	I	I				
Baby's breath	I	I				
Kochia	X	X				
Thistle	X	X				
Leafy Spurge	X	X				
Mustard	I	I				
Salsify	I	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ____ (check applicable items)

- X **lime rock barrier**
- X **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 4.5
- Approximate area (in square feet) 200
- Number of areas with exposed waste 1

5. Is there evidence of: Y ____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y X N ____
Are any gullies actively eroding? Y X N ____
Number of gullies 1 following engineered pathway

Comments. • Evidence of lime rock apron being exposed on west, North + East sides

• gopher holes / going through lime rock barrier.

• head frame - inside is covered in noxious weeds; lot adjacent to site is covered with noxious weeds

• Polygon A has a lot of new fescue growing; some in Polygon B but not much

sheep

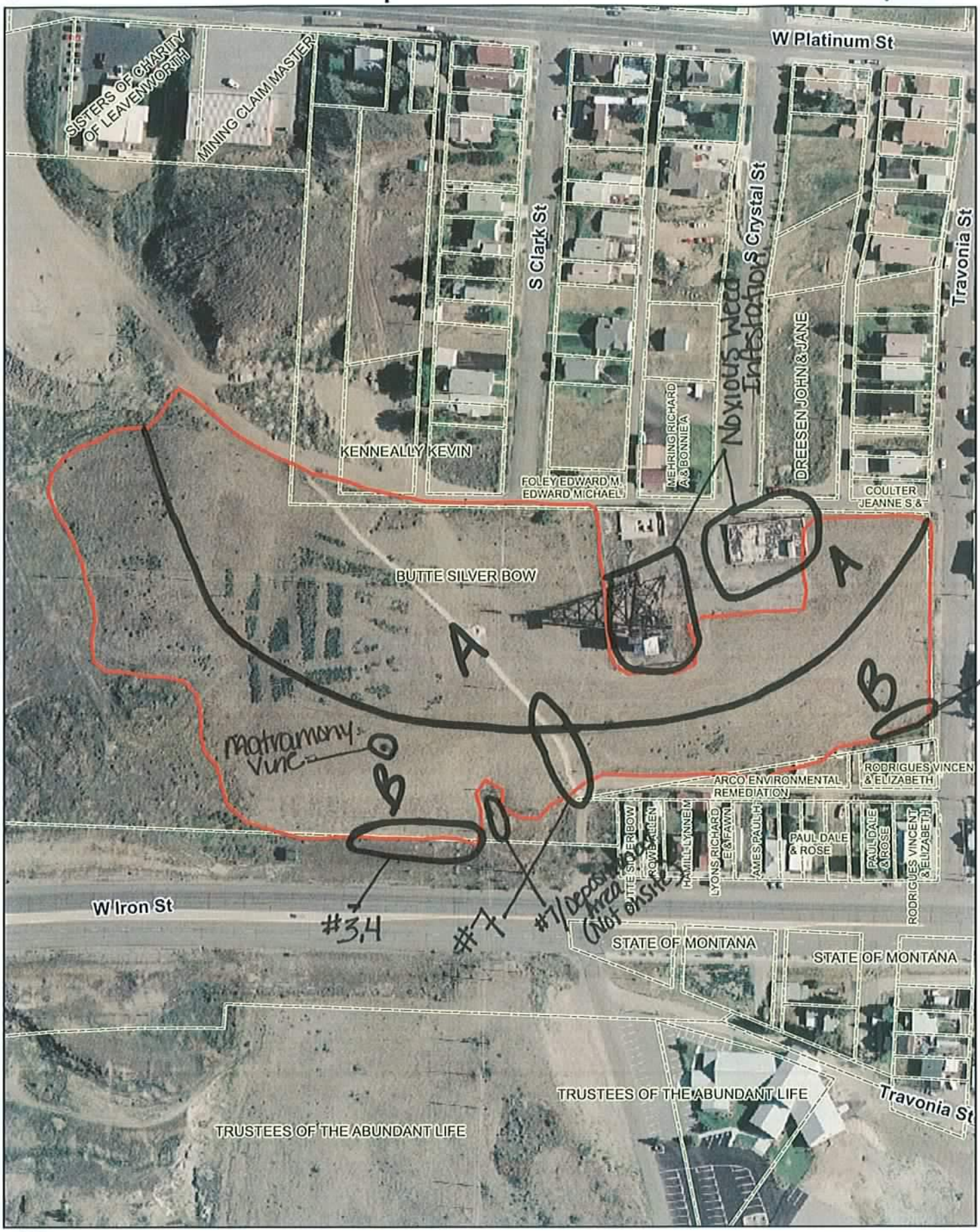
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#121 - Travoi... Dump

MASTER 7/16/08



N

0 100 200 300 400 Feet

CDM

[Master 2008]

#123

BRES FIELD FORM

Site ID: ___ Site Name: Otisco Dump Field Date: 7/15/08

Team Members (Circle your name): (Jeanne Larson) Charlie Larson Andy

Number of Polygons: 1 Slope: 0 to 20 Aspect (circle all relevant): N S W E NW NE SW (SE)

Area Description: Area east end of Iron St - East of Christie

Transfer to site sketch

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	2					
*Undesirable (weedy) species	2					
*Noxious weeds	10					
Litter	15					
Rocks > 2"	40					
Bare Ground	31					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	4					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	11					
Pedestalling	0					
Flow Patterns	6					
Rills Depth	6					
Rills Frequency	6					
Gullies Depth	2					
Gullies Frequency	2					
Soil Movement	11					
TOTAL BLM Score:	52					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- X **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** more growth outside site boundary

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___

- Estimated pH 4.0
- Approximate area (in square feet) ___ - whole site
- Number of areas with exposed waste ___

85-90 %

5. Is there evidence of: Y ___ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y X N ___ See Map

7. Gullies (over 6" in depth):
Y X N ___
Are any gullies actively eroding? Y X N ___
Number of gullies 2

Comments.

- Past reclamation efforts can be considered a total failure
- Majority of site presents exposed waste with pH of 4.0
- Open shaft presents significant hazard - approximately 100 ft NW of primary shaft cap - see map
- Site littered with abandoned rail yard debri
- Primary shaft cap compromised by heavy erosion and possible manual excavation
- Heavy vehicle traffic evident across NE section of site
- Exposed liner along length of ditch running from SW end of site eastward
- Recommend reevaluation of site security for entire area

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

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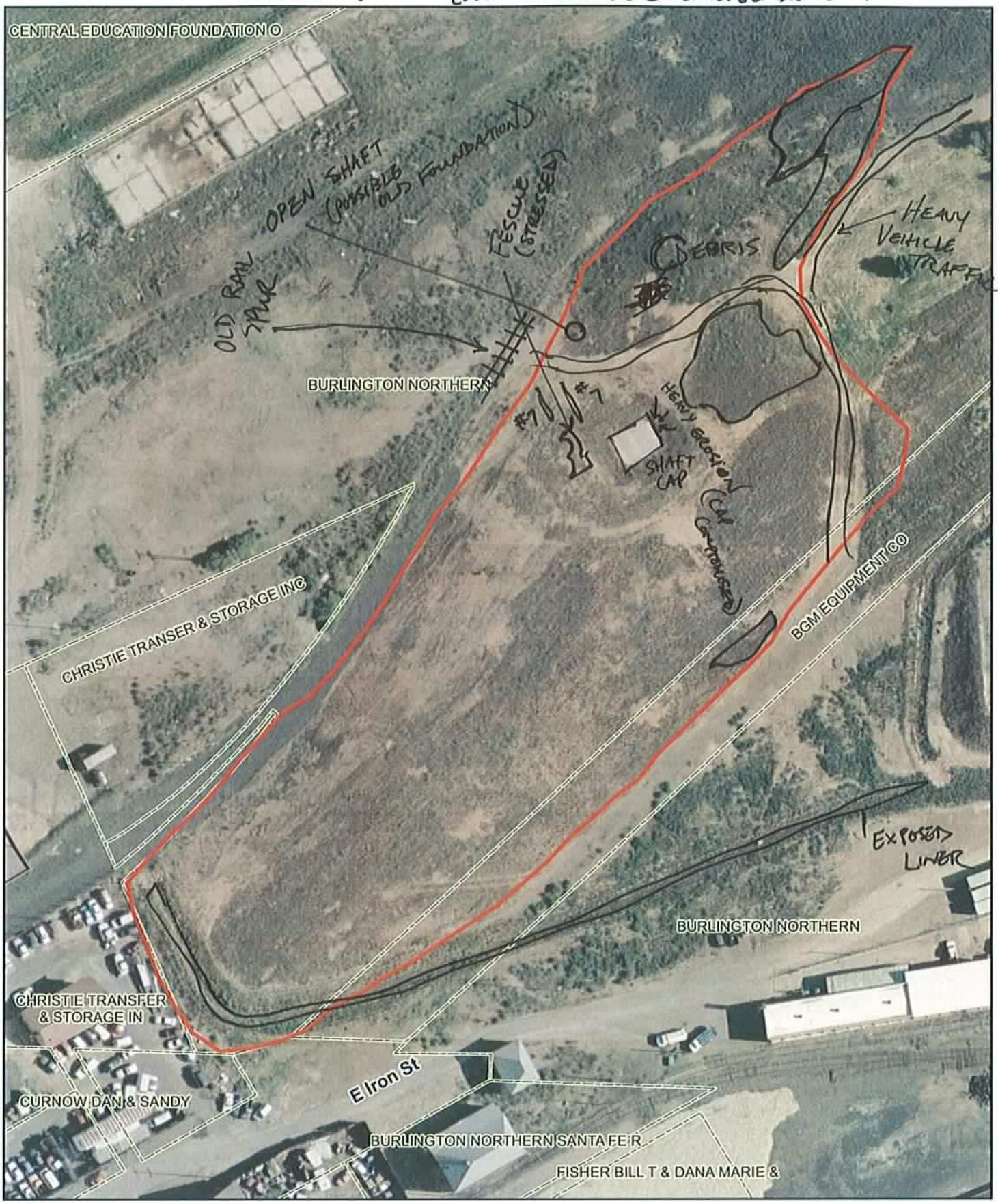
#123 - Otisco Dump

NOTE: Areas indicated on map are areas with some cover - rest to be considered barren.



N

0 50 100 150 200 250 Feet

CDM

MASTER

BRES FIELD FORM

Site ID: 125 Site Name: Child Harold Field Date: 7/16/08

Team Members (Circle your name): Hamblock, Ruppel, Gordon, Ringsak

Number of Polygons: 1 Slope: 0 to 5° Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Area south of railroad, north of Koprivica Park

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	15					
*Undesirable (weedy) species	25					
*Noxious weeds	20					
Litter	18					
Rocks > 2"	2					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	20					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	X					
Yellow sweetclover	I					
Alfalfa	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2					
Surface Rock Movement	1					
Pedestalling	1					
Flow Patterns	3					
Rills Depth	3					
Rills Frequency	1					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	2					
TOTAL BLM Score:	13					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	D					
Cheatgrass	F					
Baby's breath	I					
Kochia	I					
Thistle	X					
Leafy Spurge	X					
Salsafy	I					
Fox tail	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ____ N X (check applicable items)

- lime rock barrier
- depositional area
- more weeds
- steeper slope
- increased erosion
- less vegetation
- gullies
- other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N X

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N X

- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y X N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2
Do barren areas cover over 25% of any polygon? Y ____ N X

7. Gullies (over 6" in depth):
Y ____ N X
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

Large soil piles along western side of site
- Area along eastern site edge developed for recreational use
-

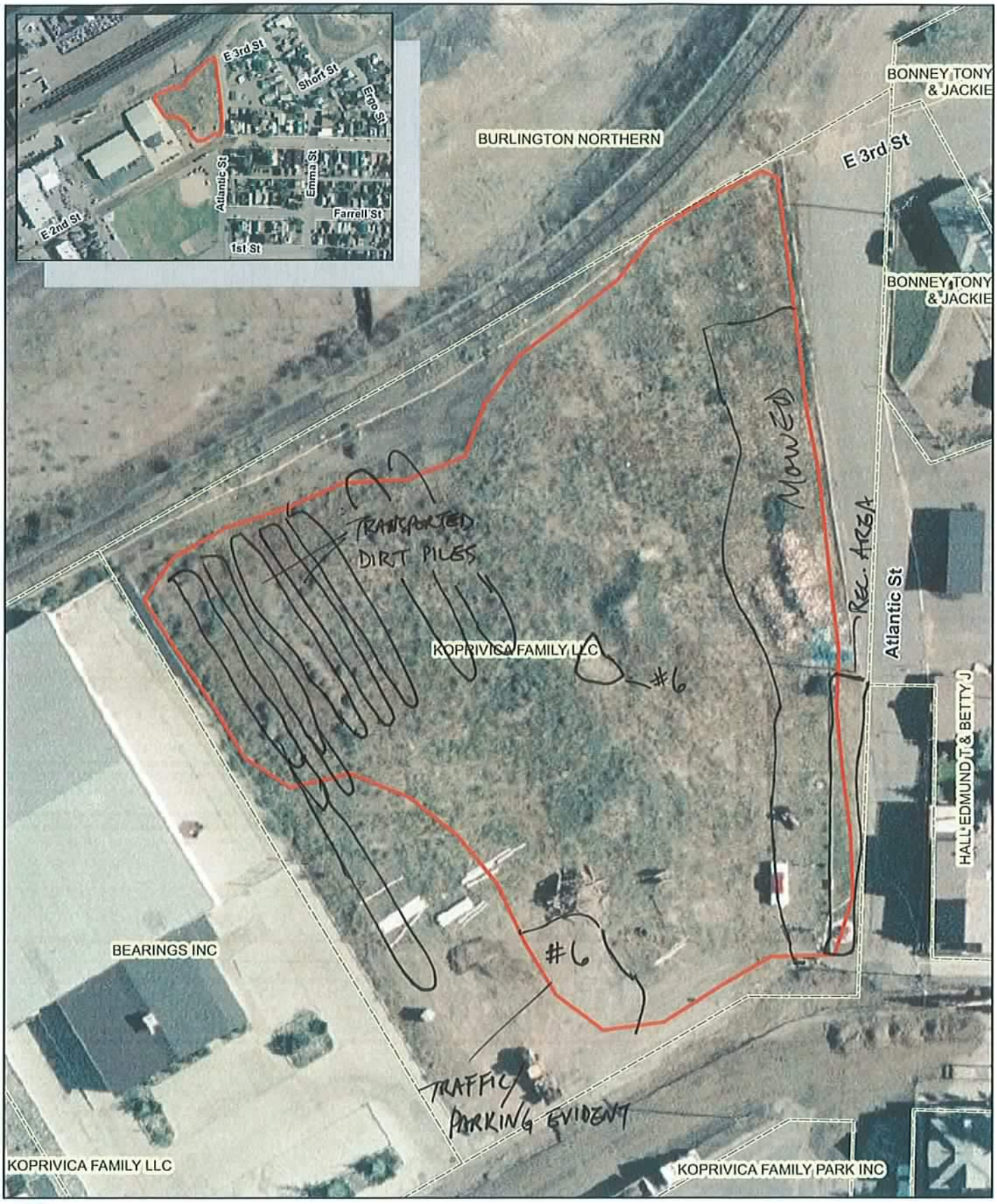
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#125 - Child Harold - 2 Dump

MASTER 7-2008



N

0 25 50 75 100 Feet

CDM

Master 2008

BRES FIELD FORM

Site ID: 127 Site Name: Tension Dmp Field Date: 7/16/08

Team Members (Circle your name): Jeanne Larson, Charlie Larson, David Slanina

Number of Polygons: 1 Slope: 0 to 5 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	8					
*Noxious weeds	5					
Litter	30					
Rocks > 2"	2					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5% Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	D					
Slender wheatgrass	X					
Yellow sweetclover	X					
Alfalfa	I					
Smooth Brome	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	14					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	I					
Kochia	I					
Thistle	X					
Leafy Spurge	X					
Mustard	F					
Salsify	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y_____ N_X_ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_X_ N_____ Ditch

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_X_

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_X_ N_____ - out of Polygon

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N_X_
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

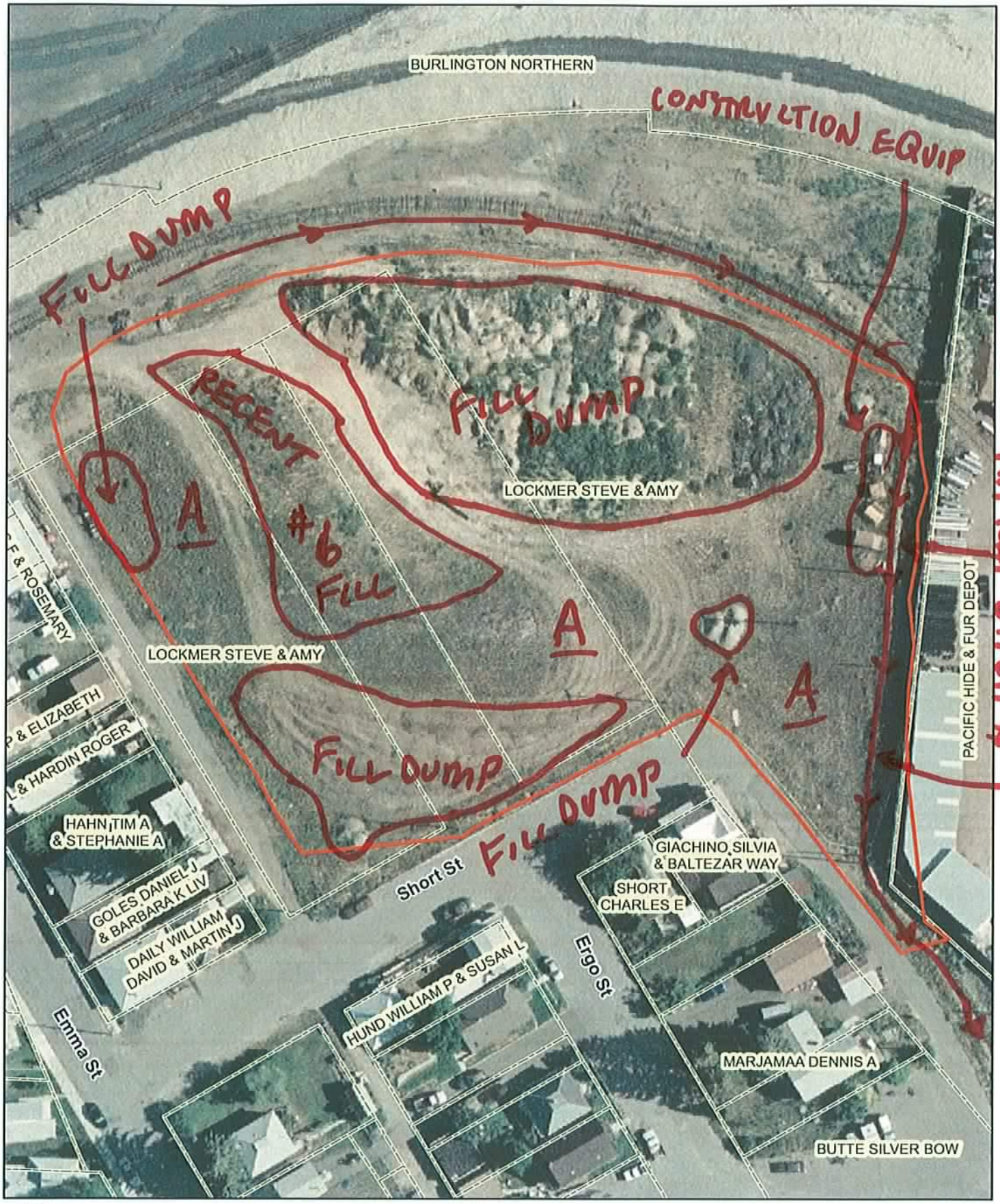
- Greater than 50% of site is used to dump fill material
- Major weed problem in Polygon A
- Railroad grade with waste material drains to east side rip/rap ditch
- Recommend institutional controls for site
- All dumps are unvegetated or has large amounts of weeds
- Some of dumps are composed of asphalt material
- Site is in rough shape - mostly due to dumping + weeds
- Check ownership of site

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#127 - Tension Dump



Master 2004

BRES FIELD FORM

Site ID: 129 Site Name: Heaney Dump Field Date: 7/18/05

Team Members (Circle your name): Jeanne Larson, Charlie Larson, David Shaw

Number of Polygons: 1 Slope: 0 to 20 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: SE corner Pacific Hide + Fur

see Notes on Back

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon? Y____ N____

7. Gullies (over 6" in depth):

Y____ N____

Are any gullies actively eroding? Y____ N____

Number of gullies ____

Comments.

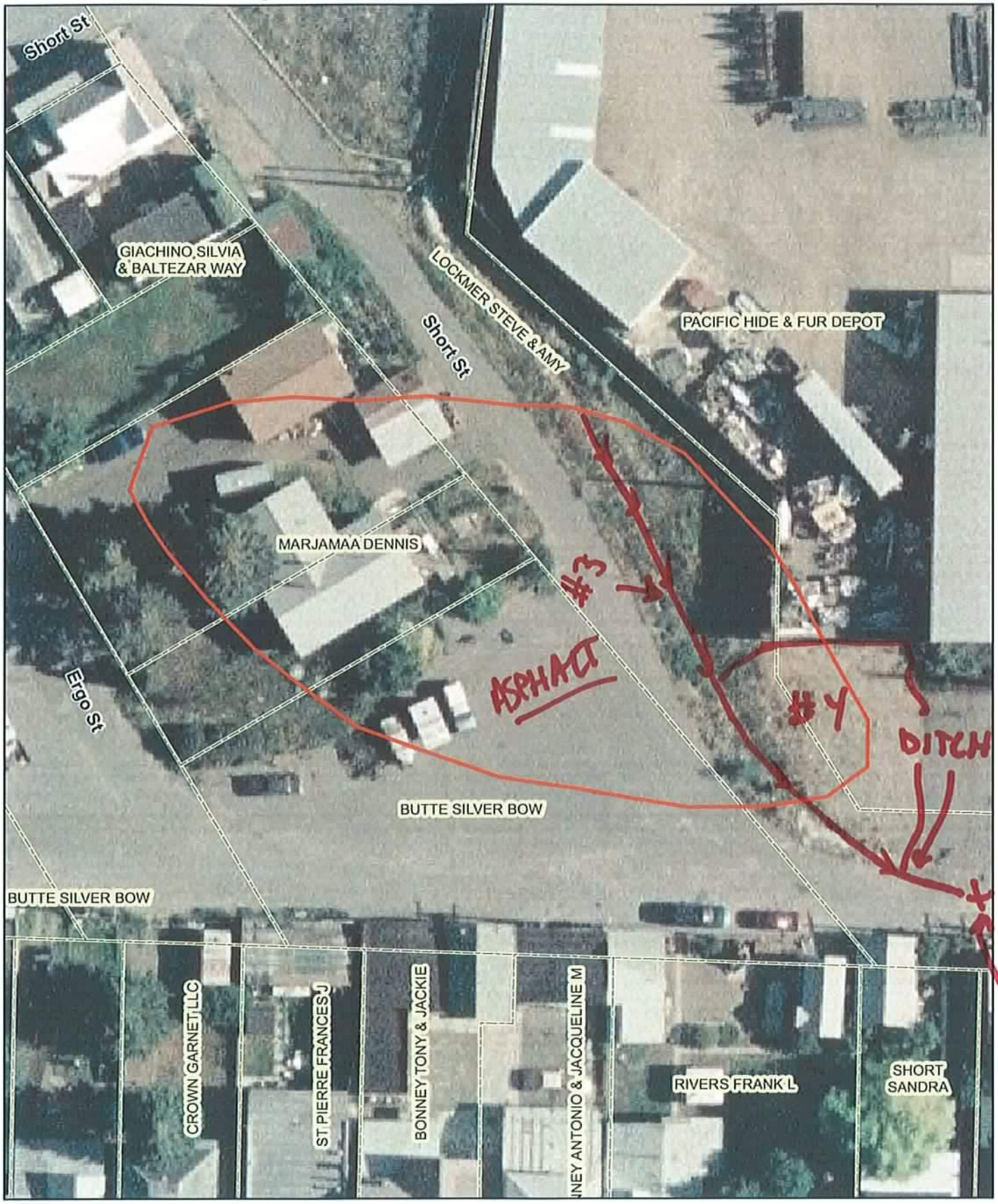
- Site consists of less than 20 % vegetation - mainly ditch from Tension Dump (site # 127) + railroad
- Ninety % weed in area between the ditch + Ergo St
- Waste along Pacific Nido + Fur fence
- Needs major weed control + attention

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#129 - Heaney Dump



132 [Master 2006]

BRES FIELD FORM

Site ID: ___ Site Name: Emma Dump Field Date: 7/16/08

Team Members (Circle your name): Jeanne Larson Charlie Larson

Number of Polygons: 1 Slope: 0 to 40° Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35	5				
*Undesirable (weedy) species	45	45	45			
*Noxious weeds	10	20	20			
Litter	45	25				
Rocks > 2"	1	0				
Bare Ground	3	5				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	41	10				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F	0				
Crested wheatgrass	D	0				
Slender wheatgrass	I	0				
Yellow sweetclover	I	0				
Alfalfa	F	0				
Great Basin Rye Grass						
Sage						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11	11				
Surface Rock Movement	2	2				
Pedestalling	9	3				
Flow Patterns	6	9				
Rills Depth	2	3				
Rills Frequency	2	5				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	5	8				
TOTAL BLM Score:	37	41				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F	I				
Dalmation toadflax	X	X				
Cheatgrass	D	F				
Baby's breath	F	I				
Kochia	X	x				
Thistle	X	x				
Leafy Spurge	X	x				
Salsify	I	x				
Prickly Lettuce	I	x				
~~Mustard~~		D				

Use D (Dominant), F (Frequent), or I (Infrequent).

Mustard - tumble

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- X more weeds
- ☐ steeper slope
- ☐ increased erosion
- X less vegetation
- ☐ gullies
- ☐ other ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___

- Estimated pH 4
- Approximate area (in square feet) 50
- Number of areas with exposed waste 1

5. Is there evidence of: Y ___ N X

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y X N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon? Y ___ N X

7. Gullies (over 6" in depth):
Y ___ N X
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

- Two polygons
- Polygon A covers whole site except for south facing hill on southern part
- Polygon B consists of south facing hill on south section of site
- Gullie located outside East Edge of site see map
- Polygon B appears full of weeds
- Any area within B that was not covered with weeds was dead
- Polygon A site edges on SW + West edges were full of weeds
- Litter on polygon A is quite thick + may start choking out desirable vegetation

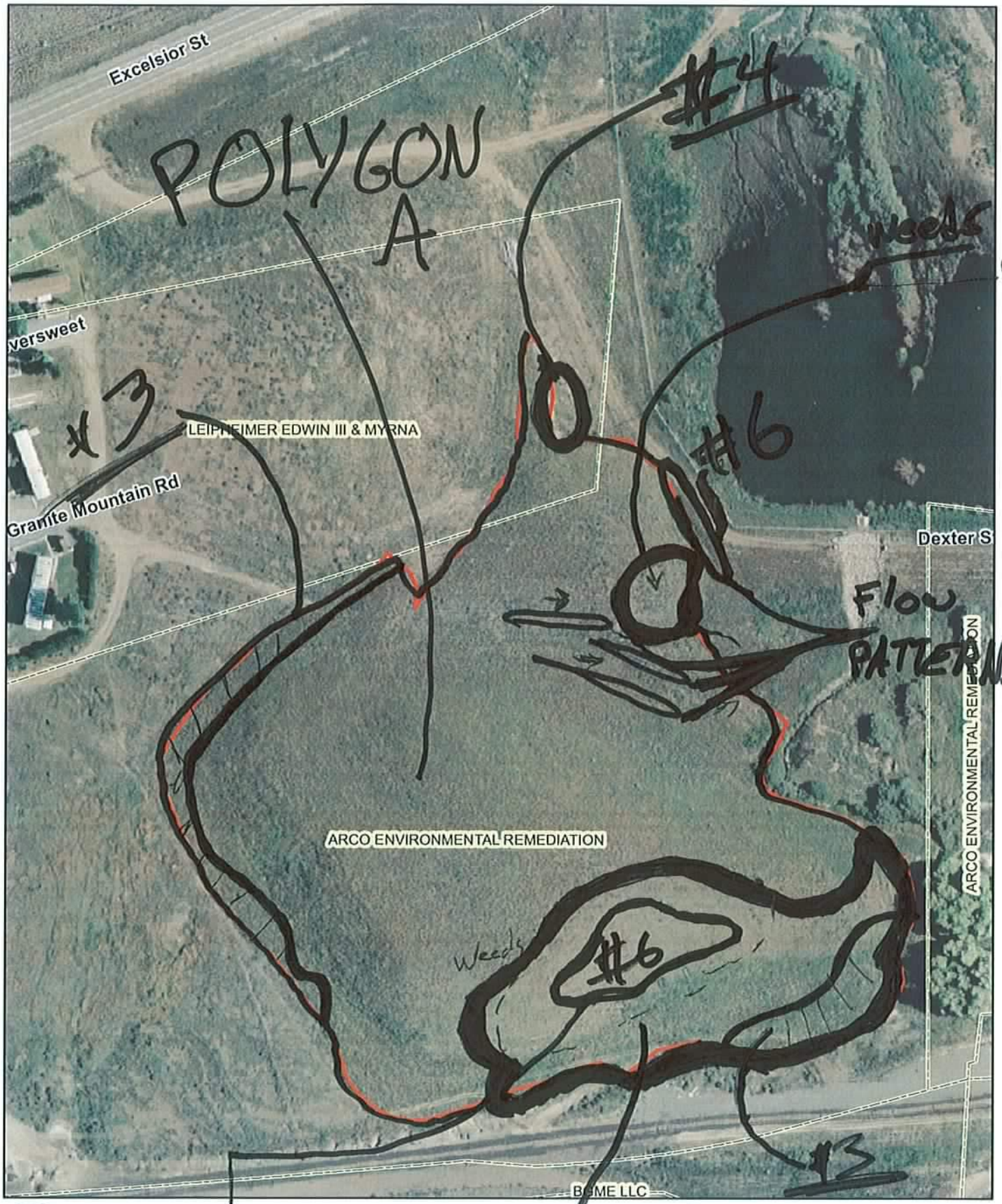
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master 2008

#132 - Emma Dump



BRES FIELD FORM

Site ID: 133 Site Name: Dexter Mill Field Date: 7/17/18

Team Members (Circle your name): Kandi Phipps Sarah Hamblock Faith Kelly

Number of Polygons: 1 Slope: 0 to 10 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Adjacent to Abundant Life

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	6					
*Noxious weeds	3					
Litter	10					
Rocks > 2"	13					
Bare Ground	34					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	I					
Rubber Rabbitbrush	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	8					
Pedestalling	9					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	34					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	D					
Baby's breath	I					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Mustard	I					
Salsify	I					
Foxtail	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- X **more weeds** NOX!
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** Waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 4.0
- Approximate area (in square feet) 500
- Number of areas with exposed waste 2

5. Is there evidence of: Y ____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1

Do barren areas cover over 25% of any polygon? Y ____ N X

7. Gullies (over 6" in depth):

Y ____ N X

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

Comments. • increased erosion off parking lot onto site flows South
• Noxious weed problem on south side of alley and site
• alot of native sheep fescue plants / not many older fescue plants
• old gate laying on site
• Dirt piles located south of parking lot may be mixing with waste
• some gully formation in parking lot

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#173 - Garden Street Area

0 50 100 150 200 Feet

CDM

QUALITY CONTROL 07/18/08 DEXTER

	desirable	undesirable	noxious	bg	litter	rock
Guestimate						
30 live	20	IIII		IIII	II	
20 bare	21	IIII		III	II	I
10 rock	22	##I		II	II	
5 undes	23	III		I	##I	I
5 noxious	24	I	IIII		##	
30 litter	25	I	I	II	III	II
	TOTALS	95	5	2	66	26	6
		38%	2%	>1%	26%	30%	2%

	live desirable	undesirable	Noxious	bg	litter	Rock
1	## II				II	I
2	II			III	##	
3	III			##	II	
4	III			##I	I	
5	## II				III	
6	III			##	II	
7	##			II	III	
8	II			II	##I	
9	II			##	I	II
10	##			III	II	
11	## II				III	
12	IIII			II	IIII	
13	##			I	III	I
14	##I			IIII		
15	II			III	###	
16	III			IIII	III	
17	II			###	III	
18	##I			II	II	
19	II			I	###	

#133 - Dexter Mill

BRES FIELD FORM

Site ID: 134 **Site Name:** STAR WEST DUMP **Field Date:** 07/18/08

Team Members (Circle your name): RUPPEL HAMBLOCK VINCENT

Number of Polygons: 2 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: ABUNDANT LIFE PROPERTY OFF OF IRON ST

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5	30				
*Undesirable (weedy) species	5	4				
*Noxious weeds	15	4				
Litter	30	30				
Rocks > 2"	5	2				
Bare Ground	40	30				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	10	34				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I	D				
Crested wheatgrass	I	I				
Slender wheatgrass	I	I				
Yellow sweetclover	I	I				
Alfalfa	I	I				
RUBBER RABBIT	X	I				
CHOKE CHERRY	X	I				
VIRGINIA REO	I	X				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	8				
Surface Rock Movement	5	11				
Pedestalling	1	9				
Flow Patterns	1	6				
Rills Depth	2	1				
Rills Frequency	2	1				
Gullies Depth	X	X				
Gullies Frequency	X	X				
Soil Movement	5	14				
TOTAL BLM Score:	23	50				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	D	I				
Cheatgrass	F	I				
Baby's breath	F	I				
Kochia	I	I				
Thistle	X	X				
Leafy Spurge	X	X				
CAMPION	I	X				
FOXTAIL	I	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N X

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y X N ____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☒ **subsidence**

6. Barren Areas: Y ____ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N X
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

- TWO CONSTRUCTION AREAS ARE DELINATED ON MAP AND WERE NOT CONSIDERED IN DATA
- CITY DOING WORK WITH WATER PIPES IN SOUTH EAST CORNER
- PARKING LOT THAT IS PAVED NOT EVALUATED

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master 2008

BRES FIELD FORM

Site ID: 134 Site Name: Star West Dump Field Date: 7/18/08

Team Members (Circle your name): Jeanne Lawson Charlie Lawson

Number of Polygons: 2 Slope: 5 to 25 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Land south of Abundant Life Church - South of Ironwood End of Loop

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	~~10~~ 40	28				
*Undesirable (weedy) species	~~10~~ 3	3				
*Noxious weeds	3	4				
Litter	12	5				
Rocks > 2"	20	25				
Bare Ground 50	~~50~~	35				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	15	31				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D	D				
Crested wheatgrass	X	I				
Slender wheatgrass	X	I				
Yellow sweetclover	I					
Alfalfa	X	F				
Rubber Rabbit Brush		I				
Choke Cherry Tree	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	1				
Surface Rock Movement	5	3				
Pedestalling 2	~~2~~	2				
Flow Patterns	4	3				
Rills Depth	6	0				
Rills Frequency 4	~~8~~	0				
Gullies Depth 3	~~6~~	0				
Gullies Frequency 2	~~4~~	0				
Soil Movement	~~81~~	~~8~~				
TOTAL BLM Score:	36	~~17~~				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D	I				
Dalmation toadflax	X	I				
Cheatgrass	X	F				
Baby's breath	I	I				
Kochia	X	X				
Thistle	X	X				
Leafy Spurge	X	X				
Matrimony Vine		I				
Mullan		I				
Foxtail		I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N (check applicable items)

- lime rock barrier
- depositional area
- X more weeds (B)
- ~~steeper slope~~ (A) ~~softer fg~~
- increased erosion
- less vegetation
- gullies
- other

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N
- Estimated pH 4.5
- Approximate area (in square feet) Scattered
- Number of areas with exposed waste across (A)

5. Is there evidence of: Y N X
- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y ~~X~~ N
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y X N ____ - polygon A

7. Gullies (over 6" in depth):
Y X N
Are any gullies actively eroding? Y X N
Number of gullies 1 (A)

Comments.

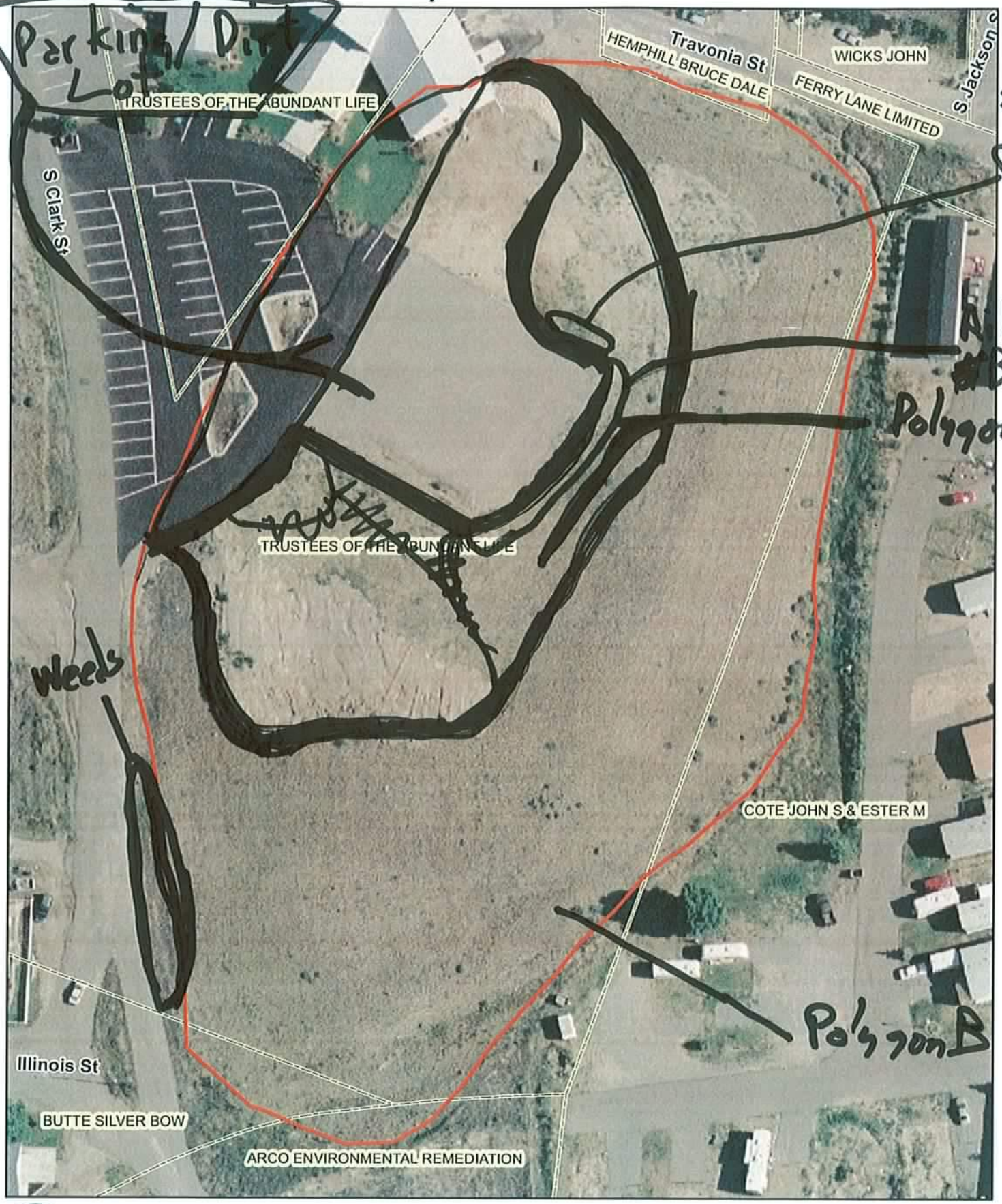
- Two polygon
- Polygon A - maybe composed of waste material brought to site
- Piles of 'dirt' in Polygon A ~~are~~ contain numerous rills
- Waste material with pH of 4.5 are scattered throughout Polygon A
- Polygon A appears to contain debris on west edge
- Polygon B appears to have more weeds on west side edge

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER 2008

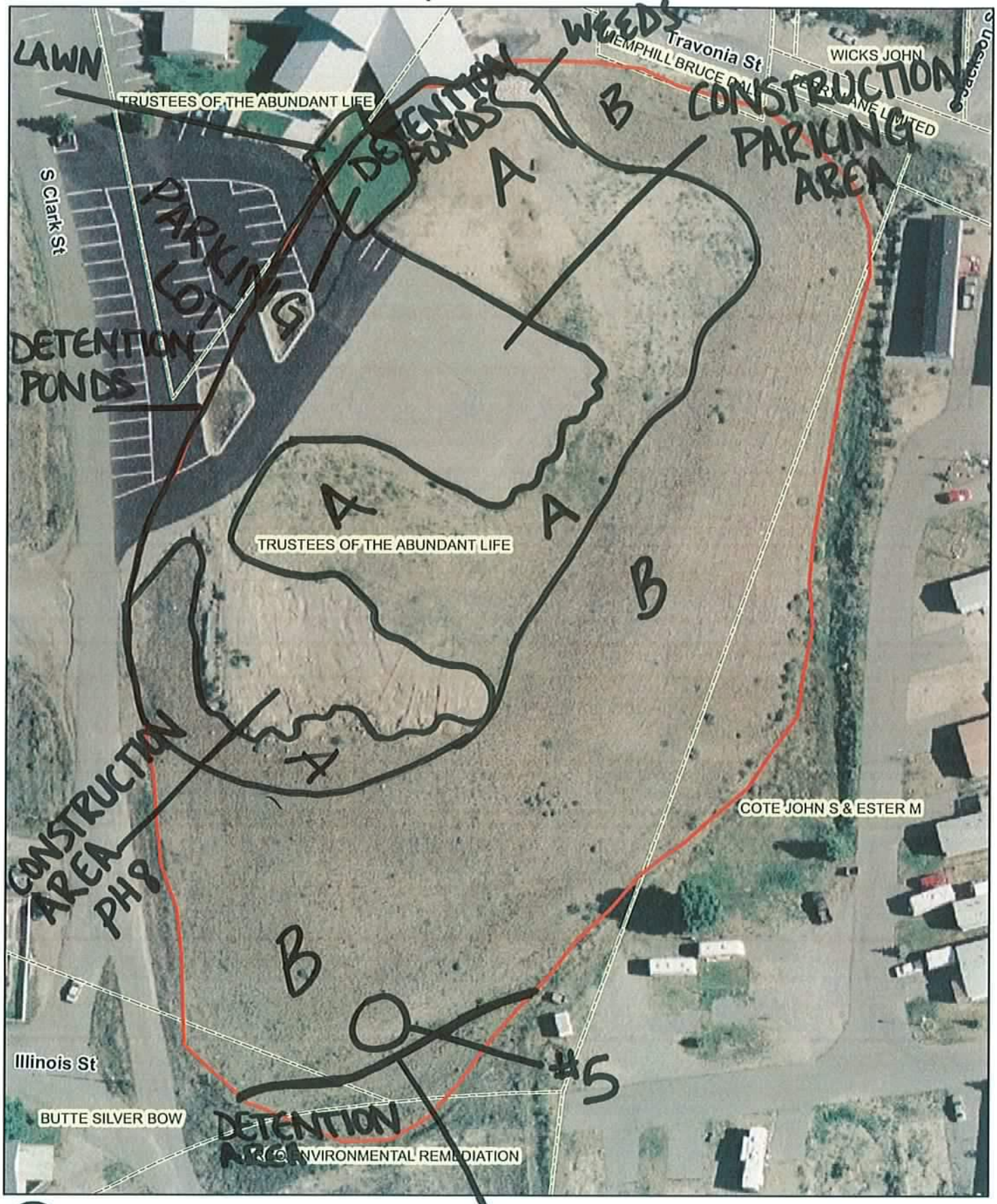
#134 - Star West Dump



0 50 100 150 200 Feet

CDM

#134 - Star West Dump



#134 - Star West Dump

N

0 50 100 150 200 Feet

CDM

BRES FIELD FORM

Site ID: BE Site Name: Opur Dump Field Date: 7/15/08

Team Members (Circle your name): Randi Phelps John Reagan

Number of Polygons: 1 Slope: 0 to 45 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: mine dump in Residential area

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	10					
*Undesirable (weedy) species	20					
*Noxious weeds	30					
Litter	17					
Rocks > 2"	11					
Bare Ground	22					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	15					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	I					
Slender wheatgrass	F					
Yellow sweetclover	X					
Alfalfa	I					
Yarrow	I					
Phacelia	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	1					
Surface Rock Movement	2					
Pedestalling	1					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	7					
Gullies Frequency	2					
Soil Movement	11					
TOTAL BLM Score:	34					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	F					
Cheatgrass	F					
Baby's breath	I					
Kochia	I					
Thistle	X					
Leafy Spurge	X					
Campion	I					
Salsify	I					
Prickly Lettuce	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ____ N X (check applicable items)

- lime rock barrier
- depositional area
- more weeds
- steeper slope
- increased erosion
- less vegetation
- gullies
- other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 4.5
- Approximate area (in square feet) 300
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N X

- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y X N ____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3

Do barren areas cover over 25% of any polygon? Y ____ N X

7. Gullies (over 6" in depth):

Y X N ____

Are any gullies actively eroding? Y X N ____

Number of gullies 3

Comments.

- Site is being used as a construction yard by RD & Werner Enterprises 406-782-5048
  - Equipment parking & traffic
  - Materials storage (gravel, dirt, landscape rock)
- Poorly reclaimed site that has been abused.
- Lots & Lots of noxious weeds.
- Exposed waste areas drain into storm water system & extend off the site.

Recommendations

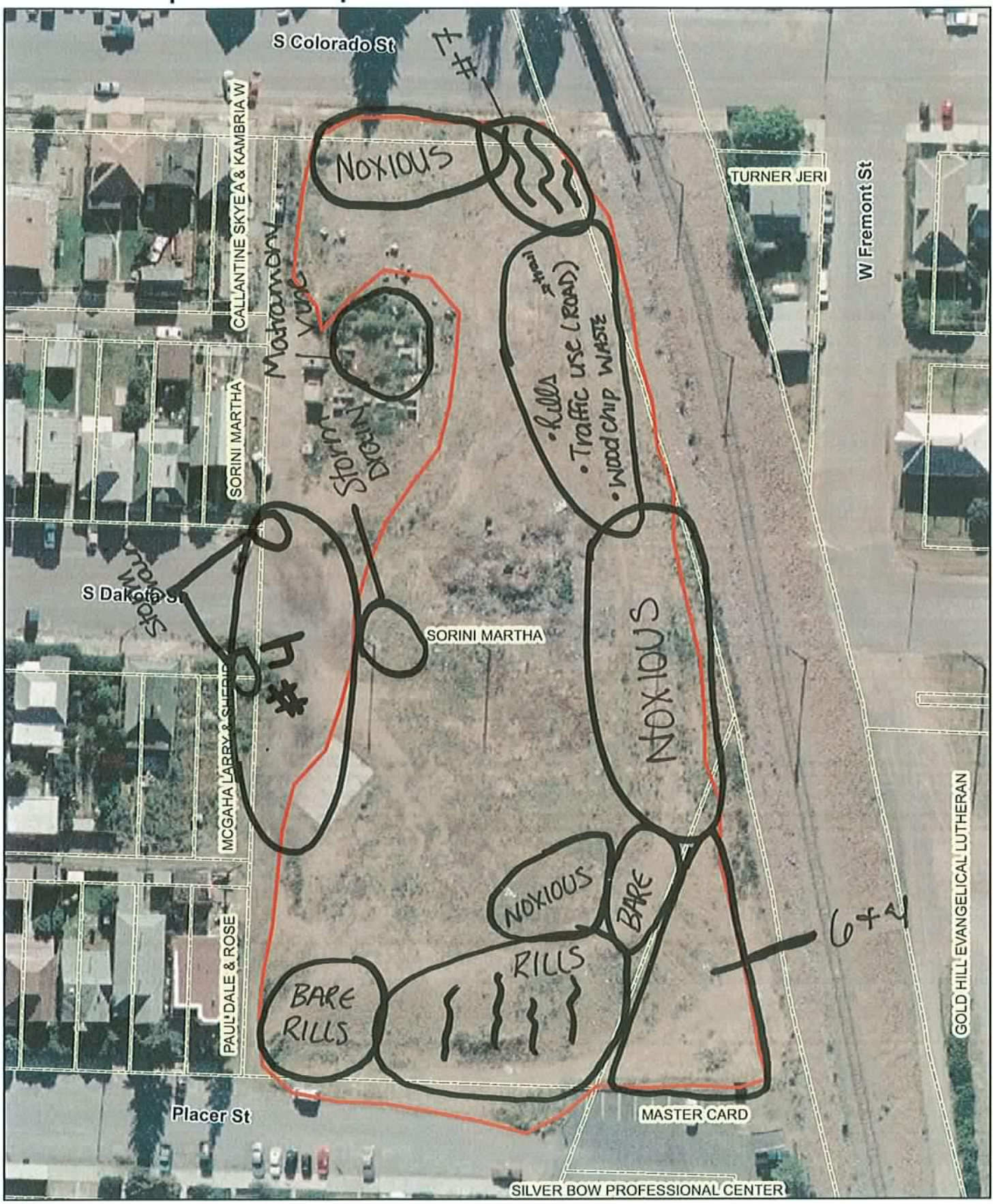
- Noxious weeds need to be dealt with immediately.
- Should be considered for improvement on the reclamation.
- Contact landowner to ensure usage is consistant with reclamation.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
lambsquarter	I					
annual wheat	I					
mustard	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

#136 - Ophir Dump



0 50 100 150 200 Feet

Muster 2004 142

BRES FIELD FORM

Site ID:__ Site Name: Charlie Judd Park Field Date: 7/16/08

Team Members (Circle your name): Jeann Larson, Charlie Larson

Number of Polygons: 1 Slope: 0 to 6 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Park - between 1st + 2nd - Alleyway

See Note

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

- One polygon
- City park - can not be evaluated according to BRES criteria
- Covered with grass, basketball court & play ground
- Exposed ground tested - pH normal

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Muster 2008

#142 - Charlie Judd Park

#142 - Charlie Judd Park

#142 - Charlie Judd Park

MASTER

BRES FIELD FORM

Site ID: 150 Site Name: ~~Colorado Smelter~~ Field Date: 7/16/08

Team Members (Circle your name): Randi Phelps John Reagan

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: By I-15; park; residential area

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	5					
*Noxious weeds	5					
Litter	30					
Rocks > 2"	2					
Bare Ground	18					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover	X					
Alfalfa	X					
Brome	I					
Sage Brush	I					
Giant Rye	I					
Blue grass	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	9					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	1					
Gullies Depth	1					
Gullies Frequency	1					
Soil Movement	2					
TOTAL BLM Score:	33					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	X					
Cheatgrass	I					
Baby's breath	I					
Kochia	X					
Thistle	X					
Leafy Spurge	I					
Salsify	I					
Butter + Eggs	I					
Mustard	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** waste

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___

- Estimated pH 4.5
- Approximate area (in square feet) 100
- Number of areas with exposed waste 3

5. Is there evidence of: Y ___ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ___ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y X N ___
Are any gullies actively eroding? Y ___ N X
Number of gullies 1

Comments. • Leafy Spurge on North third of site
• Intermitten patches of sheep fescue plant communities
• Grasshopper bath on NW side of site
• Playground on W side has rills and weeds / erosion control
Recommendations:
• If noxious weeds are sprayed know they can be controlled. Leafy Spurge spraying is urgent.

Additional Vegetation:

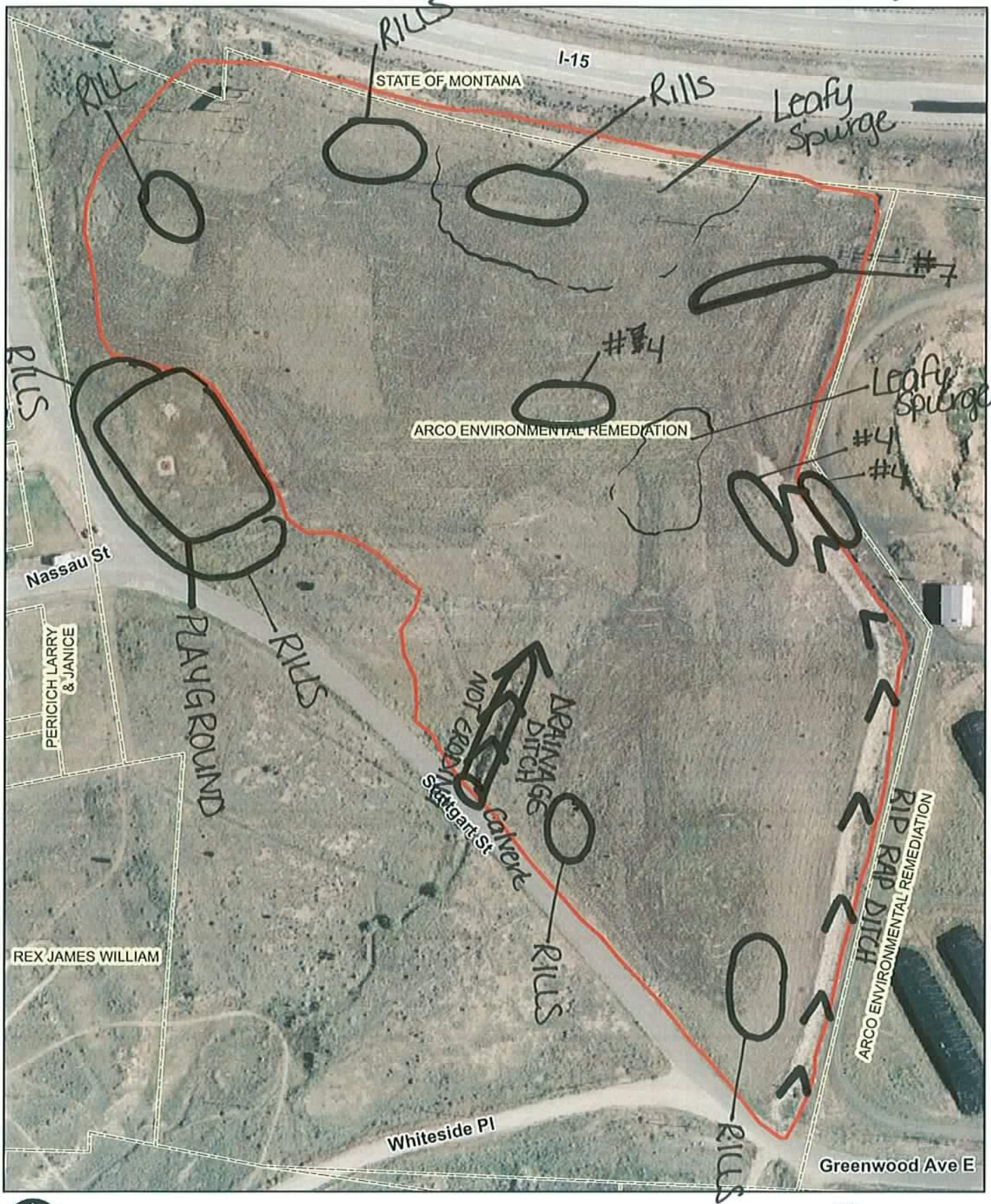
Species Present	POLYGON A	B	C	D	E	F
Sage Wort	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

WY2186

7/16/08
MASTER

#150 - Colorado Smelter



N

0 100 200 300 400 Feet

CDM

Master

BRES FIELD FORM

Site ID: 1503 Site Name: Hornet Addition Field Date: 7-8-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 0° to 10° Aspect (circle all relevant): N (S) W E NW NE SW SE

Area Description: inside lot surrounded by residents.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	5					
*Noxious weeds	0					
Litter	22					
Rocks > 2"	3					
Bare Ground	30					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	F					
Rabbit Rubber	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	9					
Rills Depth	1					
Rills Frequency	1					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	25					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	X					
Dalmation toadflax	X					
Cheatgrass	1					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Salsafy	1					
Prickly Lettuce	1					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ____ N ✓ (check applicable items)

- lime rock barrier
- depositional area
- more weeds
- steeper slope
- increased erosion
- less vegetation
- gullies
- other ____

* see comments on back

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N ✓

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y ____ N ✓

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

* adjacent areas outside of site boundries but within same lot contain undesirable weedys.

Short Term Reciamendatuns:

NONE

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER

#1503 - Horn[illegible] Addition

Master

BDN

Ruth Ruppel Matt Vincent

BRES FIELD FORM

Site ID: __ Site Name: Colorado Smelter Field Date: 7/18/05

Team Members (Circle your name): Randi Phelps Sarah Hamblock

Number of Polygons: 1 Slope: 0 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Adjacent to I-90 and railroad

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	3					
*Noxious weeds	2					
Litter	35					
Rocks > 2"	7					
Bare Ground	18					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	38					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	X					
Slender wheatgrass	X					
Yellow sweetclover	X					
Alfalfa	X					
Baltic Rush	F					
Rubber rabbit	I					
Basin Rye	I					
tufted hair	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	1					
Surface Rock Movement	5					
Pedestalling	11					
Flow Patterns	6					
Rills Depth	X					
Rills Frequency	X					
Gullies Depth	X					
Gullies Frequency	X					
Soil Movement	8					
TOTAL BLM Score:	31					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	X					
Dalmation toadflax	X					
Cheatgrass	X					
Baby's breath	X					
Kochia	I					
Thistle	X					
Leafy Spurge	X					
Mullen	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** more veg on W, less veg E

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 4.0
- Approximate area (in square feet) 50
- Number of areas with exposed waste 1

5. Is there evidence of: Y X N ____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N ____

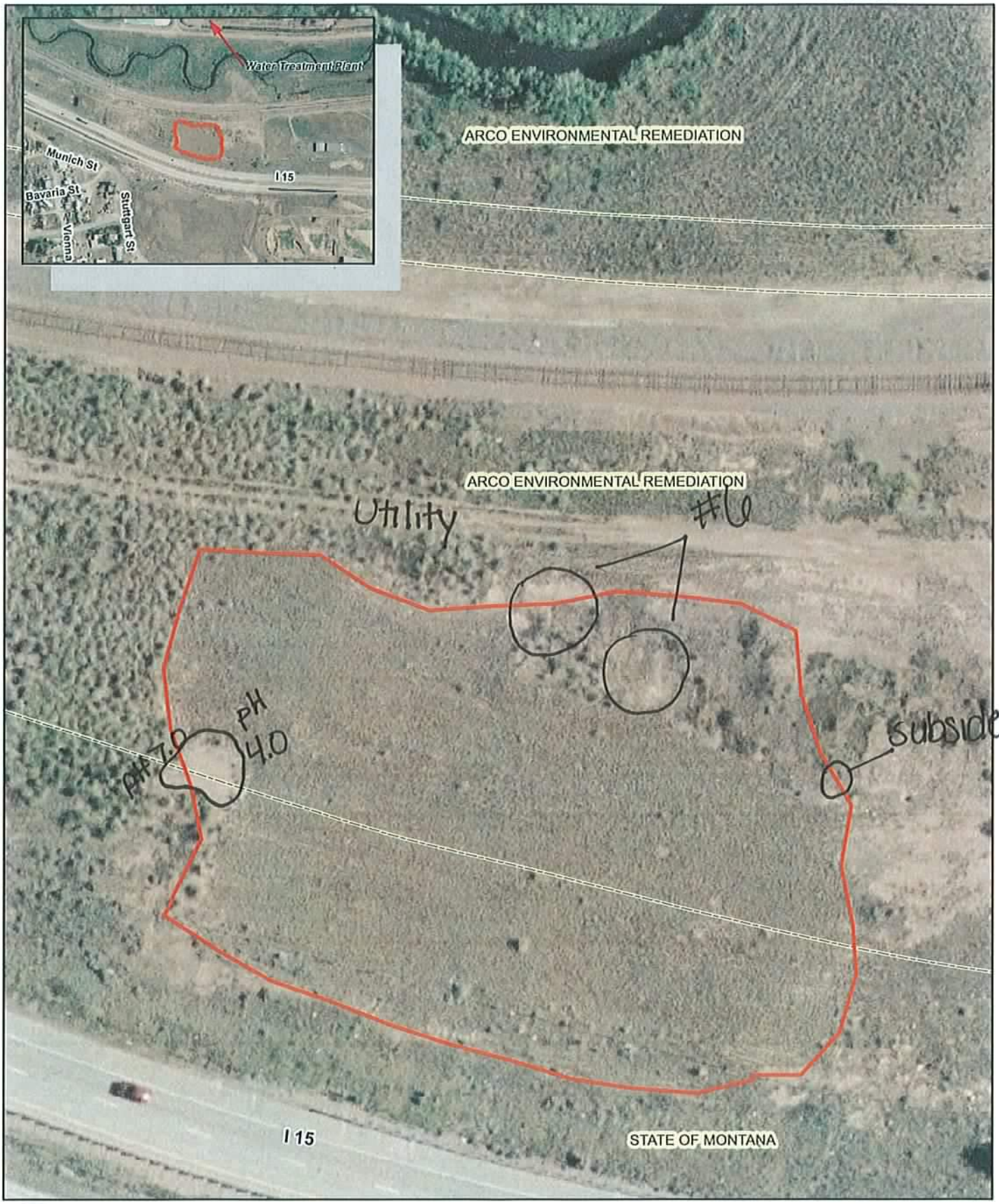
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3
Do barren areas cover over 25% of any polygon?
Y ___ N X

7. Gullies (over 6" in depth):
Y ____ N X
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

#150N - Colorado Smelter North

7/18/08
Master



0 25 50 75 100 Feet

1511

BRES FIELD FORM

Site ID: _ **Site Name:** La Platta Street **Field Date:** 7/5/08

Team Members (Circle your name): Gordon, Shanight, Ryan, Campbell

Number of Polygons: 1 Slope: 0 to 10 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Very small area, some noxious weeds adjacent along with a flow pattern that is adjacent

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	50					
*Undesirable (weedy) species	0					
*Noxious weeds	0					
Litter	45					
Rocks > 2"	0					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	50					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	D					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2					
Surface Rock Movement	1					
Pedestalling	2					
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement	1					
TOTAL BLM Score:	6					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y / N _____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- X **other** rock terrace

Estimate width of affected edge (in feet) 15

4. Exposed Waste Material? Y _____ N X

- Estimated pH _____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y _____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y _____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y _____ N X
Are any gullies actively eroding? Y ____ N ____
Number of gullies _____

Comments.

Very small site 40x40.
vegetation is good
adjacent to the site there are some noxious weeds.
adjacent is a flow pattern

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#1511 - La Platta Street

BRES FIELD FORM

Site ID: 54 **Site Name:** Montana St + I-90 **Field Date:** 7/15/08

Team Members (Circle your name): Campbell, Hamdrick, Russell, Shotwell

Number of Polygons: 2 Slope: 0 to 5 Aspect (circle all relevant): N S W E NW NE SW SE varies

Area Description: Adj. to NW energy substation

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	42	6				
*Undesirable (weedy) species	10	5				
*Noxious weeds	6	33				
Litter	33	10				
Rocks > 2"	2	1				
Bare Ground	7	45				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	47	11				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D	D				
Crested wheatgrass	F	F				
Slender wheatgrass	X	X				
Yellow sweetclover	X	F				
Alfalfa	X	X				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2	1				
Surface Rock Movement	1	1				
Pedestalling	0	2				
Flow Patterns	1	0				
Rills Depth	0	0				
Rills Frequency	0	0				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	2	1				
TOTAL BLM Score:	12	5				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	F				
Dalmation toadflax	I	I				
Cheatgrass	I	I				
Baby's breath	I	I				
Kochia	F	X				
Thistle	I	X				
Leafy Spurge	X	X				
mullein	I	D				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- X **other** stressed veg.

Estimate width of affected edge (in feet) 100

4. Exposed Waste Material? Y ____ N X

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y X N ____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- X **subsidence**

6. Barren Areas: Y X N ____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2

Do barren areas cover over 25% of any polygon? Y X N ____

7. Gullies (over 6" in depth):

Y ____ N X

Are any gullies actively eroding? Y ____ N X

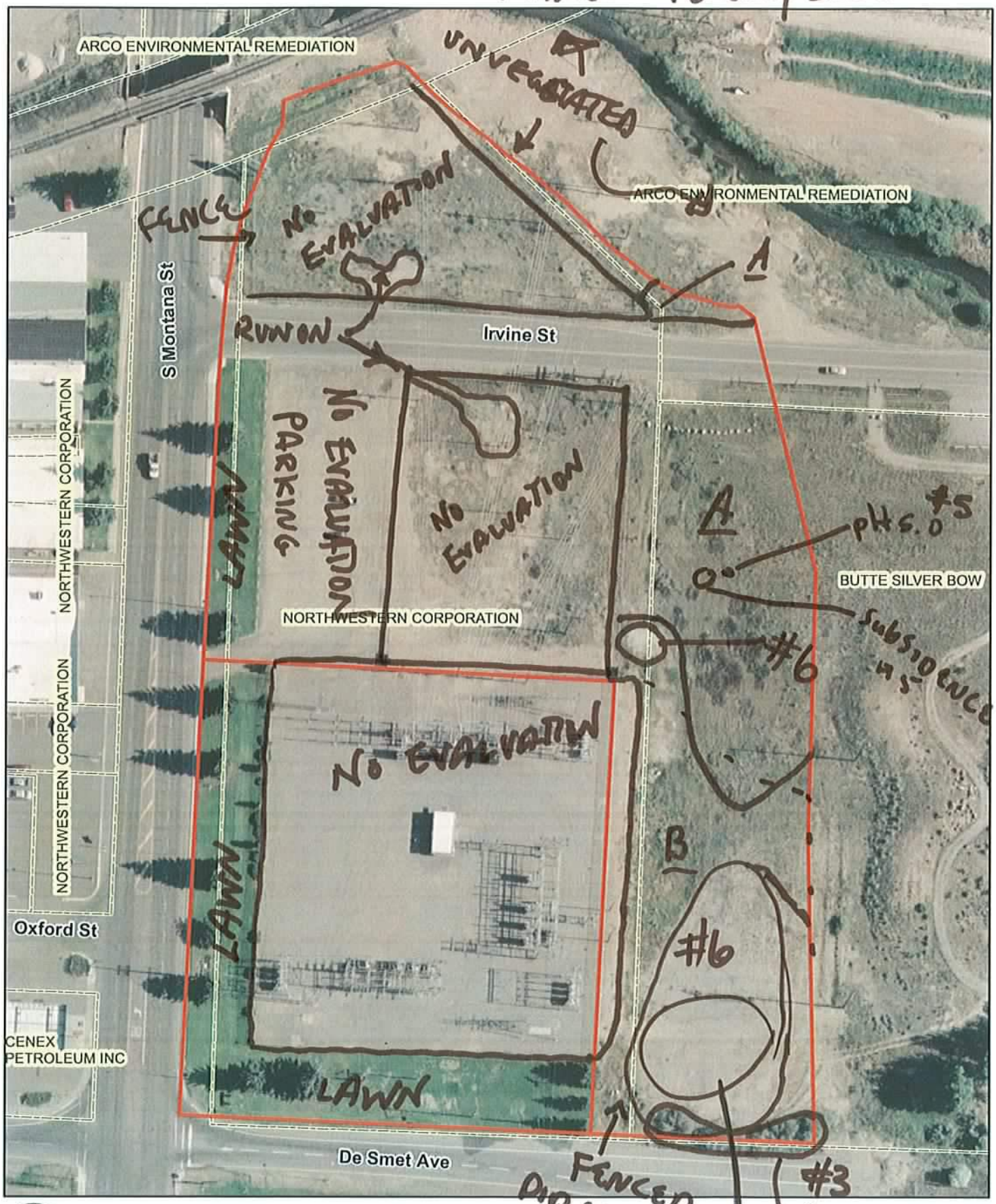
Number of gullies ____

Comments. • Polygon B was a barren area greater than 25%.
• Large amount of Weeds
• Eastern Edge looks hotter than main part of Polygon B.
• Vegetation along southern boundary (willows) appear to be stressed.
• lots of water running out of culvert into forested area + sediment appears to be green.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#152 - Montana St & I-90 MASTER 15 JULY 2008



MASTER

BRES FIELD FORM

Site ID: #155 Site Name: Clark TAILINGS Field Date: 07/16/08

Team Members (Circle your name): Hamblock Rennick (Ruppel)

Number of Polygons: 2 Slope: 0° to 35° Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: SURROUNDING COPPER MOUNTAIN PLAYING FIELDS

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35	50				
*Undesirable (weedy) species	10	6				
*Noxious weeds	5	7				
Litter	15	35				
Rocks > 2"	5	0				
Bare Ground	30	12				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	40	55				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F	I				
Crested wheatgrass	X	I				
~~Slender~~ wheatgrass	I	F				
Yellow sweetclover	F	I				
Alfalfa	I	I				
BLUE FLAX	F	F				
BASIN WILD RYE	X	D				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	3				
Surface Rock Movement	2	2				
Pedestalling	3	9				
Flow Patterns	1	6				
Rills Depth	7	0				
Rills Frequency	1	0				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	3	5				
TOTAL BLM Score:	23	15				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D	D				
Dalmation toadflax	I	I				
Cheatgrass	F	I				
Baby's breath	X	X				
Kochia	X	X				
Thistle	X	X				
Leafy Spurge	X	X				
PRICKLY LETTUCE	I	I				
SALSIFY	X	F				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ____ (check applicable items)

- ☐ lime rock barrier
- ☒ depositional area
- ☐ more weeds
- ☐ steeper slope
- ☐ increased erosion
- ☒ less vegetation
- ☐ gullies
- ☐ other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 3.0 – 7.0
- Approximate area (in square feet) 200,000
- Number of areas with exposed waste 1

5. Is there evidence of: Y ____ N X

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y X N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3

Do barren areas cover over 25% of any polygon? Y ____ N X

7. Gullies (over 6" in depth):

Y ____ N X

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

Comments.

- Less vegetation on Northern side edge of Polygon B
- Barren area in SE corner looks like it wasn't seeded
- Mine waste in southwest corner has pH 3.0
- Knapweed clusters could use spray
- Erosion problem developing on northeast corner of Polygon A

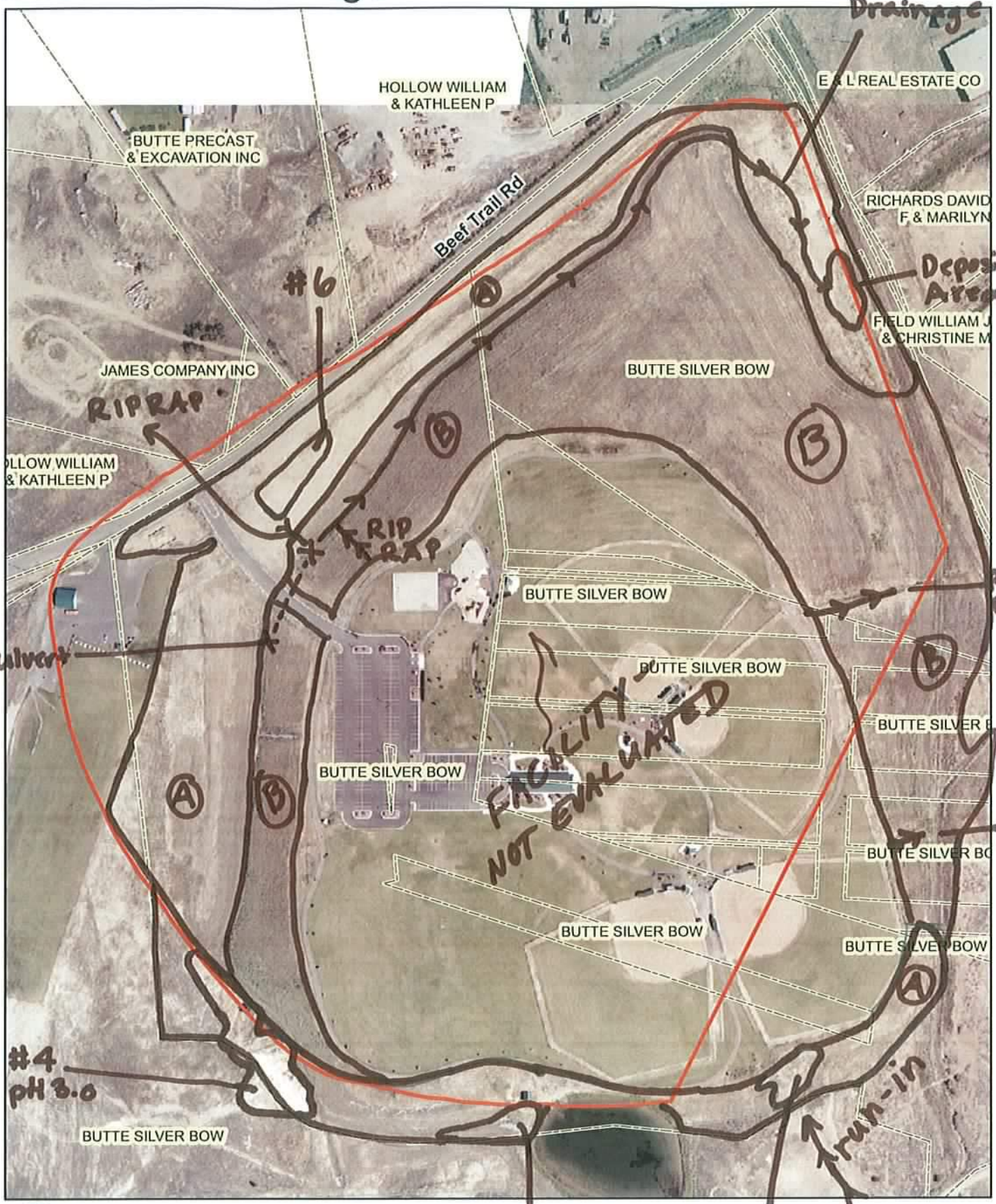
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

MASTER 2018

#155 - Clark Tailings



(A)

BRES FIELD FORM

Site ID: 156 Site Name: Timber Butte Mill Field Date: 7/16/05

Team Members (Circle your name): Hamblak, Ruppel, Rinsak

Number of Polygons: ___ Slope: 0 to 35° Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	7					
*Noxious weeds	3					
Litter	20					
Rocks > 2"	5					
Bare Ground	25					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	I					
Slender wheatgrass	X					
Yellow sweetclover	I					
Alfalfa	I					
Rubber Rabbitbrush	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	8					
Pedestalling	11					
Flow Patterns	12					
Rills Depth	5					
Rills Frequency	1					
Gullies Depth	3					
Gullies Frequency	1					
Soil Movement	8					
TOTAL BLM Score:	53					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Salsify	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ____ (check applicable items)

- [ ] lime rock barrier
- [X] more weeds
- [X] increased erosion
- [X] gullies
- [ ] depositional area
- [ ] steeper slope
- [ ] less vegetation
- [ ] other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N X
- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N X
- [ ] bulk soil failure
- [ ] land slumps
- [ ] subsidence

6. Barren Areas: Y X N ____
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ___ N X

7. Gullies (over 6" in depth):
Y X N ____
Are any gullies actively eroding? Y ___ N ___
Number of gullies 3

Comments.

- Beyond northern boundary there is a large birch / soil deposition
- More knapweed and erosion on site edges
- Northernmost slope has major erosion problems - soil movement, gullies, & destabilization
- Large barren area in the shape of a building with a pH of 7.0 but no vegetation
- Granite outcroppings throughout site
-

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

(C) 156 Timber Butte Mill Master 2008

BRES FIELD FORM

Site ID: Site Name: Timber Butte Mill Field Date: 7/16/08

Team Members (Circle your name): Jeanne Lawton, Charlie Lawton, Andy

Number of Polygons: 1 Slope: 10 to 30° Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Timber Butte - upper south slope

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	2					
*Noxious weeds	8					
Litter	15					
Rocks > 2"	25					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	42					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	X					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	I					
Rubber Rabbit Brush	I					
Basin Rye Grass	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2					
Surface Rock Movement 14	14 90°					
Pedestalling	N 90°					
Flow Patterns	3					
Rills Depth	6					
Rills Frequency	2					
Gullies Depth	6					
Gullies Frequency	2					
Soil Movement	8					
TOTAL BLM Score:	~~50~~					
BLM score: 0-55 = M (Monitor) 56-100 = EV (Engineering Evaluation)	~~41~~ 52 90°					

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax	I					
Cheatgrass	X					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y X N____
Are any gullies actively eroding? Y X N____
Number of gullies 2

Comments.

- Erosion scars appears elevated but could be reasonably expected on site with ~ 30° slope

- Bare areas = outcroppings, old cement + sediment basins deposited along switch backs

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

BRES FIELD FORM

Site ID: BB Site Name: Timber Butte Mill Field Date: 7/16/08

Team Members (Circle your name): Randi Phipps John Reagen

Number of Polygons: 3 Slope: 10 to 40 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: lower half of slope

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	38					
*Undesirable (weedy) species	2					
*Noxious weeds	5					
Litter	28					
Rocks > 2"	2					
Bare Ground	25					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	I					
Slender wheatgrass	X					
Yellow sweetclover	I					
Alfalfa	I					
Brome	I					
Sage Wart	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	11					
Pedestalling	14					
Flow Patterns	9					
Rills Depth	6					
Rills Frequency	2					
Gullies Depth	7					
Gullies Frequency	1					
Soil Movement	5					
TOTAL BLM Score:	61					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	X					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Butter + Eggs	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ____ (check applicable items)

- ☐ **lime rock barrier**
- X **depositional area**
- X **more weeds**
- X **steeper slope**
- X **increased erosion**
- X **less vegetation**
- X **gullies**
- ☐ **other** riprap sediment

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N X

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y X N ____
Are any gullies actively eroding? Y X N ____
Number of gullies 1

Comments. • pasture east of fence has less vegetation due to grazing
• some slag on east edge of polygon
• rip rap ditch located on western portion of site is filling in with small amounts of sediment + side slopes of ditch are unvegetated
• perform periodic inspection of ditch to make sure waterflows not flow into property owners house
• some of the small interior areas are composed of granite bedrock

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#156 - Timber Butte Mill

MASTER

N

0 100 200 300 400 Feet

07/16/08

CDM

#156 - Timber Butte Mill

0 100 200 300 400 Feet

2008 (Upper So. Slope)

© CDM

2008 Survey

#156 - Timber Butte Mill

Master

BRES FIELD FORM

Site ID: 158 Site Name: Waste Rock Dump Field Date: 7-9-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 2 to 1 Aspect (circle all relevant): N (S) W E NW NE SW (SE)

Area Description: residential area in Walkerville.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	10					
*Undesirable (weedy) species	30					
*Noxious weeds	25					
Litter	20					
Rocks > 2"	5					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	15					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X					
Crested wheatgrass	1					
Slender wheatgrass	1					
Yellow sweetclover	X					
Alfalfa	1					
Cottonwood	1					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	5					
Pedestalling	3					
Flow Patterns	3					
Rills Depth	1					
Rills Frequency	1					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	19					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	1					
Cheatgrass	F					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Mustards	1					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ✓ **other** more vegetation

Estimate width of affected edge (in feet) 15

4. Exposed Waste Material? Y ____ N ✓
- Estimated pH ____ * see comments
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N ✓
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓ * see comments
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

Site boundries in 2 areas. (See aerial map) Lumped into 1 polygon excluding the road way.

③ Site Edge * 2 small areas have significantly more desirable vegetation. Along W & E edges.

④ Exposed Waste - adjacent to site into land owners property. Western site edge. PH on roadway was 5.5

⑦ Rill/Gully evidence in excluded roadways

Short term Recoomendations:

- Spray weeds
- apply crushed lime rock to a graded roadway.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

#158 - Waste Rock Dump

Master

BRES FIELD FORM

Site ID: 159 **Site Name:** NW Syndicate Pit **Field Date:** 7-7-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 1 Slope: 4 to 1 Aspect (circle all relevant): (N S W E) NW NE SW SE

Area Description: Baseball Park. Open area. Residential on Western half

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	5					
*Noxious weeds	5					
Litter	40					
Rocks > 2"	0					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	50					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
~~Slender~~ wheatgrass	F					
Yellow sweetclover	I					
Alfalfa	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	2					
Pedestalling	9					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	32					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	X					
Cheatgrass	F					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Mustard	I					
Prickly lettuce	I					
Morning glory	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ✓ **steeper slope**
- ✓ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** ____

* north site edge
Estimate width of affected edge (in feet) 30

4. Exposed Waste Material? Y ✓ N ____
- Estimated pH 4
- Approximate area (in square feet) 400 ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y ____ N ✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N ✓
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

- NE side used for recreation. Ball fields and playground has exposed waste.

Short Term Reccomendations:
- South half of Parking lot needs crushed limestone barrier due to exposed waste
- curb/gutter on Missoula Ave. Site edge (North)
- N. corner of Clark & Missoula asphalt ditch with plugged storm drain.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

#159 - NW Syndicate Pit

BRES FIELD FORM

Site ID: #160 Site Name: NE Syndicate Dump Field Date: 7-11-08

Team Members (Circle your name): (Ryan) Vincent

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: surrounding b-ball field on Pacific

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	50					
*Undesirable (weedy) species	1					
*Noxious weeds	1					
Litter	40					
Rocks > 2"	1					
Bare Ground	7					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	51					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	D					
Canada Bluegrass	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	1					
Pedestalling	3					
Flow Patterns	3					
Rills Depth	X					
Rills Frequency	X					
Gullies Depth	X					
Gullies Frequency	X					
Soil Movement	3					
TOTAL BLM Score:	18					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	I					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Salsify	I					
Bindweed	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- [ ] **lime rock barrier**
- [ ] **depositional area**
- [ ] **more weeds**
- [ ] **steeper slope**
- [X] **increased erosion**
- [X] **less vegetation**
- [ ] **gullies**
- [ ] **other** ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ___ N X

- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N X

- [ ] **bulk soil failure**
- [ ] **land slumps**
- [ ] **subsidence**

6. Barren Areas: Y ___ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___

Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N X
Are any gullies actively eroding? Y ___ N X
Number of gullies ___

Comments.

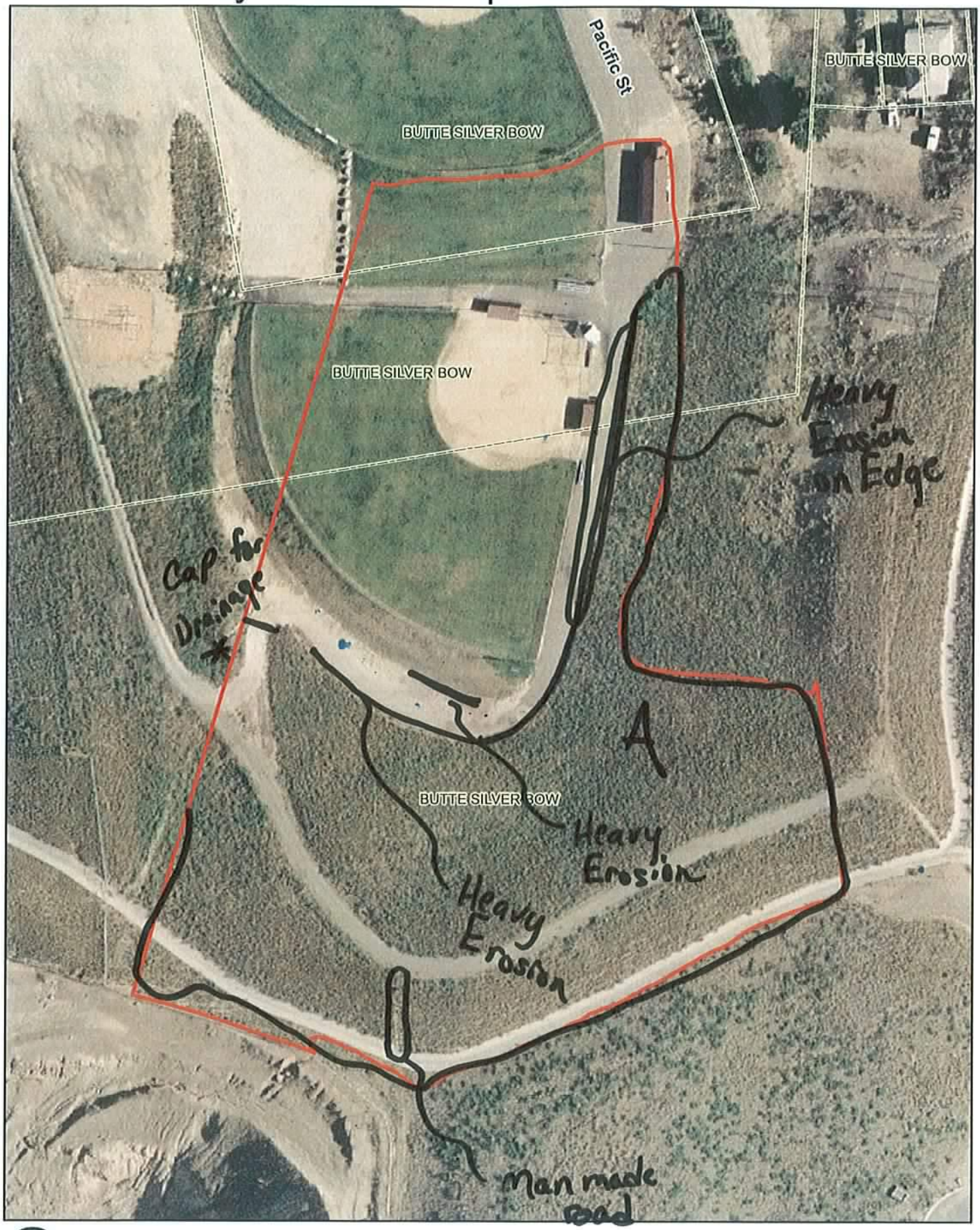
- 1 Polygon
- heavy erosion around site edges and road surrounding baseball field from irrigation and parking - evaluate run-off and access control
- Baseball field should be looked at for erosion issues
- noxious weeds present are ~~Canada Thistle~~ and Bindweed spotted knapweed
- man-made road at the boundary with the syndicate pit - recommend access control.
- 4 dead trees should be removed

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#160 - NE Sy. .icate Dump - Oro .tte Shaft



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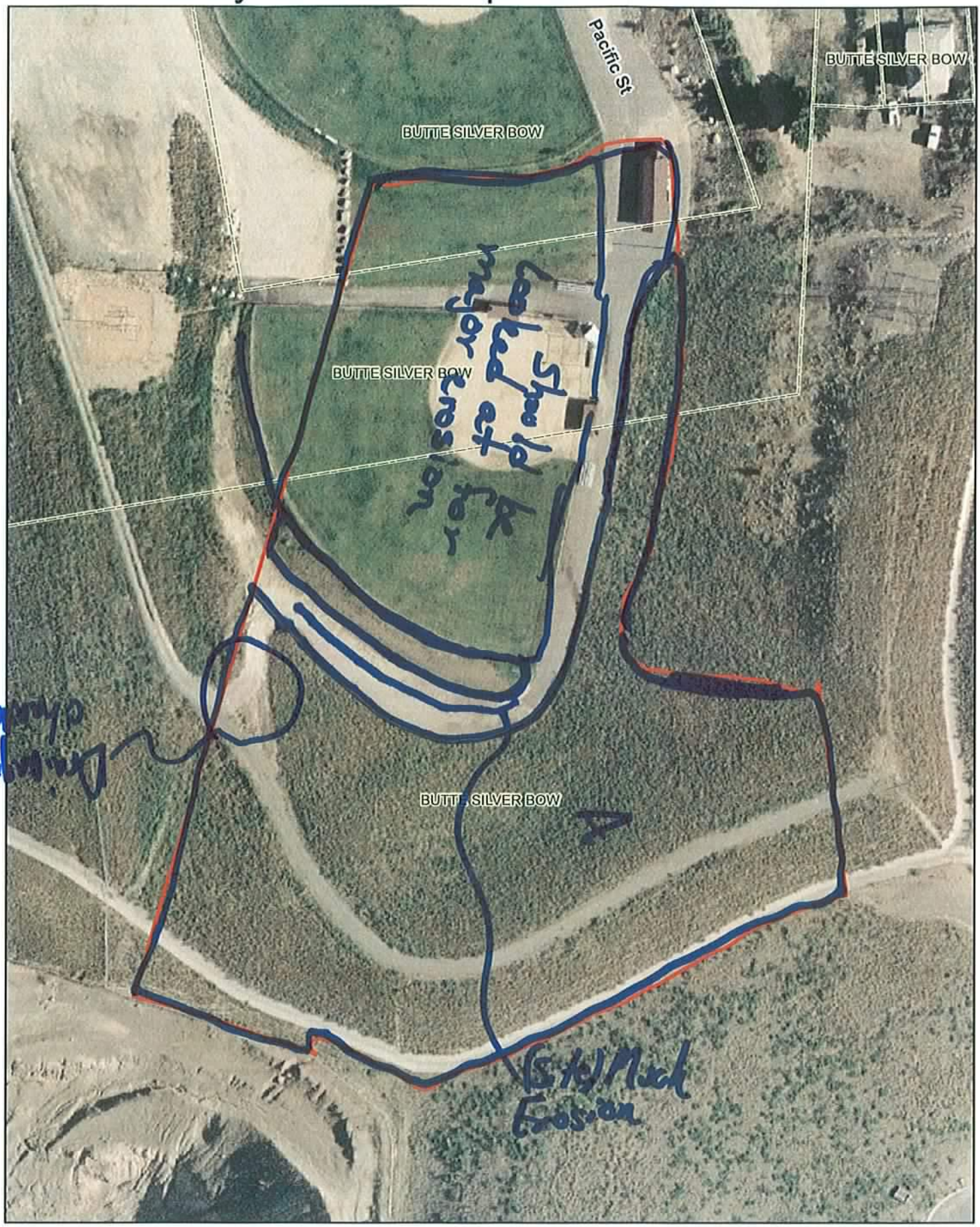

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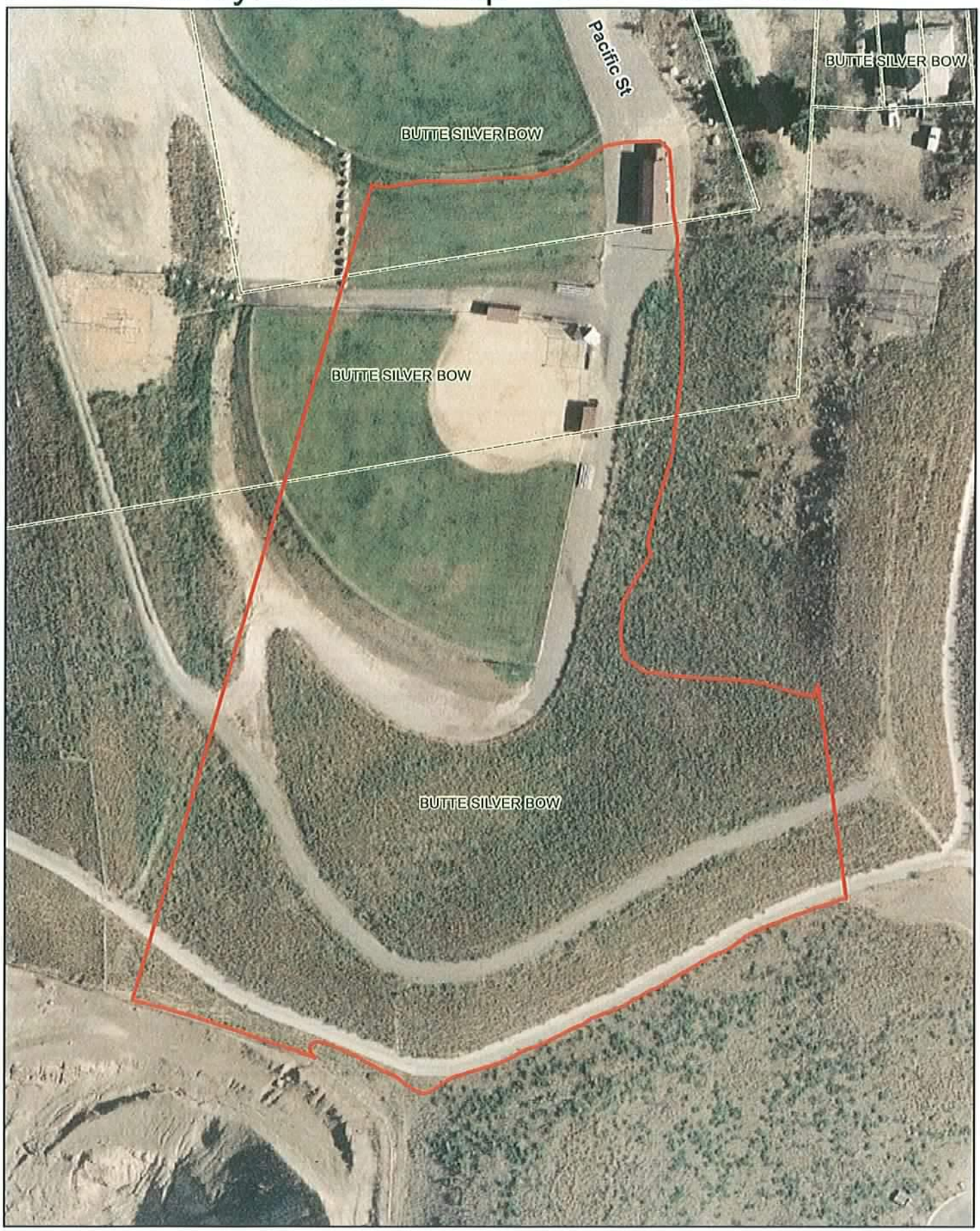


Master

1625

BRES FIELD FORM Site ID: __ Site Name: Black Bird Field Date: 7/15/08

Team Members (Circle your name): Jeanne Larson Charlie Larson Andy

Number of Polygons: 3 Slope: 0 to 20% Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Site South of MT Tech NPER - East Tech Welding shop

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35	10	20			
*Undesirable (weedy) species	3	30	40			
*Noxious weeds	2	45	10			
Litter	40	2	10			
Rocks > 2"	5	3	10			
Bare Ground	15	10	10			
TOTAL (above 6 items must total 100%)	100	100	100			
ADJUSTED LIVE % = Live + 5% Undesirable	38	15	25			

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I	X	D			
Crested wheatgrass	D	X	I			
Slender wheatgrass	F	X	I			
Yellow sweetclover	I	X	X			
Alfalfa	I	X	I			
Deciduous shrub (unknown)		D				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3	2	3			
Surface Rock Movement	1	2	2			
Pedestalling	6	0	6			
Flow Patterns	2	0	2			
Rills Depth	0	2	1			
Rills Frequency	0	4	1			
Gullies Depth	0	0	0			
Gullies Frequency	0	0	0			
Soil Movement	2	5	4			
TOTAL BLM Score:	14	15	19			

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	D	F			
Dalmation toadflax	I	X	X			
Cheatgrass	D	F	D			
Baby's breath	X	X	X			
Kochia	X	X	X			
Thistle	X	X	X			
Leafy Spurge	X	X	X			
Butter + Eggs			I			

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- ☐ **lime rock barrier** ☐ **depositional area**
- ☐ **more weeds** (A)(C) ☒ **steeper slope** (A)
- ☒ **increased erosion**(C) ☐ **less vegetation** (C)
- ☐ **gullies** ☐ **other** Noxious weeds (A)

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4.5 Southern Edge (B)
- Approximate area (in square feet) 40
- Number of areas with exposed waste polygon B

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure** ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon?

Y X N ☒ Polygon B Dbh field under tree (C)

7. Gullies (over 6" in depth):

Y____ N X

Are any gullies actively eroding? Y____ N____

Number of gullies ____

Comments.

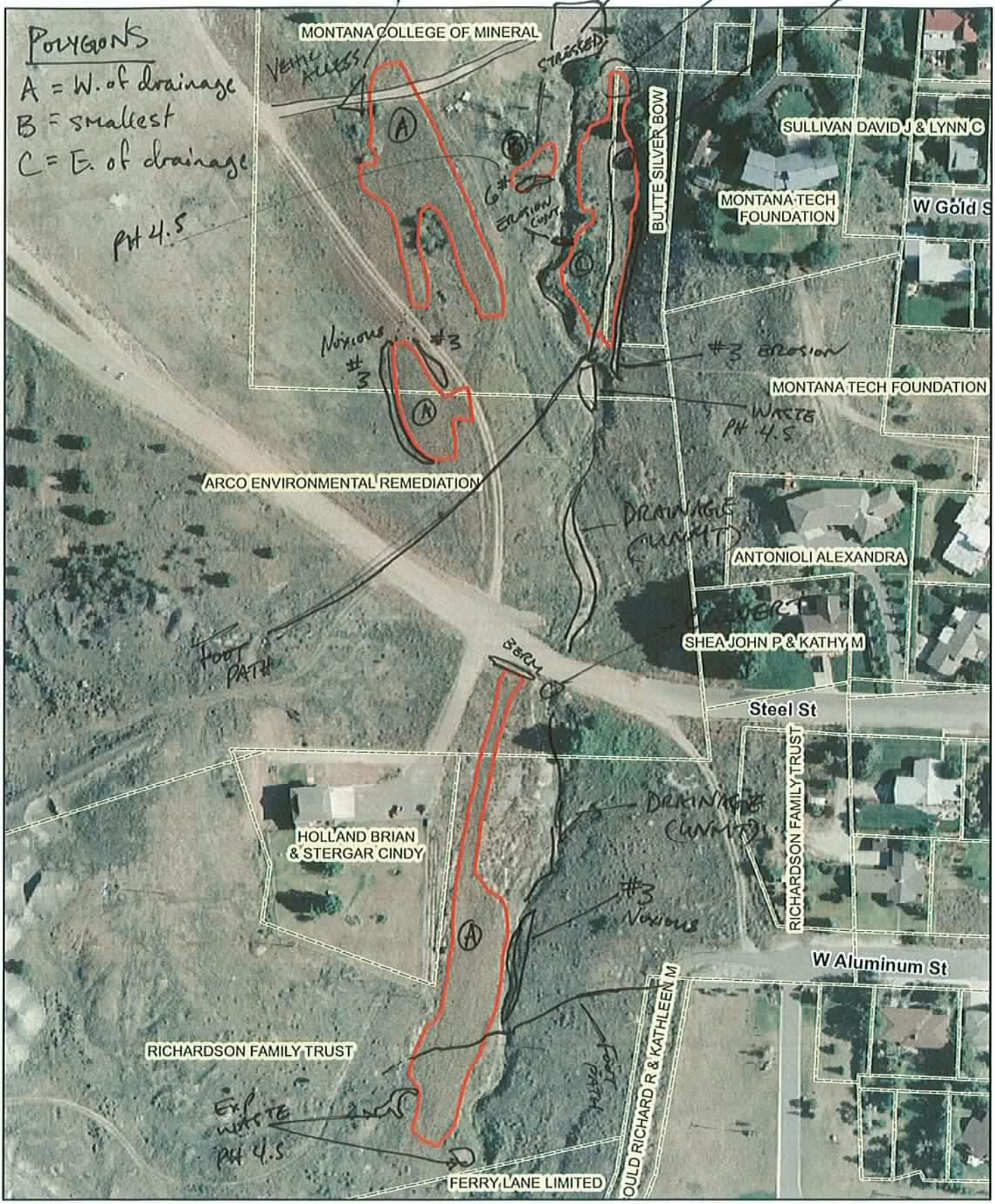
- Three separate polygons
  - # A = all parts west of drainage with exception of Poly # B
  - # B = smallest part
  - # C = East of drainage
- Exposed waste scattered throughout length of site. See map
- North section of Poly C- adjacent to culvert showing signs of stress as well as entirety of Poly B

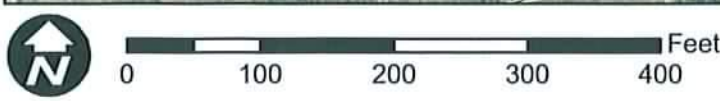
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#1625 - Black Bird





171

BRES FIELD FORM Site ID: __ Site Name: Blaine Center Field Date: 7-508

Team Members (Circle your name): Gordon, Campbell, Ryan, Shanight

Number of Polygons: 1 Slope: 0 to 10 Aspect (circle all relevant): N S W E NW NE (SW) SE

Area Description: located inside Blaine Center

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	33					
*Undesirable (weedy) species	6					
*Noxious weeds	3					
Litter	40					
Rocks > 2"	0					
Bare Ground	8					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	38					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	O					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	8					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	3					
Rills Frequency	2					
Gullies Depth	4					
Gullies Frequency	1					
Soil Movement	8					
TOTAL BLM Score:	49					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ____ (check applicable items)

- [ ] **lime rock barrier**
- [X] **depositional area**
- [ ] **more weeds**
- [ ] **steeper slope**
- [X] **increased erosion**
- [ ] **less vegetation**
- [ ] **gullies**
- [ ] **other** ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N X

- Estimated pH 7
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N X

- [ ] **bulk soil failure**
- [ ] **land slumps**
- [ ] **subsidence**

6. Barren Areas: Y X N ____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1

Do barren areas cover over 25% of any polygon? Y ____ N X

7. Gullies (over 6" in depth):

Y X N ____

Are any gullies actively eroding? Y X N ____

Number of gullies 2

Comments.

major storm water erosion off of mainstreet

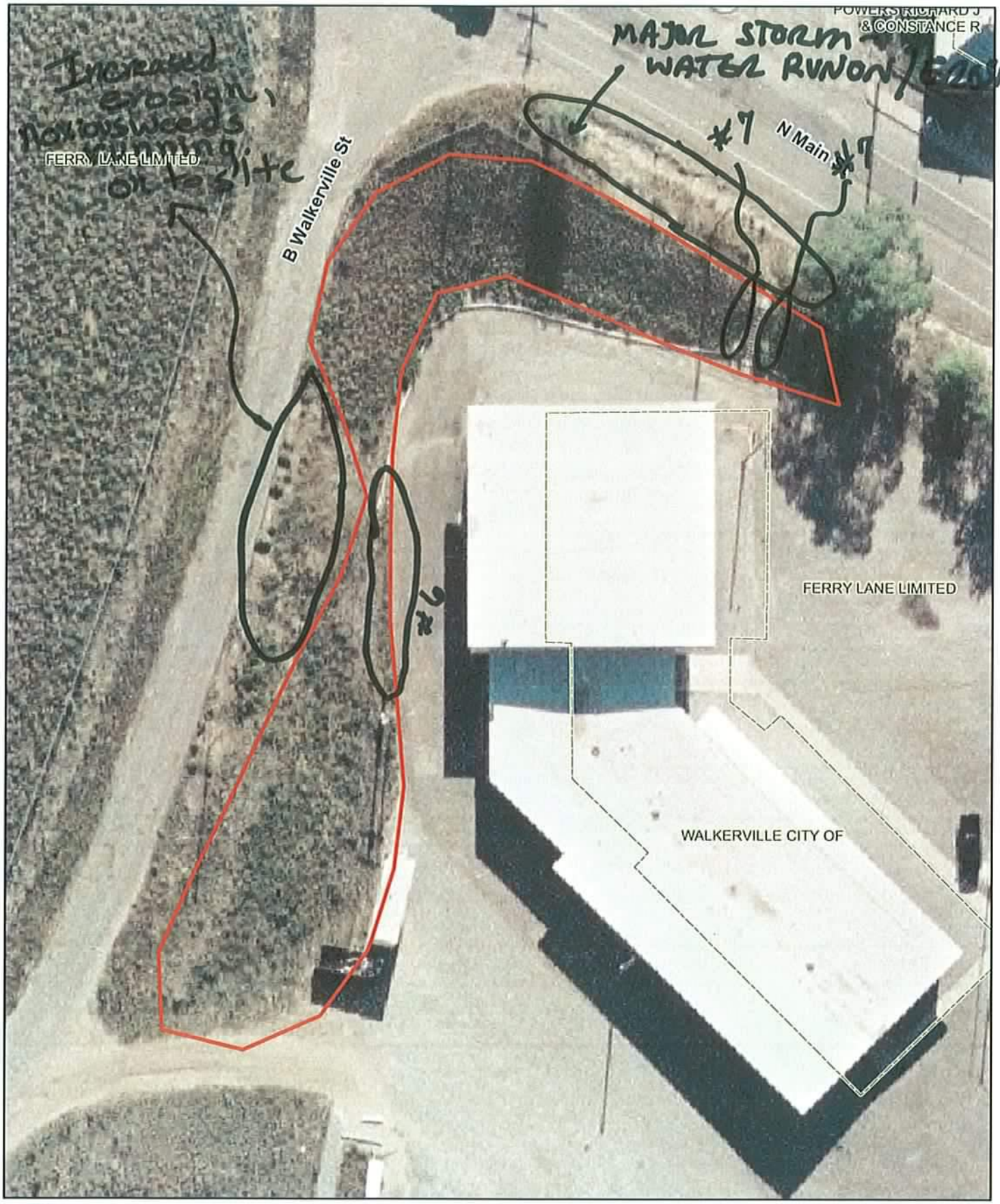
increased erosion, noxious weeds on the northedge running into site.

barren area tested a ph 7.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#171 - Blaine Center



0 25 50 75 100 Feet

CDM

BRES FIELD FORM Site ID: #172 Site Name: Calodonia Δ Field Date: 7-8-08

Team Members (Circle your name): Ryan, Shanight, Campbell

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Δ by Calodonia

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	5					
*Noxious weeds	1					
Litter	48					
Rocks > 2"	2					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	44					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	X					
Crested wheatgrass	D					
Slender wheatgrass	X					
Yellow sweetclover	X					
Alfalfa	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	1					
Pedestalling	6					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	21					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	X					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ___ N ___ (check applicable items)

- [ ] lime rock barrier
- [ ] depositional area
- [X] more weeds
- [ ] steeper slope
- [X] increased erosion
- [ ] less vegetation
- [ ] gullies
- [ ] other ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___
- Estimated pH 4.5
- Approximate area (in square feet) 100
- Number of areas with exposed waste 1

5. Is there evidence of: Y ___ N X
- [ ] bulk soil failure
- [ ] land slumps
- [ ] subsidence

6. Barren Areas: Y X N ___
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2
Do barren areas cover over 25% of any polygon?
Y ___ N X

7. Gullies (over 6" in depth):
Y ___ N X
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

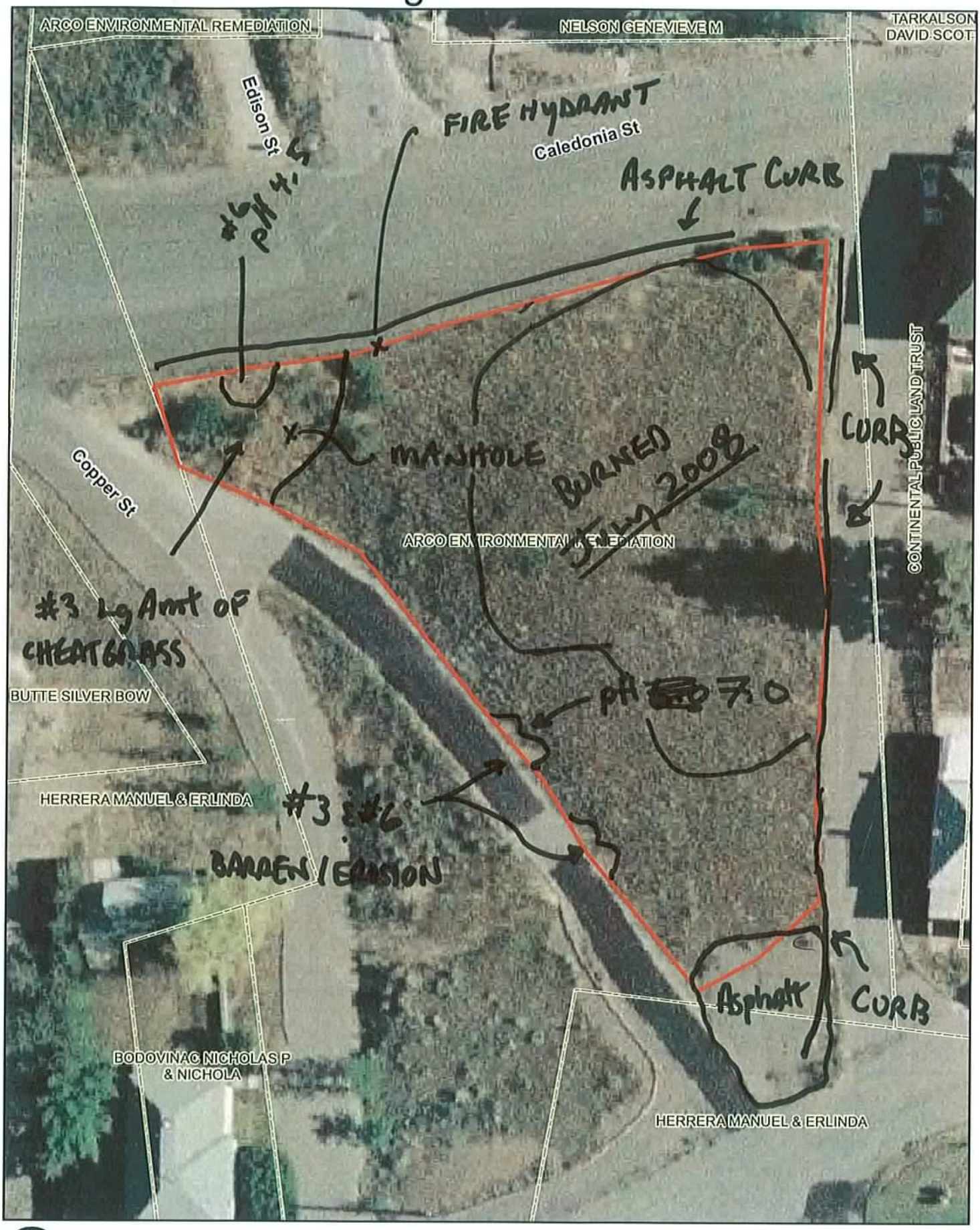
Comments.

1 polygon west side of the site has lots of cheat grass
large burned area - July 2008
pH of 4.5 on 7.0
Sediment falling onto the street

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#172 - Caldo[illegible] Triangle



N

0 8 16 24 32 40 Feet

CDM

BRES FIELD FORM

Site ID: 173 Site Name: Garden Street Area Field Date: 7/17/08

Team Members (Circle your name): Randi Phelps Sarah Hamblock Ruth Ruff

Number of Polygons: 2 Slope: 0 to 5 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: ~~located~~ Adjacent to McGruff Park

Polygon Evaluation ** Admin Use Only **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30	12				
*Undesirable (weedy) species	10	10				
*Noxious weeds	20	15				
Litter	25	40				
Rocks > 2"	1	2				
Bare Ground	14	21				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	35	17				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D	D				
Crested wheatgrass	F	F	I			
Slender wheatgrass	F	I				
Yellow sweetclover	I	I				
Alfalfa	I	I				
Rubber Rabbit	I	I				
Cotton Wood	I	I				
Wild Rose	I	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	2	6				
Surface Rock Movement	2	2				
Pedestalling	14	14				
Flow Patterns	3	9				
Rills Depth	2	7				
Rills Frequency	1	3				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	2	8				
TOTAL BLM Score:	28	49				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D	D				
Dalmation toadflax	I	X				
Cheatgrass	F	F				
Baby's breath	I	I				
Kochia	F	F				
Thistle	X	X				
Leafy Spurge	X	X				
Matramony Vine	I	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N X (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- X more weeds
- ☐ steeper slope
- X increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other rills

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y X N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3

Do barren areas cover over 25% of any polygon? Y____ N X

7. Gullies (over 6" in depth):

Y____ N X

Are any gullies actively eroding? Y____ N____

Number of gullies ____

Comments. • major erosion off of railroad grade onto site
• erosion off of side street onto site
• huge noxious weed problem!
• Polygon B was recently mowed / thats why there was low veg score
• Did not evaluate commercial buildings and parking lots

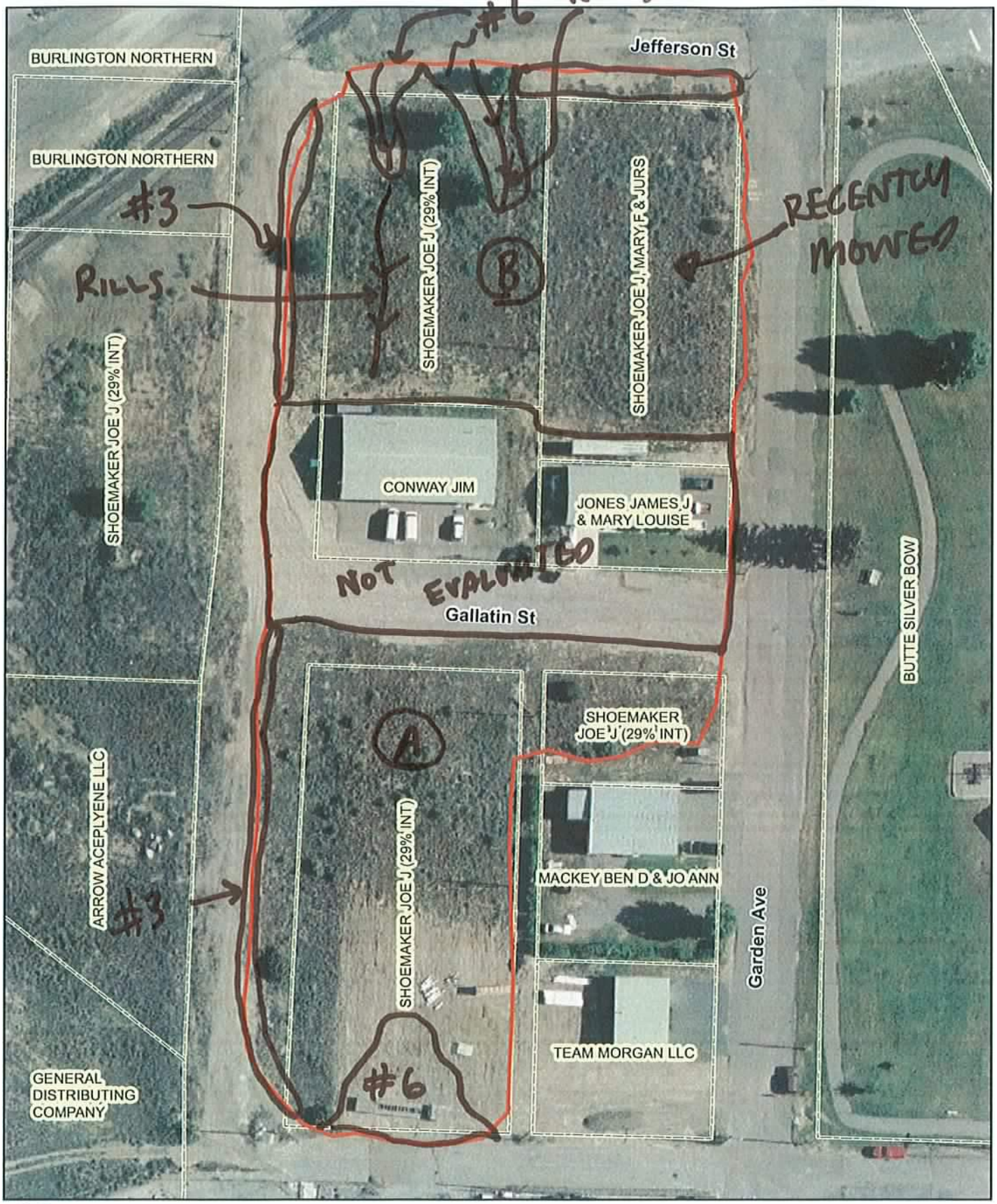
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#173 - Garden Street Area

pt# 8.0 RILLS MASTER 7.17.08



0 50 100 150 200 Feet

CDM

Master

BRES FIELD FORM

Site ID: 11 **Site Name:** Buffalo South **Field Date:** 7-10-08

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 2 Slope: ____ to ____ Aspect (circle all relevant): N (S) W E NW NE SW (SE)

Area Description: Between Buffalo St. : Ruby St.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35	15				
*Undesirable (weedy) species	17	20				
*Noxious weeds	10	7				
Litter	25	15				
Rocks > 2"	3	3				
Bare Ground	10	40				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	40	20				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I	I				
Crested wheatgrass	D	D				
Slender wheatgrass	I	I				
Yellow sweetclover	X	X				
Alfalfa	I	I				
Canada Blue	F	F				
Great Basin	I	X				

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8	3				
Surface Rock Movement	2	11				
Pedestalling	9	9				
Flow Patterns	9	12				
Rills Depth	2	3				
Rills Frequency	2	5				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	3	11				
TOTAL BLM Score:	35	54				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	I				
Cheatgrass	F	F				
Baby's breath	X	X				
Kochia	X	X				
Thistle	X	X				
Leafy Spurge	X	X				
Absinth Wormwood	X	X				
Salsafy	I	I				
Bind Weed	X	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ✓ more weeds
- ☐ steeper slope
- ☐ increased erosion
- ✓ less vegetation
- ☐ gullies
- ☐ other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4-5.5
- Approximate area (in square feet) 225 ft²
- Number of areas with exposed waste 2

5. Is there evidence of: Y ____ N ✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ✓ N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2

Do barren areas cover over 25% of any polygon? Y ____ N ✓

7. Gullies (over 6" in depth):

Y ____ N ✓

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

Comments.

2 Polygons (A&B)

A- acceptable live vegetation
- no significant erosion
- noxious weeds present

B- Reclamation Improvement needed
- serious erosion issues

* exposed waste areas noted on aerial map.

Short term Recommendations:

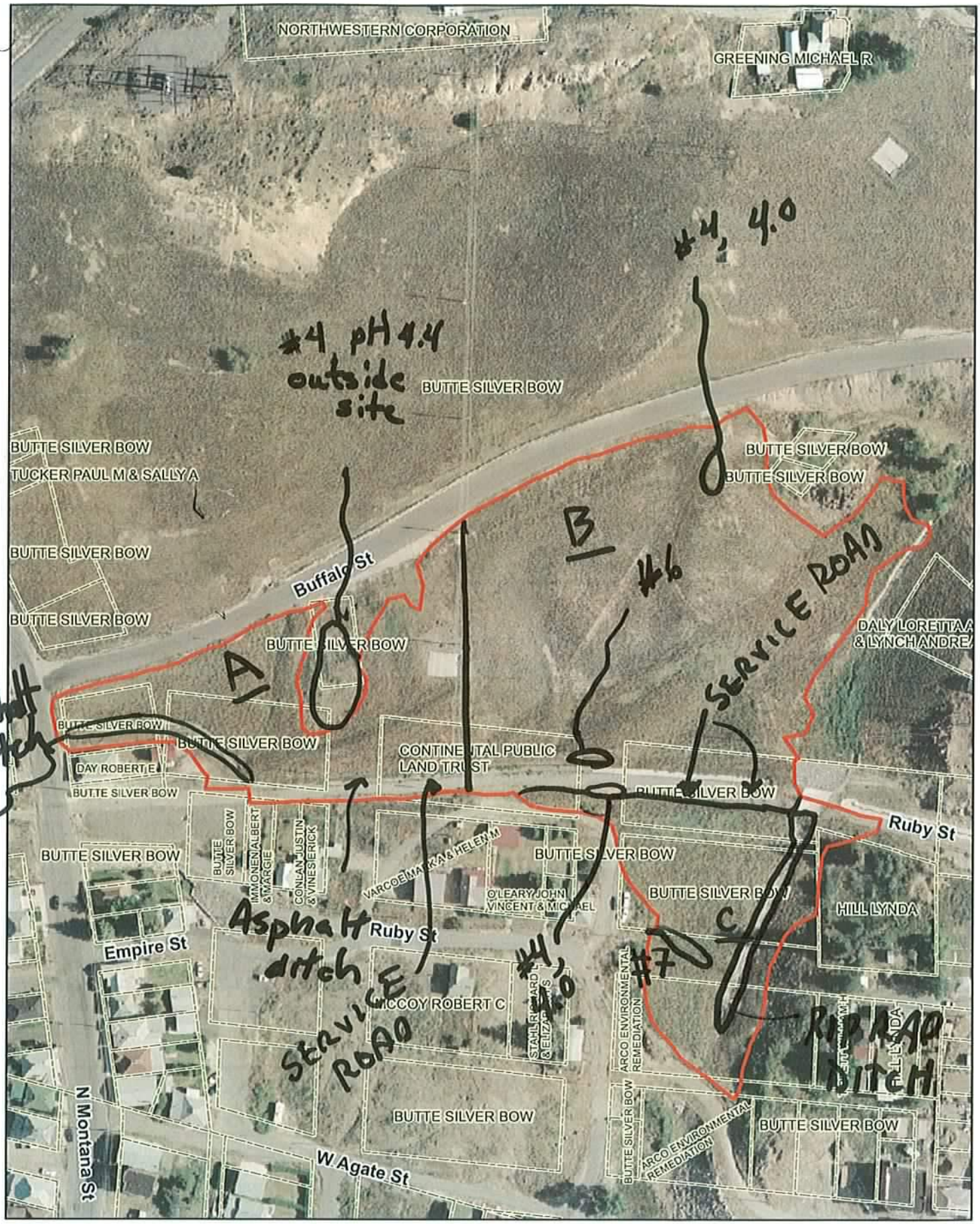
- Power line roads need addressed. (contact NWE)
- Exposed Waste
- Spray weeds

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Tumble Mustard	I	I				
Aspen	I	X				
Rubber Rabbit	I	I				
Matrimony	I	X				
Prickly Lettuce	I	I				
Indian Rice Grass	X	I				
Sedge	\	I				

Use D (Dominant), F (Frequent), or I (Infrequent).

#174 - Buffalo South



BRES FIELD FORM

Site ID: 14 Site Name: Buffalo South Field Date: 7/10/08

Team Members (Circle your name): Campbell, Ryan, Shanight, Larson, + Larson

Number of Polygons: 3 Slope: 0 to 15 Aspect (circle all relevant): N S W E NW NE SW (SE)

Area Description: South of Buffalo + Ruby St.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40 ~~35~~	35	~~46~~			
*Undesirable (weedy) species	10	10	14			
*Noxious weeds	3	3	3			
Litter	35 ~~40~~	17	30			
Rocks > 2"	2	5	2			
Bare Ground	10	~~30~~	5			
TOTAL (above 6 items must total 100%)	100	100	100			
ADJUSTED LIVE % = Live + 5%Undesirable	40	40	~~50~~			

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F	F	I			
Crested wheatgrass	D	D	D			
Slender wheatgrass	I	I	I			
Yellow sweetclover	X	X	X			
Alfalfa	I	I	I			

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3	8	3			
Surface Rock Movement	1	11	1			
Pedestalling	9	9	6			
Flow Patterns	3	9	1			
Rills Depth	1	4	X			
Rills Frequency	2	6	X			
Gullies Depth	X	X	2			
Gullies Frequency	X	X	1			
Soil Movement	5	11	2			
TOTAL BLM Score:	24	58	16			
BLM score:	(M)	(EV)	(M)			

0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I	X			
Dalmation toadflax	X	X	X			
Cheatgrass	D	D	D			
Baby's breath	X	X	X			
Kochia	X	X	X			
Thistle	X	X	X			
Leafy Spurge	X	X	X			
Bindweed	I	I	X			
Salsify	X	I	I			

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N X (check applicable items)

- **lime rock barrier**
- **more weeds**
- **increased erosion**
- **gullies**
- **depositional area**
- **steeper slope**
- **less vegetation**
- **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4
- Approximate area (in square feet) 600
- Number of areas with exposed waste 2

5. Is there evidence of: Y____ N X

- **bulk soil failure**
- **land slumps**
- **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y____ N X

7. Gullies (over 6" in depth):
Y X N____
Are any gullies actively eroding? Y____ N X
Number of gullies 1

Comments.
- Polygon A + B were delineated because of a greater than 15 pt. erosion score difference.
- Rip-Rap ditch (Polygon C) in south-east part in good condition.
- Bindweed growing in asstault ditch.
- Service road has limerock on it (Road fl Montana St. → eastern) goes
- Gully on Polygon C (on east facing slope) is healing nicely
- Berm located (Polygon A) south-western Portion of sight (above asstault ditch)

Additional Vegetation:

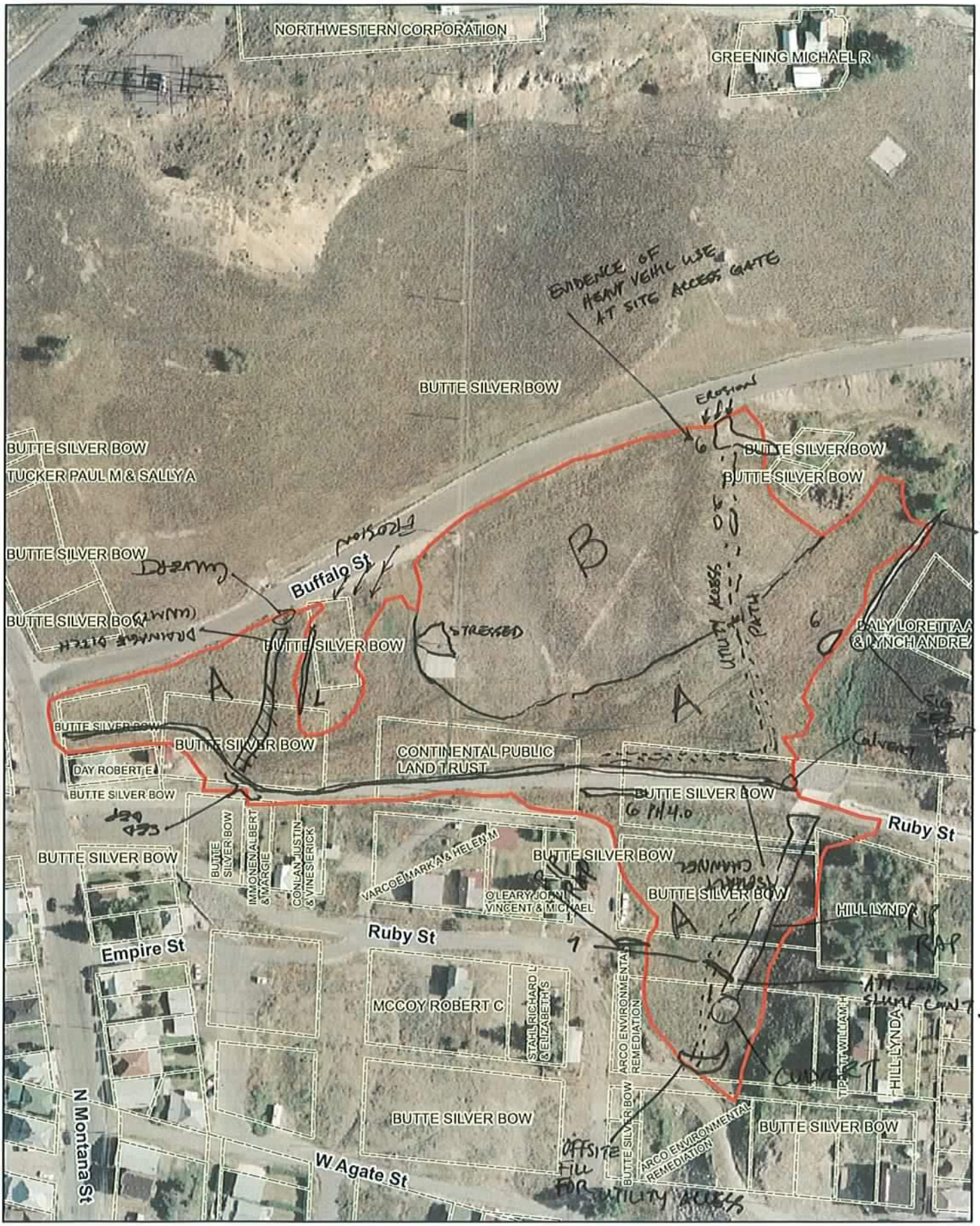
Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

532-7147

MASTER

#174 - Buffalo South



master

BRES FIELD FORM

Site ID: 175 Site Name: Upper Missoula Gulch Field Date: _____

Team Members (Circle your name): J. Hunt L. Kilmer

Number of Polygons: 2 Slope: 3 to 1 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South of Walkerville

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	15					
*Noxious weeds	10					
Litter	25					
Rocks > 2"	5					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35	* see comments				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover	I					
Alfalfa	F					
Smooth Brome	F					
Kentucky	I					
Canadian	I					
Baltic Rush	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	3				
Surface Rock Movement	5	14				
Pedestalling	9	14				
Flow Patterns	6	12				
Rills Depth	3	6				
Rills Frequency	3	2				
Gullies Depth	4	7				
Gullies Frequency	2	2				
Soil Movement	3	11				
TOTAL BLM Score:	41	71				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	see comments on back				
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					
Mustards	I					
Prickly Lettuce	I					
Absinth Wormwood	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N _____ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ✓ more weeds
- ☐ steeper slope
- ☐ increased erosion
- ☐ less vegetation
- ✓ gullies
- ☐ other _____

Estimate width of affected edge (in feet) _____

4. Exposed Waste Material? Y ✓ N _____

- Estimated pH 4-6
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y ✓ N _____

- ☐ bulk soil failure
- ☐ land slumps
- ✓ subsidence * identified on site

6. Barren Areas: Y ✓ N _____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas > 20
Do barren areas cover over 25% of any polygon?
Y B N _____

7. Gullies (over 6" in depth):
Y ✓ N _____
Are any gullies actively eroding? Y ✓ N _____
Number of gullies 4

Comments.

2 Polygons

A - Vegetated along irrigation canal vegetation is significantly more but still falls into the improvement category.
B - sloped areas on each side of canal
- Mostly bare of desirable vegetation
- Many areas of exposed waste.
- Severe erosion
- South east site edge is infested with ③ noxious weeds along with North east.

- Note on aerial map of exposed waste with a pH of 4-6

- 2 fenced mine sites need attention (subsidence)

- Majority of Polygon B is barren.

- At least 4 actively eroding gullies on site.

- Area illegally accessed by ATV's. creating erosion
- old access road along canal covered by cheat grass.

Short Term Recomendations:

- Reclamation Improvement
- Engineering Evaluation
- Add gate to access road on SE Corner

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Campion	I					
Matromony	I					
Tufted hair grass	I					
Birds foot trefoil	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

#175 - Upper Missoula Gulch

B Walkerville St
FERRY LANE LIMITED
FERRY LANE LIMITED
Bennett St
Blue Wing St
1st St
2nd St
3rd
4th St
W Daly St
Transit St
TOWN OF WALKERVILLE
BUTTE SILVER BOW
HONSHARUK FRANCES E
LOGGINS TOM G & LEANN M
KELLY MILLER KIMBERLY A
KELLY WILLIAM W & WOOGTERI & MILLER KIM
O'BOYLE EDWARD & JUDY
RYAN CHRISTINE M
TONKIN WILLIAM & JOANN BENCH
HARRINGTON BERNARD
HARRINGTON DENNIS B
DALLASERRA JOHN & LAURA
WALKERVILLE CITY OF
O'LEARY RANDY & GREG
BOLTON FAMILY TRUST (THE)
CO ENVIRONMENTAL REMEDIATION
A
B
B
B

BRES FIELD FORM Site ID: 180 Site Name: Tullamore Dump Field Date: 7-5-08

Team Members (Circle your name): Ryan Gordon Campbell Shanight

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: good vegetation, adjacent to housing sections

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	5					
*Noxious weeds	3					
Litter	30					
Rocks > 2"	2					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	X					
Alfalfa	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	2					
Rills Depth	4					
Rills Frequency	1					
Gullies Depth	7					
Gullies Frequency	1					
Soil Movement	8					
TOTAL BLM Score:	40					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ___ (check applicable items)

- [ ] **lime rock barrier**
- [ ] **depositional area**
- [ ] **more weeds**
- [ ] **steeper slope**
- [ ] **increased erosion**
- [X] **less vegetation**
- [ ] **gullies**
- [ ] **other** ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ___ N X

- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N X

- [ ] **bulk soil failure**
- [ ] **land slumps**
- [ ] **subsidence**

6. Barren Areas: Y ___ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y X N ___
Are any gullies actively eroding? Y X N ___
Number of gullies 1

Comments.

Recommend improvement on trail. used for dirt bikes

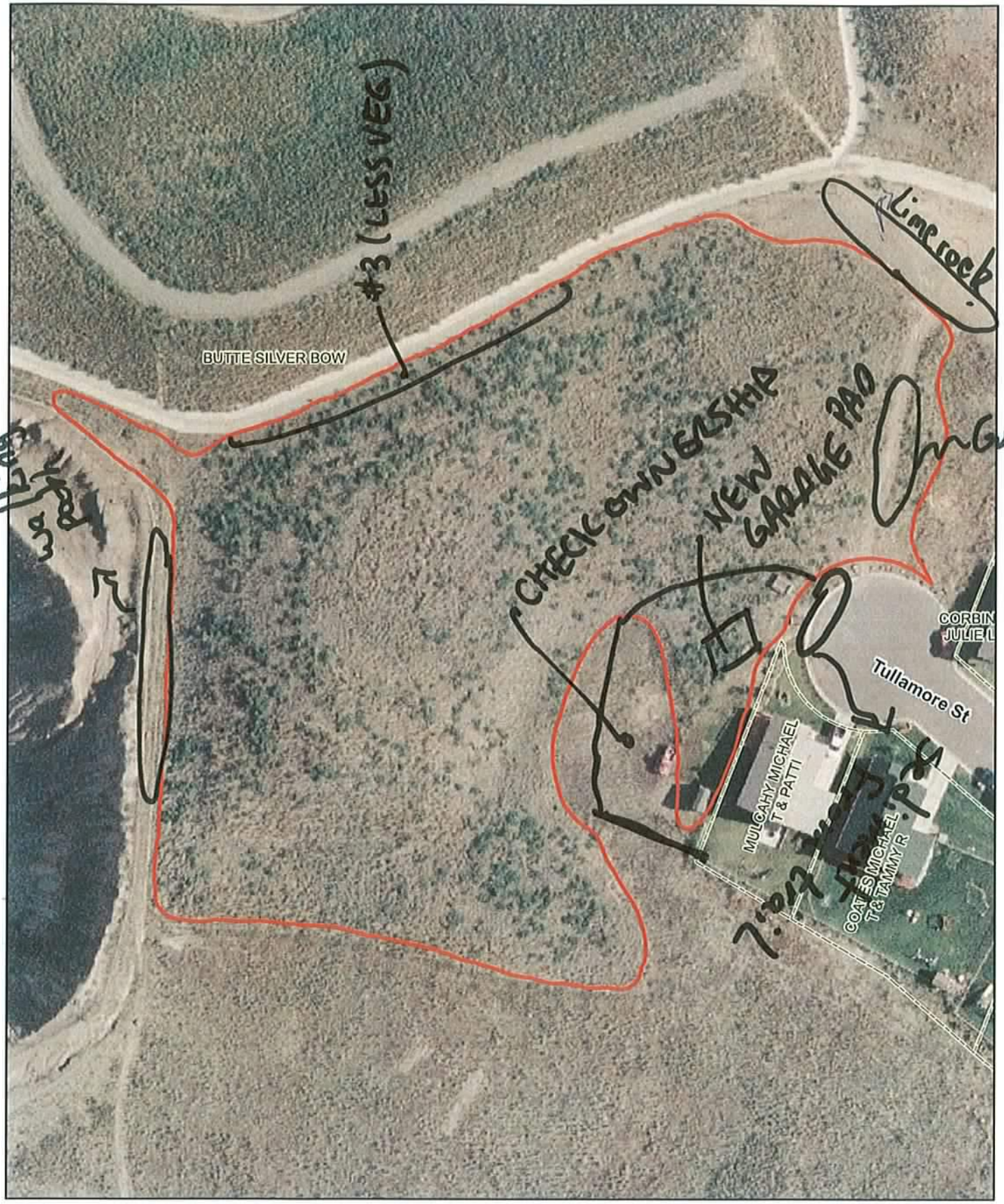
- Large amount of sediment on tullamore street from TRAIL
- RECOMMEND MOWING
- CHECK OWNERSHIP. MULCHING HAVE BUILT GARAGE WITHIN SOURCE AREA BOUNDARY.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#180 - Tullamore Dumps



Master

BRES FIELD FORM

Site ID: 181 Site Name: Mountain Con 3 Field Date: 7/14/08

Team Members (Circle your name): (Jeanne Larson) Charlie Larson Bob

Number of Polygons: 1 Slope: 0 to 35 % Aspect (circle all relevant): N S W E NW NE (SW) SE

Area Description: Directly south of MT Con head frame

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	6					
*Noxious weeds	4					
Litter	45					
Rocks > 2"	0					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	X					
Yellow sweetclover	X					
Alfalfa	F					
Western wheatgrass	I					
Rubber Rabbit Brush	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	1					
Surface Rock Movement	1					
Pedestalling	0					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	1					
Gullies Depth	5					
Gullies Frequency	1					
Soil Movement	1					
TOTAL BLM Score:	27					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	F					
Cheatgrass	F					
Baby's breath	I					
Kochia	X					
Thistle	I					
Leafy Spurge	X					
Tansy Mustard	I					
Prickly Lettuce	I					
Salsify	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ____ N X (check applicable items)

- lime rock barrier
- more weeds
- increased erosion
- gullies
- depositional area
- steeper slope
- less vegetation
- other ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 4.5
- Approximate area (in square feet) 200 ft
- Number of areas with exposed waste 2

5. Is there evidence of: Y ____ N X

- bulk soil failure
- land slumps
- subsidence

6. Barren Areas: Y ____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y X N ____
Are any gullies actively eroding? Y ____ N X
Number of gullies 1

Photo

Comments.

- Excess litter - may be 'choking' out desirable live species
- Weeds and undesirable are most prominent on edges
- Edge next to ditch is bare - has numerous small rills
- Numerous flow patterns on south/east edge of site
- Mine waste - obviously located on North - east perimeter of site
- Numerous places where animals have dug small holes in cap

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#132 - Emma Dump

5 N
10 V
3 5 4 0 L
40 C
5 Rock

Mountain
Lon QC

37 L/V 107 / 47 Nox = 51
38 litter / 6 Rock / 5 Bare Ground

35 S
40 L 45
15 V 50
3 N lit 48
8 S
3 R L, 78

	Live	Undes.	Nox	Litter	Rock	Barren
1	III			IIII		II
2	IIII			IIII I		
3	IIII II			III		
4	III			IIII II		
5	II			IIII II		I
6	III			IIII I.		
7	I			IIII III		I
8	II			IIII III		
9	I	III		III		III
10	IIII			IIII		
11	IIII			IIII		I
12	II	III		IIII		I
13	IIII	II		IIII		
14	II	I		IIII I		
15	I	I		IIII II		I
16	IIII			IIII		I
17	IIII			IIII		
18	IIII			IIII		I
19	IIII I					
20	IIII	I		IIII		
21	II			IIII III		
22	III			IIII II		
23	II			IIII III		
24	II			IIII I		I
25	I			II		

47 40
145
3 5
2 4

(7) 31% (9) 4% (3) 1% 58% (14) 6% (1-1)

7/16/08 WORKING

#90 - Waste Dump #37

WORKING 7/18/08

	live (66)	under (7)	litter (70, 43)	nox (113)	bare (0)	rock (1, 2)
1.	𝍸		𝍸			
2.	III		𝍸 II			
3.	𝍸 II		III			
4.	III		𝍸		II	
5.	𝍸		III		II	
6.	𝍸 I		IIII			
7.	𝍸 I		III		I	
8.	I		𝍸 III		I	
9.	II		𝍸 I			I
10.	IIII		𝍸			
11.	IIII		𝍷 I			
12.		𝍷 I	IIII			
13.	IIII		𝍷 I			
14.	I		𝍷 IIII			
15.	II		𝍷 III			
16.	𝍷 I		IIII		II	
17.	III	I	𝍷		I	
18.	III		𝍷 I			I
19.	II		𝍷 I		II	
20.	I		𝍷 III			

Live	undes	litter	nox	bare	rock	
5		5				10
3		7				10
7		3				10
3		5		2		10
5		3		2		10
6		4				10
6		3		1		10
1		8		1		10
2		7			1	10
4		6				10
4		6				10
	6	4				10
4		6				10
1		9				10
2		8				10
4		4		2		10
3	1	5		1		10
3		6			1	10
2		6		2		10
1		9				10
2		7	1			10
5	1	4				10
6		3			1	10
2	6	2				10
1		6	2	1		10
82	14	136	3	12	3	
32.80%	5.60%	54.40%	1.20%	4.80%	1.20%	

Total

250

#125 - Child Harold - 2 Dump

0 25 50 75 100 Feet

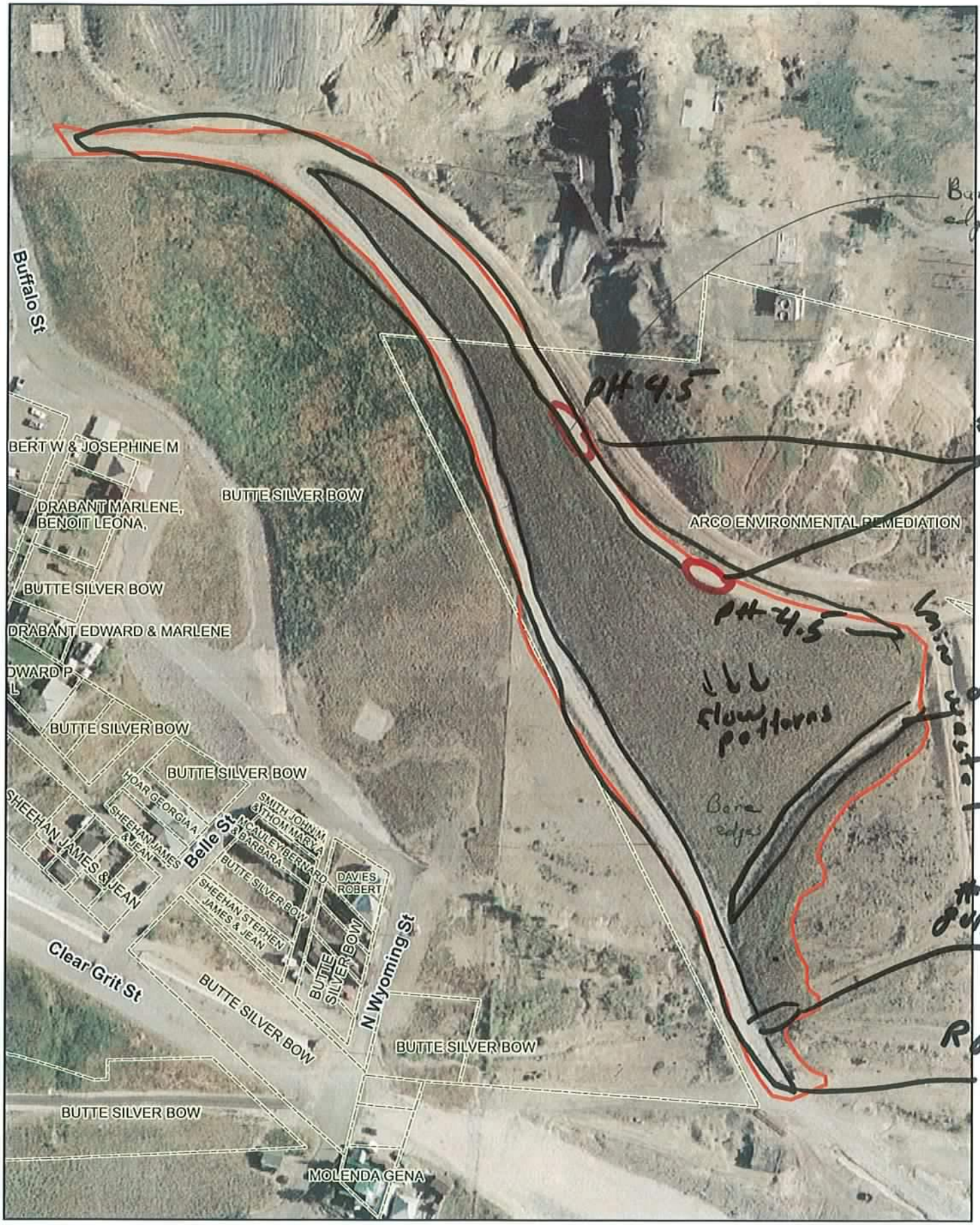
CDM

21.	1		1111			
22.	1111	1	1111			
23.	1111		111			1
24.	11	1111	11			
25.	1		1111	11	1	
	20	7	22	3	1	1
	live	undes	litter	nox	bare	rock
Total	86	14	135	3	12	3

12
135
86
14
3
12
3
253

Master

#181- Mounta... Con - 3



BRES FIELD FORM

Site ID: #125 Site Name: Donkey Hill Field Date: 7-9-08

Team Members (Circle your name): Gordon Ryan Campbell

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Δ surrounded by roads

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	20					
*Noxious weeds	3					
Litter	20					
Rocks > 2"	5					
Bare Ground	7					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	50					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	F					
Yellow sweetclover	X					
Alfalfa	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	X					
Rills Frequency	X					
Gullies Depth	X					
Gullies Frequency	X					
Soil Movement	11					
TOTAL BLM Score:	39					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	X					
Cheatgrass	F					
Baby's breath	X					
Kochia	X					
Thistle	X					
Leafy Spurge	X					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- **lime rock barrier**
- **depositional area**
- **more weeds**
- **steeper slope**
- X **increased erosion**
- **less vegetation**
- **gullies**
- **other** sediment deposit

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ___ N X

- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N X

- **bulk soil failure**
- **land slumps**
- **subsidence**

6. Barren Areas: Y ___ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N X
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

- 1 polygon

erosion along north side edge / bordman street, undercutting sand causing sig. sediment deposit

- significant sediment deposit at west corner of site

- car parked on side adjacent to Hobbs property

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#72S - Donke, Hill

N

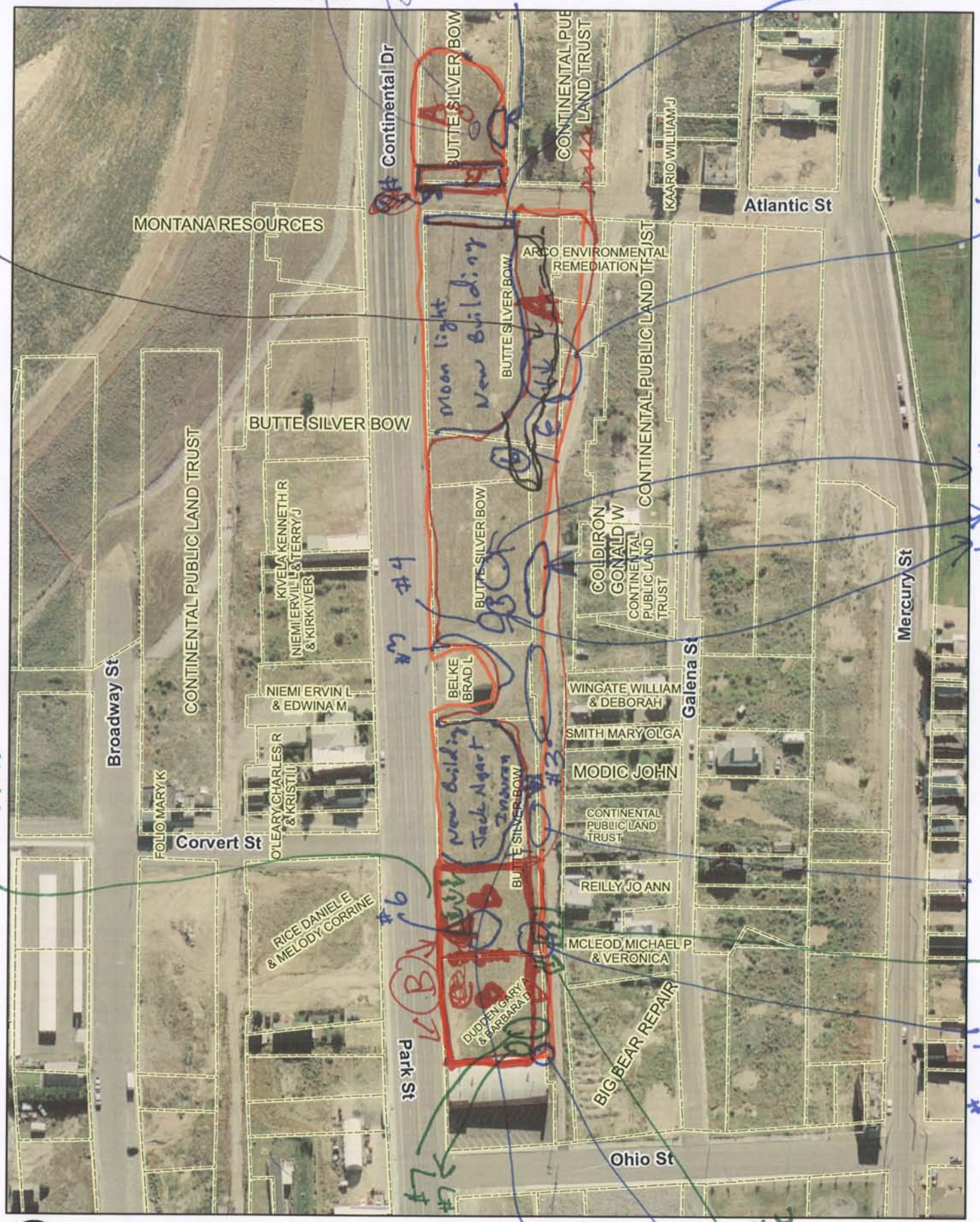
0 20 40 60 80 Feet

CDM

BPSOU_2009 Sites

master

#105 - Lizzie Shaft



Master

BRES FIELD FORM

Site ID: 105 Site Name: Lizzie Shaft Field Date: 7/6/09

Team Members (Circle your name): (Jeanne Larson) Eric Larson Beverly Plumb

Number of Polygons: 2 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	15	1				
*Undesirable (weedy) species	10	9				
*Noxious weeds	7	2				
Litter	38					
Rocks > 2"	5					
Bare Ground	30	90				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	20	6				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	I					
Slender wheatgrass						
Yellow sweetclover	I	I				
Alfalfa						
Other						
Other Scorpion		I				
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	8				
Surface Rock Movement	5	8				
Pedestalling	9	3				
Flow Patterns	6	6				
Rills Depth	4	3				
Rills Frequency	2	4				
Gullies Depth	6	7				
Gullies Frequency	2	6				
Soil Movement	3	8				
TOTAL BLM Score:	43	53				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I					
Cheatgrass	I	I				
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other Foxtail	X					
Other Salsify	X					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N 4

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y X N____
Are any gullies actively eroding? Y X N____
Number of gullies ____

Comments. NE corner of Polygon A - debris bricks pieces of concrete, and trash

* Polygon B = mostly barren area east of Archery building plus east side of Atlantic St.

* Polygon A = south site edge of Polygon B - plus all remaining sites not covered by rich, buildings

* Polygon B- sprayed for weeds immediately after evaluation- whole polygon sprayed

* Polygon A - east of Atlantic St contains many small areas of exposed waste

* ~~South~~ South of Moonlight Building excessive amount of mustard

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Randi Phelps
Jennifer Nardiello

#106 - Hoy - H[illegible]key Shafts

N

Feet
0 5 10 20 30 40 50 60

CDM

Master

BRES FIELD FORM Site ID: 6a Site Name: Hay-Hickey Shafts Field Date: 7/6/09

Team Members (Circle your name): Randi Phelps + Jennifer Nardiello

Number of Polygons: 2 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: CCCS Building and Grounds

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments. This site has been developed into a professional building site. The CCS building and landscaped grounds cover the site.

The site edges are mostly sidewalk. The main vegetation is freshly mowed lawn grass.

There is a drainage ditch in the middle of the site as noted on the map.

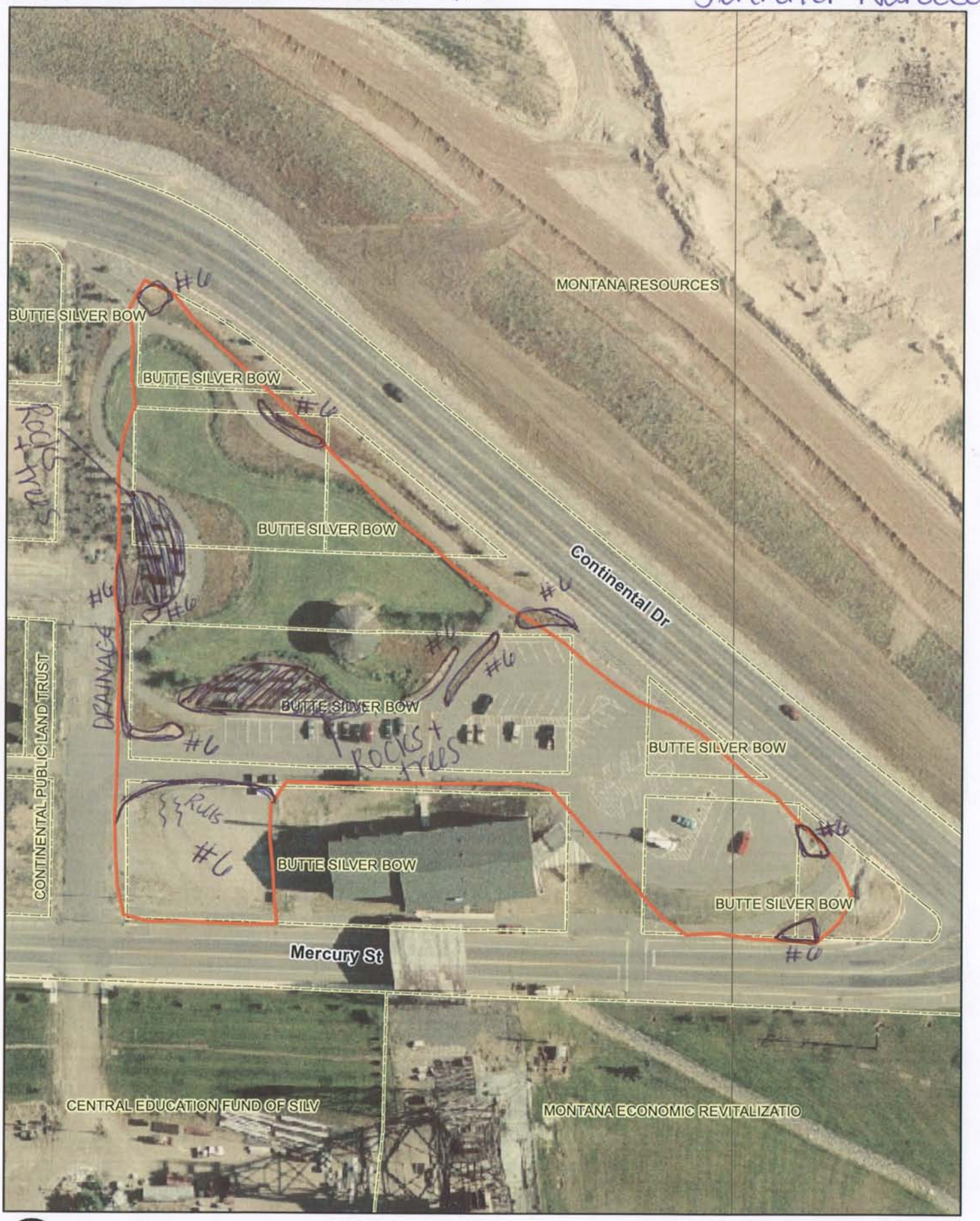
Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#116N - Belmont Hoist

Master

Randi Phelps
Jennifer Nardiello



N

Feet
0 15 30 60 90 120 150 180

CDM

BRES FIELD FORM Site ID: 116 Site Name: ~~N~~ Belmont ~~Hoist~~ Field Date: 7/6/09

Team Members (Circle your name): Kandi Phelps Jennifer Nardiello

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Belmont Senior Center

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	42					
*Undesirable (weedy) species	11					
*Noxious weeds	2					
Litter	41					
Rocks > 2"	1					
Bare Ground	3					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	47					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover	/					
Alfalfa	/					
Other Purple Clover	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	3					
Flow Patterns	3					
Rills Depth	3					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	25					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	F					
Cheatgrass	F					
Baby's breath	/					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other Salsify	F					
Other Dandelions	F					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☑ **more weeds**
- ☑ **steeper slope**
- ☑ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** ____

Estimate width of affected edge (in feet) See notes

4. Exposed Waste Material? Y ____ N ✓

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 9

Do barren areas cover over 25% of any polygon? Y ____ N ✓

7. Gullies (over 6" in depth):

Y ____ N ✓

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

Comments.

There is a definite difference along the trail edges at this site. Along the trails, there are more weeds, increased erosion, and ~~less~~ veg. barren areas.

Most of the site encompasses the Belmont Senior Center and its parking lot.

Some of the areas have landscaped rocks, mulch, and trees and ornamental bushes.

Grass in the middle of the site was recently mowed making erosion and vegetation difficult to count.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#51 - Syndicate Pit

Feet
0 10 20 30 40

CDM

BRES FIELD FORM

Site ID: 51 Site Name: Syndicate Pit Field Date: 7/14/09

Team Members (Circle your name): Jodie Keegan

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Barren Area

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	4%					
*Undesirable (weedy) species	5%					
*Noxious weeds	1%					
Litter	0%					
Rocks > 2"	10%					
Bare Ground	80					
TOTAL (above 6 items must total 100%)	100%					
ADJUSTED LIVE % = Live + 5%Undesirable	9%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	I					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	14					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	5					
Rills Frequency	5					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	14					
TOTAL BLM Score:	36					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y✓ N____

- Estimated pH 4.0
- Approximate area (in square feet) 3000ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y✓ N____

- ☑ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y✓ N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y✓ N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#57 - Little Min[illegible] 1 Master

Jennifer Nardiello
Randi Phelps

N

0 20 40 60 80 Feet

picture taken

CDM

Master

BRES FIELD FORM

Site ID: 57 **Site Name:** Little Minah 1 **Field Date:** 7/6/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: 1 Slope: 1 to 2 Aspect (circle all relevant): N S W (E) NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	40					
Erosion (BLM score)	54					
Undesir/noxious weeds	6					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	34					
*Undesirable (weedy) species	6					
*Noxious weeds	0					
Litter	57					
Rocks > 2"	0					
Bare Ground	2					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	/					
Crested wheatgrass	D					
Slender wheatgrass	/					
Yellow sweetclover	/					
Alfalfa	I					
Other Rabbitbrush	I					
Other Great Basin Wild Rye	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	8					
Pedestalling	11					
Flow Patterns	12					
Rills Depth	5					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	54					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	/					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	/					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N _____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☑ **other** Mine Waste

Estimate width of affected edge (in feet) 10 ft

4. Exposed Waste Material? Y ✓ N _____

- Estimated pH 4.5
- Approximate area (in square feet) 50 ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y ✓ N _____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☑ **subsidence**

6. Barren Areas: Y _____ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____

Do barren areas cover over 25% of any polygon? Y _____ N ✓

7. Gullies (over 6" in depth):

Y _____ N ✓

Are any gullies actively eroding? Y _____ N ✓

Number of gullies 0

Comments. There are tire tracks driving East to West through the site.

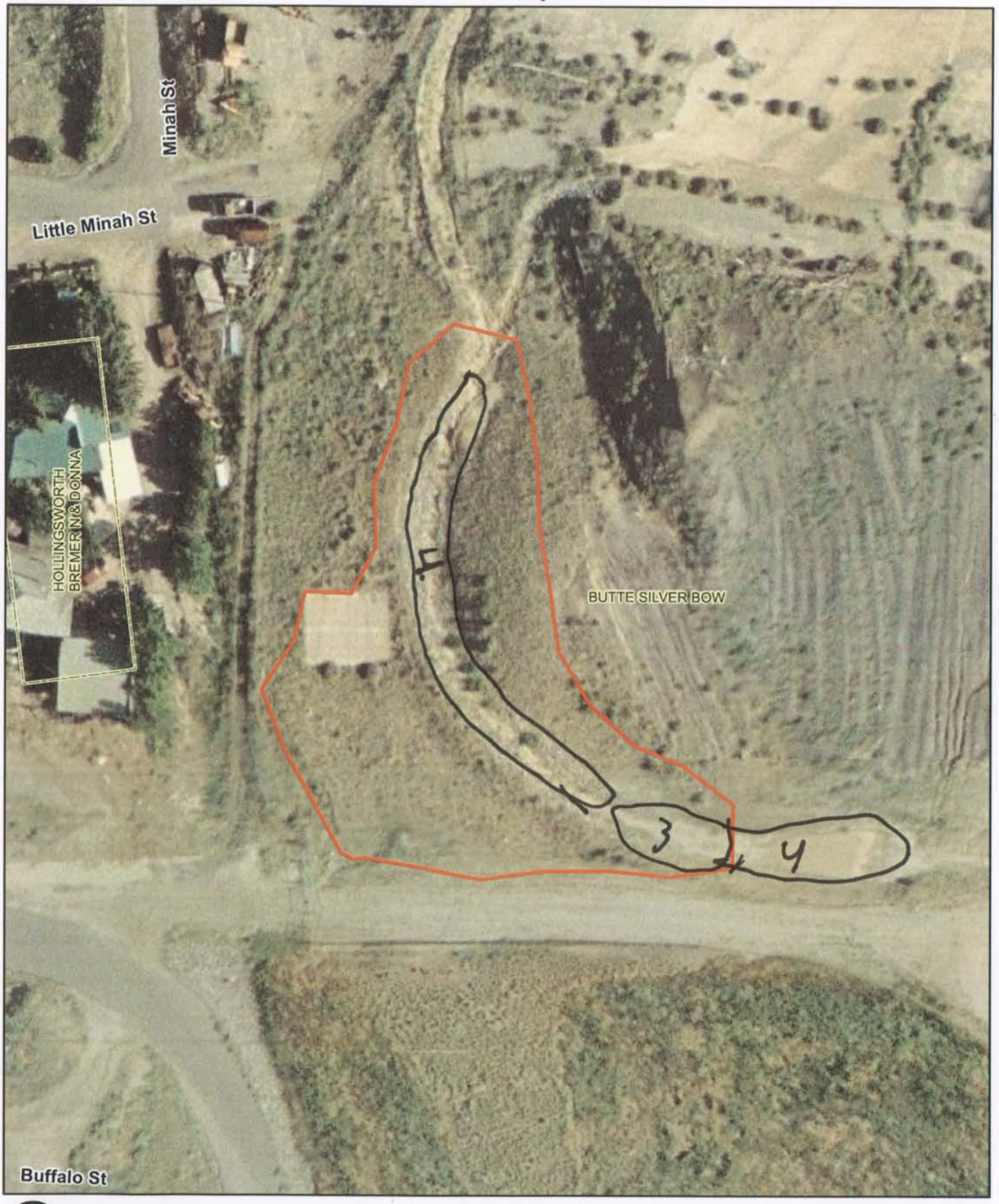
The three areas of subsidence are more than three feet in diameter.

The exposed waste is not much, but is present in the top layer of soil.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#58 - Mountain Con - 2 Dump



BRES FIELD FORM

Site ID: #58 Site Name: Mt Con - 2 Dump Field Date: 7/6/09

Team Members (Circle your name): JTR & BC

Number of Polygons: 1 Slope: 40% to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: poorly reclaimed site

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	10					
*Undesirable (weedy) species	10					
*Noxious weeds	25					
Litter	25					
Rocks > 2"	10					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	—					
ADJUSTED LIVE % = Live + 5%Undesirable	15					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover	.					
Alfalfa	I					
Canada Blue	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	3					
Rills Depth	7					
Rills Frequency	4					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	39					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	F					
Cheatgrass	F					
Baby's breath	—					
Kochia	—					
Thistle	—					
Leafy Spurge	—					
Allysum	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ___ (check applicable items)

- ✓ **lime rock barrier**
- ✓ **depositional area**
- ✓ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ✓ **gullies**
- ☐ **other** ___

Estimate width of affected edge (in feet) 10

4. Exposed Waste Material? Y ✓ N ___

- Estimated pH 4.5
- Approximate area (in square feet) 75% of site
- Number of areas with exposed waste 75% of site

5. Is there evidence of: Y ___ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ___ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N ✓
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

- On first glance it is hard to believe that this site was ever reclaimed.
- Does have a rip-rap drainage ditch with lots of exposed waste in it. There is significant waste in the deposition at the bottom of the ditch (area not included in the site).
- Most of site does <u>not</u> have a soil cap.
- Heavy prairie weed growth.
- This site needs to be completely redone + boundarys redrawn.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#68 - Little Min[illegible] - 2 MASTER

Randi Phelps
Jennifer Nardiello

Picture Taken from SE

CDM

BRES FIELD FORM

Site ID: 60 Site Name: Little Muna-2 Field Date: 1/7/09

Team Members (Circle your name): Randi + Jennifer

Number of Polygons: 2 Slope: 1 to 2 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	15	20				
Erosion (BLM score)	60	19				
Undesir/noxious weeds	10	13				

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40	15				
*Undesirable (weedy) species	5	3				
*Noxious weeds	5	5				
Litter	45	5				
Rocks > 2"	0	10				
Bare Ground	5	2				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable		18				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F	I				
Slender wheatgrass	F	F				
Yellow sweetclover		I				
Alfalfa	F					
Other: GREAT BASIN WILD RYE		F				
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8	3				
Surface Rock Movement	8	2				
Pedestalling	11	0				
Flow Patterns	12	0				
Rills Depth	6	0				
Rills Frequency	2	0				
Gullies Depth	0	7				
Gullies Frequency	0	2				
Soil Movement	3	5				
TOTAL BLM Score:	60	19				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	I				
Cheatgrass	D	F				
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☒ **steeper slope**
- ☒ **less vegetation**
- ☐ **other** RESIDENTIAL AREA SEE NOTES + MAP

Estimate width of affected edge (in feet) see map

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N_____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____

Do barren areas cover over 25% of any polygon? Y____N____

7. Gullies (over 6" in depth):

Y X N X

Are any gullies actively eroding? Y X N____

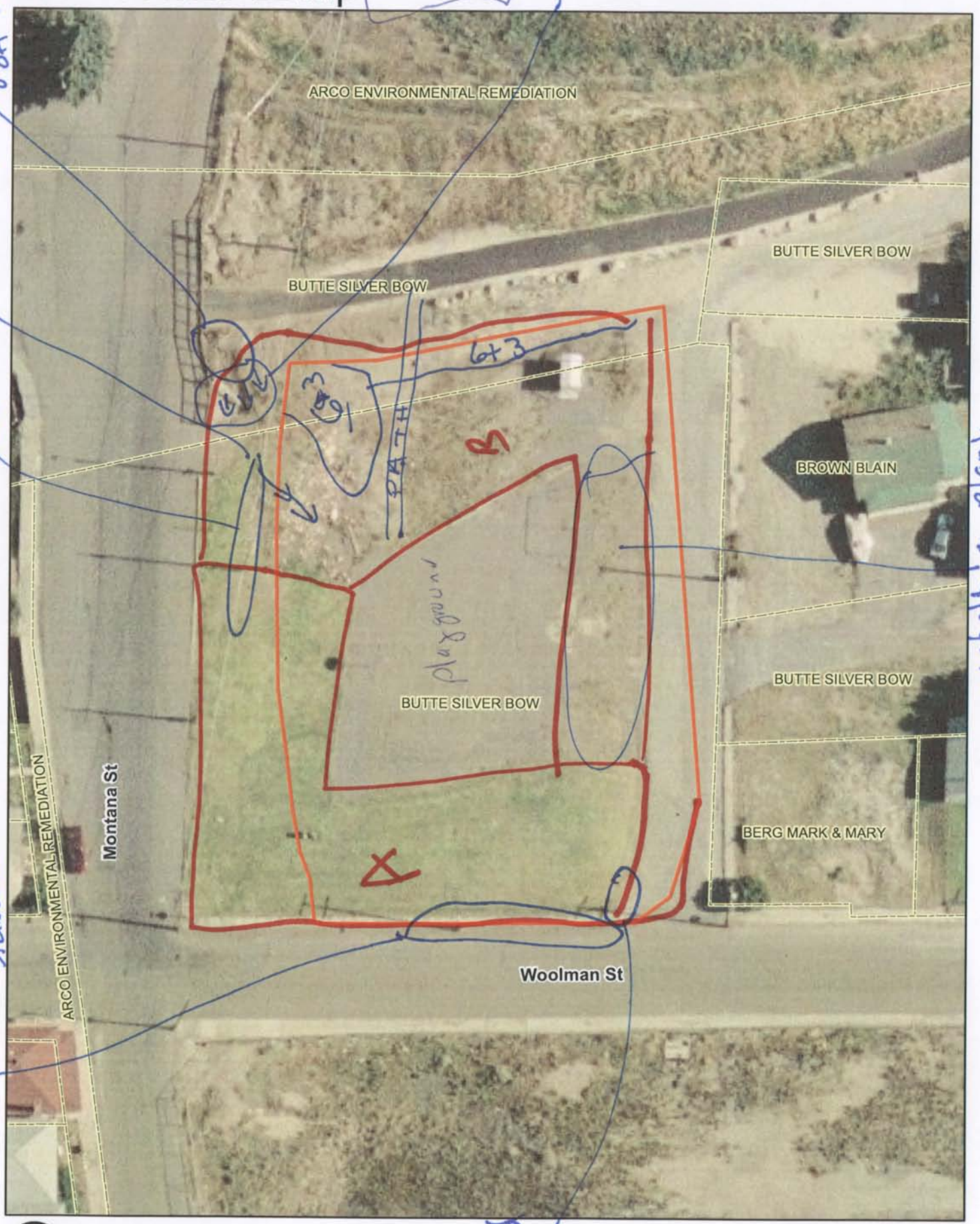
Number of gullies _____

Comments. The lower half of the site is being used for a parking lot. The East site edge along houses has a large gully leading into a house and is full of noxious weeds and is actively eroding. The drain on the lower half of the site has a ditch leading into it which is eroding and is a rill which will soon be a gully. A rill is on the top edge of the site and will become worse if not treated. Weeds need to be sprayed.

Additional Vegetation: asphalt is eroding into gully

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).


#77 - PA020 D...mp
master
ARCO ENVIRONMENTAL REMEDIATION
BUTTE SILVER BOW
BUTTE SILVER BOW
BROWN BLAIN
BUTTE SILVER BOW
BUTTE SILVER BOW
BERG MARK & MARY
ARCO ENVIRONMENTAL REMEDIATION
Montana St
Woolman St
PATH
6+3
6+3
B
A
Old Quarry
Feet
0 10 20 30 40 50
CDM

/Master/

77

BRES FIELD FORM Site ID:__ Site Name: PA 020 Field Date: 7/7/09

Team Members (Circle your name): Jeanne Larson, Eric Larson Bev Plumb

Number of Polygons: 2 Slope: ____to____ Aspect (circle all relevant): N S W (E) NW NE SW (SE)

Area Description: Playground - corner of Woolman & Montana

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	90	10				
*Undesirable (weedy) species		20				
*Noxious weeds		2				
Litter	8	5				
Rocks > 2"		8				
Bare Ground	2	55				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	90	15				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass		I				
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other turf grass	D					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3	3				
Surface Rock Movement	0	5				
Pedestalling	3	6				
Flow Patterns	3	9				
Rills Depth	0	2				
Rills Frequency	0	2				
Gullies Depth	0	2				
Gullies Frequency	0	2				
Soil Movement	3	11				
TOTAL BLM Score:	12	49				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed		I				
Dalmation toadflax	I					
Cheatgrass		I				
Baby's breath		I				
Kochia						
Thistle						
Leafy Spurge						
Other mustard		I				
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Polygon B
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **depositional area**
- ☒ **more weeds**
- ☒ **steeper slope**
- ☐ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Polygon B Y X N____

- Estimated pH 4.0
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Polygon B Y X N____

- ☒ **bulk soil failure**
- ☐ **land slumps**
- ☒ **subsidence** - soil moved - not sure how to classify

6. Barren Areas: Polygon B Y X N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y X N____

7. Gullies (over 6" in depth):
Y____ N X - one off site
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Polygon A – south sidewalk near Woodman – water is undercutting sidewalk

Polygon B – NW corner – large gullie forming near bridge – not sure if on slit – rills forming

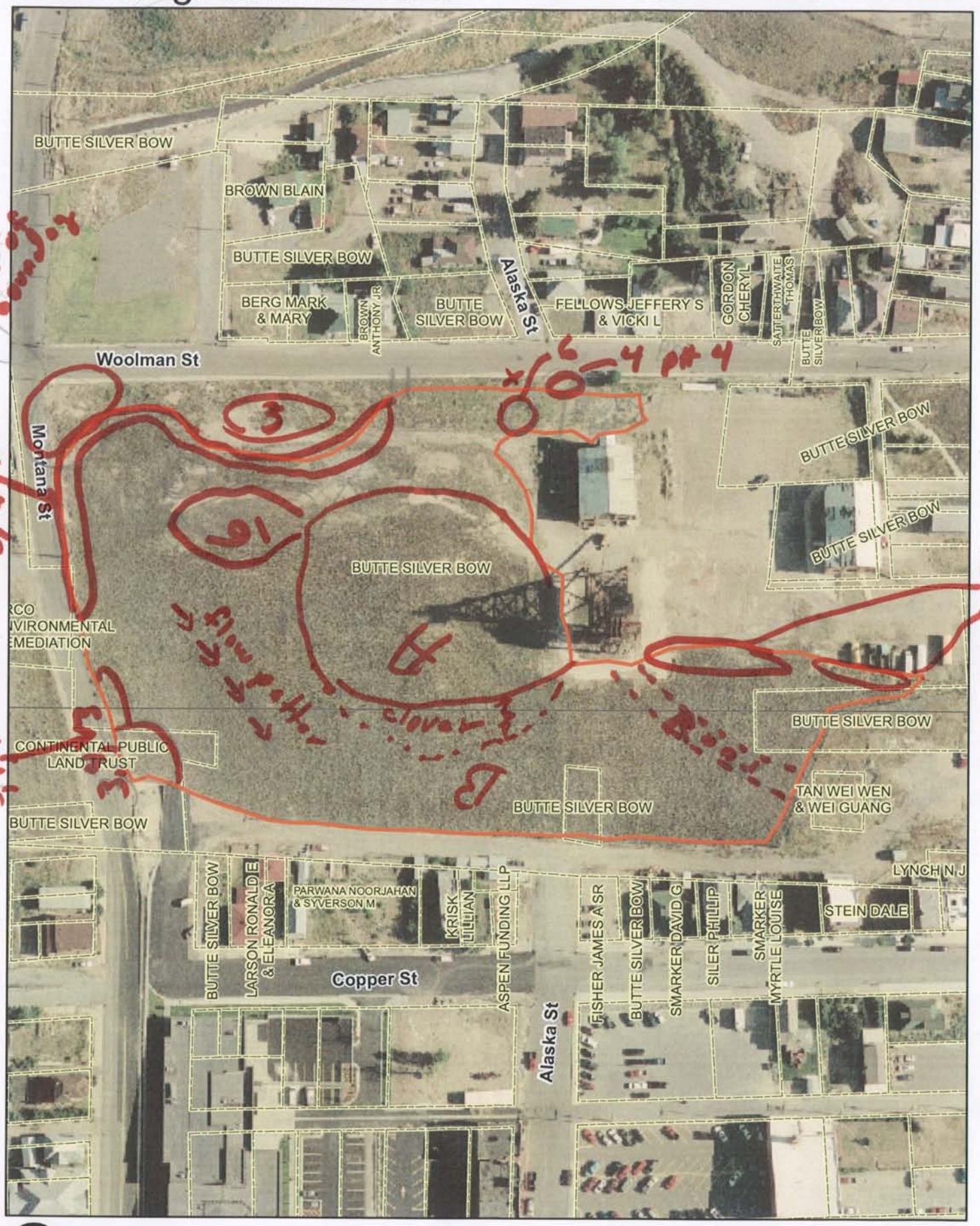
Polygon B – NW side – earth moved – exposed waste – not sure what to call it

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

#78 - Original Home Yard



Feet
0 30 60 90 120 150

CDM

(Master)

BRES FIELD FORM

Site ID: T8 Site Name: Original Mine Yard Field Date: 7/6/09

Team Members (Circle your name): (Jeanne Larsen) Eric Larsen Beverly Plumb

Number of Polygons: 2 Slope: A-5E to 14 Aspect (circle all relevant): N S W E NW NE SW SE

B 3, E, 5E 14-43

Area Description: Original Mine Site - some totally reclaimed for Folk festival

A= 20 frames

B= 50 frames

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species 75%	15%/200	22.4				
*Undesirable (weedy) species		3.6				
*Noxious weeds		0.4				
Litter 25%	44/200	58				
Rocks > 2"		0.2				
Bare Ground		15.2				
TOTAL (above 6 items must total 100%)	100%	100%				
ADJUSTED LIVE % = Live + 5%Undesirable	75	26.2				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass		F				
Slender wheatgrass						
Yellow sweetclover		F				
Alfalfa		F				
Other Turf grass	D	D				
Other Flax		I				
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0	8				
Surface Rock Movement	0	5				
Pedestalling	0	11				
Flow Patterns	0	12				
Rills Depth	0	5				
Rills Frequency	0	3				
Gullies Depth	0	1				
Gullies Frequency	0	1				
Soil Movement	0	11				
TOTAL BLM Score:	0	57				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed		I				
Dalmation toadflax		I				
Cheatgrass		F				
Baby's breath						
Kochia						
Thistle		I				
Leafy Spurge						
Other Salsify		I				
Other Foxtail	I	I				
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N_____ (check applicable items) - Polygon B

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☒ **steeper slope**
- ☒ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N_____ Polygon B

- Estimated pH 5.4
- Approximate area (in square feet) ~~____~~ all site edges
- Number of areas with exposed waste ____ along WTT + wash

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N_____ Polygon B

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 4 -> Polygon B
Do barren areas cover over 25% of any polygon?
Y____ N X

7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

* North - West Corner - Montana + Woodman - #3, 4, + 6 - not sure if in site boundary - but should be

* Site edges on almost all of Montana + Woodman should be addressed

* check opening (manhole?) on Woodman near Alaska - noted by 'X' - pointed in out by Tinaley during evaluation - should cover any way

* Site has changed since photo was taken - Polygon 1 planted with turf grass / irrigated

* Pipe sticking out + ground on NW side of edge

* Polygon A - recently mowed

* Frost heave present on South + East slopes of Polygon B

steepest part of site - spindly

* Large patch - appx 100' x 50' patch of clover on middle / south edge of polygon B - though it looks 'lush' - is not as dense on top of slope as bottom

* large flow pattern ? south west areas of Polygon B - vegetation in tact but pushed down

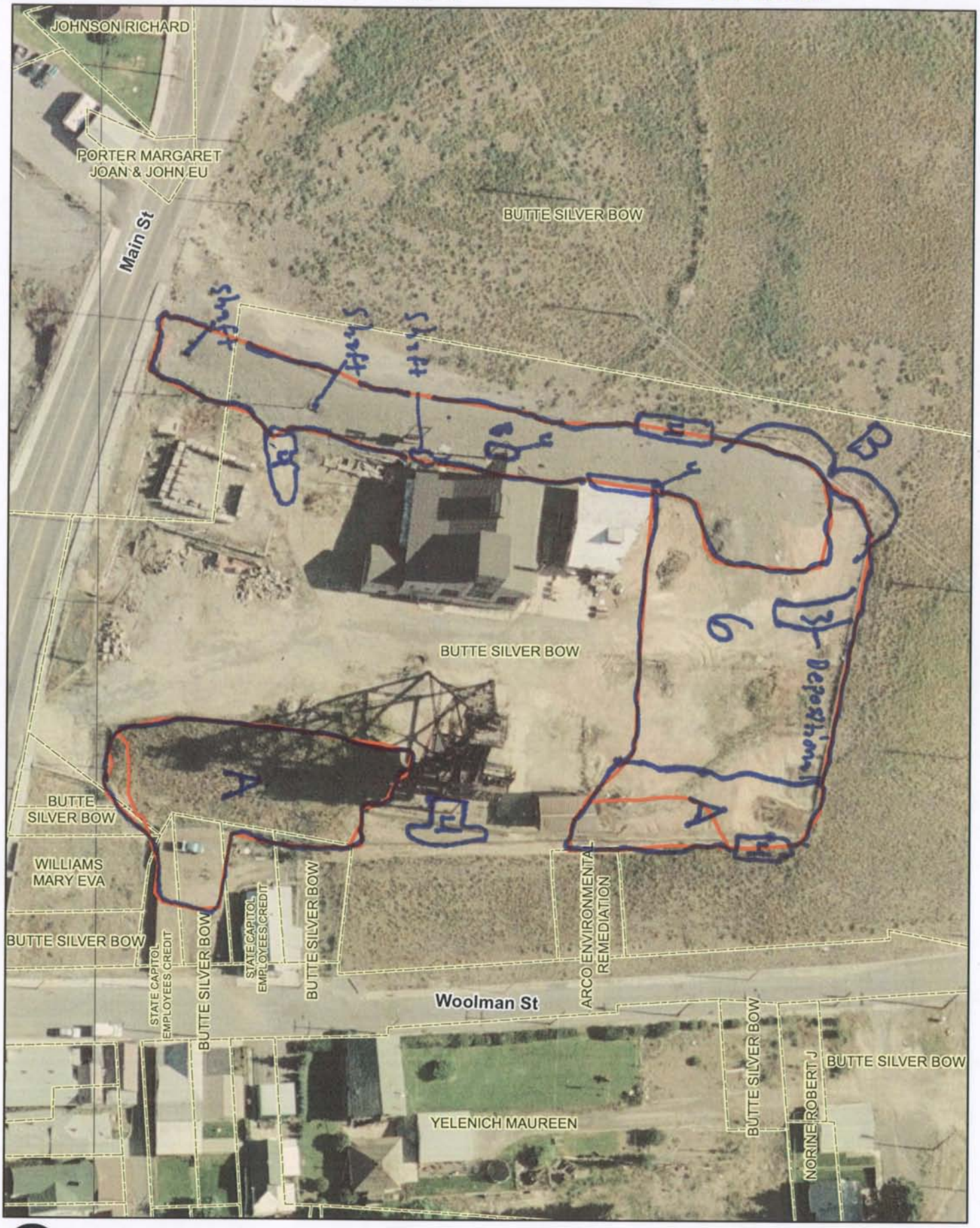
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

* numerous small exposed waste sites 1' x 1' in Polygon B south of head frame

#83 - Steward[illegible]ine Yard

Master



N

0 50 100 150 200 Feet

CDM

BRES FIELD FORM

Site ID: ~~1~~ 83 Site Name: Steward Mine Yd Field Date: 7/8/09

Team Members (Circle your name): JTR BC

Number of Polygons: 2 Slope: 30 to ___ Aspect (circle all relevant): N (S) W E NW NE SW SE

Area Description: Really messy mine yard.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35	3				
*Undesirable (weedy) species	10	2				
*Noxious weeds	2	3				
Litter	45	2				
Rocks > 2"	0	80				
Bare Ground	8	10				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	40	5				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F	I				
Crested wheatgrass	F	I				
Slender wheatgrass		I				
Yellow sweetclover	I	I				
Alfalfa	F	I				
Other Alyssum	I	I				
Other Rbbt Brsh		I				
Other Scorp Flwr	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8	3				
Surface Rock Movement	5	5				
Pedestalling	14	0				
Flow Patterns	4	4				
Rills Depth	0	0				
Rills Frequency	0	0				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	5	0				
TOTAL BLM Score:	~~41~~ 30	17				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	I				
Cheatgrass	F	I				
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other Foxtail		I				
Other Mustards	F	F				
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ___ (check applicable items)

- ☑ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☑ **depositional area**
- ☑ **steeper slope**
- ☑ **less vegetation**
- ☑ **other** Waste

Estimate width of affected edge (in feet) 20

4. Exposed Waste Material? Y ✓ N ___

- Estimated pH 4.5
- Approximate area (in square feet) 120
- Number of areas with exposed waste 6

5. Is there evidence of: Y ~~✓~~ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y ✓ N ___ Poly B

7. Gullies (over 6" in depth):
Y ___ N ✓
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

***There are three open mine shafts ***

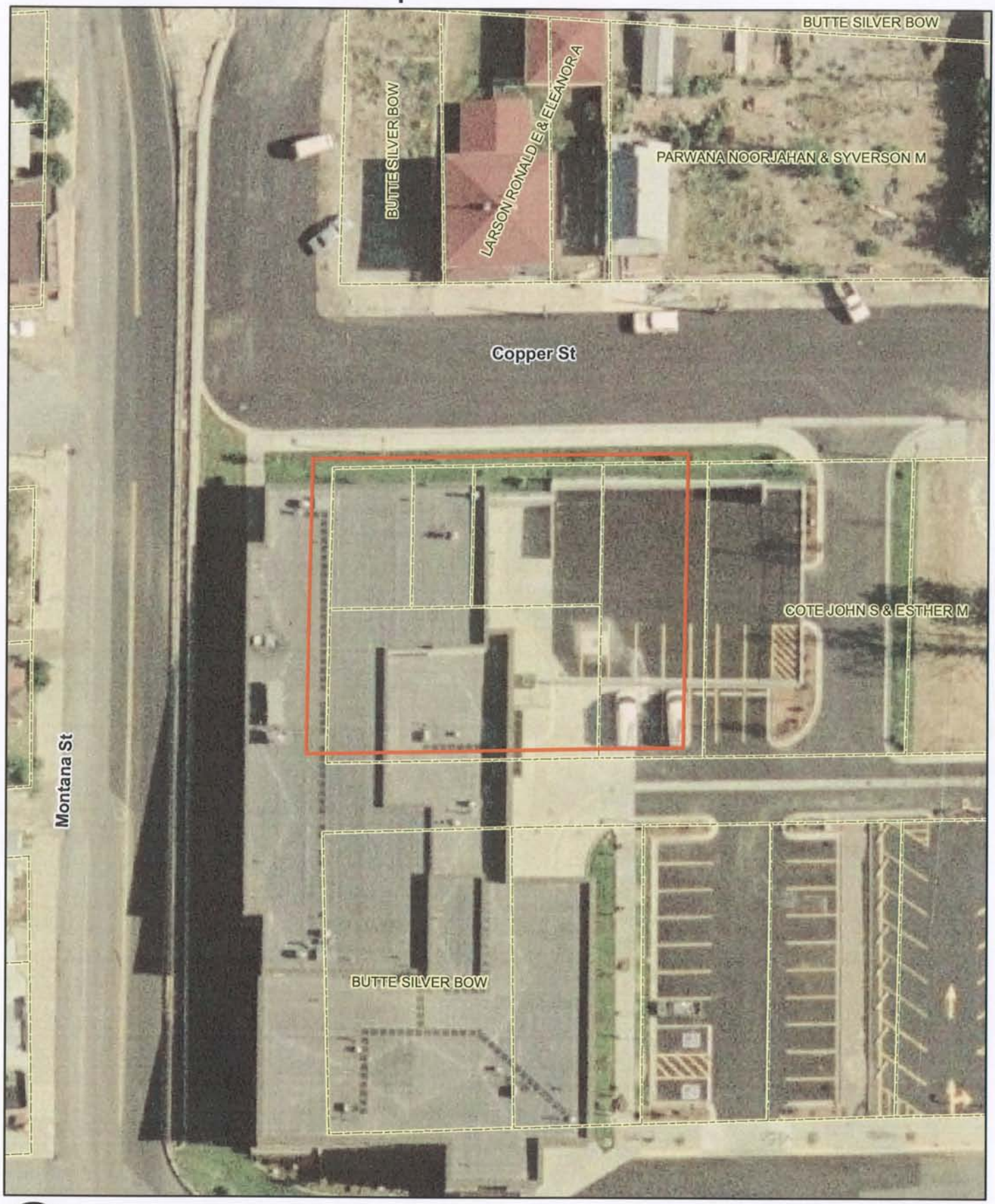
- North side of polygon B has no soil covering - lime rock only.
- Mine yard is being used by county as a storage area.
- West fence needs replacement.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

#92 - Colorado Stamp Mill



N

0 20 40 60 80 100 Feet

CDM

Name: Colorado Stamp Mill Field Date: 7/8/09

(Circle your name): Jeanne Lawson, Bill Lawson, Barb Plumb

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Butte/Silver Bow Jail

* See Note on Back

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon? Y____ N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Site is now the site of BSB Jail - no evidence of contamination - completely reclaimed

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

master

#126 - Green Copper Dump

#4 Master

Master 126

BRES FIELD FORM Site ID: __ Site Name: Green Copper Dump Field Date: 7/8/09

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Plums

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: North of 2nd, South of 3rd - between Emma + Atlantic st

Note see back

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** exposed waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH____
- Approximate area (in square feet) 4
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Majority of site consists of paved roads/driveways & residential yards

Knapweed in Alley

+ Exposed waste behind Davis Edward & SR numa

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

master

#128 - Alliance Dump

lime rock

alluvium

0 25 50 75 100 125 Feet

CDM

BRES FIELD FORM

Site ID: 128 Site Name: Alliance Pump Field Date: 7/7/09

Team Members (Circle your name): Jeanne Larson Eric Larson Bev Plumb

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

See notes

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- ☒ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Site appear to be mostly yards alley way or street

on south side of site - BSB property - too little vegetation to analyse -

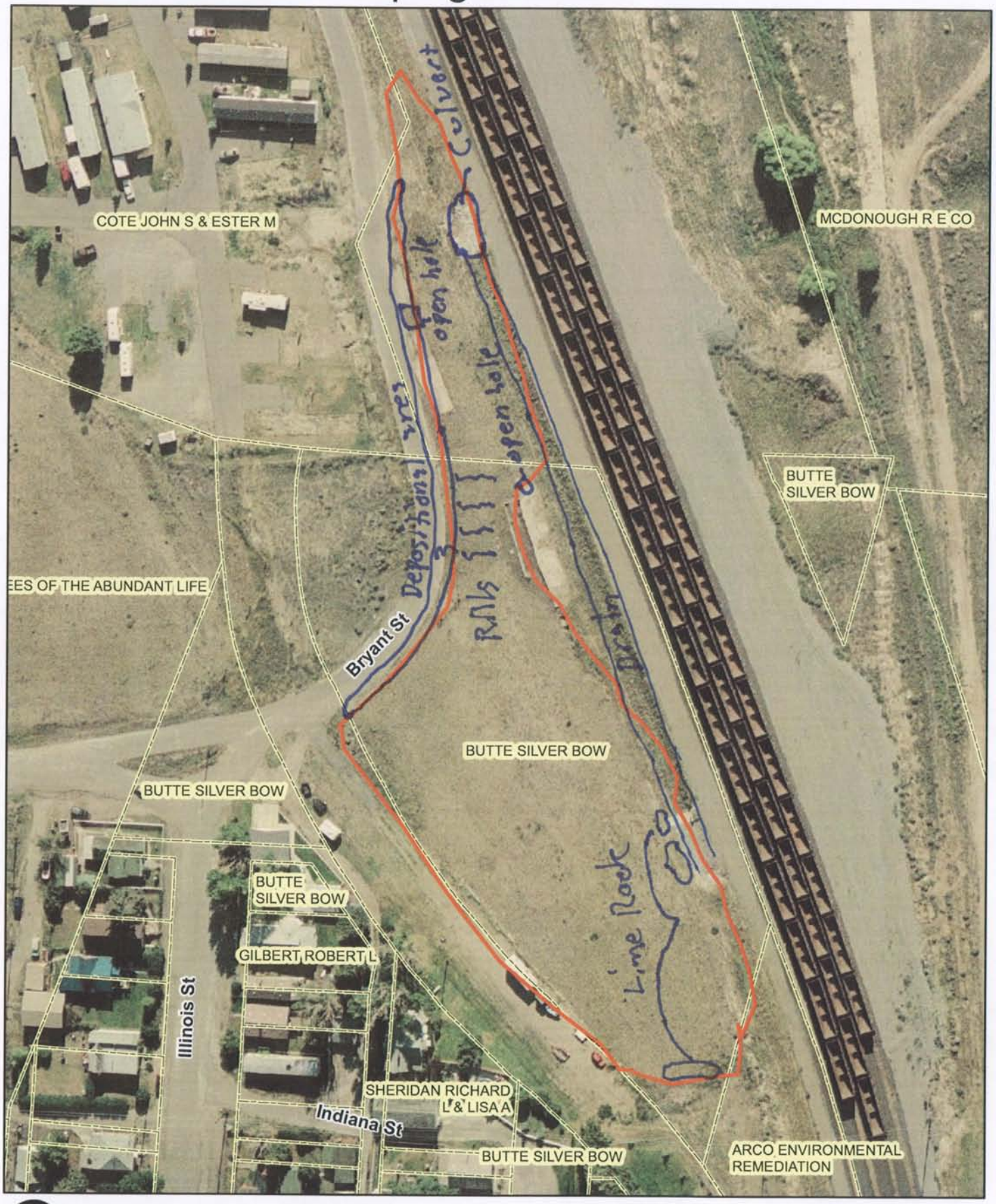
Home owner dumping with litter on site

lime rock exposed

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#135 - Washoe Samping Works Master



N

0 50 100 150 200 Feet

CDM

BRES FIELD FORM Site ID: #135 Site Name: Washoe Sampling Works Field Date: 7/8/09

Team Members (Circle your name): JTR BC

Number of Polygons: 1 Slope: 10° to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Fairly flate reclaimed damp

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	2					
*Noxious weeds	3					
Litter	40					
Rocks > 2"	3					
Bare Ground	12					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	42					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	I					
Other Flax	I					
Other Rbbt Brsh	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	14					
Flow Patterns	3					
Rills Depth	7					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	45					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other Poverty Weed	I					
Other Mustard	I					
Other Prick Lttce	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ___ (check applicable items)

- ☑ **lime rock barrier**
- ☑ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☒ **other** rills along road

Estimate width of affected edge (in feet) 10

4. Exposed Waste Material? Y ___ N ✓
- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N ✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ___ N ✓
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N ✓
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

- Runoff from road is causing majority of problems seen on the site.
- Two open holes in old rail structures are safety hazard.
- SE culvert is blocked
- Entire ditch has a poly liner.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#138 - 2nd & Nevada St

N

0 20 40 60 80 100 Feet

CDM

Master #138 2nd and Nevada

BRES FIELD FORM Site ID: Site Name: Field Date: 7/8/09

Team Members (Circle your name): Jeanne Larson Eric Larson Beverly Plumb

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: 900 block Nevada – east side

see note on back

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	15					
*Noxious weeds	2					
Litter	30					
Rocks > 2"	3					
Bare Ground 15	~~20~~					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	90					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	I					
Other grass	F					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	3					
Flow Patterns	9					
Rills Depth	7					
Rills Frequency	6					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	~~15~~					
TOTAL BLM Score:	47					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	T					
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other Foxtail	I					
Other salsify	I					
Other mustard	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** crumbling asphalt

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments. The only part of this site evaluated was the north edge of the site — approximately 8' wide — whole north edge

The remaining part of the site was reclaimed by putting homes on the site.

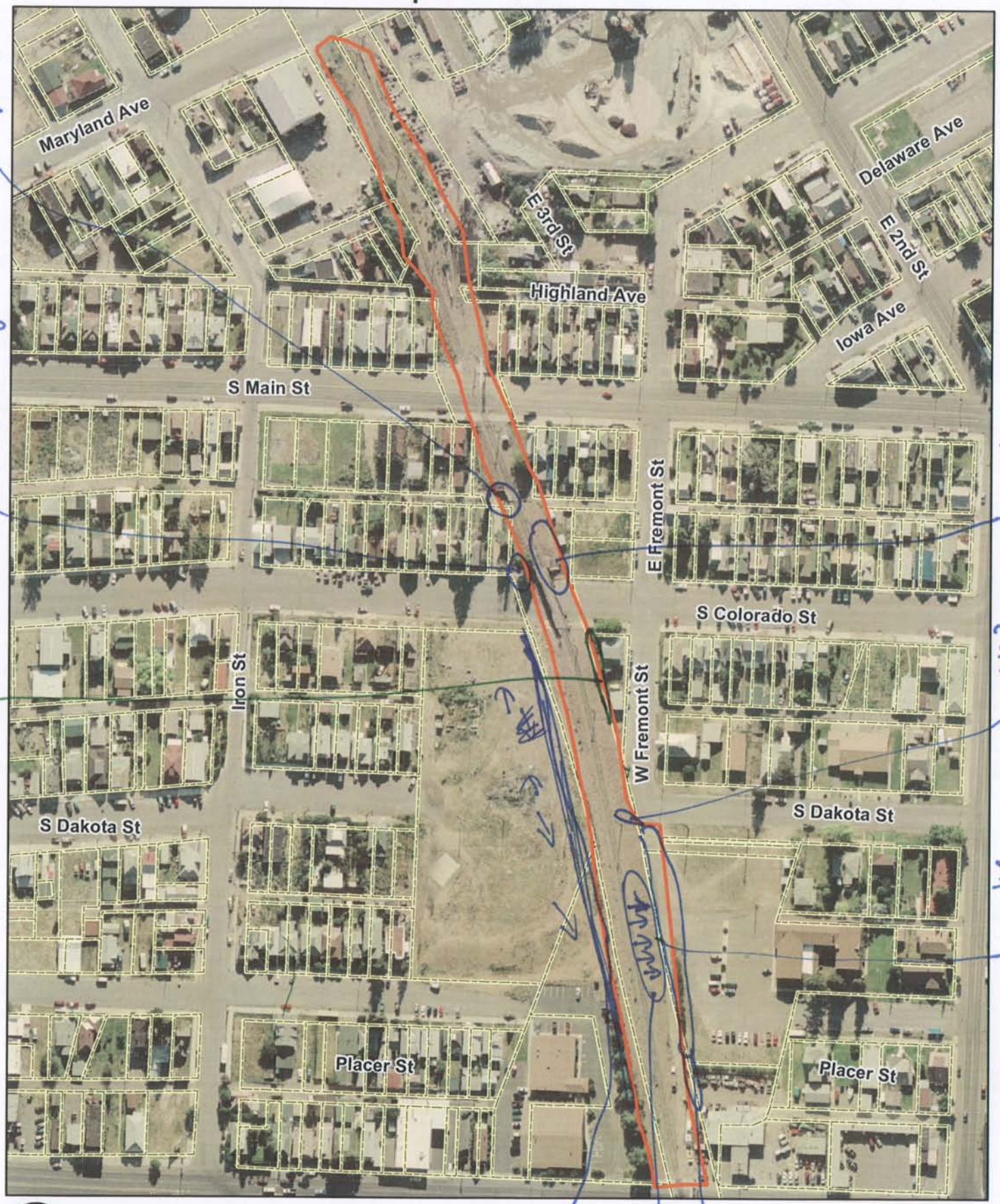
* Some of the homes' yards are not in good condition
* Drive ways in alley appears to be made of lime rock
* trash on site
* Several long rills formed
* asphalt from street crumbling onto site

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

master

#139 - Concentrate Spill



master # 139

BRES FIELD FORM Site ID:__ Site Name: Concentrate Spill Field Date: 7/2/09

Team Members (Circle your name): Jeanne Larson Eric Larson Beverly Plumb

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Railroad bed from Mulgrad to Montana - South of Iron

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

see note

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	8					
Pedestalling	/					
Flow Patterns	6					
Rills Depth	5					
Rills Frequency	2					
Gullies Depth	2					
Gullies Frequency	2					
Soil Movement	5					
TOTAL BLM Score:	30					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	✓					
Dalmation toadflax	✓					
Cheatgrass	✓					
Baby's breath	✓					
Kochia						
Thistle						
Leafy Spurge						
Other mullen	I					
Other salsify	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- X **lime rock barrier**
- X **depositional area**
- X **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4
- Approximate area (in square feet) 4
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N +

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Area between Platte + ~~Dodt~~ Dakota appears to have bikes ridden on it, displaced Rocks + exposed waste pH 4 - potential gullie - Rocks are now at bottom of slope - site edge full of weeds (south side of track

* North side - east of Montana st ditch liner exposed

* site edges should be addressed along whole site - especially weeds

* Ditch running from Colorado to Montana on North side of track appears ok

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

master

#153 - Fools Concentrator (FC) & FC A

#6, pH 4

#6, pH 4

CDM

masters

153

BRES FIELD FORM

Site ID: __ Site Name: Fools Concentrator FC ← FCA Field Date: 7/7/9

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Phillips

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Directly East of Kuw South of - Irvine Geary

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	0					
*Noxious weeds	5					
Litter	4					
Rocks > 2"	4					
Bare Ground	87					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4
- Approximate area (in square feet) whole site
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas whole site
Do barren areas cover over 25% of any polygon? Y X N____

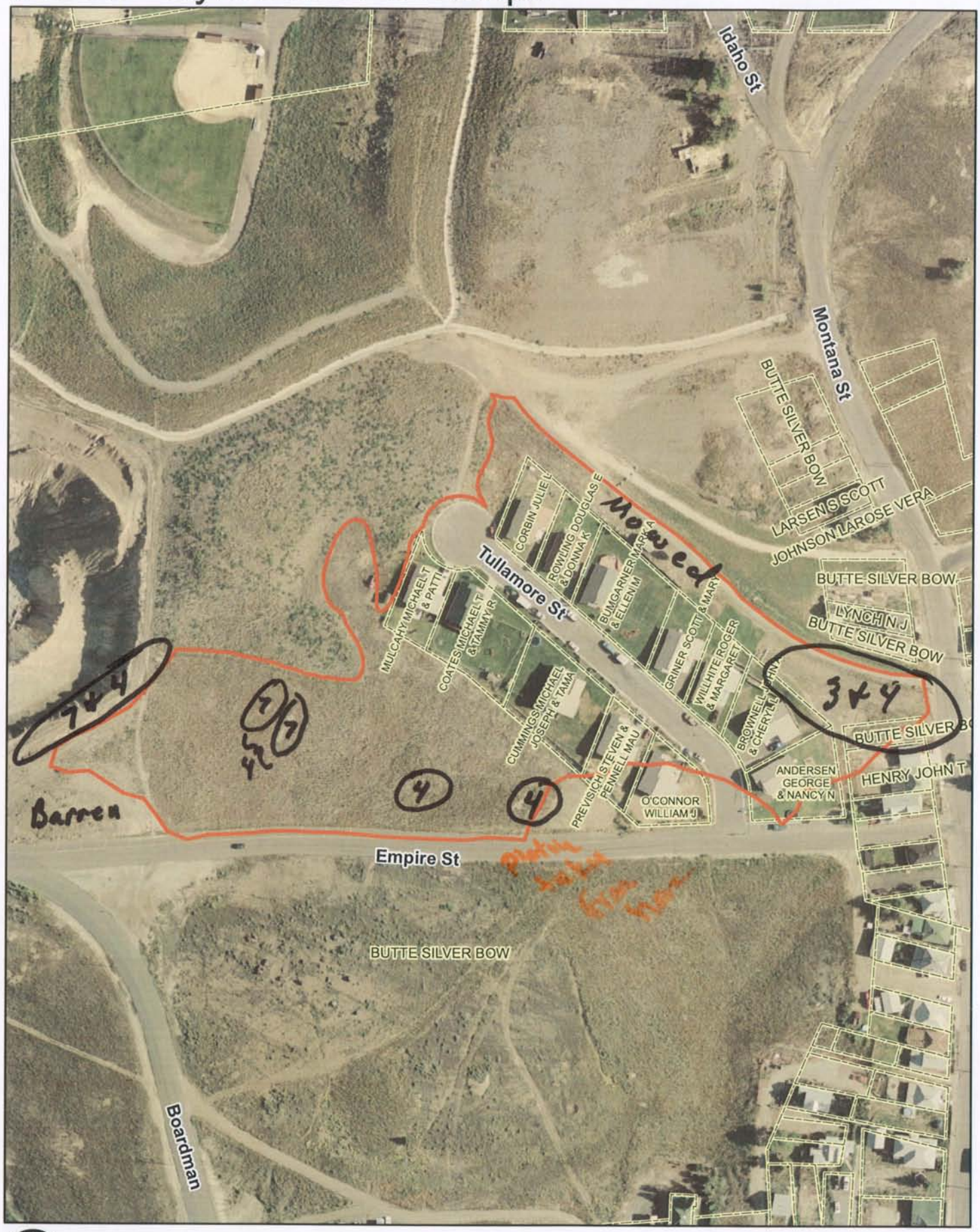
7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#160S - Syndicate Pit Dumps



0 100 200 300 400 Feet

CDM

BRES FIELD FORM

Site ID: 1605 Site Name: Syndicate Pit Dumps Field Date: 7/6/09

Team Members (Circle your name): JReagan Bryce Curran

Number of Polygons: 1 Slope: 40% to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	20					
*Undesirable (weedy) species	9					
*Noxious weeds	1					
Litter	60					
Rocks > 2"	1					
Bare Ground	9					
TOTAL (above 6 items must total 100%)	/					
ADJUSTED LIVE % = Live + 5%Undesirable	25%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	—					
Alfalfa	I					
Other Alysum	I					
Other Canada Blu	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	5					
Pedestalling	11					
Flow Patterns	6					
Rills Depth	4					
Rills Frequency	2					
Gullies Depth	7					
Gullies Frequency	2					
Soil Movement	5					
TOTAL BLM Score:	45					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	—					
Kochia	—					
Thistle	—					
Leafy Spurge	—					
Other Bttr+Eggs	I					
Other Prickly Lttce	I					
Other Mustards	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☑ **lime rock barrier**
- ☑ **more weeds**
- ☑ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☑ **less vegetation**
- ☑ **other** waste

Estimate width of affected edge (in feet) 20

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 7.5
- Approximate area (in square feet) 120
- Number of areas with exposed waste 4

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3

Do barren areas cover over 25% of any polygon? Y ____ N ✓

7. Gullies (over 6" in depth):

Y ✓ N ____

Are any gullies actively eroding? Y ✓ N ____

Number of gullies 1

Comments.

- W edge mowed
- NE edge exposed waste, lime rock + increased nox weeds.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#1501 - Christmas

BRES FIELD FORM

Site ID: #1501 Site Name: Christmas Field Date: _____

Team Members (Circle your name): JTR & BC

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5%					
*Undesirable (weedy) species	25					
*Noxious weeds	15					
Litter	10					
Rocks > 2"	25					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	–					
ADJUSTED LIVE % = Live + 5%Undesirable	10%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa						
Other Allysum	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	2					
Pedestalling	0					
Flow Patterns	3					
Rills Depth	3					
Rills Frequency	2					
Gullies Depth	7					
Gullies Frequency	2					
Soil Movement	3					
TOTAL BLM Score:	22					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	–					
Cheatgrass	F					
Baby's breath	–					
Kochia	–					
Thistle	–					
Leafy Spurge	–					
Other Mustards	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☑ **gullies**
- ☑ **depositional area**
- ☑ **steeper slope**
- ☑ **less vegetation**
- ☐ **other** _____

Estimate width of affected edge (in feet) 15

4. Exposed Waste Material? Y ___ N ✓

- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y ✓ N ___

7. Gullies (over 6" in depth):
Y ✓ N ___
Are any gullies actively eroding? Y ✓ N ___
Number of gullies 1

Comments.

- Gully on E edge - driveway/alley
- No soil cap at all - limestone cap only
- Heavy Knoxious weeds.

- Recommend complete waste removal and restoration of this residential area.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

#1519 - Nighte. gale

master

N

0 10 20 30 40 Feet

CDM

BRES FIELD FORM

Site ID: 1519 Master Site Name: Nightengale Field Date: 7/6/09

Team Members (Circle your name): Jeanne Larson Eric Larson Beverly Plumb

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Paved Driveway

See note on back

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	on edges					
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- X **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

* Site appears to have been paved

* Knapweed growing on edges

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

master

matrimony vine

#1539 - Henriett

1539 [Master]

BRES FIELD FORM

Site ID: __ **Site Name:** Henriett **Field Date:** 7/7/09

Team Members (Circle your name): Jeanne Larson Eric Larson Bey Plumb

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: SW corner of Diamond + Giro - ½ lot

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	40					
Erosion (BLM score)	24					
Undesir/noxious weeds	G					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	15					
*Noxious weeds	0					
Litter	35					
Rocks > 2"	0					
Bare Ground 15	~~35~~					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	D					
Crested wheatgrass	I					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	3					
Rills Depth	6					
Rills Frequency	1					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	24					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other matrimony Vine - off site						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y___N___

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y___ N___
Number of gullies ____

Comments.

* recently mowed

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER

Randi Phelps
Jennifer Nardiello.

#1656 - Maryland Ave and Iron St

CDM

#1656

MASTER

BRES FIELD FORM Site ID: ___ Site Name: Maryland Ave and Iron St. Field Date: 7/7/09

Team Members (Circle your name): Randi Phelps and Jennifer Nardiello

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other: Canadia Blue	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	/					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other: Foxtail Barley	I					
Other: mustards	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- X **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- X **other** NOXIOUS

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ___ N X

- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N ___

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1

Do barren areas cover over 25% of any polygon? Y X N ___ Whole Site!!!

7. Gullies (over 6" in depth):

Y ___ N X

Are any gullies actively eroding? Y ___ N ___

Number of gullies ___

Comments. Area is a gravel parking lot filled up with noxious weeds on site edges.

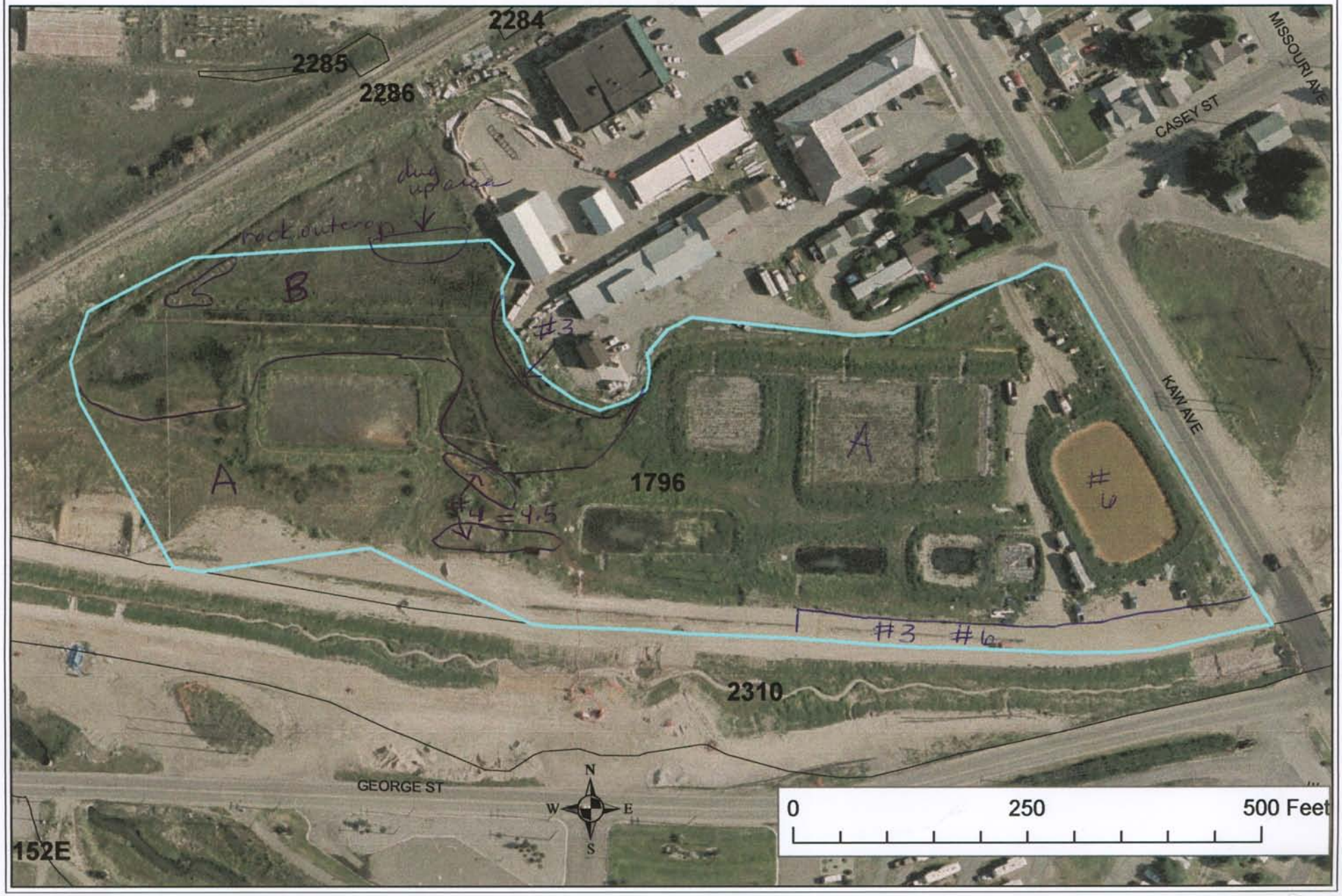
WEEDS NEED TO BE SPRAYED

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 1796



Master

BRES FIELD FORM

Site ID:__ Site Name: 1796 Field Date: 7/13/09

Team Members (Circle your name): Keegan | Jodi

Number of Polygons: 2 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: field off George | Kaw

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25	50				
*Undesirable (weedy) species	10	5				
*Noxious weeds	5	5				
Litter	50	40				
Rocks > 2"	1	0				
Bare Ground	9	0				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	30	55				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I	D				
Crested wheatgrass	I					
Slender wheatgrass	I	I				
Yellow sweetclover						
Alfalfa	F	I				
Other Willow	I					
Other Cattail	I					
Other Aspen	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	3				
Surface Rock Movement	2	0				
Pedestalling	3	14				
Flow Patterns	3	3				
Rills Depth	2	0				
Rills Frequency	2	0				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	3	3				
TOTAL BLM Score:	21	23				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I	I				
Other mullen	I	I				
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ___ (check applicable items)

- ☐ lime rock barrier
- ☑ more weeds
- ☐ increased erosion
- ☐ gullies
- ☐ depositional area
- ☐ steeper slope
- ☑ less vegetation
- ☐ other ___

Estimate width of affected edge (in feet) 10'

4. Exposed Waste Material? Y ✓ N ___

- Estimated pH 4.5
- Approximate area (in square feet) 105 1/2
- Number of areas with exposed waste 2

5. Is there evidence of: Y ___ N X

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

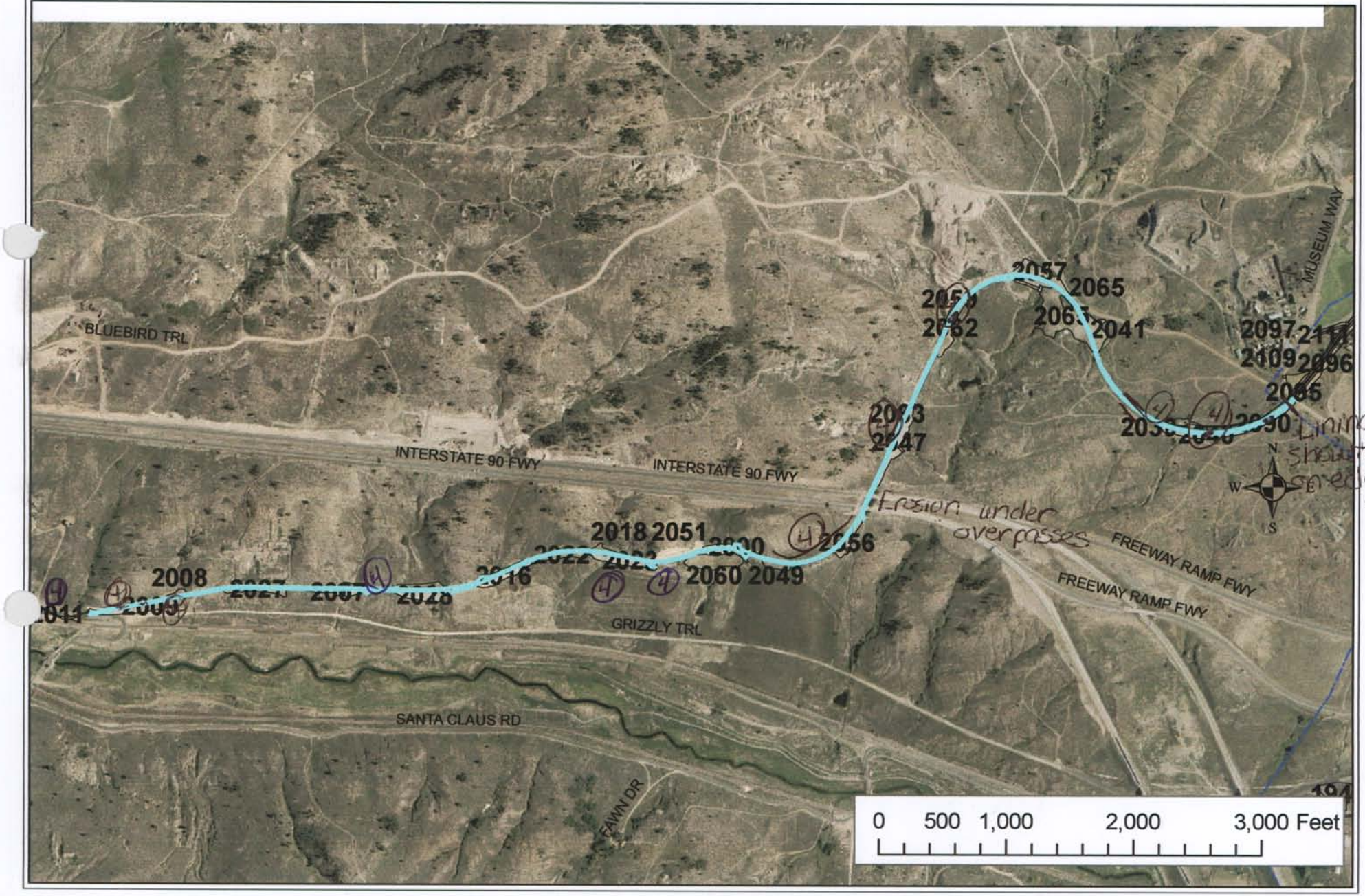
6. Barren Areas: Y ✓ N ___

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2
Do barren areas cover over 25% of any polygon? Y ___ N ✓

7. Gullies (over 6" in depth):
Y ___ N ✓
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Site 2000


BLUEBIRD TRL
INTERSTATE 90 FWY
INTERSTATE 90 FWY
MUSEUM WAY
FREEWAY RAMP FWY
FREEWAY RAMP FWY
GRIZZLY TRL
SANTA CLAUS RD
FAWN DR
2008
2018 2051
2060 2049
2057
2065
2041
2097
2109
2085
Erosion under overpasses
Lining sloughing edges
N
W
E
S
0 500 1,000 2,000 3,000 Feet

BRES FIELD FORM

Site ID: __ **Site Name:** 2000 **Field Date:** 7/16/09

Team Members (Circle your name): Keegan Jodi Mary Megan

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Walking Trail from Mining Musoum to Rocker

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable	✓					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath	F					
Kochia	F					
Thistle						
Leafy Spurge						
Other mullen	F					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☒ **more weeds**
- ☒ **steeper slope**
- ☒ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☒ **other** Exp. waste

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ✓ N ___

- Estimated pH 4.0 pH
- Approximate area (in square feet) ___
- Number of areas with exposed waste numerous

5. Is there evidence of: Y ___ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ___ N ___

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N ✓
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Master

Site 2001

BRES FIELD FORM Site ID:__ Site Name: 2001 Field Date: 7-16-09

Master

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: — to — Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock Rip Rap and culvert on N. side of trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground	—					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ~~✓~~ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☑ **other** exposed waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Gully sloping down from north (off site) into culvert running under walking trail.

* No issues
* Exposed waste to E of site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2002

BRES FIELD FORM

Site ID:__ **Site Name:** 2002 **Field Date:** 7/17/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y__X__ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☒ **other** exposed waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y___ N___
Number of gullies _____

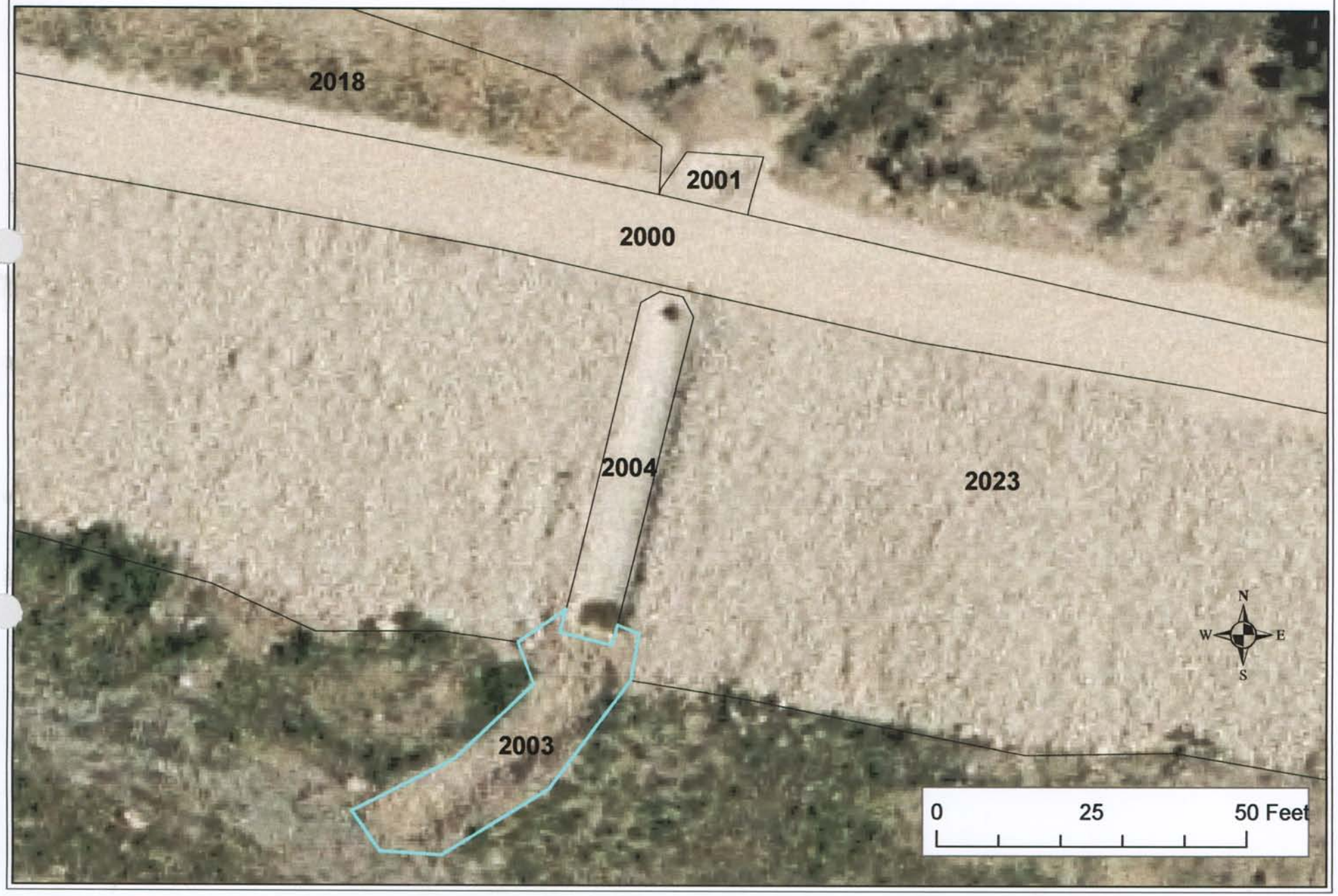
Comments. Mine waste on west edge of slope. Litter going into culvert.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2003



BRES FIELD FORM

Site ID: ___ Site Name: 2003 Field Date: 7-15-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: rock rip rap at base of concrete ditch

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	1					
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	99					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	1					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N ✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y___ N___
Number of gullies _____

Comments.

Rock Rip Rap at base of concrete ditch.

No issues.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2004

Master

BRES FIELD FORM

Site ID:__ Site Name: 2004 Field Date: 7-15-09

Team Members (Circle your name): Keegan | Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: concrete ditch from culvert under trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	✓					
*Undesirable (weedy) species	✓					
*Noxious weeds	✓					
Litter	✓					
Rocks > 2"	✓					
Bare Ground	✓					
TOTAL (above 6 items must total 100%)	✓					
ADJUSTED LIVE % = Live + 5%Undesirable	✓					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

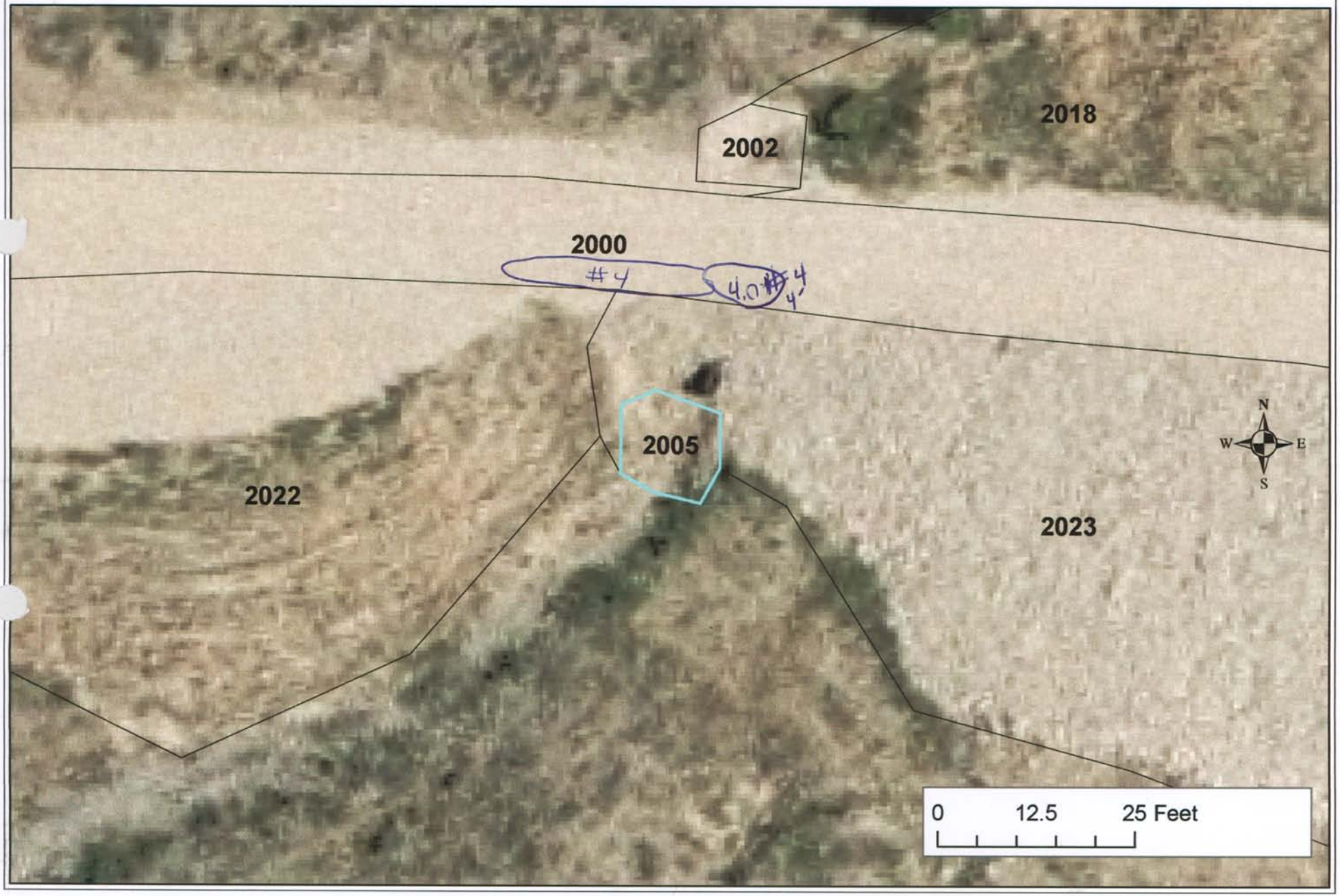
Concrete drainage ditch

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

2000

Site 2005



BRES FIELD FORM

Site ID:__ Site Name: 2005 Field Date: 7-16-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock Rip Rap below culvert

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Small Rock rip rap area below culvert on s. side of walking trail.

No issues

Note for site # 2000

Exposed waste on walking trail above this site.

Estimated sq. ft - 10' x 4.0 ph

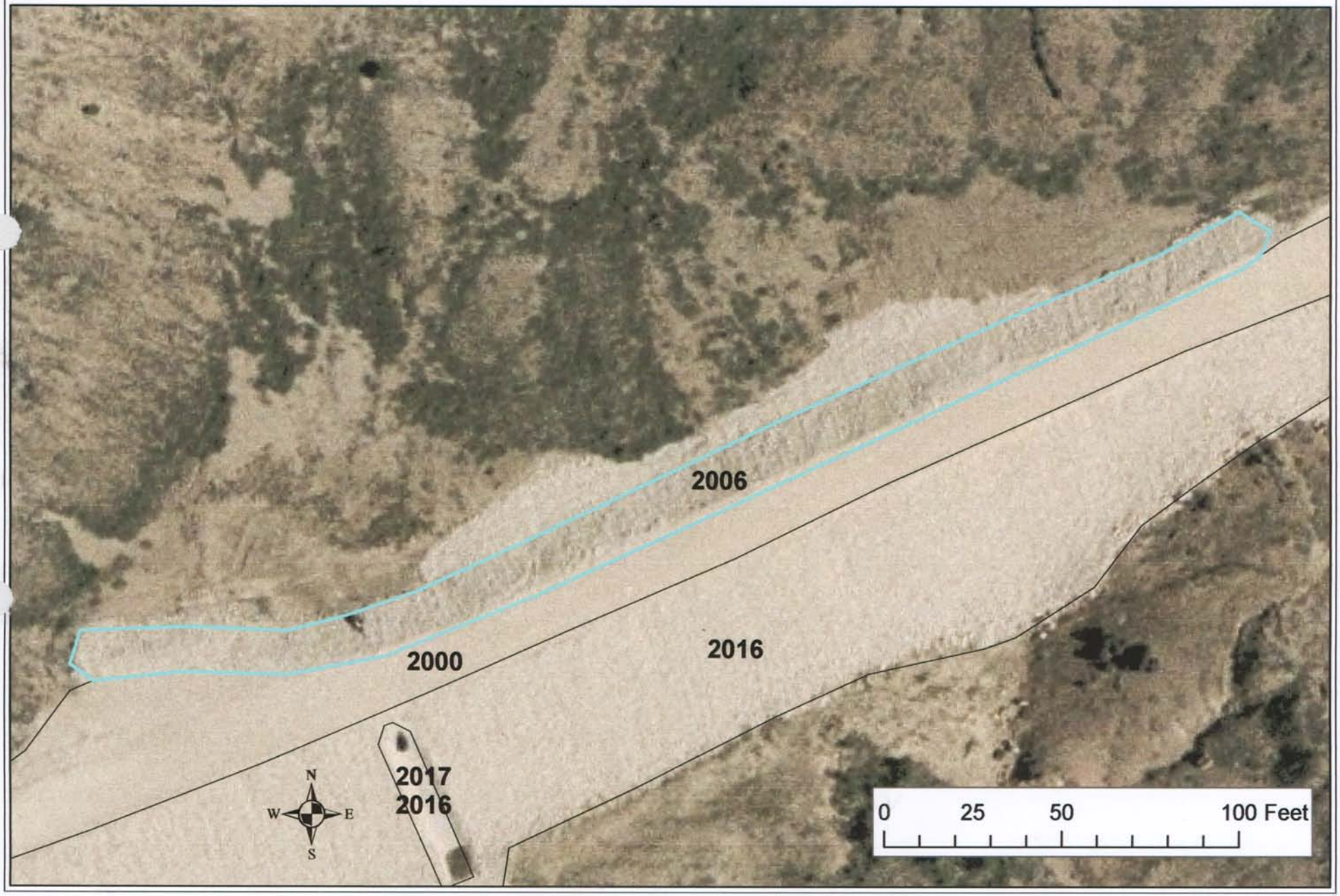
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2006



BRES FIELD FORM

Site ID:__ Site Name: 2006 Master Field Date: 7/15/09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: N. border of walking trail - Rock Rip Rap

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N✓____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N✓____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Rock rip rap

No issues.

Site edge functions as catch basin for all slopes down gradient from interstate.

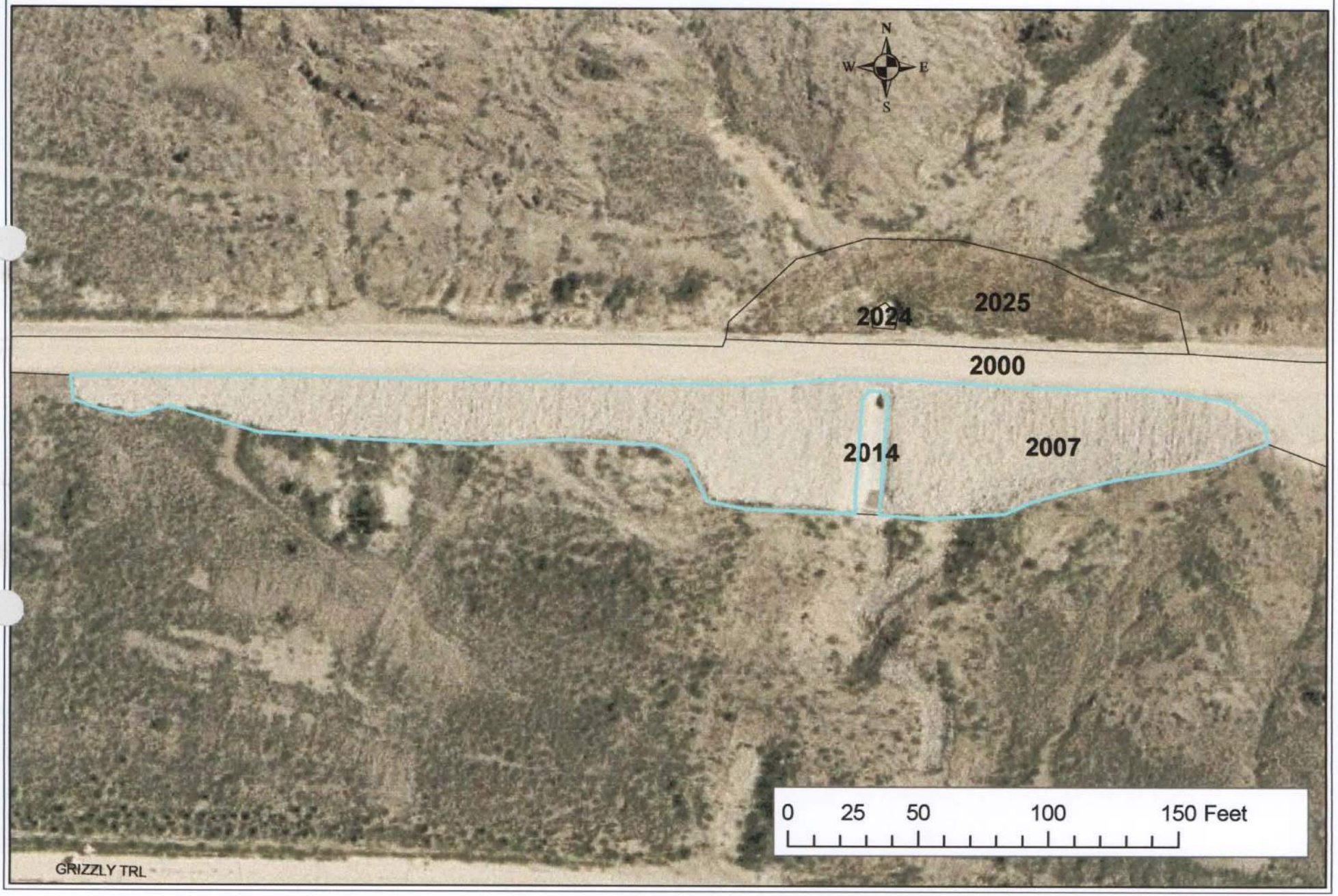
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2007



BRES FIELD FORM

Site ID: __ Site Name: 2007 Field Date: 7-15-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock Rip Rap on South edge of trail

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

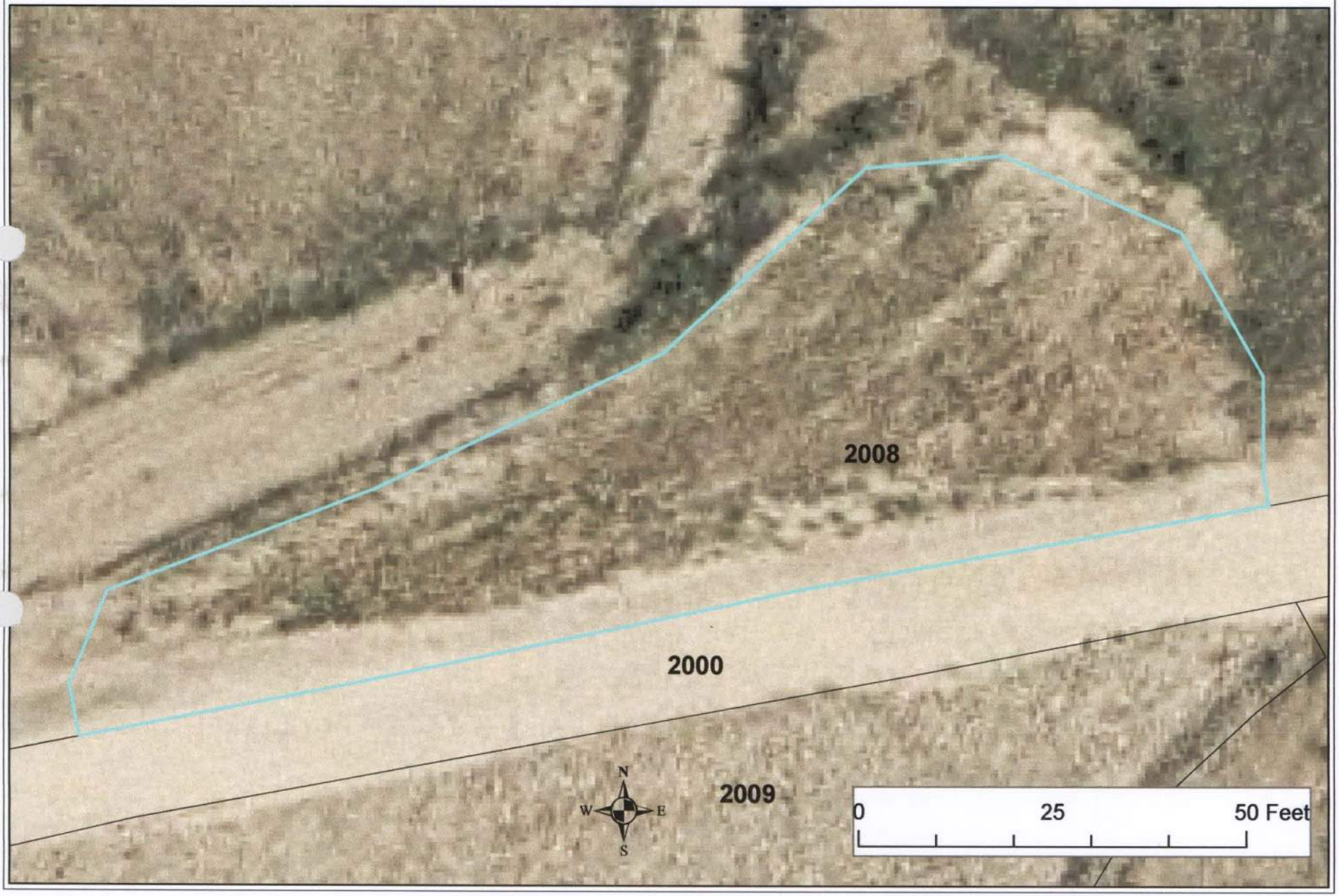
Comments.

Rock Rip Rap on Southern slope of walking trail.
No issues

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2008



QAQC

BRES FIELD FORM

Site ID: __ Site Name: 2009 Field Date: 7/15/09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	34					
*Undesirable (weedy) species	10					
*Noxious weeds	5					
Litter	31					
Rocks > 2"	-					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	39					
ADJUSTED LIVE % = Live + 5%Undesirable	100					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	D					
Yellow sweetclover						
Alfalfa	I					
Other rubber rabbit	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	3					
Flow Patterns	3					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	—					
Gullies Frequency	—					
Soil Movement	5					
TOTAL BLM Score:	26					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath	I					
Kochia	I					
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N ✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

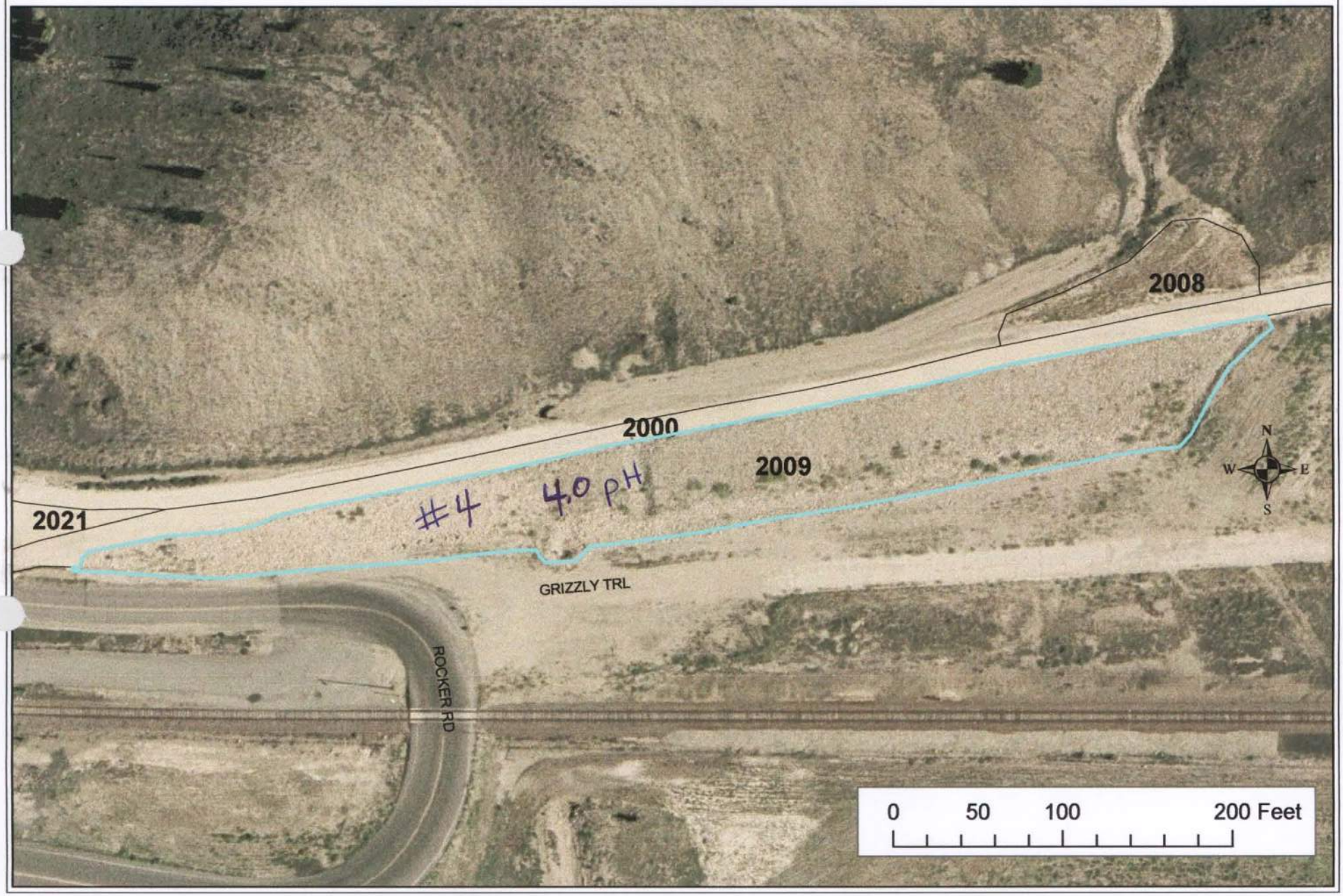
QAQC on site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2009



BRES FIELD FORM

Site ID:__ Site Name: 2009 Field Date: 7-15-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 3 to 1 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock Rip Rap over exposed waste

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	2					
*Undesirable (weedy) species	3					
*Noxious weeds	2					
Litter	-					
Rocks > 2"	93					
Bare Ground	0					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	5					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other rubber rabbit	I					
Other willow	I					
Other butter/eggs	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y✓ N____

- Estimated pH 4.0
- Approximate area (in square feet) 4000ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y✓ N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y✓N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Rock Rip Rap - Slope - covered but measures @ 40 pt where bare ground shows through and on rocks @ top of slope.

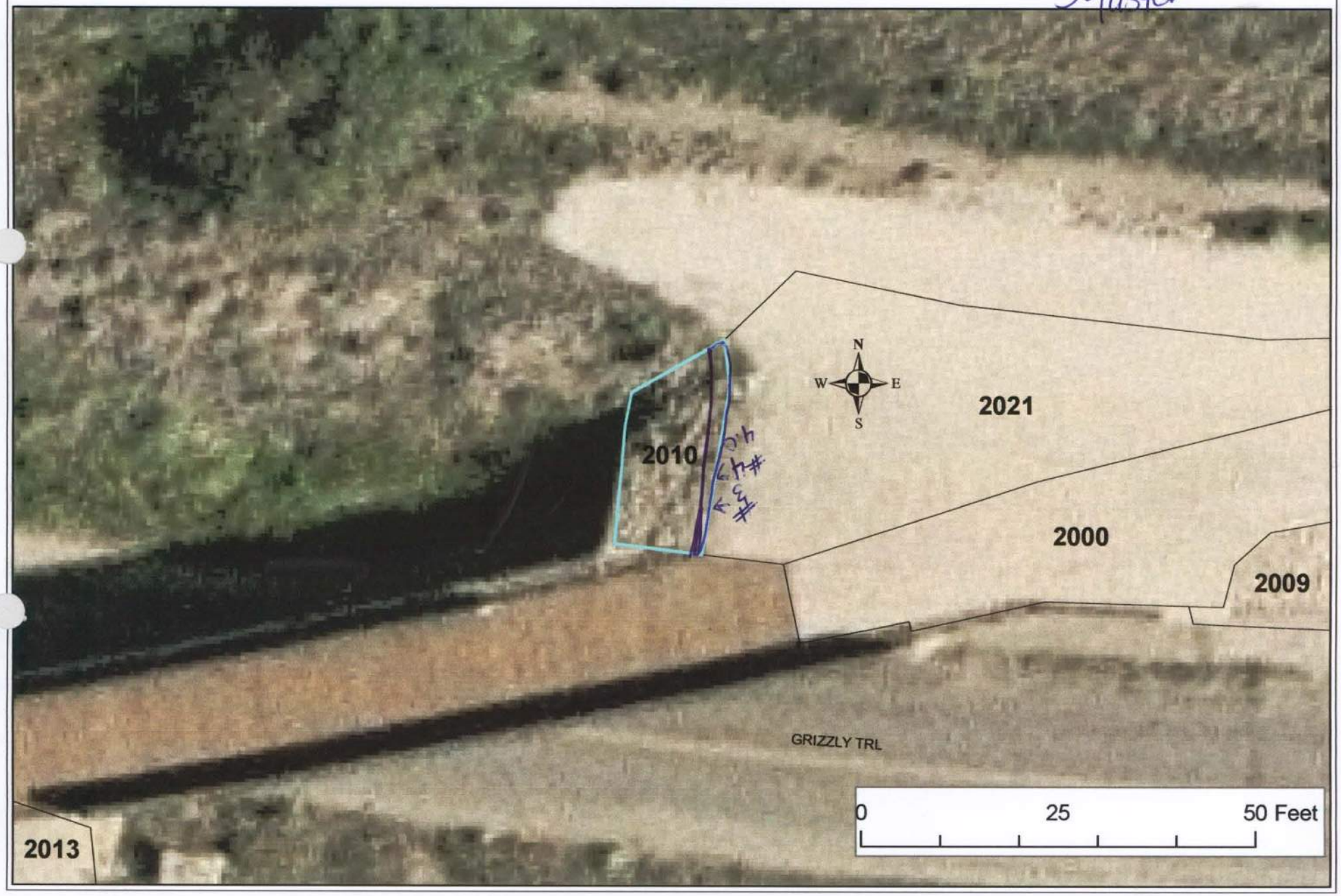
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2010

Master



BRES FIELD FORM

Site ID: __ Site Name: 2010 Field Date: 7-15-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S (W) E NW NE SW SE

Area Description: Rip Rap adjacent to bridge

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	+					
*Undesirable (weedy) species	4					
*Noxious weeds	–					
Litter	–					
Rocks > 2"	95					
Bare Ground	–					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	5					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ~~✓~~ (check applicable items)

- ☐ lime rock barrier
- ☐ more weeds
- ☐ increased erosion
- ☐ gullies
- ☐ depositional area
- ☐ steeper slope
- ☐ less vegetation
- ☑ other exposed waste

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ✓ N ___

- Estimated pH 4.0
- Approximate area (in square feet) 10'
- Number of areas with exposed waste 1

5. Is there evidence of: Y ___ N ___

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ___ N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N ___
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

Rock Rip-Rap

Site edge has exposed waste 4.0 ft (run off from site # 2021)

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2011

BRES FIELD FORM

Site ID:__ Site Name: 2011 Field Date: 7-15-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: –__to__– Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: walking path - gravel

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	2					
*Undesirable (weedy) species	10					
*Noxious weeds	–					
Litter	5					
Rocks > 2"	–					
Bare Ground	83					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	7%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth	2					
Rills Frequency	2					
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	4					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	F					
Baby's breath						
Kochia	I					
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N____ (check applicable items)

- ☐ lime rock barrier
- ☑ more weeds
- ☐ increased erosion
- ☐ gullies
- ☐ depositional area
- ☐ steeper slope
- ☐ less vegetation
- ☐ other____

Estimate width of affected edge (in feet) 5'

4. Exposed Waste Material? Y____ N ✓
- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓
- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ✓ N____
- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y ✓ N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Gravel walking path.

No issues.

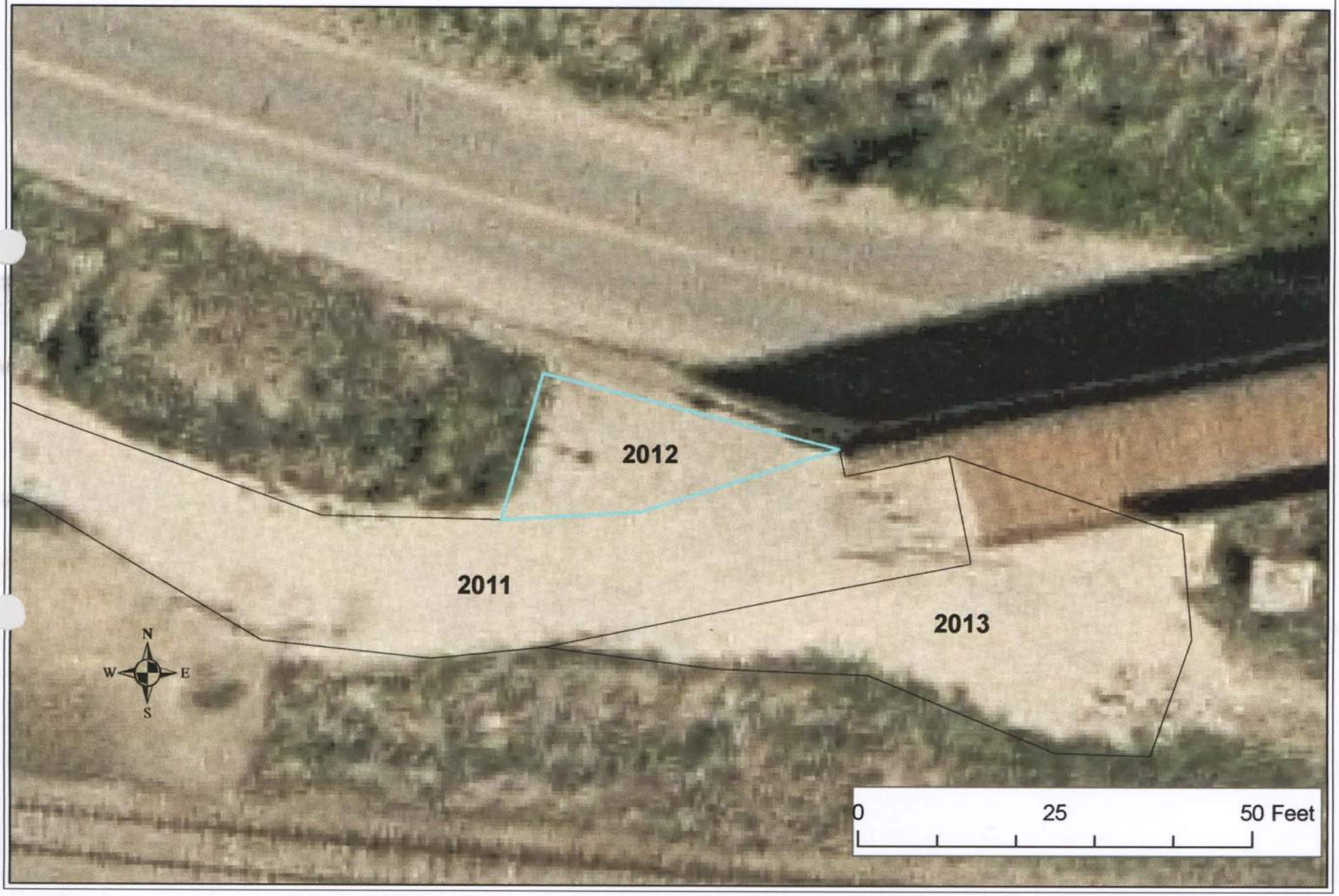
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2012



BRES FIELD FORM

Site ID: ___ Site Name: 2012 Master Field Date: 7-15-09

Team Members (Circle your name): Keegan Hartin

Number of Polygons: 1 Slope: 1 to 1 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: rock barrier

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	1					
*Undesirable (weedy) species	0					
*Noxious weeds	0					
Litter	9					
Rocks > 2"	10					
Bare Ground	80					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	1					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y✓ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y✓ N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Rock barrier on edge of bridge.

No issues.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2013

BRES FIELD FORM

Site ID:__ Site Name: 2013 Field Date: 7-15-09

Master

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Side edge of bridge & walking path

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	3					
*Undesirable (weedy) species	15					
*Noxious weeds	/					
Litter	5					
Rocks > 2"	2					
Bare Ground	75					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	8%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	–					
Flow Patterns	3					
Rills Depth	–					
Rills Frequency	–					
Gullies Depth	–					
Gullies Frequency	–					
Soil Movement	5					
TOTAL BLM Score:	19					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia	I					
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ___ N ✓

- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N ✓
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

- rock / gravel slope
- no issues

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2014

BRES FIELD FORM

Site ID: __ **Site Name:** 2014 **Field Date:** 7-15-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Concrete ditch below culvert under walking trail

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)	✓					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y___ N___
Number of gullies ____

Comments.

Concrete ditch below culvert on south side below walking trail.
No issues.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2015

BRES FIELD FORM

Site ID:__ Site Name: 2015 Master Field Date: 7/15/09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Concrete culvert / ditch

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)	✓					
ADJUSTED LIVE % = Live + 5%Undesirable	✓					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

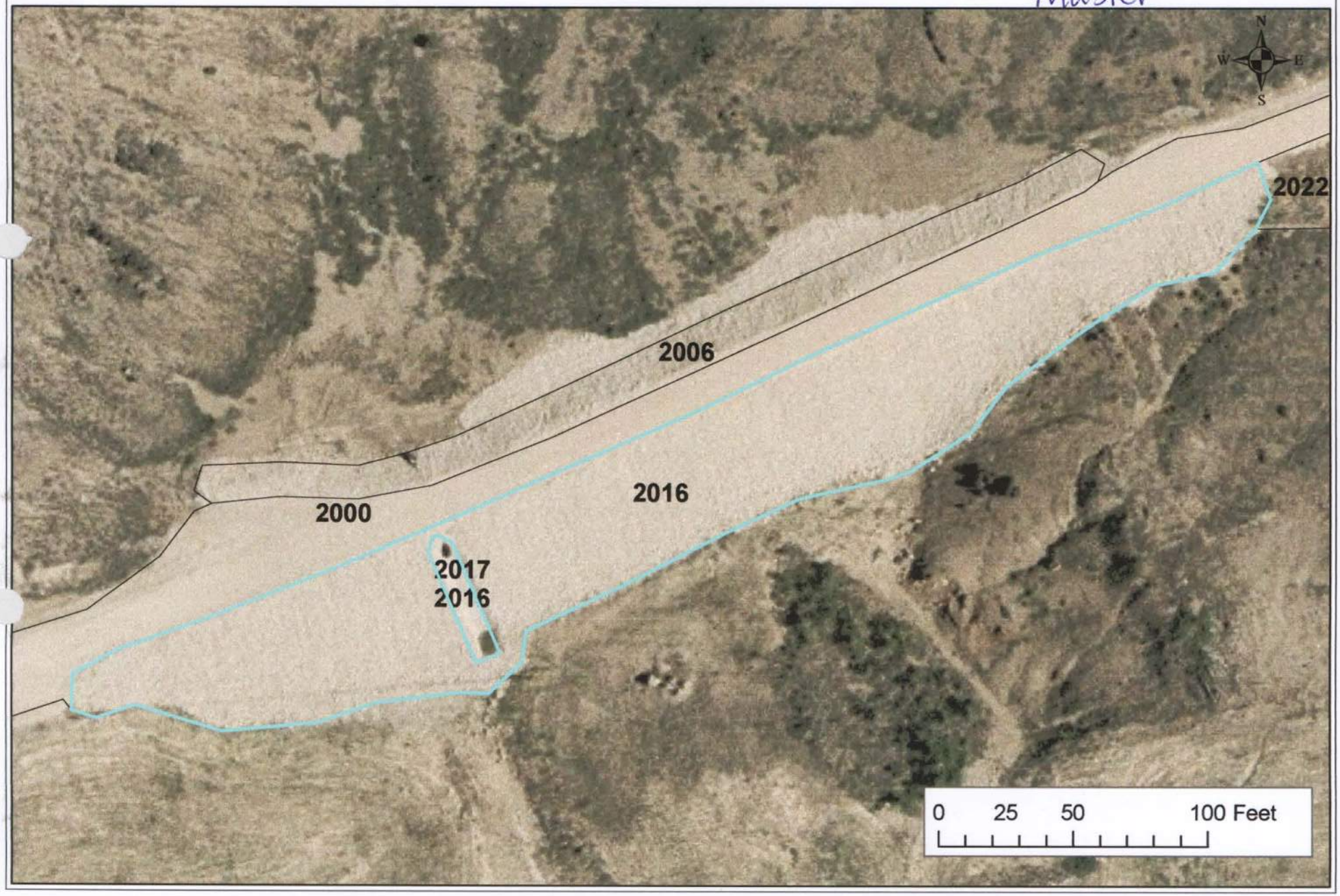
Concrete ditch below culvert under walking trail.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2016

Master



Master

BRES FIELD FORM Site ID:__ Site Name: 2016 Field Date: 7-15-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock Rip Rap on S. facing slope adjacent to walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N__✓__ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N__✓__

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N__✓__

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N__✓__

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N__✓__
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. Rock Rip Rap

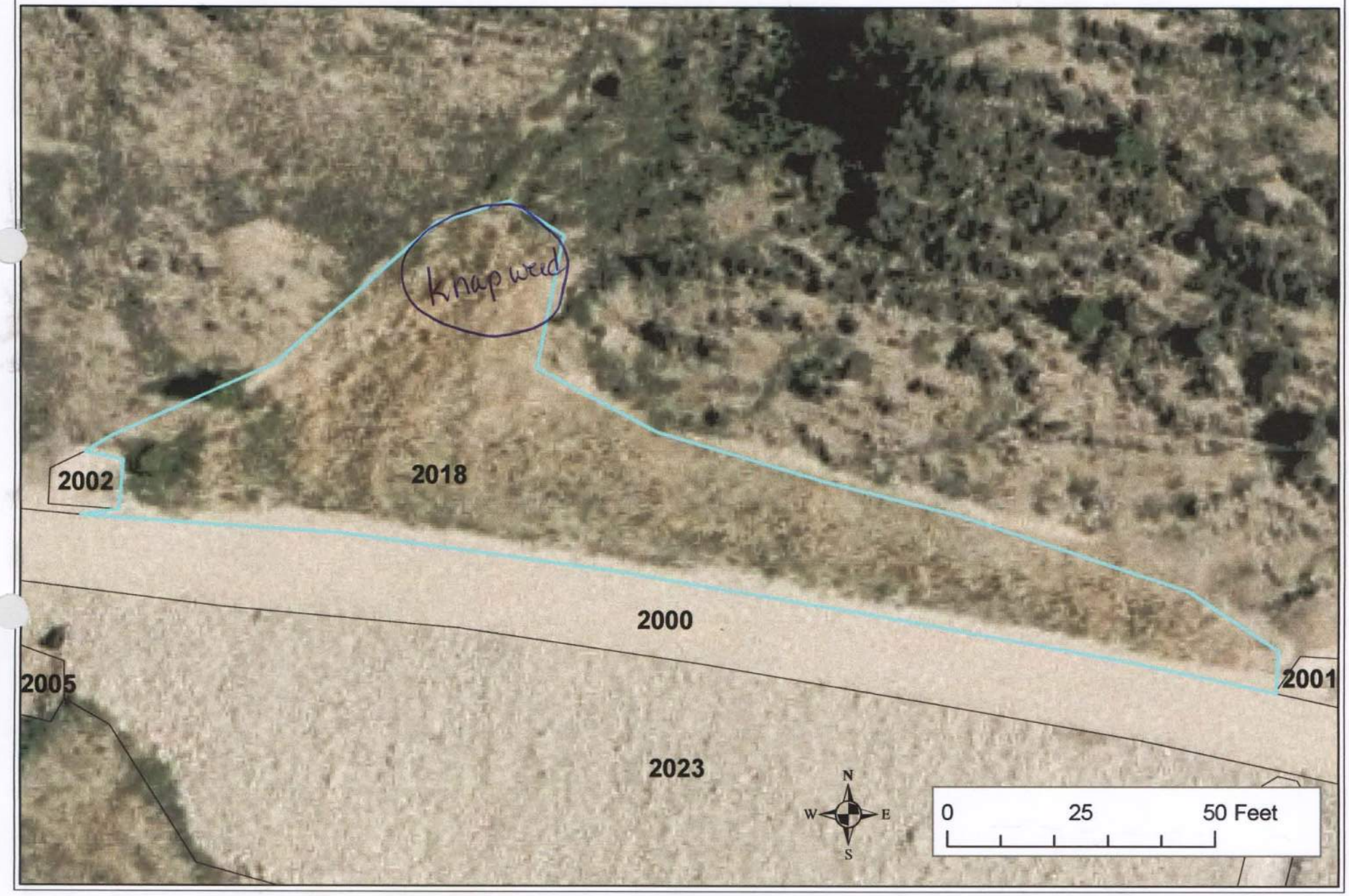
No issues

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2018



GAGC on back

BRES FIELD FORM

Site ID:__ Site Name: 2018 Field Date: 7-15-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: area adjacent to walking trail (North)

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	20					
*Undesirable (weedy) species	5					
*Noxious weeds	10					
Litter	55					
Rocks > 2"	0					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	25					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	D					
Yellow sweetclover						
Alfalfa	I					
Other rubber rabbit	I					
Other evergreen	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	32					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies _____

GAOC on back of map

Comments.

Area has high amt of litter

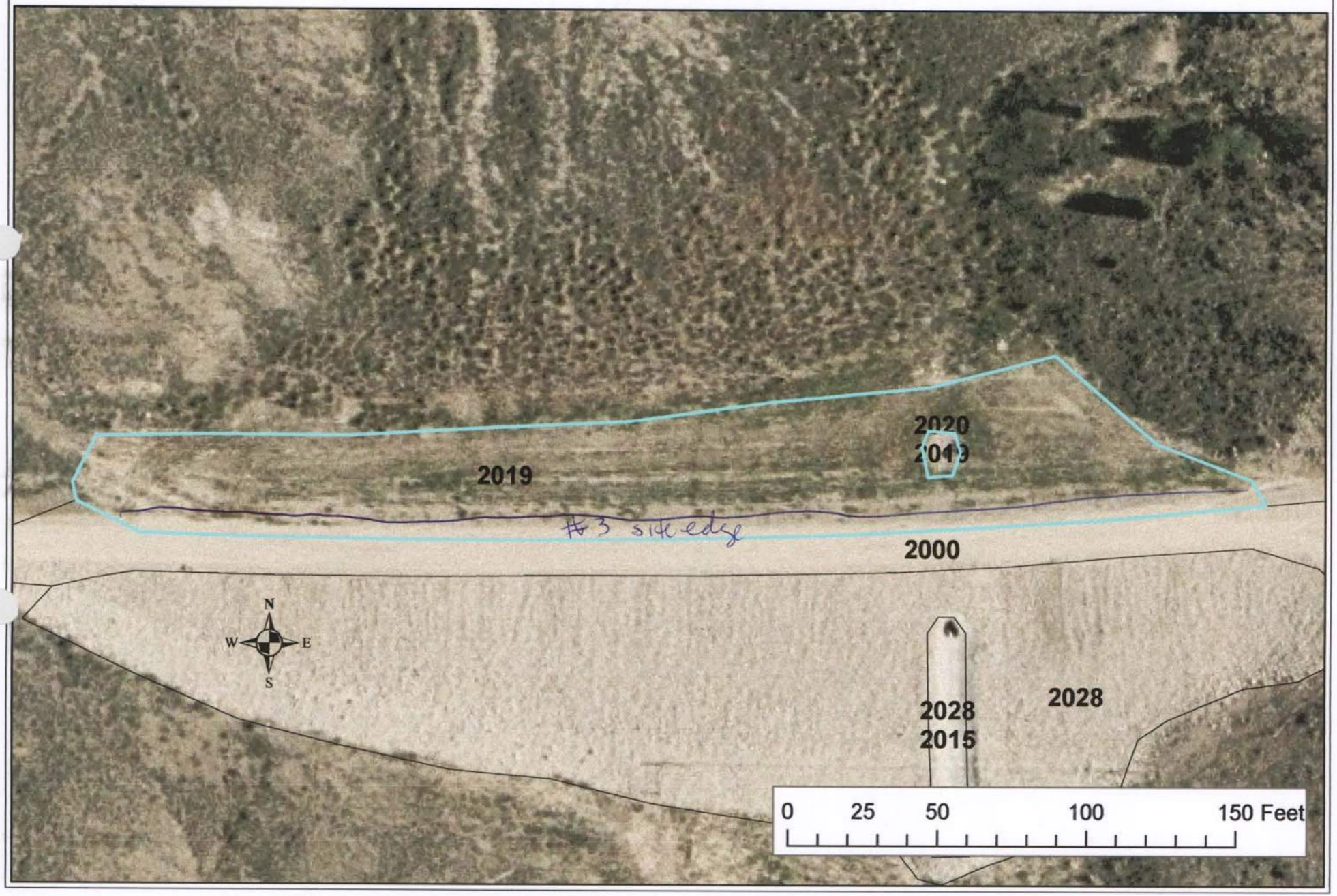
Knapweed in upper corner.
(See site map)

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2019



BRES FIELD FORM

Site ID:__ Site Name: 2019 Field Date: 7/15/19

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	5					
*Noxious weeds	0					
Litter	39					
Rocks > 2"	1					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass						
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	F					
Other aspen	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	8					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	/					
Rills Frequency	/					
Gullies Depth	/					
Gullies Frequency	/					
Soil Movement	5					
TOTAL BLM Score:	37					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustards	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☑ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☑ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) 4'

4. Exposed Waste Material? Y____ N ✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y___ N___
Number of gullies ____

Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2020

BRES FIELD FORM

Site ID:__ Site Name: 2020 Master Field Date: 7-15-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: – to – Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: culvert and rip rap on North side under walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	20					
*Undesirable (weedy) species	✓					
*Noxious weeds	✓					
Litter	5					
Rocks > 2"	75					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	20					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

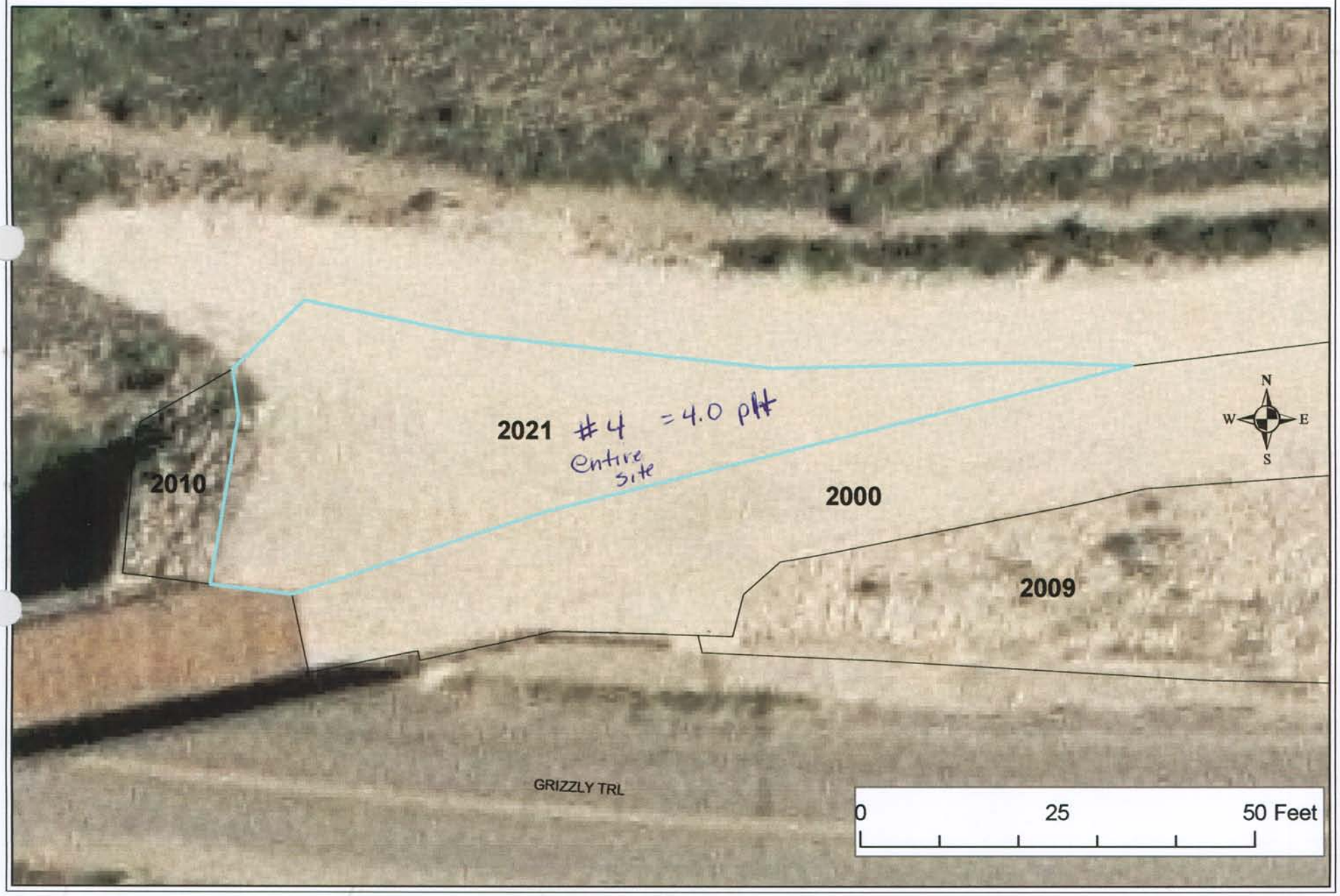
Rock rip rap and culvert under walking path on north side.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2021



BRES FIELD FORM

Site ID: __ Site Name: 2021 Master Field Date: 7-15-09

Team Members (Circle your name): Keegan | Jod

Number of Polygons: 1 Slope: — to — Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: flat gravel bordering walking area on N.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	3					
*Undesirable (weedy) species	2					
*Noxious weeds	/					
Litter	/					
Rocks > 2"	/					
Bare Ground	95					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	5%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other rubber rabbit	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	/					
Surface Rock Movement	5					
Pedestalling	/					
Flow Patterns	3					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	/					
Gullies Frequency	/					
Soil Movement	/					
TOTAL BLM Score:	12					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N____

- Estimated pH 4.0
- Approximate area (in square feet) 1000 ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments. Rock/gravel area

Entire site is exposed waste

estimated pH 4.0.

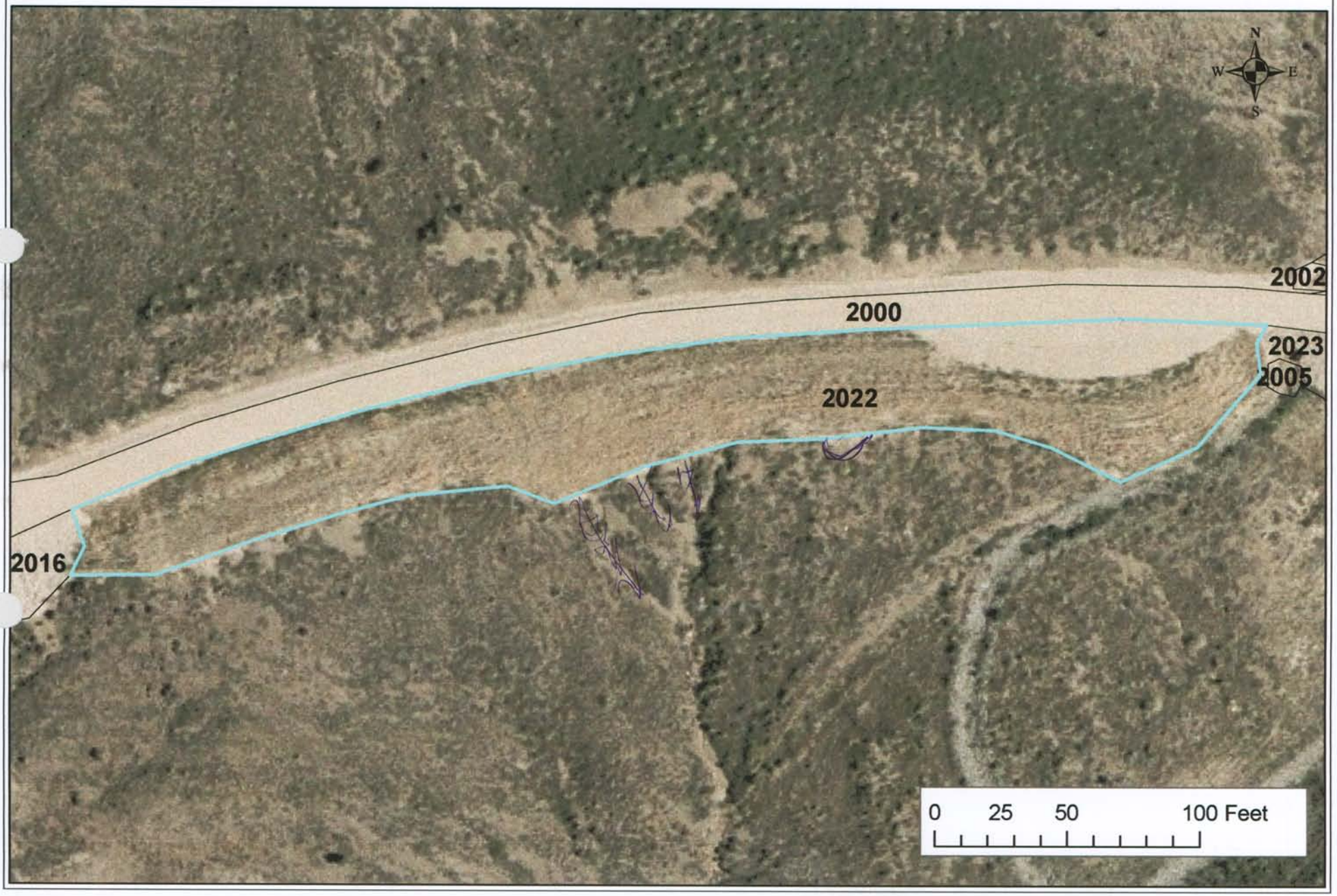
needs attention

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2022



Master

BRES FIELD FORM

Site ID:__ Site Name: 2022 Field Date: 7-15-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: S. slope adjacent to walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	5					
*Noxious weeds	1					
Litter	44					
Rocks > 2"	0					
Bare Ground	25					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	D					
Yellow sweetclover						
Alfalfa	I					
Other rubber rabbit	I					
Other butter/eggs						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	/					
Gullies Frequency	/					
Soil Movement	5					
TOTAL BLM Score:	40					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other butter/eggs	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N✓

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2023

Master

BRES FIELD FORM

Site ID:__ Site Name: 2023 Field Date: 7-15-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 1 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock RipRap on S. side of trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	/					
*Undesirable (weedy) species	1					
*Noxious weeds	1					
Litter	/					
Rocks > 2"	98					
Bare Ground	/					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	1					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mullen	I					
Other mustard	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓
- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y✓ N____
- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y✓ N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Rock Rip Rap on South downhill side of trail.

No issues

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2024

BRES FIELD FORM

Site ID:__ Site Name: 2024 Field Date: 7/15/09

Master

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: — to — Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: culvert and rip rap on n. side of walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5					
*Undesirable (weedy) species						
*Noxious weeds						
Litter	5					
Rocks > 2"	90					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	5					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other Sage	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Rock Rip Rap and culvert on north side of walking trail.

No issues.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

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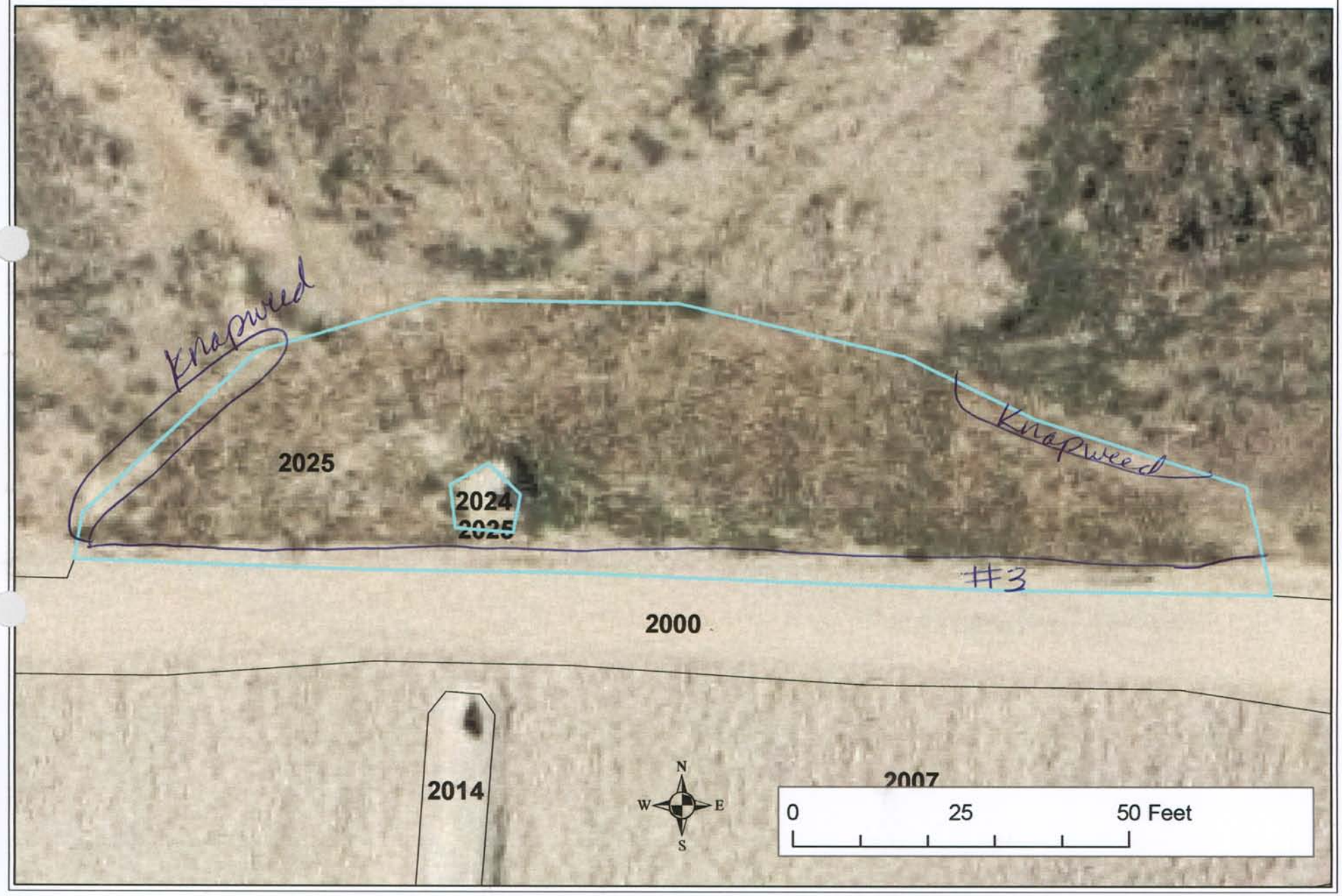
Site 2025



BRES FIELD FORM

Site ID:__ Site Name: 2025 Field Date: 7/15/09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: @ Northern boundary of walking trail

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Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	28					
*Undesirable (weedy) species	5					
*Noxious weeds	10					
Litter	30					
Rocks > 2"	2					
Bare Ground	25					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	33					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass	D					
Yellow sweetclover						
Alfalfa	F					
Other rubber rabb	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	0					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	8					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax						
Cheatgrass						
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☑ **less vegetation**
- ☐ **other** ___

Estimate width of affected edge (in feet) 4'

4. Exposed Waste Material? Y ___ N ✓

- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ___ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___

Do barren areas cover over 25% of any polygon? Y ___ N ___

7. Gullies (over 6" in depth):

Y ___ N ✓

Are any gullies actively eroding? Y ___ N ___

Number of gullies ___

Comments.

Northern site edge is catch basin for down gradient slope of I-90.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

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Site 2026

BRES FIELD FORM

Site ID:__ Site Name: 2026 Field Date: 7/15/09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: rock rip rap at base of ravine

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Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	✓					
*Undesirable (weedy) species	✓					
*Noxious weeds	✓					
Litter	20					
Rocks > 2"	80					
Bare Ground	✓					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	✓					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N ✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

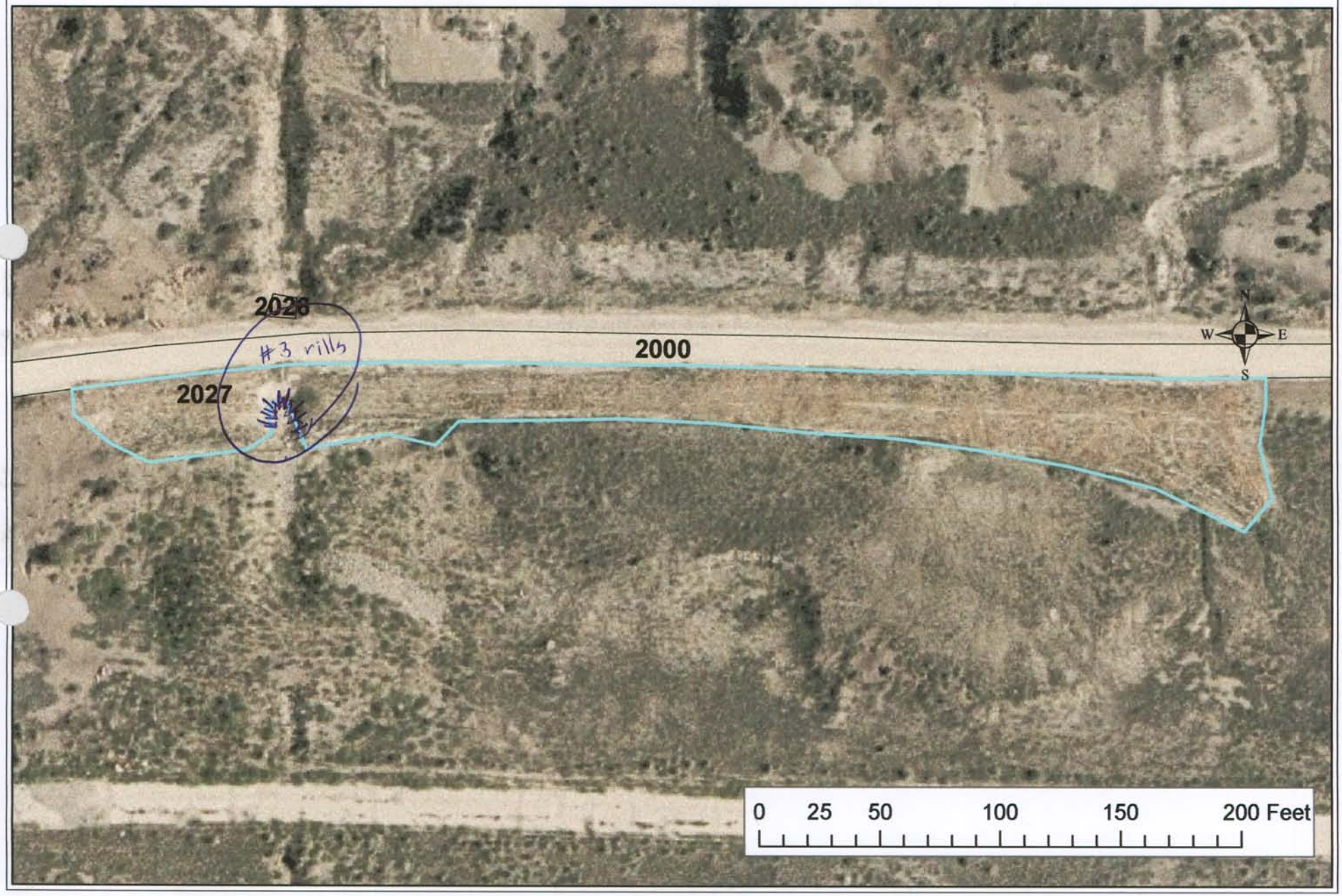
Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2027



BRES FIELD FORM

Site ID:__ Site Name: 2027 Field Date: 7/15/09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Southern slope bordering walking trail

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	5					
*Noxious weeds	0					
Litter	39					
Rocks > 2"	1					
Bare Ground	30					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	I					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	6					
Rills Frequency	4					
Gullies Depth	/					
Gullies Frequency	/					
Soil Movement	5					
TOTAL BLM Score:	35					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ~~✓~~ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☑ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☑ **steeper slope**
- ☑ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y___ N___
Number of gullies ____

Comments.

Rills (site map) may easily develop into gullies.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

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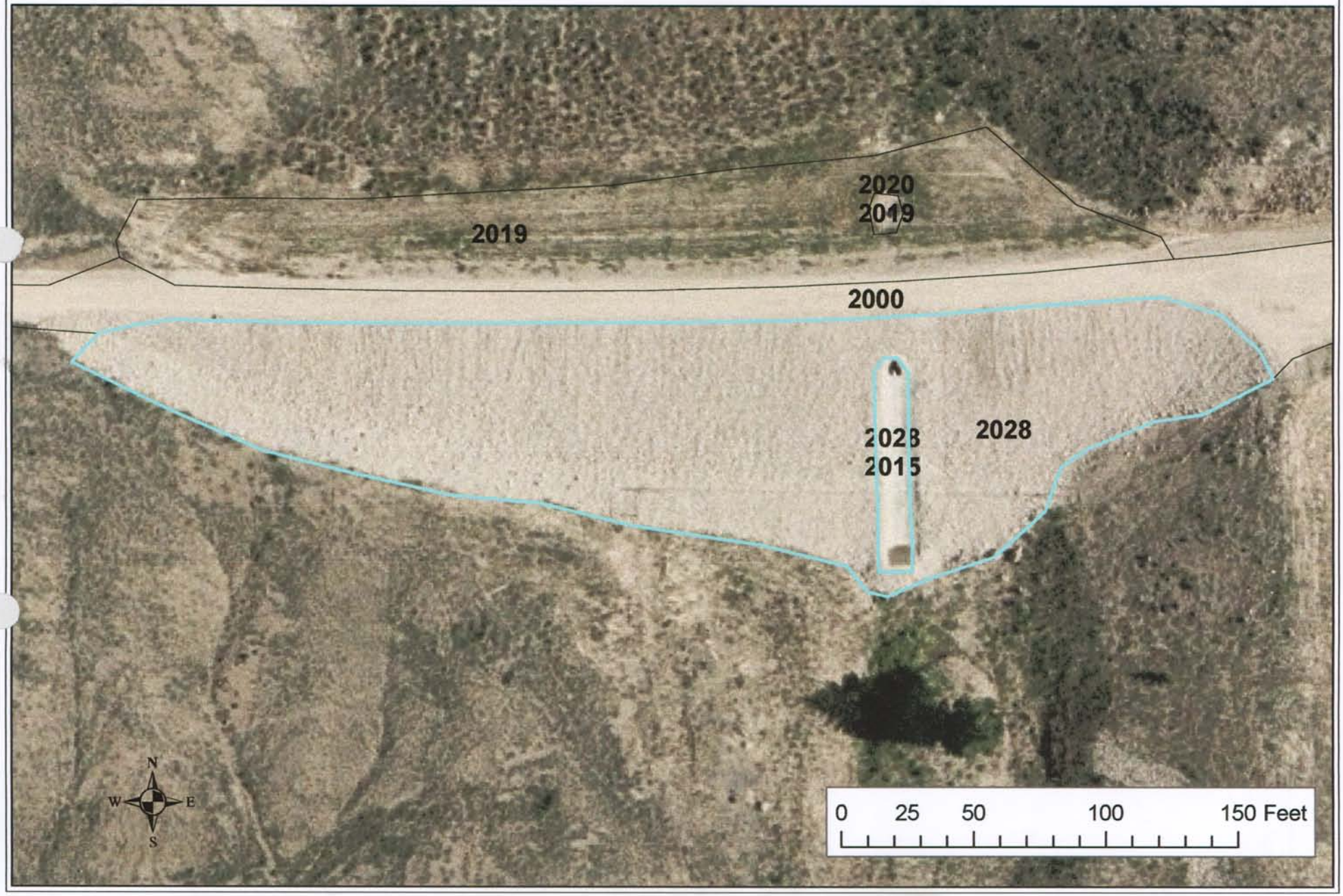
Site 2028



BRES FIELD FORM

Site ID:__ Site Name: 2028 Field Date: 7/15/09

Master

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock Rip Rap on S. border of walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y___ N___
Number of gullies _____

Site 2029

56
55
54
53
2127
2126
1715
2029
2035
2033
174
67
67E
66
160S
MONTANA ST
RUBY ST
BUFFALO ST
MAIN ST
1717
drain pipe
Soil movement
drainage
outlet
pipe
culvert
plugged

BRES FIELD FORM

Site ID: __ **Site Name:** 2029 **Field Date:** _____

Team Members (Circle your name): Logan, McCaughey

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: North of Buffalo between Maine MT

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	55					
Erosion (BLM score)	32					
Undesir/noxious weeds	20					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	50					
*Undesirable (weedy) species	20					
*Noxious weeds	0					
Litter	15					
Rocks > 2"	15					
Bare Ground	0					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	55					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	D					
Slender wheatgrass	F					
Yellow sweetclover	I					
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	4					
Surface Rock Movement	5					
Pedestalling	4					
Flow Patterns	3					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	32					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	F					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

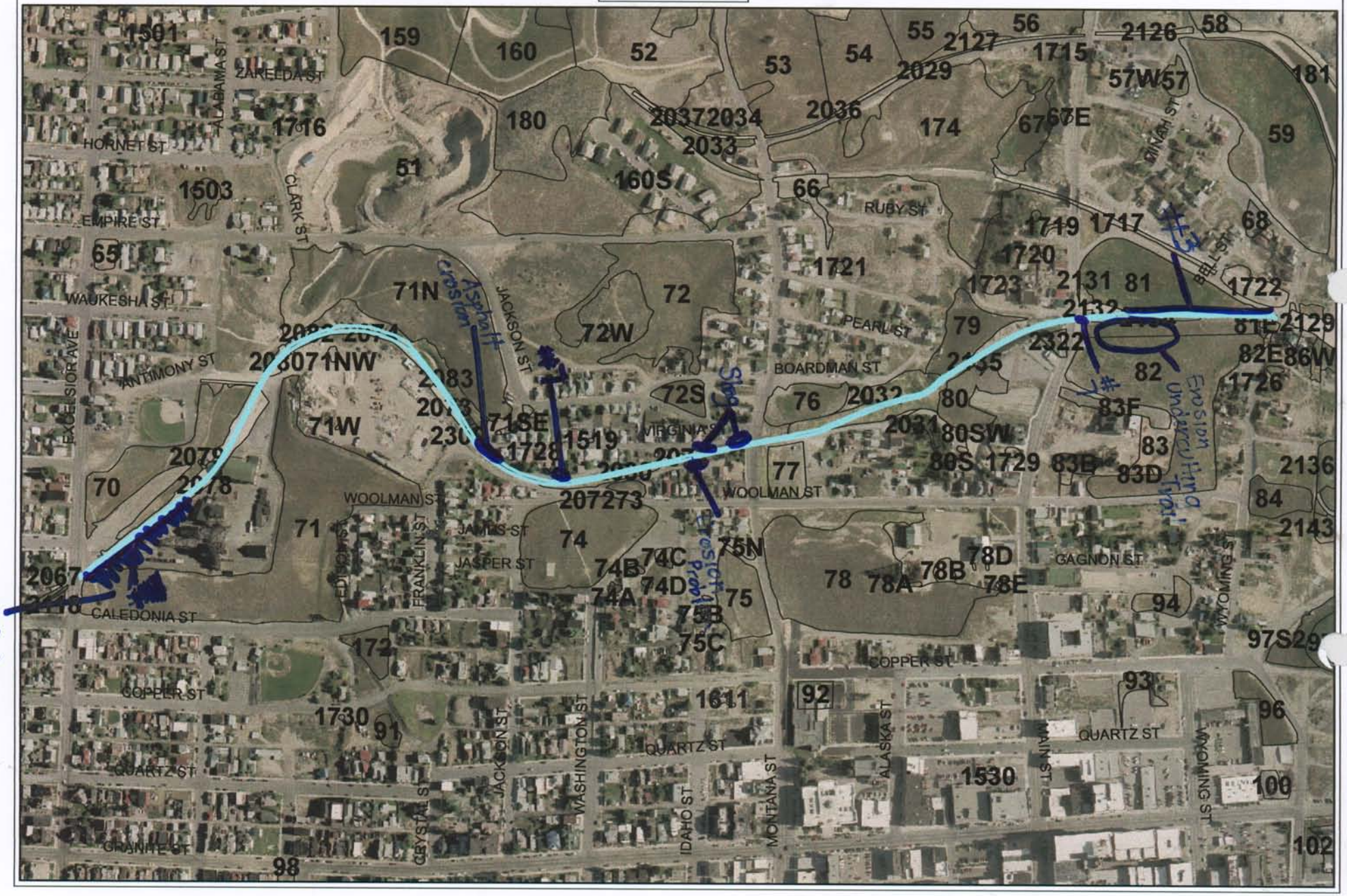
Comments. Buffalo Street looks as though it has been recently extended into site edge (south) so part of the site is covered by asphalt.
The ditch on the north side edge does have some erosion but it is mostly blocking the erosion from the large hill above.
- There are a few drainage pipes that are marked on the map that could use some work to prevent erosion.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master Randi Phelps + Jennifer Nardiello

Site 2030



Master

BRES FIELD FORM

Site ID:__ Site Name: BAAP 2030 Field Date: 7/8/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Walking Trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	F					
Cheatgrass	F					
Baby's breath	/					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y✓ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **more weeds**
- ☑ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☑ **other** exposed waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y✓ N_____

- Estimated pH slag
- Approximate area (in square feet) 20ft2
- Number of areas with exposed waste 2

5. Is there evidence of: Y_____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y✓ N_____
Are any gullies actively eroding? Y✓ N____
Number of gullies 2

Comments.

Edges of walking trail have been mowed.

On the trail west of Montana Street there was slag deposited from behind the rail road ties.

There was erosion undercutting the asphalt between Main and Wyoming along the trail.

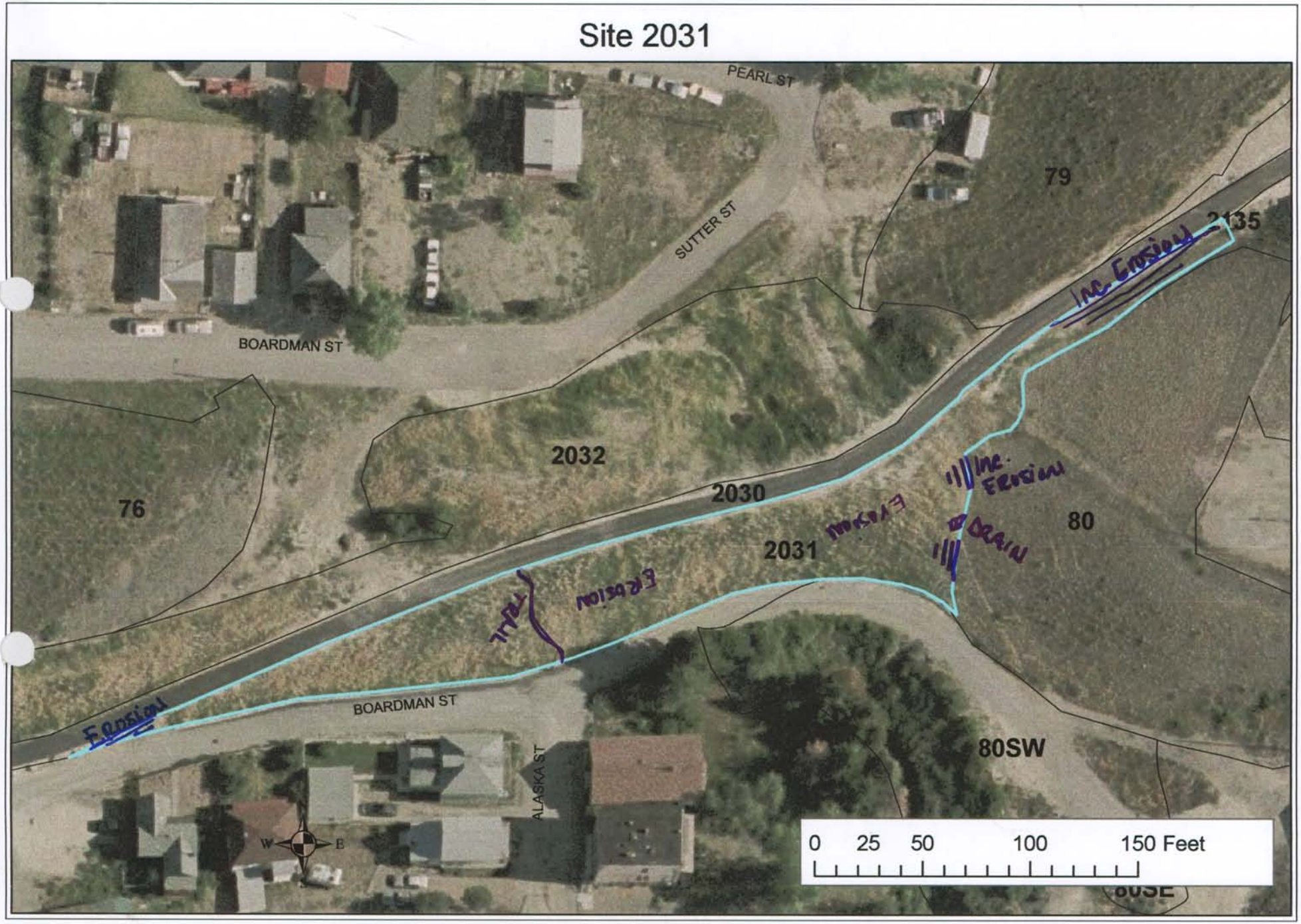
This is a maintained walking trail. BRES evaluation difficult on asphalt. Engineering evaluation would be a better tool.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2031


PEARL ST
SUTTER ST
BOARDMAN ST
BOARDMAN ST
ALASKA ST
79
2135
2032
2030
2031
76
80
80SW
Inc. Erosion
Inc. Erosion
Erosion
Erosion
Trail
Drain
Erosion
W
E
0 25 50 100 150 Feet

BRES FIELD FORM

Site ID:__ Site Name: 2031 Field Date: _____

Team Members (Circle your name): McCaughey, League

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: East side of MT. Street South of walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)	46					
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	5					
*Noxious weeds	5					
Litter	45					
Rocks > 2"	3					
Bare Ground	12					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	F					
[illegible]llow sweetclover						
Alfalfa	I					
Other Rubber Rabbit	F					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	5					
Pedestalling	9					
Flow Patterns	9					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	46					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other Mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N
Number of gullies ____

Comments. Throughout this site there is occasional erosion on site edges. An old drain was found on the SE site edge but vegetation is mostly covering it.

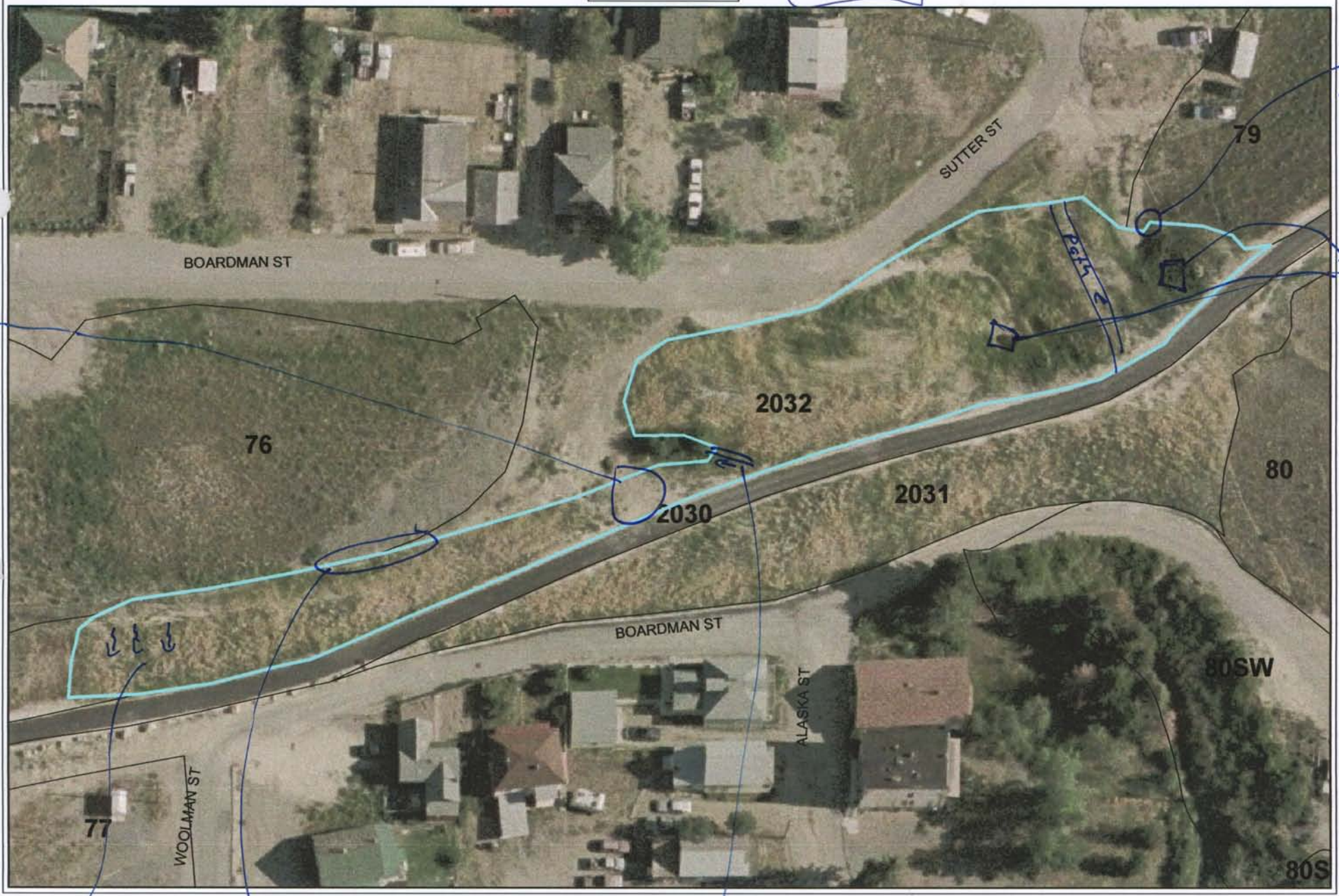
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2032

master



Path

rills

#4 pH 4

Rock ditch

4 # Sites

2 shafts - covered with rags - storm drain ?

Master / BAP Site 2032

BRES FIELD FORM Site ID: Site Name: Field Date: 7/8/09

Team Members (Circle your name): Jeanne Larsen, Eric Larsen, Beverly Plumb

Number of Polygons: 1 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South of Boardman - East of Montana
north side of walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	20					
*Noxious weeds	5					
Litter	25					
Rocks > 2"	5					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	I					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	0					
Flow Patterns	6					
Rills Depth	3					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	35					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	D					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other Salsify	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☒ **other** exposed waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N_____

- Estimated pH 4
- Approximate area (in square feet) 10
- Number of areas with exposed waste 2

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

* Lime Rock barrier may be in site # 76

* Exposed waste - may be on other site = #76

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

master

something buried?

Site 2033

173

Master

Site 2033

BRES FIELD FORM

Site ID: __ Site Name: _____ Field Date: 7/9/09

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Plumb

Number of Polygons: 1 Slope: 1 to 40 Aspect (circle all relevant): N S W E NW NE SW (SE)

Area Description: North of Tullamore West of Montana

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	~~40~~ ~~35~~					
*Undesirable (weedy) species	5					
*Noxious weeds	3					
Litter	40					
Rocks > 2"	2					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	I					
Other grass	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	3					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	7					
Gullies Frequency	2					
Soil Movement	5					
TOTAL BLM Score:	32					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	F					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- [X] **lime rock barrier**
- [ ] **depositional area**
- [ ] **more weeds**
- [ ] **steeper slope**
- [ ] **increased erosion**
- [X] **less vegetation**
- [ ] **gullies**
- [ ] **other** gullie

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- [ ] **bulk soil failure**
- [ ] **land slumps**
- [ ] **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon? Y___N___

7. Gullies (over 6" in depth):

Y X N____

Are any gullies actively eroding? Y X N___

Number of gullies 1

Comments.

* North of 'Tullamore Nurseries' people are dumping yard waste

Drainage - south side

* Ditch is filling with trash & debris

* Gully present on north side of east edge of site

* Appears to be a Sat buried in middle of site - wooden lid comes off

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2035

BRES FIELD FORM

Site ID:__ Site Name: 2035 2035 Field Date: 7-17-09 Master

Team Members (Circle your name): Keegan Hodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock Rip Rap on S. side of Buffalo

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	70					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓
- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓
- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Slender Wheat growing in Rock Rip Rap.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2036

Master

BRES FIELD FORM

Site ID: ___ Site Name: 2036 Field Date: 9-17-09

Master

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: ~ to ~ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock Rip Rap Drain and culvert N of Buffalo

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	✓					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments. Rock Rip Rap

Used as drain for slope and street.

No issues.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

4 pH 4

site edge

master

Site 2037

Master

BRES FIELD FORM

Site ID: 2037 Site Name: _____ Field Date: 7/9/09

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Plumb

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: 'Road' directly east of Buffalo st

* Note - Site is a gravel road - waste on westend

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH X
- Approximate area (in square feet) 10
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon? Y____N____

7. Gullies (over 6" in depth):

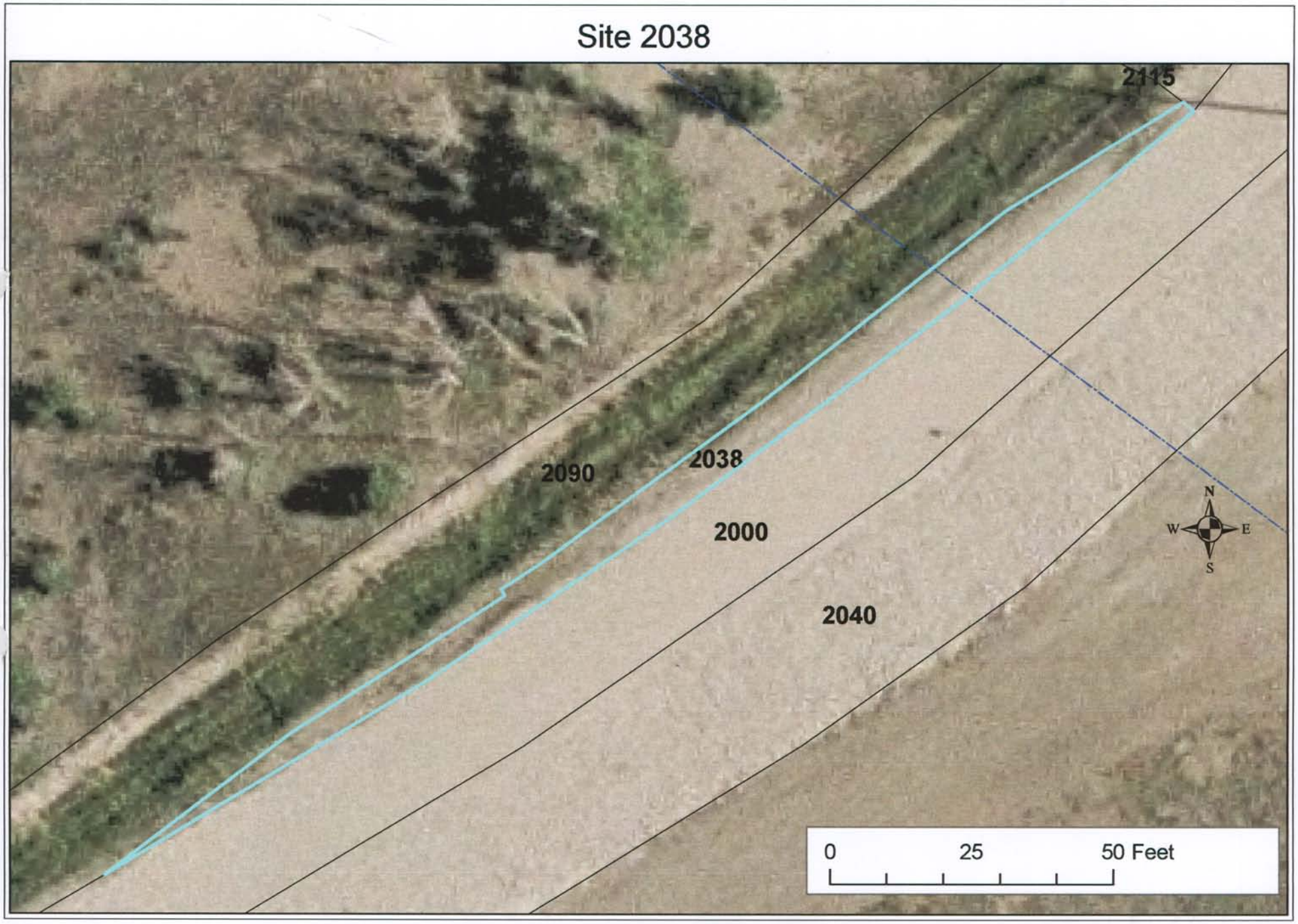
Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2038



BRES FIELD FORM Site ID:__ Site Name: 2099/2039/2038 Field Date: 7/14/09

Team Members (Circle your name): Lague McCaughey Plumb

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: North side of walking trail by Mining Museum

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	30					
Erosion (BLM score)	45					
Undesir/noxious weeds	5					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	5					
*Noxious weeds	0					
Litter	35					
Rocks > 2"	5					
Bare Ground	35					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	F					
Other Sage	I					
Other rubber rabbit brush	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	8					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	4					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	45					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☒ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☒ **other** exposed waste

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N____

- Estimated pH 4 or less
- Approximate area (in square feet) 150
- Number of areas with exposed waste 3 main ↑ is site edge

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y___N___

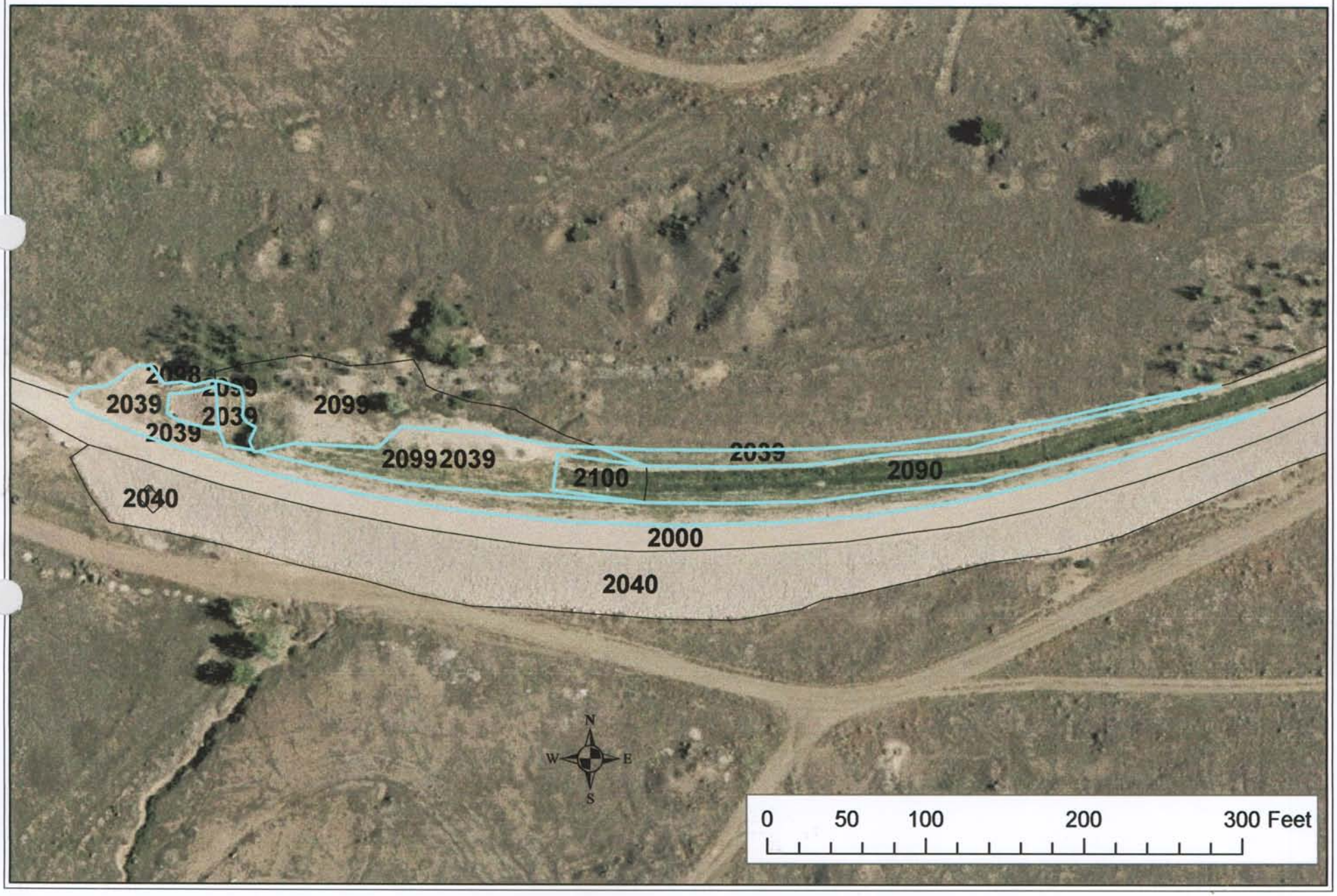
7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y___ N___
Number of gullies ____

Comments. Along north site edge there are piles of exposed mine waste. Running through part of 2099 is an old water trough covered & exposed with mine waste. Along south edge from trail there is increased erosion onto the ~~st~~ bottom. Running along the bottom starting on east edge of by site 2100 there is drainage, & it is pooling while being exposed to mine waste. On site 2100 there is a rock drainage ditch that ends & drains onto the bottom of the site. On the west end of site there is a pile of exposed mine waste. It is eroding & shows flow patterns onto the walking trail.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2039


2039
2039
2039
2099
2099
2039
2100
2090
2040
2000
2040
N
W
E
S
0
50
100
200
300 Feet

BRES FIELD FORM

Site ID:__ **Site Name:** _____ **Field Date:** _____

Team Members (Circle your name): _____

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2040

N
W
E
S
2094
2095
2097
2111
2097
2109
2096
MUSEUM WAY
2115
2038
2090
2039
2100
2039
2099
2039
2039
2099
2098
2099
2000
2040
exposed waste
exposed waste
exposed waste
exposed waste in this grass area
liner showing
the liner is showing through
trail showing erosion
0 50 100 200 300 400 Feet

BRES FIELD FORM

Site ID:__ Site Name: 2040 Field Date: 7/15/09

Team Members (Circle your name): Lague McCaughey Plumb

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South Slope of walking trail by Mining Museum

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other foxtail	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☒ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☒ **other** exposed liner + mine waste

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N____

- Estimated pH 4
- Approximate area (in square feet) 32 + south site edge
- Number of areas with exposed waste 14

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. There is a great deal of erosion from the walking trail onto the site. Along the South site edge there are 2 places where the lining is exposed on the trail / edge. Throughout the edge the liner is exposed in 3 places on the slope. There is exposed mine waste showing in 14 spots on the slope from soil samples. Many of the discolored rocks also showed PH of 4 to 4.5. Along the south site edge the liner is exposed for the majority of the length. The waste beneath the liner is also visible. It is evident water is eroding the waste beneath the liner.

~~The rocks are depth of the top~~

The rocks seem to be shifting + moving down slope leading to areas on the top of loose rocks.

Shown on the map are 2 areas on the south side of site w/ exposed mine waste. Any runoff from the slope into those areas is exposed to the waste.

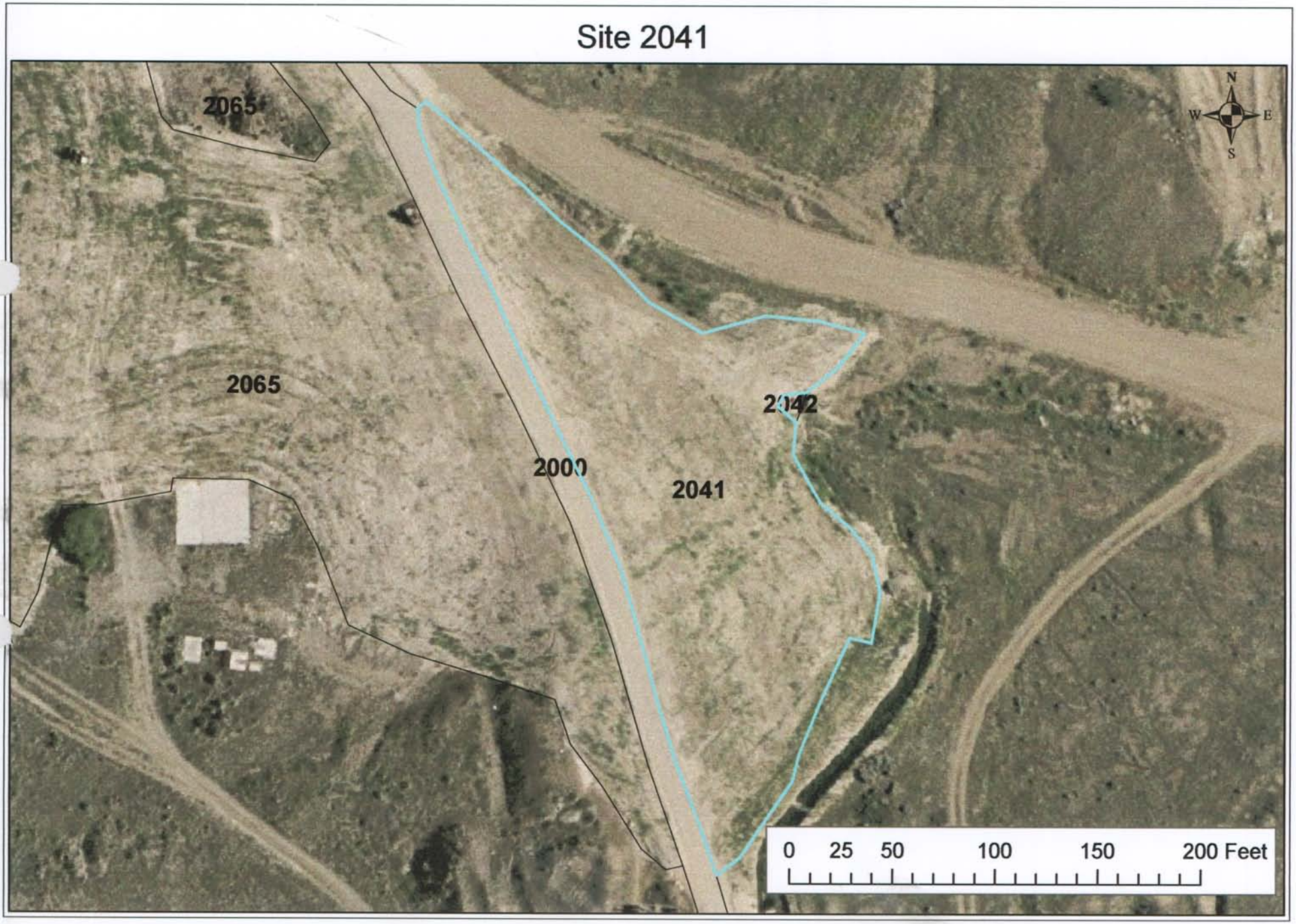
Vegetation on the slope was foxtails, mustard, + baby's breath.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2041



BRES FIELD FORM Site ID:__ Site Name: _____ Field Date: _____

Team Members (Circle your name): _____

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):

Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

picture 452

BRES FIELD FORM

Site ID:__ **Site Name:** 2043 **Field Date:** 7/15/09

Team Members (Circle your name): Lague, McCaughey, Plumb

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: ~~Drainage~~ Drain and rocks

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

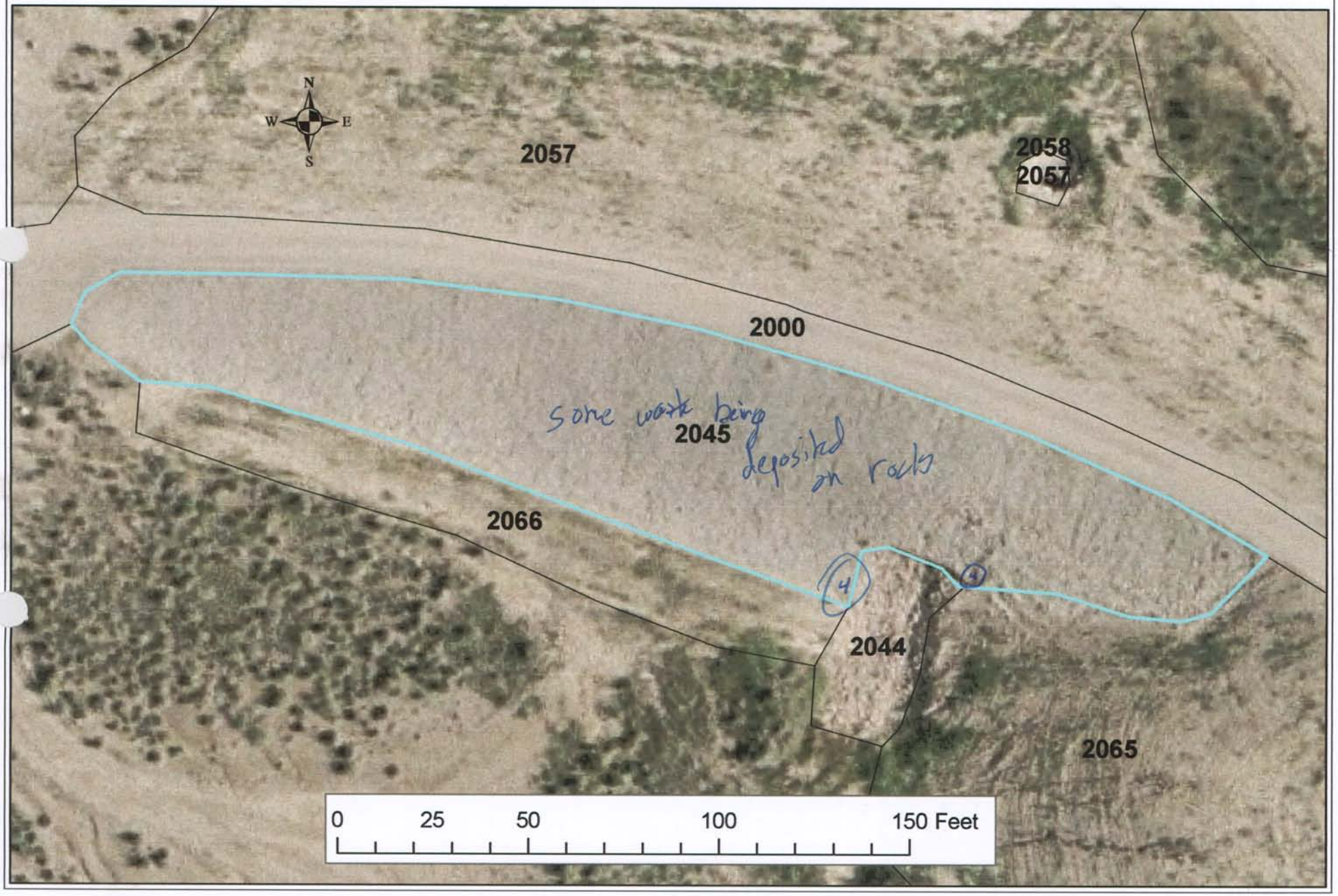
Drain and rock ditch.
Liner exposed on edge

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Picture #45 of 49

Site 2045



BRES FIELD FORM

Site ID: __ **Site Name:** 2045 **Field Date:** 7/15/09

Team Members (Circle your name): Lague, McCaughey, Plumb

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock slope along walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4.2
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

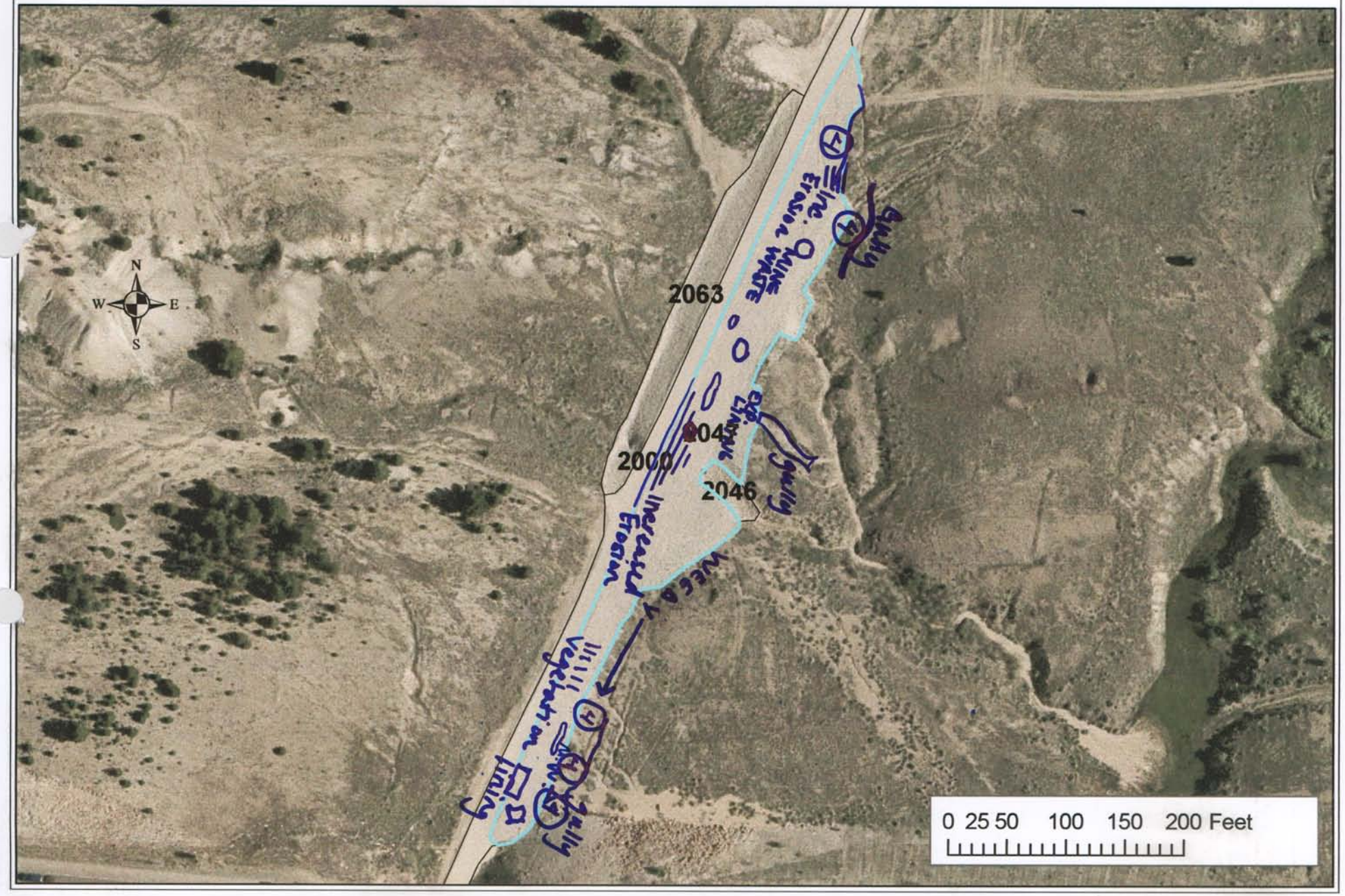
7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. mine waste being washed onto adjacent site. Liner exposed in area.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2047



BRES FIELD FORM

Site ID:__ Site Name: 2017 Field Date: 7/15/09

Team Members (Circle your name): Logue, McCaughey

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: North of Interstate bridge on E side of trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☑ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4.0
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. On the E edge of the site there are some gullies that are eroding towards the rock like ditch and exposing some waste. All the way from the S end to the N end of the ditch there is exposed waste coming up to the surface of the rocks and the lining is exposed. On the SW edge there are a lot of weedy species growing. Along the walking trail side there is increased erosion as well. All of these are marked on the map.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2048

BRES FIELD FORM

Site ID: __ **Site Name:** 2048 **Field Date:** 7/16/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: ___ Slope: ___ to 0 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Drainage ditch north side trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☒ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☒ **other** exposed waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

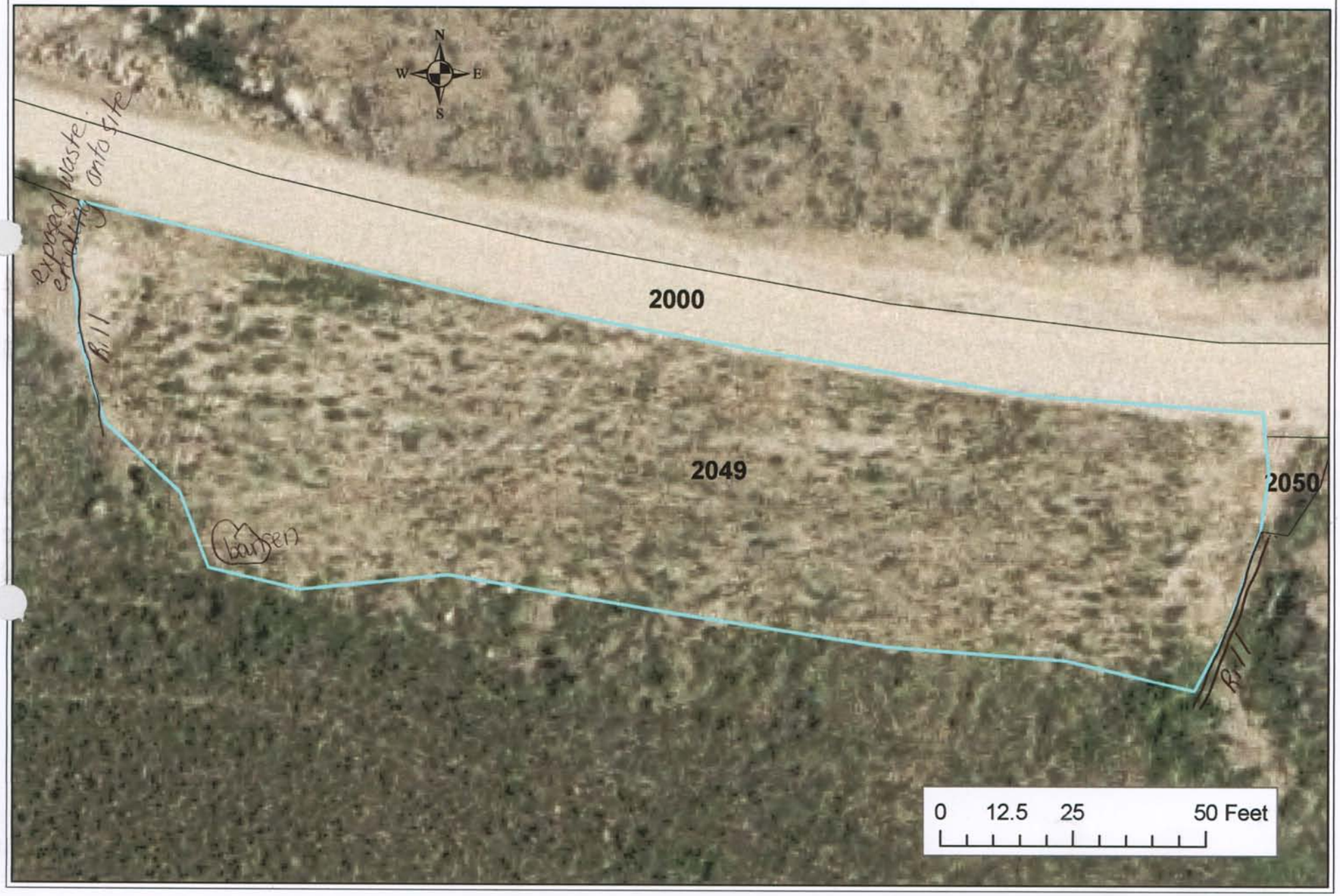
7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments: Around the north & east side of the ditch is exposed mine waste eroding into the ditch. The culvert is filled with "tumble weeds" & other litter.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2049


N
W
E
S
exposed waste entering onto site
Rill
2000
2049
2050
barbed wire
Rill
0 12.5 25 50 Feet

BRES FIELD FORM Site ID:__ Site Name: 2049 Field Date: 7/16/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South slope of trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	30					
Erosion (BLM score)	50					
Undesir/noxious weeds	12					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	10					
*Noxious weeds	2					
Litter	40					
Rocks > 2"	10					
Bare Ground	13					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa						
Other Great Basin Rye	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	8					
Pedestalling	6					
Flow Patterns	12					
Rills Depth	5					
Rills Frequency	3					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	50					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	F					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	F					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☒ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ~~N~~ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y___ N X

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y___ N___
Number of gullies ____

Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2050

BRES FIELD FORM

Site ID:__ **Site Name:** 2050 **Field Date:** 7/16/09

Team Members (Circle your name): Logue McCaughey

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South side drainage channel

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

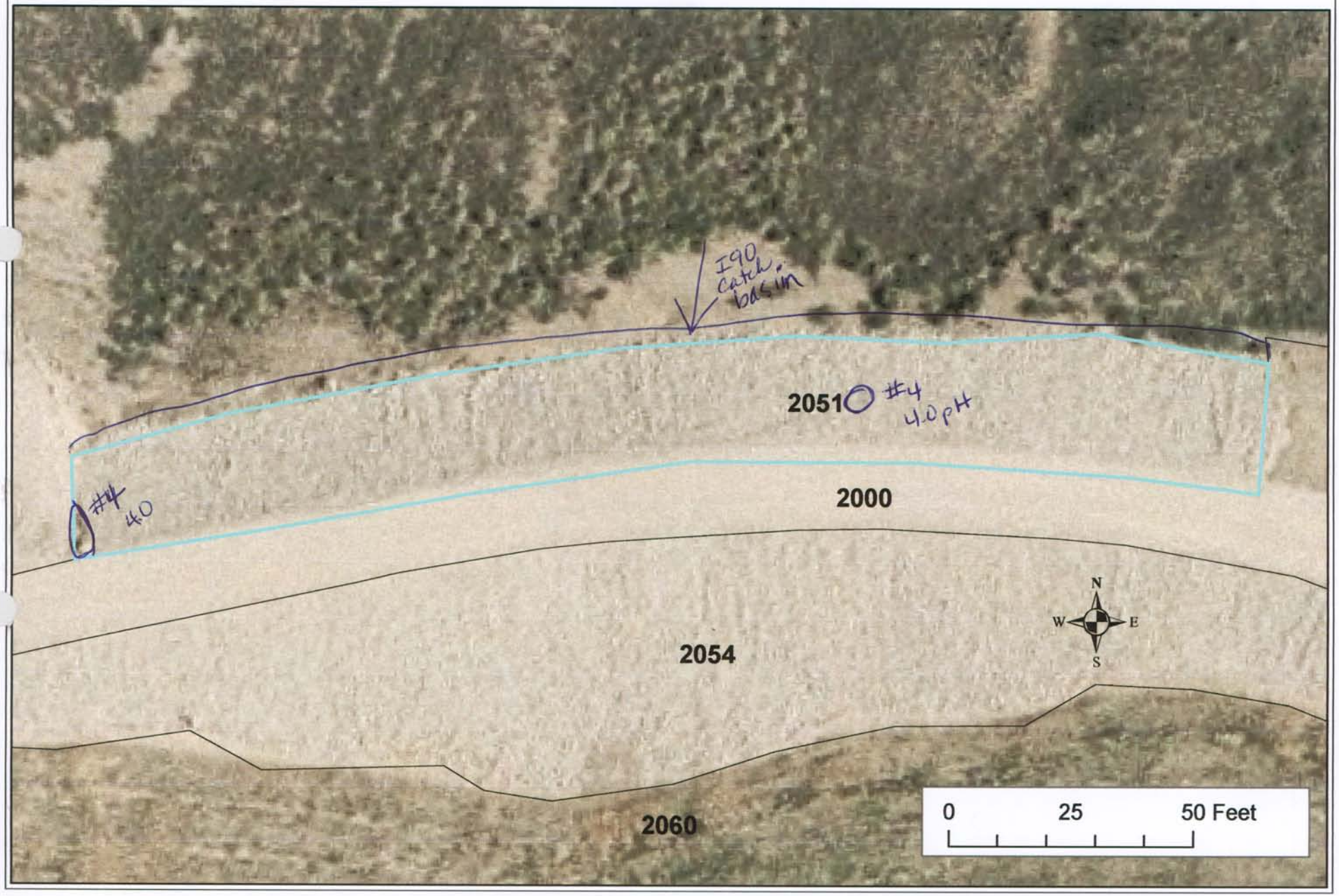
Comments. Area is drainage ditch on south side of ~~road~~ trail. There are some grasses growing in the ditch, especially where the culvert opens. There is some erosion because rocks do not cover all of west side of the site. At the south end of the site where rocks end a sill is developing.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2051



BRES FIELD FORM

Site ID:__ Site Name: 2051 Field Date: 7-16-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): (N) S W E NW NE SW SE

Area Description: Rock Rip Rap on Northern edge of trail

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y✓ N____

- Estimated pH 4.0
- Approximate area (in square feet) 15 1/2
- Number of areas with exposed waste 2

5. Is there evidence of: Y____ N____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N____

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Northern site edge is catch basin for down gradient slope from I90.

* 4.0 ptt on rock ~ 4 sq ft.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Comments.

Northern site edge is catch basin for down gradient slope from I90.

* 4.0 pH on rock ~ 4 sq ft.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2052

BRES FIELD FORM Site ID:__ Site Name: 2052 Field Date: 7/16/09

Team Members (Circle your name): Tague McCaughey

Number of Polygons: ___ Slope: ___to___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock slope at south end concrete water collector

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

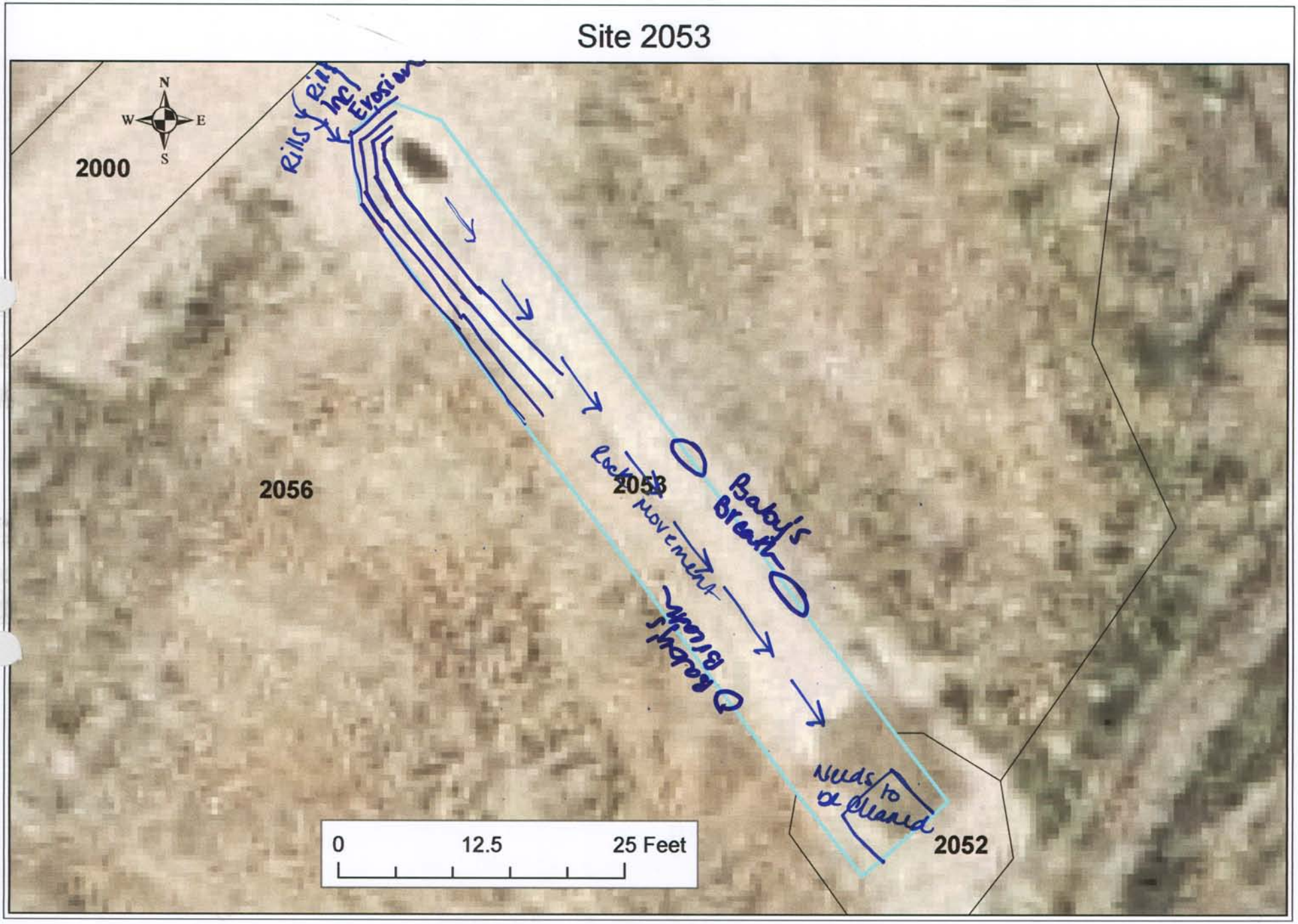
Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. Rock slope is holding up well. Some weeds (baby's breath, scorpion weed, & 1 other) along south edge of site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						


Site 2053
N
W
E
S
2000
2056
2053
2052
Rills
Inc
Erosion
Baby's Breath
Locust
Movement
Goldenrod
Bloom
Needs to be Cleared
0
12.5
25 Feet

BRES FIELD FORM

Site ID:__ Site Name: 2053 Field Date: 7/16/09

Team Members (Circle your name): Lague, McCaughey

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Water Channel cement, S end of N. trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items

Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☒ more weeds
- ☐ steeper slope
- ☒ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☐ other: ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments. This cement water channel is doing its job well. Some rocks are eroding down but not enough to cause issues. Some soil erosion on west edge. Baby's Breath on both sides of channel. Other weedy species along edge as well, but the sprayer was out here the same time we were.

- When reaching the bottom of channel the settling pool that is catching the water should be cleaned out. It is filled w/ Mud and vegetation and would benefit its purpose more if it was cleaned.
- North side edge there are some rills beginning to erode into water channel. They are actively eroding and could become gullies if not attended to.

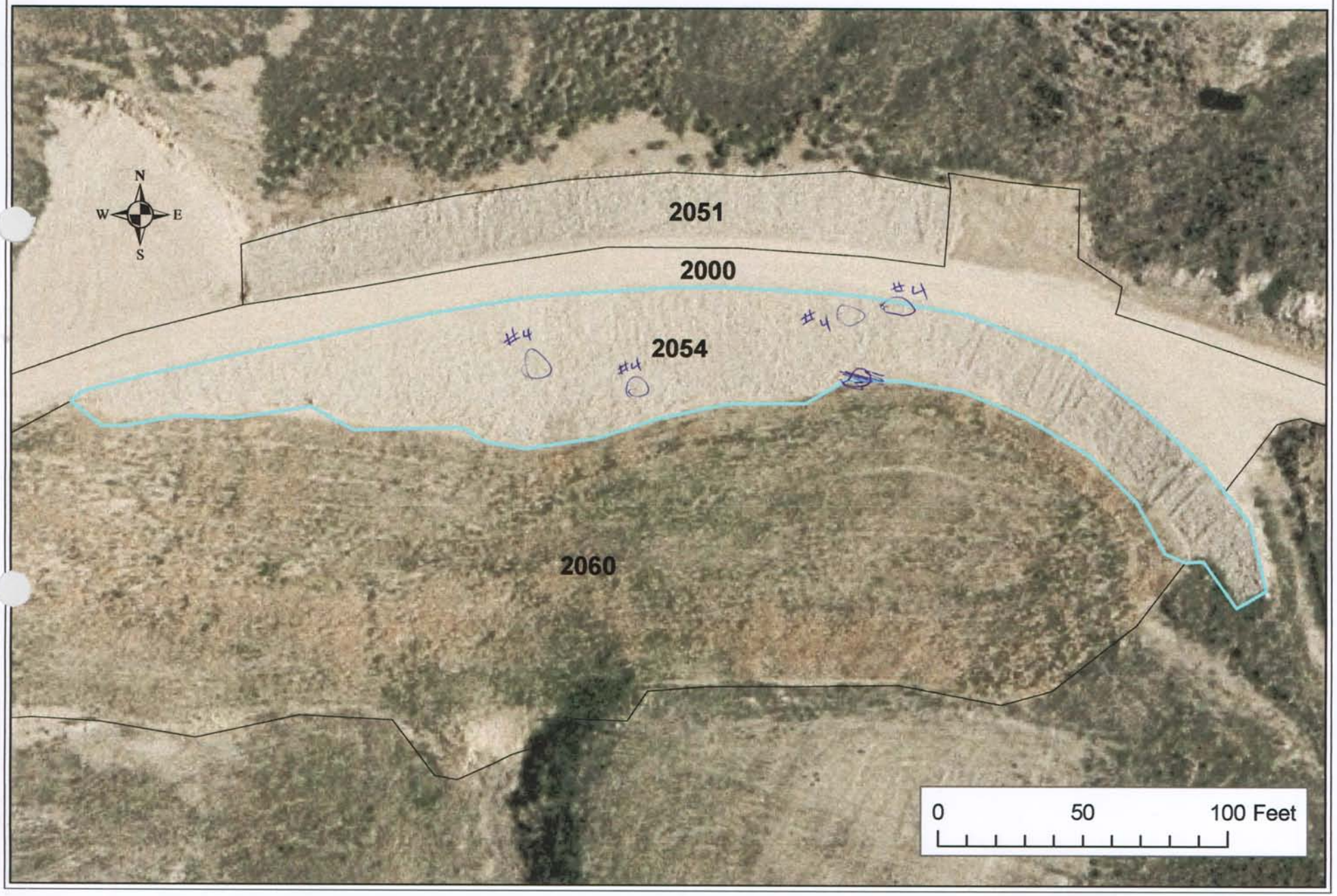
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2054



Master

BRES FIELD FORM Site ID:__ Site Name: 2054 Field Date: 7-16-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock Rip Rap on southern side of trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N__✓__ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y✓ N____

- Estimated pH 4.0
- Approximate area (in square feet) 20'2
- Number of areas with exposed waste 4

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

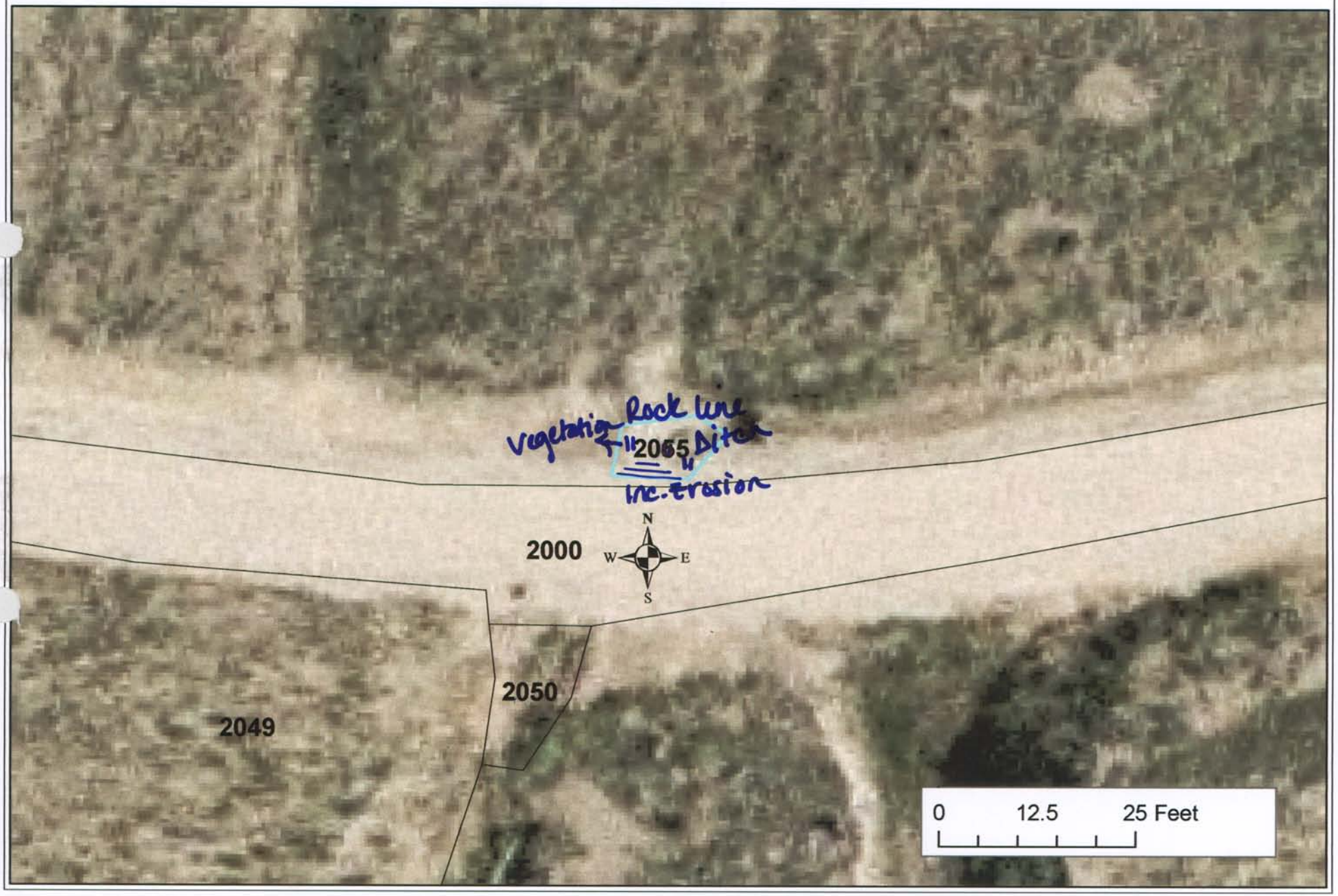
Comments.

Rip Rap area with exposed waste in various areas- see site map.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2055


vegetation
Rock line
2055
Ditch
inc. erosion
N
W
E
S
2000
2050
2049
0
12.5
25 Feet

BRES FIELD FORM Site ID:__ Site Name: 2055 Field Date: 7/16

Team Members (Circle your name): Lague, McCaughey

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: NORTH SIDE OF Walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☒ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y___ N X
Number of gullies _____

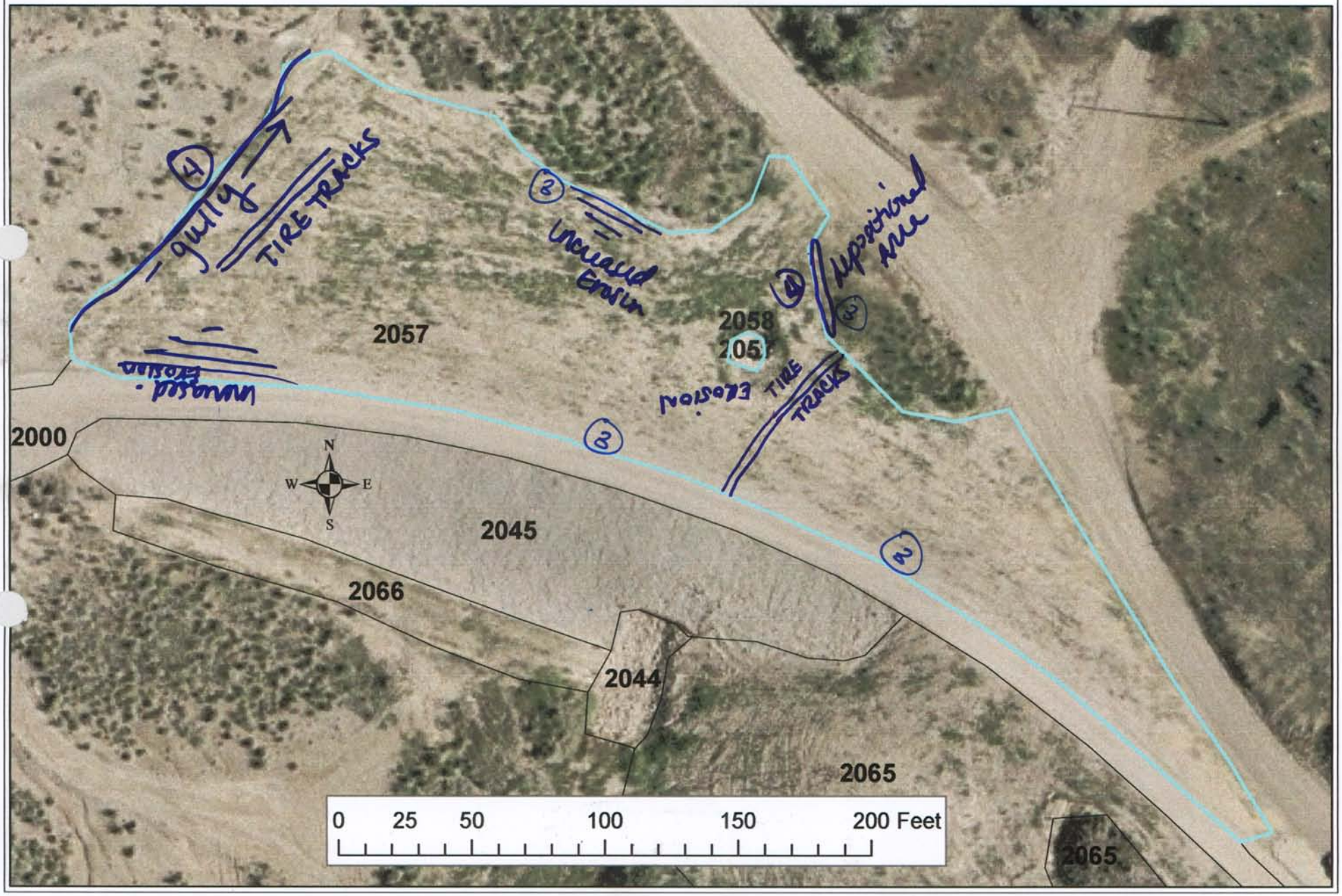
Comments. The rock line ditch is holding up well. The South side edge ~~some~~ does have some erosion, but it's not causing problems. There is a lot of vegetation coming up out of the rocks and litter on top of the rocks. The lining is exposed all around the pipe on the South side of the site.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2057


gully
TIRE TRACKS
Increased Erosion
Impervious Area
2057
2058
2056
Increased Erosion
TIRE TRACKS
2000
N
W
E
S
2045
2066
2044
2065
2065
0 25 50 100 150 200 Feet

BRES FIELD FORM

Site ID: __ **Site Name:** 2057 **Field Date:** 7/15

Team Members (Circle your name): Logue, McCaughey

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: North side of walking trail next to dirt road

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	35					
Erosion (BLM score)	40					
Undesir/noxious weeds	7					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	5					
*Noxious weeds	2					
Litter	40					
Rocks > 2"	3					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa						
Other GBRye	F					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	5					
Pedestalling	3					
Flow Patterns	9					
Rills Depth	2					
Rills Frequency	1					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	40					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items

Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- ☐ lime rock barrier
- ☒ depositional area
- ☐ more weeds
- ☐ steeper slope
- ☒ increased erosion
- ☒ less vegetation
- ☒ gullies
- ☒ other Exp. Mine waste

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ___ N X

- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N X

☐ bulk soil failure ☐ land slumps ☐ subsidence

6. Barren Areas: Y ___ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___

Do barren areas cover over 25% of any polygon? Y ___ N ___

7. Gullies (over 6" in depth): * site edge?

Y ___ N X

Are any gullies actively eroding? Y ___ N ___

Number of gullies ___

Comments. The Site edges are an issue here. There is increased erosion on the North & South edges. There is also a gully going along the west edge.

There is a depositional area outside of our site, but right along the edge on the North side and has mine wastes eroding into the site. The gully along the west also has exposed mine waste.

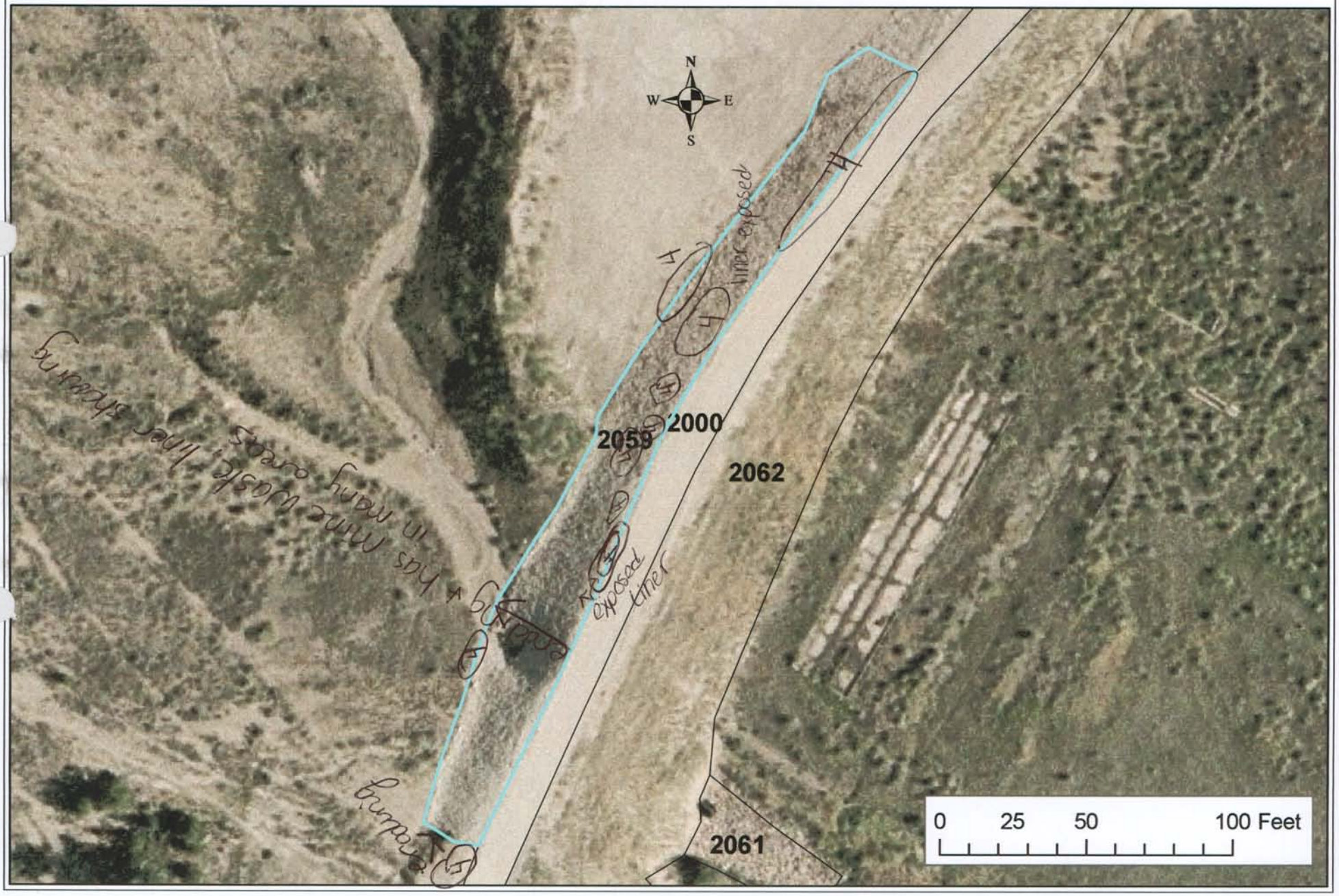
The tracks are ~~running~~ running throughout site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2059



BRES FIELD FORM

Site ID: __ **Site Name:** 2059 **Field Date:** 7/15/09

Team Members (Circle your name): Logue McCaughey Plumb

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: northwest edge of trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mullein	I					
Other foxtail	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☒ **other** mine waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4
- Approximate area (in square feet) 75
- Number of areas with exposed waste 10

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

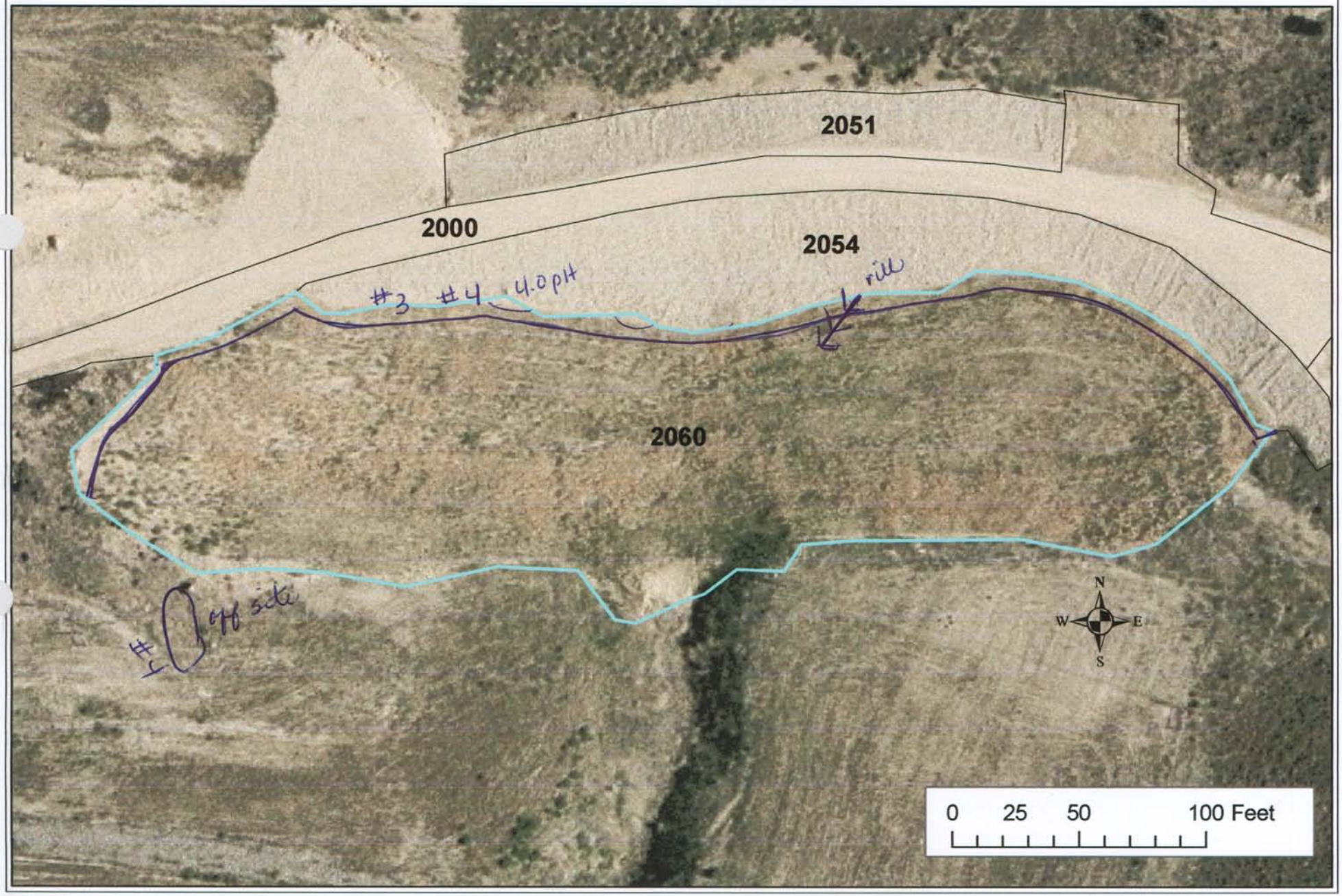
Comments. The site is a rock lined edge of the trail. Along the trail & site edge there are places the lining is exposed. On the southeast site edge there is exposed ~~rock~~ mine waste. In the site there are numerous areas where there is exposed mine waste showing through the rocks. The barrier is also showing through in many spots. On the bottom site edge there is an increase in the amount of rocks showing they are sliding to the bottom. Cutting E - W is an area w/ largely increased erosion with exposed mine waste & an area of erosion & mine waste at the bottom of the site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2060



Master

BRES FIELD FORM

Site ID: __ **Site Name:** 2060 **Field Date:** 7-16-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: vegetative area below rock rip rap.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	5					
*Noxious weeds	3					
Litter	45					
Rocks > 2"	0					
Bare Ground	17					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass						
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	I					
Other rubber rabbit	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	8					
Pedestalling	5					
Flow Patterns	10					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	/					
Gullies Frequency	/					
Soil Movement	5					
TOTAL BLM Score:	36					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia	I					
Thistle						
Leafy Spurge						
Other mustards	I					
Other salsify	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☑ **steeper slope**
- ☑ **increased erosion**
- ☑ **less vegetation**
- ☐ **gullies**
- ☑ **other** ex. west

Estimate width of affected edge (in feet) 3'

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4.0
- Approximate area (in square feet) 50'²
- Number of areas with exposed waste 4

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

Exposed waste on N. site edge at rip rap border. rill (see site map)

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2062

Master

BRES FIELD FORM

Site ID: __ **Site Name:** 2062 **Field Date:** 7/15/09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	20					
*Undesirable (weedy) species	10					
*Noxious weeds	0					
Litter	39					
Rocks > 2"	1					
Bare Ground	30					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	25%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	D					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	9					
Flow Patterns	9					
Rills Depth	1					
Rills Frequency	1					
Gullies Depth	/					
Gullies Frequency	/					
Soil Movement	5					
TOTAL BLM Score:	38					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☑ **increased erosion**
- ☑ **less vegetation**
- ☐ **gullies**
- ☑ **other** exposed waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4.5
- Approximate area (in square feet) 30 ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

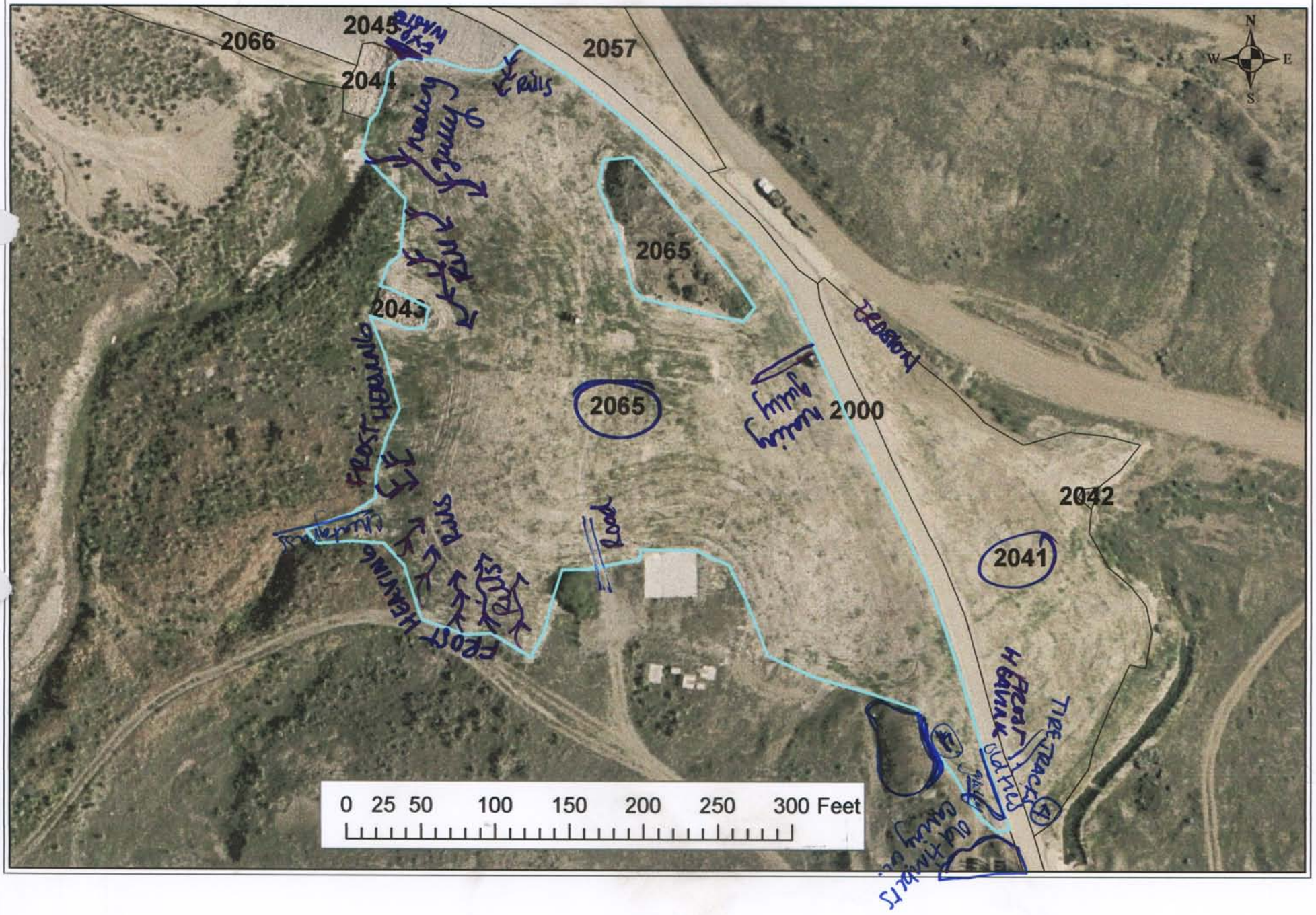
Comments.

Southern slope adjacent to walking trail. Site edge has exposed waste est 4.5 pH.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2065


2066
2045
2044
2057
2065
2043
2065
2000
2042
2041
0 25 50 100 150 200 250 300 Feet
N
S
E
W

BRES FIELD FORM

Site ID: __ **Site Name:** 2065/7041 **Field Date:** _____

Team Members (Circle your name): Lague, McCaughey, Plumb

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	35					
Erosion (BLM score)	56					
Undesir/noxious weeds	10					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	8					
*Noxious weeds	2					
Litter	40					
Rocks > 2"	2					
Bare Ground	18					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover	I					
Alfalfa	I					
Other GB Rye	F					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	8					
Pedestalling	6					
Flow Patterns	12					
Rills Depth	5					
Rills Frequency	3					
Gullies Depth	5					
Gullies Frequency	3					
Soil Movement	8					
TOTAL BLM Score:	56					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	F					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☒ **increased erosion**
- ☐ **less vegetation**
- ☒ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y___N___

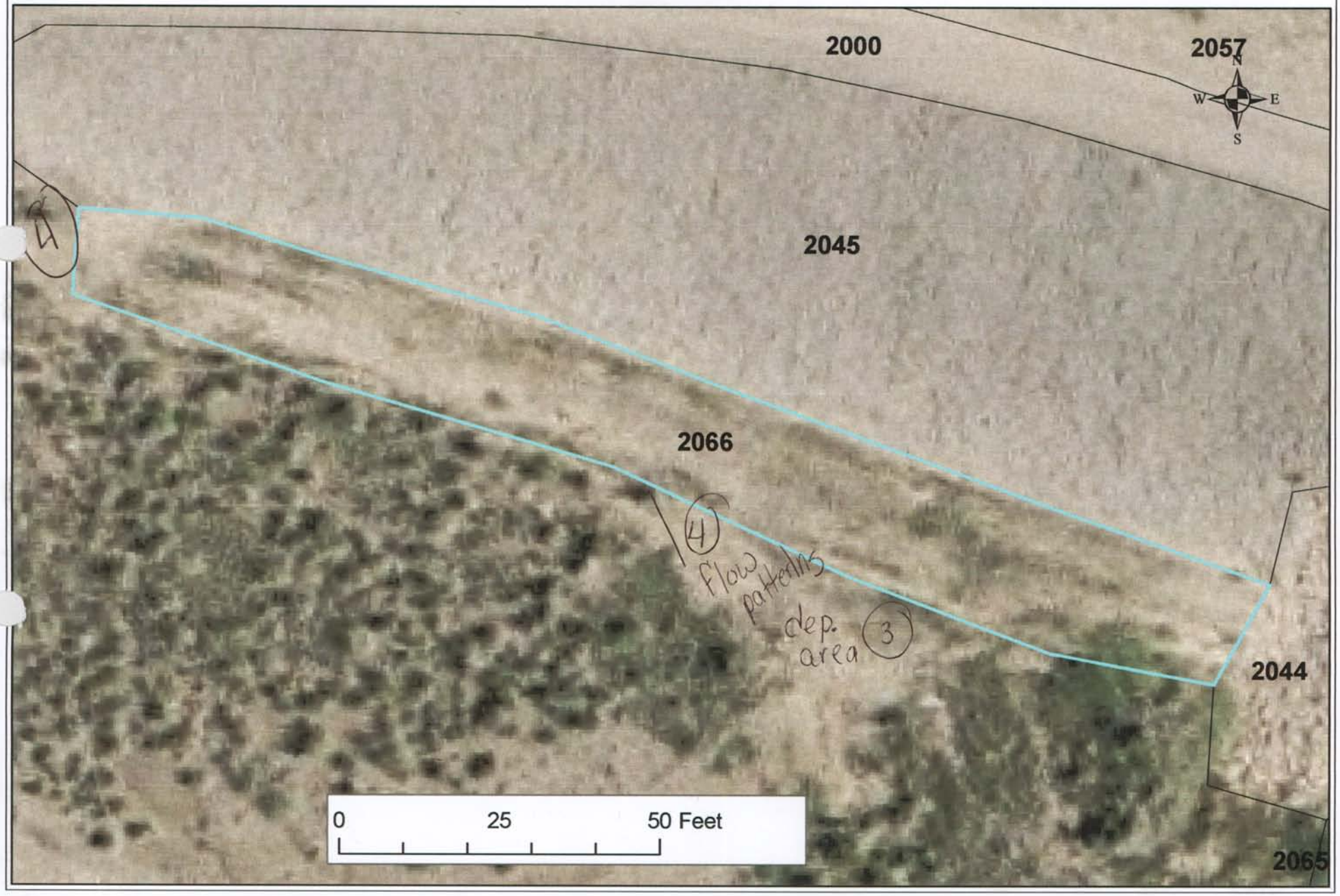
7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y___ N___
Number of gullies _____

Comments. This site has an overall good vegetation score. Some erosion issues are taking place on the SW & W site edges on the slope. On the NW corner where the rock line ditch is there is some exposed waste that could potentially erode onto the site. On the East site edge there is an old timber structure that is caving in and should be looked at ASAP.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2066


2000
2057
N
W
E
S
2045
2066
4
Flow patterns
dep. area
3
2044
2065
0
25
50 Feet

BRES FIELD FORM

Site ID: __ **Site Name:** 2066 **Field Date:** 7/15/09

Team Members (Circle your name): Logue McCaughey Plumb

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: south of rock area 2045

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	30					
Erosion (BLM score)	30					
Undesir/noxious weeds	7					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	5					
*Noxious weeds	2					
Litter	45					
Rocks > 2"	3					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other Great Basin	F					
Other Rye						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	3					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	30					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	F					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☒ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☒ **other** mine waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N X
- Estimated pH N
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments. On the west side of the site there is a large area of mine waste eroding into the site. On the south edge there is also an area of mine waste. The south edge is also showing signs of deposition.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2067

Round Table + Template Notebook Master

BRES FIELD FORM

Site ID: 2007 Site Name: BA+P 2007 Field Date: 7/8/09

MASTER

Team Members (Circle your name): Randi Phelps and Jennifer Nardiello

Number of Polygons: 1 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Off of the Excel walking Trail close to the alley

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☑ **increased erosion**
- ☐ **less vegetation**
- ☑ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) 10-12 ft²

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N_____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y X N____ whole Polygon

7. Gullies (over 6" in depth):
Y X N_____
Are any gullies actively eroding? Y X N____
Number of gullies 1

9812AM

Comments. This whole area has no vegetation. It is a dirt site connecting into a concrete alley. Where the dirt and concrete meet a huge gully is forming and going into a drain. The gully is serving as a drainage pathway but if it is meant to be a drainage pathway it should be treated as such and a rock lined ditch should be implemented.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2068

Master

BRES FIELD FORM

Site ID:__ Site Name: BA+P 2068 Field Date: 7/8/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: 1 Slope: 1 to 4 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Side edge of walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	39					
Erosion (BLM score)	8					
Undesir/noxious weeds	2					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	38					
*Undesirable (weedy) species	1					
*Noxious weeds	1					
Litter 4	50					
Rocks > 2"	0					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	39					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	/					
Slender wheatgrass	/					
Yellow sweetclover	/					
Alfalfa	F					
Other Clover	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	8					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	/					
Dalmation toadflax	/					
Cheatgrass	/					
Baby's breath	/					
Kochia	I					
Thistle	/					
Leafy Spurge	/					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N✓

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y✓ N_____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y____N✓

7. Gullies (over 6" in depth):
Y_____ N✓
Are any gullies actively eroding? Y____ N✓
Number of gullies ✓

Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2069

BRES FIELD FORM

Site ID: __ **Site Name:** 2069 **Field Date:** 7/17/09

Team Members (Circle your name): Hague McCaughey

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: path from trail to gate

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	I					
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N__X__ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N__X__

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N__X__

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N__X__

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N__X__
Are any gullies actively eroding? Y___ N___
Number of gullies _____

Comments. The site is a small rock line path to homeowners gate. Path & surrounding rock look fine. Dalmation toadflax is present on site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2070

VIRGINIA ST
2071
2070
dalmation toadflax
2030
all vegetated
2072
0
25
50 Feet
E
S

BRES FIELD FORM

Site ID:__ Site Name: 2070 Field Date: 7/17

Team Members (Circle your name): Eagle, McCaughey

Number of Polygons: 1 Slope: ___to___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: very small rock line ditch on NE portion of Walk trail next to bridge.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☒ **steeper slope**
- ☒ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☒ **other** mine waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ^ N____

- Estimated pH 4
- Approximate area (in square feet) 12
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y___ N___
Number of gullies ____

Comments. Exposed mine waste eroding into North side edge. Some dalmatian toadflax on west side edge. South half full of crested wheatgrass. Rock ditch eroding down.

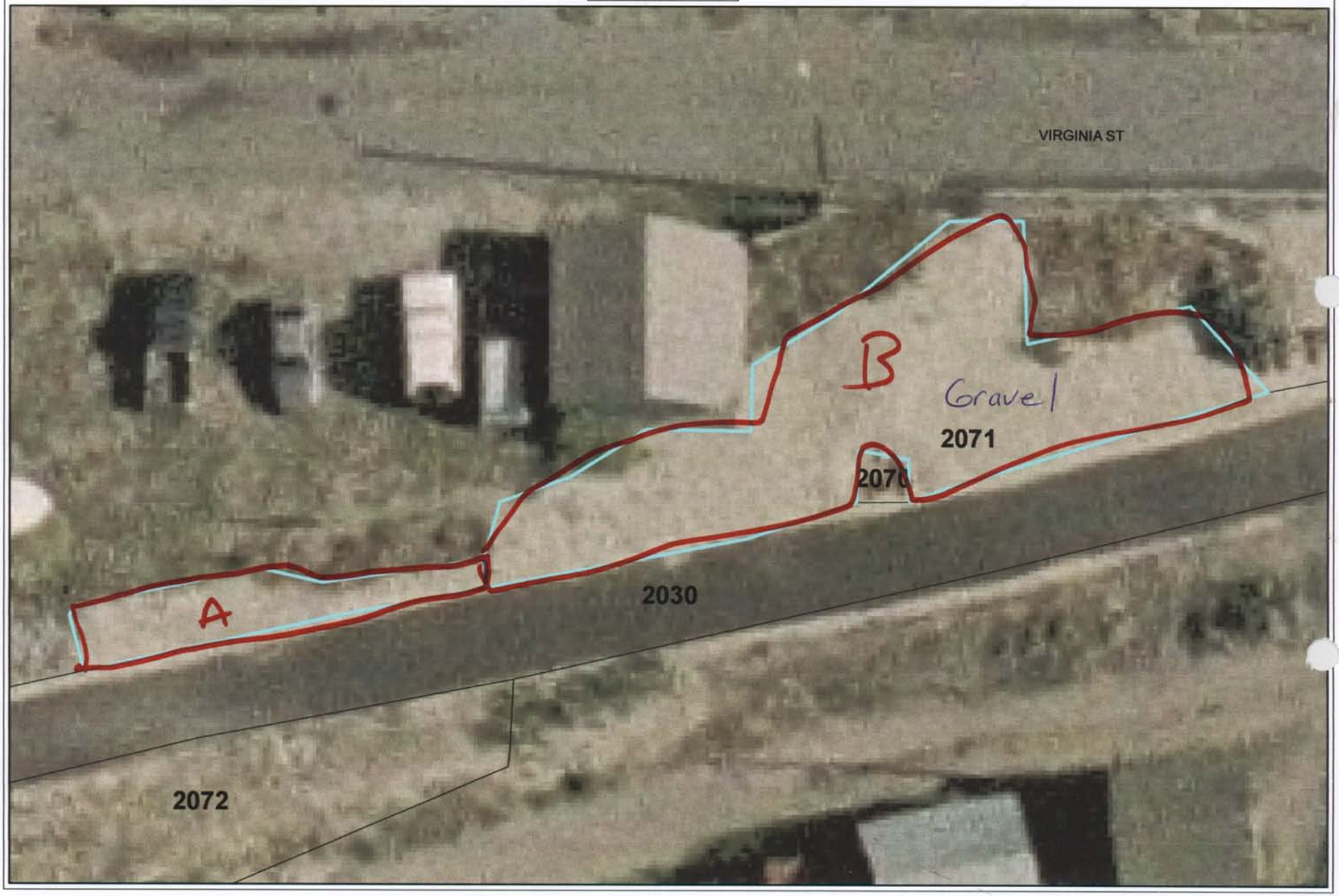
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

master ✓

Site 2071



Muster BAP 2071

BRES FIELD FORM

Site ID: __ **Site Name:** _____ **Field Date:** 7/8/09

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Plumb

Number of Polygons: 2 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Directly west of Montana St Bridge - N side of trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	15	5				
*Undesirable (weedy) species	25	5				
*Noxious weeds	5	1				
Litter	20	2				
Rocks > 2"	5	~~50~~ 73				
Bare Ground	30	12				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	20	10				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	T					
Crested wheatgrass	I	T				
Slender wheatgrass	T					
Yellow sweetclover	T					
Alfalfa						
Other rabbit brush		T				
Other scorpion grass	-	T				
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3	3				
Surface Rock Movement	2	5				
Pedestalling	3	0				
Flow Patterns	6	9				
Rills Depth	0	2				
Rills Frequency	0	2				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	3	8				
TOTAL BLM Score:	17	29				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	I				
Cheatgrass	F	I				
Baby's breath						
Kochia	I					
Thistle						
Leafy Spurge						
Other Salsify	I					
Other Prickly Lettuce	I					
Other matrimony vine		I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ~~X~~ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

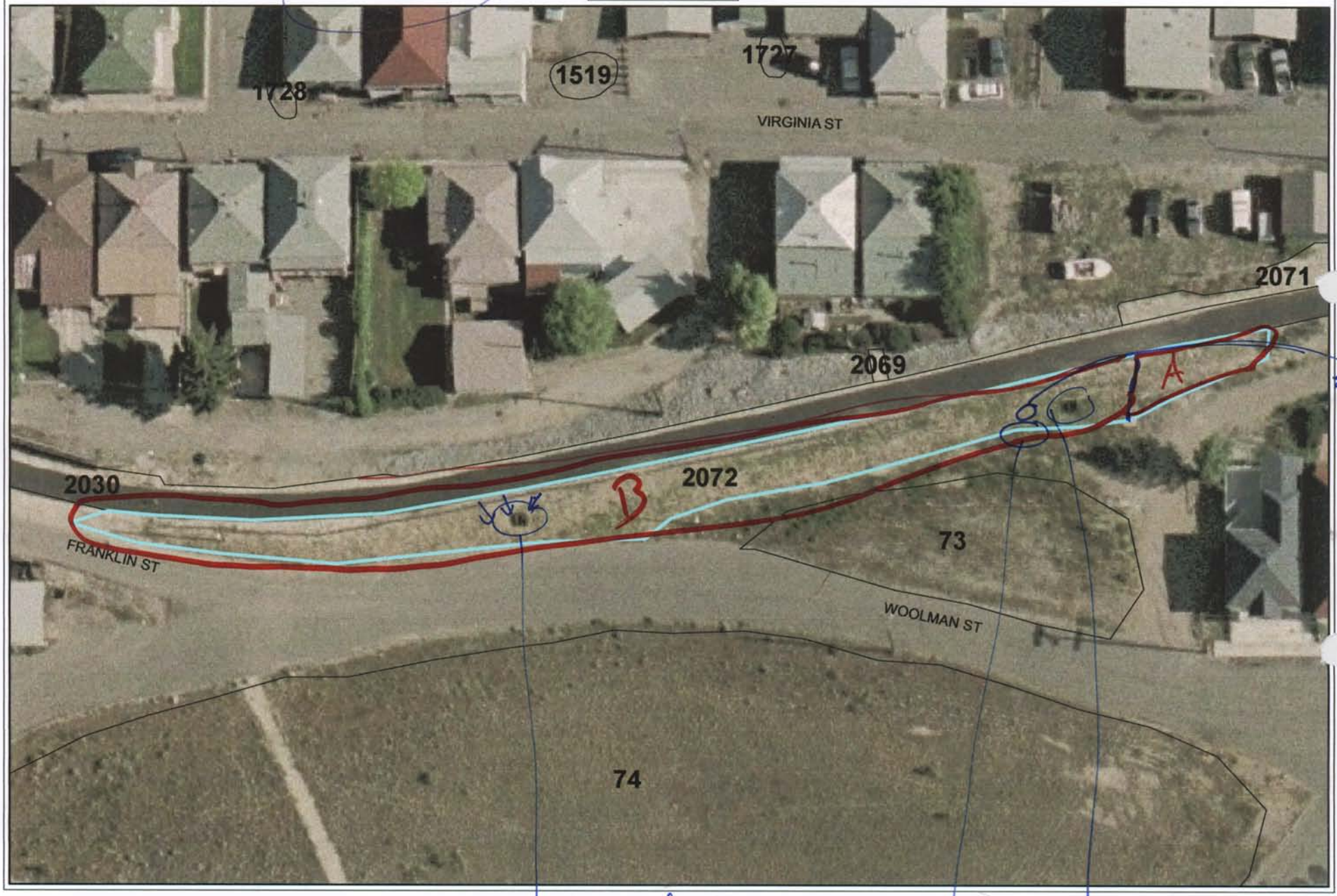
Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2072



storm drain

#4

storm drain

BAP 2072 (Master)

BRES FIELD FORM

Site ID:__ Site Name: _____ Field Date: 7/8/09

Team Members (Circle your name): Jeanne Larson Eric Larson Benny Plumb

Number of Polygons: 2 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: East of Franklin + Woodman intersection

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	15	35				
*Undesirable (weedy) species	2	15				
*Noxious weeds	0	5				
Litter	15	20				
Rocks > 2"	2	2				
Bare Ground	66	23				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	17	40				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I	F				
Crested wheatgrass	I	F				
Slender wheatgrass						
Yellow sweetclover						
Alfalfa		F				
Other scorpion		I				
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	18	8				
Surface Rock Movement	8	8				
Pedestalling	6	6				
Flow Patterns	12	6				
Rills Depth	5	3				
Rills Frequency	5	2				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	8	5				
TOTAL BLM Score:	53	38				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed		X				
Dalmation toadflax		I				
Cheatgrass		F				
Baby's breath		I				
Kochia						
Thistle						
Leafy Spurge						
Other mustard	7	I				
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X Polygon A N X Polygon B

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. * Pipe / airline on site

* Polygon A - east side of site. Bare of vegetation

Polygon B - exposed waste - may not be on site

* Polygon B - rills near manhole on west s

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

master
hole in fence
fire mark
Site 2073
2074
2073
2030
2083
71N
2301
2300
H#

BAP 2073 Master

BRES FIELD FORM Site ID:__ Site Name: _____ Field Date: 7/6/14

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Mumb

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5					
*Undesirable (weedy) species	5					
*Noxious weeds	5					
Litter	5					
Rocks > 2"	25					
Bare Ground	55					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	10					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other Rabbit Brush	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	3					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	29					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y_X_ N_____ (check applicable items)

- ☒ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_X_ N_____

- Estimated pH 4
- Approximate area (in square feet) 1
- Number of areas with exposed waste 1

5. Is there evidence of: Y_____ N_X_

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_X_ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon? Y_X_ N____

7. Gullies (over 6" in depth):
Y_____ N_X_
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

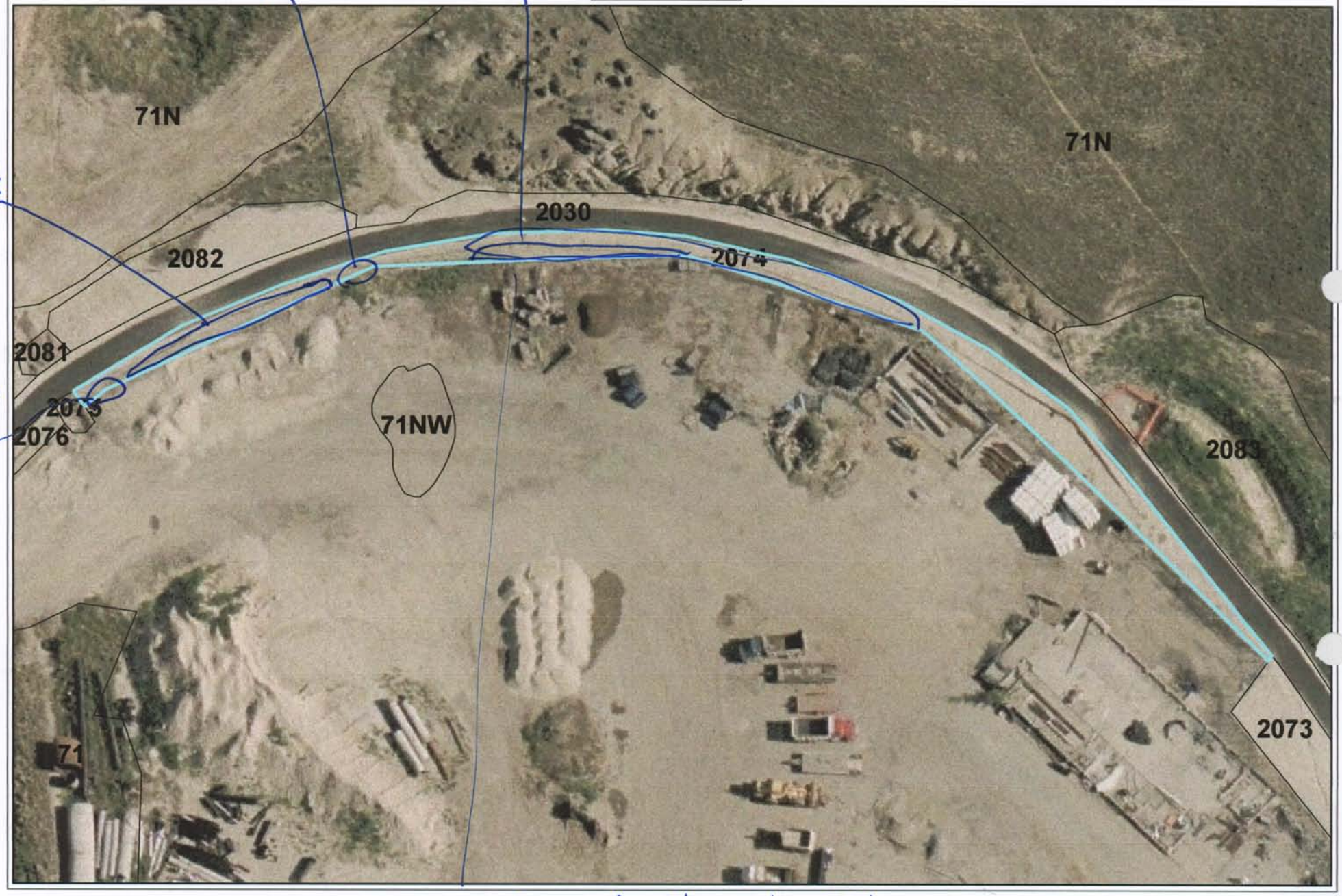
* Hole in fence
* Bare over all
* Exposed waste S/E corner

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2074



waste dispersed through site

Master / BAP 2074

BRES FIELD FORM

Site ID:__ **Site Name:** _____ **Field Date:** 7/3/07

Team Members (Circle your name): Jeanne Larsen, Eric Larsen, Beverly Plumb

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: BAP walking trail - curve N of Assistant gate

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	10					
*Undesirable (weedy) species	15					
*Noxious weeds	5					
Litter	10					
Rocks > 2"	15					
Bare Ground	45					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	15					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover	I					
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	0					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	11					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other Foxtail	I					
Other Mustard	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☒ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N_____

- Estimated pH 4
- Approximate area (in square feet) 150 - intergrained throughout soil
- Number of areas with exposed waste 15

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y X N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N X
Number of gullies _____

Comments.

* old pipe on site

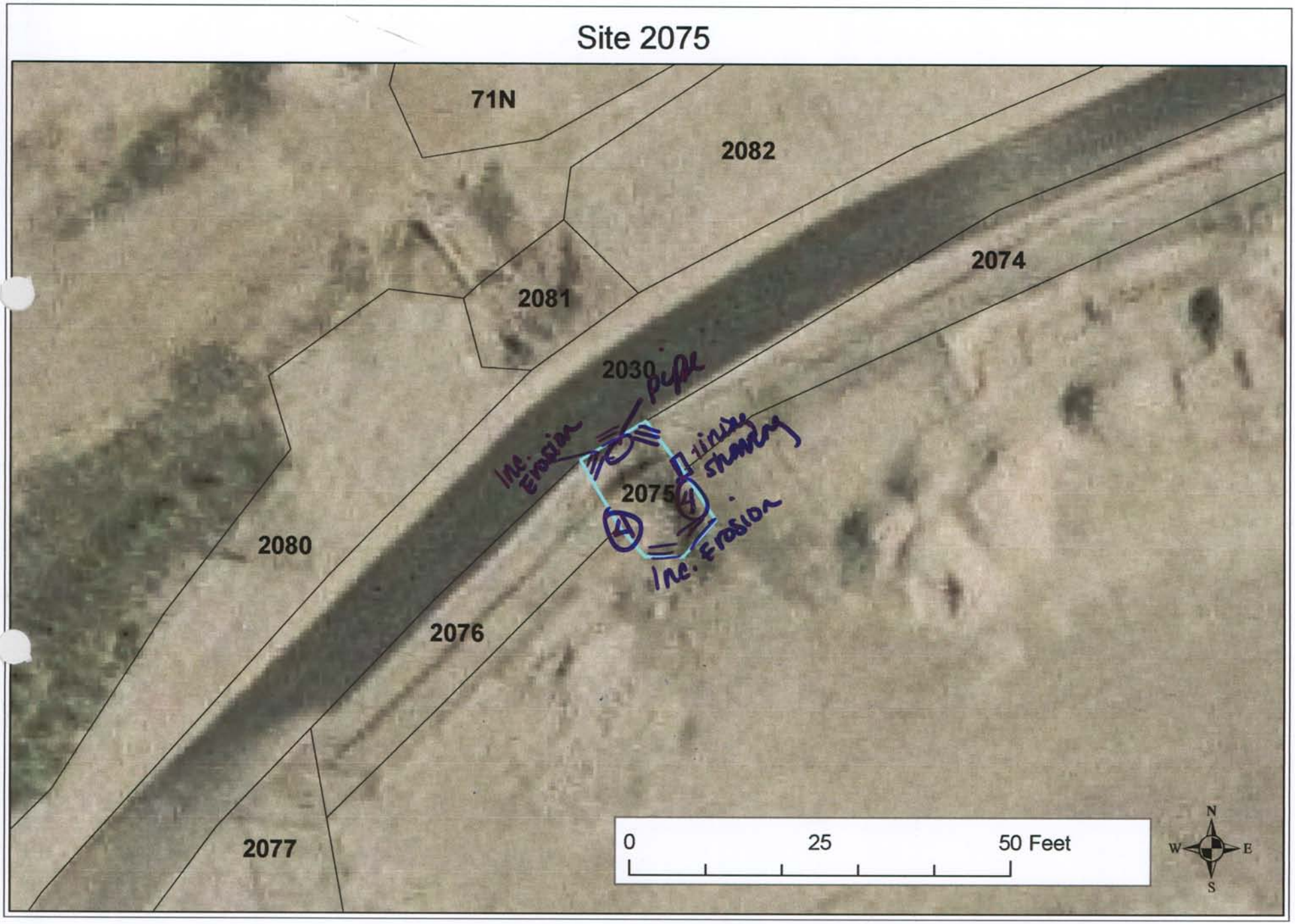
* waste dispersed throughout site - hard to mark on map because of dispersal

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2075


71N
2082
2074
2081
2030
pipe
Inc. Erosion
tinity shanding
2075
4
4
Inc. Erosion
2080
2076
2077
0
25
50 Feet
N
W
E
S

BRES FIELD FORM

Site ID: __ Site Name: 2075 Field Date: 7/17

Team Members (Circle your name): McCaughey, Legue

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock line drainage ditch on the S side of the walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ___ (check applicable items)

- ☐ lime rock barrier
- ☒ more weeds
- ☒ increased erosion
- ☐ gullies
- ☐ depositional area
- ☐ steeper slope
- ☐ less vegetation
- ☒ other lime WASTE

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___

- Estimated pH 4
- Approximate area (in square feet) ~~120~~ 12 ft²
- Number of areas with exposed waste 2

5. Is there evidence of: Y ___ N X

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ___ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N X
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

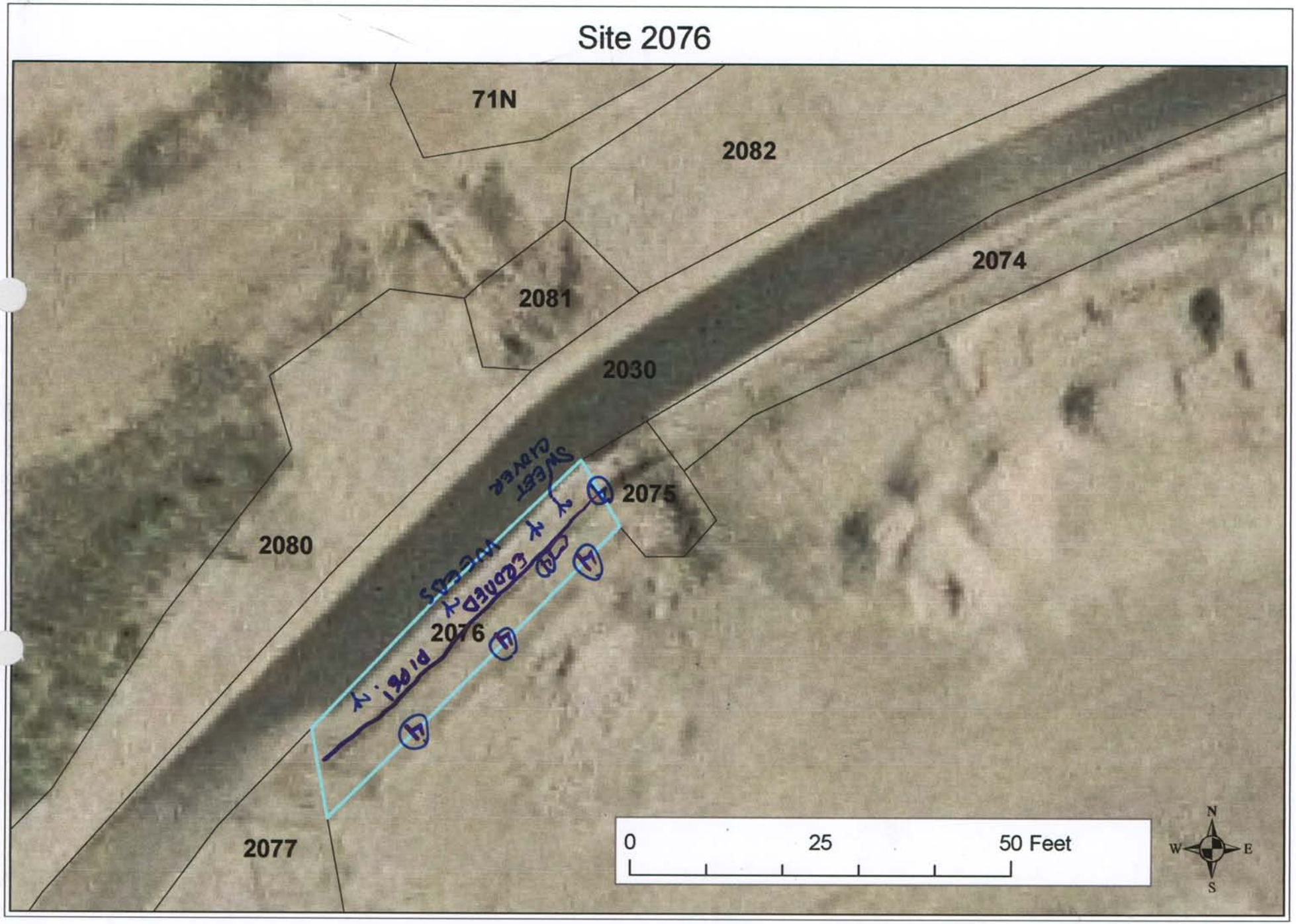
Comments. This rock line ditch has a fare amount of litter along the bottom a fence goes all through the middle and 2 fiber optic areas are exposed and eroding in. There is increased erosion along site edge and the lining is showing on the east edge. Asphalt is eroding down on the east edge and the pipe is full of rocks and liter.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2076



BRES FIELD FORM

Site ID:__ Site Name: 2076 Field Date: 7/17

Team Members (Circle your name): Logue, McCaughey

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: SW portion of walking trail west of Virginia St.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover	F					
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- ☐ lime rock barrier
- ☒ more weeds
- ☒ increased erosion
- ☐ gullies
- ☐ depositional area
- ☐ steeper slope
- ☐ less vegetation
- ☒ other lime waste

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y 1 N ___

- Estimated pH 4
- Approximate area (in square feet) ___
- Number of areas with exposed waste 2

5. Is there evidence of: Y ___ N 0

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ___ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N X
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments. This area is covered w/ rock all the way through. Exposed waste is eroding onto site from S and E site edges. The rusted pipe going through the center has been completely eroded away along the bottom edge of it. Although there is some sweet clover it is mostly weeds and rocks so no vegetation or erosion score on this site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

BAP

Site 2077

Master

BAP 2007

BRES FIELD FORM Site ID:__ Site Name: _____ Field Date: 7/5/07

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Plumb

Number of Polygons: 1 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: BAP walking trail ~~dirt~~ W adjacent to E entrance to Anselmo mine yard

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	20					
*Undesirable (weedy) species	2					
*Noxious weeds	1					
Litter	2					
Rocks > 2"	35					
Bare Ground	40					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	22					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover	F					
Alfalfa	T					
Other Scorpia	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	2					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	7					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y____N X

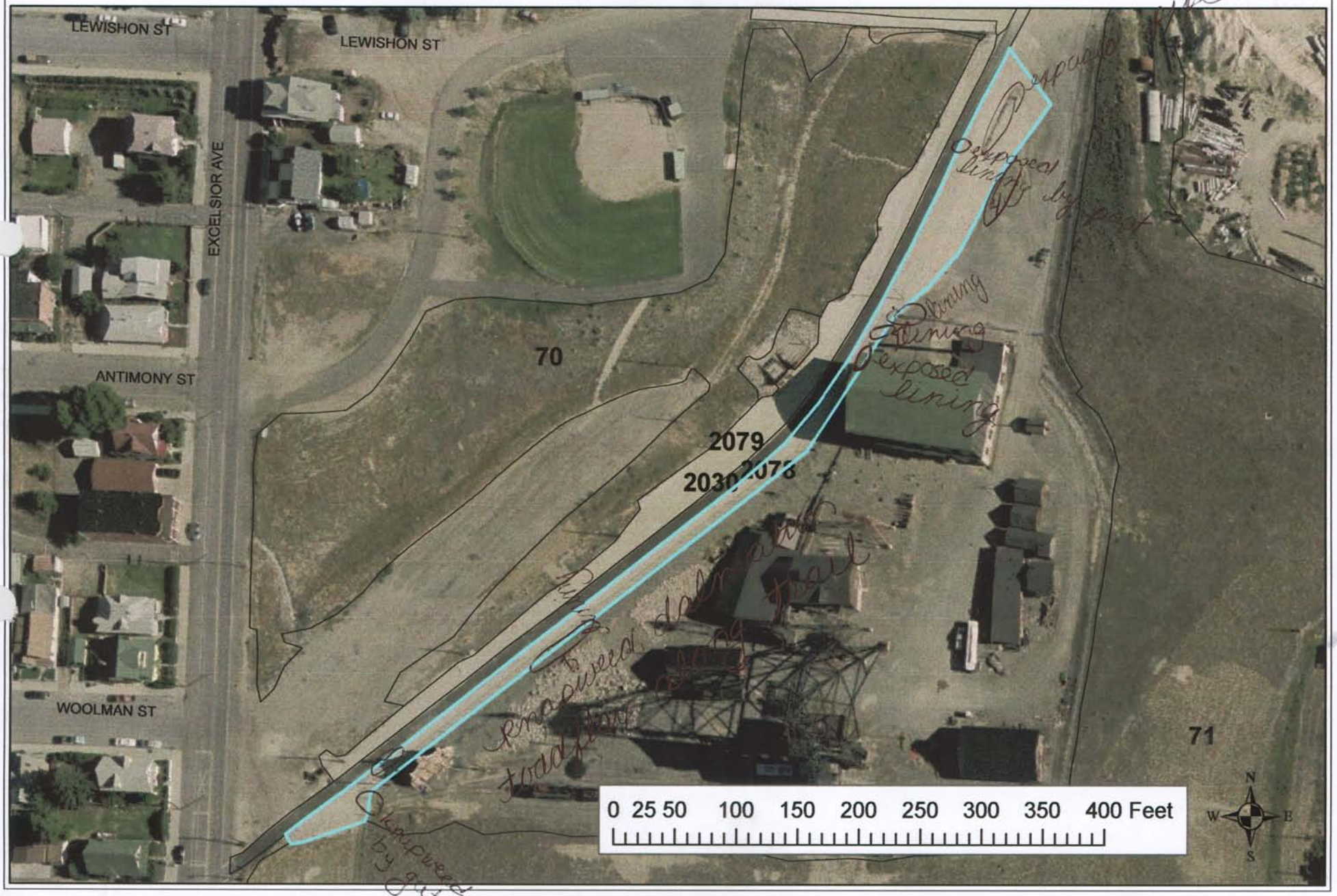
7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2078


LEWISHON ST
LEWISHON ST
EXCELSIOR AVE
ANTIMONY ST
WOOLMAN ST
70
71
2079
2078
0 25 50 100 150 200 250 300 350 400 Feet
N
W
E
S

BRES FIELD FORM

Site ID:__ **Site Name:** 2078 **Field Date:** 7/17/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): ~~N~~ S W E NW NE SW SE

Area Description: South side trail by mine yard

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	I					
Other grasses	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	F					
Cheatgrass	F					
Baby's breath						
Kochia	F					
Thistle						
Leafy Spurge						
Other mullen	F					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☒ **lime rock barrier**
- ☐ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☒ **other** exposed mine waste

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N____

- Estimated pH 4.5
- Approximate area (in square feet) 2
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N 1

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y___N___

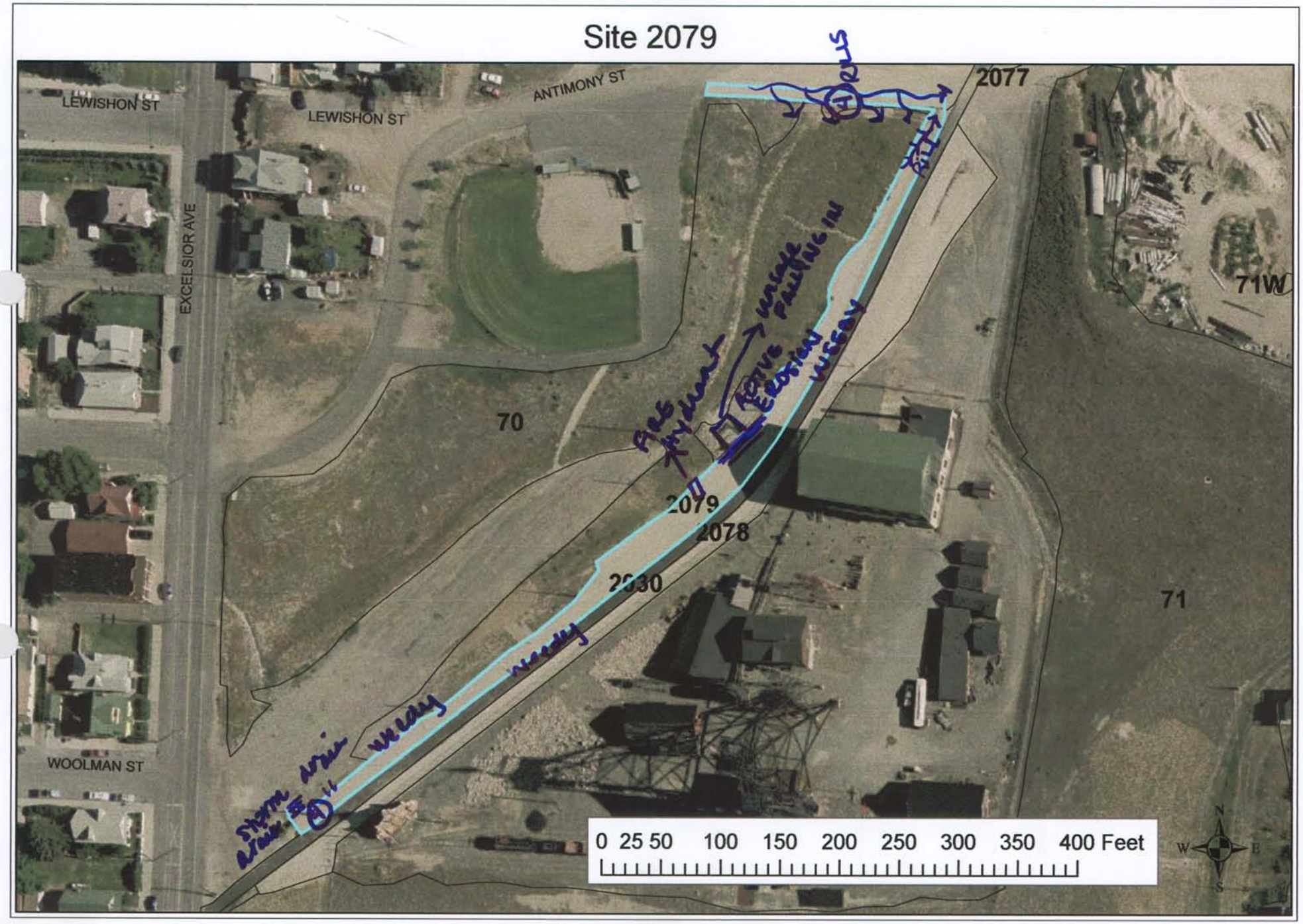
7. Gullies (over 6" in depth):
Y____ N 1
Are any gullies actively eroding? Y___ N___
Number of gullies _____

Comments. The rock lined edge of the trail is showing some movement of rocks on east side of slope. There are 4 areas of exposed lining. One area of exposed liner is to the east of sitting bench. There is also exposed weed on site edge at the same spot. There is cheatgrass, kochia, mullen, knapweed, dalmation toadflax, a few grasses, alfalfa, & mustards growing through rocks.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2079


LEWISHON ST
LEWISHON ST
ANTIMONY ST
EXCELSIOR AVE
WOOLMAN ST
2077
71W
70
71
2079
2078
2030
0 25 50 100 150 200 250 300 350 400 Feet
N
W
E
S

BRES FIELD FORM Site ID:__ Site Name: 2079 Field Date: _____

Team Members (Circle your name): Layne, McCaughey

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: North side of Walking Trail (Rock Drop) off Excelsior

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	F					
Cheatgrass	F					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☒ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** _____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N X

- Estimated pH 4.5
- Approximate area (in square feet) ____
- Number of areas with exposed waste 2

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. This site consists mainly of the rock ditch so I did not do a vegetation or erosion score. The rocks are holding up, but there is a lot of cheatgrass, dalmatian toadflax, and some baby's breath coming through. There is also a telephone pole on the NW corner of the site where mine waste is exposed. The timber structure on the N edge of the site is beginning to cave in and ~~ex~~ erode down onto rock ditch. This could be health hazard. The East edge wraps off the walking trail and up the dirt road facing N to S. This contains some rocks and some weeds but the E side edge has some rills leading down that will turn into gullies if not tended to. There is also a small area of mine waste coming ~~the~~ through the rocks on the N side of site.

X

X

X

PFQS
possess Salt, wyet

Additional Vegetation:

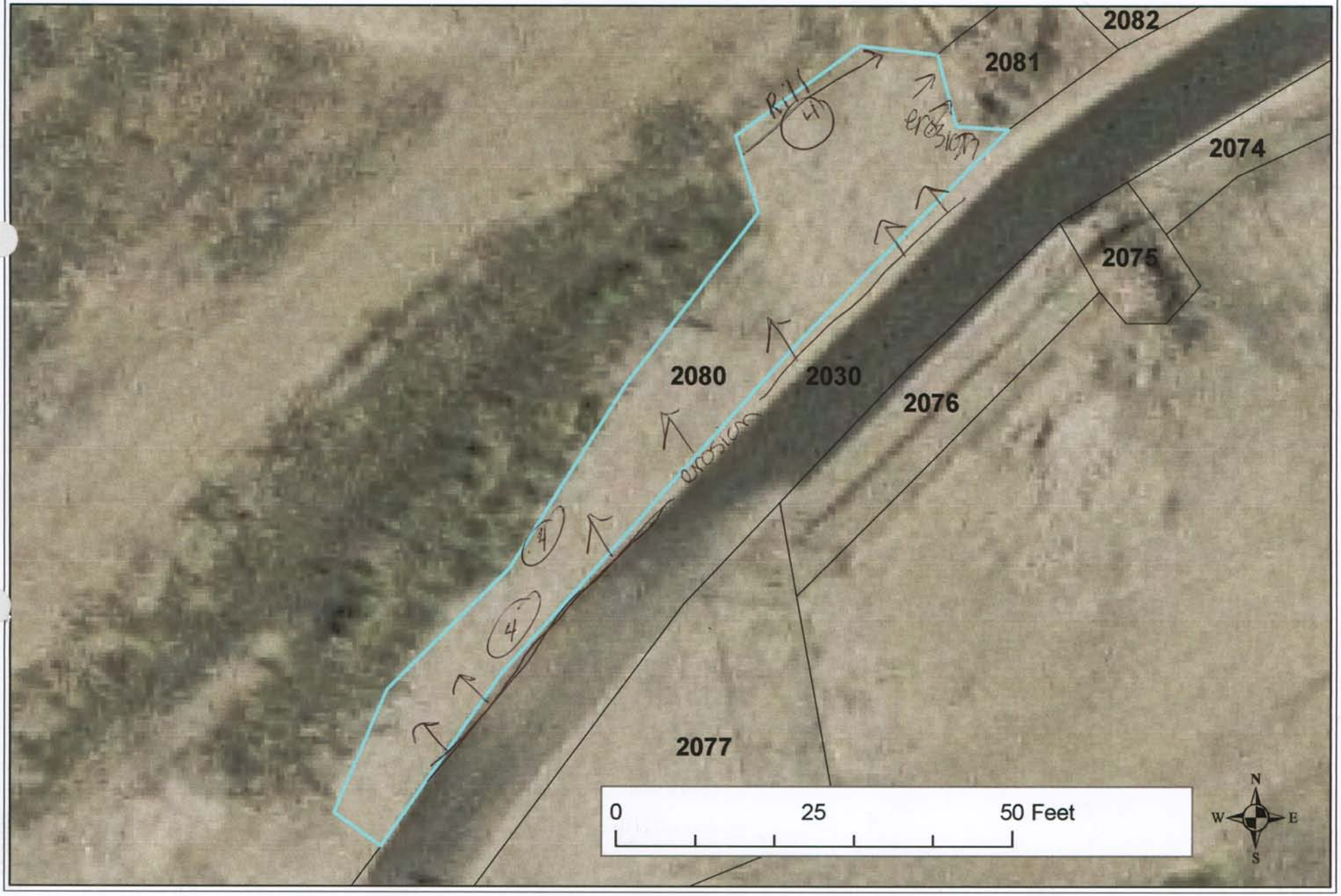
Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

F
F
F
I

I
I

Site 2080


2082
2081
2074
2075
2080
2030
2076
2077
Rill
4
erosion
4
4
0
25
50 Feet
N
W
E
S

BRES FIELD FORM

Site ID: __ **Site Name:** 2080 **Field Date:** 7/17/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: North side trail Rock area west of drainage ditch

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover	f					
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	~~I~~					
Cheatgrass	f					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☒ **less vegetation**
- ☒ **other** exposed waste

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N____

- Estimated pH 4
- Approximate area (in square feet) 18
- Number of areas with exposed waste 3

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y___ N___
Number of gullies _____

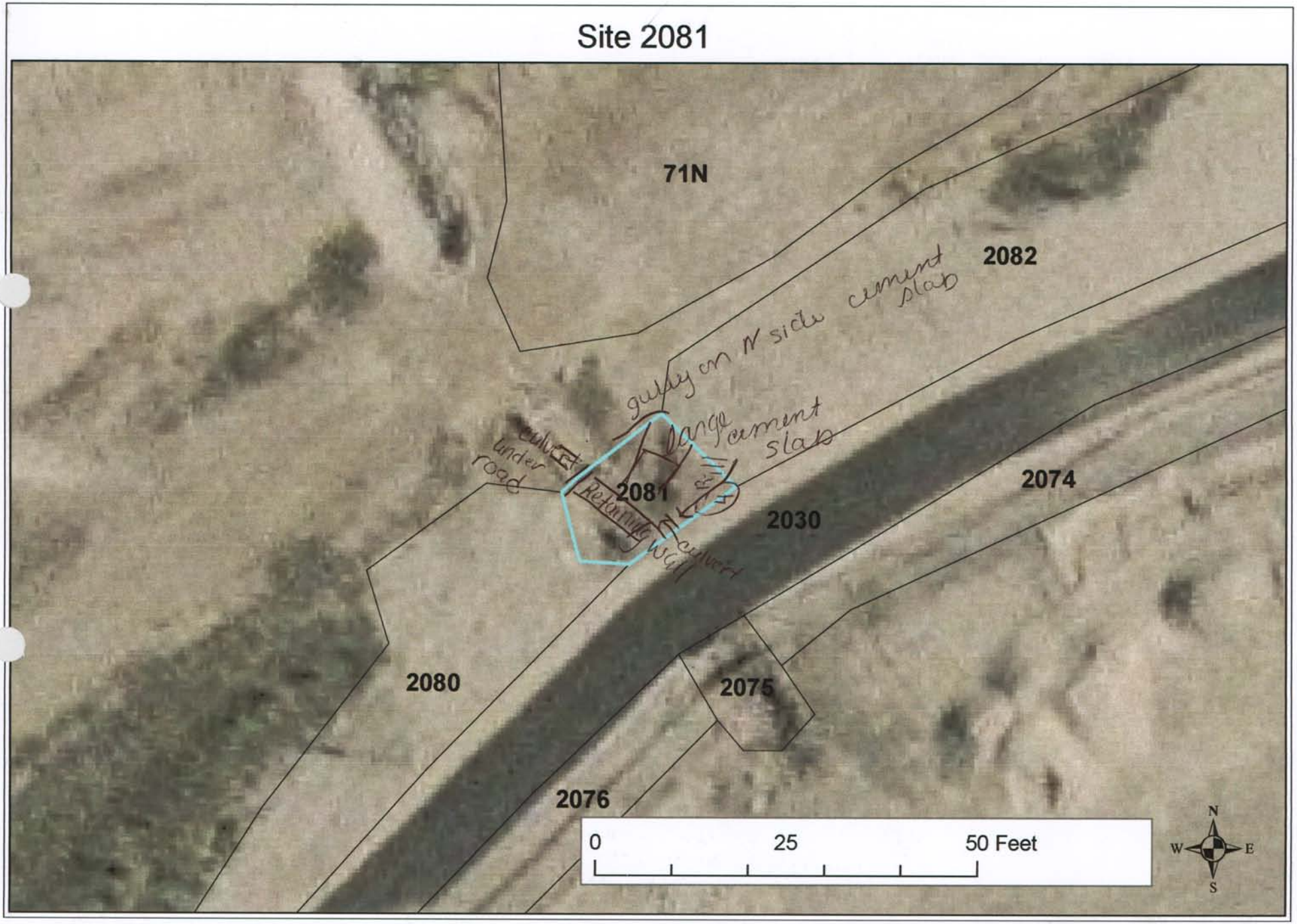
Comments. The rock area on north side of trail shows erosion + rock movement. On north edge there is a rill eroding that leads to drainage ditch. There are 3 areas of exposed waste in site including waste in rill.

Sweet clover + cheatgrass are found growing in the site as well as new shoots of dalmation toadflax

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2081


71N
2082
gully on N side
cement slab
large cement slab
culvert under road
2081
Retaining Wall
culvert
2074
2030
2080
2075
2076
0
25
50 Feet
N
W
E
S

BRES FIELD FORM

Site ID: __ **Site Name:** 2081 **Field Date:** 7/17/09

Team Members (Circle your name): Logue McCaughey

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: North side trail drainage ditch

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	I					
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☒ **increased erosion**
- ☒ **less vegetation**
- ☒ **gullies**
- ☒ **other** exposed waste

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y____ N____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. The liner is exposed on south + north areas of rock area. Concrete slab shows erosion on north + east sides around it. There is a gully forming on ~~sou~~ north side leading to culvert under road. There are other pieces of concrete on north edge that are broken with exposed rebar. west edge shows some mine waste in developing rill.

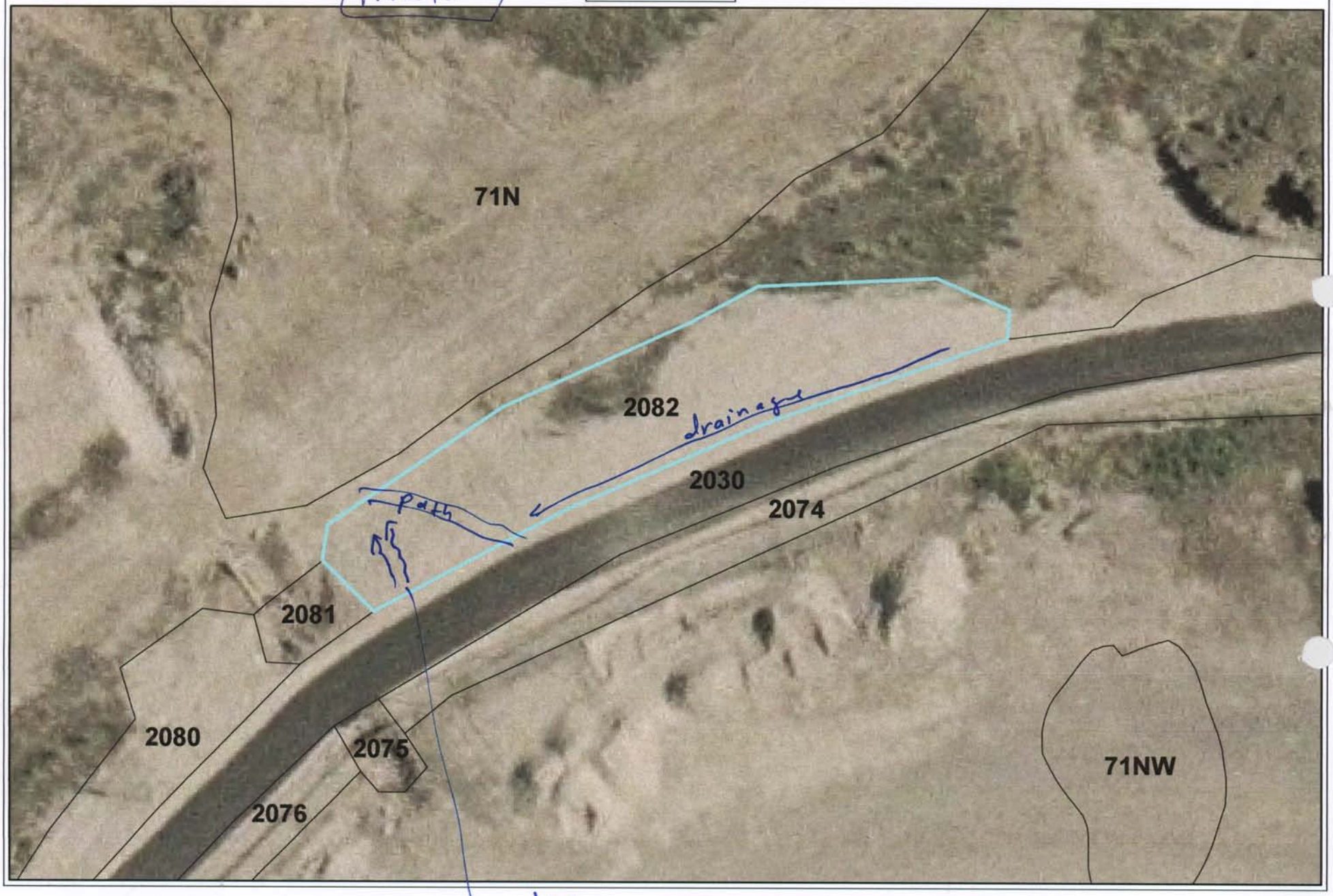
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

master

Site 2082



BAP site 2082 master

BRES FIELD FORM

Site ID: __ **Site Name:** _____ **Field Date:** _____

Team Members (Circle your name): Jeanne Larson Eric Larson Bondy plants

Number of Polygons: 1 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5 ~~10~~					
*Undesirable (weedy) species	3					
*Noxious weeds	2					
Litter	10					
Rocks > 2"	25					
Bare Ground	55					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	8					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	I					
Slender wheatgrass						
Yellow sweetclover	I					
Alfalfa	I					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	7					
Gullies Frequency	3					
Soil Movement	5					
TOTAL BLM Score:	33					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	I					
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N_____

- Estimated pH 4
- Approximate area (in square feet) 200
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y X N____

7. Gullies (over 6" in depth):
Y X N_____
Are any gullies actively eroding? Y X N____
Number of gullies 2

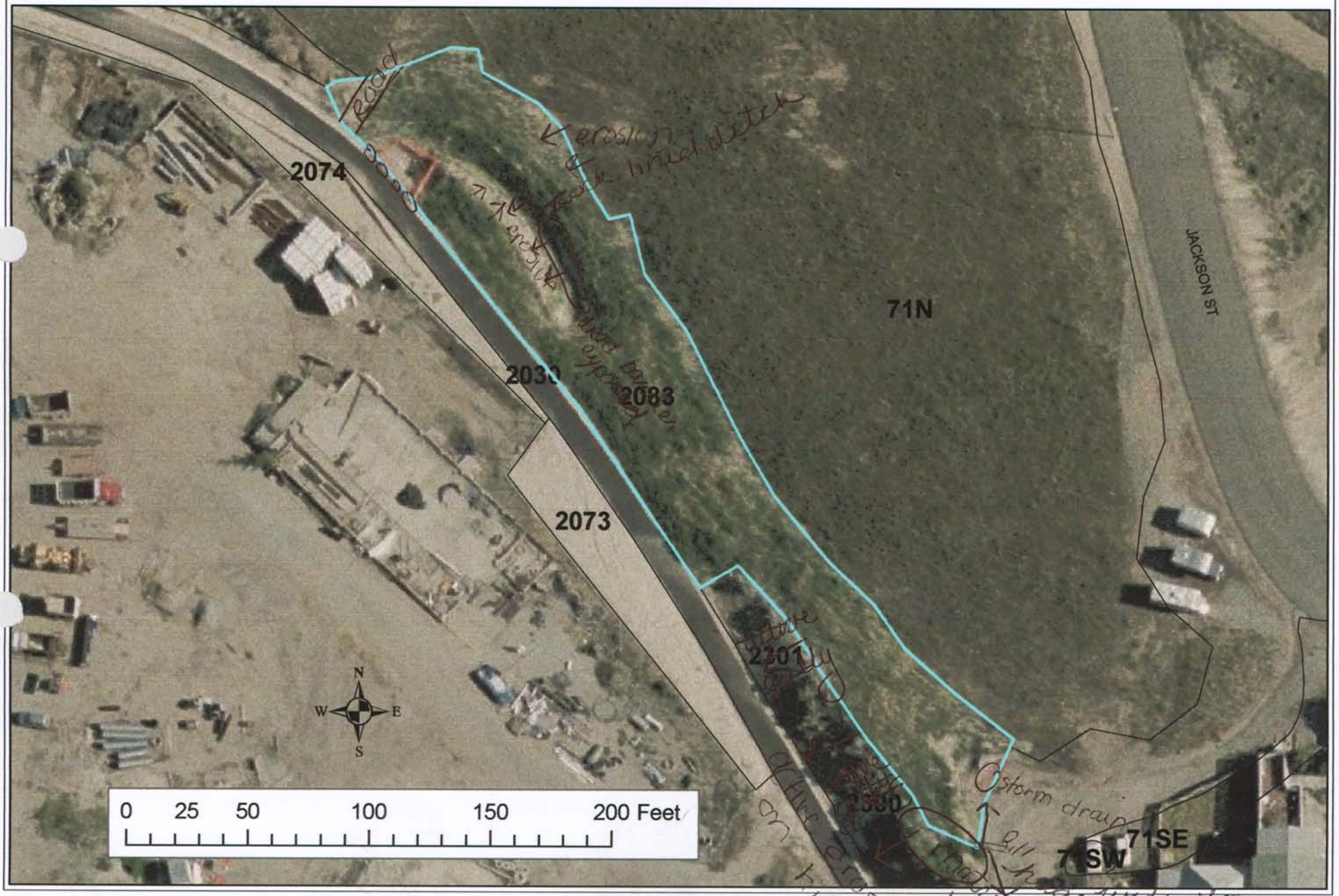
Comments. * Exposed waste scattered throughout site

* Rock covered - very little vegetation

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2083


2074
2030
2083
2073
2301
2330
71N
71SE
71SW
JACKSON ST
road
erosion
rock lined ditch
rock lined ditch opposite
storm drain
gully
N
W
E
S
0 25 50 100 150 200 Feet

BRES FIELD FORM

Site ID: __ **Site Name:** 2083 **Field Date:** 7/17/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: North side of trail north of Boardman St

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	33					
Erosion (BLM score)	37					
Undesir/noxious weeds	25					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	28					
*Undesirable (weedy) species	10					
*Noxious weeds	15					
Litter	30					
Rocks > 2"	2					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	33					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	f					
Slender wheatgrass	f					
Yellow sweetclover	I					
Alfalfa	f					
Other Rubber	F					
Other Rabbit						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	6					
Pedestalling	3					
Flow Patterns	6					
Rills Depth	3					
Rills Frequency	3					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	37					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	f					
Cheatgrass	f					
Baby's breath	f					
Kochia						
Thistle						
Leafy Spurge						
Other matrimony vine	f					
Other foxtail	f					
Other mustards	i					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☒ **increased erosion**
- ☒ **gullies**
- ☐ **depositional area**
- ☒ **steeper slope**
- ☐ **less vegetation**
- ☒ **other** exposed waste in gully

Estimate width of affected edge (in feet) 6

4. Exposed Waste Material? Y / N ____

- Estimated pH 4.5
- Approximate area (in square feet) site edge
- Number of areas with exposed waste ____ gully

5. Is there evidence of: Y ____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y X N ____
Are any gullies actively eroding? Y X N ____
Number of gullies ____

Comments. Overall this site was decent but the South side edge should be looked at ASAP. In the site along the SE corner there are large amounts of Natrimony vine growing. On the NW portion of the site there was a weed barrier mat that is fully exposed and weeds of all sorts are growing through it. There is also a large drainage ditch on the west portion of the site that contains large amounts of weeds and some rock line ditches leading into it. On the west side edge there is a road cutting through the site. It appears to be made for 4-wheelers or bikes. The weeds are frequent and a lot of noxious weeds throughout.

- The main concern should be the East side edge and on that slope. There are major erosion concerns that need to be tended and a huge outbreak of Mothmony vine.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2084 Master

BRES FIELD FORM

Site ID: 2084 Site Name: B&A RR Trail Field Date: 7/8/09

Team Members (Circle your name): JTR & BC

Number of Polygons: 1 Slope: 5° to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Reclaimed RR bed - drain ditch

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	5					
*Noxious weeds	1					
Litter	50					
Rocks > 2"	0					
Bare Ground	BY					
TOTAL (above 6 items must total 100%)	—					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	F					
Yellow sweetclover	I					
Alfalfa	I					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	3					
Flow Patterns	3					
Rills Depth	7					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	18					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other Mustards	I					
Other Bitter Eggs	I					
Other Hairy						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

-Drain ditch w/ poly barrier runs full length of site.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2085 Master

BRES FIELD FORM

Site ID: ~~2~~ 2085 Site Name: B*ARR Trail Edge Field Date: 7/8/09

Team Members (Circle your name): JTR * BC

Number of Polygons: 1 Slope: 5° to ____ Aspect (circle all relevant): N S SW E NW NE SW SE

Area Description: Reclaimed RR bed

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5					
*Undesirable (weedy) species	10					
*Noxious weeds	5					
Litter	5					
Rocks > 2"	5					
Bare Ground	70					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	10					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa						
Other Allysum	I					
Other Scorp flower	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2⅔					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	6					
Soil Movement	3					
TOTAL BLM Score:	38					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓____
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

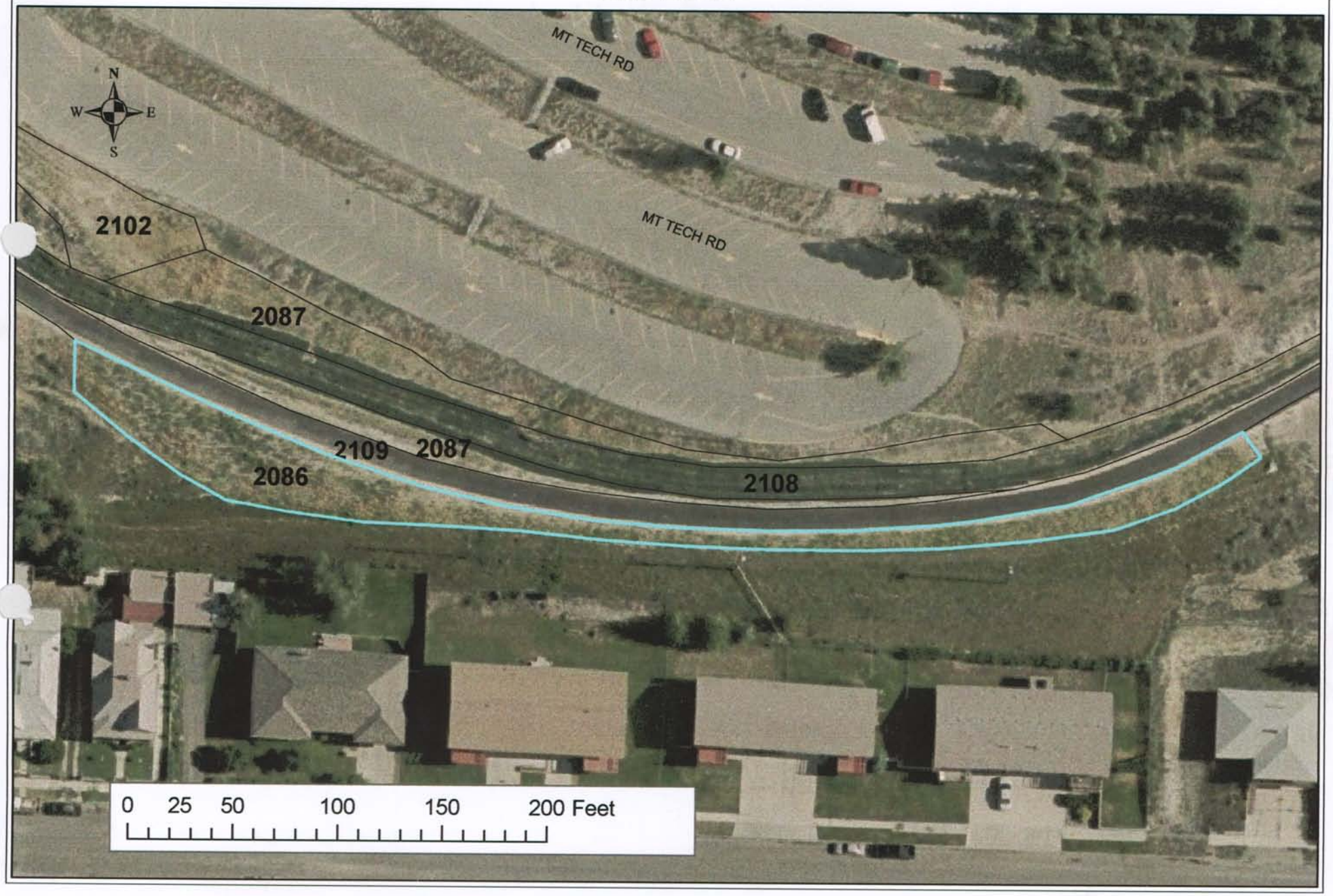
- Site has verry little vegetation & needs attention.
- There is no soil cap at all.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2086



Master

BRES FIELD FORM

Site ID: __ **Site Name:** 2086 **Field Date:** 7-17-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 2 Aspect (circle all relevant): N S (W) E NW NE SW SE

Area Description: West slope adjacent to walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	20					
*Noxious weeds	5					
Litter	20					
Rocks > 2"	/					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	50					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	D					
Other rubber rabbit	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	/					
Gullies Frequency	/					
Soil Movement	5					
TOTAL BLM Score:	35					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other mustard	F					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

no issues

mowed site edges

Additional Vegetation:

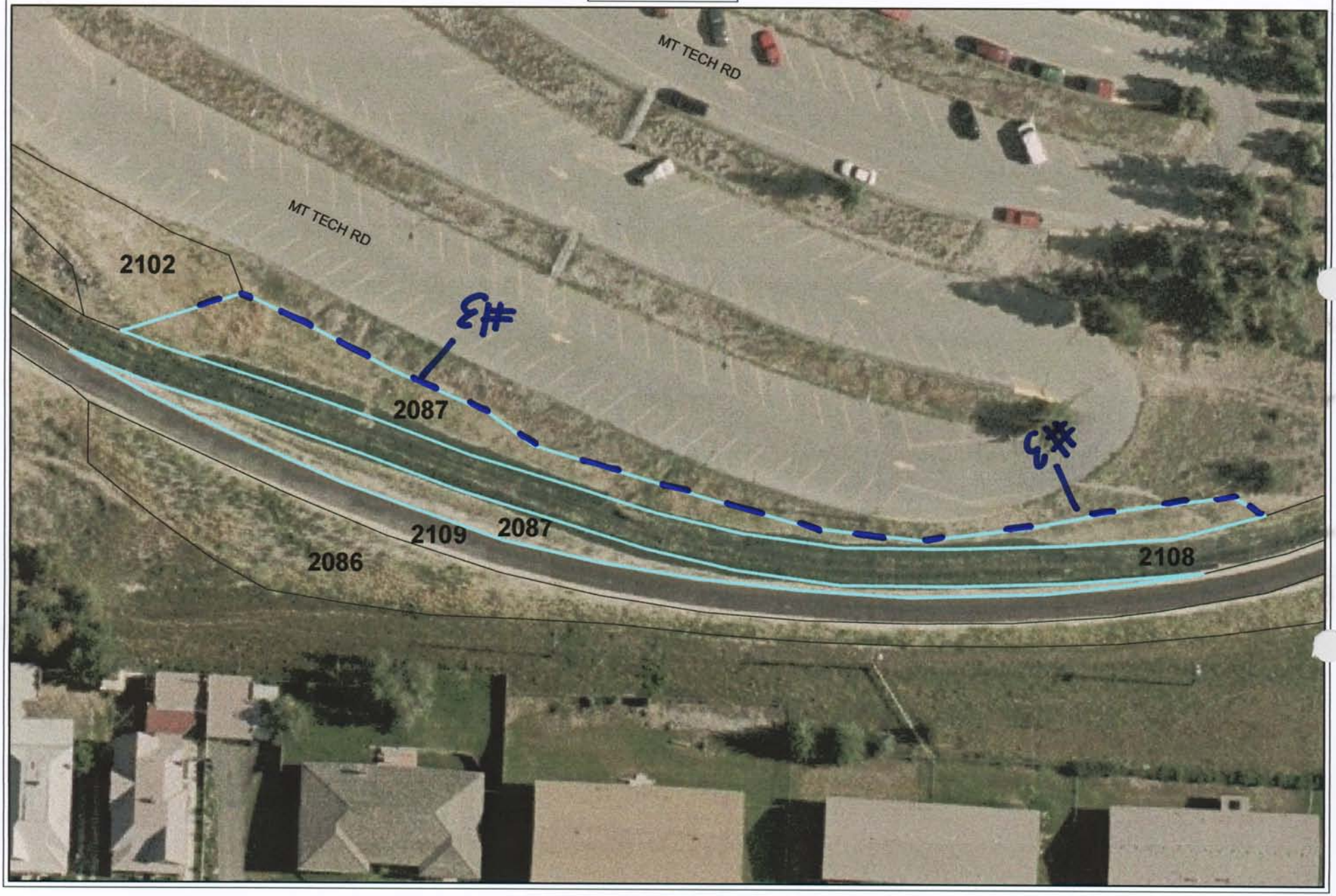
Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

MASTER

Randi Phelps + Jennifer Nardiello

Site 2087



---/ #3

Master

BRES FIELD FORM

Site ID:__ Site Name: BALP 2087 Field Date: 7/9/09

Team Members (Circle your name): Jennifer Nardiello Khandi Phelps

Number of Polygons: 1 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Side edge of walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	40					
Erosion (BLM score)	40					
Undesir/noxious weeds	5					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	37					
*Undesirable (weedy) species	3					
*Noxious weeds	2					
Litter	45					
Rocks > 2"	3					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	/					
Yellow sweetclover	I					
Alfalfa	F					
Other Rubber Rabbit	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	8					
Pedestalling	9					
Flow Patterns	12					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	40					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	/					
Cheatgrass	I					
Baby's breath	I					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other Mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☑ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☑ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N ✓

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Suggest combining area into one site instead of two.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2088

BRES FIELD FORM

Site ID: ~~1~~ 2088 Site Name: B&A RR Trail Field Date: _____

Team Members (Circle your name): JTR & BC

Number of Polygons: 1 Slope: 0° to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Culvert end next to walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	20					
*Undesirable (weedy) species	5					
*Noxious weeds	2					
Litter	20					
Rocks > 2"	50					
Bare Ground	~~138~~					
TOTAL (above 6 items must total 100%)	100 ~~127~~					
ADJUSTED LIVE % = Live + 5%Undesirable	25					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	D					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	2					
Pedestalling	0					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	16					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other Butter & Eggs	I					
Other Salsify	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N✓_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N✓_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N✓_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N✓_____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N✓____
Number of gullies _____

Comments.

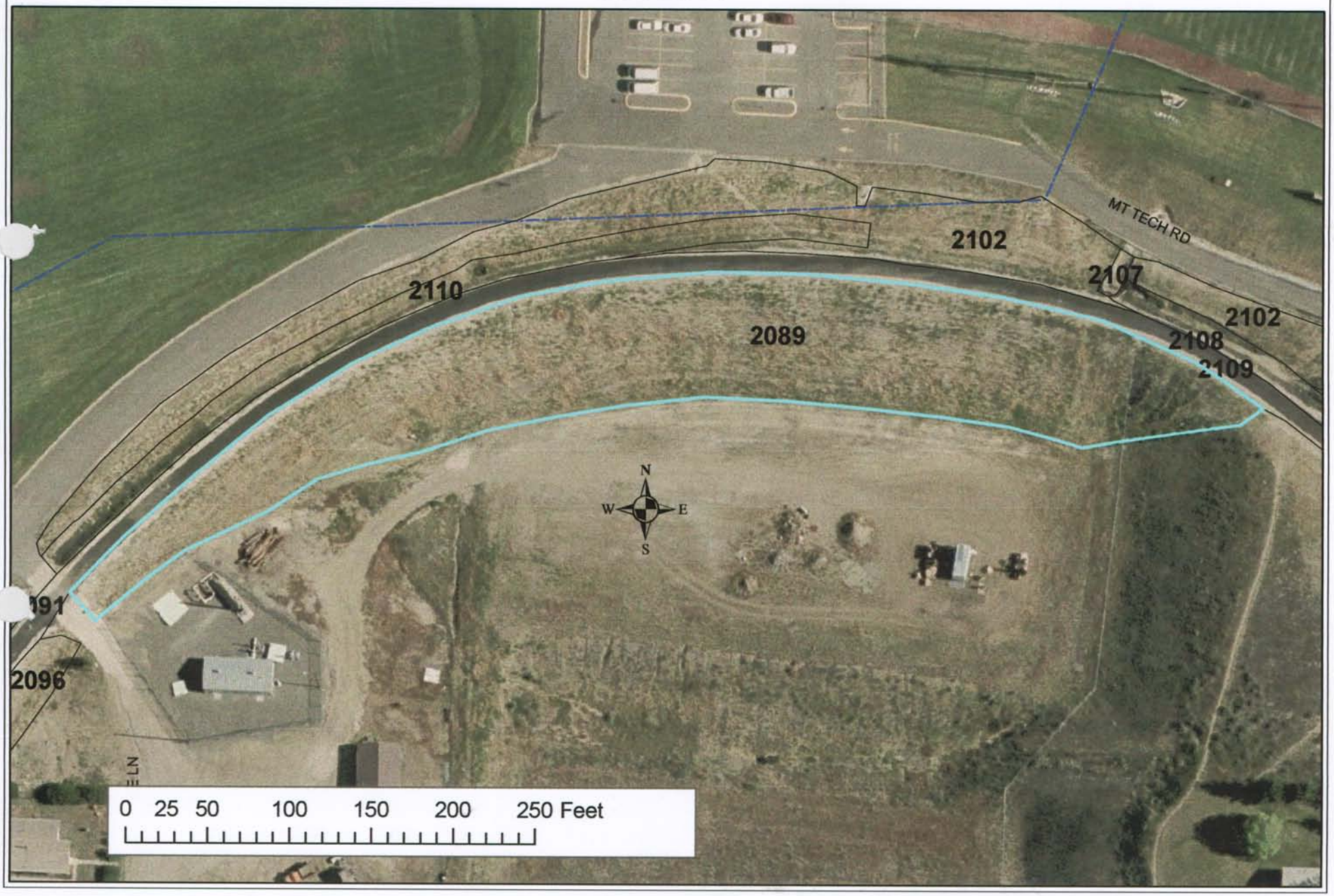
- Entire site consists of a culvert discharge and surrounding vegetation & rockwork

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2089



Master

BRES FIELD FORM

Site ID: __ **Site Name:** 2089 **Field Date:** 7-17-09

Team Members (Circle your name): Jodi / Keegan

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Southern slope adjacent to walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	25					
*Noxious weeds	5					
Litter	25					
Rocks > 2"	0					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	D					
Other mule rabbit	F					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	5					
Pedestalling	9					
Flow Patterns	9					
Rills Depth	3					
Rills Frequency	3					
Gullies Depth	/					
Gullies Frequency	/					
Soil Movement	5					
TOTAL BLM Score:	45					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath	I					
Kochia	I					
Thistle						
Leafy Spurge						
Other mustard	F					
Other salsify	I					
Other dandelion	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓
- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Site edge mowed

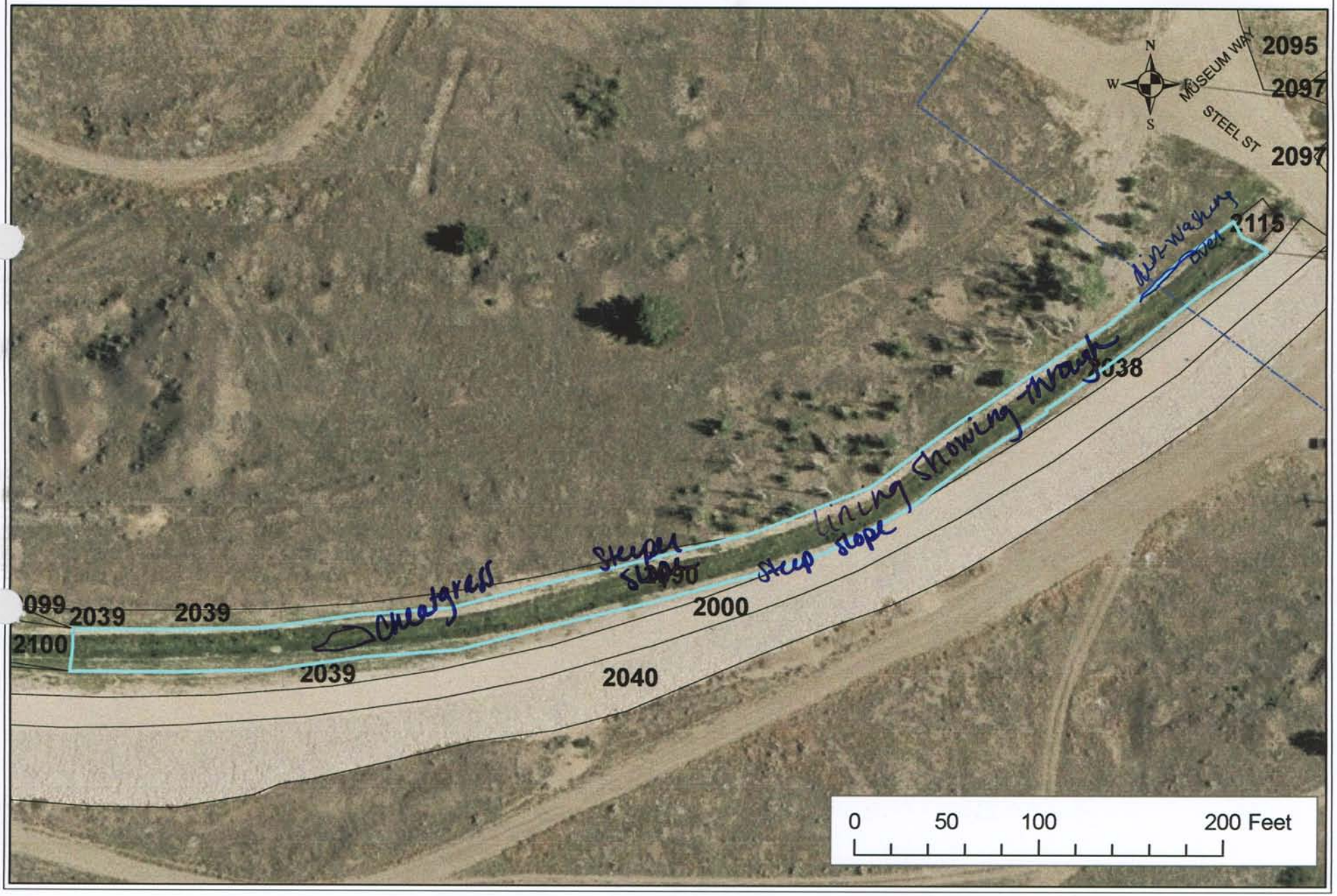
baby breath present

no major issues

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2090


N
W
S
MUSEUM WAY
STEEL ST
2095
2097
2097
2115
Air-washing
Liner showing through
Steeper slope
Steep slope
Cheatgrass
2099
2039
2039
2100
2039
2000
2040
0
50
100
200 Feet

Master

BRES FIELD FORM

Site ID:__ **Site Name:** 2090 **Field Date:** 7/15/09

Team Members (Circle your name): Lague McCaughey Plunk

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: weed fabric lined ditch

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	5					
*Noxious weeds	0					
Litter	40					
Rocks > 2"	0					
Bare Ground /Liner	25					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass						
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	F					
Other Scorpian Weed	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	9					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	11					
TOTAL BLM Score:	31					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☒ **steeper slope**
- ☒ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

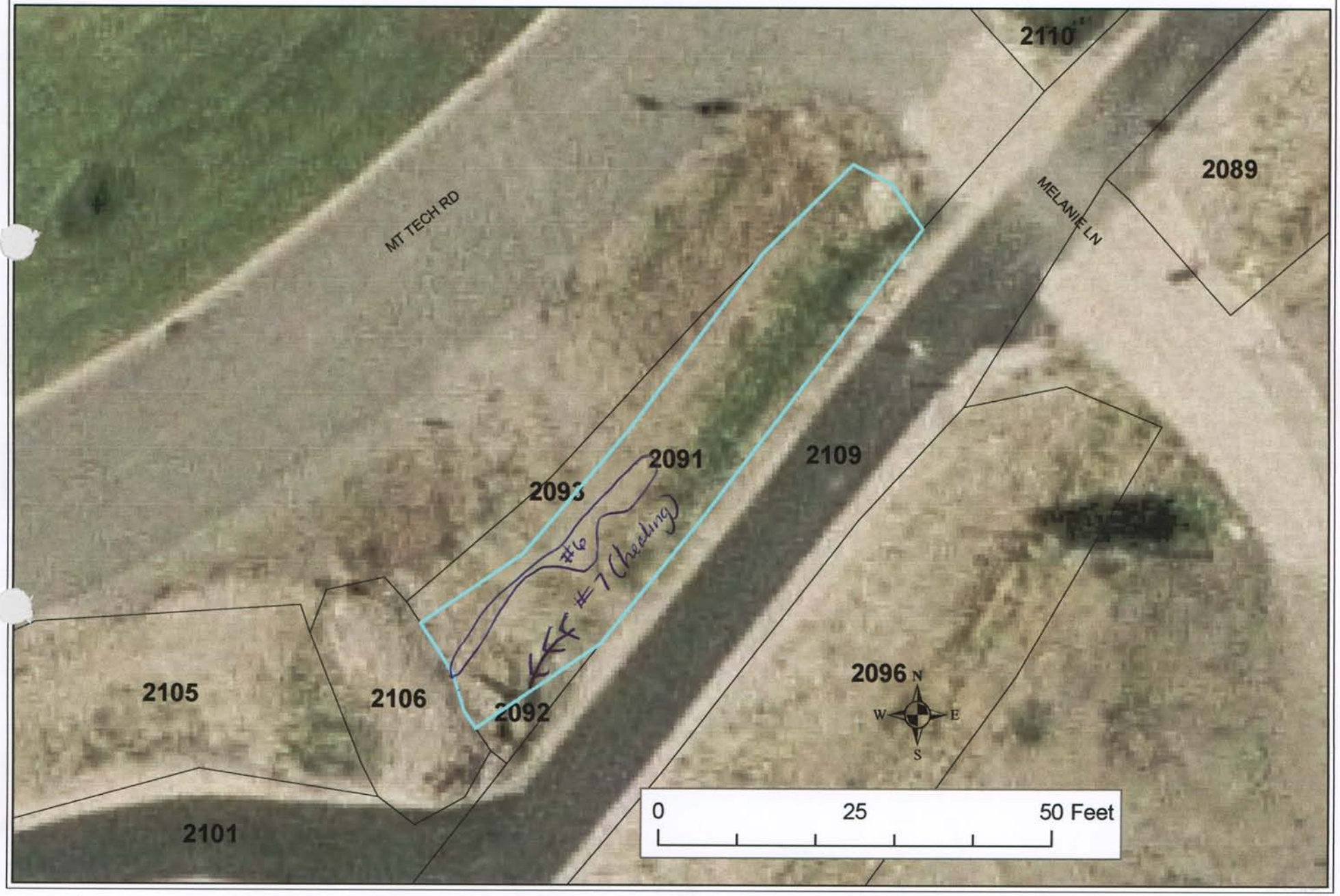
Comments. Site is fabric lined ditch. The fabric is showing throughout. Some cheat grass. On East side dirt is being washed into ditch.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2091



Master

BRES FIELD FORM

Site ID: __ **Site Name:** 2091 **Field Date:** 7-17-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Vegetated area to N of walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	0					
*Noxious weeds	0					
Litter	35					
Rocks > 2"	0					
Bare Ground	25					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	F					
Other rubber rabbit	F					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	8					
Pedestalling	3					
Flow Patterns	9					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	35					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓
- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y✓ N____
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ✓
Do barren areas cover over 25% of any polygon?
Y1 N____

7. Gullies (over 6" in depth):
Y✓ N____
Are any gullies actively eroding? Y____ N✓
Number of gullies 1

Comments.

Recommend dumping site #'s 2091 2092 2093

No issues.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2092

Master

BRES FIELD FORM

Site ID: __ **Site Name:** 2092 **Field Date:** 7-17-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: small triangle bordering walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	0					
*Noxious weeds	0					
Litter	35					
Rocks > 2"	0					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	D					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	3					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	2					
Gullies Frequency	2					
Soil Movement	3					
TOTAL BLM Score:	27					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓
- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓
- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y✓ N____
Are any gullies actively eroding? Y____ N✓
Number of gullies 1

Comments.

treating gully

Recommend combining site

#2091 2092 2093.

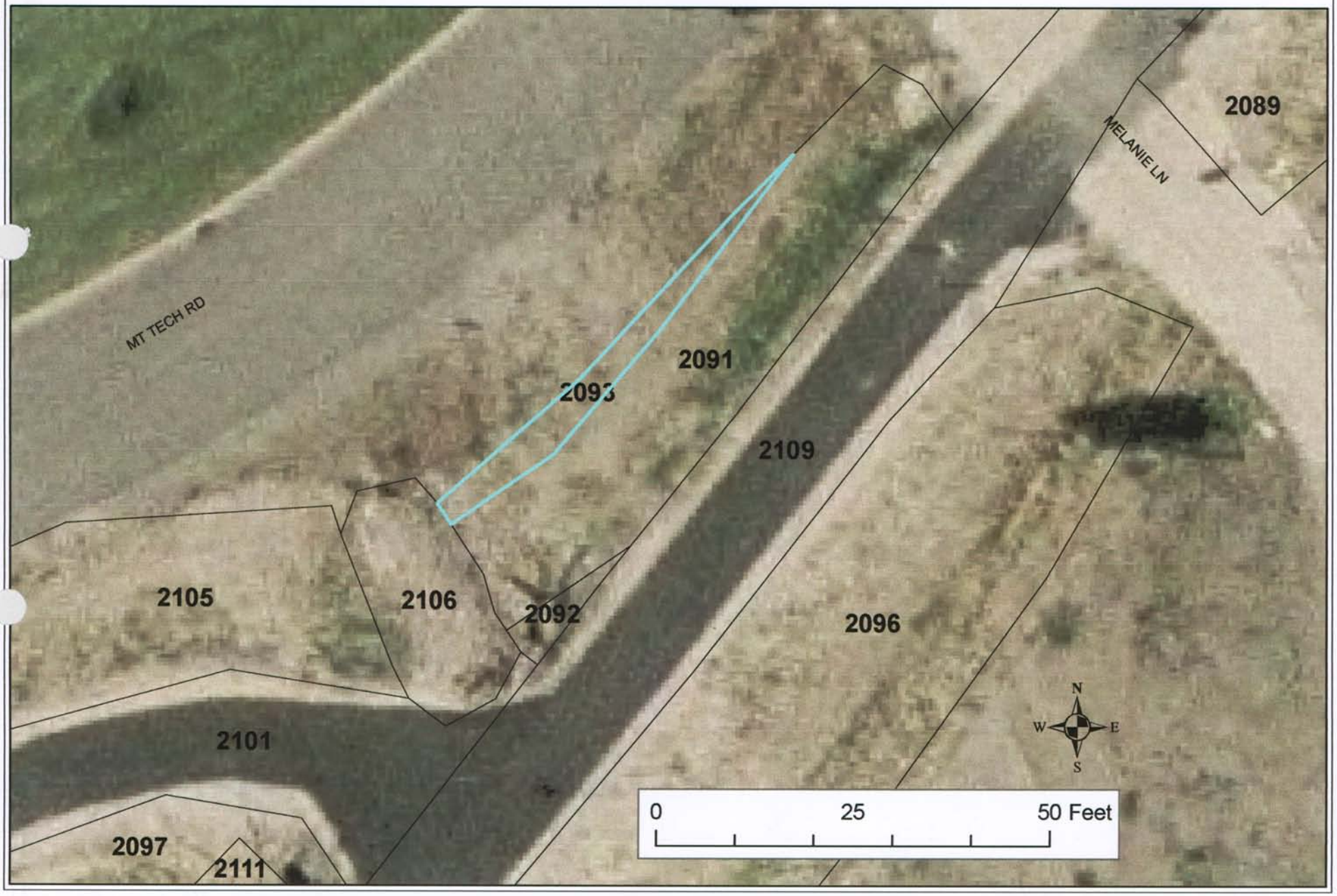
No issues

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2093



Master

BRES FIELD FORM

Site ID:__ Site Name: 2093 Field Date: 7-17-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: sloped area adjacent to walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	/					
*Noxious weeds	/					
Litter	30					
Rocks > 2"	/					
Bare Ground	35					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa						
Other rubber rabbit	F					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8	8				
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	3					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	35					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

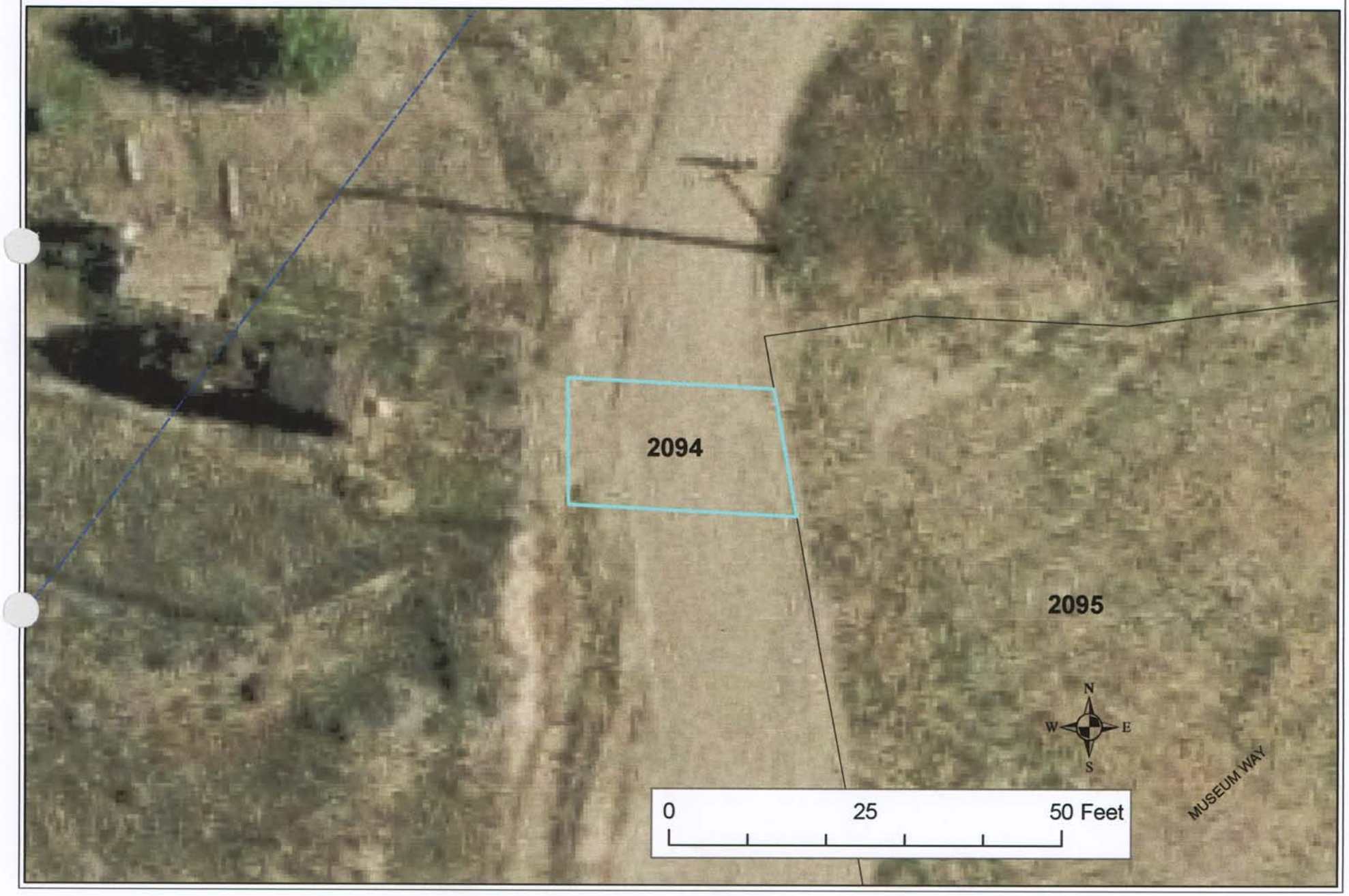
Recommend combining site #
2091 2092 2093

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2094



BRES FIELD FORM

Site ID: __ **Site Name:** 2094 **Field Date:** 7-17-09

Team Members (Circle your name): Keegan | Jodi

Number of Polygons: 1 Slope: — to — Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Gravel Road

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y✓ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 4
Do barren areas cover over 25% of any polygon?
Y✓ N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

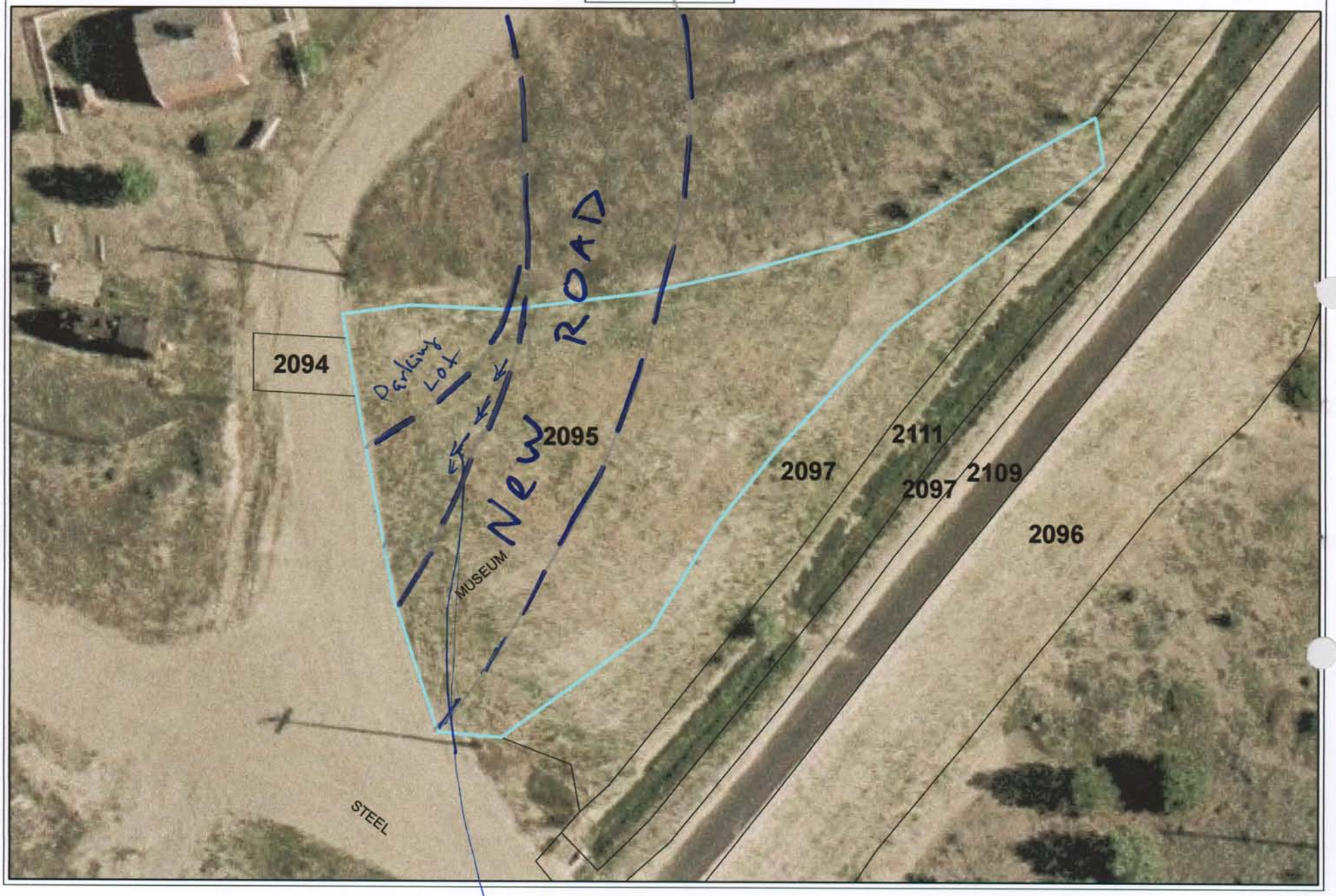
Gravel Road -
NO issues

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2095

master



(master) 2095 Beverly Plums

BRES FIELD FORM Site ID: Site Name: _____ Field Date: 7/9/04

Team Members (Circle your name): ~~Jeanne Larson~~ Eric Larson ~~Beverly~~

Number of Polygons: 1 Slope: 1 to 20 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: partially altered site where 'new' road' near mining museum was installed - west of new road between walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	20					
*Noxious weeds	5					
Litter	25					
Rocks > 2"	2					
Bare Ground	18					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover	I					
Alfalfa	I					
Other Scorpion	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	3					
Rills Depth	6					
Rills Frequency	2					
Gullies Depth	7					
Gullies Frequency	2					
Soil Movement	5					
TOTAL BLM Score:	36					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath	I					
Kochia						
Thistle	I					
Leafy Spurge						
Other Fatail	I					
Other mustard	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☒ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y X N_____
Are any gullies actively eroding? Y X N____
Number of gullies _____

Comments.

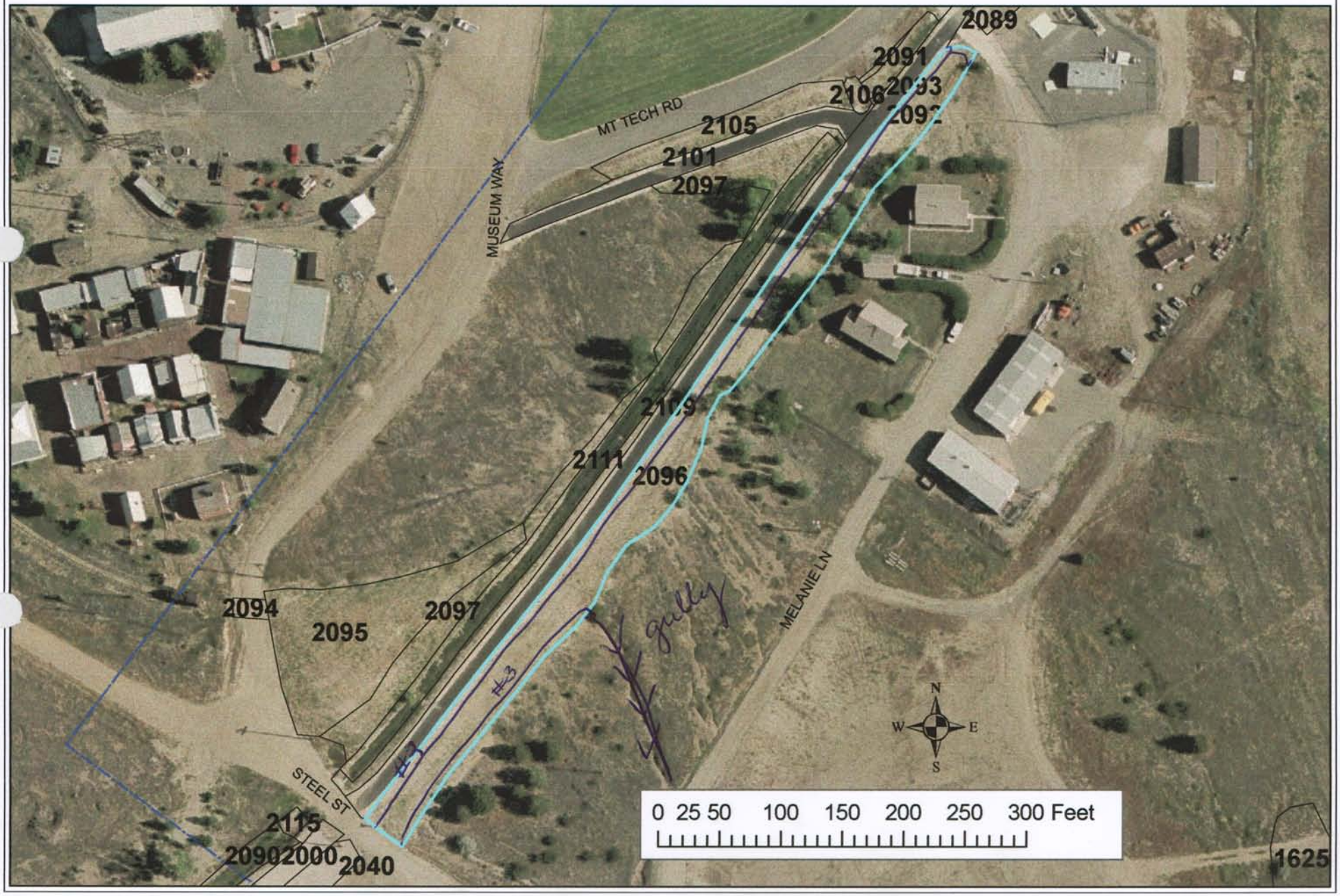
* West side of site has been altered by the widening of the road + addition of a parking lot at the mining museum
* Knap weed interspersed throughout site
* Rill turning into gullie found adjacent to NW side of road

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2096



BRES FIELD FORM

Site ID:__ Site Name: 2096 Field Date: 7-17-09

Master

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	10					
*Noxious weeds	3					
Litter	35					
Rocks > 2"	/					
Bare Ground	7					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	50%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	D					
Other rubber rabbit	F					
Other						

ominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	/					
Gullies Frequency	/					
Soil Movement	5					
TOTAL BLM Score:	29					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☑ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☑ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) 5'

4. Exposed Waste Material? Y____ N ✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

No issues

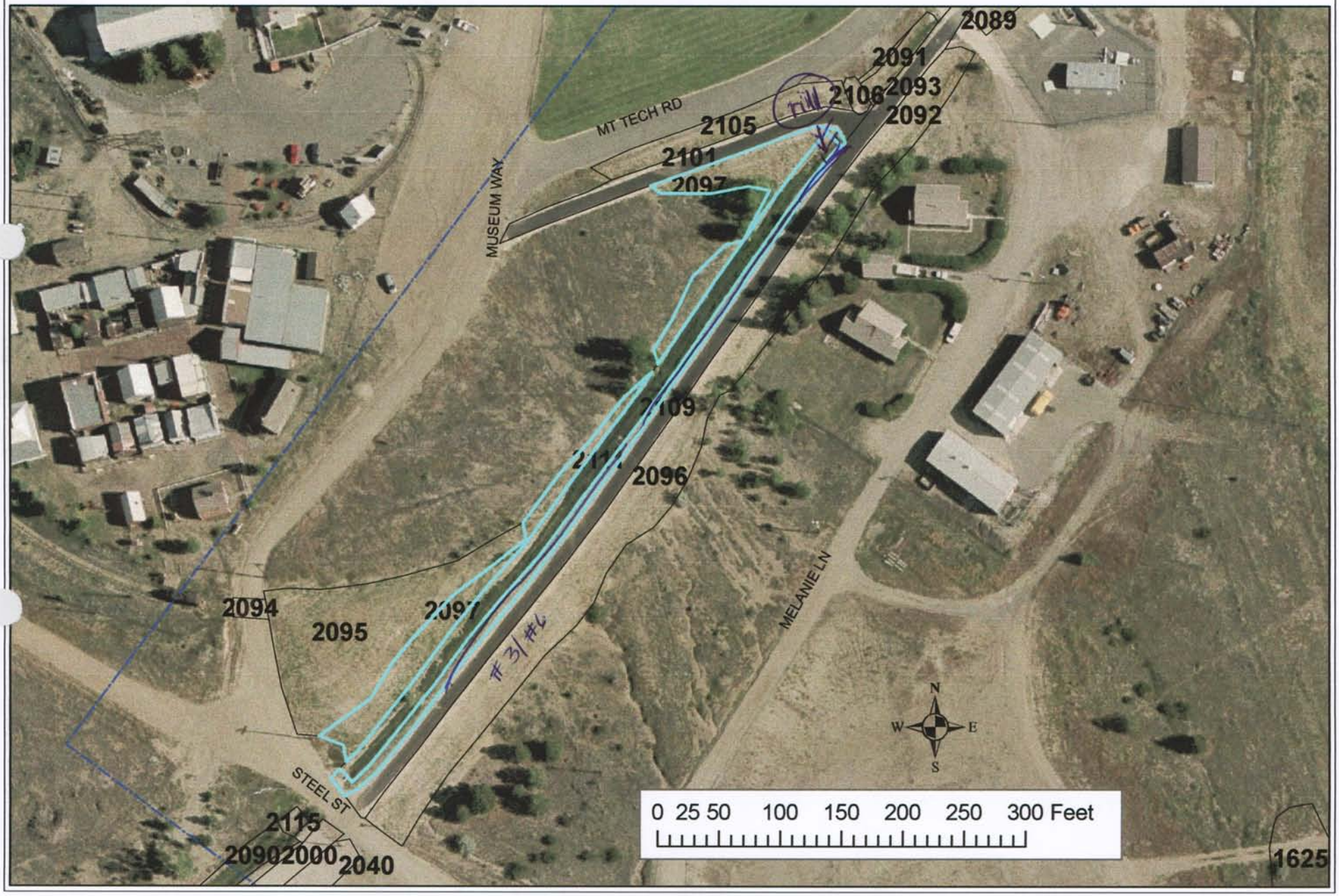
mowing crew on site edge by walking trail

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2097



BRES FIELD FORM

Site ID: __ Site Name: 2097 Field Date: 7-16-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: strip of vegetation North of walking trail

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	34					
*Noxious weeds	1					
Litter	40					
Rocks > 2"	✓					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	49					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass •	F					
Slender wheatgrass •	F					
Yellow sweetclover						
Alfalfa •	D					
Other Willow	I					
Other rubber rabbit	F					
Other Aspen	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	3					
Rills Depth	4					
Rills Frequency	2					
Gullies Depth	/					
Gullies Frequency	/					
Soil Movement	5					
TOTAL BLM Score:	22					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass •	I					
Baby's breath •	I					
Kochia						
Thistle ? purple	I					
Leafy Spurge						
Other mustard	F					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other** ____

Estimate width of affected edge (in feet) 3'

4. Exposed Waste Material? Y ____ N ✓

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ____

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y ____ N ✓

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

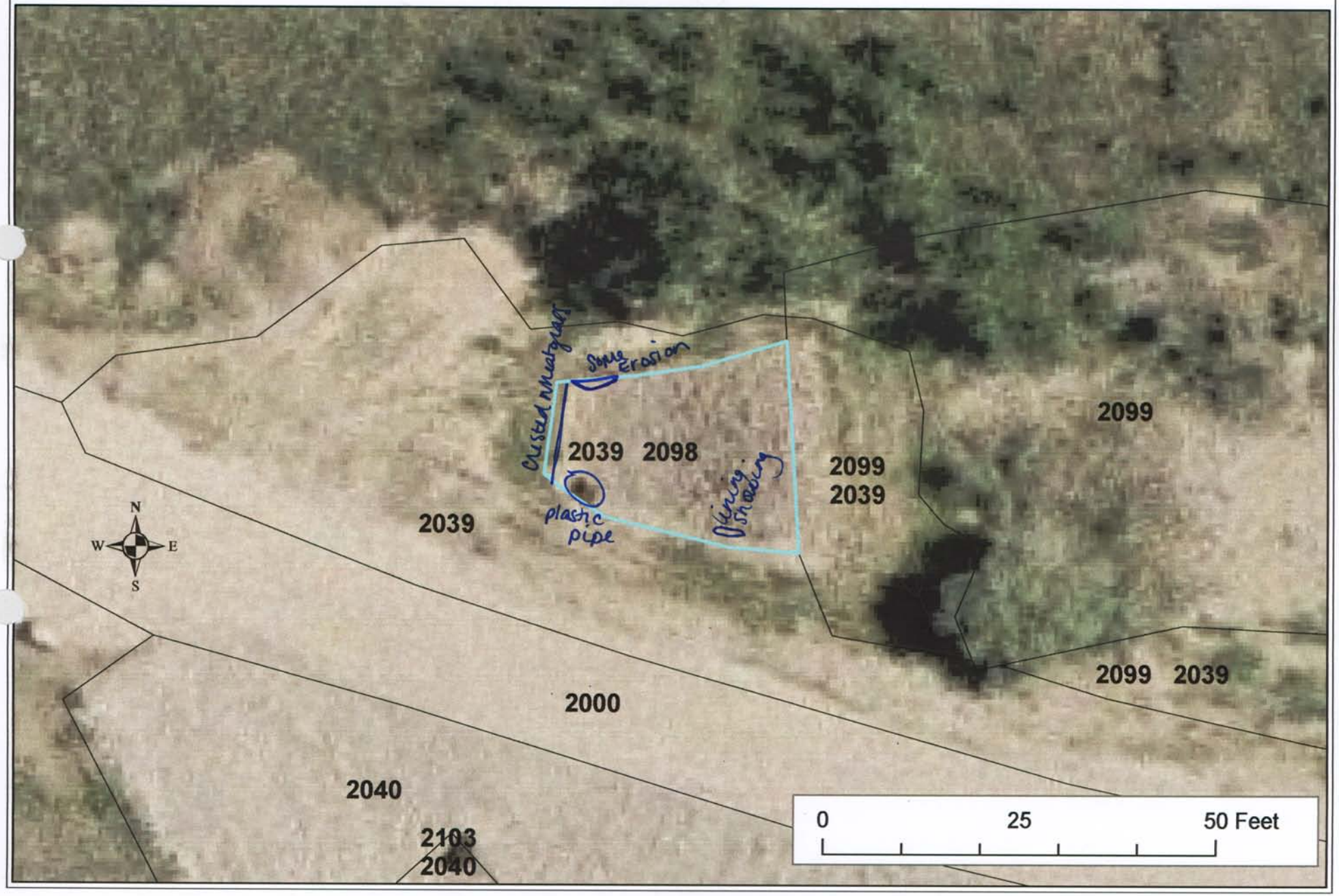
No issues.

We recommend combining sites #2111 and #2097.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2098


Crushed Mudstone
Slope Erosion
2039
2098
2099
2039
2099
2039
Plastic pipe
Overhang Shading
2039
2099
2039
2000
2040
2103
2040
N
W
E
S
0
25
50 Feet

BRES FIELD FORM

Site ID:__ Site Name: 2098 Field Date: 7/15

Team Members (Circle your name): McCaughey, Lague

Number of Polygons: 1 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: North side of walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

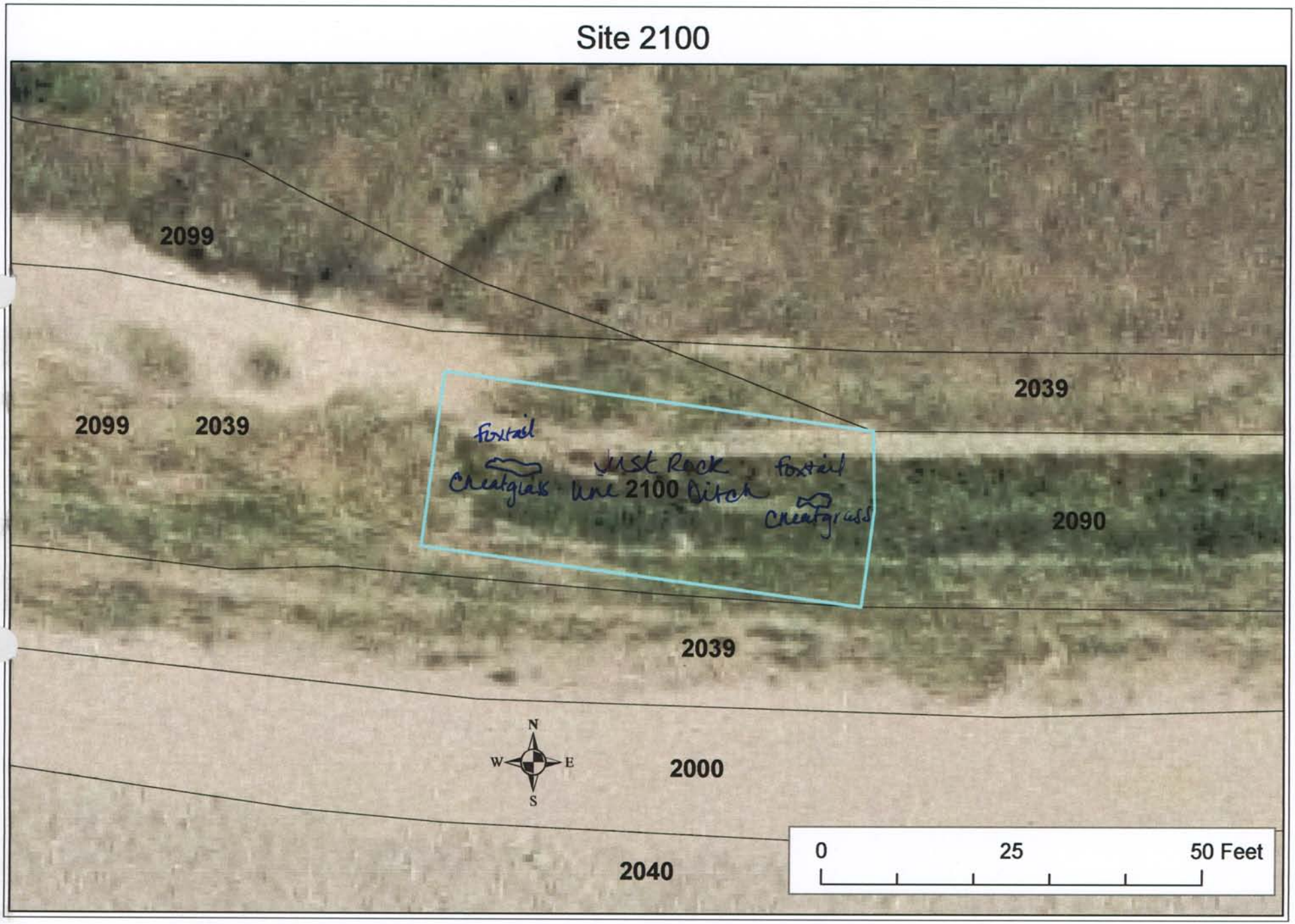
7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. Rock lining is holding up well. Some lining showing on the SE corner, but nothing major. Vegetation around the ditch looks good. Some erosion coming down on the NW site edge corner, but it looks as though it's healing.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2100


2099
2099
2039
2039
Foxtail
Creatgrass
Just Rock
Line 2100 Ditch
Foxtail
Creatgrass
2090
2039
2000
2040
N
W
E
S
0
25
50 Feet

BRES FIELD FORM

Site ID:__ **Site Name:** 2100 **Field Date:** _____

Team Members (Circle your name): McCaughey, Lague

Number of Polygons: 1 Slope: ___to___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock line ditch on NE side of trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon? Y____N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

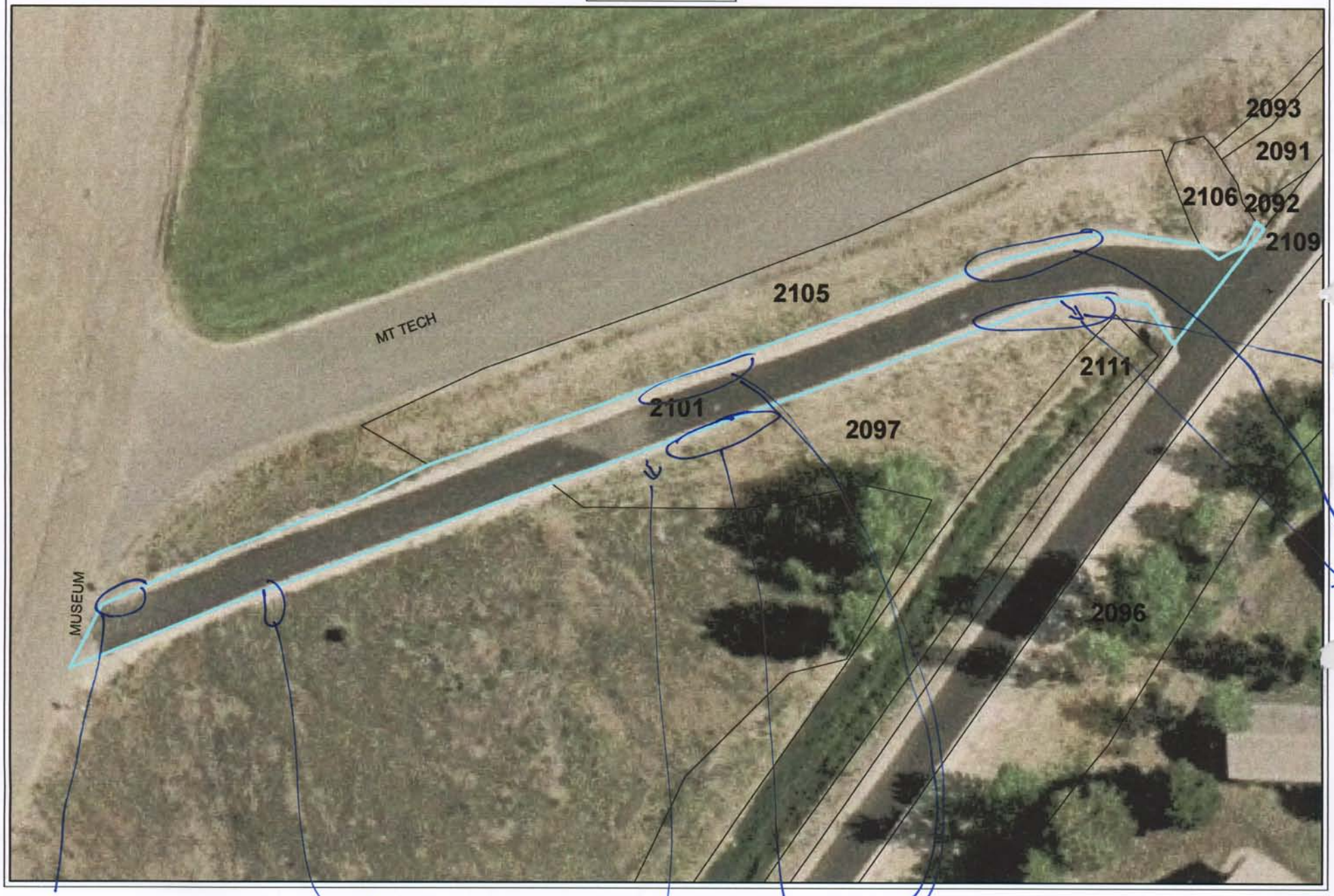
Comments. Rock is holding up well.. No exposed waste in site, but there is some on N edge that has potential to fall in. Some vegetation is coming through. Mostly consist of cheatgrass and foxtail.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2101



2101 ~~BAP~~ BPA MASTER

BRES FIELD FORM

Site ID:__ Site Name: _____ Field Date: 7/9/04

Team Members (Circle your name): Jeanne Larson Eric Larson

Number of Polygons: 1 Slope: 1 to 20 Aspect (circle all relevant): N S W E NW NE SW (SE)

Area Description: Paved - North 'tongue' - beginning walking trail west end

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	20					
*Noxious weeds	10					
Litter	15					
Rocks > 2"	5					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	I					
Other Sturpian	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	9					
Rills Depth	6					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	33					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	I					
Kochia	I					
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- [X] **lime rock barrier**
- [ ] **depositional area**
- [ ] **more weeds**
- [ ] **steeper slope**
- [ ] **increased erosion**
- [X] **less vegetation**
- [ ] **gullies**
- [ ] **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- [ ] **bulk soil failure**
- [ ] **land slumps**
- [ ] **subsidence**

6. Barren Areas: Y X N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N X

7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

* Two areas of semi-bare ground on both sides of trail ~~on~~ near eastern side of trail

* Lots of knapweed on north side of site

* some rills on south side of site

Additional Vegetation:

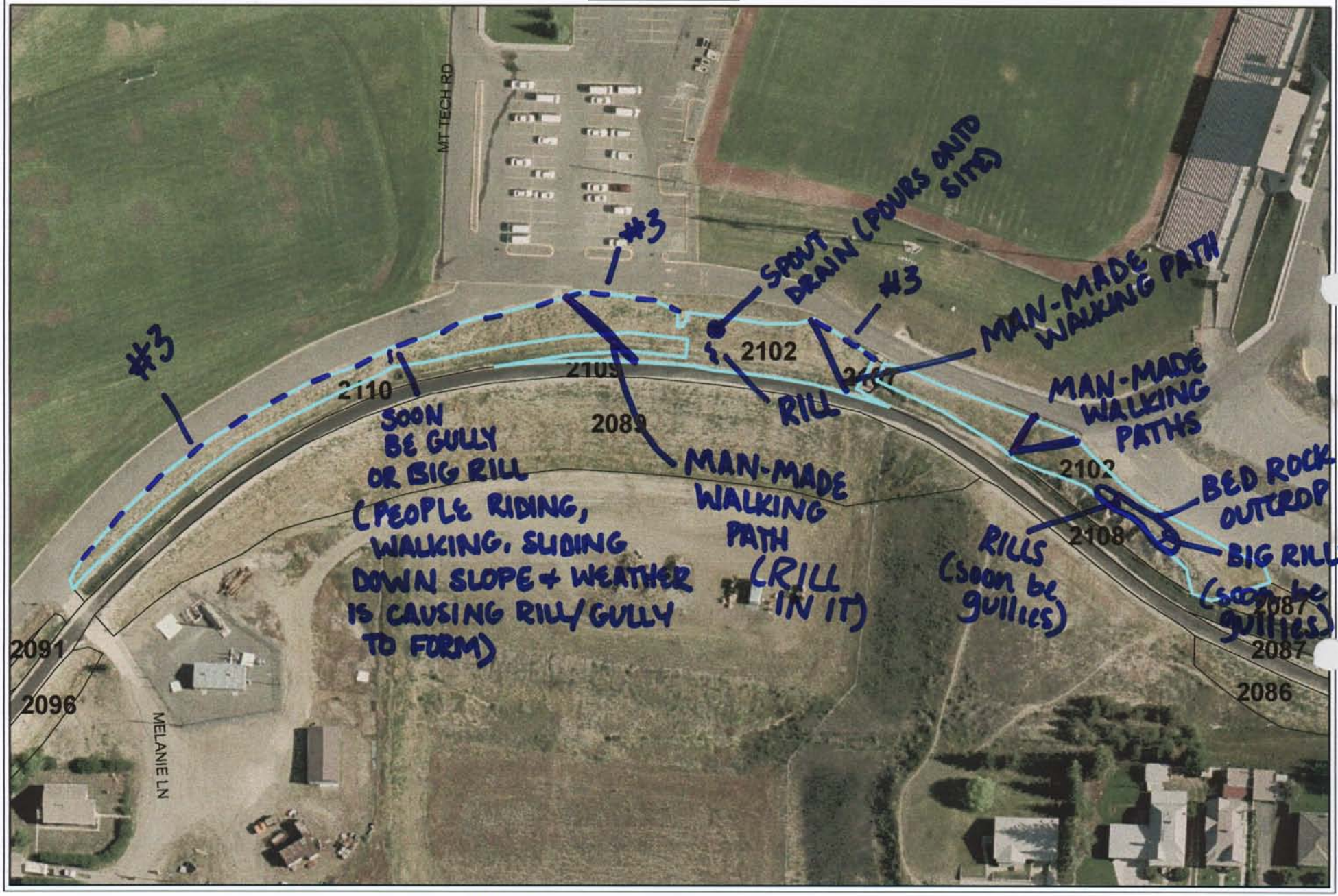
Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

MASTER

Randi Phelps + Jennifer Narduello

Site 2102



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master

BRES FIELD FORM

Site ID: _____ **Site Name:** BA+P 2102 **Field Date:** 7/9/09

Team Members (Circle your name): Randi Phelps + Jennifer Nardiello

Number of Polygons: 1 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Upper side of Tech walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	45					
Erosion (BLM score)	55					
Undesir/noxious weeds	12					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	10					
*Noxious weeds	2					
Litter	46					
Rocks > 2"	1					
Bare Ground	2					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover	I					
Alfalfa	F					
Rubber Rabbit	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	9					
Flow Patterns	15					
Rills Depth	7					
Rills Frequency	3					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	55					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	/					
Cheatgrass	F					
Baby's breath	I					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** mowed edge

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

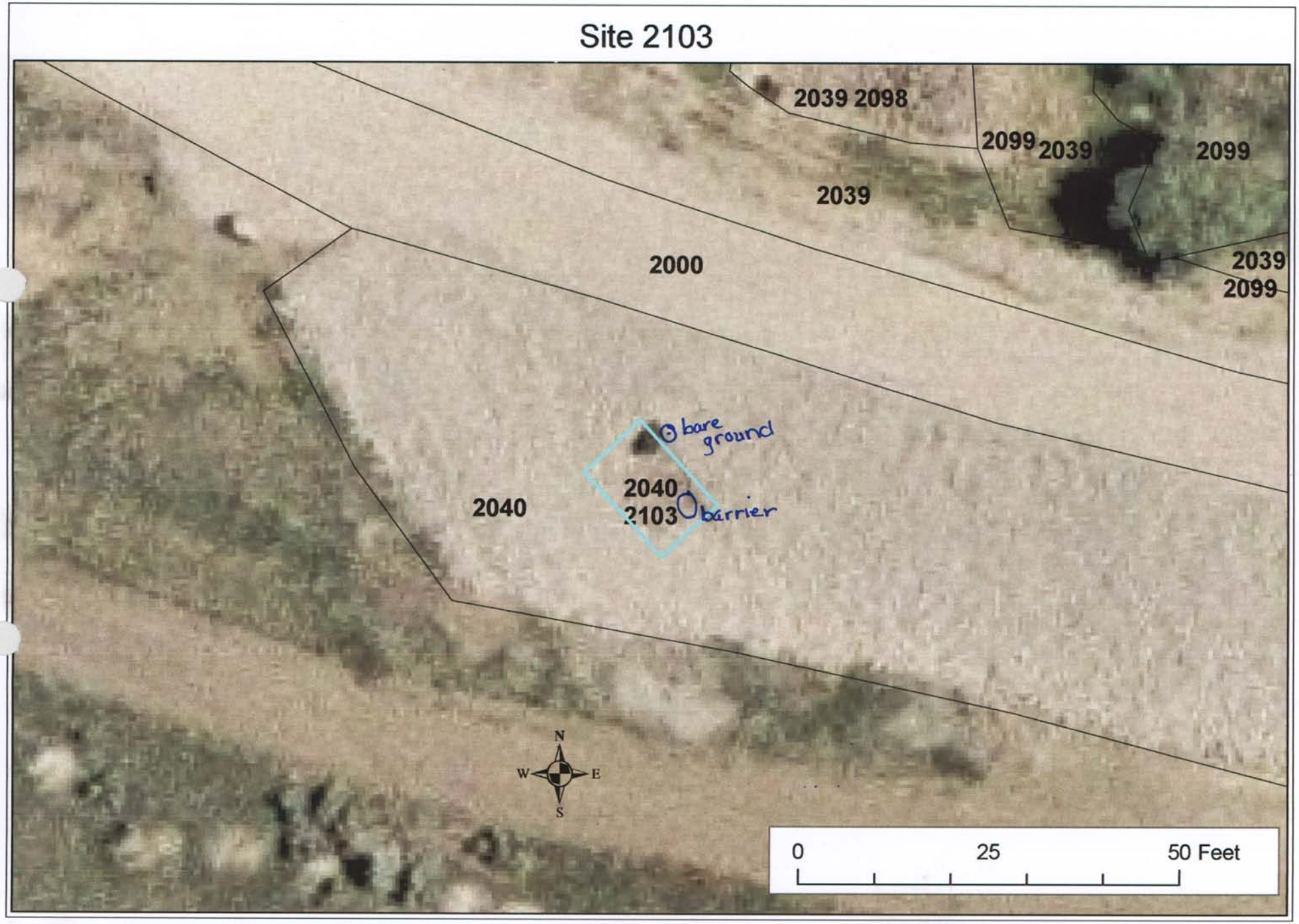
Comments. The top edge of about 3/4 of the site is mowed.
Many man-made pathways are going through the vegetation and are eroding and some have good sized rills.
Rills on site should be taken care of before they become bigger problems.
Erosion control should be taken on the rock outcrop. Big rills are forming and soon will be gullies.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2103


2039 2098
2099
2039
2099
2039
2000
2039
2099
bare ground
2040
2103
barrier
2040
N
W
E
S
0
25
50 Feet

BRES FIELD FORM Site ID:__ Site Name: 2103 Field Date: 7/15/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: culvert on south side of trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments. On south side a small amount of fabric barrier is showing through rocks.

On east side of culvert a small area of ground is showing. The rocks have shifted ~~off~~ down.

There are some foxtails growing on the site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2105

2093
2091
2106
2092
2109
2105
MT TECH RD
2111
2101
2097
MUSEUM WAY
2096

Master

BRES FIELD FORM

Site ID:__ Site Name: BNP 2105 Field Date: 7/9/09

Team Members (Circle your name): Jennifer Nardiello Khandi Phelps

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Side Edge of Walking Trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	30					
Erosion (BLM score)	45					
Undesir/noxious weeds	3					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	27					
*Undesirable (weedy) species	3					
*Noxious weeds	0					
Litter	35					
Rocks > 2"	3					
Bare Ground	32					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	/					
Yellow sweetclover	/					
Alfalfa	/					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	8					
Pedestalling	11					
Flow Patterns	12					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	45					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	/					
Dalmation toadflax	/					
Cheatgrass	I					
Baby's breath	/					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N✓
Number of gullies ____

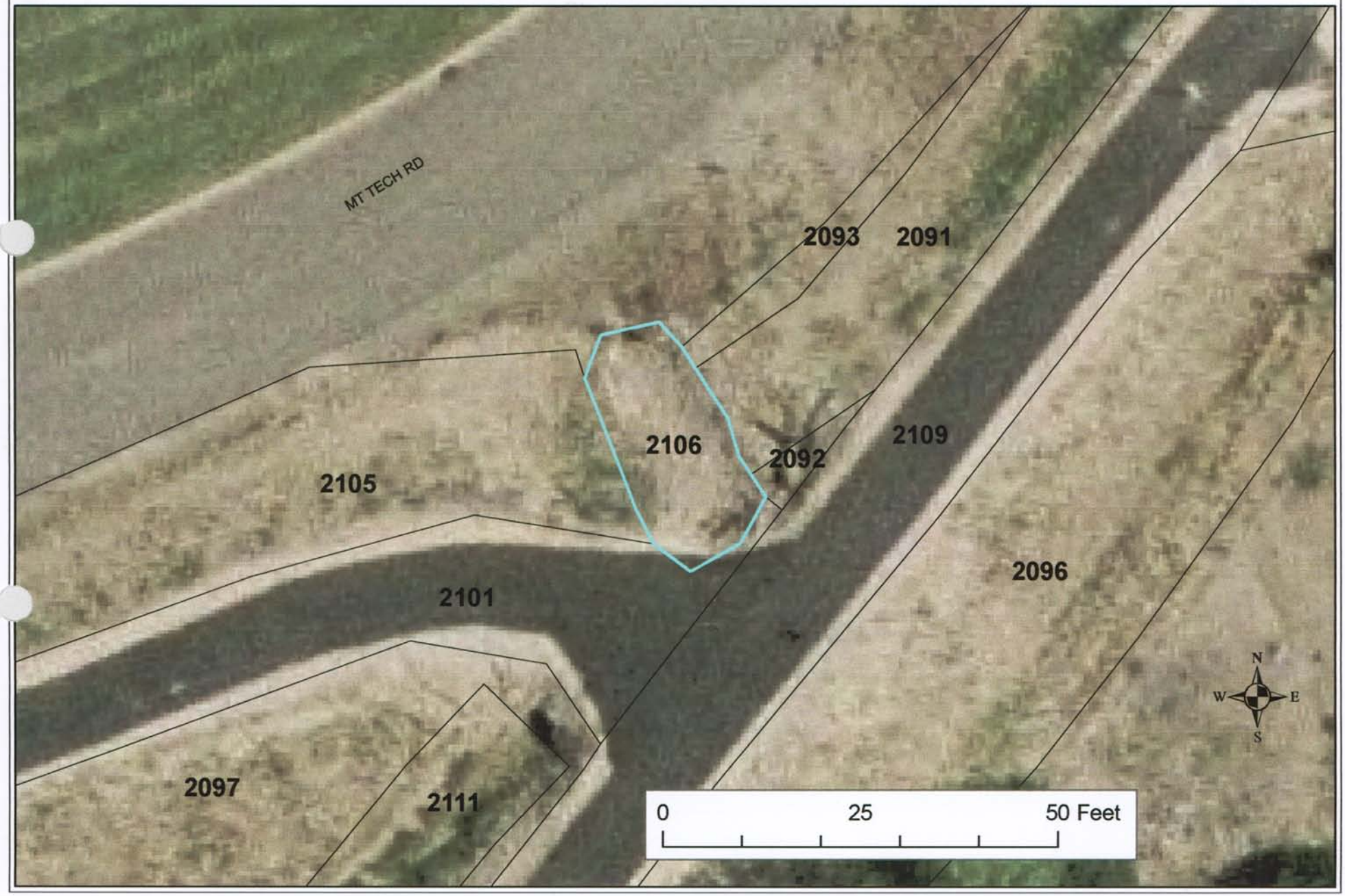
Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2106



BRES FIELD FORM

Site ID:__ Site Name: 2106 Field Date: 7-17-09

Master

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock Rip Rap Drainage area/culvert

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Rock Rip Rap and culvert by walking trail.

No issues.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2107

Master

BRES FIELD FORM

Site ID:__ Site Name: BAtP 2107 Field Date: 7/9/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: 1 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Culvert

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	45					
Erosion (BLM score)	36					
Undesir/noxious weeds	1					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	44					
*Undesirable (weedy) species	1					
*Noxious weeds	0					
Litter	15					
Rocks > 2"	40					
Bare Ground	0					
TOTAL (above 6 items must total 100%)	100 ~~100~~					
ADJUSTED LIVE % = Live + 5%Undesirable	45					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	/					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover	/					
Alfalfa	/					
Other Flax	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	3					
Pedestalling	3					
Flow Patterns	9					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	36					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	/					
Dalmation toadflax	/					
Cheatgrass	/					
Baby's breath	/					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other Mustard	I					
Other Foxtail Brom	I					
Other Salsify	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N__✓__ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N__✓__

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N__✓__

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N__✓__

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N__✓__
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Culvert needs to be cleared out.

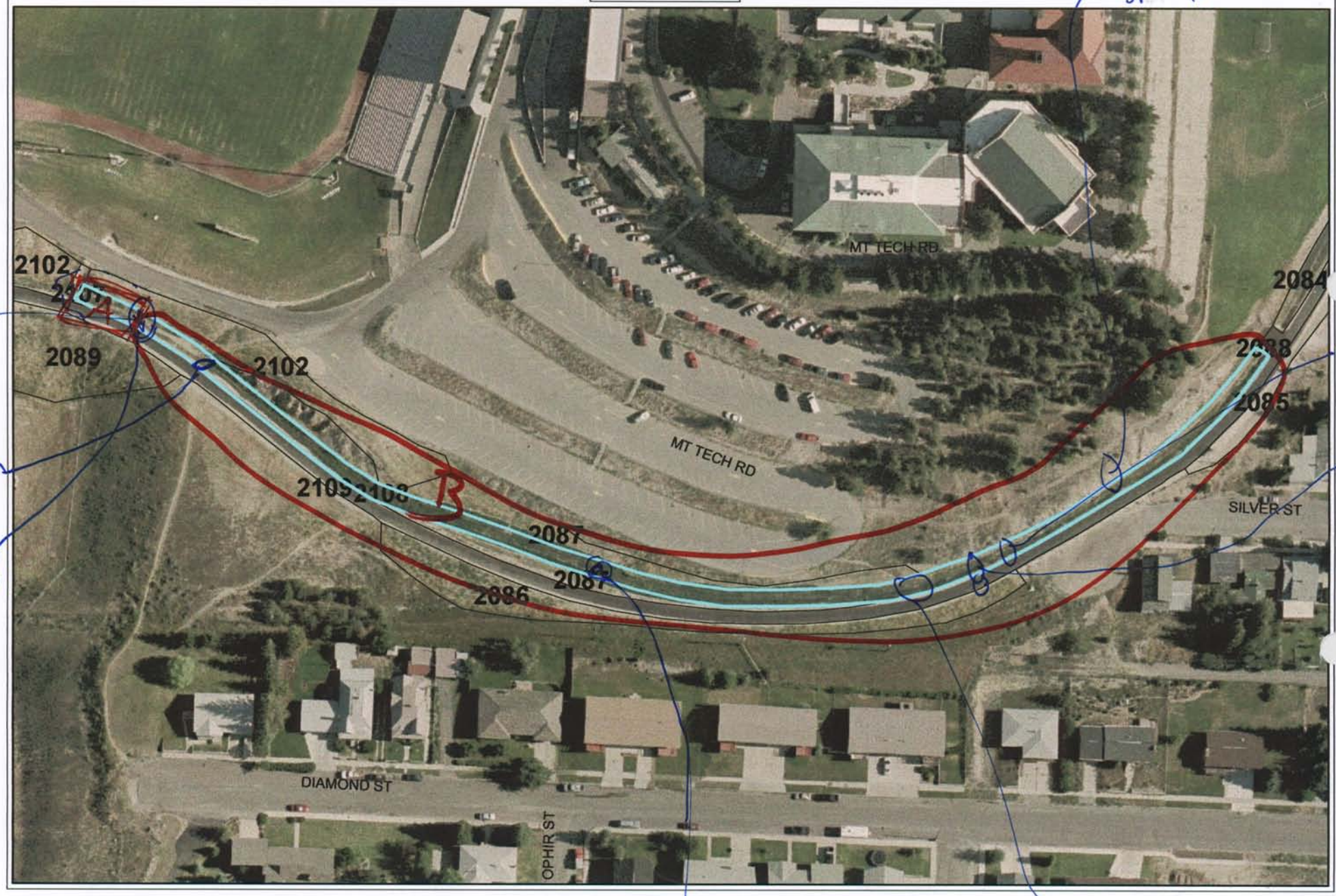
Giant cobble / riprap culvert is the site

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2108



Master

BPA Walking Trail 2108

BRES FIELD FORM Site ID:__ Site Name: _____ Field Date: 7/9/04

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly plumb

Number of Polygons: 2 Slope: 1 to 20 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Directly south of MT Tech 'Tiers North side of bend in walking Trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40	20				
*Undesirable (weedy) species	10	5				
*Noxious weeds	3	0				
Litter	30	15				
Rocks > 2"	2	0				
Bare Ground	15	60				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	45	25				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F	I				
Crested wheatgrass	F	I				
Slender wheatgrass	F	I				
Yellow sweetclover	I					
Alfalfa	F					
Other Rip gyrass	I	I				
Other rabbit brush	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3	3				
Surface Rock Movement	2	2				
Pedestalling	3	3				
Flow Patterns	6	9				
Rills Depth	0	0				
Rills Frequency	0	0				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	5	5				
TOTAL BLM Score:	21	22				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I	I				
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other fox tail	I	I				
Other mustard		I				
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____

Do barren areas cover over 25% of any polygon?

Y ~~X~~ N X ~~See note~~

7. Gullies (over 6" in depth):

Y____ N X

Are any gullies actively eroding? Y____ N____

Number of gullies _____

Comments.

Polygon A = west end of site starting at french drain going west to end of site - does not appear to have weed mat liner

Polygon B = Exposed bared liner is considered bare ground

Polygon B - area where liner was evident

* Area east of lower tier parking lot - mat is falling apart due to people walking across

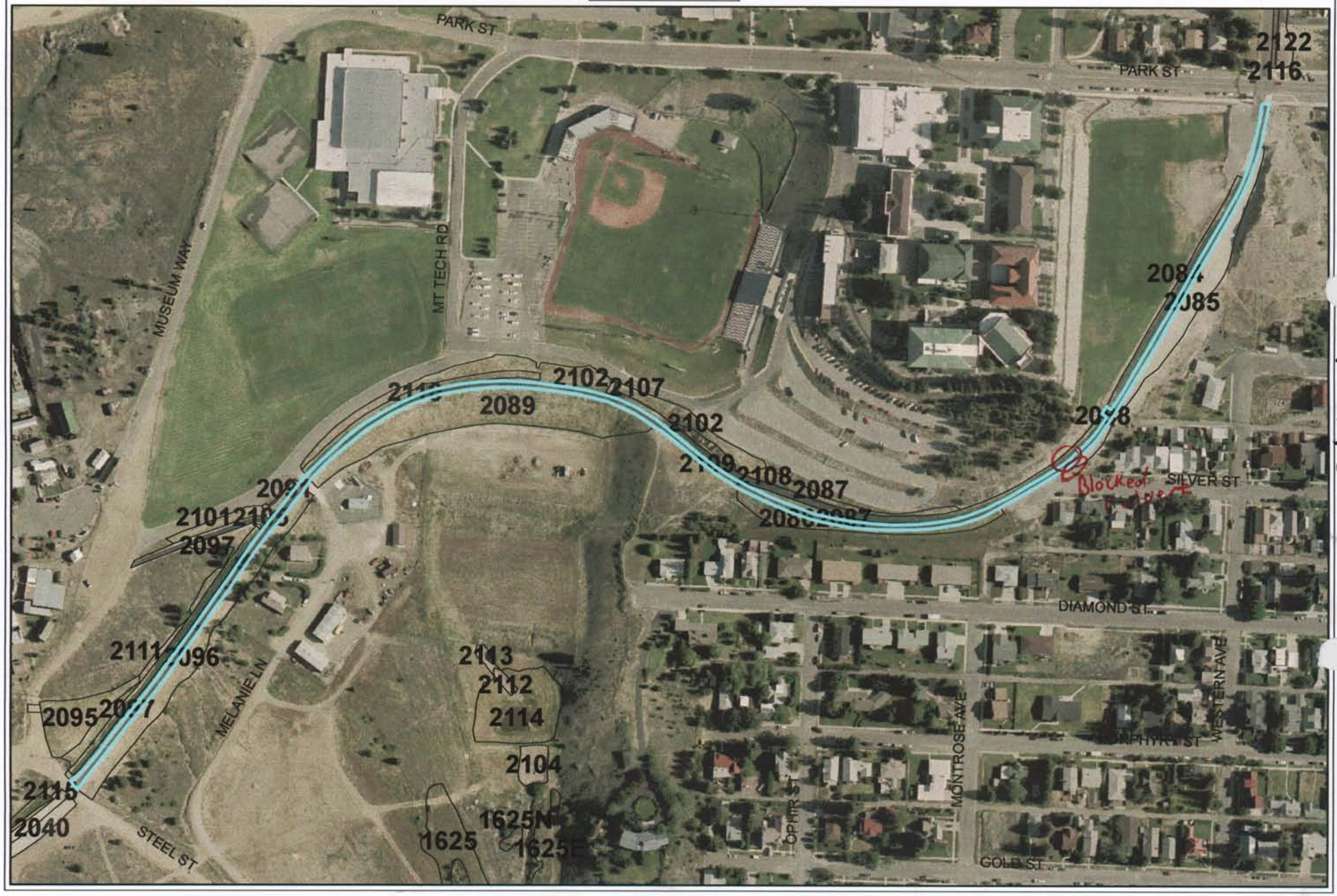
* Area of site North of Silver Street Rocks + Dirt accumulating on mat

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2109


PARK ST
PARK ST
2122
2116
MUSEUM WAY
MT TECH RD
2084
2085
2102
2107
2089
2102
2108
2087
2088
Blocked Manhole
SILVER ST
2101
2097
DIAMOND ST
2111
2096
2113
2112
2114
2095
MELANIE LN
2104
2115
2040
STEEL ST
1625N
1625
1625E
OPHIR ST
MONTROSE AVE
GOLD ST
WESTERN AVE
Master

BRES FIELD FORM

Site ID: #2109 Site Name: B&ARR Trail Field Date: 7/8/09

Team Members (Circle your name): JTR + BC

Number of Polygons: 1 Slope: 5° to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Paved Reclaimed RR bed

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	0					
*Noxious weeds	0					
Litter	0					
Rocks > 2"	0					
Bare Ground	0					
TOTAL (above 6 items must total 100%)	0					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

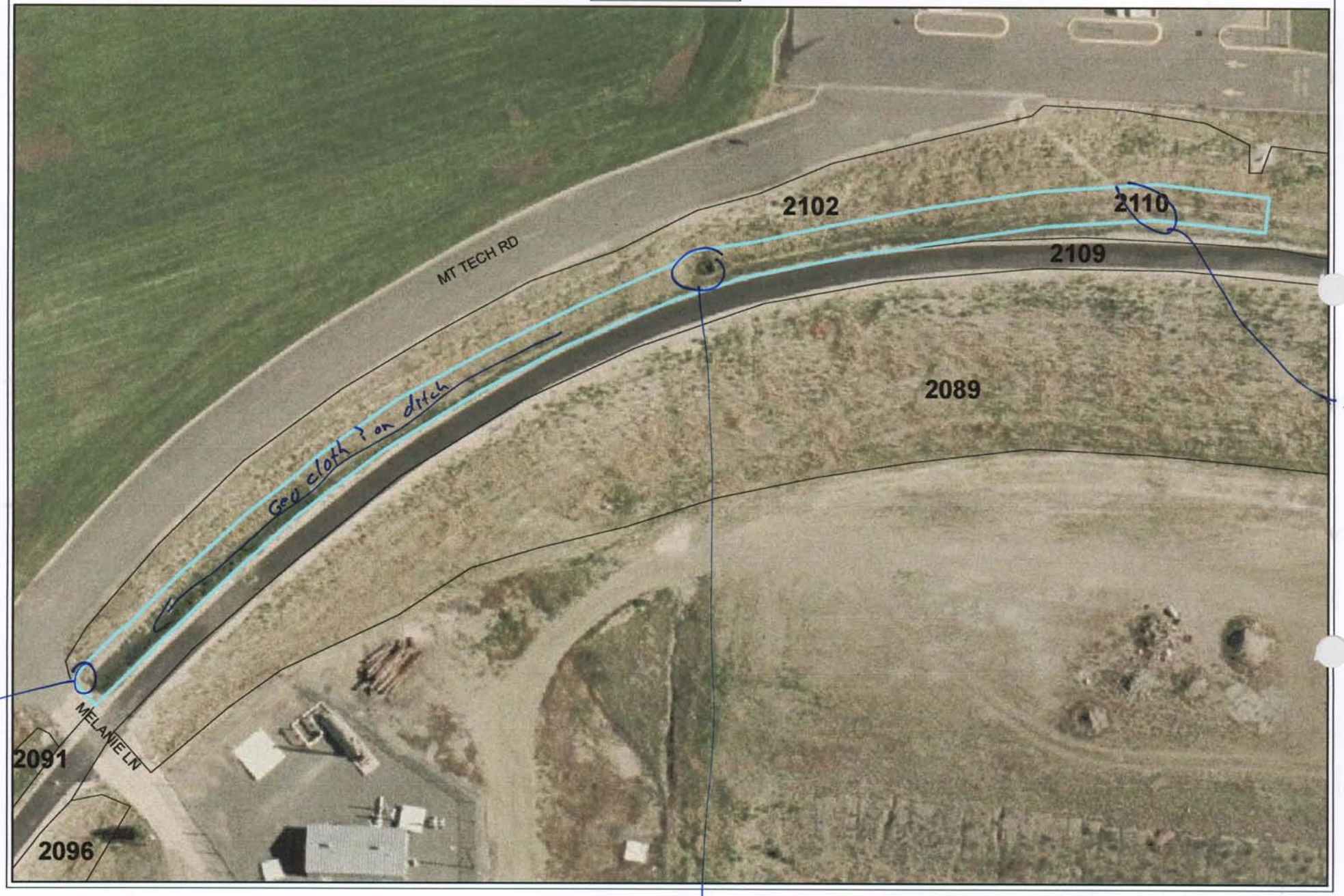
- Entire site is paved.
- Blocked culvert above Silver Street.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2110



Master / 2110 BPA Walking Trail

BRES FIELD FORM

Site ID:__ Site Name: _____ Field Date: 7/9/09

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Plumb

Number of Polygons: 1 Slope: 1 to 30 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: North side Berm of trail directly east of road to power substation

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	~~40~~ 45					
*Undesirable (weedy) species	10					
*Noxious weeds	2					
Litter	30					
Rocks > 2"	3					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	~~45~~ 50					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa	I					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	9					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other fox tail	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N__X__ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N__X__

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N__X__

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N__X__

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N__X__
Number of gullies _____

Comments.

Site looks very good

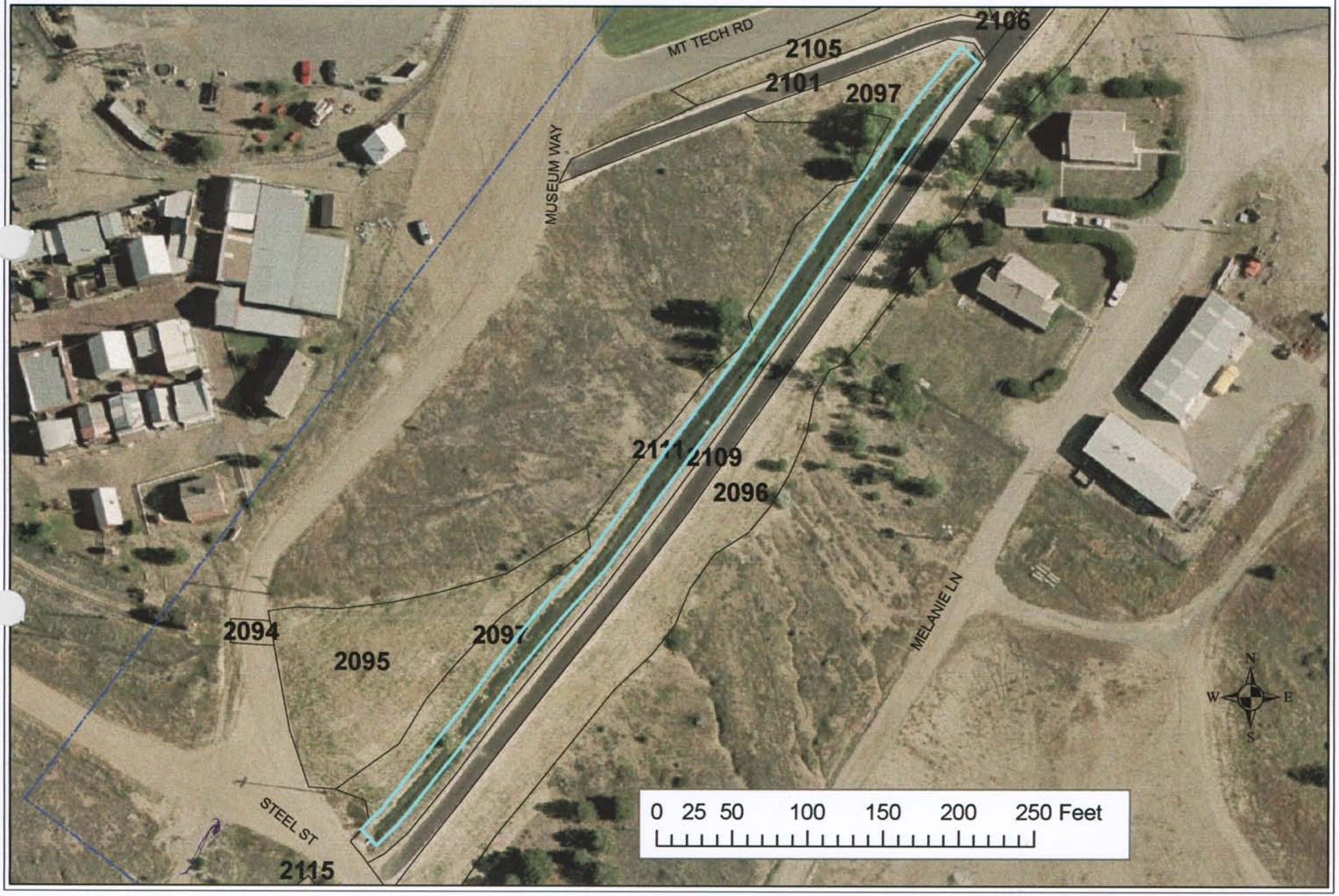
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2111



Master

BRES FIELD FORM Site ID: __ Site Name: 2011 Field Date: 7-16-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: — to — Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: depression - long creekbed N. of walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	4					
*Noxious weeds	1					
Litter	40					
Rocks > 2"	—					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	49					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	D					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	8					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath	I					
Kochia						
Thistle ? purple	I					
Leafy Spurge						
Other mustard	F					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓
- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

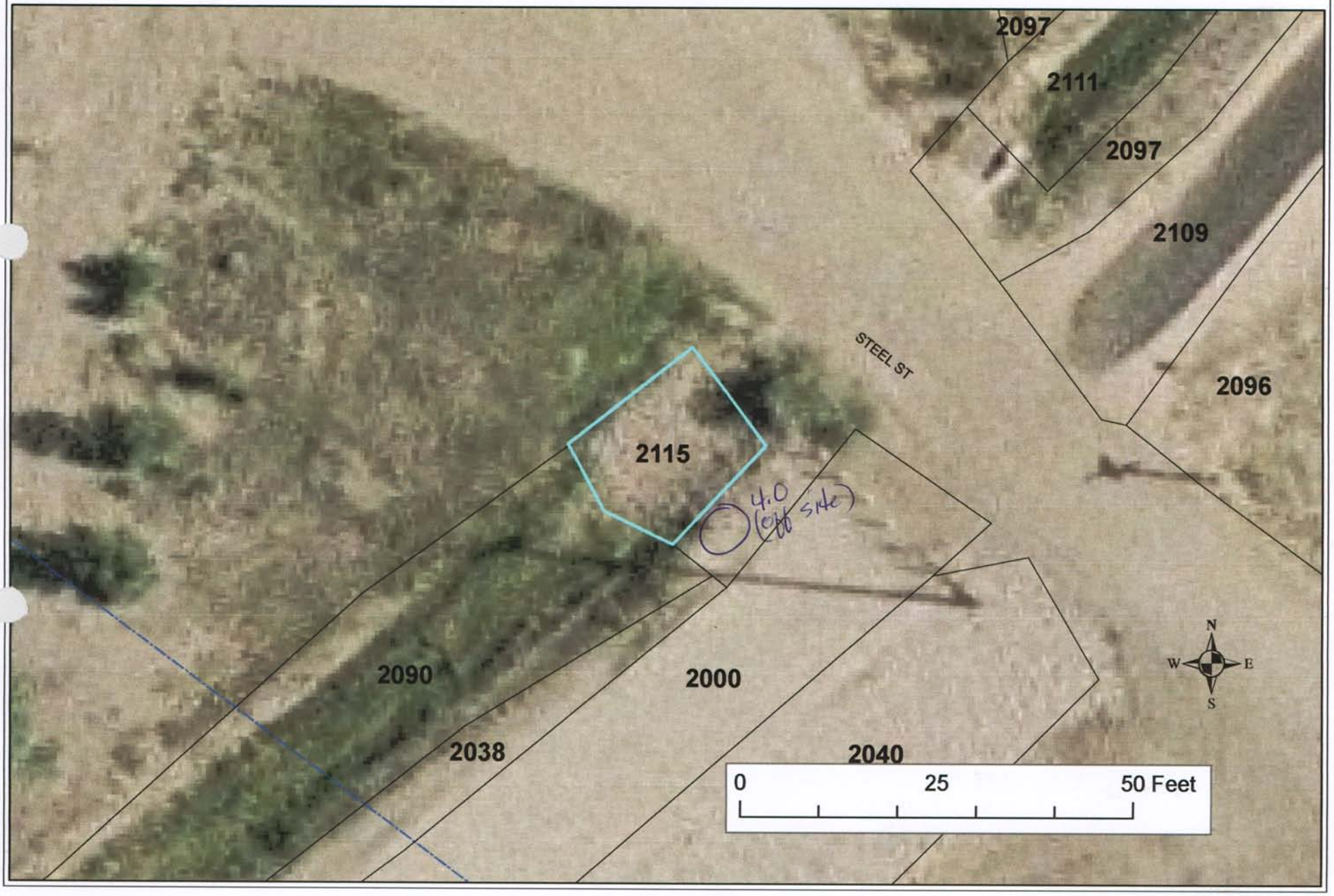
No issues!
We recommend combining site #2111 w/ #2097. Proximity ; vegetation.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2115



BRES FIELD FORM

Site ID: __ Site Name: 2115 Field Date: 7-17-09

Master

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock rip rap below culvert drain

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	2					
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	98					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	2%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** _____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Rock Rip Rap below culvert under steel street.

* small waste area just south off site.

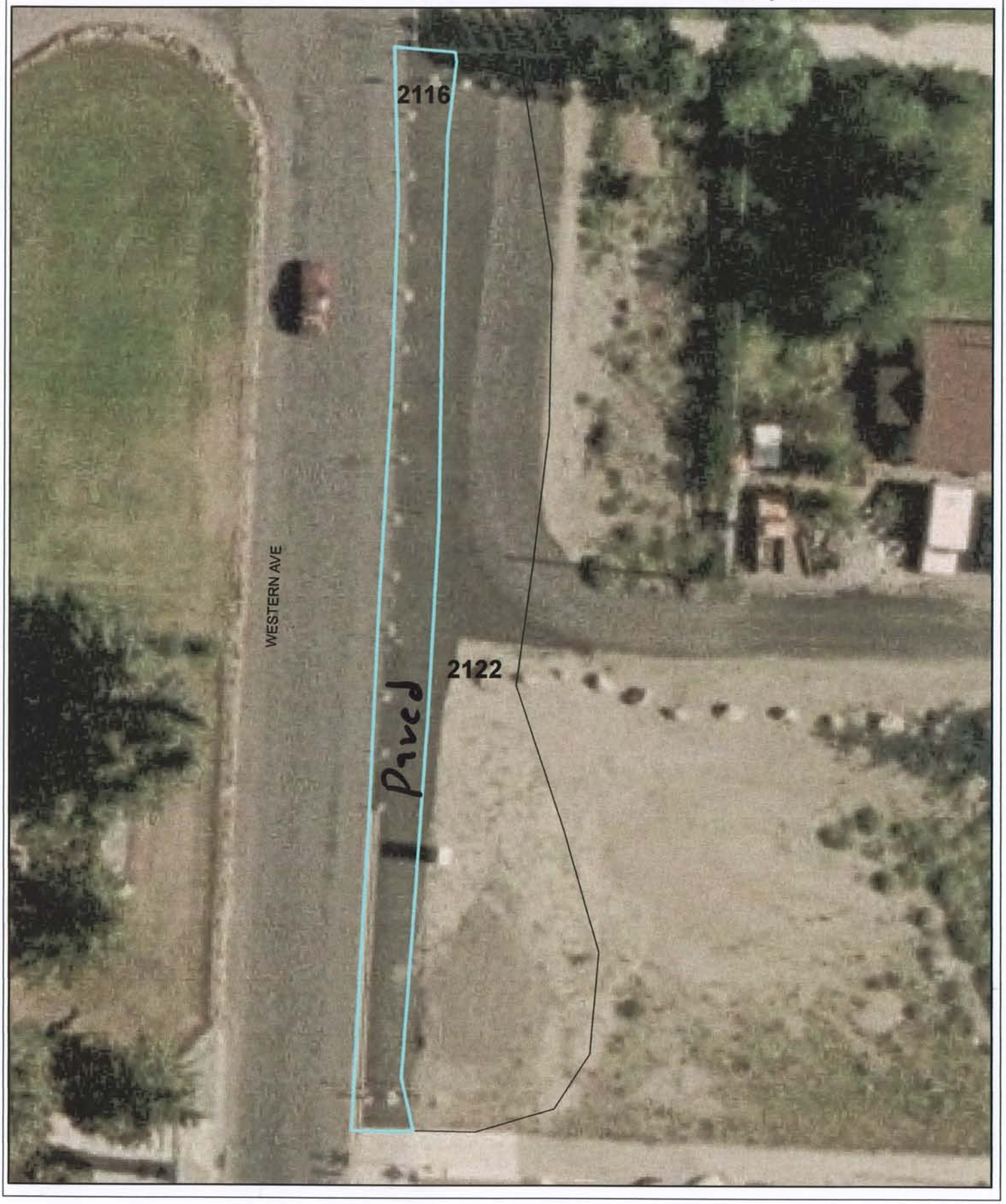
No issues!

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2116

Master



BRES FIELD FORM

Site ID: #2116 Site Name: B&A RR Trail Field Date: 7/8/09

Team Members (Circle your name): JTR BC

Number of Polygons: 1 Slope: 5° to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Reclaimed Paved RR Bed

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	0					
*Noxious weeds	0					
Litter	0					
Rocks > 2"	0					
Bare Ground	0					
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N✓

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N✓
Number of gullies ____

Comments.

- Entire site is paved.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2117

Master - See comments on back

BRES FIELD FORM

Site ID:__ **Site Name:** BA+P 2117 **Field Date:** 7/8/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: 1 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Walking Trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N✓

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N✓
Are any gullies actively eroding? Y____ N✓
Number of gullies _____

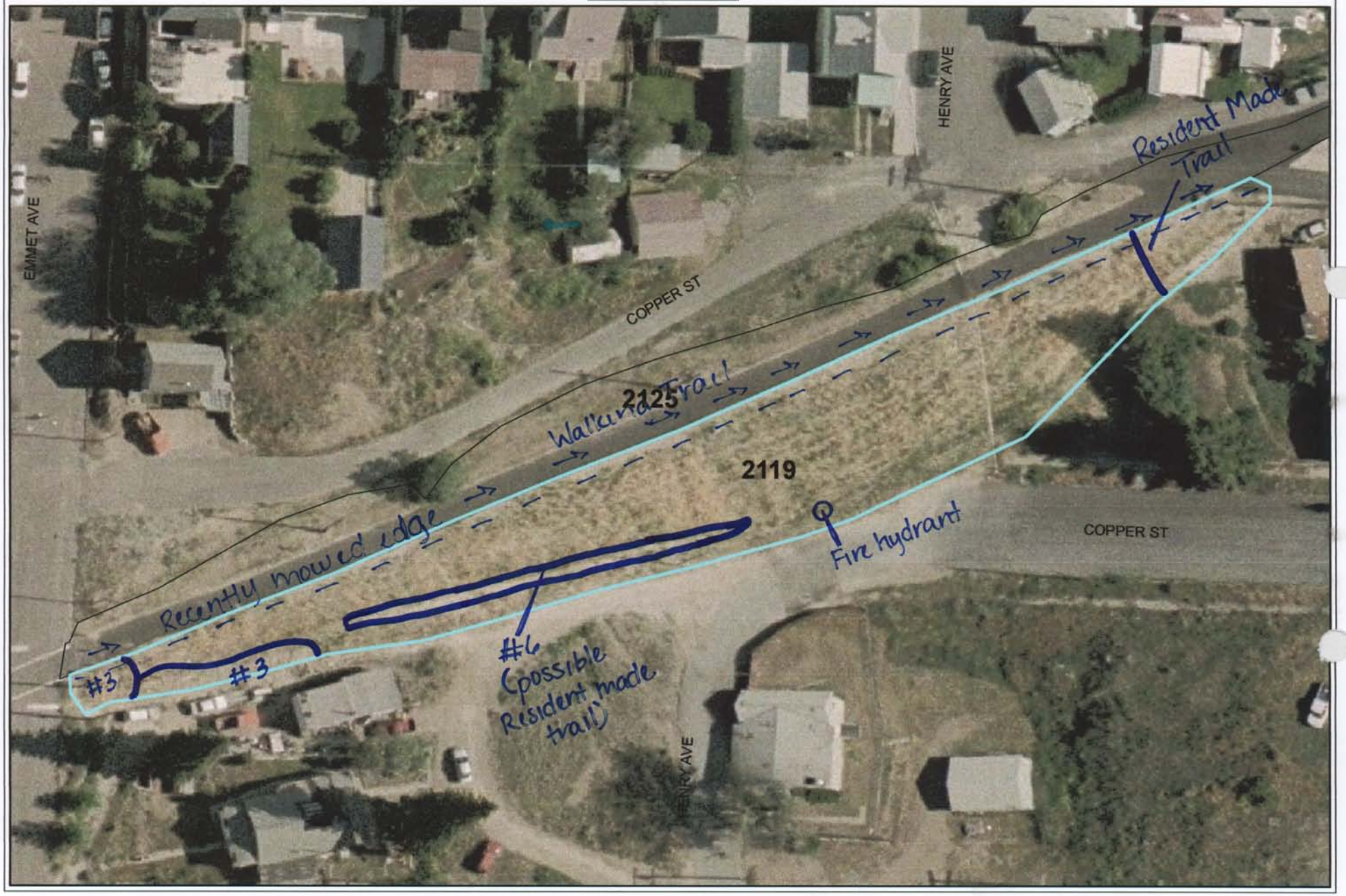
Comments. This is a paved walking trail with no site edge problems.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master Randi Phelps & Jennifer Nardiello

Site 2119



---/ Recently mowed edge

Master

BRES FIELD FORM

Site ID:__ Site Name: BAtP 2119 Field Date: 7/8/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: 1 Slope: 1 to 2 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Side of walking trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D		
Vegetation (% live)	40					
Erosion (BLM score)	45					
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	4					
*Noxious weeds	7					
Litter	39					
Rocks > 2"	3					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	I					
Slender wheatgrass	F					
Yellow sweetclover	/					
Alfalfa	F					
Other Rubber Rabbit	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	8					
Pedestalling	9					
Flow Patterns	12					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	45					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	/					
Cheatgrass	I					
Baby's breath	F					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other Stinkweed	I					
Other Salsify	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y✓ N____ (check applicable items)

- ☐ lime rock barrier
- ☑ depositional area
- ☐ more weeds
- ☑ steeper slope
- ☑ increased erosion
- ☐ less vegetation
- ☐ gullies
- ☑ other frost heave

Estimate width of affected edge (in feet) 25

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y✓ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y____ N✓

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N✓
Number of gullies ____

Comments. The north side of the site by the walking trail had been recently mowed.

The site edge on the southwestern side had increased erosion, frost heave, and less vegetation.

The barren area looked like a pedestrian made trail.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2123

[redacted]

BRES FIELD FORM

Site ID: ~~#~~ 2120 Site Name: B&ARR Trail Edge Field Date: 7/8/09

Team Members (Circle your name): JTR BC

Number of Polygons: 1 Slope: 40° to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Slope next to reclaimed RR Tracks

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	10					
*Noxious weeds	15					
Litter	35					
Rocks > 2"	2					
Bare Ground	3					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	I					
Other Allyssum	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	23					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath	F					
Kochia	I					
Thistle						
Leafy Spurge						
Other Mustards	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ~~N~~ N ✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☑ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☑ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y_____ N ✓

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

- Significant presence of Knotious weeds.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2121 Master

BRES FIELD FORM

Site ID: #21121 Site Name: Side of B+AAR Trail Field Date: 7/8

Team Members (Circle your name): JTR BC

Number of Polygons: 1 Slope: 45° to ____ Aspect (circle all relevant): N S W (E) NW NE SW SE

Area Description: Slope on side of reclaimed RR bed

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	60					
*Undesirable (weedy) species	3					
*Noxious weeds	0					
Litter	35					
Rocks > 2"	0					
Bare Ground	2					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	63					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover	I					
Alfalfa	F					
Other Red Clover	I					
Other Allysum	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	23					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia	I					
Thistle						
Leafy Spurge						
Other Mustards	I					
Other Butter+Egg	I					
Other Salsity	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

- Excellent site in very good shape. We found no problems.

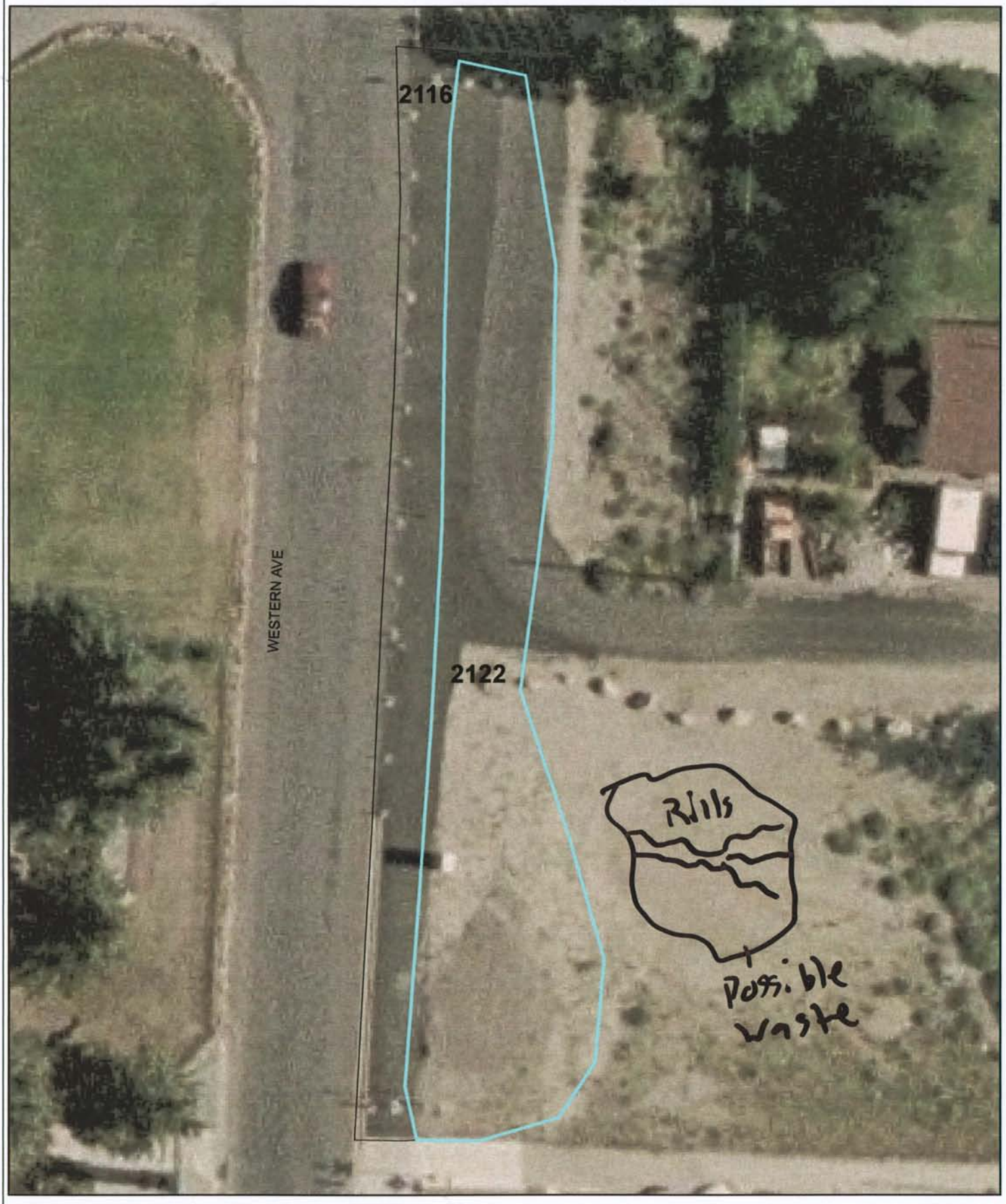
- There is a trail developing from the end at Broadway up the slope to the paved walking trail.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2122 Master



BRES FIELD FORM

Site ID: ~~#~~ 2122 Site Name: B&A RR Trail Field Date: 7/8/09

Team Members (Circle your name): JTR BC

Number of Polygons: 1 Slope: 35° to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Slope on side of reclaimed RR bed

- Site was mowed

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5					
*Undesirable (weedy) species	5					
*Noxious weeds	2					
Litter	10					
Rocks > 2"	13					
Bare Ground	65					
TOTAL (above 6 items must total 100%)	—					
ADJUSTED LIVE % = Live + 5%Undesirable	10					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover	I					
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	8					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

- Large area of possible mine waste east of the site
- Area has been mowed, skewing our #'s.
- Area has very little vegetation.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2123 Master

BRES FIELD FORM

Site ID: 2123 Site Name: B&ARR Trail Field Date: 7/8/09

Team Members (Circle your name): JTR BC

Number of Polygons: 1 Slope: 5° to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Reclaimed RR bed - Paved

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	0					
*Noxious weeds	0					
Litter	0					
Rocks > 2"	0					
Bare Ground	0					
TOTAL (above 6 items must total 100%)	0					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☑ **less vegetation**
- ☑ **other** mine waste

Estimate width of affected edge (in feet) 6'

4. Exposed Waste Material? Y ✓ N____

- Estimated pH 4.5
- Approximate area (in square feet) 100
- Number of areas with exposed waste 2

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

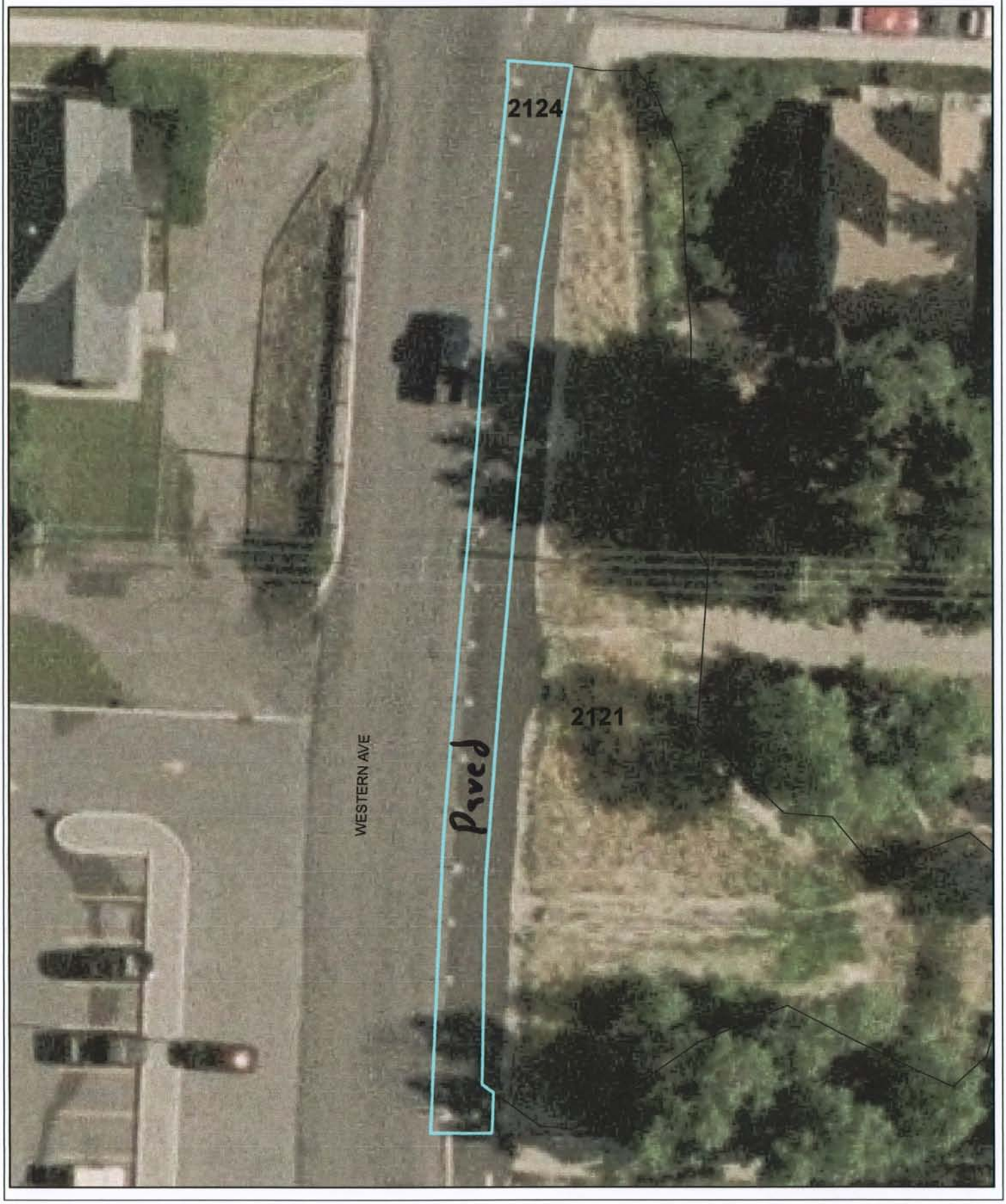
- Site is mostly paved w/ some exposed mine waste on N + W edges.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2124



BRES FIELD FORM

Site ID: #2124 Site Name: B&A RR Walking Trail Field Date: 7/8/09

Team Members (Circle your name): JTR BC

Number of Polygons: 1 Slope: 5° to ___ Aspect (circle all relevant): N (S) W E NW NE SW SE

Area Description: Reclaimed Railroad - Paved

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	0					
*Noxious weeds	0					
Litter	0					
Rocks > 2"	0					
Bare Ground	0					
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N✓

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

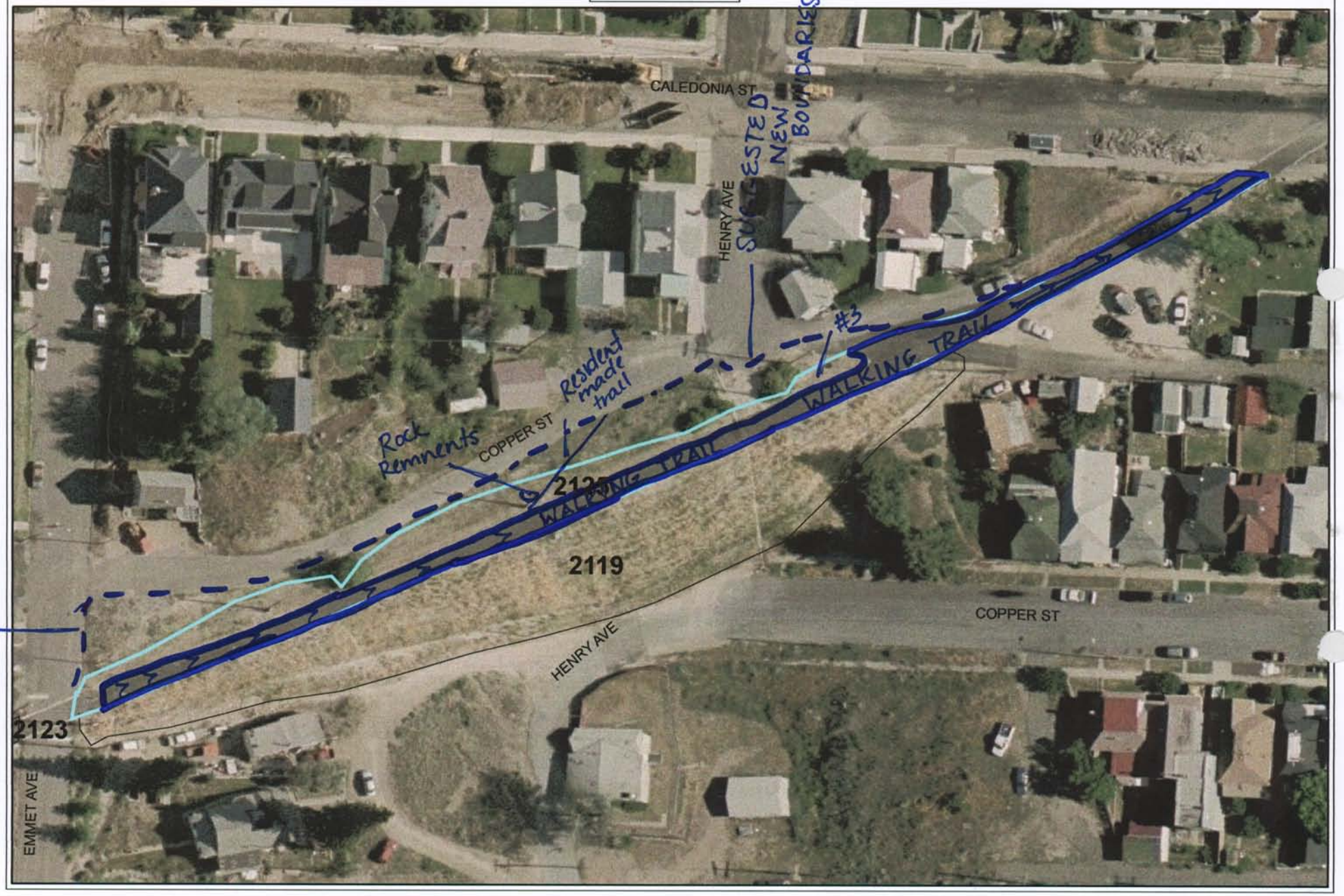
-Entire site is a paved walking trail.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER Randi Phelps + Jennifer Nardiello

Site 2125



---/SUGGESTED NEW BOUNDARIES

Master

BRES FIELD FORM

Site ID:__ Site Name: BLM P 212.5 Field Date: 7/8/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: 1 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Side edge of walking trail & trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	42					
Erosion (BLM score)	14					
Undesir/noxious weeds	3					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	40					
*Undesirable (weedy) species	2					
*Noxious weeds	1					
Litter	47					
Rocks > 2"	0					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	42					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover	/					
Alfalfa	F					
Other Flax	I					
Other Rubber Rabbit	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	14					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	/					
Dalmation toadflax	I					
Cheatgrass	/					
Baby's breath	/					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y✓ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☑ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) 8 ft

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y____N✓

7. Gullies (over 6" in depth):

Y____ N____
Are any gullies actively eroding? Y____ N✓
Number of gullies ____

Comments. Recommend extending site edge to accomadate all of the vegetated area. See map for proposed site.

The walking trail runs through this site.

There was less vegetation on one side of the site. See map for notes.

There was one concrete remnant of a structure in the middle of the site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site ~~2026~~ 2126

BRES FIELD FORM Site ID:__ Site Name: 2126 Field Date: 7/13/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: 2 Slope: ___ to 0 Aspect (circle all relevant): ~~N S~~ W E NW NE SW SE

Area Description: North side Buffalo St. east of Main St.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)		15				
Erosion (BLM score)	31	31				
Undesir/noxious weeds		45				

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species		15				
*Undesirable (weedy) species		30				
*Noxious weeds		15				
Litter		10				
Rocks > 2"		15				
Bare Ground		15				
TOTAL (above 6 items must total 100%)		100				
ADJUSTED LIVE % = Live + 5%Undesirable		20				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass		F				
Slender wheatgrass		F				
Yellow sweetclover						
Alfalfa						
Other foxtail		I				
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	6				
Surface Rock Movement	5	8				
Pedestalling	0	3				
Flow Patterns	9	6				
Rills Depth	0	0				
Rills Frequency	0	0				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	11	8				
TOTAL BLM Score:	31	31				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed		F				
Dalmation toadflax		F				
Cheatgrass		D				
Baby's breath						
Kochia		F				
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☑ **increased erosion**
- ☑ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas Polygon A
Do barren areas cover over 25% of any polygon?
Y X N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Polygon A

Site is used by cars. It is washing out. No vegetation on site but dalmation toadflax + spotted knapweed present on north side of site. Rills + gullies on bedrock / north side eroding onto site.

Polygon B

Trail on north side eroding onto site Knapweed + dalmation toadflax present.

South side polygon B used by vehicles. (Not counted for vegetation)

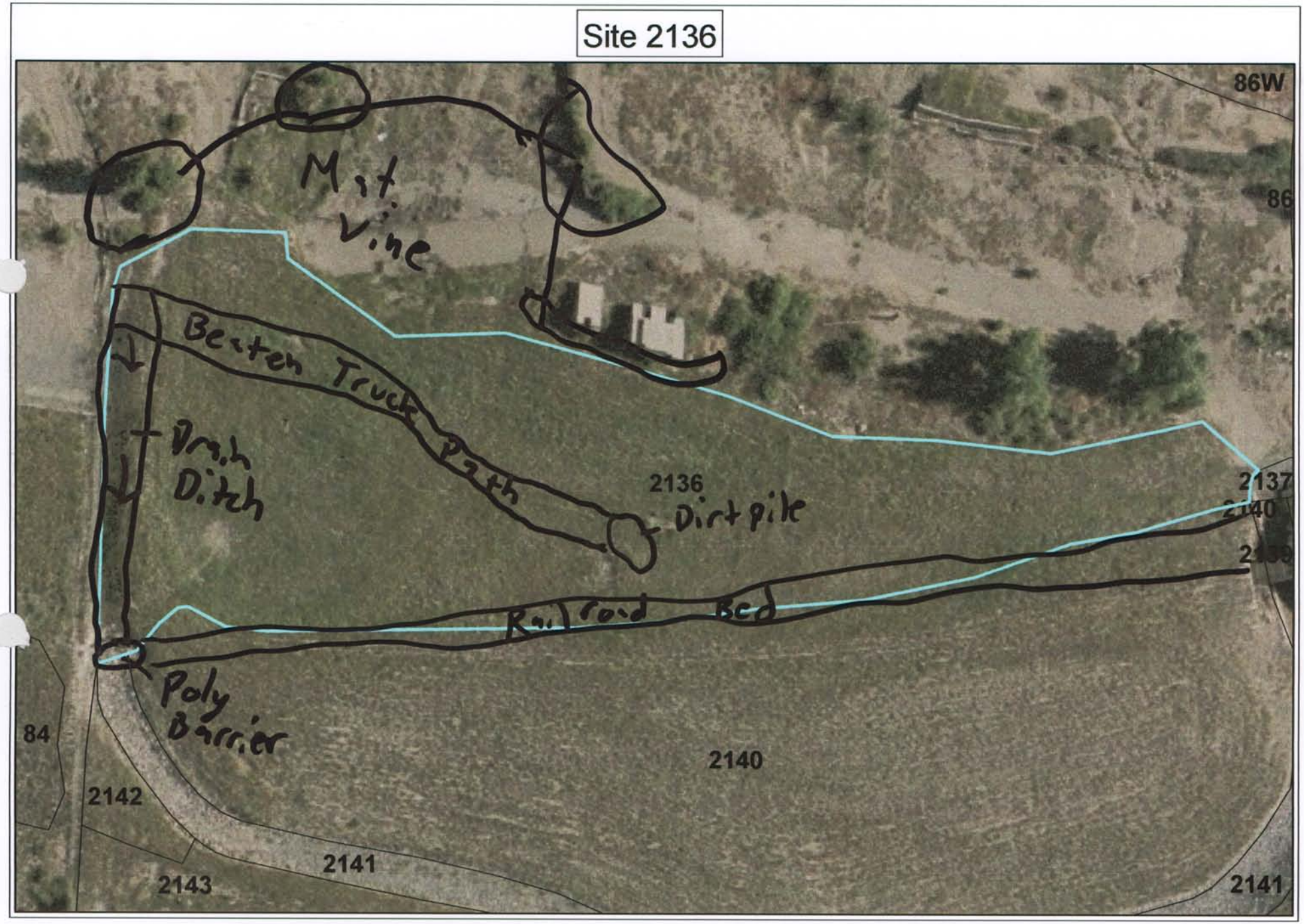
Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2136



Master

BRES FIELD FORM

Site ID: #2136 Site Name: _____ Field Date: 7/9/09

Team Members (Circle your name): JTR & BC

Number of Polygons: 1 Slope: 5° to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Top of reclaimed mine dump

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45					
*Undesirable (weedy) species	5					
*Noxious weeds	3					
Litter	45					
Rocks > 2"	0					
Bare Ground	2					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	50					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	I					
Other Blue Grass	F					
Other Grant Rye	I					
Other Brome Gr.	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	8					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	19					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other Salsify	I					
Other Mustards	I					
Other Foxtail	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☑ **less vegetation**
- ☐ **other** _____

Estimate width of affected edge (in feet) 10

4. Exposed Waste Material? Y ___ N ✓
- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ___ N ✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ___ N ✓
- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N ✓
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

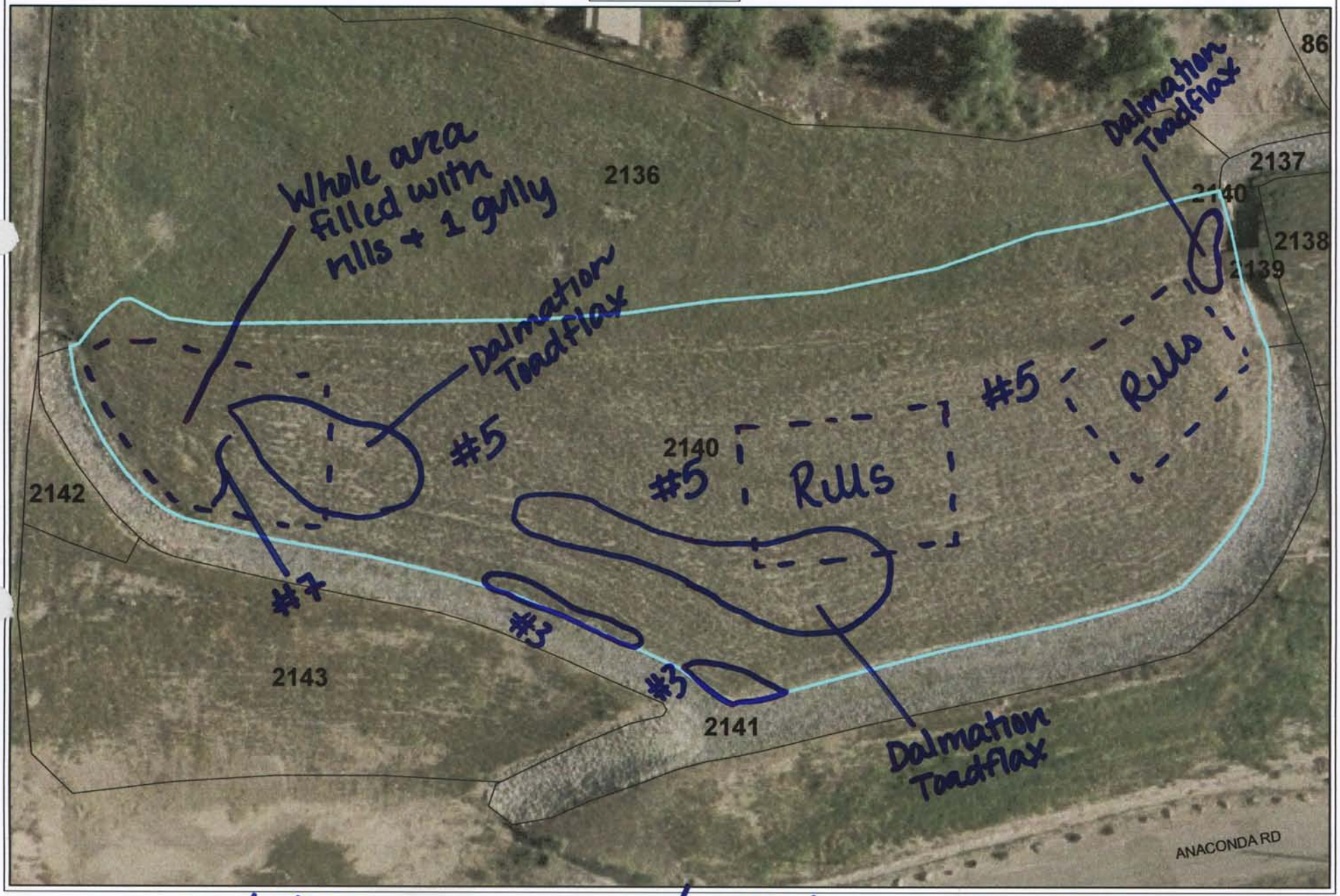
This is an excellent site in very good shape.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master Randi Phelps + Jennifer Narduello

Site 2140



/ either #3 or Dalmation Toadflax

--- / Rill filled Area

Whole sight shows signs of land slumping

Master

BRES FIELD FORM

Site ID:__ Site Name: Site 2140 Field Date: 7/9/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: 1 Slope: 1 to 2 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Southern slope of Kelly vineyard

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	29					
Erosion (BLM score)	68					
Undesir/noxious weeds	12					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	27					
*Undesirable (weedy) species	2					
*Noxious weeds	10					
Litter	45					
Rocks > 2"	1					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	29					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	/					
Yellow sweetclover	/					
Alfalfa	I					
Other Rubber Rabbit	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	11					
Pedestalling	11					
Flow Patterns	15					
Rills Depth	6					
Rills Frequency	2					
Gullies Depth	2					
Gullies Frequency	2					
Soil Movement	8					
TOTAL BLM Score:	68					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	F					
Cheatgrass	I					
Baby's breath	/					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other Prickly Lettuce	I					
Other Mustards	I					
Other Salsify	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☑ **more weeds**
- ☑ **steeper slope**
- ☑ **increased erosion**
- ☑ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ✓ N ✓

- ☐ **bulk soil failure**
- ☑ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y____N____

7. Gullies (over 6" in depth):
Y ✓ N ✓
Are any gullies actively eroding? Y ✓ N ✓
Number of gullies 1

Comments.

Rill & gully complex is not actively eroding, however side walls are wet.

Bands of land slump are evident across the site.

Frost heave is prominent across the site as well.

Spraying for dalmation toadflax is recommended.

Additional Vegetation:

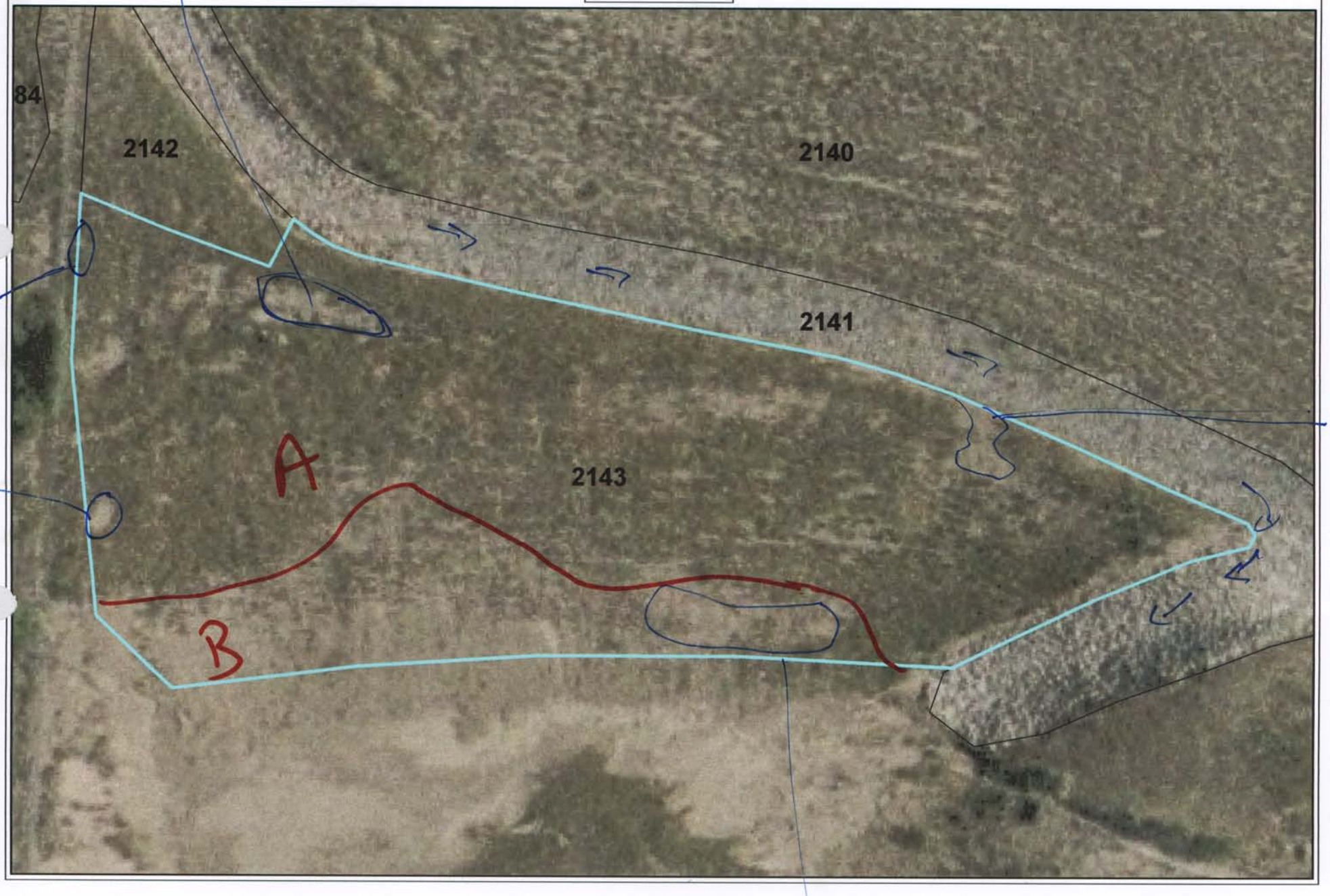
Species Present	POLYGON A	B	C	D	E	F
Dandelion	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

drop off - rock wall - pipe

Master

Site 2143



3, 4 pH 4

6

6

6

Master

BRES FIELD FORM

Site ID: ___ Site Name: 2143 Field Date: 7/10/9

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Plumb

Number of Polygons: 2 Slope: 1 to 2 Aspect (circle all relevant): N S W E NW NE SW (SE)

Area Description: Directly North of Entrance to Pioneer Property off Magnolia Road

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35	10				
*Undesirable (weedy) species	10	5				
*Noxious weeds	3	3				
Litter	40	25				
Rocks > 2"	2	1				
Bare Ground	10	60				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	40	16				

15

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue		J				
Crested wheatgrass	D					
Slender wheatgrass						
Yellow sweetclover	I					
Alfalfa	I					
Other rubber rabbit brush	J					
Other scorpion		I				
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	11				
Surface Rock Movement	5	8				
Pedestalling	9	11				
Flow Patterns	12	15				
Rills Depth	2	3				
Rills Frequency	2	7				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	8	11				
TOTAL BLM Score:	44	66				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I	I				
Cheatgrass	F	F				
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other** exposed mat (A)

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___

- Estimated pH 4
- Approximate area (in square feet) 20
- Number of areas with exposed waste 1

5. Is there evidence of: Y ___ N ___

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N ___

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2 (A), 1 (B)
Do barren areas cover over 25% of any polygon? Y ___ N X

7. Gullies (over 6" in depth):

Y ___ N X
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

Polygon A - North Edge of site
more vegetation - less erosion

exposed waste ~~out~~ near NW corner of site

old rock retaining wall located in NW corner of site

* NE corner of site has numerous varieties of weeds present

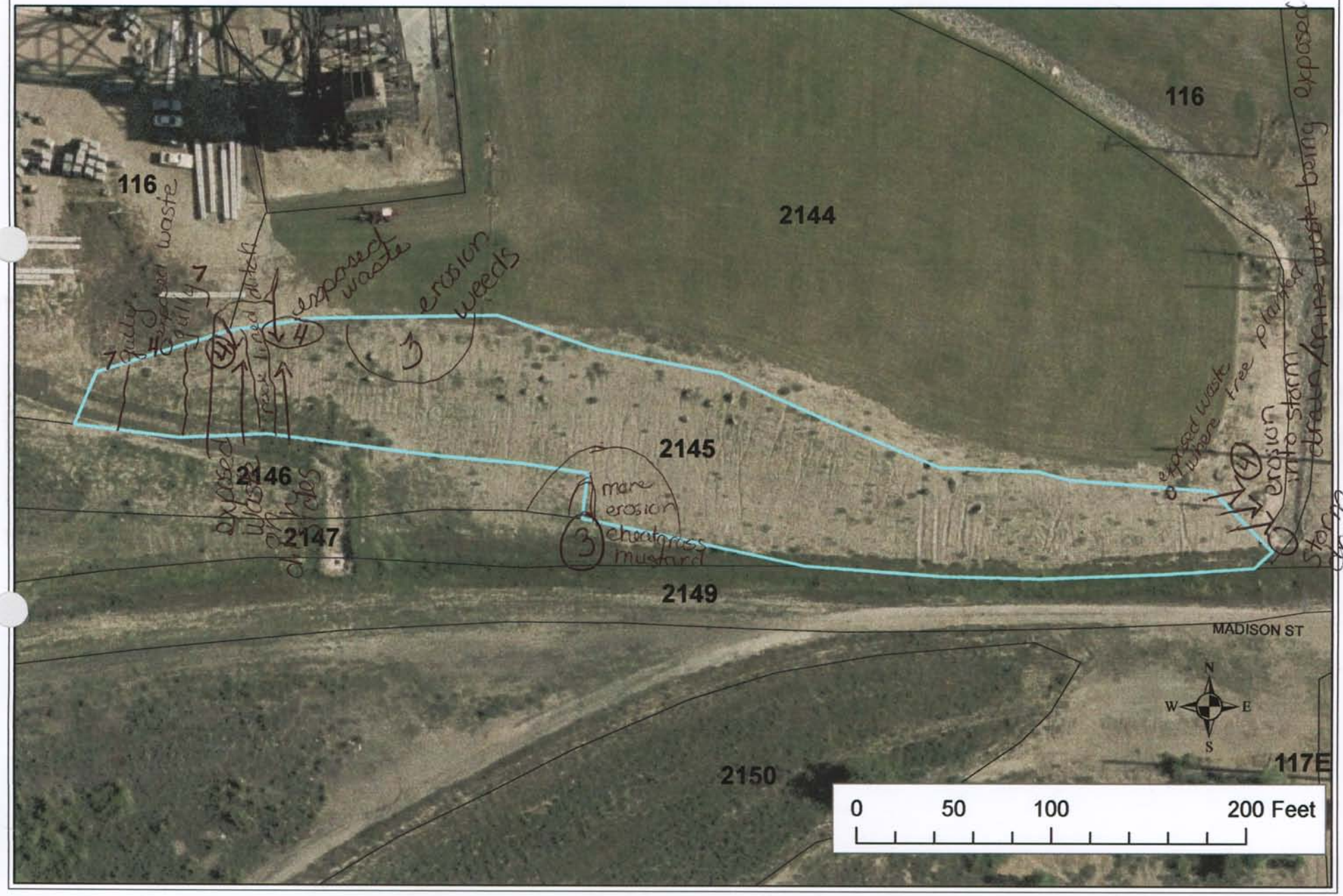
Polygon B has much less vegetation than Polygon A

also more erosion

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2145


116
116
2144
2145
2146
2147
2149
2150
117E
MADISON ST
gully
exposed waste
erosion
weeds
exposed waste
mare
erosion
chaotropes
mustard
exposed waste where tree planted
erosion into storm drain
exposed waste and tree waste being exposed
storm drain
N
W
E
S
0
50
100
200 Feet

BRES FIELD FORM

Site ID: __ **Site Name:** 2145 **Field Date:** 7/14/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South slope MAC parking lot & Belmont Head frame

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	30					
Erosion (BLM score)						
Undesir/noxious weeds	15					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	10					
*Noxious weeds	5					
Litter	50					
Rocks > 2"	2					
Bare Ground	8					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	I					
Other Canadian	D					
Other wild rye						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	18					
Surface Rock Movement	5					
Pedestalling	9					
Flow Patterns	12					
Rills Depth	3					
Rills Frequency	3					
Gullies Depth	3					
Gullies Frequency	3					
Soil Movement	8					
TOTAL BLM Score:	54					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other salsify	F					
Other mustard	F					
Other foxtail	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N ____

- Estimated pH 4.5
- Approximate area (in square feet) 100 s.f.
- Number of areas with exposed waste 4

5. Is there evidence of: Y ____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y X N ____
Are any gullies actively eroding? Y X N ___
Number of gullies 2

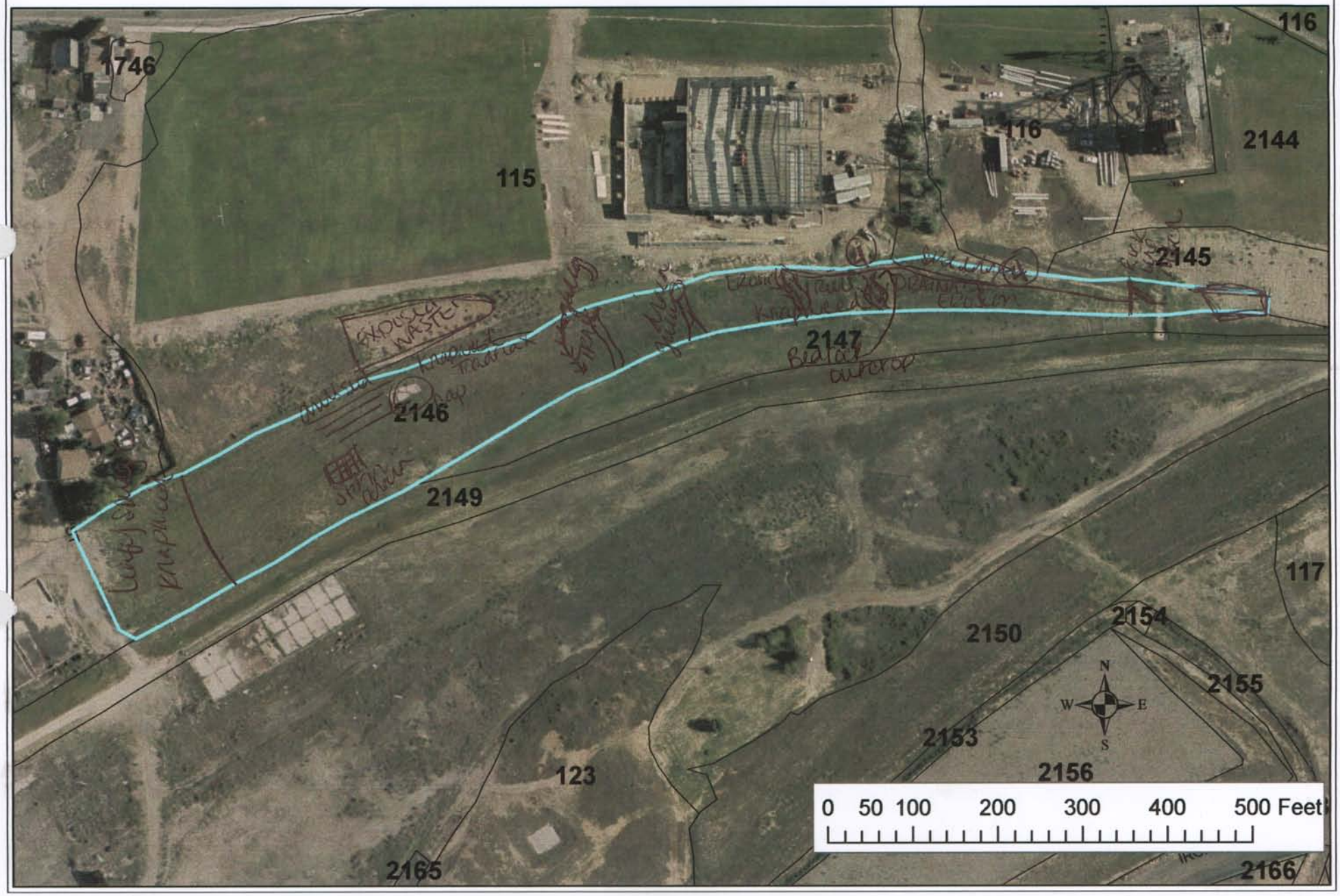
Comments. On west side of site there is a gully partly healing. Next to one overhead light for the parking lot there is exposed waste from light being installed. To the east of the light there is another ~~healing~~ partially healing gully. On the south east corner of the parking lot (north side of site) there has been a ditch installed for drainage. On both sides of ditch there is exposed mine waste that needs to be covered again or ditch redone to cover the area. As shown on map there is a large area of knapweed & dalmation toadflax. This area also has increased erosion. Along north site edge trees have been planted - but all are dead or dying. Along South edge there is a horseshoe shaped area that has dominant species of cheatgrass & mustard. It also shows increased erosion as compared to the rest of the site. Along east edge there is area around one tree with exposed mine waste. On the eastern slope there is increased erosion into storm drain (not on this site). There is exposed mine waste due to the erosion.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2146


1746
115
116
116
2144
2145
2147
2146
2149
117
2150
2154
2155
2153
2156
123
2165
2166
N
W
E
S
0 50 100 200 300 400 500 Feet

BRES FIELD FORM

Site ID: __ **Site Name:** 2 Mile **Field Date:** 7/14/09

Team Members (Circle your name): Lagues, McCaughey

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: grid south of MAC

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	35					
Erosion (BLM score)	12					
Undesir/noxious weeds	20					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	10					
*Noxious weeds	10					
Litter	35					
Rocks > 2"	5					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	F					
Other Blueflax I	~~F~~					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	8					
Pedestalling	6					
Flow Patterns	12					
Rills Depth	10					
Rills Frequency	3					
Gullies Depth	6					
Gullies Frequency	3					
Soil Movement	8					
TOTAL BLM Score:	12					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge	F					
Other Mustard	F					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☒ **steeper slope**
- ☒ **increased erosion**
- ☐ **less vegetation**
- ☒ **gullies**
- ☐ **other** ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y A N ___

- Estimated pH 4 (see Map N side)
- Approximate area (in square feet) 75 ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y ___ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ___ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y X N ___
Are any gullies actively eroding? Y X N ___
Number of gullies 2

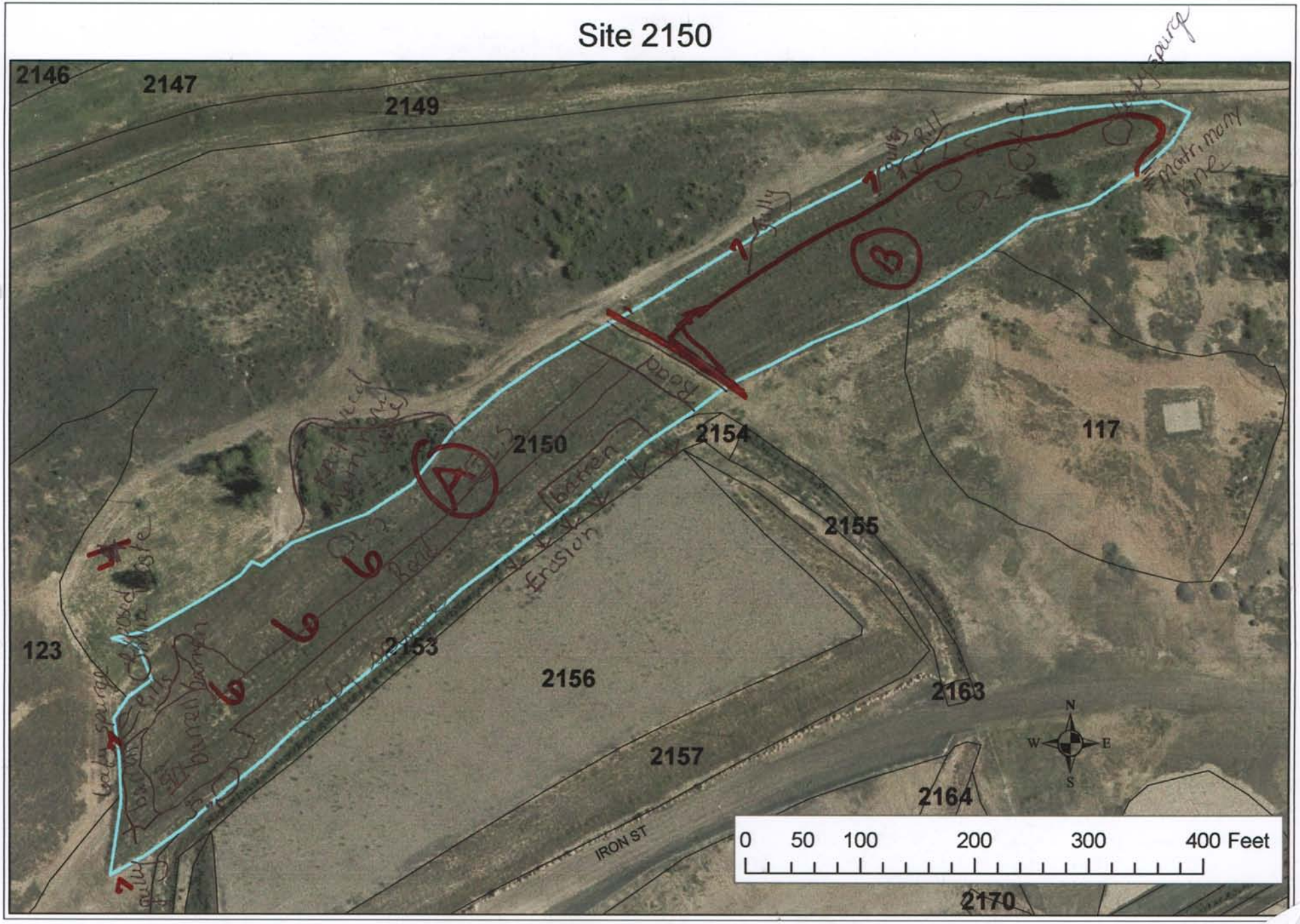
Comments. On the East side of the site there is a ditch that is beginning to expose mine waste and should be covered w/ rock.
- On the North side edge the site edge does contain some erosion issues. There are rills that have major potential to become gullies and should be looked at.
- Going North to South in the middle of site there ~~are~~ is a man made trail. Along side of the trail there is an actively eroding gully.
- Not on our site but on the NW corner there is a huge patch of Exposed Mine Waste.
- There is a cap and a storm drain in the west half of the site.
- There has been some drill seeding done, but not much new growth yet. A lot of Knapweed and LEAFY SPURGE all along this site, but Majority of it is on the West side of site.
- There is plenty of garbage (human) on site. Could be cleaned up a bit.
- Along north side of site there is a bedrock outcropping coming down slope.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2150


2146
2147
2149
2150
2154
117
2155
123
2153
2156
2163
2157
2164
IRON ST
2170
A
B
Road
Bottom
Erosion
N
W
E
S
0 50 100 200 300 400 Feet

BRES FIELD FORM

Site ID: __ **Site Name:** 2150 **Field Date:** 7/14/09

Team Members (Circle your name): Legue, McCaughey

Number of Polygons: 2 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: A - west of new road B east of road

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	15	45				
Erosion (BLM score)	82	21				
Undesir/noxious weeds	20	10				

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	10	40				
*Undesirable (weedy) species	5	5				
*Noxious weeds	15	15				
Litter	15	40				
Rocks > 2"	15	5				
Bare Ground	40	5				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	10	45				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I	F				
Crested wheatgrass	I	F				
Slender wheatgrass		F				
Yellow sweetclover						
Alfalfa	I	F				
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11	6				
Surface Rock Movement	14	2				
Pedestalling	11	3				
Flow Patterns	15	3				
Rills Depth	5	2				
Rills Frequency	6	2				
Gullies Depth	4	0				
Gullies Frequency	3	0				
Soil Movement	11	3				
TOTAL BLM Score:	82	21				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F	I				
Dalmation toadflax	F	I				
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge	F	I				
Other Salsify	I	I				
Other mustards		I				
Other matrimony vine		I				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☒ **more weeds**
- ☒ **steeper slope**
- ☒ **increased erosion**
- ☒ **less vegetation**
- ☒ **gullies**
- ☒ **other** noxious weeds

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4.5
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1

Do barren areas cover over 25% of any polygon? Y X N____

7. Gullies (over 6" in depth):

Y X N____

Are any gullies actively eroding? Y X N____

Number of gullies 5

Comments. *Polygon A has a road that has been built into the site and leads into a big barren area. Although the barren area looks as though it has been recently sprayed and killed all vegetation. In the barren area there is a cap of some sort marked with a pole.

- Along the west edge of site there is a gully that also has mine waste eroding actively with it. There is another gully on the south west corner of the site that is also actively eroding. The entire site edge has some erosion issues and this polygon needs to be tended to ASAP.
- There is knapweed and leafy spurge along the site edges.
- All of these issues are marked on map.
- On the north side edge of our site there is an area that is not included in our site, but it does contain a lot of Matrimony vine and knapweed and should be sprayed.

*Polygon B has great vegetation. It included crested wheat grass and alfalfa but there are some weeds that need to be sprayed. There are patches of leafy spurge, knapweed, and dalmatian toadflax.
- There is also a very bad site edge along the north side.
- A patch of Matrimony vine is growing on the SE corner (on map).

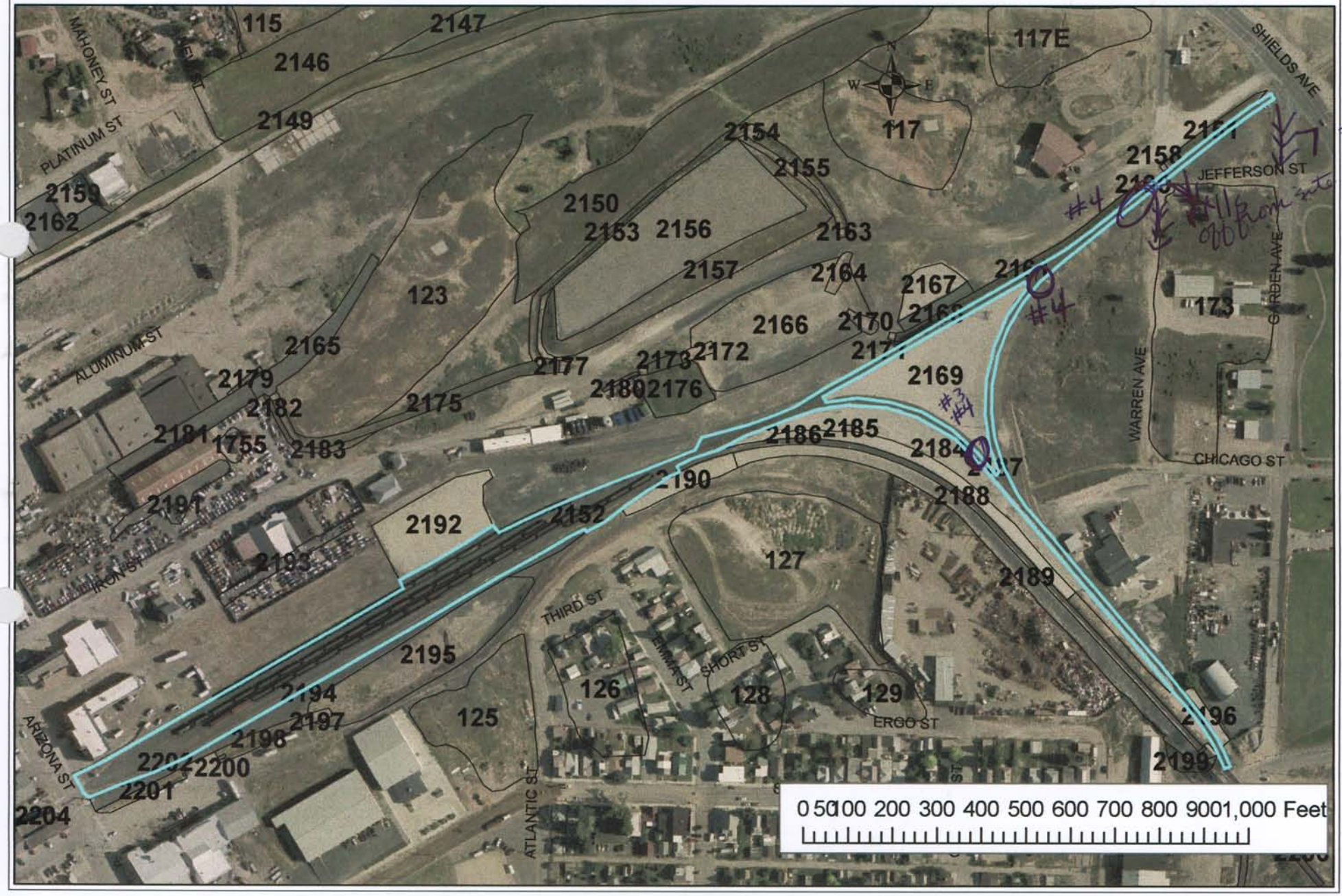
* Not included in our site, but all along the south edge of the site near the parking lot, there are gullies and erosion issues.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2152



BRES FIELD FORM

Site ID: ___ Site Name: 2152 Field Date: 7-16-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: – to – Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: RR tracks

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	50					
Bare Ground	50					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	✓					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ___ (check applicable items)

- ☒ **lime rock barrier**
- ☐ **more weeds**
- ☒ **increased erosion**
- ☒ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☒ **other** exposed waste

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y ✓ N ___

- Estimated pH 4.0
- Approximate area (in square feet) —
- Number of areas with exposed waste entire track

5. Is there evidence of: Y ___ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ___ N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ✓ N ___
Are any gullies actively eroding? Y ✓ N ___
Number of gullies 1

Comments.

Entire track has areas of exposed waste.

Gully on SE edge of site running off into side of road.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2156

BRES FIELD FORM

Site ID: #2156 Site Name: _____ Field Date: 7/9/09

Team Members (Circle your name): JTR & BC

Number of Polygons: 1 Slope: 5° to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Mine dump capped with asphault

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	2					
*Noxious weeds	3					
Litter	0					
Rocks > 2"	0					
Bare Ground	95					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☑ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** ____

Estimate width of affected edge (in feet) 3

4. Exposed Waste Material? Y ____ N ✓

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

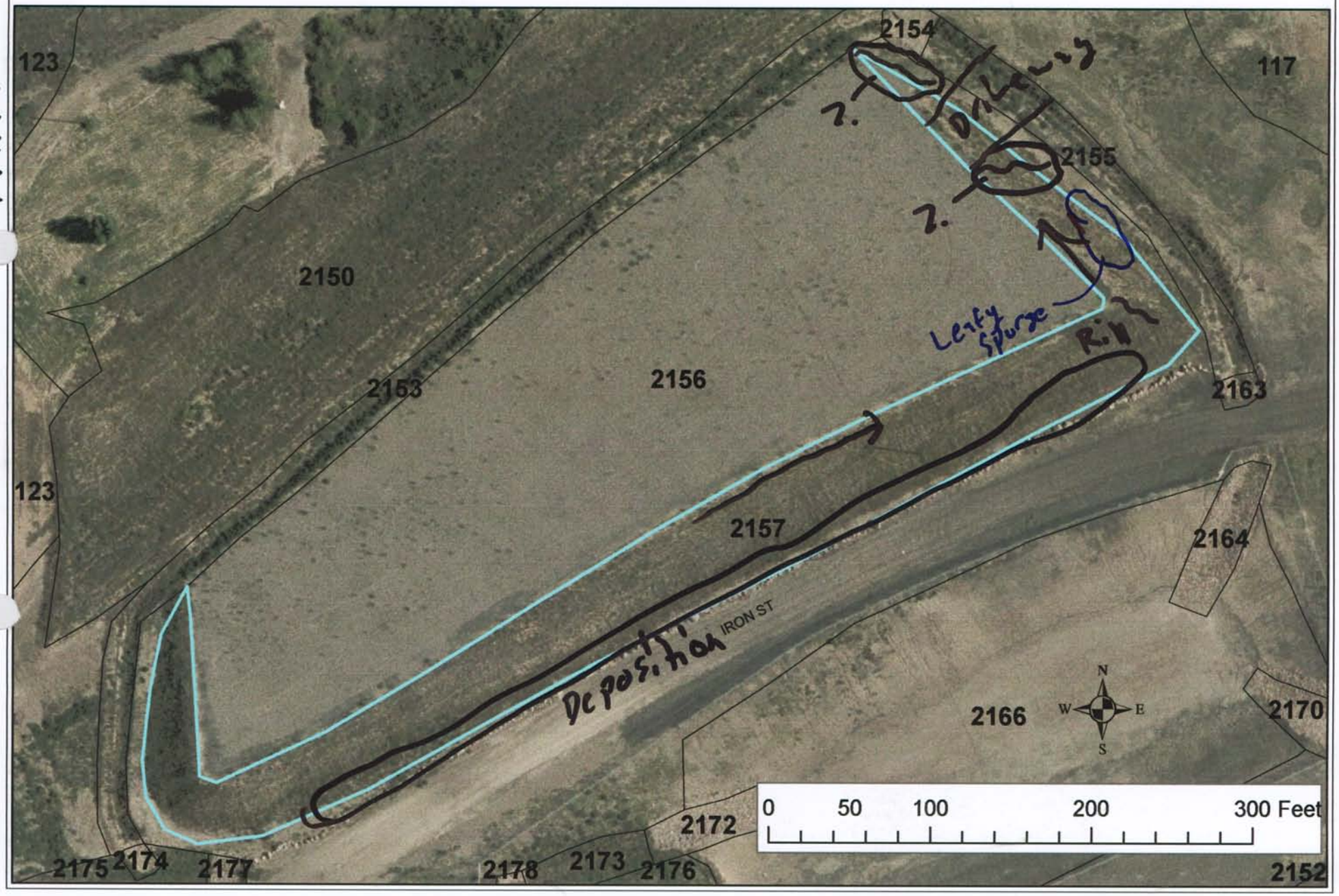
Comments.

- Site is capped with asphalt & surrounded by asphalt curb.
- Graveled drain ditch directs water around edge of site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2157


Murder
123
2154
117
2155
2150
2153
2156
2163
123
2157
2164
IRON ST
2166
2170
2172
2175
2174
2177
2178
2173
2176
2152
N
W
E
S
0
50
100
200
300 Feet

Master

BRES FIELD FORM

Site ID: #215? Site Name: _____ Field Date: 7/9/09

Team Members (Circle your name): JTR & BC

Number of Polygons: 1 Slope: 45% to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Sides of capped mine dump.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	15					
*Undesirable (weedy) species	15					
*Noxious weeds	15					
Litter	20					
Rocks > 2"	0					
Bare Ground	35					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	20					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other: Giant Rye Grass	O					
Other: Canada Blue	I					
Other: Scorp Flower	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	4					
Surface Rock Movement	11					
Pedestalling	14					
Flow Patterns	12					
Rills Depth	6					
Rills Frequency	2					
Gullies Depth	7					
Gullies Frequency	2					
Soil Movement	14					
TOTAL BLM Score:	79					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath						
Kochia	F					
Thistle						
Leafy Spurge	I					
Other: Common Toadflax	I					
Other: Kelsity	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☑ **increased erosion**
- ☐ **less vegetation**
- ☑ **gullies**
- ☐ **other** _____

Estimate width of affected edge (in feet) 10

4. Exposed Waste Material? Y ____ N ✓

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N ✓

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y ____ N ____

7. Gullies (over 6" in depth):
Y ✓ N ____
Are any gullies actively eroding? Y ✓ N ____
Number of gullies 2

Comments.

- Giant Rye Grass is dominant on this site and provides poor cover allowing the slopes to wash heavily. Recommend it be replaced.

- Good crop of 2nd generation Giant Rye plants are getting started.

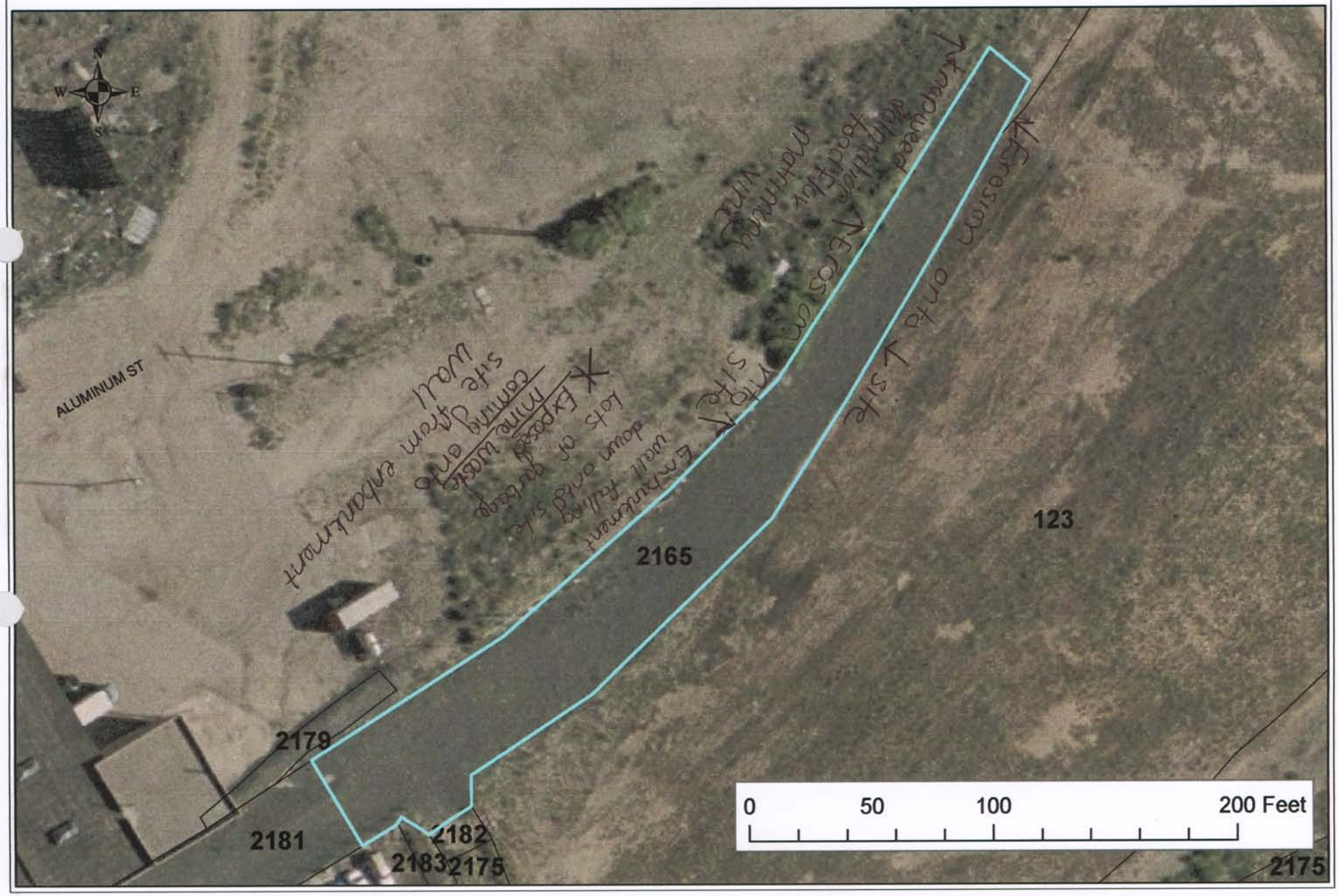
- Weed infestation on E end of site is significant.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2165


ALUMINUM ST
2165
123
2179
2181
2182
2183
2175
0
50
100
200 Feet

Site ID:__ Site Name: 2165 Field Date: 7/13/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock covered area - site of old train tracks

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** ___

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___

- Estimated pH 4.5
- Approximate area (in square feet) along timber wall
- Number of areas with exposed waste 1

5. Is there evidence of: Y ___ N /

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ___ N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___

Do barren areas cover over 25% of any polygon? Y ___ N ___

7. Gullies (over 6" in depth):

Y ___ N ___

Are any gullies actively eroding? Y ___ N ___

Number of gullies ___

Comments. Exposed mine waste showing on North embankment wall that is eroding onto site.

Embankment wall made of timber is falling down.

Site edge needs attention ASAP

Dalmation toadflax & knapweed on north site edge.

Site is ~~el~~ covered w/ rock - Knapweed is developing on site.

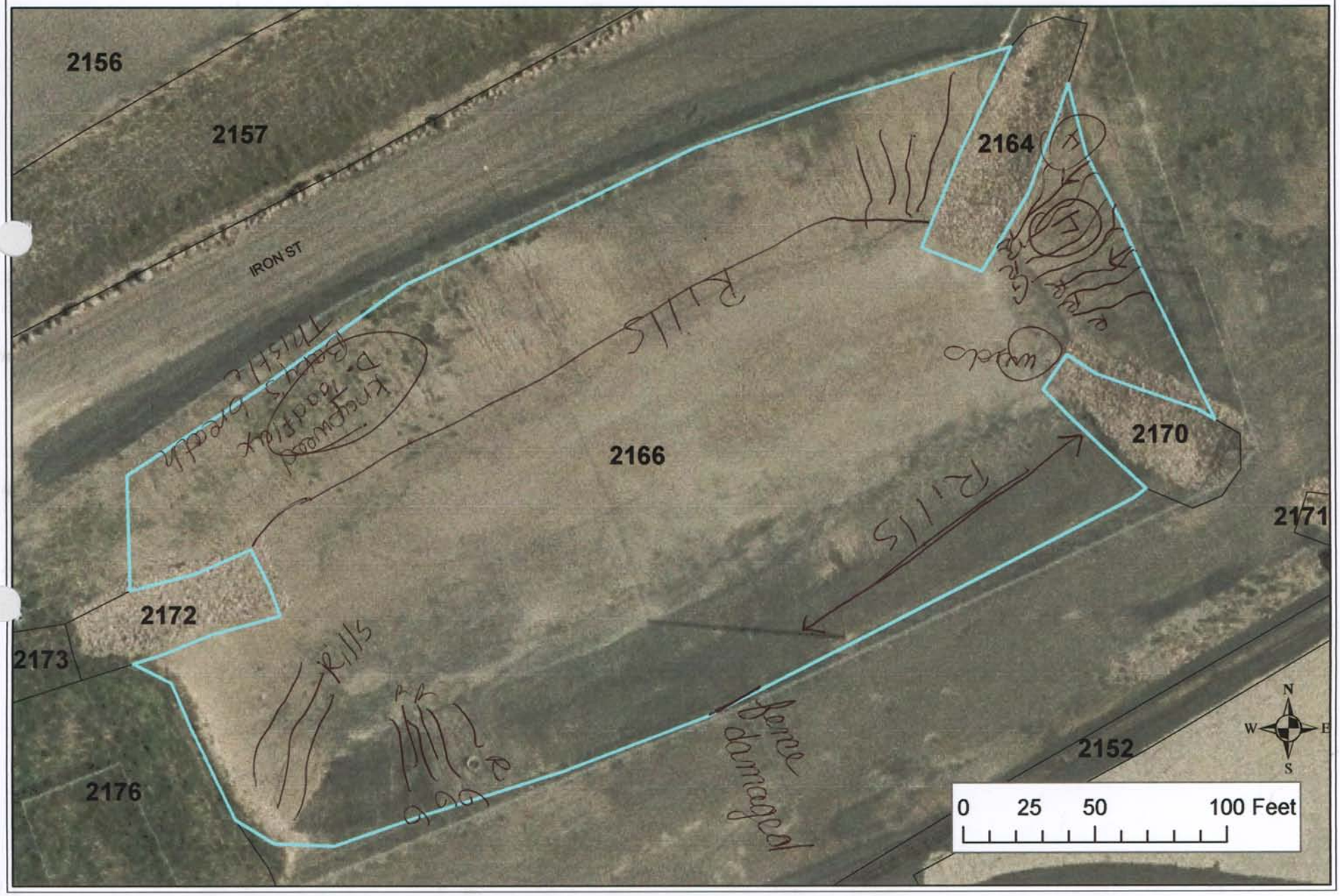
Parking lot eroding onto site on north west edge of site.

Vegetation & erosion not scared because covered w/ rocks.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2166


2156
2157
IRON ST
2164
2166
2170
2171
2172
2173
2176
2152
RILLS
RILLS
RILLS
fence damaged
0 25 50 100 Feet
N
W
E
S

BRES FIELD FORM

Site ID: __ **Site Name:** 21606 **Field Date:** 7/16/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: ___ Slope: ____to 0 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)	74					
Undesir/noxious weeds	8					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds	8					
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	11					
Pedestalling	0					
Flow Patterns	15					
Rills Depth	7					
Rills Frequency	7					
Gullies Depth	7					
Gullies Frequency	6					
Soil Movement	8					
TOTAL BLM Score:	74					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	F					
Cheatgrass						
Baby's breath	I					
Kochia						
Thistle	I					
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N__X__ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4 - 4.5
- Approximate area (in square feet) entire site
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1 entire site
Do barren areas cover over 25% of any polygon?
Y X N____

7. Gullies (over 6" in depth):
Y X N____
Are any gullies actively eroding? Y X N____
Number of gullies 10

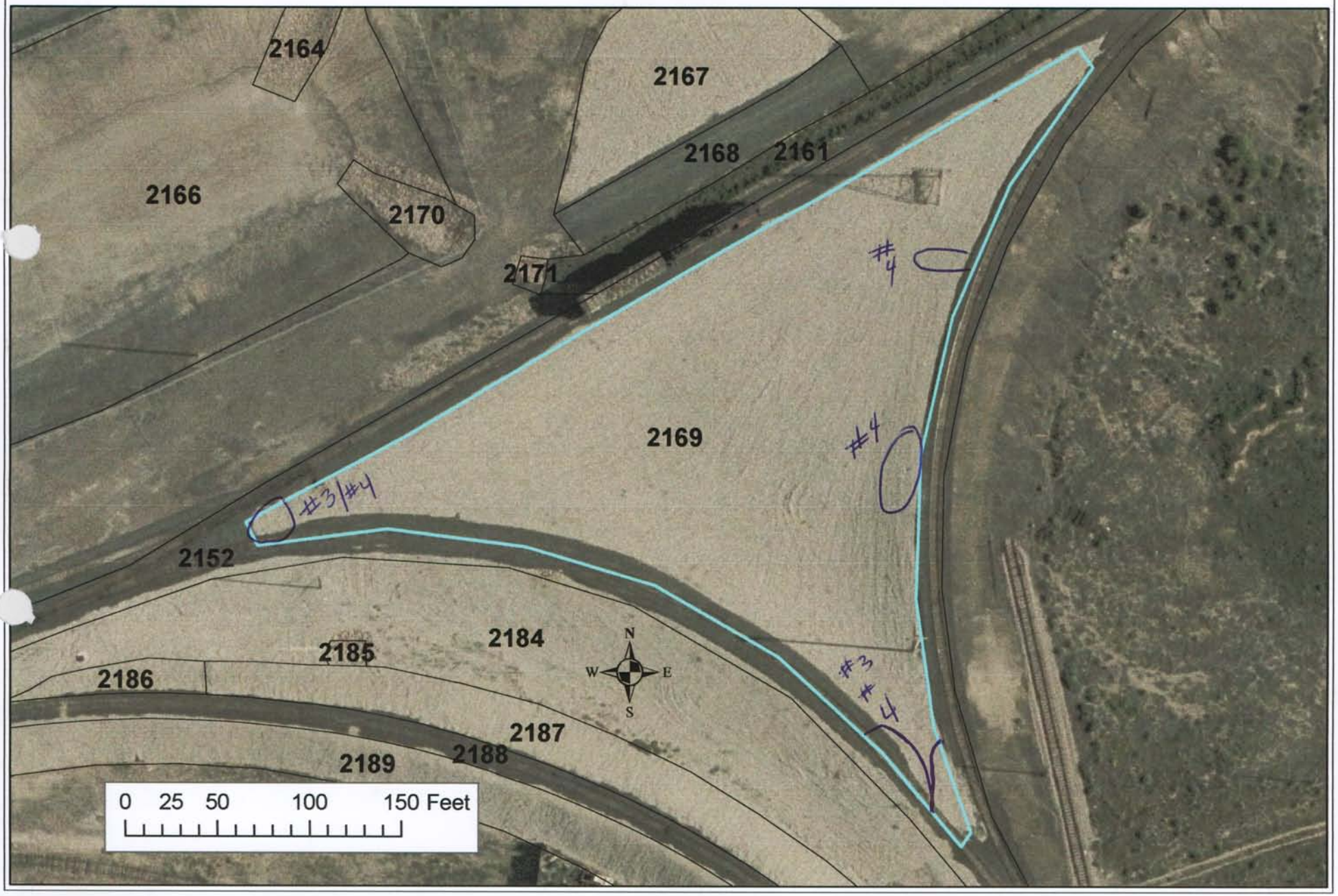
Comments. The site shows no desirable vegetation. There are 2 places with noxious weeds. There are numerous rills through site. Six gullies actively eroding are present. Exposed mine waste is found through entire site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2169



BRES FIELD FORM

Site ID:__ Site Name: 2169 Field Date: 7-16-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: —to— Aspect (circle all relevant) N S W E NW NE SW SE

Area Description: Rock covering in btwn RR Tracks

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☑ **other** exposed waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4.0
- Approximate area (in square feet) 150 1/2
- Number of areas with exposed waste 4

5. Is there evidence of: Y ____ N ____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

Rock barrier btwn RR tracks.

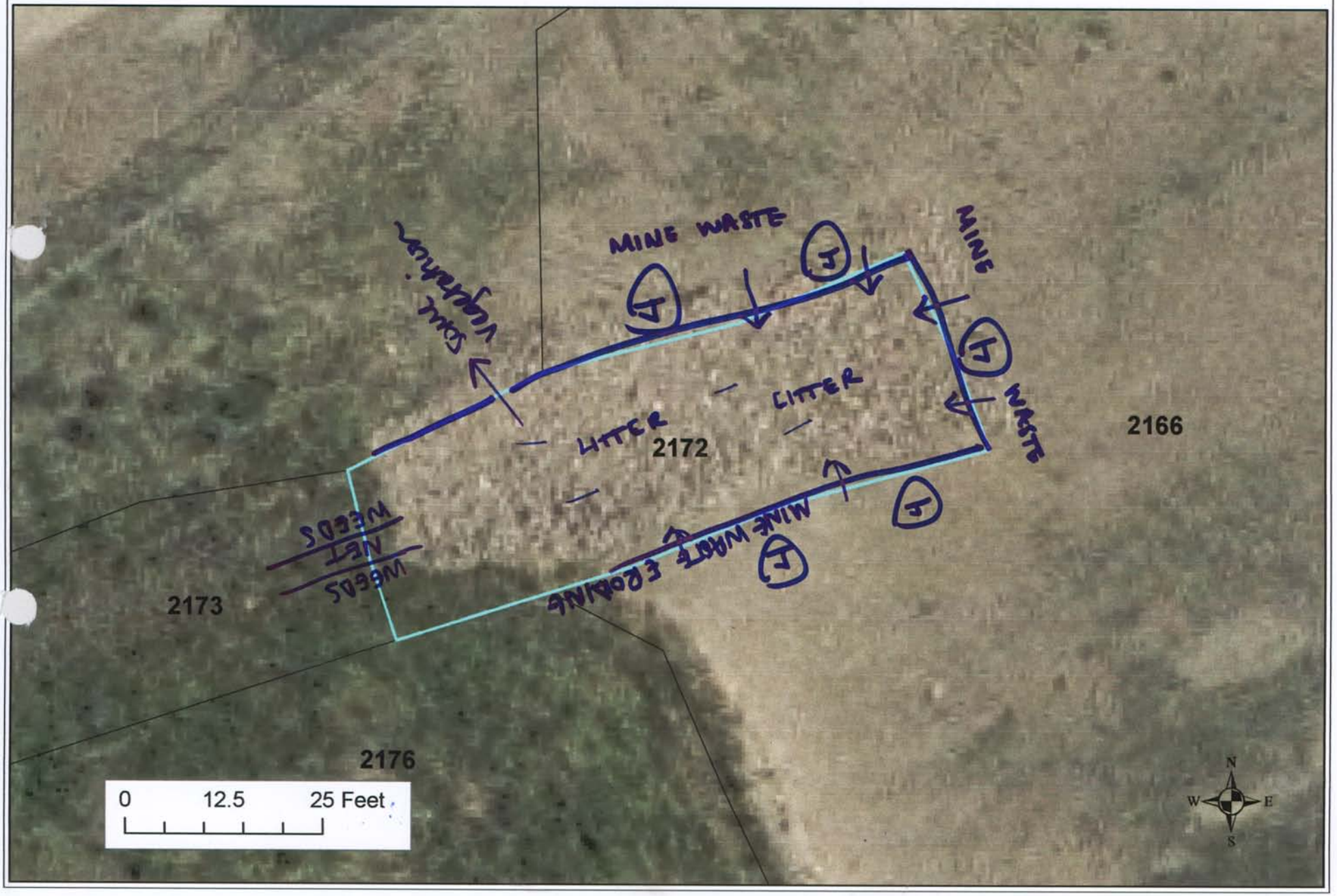
Various areas of exposed waste.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2172


MINE WASTE
MINE
WASTE
LITTER
LITTER
2172
2166
2173
2176
0
12.5
25 Feet
N
W
E
S

BRES FIELD FORM

Site ID:__ Site Name: 272 Field Date: 7/16/09

Team Members (Circle your name): Lague, McCaughey

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock Line ditch on Wedge of Mine WASTE PIT

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☑ **other** MINE WASTE

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y___ N___
Number of gullies ____

Comments. This rock line ditch is completely enclosed with mine waste eroding down from side edges. The west edge has some dalmation toadflax. Lotus is scattered throughout rocks.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2173

IRON ST
2166
2172
2166
2173
2178
2180
2176
Knapweed
Dalmatian Toadflax
Alfalfa & grass
At bottom knapweed + D. Toadflax
D. Toadflax
0 12.5 25 Feet
N
W
E
S

BRES FIELD FORM

Site ID: __ **Site Name:** 2173 **Field Date:** 7/16/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: ___ Slope: ___ to 8 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: weed barrier lined ditch

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	4					
Erosion (BLM score)						
Undesir/noxious weeds	30					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	3					
*Undesirable (weedy) species	1					
*Noxious weeds	30					
Litter	10					
Rocks > 2"	3					
Bare Ground	53					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	4					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	I					
Other grass	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	8					
Pedestalling	3					
Flow Patterns	13					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth (weed lined ditch)	0					
Gullies Frequency	0					
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	F					
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y X N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. The ditch has been lined with a weed barrier. Dalmation toadflax & knapweed are growing through the barrier. On the northeast corner of the site a small area of grasses & alfalfa are growing. On the sides of ditch dalmation toadflax & knapweed are growing. On the south site ~~ocke~~ there seems to be evidence of plant growth that has been sprayed & killed because it is a large barren area.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2174

BRES FIELD FORM Site ID:__ Site Name: 2174 + 2177 Field Date: 7/13/09

Team Members (Circle your name): Logue McCaughey

Number of Polygons: ___ Slope: ___ to 0 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock covered drainage areas

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon? Y____N____

7. Gullies (over 6" in depth):

Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. Rock lined ditch covers these two sites. They are also newly reclaimed and so we did not do an erosion or vegetation score.

Although the rock is layed down there are some signs of erosion where the rock has moved away and lining is showing through.

Other signs of drainage and the pipe is on the east side of ditch.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2176

2172
2173
2178
2180
2166
2176
Dalmation Toad Flax
0
25
50 Feet
N
W
E
S

BRES FIELD FORM

Site ID: __ **Site Name:** 217e **Field Date:** 7/16/09

Team Members (Circle your name): Logue McCaughey

Number of Polygons: 2 Slope: ___ to ___ Aspect (circle all relevant): (N) S W E NW NE SW SE

Area Description: A - Barren area B - fenced area w/ vegetation

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	2	35				
Erosion (BLM score)	48	22				
Undesir/noxious weeds	30	12				

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0	35				
*Undesirable (weedy) species	2	10				
*Noxious weeds	30	2				
Litter	15	30				
Rocks > 2"	10	3				
Bare Ground	43	20				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	2	40				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass		F				
Slender wheatgrass		F				
Yellow sweetclover						
Alfalfa		I				
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8	3				
Surface Rock Movement	8	2				
Pedestalling	3	3				
Flow Patterns	12	6				
Rills Depth	3	0				
Rills Frequency	3	0				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	11	8				
TOTAL BLM Score:	48	22				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	F	I				
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other salsify		I				
Other mustard		I				
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N ___ (check applicable items)

- ☐ lime rock barrier
- ☒ more weeds
- ☒ increased erosion
- ☐ gullies
- ☐ depositional area
- ☐ steeper slope
- ☐ less vegetation
- ☒ other exposed mine waste

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N ___

- Estimated pH 4.5
- Approximate area (in square feet) 10
- Number of areas with exposed waste 1

5. Is there evidence of: Y ___ N X

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y X N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1 polygon A
Do barren areas cover over 25% of any polygon? Y X N ___

7. Gullies (over 6" in depth):
Y ___ N X
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments. Polygon A is a barren area. It does shows evidence of once being vegetated, but there is little vegetation now. Many weeds (Jerusalem thistle, dalmation toadflax) are growing on west side of site.

Polygon B is a small area of desirable vegetation inside a fenced area of the site.

This site needs vegetation remediation. Erosion will become a problem if vegetation is not improved.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2178

IRON ST
2172
2173
2178
FENCE
WEEDS
2180
2176
0
12.5
25 Feet
N
W
E
S

BRES FIELD FORM

Site ID:__ Site Name: 2173 Field Date: 7/16/09

Team Members (Circle your name): Lague, McCaughey

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock line ditch on Wedge of site

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	F					
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y___ N___
Number of gullies _____

Comments. This rock line ditch does have some weeds growing. Mostly dalmation toadflax and spotted knapweed. Site edges do contain some erosion, but not much. There is a pile of knapweed on the SW corner outside of site but could erode inside in a short time.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2179

BRES FIELD FORM

Site ID:__ Site Name: 2179 Field Date: 7/16/08a

Team Members (Circle your name): League, McCaughey

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: concrete wall on NORTH part of site.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items

Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ____ (check applicable items)

- ☐ lime rock barrier
- ☐ more weeds
- ☒ increased erosion
- ☐ gullies
- ☐ depositional area
- ☒ steeper slope
- ☐ less vegetation
- ☐ other____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y___ N___
Number of gullies ____

Comments. This site is made up of a concrete wall on the North site edge, a building on the west edge and packed dirt and rock on the rest so we did not do a vegetation or an erosion score. Although the South site edge is beginning to erode it is not a huge issue yet. The only vegetation includes some undesirable coming through the dirt and rocks.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2180

BRES FIELD FORM

Site ID:__ Site Name: 2180 Field Date: 7/16/09

Team Members (Circle your name): Lagre, McCaughey

Number of Polygons: 1 Slope: ___to___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South side of dirt road. Fence ~~edge~~ edges of weeds

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	20					
Erosion (BLM score)	25					
Undesir/noxious weeds	20					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	20					
*Undesirable (weedy) species	10					
*Noxious weeds	15					
Litter	30					
Rocks > 2"	5					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	25					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	25					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	F					
Cheatgrass	F					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other Foxtail	F					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4.5
- Approximate area (in square feet) 12 ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments. This site is right along the fence into the railroad yard. Small edge of Asphalt along S. Edge. Some Misc Waste on SE corner. Some vegetation, Mostly Noxious weeds.
- contains a fire hydrant on N Side edge and 2 caps on NE corner

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2181

BRES FIELD FORM

Site ID: __ **Site Name:** 2181 **Field Date:** 7/13/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other silver leafed	F					
Other vasciflia						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N____

- Estimated pH 4.5
- Approximate area (in square feet) 45 s.f.
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y___ N___
Number of gullies _____

Comments. Could not give this site a Vegetation or erosion score due to the fact that it is completely rock covered. The rock is sliding down and causing some erosion issues and in some areas (Marked on map) beginning to expose the lining and even some high pH waste Material. Although there is some growth growing through the rock it only consists of Knapweed and some Silver leafed Vascilia.

There is also garbage type, rusted cans, barrels, car parts, etc. on the South site edge along the Building.

Along the west site edge the old railroad tracks) are shaving and beginning to cause land slumps.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2182 Master

BRES FIELD FORM

Site ID: #2182 Site Name: _____ Field Date: 7/10/09

Team Members (Circle your name): JTR + BC

Number of Polygons: 1 Slope: 5° to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Drain outflow head

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	10					
*Undesirable (weedy) species	5					
*Noxious weeds	50					
Litter	0					
Rocks > 2"	20					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	15					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	0					
Flow Patterns	15					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	23					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies _____

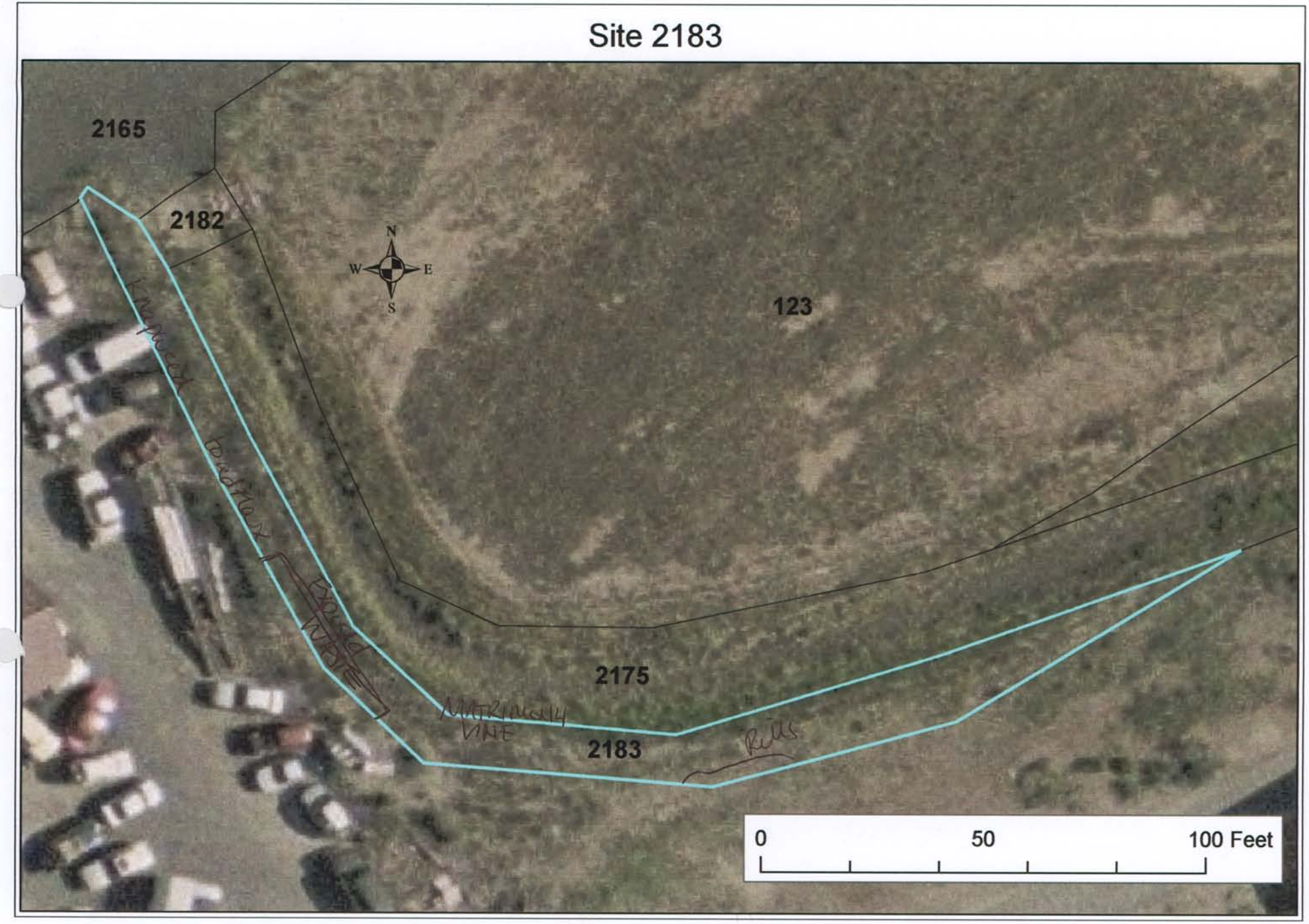
Comments.

- Knapweed is very heavy on the site and needs to be sprayed.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2183



BRES FIELD FORM Site ID:__ Site Name: 2175 / 2183 Field Date: 7/13/09

Team Members (Circle your name): Lague / McCaughey

Number of Polygons: ___ Slope: ___to___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Drainage ditch + newly reclaimed south edge

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	f					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax	D					
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☒ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4.5
- Approximate area (in square feet) 30
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y ~~X~~ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. David told us this site was seeded in 2008 & to not do a vegetation or an erosion score on it.

2183 - Knapweed, dalmation toadflax, matrimony vine present. Marked on map

Steeper slope showed some erosion.

West edge showed mine waste exposed

2175 Erosion from site 123 on north side ~~flowing~~ moving onto site.

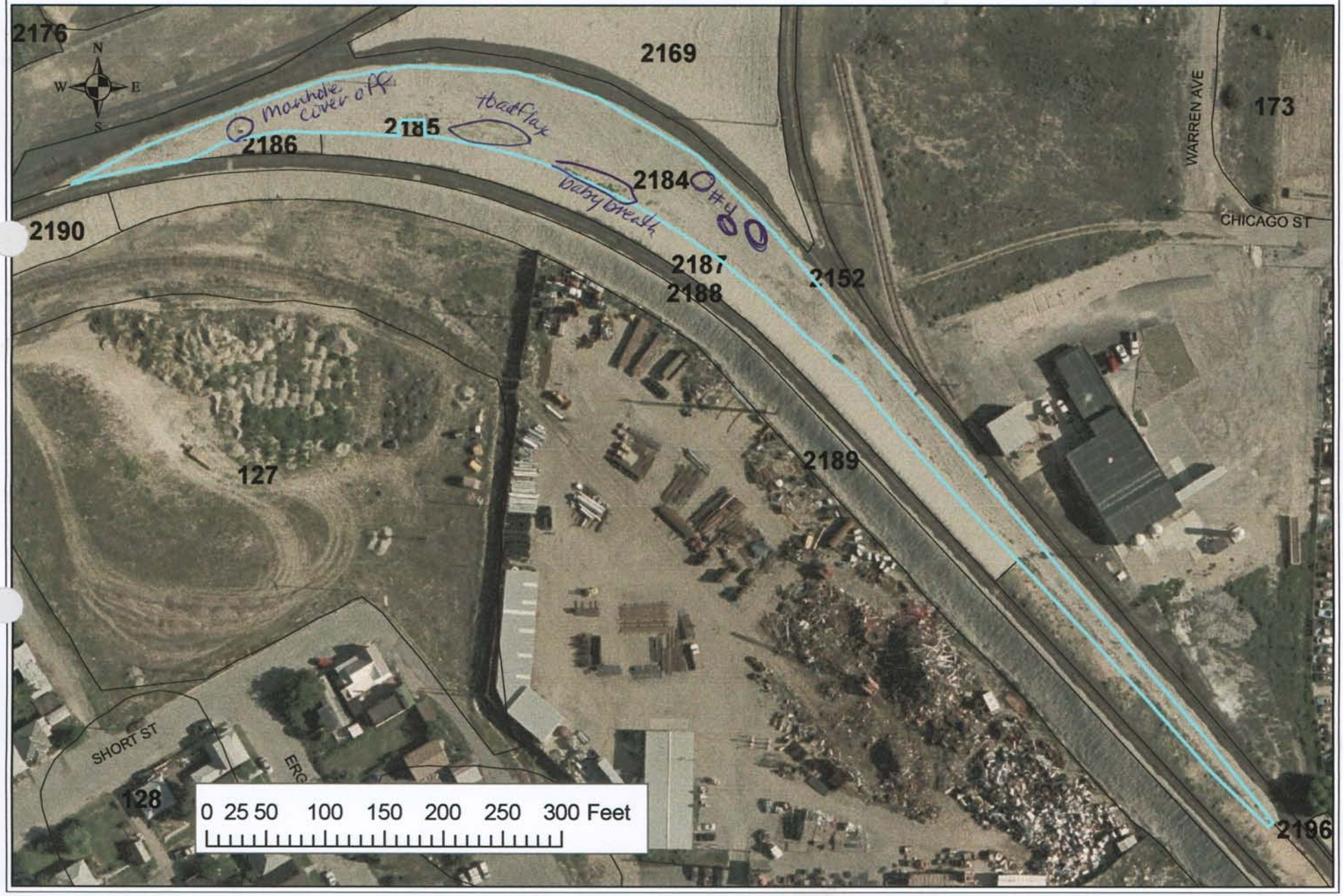
There is a drainage pipe (marked on map) that leads to ditch covered with weed barrier. Knapweed & dalmation toadflax are growing through it.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2184

Master



BRES FIELD FORM

Site ID: __ Site Name: 2184 Field Date: 7-16-09

Master

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: — to — Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock area between RR tracks.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	/					
*Undesirable (weedy) species	/					
*Noxious weeds	2					
Litter	/					
Rocks > 2"	98					
Bare Ground	/					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	I					
Cheatgrass						
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N____

- Estimated pH 4.0
- Approximate area (in square feet) 100'
- Number of areas with exposed waste 3

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Rock area between RR tracks.

3 small areas of exposed waste.

* Man hole cover is not on man hole.

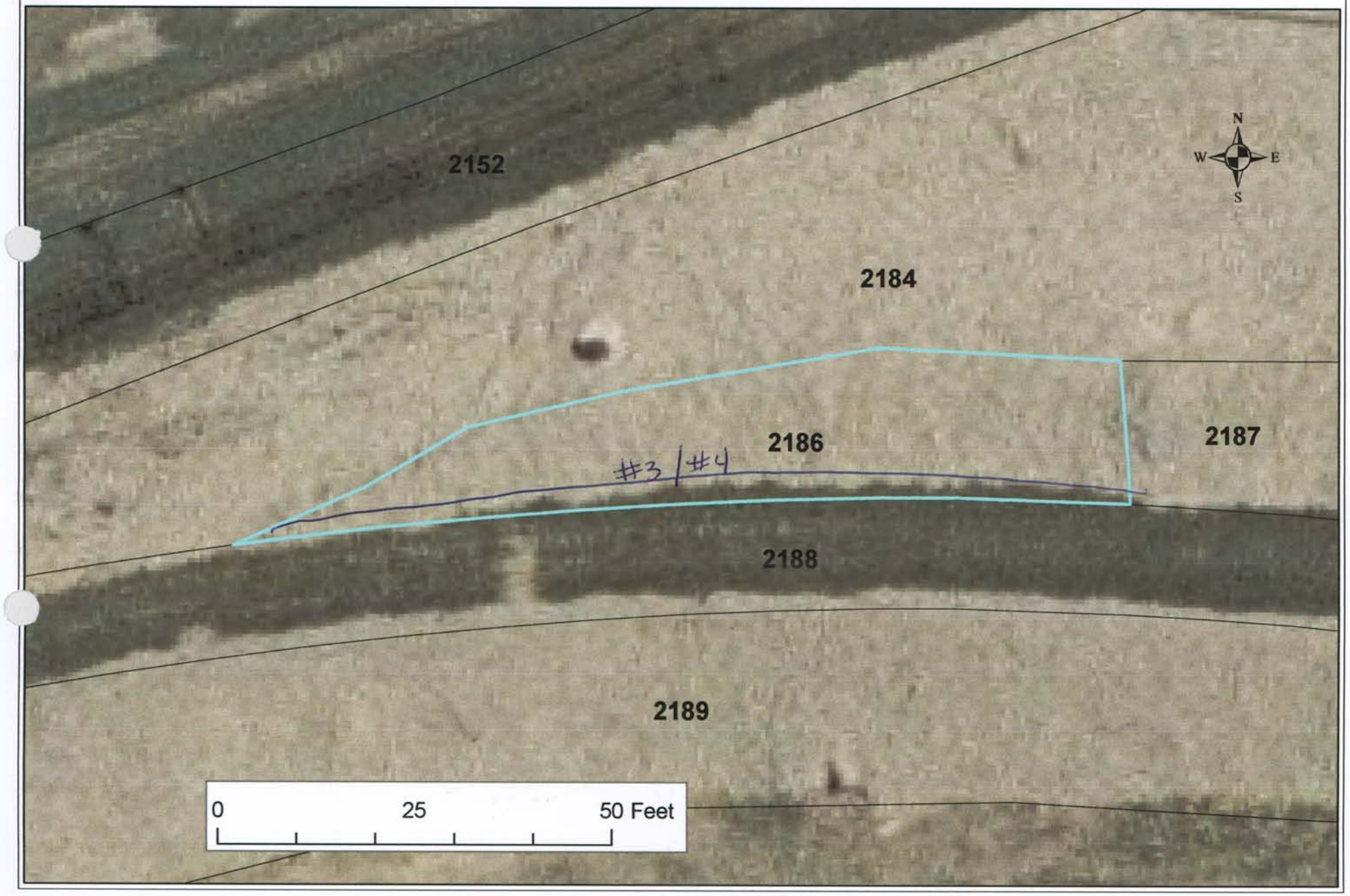
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2186



BRES FIELD FORM

Site ID: __ Site Name: 2186 Field Date: 7-16-09

Master

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock area N of RR track

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ____ (check applicable items)

- ☑ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** Exposed waste

Estimate width of affected edge (in feet) 2'

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4.0
- Approximate area (in square feet) 100'2
- Number of areas with exposed waste 1

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

Recommend this site be combined w/ 2187.

Exposed waste = 4.0pH

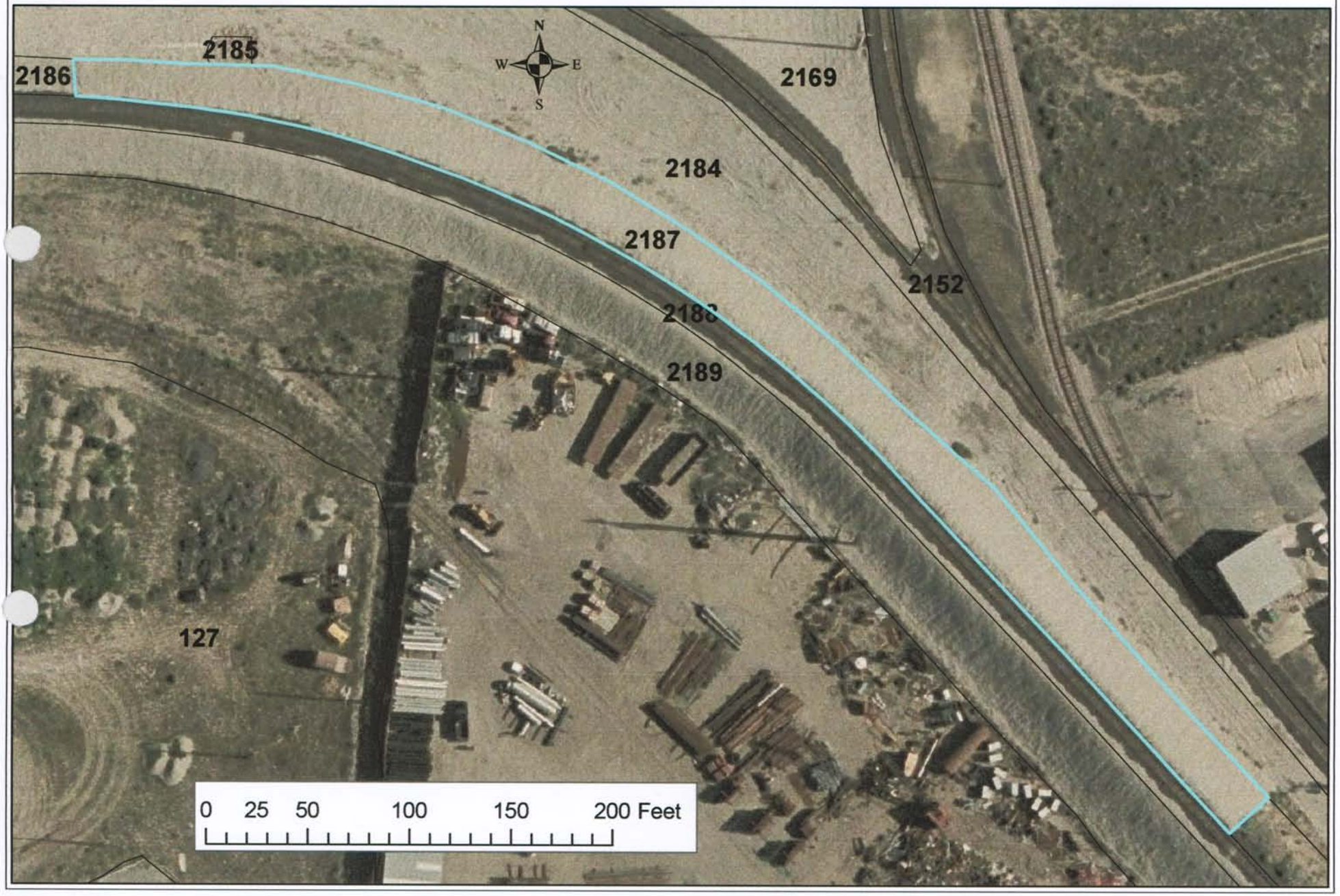
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2187



BRES FIELD FORM

Site ID: Site Name: 2187 Field Date: 7-16-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock area on N slope of RR

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	100					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items

Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

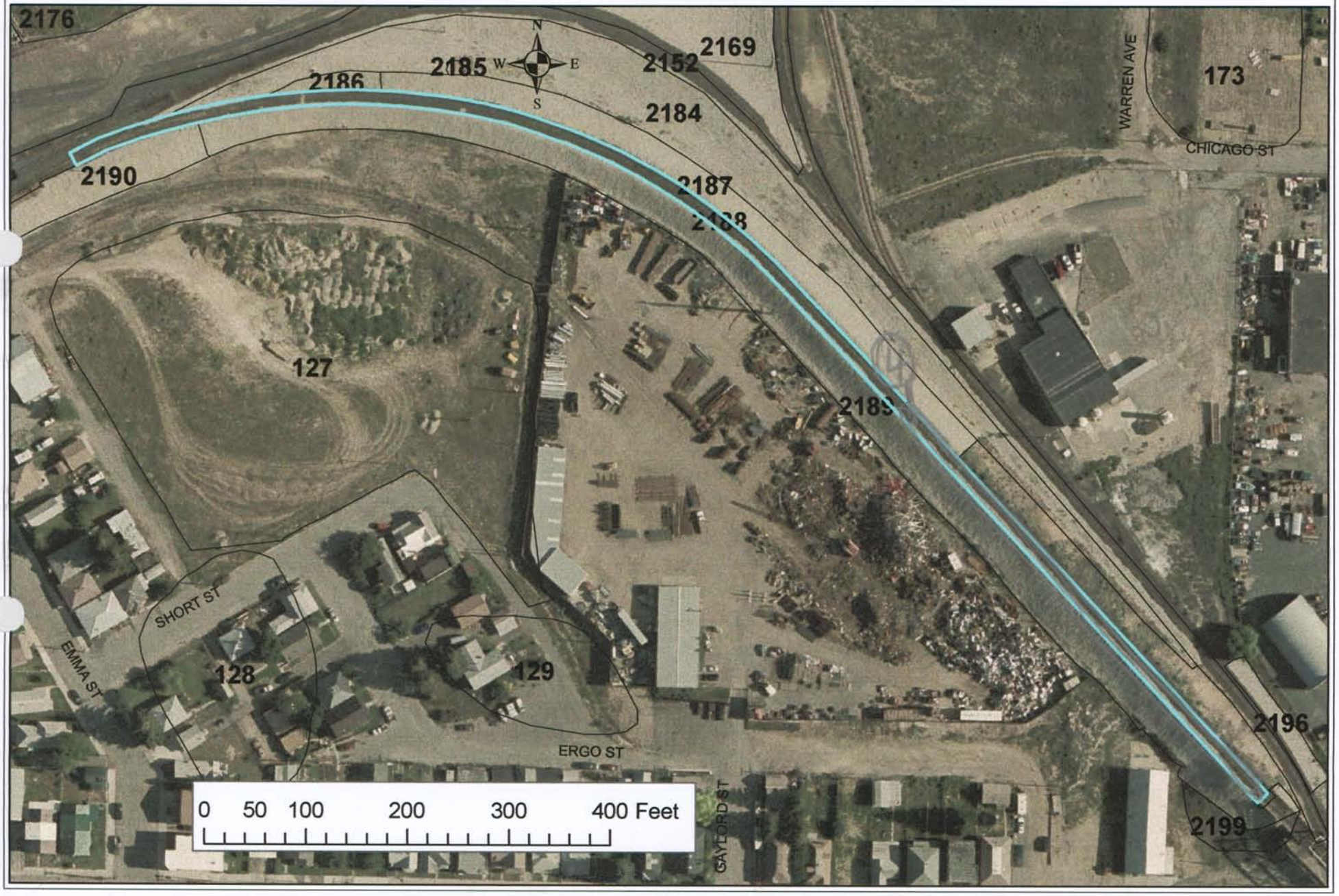
Comments.

No issues

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2188


2176
2185
2186
2169
2152
2184
2190
2187
2189
2196
2199
173
WARREN AVE
CHICAGO ST
127
128
129
SHORT ST
EMMA ST
ERGO ST
GAYLORD ST
N
S
W
E
0 50 100 200 300 400 Feet

BRES FIELD FORM

Site ID: Site Name: 2188 Field Date: 7/16/09

Master

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: — to — Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: RR track

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	✓					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N ✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N____

- Estimated pH 4.0
- Approximate area (in square feet) ____
- Number of areas with exposed waste various

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

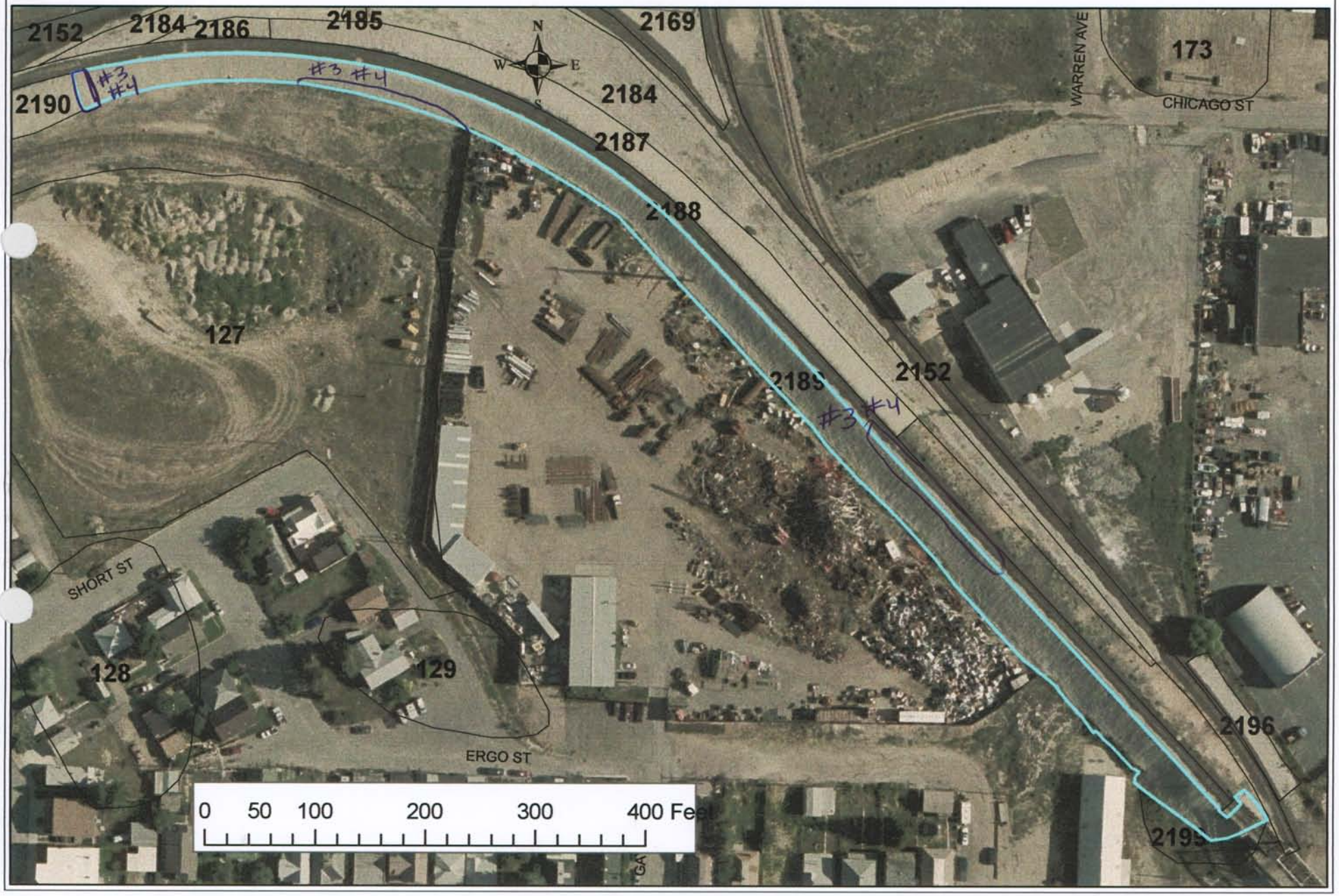
Comments.

Area btwn RR ties has exposed waste.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2189


2152
2184
2186
2185
2169
2190
#3
#4
#3 #4
N
W
E
S
2184
2187
2188
WARREN AVE
173
CHICAGO ST
127
2185
2152
#3 #4
SHORT ST
128
129
ERGO ST
2196
2195
0 50 100 200 300 400 Feet

BRES FIELD FORM

Site ID: ____ Site Name: 2189 Field Date: 7-16-09

Team Members (Circle your name): Keegan | Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Limerock next to tracks

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable	/					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	/					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☑ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☑ **less vegetation**
- ☑ **other** exposed waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4.0
- Approximate area (in square feet) 200'
- Number of areas with exposed waste 3

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

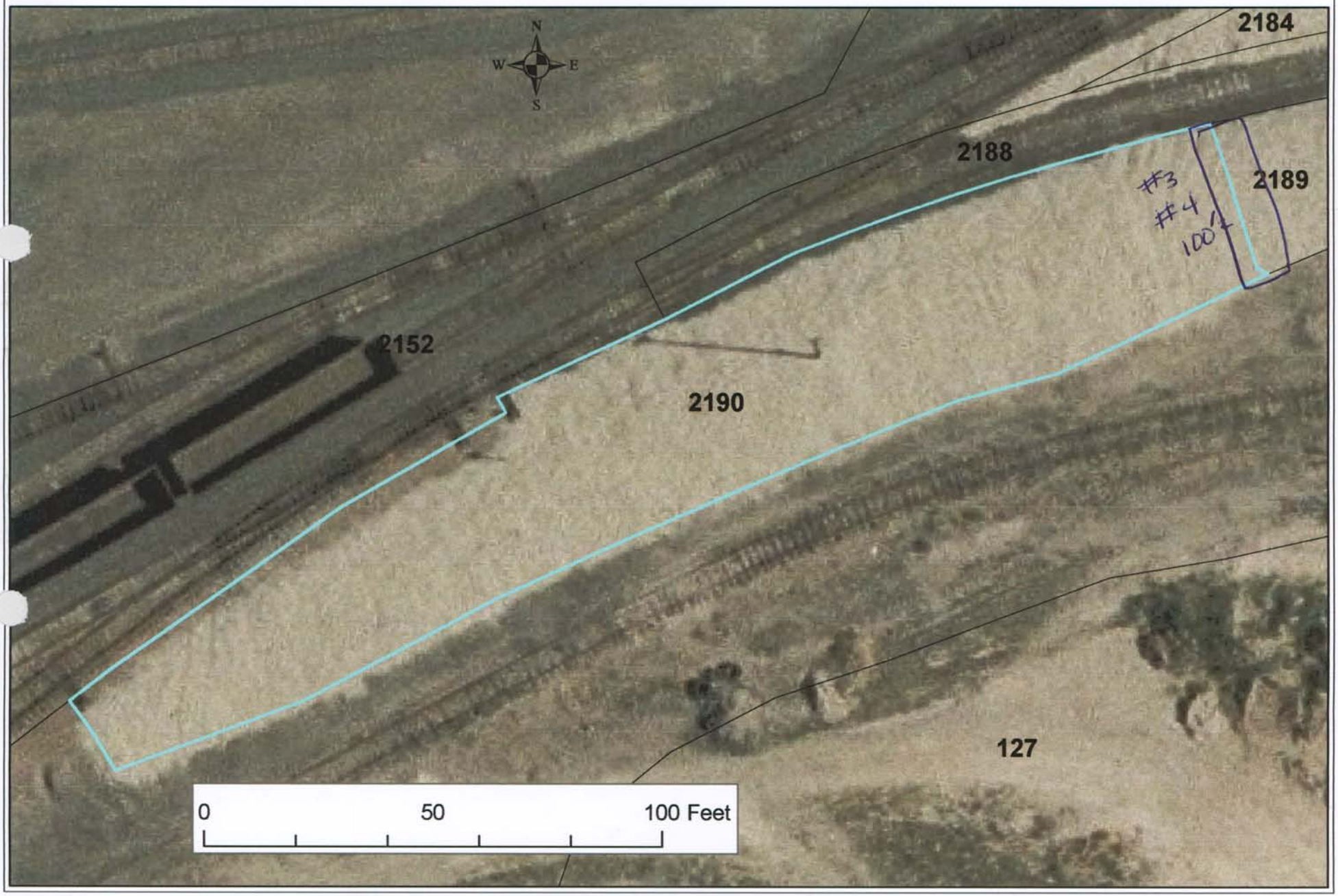
limerock area
exposed waste

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2190



BRES FIELD FORM

Site ID: __ Site Name: 2190 Field Date: 7-16-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: __ to __ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: S. edge of RR track

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ___ (check applicable items)

- ☐ lime rock barrier
- ☐ more weeds
- ☐ increased erosion
- ☐ gullies
- ☐ depositional area
- ☐ steeper slope
- ☐ less vegetation
- ☑ other exposed waste

Estimate width of affected edge (in feet) 2'

4. Exposed Waste Material? Y ✓ N ___

- Estimated pH 4.0
- Approximate area (in square feet) 100'2
- Number of areas with exposed waste 1

5. Is there evidence of: Y ___ N ✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ___ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N ✓
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

Recommend 2190 be lumped with 2189

Site edge | exposed waste

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2192

BRES FIELD FORM

Site ID: __ Site Name: 2192 Field Date: 7-16-09

Team Members (Circle your name): Keegan | Jodi

Number of Polygons: 1 Slope: — to — Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Rock area between tracks.

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"	100					
Bare Ground						
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	✓					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	/					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N____

- Estimated pH 4.0
- Approximate area (in square feet) 10
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon? Y____ N____

7. Gullies (over 6" in depth):

Y____ N ✓

Are any gullies actively eroding? Y____ N____

Number of gullies ____

Comments.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 121NW Master

BRES FIELD FORM

Site ID: #121NW Site Name: _____ Field Date: 7/8/09

Team Members (Circle your name): JTR BC

Number of Polygons: 2 Slope: A - 5° to B - 45° Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Mine Dump reclaimed as parking lot

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5	35				
*Undesirable (weedy) species	5	10				
*Noxious weeds	3	2				
Litter	5	35				
Rocks > 2"	2	3				
Bare Ground	80	15				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	10	40				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I	I				
Crested wheatgrass	I	F				
Slender wheatgrass	I	F				
Yellow sweetclover	I	I				
Alfalfa	I	I				
Other: Red Clover	I	I				
Other: Blue Grass	I	I				
Other: Allysum		I				
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3	8				
Surface Rock Movement	2	5				
Pedestalling	0	11				
Flow Patterns	0	3				
Rills Depth	7	0				
Rills Frequency	2	0				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	3	3				
TOTAL BLM Score:	17	30				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	I					
Cheatgrass	I	I				
Baby's breath	I	I				
Kochia	F	F				
Thistle						
Leafy Spurge						
Other: Mustards	I	I				
Other: Foxtail	I	I				
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** ____

Estimate width of affected edge (in feet) 10

4. Exposed Waste Material? Y ____ N ✓

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ____

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1

Do barren areas cover over 25% of any polygon? Y ✓ N ____ All of Poly A

7. Gullies (over 6" in depth):

Y ____ N ✓

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

Comments.

- Large Knapweed infestation on slope E of site.

- On poly B
  - Pedestaling scores high, but pedestals are quite small because of bunch grasses seeded.
  - Was sprayed this year.

- Poly A
  - Has not been sprayed
  - SE end is very messy & needs attention; may contain oil spills

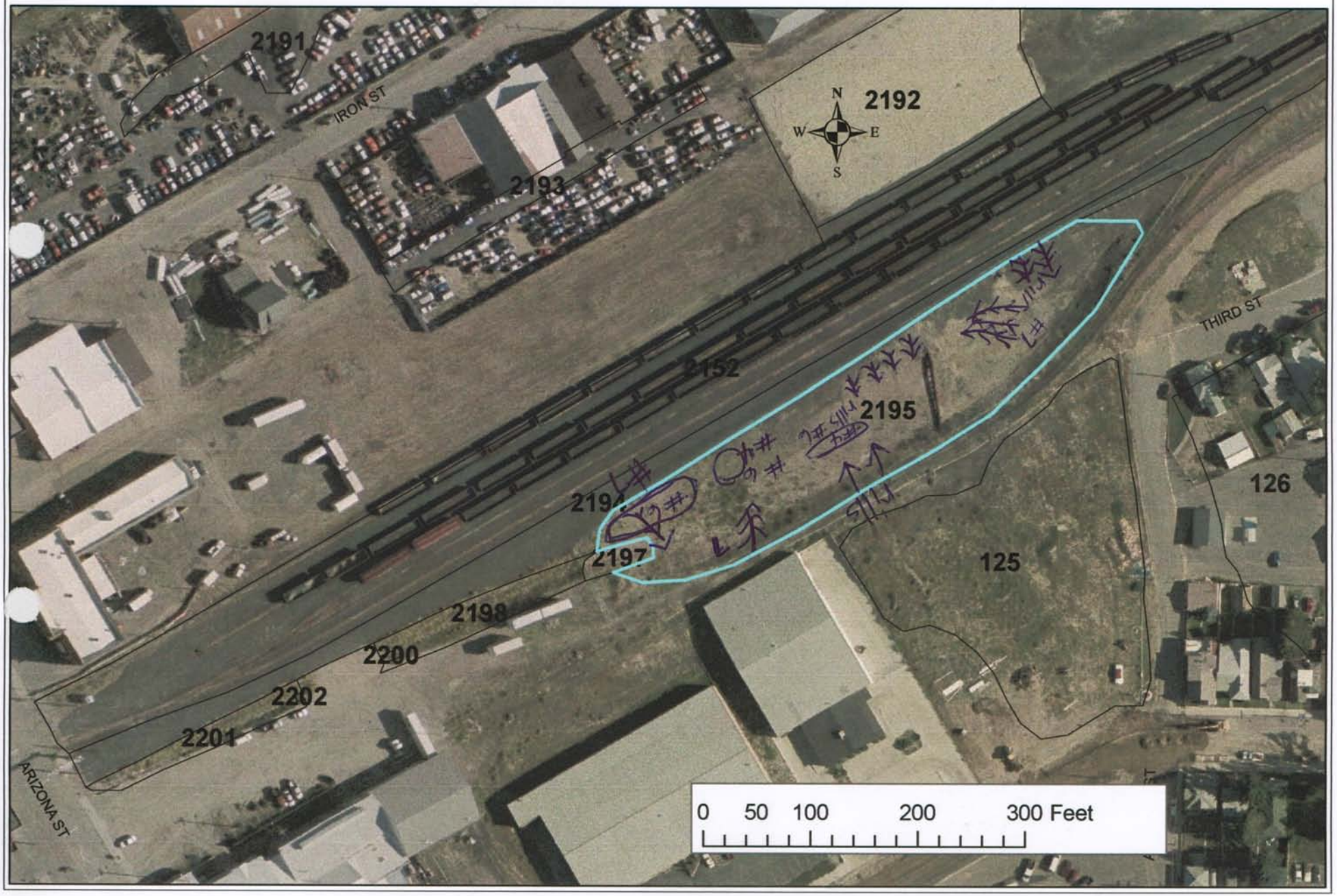
- Entire polygon is a gravel parking lot

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2195



BRES FIELD FORM

Site ID: __ Site Name: 2195 Field Date: 7-16-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 2 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: 5 of tracks - inside fence

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	1					
*Undesirable (weedy) species	30					
*Noxious weeds	30					
Litter	4					
Rocks > 2"	/					
Bare Ground	35					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	6					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	I					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	14					
Pedestalling	0					
Flow Patterns	3					
Rills Depth	7					
Rills Frequency	6					
Gullies Depth	7					
Gullies Frequency	5					
Soil Movement	11					
TOTAL BLM Score:	59					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	F					
Cheatgrass	F					
Baby's breath	F					
Kochia						
Thistle						
Leafy Spurge						
Other mustard	F					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ____ (check applicable items)

- ☒ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☒ **steeper slope**
- ☒ **increased erosion**
- ☒ **less vegetation**
- ☒ **gullies**
- ☐ **other** ____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4.0
- Approximate area (in square feet) [redacted] 1000's ft²
- Number of areas with exposed waste Variable

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas Numerous
Do barren areas cover over 25% of any polygon?
Y ✓ N ____

7. Gullies (over 6" in depth):
Y ✓ N ____
Are any gullies actively eroding? Y ✓ N ____
Number of gullies ____

Comments.

site does not appear to have ever been reclaimed.

5 of RR in fenced area

Gullies, rills, exposed waste

NXS weeds

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2203

Master

Master

BRES FIELD FORM Site ID:__ Site Name: 2203 Field Date: 7-14-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: —to— Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: RR track

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	✓					
*Undesirable (weedy) species	✓					
*Noxious weeds	✓					
Litter	✓					
Rocks > 2"	100					
Bare Ground	✓					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N✓
Number of gullies ____

Comments.

RR track with limerock barrier.

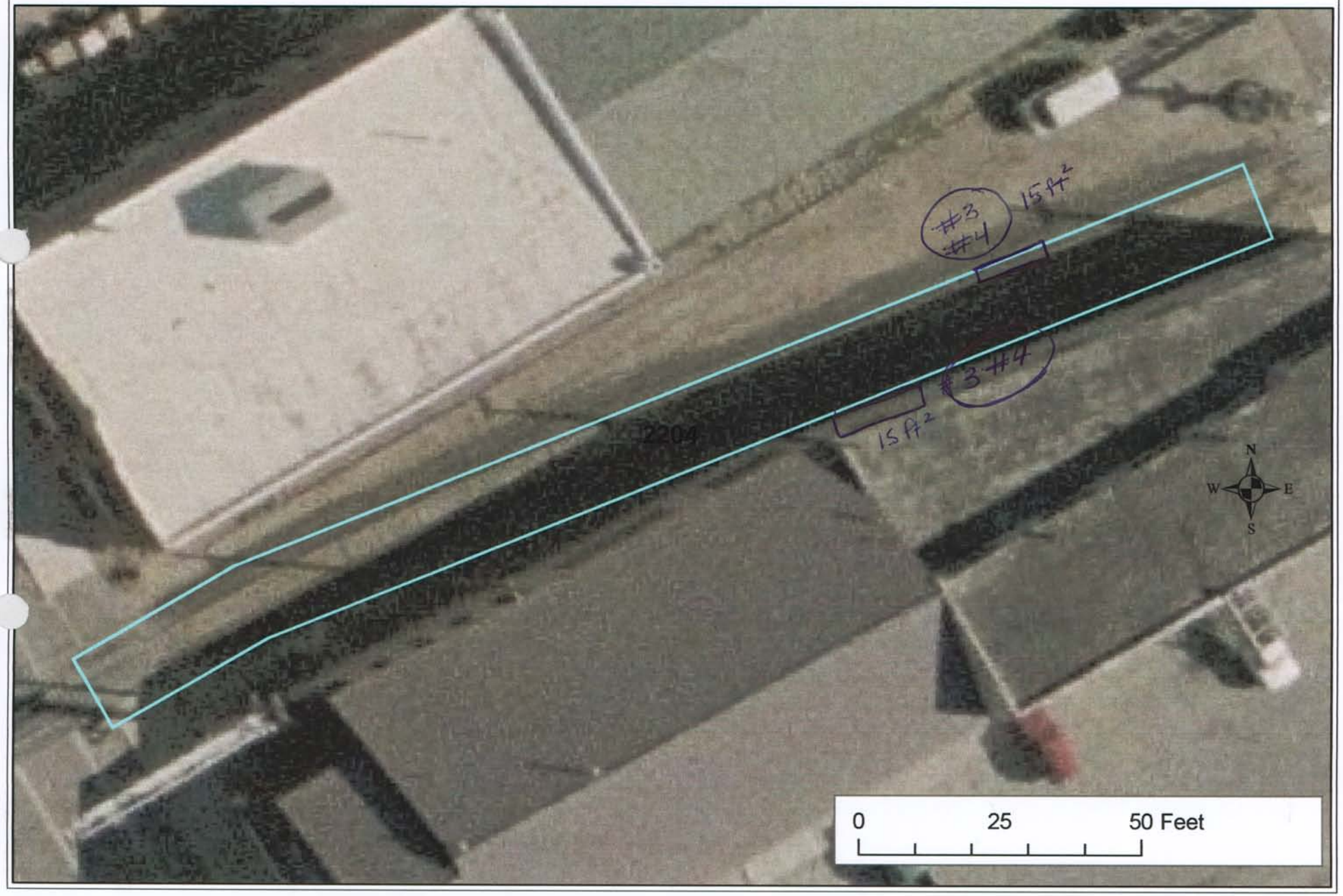
No issues

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Masky

Site 2204



Master

BRES FIELD FORM

Site ID: __ **Site Name:** 2204 **Field Date:** 7-13-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: — to — Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: RR track in Alley

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	0					
*Noxious weeds	0					
Litter	0					
Rocks > 2"	95					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☑ **other** exposed waste

Estimate width of affected edge (in feet) 30 sq ft

4. Exposed Waste Material? Y ✓ N ___

- Estimated pH 4.5
- Approximate area (in square feet) 30 ft²
- Number of areas with exposed waste 2

5. Is there evidence of: Y ___ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ___ N ✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon?
Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N ✓
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

Site is RR track in alley.

No vegetation
No erosion

Exposed waste in 2 areas 4.5 ph
30 ft 2

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

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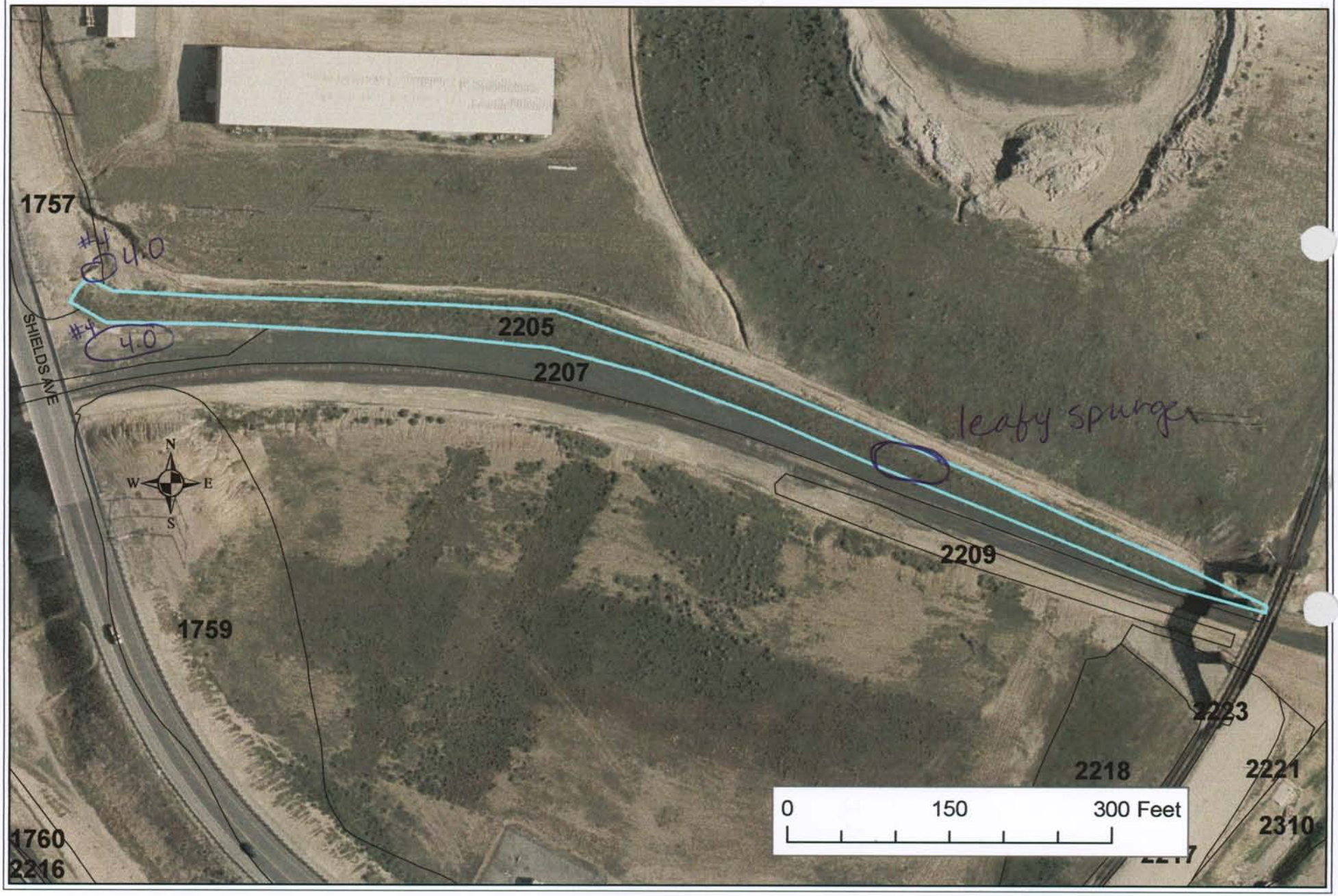
Site 2205



BRES FIELD FORM

Site ID:__ Site Name: 2205 Field Date: 7/13/09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 1 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: slope above RR track

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	20					
*Noxious weeds	15					
Litter	20					
Rocks > 2"	0					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	F					
Other rubber rabbit	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	3					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	27					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	I					
Cheatgrass						
Baby's breath	F					
Kochia	F					
Thistle ? purple	I					
Leafy Spurge *	I					
Other mustard	I					
Other salsify	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y✓ N____

- Estimated pH 4.0
- Approximate area (in square feet) 100 ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

* leafy spurge *
- baby breath
- Knapweed

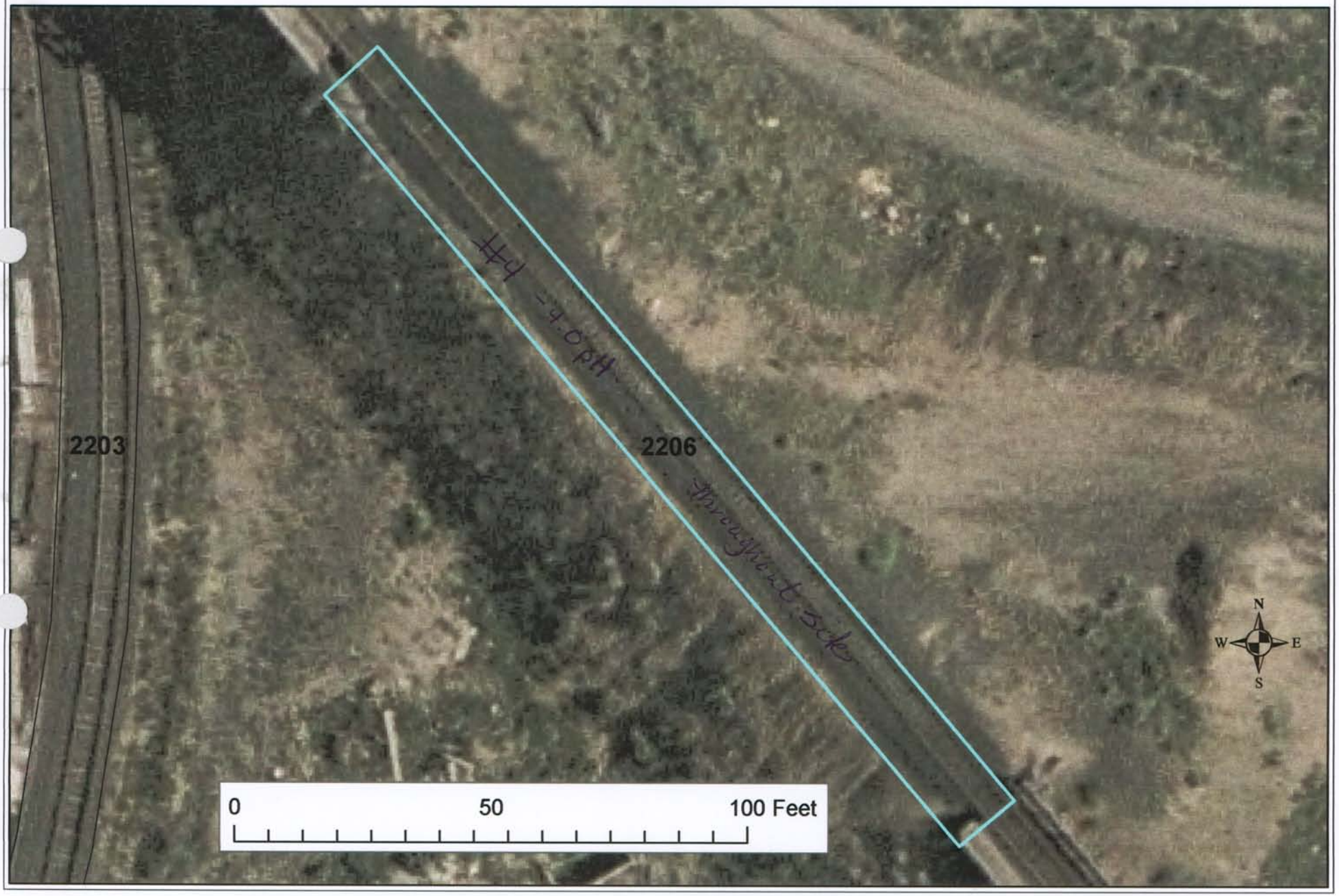
* Hobo camp under bridge
* exposed waste borders boundary

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2206



Master

BRES FIELD FORM Site ID:__ Site Name: 2206 Field Date: 7-14-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: —to— Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: RR track btwn trestle

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	✓					
*Undesirable (weedy) species	✓					
*Noxious weeds	✓					
Litter	✓					
Rocks > 2"	70					
Bare Ground	30					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y✓ N____

- Estimated pH 4.0
- Approximate area (in square feet) 100'2
- Number of areas with exposed waste all through site

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

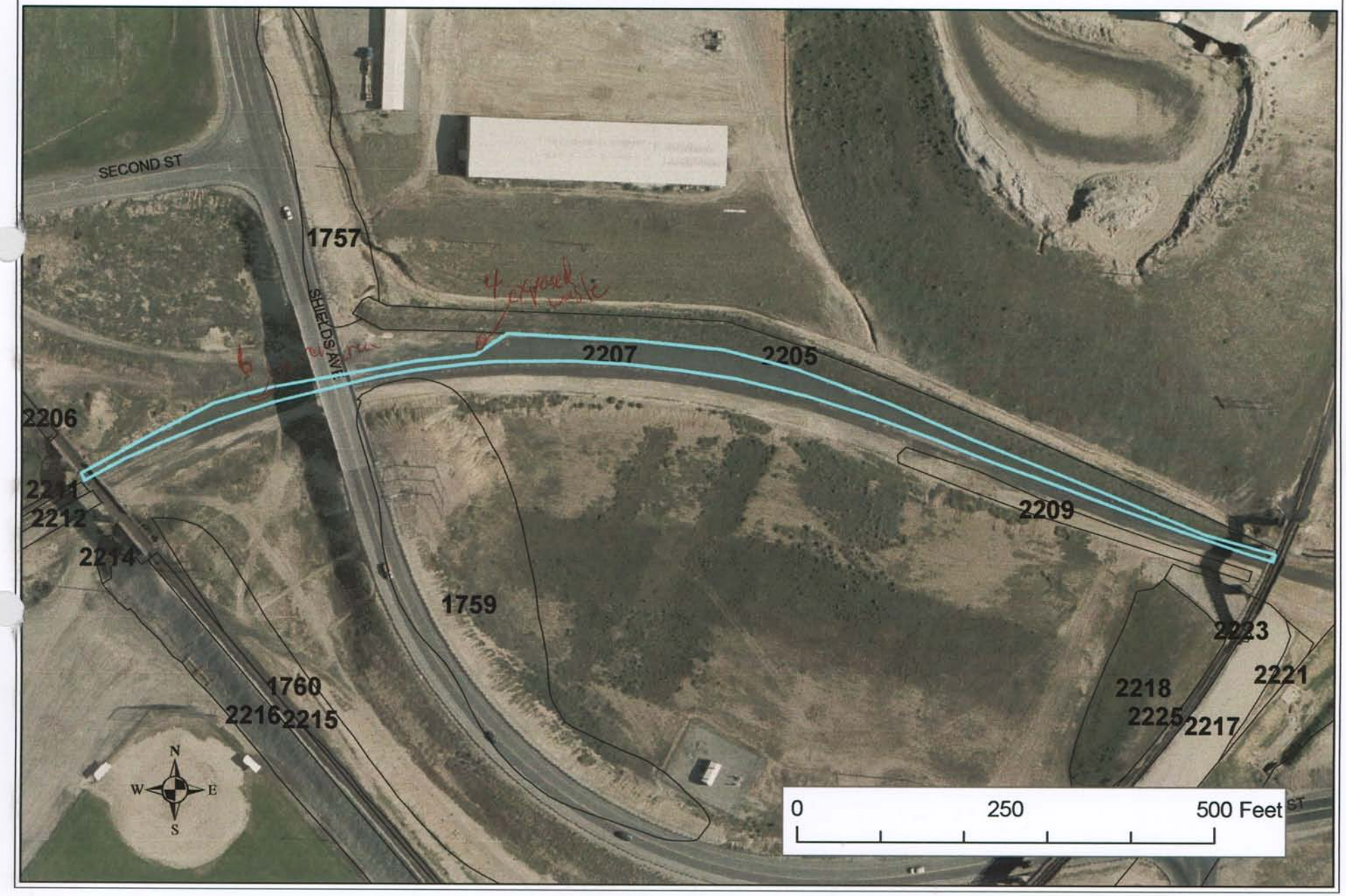
Comments.

Area covered in limerock, however, it has many areas of exposed waste measuring @ 4.0 pH. Needs attention!

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2207


SECOND ST
SHIELDS AVE
1757
2207
2205
2206
2211
2212
2214
2209
1759
1760
22162215
2223
2221
2218
2225
2217
N
W
E
S
0
250
500 Feet

BRES FIELD FORM

Site ID: __ **Site Name:** 2207 **Field Date:** 7/13/04

Team Members (Circle your name): Keegan Jodie

Number of Polygons: 1 Slope: 0 to 1 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Railroad side.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	0					
*Noxious weeds	1					
Litter	5					
Rocks > 2"	35					
Bare Ground	14					
TOTAL (above 6 items must total 100%)	100%					
ADJUSTED LIVE % = Live + 5%Undesirable	0%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ✓ N____

- Estimated pH 4.5
- Approximate area (in square feet) 1810
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y____ N ✓

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

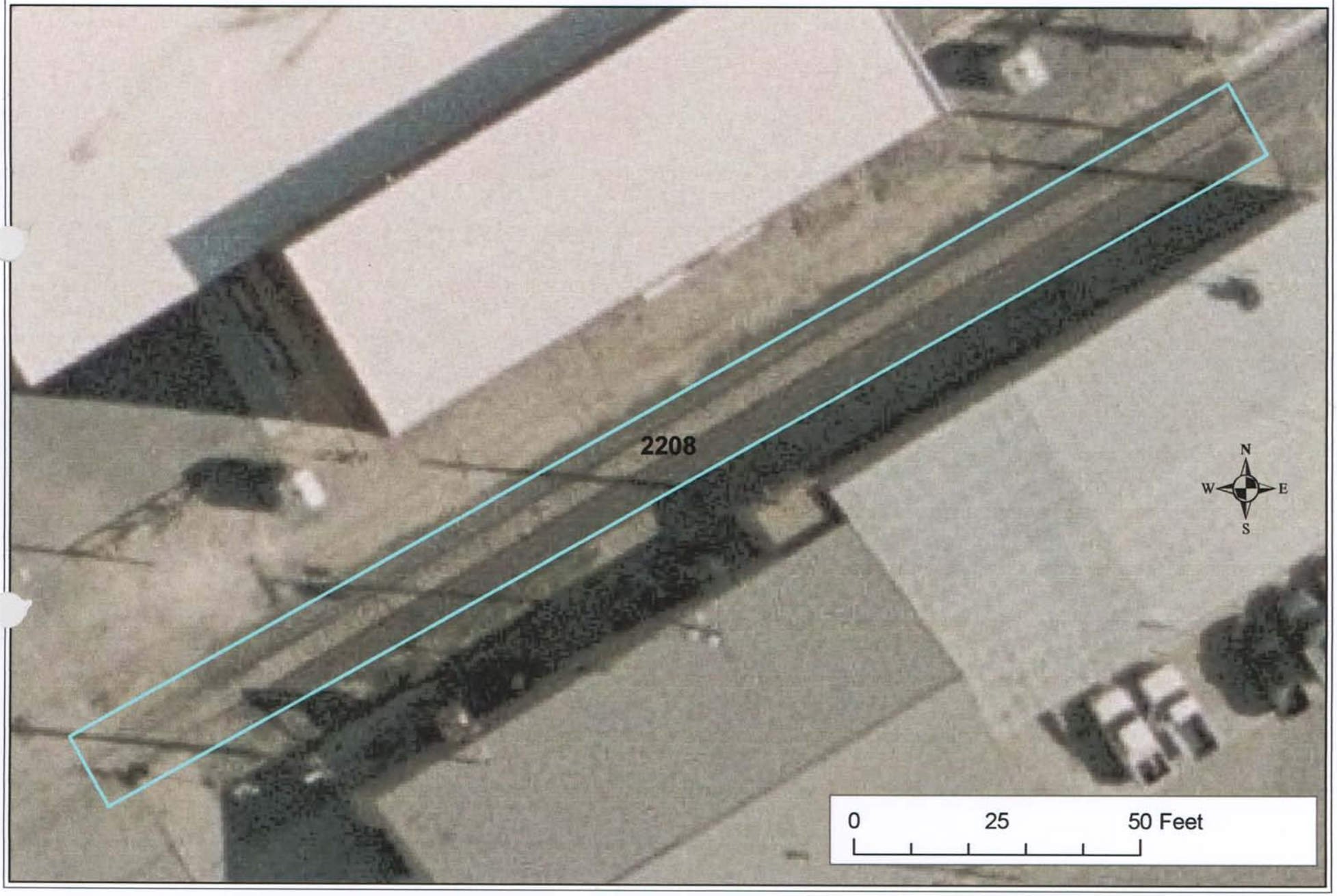
Comments. This is heavily covered with rock to cover waste. There is one place where the rock has been worn away to create the barren area.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Masten

Site 2208



Master

BRES FIELD FORM

Site ID:__ **Site Name:** 2208 **Field Date:** 7-13-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: —to— Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: RR track in alley

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	0					
*Noxious weeds	0					
Litter	0					
Rocks > 2"	95					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100%					
ADJUSTED LIVE % = Live + 5%Undesirable	0%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N✓
Number of gullies ____

Comments.

Site is RR track - 1 block - covered w/ limestone barrier.

* No vegetation
* No erosion

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

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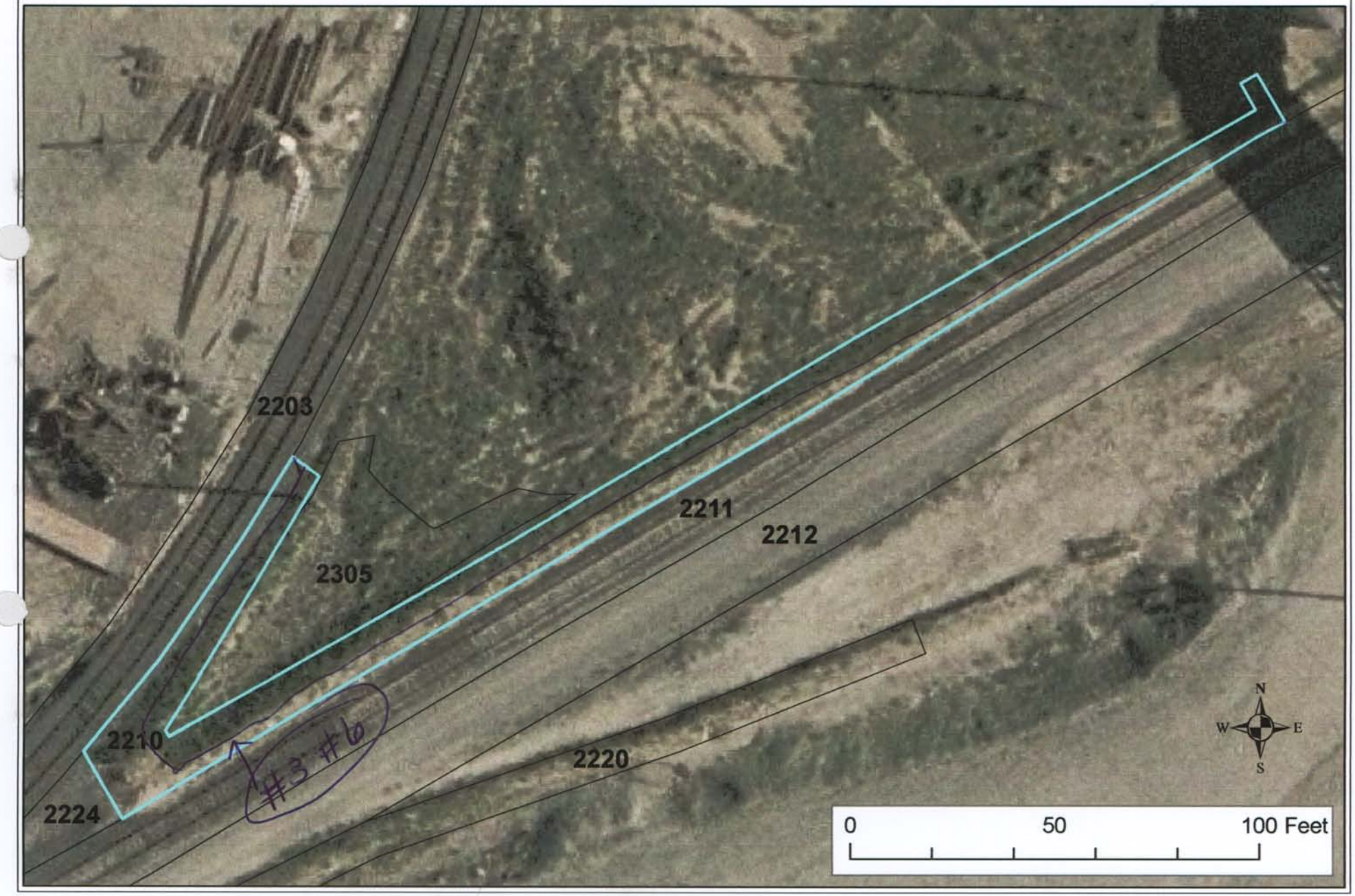
Site 2210



BRES FIELD FORM

Site ID: __ Site Name: 2210 Field Date: 7-14-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 1 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: hump btwn RR on S and site # 2305 to N.

Master

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	5					
*Noxious weeds	10					
Litter	25					
Rocks > 2"	5					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	D					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	8					
Pedestalling	0					
Flow Patterns	3					
Rills Depth	2					
Rills Frequency	3					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	25					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath	I					
Kochia	I					
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☑ **steeper slope**
- ☐ **increased erosion**
- ☑ **less vegetation**
- ☐ **gullies**
- ☑ **other** barren

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N ✓

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1

Do barren areas cover over 25% of any polygon? Y ✓ N ____

7. Gullies (over 6" in depth):

Y ____ N ✓

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

Comments.

We did not include site edge/barren area in our adjusted live %.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2211 - 2224

BRES FIELD FORM

Site ID: __ Site Name: 2211 / 2224 Field Date: 7-14-09

Master

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: ~ to ~ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: RR tracks

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	~					
*Undesirable (weedy) species	~					
*Noxious weeds	~					
Litter	~					
Rocks > 2"	100					
Bare Ground	~					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

We recommend combining site #'s 2211 and 2224 due to proximity and identical ground cover. (lime rock barrier)

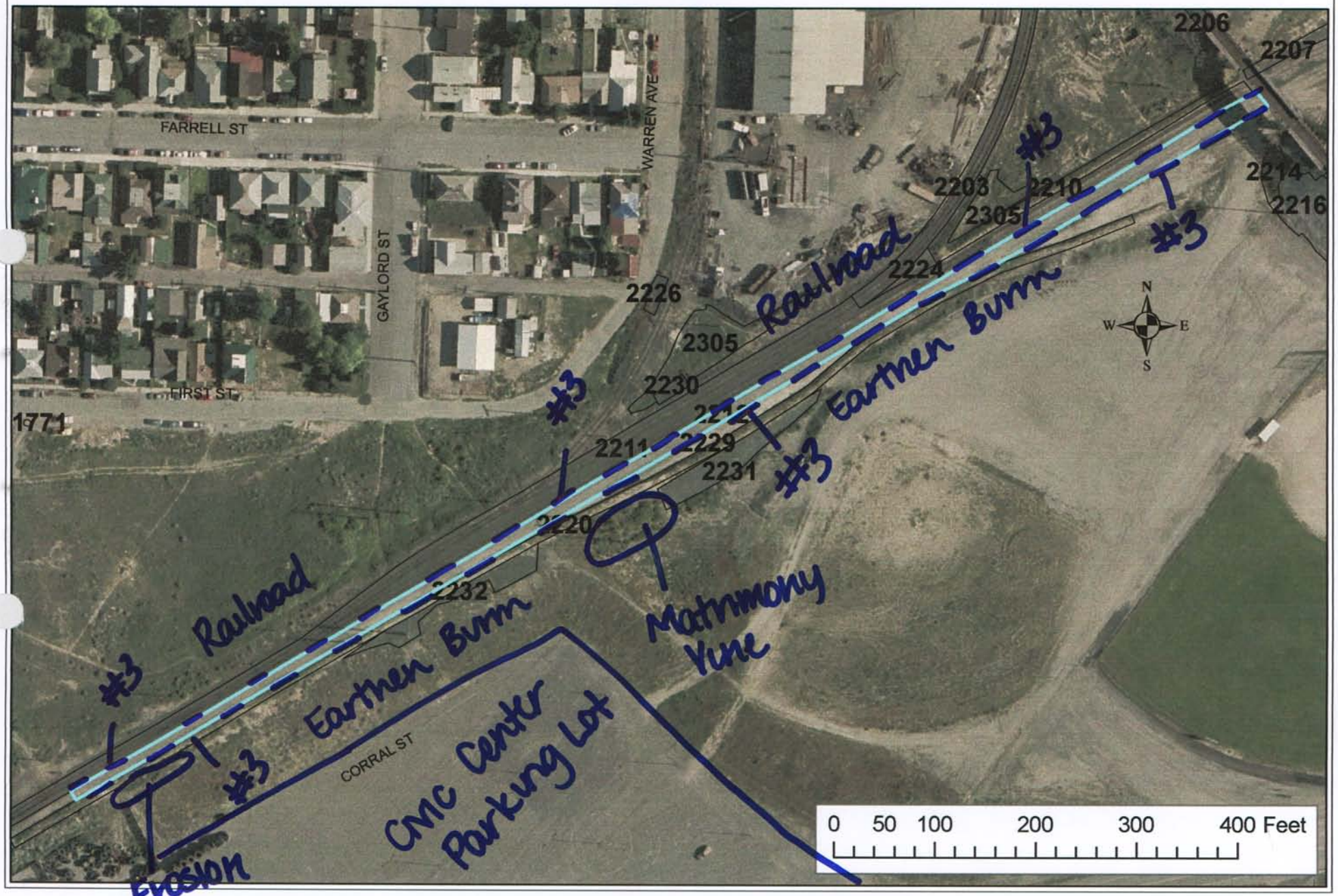
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER

Randi Phelps + Jennifer Nardullo

Site 2212



BRES FIELD FORM

Site ID: 2212 Site Name: main Field Date: 7/9/09

Team Members (Circle your name): Randi Phelps & Jennifer Nardiello

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Along the railroad

Polygon Evaluation *** Admin Use Only **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☒ **other** railroad tracks, Earthen Burm

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments. This whole site is gravel/limerock/dirt along the railroad.

~~The~~ Off the site a little there is erosion that could be possible mine waste and going down onto the Civic Center parking lot.

* high traffic gravel area to be maintained.

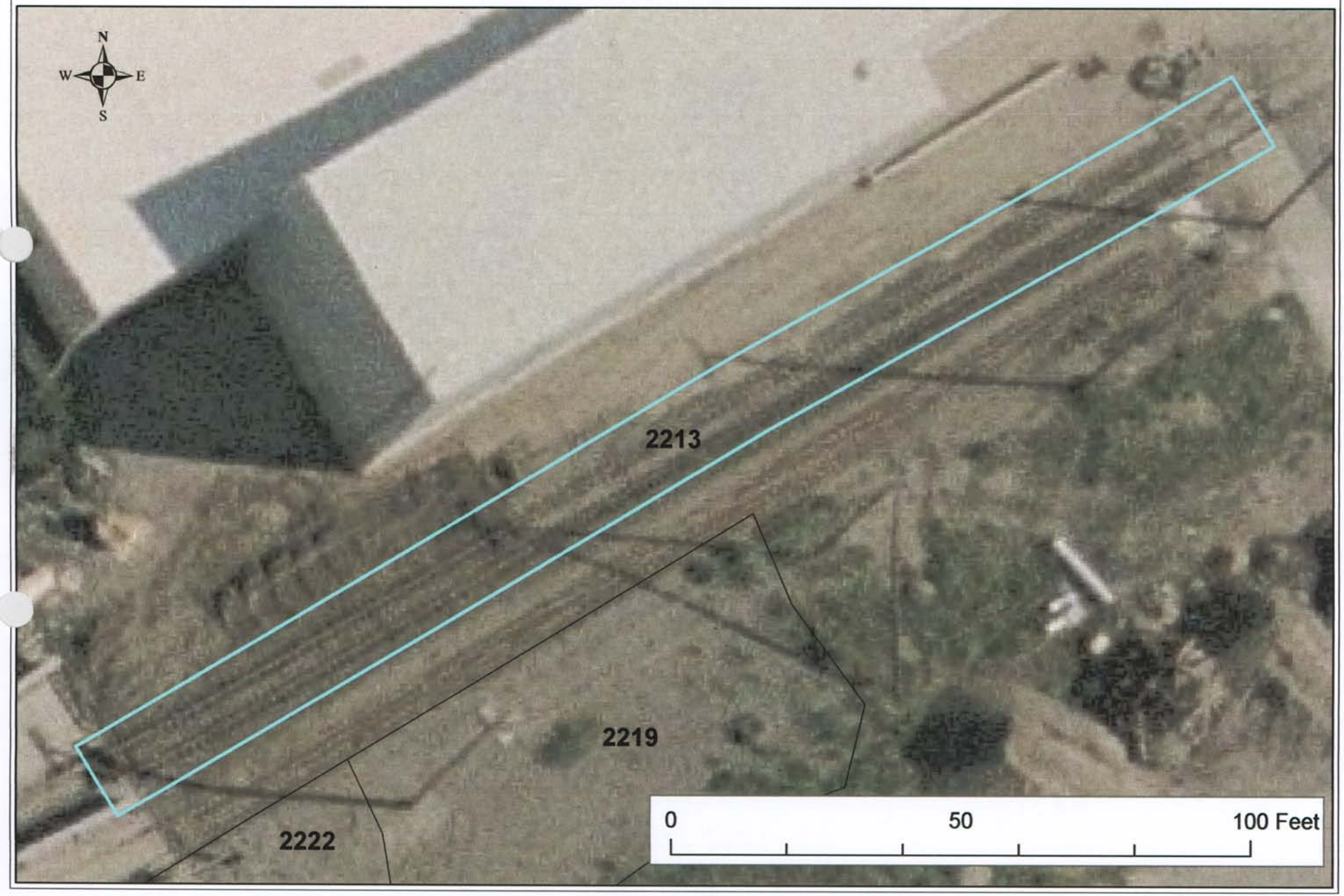
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master — railroad track

Site 2213



Master

BRES FIELD FORM

Site ID: __ **Site Name:** 2213 **Field Date:** 7/14/09

Team Members (Circle your name): Jeanne Lawson Eric Lawson Beverly Plumb

Number of Polygons: 1 Slope: Flat to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Railroad directly behind new BCW Warehouse

See Notes

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

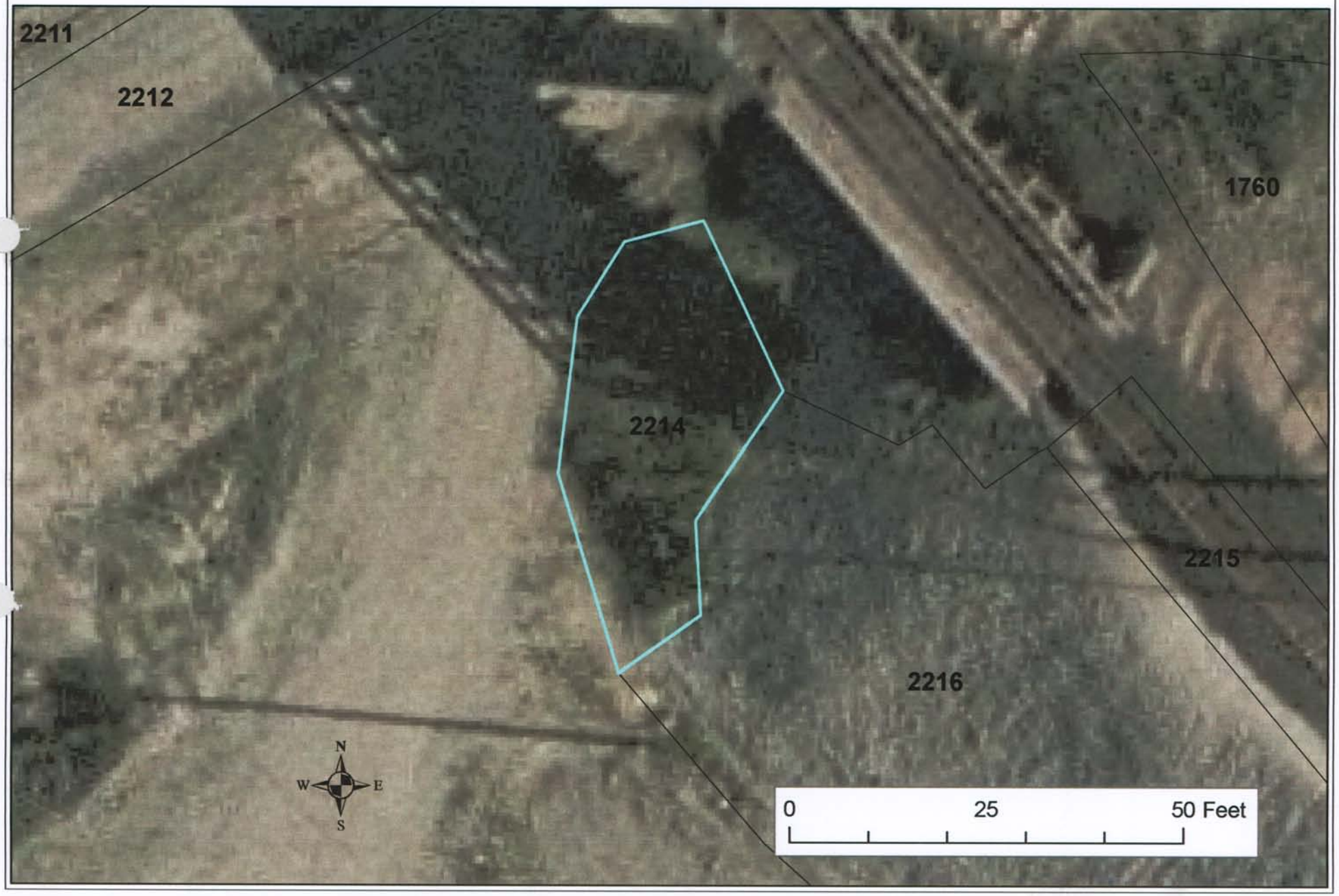
* Railroad bed
* Weeds on edge
* Yellow clover on edge

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

master

Site 2214



Master 2214

BRES FIELD FORM Site ID:__ Site Name: _____ Field Date: 7/9/09

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Plumb

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Directly west at first station of railroad bridge - NE side of ball field across from county shop

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	5					
*Noxious weeds	0					
Litter	40					
Rocks > 2"	15					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other grass	D					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	40					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☒ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X
- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N X
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X
- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

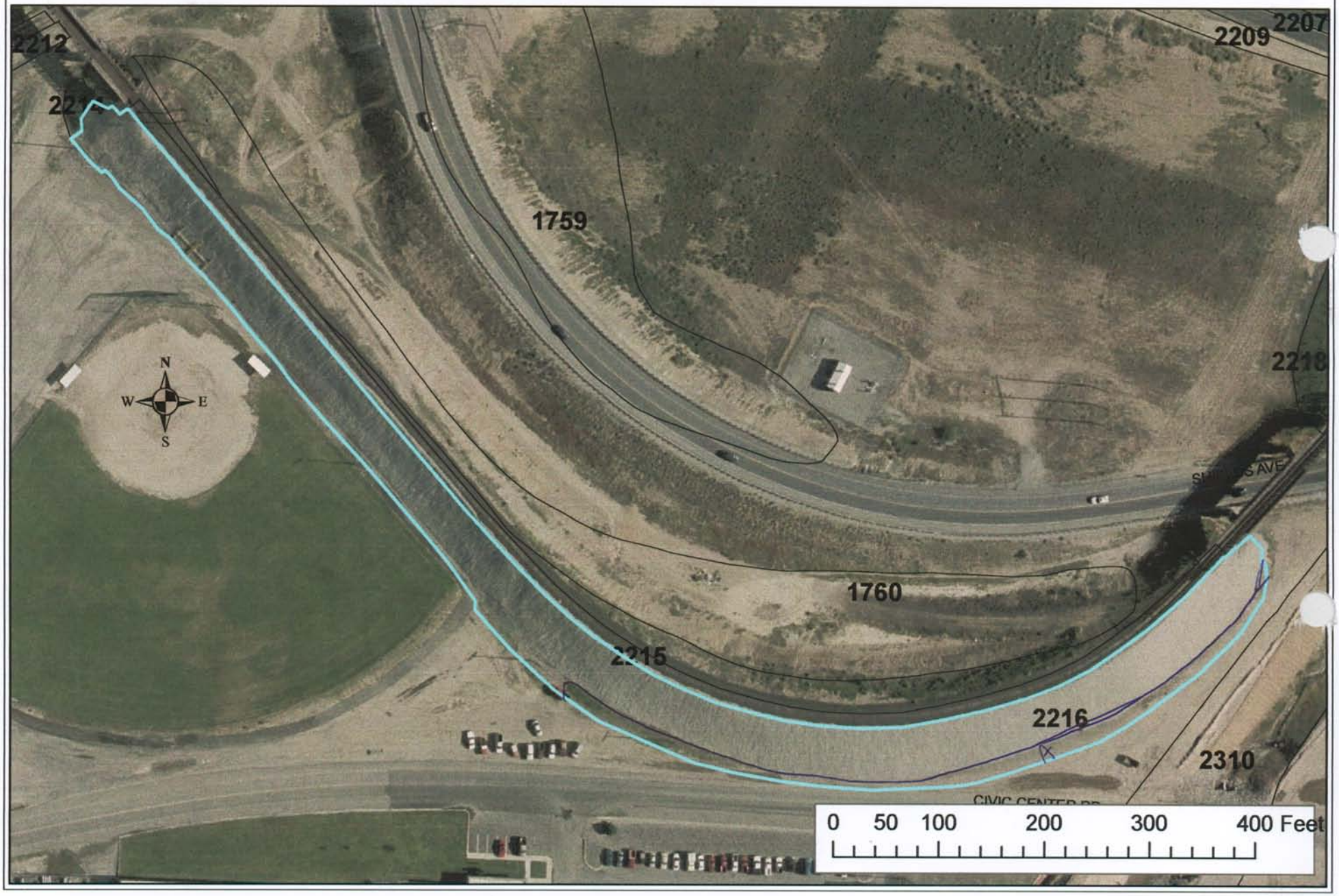
7. Gullies (over 6" in depth):
Y X N____
Are any gullies actively eroding? Y X N____
Number of gullies _____

Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2216


2212
2209
2207
1759
2218
N
W
E
S
1760
2215
2216
2310
0 50 100 200 300 400 Feet

Master

BRES FIELD FORM

Site ID:__ Site Name: ~~Wells~~ 2216 Field Date: 7/9/09

Team Members (Circle your name): Jennifer N

Number of Polygons: 1 Slope: ___to___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	25					
Erosion (BLM score)	40					
Undesir/noxious weeds	15					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	20					
*Undesirable (weedy) species	10					
*Noxious weeds	5					
Litter	25					
Rocks > 2"	~~25~~ 15					
Bare Ground	25					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	25					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	I					
Slender wheatgrass	/					
Yellow sweetclover	I					
Alfalfa	/					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	8					
Pedestalling	6					
Flow Patterns	15					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	40					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	I					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other Foxtail Brom	I					
Other Mustards	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **depositional area**
- ☑ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☑ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Most of site is dominated by gravel riprap and honeycomb net for railroad grade coverage.

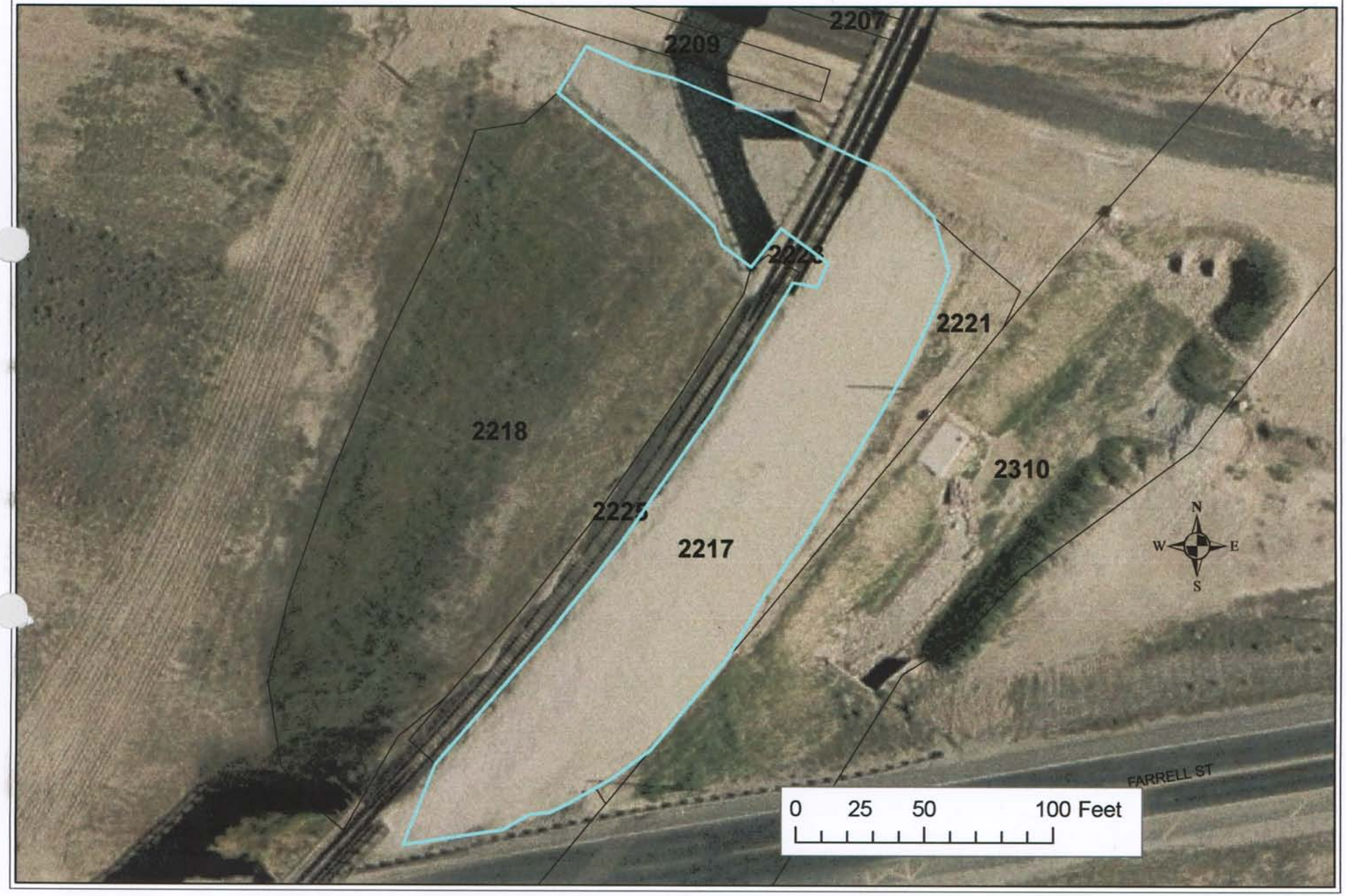
Polygon includes only vegetation on site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2217



BRES FIELD FORM

Site ID: __ **Site Name:** 2217 **Field Date:** 7/13/09

Team Members (Circle your name): Keegan Jodie

Number of Polygons: 1 Slope: 2 to 1 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Railroad rock covering

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Master

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	0					
*Noxious weeds	1					
Litter	0					
Rocks > 2"	99					
Bare Ground	0					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	2					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	2					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	I					
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N____
Number of gullies ____

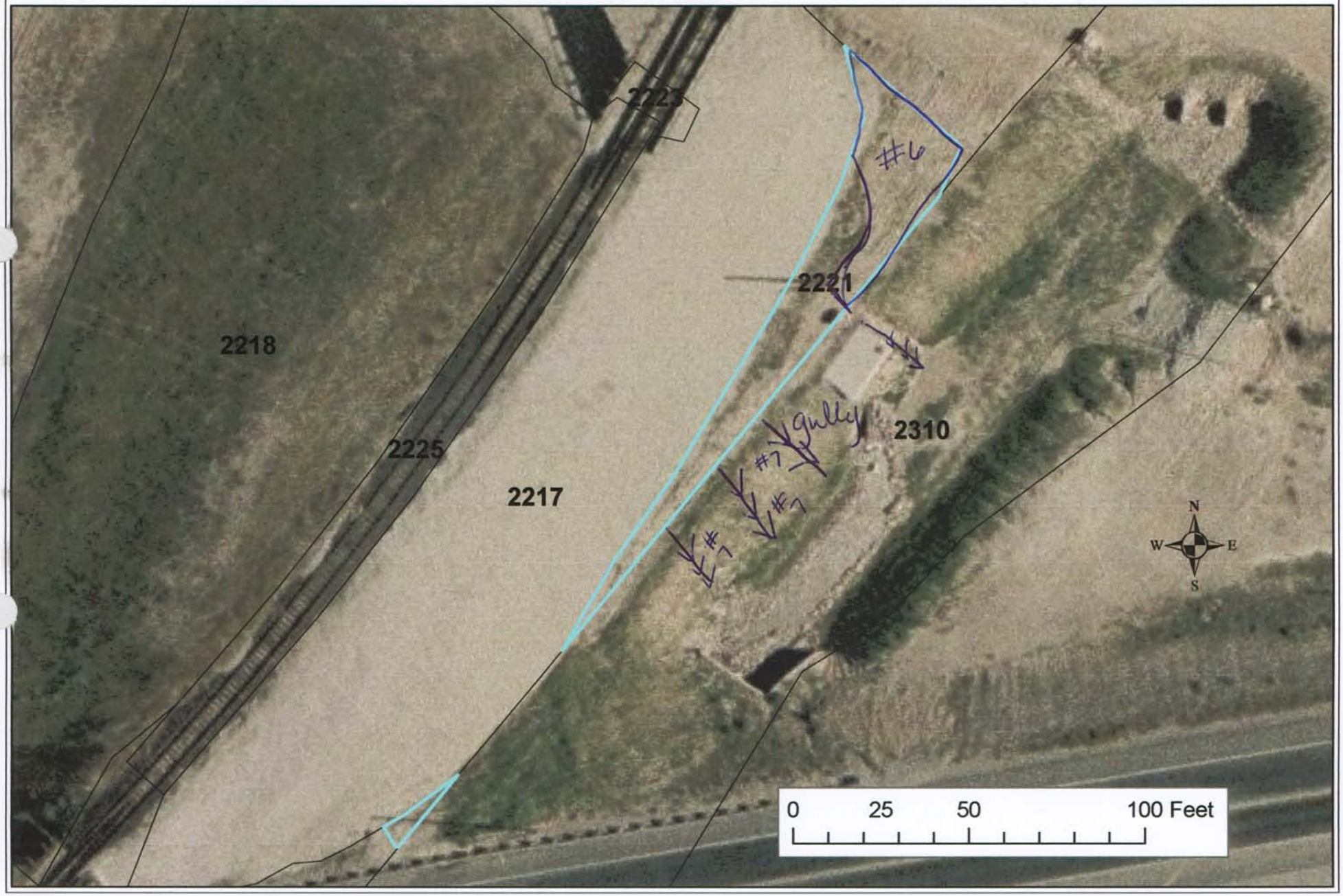
Comments. Rock layer covering waste around railroad looks like it is doing its job.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2221



BRES FIELD FORM Site ID:__ Site Name: 2221 Field Date: 7/13/09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: — to — Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: base of rock slope

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	20					
*Noxious weeds	4					
Litter	25					
Rocks > 2"	1					
Bare Ground	25					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	0					
Rills Depth	1					
Rills Frequency	01					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	30					
TOTAL BLM Score:	10					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath						
Kochia	I					
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

** A...
Vegetatio...
Erosion (BL...
Undesir/noxious ...
Comm...

Other ...
*Identify trigger ar...

3. **Site Edges:** Are outer edges of ... significantly different than remainder of ...
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. **Exposed Waste Material?** Y____ N✓
- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓
- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. **Barren Areas:** Y✓ N____
- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y✓ N____

7. **Gullies** (over 6" in depth): * see back
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

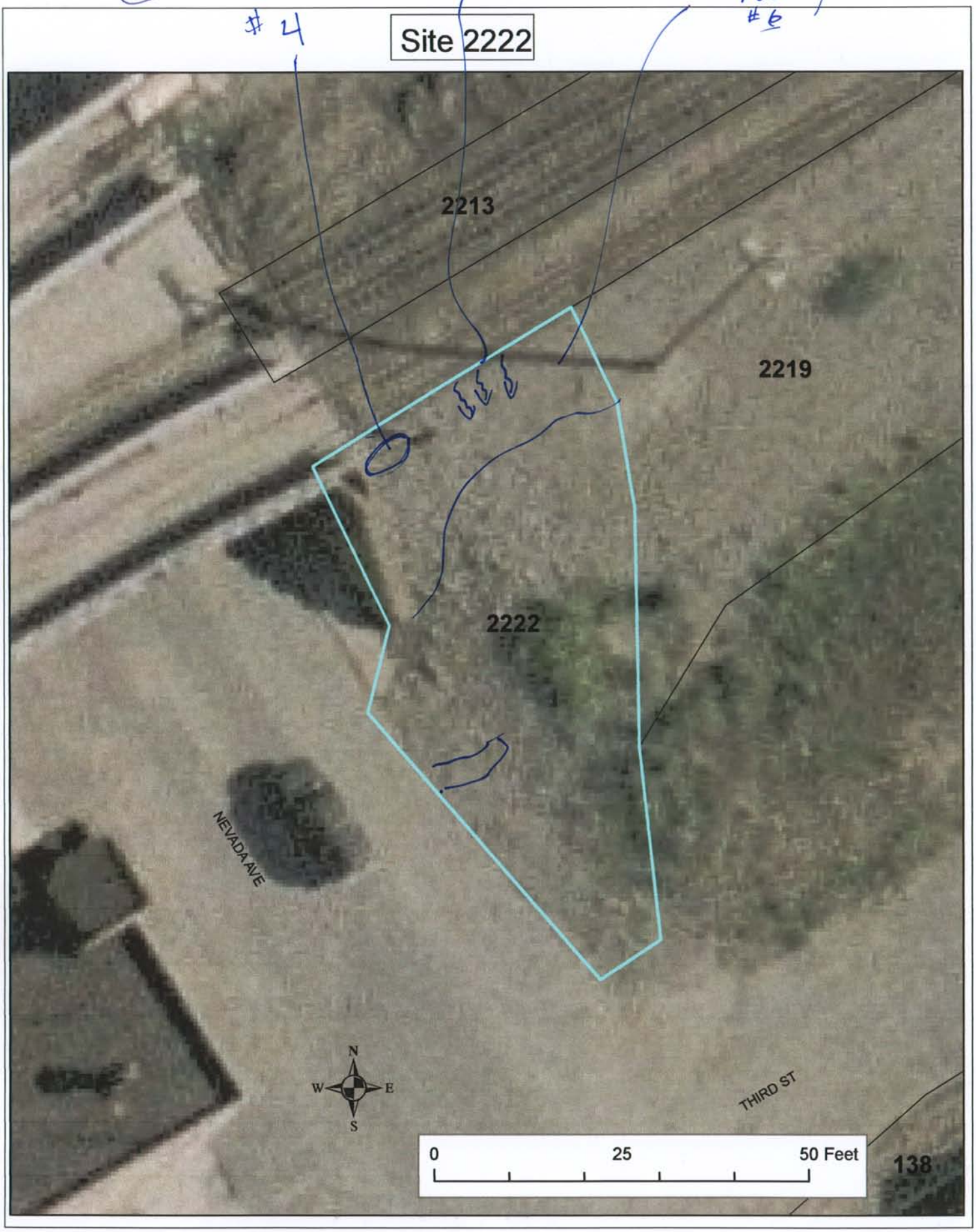
Comments.

small site at base of rock RR slope.

Gullies on adjacent site (7310)

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						


Master
#4
rill
bare rocky
#6
Site 2222
2213
2219
2222
NEVADA AVE
THIRD ST
N
W
E
S
0
25
50 Feet
138

Master

BRES FIELD FORM Site ID:__ Site Name: 2222 Field Date: 7/10/09

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Plumb

Number of Polygons: 1 Slope: 1 to 10 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: NE corner of 3rd and Nevada

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5					
*Undesirable (weedy) species	20 ~~25~~					
*Noxious weeds 30	~~35~~					
Litter	15					
Rocks > 2" 20	~~25~~ ~~30~~					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	10					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other grass	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	8					
Pedestalling	3					
Flow Patterns	9					
Rills Depth	3					
Rills Frequency	4					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	11					
TOTAL BLM Score:	46					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	D					
Dalmation toadflax						
Cheatgrass	D					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** waste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4
- Approximate area (in square feet) 6
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y X N____

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N X
Number of gullies ____

Comments.

* site is mainly rock and knapweed -

* - looks like reclamation was done by placing rocks on site

* North side of site ~~[illegible]~~ touches railroad track - bare covered with rock

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2224 -Combined w/ 2211

BRES FIELD FORM **Site ID:**__ **Site Name:** 2224 combined w/ 2211 **Field Date:** _____

Team Members (Circle your name): _____

Number of Polygons: ___ Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	**POLYGON** A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	**POLYGON** A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	**POLYGON** A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	**POLYGON** A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y_____ N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N_____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N_____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2226

2226
WARREN AVE
Fabric barrier under rock
2305
N
W
E
S
0
15
30 Feet

BRES FIELD FORM

Site ID: ~~#~~ 2226 Site Name: _____ Field Date: 7/10/09

Team Members (Circle your name): JTR + BC

Number of Polygons: 1 Slope: 30° to ___ Aspect (circle all relevant): N S (W) E NW NE SW SE

Area Description: Slope of active RR bed

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	1					
*Noxious weeds	0					
Litter	0					
Rocks > 2"	4					
Bare Ground	95					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	1					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y✓ N edit

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y✓ N___ 100%

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y___ N___
Number of gullies _____

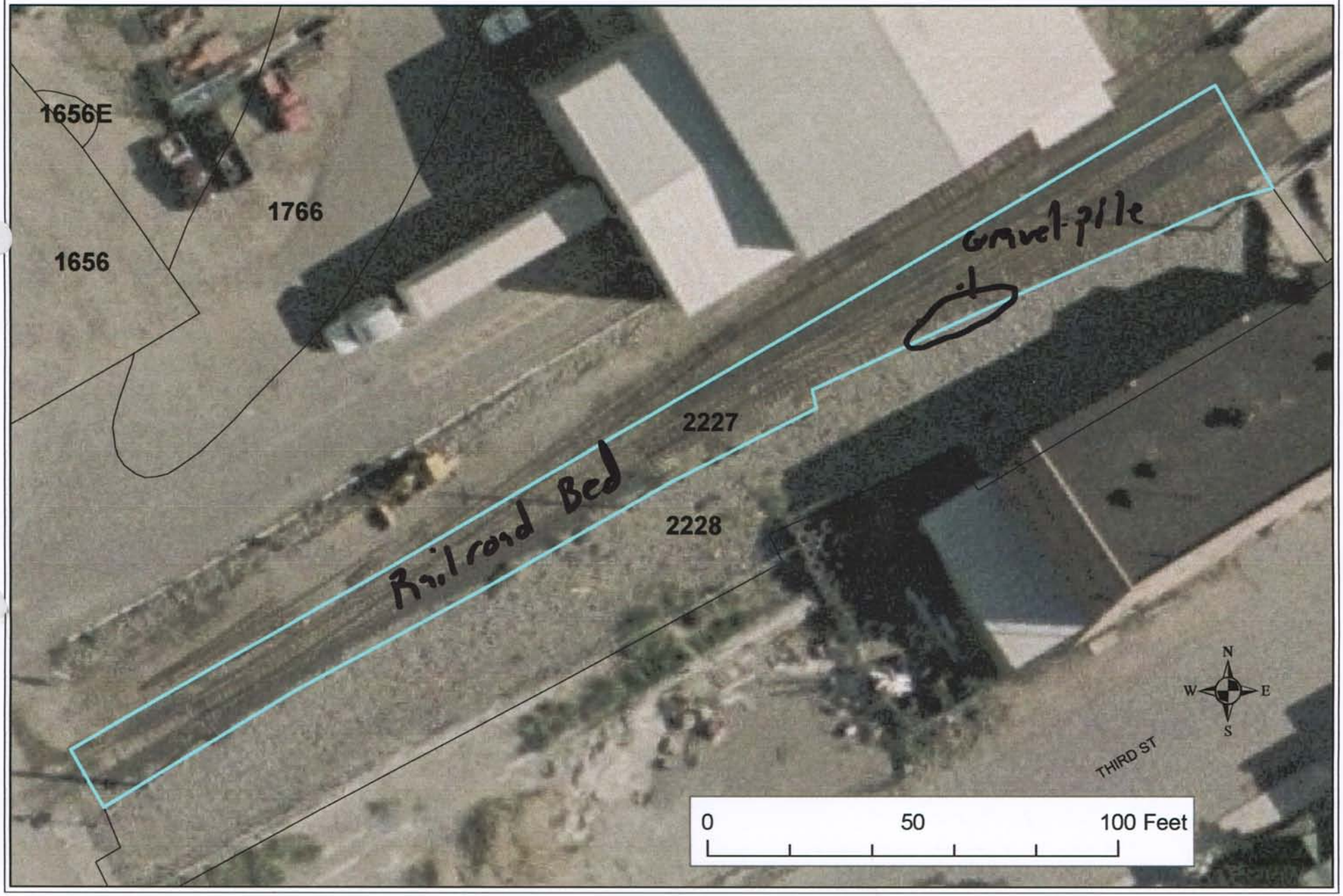
Comments.

- Very small site consisting of a fabric barrier covered with gravel.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2227 Master



BRES FIELD FORM

Site ID: #2227 Site Name: RR Tracks Field Date: 7/10/09

Team Members (Circle your name): JJR & BC

Number of Polygons: 1 Slope: 5° to ___ Aspect (circle all relevant): N S W E NW NE SW SE Level

Area Description: Bed at active railway

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	1					
*Undesirable (weedy) species	1					
*Noxious weeds	3					
Litter	0					
Rocks > 2"	20					
Bare Ground	75					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	2					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax	I					
Cheatgrass						
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

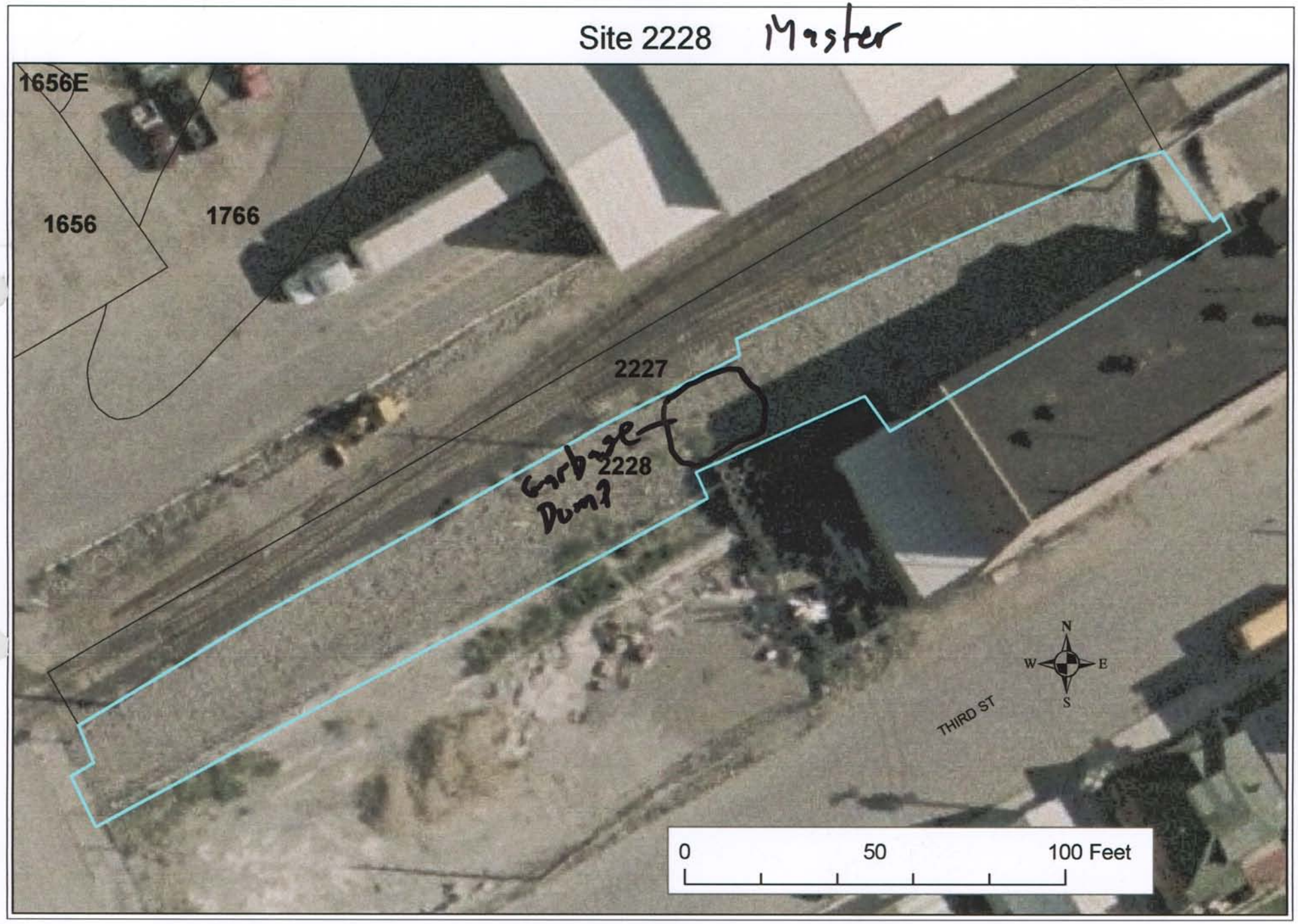
7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2228 Master



BRES FIELD FORM

Site ID: #2228 Site Name: _____ Field Date: 7/10/09

Team Members (Circle your name): JTR & BC

Number of Polygons: 1 Slope: 45° to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Slope of active railway

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	~~1~~					
*Undesirable (weedy) species	1					
*Noxious weeds	3					
Litter	0					
Rocks > 2"	95					
Bare Ground	0					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	1					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	I					
Other Brome	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass						
Baby's breath	F					
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y___N___

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y___ N___
Number of gullies _____

Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2234

Master

BRES FIELD FORM

Site ID:__ Site Name: 2234 Field Date: 7-13-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: — to — Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: 40' limerock barrier btwn Bryant & RR

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5					
*Undesirable (weedy) species	5					
*Noxious weeds	2					
Litter	5					
Rocks > 2"	75					
Bare Ground	8					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	10%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	I					
Other rubber rabbit	I					
Other butter/eggs	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	3					
Flow Patterns	3					
Rills Depth	1					
Rills Frequency	1					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	15					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other mustard	F					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y____ N ✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y____N____

7. Gullies (over 6" in depth):
Y____ N ✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Site is a 40' limerock barrier btwn Bryant St. and RR. Not meant for high live vegetation

Rill on East edge, just off site boundary

Slight slope on edge of site bordering Bryant Street.

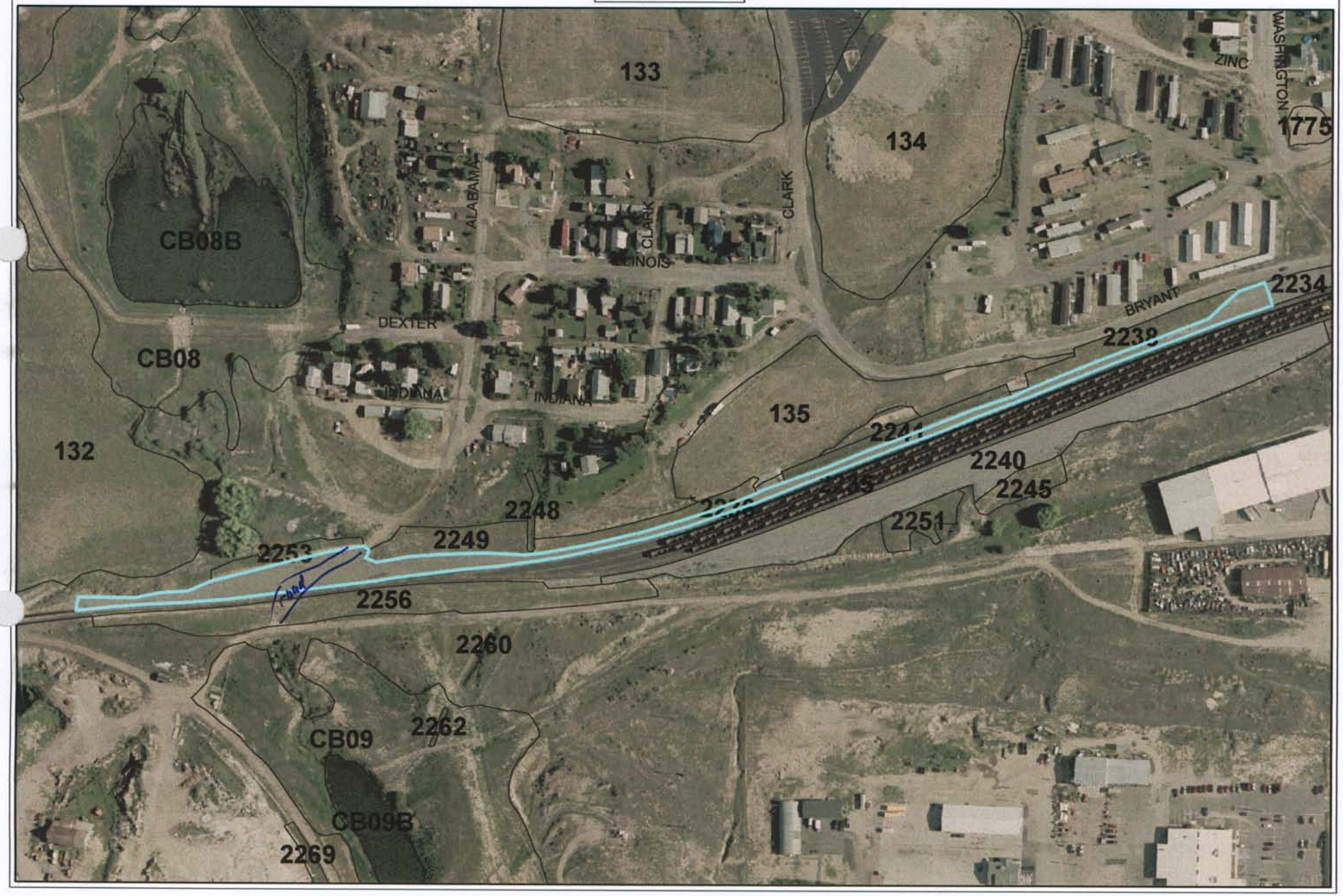
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2236



(Master)

BRES FIELD FORM

Site ID: Site 2236 Site Name: _____ Field Date: 7/10/09

Team Members (Circle your name): Jeanne Larson, Eric Larson

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Railroad edge - Washington -n Alabama / South of North side of track Ending Bigram

Note

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	6					
*Undesirable (weedy) species	0					
*Noxious weeds	1					
Litter	6					
Rocks > 2"	99					
Bare Ground	0					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	1					
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	X					
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

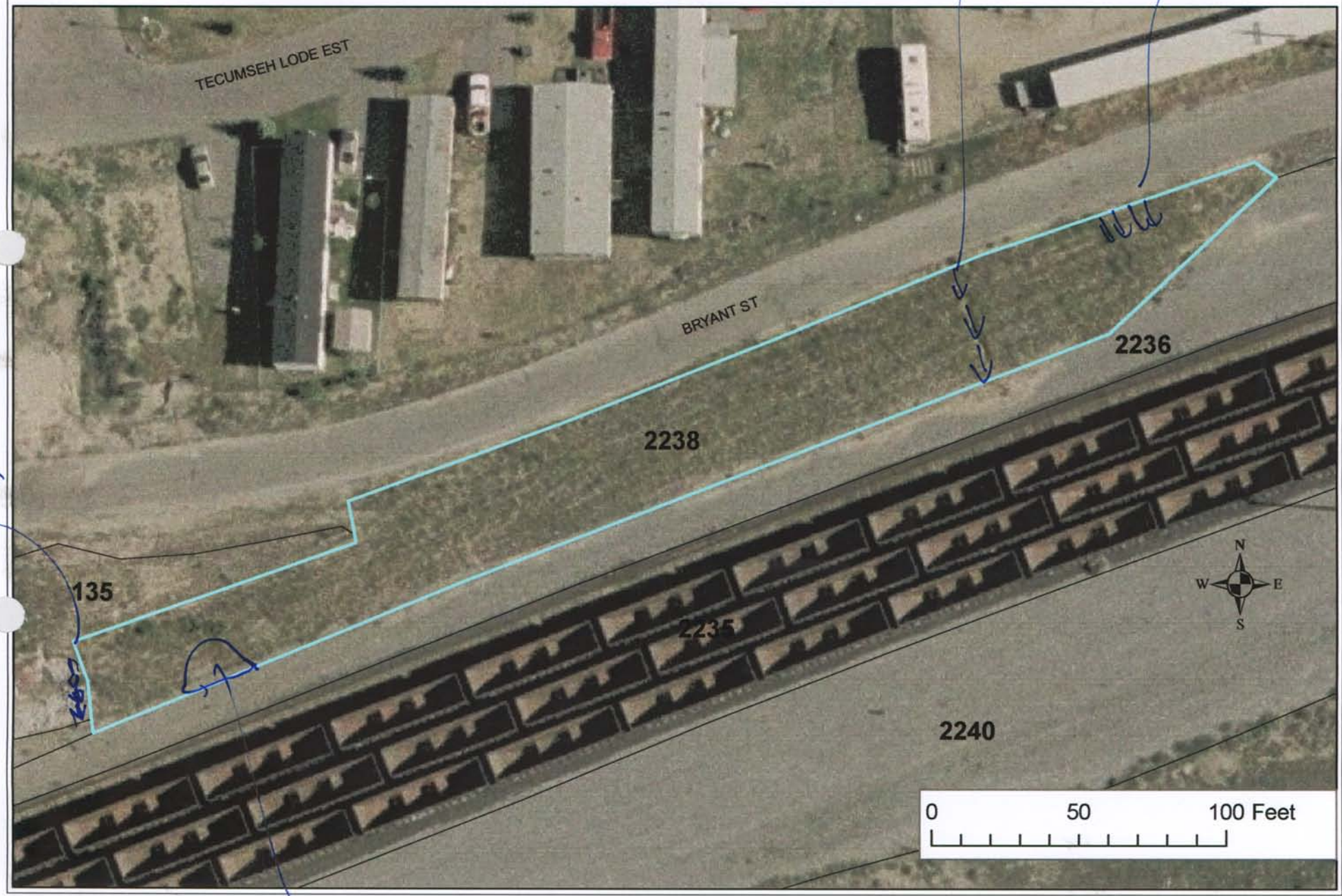
Site is all railroad edge - consisting of lime rock &

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2238



ditch

ditch

rills

#3, 4, 6
#4

Muster

BRES FIELD FORM

Site ID:__ Site Name: 2238 Field Date: 7/10/14

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Plumb

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Directly south of Bryant St + Trailer Park

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	10					
*Noxious weeds	4					
Litter	40					
Rocks > 2"	1					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	30 5					
ADJUSTED LIVE % = Live + 5%Undesirable	100					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	I					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	4					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	24					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** exposed waste/rail bed

Estimate width of affected edge (in feet) ~~20~~

4. Exposed Waste Material? Y X N ~~X~~

- Estimated pH 4.5
- Approximate area (in square feet) ~20
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N X
Number of gullies ____

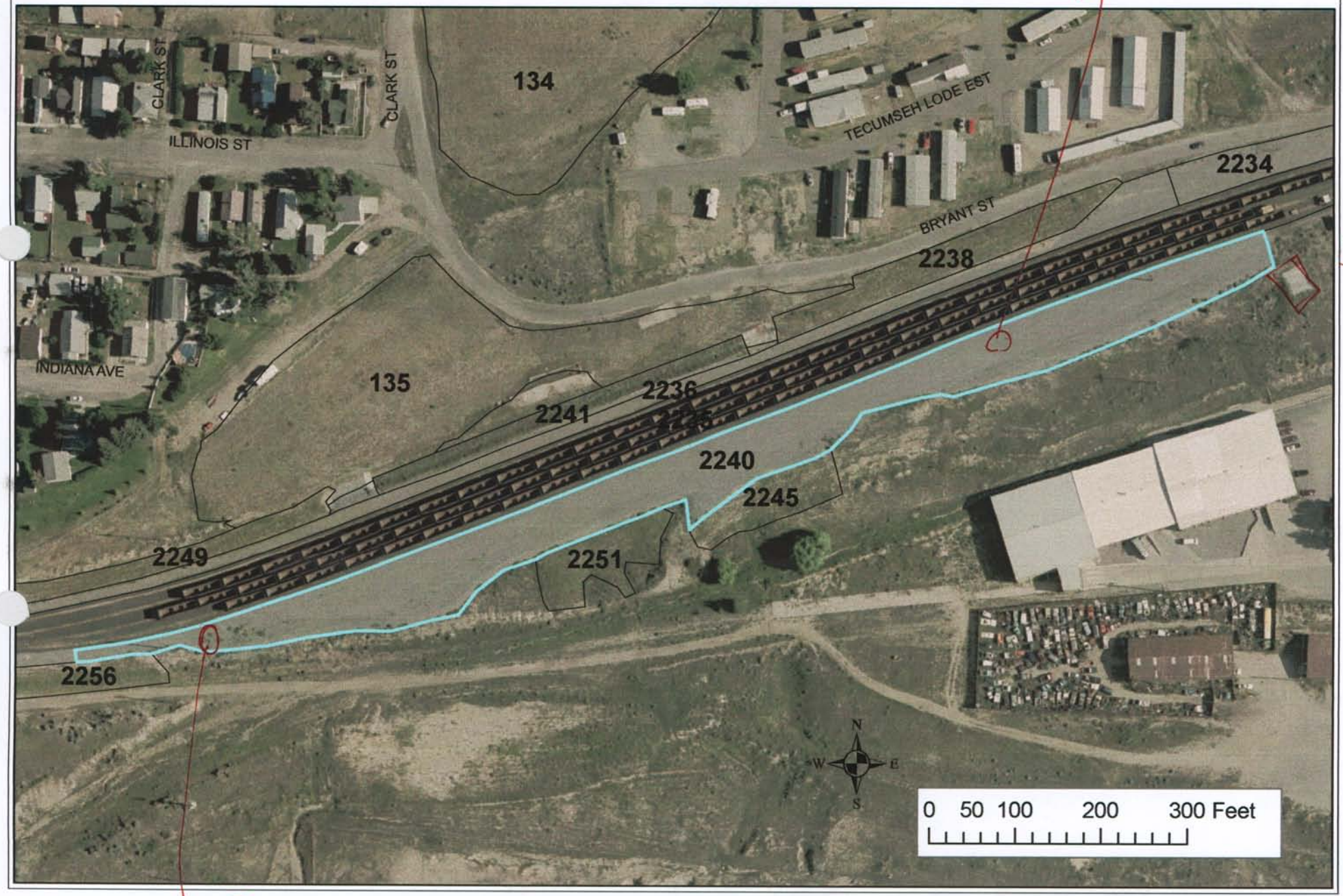
Comments.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2240



rock berm

BRES FIELD FORM

Site ID: **Site Name:** 2240 **Field Date:** 7/9/09

Team Members (Circle your name): Jeanne Larson Eric Larso

Number of Polygons: 1 Slope: 0 to 0 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South side of railroad t-d - directly south of bryant between Wash + Rt. 7

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	1					
*Noxious weeds	10 ~~30~~					
Litter	10					
Rocks > 2"	69					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	1					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	0					
Pedestalling	0					
Flow Patterns	0					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	0					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	~~F~~					
Dalmation toadflax						
Cheatgrass						
Baby's breath	F					
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☒ **more weeds**
- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____ N X

7. Gullies (over 6" in depth):
Y____ N____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

Site primarily consists of lime rock & knapweed and other sparse vegetation

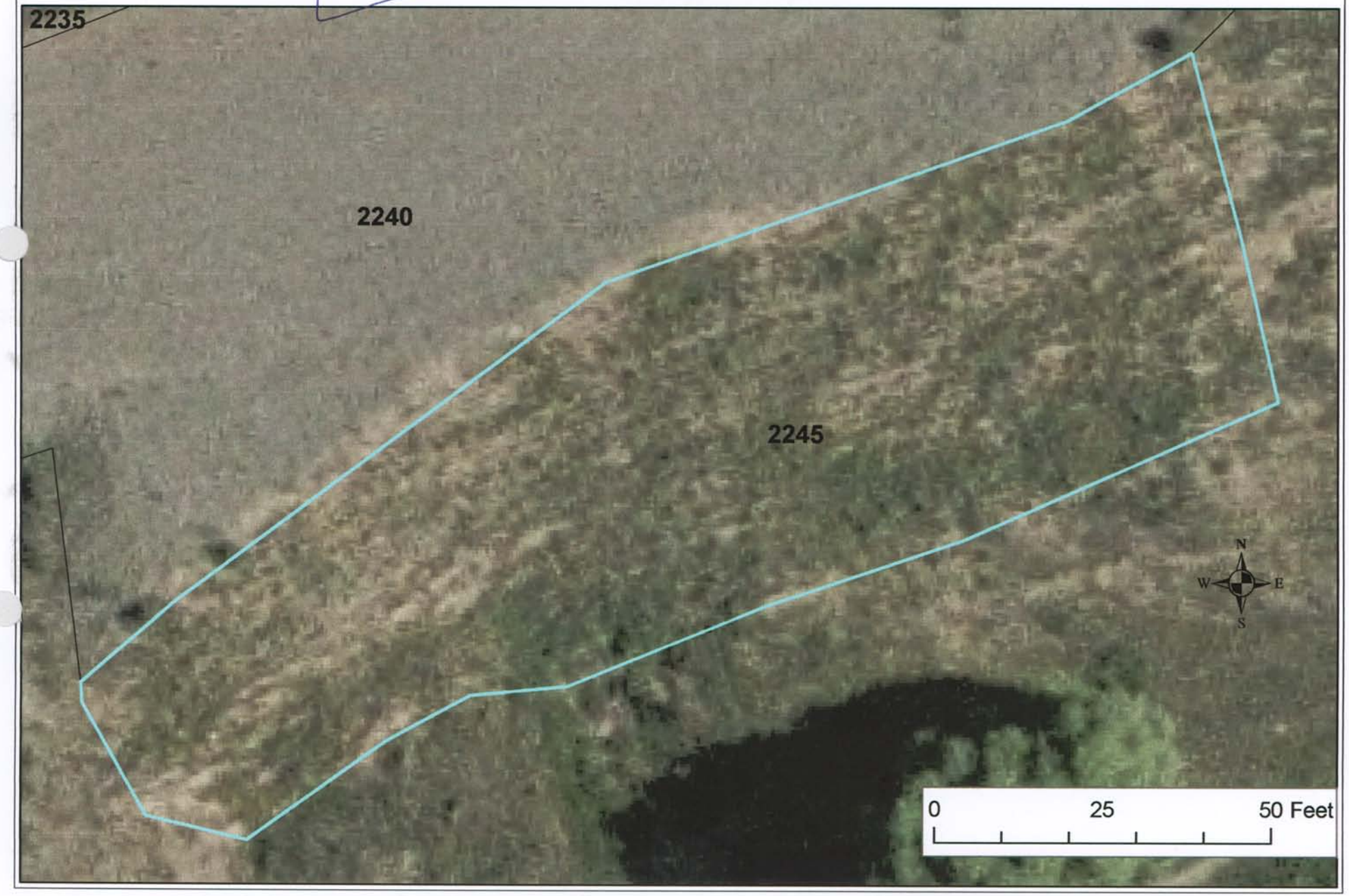
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

master

Site 2245



Muster

BRES FIELD FORM **Site ID:**__ **Site Name:** 2245 **Field Date:** 7/9/09

Team Members (Circle your name): Jeanne Larson Eric Larson

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Directly south of railroad - site 2240 / North McGregor Trucking

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	5					
*Noxious weeds	10					
Litter	30					
Rocks > 2"	5					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	I					
Other grass	F					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	38					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

mud cracks on site

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2248
Master
Deposition
2248
Poly Barrier
2249
N
W
E
S
0
25
50 Feet
2235

Master

BRES FIELD FORM

Site ID: 3248 Site Name: _____ Field Date: 7/10/09

Team Members (Circle your name): JTR & BC

Number of Polygons: 1 Slope: 5° to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Poly-lined drain ditch

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	44					
*Undesirable (weedy) species	3					
*Noxious weeds	0					
Litter	53					
Rocks > 2"	0					
Bare Ground	0					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	47					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	I					
Other Brome	I					
Other Blu Grs	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	15					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	29					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other Mustards	I					
Other Prick Lttce	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☑ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☑ **less vegetation**
- ☐ **gullies**
- ☐ **other** ____

Estimate width of affected edge (in feet) 3

4. Exposed Waste Material? Y ____ N ✓

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ____ N ✓

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y ____ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

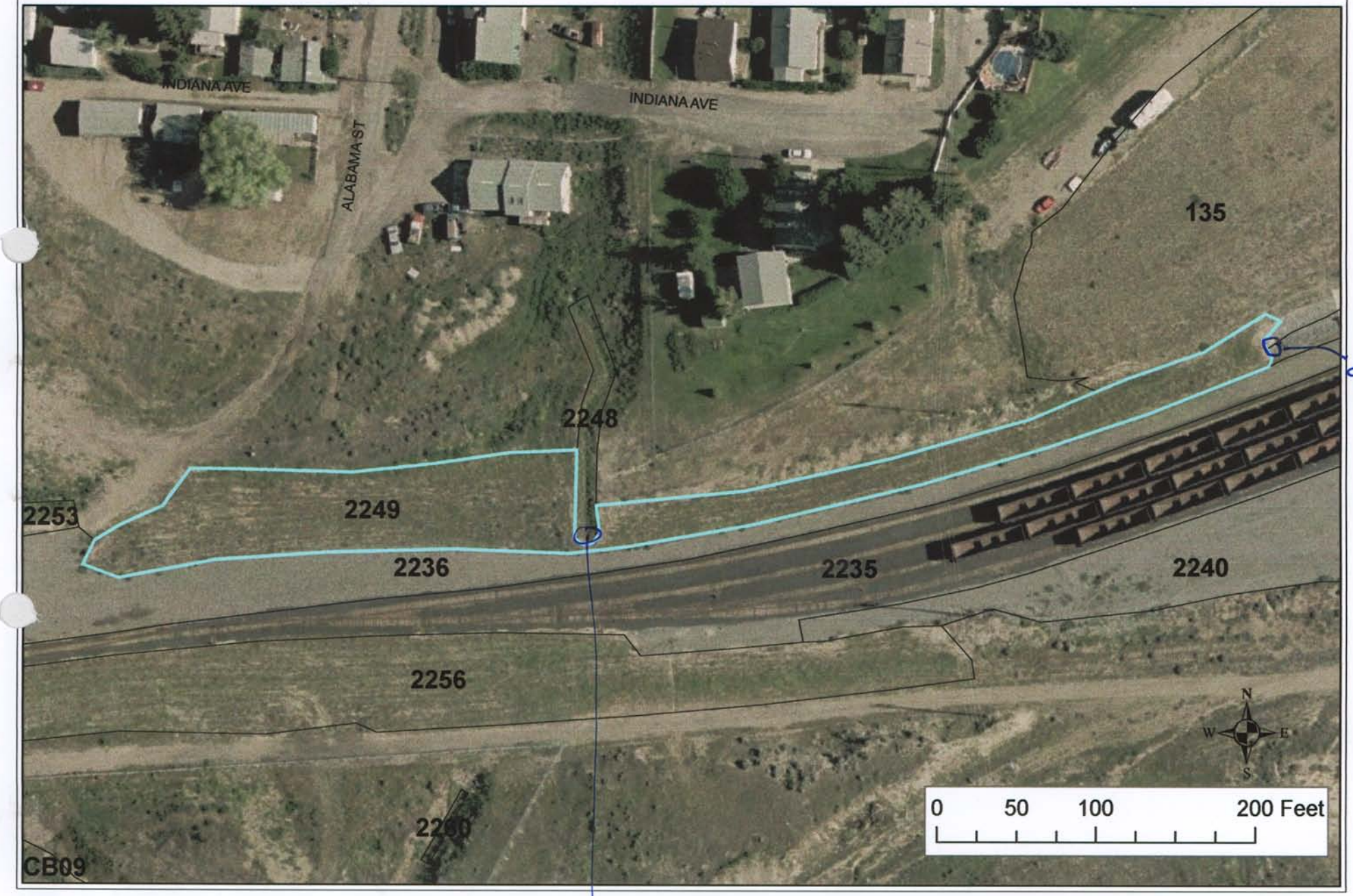
- Full length of ditch poly - lined
- Adjoining areas have heavy Knoxious weeds.
- Storm drain at south end, culvert at north.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2249



drain

storm drain cover

Master

2249

BRES FIELD FORM

Site ID:__ Site Name: _____ Field Date: 7/10/09

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Plumb

Number of Polygons: 1 Slope: 0 to 50 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South of Indiana St between Alabama & Clark directly N of Track

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	5					
*Noxious weeds	10					
Litter	30					
Rocks > 2"	5					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	I					
Other rubber rabbit brush	I					
Other phlox	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	32					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	I					
Kochia						
Thistle	I					
Leafy Spurge						
Other sisymbrium	I					
Other prickly lettuce	I					
Other mustard	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

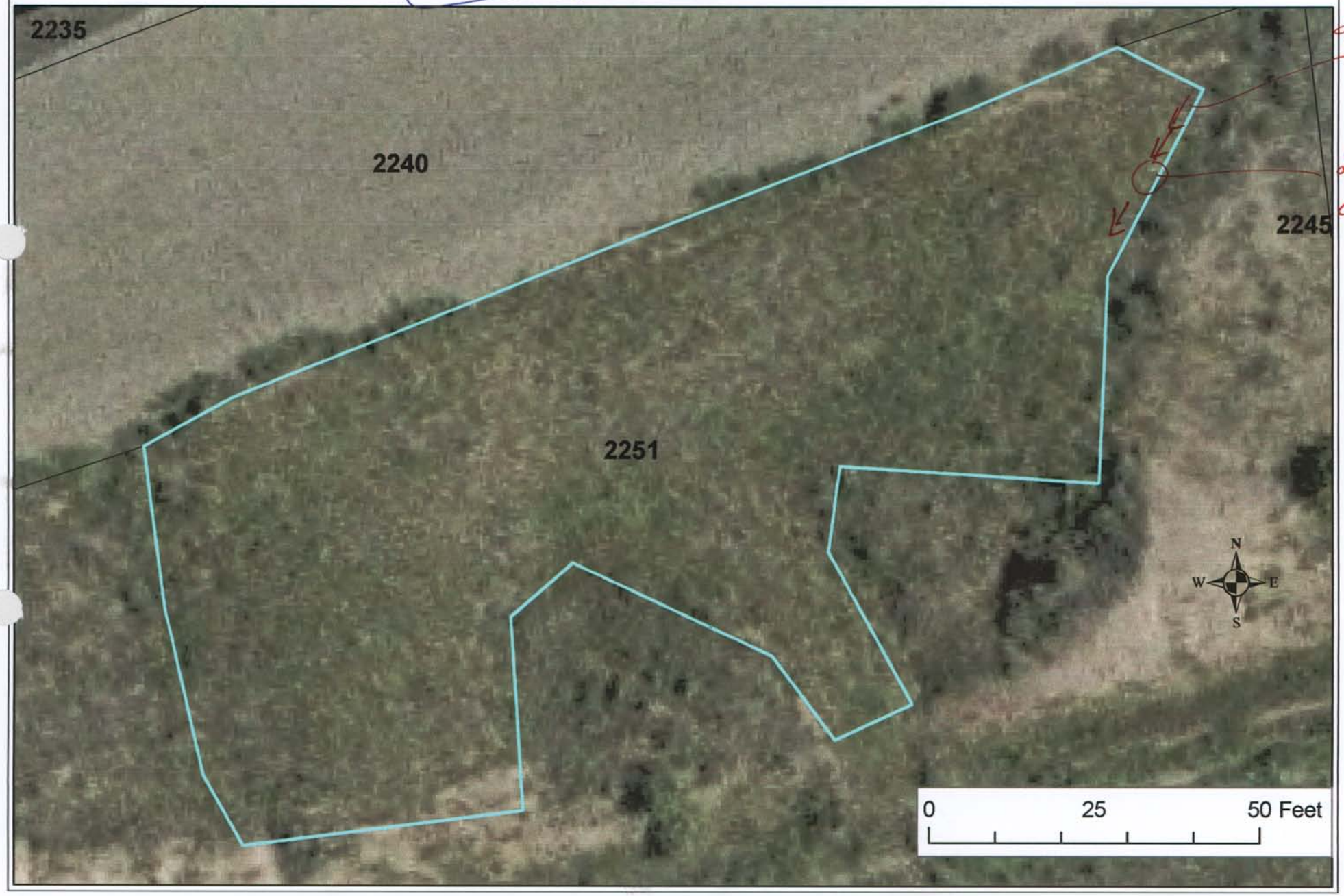
all in all site looks good
- if any problem the number of weeds on east side of site is greater than west side

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

master

Site 2251



Master

BRES FIELD FORM

Site ID: ____ Site Name: 2257 Field Date: 7/9/21

Team Members (Circle your name): Jeanne Larson Eric Larson

Number of Polygons: 1 Slope: C to D Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South of railroad - south of Bryant - North of McGraw Trucking

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30 ~~28~~					
*Undesirable (weedy) species	2					
*Noxious weeds	16					
Litter 40	~~35~~					
Rocks > 2"	3					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	32					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	I					
Other grass	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	9					
Rills Depth 2	0					
Rills Frequency 2	~~2~~					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	38					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath	F					
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N ~~X~~ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☒ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

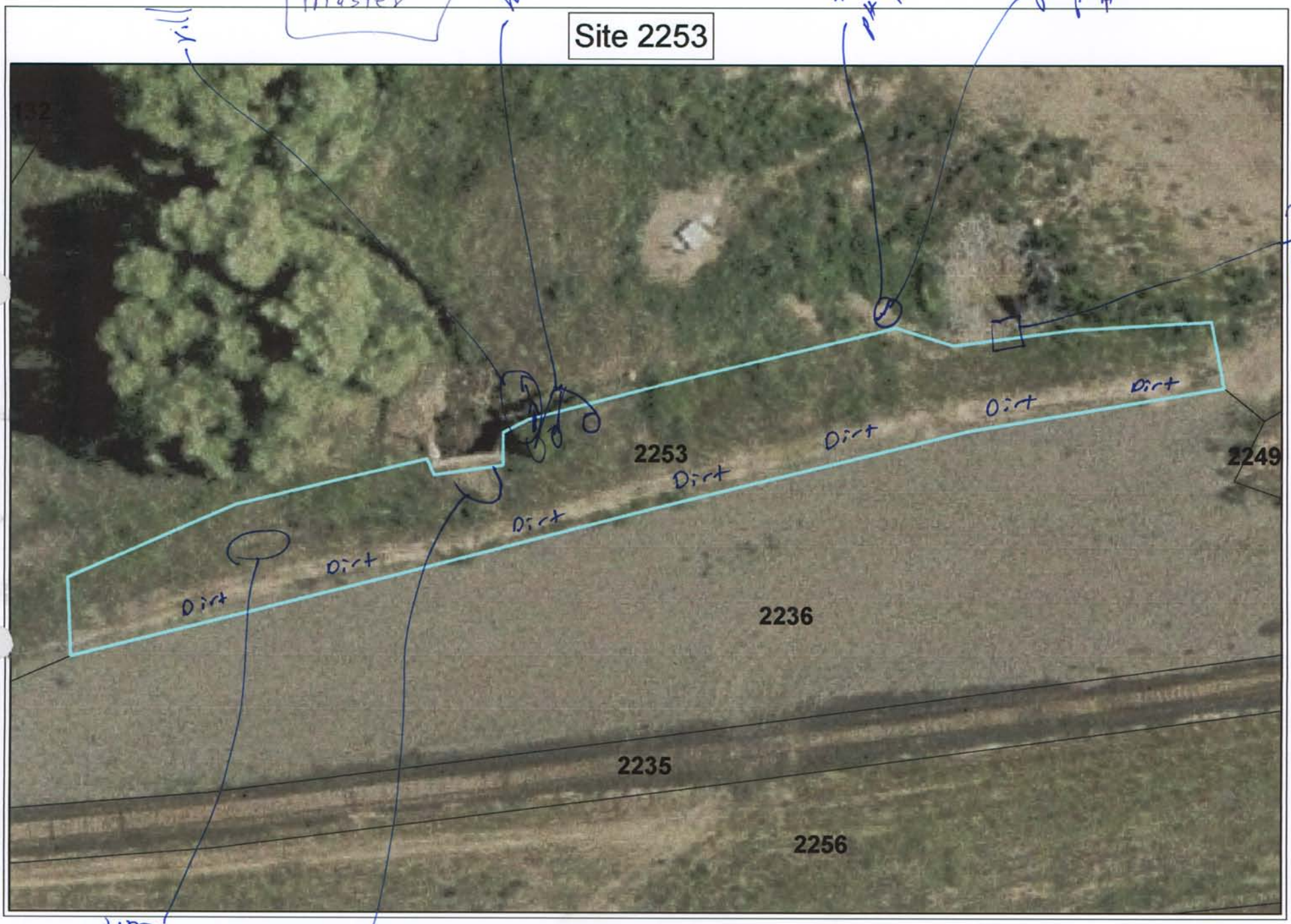
Comments.

Drainage area on east side of site

Excessive knapweed near ling rock on railroad side of site

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						


Site 2253
Master
holes
#4
#4
6" pipe
run-off
pipe
2253
2249
2236
2235
2256
Dirt
Dirt
Dirt
Dirt
Dirt
Dirt
2239
2239

Master 2253

BRES FIELD FORM

Site ID: __ **Site Name:** _____ **Field Date:** 7/10/07

Team Members (Circle your name): Jeanne Larson, Eric Larson, Beverly Plum

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: West of Alumbaugh, N of track

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	10					
*Noxious weeds	3					
Litter	35					
Rocks > 2"	2					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa	I					
Other grass	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	12					
Rills Depth	3					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	8					
TOTAL BLM Score:	42					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☒ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4
- Approximate area (in square feet) 4
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

* South edge of site has dirt edge along whole site

* Several holes have been dug on site near drainage outlet on east side of site

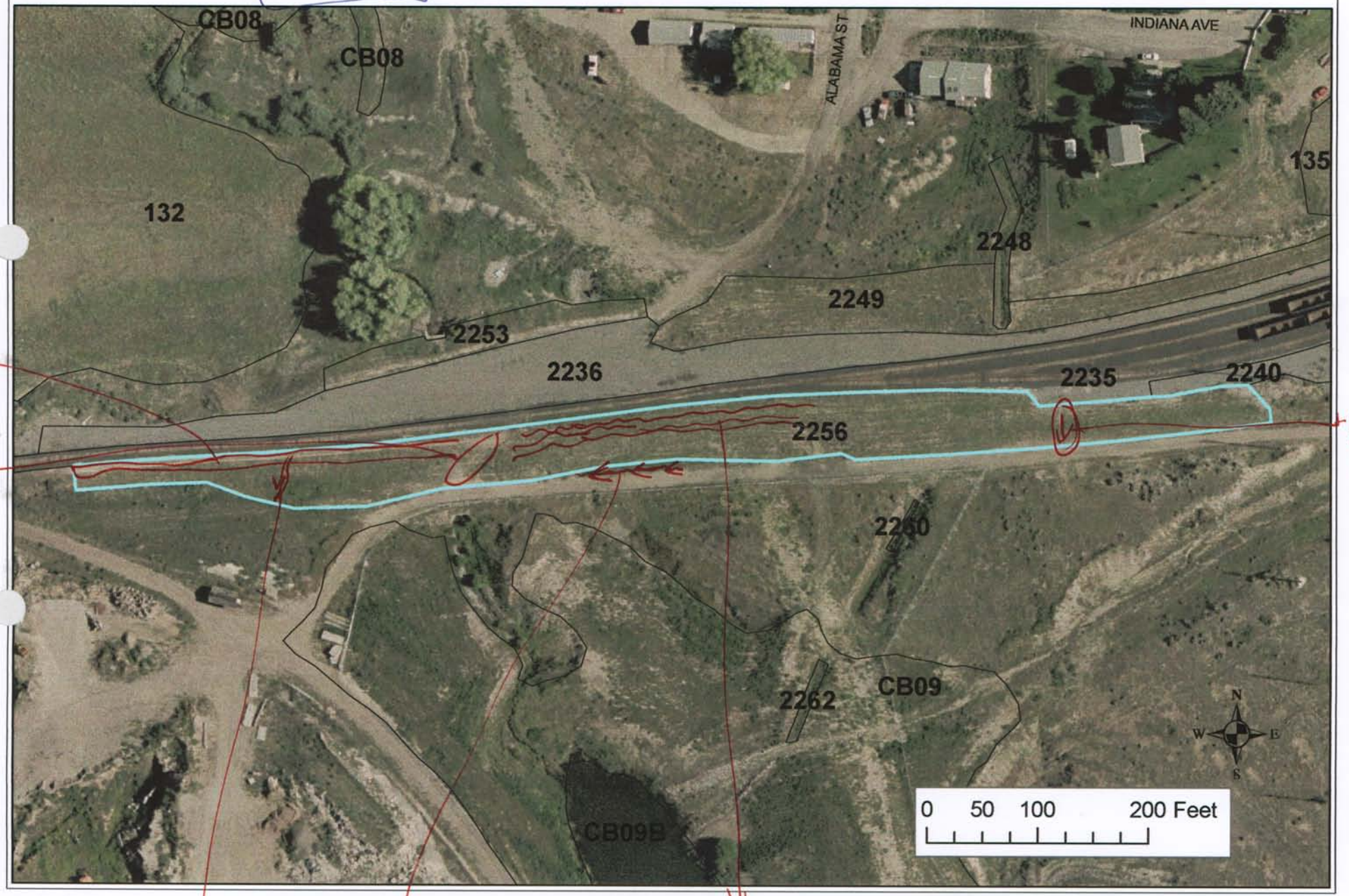
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

master

Site 2256



road

path

ditch

alternating lines of vegetation & bare spot

(Master) 22

BRES FIELD FORM

Site ID: __ Site Name: 2256 Field Date: 7/9/00

Team Members (Circle your name): Jeanne Larson Eric Larson

Number of Polygons: 1 Slope: 1 to 10 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South Indiana Ave Adj to south side of Railroad

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	5					
*Noxious weeds	5					
Litter	45					
Rocks > 2"	5					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	I					
Other grubs	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	2					
Gullies Frequency	2					
Soil Movement	8					
TOTAL BLM Score:	36					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y X N____
Are any gullies actively eroding? Y____ N X
Number of gullies 2

Comments.

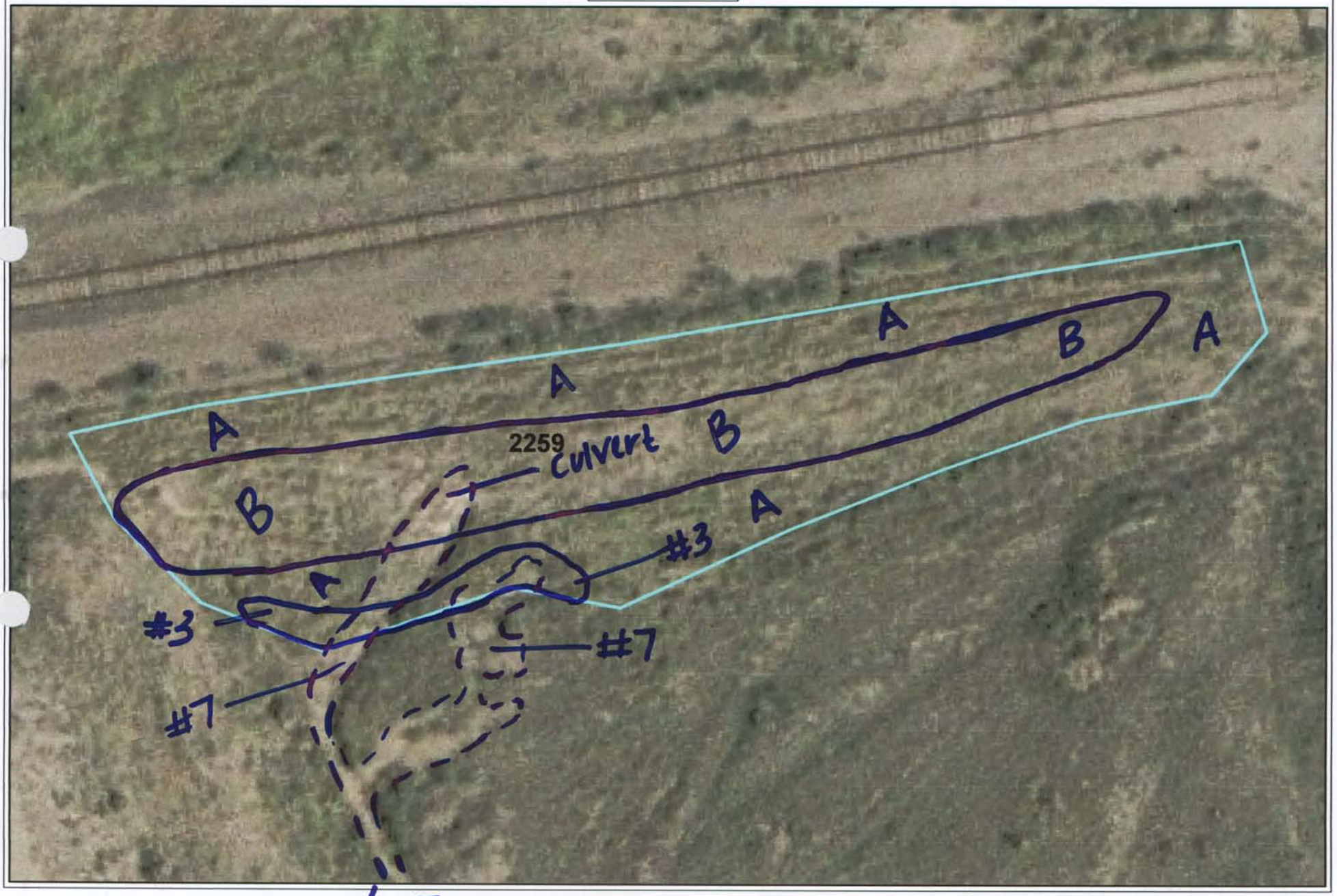
Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER

RANDI PHELPS + JENNIFER NARDIELLO

Site 2259



Master

BRES FIELD FORM

Site ID:__ Site Name: 2259 Field Date: 7/9/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: 2 Slope: 1 to 2 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South Side of railroad tracks by Centennial Avenue

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	40	30				
Erosion (BLM score)	23	66				
Undesir/noxious weeds	2	5				

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	38	25				
*Undesirable (weedy) species	2	5				
*Noxious weeds	0	0				
Litter	50	34				
Rocks > 2"	1	2				
Bare Ground	9	34				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	40	30				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F	F				
Crested wheatgrass	F	F				
Slender wheatgrass	/	/				
Yellow sweetclover	/	/				
Alfalfa	I					
Other Rubber Rabbit	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	14				
Surface Rock Movement	2	11				
Pedestalling	3	9				
Flow Patterns	9	15				
Rills Depth	0	0				
Rills Frequency	0	0				
Gullies Depth	0	7				
Gullies Frequency	0	2				
Soil Movement	3	8				
TOTAL BLM Score:	23	66				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	/	/				
Dalmation toadflax	/	/				
Cheatgrass	I	I				
Baby's breath	/	/				
Kochia	/	/				
Thistle	/	/				
Leafy Spurge	/	/				
Other Mustard	I	I				
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☑ **increased erosion**
- ☑ **less vegetation**
- ☑ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon? Y____N____

7. Gullies (over 6" in depth):

Y ✓ N____

Are any gullies actively eroding? Y ✓ N____

Number of gullies 2

Comments.

Site edged by earthern burm.

Culvert should be lined to prevent further erosion.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2267

BRES FIELD FORM

Site ID: __ **Site Name:** 2267 **Field Date:** 7/13/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: South of railroad yard

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	15					
*Undesirable (weedy) species	10					
*Noxious weeds	5					
Litter	30					
Rocks > 2"	20					
Bare Ground	30					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	20					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	F					
Yellow sweetclover	F					
Alfalfa	F					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	11					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	7					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	51					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath	F					
Kochia	F					
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1

Do barren areas cover over 25% of any polygon? Y X N____

7. Gullies (over 6" in depth):

Y____ N X

Are any gullies actively eroding? Y____ N____

Number of gullies ____

Comments. Barren area in middle of site.

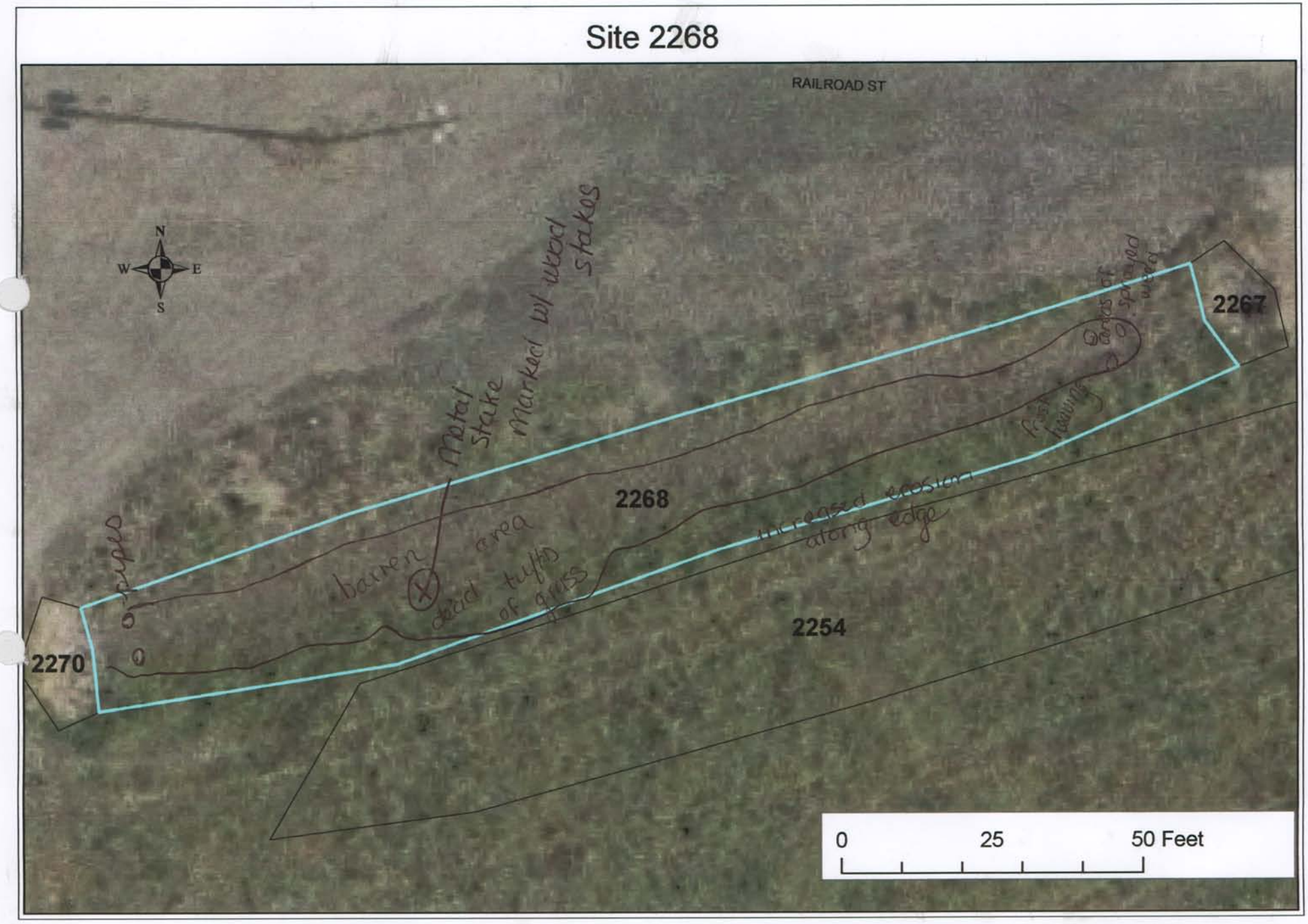
~~Cattle~~ large hill starting on south site edge.

large pieces of old scrap metal found in site

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2268


RAILROAD ST
N
W
E
S
Metal stake marked w/ wood stakes
2268
2267
2270
2254
barren area
dead tufts of grass
increased erosion along edge
0
25
50 Feet

BRES FIELD FORM

Site ID: __ **Site Name:** 2268 **Field Date:** 7/13/09

Team Members (Circle your name): Lague McCaughey

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: south of railroad yard

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	10					
Erosion (BLM score)	48					
Undesir/noxious weeds	10					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	10					
*Undesirable (weedy) species	5					
*Noxious weeds	5					
Litter	30					
Rocks > 2"	20					
Bare Ground	30					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	15					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	I					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	11					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	3					
Rills Frequency	3					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	48					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath	~~F~~					
Kochia	F					
Thistle						
Leafy Spurge						
Other salsify	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☒ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y X N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments. frost heaving

There is a large barren area in the middle of the site. Steeper slope on south side. Increased weeds - Kochia & babys breath on site edges

There is a metal stake marked w/ wooden stakes at site.

- Pieces of old rusted scrap metal from railroad company found randomly imbedded in soil on site.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2269
Master
CB09B
CB09
2269

BRES FIELD FORM

Site ID: ~~X~~ 2269 Site Name: _____ Field Date: 7/9/9

Team Members (Circle your name): JTR & BC

Number of Polygons: 1 Slope: 45° to ___ Aspect (circle all relevant): N S (W) E NW NE SW SE

Area Description: West slope of abandoned RR bed

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	25					
*Noxious weeds	10					
Litter	20					
Rocks > 2"	0					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	8					
Pedestalling	11					
Flow Patterns	9					
Rills Depth	7					
Rills Frequency	6					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	57					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath	I					
Kochia	I					
Thistle						
Leafy Spurge	I					
Other Mustards	F					
Other Common Tdf/K	I					
Other ???	F	(Counted under)				

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **more weeds**
- ☑ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other** _____

Estimate width of affected edge (in feet) 10

4. Exposed Waste Material? Y ✓ N ___

- Estimated pH 4.5
- Approximate area (in square feet) 50
- Number of areas with exposed waste 1

5. Is there evidence of: Y ✓ N ___

- ☑ **land slumps**
- ☐ **bulk soil failure**
- ☐ **subsidence**

6. Barren Areas: Y ___ N ✓

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon? Y ___ N ___

7. Gullies (over 6" in depth):
Y ___ N ✓
Are any gullies actively eroding? Y ___ N ___
Number of gullies ___

Comments.

- South third of site is in good shape. The rest has heavy undesirable growth and erosion.

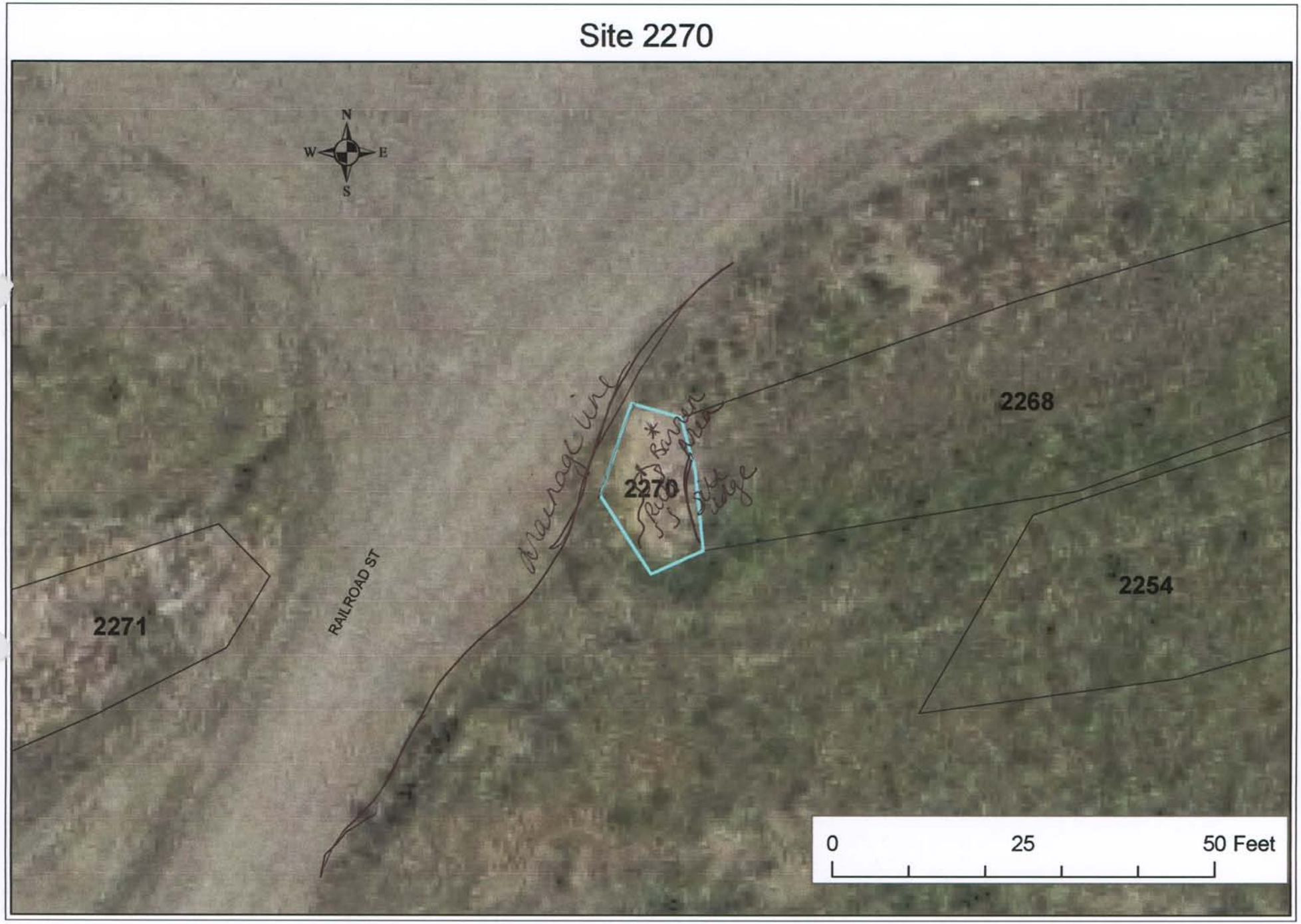
- We were unable to identify a plant that was similar to D. Toadflax (with different, globular flowerheads). We treated it as an undesirable, since it was providing little or no cover.

- This site needs attention.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2270



BRES FIELD FORM Site ID:__ Site Name: 2270 Field Date: 7/13/09

Team Members (Circle your name): Lague, McCaughey

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Next to the Railroad yard - South side

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	15					
Erosion (BLM score)	49					
Undesir/noxious weeds	10					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	10					
*Undesirable (weedy) species	5					
*Noxious weeds	5					
Litter	30					
Rocks > 2"	20					
Bare Ground	30					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	15					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	1					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	14					
Pedestalling	3					
Flow Patterns	9					
Rills Depth	3					
Rills Frequency	6					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	49					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other Mustard	1					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☒ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other** Rills

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N_____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1
Do barren areas cover over 25% of any polygon?
Y X N____

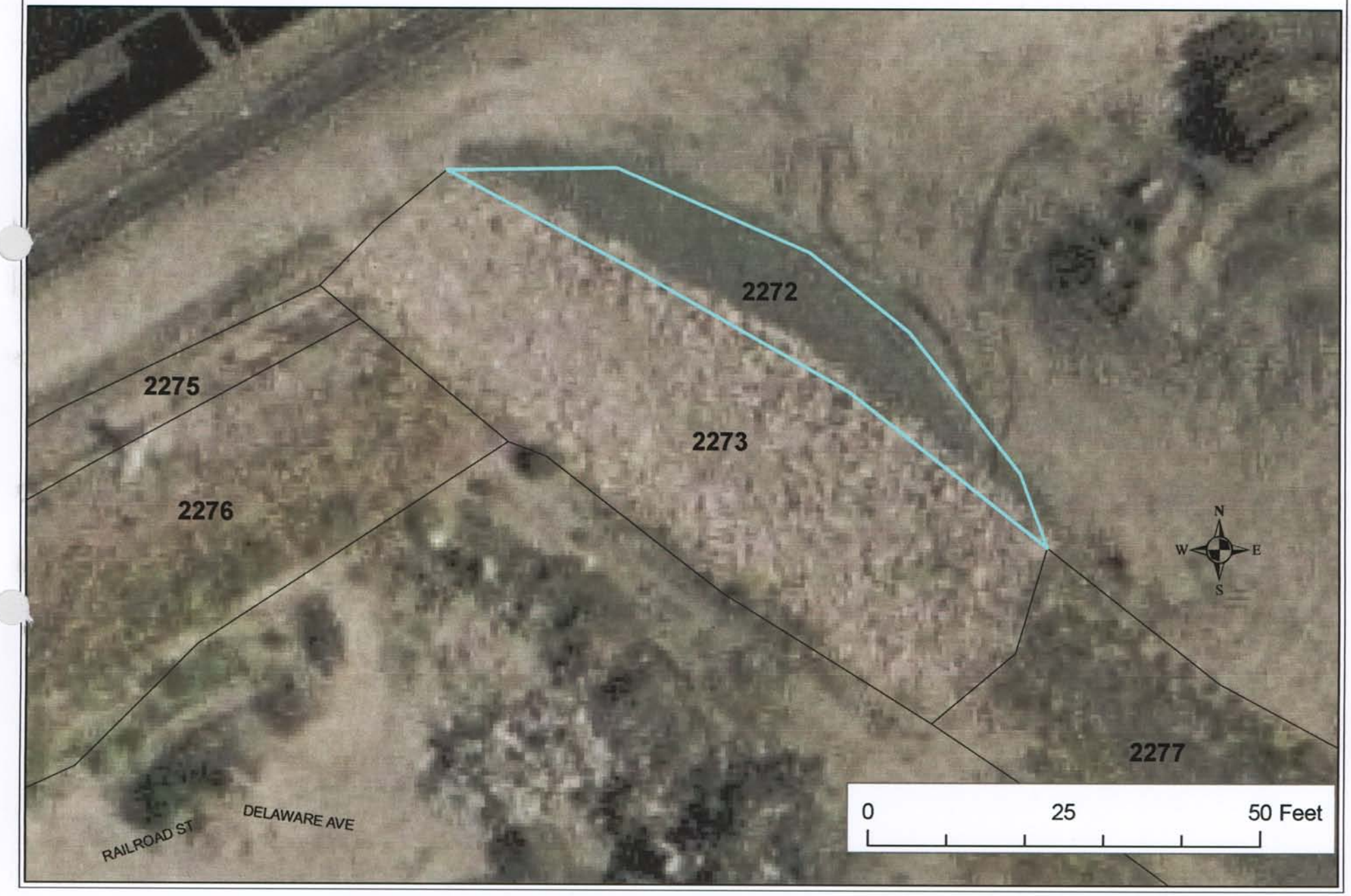
7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. Small site. The Majority is a barren area. Some erosion & has potential to become a big erosion issue.
- Frost heaving and rills are frequent.
- Not much vegetation on site, but the vegetation is decent right on the outside of site edges.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Site 2272


2272
2275
2273
2276
2277
N
W
E
S
0
25
50 Feet
RAILROAD ST
DELAWARE AVE

BRES FIELD FORM

Site ID: 2272 Site Name: _____ Field Date: 7/10/09

Team Members (Circle your name): (BC) SR

Number of Polygons: 1 Slope: 20 to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Upper slope of drainage outflow

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	0					
*Noxious weeds	0					
Litter	0					
Rocks > 2"	10					
Bare Ground	90					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	5					
Pedestalling	0					
Flow Patterns	3					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	8					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N X (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____ N____

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments. Upper slope of drain outflow

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2273 Master

BRES FIELD FORM Site ID: 2273 Site Name: _____ Field Date: 7/10/09

Team Members (Circle your name): JR BC

Number of Polygons: 1 Slope: 20° to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: R17 R22 drain

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	0					
*Noxious weeds	0					
Litter	0					
Rocks > 2"	100					
Bare Ground	0					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	0					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0					
Surface Rock Movement	2					
Pedestalling	0					
Flow Patterns	15					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	17					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N X____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N X____

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N X____

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N X____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

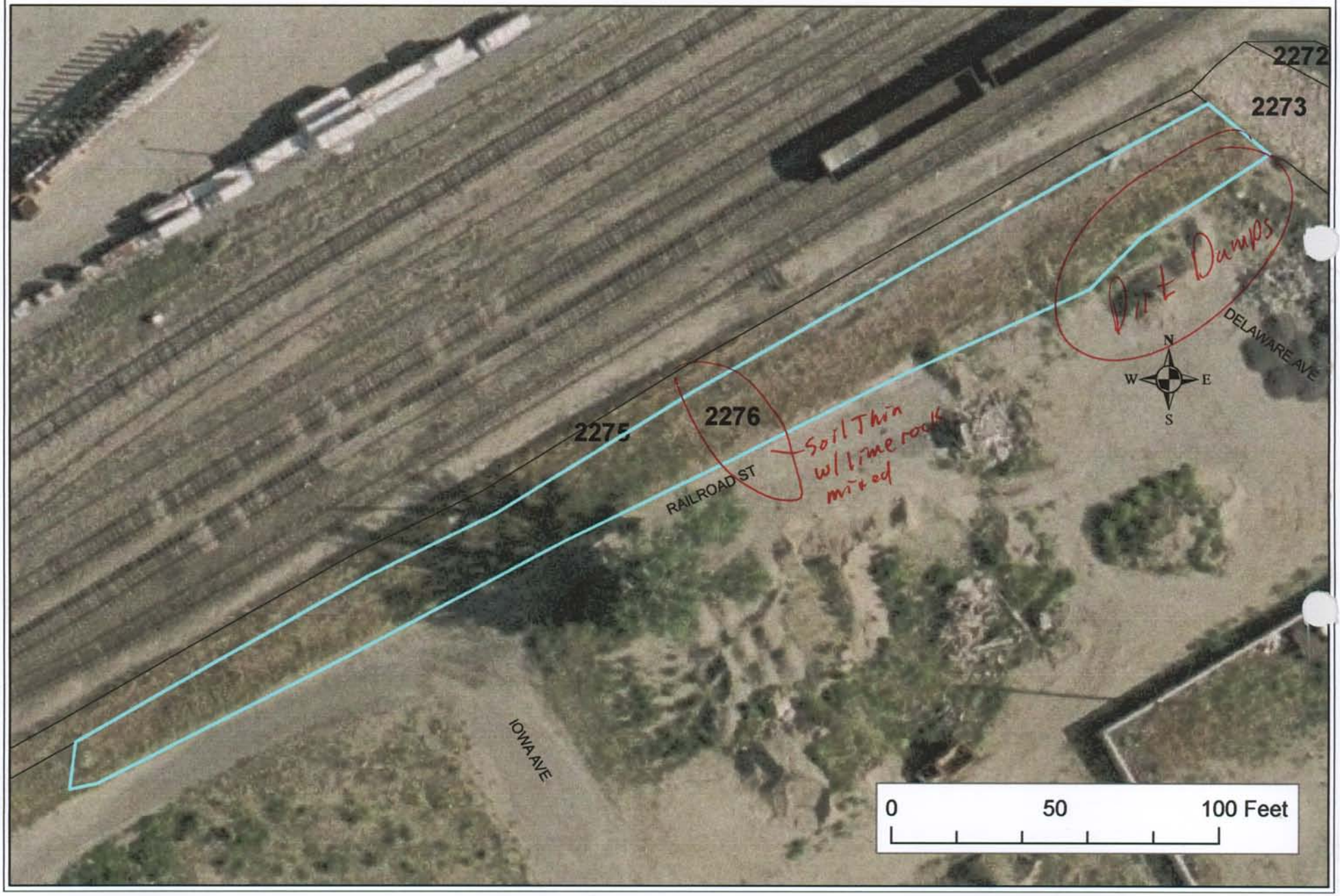
Comments. Rip-rap drain outflow

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2276 Master



BRES FIELD FORM

Site ID: #2276 Site Name: _____ Field Date: 7/10/09

Team Members (Circle your name): JTR & BC

Number of Polygons: 1 Slope: 45° to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Slope of active railway

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	0					
*Undesirable (weedy) species	1					
*Noxious weeds	20					
Litter	0					
Rocks > 2"	0					
Bare Ground	79					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	1					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other Cereal Rye	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	0					
Flow Patterns	3					
Rills Depth	3					
Rills Frequency	3					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	0					
TOTAL BLM Score:	14					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass	I					
Baby's breath						
Kochia	F					
Thistle						
Leafy Spurge						
Other Mustard	I					
Other Lambsquarter	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **depositional area**
- ☑ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** _____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y ____ N ✓

- Estimated pH ____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ____

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1

Do barren areas cover over 25% of any polygon? Y ✓ N ____

7. Gullies (over 6" in depth):

Y ____ N ✓

Are any gullies actively eroding? Y ____ N ____

Number of gullies ____

Comments.

- Area is mostly barren. Some Kochia growing along edges.
- East end is being used as depository for dumploads of dirt
- Soil seems to mostly be in place. Area needs to be seeded.

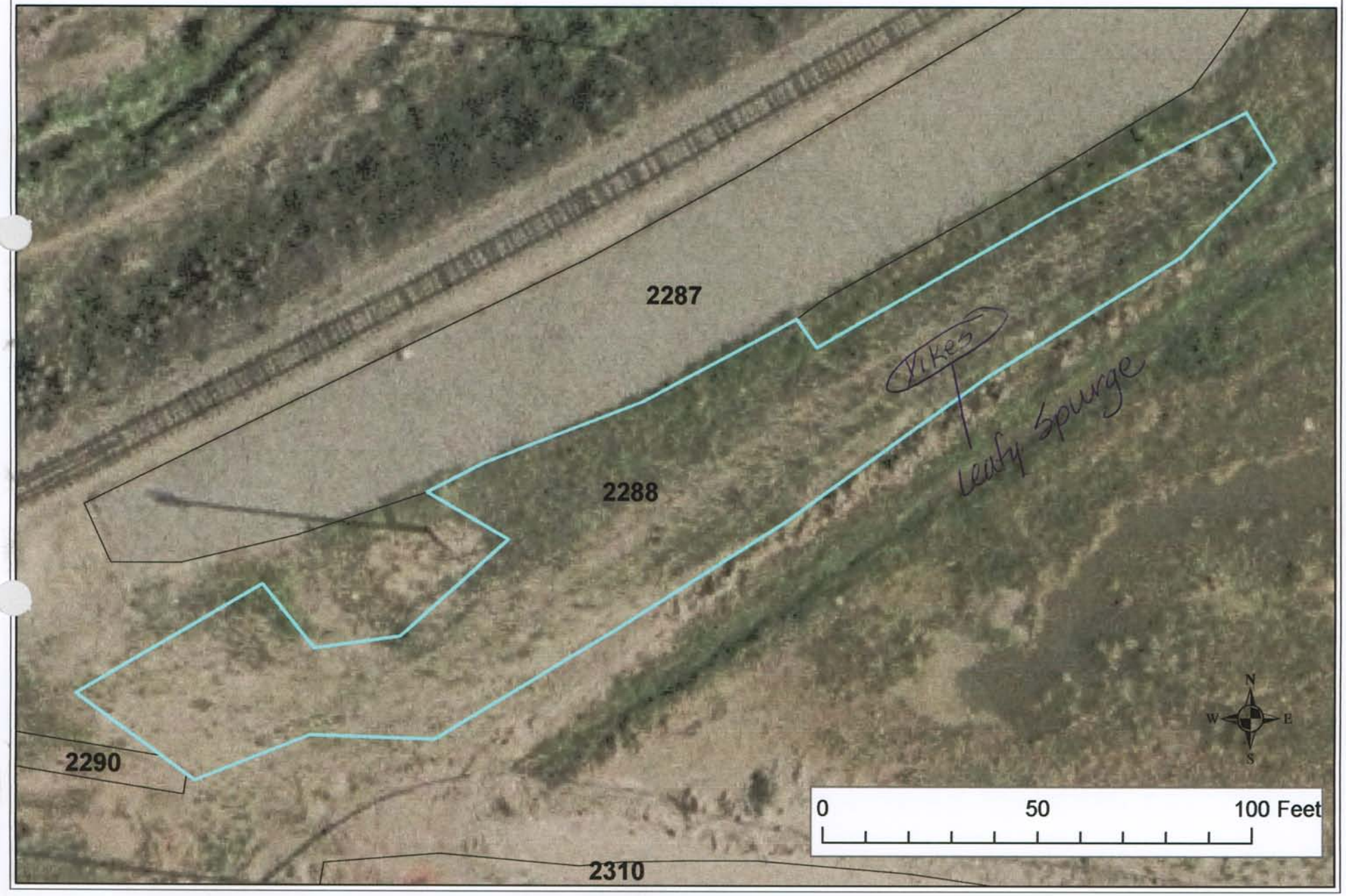
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

Master

Site 2288



BRES FIELD FORM

Site ID:__ Site Name: 2288 Field Date: 7-13-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: base of slope # (2287)

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	20					
*Undesirable (weedy) species	15					
*Noxious weeds	3					
Litter	40					
Rocks > 2"	2					
Bare Ground	20					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	25%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	I					
Slender wheatgrass	F					
Yellow sweetclover						
Alfalfa	I					
Other rubber rabbit	I					
Other sage?	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	0					
Pedestalling	3					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	18					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath						
Kochia	I					
Thistle						
Leafy Spurge *	I					
Other mustard	F					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

* LEAFY SPURGE *
* note site map for main area but more throughout site.

QAQC done on site - attached

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2302

BRES FIELD FORM

Site ID:__ Site Name: 2302 Field Date: 7-15-09

Master

Team Members (Circle your name): Keegan | Jodi

Number of Polygons: 1 Slope: -__ to -__ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Parking lot - gravel - bordering Lynx Trail Grizzly Trail

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	1					
*Undesirable (weedy) species	4					
*Noxious weeds	3					
Litter	1					
Rocks > 2"	1					
Bare Ground	90					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	5%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	/					
Surface Rock Movement	/					
Pedestalling	/					
Flow Patterns	3					
Rills Depth	2					
Rills Frequency	3					
Gullies Depth	/					
Gullies Frequency	/					
Soil Movement	0					
TOTAL BLM Score:	8					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y____ N✓ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y✓ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon?
Y✓ N____

7. Gullies (over 6" in depth):
Y____ N✓
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

Gravel parking area/ driveway.

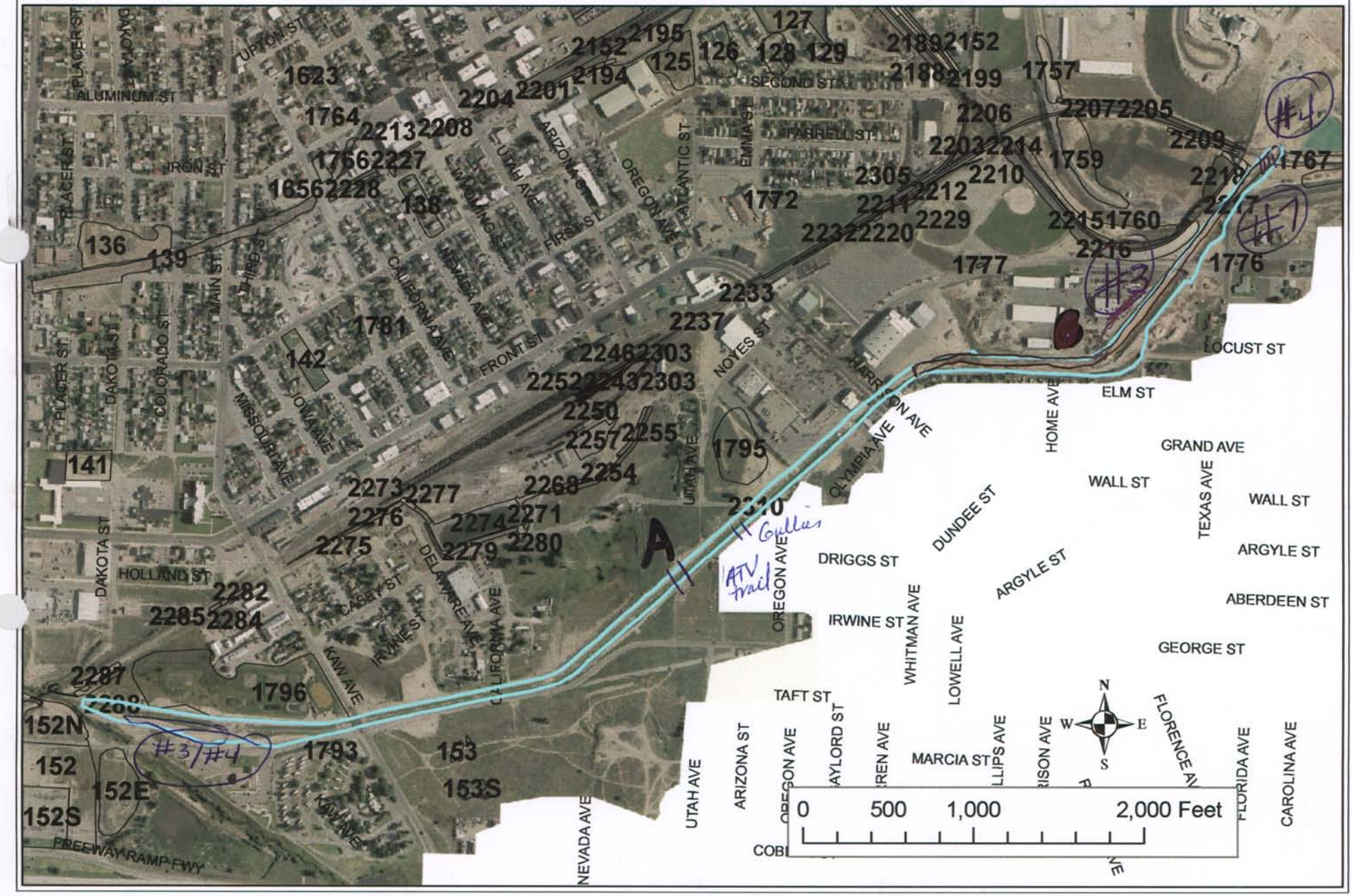
No issues.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

Site 2310



Master

BRES FIELD FORM

Site ID: __ **Site Name:** 2310 **Field Date:** 7/14/09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Creek bed and slope btwn Cont. & Kaw

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	15					
*Noxious weeds	5					
Litter	35					
Rocks > 2"	0					
Bare Ground	15					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	I					
Slender wheatgrass	D					
Yellow sweetclover	I					
Alfalfa	I					
Other evergreens	I					
Other sage	I					
Other flax	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	9					
Flow Patterns	12					
Rills Depth	4					
Rills Frequency	1					
Gullies Depth	7					
Gullies Frequency	1					
Soil Movement	3					
TOTAL BLM Score:	49					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath	I					
Kochia	I					
Thistle						
Leafy Spurge						
Other salsify	I					
Other mustard	I					
Other dandilion	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y ✓ N ____ (check applicable items)

- ☐ lime rock barrier
- ☐ depositional area
- ☑ more weeds
- ☑ steeper slope
- ☑ increased erosion
- ☑ less vegetation
- ☑ gullies
- ☑ other exposed waste

Estimate width of affected edge (in feet) 1/4 mile

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4.0
- Approximate area (in square feet) 500'²
- Number of areas with exposed waste (4)

5. Is there evidence of: Y ____ N ✓

- ☐ bulk soil failure
- ☐ land slumps
- ☐ subsidence

6. Barren Areas: Y ✓ N ____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas (1)
Do barren areas cover over 25% of any polygon?
Y ____ N ✓

7. Gullies (over 6" in depth):
Y ✓ N ____
Are any gullies actively eroding? Y ✓ N ____
Number of gullies 40

Comments.

Very long site from Concentrator to Kaw and beyond.

N.E. end of site has gullies. and exposed waste that needs attention.

S and SE facing slope from Continental to Civic Center has increased erosion and less vegetation due to runoff from walking path above.

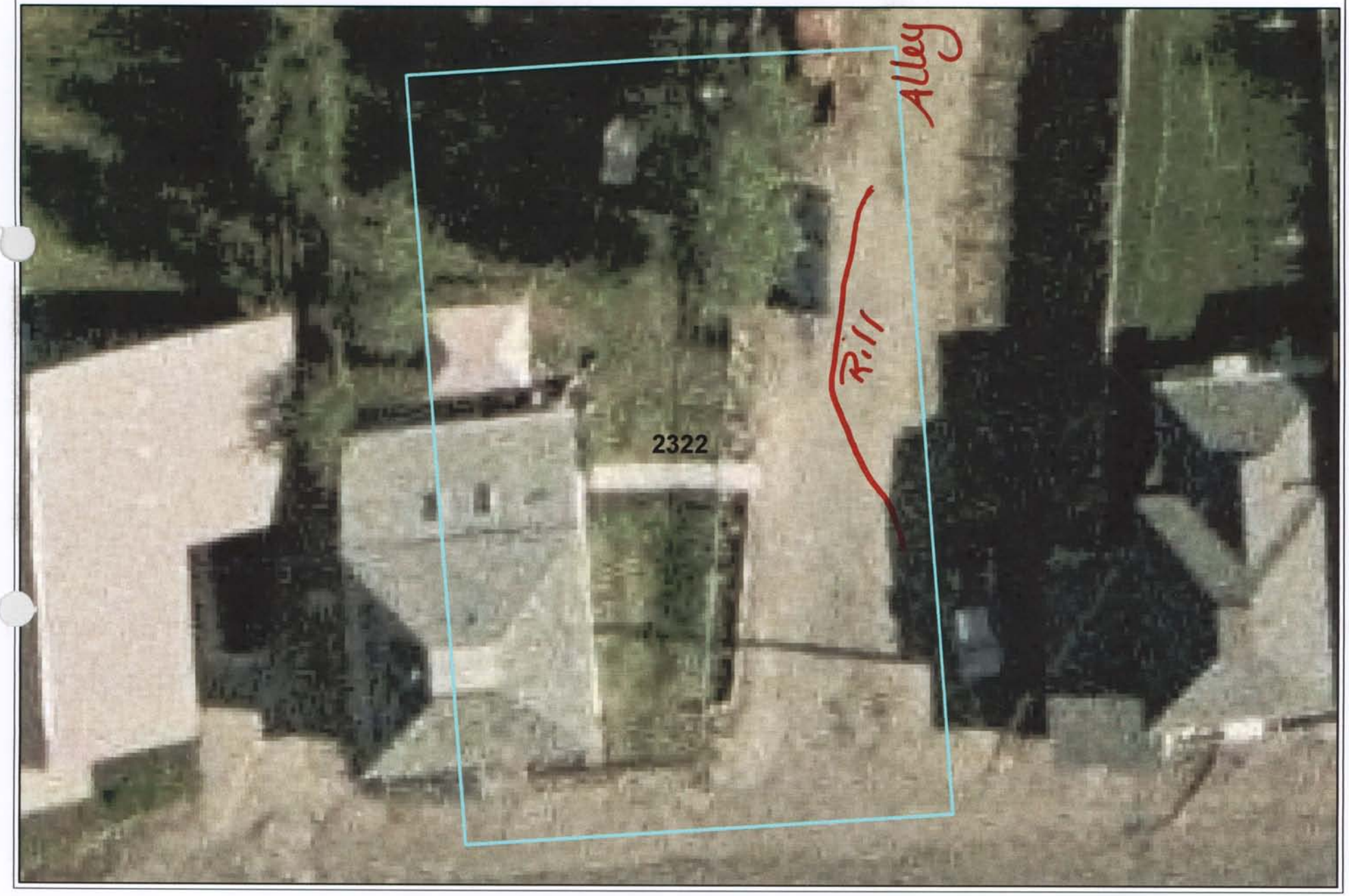
SW end of site has exposed waste of 4.0 pH

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
mullen	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Site 2322 - 203 Missoula



BRES FIELD FORM Site ID:__ Site Name: 2322 Field Date: 7/13/09

Team Members (Circle your name): Wague, McCaughey

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Alley + Private Property

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed						
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site?
Y X N_____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☒ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y_____ N X

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y_____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y_____ N_____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):
Y_____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Polair

2222

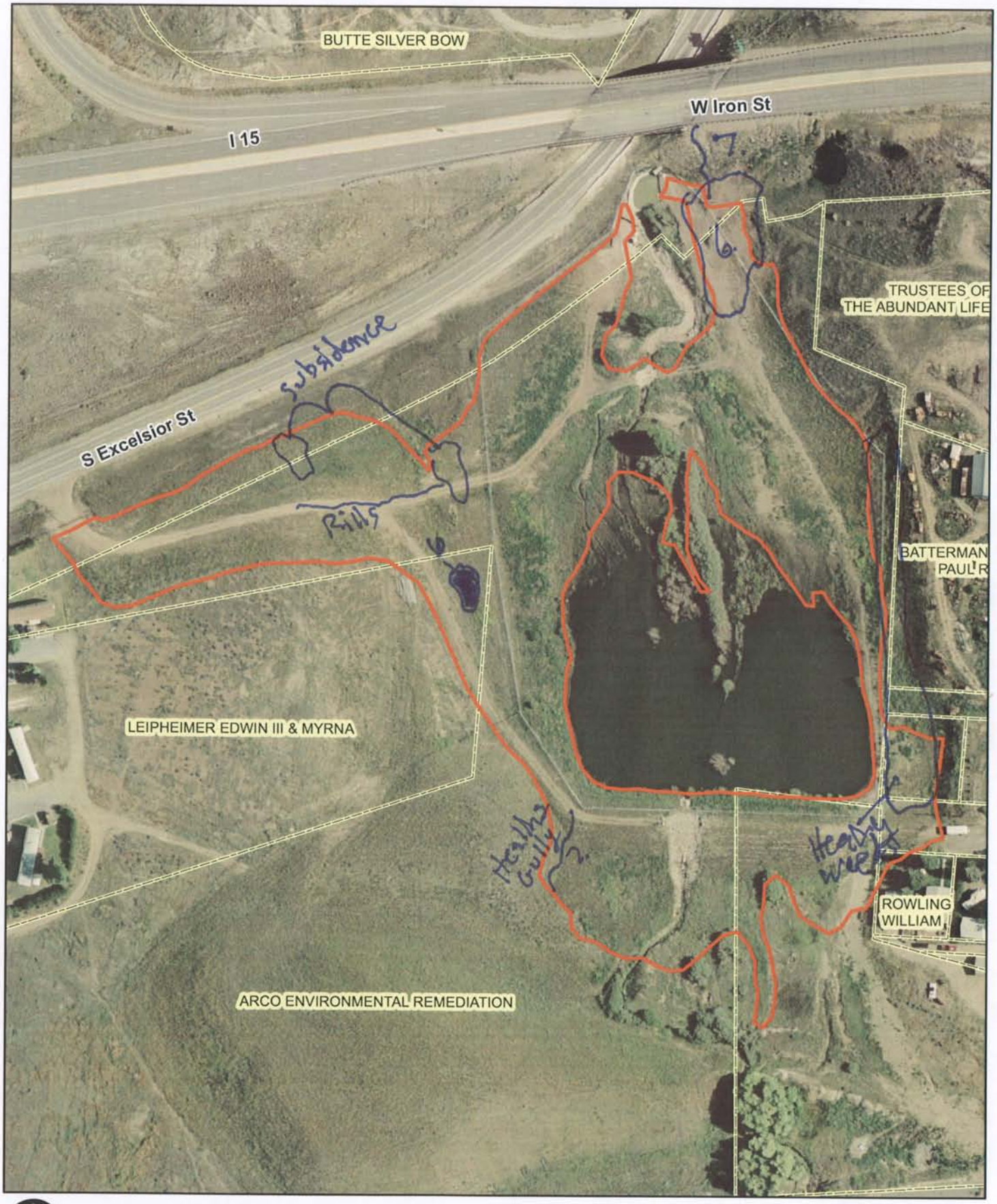
Comments. The only part evaluated was alley & paved section in front. Rest is private property. There is a rill developing from recent rain storms with potential to develop into a gully.

Additional Vegetation:

Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

#CB08 - Catch Basin 08



BRES FIELD FORM Site ID: ~~1~~ CB08 Site Name: Catch Basin 08 Field Date: 7/8/09

Team Members (Circle your name): JTR BC

Number of Polygons: 1 Slope: 30° to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Catch Basin

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25					
*Undesirable (weedy) species	5					
*Noxious weeds	5					
Litter	60					
Rocks > 2"	0					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	30					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	I					
Other Brome	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8					
Surface Rock Movement	5					
Pedestalling	14					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	2					
Soil Movement	8					
TOTAL BLM Score:	43					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass	I					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other Mustards	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ___ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☑ **steeper slope**
- ☑ **less vegetation**
- ☐ **other** ___

Estimate width of affected edge (in feet) 10

4. Exposed Waste Material? Y ___ N ✓

- Estimated pH ___
- Approximate area (in square feet) ___
- Number of areas with exposed waste ___

5. Is there evidence of: Y ✓ N ___

- ☐ **bulk soil failure**
- ☒ **land slumps**
- ☒ **subsidence**

6. Barren Areas: Y ✓ N ___

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2
Do barren areas cover over 25% of any polygon? Y ___ N ✓

7. Gullies (over 6" in depth):
Y ✓ N ___
Are any gullies actively eroding? Y ___ N ✓
Number of gullies 1

Comments.

- Very heavy Knapweed on east edge + especially on adjoining slope.
- Rills developing along site access road.
- Largest barren area on NE corner appears to be caused by vehicle traffic.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#CB09 - Catch Basin 09

CB09 | Master |

BRES FIELD FORM

Site ID: __ **Site Name:** Catch Basin 9 **Field Date:** 7/2/09

Team Members (Circle your name): Jeanne Larson Eric Larson Beverly Plum

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	5					
*Noxious weeds	2					
Litter	20 ~~15~~					
Rocks > 2"	3					
Bare Ground	35					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	F					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	F					
Other Rabbit	F					
Other Scorpion	I					
Other Phlox	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	2					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	5					
Rills Frequency	2					
Gullies Depth	2					
Gullies Frequency	2					
Soil Movement	5					
TOTAL BLM Score:	36					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other Salsify	I					
Other Mustard	I					
Other mullen	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☒ **more weeds**
- ☐ **steeper slope**
- ☒ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☒ **other** low pH pond in middle

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4.0 ?
- Approximate area (in square feet) 200
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N ~~X~~

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 6
Do barren areas cover over 25% of any polygon? Y____ N X

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

* Lots of mustard on south end of site near catch basin and on Centennial

* Frost heave occurs often on site

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER

Randi Phelps
Jennifer Nardullo

#NA - TEMP Id BRES2009 02

Pic # 100-2008

N

0 50 100 150 200 Feet

CDM

Master

BRES FIELD FORM

Site ID:__ **Site Name:** Temp BRES 2009-02 **Field Date:** 7/7/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: 2 Slope: ____to____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	1	15				
Erosion (BLM score)	0	11				
Undesir/noxious weeds	0	23				

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	1	10				
*Undesirable (weedy) species	0	20				
*Noxious weeds	0	3				
Litter	80	2				
Rocks > 2"	4	55				
Bare Ground	15	10				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	1	15				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	/	/				
Crested wheatgrass	/	I				
Slender wheatgrass	/	/				
Yellow sweetclover	/	I				
Alfalfa	/	I				
Other Rubber Rabbit		I				
Other Canadian Bluegrass		I				
Other Scorpion Weed		I				
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	0	3				
Surface Rock Movement	0	2				
Pedestalling	0	0				
Flow Patterns	0	0				
Rills Depth	0	4				
Rills Frequency	0	2				
Gullies Depth	0	0				
Gullies Frequency	0	0				
Soil Movement	0	0				
TOTAL BLM Score:	0	11				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	/	I				
Dalmation toadflax	/	I				
Cheatgrass	/	F				
Baby's breath	/	/				
Kochia	/	/				
Thistle	/	/				
Leafy Spurge	/	/				
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y✓ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☑ **other** Street and drainage ditch

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y✓ N____

- Estimated pH 4
- Approximate area (in square feet) 15-20ft²
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y✓ N____

- At Least 75 ft² • Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon? Y✓ N____

7. Gullies (over 6" in depth):

Y____ N✓

Are any gullies actively eroding? Y____ N✓

Number of gullies ✓

Comments. Polygon A was recently revegetated & reseeded.

For picture of site see #100-2668

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

master

#NA - TEMP Id BRES2009 03

BRES FIELD FORM

Site ID: NA Site Name: _____ Field Date: _____

Temp ID BRES 2009 03

Team Members (Circle your name): (Jeanne Larson) Eric Larson Beverly Plumb

Number of Polygons: ___ Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Ditch N of walking trail between Wyoming - Bella

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5					
*Undesirable (weedy) species	20					
*Noxious weeds	5					
Litter	10					
Rocks > 2"	5					
Bare Ground	55					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	10					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass						
Yellow sweetclover	I					
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	8					
Pedestalling	3					
Flow Patterns	9					
Rills Depth	6					
Rills Frequency	5					
Gullies Depth	7					
Gullies Frequency	5					
Soil Movement	11					
TOTAL BLM Score:	57					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other Mustard	I					
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- [X] **lime rock barrier**
- [X] **more weeds**
- [ ] **increased erosion**
- [X] **gullies**
- [ ] **depositional area**
- [ ] **steeper slope**
- [X] **less vegetation**
- [ ] **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4
- Approximate area (in square feet) 406
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N X

- [ ] **bulk soil failure**
- [ ] **land slumps**
- [ ] **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 2 huge areas
Do barren areas cover over 25% of any polygon? Y X N____

7. Gullies (over 6" in depth):

Y X N____
Are any gullies actively eroding? Y X N____
Number of gullies _____

Comments.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

#NA - TEMP Id BRES2009 04

(Muster)

BRES FIELD FORM Site ID:__ Site Name: Temp Bres ID 200904 Field Date: 7/7/09

Team Members (Circle your name): Joanne Larson, Eric Larson, Beverly Plumb

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Directly NE of end of walking trail at Wyoming

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5					
*Undesirable (weedy) species	35					
*Noxious weeds	2					
Litter	40					
Rocks > 2"	5					
Bare Ground	13					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	10					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	9					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	2					
Gullies Frequency	2					
Soil Movement	8					
TOTAL BLM Score:	42					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	D					
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other mustard	I					
Other Foxtail	I					
Other mustard	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

maturing I

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☒ **less vegetation**
- ☐ **gullies**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH____
- Approximate area (in square feet) 56
- Number of areas with exposed waste 1

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____
Do barren areas cover over 25% of any polygon? Y____ N X

7. Gullies (over 6" in depth):
Y____ N X
Are any gullies actively eroding? Y____ N____
Number of gullies ____

Comments.

* Rusting metal 'cup' or 'lid' on SW corner of site

* Lower half of site is a graveled drive way

* Sand/soil depositing in ditch

* Frost heave

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Master

#NA - TEMP Id BRES2009 05

N

0 25 50 75 100 Feet

CDM

master

BRES FIELD FORM

Site ID: __ Site Name: Temp ID BRES 2009 05 Field Date: 7/7/09

Team Members (Circle your name): (Jeanne Larson) Eric Larson Beverly Plumb

Number of Polygons: 1 Slope: ___ to 1 Aspect (circle all relevant): N S W E NW NE SW (SE)

Area Description: Directly south of end of walking trail - east side of Wyoming St

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

for extra curve

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	30					
*Undesirable (weedy) species	20 ~~30~~					
*Noxious weeds	1					
Litter	~~25~~					
Rocks > 2"	4					
Bare Ground	~~20~~					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	35					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	I					
Crested wheatgrass	D					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa	I					
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	3					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	2					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	5					
TOTAL BLM Score:	29					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	F					
Baby's breath						
Kochia						
Thistle	I					
Leafy Spurge						
Other Fox tail	I					
Other Mustard	I					
Other Dandelions	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

satisfy I

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N___ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☒ **steeper slope**
- ☐ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other** pH 4

Estimate width of affected edge (in feet) ___

4. Exposed Waste Material? Y X N 1

- Estimated pH 4
- Approximate area (in square feet) 15
- Number of areas with exposed waste ___

5. Is there evidence of: Y___ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y X N___

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ___
Do barren areas cover over 25% of any polygon? Y___ N X

7. Gullies (over 6" in depth):

Y___ N X
Are any gullies actively eroding? Y___ N___
Number of gullies ___

Comments.

East side of site evidence of flow patterns - not found elsewhere

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

MASTER

Randi Phelps
Jennifer Nardiello

#NA - TEMP Id BRES2009 06

PIC #'s 2670-2672

Master

BRES FIELD FORM

Site ID:__ Site Name: Temp BRES2009-06 Field Date: 7/7/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Empty lot next to a house

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	6					
Erosion (BLM score)	35					
Undesir/noxious weeds	65					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	1					
*Undesirable (weedy) species	50					
*Noxious weeds	15					
Litter	32					
Rocks > 2"	1					
Bare Ground	1					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	6					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	/					
Crested wheatgrass	/					
Slender wheatgrass	/					
Yellow sweetclover	/					
Alfalfa	/					
Other Canad Blue	I					
Other Rubber Rabbit	I					
Other Scorpion Weed	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	5					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	7					
Gullies Frequency	2					
Soil Movement	3					
TOTAL BLM Score:	35					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax	I					
Cheatgrass	D					
Baby's breath	I					
Kochia	I					
Thistle	/					
Leafy Spurge	/					
Other Mustards	F					
Other Matrimony Vine	I					
Other Salsify	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **more weeds**
- ☑ **increased erosion**
- ☑ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☑ **less vegetation**
- ☐ **other**____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 1

Do barren areas cover over 25% of any polygon? Y____ N ✓

7. Gullies (over 6" in depth):

Y ✓ N____

Are any gullies actively eroding? Y ✓ N____

Number of gullies 1

Comments.

Picture number 100-~~2669~~ 2670-2672

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

#NA - TEMP Id BRES2009 07

Master

Master

BRES FIELD FORM

Site ID: __ **Site Name:** temp id 2009-07 **Field Date:** 7-14-09

Team Members (Circle your name): Keegan / Jodi

Number of Polygons: 1 Slope: 1 to 3 Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Mini yard below ~~steeper~~ ?

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	5					
*Undesirable (weedy) species	60					
*Noxious weeds	15					
Litter	10					
Rocks > 2"	5					
Bare Ground	5					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	10%					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass	I					
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other rubber rabbit	I					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	11					
Surface Rock Movement	11					
Pedestalling	0					
Flow Patterns	3					
Rills Depth	3					
Rills Frequency	2					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	33					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	F					
Cheatgrass	D					
Baby's breath	I					
Kochia						
Thistle						
Leafy Spurge						
Other matrimony	F					
Other Salsify	I					
Other mustard	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N ____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☐ **steeper slope**
- ☐ **increased erosion**
- ☑ **less vegetation**
- ☐ **gullies**
- ☑ **other** exposed waste

Estimate width of affected edge (in feet) 1000'²

4. Exposed Waste Material? Y ✓ N ____

- Estimated pH 4.0
- Approximate area (in square feet) 1200 ft²
- Number of areas with exposed waste 3

5. Is there evidence of: Y ____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y ✓ N ____

- At Least 75 ft²
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas 3
Do barren areas cover over 25% of any polygon? Y ✓ N ____

7. Gullies (over 6" in depth):
Y ____ N ✓
Are any gullies actively eroding? Y ____ N ____
Number of gullies ____

Comments.

This site is inside a mine yard and does not appear to have ever been reclaimed.

Exposed waste → ≈ 1200'²

Additional Vegetation:

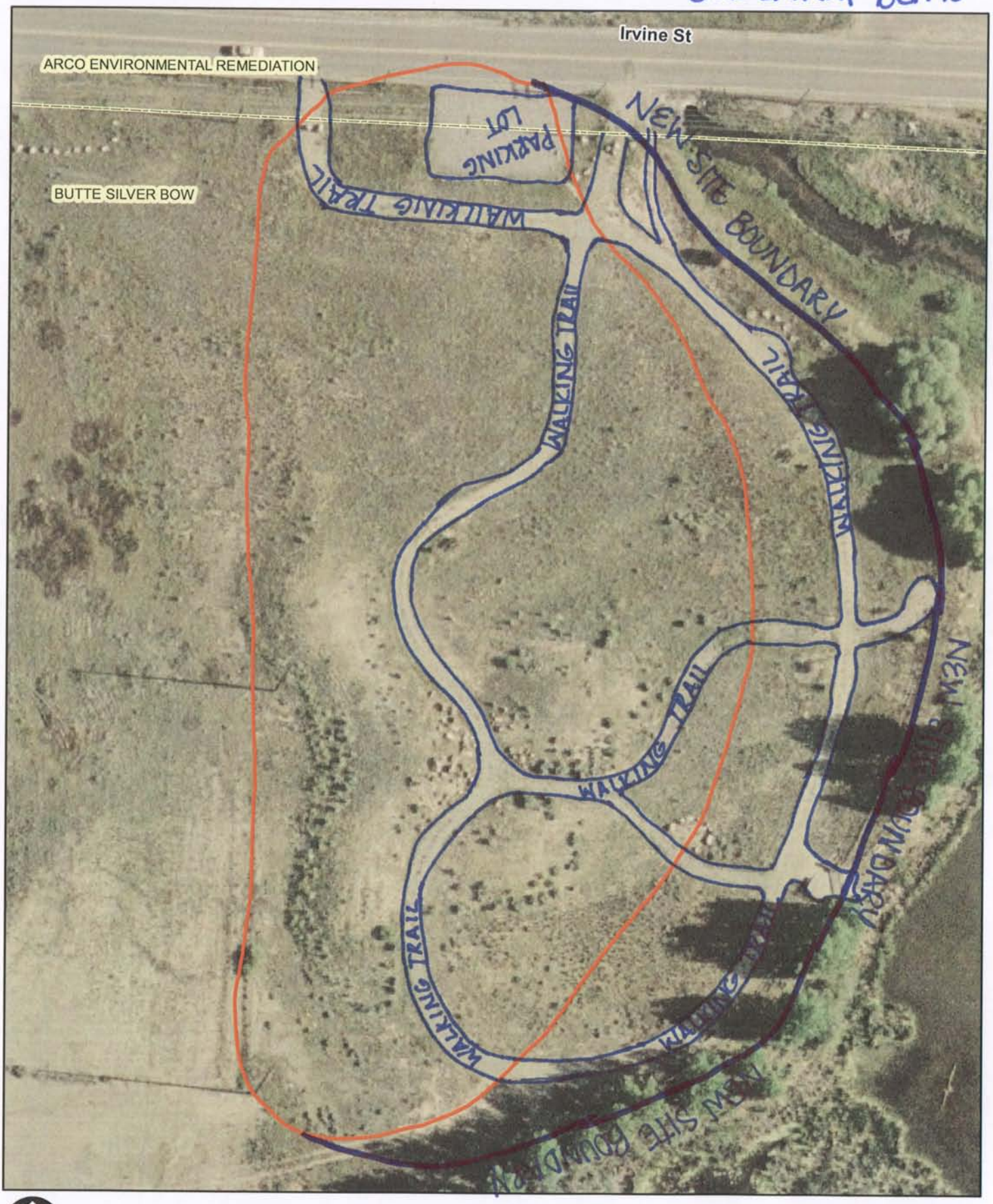
Species Present	POLYGON					
	A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Randi Phelps
Jennifer Narduello

MASTER

NEW NAME:

#NA - TEMP Id BRES2009 08 - ARCO GREENWAY DEMO



Master

Arco Greenway Demo

BRES FIELD FORM

Site ID:__ Site Name: TempBRES2009-08 Field Date: 7/7/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: 1 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: _____

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	40					
Erosion (BLM score)	29					
Undesir/noxious weeds	23					

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	35					
*Undesirable (weedy) species	20					
*Noxious weeds	3					
Litter	30					
Rocks > 2"	20					
Bare Ground	10					
TOTAL (above 6 items must total 100%)	100					
ADJUSTED LIVE % = Live + 5%Undesirable	40					

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	F					
Slender wheatgrass	/					
Yellow sweetclover	F					
Alfalfa	I					
Other Flax	F					
Other Penstemon	I					
Other Smooth Brom	F					
Other Wild Rye	F					

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6					
Surface Rock Movement	8					
Pedestalling	6					
Flow Patterns	6					
Rills Depth	0					
Rills Frequency	0					
Gullies Depth	0					
Gullies Frequency	0					
Soil Movement	3					
TOTAL BLM Score:	29					

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax	I					
Cheatgrass	I					
Baby's breath	I					
Kochia	/					
Thistle	/					
Leafy Spurge	/					
Other Mustards	F					
Other Salsify	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☑ **more weeds**
- ☐ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☐ **steeper slope**
- ☐ **less vegetation**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N ✓

- Estimated pH_____
- Approximate area (in square feet) _____
- Number of areas with exposed waste _____

5. Is there evidence of: Y____ N ✓

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N ✓

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____

Do barren areas cover over 25% of any polygon? Y____ N____

7. Gullies (over 6" in depth):

Y____ N ✓

Are any gullies actively eroding? Y____ N ✓

Number of gullies _____

Comments.

If trail system would like to be utilized, more weed control on and around the trails is needed.

Extending site boundary to fence line along eastern and south sides is recommended.

There are mature trees and shrubs, so care would be needed for weed removal.

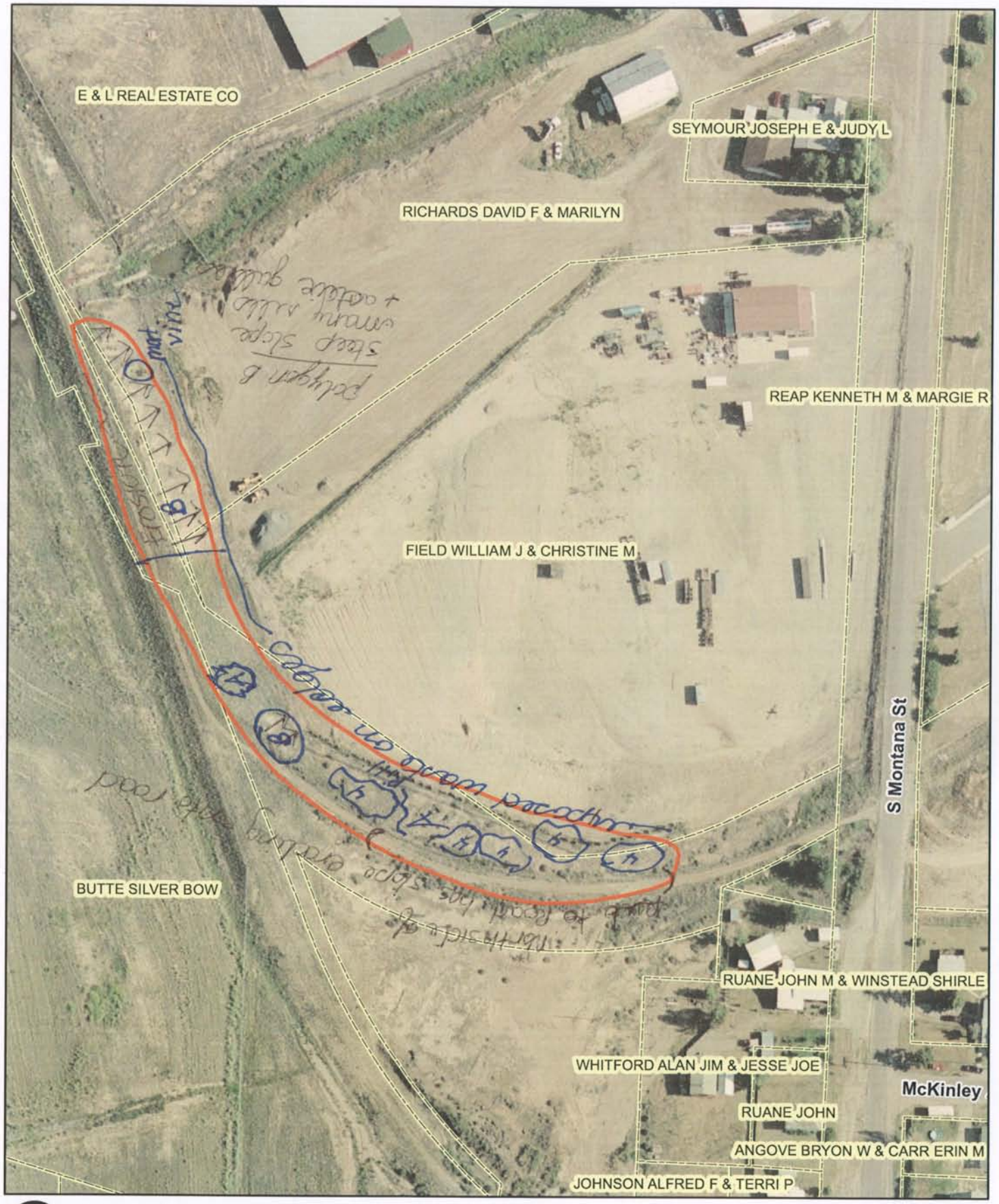
Suggest a new name ...
Arco Greenway Demo

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Rabbit Brush	I					
Sage Brush	I					
Juniper	I					
Quaking Aspen	I					
Chokecherry	I					

Use D (Dominant), F (Frequent), or I (Infrequent).

#NA - TEMP Id BRES2009 09



BRES FIELD FORM Site ID:__ Site Name: TEMPID BRES2009-09 Field Date: 7/10

Team Members (Circle your name): Logue, McCaughey

Number of Polygons: 2 Slope: ____ to ____ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: North end of Timber Butte hill on S. MT Street.

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)	25	20				
Erosion (BLM score)	45	82				
Undesir/noxious weeds	25	35				

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	25	15				
*Undesirable (weedy) species	10	25				
*Noxious weeds	15	10				
Litter	30	25				
Rocks > 2"	3	5				
Bare Ground	17	20				
TOTAL (above 6 items must total 100%)	100	100				
ADJUSTED LIVE % = Live + 5%Undesirable	30	20				

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.

Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue	F					
Crested wheatgrass	I					
Slender wheatgrass	I					
Yellow sweetclover						
Alfalfa						
Other 66 Rye	F					
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	8	11				
Surface Rock Movement	5	11				
Pedestalling	9	9				
Flow Patterns	9	15				
Rills Depth	3	6				
Rills Frequency	3	7				
Gullies Depth	0	5				
Gullies Frequency	0	4				
Soil Movement	8	14				
TOTAL BLM Score:	45	82				

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	F					
Dalmation toadflax						
Cheatgrass	F					
Baby's breath	F					
Kochia						
Thistle						
Leafy Spurge						
Other Mustard	F					
Other Matrimony vine	I					
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y X N____ (check applicable items)

- ☐ **lime rock barrier**
- ☒ **more weeds**
- ☒ **increased erosion**
- ☐ **gullies**
- ☐ **depositional area**
- ☒ **steeper slope**
- ☒ **less vegetation**
- ☒ **other** MineWaste

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y X N____

- Estimated pH 4
- Approximate area (in square feet) 100
- Number of areas with exposed waste 7

5. Is there evidence of: Y____ N X

- ☐ **bulk soil failure**
- ☐ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N X

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas ____

Do barren areas cover over 25% of any polygon? Y____ N____

7. Gullies (over 6" in depth):

Y X N____

Are any gullies actively eroding? Y X N____

Number of gullies 4

Comments. Polygon A - This polygon has a very large amount of exposed mine waste throughout the area. It is moving through the fence and on to private property. It was tested at numerous areas and had a PH of 4 or less at all of them. There is also a large amount of Baby's Breath that should be sprayed along w/ Knap weed. This polygon did contain some rills and the entire South side slope is eroding onto the trail.

Polygon B - This polygon is actively eroding and needs to be treated to ASAP. It is exposing waste and ruining vegetation. There is a Matrimony vine on the NE corner of this polygon and plenty of Baby's breath throughout the W edge. There are rills & gullies actively eroding down into private property.

Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F

Use D (Dominant), F (Frequent), or I (Infrequent).

MASTER

Randi Phelps
Jennifer Nardiello

#NA - West Gray Rock Shaft

N

0 25 50 75 100 Feet

CDM

Master

BRES FIELD FORM

Site ID:__ Site Name: West Gray Rock Cap Field Date: 7/7/09

Team Members (Circle your name): Jennifer Nardiello & Randi Phelps

Number of Polygons: 1 Slope: ___ to ___ Aspect (circle all relevant): N S W E NW NE SW SE

Area Description: Cap of West Gray Rock Mine

Polygon Evaluation ** *Admin Use Only* **	A	B	C	D	E	F
Vegetation (% live)						
Erosion (BLM score)						
Undesir/noxious weeds						

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species						
*Undesirable (weedy) species						
*Noxious weeds						
Litter						
Rocks > 2"						
Bare Ground						
TOTAL (above 6 items must total 100%)						
ADJUSTED LIVE % = Live + 5%Undesirable						

*Up to 5% of undesirable species and 0% of noxious weeds may count toward Adjusted Live %.
Vegetation (% live) score:
0-20% = RI (Reclamation Improvement)
21-39 % = VI (Vegetation Implementation)
40-100% = M (Monitor)

Species Present:	POLYGON A	B	C	D	E	F
Sheep fescue						
Crested wheatgrass						
Slender wheatgrass						
Yellow sweetclover						
Alfalfa						
Other						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter						
Surface Rock Movement						
Pedestalling						
Flow Patterns						
Rills Depth						
Rills Frequency						
Gullies Depth						
Gullies Frequency						
Soil Movement						
TOTAL BLM Score:						

BLM score:
0-55 = M (Monitor)
56-100 = EV (Engineering Evaluation)

Weeds Present:	POLYGON A	B	C	D	E	F
Spotted knapweed	I					
Dalmation toadflax						
Cheatgrass						
Baby's breath						
Kochia						
Thistle						
Leafy Spurge						
Other						
Other						
Other						

Use D (Dominant), F (Frequent), or I (Infrequent).

Other BRES Trigger Items
Identify trigger areas (using #) on air photo

3. Site Edges: Are outer edges of the site significantly different than remainder of the site? Y ✓ N____ (check applicable items)

- ☐ **lime rock barrier**
- ☐ **depositional area**
- ☐ **more weeds**
- ☑ **steeper slope**
- ☑ **increased erosion**
- ☐ **less vegetation**
- ☐ **gullies**
- ☐ **other**_____

Estimate width of affected edge (in feet) ____

4. Exposed Waste Material? Y____ N____

- Estimated pH____
- Approximate area (in square feet) ____
- Number of areas with exposed waste ____

5. Is there evidence of: Y ✓ N____

- ☐ **bulk soil failure**
- ☑ **land slumps**
- ☐ **subsidence**

6. Barren Areas: Y____ N____

- At Least 75 ft^2
- Not a rock outcrop
- Less than 10 % total cover (live & litter)

Number of barren areas _____
Do barren areas cover over 25% of any polygon?
Y____N____

7. Gullies (over 6" in depth):

Y____ N____
Are any gullies actively eroding? Y____ N____
Number of gullies _____

Comments.

There are areas of erosion around the cap on the East & West sides.

There is a land slump north of the cap.

There were two spotted Knapweed plants around the cap.

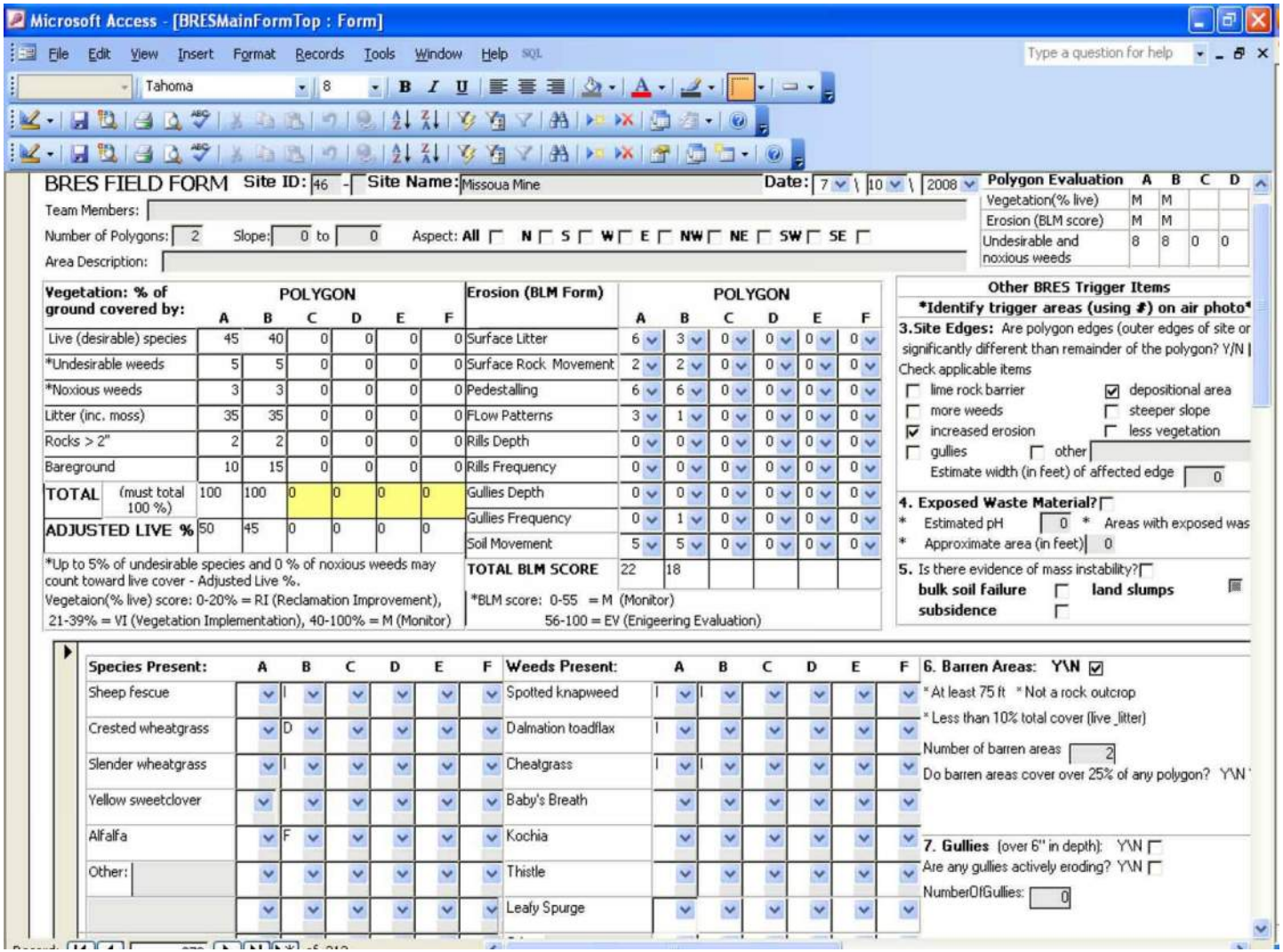
Additional Vegetation:

Species Present	POLYGON A	B	C	D	E	F
Use D (Dominant), F (Frequent), or I (Infrequent).						

Appendix E

Example O&M Forms from the BSB Source Area Database

Below is a snapshot of the 2008 BRES Report for Site No. 46, the Missoula Mine Yard. The BRES passes evaluation for Vegetation and Erosion, but identifies 2 Barren Areas in BRES Polygon B, approximately 4,500 sq. ft., and 1 Gully in BRES Polygon A. The associated O&M Report indicates that 50 cubic yards of new soils were subsequently imported to Site No. 46, the Missoula Mine Yard.



Microsoft Access - [BRESMainFormTop : Form]

BRES FIELD FORM Site ID: 46 - Site Name: Missoua Mine Date: 7 \ 10 \ 2008

Team Members:

Number of Polygons: 2 Slope: 0 to 0 Aspect: All N S W E NW NE SW SE

Area Description:

Polygon Evaluation	A	B	C	D
Vegetation(% live)	M	M		
Erosion (BLM score)	M	M		
Undesirable and noxious weeds	8	8	0	0

Vegetation: % of ground covered by:	POLYGON A	B	C	D	E	F
Live (desirable) species	45	40	0	0	0	0
*Undesirable weeds	5	5	0	0	0	0
*Noxious weeds	3	3	0	0	0	0
Litter (inc. moss)	35	35	0	0	0	0
Rocks > 2"	2	2	0	0	0	0
Bareground	10	15	0	0	0	0
TOTAL (must total 100 %)	100	100	0	0	0	0
ADJUSTED LIVE %	50	45	0	0	0	0

*Up to 5% of undesirable species and 0 % of noxious weeds may count toward live cover - Adjusted Live %.

Vegetaion(% live) score: 0-20% = RI (Reclamation Improvement), 21-39% = VI (Vegetation Implementation), 40-100% = M (Monitor)

Erosion (BLM Form)	POLYGON A	B	C	D	E	F
Surface Litter	6	3	0	0	0	0
Surface Rock Movement	2	2	0	0	0	0
Pedestalling	6	6	0	0	0	0
FLow Patterns	3	1	0	0	0	0
Rills Depth	0	0	0	0	0	0
Rills Frequency	0	0	0	0	0	0
Gullies Depth	0	0	0	0	0	0
Gullies Frequency	0	1	0	0	0	0
Soil Movement	5	5	0	0	0	0
TOTAL BLM SCORE	22	18				

*BLM score: 0-55 = M (Monitor)
56-100 = EV (Enigeering Evaluation)

Other BRES Trigger Items

Identify trigger areas (using #) on air photo

3.Site Edges: Are polygon edges (outer edges of site or significantly different than remainder of the polygon? Y/N

Check applicable items

- [ ] lime rock barrier
- [x] depositional area
- [ ] more weeds
- [ ] steeper slope
- [x] increased erosion
- [ ] less vegetation
- [ ] gullies
- [ ] other

Estimate width (in feet) of affected edge 0

4. Exposed Waste Material? [ ]

* Estimated pH 0 * Areas with exposed was
* Approximate area (in feet) 0

5. Is there evidence of mass instability? [ ]

bulk soil failure [ ] land slumps [ ]
subsidence [ ]

Species Present:	A	B	C	D	E	F
Sheep fescue		I				
Crested wheatgrass		D				
Slender wheatgrass		I				
Yellow sweetclover						
Alfalfa		F				
Other:						

Weeds Present:	A	B	C	D	E	F
Spotted knapweed	I	I				
Dalmation toadflax	I					
Cheatgrass	I	I				
Baby's Breath						
Kochia						
Thistle						
Leafy Spurge						

6. Barren Areas: Y\N [x]

* At least 75 ft * Not a rock outcrop
* Less than 10% total cover (live _litter)

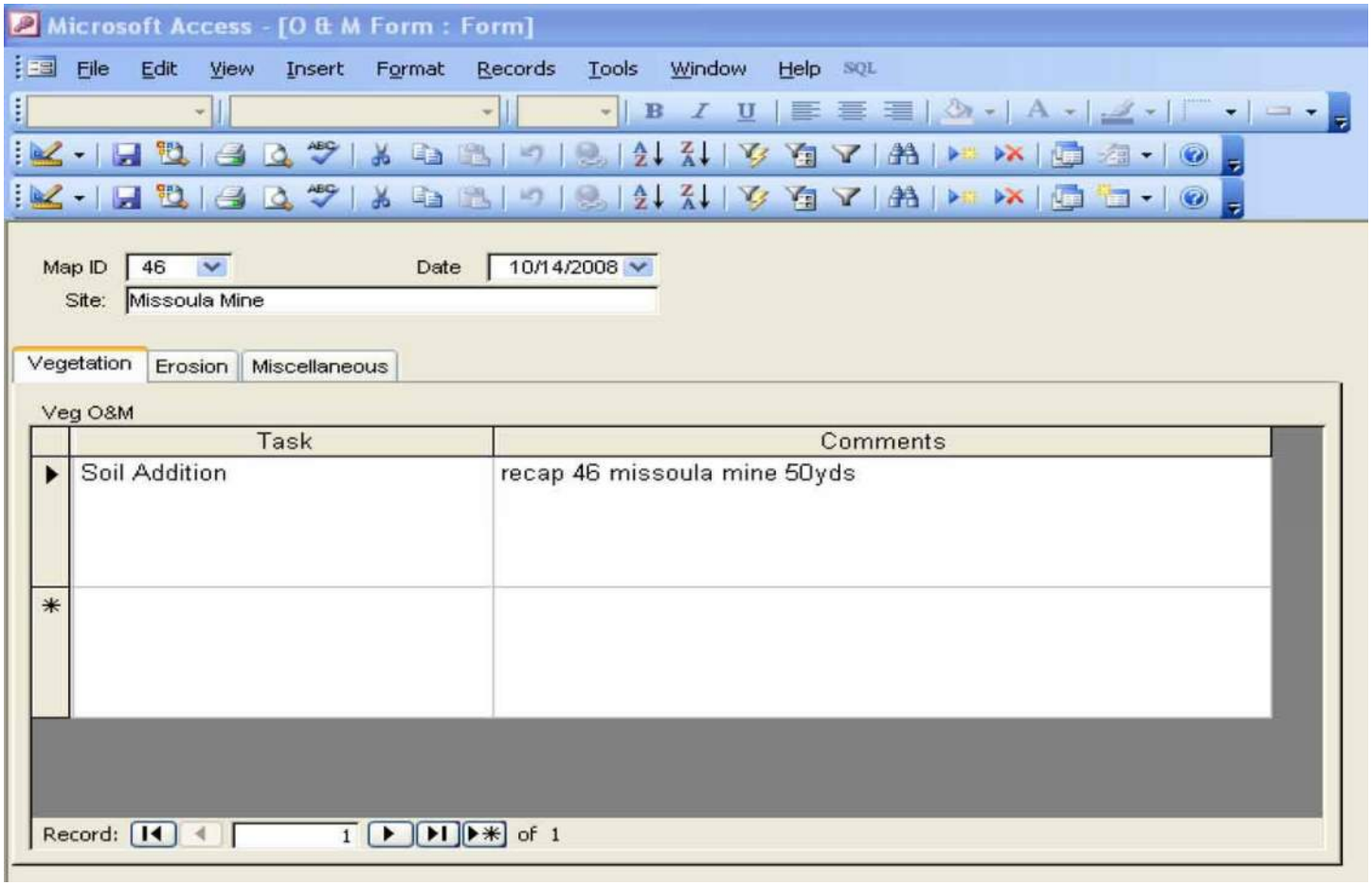
Number of barren areas 2

Do barren areas cover over 25% of any polygon? Y\N

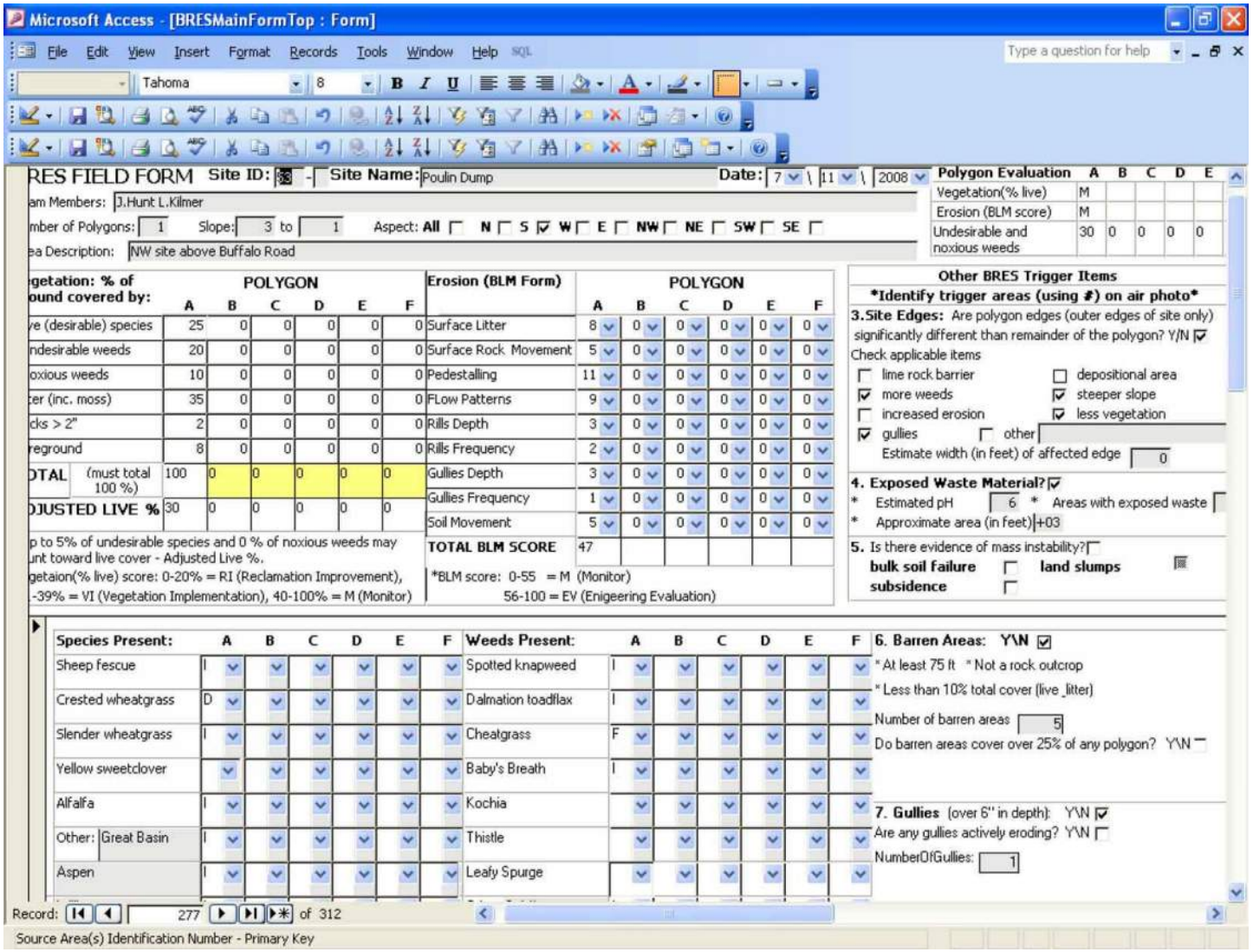
7. Gullies (over 6" in depth): Y\N [ ]

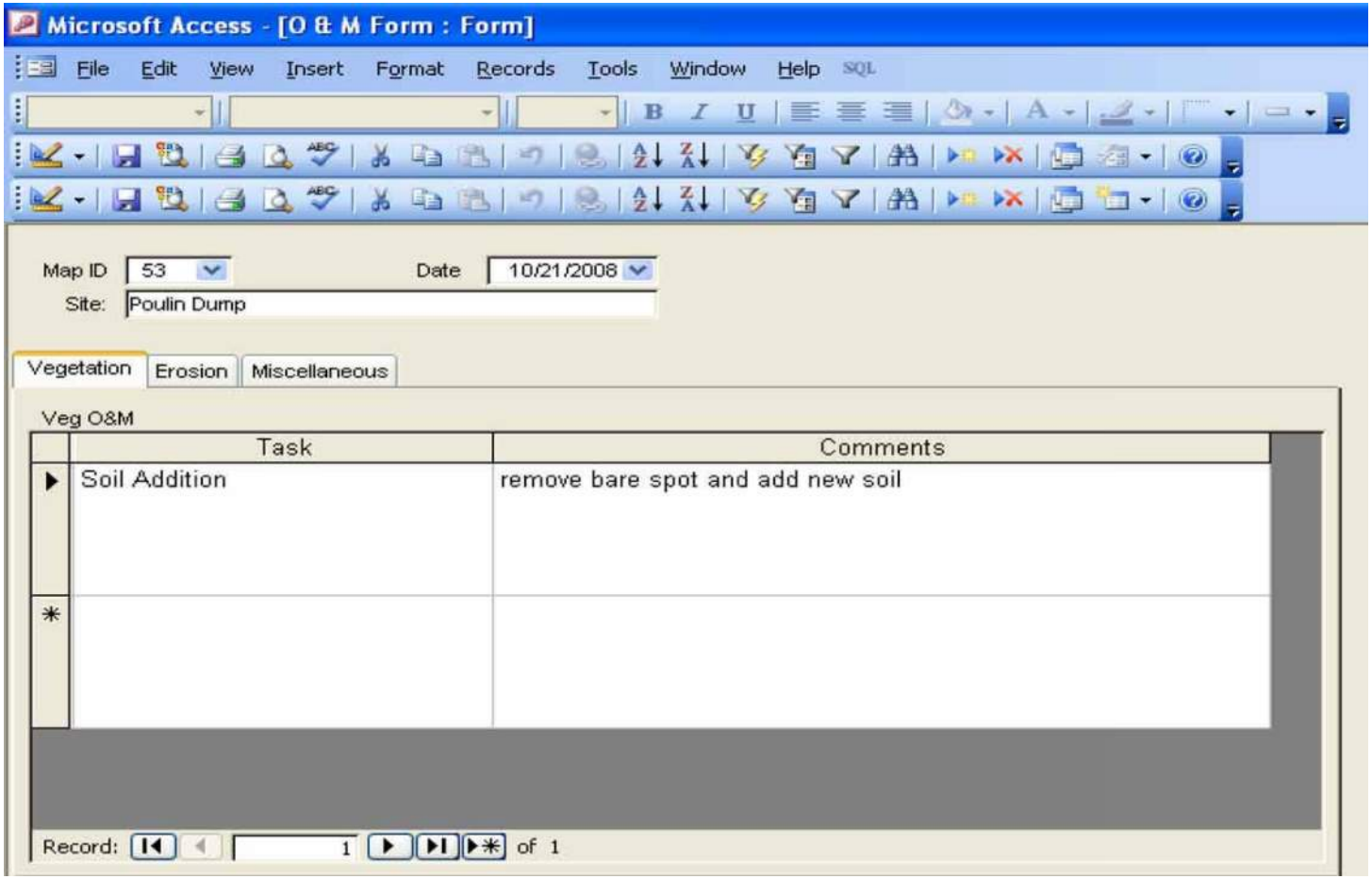
Are any gullies actively eroding? Y\N [ ]

NumberOfGullies: 0

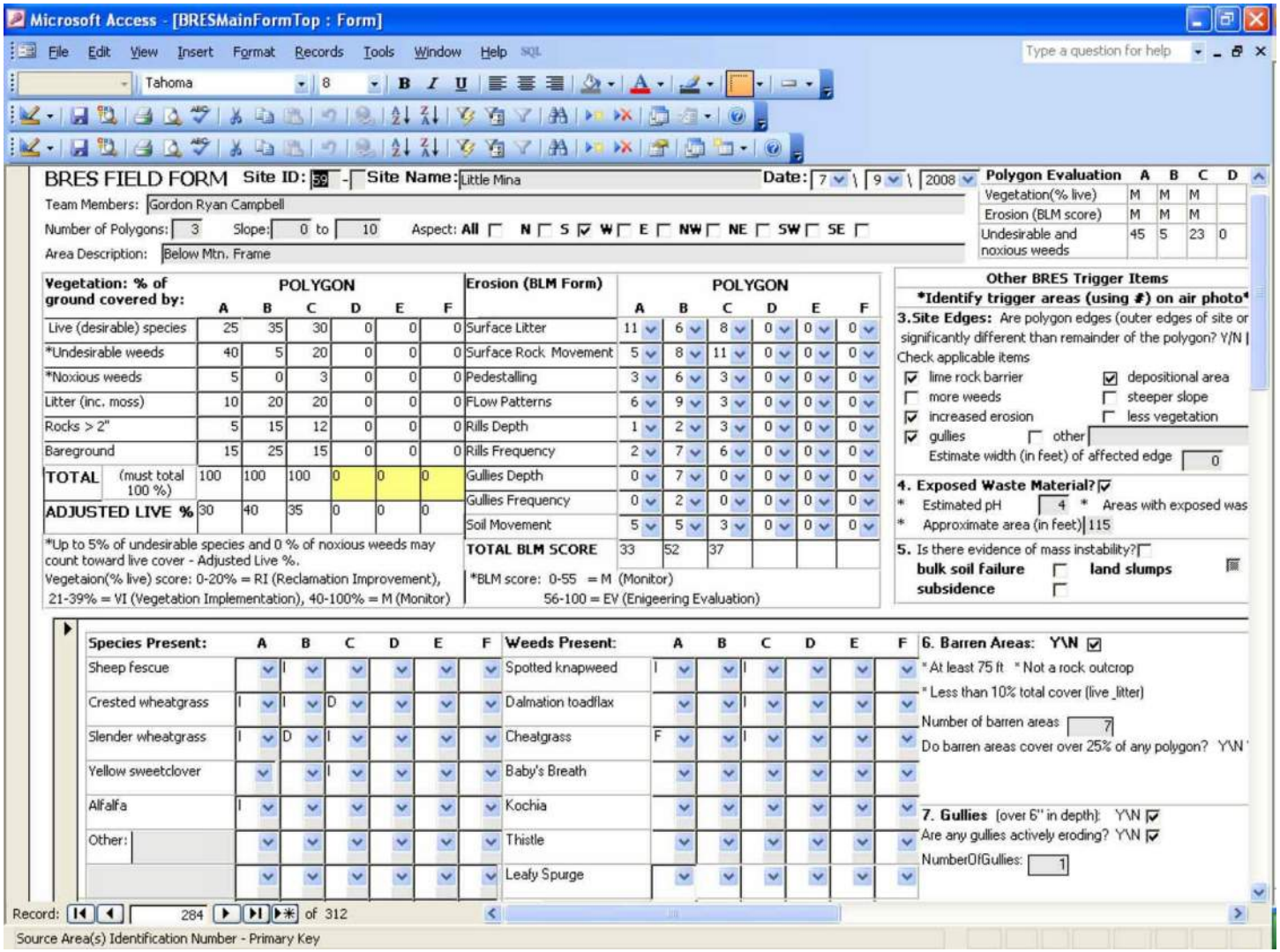

Microsoft Access - [O & M Form : Form]
File Edit View Insert Format Records Tools Window Help SQL
Map ID 46
Date 10/14/2008
Site: Missoula Mine
Vegetation
Erosion
Miscellaneous
Veg O&M
Task
Comments
Soil Addition
recap 46 missoula mine 50yds
Record: 1 of 1

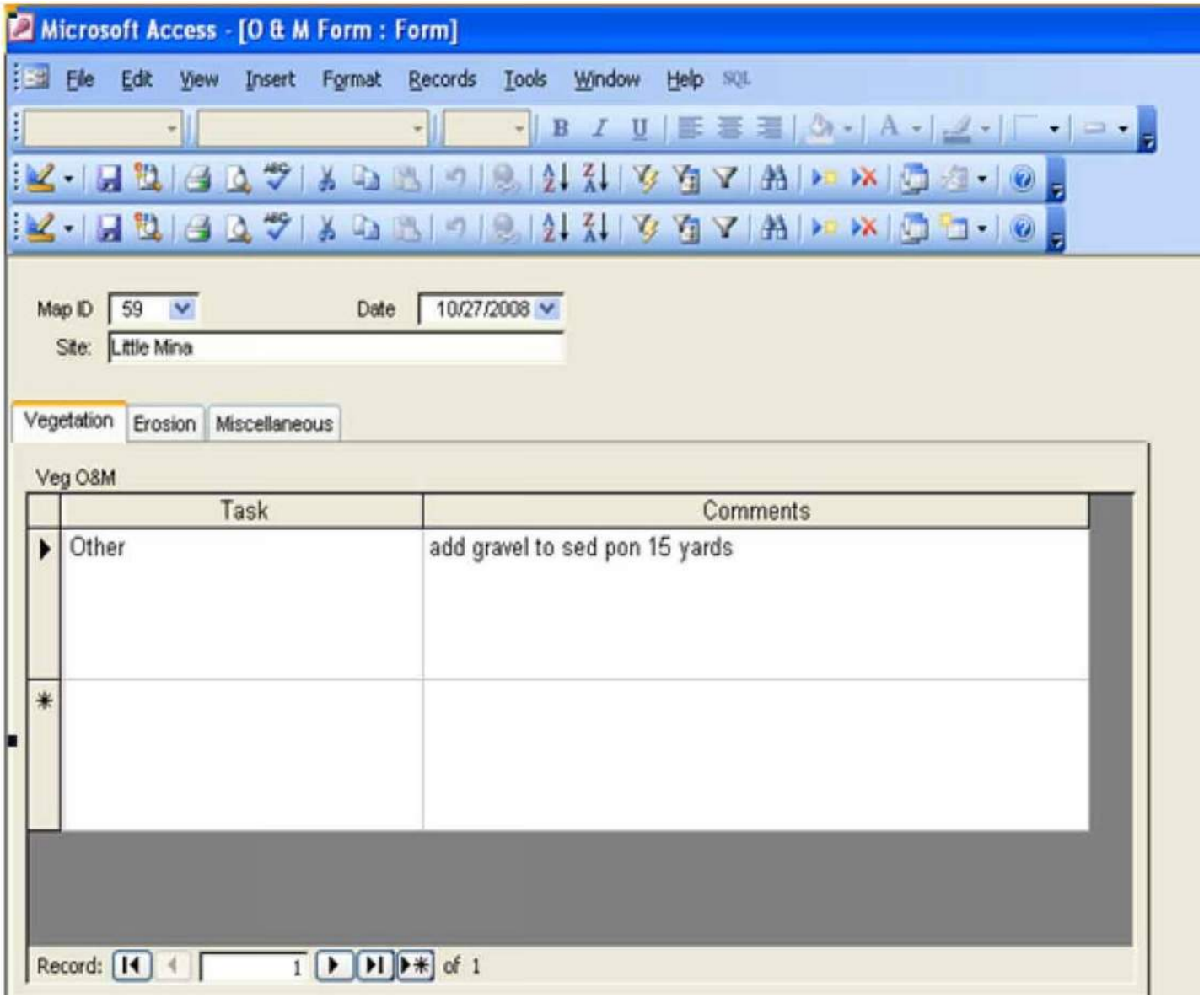
The 2008 BRES Report for Site No. 53, the Poulin Dump, passes evaluation for both Vegetation and Erosion standards, but identifies approximately 1,300 sq. ft. of Exposed Waste Material, and 5 Barren Areas, and 1 Gully, all in BRES Polygon A. The associated 2008 O&M Report indicates that material from barren areas was removed (to the Mine Waste Repository) and new soils were imported to Site No. 53, the Poulin Dump.




Microsoft Access - [O & M Form : Form]
File Edit View Insert Format Records Tools Window Help SQL
Map ID 53
Date 10/21/2008
Site: Poulin Dump
Vegetation
Erosion
Miscellaneous
Veg O&M
Task
Comments
Soil Addition
remove bare spot and add new soil
Record: 1 of 1

The 2008 BRES Report for Site No. 59, the Little Mina, passes evaluation for both Vegetation and Erosion standards for all 3 BRES Polygons, but identifies approximately 115 sq. ft. of Exposed Waste Material, and 7 Barren Areas, and 1 actively eroding Gully, in various areas of BRES Polygons A, B and C. The associated 2008 O&M Report indicates that 15 cubic yards of new gravel were imported to the Sediment Pond area at the bottom of a rip-rapped storm water ditch. The original BRES Report indicates this area contained both exposed waste and several barren areas.




Microsoft Access - [O & M Form : Form]
File Edit View Insert Format Records Tools Window Help SQL
Map ID 59
Date 10/27/2008
Site: Little Mina
Vegetation
Erosion
Miscellaneous
Veg O&M
Task
Comments
Other
add gravel to sed pon 15 yards
Record: 1 of 1

Appendix F

DEQ Notice of Violation for BSB Municipal Wastewater Treatment Plant

Montana Department of
ENVIRONMENTAL QUALITY

FACSIMILE TRANSMITTAL

To: D. Henry Elsen, EPA counsel

Fax #: 457-5056

Date: December 9, 2009

Pages: 13 (including cover sheet)

From: C. Bradley Smith, DEQ counsel

Amended Notice of Violation and Administrative Order on Consent, City and County of Butte-Silver Bow, Silver Bow, Montana, Docket No. WQ-07-07

If there is any problem with transmission of this document, please call Mary Mackie at (406) 841-5018.

NOTICE: This message is intended ONLY for the use of the individual or entity to which it is addressed. It may contain information that is privileged, confidential and exempt from disclosure under applicable law. If you, the reader of this message, are not either the intended recipient or the employee or agent responsible for delivering this message to the intended recipient, you are hereby notified that any dissemination, distribution, or copying of this communication is strictly prohibited. If you did receive this communication in error, please notify us immediately by telephone and return the copy of this message you received in error to the address below. Thank you.

Montana Department of Environmental Quality (DEQ)
Remediation Division Legal Unit
1100 North Last Chance Gulch
PO Box 200901
Helena, MT 59620-0901
Telephone: (406) 841-5000
Facsimile: (406) 841-5050

Montana Department of
ENVIRONMENTAL QUALITY
Brian Schweitzer, Governor
P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

Facsimile
TRANSMITTAL

to: Brad Smith

fax #: 406-841-5050

re: BSB AOC
date: December 4, 2009
pages: 11 excluding cover

from: Jim Madden 444-4009
DEQ Legal Counsel

Montana Department of
ENVIRONMENTAL QUALITY
Brian Schweitzer, Governor
P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • www.deq.mt.gov

August 28, 2009

Rick Larson, Operations Manager
Department of Public Works
Butte-Silver Bow City / County Government
126 West Granite
Butte, MT 59701

RE: Amended Notice of Violation and Administrative Order on Consent (Amended Order)
Docket No. WQ-07-07, FID #1364

Dear Rick:

Signed copies of the above-referenced Amended Order and the attached signature pages are enclosed for your files. Thank-you and other members of the Butte-Silver Bow staff for the cooperation in this matter. If you have any comments or questions, please feel free to call me.

Sincerely,

John L. Arrigo
Administrator
Enforcement Division
(406) 444-5327; fax (406) 444-1923
jarrigo@mt.gov

Enc.

cc w/Enc: Jenny Chambers, Water Protection Bureau
Jim Madden, Legal
Paul LaVigne, Technical and Financial Assistance Bureau
Julie DalSoglio, EPA Region 8, Montana Office

BEFORE THE DEPARTMENT OF ENVIRONMENTAL QUALITY

OF THE STATE OF MONTANA

IN THE MATTER OF: MPDES PERMIT REQUIREMENTS UNDER THE MONTANA WATER QUALITY ACT, CITY AND COUNTY OF BUTTE – SILVER BOW, SILVER BOW, MONTANA. (FID #1364)	AMENDED NOTICE OF VIOLATION AND ADMINISTRATIVE ORDER ON CONSENT Docket No. WQ-07-07

This Amended Notice of Violation and Administrative Order on Consent (Amended Consent Order) supersedes the Notice of Violation and Administrative Order on Consent (Order), Docket No. WQ-07-07, entered into between the Department of Environmental Quality (Department) and the City and County of Butte-Silver Bow (BSB) on May 15, 2008.

I. NOTICE OF VIOLATION

Pursuant to the authority of Sections 75-5-611 and 75-5-613, Montana Code Annotated (MCA), the Department hereby gives notice to BSB of the following Findings of Fact and Conclusions of Law with respect to violations of the Montana Water Quality Act (WQA), Sections 75-5-101, *et seq.*, MCA, and rules adopted under the WQA found at Administrative Rules of Montana (ARM) Title 17, chapter 30.

II. FINDINGS OF FACT AND CONCLUSIONS OF LAW

1. The Department of Environmental Quality (Department) is an agency of the executive branch of government of the State of Montana, created and existing under the authority of Section 2-15-3501, MCA.

2. BSB is a local governmental entity within the State of Montana and is, therefore, a "person" as defined in Section 75-5-103(23), MCA.

3. Section 75-5-605(1)(b), MCA, states it is unlawful to violate any provision set forth in a permit, or stipulation, including but not limited to limitations and conditions contained

in the permit. ARM 17.30.1342(1) requires that the permittee shall comply with all permit conditions. ARM 17.30.1342(5) requires that the permittee shall, at all times, properly operate and maintain all facilities and systems of treatment and control to achieve compliance with the conditions of its permit.

4. The Department issued BSB MPDES Permit No. MT-0022012 (Permit). This Permit was issued on September 29, 2006 and is effective November 1, 2006 through October 31, 2011. New effluent limits for Total Nitrogen, Total Phosphorus and Chlorine become effective January 1, 2009 and are applicable to discharges from June 1 through September 30 of each year.

5. BSB is in the process of upgrading its wastewater treatment plant. The upgrades are intended to provide for treatment that will comply with all effluent limits in the Permit. BSB is using best efforts to implement the upgrades in a timely fashion, but the upgrades will not be completed by January 1, 2009. The parties anticipate that, on January 1, 2009, BSB's wastewater treatment plant will not be capable of meeting the Permit requirements for the new effluent limits for Total Nitrogen (TN), Total Phosphorus (TP) and Total Residual Chlorine that become effective on that date. The purpose of this Amended Consent Order is to establish a compliance schedule for BSB to implement the planned upgrades to its wastewater treatment plant. In consideration of BSB implementing the identified treatment plant upgrades in accordance with the schedule in this Amended Consent Order and performing certain other interim measures as set out in this Amended Consent Order, BSB and the Department agree that any failure by BSB to meet the effluent limits for TN and TP in the current Permit, or in any amended or re-issued permit, between January 1, 2009 and October 31, 2017, will not result in a formal enforcement action by the Department.

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III. ADMINISTRATIVE ORDER ON CONSENT

This Amended Consent Order is issued to BSB pursuant to the authority vested in the State of Montana, acting by and through the Department under the WQA, Sections 75-5-611 and 75-5-613, MCA, and rules adopted thereunder found in ARM Title 17, chapter 30. NOW, THEREFORE, THE DEPARTMENT ORDERS AND BSB AGREES AS FOLLOWS:

Phase I – Operational Improvements and UV Disinfection

6. On or before November 1, 2008, BSB shall submit maps, plans and specifications for the final design of Phase I. Phase I must include, but is not limited to the following wastewater treatment plant improvements:

a. New screenings for the washer/compactor;

b. New grit pump;

c. New Parshall Flume;

d. New ultraviolet disinfection system; and

e. Upgrades for emergency power and the Supervisory Control and Data Acquisition (SCADA) system.

The Department acknowledges receipt of the plans and specifications on October 31, 2008, which were approved on November 28, 2008. BSB has fulfilled this requirement.

7. By August 1, 2009, BSB shall implement a Chlorine Reduction Plan (Plan) and submit a report on the results of the Plan to the Department. The purpose of the Plan will be for BSB to attempt to meet both *E. coli* and chlorine residual discharge limits within the constraints of current operational abilities and temporary modifications for the period from August 1, 2009 through February 28, 2010, at which time full compliance with both limits can be achieved through implementation of the Phase I project.

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8. By February 1, 2010, BSB shall complete that portion of the construction of Phase I that results in an operational ultraviolet (UV) disinfection system and certify to the Department in writing, through its professional engineer, that the modifications to the wastewater treatment plant contained in Phase I related to an operational UV system have been constructed in accordance with the approved plans and specifications. Within 90 days of the engineer's certification of the UV system, certify in writing, through its professional engineer, that the complete Phase I project has been constructed in accordance with the approved plans and specifications, and submit certified as-built plans along with a complete final report.

Phase IIA – Biological Nutrient Reduction and Effluent Reuse

9. On or before October 1, 2010, BSB shall submit maps, plans and specifications for the final design of Phase IIA. Phase IIA must include, but is not limited to, the following wastewater treatment plant improvements:

a. Three stages of a five-stage Biological Nutrient Reduction system;

b. Return system for activated sludge improvements;

c. Waste system for activated sludge improvements; and

d. Detailed plans for effluent reuse though land application to the Sod Farm and additional public or private lands.

10. On or before October 1, 2012, BSB shall complete construction and certify to the Department in writing, through its professional engineer, that the modifications to the wastewater treatment plant and the effluent reuse system contained in Phase IIA have been constructed in accordance with the approved plans and specifications. Within 90 days of submittal of the engineer's certification, submit the certified as-builts along with a complete final report.

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11. On or before March 1, 2011, BSB shall submit an application and review fees to the Department to renew the Permit. The application must specify additional outfalls used for land application.

Phase IIB – System Evaluation and Additional Nutrient Reduction

12. After construction of Phase IIA is completed and before October 1, 2013, BSB shall complete an evaluation of the wastewater treatment plant improvements to determine if operational performance can be optimized and if the discharge, in conjunction with use of the effluent reuse system, can meet effluent limits for TN and TP in any amended or re-issued Permit.

13. By October 1, 2013, BSB shall submit a final report of the results of the evaluation along with recommendations for the need for additional nutrient treatment and removal.

14. If the results of the evaluation demonstrate that BSB can meet the effluent limits for TN and TP in any amended or re-issued permit, those effluent limits for TN and TP must be in effect and enforceable as of November 1, 2013.

15. If the results of the evaluation demonstrate that BSB cannot meet the effluent limits for TN and TP in any amended or re-issued permit, BSB shall initiate the design of additional nutrient removal through Phase IIB. If BSB initiates Phase IIB, the Department and BSB agree to amend this Consent Order to establish Interim Enforcement Effluent Limits for TN and TP that must be in effect for Outfall 001 as of November 1, 2013.

16. If BSB initiates Phase IIB, on or before October 1, 2014, BSB shall submit maps, plans and specifications for the final design of Phase IIB. Phase IIB must include, but is not limited to, the following wastewater treatment plant improvements:

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a. The final two stages of the five-stage Biological Nutrient Reduction system; and/or

b. Alternative denitrification or filtration treatment systems.

17. On or before October 1, 2016, BSB shall complete construction of the approved additional nutrient reduction system(s) and certify to the Department in writing, through its professional engineer, that the Phase IIB modifications have been constructed in accordance with the approved plans and specifications. Within 90 days of the engineer's certification, submit certified as-builts along with a complete final report.

Reports

18. Beginning on January 1, 2010, BSB shall submit annual status reports to the Department that outline progress and updates on activities towards completion of the upgrades. The reports shall be submitted to the Department no later than January 1 of each year.

19. All reports, plans and specifications, engineer's certification, as-built plans, status reports, and other documentation required by this Amended Consent Order shall be sent to:

John Arrigo, Administrator
Enforcement Division
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901

Stipulated Penalties

20. BSB shall be liable for a $500 stipulated penalty for any failure to submit monthly discharge monitoring reports (DMR), for incomplete or late DMRs as required by the Permit, for an exceedance of an Interim Enforcement Limit of 0.20 mg/l monthly average for Total Residual Chlorine during August 1, 2009 through February 28, 2010, or for an exceedance of an Interim Enforcement Effluent Limit for TN or TP.

//

21. BSB shall be liable for a $5,000 stipulated penalty for the failure to meet any of the deadlines specified in Paragraphs 7 through 18.

22. If any event occurs that may delay completion of corrective actions required in this Consent Order, BSB shall notify the Department in writing within ten (10) days after it becomes aware of the event. The notice must be sent to the address listed in Paragraph 19. The notice of delay must include: (a) an explanation of the reasons for the delay; (b) the expected duration of the delay; and (c) a description of all actions taken or to be taken to prevent or minimize the delay and a schedule for implementation of those actions.

23. The Department will review the notice submitted by BSB under Paragraph 22 and will exercise its enforcement discretion to determine if it is appropriate to waive all or a portion of any stipulated penalties.

24. Any stipulated penalties due under this Amended Consent Order shall be paid to the Department within thirty (30) days after BSB's receipt of a written demand from the Department. Payment of any stipulated penalties due shall be paid by check or money order, made payable to the "Montana Department of Environmental Quality," and shall be sent to the address listed in Paragraph 19.

25. For purposes of Section 75-5-516(2), MCA, regarding Permit fees, BSB is not eligible for for a 25% reduction in annual permit renewal fees during the term of this Amended Consent Order.

26. None of the requirements in this Amended Consent Order are intended to relieve BSB from complying with all applicable state, federal, and local statutes, rules, ordinances, orders, and permit conditions, other than the TN and TP effluent limits that are the subject of this Amended Consent Order.

//

27. BSB waives its right to administrative appeal or judicial review of the Findings of Fact and Conclusions of Law and Amended Consent Order set forth herein and agrees that this Amended Consent Order is the final and binding resolution of the issues raised.

28. The terms of this Amended Consent Order constitute the entire agreement between the Department and BSB with respect to the issues addressed herein notwithstanding any other oral or written agreements and understandings made and entered into between the Department and BSB prior to the effective date of this Amended Consent Order. Except as herein provided, no amendment, alteration, or addition to this Amended Consent Order shall be binding unless reduced to writing and signed by both parties.

29. Each of the signatories to this Amended Consent Order represents that he or she is authorized to enter into this Amended Consent Order and to bind the parties represented by him or her to the terms of the Amended Consent Order.

30. BSB agrees to waive defenses based upon the statute of limitations for the issues addressed herein and not to challenge the Department's right to seek judicial relief in the event that BSB fails to fully and satisfactorily comply with the terms of this Amended Consent Order.

31. The Department will terminate this Amended Consent Order in writing upon BSB's demonstration of compliance with the TN and TP effluent limits in any amended or re-issued permit.

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32. This Amended Consent Order becomes effective upon signature of the Director of the Department or his designee.

IT IS SO ORDERED:

STATE OF MONTANA
DEPARTMENT OF ENVIRONMENTAL QUALITY

JOHN L. ARRIGO, Administrator
Enforcement Division

8/28/09
Date

IT IS SO AGREED:

CITY AND COUNTY OF BUTTE - SILVER BOW

Signature

Print Name

Title

Date

See attached signature page
8/28/09

IN WITNESS WHEREOF, the parties hereto have caused this Agreement to be executed by their authorized representatives, on the day and year first written above

BUTTE-SILVER BOW

PAUL BABB
CHIEF EXECUTIVE

Administrator Enforcement

John L. Arrigo

ATTEST:

SALLY J. HOLLIS
CLERK AND RECORDER

APPROVED AS TO FORM:

EILEEN JOYCE
COUNTY ATTORNEY

STATE OF MONTANA)
:SS
County of Silver Bow)

On this 24th day of Aug, 2009, before me, Sheri Kennedy a Notary Public for the State of Montana, personally appeared PAUL DAVID BABB and SALLY J. HOLLIS, known to me to be the Chief Executive and Clerk and Recorder, respectively, of the City and County of Butte-Silver Bow, a municipal corporation and political subdivision of the State of Montana, and acknowledged to me that they executed the written instrument on behalf of said municipal corporation.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed my official seal the day and year in this certificate first above written

Sheri Kennedy
PRINTED NAME Sheri Kennedy
NOTARY PUBLIC FOR THE STATE OF MONTANA
RESIDING AT Butte
MY COMMISSION EXPIRES Dec. 20, 2010

Appendix G

Responsiveness Summary

Responsiveness Summary – Butte Priority Soils Operable Unit

The responsiveness summary includes comments received on the draft BPSOU five year review report (Volume 6) during the December 12, 2010 through January 31, 2011 comment period. The comments are shown as received but were edited to include only those comments pertaining to the BPSOU. Comments from the EPA responses are included in italicized text.

Comments from Atlantic Richfield

BUTTE PRIORITY SOILS OPERABLE UNIT

AR appreciates the level of data analysis incorporated into EPA's review of the BPSOU site and agrees with its major finding on the amount of progress made in water quality improvement to date. In addition, AR acknowledges EPA's continued support for the groundwater technical impracticability waiver (TI) for alluvial groundwater. The technical merit of EPA's 2006 decision has been validated by the collection and analysis of data that has continued since EPA's decision. As articulated in response to community interviews, removal of the Parrot Tailings is not technically merited as alluvial groundwater collection and treatment would nonetheless be necessary long-term.

***EPA Response**: Comment noted.*

Specific Comments

1. Storm Event Acute Standard Exceedances:

   AR is developing designs to implement additional BMPs that are expected to incrementally continue to improve surface water quality during storm runoff events. However, AR expects that exceedances of DEQ-7 total recoverable standards will continue even after the additional BMPs are in place. Therefore, AR believes total recoverable standards are not reasonably achievable and that a TI waiver of DEQ-7 standards is appropriate.

***EPA Response**: This issue is outside of the scope of the five year review, which looks at the current efforts to implement the remedy and whether the remedy is or will be protective of human health and the environment. No response is warranted at this time.*

2. Deteriorating Storm Pipes:

   Existing storm water pipes within the Butte Silver Bow (BSB) system are in many places over 100 years old, and have been utilized over that period with minimal maintenance or upgrades since the original installation. AR believes that the deterioration of the storm pipes are not a CERCLA issue and are the responsibility of BSB.

***EPA Response**: EPA disagrees with this comment. The Butte Priority Soils Operable Unit (BPSOU) Record of Decision (ROD) requires the implementation of iterative best management practices (BMPs) to control contaminated storm water releases sufficiently to meet standards. These actions could involve improvements to storm water conveyance systems, and, indeed, some of the first BMPS required under the BPSOU ROD address storm water system cleanouts and improvements.*

3. Run-on/run-off and BRES O&M Issues:

   AR recently met with BSB to discuss run-on/run-off and other O&M issues with respect to the BRES sites. BSB indicated that they have a plan to accelerate implementation of

mitigation for identified problem sites over the next three years. Conditions will improve as additional source control as well as curb and gutter work approved by EPA is completed. Curb and gutter work was started in 2010 and is proposed to be completed in 2011-12. The additional source control work is also proposed for construction in 2011-12.

EPA Response*: EPA agrees that curb and gutter work is important as a storm water BMP control, and that the implementation of such measures may impact, in a positive way, the operation and maintenance measures for caps under the BRES system. Both actions – aggressive curb and gutter work and the diligent implementation of the BRES inspection and maintenance system in a timely way – are important. The final Silver Bow Creek/Butte Area five year review report retains recommendations and issues which address both of these issues.*

4. Butte Treatment Lagoon (BTL) and Groundwater Capture Evaluation:

   a) Page 6-13, Sec. 6.4.2, first full paragraph: EPA states that "most of the selected remedy for groundwater has not yet been implemented." AR disagrees with this statement. Between the installation of the Lower Area One (LAO) groundwater capture system, Missoula Gulch base flow collection system, and the Metro Storm Drain (MSD) installation, collection system installation is largely complete. AR is currently implementing agency-approved improvements in the Butte Reduction Works (BRW) to capture groundwater reaching the creek in this area (in between surface water monitoring stations SS-5.7 and SS-5.9, at the downstream end of the slag canyon).

EPA Response*: EPA acknowledges that these important components of the ground water remedy component of the BPSOU ROD are in place and/or are being re-evaluated and improved. EPA will modify the text to reflect this status.*

With the implementation of each of the groundwater collection system improvements listed above, notable improvements in surface water quality have been observed. Since the MSD subdrain system went on-line in 2005, base flow water in SBC frequently complies with current DEQ-7 surface water standards and almost always complies with federal surface water standards. On-going work in the BRW area will improve the compliance frequency and compliance ratios.

EPA Response: *Comment noted. The five year review report text does acknowledge improvements in water quality.*

Furthermore, with the improvements to the BTL system completed in 2005, all collected groundwater is effectively treated, and the water complies with discharge standards the large majority of the time. Additional improvements are to be implemented as part of the remedy and will only serve to improve performance and reliability of the system. On-going development of the groundwater/surface water interaction conceptual site model (CSM) will determine if any additional groundwater collection is needed to assure protectiveness of the stream.

***EPA Response**: Comment noted. Effluent data from the BTL are presented in the report.*

b) Pages 6-15 to 6-16: EPA states, "Of particular importance is an evaluation of the feasibility of extending the LAO capture system to collect and treat contaminated groundwater between the LAO and MSD capture systems which is currently impacting SBC." On-going surface water monitoring during base flow conditions indicates that there is not a significant load entering the creek between the LAO and MSD capture systems. As noted in Section 7.4, page 7-5 of Volume 1 of the five-year review, "Arsenic and heavy metal contaminants in alluvial groundwater are now prevented from reaching SBC through a comprehensive groundwater control, capture, and treatment system, such that water quality standards are being met much of the time during base flow conditions." In the area immediately east of the LAO capture system (between the surface water monitoring stations SS-5.7 and SS-5.9), AR has extended capture and treatment in accordance with a phased plan approved by EPA and DEQ. Initial sampling results are encouraging, suggesting that the work completed thus far may have addressed the load coming from this area. Monitoring will continue, and if additional steps are required to mitigate contaminant loading to the creek in this area, they will be implemented in accordance with the approved plan. Therefore, this section should be revised to reflect that an FS evaluation of the entire area is not necessary, but instead that the agency-approved plan to mitigate contaminant loads in the area of Stations SS-5.7 and SS-5.9 should continue, along with the planned monitoring to assure its effectiveness.

***EPA Response**: The text does not state that an FS level evaluation is needed for this area. The text correctly states that the area between MSD and LAO is a key area that requires continued evaluation during remedial design. This remains EPA's position.*

c) Section 6.4.3, page 6-15, last bullet: EPA indicates that upgrades to the LAO and MSD capture system are part of the remedial action yet to be implemented, to "ensure long-term permanence and ARAR compliance." On-going evaluations and shakedown operations of these capture systems are being conducted, and improvements to the MSD capture system (e.g. installation of manholes to facilitate cleaning and flow measurements) have been implemented. Groundwater and surface water monitoring, along with the updated CSM, indicate that the systems are effectively capturing contaminated groundwater. While the on-going evaluation may identify additional improvements, it is not certain that improvements will be required. This section should be revised to state that, pending the results of on-going evaluations, upgrades may be necessary.

***EPA Response**: Ongoing evaluations and certain improvements are being conducted and implemented as part of remedial design and initial remedial implementation, and the text is not inconsistent with that situation. However, further remedial design work is needed and the final remedy component for the ground water system is not complete and the statement in the five year review draft is accurate.*

d) Page 4-4, Groundwater Treatment Facility, Bullet No. 2: The five-year review states that the BRW area is not allowed to be used for sludge management. The possibility of keeping this area as an open area for public access was contemplated, and thus the ROD did not allow the use of this area for sludge management. However, evaluations and pilot studies conducted since the ROD have determined that sludge dewatering in drying beds at this location are the most effective form of sludge management. Review of this information by other stakeholders, including BSB, has led to agreement in concept that sludge drying and management is the most beneficial use of this area. Pending final agreement with this concept, a ROD amendment or ESD will be required to allow the use of this area for sludge management. The five-year review report text should be revised to reflect that potential use of this area for sludge management, coupled with proper engineered controls to prevent public access, is contemplated.

EPA Response: *The five year review report describes the remedy as it currently is proscribed in the BPSOU ROD. This comment indicates that the ROD may change, but that change has not been issued by EPA and this comment is outside the scope of the five year review report.*

e) Page 4-4, Groundwater Treatment Facility, Bullet No.3: The five-year review report states that, per the ROD, a conventional lime treatment system shall be installed if performance standards cannot be met by the lagoon system. As noted elsewhere in the five-year review report, the lagoon system consistently meets discharge standards. The ROD, as noted in Section 6.4.2 of the five-year review report, correctly identified that the lagoon system is more effective at treating cadmium than conventional systems. Rather than identifying the possibility of replacing the BTL system with a conventional treatment system, the five-year review report should state that the operational history has shown that the treatment lagoons have proven themselves to be as good as or better than conventional lime precipitation treatment, and that conventional treatment is unwarranted as a replacement for the BTL system.

EPA Response*: The five-year review report describes the remedy as it currently is proscribed in the BPSOU ROD, which includes the potential for a conventional treatment plant under the circumstances described in the five-year review report and the ROD. The report also notes that current data indicates substantial compliance with ARAR standards is occurring currently.*

5. Ecological Monitoring:

As discussed in AR's comment on the issue of the need for additional integrated site-wide monitoring, modifications and/or additions to current monitoring programs in BPSOU should be pursued carefully, considering information collected to date, specific objectives and associated data needs, and specific future decisions that additional data are needed to support. AR recommends that this be pursued through a DQO-driven process, and that modification of monitoring programs be coordinated on a site-wide

basis. Additionally, although it likely makes sense to address these issues under an integrated site-wide framework to ensure consistency, a one-size-fits-all approach to monitoring should not be adopted given that the utility of previously collected data, the types of data to be collected in the future, and the application of data in a decision-making context will be different for different OUs, and will differ depending on the specific questions that need to be addressed to support protectiveness and compliance arguments.

***EPA Response**: EPA will consider these comments in any modification to monitoring plans for BPSOU.*

6. Surface Water Quality Base Flow Data Comparison to Standards:

   AR agrees that the available surface water data show that actions completed in the BPSOU have significantly improved surface water quality when comparing water quality data from pre-Superfund days to today's water quality data. However, the 5-year review only included presentation of data through 2007. Data collected since 2007 shows continued improvement, and AR recommends that EPA include data collected through the end of the identified 5-year review period (December 2009) in its evaluation of base flow surface water quality in the 5-year review. In 2007, base flow data collection began occurring on a monthly rather than quarterly basis which results in a substantial amount of available data for 2008 and 2009 that has not been evaluated in this 5-year review. AR has provided surface water data plots covering the full 2005-2009 five-year review period in Attachment A.

***EPA Response**: Water quality data collected through 2009 have been included in the figures of the report. EPA acknowledges that the 2008 and 2009 data indicate continued improvement in base flow water quality at the BPSOU.*

7. Fish Studies:

   Comments here are focused on the caged fish study discussed in section 6.4.3.6 and the recommendation that ecological monitoring should be updated to track the success of a self-sustaining fishery.

   The results of the caged fish studies (using Westslope cutthroat trout) were discussed in some detail in section 6.4.3.6, stating that fish survival after a small rain event was different at two closely located sites within the BPSOU: above (SS-06G) and below (SS-07). Other sites within SBC were monitored but were not within this OU. No mortalities were observed at SS-06G, and complete fish mortality was observed at SS-07 (below the BPOTW outfall) 8-11 days into the 28-day study. While elevated copper, zinc, and total ammonia concentrations (i.e., above acute water quality criteria) were observed at both sites, and no dose response between metals and lethality could be defined, the five-year review appears to conclude that metals caused the observed toxicity. Inconsistent with this conclusion, the original report stated that "it is not possible to determine the ultimate cause of fish mortalities" (Streamside Tailings OU

report 2008, page 157). In evaluating the potential cause of toxicity, it is important to recognize that elevated concentrations of nutrients (primarily nitrogen and phosphorus) have been measured at the discharge of the BPOTW, and nutrient-associated impacts including to the quality of surface water habitat quality for fish are indicated downstream. Data from recent fish counts in SBC (see Figure 3 of MSU 2010) indicate that nutrients and dissolved oxygen concentrations likely represent primary limiting water quality factors for fish in SBC downstream of the BPOTW. Specifically, brook trout abundance measured in SBC by electrofishing techniques has shown significant decreases in fish numbers at the outfall and down-stream of the BPOTW. The results of the caged fish studies similarly show significant mortality to trout at stream monitoring location SS-7 (below the BPOTW discharge) when compared to SS-6G (upstream of the BPOTW discharge). These two data sets, taken together, indicate that nutrients, DO, and ammonia concentrations are likely critical limiting water quality factors for fish in the area of SS-7 and downstream.

EPA Response: *EPA acknowledges this comment and, although it does not entirely agree with the comment, will change the text to recognize the uncertainty associated with the caged fish study.*

It is also important to note that the comparison to acute standards referenced in the five-year review is conservative because the metal standards used for comparison are based on total recoverable metals concentrations, and not on the more biologically available "dissolved" (i.e., metal fraction that will pass through a 0.45 µm filter) fraction. The "dissolved" metal fraction has been scientifically shown to be a better indicator of metal bioavailability and thus toxicity (USEPA 1996). Consequently, metal-associated toxicity does not necessarily increase as total recoverable metals concentrations increase.

EPA Response: *The comparison is to the existing ROD water quality ARARs and is appropriate.*

Given the likelihood that ammonia and/or dissolved oxygen (DO) likely contributed to the observed toxicity in the caged fish study downstream of the BPOTW, and the fact that a clear dose response could not be defined between metals and toxicity, the conclusion that metals caused the toxicity observed in the caged fish study is not supported. Additionally, it is not possible to determine what proportion of observed toxicity (if any) is related to metal concentrations without more information (e.g., species-specific toxicity data, dissolved metals concentrations, ammonia, etc.) or specialized studies (e.g., toxicity identification evaluation manipulations). Given that multiple factors (e.g., metals, ammonia, DO, and total suspended solids [TSS]) likely contributed to the mortality observed at SS-07 in the caged fish studies, attributing the observed toxicity at SS-07 primarily or exclusively to metals is misleading and technically unsupported.

EPA Response: *See our prior response to a similar comment.*

It should be noted that the 2008 Streamside report documents the continued observations of various fish species collected in the SBC including within the BPSOU (LAO). The fish species observed at this site include brook trout, longnose sucker,

sculpin, and central mudminnow. While fish monitoring has been conducted annually in SBC since 2002, it is unclear what updated ecological monitoring will be undertaken in the future in order to track the success of attaining a self-sustaining fishery. Whatever future monitoring is planned, it should include a more comprehensive monitoring approach that addresses specific and appropriate DQO-driven objectives/goals that are achievable and address the overall remedial objectives. Any such approach should also address not just OU-specific issues, but should also consider non-metal watershed-scale issues and factors that can impact habitat, resources, and therefore biological populations. Examples of factors that can impact fish abundance include habitat characteristics (e.g., canopy, protective refugia, substrate size and degree of embededness, bankful width, stream gradient, stream order, stream flow, percent pool area, impassible barriers, etc), and water quality factors (e.g., dissolved oxygen, temperature, conductivity, nutrients, turbidity), both of which affect food supply. Nutrient input into the SBC, as discussed above, can also negatively impact fish presence due to direct toxicity associated with ammonia and indirectly due to lower dissolved oxygen concentrations from eutrophication. A final consideration associated with this remedy is to realize the potential limitations associated with the remedy given that the soil geology of the watershed is naturally metals-enriched, and thus remedial goals should be different from other areas that are not metals-enriched.

EPA Response*: EPA understands that there are watershed issues outside of metals that can impact a fishery. EPA agrees that whatever ecological monitoring is undertaken will have specific DQOs. These issues do not lessen the Superfund requirement to comply with ARARs.*

8. Section 7.2 Comment:

   While AR agrees with the conclusion that the lead remediation goal of 1,200 ppm is protective, we note that the default soil/dust ingestion rates from the IEUBK model shown in Table 7-2 are higher than the most recent values listed by USEPA (2008) in the Child-Specific Exposure Factors Handbook and are much higher than suggested by a soil ingestion study conducted in Anaconda. Current default IEUBK values for age-dependent soil ingestion rates are 85 mg/day for 0–1 year, 135 mg/day for 1–4 years, 100 mg/day for 4–5 years, 90 mg/day for 5–6 years, and 85 mg/day for 6–7 years, which yields an average of 109 mg/day. The IEUBK model is designed to use central tendency values of all input parameters (USEPA 1999). Based on updated analyses of the Anaconda soil ingestion study, Stanek and Calabrese (2000) have identified much lower mean and median soil ingestion estimates than the IEUBK model default values.

   The Anaconda study was an investigation of soil ingestion among a stratified simple random sample of 64 children aged 1 to 4 years living in Anaconda. Study data were collected for seven consecutive days during September and October of 1992. A mass-balance methodology was utilized in which eight[1] naturally occurring soil trace elements (Al, Si, Ti, Ce, Nd, La, Y, and Zr) believed to be poorly absorbed by the

[1] Although eight trace elements were measured in the Anaconda study, Ti was excluded from analyses presented in the more recent publications because of its high variability and unreliability. The authors found that Ti is susceptible to both input-output misalignment error and source error.

gastrointestinal tract were employed to provide soil ingestion estimates. The primary analysis of study results was presented in a 1997 publication (Calabrese et al. 1997) that has been subsequently followed by five publications further refining the original analysis. The most recent of these publications (Stanek and Calabrese 2000; Stanek et al. 2001) are considered the best characterization of the daily soil ingestion rate distribution based on the Anaconda study because it reflects the latest and most improved statistical methodology to provide estimates of uncertainty as well as predicting cumulative long-term (i.e., annual) soil ingestion rates. Support for the use of this distribution is found in the USEPA report on Rocky Flats, in which "the empirical distribution function developed by Stanek et al. (2001) for the long-term average ingestion rates was employed" (USEPA et al. 2002).

Stanek and Calabrese (2000) estimate a mean soil ingestion rate of 31 mg/day and a one-year 95th percentile of 106 mg/day for 1–4 year old Anaconda children. Stanek et al. (2001) indicates the median is 24 mg/day. In Stanek et al. (2001) the 95th percentile is 91 mg/day. Based on these analyses, region-specific data support much lower soil ingestion rates than those currently included in the IEUBK model.

We also note that the "site-specific" GSD of 1.68 used by EPA may not be an appropriate value for current conditions in Butte. The IEUBK model uses an individual geometric standard deviation (GSD_i) with a default value of 1.6. A community-based GSD of 1.68 was derived independently by Dr. Robert Bornschein, who conducted the original Butte community environmental health blood lead study (EHLS, UCDEH 1992). Community-based GSDs include variability in environmental lead concentrations. By definition, GSD_i is independent of variability in environmental lead concentrations. USEPA (1994) states "*The GSD is intended to reflect the five types of individual blood lead variability identified below, not variability in blood lead concentrations where different individuals are exposed to substantially different media concentrations of lead.*" Assuming that the value of the GSD_i is equivalent to the community-based GSD and is equivalent to assuming that environmental lead exposures do not contribute to the variability in blood lead levels (Griffin *et al*., 1999). If this were the case, then remediation of environmental lead sources would not be expected to have an effect on blood lead levels. An analysis by EPA (1993) using the data from the EHLS derived estimates of GSD_i that bounded the community GSD of 1.68. This outcome is counterintuitive and requires further consideration before assuming it will yield a reliable indication of the range of blood lead levels in Butte attributable to soil contamination under current conditions.

A range of GSD from 1.2 to 1.6 has been presented and discussed by EPA Region 8 (USEPA 2001) for application in lead modeling and risk assessment. Griffin et al. (1999) found that GSD_i was highly dependent on statistical treatment of nondetected values in datasets for several western U.S. mining/smelting communities, yielding estimates that ranged from 1.3 to 1.7 for Bingham Creek, UT and from 1.4 to 1.6 for Sandy, UT. They conclude that more accurate measurements of blood lead concentrations below typical detection limits was merited. This finding is supported by more recent national evaluations of GSD for adult blood lead levels that have shown marked reductions in estimated GSD as detection limits have been reduced in the 1999 NHANES surveys.

A GSD of 1.4 was used in the IEUBK modeling done for the baseline risk assessment in Anaconda. This GSD was calculated from site-specific data foron children from Sandy, UT, and Bingham Creek, UT (CDM 1996). These communities have a fairly homogenous population, similar to that found in Anaconda and Butte. Re-evaluation of GSD_i for Butte with contemporary data and lower detection limits may be valuable for future predictions of blood lead levels.

EPA Response: *The five year review report indicates that EPA's current evaluation of lead toxicity continues to indicate that the 1,200 ppm lead action cleanup level remains protective. The information provided in this comment does not change that determination.*

Comments from CTEC

Comment: CTEC recognizes that progress has been made in Silver Bow Creek/Butte Area National Priorities List (NPL) site remedy over the last decade. Many reclaimed and rebuilt areas are so well-established that local residents have forgotten the hills of bare mining wastes that existed here only a few years ago. Aquatic and terrestrial wildlife populations in and around Silver Bow Creek continue to increase, as does recreational use of restored reaches. While strides have been made, the long-term success of the remedy depends on learning from past experience and addressing deficiencies in the remedy where they exist. This letter and attachment describe aspects of the remedy that remain a concern to CTEC members in the expectation that they be addressed by the final Five Year Review report.

EPA Response: *EPA's response to each of the concerns presented by CTEC below will be provided following the specific CTEC comment. By organizing our response to comments in this way, EPA is trying to be clear and specific in addressing CTEC, and other commenter's, concerns.*

Comment: The attached detailed discussion of concerns can be summarized as follows:

> Improved public outreach is paramount to future Superfund efforts in Butte. Citizens of Butte are greatly concerned that their health is at risk and they don't have adequate answers to questions regarding how their health is being protected by the remedy as currently being implemented. Low income and elderly groups who live on the Butte Hill are especially at risk and may not have the resources to get educated about Superfund programs which can protect their health.

EPA Response*: EPA agrees that public outreach and involvement is important for Superfund cleanup actions. EPA has consistently funded CTEC, under the Superfund Technical Assistance Grant program, to help with this effort, and we appreciate CTEC's efforts over the years to foster communication and outreach. EPA had conducted well over 100 public meetings in Butte about Superfund actions from the middle of the 1980s when the site was listed to the present time, and EPA will continue to conduct these meetings. The 2006 Record of Decision (ROD) for the Butte Priority Soils Operable Unit (BPSOU) responded in detail to over a 1,000 comments in a 208 page responsiveness summary.*

EPA currently publishes monthly bulletins in the local newspapers regarding ongoing actions, and, in the past, has produced numerous fact sheets (which are provided in newspapers and to a large mailing list) about the Butte area and site wide cleanup actions. EPA has maintained a staffed office in Butte for the past 20 years, where information is kept and made available to the public, and where citizens can interact directly with agency personnel.

As major design documents have been created post-ROD (such as the Residential Metals Abatement Plan, the Granite Mountain Memorial Plan, the Butte Lagoon Treatment System Plan, etc), EPA has solicited public review and comment, and incorporated that public input into documents, before approving the final documents.

The ongoing residential contamination remediation efforts are provided for in the Residential Metals Abatement Plan. Prior to the completion of that plan, many yards in Butte and Walkerville were cleaned up under EPA's removal authority. As noted, EPA issued fact sheets and held public and private meetings with residential owners and tenants throughout the removal efforts. Butte Silver Bow County government (BSBC) has been the primary implementer of residential cleanup actions, and they have independently conducted public outreach about those efforts. The Residential Metals Abatement Plan requires a number of outreach and education activities surrounding the cleanup plan, and EPA will monitor implementation of the plan carefully. A summary of the outreach efforts, many of which are directed at low income and/or elderly residents, are summarized in a recent newspaper update insert which is attached to this response. EPA's outreach efforts, among other issues, were also examined by EPA's Environmental Justice office on three separate occasions (see letters from EPA Region 8 Office of Environmental Justice of August 23, 2005; January 23, 2007; and January 12, 2010), and the findings of those examinations, which are detailed and generally supportive of EPA's remediation efforts, are available in the public record.

EPA is committed to public involvement and information sharing. EPA understands that improved public outreach is needed, and EPA will continue to improve its efforts at getting relevant information to the community about health protection and other issues. As we work to improve this effort, we hope we can continue to work with CTEC to accomplish these efforts in a better manner.

> **Comment**: The non-sequential and highly technical nature of remedy in the NPL site combined with ineffective outreach has fostered public confusion and indifference. We would like the Five Year Review to provide a comprehensive review of the NPL and present a plan that encompasses all of the operable units into a unified whole from Butte to Milltown. The Five Year Review should be clearly understandable, and CTEC would like to work more closely with EPA to guarantee that remedy and community outreach is known and understood by the public.

***EPA Response**: Five year reviews are done for each listed Superfund Site. This five year review addresses the Silver Bow Creek/Butte Area (SBCBA) site, which runs from in and around Butte to the Warm Springs Ponds.*

The final five year review report for the Silver Bow Creek/Butte Area site addresses each operable unit within the site, and also contains an introductory section (Volume 1) that addresses the site as a whole. We have tried to make the final report readable and understandable, as well as comprehensive – you will note many changes from the public draft version that are intended to do that.

EPA will continue to conduct public information and outreach activities as remedy implementation continues (for example, the monthly newspaper inserts will continue) as well as participate in CTEC events and meetings as requested. EPA hopes that we can continue to work with CTEC to improve and expand public outreach and information sharing. EPA will continue to look for ways the public can have input during decision-making processes.

> **Comment:** The downstream-first approach to remedy creates a risk of recontamination of restored areas. CTEC would like to see upstream areas remedied before

recontamination can happen. Furthermore, lessons learned from down-stream remedy implementation should be fully considered when finalizing up-stream remediation options. Specifically, EPA's public acknowledgment during CTEC's meeting at the Butte Chamber of Commerce stating that "Stream Side Tailings Operable Unit has cleaned up quicker than anticipated" should be used as a lesson learned when considering full removal actions within the Butte Priority Soils Operable Unit (BPSOU). EPA needs to show an ability to learn from one operating unit to another.

EPA Response: *Contrary to how it may appear, the approach to cleanup of the Silver Bow Creek/Butte Area site was and is not a "downstream first" approach. EPA and the State of Montana Department of Environmental Quality carefully prioritized actions and areas in the 1980s for the SBCBA Site. That effort resulted in significant cleanup action both downstream and upstream in ways that addressed the most significant and acute problems first. For example, the Warm Springs Ponds, which are downstream from Butte, were targeted first for action with removal actions and interim Records of Decision, because they contain large volumes of contaminated sediments located in the riparian environment, and needed to be addressed immediately for earthquake or flood issues. Simultaneously, EPA conducted several major removal actions in and around Butte and Rocker, Montana (upstream) to address the most acute contamination and uncontrolled release scenarios there. These actions are detailed in the 2006 BPSOU Record of Decision, but notably included removal of 1.5 million cubic yards from the Lower Area One location in Butte which provided the vast majority of the loading to Silver Bow Creek (downstream); and significant efforts to capture contaminated ground water in Butte and to control the most acute sources of stormwater in Butte. After these major upstream actions were conducted, EPA worked with the State of Montana to develop and implement the cleanup of the Streamside Tailings Operable Unit (SST OU), which was a long-term project (which is still ongoing) to address the severely contaminated stream. During the SST cleanup, EPA continued to address upstream Butte contamination through more removal actions and now with the development and implementation of the BPSOU ROD.*

EPA recognizes that more needs to be done to address upstream contamination and downstream contamination to protect what has been accomplished, but the characterization of the many site wide cleanup actions as "downstream first" is not accurate in EPA's view. As the section of the report which addresses the SSTOU notes, re-contamination is a serious concern but actual recontamination at levels which will affect protectiveness is not occurring currently.

EPA agrees that learning from past actions is important, and believes our removal and remedy decisions reflect that learning. Partial removal of contamination at the Streamside Tailings operable unit has produced incredible success at that site (those actions were taken after learning that removal was effective as part of the Lower Area One removal action), but this cleanup also has presented current issues with residual waste left after removal, as noted in the SST five year review section. Removal of substantial Butte wastes in the immediate floodplain was achieved in the LAO removal action and in other actions throughout Butte, but removal of waste alone cannot be the answer to all contamination throughout Butte or the Silver Bow Creek/Butte Area site. Rather, a mix of removal and careful in-place capping and revegetation is warranted, depending on specific site conditions and concerns. In short, EPA does consider prior actions and their results, both on a national and local level, when making each new cleanup decision. Further information on this issue is provided in the response to similar comments on the SST section of the five year review as well.

Comment: CTEC would like more transparency regarding effectiveness of voluntary actions implemented in the Parrott Tailings and Metro Storm Drain areas, and at Lower Area One, and requests that EPA implement more comprehensive monitoring. New data is available which questions if the selected remedy for this area is correct; this data must be considered. The EPA should reconsider removal of remaining waste to protect down-gradient surface and groundwater.

***EPA Response**: Actions in the Parrott Tailings area, the Metro Storm Drain Area, and the Lower Area One area have not been voluntary, but have been efforts conducted under removal action memoranda, Butte Mine Flooding Record of Decisions implementation actions, and resulting EPA enforcement proceedings. EPA's past actions in BPSOU, including actions which resulted in the Metro Storm Drain capture/interception and pumping facility, are explained in detail in the BPSOU ROD if more information is needed.*

EPA is aware of the recent ground water flow data and other data concerning the ground water portion of the BPSOU ROD, and is considering that new data as it works to implement the 2006 BPSOU ROD through remedial design efforts. EPA agrees that the protection of downgradient surface and ground water is very important as it designs and monitors the final remedy for BPSOU. To date, surface water data indicates these efforts are generally working, although more can be done.

There are interim surface water and ground water monitoring plans for BPSOU that are extensive and which produce large amounts of data. EPA will issue an improved and more extensive ground water monitoring plan. The BPSOU ROD requires the development of final surface water and ground water monitoring plans, and EPA is currently working with the State of Montana and the responsible parties on those efforts.

As noted, EPA is about to release an updated, interim ground water monitoring plan, which will provide for more ground water monitoring wells in key areas, to address current information and issues about ground water contamination in Butte and to further the completion of remedial design for the ground water component of the BPSOU ROD.

Comment: The residential soil remediation program must be protective for all potential metals of concern. CTEC is concerned that health impacts may be concentrated preferentially among new residents and low-income residents, and extra efforts must be made to inform and involve those populations. And, environmental justice concerns justice must be served to the Butte community.

***EPA Response**: More detailed responses regarding the selection of the contaminants which have actions levels, and the action levels themselves, are addressed later on page 55 of this responsiveness summary. As part of the five year review process, EPA consulted with the Region 8 risk assessors to ensure that the appropriate contaminants of concern for residential cleanup were identified and that appropriate actions levels for these contaminants were set in the ROD. We remain confident that the actions levels for arsenic, lead, and mercury set in the ROD for residential cleanup are fully protective of human health.*

Under the Residential Metals Abatement Plan, all residential areas within the BPSOU will be sampled and cleaned up if actions levels are exceeded. This will ensure that all residents, including low income residents and tenants, will be addressed and no class will be left out. Issues regarding public outreach and environmental justice are very important, and the Residential Metals Abatement Plan requires the responsible parties to conduct such efforts. EPA recently worked with Butte Silver Bow County to develop a fact sheet which summarizes these efforts. Environmental justice issues associated with the residential cleanup plan have been examined by EPA's Environmental Justice section on three separate occasions and the results of those examinations are available in the public record.

> **Comment**: CTEC is concerned that the Five Year Review process involves EPA and their contractors evaluating their own work and that no objective party review has occurred. The Five Year Review should follow EPA's own guidance that review be performed by objective parties without bias or preconceived views or conclusions about the remedy and conditions at the site.

EPA Response: *EPA did follow the Superfund law, the Superfund regulations (known as the NCP), and its own five year review guidance carefully when conducting this review. EPA's headquarters office in Washington, D.C. recently responded to letters similar to this comment about the conduct of the five year review by EPA and its contractors, and concluded that EPA Region 8's efforts were being done in compliance with the Superfund law and EPA guidance. A copy of that response is attached here.*

> **Comment**: Butte Reclamation Evaluation System (BRES) reports should be made available on a consistent basis and waste cap design should be improved where caps are compromised. Future plans for cap inspection and maintenance should be presented in detail.

EPA Response: *EPA agrees with this comment, and has emphasized the issue of better implementation of the BRES operation and maintenance actions as recommendations in both the draft and final five year review section for BPSOU. EPA has taken enforcement steps with the responsible parties to ensure that the BRES plan and requirements are followed as required by the ROD, and that reports are publicly available. We will oversee and monitor these efforts more closely.*

> **Comment**: CTEC members are looking forward to release of the final Five Year Review. And, as there is great concern that past comments and concerns by the citizens of Butte have been disregarded and that the public has not been afforded concrete answers to their concerns, CTEC requests that EPA specifically address these concerns as presented in a formal written response letter sent directly to CTEC.

EPA Response: *All comments and public input to EPA on all Silver Bow Creek/Butte Area operable units, including the BPSOU operable unit, are considered carefully. Detailed responses to comments on the BPSOU Proposed Plan are provided in the BPSOU ROD. Detailed responses to comments are provided here and will be sent directly to CTEC as well as placed in the administrative record for the Silver Bow Creek/Butte Area site.*

Silver Bow Creek/Butte Area National Priorities List (NPL) Site-Wide Comments

Comment: ***A. NPL Remedy Progress:*** While voluntary and prescribed interim actions such as storm water controls, waste capping, and groundwater capture and treatment have improved protection of human health and the environment in Butte, metals can still migrate downstream and recontaminate remediated reaches of Silver Bow Creek (SBC).

EPA Response*: Actions taken currently in the BPSOU are being done pursuant to the final remedy for BPSOU described in the 2006 BPSOU ROD. These actions are not voluntary or interim, and have produced significant cleanup of BPSOU. As noted in the SSTOU five year review report, recontamination at levels of concern is not occurring, but EPA recognizes the potential for recontamination and is working aggressively to address full implementation of the BPSOU ROD, including additional stormwater control measures.*

The Stream Side Tailings Operable Unit (SSTOU) is being remediated ahead of Butte Priority Soils, and the Westside Soils OUs in the headwaters is at the beginning of Superfund assessment and actions.

EPA Response*: See our prior response regarding sequencing of cleanup actions for the entire site. The Five Year Review is an opportunity to evaluate how individual OUs are progressing and how well NPL remedy is progressing as a whole. It is a chance to make sense of the patchwork of interim actions by targeting final remedy for the entire NPL site, ensuring that OU cleanup is properly prioritized so as to not recontaminate downstream areas. EPA Response: EPA disagrees that there is a patchwork of interim actions. EPA's Records of Decision for each operable unit are comprehensive and are being implemented. Remedies for the Rocker OU, the SST OU, the BPS OU, and the Mine Flooding OU are final remedies, while EPA's records of decisions for the Warm Springs Ponds area are interim RODs which will be converted to final RODs at the appropriate time. See EPA's prior responses regarding sequencing and recontamination.*

The Final Five Year Review needs to include a discussion describing how the remedy is progressing on a site-wide basis and include what contingencies are being considered:

1. the vastly different schedules for remedy completion,
2. effects that slower cleanup upstream has on achieving remedial goals downstream,
3. potential for recontamination of remediated areas downstream.

This site-wide progress section should contain a list of issues from the individual OUs and evaluate how to prioritize follow-up actions based on the severity of risks to humans and the environment and the potential for issues from one OU to influence remedy success at another OU.

EPA Response*: The site-wide summary contained in the final five year review report includes an extensive table summarizing all of the issues and recommendations for all of the OUs, as well as*

milestone completion dates. As noted above, while the BPSOU ROD was completed later than the RODs for the downstream areas of the Silver Bow Creek/Butte Area site, a tremendous amount of cleanup work in the upstream areas was completed under EPA removal authority in the early years of Superfund involvement in this area (before beginning the SST cleanup); and sequencing was carefully considered. Importantly, storm water runoff was improved substantially due to reclamation of mine dumps on the Butte hill and through implementation of the Storm Water Time Critical Removal Action (TCRA) (which largely controlled stormwater from Missoula Gulch, and diverted large areas of runoff to the Berkeley Pit). Indeed part of the justification for the Storm Water TCRA was to lessen recontamination of downstream OUs so that remediation at SSTOU could move forward. Even more extensive stormwater control work is currently being implemented. EPA agrees that, although substantial improvement in water quality from the Butte area has already occurred, the potential for substantial recontamination of downstream areas is a serious concern that needs attention and effort by EPA and the BPSOU responsible parties. Stormwater runoff and the municipal wastewater discharge from Butte affecting downstream operable units are identified as issues in the report, and will be pursued in the ongoing efforts to fully implement the BPSOU ROD.

Comment: ***B. Transparency: Remedy decision transparency.*** There are two primary methods of cleanup in Superfund sites according to the National Contingency Plan (NCP): 1) removal or 2) remediation. Each of these requires either an Action Memorandum for early actions or a Record of Decision (ROD) before proceeding to interim or final action. An official public process is required for either method. Not all actions in the SBC NPL site have progressed following these administrative operating systems. In certain cases removal actions have evolved over time into pilot tests and adaptive management of wastes and water treatment by ARCO/BP. Examples are Lower Area One (LAO) treatment lagoons. In other cases, voluntary actions performed by ARCO/BP seem destined to become final components of the remedy. Examples are Metro Storm Drain (MSD) groundwater collection system. The decision-making process used by ARCO/BP in designing and operating these response actions has not been adequately explained and public involvement is lacking. Additionally, the public has not been adequately informed of ARCO/BP's internal review of the functioning and capability of these treatment systems to meet ARARs. While EPA may have communicated to the public at some level about these systems, the decisions leading to current installations built to protect human health and the environment, and additional data used to design them, has not been made public as one would expect if part of an official action. The Five Year Review process should examine the impact on final cleanup of allowing large-scale voluntary actions and pilot tests. It appears that these large systems, good or bad, will become part of the final remedy by default. For example, there is conjecture that the Metro Storm Drain collection system is overwhelming LAO water treatment facility in flow and water quality. If the actions taken in LAO had been part of an official action, details of the assessment, design, and operation of the system would be available to the public – instead, we are left to speculate. CTEC strongly encourages more public disclosure of data, designs, and operations of these facilities.

The Final Five Year Review should identify the:

1) Sources of data used to evaluate actions, such as removal actions;

2) The method by which the removal actions and pilot-scale studies have been evaluated,
3) Citation for any document wherein the action/study is evaluated, where the data sources and evaluation records are publicly available, and
4) Plans for further evaluation and public input if any.

EPA Response: *The cleanup actions done prior to the final remedy selection in the 2006 BPSOU Record of Decision were done as part of EPA's removal authority and procedures; or as part of the implementation process for the Mine Flooding record of decision. The BPSOU ROD contains a detailed description of these efforts and their results. During the feasibility study for the BPSOU ROD, EPA produced a lengthy and detailed examination of the data and effects of the removal actions in a report titled Response Action Summary Document, PRP Group October 2003, BPSOU/Butte Area Superfund Site. The BPSOU ROD then explains in detail how these removal actions are incorporated or altered in the final remedy, all in accordance with the Superfund law and EPA guidance. Importantly, the BPSOU ROD and the RI and FS that preceded the ROD provides large quantities of data and analysis addressing the issues presented in this comment; and the BPSOU ROD selected the final remedy for the BPSOU. This comment seems to suggest that remedy selection has yet to occur for BPSOU.*

EPA has communicated the results of the Metro Storm Drain capture/interception system and the treatment results and capabilities of the Lagoon Treatment system both in reports such as the Remedial Investigation and the Feasibility Study, and in public outreach communications such as meetings, but will re-double its efforts for public communication and outreach. The Lagoon Treatment system final design plans were recently published and public comment was solicited on those plans. Discharges from the Lagoon Treatment system meet ARAR standards almost all of the time. The Metro Storm Drain interception system is undergoing extensive design and review efforts as part of the BPSOU ROD implementation, and the results of that effort will be made available to the public. To date, surface water quality indicates that this system, along with the HCC system, is working to intercept contaminated ground water, although further improvements are needed. Those improvements include *addressing sources near the former Butte Reduction works area, better ground and surface water monitoring, improved MSD facilities, and the possible installation of diversions of ground water and/or infiltration barriers to further reduce ground water contaminant flows.*

The reason the MSD and LAO collection and treatment systems were not included specifically in the Five year review report was mainly an issue of the timing and scope of the report. Data collection and analysis for the MSD remains in process and will be discussed when these design efforts are more complete. The collection and treatment systems will be addressed in the next 5 year review for the BPSOU.

Comment*: Five Year Review Conclusions - Protectiveness Statement transparency.* The draft Comprehensive Protectiveness Statement (vol. 1, section 8) states "The actions that have been completed to date indicate that once the remedies are fully completed, the site should achieve long-term protectiveness of human health and the environment." However, it is not clear how this was determined since the Draft Review demonstrates that the remedies have so far met varying success.

EPA Response: *The final report has made changes to volume 1, and the protectiveness statements are now focused on each operable unit. A site-wide protectiveness statement is not required until all of the*

operable units within the SBCBA site are more fully addressed, according to the Superfund law and the guidance.

The report for each operable unit has identified issues and recommendations that must be addressed. However, none of these recommendations call into question the basic effectiveness of the selected remedies, in EPA's view. The report, and indeed CTEC's own comments, discuss the substantial progress in water quality, vegetation, ground water capture and treatment, and other remediation efforts that has been made to date and EPA believes the report demonstrates that the pursuit of implementing the selected remedies and the recommendations from this report will continue to lead to improved site conditions and improved, overall protectiveness.

> **Comment:** There are clear discrepancies in the protectiveness statements that are not explained. An example: the current statement on protectiveness for the Butte Priority Soils Operable Unit (BPSOU) (section 7.4) states: "Arsenic and heavy metal contaminants in alluvial groundwater are now prevented from reaching Silver Bow Creek through a comprehensive groundwater control, capture, and treatment system, such that water quality standards are being met much of the time during base flow conditions." Figure 6-15 (vol. 6) shows that this is clearly not the case; copper exceeds base flow standards more than ½ the time at every monitoring station in Silver Bow Creek. The text (pp 6-26, vol. 6) states: "Following the treatment of all MSD groundwater, total recoverable copper concentrations have stabilized; however, continue to exceed the acute and chronic standard on most occasions."

EPA Response: *EPA agrees and the protectiveness statements have been modified to more accurately reflect site conditions. The basic point made in the draft report, which is that base flow conditions for surface water have improved significantly and that base flow conditions meet or come close to the very low ARAR standards at many times in a given year at the BPSOU, remains valid and is described with more clarity in the final five year review report.*

> **Comment:** ATSDR (2002) identified elevated skin cancer rates in Silver Bow County, a cancer type prevalent in humans exposed to arsenic in their environment. The ATSDR study recommended further evaluation or arsenic-cancer connections in the Butte area; but to our knowledge that has not occurred. The Five Year Review states that medical monitoring for arsenic occurs as part of Residential Metals Abatement Program (RMAP), but that monitoring is not described and risks to human health are not evaluated.

EPA Response: *Medical monitoring for blood lead and urinary arsenic is available, but voluntary. The monitoring programs are described in more detail in the Residential Metals Abatement Program. As noted in the five year review report, blood lead levels have consistently decreased in Butte to very low levels in almost all cases, and urinary arsenic testing has not shown problems with arsenic in individuals for those who have been tested. BSB is compiling health data for the BPSOU that reviews diseases , including cancer associated with metal contamination. Once the report is complete, BSB will submit it to EPA and ATSDR for review and approval.*
The following are the exact conclusions and recommendations from the 2002 ATSDR report:

CONCLUSION

The data indicate a slightly elevated incidence of skin cancer in Silver Bow County when compared with age-standardized rates at the State and national level. No other cancer outcomes were consistently elevated when compared with these two reference groups. The slight increase in skin cancer incidence cannot be directly attributed to soil arsenic contamination in the area since no exposure assessments were included in this analysis.

RECOMMENDATIONS

1. *Evaluate melanoma and no melanoma skin cancer incidence separately since only non-melanoma skin cancers are associated with arsenic exposure.*
2. *Educate local citizens on ways to reduce or eliminate exposure to ambient arsenic contamination.*
3. *Educate local physicians on the symptoms, effects, and treatment regimes for arsenic exposure.*
4. *Consider reviewing pre-1979 cancer statistics to determine if cancer incidence was elevated prior to the time frame used in this analysis.*

The ATSDR study does note slightly elevated skin cancer rates, but could not definitively separate skin cancers due to arsenic exposure. Regardless, arsenic exposures are decreasing due to CERCLA response actions and the arsenic action level for the BPSOU is protective of human health. Educational efforts are ongoing under the Residential Metals Abatement Plan. EPA will discuss other recommendations from the ATSDR report with ATSDR in light of current site conditions.

Comment: Disconnection between the data and conclusions in the review do not help the public to follow statements regarding how the actions completed to date indicate that long-term protectiveness will be achieved. The connection between the data and conclusions should be made clear. And, where discrepancies, such as quoted above exist, the current statements on protectiveness of the remedy need to be corrected.

EPA Response: *EPA agrees. The protectiveness statements have been revised, and the text has been revised for readability and clarity. Also, see prior responses to comments which address some aspects of this comment.*

Comment: ***C. NPL Community Outreach:*** CTEC, EPA, and others have coordinated and led numerous community outreach efforts over the last two decades. Typically, outreach is focused on one OU, such as Stream Side Tailings OU or Butte Priority Soils OU, and the geographically scattered approach and complexity of the issues discussed deflect focus from the remedy as a whole. It is not clear whether past public outreach was effective in gaining adequate citizen input over the last decade and whether it has provided sufficient education regarding the impacts of Superfund on the community. Deficiencies in community outreach are evident in local news such as the September 9, 2009 Montana Standard staff editorial which stated "Display ads about the [Multi-Pathway Residential Metals Abatement Program Plan] comment period ran in local papers, but unless a person already knew about the program, there's a good chance they had no idea what the ad was about." CTEC requests that the Five Year Review objectively evaluate the effectiveness of past community outreach (by all parties), especially with respect to the response actions performed under removal authority

described in the BPSOU ROD, voluntary actions and pilot tests undertaken by ARCO/BP to fast-track cleanup. CTEC is interested in trying new and innovative methods of outreach to engage the public and derive meaningful citizen input, and is looking for ways to do a better job. Likewise, EPA should consider how it may collaborate with CTEC by providing additional funding or more actively participating in engaging the public.

EPA Response: *EPA appreciates this comment. Appendix A of Volume 1 summarizes the extensive community interview results and discusses many of the findings regarding community involvement and outreach. The purpose of the Five-Year Review is to evaluate the effectiveness of the remedy and EPA does not intend to broaden the scope of this review to evaluate community outreach. However, EPA remains open to new ideas for outreach and is working to better meet the community's needs. EPA values CTEC's contributions welcomes discussion on innovative and effective ideas for community outreach.*

Comment: ***D. Environmental Justice:*** Low-income residents may bear a disproportionate impact of waste left in place and require specific targeting for voluntary residential abatement because low-income households are concentrated in the heavily contaminated portions of the BPSOU and because these households are more likely to be renters relying on property owners to initiate residential sampling and abatement. The community interviews indicate strong community support for greater attention to issues regarding environmental justice. However, the draft review makes no recommendations or follow-up actions regarding this concern. The final review should specifically examine:

1. What provisions have been made to specifically reach out to low-income residents, residents who are not well connected to mainstream communication media, and citizens who are new to the area.
2. The potential for exposure to contaminated indoor dust by residents is high if their homes have not been assessed for contaminants and contaminated indoor dust is not removed.
3. Disproportionate exposure to toxins by low income citizens living in uptown Butte.
4. The challenges that low income citizens face in minimizing exposure to toxins given limited financial resources, reliance on landlords to invoke abatement, and run-down structures being prone to leaking toxic dust into living areas.

EPA Response: *EPA has addressed environmental justice issues at the BPSOU site through review by the EPA Region 8 Environmental Justice Office in 2004 through 2010:*

- *EPA 2004. August 2, 2004 letter from Art Palomares (EPA – Environmental Justice Office) to John W Ray with subject of "Transmits and Discusses Environmental Justice Complaint Investigation" and a report dated August 2, 2004 from EPA Environmental Justice Program titled "Evaluation Report Environmental Justice Concerns at the Butte Priority Soils Operable Unit, Butte, Montana, Final Report".*

- *EPA 2005. August 23, 2005 letter from Art Palomares (EPA Region 8– Environmental Justice Office) to John W Ray with subject of "Risk Assessments for Butte Priority Soils Environmental Justice Complaint" – 6 page letter with five appendices.*

- *EPA 2007. January 23, 2007 letter from Art Palomares (EPA Region 8 Environmental Justice Office) to John W Ray – 13 page letter regarding the BPSOU ROD.*

- *EPA 2010. January 12, 2010 letter from Art Palomares (EPA Region 8 Environmental Justice Office) to John W Ray regarding the Residential Metal Abatement Plan – 4 page letter.*

Additionally, EPA worked with Butte Silver Bow County to describe community outreach efforts for residential cleanup in the recent fact sheet that was placed in local newspapers. Also, the final Residential Metals Abatement Plan requires various educational and community outreach efforts, and these efforts will be monitored closely by EPA.

Furthermore, EPA has ensured that ***the remedy is designed to systematically remediate all properties, regardless of income.*** *EPA and BSB Health department have numerous avenues of reaching the public, but most of all, BSB is systematically sampling and remediating every property in the BPSOU. They are tracking all locations where access has been denied or remediation refused.*

> **Comment*****: E. Potential for Bias in Review Process:*** CTEC is greatly concerned that the Five Year Review was performed by EPA officials and their contractors, specifically CDM, who are greatly invested in the cleanup of Butte and who are not objective parties. Many citizens of Butte perceive that the review is a biased process and that our concerns are disregarded. EPA's Comprehensive Five-Year Review Guidance (EPA 540-R-01-007—OSWER No. 9355.7-03B-P, June 2001) states: "The review should be performed by objective parties without bias or preconceived views or conclusions about the remedy and conditions at the site." CTEC contends that the draft review needs to be audited by an objective party prior to being finalized and that future reviews are performed entirely by an objective party. An objective review party could be developed similarly to a "Tiger Team" model and include agency representatives from different regions who are not invested in remedy success.

EPA Response: *EPA assigned an RPM who was not affiliated with the Butte Site to manage the project and direct CDM accordingly. Furthermore, the report was reviewed by the EPA regional and EPA headquarters personnel to ensure objectivity. Please see the response dated March 4, 2011 from EPA's director of the Superfund program for additional explanation on this issue.*

Operable Unit Comments
Butte Priority Soils Operable Unit (BPSOU)
General Comments

> **Comment:** It is especially important that the Five Year Review evaluate prior actions on the BPSOU including those listed in the Response Action Summary Document, Butte Priority Soils Operable Unit (2003) and those voluntary actions such as the MSD groundwater capture system to ensure that they fully support the final remedy of the

whole NPL site. Further, EPA should differentiate between past actions that were approved or led by EPA and those that are voluntary actions or pilot tests and are not necessarily final actions. The effectiveness of past actions is not only important to the health of citizens that live in the Superfund site, but to the prevention of downstream migration of metals via surface water or groundwater. Transparency is needed on how these actions are evaluated and what the results of these evaluations are to ensure public trust about protection of human health and the environment.

In absence of evaluating these interim removal actions, EPA needs to describe how they determined that there are no unacceptable immediate dangers to human health and environment given new data about the functioning of the removal actions, such as the issues with waste caps identified by BRES.

EPA Response: *The October 2003 Response Action Summary document is a detailed evaluation of the prior removal actions. It was done as part of the RI/FS for the site, and its results were considered and incorporated where appropriate into the 2005 Proposed Plan and the final 2006 Record of Decision for BPSOU. The 2006 BPSOU ROD contains descriptions and information about the past actions and the authority under which they were implemented. Extensive comments were made on the BPSOU Proposed Plan, and EPA responded to those comments in detail.*
It is the Record of Decision which establishes the final remedy for the site, and the ROD itself describes how the many ROD requirements comply with the Superfund law and meet its protectiveness requirements. The five year review report is not meant to go back into history and review these actions and decisions – it is intended to review the ROD's implementation and the remedy's protectiveness. EPA believes the report does that.

EPA developed the BRES as a comprehensive plan and standard for all reclaimed source areas on the Butte Hill and incorporated those requirements into the ROD. As the Five Year Review notes, BSB and the other responsible parties have not implemented the necessary corrective actions under the BRES system at the reclaimed caps, nor have they reported results consistently. The five year review report notes that this is a serious deficiency that can affect long-term protectiveness and recommends follow-up action to ensure that BRES is fully implemented as required by the BPSOU ROD. Finding this deficiency is an example of the FYR doing its job.

Comment: The integrity of caps on waste left in place in Butte are important because they will likely be there for hundreds of years where the land is eventually developed, and in perpetuity for undeveloped areas. CTEC and their technical consultants visited a Montana Rail Link constructed cap near the old railroad depot during EPA's Five Year Review tour which had no cover soil or vegetation. The Five Year Review should evaluate the potential for exposure to toxins given current waste cap design. This can be accomplished by evaluating the occurrence of caps which are not functioning and the contaminant levels present in soil and water and evaluating whether exposure scenarios used in the risk assessment are valid. The Five Year Review should also evaluate the effects of waste left in place on water quality if the integrity of caps is compromised, and whether future finances will support cap monitoring and repair in perpetuity. Analytical testing of surface water runoff and groundwater leaching of contaminants from capped areas should be recommended in the Five Year Review and provisions made if exposure to contaminated water can occur or if contaminants are determined to be mobilizing and

impairing surface water quality. CTEC wants to be sure that the BRES system is being consistently administered and that inspections are frequent enough to keep up with emerging problems. CTEC would like BRES reports to be made available on a consistent basis as they are completed. And CTEC would like to see a plan for what will be done to caps that are not monitored and maintained by the local government.

EPA Response: *The cap in question was one of the first source areas reclaimed by the Montana Department of State Lands. While the cap material used was clean, it was too sandy to be a suitable, stable growth medium. This source area is an example of a cap where a corrective action needs to be implemented to bring the cap up to the performance standards in the BRES (i.e., stable, vegetative cap). EPA will ensure that this capped is corrected in accordance with the BRES.*

EPA agrees with CTEC about the need for the report to identify the cap correction, maintenance, and BRES implementation problems, and the report discusses many of the issues raised in this comment in detail. EPA also agrees that full implementation of the ROD's BRES requirements is very important to Butte and its citizens, and has taken steps to be sure the responsible parties fully implement the BRES requirements. EPA will continue to pursue this issue vigorously.

EPA agrees that these reports should be available at a frequent, consistent basis for public review. EPA will pursue this issue with the responsible parties as part of its follow-up work on BRES implementation.

Comment: The draft review indicates waste caps are not meeting BRES objectives in more than half of the sites inventoried. CTEC contends that the public should not wait until issues with BRES implementation are "ironed out" to identify the risk of cap failures. CTEC contends that the exposure scenarios used in the risk assessment are not valid given the current state of the WLIP remedy. The only evaluation of this risk apparent in the draft review is table 8-1 (vol. 6), which states that the issues do not affect current protectiveness because "Caps have not failed, and soils generally remain in place as a barrier between mine waste and humans." CTEC finds that there is a disconnect between this conclusion and data indicating exposed waste present in 60% of the caps inventoried by BRES during 2007-08. The Five Year Review needs to evaluate whether cap failure presents an unacceptable risk to human health that should be dealt with immediately under Record of Decision (ROD) authority or time critical removal action. The review should evaluate whether funding is inadequate for Butte-Silver Bow to perform needed cap O&M.

EPA Response: *EPA agrees with CTEC about the importance of full BREs implementation. See our responses above.*

As a point of clarification, the BRES standard does not consider small areas of exposed waste material to be a "cap failure". Rather, this is a trigger item identified in the BRES as an area needing corrective action (such as additional soil, revegetation, modification of site drainage, etc.).

The exposure scenarios and other risk factors described in the risk assessments for BPSOU were reviewed and judged to be valid. Waste is capped when action levels are exceeded or stormwater run-off problems are present. If waste exceeding the action levels is exposed, it needs to be addressed, and the ROD provides for this. Once the waste is capped, the exposure pathway is broken.

EPA will use its enforcement authority to ensure full and timely implementation of the BRES requirements, without regard for funding agreements between or among responsible parties.

> **Comment:** Additionally, the BPSOU ROD (EPA, 2006) provides that vegetated cover soil caps must support a diverse plant community including native species to the extent that the constituents of the vegetation cover are not incompatible with the remedy (Section 12.6.1 – Solid Media). The final Five Year Review should evaluate how native species have been incorporated into caps and which species are most effective at achieving revegetation objectives.

EPA Response: *These requirements are built into the performance standards that are in the BRES and are covered during the BRES evaluation process. These vegetation standards are built into the Butte Hill Revegetation Specifications (part of the BRES). EPA will continue to monitor and oversee the implementation of the ROD and BRES requirements vigorously.*

Surface water management program

> **Comment:** EPA's 2008 Surface Water Characterization Report, Butte Priority Soils Operable Unit, section 5 shows that most of the copper input to Silver Bow Creek occurs during storm events. Remedial actions must be constructed today to reduce the storm load of metals to the creek. The Five Year Review should determine appropriate measures needed to ensure protection of the SSTOU remedy from storm water runoff as required by the SSTOU ROD. The Five Year Review needs to address the immediate implementation of final storm water actions to protect downstream water quality on SBC.

EPA Response: *The BPSOU ROD requires storm water control measures through an iterative program to address this important issue. In light of the Surface Water Characterization Report and community concerns about stormwater, EPA worked with the State DEQ and the responsible parties to design aggressive up-front stormwater control measures implemented over the last three years under the ROD requirements. These have included curb and gutter construction, stormwater system cleanout, stormwater basin improvements, further capping and revegetation, and other efforts. EPA is working on additional, major stormwater control actions for 2011 and 2012, in accordance with the ROD requirements.*

The five year review report for BPSOU and SST both recognize the importance of this ROD requirement and the need for follow-up action.

> **Comment:** Draft Recommendations and Follow-Up Actions for the SSTOU (section 9, vol. 2) include: "Ongoing evaluation and implementation efforts to control upstream stormwater should continue. The goal should be to demonstrate no significant recontamination concern through instream water quality and sediment sampling. If significant recontamination is occurring (current data do not show this) design additional mitigation measures to control or treat." This action is given a milestone date of 2012; but what that milestone date means is not described. It is not clear how the

evaluation proposed will demonstrate that no significant recontamination concern exists. Additionally, it appears that there is an incongruity between the BPSOU and SSTOU Recommendations and Follow-Up Actions wherein the STTOU recommends the follow-up action of demonstrating no significant recontamination concern and the BPSOU recommendations appear to take a "business as usual" approach to stormwater control implementation. The review should explicitly describe how the recontamination issue will be evaluated and by what date. CTEC contends that additional measures to control or treat stormwater must be expedited such that the risk of recontamination is minimized.

EPA Response: *See our response above.*

Lower Area One

Comment: CTEC identifies Lower Area One (LAO) as the final stopgap for downgradient migration of pollutants from much of Butte. The Five Year Review needs to address whether the LAO capture treatment system works sufficiently to achieve water quality objectives in SBC. Based on the site visit with EPA for the Five Year Review, there has been, and still is, a lot of work to improve groundwater collection that has had little public disclosure. Were alternatives for capture of shallow and deeper groundwater adequately considered, and have alternative treatment options been adequately considered? The existing treatment system is an interim and experimental system that was not to our knowledge subjected to a thorough feasibility study, yet it is one of the most important final remedy components of BPSOU.

EPA Response*: The LAO Treatment Lagoons were implemented as part of the prior LAO non-time-critical removal action after undergoing initial design. The use of this treatment system in the final remedy was extensively examined and reviewed in the BPSOU feasibility study. The final ROD for BPSOU recommended keeping the Treatment Lagoons as a primary water treatment system and required certain upgrades to the system. Those upgrades have been undergoing remedial design, and the first batch of upgrade remedial design plans was developed last year. Those plans underwent review, and are now final. Those plans should be implemented this field season. Another round of design plans are in development, pursuant to the ROD, and will undergo the same process. The next five year review report will look more closely at the operation of the treatment system and its compliance with ROD performance standards.*

Throughout the pre and post ROD processes, data regarding discharges from the ponds is produced and is available from EPA. That data shows that the ponds treatment system meets performance standards consistently (pre-ROD data to this effect was discussed extensively in the BPSOU RI/FS and ROD) almost all of the time.

Ground water collection is also addressed in the ROD, as well as the need for additional studies, data collection, and monitoring of groundwater. EPA has presented information to CTEC and the public regarding these ongoing efforts at ROD implementation, and plans to present more information in the near future. Once remedial design efforts are complete, additional actions to upgrade the interception and

pumping systems for ground water may be implemented. Already, as a result of remedial design efforts, additional capture of groundwater has been implemented in the Butte Reduction Works area.

In a general sense, the post-ROD monitoring and assessment and design efforts continue to indicate that the extensive capture/interception system (the HCC and the Metro Storm Drain system) are working well and most contaminated ground water is being captured and treated successfully. Base flow surface water data reflects these findings. The five year review report accurately summarizes these efforts in EPA's opinion.

CTEC has maintained for almost five years that LAO does not collect all contaminated groundwater flowing down gradient from major sources of metals, and the BPSOU ROD calls for additional groundwater monitoring wells to be installed; but these wells have not yet been constructed.

EPA Response: *Additional ground water monitoring wells have been installed, as described in the ROD. Based on the data collected from the new monitoring wells installed at LAO, EPA believes that the groundwater collection system does collect and treat the contaminated groundwater.*

Comment: LAO is currently being revisited by ARCO/BP to improve groundwater collection and treatment, which implies that LAO groundwater collection can be improved. The groundwater not collected at LAO flows downgradient of BPSOU to the SSTOU, which does not have a groundwater remediation component in the ROD.

EPA Response: *EPA agrees that the system can be improved and this is stated in the BPSOU ROD. The efforts at improvement to date include what was done with the Butte Reduction Works improved collection efforts. Further remedial design work and investigation is ongoing and may produce more capture system improvements. EPA is not aware of significant ground water contamination moving downgradient from the HCC or the LAO treatment lagoons and into the SST operable unit.*

Comment: Logic supports removal of sources of metals in SBC to help reduce metal leaching into groundwater. Since sources of metals are not all being removed, what will be the long-term impact on groundwater and surface water quality along SBC? Will gaining reaches of SBC receive contaminated groundwater that was not collected over the last decade and groundwater that will not be collected in the future from LAO?

EPA Response: *EPA's ROD and the accompanying technical impracticability ground water evaluation for ground water found that removal of waste sources to ground water, which are ubiquitous in BPSOU, would not result in ground water cleanup. The ROD required extensive ground water collection and treatment efforts to ensure that ground water is collected and treated, and therefore does not impact surface water in and downstream from BPSOU. Currently, the capture and treatment system is working generally well, and remedial design efforts to improve the system are ongoing. Silver Bow Creek shows dramatically improved water quality and ongoing remediation efforts, both at BPSOU and at the SST OU, will continue to improve that water quality.*

Comment: The Five Year Review should recommend a specific plan for monitoring groundwater within and downstream of LAO and a timeline for implementing that monitoring before 2013. The Five Year Review should also recommend a plan to evaluate the ability of the MSD and LAO groundwater capture and Butte Treatment Lagoon (BTL) facility to treat contaminated water to meet ARARS and report those findings to the public.

EPA Response: *The Feasibility Study which preceded the ROD evaluated the ability of the MSD and LAO capture/interception, pumping, and treatment system to meet ARARs. Data from the operation of the Lagoon Treatment System during the time period prior to the ROD did show that ground water could be captured and treated, along with contaminated surface water, such that ARAR standards were met in almost all conditions for the discharge from the Lagoon Treatment System. This is one of the factors which led EPA to select the continued operation of this ground water capture/interception, pumping, and treatment system, with necessary improvements as described in the ROD, as part of the selected remedy for BPSOU described in the final ROD. Ongoing data reporting on the discharge from the Lagoon Treatment System continues to indicate compliance with ARAR standards for the Lagoon Treatment System discharge, and this data is available to the public. The ROD already requires extensive ground water monitoring. Extensive ground water monitoring under an approved plan has been ongoing for some time, and data from that plan is available to the public via EPA's Butte office. An improved and updated, interim ground water monitoring plan is about to be implemented. A final ground water monitoring plan is needed for complete implementation of the ROD and will be developed under the remedial design process as the entire ROD is implemented and the requirements of such a plan are fully known and understood.*

Technically speaking, the ground water capture/interception system works as well as it does largely due to some fortuitous geology at the west end of the site. The bedrock underlying the alluvial aquifer shallows and outcrops along the west edge of the site. Thus, the alluvial aquifer becomes thin in this area. To exit the valley, the groundwater must pass through this narrow constriction in the aquifer, or be expressed as surface water. The BPSOU capture/interception system takes advantage of this setting by maintaining a groundwater sink in the area where the groundwater would naturally surface. These features along with the capture/interception system largely prevent westward migration of alluvial groundwater from LAO into the SSTOU. If the data from additional wells or other information developed during the remedial design process indicates groundwater capture can be significantly improved and impacts to Silver Bow Creek can be lessened, EPA will require those improvements.

Indoor dust/lead

Comment: CTEC believes that indoor dust/lead is one of the most important threats to human health within the NPL boundary. Many homes are suspected to be impacted by past smelting emissions which have led to exposures [Montana Standard 11/29/2004 - Anaconda Homeowner Finds Danger Lurking in the Attic] and could lead to future exposures if not properly cleaned up. CTEC believes other exposures to metal and arsenic-contaminated attic dust have occurred but have not been reported because those citizens exposed were either unaware of the hazard or did not have a clear way to report the exposure and mitigate the risk. The Draft Baseline Risk Assessment, Streamside Tailings Operable Unit, Silver Bow Creek/Butte Area NPL Site (CDM, 1994) exemplifies a strong correlation between interior dust lead concentrations and blood lead levels.

Are community involvement and outreach elements described in the current Residential Metals Abatement Plan (RMAP) adequate to ensure near 100% voluntary participation in the remediation program? In particular, are low-income residents' needs met? CTEC has provided comment on the draft Residential Metals Abatement Plan which among other items requests expansion of the Community Awareness and Education program. More proactive community involvement in this process is necessary and should be carefully considered as part of the Five Year Review.

A complete description and evaluation of outreach for the RMAP program needs to be provided. CTEC recommends that outreach suggestions specific to improving participation in the RMAP program be included in table 3-1 'Suggestions for Improving Communication based on Community Feedback.' Additionally, the medical monitoring program for arsenic and mercury must be described, results presented, risks to human health assessed, and the program function evaluated in the final review. CTEC would like to see that arsenic related cancer risks to Butte residents are evaluated as proposed in ATSDR (2002).

EPA Response*: EPA agrees that the success of the attic or wall dust cleanup component of the Residential Metals Abatement Program is very important. The outreach efforts in table 3-1 are general suggestions and the table was not changed. More importantly, the final Residential Metals Abatement Program was finalized after careful consideration of all public comments including CTEC's comments. EPA believes that the outreach and education programs described there are adequate and will be overseeing the faithful implementation of the RMAP, including its education and outreach requirements, by the responsible parties. EPA will work with community members to determine if additional outreach efforts are necessary. Additionally, EPA will renew discussions with ATSDR about the follow-up activities suggested in the last ATSDR review. Because the recommendations were made in 2002 and substantial work has occurred since then, some of these recommendations may need to be changed or updated.*

Comment: A discrepancy in reporting that needs to be addressed is that table 6.2 (Vol. 6) does not show that blood lead occurrences in the 1990's was 12% as reported on page 2.13 and page 3.5 in vol. 1, appendix A.

EPA Response: *The 12 percent occurrence mentioned in Appendix A is there because this was a quote from an interviewee. Interviewee quotes were not necessarily verified for accuracy. The data in Table 6.2 (Vol. 6) was compiled from BSB records. The text will be modified in Appendix A for consistency.*

Parrott Tailings/Metro Storm Drain

Comment: CTEC participated in a public meeting on February 23, 2009 regarding hydrogeologic and soils assessment funded by the Natural Resource Damage Program (NRDP). At this meeting, the Montana Bureau of Mines and Resources (MBMG) who did the assessment presented a compilation of Parrott Tailings data, pointing out gaps in data defining the boundary of the tailings and the nature of overburden. New data has been collected and analyzed by the MBMG, and will be made available to the public

shortly. Published studies such as MBMG (2004, 2010a, and 2010b), as well as personal communications from MBMG scientists currently working on characterizing the Metro Storm Drain (MSD) contaminants indicate that assumptions about the volume and transmissivity of the Parrott Tailings reported in EPA's Focused Feasibility Study for Parrott Tailings (CDM, 2004) sections 2 and 3 are flawed. This new data indicates the Parrott Tailings is impacting surface water in areas not considered in the 2004 Focused Feasibility Study for the MSD (CDM, 2004) or in ROD remedy selection. New data indicate contamination from the Parrot tailings in the intermediate alluvial aquifer is travelling parallel to, and confined from the MSD capture system. Recent monitoring activities in the area suggest a worsening of water quality in the plume associated with the Parrott tailings and that the plume has migrated farther than expressed in the feasibility studies.

EPA Response: *Over the last several months, several ground water studies and analysis by the Atlantic Richfield Company has been conducted as part of the remedial design process. EPA will be working with the responsible parties and the State to update the public on the status of these studies. The Montana Bureau of Mines and Geology has also conducted studies, primarily as part of the State and local restoration planning process.*

EPA acknowledges that these studies have shown data that is different from some of the assumptions used in the EPA's pre-ROD focused feasibility study and related reports, particularly in relation to ground water flow rates. EPA does not agree that the new flow data or other information indicates that the BPSOU ROD component which addresses ground water needs to be changed, nor does it indicate that contaminated ground water is not being substantially captured currently. EPA does agree that the newer data and analysis needs to be used carefully as remedial design for the final capture/interception, pumping, and treatment system is completed.

The baseline water quality conditions for surface water in the BPSOU continue to indicate substantial reductions in contamination reaching this water (such that conditions are near the very conservative in-stream ARAR standards for surface water), and this data indicates that a well designed capture/interception, pumping, and treatment system will be protective of surface water. The five year review report conclusions reflect this general conclusion.

Finally, EPA notes that the State restoration plan for Butte provides for the removal of the Parrott Tailings, and that this action has been funded by settlement agreements between the Atlantic Richfield Company and the State of Montana. EPA will work cooperatively with the State, the responsible parties, and all other interested persons to design a final remedy and a final restoration plan that provides maximum benefit for the protection of Silver Bow Creek water quality.

Comment: ARCO/BP recently completed an aquifer test in the Parrott Tailings and upper Metro Storm Drain area. Contaminated groundwater from the Parrott Tailings is now discharging at an increased rate due to the groundwater capture system installed voluntarily by ARCO/BP, and there are reports of ongoing serious malfunctions in the pumping system. The new data strongly suggests the foundations of past decisions concerning the ROD remedy for the MSD including the 2004 Focused Feasibility Study for the MSD (CDM, 2004) and the Groundwater Technical Impracticability Evaluation

(ARCO, 2005) contain significant errors regarding site characterization and remedy feasibility.

EPA Response*: See our response above. The Metro Storm Drain interception system is not a "voluntary" system but a system that was analyzed in the Feasibility Study for BPSOU and whose inclusion, along with necessary upgrades, is required by the BPSOU ROD. EPA via the remedial design process has and will continue to take a hard look at the past malfunctions with the Metro Storm Drain capture/interception and pumping system noted in this comment, such that interim and final designs for the system address these issues and a reliable, long-term system is implemented and maintained by the responsible parties.*

Comment: The Five Year Review must evaluate how new data change the assumptions made in these decision-making documents and address the disparity in the new data versus that used in the feasibility studies and remedy selection. This evaluation must specifically include the decision to leave waste-in-place, the ability of a subdrain capture system to collect contaminated groundwater, and the treatability of contaminated groundwater.

EPA Response: *See our responses immediately above. Additional data collected since the focused feasibility study and ROD issuance at BPSOU has allowed for better definition of the waste areas and plume migration in ground water at BPSOU. The fact that our understanding has improved means that the groundwater capture system remedial design process will yield results which will ensure that the groundwater in the intermediate alluvial aquifer and elsewhere is being captured, and that appropriate modifications or improvements are made to the capture system as necessary. As explained above, the new data do not mean that the selected remedy found in the BPSOU ROD is wrong. Importantly, the new data do not indicate that waste removals will improve groundwater quality such that capture and treatment are not necessary. EPA maintains that any removals of waste in the aquifer may improve groundwater quality, but removal to the extent necessary to ever achieve groundwater standards, even if that was possible, are not practicable or required under the Superfund remediation law due to the urban infrastructure built on the waste material and other factors.*

EPA notes that the State may pursue waste removal as part of its natural resource damage program for the Butte area, and will continue to cooperate with the State on coordinating these efforts with the remedial design efforts for the ground water component of the BPSOU ROD.

Comment: The Five Year Review should examine the process by which new data are made available to the public. CTEC is charged with representing the citizens of Butte, which is very difficult if the data and underpinning logic for cleanup decisions are not disclosed.

EPA Response: *The underpinning logic for the remedy selection at BPSOU is carefully described in the BPSOU Proposed Plan and ROD. Substantial amounts of data have been provided to CTEC and other members of the public, and the EPA office in Butte is another source for such data. EPA will work to provide better ways to provide data results to the public and appreciates CTEC's continued efforts on this issue.*

Clark Fork Coalition Comments

General Comments

Comment: The Clark Fork Coalition (CFC) appreciates this opportunity to comment on the third five-year review for the Silver Bow Creek/Butte Area Superfund site. The CFC is a citizen's organization of about 1,500 members within the Clark Fork watershed, dedicated to clean water and healthy rivers. In the 25 years that we've been active in Superfund issues, we've been encouraged by the amazing transformation that's occurring on Silver Bow Creek. Certainly much has been accomplished since the first review, and while it's exciting to see progress, it's also clear that much remains to be done. It is extremely important for this Superfund cleanup that we "get it right" in Butte, both for the citizens who live there and because it's the headwaters of the biggest river in western Montana.

Communication. To quote Cool Hand Luke, "What we've got here is a failure to communicate." This is a problem, not just for EPA, but also DEQ, BSB and ARCO, and you've heard it loud and clear from the community. The communication gap seems to exist on several levels, and that's probably not surprising for a project this complex. The remedy can't be successful, and it won't be a national model if communication isn't addressed, and improved.

EPA Response: *EPA's communication efforts for BPSOU and the other operable units for which it is the lead have been extensive (see our response above, as well as the descriptions of public communication in the BPSOU ROD and in the five year review report for a more complete description of past efforts). Nevertheless, these efforts can always be improved. The five year review report notes the need for better communication and EPA will follow-up with improvements to communication. EPA will also encourage the State DEQ, - the lead agency for the SST operable unit- to improve its communication efforts.*

Comment: First, the agency personnel in charge of the different operable units need to communicate better with each other. All of these OUs are connected. Just because they're divided into manageable chunks doesn't mean they can always be treated separately - especially not where one or more units have the potential to recontaminate other units. I've noticed that EPA recognizes this problem in the five year review report. It's important that it doesn't slip between the cracks.

EPA Response: *The five year review report does address this issue and EPA will follow-up on better communication among the EPA and state staff assigned to the different operable units within the Silver Bow Creek/Butte Area site.*

Comment: Second, the agencies need to make a good faith effort to listen and respond to the public. In 2004 or 2005, I participated in a facilitated, EPA sponsored community group in Butte that discussed various aspects of the BPSOU proposed remedy prior to the Record of Decision. EPA was careful to assemble a diverse group, and everyone at the table took the responsibility seriously. We volunteered a lot of time to these meetings over a period of 4-5 months. At the end, we produced a letter that was a

consensus document of community concerns with the remedy. We sent it off, and as far as I know, never heard another word. And when the ROD came out, it was discouraging to see that we'd had no impact whatsoever. The ROD reflected little, if any, of the community concerns. It's no wonder that the public is frustrated. There may never be agreement on all issues between the agencies and the public, but a good faith effort to respond and explain, as often as necessary, would help.

EPA Response: *EPA did carefully consider all comments received on the BPSOU Proposed Plan, including the comment letter described above. In the BPSOU ROD, EPA responded in substantial detail to all comments received, and these written responses are contained in the 128 page responsiveness summary attached to the ROD. Over the past year, EPA has released remedial design reports for informal public comment and again carefully considered those comments in changing and approving the final remedial design documents. EPA has participated in several community group meetings since the ROD was signed, and has issued monthly information bulletins since March of 2010 in local newspapers regarding the BPSOU ROD implementation.*

Finally, EPA issued this five year review report in draft form, received substantial comments, and again is responding to comments in writing and in detail.

EPA recognizes the commenter's concern about continued community information and involvement and will work to improve these efforts. Appendix A to the Volume 1 of the final five year review report contains discussions of community concerns and ways that EPA could address them. EPA plans to initiate efforts towards reviewing and renewing its community involvement efforts, using Appendix A and other input, in the near future for the BPSOU.

Comment: ***Education and Outreach.*** There are no two ways about it; Superfund is confusing as heck. It would help the public to have some simple educational materials describing each OU as well as how they fit together and affect each other. That, along with accomplishments, next steps and issues would go a long way toward better public involvement. And these materials should not be designed by an engineer or scientist (although they can certainly fact-check.) Hire a professional ad agency or designer. On top of that, find the best communicator you can to work with the public.

EPA Response: *EPA agrees that communication and education are a key part of Superfund community involvement process at this site. A major lesson learned by EPA is that it is necessary to repeatedly present some of the same materials in order to educate new community members and especially new community leaders, in addition to presenting new material or new findings. This commenter's suggestion for simple fact sheets is a good idea. EPA will work to improve communications with the available resources that EPA has for such efforts.*

Butte Priority Soils OU

Comment: ***Delay of the Consent Decree.*** We are disappointed and frustrated with the slow pace of cleanup in the BPSOU. The Record of Decision was issued in 2006, and five years later, we still don't have a consent decree and a final cleanup plan. We recognize and appreciate that difficult negotiations are ongoing, but in the meantime, metals are

leaking from the hill to Silver Bow Creek, threatening the good work that's been accomplished.

EPA Response: *EPA recognizes the need for clear enforcement proceedings and is also frustrated with the pace of the Consent Decree negotiations. The Agency will soon issue an administrative order to implement major portions of the BPSOU ROD (where remedial design is complete or to clarify interim actions and processes). EPA will do everything it can to complete remedial design and reach a Consent Decree agreement or otherwise move the full implementation of the remedy forward through additional or modified administrative orders.*

Comment: Also, in the meantime, ARCO is experimenting with voluntary actions and pilot projects in the metro storm drain and LAO that may, by default, become remedy. I can understand that some experimentation is necessary, but in LAO, this seems to be subverting the typical Superfund process, and information about the success or failure of these experimental actions does not seem to be widely available for review by the public.

EPA Response: *There are no experimental or voluntary cleanup efforts occurring. The BPSOU ROD requires the work that has been done, is being done, or will be done. EPA does not believe that the Superfund process has been "subverted" in any way.*

Comment: If taking the extra time means that we ultimately get a more protective, long-term remedy, then the delay will have been worth it. But it's hard to imagine that the agencies and PRPs have the public's best interests in mind when they stretch negotiations out this long. The five year review report should at least address and explain the issues that are delaying a decision on the consent decree.

EPA Response: *EPA acknowledges that consent decree negotiations have been very lengthy. EPA will issue an administrative order regarding partial remedy implementation so that responsibilities are clear and remedy implementation can proceed.*

Comment: ***Parrott Tailings.*** While we recognize that the new information on the Parrott tailings came out after the cutoff date for the five year report, it's nonetheless been a topic of great interest and debate, and should not have been ignored in the report. The new information from additional wells and the aquifer test has confirmed what many knew to be true all along: the remedy for this area was selected based on inadequate information. Given the level of mistrust between the public, EPA, DEQ, BSB, and ARCO, we suggest convening an independent review panel of outside experts with no prior experience or connection to the site. All parties currently negotiating should agree on the participants, and the panel should be convened as soon as possible. Remedy selection should focus on long-term protectiveness as much as possible.

EPA Response: *See our response to similar comments from CTEC about the ground water portion of the BPSOU remedy described above. EPA disagrees that the BPSOU ROD was based on inadequate information in EPA' opinion, but EPA does recognize that new information has been developed (as part of EPA's remedial design process and as required by the ROD) and through the State of Montana*

restoration planning process. Remedy selection is complete, and remedial design is ongoing, including remedial design for the ground water component. The new information will be incorporated into design efforts to ensure that the remedy is effective and provides for long-term protectiveness.

> **Comment:** ***Soil Caps and BRES.*** The success of soil-capped waste as a remedy is only as good as its maintenance, and judging from the five year review report, that's not very good. If the caps can't be adequately maintained, the waste should be removed. Keeping better records is important, but not a solution by itself. The longer the maintenance is left undone, the greater the likelihood that waste will spread off-site. Removal should be considered where slopes are steep, or where runoff is likely to entrain wastes.

EPA Response: *EPA agrees with portions of this comment which emphasize the importance of cap monitoring, assessment, corrective action implementation, and record keeping. This concern is noted in the five year review report and will be pursued vigorously by EPA. Better recordkeeping and documentation will aid in the tracking of the corrective actions and oversight of the program. However, the documentation is not a substitute for on the ground inspections and oversight of the work.*

Comments from Mary Bugni (via 01/25/2011 email)

Comment: Hello, I am writing in regards to the five year review for the Butte area. My biggest area of concern is in regards to the parrot tailings. Is the EPA in place to protect the citizens of Butte? The remedy selected for the parrot tailings was based on inaccurate data. The contamination left in place continues to recontaminate and we have data that proves this to be true. I attended the meeting last fall in which the Montana Bureau of Mines presented their new data on this subject. It was clear in that meeting that the EPA was influenced by ARCO. The common theme reiterated by both the EPA and ARCO was that the data presented by the MBOM was just one piece of the puzzle. To the citizens of Butte, it is a pretty big piece! I was appalled at Julie Dalsalgio's comment at the end of that meeting that the EPA not only did not intend to reopen the ROD but that they really weren't even going to address the issue of the parrot tailings. The citizens of Butte are sitting at "ground zero."

We want our beautiful city cleaned up right! Please represent us the way that your office is suppose to. Thank you, Mary Bugni

EPA Response: *The decision not to remove the Parrott Tailings was not taken lightly by EPA. However, EPA found that long-term ground water capture and treatment, and long-term O&M costs for groundwater capture and treatment would not be reduced even if Parrot Tailings wastes were partially removed in the MSD (note – partial removal is judged by all to be the only implementable removal alternative – a total removal alternative is agreed upon by all to not be practicable or implementable). This is the fundamental rationale behind EPA's decision. EPA will try to better explain its positions at public meetings in the future, and EPA has taken care to explain its rationale for remedy implementation in this response to comments and elsewhere. EPA recognizes the importance of the ground water capture/interception, pumping, and treatment system and is working very hard to ensure the ROD requirements for these systems are fully implemented, and that monitoring of ground water and surface water conditions continue. Other responses to similar comments from the public may be useful to you and the full set of public comments and responses will be sent directly to you.*

Comments from Leland Greb

Comment: In case you have not seen this item before I send it to you now. For me, this is just one, of many, problems with the way in which the EPA conducts itself. This is just one reason why the people in the Silver Bow Creek Headwaters Coalition have called the state of Montana to task over things being done in our name, such as the EPA and the DEQ calling the headwaters of Silver Bow Creek the Metro Storm Drain. Dr. Ray, in this message, is calling to the front that simple fact that the EPA has a defined problem with bureaucratic accountability. If you look closely, you can also see the signs of this problem at every level at the bureaucratic system that is deals with the toxic waste that is part of the landscape of the Upper Clark Fork River Basin drainage. This problem needs to be addressed. Since the bureaucratic system is

having a problem dealing with their own accountability, we as citizens need to push for the needed changes. The pro forma accounting that is being done in with this 5 year report is against the best interests of the EPA. This method of auditing their work does not serve the EPA, or in the larger sense, the citizens of the USA, very well. We need to find a better way than to take the agency to court to make sure that the full measures called for in the law dealing with foul wastes left over from more than a century hard rock mining are taken. One way we can start is to attend the meeting that is being held on Tuesday night at the Holiday Inn in Butte. Another is to call upon Julie DalSoglio, the person in charge of the Montana office of the EPA, who can be reached at 406-457-5025, or toll-free @ 866-457-2690. Her e-mail address is dalsoglio.julie@epa.gov. Heres to seeing you on Tuesday night

EPA Response: *EPA's has followed its guidance, and the Superfund laws, for conduct of the five year review, and the review and its extensive recommendations are not pro-forma. Dr. Ray's comments are responded to in a separate document. EPA has required or conducted over $100 million of cleanup actions over the years in Butte, and the BPSOU ROD requires substantially more cleanup work. Accountability is important to EPA, and that is one reason EPA chose to issue the five year review report in draft, take public comment on the draft, and respond to those comments in detail.*

Comments from Fritz Daily

Comment: Please make this letter part of the official record expressing my dissatisfaction with the five year review process recently completed by the Environmental Protection Agency and the Montana Department of Environmental Quality.

The following is a direct quote from a letter mailed to the Environmental Protection Agency from the Montana Department of Environmental Quality concerning the Record of Decision, on Butte Priority Soils Operable Unit, Silver Bow Creek/Butte Area National Priority List Site, on April 22, 2006. The quote strongly outlines a failed cleanup system implemented by the Environmental Protection Agency and the State of Montana on Butte Priority Soils Operable Unit that will have negative and costly consequences in perpetuity for future Montana residents. The quote confirms that the State does not believe that the cleanup remedy adopted by the Environmental Protection Agency is protective of the health and the environment of the residents of Butte and of Montana.

> "{Department of Environmental Quality} DEQ does not agree with all the decisions made by EPA {Environmental Protection Agency} or all the statements and opinions expressed in the ROD. The areas of disagreement between our agencies have been extensively documented in previous State comments and won't be reiterated here. However, as you know, DEQ does not concur with the overarching decision to leave accessible, major sources of groundwater contamination in place. We refer specifically to the Parrot Tailings, Digging East

> Tailings and the North Side Tailings. Our concerns is that leaving these wastes in place poses a significant and permanent threat to groundwater and the long-term water quality in Silver Bow Creek. EPA's remedy decision relies upon capturing and treating highly contaminated ground water in perpetuity to protect Silver Bow Creek. However, the State believes that significantly more weight should have been given to Metro Storm Drain {Butte's Section of Silver Bow Creek) Alternative 5b, which called for the removal of the major sources of groundwater contamination, as the State in fact did at the Silver Bow Creek/Butte Area NPL {National Priority List} site. The State believes that such removal would substantially reduce toxicity, mobility, and volume of groundwater contamination and greatly increase the permanence and long-term effectiveness of the remedy for this highly contaminated groundwater area.
>
> DEQ also has concerns about long-implementation o the Butte Reclamation Evaluation System {BRES) for waste left in place. The reclamation repair component must be aggressively implemented, adequately funded and seek to establish diverse, self sustaining vegetative covers for this component to remain protective over time."

Many others and I could have written this quote expressing their frustration with the Record of Decision on Butte Priority Soils by the Environmental Protection Agency, and our dissatisfaction with the recent Five Year Review Plan completed by the Environmental Protection Agency and the Montana Department of Environmental Quality. I find it unconscionable and unbelievable that representatives of the State of Montana would write such a strong letter expressing their frustration and strong opposition to the decision by the Environmental Protection Agency, yet allow such a travesty to continue.

EPA Response: *EPA notes this commenter's disagreement with the ROD. EPA explained its ROD decision -- including the ground water components and the O and M requirements for waste left in place which this comment addresses – in detail both in the ROD itself and in responses to comments attached to the ROD. EPA acknowledges the State's partial non-concurrence with the ROD, and also notes that the State subsequently issued a restoration report for the Butte area which calls for Parrott Tailings removal. The State then reached a settlement with the Atlantic Richfield Company for funding of the restoration plan, and this money is available to the State for implementation of the recommended actions. EPA hopes that the planning process for restoration work continues. EPA will work cooperatively with the State in these efforts and in coordinating the remediation work with any restoration work the State ultimately chooses to implement.*

Comment: In addition, new research by the Montana Bureau of Mines has also discovered information in the past five years that make this decision in my mind borderline criminal. Research that quantifies the fact that that groundwater in this area is more toxic than Berkeley Pit Water and is moving at a much more rapid rate than originally projected under the 2005 Record of Decision.

There is also additional information discovered since the 2005 Record of Decision that is too lengthy to list in this letter. Information such as an article entitled "Cut and Run' written by extremely knowledgeable Butte geologists, hydrologists, hydro geologists, soil Scientists, and engineers who have worked extensively with mine waste characterization and reclamation in western Montana expressing their dissatisfaction with the Record of Decision on Butte Priority Soils.

EPA Response: *EPA acknowledges disagreement among some parties with the remedy decision, but disagrees with the conclusions of this comment. New information about the ground water conditions at BPSOU was developed both by the State restoration program via the Montana Bureau of Mines and Geology and by EPA as part of the remedial design efforts required by the 2006 BPSOU ROD. EPA is considering all of this data as it moves forward with remedial design and intends to require the development and implementation of a reliable, long-term capture/interception, pumping, and treatment system for BPSOU and its contaminated ground water. EPA does not believe the recent data indicates that such a system is not needed – rather, it emphasizes the need for the system and its long-term reliability. Flow rates measured during recent pump tests implemented by EPA are different than assumed flow rates used in pre-ROD studies by EPA, but that doesn't change EPA's findings that the ground water in the alluvial aquifer in Butte will never be cleaned up to performance standards or that a capture/interception, pumping, and treatment system that is well designed and reliable over the long-term is necessary. EPA will work cooperatively with any State restoration efforts which remove materials from the alluvial aquifer.*

All comments received on the BPSOU proposed plan were responded to in detail in the responsiveness summary for the BPSOU ROD, including some of the comments referred to above.

Comment: I personally believe the Five Year Review is just another "hoop jumping exercise" required under Superfund Law, and will have little or no effect on what is critically needed to have a responsible cleanup of Butte's Section of Silver Bow Creek, the Butte Hill and the Parrott Tailings area.

EPA Response: *EPA acknowledges the opinion of the commenter, but respectfully disagrees with the conclusion. The final five year review report contains many substantive recommendations for remedy implementation that EPA will carefully follow-up after the review report is released.*

Comment: Rather than reiterating my reasons for opposing the Five Year Review Plan, I am enclosing several letters I have written over the past five years concerning this subject. I ask that they be included as part of the official record on information submitted by the public concerning this document.

As I have written and expressed publically many times I only write these letters so that future generations of Montana's children will know when they are paying millions of tax dollars to repair a broken system that someone actually did care and tried to change the system in a responsible manner.(see other attached letters by reference)

EPA Response: *EPA has responded to these issues in detail before. The excerpt copied below is from the Technical Impracticability Response Paper accompanying the groundwater TI Evaluation (EPA 2006. Technical Issue Discussion and Response to Comments Received on the Draft Alluvial Groundwater Technical Impracticability Evaluation. Butte Priority Soils Operable Unit. May.) These portions of the response paper are reprinted here for further explanation of EPA's BPSOU remedy decision and the processes that led to that decision.*

> *(pp. 7-10) The BPSOU proposed remedy has received extensive, independent review from groundwater experts at the regional and national level. These reviews include the National Remedy Review Board (NRRB), the National Risk Management Research Laboratory Center for Ground Water and Ecosystems Restoration Division in Ada, Oklahoma, and EPA's regional and national authorities on Technical Impracticability evaluations in Washington D.C. These reviews have supported EPA Region 8's proposed TI waiver and proposed remedy for groundwater at the BPSOU.*
>
> *The NRRB is a panel of highly experienced EPA personnel from EPA Headquarters and all EPA Regional offices. The purpose of the NRRB review is to ensure that proposed remedial or response actions at large or high cost sites receive adequate and thorough review internally. The NRRB's recommendation with respect to the groundwater remedy was as follows (EPA 2004b):*
>
> > *Based on the presentation by the Region and State representatives, there appears to be some uncertainty regarding the hydrogeology of the alluvial aquifer, as well as uncertainty regarding prospects for its restoration to beneficial use and whether the MCLs or other ARARs can be achieved in a reasonable time frame. The Board recognizes that there will be further review of the existing hydrogeological data by ORD's Ground Water Technical Support Center.*
> >
> > *If further review indicates that MCLs cannot be achieved for ground water within a reasonable time frame, and/or the effects on surface water are manageable, based on information presented to date, the Board supports the proposal to leave source materials (for example, Parrot Tailings and Northside Tailings Areas) in place.*
>
> *The "review of existing hydrogeological data by ORD (EPA's Office of Research and Development) Ground Water Support Center", referred to by the NRRB, was completed shortly after the NRRB review. The Ground Water Technical Support Center in Ada, Oklahoma (the "Center") provided the following review, included here in its entirety so that it is not quoted out of context (EPA 2004c):*
>
> > *At the Region's request, the U.S. EPA's Ground Water Technical Support Center was asked to review documents associated with the Butte Priority Soils Operable Unit of the Silver Bow Creek/Butte Area Superfund Site located in Butte, Montana. Specifically, we were asked to review the findings of the Feasibility Study of the Metro Storm Drain (MSD), comment on the soundness of the ground water technical analysis that EPA Region 8 used to evaluate the alternatives, and determine whether the aquifer can be recovered to its beneficial use in a reasonable amount of time (<100 years) after removal of the waste materials that have been placed in the area. To further enhance our understanding of the site, we also participated in a site visit of the impacted area on October 13, 2004.*
> >
> > *Like in other contaminated aquifers, adequate understanding of the ground water flow and contaminant transport in the alluvial aquifer is very important in the selection of the most appropriate remedial methods at the MSD site. This understanding or misunderstanding may*

affect the identification of the primary contaminant source(s) and affect the decision as to whether the aquifer can be restored in a certain amount of time. However, interpretation of ground water flow and contaminant transport can be a very challenging task, particularly for alluvial aquifer systems. Often, the same aquifer is conceptualized differently based on the data available and the experience of the investigators. Heterogeneity is an inherent character of alluvial aquifers. The majority of the different opinions in the CDM Report and the MBMG Report are actually indicative of the heterogeneity. Most of the findings in the reviewed reports are not necessarily contradictory, but rather represent a spectrum of the flow conditions in the heterogeneous aquifer. The Parrott Tailings are not the only source that provides contaminants to the ground water system, although they may be the most predominant source.

It is our opinion based on review of the documentation and site data provided, that far too many uncertainties still remain with respect to subsurface conditions and contaminant distribution in the MSD area to conclude whether the MSD aquifer system can or cannot be remediated within a reasonable time frame (e.g. <100 years). ***Resolution of many of the uncertainties is likely to be very technically challenging and costly, and for all practical purposes, may not be achievable.*** *[Emphasis added.]*

The aquifer system is too heterogeneous, both laterally and vertically, to allow assignment of single average values to parameters such as hydraulic conductivity in predicting contaminant transport behavior within the aquifer. The lithologic complexities of the aquifer as they relate to hydraulic flow distribution, contaminant distribution, contaminant retention, and contaminant release must be factored into the predictions, and this is a very difficult, if not technically impossible, undertaking. The assignment of conservatively high values to parameters such as hydraulic conductivity unfortunately does little to aid in predicting the overall remediation time frame since remediation of the aquifer is not likely to be dictated by the properties of the more highly transmissive zones.

Contaminant removal from many of the finer grained layers/zones in the aquifer will likely be diffusion limited and can be expected to play a major role in dictating the cleanup time frame for the aquifer. Due to the many years of contaminant infiltration into the aquifer system, the finer layers undoubtedly contain greater concentrations of contaminants than do the coarser layers. This further compounds the impact of diffusion limited conditions on the remediation process. The presence of a highly transmissive zone through which much of the contamination may flow unfortunately does not diminish the impact of the diffusion limited conditions on the overall remediation time frame. The effects of diffusion limited conditions on aquifer clean up time frames unfortunately can also not be effectively replicated in column tests such as the ones performed.

It is apparent that additional potential sources of contaminants at other locations within the MSD area are likely present down gradient of the Parrott Tailings. The significance of these additional potential sources with respect to ground water quality impacts is unknown and it would appear that considerably more subsurface investigation work would need to be conducted in order to determine this. In our opinion, it would make little sense to proceed with removal of the Parrott Tailings if significant additional sources of contamination do indeed exist at other locations with the MSD area. There is no guarantee that removal of the Parrott Tailings would reduce metal concentrations in ground water discharging into Blacktail and Silver Bow Creeks at any time in the foreseeable future.

Ground water impacted by contaminants originating from the Parrott Tailings can apparently be easily captured with the existing hydraulic capture/treatment system located adjacent to and down gradient of the MSD area. ***Since this hydraulic capture and treatment system is scheduled to operate in perpetuity, directing ground water impacted by the Parrott Tailings into this existing system would appear to be a cost-effective and practical strategy.*** *[Emphasis added.] Incomplete delineation of the lateral extent of the plume and the possible by-passing of the treatment system by a portion of the plume is a significant issue. However, it would seem that any interception system to be constructed parallel to Blacktail and Silver Bow Creeks could be conservatively designed such that any uncertainties in lateral plume extent could be accommodated.*

The cost of removing the Parrott Tailings is enormous, and the added risk of human exposure during the removal and transport process is increased due to the location of the tailings within the city of Butte. The aquifer is not likely to be used as a source of drinking water and ground water can apparently be easily treated with the existing ground water treatment system. The cost-benefit of the proposed tailings removal is thus not clear and money allocated to tailings removal could probably be better spent elsewhere.

It is our understanding the removed Parrott Tailings would be placed at a "secure" location on the other side of Silver Bow Creek and subsequently covered with a cap to be maintained in perpetuity. [Note, this misunderstanding of exactly where removed tailings would be placed does not change any of the technical arguments and opinions concerning aquifer remediation.] From our standpoint, this does little to resolve the overall problem associated with the tailings. The potential for these tailings to generate acid drainage will continue to remain in perpetuity under this removal scenario. With the tailings remaining in place where they currently are and with the ground water discharge from the Parrott Tailings being directed to the already existing treatment system, gradual diminishment of the tailings acid producing potential will in effect be occurring over time.

In light of the above comments, we recognize that leaving the Parrott Tailings in place may be perceived as a no-action alternative and may therefore not be well received by various stakeholders. This is a major factor in the decision making process and may override the technical arguments we have provided. We are unfortunately not qualified to assess the importance of this factor in the overall decision making process.

In short, the NRRB and the Center recognize the near impossibility of resolving all uncertainties with respect to aquifer characterization or the ability to predict the effects that removal of the Parrott Tailings would have. The reports recognize the presence of other source area wastes besides the Parrott Tailings. Furthermore, the reports acknowledge the substantial costs and dangers associated with large scale removals, and point out that the control, capture, and treatment system will be an effective remedial strategy. Unfortunately, in the comments received on the draft TI Evaluation, statements from the Center's letter have been used out of context to somehow support removing the Parrott Tailings in the upper MSD. EPA believes this use of selective quotes from the Center's letter to support large scale removal, when in fact the Center's letter does just the opposite, is inappropriate, and has responded to those comments accordingly.

Despite the recommendations from the members of the NRRB and experts at the Center, EPA has received opposition from the DEQ, NRDP, the Montana Bureau of Mines and Geology (MBMG),

and others. In general, most comments have focused on attempting to discredit individual factors that led to EPA's conclusion that ARARs cannot be achieved in a reasonable time frame in the alluvial aquifer, regardless of the extent of the removal action performed. In particular, travel time calculations into the hundreds of years have been questioned by debating the validity of parameters (e.g., hydraulic gradients, porosity, and hydraulic conductivity) used in Darcy's Law to estimate groundwater flux and travel times. EPA recognizes the inherent variability of these parameters in a natural system such as the BPSOU alluvial aquifer. However, these parameters were represented accurately, with appropriate disclaimers as to potential uncertainties, in EPA's evaluations. In addition, in accordance with the NCP, EPA's evaluation of a request for a technical impracticability waiver of ARARs looks at other site-specific factors presented at a site, such as cost, cost effectiveness, practicality, actual use or predicted use of the aquifer, flow rates, and the degree of risk reduction and benefits achieved by active remediation factors (see EPA's "Guidance for Evaluating the Technical Impracticability of Ground Water Restoration", OSWER Dir. 9234. 2-25 (1993)). The actual cleanup time for the aquifer is not the only significant issue to consider in selecting an effective remedy or granting a TI waiver. DEQ, NRDP, and others have missed, or chosen to ignore, points made in the FFS and reiterated in the Center's letter that are of paramount importance.

(p. 13) This does not mean that data gaps may need to be filled. More data will be useful and will be collected during remedial design, as necessary, to ensure that the selected remedy is implemented effectively and monitored appropriately. But, given the available data, the level of scientific techniques available, and the understanding of arsenic-metal geochemistry, including adsorption/desorption phenomena, EPA is convinced that additional data for remedial decision making purposes are not needed. Filling data gaps will most likely serve to refine the remedial design details of the hydraulic control and capture system. EPA acknowledges that the contaminant plume associated with the Parrott Tailings needs to be better defined in three dimensions, with particular attention paid to potential preferential flow paths. Extensive monitoring will be performed to both define the contaminant plume and to ensure that it is being controlled and not bypassing the capture system. If monitoring data indicate problems, the remedial design will be modified to address these problems.

Dr. John W. Ray's Comments

Comments on Five-Year Review Butte Area Superfund Sites

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The focus of this paper is on the Draft Five-Year Review as it applies to Butte Priority Soils OU.

Given that the EPA's remedy for Priority Soils calls for a "cleanup" that relies heavily on leaving capped waste-in-place and institutional controls, rather than aggressive treatment and/or removal of wastes, this Five-Year Review is particularly important. A poorly functioning or implemented remedy will expose citizens to the very threats from toxics of concern that Superfund was supposed to remediate. The threat remains at Priority Soils, but it is EPA's contention that that threat can be managed so as not to affect human health and the environment. Unless the waste-in-place is "managed" properly, the remedy will not protect human health and the environment.

The protectiveness of the Remedy as currently being implemented also depends on the adequacy of the data upon which the health risk assessments were based and the adequacy of the data upon which the action levels were based. As will be shown, new studies and new data since the Record of Decision for Butte Priority Soils was released show that the original data used for the health risk assessments and the determination of the action levels was inaccurate, inadequate, incomplete and mischaracterized the health threats and risks at the Priority Soils site. New studies and new data call into question the protectiveness of the Remedy currently being implemented at the Priority Soils OU. The EPA without justification made assumptions. If the data is problematic, all conclusions based on that data are suspect and warrant change and redoing. This new data was ignored in the Five-Year Review Draft document.

Given the high concentration of low-income citizens within the BPSOU, particular attention must also be given to issues related to environmental justice. Environmental justice concerns were ignored in the Five-Year Review Draft document.

The question to be answered by the Five-Year Review is: Whether or not the Butte Priority Soils Remedy, as currently being implemented, is protective of human health and the environment. The question to be answered by this Five-Year Review is whether or not environmental justice is being promoted by the implementation of the Priority Soils Record of Decision. The answer in both cases is a resounding NO!!!!!!!

As this paper will convincingly demonstrate, the Priority Soils ROD should be modified in order to successfully address the concerns that I discuss. Unfortunately, the draft Five-Year Review ignores major Priority Soils remedy problems and, despite its length,

gives a perfunctory/superficial review of the Priority Soils remedy performance. It is obvious that the EPA was determined from the start to find that the remedy was working well.

Surprise! Surprise! —The EPA has found that the EPA is doing a wonderful job. We have neither an impartial nor a neutral judge. The threat remains at Priority Soils, but the EPA is betting on our health that they can "manage" this toxic threat. This Five-Year Review is an EPA PR document produced to convince us they are right.

EPA Response: *EPA did not pre-determine the outcome of the five year review, nor did EPA conduct a biased review.*

EPA assigned a remedial project manager (RPM) and experienced employee with extensive Superfund experience to manage the five year review of the Silver Bow Creek/Butte Area Site. The assigned RPM did not have prior involvement with the Silver Bow Creek/Butte Area operable units, and EPA asked the RPM to conduct a five year review in accordance with guidance and regulations and without pre-conceived ideas about the operable unit remedies.

That RPM assembled a qualified contractor team to assist him, and conducted extensive community member interviews. Those concerns were carefully catalogued (see Appendix A of volume 1 of the final five year review report for a description of this extensive effort). EPA then conducted the review and wrote a report which is comprehensive and thorough for each operable unit. EPA took care to write the report in compliance with EPA's five year review guidance and statutory and regulatory requirements. EPA also had several experienced people from outside of the EPA Montana office review and comment on the report.

Finally, EPA released the report for in draft form for public comment (something that is not required by law and which is not often done by EPA when issuing five year review reports). EPA is now responding to public comment on the report with written responses.

The final report contains 29 recommendations and issues which describe items and issues that must be addressed by EPA for each of the operable unit remedies that are complete or ongoing. The recommendations and issues have specific dates for follow-up assigned to each of them. The RPM for each operable unit will now follow-up on recommendations and issues, and the follow-up actions are tracked by EPA.

Comment: Toxic metals/elements such as aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium, while present, according to the EPA, at the Priority Soils site, are not "remediated" under the Remedy. The Five-Year Review fails to consider the well-documented inadequacies of the EPA's Health Risk Assessment on which the current remedy is based. The Five-Year Review fails to consider the synergistic, chronic and bio-accumulative effects of exposure to the heavy metals in Uptown Butte.

EPA Response: *EPA's experienced risk assessor was asked to carefully review the prior risk assessments and the action levels and selected contaminants of concern for the BPSOU remedy. She concluded that the prior risk assessments were thorough and that the action levels and selected contaminants of concern*

were appropriately and conservatively set. The soil cleanup component of the remedy is described in the Residential Metals Abatement Plan, which is being, and will continue to be, implemented by the responsible parties for the BPSOU site. The soils, indoor dust, attic dust, and lead source remediation described in that plan will ensure the human health is protected in and near the BPSOU, in accordance with CERCLA. The five year report itself contains further and more detailed discussion of risk assessments and toxicity information for each operable unit, as required by CERCLA, the CERCLA regulations, and EPA guidance on five year reviews.

> **Comment:** While there are elevated cancer rates in Butte of the type of cancers related to exposure to mine waste, the EPA ignores such a finding. If the current Remedy was working, these cancers would be decreasing; they are not.

EPA Response: *The source of this statement appears to be the 2001 ATSDR Health Consultation which looked at cancer incidence data for Silver Bow County. The report concluded that there was a slightly elevated incidence of skin cancer in Silver Bow County when compared with age-standardized rates at the State and national level. No other cancer outcomes were consistently elevated when compared with these two reference groups. A limitation of the study was that malignant melanoma and non-melanoma skin cancer (the latter is the form associated with arsenic exposure) were not differentiated. So the study does not address or adjust for other factors for skin cancer, such as UV exposure. The report did not implicate exposure to arsenic in mine waste, saying specifically "The slight increase in skin cancer incidence cannot be directly attributed to soil arsenic contamination in the area since no exposure assessments were included in this analysis".*

As noted in other responses to comments, EPA reviewed the arsenic action level for the BPOSU carefully and believes that it is protective, addresses potential arsenic exposure for sensitive subgroups, is conservative, and was formulated in accordance with the Superfund law and regulations and EPA guidance.

> **Comment:** The Five-Year Review document itself notes that there are still ongoing "exceedances" of arsenic and that contaminants are still accumulating in "fish and other biota." (p. ES-12) If the remedy is working as well as the EPA claims, why these "exceedences?"

EPA Response: *The quote is from a statement regarding the Warm Springs Ponds operable units. Exceedances of the arsenic ARAR for the Pond 2 discharge are discussed in the final five year review report for the Ponds, and are largely due to the incomplete cleanup actions upstream of the ponds. See the final five year review report section for the Warm Springs Ponds for additional discussion.*

> **Comment:** Faulty data produces faulty conclusions that should be redone. Five-Year Reviews are supposed to consider new data that calls into question the protectiveness of the remedy. The Five-Year Review should consider whether any new contaminants or sources of contamination have been identified. Although the public presented to the EPA abundant new evidence that called into question the protectiveness of the existing remedy, the EPA ignored this evidence. Once again, public participation in EPA decision-making was ineffective. The forms of citizen participation were present; the efficacy was missing. The EPA believes it has met its mandate to provide "meaningful"

public participation if it provides venues for such participation—meeting, comment periods, etc. It ignores the more fundamental problem/issue that the efficacy of the content provided by the public at these meetings is missing. The EPA is satisfied if it has a public meeting. The fact that the EPA ignored the public input provided at such a meeting is of no concern to the EPA.

EPA Response: *Public concerns are carefully described in Appendix A to volume 1 of the report. Data and concerns raised by the public were taken into account as the five year review report was written, and many of the concerns are reflected in the final issues and recommendations for each operable unit.*

Comment: A specific failure of the Five-Year Review draft document concerns the Parrott Tailings. Although the Parrott Tailings are a significant part of the Priority Soils site, they were excluded from consideration as part of the Five-Year Review Process. Could that have happened because the Parrott site is not conforming to the EPA's model of what should be happening? According to the EPA, if reality doesn't conform to their model, reality is wrong.

EPA Response: *Over the last several months, several ground water studies and analysis by the Atlantic Richfield Company has been conducted as part of the remedial design process. EPA will be working with the responsible parties and the State to update the public on the status of these studies. The Montana Bureau of Mines and Geology has also conducted studies, primarily as part of the State and local restoration planning process.*

EPA acknowledges that these studies have shown data that is different from some of the assumptions used in the EPA's pre-ROD focused feasibility study and related reports, particularly in relation to ground water flow rates. EPA does not agree that the new flow data or other information indicates that the BPSOU ROD component which addresses ground water needs to be changed, nor does it indicate that contaminated ground water is not being substantially captured currently. EPA does agree that the newer data and analysis needs to be used carefully as remedial design for the final capture/interception, pumping, and treatment system is completed.

The baseline water quality conditions for surface water in the BPSOU continue to indicate substantial reductions in contamination reaching this water (such that conditions are near the conservative in-stream ARAR standards for surface water), and this data indicates that a well designed capture/interception, pumping, and treatment system will be protective of surface water. The five year review report conclusions reflect this general conclusion.

Finally, EPA notes that the State restoration plan for Butte provides for the removal of the Parrott Tailings, and that this action has been funded by settlement agreements between the Atlantic Richfield Company and the State of Montana. EPA will work cooperatively with the State, the responsible parties, and all other interested persons to design a final remedy and a final restoration plan that provides maximum benefit for the protection of Silver Bow Creek water quality.

Comment: Given the high concentration of low-income citizens within the Uptown area, the EPA should have given particular attention to issues related to environmental justice as part of the Five-Year Review. Even though the EPA has a mandate to consider environmental justices concerns, the EPA ignored environmental justice issues.

EPA Response: *EPA has not ignored Environmental Justice issues at BPSOU. In response to submittals on this topic from the commenter, EPA has taken the following actions:*

- *EPA 2004. August 2, 2004 letter from Art Palomares (EPA – Environmental Justice Office) to John W Ray with subject of "Transmits and Discusses Environmental Justice Complaint Investigation" and a report dated August 2, 2004 from EPA Environmental Justice Program titled "Evaluation Report Environmental Justice Concerns at the Butte Priority Soils Operable Unit, Butte, Montana, Final Report".*

- *EPA 2005. August 23, 2005 letter from Art Palomares (EPA Region 8– Environmental Justice Office) to John W Ray with subject of "Risk Assessments for Butte Priority Soils Environmental Justice Complaint" – 6 page letter with five appendices.*

- *EPA 2007. January 23, 2007 letter from Art Palomares (EPA Region 8 Environmental Justice Office) to John W Ray – 13 page letter regarding the BPSOU ROD.*

- *EPA 2010. January 12, 2010 letter from Art Palomares (EPA Region 8 Environmental Justice Office) to John W Ray regarding the Residential Metal Abatement Plan – 4 page letter.*

Additionally, EPA worked with Butte Silver Bow County to ensure that the Residential Metals Abatement Plan that was the result of the remedial design effort addressed outreach and education efforts. EPA also worked with Butte Silver Bow County to describe community outreach efforts for residential cleanup in the recent fact sheet that was placed in local newspapers.

> **Comment:** If the EPA is going to be true to their own agency requirements in conducting a Five-Year Review, it is clear that the Butte review needs to be more than the current perfunctory process. If new information has come to light, if the remedy is based on incomplete, inaccurate or inadequate characterization of the toxics of concern, if the remedy doesn't protect human health and the environment, it should be modified so as to be fully protective of human health and the environment. Remedy evaluations are supposed to fix Remedy implementation problems that compromise the remedy now and in the future. New data clearly shows that significant modifications are needed in the Priority Soils remedy.
>
> Despite the length of the Five-Year Review document, once again we have a superficial exercise whereby the EPA evaluates itself and finds it has done ok. While it is unfortunately unlikely that the EPA will conduct a thorough, comprehensive and unbiased review of the Priority Soils Remedy by reconsidering and reevaluating the draft Five-Year Review, the following discussion is offered to: (1) Show the inadequacies of the draft Five Year Review and (2) Suggest what should be investigated. Having the EPA investigate the performance of the EPA is certainly problematic. Given that the EPA had determined, *de facto*, before the Five-Year Review, that the remedy for Priority Soils was working well compromises the integrity of this process. Given that the EPA provides only the forms of public participation without any efficacy to that participation, certainly works against any possible changes to the remedy. If this draft

Five-Year Review is an example of how the EPA now takes the Five-Year Review process seriously,

EPA Response: *See the responses above which describe the serious efforts EPA has made to conduct the five year review in a way that addresses many of these issues. Dr. Ray is incorrect in stating that five-year reviews are intended to evaluate the performance of EPA. By statute and by regulation, five-year reviews are specifically intended to evaluate the performance of selected remedies, and to make determinations regarding their protectiveness. The final five year review report for the Silver Bow Creek Butte Area site contains __ recommendations and issues, all of which will be tracked and followed up on. These recommendations and issues are not minor or perfunctory, and EPA believes the pursuit of these issues will improve the remedy implementation for the site and continue to ensure overall protectiveness.*

Five-Year Reviews – What they are supposed to do

Comment: Despite past EPA practice in Montana, Five-Year Reviews are not supposed to be perfunctory exercises. Sadly, although lengthy, the current draft Five-Year Review continues this unfortunate EPA tradition of producing perfunctory reviews. Let us consider the main guidances found in the EPA's Comprehensive Five-Year Review Guidance—EPA 540-R-01-007—OSWER No. 9355.7-03B-P, June 2001. (This is THE Guidance document covering Five-Year Reviews. Unless otherwise noted, all page references refer to this document.) Comparing the draft document to these EPA guidance documents requirements will clearly show that the draft is not congruent with the EPA's own rules and regulations for doing Five-Year Reviews.

A. Five-Year Reviews need to be conducted when waste is left in place
B. The purpose of a Five-Year Review is: "to evaluate the implementation and performance of a remedy in order to determine if the remedy is or will be protective of human health and the environment. Evaluation of the remedy and the determination of protectiveness should be based on and sufficiently supported by data and observations." (Page1-1) See also: *CERCLA*, Section 121 (c) and 40 *CFR*, Section 300.430(f)(4)(ii).
C. Community Involvement is a significant part of the Five-Year Review process. (See pages 3-2 and 3-3.)
D. The Five Year Review envisions the necessity of supplemental data collection, sampling and evaluation activities. (Page 3-3)
E. Neutral, objective parties "without bias or preconceived views or conclusions about the remedy and the site" should perform the Five-Year Review. (Page 3-5)
F. The Five-Year Review should address certain topics which include:
    a. "Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?" (Page 3-7)
    b. "Has any other information come to light that could call into question the protectiveness of the remedy?" (Page 3-7)
    c. "A determination of whether (new) issues affect current or future protectiveness." (Page 3-7)
    d. "List of any recommendations, including follow-up actions to ensure protectiveness." (Page 3-7)

G. The Five-Year Review process is supposed to identify whether or not "there are problems with the remedy that could ultimately lead to the remedy not being protective or suggest protectiveness is at risk." (Page 4-1)
H. The Five-Year Review should consider whether "other actions (e.g. removals) are necessary to ensure that there are no exposure pathways that could result in unacceptable risks." (Page 4-1)
I. The Five-Year Review should consider: "whether new human health or ecological exposure pathways or receptors have been identified." (Page 4-2)
J. ***Very importantly***, the Five-Year Review should consider whether "new contaminants or contaminants sources have been identified." (Page 4-2)
K. The implementation status of institutional controls needs to be considered. (Page 4-3) This includes whether or not institutional controls are incomplete, inadequate or unworkable. (Page 4-10)
L. If necessary, new risk assessments should be conducted. "In some cases, it may be necessary to revise or expand the previous risk assessment as part of your five-year review." (Page 4-7)
M. The Priority Soils remedy uses site-specific cleanup levels. "If the remedy is intended to meet site specific. . . cleanup levels, you should check to see whether toxicity or other contaminant characteristics used to determine the original cleanup level have changed. If there have been changes in the understanding or in our knowledge of these physical/chemical characteristics, you may need to recalculate risk. . . ." (Page 4-7) It is clear that cleanup is not a frozen process but changes to meet new conditions. (Page 4-80)
N. RAOs (Remedial Action Objectives) may be modified as a result of the Five-Year Review process. (Page 4-8)
O. RAOs need to be evaluated as to whether or not they are "sufficiently comprehensive to cover new or changed conditions at a site." (Page 4-9)
P. Five-Year Reviews need to consider whether or not risks have been sufficiently addressed at the site. (Page 4-9)
Q. If needed, the agency should be open to conducting "additional studies or investigations" in order to optimize the remedy. (Page 4-12)
R. Remedies need to be modified if they are not protective, based on incomplete or inadequate data and/or unworkable. (Pages 4-13 and 4-14).

EPA Response: *The guidance cited by the commenter speaks for itself and EPA does not agree with the exact phrasing of each of the listed points, but in general this comment describes many of the main points of the guidance. EPA followed the guidance carefully in conducting the five year review.*

The comment does not accurately describe the guidance's full statement regarding who conducts the five year review. EPA, by statute, is charged with conducting and authoring the five year review report. EPA's correspondence to Dr. Ray of March 4, 2011 addresses this issue further and is attached to this response to comments.

Comment: Another document of significance is: EPA, Five Year Reviews, Frequently Asked Question (FAOs) and Answers, OSWER 9355.7-21.

In this document we find additional information as to what is involved in a Five-Year Review and that Five-Year Reviews are supposed to be a proactive processes.

1. Remedy optimization opportunities typically identify modifications to the operating remedy which may improve remedy performance. . . . (Page 8)
2. In Question B of the Technical Assessment section of the five-year review report, the toxicity data evaluation done in the risk assessment should be reviewed to ensure that any assumptions made at the time of the original risk assessment continue to be protective. In addition to reviewing the toxicity information form the original risk assessment, Regions generally should evaluate new toxicity information for other chemicals identified at the site. New toxicity information my result in the determination that the additional contaminants sources poses a risk to human health or the environment. The review of both the original risk assessment and any new site contaminant information is intended to ensure that the implemented remedy continues to be protective both currently and in the future. (Page 9)
3. When conducting the five-year review, it is appropriate to evaluate whether any new information comes to light that could call into question the protectiveness of the remedy. (Page 10)
4. The goal of the recommendation, and associated follow-up actions, generally is to ensure both current protectiveness and long-term protectiveness of the implemented remedy. (Page 11)

EPA Response: *Again, EPA does not agree with each phrase in this comment but does agree that the cited document provides pertinent information about the five year review process. Again, EPA believes it has conducted the Silver Bow Creek Butte Area five year review in accordance with the guidance.*

Note that the cited document talks about modifications to remedies through the five year review process, not a full scale re-evaluation of the remedy selection. Many of this commenter's comments are repeated nearly word-for-word from comments made by the same commenter when the proposed plan for the BPSOU was released for public comment. Those comments were considered and addressed/responded to in detail in the BPSOU Record of Decision. The purpose of the five-year review is not to repeat the remedy selection process, but to evaluate whether the remedy – as implemented – achieves the goals and objectives of the ROD and is protective of human health and the environment.

Comment: The overall question the Five-Year Review is supposed to answer is: Does the remedy protect human health and the environment?

If the Montana Office is going to be true to their own agency requirements in conducting a Five-Year Review, it is clear that that review should have been more than a superficial process. If the Remedy for Priority Soils is not meeting the above requirements, if new information has come to light, if the remedy is based on incomplete, inaccurate or inadequate characterization of the toxics of concern, if the remedy is not protective of human health and the environment, it should be modified so as to be fully protective of human health and the environment. Remedy evaluations are supposed to fix Remedy implementation problems that compromise the remedy now and in the future. As I will

show, there is strong warrant for significant modifications of the Priority Soils Record of Decision. Though submitted to EPA during the "public involvement" process prior to the issuance of the draft Five-Year Review, the EPA ignored this input.

EPA Response: *EPA agrees that one significant purpose of the five-year review is to make protectiveness determinations. See the responses above to similar comments.*

Comment: Also, by extrapolation, environmental justice issues must permeate the Five-Year Review process given that the Office of Solid Waste and Emergency Response [OSWER] in their Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development mandates that "Environmental Justice issues should be considered at all stages of policy guidance and regulation development, beginning with preliminary efforts" and that environmental justice should be integrated into all agency actions. (OSWER Directive 9200.3-18FS, EPA540/F-95/023) EPA Administrators have consistently defined environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies." Although the issue was presented to the EPA during the public input process prior to the issuance of the draft Five-Year Review, nowhere in the draft Five-Year Review is environmental justice considered.

EPA Response: *See the response above to similar comments regarding environmental justice and this site, and see also the four detailed, prior reports (cited above) and letters issued to the commenter by EPA on this same topic.*

Comment: The following are issues/topics of concern regarding the BPSOU Remedy as currently being implemented. The EPA in preparing the draft Five-Year review document ignored these issue/topics of concern. I call upon the EPA to redo the Five-Year Review and specifically consider these issues.

Significant Toxics of Concern, which EPA admits are present at the BPSOU site, have not been adequately characterized or evaluated. Due to this inadequacy, the Remedy as currently being implemented can provide no assurances that the public health or the environment will be protected. This is a major problem. Unfortunately, in the draft Five-Year Review the EPA fails to consider these informational shortcomings.

a. Metals/elements of health and environmental risk such as aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium, while present, according to the EPA, at the BPSOU site, are not considered under the Remedy, nor have these contaminants of concern ever been assessed by EPA as to the threat to human health that they pose. Yet, these metals do pose, according to the EPA, a risk to human health and the environment that mandates that they be assessed and remediated. EPA admits there is a threat in place but does not remediate that threat to human health and the environment under the Remedy as currently being implemented. In short the Remedy as currently being implemented is based on an incomplete, inadequate assessment and

consideration of all the potential metals/elements/contaminants of health and environmental risk. In terms of the BPSOU, no comprehensive health risk assessments have been conducted pertaining to the metals/elements of health and environmental risk that are identified in the above part of this section—aluminum, mercury, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium. Exposure data pertaining to the metals/elements of health and environmental risk (aluminum, mercury, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium) is insufficient. Pathways of exposure regarding these above-mentioned metals/elements of health and environmental risk have not been identified. Given that the adequacy of this Remedy as currently being implemented must be judged in terms of whether or not it will help achieve the goals of Superfund, which are to protect human health and the environment, a reasonable person could conclude that that this Remedy as currently being implemented is based on, at best, incomplete/inadequate data and ignores significant areas of threat to human health and the environment. Therefore, this Remedy as currently being implemented is inadequate in protecting human health and the environment from known contaminants of concern.

b. The Remedy as currently being implemented rests on the unproven assumption that if you remediate lead and arsenic you will automatically remediate the above listed contaminant/metals/elements of health and environmental risk. For example, can we assume that if lead levels drop, exposure to other heavy metals will also drop in a similar way? Does remediating mercury assure that cadmium levels will also drop? The EPA provides no information warranting such a conclusion. While the EPA says that its decisions are based in "good science," how good is their science when it is based on missing, incomplete and inadequate data? If the data is faulty, what flows from that data is also faulty. The relationship between lead and other metals concentrations in outdoor soil is not evaluated in any detail. (Steve Ackerlund—Draft Memorandum to CTEC Membership, September 15, 2009)
c. The Remedy as currently being implemented fails to consider the synergistic affects of the contaminants/metals/elements of health and environmental risk on human health. It is known that synergistic interaction does occur but this synergistic interaction was never evaluated.
d. The Remedy as currently being implemented fails to deal with bioaccumulation of the metals/elements of risk and toxics of concern.
e. The Remedy as currently being implemented fails to deal with the cumulative effects of exposure to these contaminants/toxics of concern.
f. The Remedy as currently being implemented fails to consider the chronic effects of exposure to arsenic, mercury and all of the other toxics of concern. Consider:
    1. Blood and urine samples indicate acute arsenic exposure while tests of hair and fingernails indicate chronic arsenic exposure.
    2. Epidemiological assessments have identified high cancer prevalence in the Butte area for arsenic related types of cancer, implicating exposure to arsenic and other constituents in mine waste as a cause.

3. Prior bioavailability work, which strongly influenced cleanup levels, failed to consider relative bioavailability for the diverse types of sources such s attic dust, house dust, or sufficient numbers and varieties of soil types in the Butte area. Relying upon soil cleanup level for lead and arsenic and lead biomonitoring only will not ensure protection from excessive exposure to arsenic and other metals.
4. Prior bioavialability work also does not consider the effect of exposure to multiple chemicals, as is the case in Butte. (Steve Ackerlund, CTEC Position on Butte Area Soils Cleanup Program, Draft, June 25, 2009)

g. The site-specific bioavailability data that the Remedy as currently being implemented was extrapolated from the Anaconda Smelter Superfund site. No justification for doing this has ever been provided. Specific bio-availability of indoor dust and attic dust have never been adequately addressed. (See: Summary of Risk Assessment Reviews—Steve Ackerlund—Draft—June 3, 2009) In particular, the applicability of these 'site-specific' values to indoor dust and attic dust has not been evaluated. (Steve Ackerlund—Draft Memorandum to CTEC Membership, September 15, 2009) For example, the characteristics of attic dust may well mean that it is very bioavailable. Yet, the EPA failed to evaluate this. Regarding bioavailability, the generalized estimates made for the entire BPSOU may not apply to specific locations, and the potential for error is larger when the 'site-specific' bioavailablity factor used is very much to the low end of typically values. In particular, the applicability of these 'site-specific' values to indoor dust and attic dust have not been evaluated. (Steve Ackerlund—Draft Memorandum to CTEC Membership, September 24, 2009)

EPA Response: *The bioavailability factor for arsenic in soil and dust used in the BPSOU human health risk assessments was based on bioavailability studies for both soil and house dust at the Anaconda Smelter site. Therefore the statement that bioavailability of dust never being adequately addressed is incorrect. Also, in March 2003, EPA issued a report entitled Relative Bioavailability of Arsenic in Soils from Butte, Montana. Two soil samples from the BPSOU were tested for arsenic bioavailability with estimates of 17 and 22%, which are consistent with the Anaconda Smelter findings and the original BPSOU risk assessments. This supported EPA's decision to use the arsenic bioavailability factor which it used in the BPSOU risk assessments.*

Comment:

h. The EPA provides no justification for assuming that using lead level data can accurately lead to protective arsenic and mercury exposure action levels.
i. There are elevated cancer rates in Butte of the type of cancers related to exposure to mine waste. Such a finding is ignored by the EPA. If the current Remedy was working, these cancers would be decreasing.
j. By only considering only arsenic, lead and cadmium, the Priority Soils remedy as currently being implemented fails to sufficiently protect public health because it neglects other metals/contaminants of concern.
k. The Remedy as currently being implemented fails to consider the fact that children are particularly at risk from all the pollutants found in Butte Priority Soils, not just lead, mercury and arsenic. Action levels that may be protective for adults are not necessarily protective of children. Of course, the EPA has

conducted no investigations of the effects of aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium on children within the BPSOU. Are BPSOU children somehow mysteriously immune to the health effects of aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium?

l. The tests used to detect arsenic contamination rely on urine studies that do not show the long-term, chronic affects of exposure to arsenic. Hair and fingernail studies give a much more comprehensive view of long term, chronic exposure to arsenic. Relying on urine sample fails to give a comprehensive picture of the degree of long-term exposure to arsenic that residents of the BPSOU have had to endure. Studies of the chronic effects of exposure to arsenic tend to show a much more significant problem. (For example, Dr. Holly Peterson and Stacie Barry, MTech, completed an EPA-funded biomonitoring project that evaluated arsenic exposure in domestic pets and other sentinel species. This project went through a rigorous quality assurance, peer review, and publication process by the MTech Mine Waste Technology Program, the MSE Mine Waste Department, and the EPA. The study result indicate an increased risk of exposure to several mining related contaminants, including arsenic, and it suggests that exposure to humans may also be occurring. The results of this study are potentially conflicting with an exposure investigation conducted by ATSDR in 2000, which showed non-detectable arsenic exposure in Walkerville. However, the Walkerville study had a small sample size, was conducted during the winter when all exposure pathways are not well represented, and did not show exposure to elevated blood-lead such that no relationship of exposure between the two metals can be determined. While definitive studies on elevated arsenic exposure to Butte area residents are lacking, an ATSDR Health Consultation conducted in 2001 does show higher rates of cancer in Butte area residents compared to Montana overall. [Steve Ackerlund—Draft Letter to John Wardell and Richard Opper—August 4, 2009]

m. The Remedy's assessment of mercury was based on an early study of Walkerville that had significant uncertainties.

n. The Remedy as currently being implemented fails to give special consideration to the differential health effects of heavy metals exposure and other contaminants of concern—mercury, arsenic, lead, aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium—on low income populations, thus ignoring the EPA's environmental justice mandate. Given that low income citizens tend have poorer health than the non-poor, the EPA should have, but did not, investigated the differential effects of exposure to contaminants of concern on the low-income population of the BPSOU.

o. The Remedy as currently being implemented is based on an inadequate health risk assessment process in that many elements/contaminants of concern were never subjected to a health risk assessment and the three drivers—lead, mercury, and arsenic—never underwent a comprehensive health risk assessment. Mercury was particularly neglected in this concern. Arsenic was extrapolated from the Anaconda site and little unique work was done in Butte. Action levels were arbitrarily set with different action levels at different sites for the same contaminant. Are we to assume that somehow the toxicology and epidemiology related to toxic elements differs from one adjacent area to another? Is arsenic in

Anaconda different than arsenic in Butte? Does Butte have a special kind of lead or mercury? Are the people of Anaconda somehow biologically different than the people of Butte or Missoula or East Helena?

EPA Response: *The lengthy remedial investigation process for the BPSOU did collect data on all of the contaminants listed in this comment. All of these contaminants were found in soil and source areas throughout the BPSOU at levels above background. The extensive soil sampling efforts are detailed in the BPSOU Phase II Remedial Investigation Report (2002, PRP Group approved by EPA), and the data is reproduced in Appendix B of the BPSOU Record of Decision (2006, EPA).*

However, the presence of a contaminant at a Superfund site does not mean it presents a human health risk. EPA risk assessment guidance recommends that all analytes be screened against conservative risk-based screening levels to determine which analytes are expected to present de minimus risk (and are excluded from further analysis) and which analytes should be investigated and assessed further. This was done for the BPSOU in accordance with EPA guidance.

The EPA produced a BPSOU Soils Screening Study in 1988. Section 4 of that study looked carefully at the contaminant distribution and toxic nature of the full range of contaminants, and determined that the contaminants of concern for soils are arsenic, cadmium, lead and mercury. As noted, the narrowing of contaminants found at a Superfund site to a list of contaminants of concern (or "drivers") is common and endorsed in EPA's human health risk assessment and Remedial Investigation guidance.

Site specific conditions for BPSOU were examined in detail in a series of human health risk assessments conducted for BPSOU. Those risk assessments are:

- *Preliminary Baseline Risk Assessment (1991, Clement). This study concluded, after further analysis, that cadmium levels at the BPSOU did not represent a risk to human health above the range of unacceptable risk according to Superfund regulations and guidance, but found the potential for unacceptable risk for arsenic, lead and mercury.*

- *Baseline Human Health Risk Assessment for Lower Area One (EPA/CDM 1991) and Baseline Human Health Risk Assessment for Lead (EPA/CDM 1994). These studies found unacceptable risk for lead at the BPSOU and, using the Integrated Exposure Uptake BioKinetic (IEUBK) model that EPA uses in all Superfund risk assessments, calculated action levels for lead in Butte. These assessments used site specific inputs based primarily on the bioavailability of lead in Butte.*

- *Baseline Human Health Risk Assessment for Arsenic (EPA/CDM 1997). This study found unacceptable human health risk assessments for arsenic at the BPSOU, and again used site specific bioavailability information to calculate action levels for BPSOU.*

- *Human Health Risk Assessment for Walkerville Residential Areas (EPA/UOS 2003). This study re-examined the prior human health risk assessments to ensure they were adequate, and also added mercury as a contaminant which produced unacceptable risk at the BPSOU. Mercury action levels were calculated in this study.*

All of these risk assessments were conducted by experienced risk assessors for EPA and its contractors. All of these risk assessments used standard EPA risk assessment methodology and conservative

assumptions to ensure that actions levels were protective in accordance with Superfund regulations and EPA guidance. Further explanation about these risk assessments is contained in the BPSOU ROD responsiveness summary, page I-80 – 81.

The BPSOU ROD then adopted the action levels from the risk assessments for use in the Residential Metals Abatement Program, which is the remedial design document that will govern implementation of the BPSOU ROD requirements for residential soils, indoor dust, and other non-Superfund lead sources.

EPA did not ignore the public comments raised about these issues when conducting the five year review. EPA's risk assessor and its contractor employees reviewed the assumptions, including the screening, exposure pathways, toxicity factors, and site specific bioavailability information, carefully. EPA re-calculated the lead action levels by using the most current version of the IEUBK model. The conclusions from this review are found in section 7.2 of Volume 6 of the report. EPA's risk assessor specifically reviewed the manganese screening level for risks to human health set for the BPSOU (12,609 parts per million which is rarely exceeded in BPSOU) and found it to be protective and valid. EPA remains confident that the full implementation of the BPSOU ROD and the Residential Metals Abatement Plan will result in the protection of human health for all residents of BPSOU in full accordance with the Superfund law and regulations.

EPA is aware that other sites have different action levels for lead and arsenic than does the BPSOU. Site specific data was used to calculate the action levels for BPSOU based on careful studies with animals done by some of the better known researchers and risk assessors. ATSDR was involved in this work and has not found problems with EPA's risk calculations or protectiveness findings. EPA will continue to consult with ATSDR on these matters as the cleanup proceeds for BPSOU. EPA will also continue to assess data collection efforts to ensure that the "driver" contaminants are appropriate and provide protectiveness.

EPA is aware that blood lead levels taken in the voluntary blood lead program in Butte have shown a consistently downward trend over the past several years, which indicates that the cleanup activities are having a very positive effect on human health in Butte. In fact, there have been no elevated blood leads associated with mine waste in Butte for the past two years.

> **Comment:** The Remedy as currently being implemented fails to recognize that the arsenic in attic dust did come from smelting operations in the Butte/Anaconda area. Because the attic dust did come from mining related activities, it is directly under the purview of Superfund. Another issue ignored in the draft Five-Year Review.

EPA response: *Arsenic and other COCs in attic dust are from mining sources primarily, and are being remediated through Superfund. EPA does not assert that these COCs are not Superfund related. EPA has never contended otherwise, and the BPSOU ROD is clear on this issue.*

> **Comment:** The public involvement plan pursuant to the remedy as currently being implemented needs some benchmarks by means of which success of public outreach is evaluated. At present, there is no way to determine whether or not the community involvement component which is critical for the success of the Remedy as currently being implemented has been successful. What would be considered a successful public involvement/educational plan? We have no way of knowing what constitutes success or

failure. Overall, the Remedy, as currently being implemented, presents a very sketchy community involvement plan. Yet, the success of the Remedy as currently being implemented depends on effective community outreach.

EPA Response: *EPA agrees that communication and community involvement are a key part of Superfund cleanup implementation efforts. EPA continues to provide opportunity for public involvement and comment regarding the design and implementation of the BPSOU remedy. EPA agrees that there is no benchmark or metric against which to measure community involvement. EPA has taken the criticisms of poor communication to heart and will undertake a more comprehensive approach to communication moving forward. Through the community interviews process, EPA has realized that it is particularly important at this site with a such long history to repeatedly present some of the site information to educate new citizens, or more importantly, new people in leadership roles.*

Comment: It is problematic as to whether the education/community involvement program mandated under the remedy as currently being implemented will reach populations of concern, particularly low-income citizens. Given the Montana EPA track record regarding community involvement in the BPSOU, which has been limited to the traditional/formalistic/ineffective format of formal agency conducted public hearings and informational meetings along with some agency produced written materials, there is little to suggest that target populations, particularly low-income citizens, will be reached and/or motivated to participate in the program. This is contrary to the EPA's Community Involvement policies, rules, regulations and guidance documents. For example, EPA has an environmental justice mandate to be pro-active in attempting to involve low-income citizens in their programs.

EPA response: *EPA disagrees with this comment. In addition to the public meetings and written material, information has been disseminated through radio, television, newspapers, advertisements, and websites. EPA recently produced a fact sheet with details the extensive efforts made by the Butte Silver Bow County Health Department, in cooperation with EPA, regarding residential cleanup activities. The Residential Metals Abatement Plan requires outreach and education efforts, and EPA will carefully oversee implementation of that plan.*

Please see prior responses regarding the environmental justice issues that have been examined at the BPSOU.

Comment: The BPSOU Remedy as currently being implemented fails to recognize and accommodate the unique health problems of low-income citizens thus failing to meet EPA's environmental justice mandate. Furthermore, the Plan fails to take into consideration the substandard housing, poor diet and other environmental factors affecting the poor in relation to toxic metal exposure.

EPA response: *EPA disagrees with this comment. As noted, EPA has reviewed its risk assessments and found that they used conservative assumptions about exposure pathways and receptors in Butte and that action levels resulting from these assessments are protective. Please see our prior responses regarding environmental justice issues at the BPSOU.*

Comment: There is no assurance that the majority of problematic properties will be identified. There are problems related to absentee landlords, property owners, etc. There are problems in that, if there is no application for a building permit prior to renovation, that kind of property may be ignored.

EPA Response: *EPA acknowledges the comment. These types of potential problems with implementation of the attic dust portion of the Residential Metals Abatement Plan are real challenges for achieving complete and comprehensive cleanup. This is why the RMAP is being implemented in a systematic fashion with extensive outreach and education activities and follow-up tracking requirements.*

Comment: Given the voluntary nature of participation in the medical monitoring program, what assurances are there that the vast majority of the affected population will be identified and screened?

EPA Response: *The only viable method for medical monitoring is through outreach and voluntary participation – EPA does not believe that mandatory medical monitoring is either practical or acceptable to the Butte community. However, EPA believes that a turnout of nearly 1,000 people in 2008-2009 alone who volunteered for blood lead demonstrates a fairly high level of participation in the program, and will work with the Butte Silver Bow County Health Department to assess and improve participation rates where possible. In addition, EPA does not base the need for cleanup on whether or not individuals participate in the voluntary medical monitoring program. The need for cleanup is based upon environmental sampling data.*

Comment: The Remedy as currently being implemented still mistakenly puts the onus on the property owner or renter or resident to initiate remediation. Such an onus is particularly burdensome to low-income residents. Past experience amply demonstrates that such an approach is not efficacious.

EPA Response: *This is not the case for yard soils or indoor dust remediation. All residential areas within the BPSOU will be sampled and assessed and cleaned up if action levels are exceeded under the Residential Metals Abatement Plan. For the attic dust component, the property owner or resident has the opportunity to contact the BSB health department anytime when remodeling or other activities result in human exposure to attic dust at a give residential location. The Butte Silver Bow County Health Department will work to maintain outreach and educational efforts for the RMAP activities including the attic dust component, as required, and EPA believes these efforts by a local health agency will be efficacious.*

Comment: It is not clear and actually very problematic that that there will be enough money to accomplish a comprehensive remedy.

EPA Response: *EPA has asserted liability against several responsible parties for the BPSOU cleanup, and EPA has enforcement mechanisms which should ensure that the remedy is fully implemented and funded.*

Comment: The Remedy as currently being implemented still relies on a non-protective pathways of exposure argument regarding the abatement of attic dust.

EPA Response: *EPA disagrees. EPA's risk assessment and survey found that most attics within the BPSOU were not accessed by residents. If there is no pathway for exposure in sealed attics, there is no exposure. EPA's ROD, and the Residential Metals Abatement Plan, provide for remediation of attic dust where access or exposure does occur.*

Discussion

Comment: The plan still insists that attic dust will not be remediated unless a pathway of exposure is present. (There is no substantive discussion in the draft Five-Year Review of the issue of pathways of exposure needing to be present and identified before remediation will take place.)

The contaminated dust found in many BPSOU attics poses a direct threat to human health if people were to be exposed to these contaminants.

The dust obviously entered the attics. What enters can leave, if disturbed. Saying that no pathways of contamination currently exist does not provide any permanent remediation of the threat of toxic attic dust. New and expanded Pathways of exposure can be created by:

a. Remodeling and Painting
b. Use of the attics for storage
c. Weatherization
d. Deterioration of ceilings.
e. Damage or deterioration of roofs.
f. Modifying the attic through such measures as adding electrical wires, skylights, ceiling fans, electric lights or working on the roof.
g. Fires
h. Subsidence and cracking
i. Cleaning
j. Wind, rain, hail and or water from storm events.

2. The pathway argument rests on the failed premise that remediation should attempt to keep people from contaminants rather than remove the contaminants from people.
3. The pathway argument directly contradicts the Superfund requirement for permanent solutions in that human behavior patterns, residential use patterns, and general land use patterns change over time.
4. There exists no current law, rules, or regulations that would prohibit the owner of a home or the renter of a home from using or disturbing the home's attic.
5. The pathways argument is contrary to the principles of environmental justice in that this approach means that low-income citizens will continue to bear a disproportionate toxic burden.
6. The pathways approach is contrary to the principles of the Superfund Redevelopment Initiative and the Superfund Land Revitalization Action Agenda in

that it limits or precludes future productive land uses and redevelopment of sites contaminated with toxic attic dust.

7. The pathways argument is directly contrary to the Principles of Pollution Prevention and the Precautionary Principle, which are embraced by EPA policy, rules and regulations, as well as Montana State Law.
8. The Libby Cleanup Precedent would warrant addressing contaminated attic dust in Butte.

EPA Response: *The commenter's interpretation of the attic dust portion of the selected remedy is incorrect. Attic dust is remediated if there is an exposure pathway or if a change in the use of the attic space is planned. If it is found that attic dust is actually contaminating living spaces (e.g., attic dust is "leaking" into the living space via light fixtures, ceiling cracks, etc.) then it will be cleaned up under the RMAP. Alternatively, if the attic is frequently accessed, or if there is going to be a change in the use of the attic that can lead to an exposure pathway (e.g., remodeling), then the attic will be cleaned up under the RMAP. Furthermore, EPA has to balance not only risks to the residents, but also risks to workers who could be exposed to contaminants or other risks (e.g., construction, heavy equipment) during an abatement or other cleanup action.*

The exposure pathway argument is similar to the accepted cleanup requirements for asbestos in most places – to manage it in place and not disturb it unless necessary. If the asbestos containing material is present, but intact, or otherwise inaccessible, then it is better left alone. If however, the material is friable (i.e., is falling apart and able to be inhaled), and accessible, then it should be abated by a professional. For attic dust, if it is present, but the residents do not use their attic and the dust cannot get into the living space, then it does not need to be abated. If instead, it is likely that the residents will be exposed, then it should be abated. Many attics have been remediated because people are remodeling their homes.

Comment: The Remedy as currently being implemented does not adequately address many metals and mining related toxics of concern and potential risks to the public from these many metals and mining related toxics of concern.

By the EPA's own account (BPSOU ROD), in addition to lead, arsenic and mercury, copper, aluminum, cadmium, iron, silver and zinc are also toxics of concern presently found within the BPSOU. Other studies have found boron, lithium, manganese, molybdenum and selenium to be metals/elements/toxics of risk present at the BPSOU site. (Holly Peterson, 2007. Domestic Pets as Biosamplers of Mining Related Contaminants, EPA Mine Waste Technology Program, Butte, Montana.)

The Remedy as currently being implemented fails to address these other toxics of concern and risk. I suppose that the assumption is made that if we remediate arsenic, lead and mercury, we will "get" all of these others also. However, there is no substantiation for this claim, the EPA just assumes it. Nor is there any consideration of the synergistic effects of these toxics of concern on human health. Nor is there any consideration of the bioaccumulation of these toxics of concern. Nor is there any consideration of the cumulative effects of chronic exposure by humans to these toxics of concern. (For example, given the reliance on urine sampling to measure arsenic

exposure, the EPA probably never would be able to assess the cumulative effects of chronic exposure to arsenic.) Nor has there been an adequate health risk assessment of mercury exposure within the BPSOU. The harmful health effects of the above listed toxics of concern are amply discussed and demonstrated in Stacie Barry's Toxicology of the Chemical of Concern in Butte, Montana: Submitted to the Butte-Silver Bow Health Department, June 5, 2008.

In short, the current proposed the Remedy Plan as currently being implemented fails to consider all the potential threats to human health and the environment within the Butte Priority Soils OU in that it neglects many elements with are risky for human health and the environment. Faulty and incomplete data and conclusions based on unsubstantiated assumptions can only compromise the effectiveness of any plan based on such data.

EPA Response: *EPA disagrees. See the response above to similar comments.*

Direct Evidence of Causal Link to Mining and Smelting.

Comment: Arsenic found in BPSOU and areas adjacent to the BPSOU is from smelter activities in Butte and Anaconda and, therefore, is directly under the Superfund purview.

There is strong evidence that a significant amount of the trivalent arsenic present in attics in the homes in the BPSOU as well as adjacent to the BPSOU came, in large part, from the Anaconda Smelter. The geomorphology and chemical composition of the arsenic contaminated attic dust from the Anaconda Smelter and the geomorphology and chemical composition of the arsenic contaminated attic dust found in homes both within and adjacent to the BPSOU are the same. The arsenic attic dust is smelter arsenic dust. The EPA must stipulate that the arsenic attic dust is smelter arsenic dust.

The prevailing wind patterns in Southwestern Montana clearly indicate that the prevailing winds flow from the Anaconda Smelter to Butte—hence a plume of trivalent arsenic contamination could have reached the Butte Hill. According to the National Oceanic and Atmospheric Administration—National Climatic Data Center, the prevailing winds are generally from Anaconda to the Butte area along the I-90 Corridor and are sufficiently strong enough of the time to carry contaminated smelter dust to Butte. A weather chart from the National Weather Service in 1920 shows essentially the same wind directions as today from Anaconda to Butte.

Additional support comes from the U.S. Forest Service, which in their various Forest Fire Suppression Documents and Reports, notes that the typical wind direction is from west to east as can be readily seen by the extent of smoke and particulate matter in the Butte area from fires occurring west of Butte. Ash from forest fires is denser and heavier than airborne particulate matter from the Anaconda smelter. The EPA Superfund ROD for the Anaconda Smelter (09/30/1996) also notes that the prevailing wind pattern is from west to east with most arsenic and heavy metal contamination found east of the Smelter stack.

The Final Risk Assessment-BPSOU Baseline Human Health Risk Assessment for Arsenic, April 29, 1997 notes: "Aerial emissions from the mills and smelters, as well as the Anaconda Smelter, also contributed to the BPSOU." (p. 1-2, emphasis supplied.) It is important to note that inorganic, trivalent arsenic contamination releases result from the ore smelting process. (See: Paul F. Holt, *Inhaled Dust and Disease*, (New York: John Wiley and Sons, 1987. See also: *Arsenic* (ATSDR)"While arsenic is released to the environment from natural sources such as wind-blown dirt and volcanoes, releases from anthropogenic sources far exceed those from natural sources." (ATSDR) Mining and smelting are major causes. "The soil receives arsenic from a variety of anthropogenic sources, including… smelting operations, mining wastes. Mine tailing and smelter slag was estimated to add an additional, 200-11000 and 4,500 –9000 metric tons respectively… abandoned mine tailings add still more."

Indirect Evidence of Causal Link to Mining and Smelting

Comment: There is no other possible source of the contaminated attic dust in Butte than the Anaconda Smelter.

Turn of the century and early 20th Century smelters in Butte are not the source of present day attic dust contamination in that contamination is found in homes both within and adjacent to the BPSOU that were built long after these early Butte smelters closed.

Coal burning is not the source of the present day attic dust contamination, as some allege, in that many homes with contaminated attic dust were built long after coal burning had ceased in Butte.

Contamination is not found in attics of homes that were built after the Anaconda. Smelter closed in 1980.

To the extent that trivalent arsenic is found in the attics of homes constructed after smelter operations ceased on the Butte Hill, the 1920s, there would exist the strong presumption that such arsenic emanated from Anaconda. By the EPA's own assumptions, trivalent arsenic was not characteristic of the arsenic found in Butte soils but is characteristic of the arsenic found in Anaconda.

Conclusion

Comment: The Anaconda Smelter would seem to be the only practical source for this trivalent arsenic found in Butte attic dust. What other major source exists? Thus, the presence of arsenic in BPSOU attics is a direct result of mining activity which contamination is covered by Superfund.

EPA response: *Arsenic and other COCs in attic dust are being remediated through Superfund (or are in the "purview" of the Superfund program as the commenter phrases it). EPA does not assert that these COCs are not Superfund related.*

Comment: The BPSOU Remedy as currently being implemented fails to recognize and accommodate the unique health problems of low-income citizens thus failing to meet EPA's environmental justice mandate. The public involvement plan also fails to recognize and accommodate the unique problems of reaching low-income citizens thus failing to meet EPA's environmental justice mandate. The issue of environmental justice is ignored in the draft Five-Year Review. The need for the public involvement plan to recognize and accommodate the unique problems of reaching low-income citizens is also ignored in the draft-Five Year Review.

I make the following arguments that lead to the clear conclusion that the EPA needs to be more aggressive in attacking the BPSOU toxic attic dust problem. It is a human health issue and an environmental (social) justice issue:

A. A significant number of homes in the BPSOU are substandard and deteriorating.
B. A disparate concentration of poor is found living in this substandard BPSOU housing.
C. Many, if not most, of these substandard BPSOU homes are contaminated with toxic attic dust which constitutes a severe threat to human health, particularly the health of children
D. This contaminated and toxic attic dust is found in BPSOU homes as the direct result of mining related activities. Hence, such toxic attic dust is clearly within Superfund's purview.
E. There is a great risk of exposure to toxic attic dust in substandard homes, particularly as compared to homes of good quality.
F. Superfund was designed to remediate these human health threats.
G. Superfund, in remediating human health threats, must also address environmental justice concerns.
H. The concentration of toxic attic dust in the BPSOU raises an environmental (social) justice issue.
I. The EPA's current approach to remediating toxic attic dust in the BPSOU is inadequate in that it will only address the toxic attic dust issue if there is a clear and present pathway of contamination within a home which leads to exposure of inhabitants to the toxic dust.
J. The EPA's current approach to remediating toxic attic dust in the BPSOU violates EPA environmental justice mandate in that it perpetuates a disparate toxics burden on the poor in the BPSOU.
K. Even though the Record of Decision for Priority Soils has been issued, EPA still has the regulatory flexibility and authority to change its approach to remediating toxic attic dust.
L. EPA should change its approach, in the ways suggested in this paper, to more aggressively monitor and remediate toxic attic dust. Failure to undertake these changes would be contrary to the Superfund mandate to clean up sites, to protect human health and the environment and to make sites free of toxics in a permanent manner and would be contrary to EPA's environmental justice mandate.

The quality of the housing stock in the BPSOU is poor, the housing stock has a disproportionate number of low income citizens living in this housing, this housing stock is contaminated with toxic attic dust, and due to its substandard nature, it is likely that exposure of residents to this toxic attic dust will continue to occur:

1. According to a study commissioned by the Butte/Silver Bow Planning Board, ". . . much of the housing stock in the older town site is in a state of decay. Decay of the housing stock in much of Census Tracts 1 and 2, which encompass the area north of Front Street to Walkerville and the upper and lower west sides of the urban cluster are contributing to a significant aesthetic crisis and have created an economic development barrier for the community. Retail activity in the central business district is inherently impacted by a loss of people, by vacant and blighted structures and by high poverty in these areas." (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 2-5)
2. According to the Center for Applied Economic Research for the Montana Department of Commerce, about 73% of the substandard housing units found in Butte are within the confines of the BPSOU. According to the report, this amounts to 2600 housing units. (Quoted in *Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 2-5)
3. According to the Planning Board sponsored report: "The County's poor population is being isolated in the most blighted areas of the community. The older town site (Census Tracts 1 and 2), which contains an approximated 73 percent of the community's substandard housing units, (2600) units, is also home to 52 percent of people living below the federal poverty line. Living below the federal poverty line indicates people do not have enough resources to purchase the most basic goods and services for survival. Lower income families and individuals are segregated in blighted areas of Butte-Silver Bow; many are living in substandard conditions while paying more than 30% of their monthly incomes for housing costs. Disabled people, many of whom have extremely low incomes, are a subset of the impacted group." (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, pp. 2-3 and 4) Note: Butte Census Tracts 1 and 2 are in the BPSOU.
4. Substandard housing disparately affects the poor who live in Butte more than the non-poor.
5. The housing problems in the BPSOU are part of the overall poverty problem in Butte. According to the 2000 Census, 10.7% of Butte families live in poverty, compared to 10.5% across the state. About 15% of the Butte population lives below the poverty line. Also, according to the 2000 Census, close to 25% of Butte families with children under the age of five years have incomes below the official poverty line. Fifty-eight percent of the homes without fathers have incomes below the official poverty line. According to the Montana Department of Public Health and Human Services, in 2002, about 2.4% of Butte's citizens were receiving Temporary Assistance for Needy Families compared to the state average of 1.89%.

Over 10% of the Butte population was receiving food stamps compared to 7.56% statewide.

6. Low-Income Renters are a major component of the BPSOU housing occupants. (The percentage of households with incomes less than $25,000 is 42% in Silver Bow County compared with 28% for the nation and 38% for Montana. Further, 41% of families are considered low-income; seventy percent of renters have incomes less than $25,000 and 81% of them are concentrated in Census Tracts 1 and 2 (BPSOU) where there are an estimated 2600 substandard units. Thirty percent of households occupying rental units are experiencing a cost burden by contributing more than 30% of their income to housing costs." *Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 2-2) 32% of renters in the age range 25-34 have annual income below the poverty level. (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 2-1)
7. 30% of children in Butte live in high poverty neighborhoods in the BPSOU. "Silver Bow County ranked first (highest) in Montana in the poverty rate for population under 18 years of age; the percentage of children living in high-poverty neighborhoods (coterminous with the BPSOU); and the average number of food stamp recipients per month." *(Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 1-40)
8. Deep poverty persists within the BPSOU. 59% of the high poverty block groups in Silver Bow County are found within the BPSOU. The BPSOU area "contains 52% of the county's poor while only comprising 29% of the total population. Of particular note are Bock Groups 4 and 5 in Tract 1 where poverty rates were 47% and 61% respectively in 2000." (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 1-28)
9. Resident flight from the BPSOU is continuing and contributing to the decline and deterioration of the area. (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 1-8)
10. Studies also indicate that the vast majority of the poor live in the area encompassed by Butte Priority Soils. For example, of the 1200 houses in Butte that have had a high risk of lead, the vast majority are in the Butte Priority Soils site. The risk of exposure to contaminated arsenic in attics is much higher in the BPSOU than anywhere else in Butte. The housing stock in the BPSOU is more deteriorated and dilapidated than anywhere else in Butte and is overwhelmingly substandard. Compared to Butte as a whole, the low-income citizens living in the area encompassed by the Butte Priority Soils Operable Unit bear a disproportionate burden of exposure to toxics compared to the rest of the community. Comparing income levels to quantity of toxics present clearly demonstrates that low-income citizens in Butte bear a disproportionate toxics burden. The poor in Butte have a greater risk of cancer from exposure to heavy metals than do the non-poor. Given weakened immune systems which weaknesses are greater in the poor than the non-poor, given inadequate diets

which are more prevalent in the poor than the non-poor, given lack of access to adequate medical treatment which is more prevalent in the poor than the non-poor, given the detrimental health effects of living in substandard housing which is more prevalent for the poor than the non-poor, the poor in Butte are more threatened by the release of toxic, heavy metals associated with mining than the non-poor. (See: Environmental Defense Fund, *Summary Report: Silver Bow County*, 11/24/03.)

11. The poor residents of central Butte lack the financial ability to either (1) move into better housing within the district or (2) move out of the BPSOU area into better housing. (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006)
12. Many of these homes have attics that are contaminated with toxic arsenic dust.
13. "The age of the house and the design, construction, and condition of the house structure largely determine the entry of ceiling dust to the living areas of a dwelling. Dwellings in good condition rarely show evidence of ceiling dust entering the living areas of the house. Older dwellings and those in need of repair tend to show more signs of ceiling dust encroachment through cracks and vents." (Jeffrey J. Davis and Brian L Gulson, "Ceiling (attic) dust: A 'museum' of contamination and potential hazard," *Environmental Research*, Volume 99, Issue 2. October 2005, Pages 177-194) These findings are particularly relevant given the generally poor condition of housing stock within the BPSOU.

The conclusions reached by points 1-13 above are:

1. Butte has a high rate of poverty compared to the rest of the nation and Montana.
2. These poor live overwhelmingly within the BPSOU. The "poor-poor," which is a subset of the poor, also live overwhelmingly within the BPSOU.
3. A major subcategory of the poor and "poor-poor" living within the BPSOU are children, the elderly and the disabled.
4. These poor live in substandard housing within the BPSOU.
5. The poor living in the BPSOU area have a greater level of exposure to contaminated and toxic attic dust than the non-poor.

Next, let us consider the degree of toxic attic dust contamination found in these substandard homes within the BPSOU and the health effects of this contamination. The draft Five-Year Review ignored this also.

Regarding the health effects of toxic attic dust found in housing units in the BPSOU, we know the following:

1. Inorganic arsenic, found in attics in the BPSOU, even at low levels of exposure, poses a serious threat to human health. Arsenic has been designated a human carcinogen. Arsenic can cause cancer of the lungs, liver and skin. Long-term exposure to arsenic can cause alterations in mental functions and depression. (*Staying Healthy in a Risky Environment*, New York University Medical Center, p. 365 and 428) Arsenic exposure at low doses can cause nerve damage,

cardiovascular problems, skin problems and constitutional complaints such as nausea, diarrhea, gastrointestinal upset, etc. (Johnson and DeRosa, ASTDR, "The Toxicologic Hazard of Superfund Hazardous Waste Sites") [See also: Paul F. Holt, Department of Chemistry, University of Reading, UK, *Inhaled Dust and Disease*, p. 245. which discusses the causative effect of arsenic on heart disease.] Arsenic targets most of the body's organs and is particularly harmful to the gastrointestinal tract and to the skin. Outdoor play is a common arsenic exposure route for children. Attics in the Butte Priority Soils area are contaminated with a host of toxics, in addition to inorganic arsenic, related to past mining/smelting activities.

2. More specifically, the trivalent arsenic found in BPSOU attics is a proven human carcinogen. One form of human cancer directly linked to trivalent arsenic is skin cancer that has above average levels in Butte. (NIOSH, Tenth Report on Carcinogens, *Arsenic Compounds, Inorganic*. See also: International Agency for Research on Cancer, *IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man*, Vols. 2 and 23 and Supplements 4 and 7, USEPA, Integrated Risk Information System, *Arsenic, inorganic* (CASRN 7440-38-2) and Dennis M. Opresko, Ph.D., Chemical Hazard Evaluation and Communication Group, Biomedical and Environmental Information Analysis Section, Health and Safety Research Division, Oak Ridge Reservation Environmental Restoration Program, Risk Assessment Information System, 1997) Not only is trivalent arsenic carcinogenic, even at low doses, [Arsenic exposure at low doses can cause nerve damage, cardiovascular problems, skin problems and constitutional complaints such as nausea, diarrhea, gastrointestinal upset, etc. (Johnson and DeRosa, ASTDR, *The Toxicologic Hazard of Superfund Hazardous Waste Sites*)] but it is also genotoxic. (Mass et al.,*Chem. Res. Toxicol.* 14:355-36, April 16, 2001) The EPA has specifically endorsed this genotoxic conclusion. (April 2001) "Inorganic arsenic is readily absorbed through ingestion and is widely distributed in the human body. It does not need metabolic activation to exert its effect." (Chiou, et. al., *Incidence of transition cell carcinoma and arsenic*, American Journal of Epidemiology 153 (5): 411-418, 2001)
3. Moreover, there are no known safe levels of exposure to inorganic arsenic. Trivalent arsenic bioaccumulates in tissue and is excreted very slowly. (Dr. Ronald Brecher, *Arsenic*, EBI, Canada and Aapo Saask, *The Arsenic Challenge*, Scarab Development AB, Stockholm, Sweden) Finally, trivalent arsenic causes a host of other serious medical problems. (Holt, *Inhaled Dust and Disease*, *op. cit*.; Norman Trieff, *Environment and Health*, Ann Arbor Science Publishers Inc.; Graber and Upton, *Staying Healthy in a Risky Environment: The New York University Medical Center Family Guide*; ATSDR; OSHA; NIOSH; and USEPA.)
4. Trivalent Arsenic is one of the major contaminants of attic dust on the Butte Hill. The gross geologic morphology of the attic arsenic dust would lead to that conclusion.
5. There is strong evidence that a significant amount of the trivalent arsenic present in attics came from the Anaconda Smelter.
6. To the extent that trivalent arsenic is found in the attics of homes constructed after smelter operations ceased on the Butte Hill, the 1920s, there would exist the strong presumption that such arsenic emanated from Anaconda. By the EPA's

own assumptions, trivalent arsenic was not characteristic of the arsenic found in Butte soils but is characteristic of the arsenic found in Anaconda.

7. The prevailing wind patterns in Southwestern Montana clearly indicate that the prevailing winds flow from the Anaconda Smelter to Butte—hence a plume of trivalent arsenic contamination could have reached the Butte Hill.
8. The Final Risk Assessment-BPSOU Baseline Human Health Risk Assessment for Arsenic, April 29, 1997 notes: "Aerial emissions from the mills and smelters, as well as the Anaconda Smelter, also contributed to the BPSOU." (p. 1-2, emphasis supplied.)
9. Inorganic arsenic contamination releases result from the ore smelting process such as occurred very early in Butte, ending in the 1920s, and most prominently and recently in Anaconda. (See: Paul F. Holt, *Inhaled Dust and Disease*, (New York: John Wiley and Sons, 1987. See also: *Arsenic* (ATSDR)"While arsenic is released to the environment from natural sources such as wind-blown dirt and volcanoes, releases from anthropogenic sources far exceed those from natural sources." (ATSDR) Mining and smelting are major causes. "The soil receives arsenic from a variety of anthropogenic sources, including. . . smelting operations, mining wastes. Mine tailing and smelter slag was estimated to add an additional, 200-11000 and 4,500 –9000 metric tons respectively. . . .abandoned mine tailings add still more."
10. **Conclusion**: The Anaconda Smelter would seem to be the only practical source for this trivalent arsenic found in Butte attic dust. What other major source exists? Thus, the presence of arsenic in BPSOU attics is a direct result of mining activity which contamination is covered by Superfund.
11. The 1997 Health Risk Assessment for arsenic and subsequent health studies for Butte Priority Soils do not specifically and directly consider trivalent arsenic found in Butte attics. The 1997 Health Risk Assessment for arsenic and subsequent studies only consider the levels of trivalent arsenic found in soil as a potential source of the dust home contamination problem. This is deceptive in that arsenic is water soluble and would have been washed away to a large extent given rain, snow melt, wind, etc. However, the fine trivalent arsenic dust found in attics would not have been washed away by rain and snowmelt. Wind would not have blown away the trivalent arsenic found in attics. It is totally plausible that there would be low level of trivalent arsenic in the soil while having high levels of trivalent arsenic in attics. Arsenic does not lose it toxicity over time.

The contaminated dust found in many BPSOU attics poses a direct threat to human health if people were to be exposed to these contaminants. The EPA needs to be more pro-active in reaching out to low-income residents who are disproportionately concentrated in the Butte Priority Soils Site. Yet, no provisions occur in the proposed Multi-Pathway Residential Metals Abatement Program Plan for reaching out to, including, and involving low-income citizens in the Multi-Pathway Residential Metals Abatement Program.

Given the concentration of the poor in the substandard housing units of the BPSOU, which are contaminated in a disparate manner with toxic attic dust, the poor bear a

disproportionate toxics burden. ***Consider:*** On February 11, 1994, through Executive Order 12898, President Clinton declared that: "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States." According to the EPA, the President's concern was that: "minority and low-income populations bear a disproportionate amount of adverse health and environmental effects." Today, the EPA further defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or a socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal and commercial operations ***or the execution of federal, state, local, and tribal programs and policies***." (Emphasis supplied.) EPA administrator Whitman in August 2001 stated that environmental justice would be an integral part of all EPA programs, policies, and activities. According to Whitman, the goal of the EPA's Environmental Justice program is that no segment of the population, including low-income citizens, suffers disproportionately from the EPA's policies, programs and activities. Furthermore, EPA has a mandate to provide for the equitable distribution of the burden of cleaning up sites. (The Office of Solid Waste and Emergency Response [OSWER] in their *Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development* mandates that "Environmental Justice issues should be considered at all stages of policy guidance and regulation development, beginning with preliminary efforts" and that environmental justice should be integrated into all agency actions. (OSWER Directive 9200.3-18FS, EPA540/F-95/023)

This above OSWER Directive also mandates that the economic/regulatory impacts of EPA decisions be considered in terms of environmental justice issues. Part of the EPA's environmental justice strategy is to promote a "sustainable economy" in areas affected by EPA rules, policies and programs. For example, OSWER Directive No. 9200.3-17 entitled *Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development* states: "Where environmental justice concerns or the potential for concerns are identified, staff should conduct an appropriate analysis of the issues(s). To the extent practicable, staff should evaluate the ecological, human health (taking into account subsistence patterns and sensitive populations) and socio-economic impacts of the proposed decision document on minority and low-income communities. Examples include how a policy on future land use would impact minority or low-income communities versus non-minority, affluent communities. The analysis should be documented and retained for public availability." (This has not been done by the Montana Office of EPA for Priority Soils.) The point is that the Montana Office of EPA has a mandate to consider how its enforcement/abatement actions will disproportionately and adversely economically affect low-income areas and has a mandate to mitigate disproportionate adverse economic impacts on low-income citizens. (See: *Incorporating Environmental Justice Principles into the CERCLA Process*, May 1998.) Low-income citizens should not bear a disproportionate or undue regulatory burden

when it comes to the development of cleanup activities. (EPA, Region 8, *Environmental Justice Action Plan*, April 2003)

The Region 8 of EPA also equates environmental justice with the legal concept of equal protection under the law. In April of 2003, Region 8 issued its *Environmental Justice Action Plan* which mandates that the agency will work with stakeholders to "correct and prevent inequitable environmental and public health impacts to any groups." In short, environmental justice mandates a particular concern with populations, such as low-income populations, that bear a disproportionate burden of environmental degradation and environmental regulations. "Fair treatment means that no group of people, including a racial, ethnic, or social economic group should bear a disproportionate share of the negative . . .consequences resulting from . . .the execution of federal, state, local and tribal programs and policies." (Headquarters Press Release, EPA, *Administrator Whitman Reaffirms Commitment to Environmental Justice*, August 21, 2003)

In meeting its obligation to remove in a permanent manner threats to human health and in meeting its obligation to promote environmental justice, the EPA choose to leave toxic attic dust in place and only remediate after dust was found to be contaminating living areas.

Superfund was designed not only to deal with actual harms to human health and the environment but also with threatened harms and potential threats. CERCLA specifically deals not only with release of hazardous substances but also with the "threat of" release "into the environment of a hazardous substance or pollutant or contaminant. CERCLA defines each of these terms quite broadly." (*Environmental Law Handbook*, p. 76.) Also, Superfund places an emphasis on treatment rather than containment for hazardous waste. [EPA, "Rules of Thumb for Superfund Remedy Selection," 40 CFR 300.430 (a)(1)(iii)(A)] Yet, in the Record of Decision for the BPSOU, the EPA determined that a onetime evaluation of the living spaces of homes in order to determine whether or not toxic attic dust was present was sufficient to meet it burden of protecting human health and promoting environmental justice. It is hard to fathom how EPA could argue that a one-time evaluation of homes was sufficient in order to achieve this purpose.

Based on what we know regarding toxic attic dust within the BPSOU and what we know concerning housing within the BPSOU, the following conclusions are warranted regarding evaluation of homes in the BPSOU for toxic attic dust exposure:

1. Toxic attic dust poses a threat to the health of residents of BPSOU.
2. Given the deteriorated and substandard condition of most of the housing units within the BPSOU and given the ease of creating new and/or expanded pathways of contamination, eventually, contaminated attic dust will seep into living areas and expose residents to toxic contamination.
3. This toxic burden falls disproportionately on the poor living with the BPSOU area and is not only a human health issue but also an environmental justice issue.
4. Given the deteriorated housing stock in the BPSOU, the EPA needs to be much more aggressive in attacking the problem of contaminated attic dust both in terms of more frequent inspections and evaluations of property (one-time inspections

are clearly not enough) and more rigorous measures to prevent pathways of exposure to contaminated attic dust from opening up.

5. It is contrary to the EPA environmental justice mandate to place the burden on the poor to monitor and report possible contamination exposure. The poor may well lack: knowledge of the contamination's presence, the dangers such contamination poses and how to report possible exposure and whom to report it to. Low-income citizens may be fearful of reporting potential exposure to a government entity, may be fearful of incurring personal liability by reporting or getting into trouble by reporting, if renters, residents may be fearful of getting "in trouble" with the owner, and residents may have a lack of knowledge of how the bureaucratic Superfund process works (after all, it is pretty Byzantine).
6. The EPA has the regulatory authority to modify institutional controls within the BPSOU in order to more fully assure that attic dust contamination is not entering into living areas within the homes of BPSOU.

EPA Response: *EPA has carefully reviewed the prior risk assessments and action levels for the BPSOU and is confident that those actions levels are protective, conservative, and account for the most sensitive sub-populations in BPSOU. Issues regarding trivalent arsenic, raised by the same commenter, were addressed in detail in the responsiveness summary to the BPSOU ROD, to which the commenter is referred. Comments regarding attic dust are addressed above and in the responsiveness summary. Environmental justice issues have been examined and addressed by EPA in four reports and responses on the issues raised in this comment in the following documents:*

- *EPA 2004. August 2, 2004 letter from Art Palomares (EPA – Environmental Justice Office) to John W Ray with subject of "Transmits and Discusses Environmental Justice Complaint Investigation" and a report dated August 2, 2004 from EPA Environmental Justice Program titled "Evaluation Report Environmental Justice Concerns at the Butte Priority Soils Operable Unit, Butte, Montana, Final Report".*

- *EPA 2005. August 23, 2005 letter from Art Palomares (EPA Region 8– Environmental Justice Office) to John W Ray with subject of "Risk Assessments for Butte Priority Soils Environmental Justice Complaint" – 6 page letter with five appendices.*

- *EPA 2007. January 23, 2007 letter from Art Palomares (EPA Region 8 Environmental Justice Office) to John W Ray – 13 page letter regarding the BPSOU ROD.*

- *EPA 2010. January 12, 2010 letter from Art Palomares (EPA Region 8 Environmental Justice Office) to John W Ray regarding the Residential Metal Abatement Plan – 4 page letter.*

Comment: It is problematic as to whether the Remedy as currently being implemented will reach populations of concern, particularly low-income citizens. The draft Five-Year Review pays no attention to this issue. There is little concern displayed in the draft Five-Year Review about reaching populations of concern, particularly low-income citizens.

The citizen education/community involvement approach articulated in the Remedy is inadequate. Yet, this educational/community involvement component is critical for the

success of the Abatement Plan. The Plan's approach places the burden of avoiding exposure to toxic wastes on the residents of Butte Priority Soils. Effective resolution of liability obligations is shifted from the PRPs to the non-liable citizens. This is a total convolution of the Superfund process that calls for cleaning up an area in order to protect human health and the environment. Superfund is not an education program but a cleanup program. Superfund places the liability for cleanup on those legally responsible for the pollution, not the victims of pollution. It is interesting that in the draft Five-Year Review discusses public involvement it characterizes that involvement is a one-step, linear process in which the EPA gives "information" to citizens. Contrary to EPA mandates, EPA public involvement activities are characterized in the draft Five-Year Review as essentially public relations activities in which the EPA attempts to "sell" the public on what the agency is doing. Efficacious public involvement up the EPA hierarchy is lacking. Substantive comments by the public that criticize EPA performance are ignored. Perhaps this is a by-product of the EPA evaluating the EPA.

The EPA mandate for meaningful public participation is particularly pronounced when it comes to providing opportunities for meaningful participation by low-income citizens. On August 9, 2001, EPA administrator Christine Todd Williams issued a memorandum entitled "EPA's Commitment to Environmental Justice" which in part stated: "The agency defines environmental justice to mean the fair treatment of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws and policies, and their meaningful involvement in the decision making processes of the government." She goes on to state that environmental justice means that everyone has "equal access to the decision-making process to have a healthy environment in which to live, learn, and work." The *Region 8 Action Plan* for environmental justice issued in April 2003 mandates a pro-active approach to include, among others, low-income citizens.

Although the institutionalized mechanisms and forums of participation have been provided with regard to Butte Priority Soils, contrary to EPA policy, there have been no pro-active attempts to specifically include or encourage low-income citizens to participate in the decision-making process. On August 21, 2001, the EPA stated that: "Fair treatment means that no group of people, including a racial, ethnic, or social economic group should bear a disproportionate share of the negative environmental consequences resulting from. . .the execution of federal, state, local and tribal programs and policies." Meaningful participation as defined by EPA is that "the decision makers seek out and facilitate involvement of those potentially affected." In April 1995 the EPA issued "The Environmental Protection Agency's Environmental Justice Strategy" which mandates that the EPA needs to reach out to, among others, low-income residents and needs to afford them particular consideration in the development and execution of EPA policies, rules, regulations and guidelines. Sylvia F. Liu, Attorney, Environment and Natural Resources Division of the U.S. Department of Justice, in an article entitled: "Environmental Justice: An Overview of Legal Issues," states that agencies should: "Consider conducting outreach to the affected communities to promote participation in agency decision-making process concerning remedies." (February 2000) So far, no specific outreach has been directed to the low-income citizens within Butte Priority Soils.

So far, the EPA has not reached out specifically to the low-income citizens who live within the Priority Soils area.

There have been developed no outreach programs that specifically target low-income residents of Butte. There has been extended no particular consideration of the effects of a waste-in-place solution on the low-income residents of Butte. The above lack of special attention to the low-income residents of Butte is at variance with the principles of environmental justice mandated under EPA rules, regulations, and policies. The proposed education program makes no special accommodation for reaching low-income citizens.

Public/stakeholder input is supposed to impact and shape EPA decisions.

Public/stakeholder input is supposed to inform and be taken into consideration as EPA formulates a remedy. It is hard to see how low-income citizens can impact EPA decisions regarding Priority Soils if they are not specifically represented in the decision making process. The above is another area ignored in the draft Five-Year Review for Butte area Superfund sites.

EPA Response: *Section 3.0 of the final RMAP (April 2010) outlines components of the community involvement program. The voluminous assertions and accusations presented by this commenter fail to show that the components of the RMAP community involvement program are inadequate. The RMAP presents innovative education efforts that target not only the population at large, but specifically educates key members of the citizenry that are involved in home remodeling and selling of property (contractors, developers, home inspectors, electricians, plumbers, and weatherization workers). Local hardware/home improvement stores provide educational materials to inform the "do-it-yourself" crowd. The program also educates day care centers, pediatricians, and various low-income assistance programs (WIC, LIEAP, Head Start). Furthermore, the RMAP requires each and every property in the BPSOU to be assessed and remediated as necessary. Approaching this in a systematic manner along with detailed tracking ensures that all properties are included, regardless of income level.*

Regarding environmental justice issues, see EPA's response above.

Summary--Public Participation and Environmental Justice

Comment: It is a basic tenet of democratic decision making that: "on all matters where social action is substituted for individual action, liberty exists only through participation either in decision making or in control of leaders who make the decisions." (Emmette Redford-*Democracy in the Administrative State*.) It is not just the ethics of democracy that mandates citizen participation, but the quality of public decisions is enhanced by public participation. The more people who are substantively involved in making a decision, the more information and the more perspectives that are brought to that decision. Public participation means that more alternative solutions are considered and the resulting decision will have greater credibility and legitimacy. Meaningful public participation promotes public civic education and increases trust in government institutions. Efficiency is also enhanced by public participation in that public acceptance of an agency decision decreases the likelihood of prolonged challenges to that decision. The law also

mandates that most public agencies take into account public comments in rendering their decisions. EPA policies, procedures, rules, and guidance documents certainly mandate significant and consequential public involvement.

Agency personnel should not view the provision for meaningful public involvement as simply a procedural hurdle that need only be formally addressed. There are valuable contributions that the public can make to the Superfund decision-making process.

1. Citizens know best how a decision will affect their interests.
2. Citizens know the local area.
3. Because it is concerned with the making and enforcing of government policy decisions, Superfund decision-making is as much, if not more, a political process than it is a scientific process. Cleanup decisions cannot be determined with the certitude of a mathematic or scientific theorem. Although there are those who would seek to avoid conflict by an appeal to the certainty of science (after all you can't argue with science), an appeal to "good science" cannot eliminate conflict. Correct environmental decisions lie in the realm of the probable and contingent not the certain and absolute. As an inherently political process, the public must not only be involved but also allowed to be effective in their participation by decision makers. For example, consider Superfund's nine criteria for remedial alternatives evaluation. These criteria do not have scientific or technological certainty or precision. How they apply to perspective decisions, what they mandate and what they do not mandate, how they relate to each other, what they mean, and their significance are the result of political processes, bargaining and decision making. If one takes cost, for instance, how do you determine with scientific and technical certainty whether or not an alternative costs too much? The very standards such as contaminant action levels and the risk assessment process are infused with politics. Often action levels are the result of political bargaining and represent the lowest common denominator of what is acceptable to the various groups fighting about where the levels should be placed. The notion of value neutral decisions in Superfund is unobtainable.
4. Even decisions that are based in science and technology have to be open to public scrutiny and comment**.** The expert must offer his or her expert opinion to the public in the public realm. The expert's opinion must be tested, analyzed and evaluated in the public realm. We do not, even in environmental decision-making, have a government of experts. To this end, it is important to remember that not all expertise resides in government or the PRPs. Members of the general public often have extensive knowledge, experience, and expertise in the areas under consideration in Superfund. The wanton corporate hubris displayed at a recent meeting on Priority Soils where public input was characterized as the articulation of "feelings" is a disservice and mischaracterization of the value of the public participation process. Unfortunately, some Montana EPA officials buy into this characterization of the nature and value of public input.

For reasons already articulated, the public has a right to participate in Superfund decision-making. The low-income citizens living in the Butte Priority Soils area have a special right to participating in decision-making regarding the site. For reasons already

articulated, EPA rules, policies, procedures, and guidance documents mandate efficacious and meaningful public involvement, particularly on the part of environmentally disadvantaged groups such as low-income citizens. For reasons already articulated, public participation produces sound environmental decisions. The specifics of my complaint address the issue of whether or not the Montana EPA really values public input into the decision making process regarding Butte Priority Soils. Does the Montana EPA allow public input to really impact a decision? Does the Montana EPA see public involvement, particularly involvement by low-income citizens as meaningful and efficacious? Does the Montana EPA afford meaningful opportunities, not just formal venues, for participation by low-income citizens? Given recent comments by Montana EPA decision makers, unfortunately, in terms of deeds, the answer is no. While the forms of public participation are present, the substance of efficacious public participation is missing. It will be the low-income citizens of the Butte Priority Soils area who will continue to bear a disparate toxics burden as a result of the failure to provide for meaningful public participation in the decision making process surrounding Priority Soils.

To me this is a significant test case regarding the efficacy of public involvement in Superfund decision-making. Does the Montana EPA really assign any weight to public involvement? Are we just going through the motions? If issues are effectively off the table of efficacious public discussion, if the primary elements of a remedy have already been determined regarding the "soils" element of Priority Soils while we are still in the RI/FS process, if the purview and purpose of citizen input can be limited to what the agency would like, if major emergency actions already taken are beyond public scrutiny and if significant elements of the remedy can be instituted by a PRP prior to the completion of the RI/FS and public comment, public participation in the Priority Soils decision has no substance. Some of the venues of public participation are there but the reality is absent, particularly for low-income citizens. What we have is "environmental theatre" where the script is already written, the outcome is already determined and the actors are simply playing pre-assigned parts and reading predetermined dialogue. Public participation in Superfund decision-making should be considered by the Montana EPA to be more than histrionics.

It is clear EPA policy that special effort needs to be made to ensure the maximum level of participation by low-income citizens. So far no special efforts have been made to ensure meaningful participation on the part of low-income citizens who live within the Priority Soils area. The draft Five-Year Review document does not address this issue.

EPA Response: *EPA appreciates and encourages public participation, and realizes it needs to do a better job of educating the public on new issues as well as continuingly reeducating the public and new citizens on the fundamental site issues and rationale behind those decisions. EPA considers every comment received, but has to weigh the public's opinion along with the other decision making criteria – and there are a lot of details to wade through to get to those decisions. Just because EPA does not make a decision that agrees with a comment does not mean that EPA did not consider that comment.*

As written, it is the opinion of the commenter that EPA is not doing an adequate job of reaching the poor. During community interviews, EPA specifically sought out not only the BSB Health Department, but

personnel at other programs who are also advocates for low income citizens. These people agree EPA and BSB are addressing environmental justice and outreach issues.

See also our responses above regarding community involvement and environmental justice issues.

Caps are not Permanently Protective of Human Health and the Environment

Comment: Yet, the BPSOU Remedy as currently being implemented makes extensive use of capping toxic waste left in place. The draft Five-Year Review Document ignores all of these substantive problems with Caps.

Problems with caps:

1. Metals can be remobilized through bio-irrigation. (Dueri, Sibylle, et. al., University of Laval, Quebec, "Modeling the Transport of Heavy Metals through a Capping-Layer: The case Study of the Flood Sediments Deposited in the Saguenay Fjord, Quebec.")
2. The long term efficacy of caps can be compromised by advection "related to consolidation, diffusion, chemical reactions, and the effect of . . . burrowing activity." (*Ibid.*)
3. Desiccation can cause cracking of the cap cover. (David Daniel, Professor of Civil Engineering, University of Texas, *Geotechnical Practice for Waste Disposal*)
4. The freeze-thaw cycle can produce changes in the structure and fabric of the cover and a way that increases hydraulic conductivity. (*Ibid.*)
5. Caps are difficult to construct correctly. (*Ibid.*)
6. Caps are difficult to maintain and repair. (*Ibid.*)
7. Erosion is a serious problem. (Jack Caldwell, U.S. Department of Energy, *Principles and Practice of Waste Encapsulation*.)
8. Biointrusion can compromise the effectiveness of the cap. (*Ibid.*)
9. Differential settlement of the cap can cause cracking. (Oweis and Khera, New Jersey Institute of Technology, *Geotechnology of Waste Management.)*
10. Caps require regular and often expensive repair. (*Ibid.*)
11. Stabilization of the cap is a problem. (*Ibid.*)
12. Caps present long-term subsidence and settlement issues. (*Ibid.*)
13. Because of their susceptibility to "weathering, cracking and subsidence" caps have limited long term utility. "Wind, rain, and generalized erosion over time can severely damage even a well-designed . . . cover." (U.S. Department of Energy, Office of Environmental Management, "Remediation Technology Descriptions: Containment.") See also: Merritt, Frederick (ed.) *Standard Handbook for Civil Engineers*, McGraw-Hill, New York.

The extensive use of caps as a cleanup method for Butte Priority Soils would do nothing to reduce the toxicity and volume and mobility of contaminants. Caps do nothing to clean up a site. The extensive use of caps as a cleanup method for Butte Priority Soils would not provide a permanent remedy. The extensive use of caps as a cleanup method for BPSOU would violate the Superfund mandate for treatment over containment. In short, the extensive use of caps for the BPSOU would not be protective of human health and the environment.

EPA Response: *The BPSOU remedy, including prior removal actions, involved extensive removal (for example, large volumes of contaminants were removed from the Lower Area One area) and capping of certain source areas. EPA recognizes the problems that can occur from capped waste, and included a detailed and thorough maintenance and inspection program in the BPSOU ROD for these caps, known as BRES.*

EPA's five year review found problems with the implementation of the BRES program and the condition of some of the caps in Butte. This is an example of the five year review process working as it should. The issue is noted as a primary issue and recommendation in the review. In response, EPA has met with the responsible parties and is increasing its oversight of the BRES implementation substantially. Reports on BRES implementation are now available, and more efforts are needed. EPA plans further enforcement efforts to ensure that the BRES capping requirements are implemented to ensure that the remedy is protective.

> **Comment:** Institutional Controls—The Public should be concerned about too great a Reliance on Institutional Controls for the Remedy as currently being implemented. The draft Five-Year Review ignores all of the problems related to institutional controls that are discussed at length in the following pages.
>
> Institutional controls per se do nothing to reduce the mobility, toxicity, or volume of contaminants. Institutional controls do nothing to clean up a site. The institutional controls being considered in the EPA's RI/FS for Priority Soils would seriously limit productive land uses and greatly compromise the property rights of owners to use their land as they determine. The extensive reliance on institutional controls is also contrary to the Superfund mandate of preference for treatment over restricted land use. Institutional controls do nothing to treat a site. The EPA's own document "Rules of Thumb for Superfund Remedy Selection" states that the law mandates a clear preference for treatment over all other approaches. "EPA expects to use treatment to address the principal threats posed by a site. . . ." [40 CFR 300.430(a)(1)(iii)(A)]. The above document also notes: "Institutional controls. . .generally shall not substitute for more active measures. . . ." (pp. 12-13)

EPA Response: *Institutional controls are specified in the BPSOU ROD. EPA has reviewed the cited guidance and agrees that institutional controls should not be used as a substitute for remediation. The BPSOU ROD requires substantial, active remediation of contaminants, and then supplements those requirements with practical and limited institutional controls. EPA believes that this use of institutional controls is consistent with the cited guidance and with the Superfund law and regulations.*

> **Comment:** The EPA itself has found significant problems with institutional controls at its other sites. In an article entitled "EPA, Think Tank Studies Show Superfund Land-use Controls Flawed, December 10, 2001" which summarizes "Superfund Report via Inside EPA.com" by Resources for the Future, we find these conclusions, reached by the EPA itself, which due to their significance, I will quote at length:
>
> "EPA and environmental think tank studies have shown that the federal and state governments' land-use restrictions at Superfund sites, known as institutional controls

(IC), are seriously flawed, with an agency study showing the controls are not reliably implemented and the think tank report finding the controls are dramatically under-funded."

"During a November 27 land use control summit, sponsored by the International City/County Management Association (ICMA), EPA officials and the Environmental Law Institute (ELI), outlined numerous shortcomings they have found with EPA's IC monitoring and enforcement efforts nationwide. While EPA released the results of a study showing EPA has failed to ensure Superfund ICs are reliably implemented, and ELI study indicates that EPA's ICs are dramatically under-funded."

"Bruce Means, of EPA's Federal Facilities Restoration and Reuse Office, told attendees that preliminary studies show that half of the ICs implemented under Superfund records of decisions (ROD) were mischaracterized. During a study of RODs conducted during 1999 and 2000, the agency found that half of the ICs established under RODs were not implemented as the agency had planned."

"And Jay Pendergrass of ELI outlined the preliminary findings of ELI's study of state's IC programs, which showed that the programs are severely under-funded."
"In a draft version of the report, Pendergrass found that state environmental programs are underfunded and as a result the sites allocate very little time on IC implementation. The funding and staffing shortfall 'raises concerns about whether [ICs] are implemented as intended and [are] as protective as intended."

"An ICMA source agrees that EPA has serious problems with its IC program, saying that the agency has many RODs with vague or inconsistent references to such controls." (pages 1-2)

The greater the cleanup of the Butte Priority Soils Operable Unit, the more the site can be used productively. The less cleanup of the BPSOU, the less the site can be used for residences and recreational uses. Given the EPA's admission that institutional controls have failed it in the past, it is amazing that the remedies listed in the RI/FS for Priority Soils call for such extensive use of institutional controls.

EPA Response: *EPA has insisted that a detailed institutional control plan be developed by the responsible parties to address these very issues. That plan was released for informal public comment, and the final version of the plan will address public comments. EPA, via its enforcement mechanisms, is insisting that the limited institutional controls found in the BPSOU ROD are clearly implemented, enforced, and funded, via the plans.*

Comment: Other Problems with Institutional Controls:

a. There is a tendency not to implement institutional controls as time passes. Frequently institutional control mandates are not carried to completion.
b. The effectiveness of institutional controls usually depends upon the ability, personnel and resources of the local government to implement. Often local governments do not have the personnel or resources to devote to the implementation and monitoring of institutional controls. Given the national

administration's proposed cutbacks in Superfund allocations, resources will be increasingly unavailable on the national level to monitor implementation and effectiveness of institutional controls. Certainly the financial capacity of Butte's local government to implement and monitor institutional controls is greatly limited. Nowhere does the EPA's comprehensively address the above issue.

c. "Institutional controls rely heavily on humans to implement, oversee, and administer them. It is human nature to ignore tasks that no one else seems to care about or where the purpose is not readily apparent. Residual hazardous substances are a classic example of a problem that is not readily apparent." ("Protecting Public Health at Superfund Sites: Can Institutional Controls Meet the Challenge?" Environmental Law Institute, p. 2)
d. Although EPA must review the remedy every five years, the frequency of this review process may be insufficient to detect the failure of institutional controls.
e. The use of education as part of the institutional controls strategy is a substantial part of the EPA's approach to implementing institutional controls. Research of previous remedies under Superfund indicates that education programs fail to materialize.
f. "In addition to the direct costs of implementing institutional controls, their use can impose substantial indirect costs on communities, property owners, prospective purchasers and developers by limiting the ways a site may be used. The burden of the restrictions on use of the site falls on the property owner and the community, with the owner reaping potentially lower profits from use of the property and the community receiving lower social benefits from the allowed uses than would have been possible if no restrictions existed." (ELI, *Ibid.)*
g. Because the sites where institutional controls will be implemented will not be cleaned up and will present a continuing potential threat to human health, these sites will be off limits to development in perpetuity. It is difficult to see how the use of institutional controls meshes with the goals of the EPA's Superfund Redevelopment Initiative.
h. It is impossible to determine future possible land uses for the site nor is it possible to predict unanticipated land uses. (See: "Linking Land Use and Superfund Cleanups: Uncharted Territory," by Probst, Hersh, Wernstedy and Mazurek, *Summary of Findings*, RFF, p. 1)
i. "Institutional controls have more problems than just risk miscalculation. Breeches in the site because of future construction, or even animals may cause the control to fail. The lack of a required contingency plan, would not account for new remedies, new information, or failed institutional controls negatively impacts the effectiveness of the treatment. Institutional memory loss was well is an important factor. This memory loss occurs when a party decides to breach the original institutional control without its own knowledge. In fact, in the ICMA (International City/County Management Association) study, the majority of respondents (63%) said that breaches in the institutional controls on a site were highly or somewhat likely. Following up on that question, 30% of the respondents reported that no formal inspection schedule was set up to evaluate the site as require by law." (Erwin Tam, Environmental Science and Economics, UC Berkeley, "Analysis of Institutional Controls at California Superfund Sites.")
j. "Concern has been expressed about the long-term viability of institutional controls as a remediation tool. For example, they may be forgotten; enforcement agencies

may not effectively review properties or land users' actions; or land users simply may take their chances. Decision makers should weigh the full costs of such options, including capital costs, costs of long-term sampling and analysis, and costs of replacing equipment, as well as concerns about potential long-term risks associated with contaminants left in place, against the cost options that would remove the contaminants completely. Many local governments do not yet have the capacity and resources necessary to meet the challenges of long-term stewardship." ("Understanding the Role of Institutional Controls at Brownfields Sites: Major Concepts and Issues.")

k. Because institutional controls leave large amounts of contaminants in place, institutional controls will have to be perpetual. Who is to say what anticipated land uses come up for an institutionally controlled area? For example, fifty years after the record of decision for Butte Priority Soils is implemented, the contaminants will still be there threatening human health and the environment, but will the will be there to restrict land uses in order to prevent the release of contaminants. "Institutional controls 'work' only if they are complied with. And while this is true of any site remedy, institutional controls require monitoring and enforcement over long time periods." ("Linking Land Use and Superfund Cleanups: Unchartered Territory, Probst, et al., Resources for the Future Center for Risk Management.) Will the will to enforce institutional controls exist fifty to a hundred years in the future?
l. Legal, social and political pressures limit the effectiveness of institutional controls. (*Ibid*.)
m. The long-term effectiveness of institutional controls is unknown. "There has, however, been little investigation of what happens at sites on the National Priorities List (NPL) when land use plays a prominent role in the remedy selection process. There also has been little analysis of what institutions are involved in making land use decisions and maintaining land use restrictions over time. It is unclear what legal mechanisms are most effective, what institutions will be responsible for enforcing institutional controls, and who's going to pay for these additional responsibilities. We need to be able to answer these questions if land use-based remedies are to be protective over the long term." (*Ibid*.)

"Planners of long-term disposal systems have long recognized the difficulty of maintaining institutional control over property. . . ." (Jack A. Caldwell and Charles C. Reith, *Principles and Practice of Waste Encapsulation*, 1993, p. 35)

EPA Response: *EPA Region 8 hopes to learn from the problems identified in institutional control efforts at other sites, and has accordingly been specific in its description of limited institutional controls in the BPSOU ROD and has insisted on clear reporting, funding and implementation plans for the institutional controls from the responsible parties. EPA will maintain oversight of these efforts as they are implemented, and will review the yearly reports as well as address issues in the five year reviews for BPSOU which will continue for a long time.*

More on the inadequacy of Institutional Controls

Comment: Superfund's goal is to clean up hazardous waste sites that pose a threat to human health and the environment. Superfund cleanups should provide a permanent

remedy that, in part, reduces the toxicity, mobility, and volume of contaminants. Because Superfund has a strong preference for treatment, the use of institutional controls should normally not be a substitute for "more active measures (e.g. treatment and/or containment of source materials) as the sole remedy. . . ." (40 CFR 300.430(a)(1)(iii)(D). OSWER Directive 9355.0-69, EPA 540-R-97-013 makes essentially this same point that the use of institutional controls should be a remedy of last resort.

To the extent that contamination at a site is really cleaned up, the necessity for institutional controls is minimized. To the extent that institutional controls are used at a site to put waste off-limits, the extent of contamination cleanup is minimized. It is important to remember that the impetus for Superfund in the first place was a failure of institutional controls to prevent the contamination problems and resultant health effects at Love Canal where the institutional controls were not followed. Risk is a function of both toxicity of the materials on site and the degree of exposure to the hazardous waste. (*Effects of Future Land Use Assumptions on Environmental Restoration Decision Making*, DOE, Office of Environmental Policy and Assistance, RCRA/CERCLA Information Brief, DOE/EH-413/9810, July 1998, p.1) Institutional controls depend on limiting exposure to toxic materials and do nothing to lessen the toxicity of these materials. After institutional controls are implemented, the toxic materials that originally triggered the Superfund cleanup are still on site to threaten human health and the environment.

Superfund should be concerned about treating hazardous wastes so that they are no longer toxic and, if treatment of the waste is technically impossible, removing the hazardous waste to a repository where the waste will no longer threaten human health and the environment. "Our obligation is to free subsequent generations of the responsibility for caretaking our hazardous residues, not to saddle them with housekeeping chores which, if neglected, will result in the re-pollution of the environment that we worked so hard to clean." (Jack A. Caldwell and Charles C. Reith, *Principles and Practice of Waste Encapsulation*. Boca Raton: Lewis Publishing Co., 1993, p. 35.) Wastes that are institutionally controlled are still a permanent threat to human health and the environment.

The cleaner a site is after remediation, the greater the potential land uses for that site. The more contamination left after remediation, the less the potential land uses are for the site. "Citizens have pushed for the highest cleanup standards, arguing that an unrestricted use would allow a wider range of future development at the site." (Wernstedt, et. al., *Basing Superfund Cleanups on Future Land Uses: Promising Remedy or Dubious Nostrum?*, Resources for the Future, Discussion Paper 98-03, October 1997, p. 17) The institutional controls being considered in the EPA's RI/FS for Butte Priority Soils would seriously limit productive land uses and greatly compromise the property rights of owners. The extensive reliance on institutional controls is also contrary to the Superfund mandate of preference for treatment and cleanup over institutional controls that restrict land use in perpetuity. If the goal is to encourage productive land uses after Superfund cleanup, a clean site affords the most encouragement. If the goal is to protect human health and the environment, these toxic materials must be treated and/or removed.

The thesis of my comments is that the use of institutional controls for the Butte Priority Soils Operable Unit should be minimal. The draft Five-Year Review gives them a pass. Instead of extensive use of institutional controls to deal with the BPSOU contaminants, the toxics in Butte Priority Soils should either be treated on site or, if that is not feasible, be removed to a safe repository and treated there using appropriate innovative technologies.

The reasons for this conclusion are:

1. Institutional controls do not meet the Superfund mandate of really cleaning up a site. To clean up means to make free of contamination.
2. Institutional controls are not permanent remedies. Rather, institutional controls permanently leave pollutants in place.
3. Institutional controls do nothing to reduce the toxicity of the hazardous materials. Lead, arsenic, mercury, and cadmium don't naturally attenuate over time, but keep their toxicity indefinitely.
4. Institutional controls are designed, implemented and monitored poorly.
5. Institutional controls have inherent enforcement problems.
6. Institutional controls have severe legal problems that work against effective reduction of the threats to human health and the environment posed by toxic materials.
7. Institutional controls are ineffective.
8. Institutional controls for a Superfund site are usually the result of a defective process that limits public participation and which leads to a haphazard development of institutional controls for a particular site.
9. Institutional controls are poorly understood and poorly defined.

EPA Response: *The final five year review report for the BPSOU does not give institutional controls as pass. Rather, it lists the institutional controls specifically and discusses the status of implementation for these controls. The institutional controls required at BPSOU are not substitutes for cleanup but are important supplemental actions for the active cleanup components for the BPSOU remedy. As noted, EPA has insisted on detailed implementation plans from the responsible parties for the BPSOU institutional controls, and EPA will oversee and monitor these efforts carefully.*

Institutional Controls are not Effective

Comment: **A.** The EPA itself has found significant problems with the effectiveness of institutional controls. For example, in an article entitled "EPA, Think Tank Studies Show Superfund Land-use Controls Flawed, December 10, 2001" which summarizes "Superfund Report via Inside EPA.com" by Resources for the Future, we find the following conclusions:

1. Institutional Controls are not reliably implemented. The EPA study found that over half of the institutional controls implemented under EPA issued records of decision are mischaracterized and that half of the institutional controls were not implemented according to EPA plans.
2. Institutional Controls are dramatically underfunded.

> 3. Monitoring of institutional controls is poor. Another study of California Superfund sites entitled: "Analysis of Institutional Controls at California Superfund Sites" by Erwin Tam of the University of California—Berkley found that 30% of the sites had no inspection schedule as required by law and in 63% of the cases it was felt that compromise of the institutionally controlled site was likely.
> 4. Enforcement of institutional controls is poor.
> 5. ROD's tend to have "vague or inconsistent references" to institutional controls.

In a study done by English, et. al. of the University of Tennessee entitled *Institutional Controls at Superfund Sites*, (July 1997. Hereinafter cited as *Institutional Controls at Superfund Sites*.), which was funded in part by EPA; the EPA's remedial project managers admit the above listed problems (1-5) with institutional controls. The report concludes: "Perhaps most importantly, the results of this study point to a fairly strong sense of unease on the part of some RPMs with the efficacy of institutional controls. This finding is consistent with discussions in the literature on the efficacy of institutional controls." (p.67) No wonder noted engineers Jack A Caldwell and Charles C. Reith stated in their book *Principles and Practice of Waste Encapsulation*, that "Planners of long-term disposal systems have long recognized the difficulty of maintaining institutional control over property. . . ." (p. 35)

B. "To the extent that responsibility for selecting and maintaining the long-term effectiveness of the remedy will become contingent on the intent and actions of a more diffuse set of institutions—local government, private property laws, current and future property owners, land recordation offices, the courts—the ultimate effectiveness of a remedy to protect human health and the environment will become increasingly difficult to assess." (Hersh, et. al., *Linking Land Use and Superfund Cleanups: Uncharted Territory*, Center for Risk Management, 1997, p.49. Hereinafter cited as: *Linking Land Use*.) If institutional controls become a prime remedy for the Butte Priority Soils Operable Unit, the community will have to live with these controls, effective or not, in perpetuity.

C. The success of institutional controls will depend on changing the way people behave which is very difficult.

> Managing human behavior is an extraordinarily difficult task. None of the institutional controls in use, or under consideration for future use, is foolproof. None can reduce to zero the risk of human or environmental exposure to hazardous substances left in place at a site. Nor is there a universal, all-purpose institutional control appropriate for all sites. (Environmental Law Institute, *Protecting Public Health at Superfund Sites: Can Institutional Controls Meet the Challenge*, 1999, p. 13. Hereinafter cited as *Protecting Public Health*.)

The risk of human exposure is considerably less if the toxics are treated to make them non-toxic or if they are removed to a repository where the public cannot come in contact with them.

D. The relationship between land use and toxic exposure is not well understood and can have a great deal of variation.

Institutional Controls have Inherent Limitations

Comment: **A**. Institutional controls do nothing to reduce the toxicity or volume of contaminants. Institutional controls, per se, are not that effective in reducing mobility of toxics off-site. To be protective of human health and the environment, institutional controls would have to last as long as the toxics last. "Substances such as lead, mercury, arsenic, and cadmium will not degrade at all and will remain potentially hazardous unless removed or treated. In order to effectively protect against exposure to such long-lived risks, institutional controls would need to last essentially for as long as humans are expected to live on the planet."
(*Protecting Public Health*, p. 13.) No institutional control has this needed level of permanence. If institutional controls are used instead of removal and/or treatment, these controls will have to work in perpetuity. Remember, toxic heavy metals such as those found at the BPSOU do not lose their toxicity over time. Yet, institutional controls are predicated on the designated land use of a sight existing in perpetuity—a flawed assumption. Land use changes are the most frequent changes in a locality.

B. Institutional controls also increase the likelihood that people will unknowingly be exposed to hazardous materials. Leaving contamination on site will always pose a threat of exposure if the institutional control fails. Predicting the long-term efficacy of an institutional control system is very problematic.

C. As we saw with regard to lead exposure, very often, as time passes, it is determined that the contamination in place is more dangerous to human health and/or the environment than originally thought. In such a situation, the in-place institutional controls may not be sufficiently protective of human health and the environment. "Questions then arise about who should be responsible for additional controls or remediation, and about whether residual contaminants should be allowed only if their risks and methods of containment are well understood." (*Institutional Controls at Superfund Sites*, p. 36.) It is critical that we get the most protective remedy the first time around.

D. Since the implementation of institutional controls depends on people, human error or neglect is a constant problem. After a remedy is selected, the degree of interest in the implementation of the remedy does not match the degree of interest shown during the remedy selection process. "Residual hazardous substances are a classic example of a problem that is not readily apparent, and the tasks associated with implementing institutional controls are unlikely to be the focus of widespread public attention in many cases. Thus, decision makers should plan for a relatively high probability that the person charged with the responsibility to implement an institutional control will fail to do so because that task is not a high priority for that person or because it is a task without a specific deadline and can therefore be postponed indefinitely." (*Protecting Public Health*, p. 103) The efficacy of an institutional control depends on human judgment and "the judgment of any individual may be questionable in a specific situation and a poor

judgment about implementing institutional controls could cause people to be exposed to hazardous substances." (*Protecting Public Health,* p. 105)

EPA Response: *See our responses to similar comments above.*

The Meaning and Understanding of Institutional Controls is Problematic

Comment: A. What are the institutions that will be charged with controlling the toxics? How will these institutions coordinate their activities? Who will devise these institutional controls? Who will have enforcement responsibility? How will these controls be enforced?

What is meant by controls? To what extent will the nature of these controls be the result of political processes rather then good protective environmental and scientific technology? Who will monitor the institutional controls? How often will the controls be monitored? How will they be monitored? All of these questions must be satisfactorily answered before the public can have any confidence in the protectiveness of the controls. Yet, in far too many cases where EPA has extensively utilized institutional controls, these questions have never been answered. Nor is there any consensus as to how they should be answered.

B. "When we admit societal values, power, political leverage, and notions of rights and duties into the picture, it becomes difficult to see 'controls' as anything but contested, and hence problematic. For institutional controls are not stagnant features of a remedy but are made and unmade in the course of experience by regulatory statutes, by the acuity of government oversight, by negotiations at planning board meetings, by the attitudes of bankers, developers, and others involved in real estate, by the limitations of scientific understanding of the health risks posed by toxic chemicals, by the vast and evolving corpus of real property law, by public trust in government or the lack thereof, and, in a broader sense by the constellation of rights and responsibilities that inform a societal ethic." (*Linking Land Use*, p. 52. See also: T. Beatley, *Ethical Land Use: Principles of Policy and Planning* (Baltimore, MD: Johns Hopkins Press, 1994 and R. Platt, *Land Use and Society: Geography, Law and Public Policy* (Washington, D.C.: Island Press, 1996)

Even if there were some agreement on the nature and role of institutional controls, that agreement would be fleeting.

EPA Response: *EPA has required ARCO, the primary responsible party for the BPSOU, to conduct detailed and thorough implementation evaluation for institutional controls during the RI/FS, and these reports are reviewed periodically by EPA enforcement personnel and are in the administrative record of BPSOU. As noted, EPA has insisted on specific and detailed implementation plans, which address roles and funding, and EPA will oversee and monitor these efforts.*

The Effectiveness of Institutional Controls is Compromised by a Dependency on Local Government

Comment: **A**. It is impossible for local government to predict future land uses. Most land use planning is done in a very piecemeal, incremental fashion. One of the great faults of incremental decision-making is its inability to predict accurately or to plan for possible future events that differ from the present.

B. Often the development of institutional controls occurs after the record of decision has been determined. This later development limits public participation and limits local government input into the design and implementation of institutional controls. If institutional controls are imposed on local government after secret consent decree negotiations, local governments may well see no compelling reason to be pro-active in enforcing or monitoring these controls.

C. Often the development of specific institutional controls is more of a political process rather than a technical or scientific process. The essence of the political process is compromise which compromises may not be protective of human health and the environment. "When institutional controls are used to assure protection of human health and the environment, the technical adequacy of the remedy becomes dependent on a number of non-technical factors over which EPA has little influence. These include: the efficacy of local government administration; the consistent application of zoning ordinances; the ability of private property restrictions (such as easements and restrictive covenants) to bind both current and successive users of the sites; and prompt enforcement." (*Linking Land Use*, p. 7.) Land use planning on the local level is often not systematic but results from the compromises that are endemic to the political process. Often land use planning decisions represent the interests of developers, bankers, real estate agents, and etc. rather than the interests of the general public.

D. The lack of consistency in developing and applying land use controls on the local level means that institutional controls are not very dependable or reliable. "In no area of American law are there such frequent requests for amendments to the law (rezoning requests) or minor revisions to the law under the guise of an administrative actions (variance, special exemptions, and so forth." (*Linking Land Use,* p. 61) In fact changing zoning is the most common form of land use action which local government takes. (*Ibid*., p. 62) E.D. Kelly in "Zoning" states this process is inherently "unpredictable and unfair." (Found in *The Practice of Local Government Planning*, 2nd ed., ed. F.S. So and J. Getzels (Washington, D.C.: ICMA Training Institute, 1988) Variances are also frequently given. B. Collingsworth in *The Political Culture of Planning* notes: "Various studies have convincingly shown that boards of adjustment (or appeal) commonly operate according to their own sense of what is right, with little regard to the law, or even their local planning department." (New York: Routledge, 1993, p. 7) English, *et. al*. conclude in *Institutional Controls at Superfund Sites* that: "local governments can repeal or modify any ordinance that they create. In no other area of American law are there such frequent requests for amendments to the law, and decisions about land use have been among the most controversial and contested issues in many communities. Furthermore, some zoning ordinances place few locational constraints on residential construction, and, especially if a local government does not agree with the proposed Superfund remedy, it may be unwilling to cooperate by amending its zoning ordinance." (Energy, Environment, and Resources Center, University of Tennessee, July 1997. Hereinafter

cited as: *Institutional Controls at Superfund Sites*.) For example, most restraints on local governments ability to change zoning regulations are procedural not substantive.

E. Local governments also face serious problems regarding the long term, permanent application of institutional controls. Enforcement of institutional controls by local government has been called "the weakest link of the chain." (Claudia Kerbawy, telephone interview with Robert Hersh, November 1995. Kerbawy is Chief of 307, Environmental Response Division, Michigan Department of Environmental Quality, Lansing, Michigan quoted in *Linking Land Use*, p. 65.) E.D. Kelly in *Enforcing Land Use Controls* calls local enforcement and monitoring of institutional controls "a planner's paradise but an enforcement nightmare." (Planning Advisory Service, Report Number 409 [Chicago: American Planning Association, 1988], p. 4)

F. The effective use of institutional controls demands coordination between and among several levels of government—a difficult, if not impossible, task. Several government agencies may be charged with selecting and implementing the institutional controls. The lack of coordination and cooperation between these agencies can doom institutional controls to failure. So often in the past, institutional controls have been selected on the federal level and the local government has been charged with implementation. Yet, often the local government does not have the authority, funding, interest in or commitment to the institutional controls imposed on it. Coordination and commitment problems can mean that the institutional controls will not be implemented as planned and will not be effective. "The entities responsible for implementation and operation of institutional controls must support the controls selected and have the authority, resources and commitment to enforce them. Because institutional controls may be essentially an unfunded mandate and can conflict with other interests of a locality or state, such as economic development, local acceptance is particularly important." (*Protecting Public Health*, p. 98)

G. The often-poor record keeping of the land use conditions that have been imposed on a Superfund site also compromise enforcement. Even conscientious developers may not be able to ascertain what restrictions have been placed on a piece of property they wish to develop.

H. Problems with local funding also limit the enforcement of institutional controls.

> "The long term efficacy of institutional controls must be based on regular monitoring, PRP or site owner compliance, and prompt enforcement; yet funding for environmental monitoring and enforcement at the local level has been reduced, and noncompliance with property-based restrictions can be difficult to detect. With deep funding cuts for environment enforcement activities at both the federal and state levels, there is a strong possibility that noncompliance with institutional controls will go unnoticed. Institutional controls work only if they are complied with. While this is true of any site remedy, institutional controls require monitoring and enforcement over long time periods and are thus more problematic. If we define a right to exist only when there is a system to protect the holder of the right from action or claims of another, to what extent should we see the increased use of institutional controls as a process that reduces the rights

of nearby residents or workers on remediated sites while privileging those of past polluters? " (*Linking Land Use*, p. 68)

I. Local and state governments experience great turnover of staff. Institutional knowledge about the institutional controls is lost when there is a constant turnover of knowledgeable personnel.

EPA Response: *The Butte Silver Bow County government is a responsible party for the BPSOU Site. As such, its personnel have been involved in the development of the detailed institutional control plans for the site. Funding and follow through are important issues for local government implementation of institutional controls, and EPA has insisted on detailed implementation plans for the ICs at BPSOU which will, hopefully, address the concerns raised by this comment.*

Legal Issues Limit the Effectiveness of Institutional Controls

Comment: **A**. Another problem complicating the use of institutional controls are the courts. The courts can potentially play a significant role on land use decisions and land use decisions can be very litigious.

"Although the courts try not to make substantive zoning decisions, judicial attacks on local land use regulations are well documented in case law and in the planning literature and constitute yet another source of uncertainty to the effective working of institutional controls at Superfund sites. In view of the wide variation in the decisions of state and appellate courts concerning the limits of police power to regulate land use and the need for Constitutional protection for the individual, it is easy to envisage the possibility that an owner of a site that is encumbered with a use restriction may challenge and successfully invalidate an institutional control, such as a zoning restriction, on the grounds that the restriction will cause a severe burden and, as such, constitutes a taking of private property by the government." (*Linking Land Use*, p. 64)

B. The NCP does not clearly specify the legal authority for institutional controls. Because there are no detailed statutory specifications of institutional controls, institutional controls are often left to the end of the remedy selection process where public input is minimal. Leaving them to the end is problematic in that: "If you leave institutional controls to the last and you can't get them implemented, then you're stuck. You're at a dead end rather than the destination of the record of decision (ROD)." (Claudia Kerbawy, *op.cit*., p. 53)

C. On a practical level, it is unclear who should monitor and enforce the institutional controls. RODs usually have little specificity regarding the implementation and monitoring of institutional controls. Often the specification of the nature and types of institutional controls is very general. Questions abound regarding what kind of monitoring will be performed, who will perform the monitoring, how and what type of enforcement will occur, what will be the frequency of the monitoring, and who is responsible for maintaining the protectiveness of the institutional control arrangements. The technical remedy is determined first and then institutional controls are developed to protect the remedy. Yet, it is often difficult to get acceptance by property owners or PRPs after the ROD is issued

D. Given that issues related to institutional land use/property control are not based in federal law but are based in state property laws or the local police power, federal control of institutional controls on the local level is very limited. CERCLA provides EPA with oversight authority over institutional controls that are part of the ROD remedy but CERCLA provides no mechanisms to enforce that control. Every five years, EPA can amend a remedy when contaminants are left in place, but during that five-year period the supervision of institutional controls is with the local government. Much to compromise a remedy can happen in five years. Moreover, there are serious proposals in Congress to remove the five-year review process. Hence, federal supervision of institutional controls is very problematic and could disappear altogether.

E. It is very problematic whether an institutional control on a current owner of a particular property would bind subsequent owners of that property. "Can third parties (for example, community groups or the local government) enforce a restriction at a site if the property owner fails to comply with the control and the holder of the easement, for example, (EPA, a PRP, the state government, or a local government if signatory to the agreement) fails to act properly? (*Linking Land Use*, p. 57) In *Environmental Regulation of Real Property*, N. Robinson comments that institutional control covenants are very complicated and that "they often defeat the attempts of parties to write covenants which will be enforceable against successors." (pp. 6-16) For example, the form of future property ownership must be similar to the existing type of property ownership for an institutional control restriction to continue in force. Once a property is sold to a new owner, monitoring of what the new owner does on the property is diffuse if it exists at all.

What happens in a commercial venture if the purchaser of the property goes bankrupt? Who is responsible for the institutional control restrictions on the property? Who will enforce these restrictions? State laws regulating the use property are Byzantine.

> "The common law tradition of different types of ownership could limit long-term effectiveness of (institutional controls') reliability if they fail to bind third parties to the agreements worked out in the consent decree, and the question of authority—who holds an easement and on what legal basis can the government or some other entity challenge noncompliance with the easement or deed restriction—is, again, open to interpretation. These issues suggest that proprietary controls, negotiated between PRP/site owners and government (federal, state, local) may be insufficient by themselves to effectively ensure the long-term safety of the public from residual contamination. Their reliability hinges on how carefully they are devised, the authority and willingness of the party holding the rights to use them, and the willingness of a property owner to comply." (*Linking Land Use*, p. 58)

F. Multiple owners or multiple use of a site also compromise the ability of government to police institutional controls.

G. The "touch and concern" doctrine can limit the efficacy of real covenants in the institutional control process. "Equitable servitudes" also are limited in their effectiveness by the "touch and concern" requirement.

H. Liability under institutional controls is problematic.

> "When institutional controls are created, it is important to determine who will be liable in the event they fail. Even if the EPA has entered into a consent decree at the time of the initial site remediation releasing PRPs from liability for residual contamination, questions remain about liability if the institutional controls are violated. For example: If the current property owners allow development that violates use restrictions, are they liable, are the original PRPs liable, or both? If people are harmed by such a violation, would they be able to sue the current property owners, the original PRPs or both?" (*Institutional Controls at Superfund Sites*, p. 34)

I. Another difficulty is that land use controls are "vulnerable to changing legal interpretations about the nature of property rights." (Wernstedt, et. al., *Basing Superfund Cleanups on Future Land Uses: Promising Remedy of Dubious Nostrum?,* Resources for the Future, Discussion Paper 98-03, October 1997, p. 16) For example, if the courts expand the scope of takings decisions to increase the extent to which government regulations are viewed as a "taking" then the efficacy of institutional controls will be diminished.

EPA Response: *EPA was careful to select institutional controls in the BPSOU ROD that are based on careful and detailed legal research and are implementable. The institutional control implementation plans developed during the remedial design process are meant to address many of the concerns expressed in this comment, and will be monitored carefully by EPA.*

Summary

Comment: Based on the above one can, in summary fashion, conclude:

1. Because the data upon which the remedy was based is incomplete, inadequate or insufficient, additional investigation is mandated.
2. Because the assumptions upon which the remedy is based are unsupported, additional investigation is mandated.
3. Because toxics of concern were not recognized and evaluated in the original remedy selection process, new investigations should be conducted and, if needed, the remedy should be modified to remediate these new toxics of concern.
4. Because there are workability/implementation problems, the remedy must be changed.
5. Because the Community Involvement Program is inadequate, particularly in terms of environmental justice issues, the Community Involvement Program must be modified.
6. Because of inherent problems with Institutional Controls and the degree to which the Priority Soils Remedy's effectiveness depends on Institutional Controls, the implementation of Institutional Controls at the Priority Soils site warrants strict scrutiny.
7. Because of inherent problems associated with caps, the difficulties inherent in the use of capping hazardous waste must be addressed.
8. Because of new data, the Priority Soils Record of Decision must be significantly modified.

As I have indicated throughout this document, although the EPA was made aware of these issues as the draft Five-Year Review was being written and although the EPA was provided with compelling support and data for these issues, the EPA in the draft Five-Year Review chose to ignore this significant citizen input.

EPA Response: *See our responses above to the issues raised in this summary comment.*

Comment: The BPSOU Remedy as currently being implemented must be modified in order to:

1. Remediate all attics containing toxic attic dust, both within the BPSOU and in areas adjacent to the BPSOU, regardless of whether or not a so call "pathway of exposure" to the toxic dust exists. If toxic attic dust in present, it should be remediated. The "pathways of exposure" approach to remediating attic dust will assure that the BPSOU remedy as currently being implemented will never be protective of human health and the environment.

EPA Response: *See previous related responses regarding attic dust. EPA believes that the Residential Metals Abatement Plan, including the public outreach and education components and the active cleanup components when exposure pathways are found addresses attic dust remediation and will be protective of human health at and near the BPSOU.*

Comment: 2. Comprehensively examine/assess/remediate all toxics/metals/elements of risk to human health and the environment found within and adjacent to the BPSOU.

EPA Response: *See the responses above regarding human health risk assessments and action levels.*

Comment: 3. Correct the health risk assessment omissions and remediation inadequacies listed earlier in this paper.

EPA Response: *See the responses above regarding human health risk assessments and action levels.*

Comment: 4. Officially stipulate that the arsenic contamination found in attics within and adjacent to the BPSOU is smelter dust and thus within the remediation purview of the Superfund program.

EPA Response: *Attic dust is being remediated under CERCLA. EPA has never asserted that the attic dust is not a CERCLA issue.*

Comment: 5. Develop, as part of the Remedy implementation, a comprehensive/effective/innovative community involvement program for the BPSOU that targets, in particular, low-income citizens.

EPA Response: *Section 3.0 of the final RMAP (April 2010) outlines components of the community involvement program for residential cleanup components of the BPSOU remedy. The RMAP presents innovative education efforts that target not only the population at large, but specifically educates key*

members of the citizenry that are involved in home remodeling and selling of property (contractors, developers, home inspectors, electricians, plumbers, and weatherization workers). Local hardware/home improvement stores provide educational materials to inform the "do-it-yourself" crowd. The program also educates day care centers, pediatricians, and various low-income assistance programs (WIC, LIEAP, Head Start). Furthermore, the ultimate goal is for each and every property in the BPSOU to be assessed and remediated as necessary. Approaching this in a systematic manner along with detailed tracking ensures that all properties are included, regardless of income level. EPA is hopeful that these efforts will address the commenter's concerns.

Comment: 6. Address and resolve the environmental justice issues that are discussed in this paper.

EPA Response: *See previous responses regarding environmental justice.*

Comment: 7. Justify the argument that remediating three toxics—arsenic, lead and mercury—will lead, automatically, to the remediation of all toxics present within the BPSOU.

EPA Response: *See our prior responses on this issue.*

Comment: 8. Place the burden of initiating remediation on the PRPs and not on citizens.

EPA Response: *The burden of remediation is on the PRPs (i.e., BSB's systematic sampling and abatement program). Should a citizen become concerned that their property needs sampling and remediation, or if they are part of a higher risk population, they can contact BSB Health Department for an assessment and remediation if needed, free of cost, and regardless of where BSB is currently working.*

Comment: 9. Be proactive in Remediation. The Remedy as currently being implemented places far too much emphasis on voluntary cleanup initiation and compliance by property owners, or renters or occupants. (The primary burden should be on owners.) Given the inadequate community outreach program articulated in the Plan, this is particularly problematic. While the PRPS for BPSOU need to be primarily responsible for implementing the cleanup of attics, however, the EPA needs to be pro-active also. For example, private property controls such as deed restrictions, restrictive covenants, or government controls such as notices and advisories of contamination existing on the property, permits and informational devices (for example, notices that would become part of property deeds) could be used. The EPA has no lack of statutory authority to enforce its cleanup decisions under CERCLA. In developing these controls, I would reference:

1. "Draft Guidance "Institutional Controls: A Guide to Implementing Monitoring and Enforcing Institutional Controls at Superfund, Brownfields, Federal Facility, UST and RCRA Corrective Action Cleanups" February 19, 2003
2. The Uniform Environmental Covenants Act
3. All of the enforcement tools available to EPA under the general heading of Superfund (CERCLA) law, policies and regulations. EPA has broad authority to regulate private actions in order to protect the public's right to a clean and healthy

natural environment. The contaminants found on private property within the BPSOU constitute a threat to the public health and welfare.

Certainly, EPA has the legal right to enter into such environmental covenants, controls and enforcement actions in order to protect human health and the environment from contamination now and in the future. If voluntary compliance fails, these, and similar, controls and enforcement actions can and should be used to gain access to contaminated properties in order to remediate them. (Perhaps, what could be done is to have some property owner/resident response level participation target or benchmark level and if that target or benchmark level is not met, mandatory compliance actions will be forthcoming. If participation levels are below benchmark targets, the EPA could use more aggressive measures. I am all for voluntary compliance as a first start but, if voluntary compliance does not work, more directive measures and procedures are needed. Hopefully, if coupled with a vigorous public outreach campaign, voluntary compliance will be successful.) In any event, the EPA needs to be more aggressive at identifying and remediating homes with attic dust contamination problems. Leaving attic dust in place is leaving a threat to human health in place, contrary to Superfund law. Not only is this contaminated attic dust a direct threat to human health, it also is a threat to the whole BPSOU remedy in that it leaves in place a potential source of recontamination of the BPSOU. In order to ensure a permanently protective remedy, it would seem that preventing attic dust contamination from migrating to other parts of the BPSOU would be required. This can only be done, with any level of assurance, if existing attic contamination is expeditiously remediated regardless of whether or not some "visible" pathway of contamination is observed. EPA must approach this remediation proactively, using the extensive legal rights it possess to compel, if voluntary measures fail, remediation under Superfund. Over reliance on voluntary measures does not guarantee that the threats posed by attic dust contamination will be successfully remediated. Voluntary compliance may be the place to start, but if voluntary compliance is ineffective, more aggressive measures are necessary.

EPA Response: *See our prior responses on institutional controls and attic dust.*

Comment: 10. Provide assurances that adequate monies will be available to implement the program.

EPA response: *EPA will use its enforcement authority to ensure adequate funding is provided for the BPSOU remedy.*

Comment: I would call upon the EPA to redo, totally, the draft Five-Year Review to answer the issues/concerns/complaints raised in this document and significantly modify the Record of Decision for Priority Soils in light of this information.

EPA Response: *EPA has spent considerable effort in producing the final five year review report to be readable and clear. EPA has also responded to all public comments on the draft five year review.*

Comments from the January 11, 2011 Public Meeting

DR. RAY: Thank you. My name is John, J-O-H-N, Ray, R-A-Y. This five-year-review process is really significant for Butte because so much of the Butte remedies call for leaving toxic waste in place. Contrary to my reading of Superfund law, which gives the preference for removal and/or treatment, the EPA, largely for cost reasons, has decided to leave vast amounts of toxic waste in place with the idea that the EPA can manage those wastes so that they are not harmful to human health and the environment. So this five-year review is particularly important because so much toxicity is being left by EPA in the Butte area. My focus of comments this evening is on the Priority Soils area, which is Uptown Butte. In the past, the EPA itself, the Office of Inspector General of the EPA, has criticized the five-year-review process for Superfund sites as being superficial and perfunctory. And we were assured that this five-year review would be different, that it would not be perfunctory, it would be comprehensive. The only thing, to me, that has changed in the five-year review that we have now is the length of the document. They have managed to kill a lot of trees and produce a lot of paper in evaluating performance of Superfund remedies, particularly in Priority Soils. But I would make the argument that it is still as perfunctory and superficial as it has been in the past; it's just a longer degree of superficiality and perfunctiveness. What are my concerns? One is the bias of the process. What you essentially have is the EPA evaluating the EPA, and, guess what, the EPA found that it's doing a wonderful job. There was no independent review or evaluation of the data or of the protectiveness of the remedy or anything like that. You had people who were essentially judges in their own cause and found that they were doing an excellent job.

EPA Response: *EPA respectfully disagrees with Dr. Ray's assertion of bias. Dr. Ray submitted a complaint addressing this issue to EPA Headquarters. EPA has responded to Dr. Ray in a letter dated March 4, 2011, which notes that EPA is required by law to conduct CERCLA five year reviews (EPA can't delegate this to third parties), and that EPA Region 8 has taken reasonable steps to avoid bias, such as the assignment of an EPA employee who was not directly associated with Silver Bow Creek/Butte Area Site remediation and the use of internal reviewers at EPA who are not directly associated with this site, to address this issue. A copy of the March 4, 2011 EPA letter addressing this issue is attached to this responsiveness summary.*

DR. RAY: A second problem that I have is a failure to consider additional information. One of the things that I found shocking in terms of reading the document, and then in the presentation tonight, was the identification of issues for Butte Priority Soils. I know I did, and several other people presented comprehensive information detailing new data regarding the protectiveness of the remedy, new data about the inadequacy of the health risk assessment on which this remedy was based. None of that data, none of those issues were considered by the EPA. And you can see that in the list of issues that they identify for Priority Soils. They are totally incongruent with what the public said were important issues. I would suggest they picked issues that they thought they could manage, but they don't get at the real problems in the Butte Priority Soils site.

EPA Response: *EPA respectfully disagrees with Dr. Ray's suggestion that it did not consider new information and new data for the five-year review. EPA did document and consider all information*

submitted by the public (see appendix A of Volume 1 the final Silver Bow Creek/Butte Area Five Year Review Report, which describes and catalogues all issues raised by the public). This includes new data on risk assessments as well as other concerns. The five year review report discusses all data and information in the manner which is proscribed by EPA's Five Year Review Guidance.

In the final version of the report, we have tried to be more clear and direct about our consideration of the information. We have also responded specifically and in detail to the comments received during the public comment period on the five year review through this responsiveness summary. EPA does not always agree with the points raised by various commenters, but we have tried to respond to them clearly, and we definitely have not ignored the comments or information.

EPA did not pick or pre-select issues based on factors such as the ease by which the issue could be addressed. EPA followed both the CERCLA statutory and regulatory provisions on five year review reports, as well as EPA's guidance for five year review reports carefully in the preparation of this report. The issues that resulted from that review resulted from a sincere and legitimate application of the applicable laws, regulations, and policies to the Butte Priority Soils Operable Unit (BPSOU) remedy implementation (and other Silver Bow Creek/Butte Area site OUs as well). EPA's rationale for consideration of these issues is presented in the final version of the report in a manner that we hope is clear.

> **DR. RAY:** Another problem I see is a failure to consider environmental justice issues. Uptown Butte, which is Butte Priority Soils, has a disproportionate number of low-income citizens who are disparately impacted by the toxics that EPA has decided to leave in place. Low-income citizens are more affected by these toxics than non-low-income citizens. They're more exposed to it, because of substandard housing, than non-low-income citizens. Environmental justice issues were raised during the scoping process for this document. They were ignored by EPA. Even though EPA has a mandate to consider environmental justice issues in all of their decision making, it's ignored. You did not see the words "environmental justice" tonight. And if you scan the document, you know, you do a Google search of the words, "environmental justice" never shows up.

EPA Response: *EPA respectfully disagrees with Dr. Ray's assertion that it has not considered environmental justice issues. Dr. Ray's environmental justice issues have been examined in detail on four different occasions by EPA experts in the environmental justice field, and comprehensive responses to Dr. Ray's complaints can be found in the reports and letters that EPA issued in response to Dr. Ray's complaints. The five year review report was prepared with those four reports in mind, and, like those reports, the five year review process did not identify deficiencies or issues or recommendations concerning environmental justice issues. All of the residential areas in the BPSOU will be sampled and cleaned up (if action levels are exceeded) under the BPSOU Record of Decision (ROD), as shown in the final Residential Metals Abatement Plan (April 2010) which was developed as part of the BPSOU ROD design process. EPA reviewed the BPSOU ROD action levels, including residential area action levels, in accordance with the five year review regulations and guidance, and found that they remain protective and conservative (and take into account intake and exposure routes of concern to low income people), and EPA's residential cleanup program has educational and outreach efforts and will address all residential areas and people in and near the BPSOU, including low income areas and residents. The four reports on environmental justice issues already issued for the BPSOU Site have looked at this approach and have found that it meets EPA's environmental justice policies.*

To be clear, EPA is committed to ensure that low income and elderly residents within Butte are informed about cleanup plans and that their property is addressed in a timely manner, just as other residential areas are. EPA prepared an information sheet describing these efforts and it is attached to this response to comments (the sheet was also published in local newspapers). These efforts include outreach and education via the WIC program, through childcare facilities and programs such as Head Start, low income and elderly housing programs, and local contractors.

These efforts and others are required under the Residential Metals Abatement Plan. EPA will carefully oversee and monitor Butte Silver Bow County's efforts, as well as all responsible party efforts, in implementing the plan carefully. EPA can require further efforts if needed. Add to re-state a primary point, ultimately, all residential yards and houses within BPSOU will be sampled and, if action level exceedances are found, remediated by removal of the contaminants from yards or exposed indoor areas (not left in place as stated in the comment).

Dr. Ray has been a strong proponent on behalf of low income and elderly residents within the BPSOU. This comment has served to re-enforce the need for the continued outreach and education efforts to these populations, and EPA renews its commitment to monitor these efforts closely.

> **DR. RAY:** Another problem is that of public participation. It's an ongoing problem, to me, with EPA. They provide the forums of public participation; it's the efficacy of that participation that's missing. You know, I was shocked -- Okay, they did interviews in preparing this draft document, but I know the comments that I made and the comments that a number of other people told me they made never appeared as being considered in this draft five-year review. They provide the forums, they don't provide the efficacy. And this is particularly true in terms of low-income citizens, where the venues that the EPA use to get public input totally ignore low-income citizens.

EPA Response: *EPA agrees that there is always room for improvement in the manner in which we conduct community outreach and involvement. EPA management has asked for a review of EPA's community involvement and outreach activities for the Silver Bow Creek/Butte Area site and especially for the Butte area. After publication of this report, EPA will pursue that review and see what EPA can do better and more effectively, using the community input received during the five year review interview process as a basis for that review.*

EPA conducted extensive community involvement activities for this report, including a large number of interviews. EPA compiled those concerns in Appendix A of Volume 1 of the five year review report. Section 2.3.3 of Appendix A lists specific concerns in detail. Many (not all) of the issues raised in the community interviews were then evaluated and discussed in the report itself. If EPA did not discuss the concerns, the narrative in section 2.3.3 discusses why that is (for example, some issues were simply outside the scope of what a five year review is – others involved parts of the remedy that were not fully implemented and could not be more fully evaluated at this time).

Appendix A also discussed community outreach and input for the site, and especially for the Butte area, in some detail. This appendix details a lot of public involvement activities, and describes the extensive interview process that began the five year review process. The Appendix contains a number of recommendations for improved community relation and involvement activities (see section 3 of Appendix A).

To summarize some of the specific activities EPA conducted for the five year review report effort, aside from the community interviews described in Appendix A, EPA published newspaper advertisements asking for public input to the report. EPA held several meetings with CTEC, EPA's TAG grant recipient, and other interested community groups about the report. None of these efforts ignored low income citizens, and EPA has encouraged and worked with CTEC to direct their efforts at community information and sharing to low income citizens. Finally, EPA published a draft version of the report, and accepted public comment. EPA has responded to the public comments received, in writing; and considered each issue raised in the public comment process carefully and thoroughly before completed the final report.

> **DR. RAY:** Another problem I see is regarding the Parrot Tailings. If you'll notice, it wasn't mentioned tonight. In the draft document, they mention it, and they say, We're not going to consider it because it's an ongoing issue. What is interesting for every one of the issues that were raised tonight, the statement appeared, This is an ongoing issue. Why was the Parrot Tailings separated out, even though it is an ongoing issue, but the other issues are ongoing? I would suggest because, again, new data calls into question the model that the EPA has used in deciding the risk involved in the Parrot Tailings. And the difficulty is that the new data provided, for example, by the Montana Bureau of Mines calls into question the EPA model. So what does EPA do? Well, if reality doesn't square with the model, let's ignore reality and stick with our model. That's why you didn't see it tonight. They're going to put it off for another five years before they consider the Parrot Tailings. The Parrot Tailings are a significant threat to human health and the environment in Butte, and it is unconscionable that the EPA is not addressing that threat in their five-year review.

EPA Response: *EPA respectfully disagrees with Dr. Ray's suggestion that we are ignoring the Parrott Tailings. EPA required the responsible parties to perform the pumping test that generated the new data for the middle ground-water zone in the area of the Parrott Tailings. These more detailed data are important to ensure that the design and implementation of the selected remedy are effective and protective.*

The Parrott Tailings are one source among many that contaminate or have contaminated the alluvial aquifer at the BPSOU. After detailed studies and careful review by several experts, EPA concluded that the BPSOU alluvial aquifer could not be remediated such that ground water standards for the aquifer could be met even if the Parrott Tailings were partially removed. EPA issued a technical impracticability waiver for the ground water. Rather than removal of the Parrott Tailings, EPA's remedy requires careful study of, and upgrades to, of the ground water interception/collection, pumping, and treatment system. Such a system will protect Silver Bow Creek surface water quality, and EPA's remedial design efforts are focused on those ROD requirements. EPA expects to be able to design an effective system and extensive monitoring program for ground water at the BPSOU through the ongoing remedial design process. This system will protect Silver Bow Creek from contaminated ground water, and treated ground water will meet ARAR requirements before discharge. The five year review report looks carefully at these issues and explains EPA's rationale for continuing with remedy implementation for this component of the BPSOU ROD aggressively. The report's specific look at this issue is an example of EPA trying to be responsive to public input, which did emphasize this issue as an issue of importance to many people.

EPA is not ignoring the recent data from the Montana Bureau of Mines and Geology about flow rates in one portion of the BPSOU alluvial aquifer. EPA required the pump test, shared the data, cooperated with MBMG in the preparation of its recent reports, including the flow rate report, and provided the funding for MBMG to assist EPA in the review and design of the remedy component addressing ground water interception/capture, pumping, and treatment. EPA acknowledges that some flow rate data is different than the data assumptions for flow rates used in the pre-ROD modeling efforts. However, flow rate data and predictions were just one component of the model and the EPA remedy decision on ground water, including the waiver of standards. The new data on flow rates does not change EPA's view that the aquifer cannot meet ground water ARAR standards in an efficient manner even with the removal of the Parrott Tailings and other sources. The aquifer is severely degraded, is not used for domestic purposes, will not be used for domestic purposes as domestic use is now prohibited under a well ban enacted by the State of Montana, and has ubiquitous sources of contamination throughout the BPSOU area. EPA has concluded that extensive removal of ground water contamination sources at BPSOU is implementable without severe disruption to commerce and public safety in Butte.

The new data on flow rates has been used to conduct remedial design assessments of the interception/capture, pumping, and treatment system, and the data will assist EPA and all parties to end up with a more effective and protective system.

The five year review report addresses these same issues in a consistent and appropriate manner. EPA notes that the State of Montana issued a restoration plan for the Butte area which does address the removal of the Parrott Tailings and other sources, and the State of Montana has funding, via court settlements, for implementation of this NRD restoration plan. EPA will cooperate with the State in the implementation of this plan if the State chooses to implement it.

> **DR. RAY:** Another problem, caps. They talk about the BRES system evaluating caps. The use of caps in Butte, particularly Priority Soils, is critical because they are leaving all the toxic waste in place. Studies in the past have shown that anywhere between 60 and 70 percent of the caps in Butte fail. Look at Anaconda recently, about the problems there where they've put in caps where nothing has grown. I raised, I know personally, some 15 problems with the caps in Butte in the material that I submitted to them prior to this draft; I know other people who submitted other problems. None of this was discussed.

EPA Response: *EPA agrees with Dr. Ray that cap maintenance in the BPSOU is critical. The five year review report emphasized problems with the cap maintenance program with clear criticism of the existing Operation and Maintenance efforts (called BRES under the BPSOU ROD) for the capped areas. This important, critical issue is identified in the list of issues and recommendations at the end of the BPSOU section of the report. EPA will follow-up vigorously with efforts to ensure that this portion of the ROD is implemented in a better fashion.*

EPA has met with the responsible parties who are required to implement BRES on several recent occasions. Although Dr. Ray's estimate of 60 to 70 percent failure is not accurate, EPA works with the responsible parties to identify and track all capped areas requiring repair and maintenance. EPA will issue enforcement documents to be sure BRES requirements are implemented and caps are repaired and maintained. We will continue to strictly monitor and oversee the BRES efforts at evaluation and improvement of caps and ongoing maintenance of the caps in a vigorous manner.

> **DR. RAY:** Institutional control, same issue; numerous problems with the institutional controls in Butte that were presented by the public to the EPA ignored in terms of this draft five-year review.

EPA Response: *EPA respectfully disagrees with Dr. Ray's suggestion that institutional controls were ignored. Evaluation of institutional controls was the topic in Section 6.5 of the BPSOU Five Year Review. Section 6.5 is 10 pages long, which is nearly one-quarter of Section 6. EPA is working with the responsible parties to finalize detailed institutional control plans as called for in the BPSOU ROD, and EPA will monitor and enforce these efforts once the final plans are approved.*

> **DR. RAY:** Although EPA is supposed to conduct a thorough, meaningful, complete, independent five-year review, that's not what we have. And I would suggest that the slides tonight mischaracterize what the five-year review is supposed to be. The five-year review is not supposed to just tinker on the fringes of a remedy. You heard over and over, We expect that the remedy will be fully protective, and then there were some issues that were raised. Five-year reviews are supposed to, if you look at the EPA's own documentation, consider new data, consider new inferences from the data, and look at the possibility of totally reworking the remedies in question.

EPA Response: *EPA respectfully disagrees with Dr. Ray, and believes that this five-year review is meaningful and was conducted in accordance with the statue, regulations, and guidance for conducting five-year reviews. The five-year review report is thorough and comprehensive, and the report contains several issues and recommendations (long and short term) that will be carried forward, addressed, and tracked for compliance and resolution. EPA's rationale for its review of the remedy and for development of the issues and recommendations is presented in detail in the text of the report. Several opportunities for public input were given, and public input was carefully documented and considered.*

> **DR. RAY:** New data shows these remedies are not working, they are not protective. The document itself talks about cancer rates in Butte that are caused -- cancers that are caused by exposure to toxic waste that are not decreasing, and, in some cases, are increasing. How, then, can the EPA maintain these are protective of human health and the environment when cancers caused by these toxic wastes are either remaining the same or actually increasing? This is ignored by the EPA.

EPA Response: *EPA respectfully disagrees with Dr. Ray's suggestion that new data show that EPA's selected remedy is not working. Although much work to design and construct components of the remedy has already been done, the full remedy for the BPSOU has not yet been completed. At this time, there are no data that would cause EPA to conclude that the selected remedy is not working. There are considerable data continuously being generated and evaluated for the site that have been incorporated into this five-year review. EPA has used these data to identify issues and develop recommendations in this five-year review.*

EPA is unsure what cancer rate information Dr. Ray refers to. The BPSOU section of the five year review report does note that blood lead data has shown a remarkable downward trend in Butte since residential remediation efforts began under Superfund.

In the course of conducting the five year review, EPA reviewed its action levels for lead, arsenic, and mercury and concluded that these levels are protective of human health from cancer and other harmful

effects. EPA also reviewed whether additional contaminants of concern needed to be identified for residential or other exposures, and found that addressing the three contaminants of concern listed above will address harmful human health exposures for other contaminants. EPA has worked with the responsible parties and Butte Silver Bow County to design a program that addresses mining waste exposures at residential areas and addresses other lead issues (such as lead in drinking water pipes) in a comprehensive way, so that added human health protection will be provided by implementation of the remedy.

EPA does agree that the residential soils and indoor dust cleanup program needs to be implemented for all residential areas at the BPSOU, and we have insisted on a clear schedule for sampling and cleanup (where action levels are exceeded) for all homes in the BPSOU. This is provided in the Residential Metals Abatement Plan, and EPA will monitor and oversee implementation of this plan to be sure the schedules are met.

> **DR. RAY:** What we have is that, essentially, the EPA invested itself in a remedy, and, as you would expect, if you're called upon to evaluate your own work, what are you going to say? Oh, we came up with an awful remedy that we need to change. There is a bias in favor of the remedy that you pick. The problem for citizens of Butte is that this process has yielded a sham five-year review, a cover-up, literally as well as figuratively, of a remedy that does not protect human health and the environment.

EPA Response: *EPA believes that the five year review report is comprehensive and thorough, and done in accordance with the CERCLA statute and regulations. Nothing was covered up or ignored – EPA simply did not reach the same conclusions as the commenter about the many issues raised. Issues of bias are addressed in the letter from EPA to Dr. Ray dated March 4, 2011.*

> **MR. GREB:** My name is Leland, L-E-L-A-N-D, Greb, G-R-E-B. One of the things -- besides what Dr. Ray has talked about, one of the things I have noticed and I have commented on more than a few times is that you're not using all the resources to inform the community about what is going on, what they can do, who they can talk to, so on and so forth.
>
> Since 2006, when the Priority Soils had been talked about, I have talked to Wendy about, you know, going to places like Rotary Club, Kiwanis, talking on the radio and so forth. And, basically, it's been the old phone-tag type of thing. And plus you're not using volunteers, you're not using the TAG like you should. You know, when the TAG has to worry about whether or not they're going to get their funding and keep their office open, then you've got a problem, because then you've got all these people that are willing to volunteer, willing to do things, but you don't have somebody that can do that paperwork that you require to do things.

EPA Response: *EPA has funded the TAG recipient, CTEC, for over twenty years. EPA is not aware that the group has ever been short on funds to the point of the organization shutting doors or not being operational. Over the past twenty years, EPA has hosted over 100 meetings and attended many others, including CTEC meetings, whenever requested. EPA representatives have appeared on radio shows about issues that were being discussed at the time on several occasions. EPA publishes monthly information bulletins in the local newspapers. EPA maintains a staffed office in Butte where residents can come and ask questions or seek information.*

MR. GREB: And the other thing is, this is the largest Superfund site in the United States, as I understand it. You have one person in town, one person who lives in town. The rest of you guys are up in Helena. I think that if you guys lived here, I think you would be more -- you know, you would look at the thing differently than because you live in the Helena and you get to talk to the Governor and so on and so forth. I don't know what you do up there. Maybe you just sip coffee, I don't know.

But it bothers me that you're spending all this money, but you're also spending all this time going back and forth, and you've got things -- You know, your faces should be on TV. The reporters on TV should know who you are. You walk down the street, you have a cup of coffee, and so forth. Joe Griffin, back there someplace, I've had coffee with him several times during the last year and we've talked about various things. That's the sort of thing that -- You guys should be available on an informal basis as well as a formal basis, and living up in Helena, you're not there.

You should take advantage of it, and the next guy that you import, like Nikia, base him here. There's plenty of office space. There's more than plenty of office space. You should establish something that, you know, people actually know where you are. And when you do, make sure that they know when the office is open. I've gone to the Butte field office, and when Sara has been gone and Jean is off doing something that she has to do personally -- You know, you don't know when they're going to be open. Your presence in the community should be there, you should be felt. You should have more public exposure. At least your public involvement people should know who the people are at radio stations and so forth and so on and should be on a first-name basis with them. That goes all the way back to who you're talking to. You're talking to an audience of the people that live here, and you're not doing it very well.

EPA Response: *EPA agrees that communication and education are a key part of Superfund cleanup implementation efforts at the BPSOU site. As noted above, EPA will re-evaluate its community involvement efforts after publication of this report and we hope we can improve our community involvement activities. Please see Section 3 of Appendix A of volume 1 of the report for a discussion of some specific ideas for this improvement process.*

EPA will work to ensure the Butte office is open at regularly scheduled hours, and that information is more available. A major lesson learned by EPA during this process is that it is necessary to present some of the same materials that have been presented in the past in order to educate new community members and especially new community leaders, in addition to presenting new material or new findings.

MR. PENHALIGEN: My name is Rich Penhaligen, and I have just one quick comment. I'm concerned as well with what Dr. Ray said about the Parrot Tailings not being part of this; I'm concerned about that issue.

EPA Response: *The Parrott Tailings are one source among many that contaminate or have contaminated the alluvial aquifer at the BPSOU. EPA concluded, after detailed studies and careful review by several experts, that the BPSOU alluvial aquifer could not be remediated such that ground water standards for the aquifer could be met even with Parrott Tailings removal, and EPA issued a*

technical impracticability ARAR waiver for the ground water. EPA's remedy did not require removal of the Parrott Tailings, but instead requires careful study of, and upgrades to, the ground water interception/collection, pumping, and treatment system. Such a system will protect Silver Bow Creek's surface water. EPA's current remedial design efforts are focused on those ROD requirements, and EPA expects to be able to design and implement a very effective system that will capture and treat contaminated ground water and protect human health and the environment. The remediation program will also contain an extensive monitoring program for ground water at the BPSOU. As noted, this system will protect Silver Bow Creek from contaminated ground water, and treated ground water will meet ARAR requirements before discharge. The five year review report looks carefully at these issues and explains EPA's rationale for continuing with remedy implementation for this component of the BPSOU ROD aggressively.

> **MR. PENHALIGEN:** And this is probably a stupid question, but why are we waiting for the water to get to the critical stage in the Berkeley Pit to start that type of pumping and treating?

EPA Response: *EPA is not waiting for water in the Berkeley Pit to get to the critical stage. The "critical water level" is a level determined by EPA at or below which the water in the pit needs to be maintained to ensure that surrounding ground water flows toward the pit. In other words, maintaining the water at or below this level ensures that all of the ground water within the area influenced by the pit will flow toward it rather than away from it. Determination of the appropriate level incorporated a reasonable margin of safety.*

EPA examined the bedrock aquifer contamination, underground mine shaft contamination, and the Berkeley Pit in the RI/FS and Record of Decision for the Mine Flooding operable unit, which was issued in 1996. Those studies and processes determined that the best solution for these issues was to determine at what point contaminated water would escape from these workings and aquifers to cause harm and uncontrolled releases outside of the bedrock aquifer and underground workings. The critical water level was established in the ROD as a way to measure that point, and an extensive monitoring system is in place to be sure that necessary actions are taken before the bedrock aquifer exceeds the critical water level. A treatment plant is in place (and is treating other contaminated water) which will receive the contaminated bedrock aquifer water when the critical water level is approached.

> **MR. WILLIAMS:** Yes, I have a question. And without specifically addressing the Parrot Tailings, let me read what's in the Technical Assessment Section 7. I'm Dave Williams. I'm with the Butte Restoration Alliance and CTEC, among other things. Has any other information come to light that could call into question the protectiveness of the remedy? There is no other information at this time that calls into question the protectiveness of the remedy. This is for Butte Priority Soils.
>
> Well, there most certainly is. And I will be shortly sending a letter to EPA that addresses some of those things that have specifically been identified by the Montana Bureau of Mines and Geology which identify some serious previous shortcomings in the work specifically with the Parrot Tailings.
>
> But the other question is, if you look at the stuff that you have for Butte Priority Soils, there are all these things kind of left hanging and you come to the same conclusion, that the remedy will be protective. I don't see how you can make that conclusion, when

there's so much hanging out there. But when we give you the input, we expect you to do something with it.

EPA Response: *EPA respectfully disagrees with Mr. Williams' interpretation of the new data for ground water in the area of the Parrott Tailings. The Parrott Tailings are one source among many that contaminate or have contaminated the alluvial aquifer at the BPSOU. EPA concluded, after detailed studies and careful review by several experts, that the BPSOU alluvial aquifer could not be remediated such that ground water standards for the aquifer could be met, and EPA issued a technical impracticability waiver for the ground water. EPA's remedy did not require removal of the Parrott Tailings, but instead requires careful study of, and upgrades to, the ground water interception/collection, pumping, and treatment system. EPA's current remedial design efforts are focused on those ROD requirements, and EPA expects to be able to design and implement a very effective system that will capture and treat contaminated ground water and protect human health and the environment. The program will also contain an extensive monitoring program for ground water at the BPSOU. This system will protect Silver Bow Creek from contaminated ground water, and treated ground water will meet ARAR requirements before discharge. The five year review report looks carefully at these issues and explains EPA's rationale for continuing with remedy implementation for this component of the BPSOU ROD aggressively.*

EPA cooperated with MBMG in the preparation of its recent reports, including the flow rate report, and has funding for MBMG to assist EPA in the review and design of the remedy component addressing ground water interception/capture, pumping, and treatment. EPA acknowledges that the flow rate data for a portion of the aquifer is different than the data assumptions for flow rates used in the pre-ROD modeling efforts. However, flow rate data and predictions were just one component of the model and the EPA remedy decision on ground water, including the waiver of standards. The new data on flow rates does not change EPA's view that the aquifer cannot meet ground water ARAR standards even with the removal of the Parrott Tailings and other sources; as the aquifer is severely degraded, is not used for domestic purposes, will not be sued for domestic purposes as domestic use is now illegal under a well ban enacted by the State of Montana, and has ubiquitous sources of contamination throughout the BPSOU area. Also, EPA also does not think extensive removal of ground water sources at BPSOU is implementable without severe disruption to commerce and public safety in Butte.

MR. McKEE: John McKee, J-O-H-N, M-C-K-E-E. My question is, if there's a general level of dissatisfaction with either the five-year report or just generally remediation on the hill at all, what's the appeal process other than another five years? Especially if people are submitting documents five years ago that haven't been addressed to their satisfaction. Where do we go if we're not happy with what's been done?

EPA Response: *There is no appeal process. EPA will continue to monitor all aspects of the remedy as it is implemented. EPA will continue conducting five year reviews for the BPSOU for the foreseeable future. It is EPA's responsibility to ensure that remedies protect human health and the environment and comply with all applicable or relevant and appropriate laws and regulations. We continue to try to address community concerns and incorporate the needs and interests of the local community into how remedies are selected and implemented. EPA will continue to evaluate our community involvement process and its effectiveness in an attempt to improve communication and involvement with the community in cleanup activities at the site.*

MS. ELLIOTT: Colleen Elliott, C-O-L-L-E-E-N, E-L-L-I-O-T-T. I'd like to hear a little more discussion about the cancers that Dr. Ray mentioned in his comment. I haven't read the whole review; it was really long. I didn't see anything about cancer in the sections that I read, but I'd be interested to hear a response to that from EPA.

EPA Response: *Please see our response above to Dr. Ray's questions on this issue.*

DR. RAY: The area, and this is off the top of my head, from the draft where it's discussed is in the Executive Summary, around pages 10 through 12. But there have been other studies, going back to some stuff that Johnnie Moore, from University of Montana, did, some of the toxic disease registry information at the hospital, where if you'll look at the kinds of cancers, like bladder cancer, that are caused by exposure to the kinds of toxics that you find particularly in Priority Soils, the rate in Butte has either stayed the same or actually increased. What I always find interesting is, EPA is now buying into the argument that industry makes that, well, we have these toxics of concern and we have cancer, but we can't draw the link between them because there could be all sorts of intervening variables. And the tobacco industry made the same argument, and a whole list of companies that have had toxic problems make that kind of argument, that you can't draw the causal link.

It's unfortunate when you hear that kind of argument from an agency that is supposed to protect the public. Because there have been studies after studies, even the EPA's own pig studies and urine studies and whatnot, that these toxics do cause problems. If they didn't, why are we bothering to clean anything up? And it's shocking when the agency is buying into this thing, well, we can't establish a causal link, so we're not going to worry very much about it.

One other quick thing, in responding to Julie's comment, she's right, there is no appeal. And that's one of the problems. You have a bureaucracy that is impervious to public comments, largely ignores the comments of elected officials, because of its position as essentially a fourth branch of government, and so holding an agency like the EPA accountable is difficult. Comments from before, I know a lot of data was presented, following the deadlines that Sara set up to provide comments in the draft review, about new data showing that the remedy was based on inadequate, incomplete, and inaccurate data. Nowhere in this draft review is it considered. I mean, it's one thing to talk about -- It's true, you can draw different inferences from the same data. That's one argument.

My concern is that the new data wasn't even mentioned or considered, and there were no inferences drawn from it in the draft review; it was simply ignored, from reputable sources. To be blunt, if it didn't conform to the EPA's predetermined notion of what would work -- and I do love that, we don't know what the remedy is, it's being implemented, but we're sure it will be protective of human health and the environment. I don't know that that's good science that would pass in a laboratory. But when new data from reputable sources is ignored, not even considered in the draft review, and it was submitted in a timely manner prior to the writing of this draft, it, to me, again, is a lapse in public accountability that this information was ignored.

EPA Response: *Most of these comments were addressed in prior responses. On the issue of toxic substances and cancer risks, the BPSOU ROD sets action levels for arsenic, lead, and mercury in soils, and requires that areas which exceed these levels are remediated. The actions levels that were set are based on detailed risk assessments which are done by professional risk assessors trained in health assessment, contaminant toxicity, and protection. The risk assessments use conservative assumptions to derive at conservative action levels for these contaminants which protect sensitive sub-populations, based on the potential for risk to human health from cancer or other human health impacts. EPA's approach for risk assessment has been reviewed by the National Academy of Sciences and other bodies, and EPA takes its responsibility for protection of human health very seriously.*

The ROD addresses known, potential threats to human health and requires significant action to ensure that human health in the BPSOU is protected. Several million dollars has been spent in Butte to implement prior removal efforts and the ROD requirements. The five year review report examines the specific ROD requirements, the current implementation efforts, and current data and other information, and makes conclusions about the continued protectiveness of the remedy as well as ways to improve implementation of the remedy. These conclusions are explained in detail with EPA's rationale provided. EPA understands that the commenter disagrees with EPA's rationale and conclusions, but that is different than saying that the remedy is somehow unknown or that the rationale and conclusions are not presented.

> **MR. OKRUSCH:** My name is Chad Okrusch, C-H-A-D, O-K-R-U-S-C-H. I wanted to also participate in the conversation and respond partly to one of the things that you said, Julie, and I think the general sentiment that we're feeling in here, at least that I'm observing as I'm watching this. You said you're tasked to protect human health and the environment. But you're also tasked -- Because of an executive order in the Clinton Administration, in reaffirming those executive orders about environmental justice, as Dr. Ray has brought up, you're also tasked with the messy business of not only opening up these forums for us to make our comments and to provide you with this information, as you mentioned earlier, it needs to be meaningful. And we're not suggesting that everything that we submit to you or alert you to is going to change the general drift and direction of the remedies that you have determined are the right pathways. But, for crying out loud, nobody in here feels like their voice is being heard or considered, and that means that you're not doing something right.

EPA Response: *EPA agrees that communication and community involvement are a key part of Superfund cleanup implementation efforts at the BPSOU site. EPA has tried to listen to and respond to community concerns throughout the lengthy BPSOU Superfund process. Cleanup actions have been prioritized and modified in response to public concerns, and that is how the soccer fields in Butte were built (the fields are actually a cap on contaminated material that were developed into a community use area rather than a fenced and capped area). Historical preservation efforts have been required under Superfund authority in response to community concerns about those important resources. EPA has always tried to respond in detail to public comments received on the proposed plan for the ROD and other documents which proposed cleanup action, and now is responding to comments on the five year review report in detail so that our consideration and response to public input is clear and available.*

The commenter is correct about the need to improve and adjust our community involvement efforts to be sure they are effective and responsive. EPA is in the process of re-examining those efforts, and will continue to work with the community improve communication and coordination in the future.

MR. PAYNE: I'm Scott Payne, P-A-Y-N-E. I am the CTEC technical adviser, and I have just three points. I wanted to state for the record, CTEC does actually have comments they've prepared for the documents. I'm not at liberty to describe those points at this point in time until the board directs me to do so, but they have worked hard and they have struggled with how best to come to consensus as a group on how to put forth that organization's point of view, but, hopefully, that will be forthcoming.

Second, I, too, can understand how Dave feels, because he's not the only one that wrote comments about Parrot Tailings five years ago. At CTEC, we wrote comments and they just disappeared, and, sure enough, five years later, it's not quite being remembered that these points were brought up.

EPA Response: *EPA assumes that the commenter is referring to comments provided on the Proposed Plan for BPSOU, and the resultant ROD. EPA received numerous comments on the Parrott Tailings, in particular, from many different commenters. EPA seriously considered all comments, responded to the comments in great detail in the responsiveness summary for the BPSOU ROD, and made final remedy decisions based on that input. All of the comment letters and individually identified comments, including CTEC's, can be traced in the ROD's lengthy responsiveness summary.*

MR. PAYNE: And I do have a suggestion. We talked about communication tonight. How do you get back to the community that you're hearing them? Well, having responded to agency comments when I work on projects, I usually take that comment, I put it in the back of my report, and I say agree or disagree and I fixed it or I didn't fix it because. So it's real simple. And I think you take the written comments, you take the comments from tonight, you take the comments however you get them, interviews, and put them in there and just say, We hear you and we disagree with you. Just say it outright. Just say, We don't think this is a correct interpretation of the data, or, Yes, we should have saw this five years ago. But the point is that you want to communicate. I think as a consultant, I've had to do that to make sure the agencies will not beat me up too bad, I guess, is the best way to say it.

I guess my third point is, the one thing -- I've heard some concern about cancer rates and what-have-you, and there was an ATSDR report years ago, and there's been discussion on that. The one thing I didn't hear tonight in the presentation was anything about the progress of cleaning up indoor dust. And, specifically, if I had a concern about exposure to people, not necessarily the environment, that's where I would have expected to have a review. So that seems to be missing, at least in tonight's discussions.

EPA Response: *A review of the residential metals abatement program is included in Section 6 of the Five Year Review, and attic dust is included in that review. The final report attempts to better explain the indoor dust remedial actions and the results to date.*

This responsiveness summary is an attempt to address all public comments in the manner the commenter suggested. EPA's BPSOU ROD also contains a detailed responsiveness summary that also answers public comments in the way the commenter suggests.

MS. PARWANA: I guess I have a question. My name is, I'll make it easy on you, Noor, N-O-O-R, Parwana, P-A-R-W-A-N-A. I'm just going to step back and just mention that I had made a note prior to Chad Okrusch's comment about the dynamic of defensiveness that I was feeling here coming from the EPA. And I'm assuming that you're all well-meaning people trying to do a good job for the community, but something has to change in how the EPA -- the dynamic in which you come to this community. Because I think it's inappropriate that these concerns that citizens have brought up five years ago and are bringing up tonight are -- There's a lot of sort of excuse making about how, yeah, we are dealing with that or that really isn't an issue. I don't know, it seems like we-know better- than-you kind of an attitude. And maybe you need to change the way that you're making your presentations or your interpersonal -- your attitudes, some kind of training that you can do in Helena to change that dynamic.

EPA Response: *EPA agrees that communication and community involvement are a key part of Superfund cleanup implementation efforts. EPA is reviewing its community relations efforts in Butte and hopes to improve those efforts. Part of that effort is holding a public comment period on the five year review and responding to those comments in this responsiveness summary. EPA has clearly heard from the community that greater effort or a different approach is needed, and we will continue to examine and improve our process.*

MS. PARWANA: I guess I have like two or three pages of comments -- or questions, but my biggest concern personally is Parrot Tailings. I guess I don't understand why they aren't included in this five-year review. If you could remind me why the data from the Montana Bureau of Mines and Geology was not talked about in this five-year review, and if you have any information about how the Parrot Tailings and the fact that those are still in place are affecting the rest of the cleanup. I mean, are those toxics getting into the downstream water? I guess those are my questions. But shouldn't that be in the document? I mean, okay, so you haven't got it implemented or whatever it was. But, I mean, shouldn't that be in there, saying, Well, this is a big concern and here's everything we know about the Parrot Tailings? Because it's part of the whole issue.

EPA Response: *See related comment on the Parrott Tailings. Baseline surface water conditions in BPSOU show that surface water is very near the very stringent ARAR levels currently. This is because the current interception/capture, pumping, and treatment system is working, and further improvements as a result of the ROD remedial design efforts should make the situation even better. Based on this data, EPA does not believe that the contaminated ground water from the alluvial aquifer is reaching the surface water or downstream areas in significant or harmful quantities.*

DR. RAY: I want to follow up on something Chad's comments made me think of about the whole Priority Soils process of public involvement. One, I was asked to be on an EPA citizen advisory group before the remedy was even developed. The EPA hired a facilitator, Jenny Tribe, from Missoula. They spent a lot of money feeding us, and we met about twice a month. And our group came up with 15 recommendations for the remedy for Priority Soils. Not one of those recommendations was accepted by the agency, but more egregiously, we never heard back from the agency why. They just disappeared in this black hole of agency decision making, and we weren't even given the courtesy of a reason why.

EPA Response: *EPA respectfully disagrees with Dr. Ray's assertion that we did not consider or respond to recommendations his group developed. EPA did consider the work group's recommendations and, in some cases, incorporated those recommendations into the remedy. EPA responded in detail to those comments and all public comment on the BPSOU Proposed Plan in the ROD's responsiveness summary. EPA apologizes for not better interacting with the workgroup after the ROD was issued. EPA recognizes that we should have done a better job of responding more directly to the group to ensure that everyone understood the rationale for those areas where we agreed and those where we disagreed with the group's recommendations.*

Silver Bow Creek / Butte Area

2010 Residential Metals Abatement Program Activities

Bulletin #13 **April 6, 2011**

Butte-Silver Bow (BSB) Health Department Completed 65 Abatement Projects in 2010

- **3 interior living spaces**
- **38 residential attics**
- **24 residential yards**

The Residential Metals Abatement Program (RMAP) aims to reduce risk from exposure to high metals levels. RMAP is designed to sample and remediate (if necessary) all residential properties in the Butte Priority Soils Operable Unit. The Butte-Silver Bow Health Department performs continuous metals abatement activities in the Butte area through the RMAP. Children living at or frequently visiting properties that exceed action levels, help determine the order of the abatement projects.

Abatement projects are performed when lead levels in soils and dust are greater than 1200 mg/kg (parts per million)) and/or arsenic is greater than 250 mg/kg and/or mercury is greater than 147 mg/kg.

Testing

Blood lead screening is available to all residents of Butte-Silver Bow. The Butte Women's, Infant's and Children's program (WIC) gives special attention to screening children. WIC staff routinely performs finger stick capillary collections. If a collection result is more than 9 micrograms of lead per deciliter of blood, it is confirmed with a venous collection before the child is documented as having an elevated blood lead. Of the 693 blood lead screenings performed between January and December 2010, one venous collection was confirmed having a blood lead level more than 9.9 micrograms of lead per deciliter of blood; the elevated blood level came from a non-environmental source of lead. RMAP staff contact each family of a child with an elevated blood level and arranges for an environmental assessment. The RMAP includes Case Management for children with elevated blood levels, to work with the family and/or landlord to assure that the child's environment is not a source of lead contamination. Case management includes home visits, education for the family, and timely follow-up lab testing.

To ensure that the BSB Health Department provides accurate and appropriate environmental screening and testing for the residents of Butte, the Health Department staff has attained EPA lead supervisor/contractor and risk assessor certification.

Environmental assessments

Environmental assessments are offered to all WIC clients and expedited if potential exposures are identified during the interview process. Environmental assessments are performed to identify potential sources of lead, arsenic and mercury exposures. Environmental assessments consist of soil testing, attic dust testing, interior dust testing and X-ray fluorescence testing for lead-based paint. The residences where exposures are identified during the environmental assessment process are prioritized for abatement. The Health Department conducted 251 environmental assessments in 2010. In addition to environmental assessments, the Health department informs families about potential exposure to contamination.

Education and Outreach

The Residential Metals Abatement Program (RMAP) works in conjunction with the medical community - particularly pediatricians and the WIC program- to inform the public about risk, health monitoring, nutritional information, and the Program's activities. Education and outreach specifically address portions of homes that pose a risk for potential exposure. The RMAP relies on educational materials and face -to- face consultations to ensure homeowners, remodeling contractors, home inspectors, potential buyers, and weatherization workers are aware of the following:

- The potential presence of lead, arsenic, and/or mercury in attics or basements.
- The importance of restricting access to those areas by sensitive populations (young children and pregnant or nursing mothers), and taking the appropriate measures to ensure that dust is not tracked into the interior living space.
- The proper communication protocol prior to implementing any remodeling project and/or landscaping project to ensure that dust and soil are appropriately handled and taken to an approved disposal facility.

The RMAP engages in a range of education activities

- **Distribution of Educational Materials to**
  - **° Local Contractors**
  - **° Hardware/Lumber Suppliers**
  - **° Childcare Facilities/Programs (e.g. Head Start)**
  - **° Housing Authorities (e.g. Human Resource Council –Section 8 and LIEAP)**
  - **° Local Realty Agencies**
- **Informative Presentations**
- **Periodic Mailings**
- **Events (e.g. Community Health, Fitness, and Safety Fair)**
- **Public Service Announcements**

Do you Need More Information?

U.S. Environmental Protection Agency:

Sara Sparks, Remedial Project Manager, 406-782-7415

Jean Cannada, Senior Environmental Employee, 406-782-3264

Nikia Greene, Community Involvement Coordinator, 406-457-5019

Butte Silver Bow County Health Department:

Eric Hassler, Residential Metals Abatement Program Manager, 406-497-5042

Michele Bay, Community Outreach Coordinator, 406-497-5045

Montana Department of Environmental Quality:

Joe Griffin, Project Officer, 406-560-6060

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C. 20460

MAR - 4 2011

OFFICE OF
SOLID WASTE AND EMERGENCY
RESPONSE

Dr. John W. Ray
915 W. Galena Street
Butte, MT 59701

Dear Dr. Ray:

Thank you for your electronic message to the Office of the Inspector General (OIG) of the U.S. Environmental Protection Agency (EPA) regarding Superfund sites in Butte, Montana. The OIG referred your correspondence to this office for review and appropriate action. EPA's Office of Superfund Remediation and Technology Innovation provides national guidance on Superfund remediation projects carried out by EPA's ten regional offices.

You expressed concerns about potential bias of those conducting five-year reviews at Butte, Montana, Superfund sites. The five-year review is the statutorily-required review of certain Superfund remediation projects to ensure that human health and the environment are being protected. You believe that the project manager involved in the remediation should not conduct the five-year review.

Project managers conduct reviews in compliance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, i.e., the Superfund statute) and program guidance. CERCLA, Section 121(c), states:

> *"If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented."*

This authority has been delegated to the EPA for most Superfund sites. In addition, the "Comprehensive Five-Year Review Guidance" (OSWER 9355.7-03B-P, June 2000) indicates that the project manager is part of the review team conducting a five-year review at any site. While EPA can use contractor services or other agencies to provide assistance in conducting the five-year reviews, EPA is ultimately responsible for making the determination whether the remedy is protective.

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While the Agency respects your perspective, we believe there is no potential bias in having the project manager involved in the remediation also conduct the five-year review. This is standard practice in the Superfund program. The project manager does not act in a vacuum when he or she conducts such a review. His/her work is reviewed by a supervisory branch or unit chief, in this case a branch chief.

There is an additional check built into the Agency's review process. My staff reviews and comments on most of the draft five-year reviews nationwide. Concurrent with the public comment period for the Silver Bow Creek/Butte Area five-year review, staff in the Region 8 Denver office and my office reviewed and commented on the draft. Comments were extensive and will result in many changes to the text, issues, recommendations, and protectiveness statements. We will also be reviewing and commenting on the draft five-year review for Montana Pole and Treating Plant later this year.

Your electronic mail also included an attachment with comments on the draft five-year review for the Butte Priority Soils Operable Unit. EPA Region 8 received these comments as part of the public comment process for the Silver Bow Creek/Butte Area draft five-year review. Since Region 8 is in the process of evaluating all public comments, I will defer to them for a response to your comments.

We appreciate your continued attention to the Butte sites and to the residents affected by the contamination and cleanup. Everyone benefits from public participation, and your insights into the nature of the contamination at the site, the community, and the cleanup process, have been useful.

Thank you for your correspondence on these issues, and for your participation in this process. If you have further questions or concerns, please contact either Carol Campbell (Campbell.Carol@epa.gov) or Joe Varna (Vranka.Joe@epa.gov) in Region 8.

Sincerely,

James E. Woolford, Director
Office of Superfund Remediation
and Technology Innovation