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**COLORADO**  
Department of Public  
Health & Environment

September 9, 2024

Mr. Toby Wright  
Wright Environmental Services, Inc.  
226 Peterson Street  
Fort Collins, CO 50252

Re: Quality Assurance Project Plan for the Phase I Risk Assessment, Rev. 0; Lincoln Park Superfund Site OU1/OU2/OU3 Canon City, Fremont County, Colorado EPA ID No. COD042167858

Dear Mr. Wright:

The Environmental Protection Agency (EPA) and Colorado Department of Public Health (CDPHE) have reviewed the Phase I Risk Assessment Quality Assurance Project Plan (QAPP) submitted July 8, 2024. The Agencies disapprove of the submission and request Cotter modify the QAPP to address comments identified in the enclosed attachments.

As outlined in the Administrative Settlement Agreement and Order on Consent Paragraph 46, a period of 30 days is provided for revision and resubmission of this document.

If you have any questions or would like to schedule a meeting to discuss, please contact Paul Stoick at [Stoick.Paul@epa.gov](mailto:Stoick.Paul@epa.gov) and Alex Hedgepath at [Alex.Hedgepath@state.co.us](mailto:Alex.Hedgepath@state.co.us).

Sincerely,

Stoick, Paul

Digitally signed by Stoick,  
Paul  
Date: 2024.09.09  
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Paul Stoick, PE  
Remedial Project Manager  
Superfund and Emergency Management Division, Section A  
U.S. Environmental Protection Agency, Region 8

Alex  
Hedgepath

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Alex Hedgepath  
State Remedial Project Manager  
Hazardous Materials and Waste Management Division  
Colorado Department of Public Health and Environment

Attachments:

- 1) EPA and CDPHE Quality Assurance Project Plan Technical Review Crosswalk
- 2) EPA Region 8 Quality Assurance Project Plan QA Review Crosswalk
- 3) Public Comments

Cc:

Craig Bartels – Cotter Corporation (N.S.L.), Officer  
April Lafferty – Wright Environmental Services, Inc., Environmental Coordinator  
Mike Schierman – H3 Environmental, Inc., Quality Assurance Manager  
Mary Goldade – EPA, Region 8, Regional Quality Assurance Manager  
Shiya Wang- CDPHE, Uranium and TENORM Lead

**Attachment 1:**  
**EPA and CDPHE Quality Assurance Project  
Plan Technical Review Crosswalk**

## Combined Agency Comments on Phase I Risk Assessment UFP-QAPP

### Summary of Comments

#### **General Comment**

A thorough review has identified numerous inconsistencies or lack of sufficient details to implement the UFP-QAPP. Specific comments have been provided which have identified issues that need to be addressed in the resubmission of the Phase 1 Risk Assessment QAPP.

Reviewing the QAPP could be more efficient if all worksheets were contained in a single PDF instead of having them each in a separate PDF file linked to the main file.

#### **Radiation Requirements**

The Agencies do not believe that Cotter has adequately implemented substantive requirements related to radiation safety or handling. Relevant requirements have been identified by the CDPHE Radiation Control Program have been documented in a table below. The Agencies require that Cotter update the Risk Assessment Quality Assurance Project Plan to address required radiation safety and handling requirements.

#### **Summary of Project Taks, Sampling Design and Rationale**

There is a lack of sufficient details for project tasks, sampling strategy and rationale for sample locations. Further justification and rationale are needed to support the proposed sampling approach and locations.

Examples of missing information include:

- How will each type of sample be collected?
  - Describe the process for collecting a discrete soil sample (surface and subsurface).
    - How will the soil be homogenized prior to be placed into the appropriate size bottle ware?
  - Describe the process for collecting a surface water sample.
  - Describe the process for collecting a sediment sample.
  - Describe the process for collecting collocated surface water and sediment samples.
  - What types of sampling equipment will be used to collect each type of sample? Will they be disposable?
  - What types of equipment will be used for air sampling?
  - What instruments will be employed for air monitoring?
- How will non-disposable equipment be deconned? Please specify the methodology.
- How will locations for duplicate samples be selected?
- Please specify the methodology used to collect an ISM sample. Some of the details that are needed include:
  - What size coring device will be used?
  - Will the resulting volume be sufficient to meet all analyses, or will more than one core need to be collected from each increment location?
  - How will the random starting point for the generation of the systematic grid be determined?
  - Please explain under what circumstances, 5 replicate ISM samples are needed.
- What methodology will be used to develop new groundwater wells and redevelop existing groundwater wells? Please provide details on drilling methods that will be used, how boreholes will be constructed, materials which will be used (e.g., screen, casing), etc.
- Please provide further details regarding the air monitoring versus the air sampling that will be conducted. What COIs will be assessed through monitoring and what will be assessed through sampling?
- Clarification is also needed of where discrete versus ISM samples will be collected. If discrete samples are collected for the objective of identifying COPCs/COPECs in Phase 1, note that these data do not meet criteria needed for use in the baseline risk assessments.

**Specific comments to be addressed are included in the following pages.**

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

Comment Number	PDF Page	Reference/ Location	Agency Comment	Cotter Response
<b>Introduction, Worksheet 0</b>				
1	0	Radiation Requirements	The Agencies do not believe that Cotter has adequately implemented substantive requirements related to radiation safety or handling. Relevant requirements have been identified by the CDPHE Radiation Control Program have been documented in a table below. The Agencies require that Cotter update the Risk Assessment Quality Assurance Project Plan to address required radiation safety and handling requirements.	
2	8	Abbreviations	CERCLA abbreviation is missing the word Comprehensive	
3	8	Abbreviations	COPC abbreviation should say "Concern" rather than "Interest" and "Contaminant" rather than "Constituent".	
4	8	Abbreviations	Add in "Agencies" as a combination of EPA and CDPHE.	
5	10	References	"EPA. February 2024...." is not in alphabetical order. Additionally, EPA references should be updated after moving 2024 reference, to match nomenclature.	
6	10	References	Adrian Brown "1989c" reference should be renamed to "1989b".	
7	10	References	Cotter Corporation "1996b" reference should be renamed to "1996".	
8	11	References	EPA is defined twice in references, remove 2nd definition.	
9	12	References	Hershey-Wooderson references should be updated from "1977b" to "1977"	
10	13	References	USGS is defined three times, remove redundant definitions.	
11	13	References	Wahler is defined three times, remove redundant definitions.	
12	13	References	Wahler references should be updated as follows: "1978b" renamed to "1978a", "1978c" renamed to "1978b", and "1981b" renamed to "1981".	
13	13	References	WESI is defined twice, remove redundant definition.	
<b>Title and Approval Page, Worksheet 1 &amp; 2</b>				
14	1	Document Title	Document title is wrong and should be updated based on Cover Sheet.	
15	1	Site name/project name	Site name/project name should be updated to "Lincoln Park Superfund Site" or "Lincoln Park Superfund Site, Remedial Investigation".	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

Project Organization and QAPP Distribution, Worksheet 3 & 5				
16	1	Organization chart	Major contractors should be identified beyond just H3 on the Organization Chart. If Eurofins is the analytical laboratory as shown in Worksheet #6, they should be identified here. If Contractor is unknown, expected contract tasks should be identified (analytical laboratory, surveyor, driller, risk assessor, etc) or refer to Worksheet #4.	
17	1	Footnote	"Every position on this chart will receive a copy of the QAPP". Does this include analytical laboratory staff, field staff and the procurement specialist? If not, use an asterisk to indicate who received a copy of the QAPP.	
Personnel Qualifications and Sign-off Sheet, Worksheet 4, 7, & 8				
18	2	Specialized Trainings/Certs	Note (*) should be added to say that if a staff member has not yet been identified, those are the minimum trainings/certifications that will be required. Additionally, a row should be added for "field staff" with required trainings/certifications listed.	
Communication Pathways, Worksheet 6				
19	1	Project Level Comms	Organization and Procedures do not match. Procedures for Groundwater, Surface Water/Sediment, and Air, Soil, and Radiological Sampling describe communications with organizations not listed under "Organization". For example, the "Groundwater" row describes communication with both WESI and H3, although only communication between Cotter/HRS is listed. Other similar issues are noted other "Communication Driver" listings.	
20	1	Communication Driver	<p>What is listed here are types of communication rather than communication drivers. Communication drivers are those activities that necessitate communication between different responsible entities. These drivers can include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Approval of amendments to the QAPP</li> <li>• Initiation, notification and/or approval of real time modifications</li> <li>• Notification of delays or changes to field work</li> <li>• Recommendations to stop work and initiation of corrective action</li> <li>• Reporting of issues related to analytical data quality, including, but not limited to, ability to meet reporting limits</li> </ul> <p>Please refer to Section 2.4.2 of the EPA QAPP Manual.</p> <p>In the 2nd row, "Deviations from QA Documents" is noted, but this is a communication driver. The column should instead describe the communication pathway (e.g., how things are communicated, communication steps, and documentation).</p>	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

21	6	Analytical Corrective Actions	Procedure is blank and needs to be described. Does communication go H3, WESI, or Cotter?	
<b>Project Planning Session Summary, Worksheet 9</b>				
22	4	Organization chart	Katelyn Laverich is listed as CDPHE, but should be listed as EPA and "Laverich" should be "Stocksdale".	
23	5	Meeting Notes	PDF pages have "DRAFT" watermark, which should be removed.	
24	8	Organization chart	Katelyn Laverich is listed as CDPHE, but should be listed as EPA and "Laverich" should be "Stocksdale".	
25	9	Meeting Notes	PDF pages have "DRAFT" watermark, which should be removed.	
26	10	Notes	EPA noted that using ISM prevents "wildly" ranging concentrations and when it comes time to compute EPCs it is best to compare the same data type. It is expected that EPCs will be computed based on ISM sampling and not discrete sampling.	
27	1, 2, 8, 9	Participants tables	Change "Syracuse Research Corp." to "SRC."	
<b>Conceptual Site Model, Worksheet 10</b>				
28	1	Introduction	2nd Paragraph. Text should better identify and explain the Radioactive Materials License since "licensed operations", "licensee", and "license" are used throughout worksheet.	
29	1	General	This should include a section on data gaps and uncertainties associated with the CSM.	
30	1	Introduction	Fourth paragraph, first sentence: the words "operating units" should be corrected to "operable units".	
31	2	Section 10.1	Term "old mill" is used multiple times. Recommend either defining "old mill" vs "mill" (Worksheet 0 Abbreviations), or replace with the term "mill" throughout.	
32	2	Section 10.1	3rd Paragraph sentence, "These ores may have contained metals and other radionuclides as well.", should be updated to include raffinates.	
33	2	Section 10.1	4th Paragraph. First use of "OPA" should be defined.	
34	2	Section 10.1	5th Paragraph. First use of the term "newer mill". Does not appear that the "old mill" vs "new mill" time periods/distinctions have been identified in the report. Term "new mill" is defined on page 3.	
35	2	Section 10.1	5th Paragraph. Text should identify when/why the impoundments were created. Text answers these questions on PDF Page 3, recommend moving last sentence of 5th paragraph to after information regarding the impoundments.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

36	3	Section 10.1	First paragraph, first sentence: it says that "In 1977, permission was requested by the licensee..." Change the words "licensee" to "Cotter" to be more specific.	
37	3	Section 10.1	Second paragraph: it says that uranium, vanadium, and molybdenum were produced, but there is only description on how uranium and vanadium were processed. Add description on how molybdenum was processed.	
38	3	Section 10.1	The text states "The organic solvent trichloroethene (TCE) was used in the grind and leach building as an industrial degreaser. PCBs and TCE are likely only present in the subsurface soil at the Mill because of the extensive surface disturbances that occurred during the decommissioning of Mill structures" Comment: This sentence appears to be trying to make the distinction that PCBs and TCE are likely only present in subsurface soil as opposed to surface soil, but elimination of COPCs/COPECs based on assumptions is not an appropriate practice in CERCLA risk assessments. Either additional supporting evidence for excluding PCBs and TCE as COIs in surface soil should be provided, or these contaminants should be included as COIs in surface soil.	
39	4	Section 10.1	First paragraph on this page: it says that "The remaining process-related structures were demolished in 2013". It should be in 2012.	
40	4	Section 10.1	Second paragraph on this page, first sentence: CCD is one element of the milling circuit. Change the words "from the counter current decantation circuit" to "from the milling circuit".	
41	4	Section 10.1	Second paragraph on this page, second sentence: Change "Points of air emissions" to "Point sources of air emissions" to be more accurate.	
42	4	Section 10.3.1	First paragraph, second sentence: it says that air stations in and around OU1 have been continuously monitored since 1979 under the RML program. Verify if this is a correct statement because in the Scribe database which hosts all historical data, the earliest data for boundary air monitoring stations are dated in 2002.	
43	5	Section 10.3.2	3rd Paragraph. Multiple uses of Old Ponds Area should be shortened to "OPA".	
44	5	Section 10.3.2	OU3 Heading. Brief explanations should be made regarding known OU3 areas. Descriptions can be brief or related to OU1/OU2 discussions.	
45	5	Section 10.3.2	Reference to generalized land use should at a minimum acknowledge specific residential areas (Wolf Park, Dawson Ranch, Town of Brookside). Specific surface water features including ditches, ponds and lakes should also be identified (e.g., Willow Lakes).	



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Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

46	6	Section 10.3.3	3rd Paragraph sentence regarding Figure 10-5 should be clarified as to whether the groundwater is potentially within 5' of ground surface or whether groundwater is potentially discharging to surface water. It appears that Figure 10-5 shows areas where groundwater is potentially within 5' of ground surface, which isn't the same as the text statement about groundwater potentially discharging to surface water.	
47	6	Section 10.3.3	3rd Paragraph. Text stating "although this may need to be confirmed with additional field study", should be replaced with "although this will be confirmed during the [insert expected report title here]".	
48	6	Section 10.3.3	Text regarding Spring locations should be field compared with the 11 seeps and springs that the Lincoln Park Community Advisory Group has identified.	
49	6	Section 10.3.3	4th Paragraph. Add in brief descriptions on where key sampling locations are relative to the Site or community feature (ex. Location XX is approximately X-miles upstream of XX).	
50	6	Section 10.3.3	4th Paragraph. Include impact of Wet Mountains on the Arkansas River and/or ditches.	
51	6	Section 10.3.3	4th Paragraph. Text should describe where the Benton Group is in proximity to the Site or reference a geological map.	
52	6	Section 10.3.3	4th Paragraph. Replace the "somewhat" in "Sand Creek results are somewhat high" with a more descriptive term.	
53	6	Section 10.3.3	5th Paragraph. 1st sentence should be revised to include rationale or basis for these statements. Sentence implies that some evaluation/assessment has occurred or there is a technical basis for the statement. The following sentence discusses no-impacts through sampling, but the lack of contamination from sampling does not provide direct evidence that the locations are not hydraulically connected or that groundwater doesn't discharge into the lakes.	
54	6	Section 10.3.3	The text states "There is no noted groundwater discharge to surface water in OU2 with the exception of the small eastern area near the confluence of Sand Creek and the Arkansas River. Local ponds in OU2 are believed to be developed from surface water impoundment rather than groundwater recharge, although this may need to be confirmed with additional field study." Additional evidence is necessary to support this statement.	
55	6	Section 10.3.3	The text states "There is no groundwater recharge to surface water further upstream in ephemeral portions of Sand Creek or in the irrigation ditches." This statement requires more supporting evidence. Also, "recharge" should be "discharge".	

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Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

56	6 and 7	Section 10.3.3	The text states "There is also no evidence that groundwater discharges to surface water in the Willow Lakes area and these lakes do not appear to have a hydraulic connection to the Site. The Draft RI (CLL, 2022) concluded that based on previous sampling these lakes have not been impacted by the operations at the Former Cañon City Mill." This statement requires more supporting evidence. A discussion of the information provided in the Draft RI used to draw this conclusion should be included.	
57	6	Section 10.3.3	Add reference to Figure 10-2 in sentence, "Quarterly locations include Stations 904 (downstream in the Arkansas River), 907 (upstream in the Arkansas River) and 008 in Sand Creek."	
58	6	Section 10.3.3	Identify irrigation ditches.	
59	6	Section 10.3.3	Indicate the frequency of sampling in Sand Creek (i.e. Location 506 in Sand Creek near the Arkansas River is sampled <i>annually</i> ).	
60	6	Section 10.3.3	Correct "hydraulic" to "hydrologic" in the first sentence of the last paragraph.	
61	7	Section 10.3.4	The text states "The Poison Canyon and Raton Formations form a closed basin within the Chandler Syncline." This statement may be true on a regional scale, but this statement as written is presumptive. There is currently not enough information to declare with certainty that fractured bedrock or preferential pathways do not exist.  The text should be revised to acknowledge uncertainties associated with the hydrogeological conceptual site model.	
62	10	Section 10.3.6	3rd Paragraph. First use of "bgs", define.	
63	10	Section 10.3.6	3rd Paragraph. Add units to "...greater than 125 but shallows near..."	
64	10	Section 10.3.7	1st Paragraph. Revise "The undefined boundaries of OU3 frustrate complete description..." to "The currently undefined boundaries of OU3 complicate a complete description..."	
65	10	Section 10.3.7	2nd Paragraph. Remove or revise, "Iron oxyhydroxides and clays are present in varying amounts and likely contribute some attenuation to selected constituent transport.". Sentence is too vague/undefined to be useful without further details regarding the amounts of clays/oxyhydroxides, which type of attenuation, and which constituents/types transported.	
66	11	Section 10.5	Section needs to be expanded upon and include more than just information related to alluvium flow.	
67	11	Section 10.5.1	Revise Section numbers. Two Section 10.5.1s are present, "Groundwater in OU1" and "Groundwater in OU2"	

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Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

68	11	Section 10.5.1	1st Paragraph. Revise "The undefined boundaries of OU3 frustrate complete description..." to "The currently undefined boundaries of OU3 complicate a complete description..."...Poison Canyon Formation and in portions of the alluvium in the creek beds that vary in thickness across the Former Cañon City Mill..." to "...Poison Canyon Formation and in portions of the alluvium in the creek beds, which vary in thickness across the Former Cañon City Mill..."	
69	12	Section 10.5.1	1st Paragraph. Revise/clarify last sentence of paragraph to explain/detail if limited water quality data is due to spatial, temporal, or quality data issues.	
70	12	Section 10.5.1	3rd Paragraph. Revise 3rd sentence in the paragraph into more concise, smaller sentences. Additionally, "...geometry associated of the weathered zone..." should be revised to "...geometry associated with the weathered zone..."	
71	12	Section 10.5.1	4th Paragraph. Groundwater gradient is typically discussed in ft/ft, not percent grade. Convert to ft/ft, provide rationale for use of slope, or include both instead.	
72	12	Section 10.5.1	5th Paragraph. Clarify use of "current groundwater elevation" by further describing how long this current trend has existed, how it differs from past groundwater elevations, and/or cause (high vs low, seasonal, drought condition).	
73	12	Worksheet	No changes / overall comment. Many of the technical assessments and references made in this Worksheet will need to be verified during onsite investigations. It does not appear that all of the data (see Adrian Brown, 1989c) was evaluated as part of the DSTA and can therefore not be used for the basis of decision making. It is recommended that this worksheet (specifically Sections 10.3 onward) be updated to clarify/identify aquifer, geochemical, hydrological, geological, and other data use limitations.	
74	12	Section 10.5.1	1st Paragraph. Text should include information regarding OU1 mine shafts and potential impact on groundwater. Updated text should also be included in Section 10.6.1.	
75	13	Section 10.5.1	Groundwater in OU2 should be updated to include information regarding OU1 to OU2 Groundwater flow.	
76	13	Section 10.5.1	2nd Paragraph. Remove highlight.	
77	13	Section 10.5.1	2nd Paragraph. Replace uses of "very low" and "extremely low" permeability with a more relative measurement (for example: "order of magnitude lower than the alluvium") or quantitative estimate.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

78	13	Section 10.5.1	3rd Paragraph. Add reference or clarity regarding "leakage from the irrigation ditches". Do the ditches cause mounding, are losses tracked, or other basis for having a "substantial seasonal influence". Information should also be added to this section to describe what areas have lined ditches, when they were lined, are they effective at preventing this leakage, and other information regarding the ditches impact on groundwater, to the extent possible.	
79	13	Section 10.5.1	Are there reports that can be cited to support the hydrology details included in the text?	
80	14	Section 10.5.1	4th Paragraph. Identify the names of the two wells described. The use of information to describe alluvium aquifer properties from two wells screen across two aquifers is questionable without additional information/context being added as to why this is a valid comparison. If these two wells are not being used to describe the alluvium aquifer, then the first sentence of the paragraph should be revised for clarity.	
81	14	Section 10.6	Unsure of the purpose of the 1st sentence. Sentence should either give an overview of what Section 10.6 is describing, include information regarding OU2 since OU1/OU3 are discussed, or be removed.	
82	14	Section 10.6.1	2nd Paragraph. Revise descriptions of contaminant concentrations to "likely", "believed", or "expected". The Remedial Investigation is being completed in part to determine where and at what concentrations contaminants exist at the Site. Uncertainty exists and needs to be addressed and accounted for.	
83	14	Section 10.6.1	2nd Paragraph. Revise "The vertical distribution of groundwater contamination in OU1 is not yet well defined and warrants additional study." to "The vertical distribution of groundwater contamination in OU1 is not yet well defined and will be addressed as part of the [insert OU1 RI report title]". Additionally, insert reference to support "existing data indicate".	
84	14	Section 10.6.1	3rd Paragraph. Replace "...contamination above background in OU2 and OU3 is not yet well defined." with "...contamination above background at the Site is not yet defined."	
85	14	Section 10.6.1	3rd Paragraph. Replace "annual reports" with "RML annual Reports".	
86	15	Section 10.6.2	Section should briefly describe if impacts are expected in OU2 or OU3.	
87	15	Section 10.6.2	More discussion is needed here to support only evaluating metals and radionuclides in air. Other COIs cannot be excluded based on assumptions.	

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Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

88	15	Section 10.6.3	Suggested edit: "Mill-derived constituent impacts to surface soil in the other areas of OU1 are identified as remaining <i>to be investigated</i> ."	
89	15	Section 10.6.3	The text states "The potential OU3 areas identified for potential maximum constituent concentrations are the former ore transfer stations (Team Track, NONAC, and Fourth Street Depot), and the yard of the former Berta Trucking Company (Old Berta Yard)." This QAPP should provide a rationale for identifying any parts of OU3 that are not associated with the identified sub areas that may have received contamination for windblown deposition and/or erosional transport pathways.	
90	16	Section 10.6.3	5th Paragraph. Remove "or rumor that any" from 5th sentence.	
91	16	Section 10.6.3	6th Paragraph. Define the implied subject in the first sentence regarding "...Arkansas River was selected for inclusion because..." (Inclusion into what; highest concentration or as a potential receptor assessment?).	
92	16	Section 10.6.4	1st Paragraph. Define the implied subject in the first sentence regarding "...Arkansas River was selected for inclusion because..." (Inclusion into what; highest concentration or as a potential receptor assessment?).	
93	16	Section 10.6.4	2nd Paragraph. Areas of potential reception, or complete pathway, should be identified or described.	
94	16	Section 10.7	COI is defined as constituent of interest in the Abbreviations Section. Use of Constituent, Chemical, or Contaminant should be assessed and corrected throughout. 1st sentence of 1st paragraph defines COI as a constituent, while Section title defines it as chemical. COI should be defined as Contaminant of Interest throughout document.	
95	16	Section 10.6.3	The final paragraph "The Arkansas River was selected...for ecological receptors (Ensero, 2024)" is repeated below. Is this paragraph intended to reflect soil (bank) contamination along the Arkansas River? If so, then this should be clearly stated.	
96	17	Section 10.7	4th Paragraph. Include or reference table of COIs that may be associated with the Site, or the list of constituents to be sampled. The CAG has identified additional chemicals related to onsite operations should be assessed within this Section (zinc, sulfate, fluoride, acids, selenium, nitrate/nitrite, ammonia, etc) in a CAG Data Gaps letter from November 2nd, 2015.	
97	17	Section 10.7	4th Paragraph. Revise "...distal portions of OU1 and in OU2 may be necessary to adequately delineate the nature and extent of these COI." to "distal portions of OU1 and in OU2 will be delineated to determine the nature and extent of these COI during the [insert appropriate planning document]."	

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Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

98	17	Section 10.7	<p>5th Paragraph. Adequate assessment has not been completed to make some of the statements in this paragraph. Additionally, this is the first use of the phrase "complete contaminant transport mechanism", and should therefore be better explained. Section is predominately focused on exposure pathways and complete pathways, so the use of "complete" with regards to transport mechanisms is unclear.</p> <p>Transport mechanisms should have been described and defined in Section 10.6, not in the conclusions of Section 10.7.</p>	
99	17	Section 10.7	7th Paragraph. uses the term "contaminants of interest" when COI should be used.	
100	17	Section 10.7	7th Paragraph. Text uses the term "secondary transport mechanism" without describing the difference between that and a primary transport mechanism.	
101	17	Section 10.7	Section wide. Section should be better organized and split up by OUs or media. Text is hard to follow since it jumps between OUs and Media without clear delineation.	
102	17	Section 10.7	Fourth Street Depot needs to be added to Figure 10-23.	
103	17	Section 10.7	ATSDR policy and guidance are not pertinent to CERCLA remedial investigations. Reference to ATSDR policy should be removed.	
104	17	Section 10.7	Aerial releases of radionuclide particulates (as described in section 10.6.2) should be included in the paragraph about milling contaminant.	
105	18	Section 10.8	ATSDR policy and guidance are not pertinent to CERCLA remedial investigations. Reference to ATSDR policy should be removed.	
106	18	Section 10.8	2nd Paragraph. Last sentence should clarify the use of Site. Conceptually, "Site" is where the contamination is since the Site does not have complete characterization or a Record of Decision (ROD). Recommend revising use of "site" to "receptor" or other term.	
107	18	Section 10.8.1.1	2nd Paragraph. Clarify why OU1 is anticipated to be managed under authority of the DOE. Remedial Investigation cannot presume a remedy will occur, but given the complexities of the site being dual regulated under both CERCLA and an RML, a sentence should be included regarding how RML/DOE manages this type of project. Sentence should be reworded from "anticipated" to "reasonably anticipated", or other similar text.	
108	18	Section 10.8	Suggested addition to the purpose and objective statement: "To the extent possible, data should be generated that can be used in both the screening-level assessments and baseline risk assessments."	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

			Sampling considerations should be made to gather data that best represent chronic exposures but also capture maximum contaminant concentrations."	
109	18	Section 10.8	As noted earlier, ATSDR text should be removed.	
110	19	Section 10.8.1.3	1st Paragraph. Last two sentences of paragraph should be removed. Work occurring under the direction of the CDPHE is not the basis to not assess current or future construction worker risk at the Site. Risk still needs to be assessed under CERCLA. Additionally, OU2 is not discussed or addressed in this Section.	
111	19	Section 10.8.1.3	Clarify what population the following claim is being compared to: "Although a construction worker may experience a shorter exposure duration... are expected to be greater by comparison."	
112	19	Section 10.8.1.4	Resident recreator should be assumed. Change section title to reflect.	
113	19	Section 10.8.1.4	Additional information should be added to the end of this paragraph. Suggested edit "These activities will be assessed for OU1 (outside the restricted area), OU2, and OU3. These exposures will be assumed to be most frequent for resident recreators. Accordingly, the resident recreator will be the highest exposed receptor and will be used for this assessment."	
114	20	Section 10.8.2	Vapor intrusion should be included in this Section. Vapor intrusion is not addressed in the same manner as the air or groundwater pathways, but instead is addressed via the soil pathway (Section 10.8.2.1).	
115	21	Section 10.8.2.1	Section does not address the potential for OU2 soil exposures through the groundwater to soil contamination pathway. The potential pathway should still be discussed in this section regardless of if sampling is planned to be completed or dependent on the results of the OU2 investigation.	
116	21	Section 10.8.2.1	2nd Paragraph. Text discussion regarding COPC should be replaced with COI or text clarified as to why it is for COPCs rather than COIs.	
117	21	Section 10.8.2.1	Specify what fine particles will be accessed. Suggested edit: "Even though few people intentionally ingest soil, people who have direct contact with surface soil ingest small amounts of <i>fine particles</i> (i.e. <150 μm particle size fraction) that adhere to their hands during outdoor activities."	
118	22	Section 10.8.2.3	1st Paragraph. Reference to the completion of a comprehensive water use survey would be appropriate in this Section since it is discussing ingestion and dermal contact with groundwater.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

119	22	Section 10.8.2.3	2nd Paragraph. Text discussion regarding COPC should be replaced with COI or text clarified as to why it is for COPCs rather than COIs.	
120	23	Section 10.8.2.4	1st Paragraph and 2nd Paragraph. Sections should also include discussion regarding construction workers and whether a recreational receptor is a conservative evaluation metric for them.	
121	23	Section 10.8.2.4	2nd Paragraph. Text discussion regarding COPC should be replaced with COI or text clarified as to why it is for COPCs rather than COIs.	
122	23	Section 10.8.2.5	1st Paragraph and 2nd Paragraph. Sections should also include discussion regarding construction workers and whether a recreational receptor is a conservative evaluation metric for them.	
123	23	Section 10.8.2.5	2nd Paragraph. Text discussion regarding COPC should be replaced with COI or text clarified as to why it is for COPCs rather than COIs.	
124	23	Section 10.8.2.4	Specify what fine particles will be accessed. Suggested edit: "Although it is not expected that people intentionally ingest sediment, these recreational activities may result in the incidental ingestion of small amounts of <i>fine particles (i.e. &lt;250 μm particle size fraction) from surface sediment.</i> "	
125	24	Section 10.8.2.6	1st Paragraph. Since residents are present on portions of OU1, there should be some assessment of ingestion of produce at OU1.	
126	24	Section 10.8.2.6	2nd Paragraph. Text should be revised to state during what investigation/phase additional information will be collected to better understand water body use.	
127	24	Section 10.8.2.6	3rd Paragraph. Text should not be bound/limited to elk/deer populations. Text should also be revised to include possible ingestion of surface water (primary impoundment).	
128	24	Section 10.8.2.6	Suggested edit "Contamination can be taken up into <i>and be adhered onto the surface of</i> the vegetables or fruit tissues."	
129	25	Section 10.8.3	7th Bullet. Remove "(during indoor use)". Residents can also contact groundwater during irrigation.	
130	25	Section 10.8.3	Since different receptors and exposure pathways will be evaluated for each OU, this list should be separated by OU for clarity.	
131	25	Section 10.8.2.7	The last paragraph of this section indicates that a potential pathway of exposure to radionuclides is direct ingestion of soil. This should be incidental ingestion.	
132	25	Section 10.8.2.7	Last paragraph of this section: change "inhalation of fugitive dusts" to "inhalation of radioactive airborne particulates and radon" to be most specific.	



**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

133	26	Section 10.9.1	1st Paragraph. The 1998 ERA is 26-years old and should be evaluated to determine if the assumptions made in the report are still accurate or if additional assessment needs to be completed. Additionally, the DSTA did not assess the 1998 ERA; the 2007 ERA by Stoller and Shafer was assessed, but received "poorly" and "partially" evaluations.	
134	26	Section 10.9	Delete "be" before "based on screening..." in the sentence, "The purpose and objective of this Phase I Risk Assessment QAPP are to identify COPEC in various media at the Lincoln Park Superfund Site based on screening the maximum concentrations."	
135	26	Section 10.9	ATSDR does not establish guidance for CERCLA sites. Remove the reference to ATSDR in this paragraph.	
136	26	Section 10.9	"The purpose and objective of this Phase I Risk Assessment QAPP are to identify COPEC in various media at the Lincoln Park Superfund Site based on screening the maximum concentrations." This is the objective of the Phase I Risk Assessment, not the QAPP. The objective of the QAPP is to identify the data needs. Please revise this statement.	
137	26	Section 10.8.3	The exposure pathways should also include the internal radiation exposure pathways described in the last paragraph of Section 10.8.2.7 for all receptors.	
138	27	Section 10.9.3	1st Paragraph. Revise "(i.e., known with certainty to occur)" with "or high likelihood of being complete". A complete pathway, known with certainty to occur, is too limiting unless thorough and comprehensive surveying is completed. The current text does not include the assessment of a surface water body unless there is documentation that receptors use that water body. Very few locations likely have certainty that they are used by receptors, but it can be assumed that it is very likely that they are/could be.	
139	28	Section 10.9.3.1	Suggested revision, "Ingestion of soil by terrestrial invertebrates is a complete exposure pathway, <i>however, there is limited toxicity data available to evaluate this pathway quantitatively.</i> "  Replace "but is expected to be minor compared to exposure by diet" with the italicized text.	
140	28	Section 10.9.3.2	Section header should state, "Direct Contact with Sediment by Aquatic Invertebrates, Plants, and Fish". Delete the final sentence of this section, "Toxicity information (beyond screening levels) for evaluating this exposure pathway is typically not available." This is an incorrect statement.	
141	29	Section 10.9.3.4	A summary of complete exposure pathways for ecological receptors, similar to Section 10.8.3, should be added.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

142	29	Section 10.9.3.4	A discussion of exposure of ecological receptors to radionuclides should be added.	
143	31	Table 10-1	The date for "Decommissioning/reclamation of Mill begins" is incorrect. Last date on timeline is "July 4, 1905".	
144	31	Table 10-1	Change the item "2007-2011 Mill is on Standby Status" to "2006-2011 Mill is on Stand-down Status".	
145	32	Table 10-2	1993-1999: The cleanup standard for radium and thorium is based on human health risk. This should be clarified, and sediment should be added to OU2 for ecological receptors, if available.	
146	32	Table 10-2	Clarify that the OU column is the OU in which the action occurred.	
147	34	Table 10-3	Column should be added to the table that describes/identifies main types/compounds/constituents of the reagents/chemicals. Table should also include a reference(s) of documented use (or a report documenting use).	
148	35	Table 10-3	Table has mistaken rows on Page 35 that should be removed/corrected.	
149	35	Table 10-3	The title of this table should be changed from "Table 10-1: Process Reagents...." to "Table 10-3: Process Reagents...". Correct Table number to 10-3.	
150	1 through 35	Throughout	Editorial corrections:Page 1, 3rd paragraph: Add a closing parentheses to the sentence, "The Site is in a semi-arid high desert (approximately 5,000 feet above mean sea level."Page 3, 3rd paragraph: "disturbances" is misspelled.Page 7, 2nd paragraph, first sentence: change again to against in the sentence, "The Chandler Syncline is comprised of steeply dipping sedimentary formations abutting again the Precambrian crystalline rocks to the southwest."Page 9, section 10.3.5: Reconcile whether the spelling is Fluor Daniel or Flour DanielPage 10, section 10.3.6: Add "ft" to sentence, "Further to the north and northeast, depth to bedrock can be greater than 125 but shallows near the Arkansas River near where the Pierre Shale is exposed along the Arkansas River (WESI, 2012b)."Page 11, section 10.4: Add space between "This" and "loam" in the sentence, "This loam covers approximately 55 percent of the area of OU2."Page 16, section 10.6.3: Depot is misspelled in the sentence, "Although excavation occurred at Team Track, NONAC, and Fourth Street Depot, and some backfill occurred at Fourth Street Deport and NONAC, remedial investigations have not been completed."	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

151	Figures, pg. 2	Figure 10-2	The OU3 boundary lines are misleading. OU3 has not yet been fully defined. This should be made clear on this figure. This comment applies to all figures with this OU3 boundary identification.  Remove RML surface water sample locations, as they are not Site Features. Figure should include SCS Dam, former facility, PRTW, and other related features.	
152	Figures, pg. 4	Figure 10-4	Identify or note where Arkansas River is on the generalized geologic cross section.	
153	Figures, pg. 5	Figure 10-5	Proposed sample locations should be removed from figure and moved to figures associated with sample planning.	
154	Figures, pg. 6	Figure 10-6	NRSC overlay should be updated if newer version is available.	
155	Figures, pg. 7	Figure 10-7	SCS Dam polygon overlays should be included in the Legend. All drainages should be identified.	
156	Figures, pg. 8	Figure 10-8	Reference should be included on how/where the bedrock contact information came from.	
157	Figures, pg. 9	Figure 10-9	How did Cotter modify Ensero's uranium contours? Explanation should be given on figure. SCS Dam polygon overlays should be included in the Legend.	
158	Figures, pg. 10	Figure 10-10	How did Cotter modify Ensero's molybdenum contours? Explanation should be given on figure. SCS Dam polygon overlays should be included in the Legend.	
159	Figures, pg. 11	Figure 10-11	All TCE concentrations should be included on the Figure. Recommend boxes or some sort of contrast between Well ID and Concentrations.	
160	Figures, pg. 12	Figure 10-12	Clarify which report maps were taken-from and how the figures were modified for use.	
161	Figures, pg. 13	Figure 10-13	O pathway evaluation note should be clarified on if the use of the term "future" is in reference to future use or future evaluation.	
162	Figures, pg. 13	Figure 10-13	Incidental Ingestion of Groundwater should be changed from a "O" to a filled in circle based on current Site use for maintenance operations onsite.	
163	Figures, pg. 13	Figure 10-13	Section 10.8.2.2 says that Construction Work-> Vapor Intrusion is a complete pathway. Figure should be updated from an "X" to "O".	
164	Figures, pg. 13	Figure 10-13	As commented regarding Section 10.8.2.5, Construction work-> Surface Water / Sediment should be updated from "X" to "O" or "O" with a dot.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

165	Figures, pg. 14	Figure 10-14	Section 10.8.2.2 says that Construction Work-> Vapor Intrusion is a complete pathway. Figure should be updated from an "X" to a filled in circle.	
166	Figures, pg. 14	Figure 10-14	As commented regarding Section 10.8.2.5, Construction work-> Surface Water / Sediment should be updated from "X" to "O" or "O" with a dot.	
167	Figures, pg. 14	Figure 10-14	Assuming resident recreator is maximally exposed recreator to be assessed in the HHRA, then crop ingestion and indoor air should be the same for both recreator and resident receptors.	
168	Figures, pg. 15	Figure 10-15	Remove Note #4 in OU2 CSM Table. Although it is not believed that any Lincoln Park residents use domestic wells for drinking water, this cannot be confirmed without a comprehensive well survey.	
169	Figures, pg. 15	Figure 10-15	Surface water arrow should be point to it's own evaluation rather than Dust Inhalation-> Recreator (adolescent)	
170	Figures, pg. 15	Figure 10-15	Note should be added to the table that construction/commercial works are shown on the table since the residential pathway assessment will be conservative enough to cover construction/commercial receptors.	
171	Figures, pg. 15	Figure 10-15	Recreator pathways for dust inhalation and external should be complete pathways. Surface water should include incidental ingestion. Dermal contact and external for potential exposure routes should have an X for residents and circle with dot for recreator. Water supply for residents would be open circles. Also, although adolescents may be more likely to recreate in this area, it is possible that young children may also recreate and should be considered.	
172	Figures, pg. 16	Figure 10-16	Note #3 references a 2017 ROD, when it should reference the 2002 ROD.	
173	Figures, pg. 16	Figure 10-16	Formatting issue with Biota Uptake arrow, which should be removed.	
174	Figures, pg. 18	Figure 10-18	Currently the primary impoundment and multiple other areas within the restricted area are open surface water bodies. These exposures should be assessed as part of the ERA. Although the CDPHE through the RML is managing the Site, exposures related to onsite wastes need to still be evaluated.	
175	Figures, pg. 18	Figure 10-18	Note #1 is incorrect; there are multiple year-long surface water exposure within the restricted area.	
176	Figures, pg. 18	Figure 10-18	Semi-aquatic wildlife may feed on terrestrial food items. The ingestion pathway for Semi-Aquatic Wildlife should be shown as complete, quantitative evaluation. The Semi-Aquatic Wildlife	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

			Incidental ingestion of sediment and surface water pathway should also be shown as complete.	
177	Figures, pg. 19	Figure 10-19	CSM table does not appear to take into account the primary impoundments or other onsite features.	
178	Figures, pg. 19	Figure 10-19	Note #1 is incorrect; there are multiple year-long surface water exposure within the restricted area.	
179	Figures, pg. 19	Figure 10-19	Ingestion of surface water should be shown as complete, quantitative evaluation for terrestrial wildlife.	
180	Figures, pg. 20	Figure 10-20	Semi-aquatic wildlife "X"s should be "O". If irrigation caused secondary contamination, wildlife interacting with the soil/vegetation would be a complete, but minor pathway.	
181	Figures, pg. 20	Figure 10-20	Ingestion of terrestrial food items, incidental ingestion of surface water, and incidental ingestion of soil should all be shown as complete pathways for semi-aquatic wildlife.	
182	Figures, pg. 21	Figure 10-21	Ingestion of surface water should be shown as complete, quantitative evaluation for terrestrial wildlife.	
183	Figures, pg. 22	Figure 10-22	Show direct contact with surface water as hypothetically complete for wildlife receptors.	
184	Figures, pg. 23	Figure 10-23	Fourth Street Depot needs to be added to Figure 10-23. Worksheet 10 states that "the Arkansas River may have received sediment input due to historical erosion from Fourth Street Depot." Figure 10-23 should include pathways of exposure of aquatic organisms to sediment and surface water. Figure 10-23 should also include ingestion of aquatic organisms by wildlife receptors.	
185	Figures, pg. 16, 17	Figure 10-16 and Figure 10-17	Revise "Notes" to remove "released and" from note one. Are there any future development or utility work concerns or is this covered by a deed restriction or IC covering deeper soil?	
186	Figures, pg. 9, 10	Figure 10-9, 10-10	Define the brown and lime green areas in the figure legend.	
<b>Project/Data Quality Objectives, Worksheet 11</b>				
187	1	Section 1	1st Paragraph. COPC and COPEC should both be "contaminants", not "constituents".	
188	1	Section 1	2nd Paragraph. Revise "...systematic identification of all potential COI has not yet been completed." to "...systematic identification of all potential COI will be completed as part of this investigation."	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

189	1	Section 1	3rd Paragraph. Revise "appropriate" to "potential" in 2nd sentence of paragraph. "Potential" was already used to describe COI. If "appropriate" is a more appropriate adjective, then a sentence should be included to explain the difference uses.	
190	1	Section 1	State the Problem, first paragraph, p.1. Maximum measured environmental media concentrations should be used for screening. Suggested revision "Per the Work Plan, <i>the maximum measured</i> environmental media concentrations in each Operable Unit (OU) are to be screened against protective human and ecological health action levels." Add the italicized text to the statement.	
191	2	Section 1	4th Paragraph. Revise "Colorado Department of Public Health and Safety (CDPHE; Remedial Project Manager)" to "Colorado Department of Public Health and Environment (CDPHE; Project Manager)".	
192	2	Section 1	5th Paragraph. COIs are not limited to those identified by the EPA in the Work Plan. As stated in the 3rd Paragraph, a systematic identification should also be completed to include any additional COI that have not been previously identified.	
193	2	Section 2	Estimation Statement that Addresses the Study Questions. Previous applicable Gamma Studies should be included in the list of "anticipated historic maximum concentrations".	
194	2	Section 1	State the Problem, third paragraph, p.2 . Maximum measured environmental media concentrations should be used for screening. Suggested revision "To ensure COI concentration screening does not unintentionally exclude constituents from further assessment, <i>the maximum measured</i> constituent concentrations in <i>environmental media</i> in each OU are needed." Revise the statement with the italicized text.	
195	2	Section 1	Colorado Department of Public Health and Environment needs to be added to Worksheets #3/#5 and Worksheets #4/#7/#8.	
196	2	Section 2	Need a clear decision statement. Suggested statement: "If maximum measured concentrations of COIs in any exposure medium exceed project action levels, then those COI are identified as COPCs/COPECs for further evaluation of risk."	
197	2	Section 2	Last bullet: Add "and require further investigation" after "(all COI are considered either COPC or COPEC)"	
198	2	Section 2	"What is the set of COI related to site operations and releases into the environment?" is not a study question. This should be determined based on site operations and existing data. The study question is to identify COPCs and COPECs.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

199	2	Section 2	The text states "What is the set of COI related to site operations and releases into the environment?" The statement should be revised to "...potentially related to site operations. as risk assessments are not intended to attribute contamination to a specific source.	
200	3	Section 3	1st Paragraph. Cotter may retain systems or process knowledge of the Site/operations, that should be assessed in the development of the list of COI. Include "Cotter operations history" to the list of information presented.	
201	3	Section 3	List the COI here: radionuclides, TAL metals, molybdenum, uranium, VOCs, SVOCs, PCBs and petroleum hydrocarbons	
202	3	Section 3	At the beginning of the second paragraph, add the statement, "Definitive, validated data are needed for risk assessment."	
203	3	Section 3	The site operational history should also be listed in the information used to develop the list of COI.	
204	3	Section 3	Replace "EPA will also compare..." with "Comparison of..." This is part of the QAPP and SAP development.	
205	3	Section 4.1	This section should identify classes of COIs that will be measured. Similar to section 4.2 which discusses soil.	
206	4	Section 4.1	The date of the ROD mentioned in the OU2 bullet point should be included.	
207	4	Section 4.1	The final sentence on this page "The temporal boundaries... groundwater concentrations" is repeated in the next paragraph.	
208	5	Section 4.1	Timeframe & Scale for Decision-Making or Estimation. Text states/implies multiple times that data collection will only encompass 1-year period. Text should be revised/clarified about how this design addresses temporal, hydrological, or anomalous changes at the Site.	
209	5	Section 4.2	Target Population & Sampling Unit, Operable Unit 1. Confirmation depth (0.5-2') samples & further assessment based upon shallow (0-0.5') concentrations should both be included. Due to the amount of earth moving activities that have occurred at the Site and it's long operational history, depth samples are required. Alternatively, text can state that subsurface will be characterized as part of N&E and the Risk Assessment will be updated and reevaluated as necessary.	
210	5	Section 4.1	The last sentence of this paragraph "A single sampling...current conditions" refers to soils; however, this section is about groundwater. Move this sentence to section 4.2 Soil.	
211	5	Section 4.2	Operable Unit 1 should be broken out into restricted area and non-restricted area.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

212	5	Section 4.2	Note that unsieved surface samples (0-6 inches) will be assessed for risk to ecological receptors.	
213	5	Section 4.2	Subsurface soil depths should be 0.5- 2 ft instead of 0- 2 ft. Clarify which COIs are included in "Uranium processing-related COI"	
214	5	Section 4.2	For HHRA, 0-1 inch best represents surface soil exposure. Also, note that <150 µm particle size fraction for analysis is needed.	
215	5	Section 4.2	Correct "metal" to "metals."	
216	5	Section 4.2	Worksheet #10 specifies petroleum hydrocarbons, including VOCs and SVOCs. These should also be included in the last bullet point. Additionally, mercury should be included in this list.	
217	5	Section 4.2	The classes of the COIs should be listed.	
218	5	Section 4.2	For HHRA, 0-1 inch best represents surface soil exposure. Also, note that <150 µm particle size fraction for analysis is needed.	
219	5	Section 4.2	The classes of the COIs should be listed.	
220	5	Section 4.2	For HHRA, 0-1 inch best represents surface soil exposure. Also, note that <150 µm particle size fraction for analysis is needed.	
221	6	Section 4.2	This section should also include the size of the exposure units.	
222	6	Section 4.2	Correct section number to 4.3 for Surface Water and Sediment.	
223	7	Section 4.2	Surface Water and Sediment is titled as Section 4.2, but should be Section 4.3. Sections become off throughout rest of worksheet and should be corrected.	
224	7	Section 4.2	Target Population & Sampling Unit. Surface water of the impoundment and other features should be included in the Risk Assessment. These features and not CERCLA implemented and have been present for long time periods; reasonable expectation is that these features will continue to exist for the time being and should therefore be included.	
225	7	Section 4.2	Target Population, Operable Unit 3. Either wrong punctuation or missing bullet points.	
226	7	Section 4.2	The text states "Surface water and sediment samples in the Arkansas River, and at locations where groundwater elevations indicate a seasonal elevation within five feet of ground surface elevation, indicating a potential seep (see Figure 17-23)." Provide rationale for why 5 feet bgs was selected as the criteria for indicating a potential seep.	
227	7	Section 4.2	Surface Water and Sediment Operable Unit 1, Operable Unit 2, and Operable Unit 3. The classes of the COIs should be listed.	



**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

228	7	Section 4.2	Surface Water and Sediment- Sampling Unit- Operable Unit 1, Operable Unit 2, and Operable Unit 3. These bullet points need more information. Specify whether ICS or discrete samples. Specify the water type (disturbed, dissolved, or other). Also, note that <250 µm particle size fraction for analysis for sediment for HHRA.	
229	7	Section 4.2	Surface Water and Sediment- Sampling Unit: Operable Unit 1. Note that -unsieved surface samples (0-6 inches) will be assessed for risk to ecological receptors. Also note that total and filtered surface water samples will be assessed.	
230	7	Section 4.2	Surface Water and Sediment- Sampling Unit: Operable Unit 3. Add more detail to the location along the Arkansas River. Suggested addition: "up and down stream of the Fourth Street Depot and the confluence of Sand Creek and the Arkansas River"	
231	7	Section 4.3	Correct section number to 4.4 for Air.	
232	8	Section 4.3	Clarification is needed regarding whether air monitoring or air sampling is being proposed.	
233	8	Section 4.3	The text states "Air sampling is not identified in the Work Plan for OU2 or OU3 and no air quality data gaps are identified for OU2 and OU3 in the Draft RI (Ensero, 2022)." Additional explanation is needed. At a minimum, language should be included indicating OU1 air results will be used to determine necessity of step-outs in OU2/OU3 and addressed in baseline HHRA.	
234	8	Section 5	Develop the Analytical Approach- Logic for Drawing Conclusions from Findings. There is no previous mention of ISM sampling. Earlier in the document, it specifies biased/targeted sampling. If ISM is going to be used, then it needs to be added throughout this worksheet.	
235	9	Section 5	Develop the Analytical Approach- Logic for Drawing Conclusions from Findings. "Five replicates from each DU..." needs a citation or calculations justifying this number of replicates. Are these replicates or individual discrete samples? How will sample locations be determined?	
236	9	Section 5	Develop the Analytical Approach- Logic for Drawing Conclusions from Findings. This is the first mention of reference areas which is outside of the scope of this specific QAPP. Reference/background concentrations cannot be used to eliminate COI from further evaluation in the risk assessment. Comparison of targeted areas versus reference areas would require a much more detailed discussion. Further, the planned sampling that is based on biased sampling cannot be used in a defensible comparison to reference data.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

237	9	Section 5	Develop the Analytical Approach- Logic for Drawing Conclusions from Findings. The objective of this QAPP is not to compare data to reference parcels because reference/background concentrations cannot be used to eliminate COI from further evaluation in the risk assessment. Further, stating that UCLs will be calculated for reference parcels for comparison to site concentrations is not correct. To support risk management, UTLs (not UCLs) would be calculated on the reference parcels for comparison to site concentrations. Alternately, t-tests would be conducted between target and reference area data. Additionally, targeted/biased sampling results should not be compared to reference area data. The discussion as presents is inadequate and lacking details.	
238	9	Section 5	Develop the Analytical Approach- Logic for Drawing Conclusions from Findings- Estimator. The parenthetical references ISM data. Clarification is needed regarding where ISM is being used.	
239	9	Section 6	Specify Performance or Acceptance Criteria- Decision. Suggested edits: H0: " <i>The estimated maximum concentration</i> of a given COI is at or above its receptive Project Action Limit." For Ha, " <i>The estimated maximum concentration</i> of a given COI is below its respective Project Action Limit."	
240	9	Section 6	Specify Performance or Acceptance Criteria. A false decision acceptance error is described only in the context of groundwater. This applies to all media. Suggested revision: "A false decision acceptance error occurs when the presence of a given COI in <i>an environmental exposure medium</i> is deemed hazardous when it is not hazardous."	
241	10	References	References can be removed/combined with references from Table of Contents.	
242	10	Section 6	Specify Performance or Acceptance Criteria- Estimation. What uncertainty is reduced? What if contamination is missed because only biased sampling was conducted?	
243	10	Section 6	Specify Performance or Acceptance Criteria. Delete "in groundwater" from the second to last sentence in Section 6. This applies to all media.	
244	1 to 11	Throughout	The sampling discussions throughout this worksheet need to clearly identify discrete versus ISM sampling.	
<b>Measurement Performance Criteria, Worksheet 12</b>				

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

245	1	Footnotes #1 & #2	These footnotes do not point to Eurofins's method SOPs but rather a Region 1 document, a DoD/DoE document and others. Do these tables reflect the performance criteria contained in Eurofins's analytical method SOPs or are they "generally acceptable" parameters based on the listed citations? If they do not reflect the actual performance criteria that Eurofins's SOPs specify, when will the worksheets be updated to reflect that information? It is suggested that Eurofins's SOPs are included as an Appendix to the QAPP so that the criteria listed in Worksheets #12 and #28 can be verified.	
246	1	Footnote #3	Change "Detection limits" to "Reporting limits"	
247	6	Analytical Group	EPH & VPH. Explain the basis for using Massachusetts methods in Colorado.	
248	7	Table title, page 7 of 20	Specify that it is TAL metals	
249	14	Matrix: Soil/Sediment-Analytical Group or Method: TAL Metals 6020B	It is unclear if ISM sampling is proposed for any of the soil sampling. If it is used, then the RSD needs to be added to the soil tables.	
250	14	Matrix: Soil/Sediment-Analytical Group or Method: TAL Metals 6020B	The method and table for mercury are missing.	
251	20	Analytical Group or Method	Why are methods for other COIs not presented for air?	
252	4 through 11	Row: Sensitivity Column: Measurement Performance Criteria	Change "Detection limits" to "Reporting limits"	
<b>Secondary Data Uses and Limitation, Worksheet 13</b>				
253	1	Data Summary Technical Assessment (CLL, 2018)	"Useability of data was identified with general assessment factors" Explicitly state here any issues with the existing dataset	
254	1	Table	Add 2021 final report for TCE in groundwater.	
<b>Project Tasks and Schedule, Worksheet 14 &amp; 16</b>				
255	1	OU2 Public Scoping	Deliverable should be updated from "None" to "meeting summary" for deliverable.	
256	1	OU2 Homeowner Surveys	Include EPA/CDPHE with Responsible Party and change "None" to "Meeting Summary" for deliverable.	
257	1	Access Agreements	Include EPA/CDPHE with Responsible Party.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

258	1	Mobilization/Demobilization	Add "Notice of Mobilization (email)" as a deliverable with a due date of "10-days prior to mobilization"; change frequency to "as appropriate".	
259	1	Description, Frequency, Planned completion date, Deliverable(s)	Editorial comments:Merge activity and description boxes so that there aren't any blanks.The first row in the Frequency column is blank.Seep/Spring Surveys- Planned Completion Date: Add a footnote to indicate when collections will be made (e.g. April after snowmelt and August toward the end of the rainy season).Deliverable for Coordinate OU1 restricted area sample collection with CDPHE should be a memo for more formal documentation that can be cited.Deliverable for OU1 sample collection-- air and soils should be field sampling reports.Deliverable for OU2 Public Scoping at CAG meeting should be meeting notes.Deliverable for OU2 Homeowner surveys should be a spreadsheet and a survey summary report documenting that all homeowners were contacted and what, if any, responses were received.Deliverable for OU1, OU2 and OU3 access agreements should be a Summary Report.Deliverable for all sample collections should also include a sampling summary report.	
260	1	Responsible Party	ENSERO needs to be added to Worksheets #3/#5 and Worksheets #4/#7/#8.	
261	1	Responsible Party	WESI is listed as the Responsible party for OU1 sample collection for air. Worksheet #6 indicates H3 as doing air, soil, and RAD sampling. There needs to be consistency in identifying project teams and responsibilities.	
262	1	Seasonal habitat/vegetation survey	These have not been mentioned previously. These surveys should be described in Worksheet #11.	
263	2	Responsible Party	WESI is listed as the Responsible party for OU1 sample collection for surface water. Worksheet #6 indicates Brown and Caldwell as doing surface water and sediment sampling. There needs to be consistency in identifying project teams and responsibilities.	
264	2	Responsible Party	WESI is listed as the Responsible party for data analysis of all sampling activities. Worksheet #6 indicates Eurofins is responsible for analytical corrective actions. There needs to be consistency in identifying project teams and responsibilities.	
<b>Project Action Limits and Laboratory-Specific Detection/Quantitation Limits, Worksheet 15</b>				
265	1	Introduction	Acronyms "COI" and "RL" are not defined.	
266	1	Section 10.1	Section should be renamed from a 10 series (10.1) to 15 series throughout.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

267	1	Section 10.1	"ELCR" and "HQ" are not defined in the text.	
268	1	Section 10.1	3rd bullet. Explain the basis for using Massachusetts standards in Colorado.	
269	1	Section 10.1	"Specific references appear in "PAL Reference" column in each table." Need to define the abbreviations used in the "PAL Reference" column. For example, WQCC(41) on the groundwater table needs to be defined.	
270	1	Footnote #2	The QAPP proposes that only Steps 1 and 2 of the ERA will be completed. ESVs should be used in the SLERA. USEPA Region 4 uses RSVs for refining COPECs in Step 3A; however, this is not done throughout EPA, and saying "USEPA recommends the use of" RSVs is misleading.	
271	2	Section 10.1	The reference for the National Recommended Water Quality Criteria-Human Health Criteria Table should be for water + organism.	
272	2	Groundwater Table	ESVs for surface water should be used for groundwater for the SLERA.	
273	2	Sediment Table- SVOCs	SVOCs are indicated to be in ug/kg, but the ESV values listed are in mg/kg. Suggest changing the SVOC table header to "SVOCs (mg/kg)". The units of the SVOC laboratory RLs and MDLs need to be confirmed to determine whether they are ug/kg or mg/kg.	
274	2	Sediment Table- SVOCs	The PALs for benzo[a]anthracene, benzo[b]fluoranthene and hexachlorobenzene are marine ESVs. Although they are lower than the freshwater ESVs, freshwater ESVs should be used as the PALs.	
275	3	Section 10.3	"Laboratory RLs and MDLs that exceed the PALs respective analyte are highlighted in red." PALs should only be compared to the RL, which is the lowest concentration that can be reliably measured (within specified limits of precision and accuracy), and is generally 3 to 10 times the MDL.	
276		All Worksheet 15 tables	MDLs for several analytes are erroneously displayed in red font where the MDL is indeed lower than the respective PAL.	
277	4	Air Table	It is not clear which EPA PRG table the PALs for radionuclides were identified. The values shown do not match the generic air PRGs. If an assumption of equilibrium was made those details need to be provided and the basis for that assumption should be included.	
278	4	Air Table	EPA Radionuclide screening levels are in units of pCi/m <sup>3</sup> , while the PALs referenced in this QAPP are in units of pCi/filter. Can pCi/m <sup>3</sup> be estimated from Ci/filter based on anticipated collection duration?	
279	4	Groundwater Table	The Reporting Levels and Method Detection Limits for many analytes, particularly radionuclides, exceed PALs. Steps should be	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

			taken to ensure the analytical methods selected achieve the lowest concentrations possible.	
280	4	Groundwater Table	Add fluoride to COI and PAL list. EPA included fluoride in the Final Phase 1 Risk Assessment Work Plan in response to comments from community stakeholders.	
281	4	Groundwater Table	The PAL for U-238 listed in the table is associated with the uranium chemical screening level, use the respective radionuclide screening levels for all uranium isotopes	
282	4	Groundwater Table	Laboratory MDLs exceed the PALs for Radon-220 and Radon-222 but they are not highlighted in red as indicated in the text on Page 3.	
283	5	Groundwater Table	What is the basis for groundwater PALs for the radionuclides? The values shown do not match EPA's residential tap water PRGs. Where are the VISL values being pulled from? The values shown do not match the default residential VISLs. The lower of the "tap water" and "MCL" values in the RSL table should be selected as the PAL. This is not done here, so there are multiple values that should be lower (see 1,1,1-Trichloroethane and Methylene Chloride for examples). The Cadmium tap water value from the RSL table is lower. There is a lower value for Manganese in the WQCC(41)-Table 1,2,3,4. Why is that value not being pulled in? There are lower values for Petroleum Hydrocarbons in the RSL table. Why are those values not being utilized?	
284	4	Groundwater and Soil Tables	The generic RSL tables contain screening levels for TPH aromatic/aliphatic fractions. Although the TPH fractions do not match the Mass DEP analytical method exactly, they are similar enough to be used for screening purposes. The TPH fraction RSLs are associated with EPA Provisionally Peer Reviewed Toxicity Values (PPRTVs), which as "Tier 2" toxicity values under EPA OSRTI's toxicity value hierarchy (OSWER Directive 9285.7-53), are preferred over the "Tier 3" screening values from Massachusetts DEP currently reference in this QAPP.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

285	9	Sediment Table	<p>Sediment PALs should be added for radionuclides or assume the same PALs as soil.</p> <p>All RSL values are in mg/kg not ug/kg. Confirm if PQL, RL, and MDL values are mg/kg or ug/kg.</p> <p>The lowest value is not being pulled from the RSL table; only the child ingestion value is being pulled in rather than the lowest SL. Why are the values from the RSL recreator table not being pulled in for petroleum hydrocarbons?</p> <p>The freshwater sediment ESV (0.204 mg/kg) should be listed for phenanthrene.</p> <p>No PALs are identified for petroleum hydrocarbons. Human health PALs should be considered as well as available ESVs for TPH diesel and TPH residual.</p> <p>For the following analytes, the saltwater sediment ESV was used when it was lower than the freshwater ESV: 1,1,2,2-Tetrachloroethane, 1,1-Dichloroethene, 1,2,3-Trichlorobenzene, Carbon tetrachloride, Dibromochloromethane, Ethylbenzene, Naphthalene, 2,4-Dimethylphenol, 2,4-Dinitrophenol, 2,4-Dinitrotoluene, 2-Methylphenol, Anthracene, Benzo[a]anthracene, Benzo[a]pyrene, Chrysene, Dibenz(a,h)anthracene, Diethyl phthalate, Dimethyl phthalate, Fluoranthene, Fluorene, Hexachlorobenzene, Hexachlorocyclopentadiene, Naphthalene, Phenol, Pyrene, Cadmium, Copper, Lead, Mercury, Nickel, Silver, and Total PCBs.</p> <p>Section 10.1 Identification of Reference Limits of the worksheet indicates that freshwater screening values would be used.</p> <p>For the following analytes, a RSV was used when a ESV should have been selected as the PAL: Cyclohexane, 1,2,4,5-Tetrachlorobenzene, 2,6-Dinitrotoluene, . Section 10.1 Identification of Reference Limits of the worksheet indicates that RSVs would not be used.</p>	
286	13	Soil Table- Vinyl chloride	<p>The lower of the soil ESV and the RSL should be selected as the PAL. There are a number of instances where the RSL is selected as the PAL. Examples noted during the review include vinyl chloride (0.03 mg/kg) and PAHs such as anthracene (29 mg/kg based on total LMWPAH), benzo[k]fluoranthene and pyrene (1.1 mg/kg based on total HMWPAH).</p>	
287	14	Soil Table	<p>Default PRGs for radionuclides should be based on peak PRGs for the most highly exposed receptor (residents). Values shown in this table do not match EPA PRGs.</p> <p>Why are the values from the RSL table not being pulled in for petroleum hydrocarbons?</p> <p>3&amp;4-methylphenol: The Reference Limit Source is ESV- Table 3.</p>	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

288	17	Surface Water Table	<p>Surface water PALs should be added for radionuclides or assume the same PALs as groundwater.</p> <p>There is a value available for 1,1,2-Trichloroethane in the RSL table (64.20 ug/l).</p> <p>The value for bromodichloromethane seems to have a typo based on the source.</p> <p>The value shown for carbon tetrachloride does not match the value in the source document.</p> <p>There are lower values for cadmium, silver and zinc that should have been selected. The surface water ESV in Table 1a is 0.45 ug/L for cadmium, 0.06 ug/L for silver, and 66 ug/L for zinc.</p> <p>Why are the values from the surface water RSL recreator table not being pulled in for petroleum hydrocarbons?</p> <p>The mercury ESV listed is the aquatic life value. There is a lower value available (wildlife based): 0.0013 ug/L that should be used as the PAL.</p> <p>There is a surface water ESV available for 1,1,2-trichloroethane, phenanthrene, and potassium. The chronic ESV from Table 1a (76 µg/L) should be used for 1,1,2-Trichloroethane. The chronic ESV from Table 1a (2.3 µg/L) should be used for phenanthrene. The chronic ESV from Table 1a (53,000 µg/L) should be used for potassium.</p>	
289	4, 20		<p>The PALs in this table for radionuclides for air, soil, and water are different from the PALs listed in Table 6-1 of EPA's Phase I Risk Assessment Work Plan dated February 2024.</p>	
<b>Sampling Design and Rationale, Worksheet 17</b>				
290	0	Sampling Design	<p>Worksheet. Sections on each specific OU/media only discuss Uranium and Molybdenum basis for selection, although first section describes all COI analytes being analyzed for. Current Ur &amp; Mo section should be expanded to include all COIs or additional sections added to describe those COI basis for selection.</p> <p>Cannot currently evaluate non-Uranium/Molybdenum sampling designs without further clarification on which wells will be sampled and why.</p>	
291	0	Tables	<p>Multiple tables are missing acronym definition for DSTA.</p>	
292	0	Section	<p>Text regarding access agreements. The Agencies can compel access at Superfund Sites if needed. If Cotter is not able to gain access through best efforts, the Agencies should be consulted prior to a sample location being dismissed.</p>	
293	1	Worksheet	<p>Worksheet should be organized with Section numbers as previous worksheets were.</p>	
294	1	Introduction	<p>2nd Paragraph. Why is NONAC Soil specific? Does that sentence not apply to all investigatory areas?</p>	



**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

295	1	Introduction	2nd/3rd Paragraph, Guidance Quote. The EPA Guidance text does not agree with the statements directly before and after the quote. The EPA Guidance says, "...samples only from areas known by experts to have the highest concentration levels...". Currently, it is believed or expected that the highest concentrations are in their present locations. Text should be included that explains that if higher concentrations are found at the Site elsewhere as part of the RI process, they will be included in the Risk Assessment, as warranted.	
296	2	Table 17-1	Table should include a column showing the Analytical Method since Worksheet 18 refers to the Table for Analytes.	
297	2	Table 17-1	COIs should include plutonium.	
298	1	Introduction	For the last sentence on this page, this is true. However, if this method is followed, then the data collected in Phase 1 will not be used in the Baseline Risk Assessments and cannot be compared to reference area data as discussed in Worksheet 11.	
299	12	Sampling Design	DWR monitoring well construction requirements should be referenced/footnoted.	
300	13	last paragraph	Format issues with text.	
301	14	Table 17-5	Sampling density is not high enough. Additional samples should be added to ensure that each potential contaminant group has redundant wells to ensure that no COI is overlooked. Currently, based on the sampling rationale, TPH has 3 wells, while metals, PCBs, and TCE have 1 well each. Additionally, radiological and PAHs have no wells identified.	
302	14	Table 17-5	Change "COI Determination" in "Purpose" column to "COPC/COPEC Determination".	
303	16	OU1 GW: Sample Location / Field Contingencies	Recommend that each well is sampled once, then the wells (primary vs backup) are evaluated to determine which set should be carried through to quarterly sampling.	
304	18	OU2 GW: Sampling Design	1st Paragraph. Last sentence of the first paragraph appears to be more related to determination of Nature and Extent. Recommend adding explanation on how this will better determine maxima.	
305	18	OU2 GW: Sampling Design, Ur & Mo	1st Paragraph. RML and CERCLA are different regulatory environments. The use of certain wells for RML monitoring does not mean that they are acceptable under CERCLA. Justification for using these well locations should not rely on RML acceptability.	
306	18	OU2 GW: Sampling Design, Ur & Mo	3rd Paragraph. Paragraph should better define/explain what the visual assessment will be evaluating (fouling, screen intervals, sediment, material, etc) to determine usability.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

307	18	OU2- Groundwater-Sampling Design and Basis for Selection	The sampling analysis should include TAL metals in addition to molybdenum and uranium	
308	20	Tables 17-6 & Table 17-7	Can these tables be combined? Recommend removing "Number of Samples" column and greying out wells/analytes/dates that are non-maximum.	
309	22	Sampling Design, Supplemental Wells	2nd Paragraph. Explain the basis for choosing that specific screen length and interval for Well 2002. Is it based on contamination dates & vertical flow gradients, arbitrary, or presence of a shale/coal seam? Deep well sampling design should typically be based on a contingency plan (first this, or else this).	
310	22	Sampling Design, Supplemental Wells	4th Paragraph. Sentences appear to be more related to determination of Nature and Extent. Recommend adding explanation on how this will better determine maxima.	
311	22	Sampling Design, Supplemental Wells	5th Paragraph. Sentences appear to be more related to determination of Nature and Extent. Recommend adding explanation on how this will better determine maxima.	
312	22	Sampling Design, Supplemental Wells	6th Paragraph. The agencies appreciate Cotter being proactive in submitting filings to DWR. Since these wells will fall under the CERCLA permit exemption, revise the last sentence to exclude "required regulatory filings".	
313	23	Sample Location and contingencies	1st Paragraph. All wells should be sampled, then evaluated to see which set should be included in the periodic sampling.	
314	23	Sample Location and contingencies	3rd Paragraph. Contingency Well Locations should be included on Figure 17-11.	
315	25	Table 17-8	Rationale for last 3 rows should be revised, since they are more appropriate for the nature and extent investigation. Additionally, purpose and rationale of the rows do not match.	
316	27	Sampling Design and Basis for Selection	A note should be added that the geographical extent of OU3 is not yet defined and that any additional areas discovered during the Nature & Extent investigation would need to be assessed; currently the text only covers known OU3 subareas.	
317	28	Tables 17-9,-10	Recommend combining these tables as discussed in a previous comment.	
318	29	OU3 Sampling Design and Basis for Selection – Supplemental Wells	Add wells along the Arkansas River with one upstream from Sand Creek and one downstream from Sand Creek.	
319	30	Sampling Design, Supplemental Wells	7th Paragraph. The agencies appreciate Cotter being proactive in submitting filings to DWR. Since these wells will fall under the	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

			CERCLA permit exemption, revise the last sentence to exclude "required regulatory filings".	
320	33	Section	Margins are different from previous pages.	
321	33	Section	Concerns with sampling density. Basis for limited sampling stations should be better clarified, or additional monitoring points should be included.	
322	33	OU1- Air- Sampling Design and Basis for Selection	For the second bullet point that states "metals," does this refer to TAL metals or does it also include mercury?	
323	33	OU1- Air- Sampling Design and Basis for Selection	For the third bullet, reference comment in Worksheet #10 regarding justification needed to support the assumption that no pathway exists for PCBs and TCE and other COIs.	
324	33	OU1- Air- Sampling Design and Basis for Selection	The text states "Monitoring for Radon-222 and –220 will not be conducted since the risk-based action levels are far below the analytical sensitivity level for available sampling methods. Additionally, available monitoring data for the eight air monitoring stations in OU1 (Ensero, 2024) demonstrate radon-222 is above risk-based action levels and will be included as a COPC." Change "monitoring" to "sampling". Radon-220 and 222 analytical results are needed for the COPC screening process regardless of whether the contaminants are presumptively included as COPCs. It is neither appropriate to exclude or include COPCs based on assumptions.	
325	35	Table 17- 12	Change units from uCi/mL to pCi/m <sup>3</sup> since those are the units used in the EPA Radiation Screening Levels. The unit conversions are such that the number values stay the same.	
326	35	Table 17-12	Recommend removing table and just referencing a report which contains the data, unless the information is directly relevant to the RA investigation.	
327	37	Assumptions	Assumptions made should be verified throughout the investigation. Add additional information or include how they will be verified.	
328	37	Section	OU1 Soil does not currently evaluate onsite cleanups or previous dirt moving activities. Basis should be expanded to include further discussion/evaluation of previous onsite activities and their impacts on Risk Assessment approach.	
329	38	OU1- Soil- Sampling Protocols	"Soil sampling will consist of surface soil sampling" will this be done through ISM or discrete sampling?	
330	38	OU1- Soil- Sampling Protocols	For HHRA, 0-1 inch is preferred for surface depth based on anticipated exposures. USEPA guidance recognizes surface soil for radionuclides as 0-6 inch depth. Consideration is needed to ensure	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

			that contamination within the top inch of soil is characterized. Sampling protocols should also describe sieving.	
331	38	OU1- Soil- Analytes	Further justification is needed to support the proposed sample density. For instance, what confidence is there that the maximum concentrations will be identified in the OPA based on a single discrete sample?	
332	39	Table 17-13	Revise "Comments" to "Comments/Rationale" or similar.	
333	39	Table 17-13 Sample Location Rationale	See previous comment on sample depth. It would be best to add a column for sieving, so that surface depth and sieving for HH versus eco are clearly identified.	
334	39	Table 17-13 Sample Location Rationale	For the samples that say "composite 0-24 inches and composite 24 inches to 10 feet" in the depth column, provide more details on how these samples will be composited. The way it is written can be interpreted as there will only be two samples for the 0- 24 inch depth and 2 samples for the 24 inch to 10 ft depth. Is that a sufficient sample size for screening?	
335	40	Scope Rationale	5th Paragraph. Sentence(s) should be added to this section to explain that a comprehensive well survey will be completed as part of nature and extent and may factor into this Risk Assessment, or similar.	
336	42	Outreach	1st Paragraph. Revise "includes a QR Code" with "includes a QR Code as well as general project and contact information" or similar.	
337	42	Outreach	It is recommended Cotter additionally include the Community Advisory Group in Outreach activities.	
338	42	Sampling Plan	Recommend that instead of removing nonfunctional wells from the program, that they be considered backup locations if not enough functioning wells can be sampled/assessed.	
339	42	Outreach	Note: due to the personal information that Exhibit 2 / survey will include, there will need to be consideration to Personally Identifiable Information (PII) and required redactions. Recommend including text explanation that certain information gathered may be PII and may require redaction.	
340	43	OU2- Private Well-Irrigated Soil- Sample Location Positioning and Field Contingencies	This is the first mention of ISM sampling in this worksheet.	
341	43	OU2- Private Well-Irrigated Soil- Sample Location Positioning and Field Contingencies	The following sentence needs clarification: "The Decision Units (Dus) will be laid out on the parcel maps and developed to cover the area of irrigated soil." Is "the area of irrigated soil" within a property or across properties?	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

342	43	OU2- Private Well-Irrigated Soil- Sample Location Positioning and Field Contingencies	Again, 0 to 1 inch surface depth is best for HHRA. Samples should be appropriately sieved.	
343	43	OU2- Private Well-Irrigated Soil- Sample Location Positioning and Field Contingencies	For the paragraph that starts with "the sampling protocol...", discuss the bulk sample that results. Will 1 to 2 kilograms of soil per increment provide enough sample material for all of the analyses being run? Please provide a breakdown of those calculations to verify it will. Additionally, discuss who is doing the sample preparation. Is the lab going to do the sieving to the correct particle size for HHRA and is slab cake subsampling necessary for ISM samples?	
344	46	List	Recommend adding a header to this list to better distinguish it from the text, since it is associated with the Exhibit 1.	
345	48	Exhibit B	Questions 5 & 6. Additional questions should be added or current questions revised, to address any other environmental conditions/sampling that residents know about. This is more related to nature and extent, so no changes are required.	
346	49	Sampling Design; Basis for Selection	2nd Bullet. Not enough information is presented to assume that surface soils and subsurface soils share the same COIs. It seems plausible, but would need to be confirmed via sampling during nature and extent.	
347	49	Section	Section is missing header and page numbers.	
348	49-57	OU3 Sub Areas Soils	There would be significant benefits associated with the use of ICS instead of discrete samples for currently identified OU3 sub areas. At a minimum, replicates of discrete samples perpendicular to the proposed transects should be considered in order to provide a source of redundancy that reduces the possibility of areas with relatively low concentrations being sampled by chance, thereby inadvertently excluding legitimate COPCs/COPECs. A decision unit approach that utilizes ICS could be used in the baseline risk assessments since the boundaries of these sub areas are established, which would reduce overall effort associated with risk assessment data collection.	
349	51	Sampling Design; Basis for Selection	3rd & 4th bullets are redundant and should be combined.	
350	51	OU3- NONAC Soil- Sampling Design and Basis for Selection	The acronym "bgs" should be moved in the last sentence to follow "6 feet below ground surface ( <i>bgs</i> )..."	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

351	51	OU3- NONAC Soil-Sampling Design and Basis for Selection	The text states "Polychlorinated biphenyls, trichloroethylene, total petroleum hydrocarbons, and volatile organic compounds from historical mill activities will not be present in soil at NONAC at concentrations above action levels (refer to Conceptual Site Model, Worksheet 10) because no pathway exists." Analyses of the full suite of COIs at all locations are needed to achieve cumulative risk assessment objectives. The use of assumptions to eliminate COPCs/COPECs is not appropriate.	
352	51	OU3- NONAC Soil-Sampling Design and Basis for Selection	Gamma survey data are acceptable for nature and extent evaluation and for screening, but definitive laboratory information is needed for the risk assessment.	
353	52	Physical Boundaries	2nd Paragraph, 2nd sentence. Sentence is in past tense and should be revised to future/anticipated tense.	
354	52	Sample Location; contingencies	3rd Paragraph. Hole offset is 0.5 meters; previous sections use 1.5 feet. For simplicity, contingencies should match to the extent possible.	
355	52	Sampling Protocols	2nd bullet. Contingency should be added incase hand auger is not able to reach 8' bgs. DPT or motorized auger should be considered.	
356	53	Sampling Protocols	4th Paragraph. Sentence discusses 0 to 6' bgs sampling, but not 8' bgs sampling.	
357	54	Sampling Design; Basis for Selection	1st Paragraph. Potential contaminant deposition should also include poor handling practices. Text regarding presence of surface soils and no mechanism for depth contamination should be verified by evaluation of fill import through historical records and site manager interviews.	
358	56	Sampling Design; Basis for Selection	3rd Bullet. Text is acceptable, but will need to be confirmed during nature and extent.	
359	57	Sample Location; contingencies	2rd Paragraph. Hole offset is 0.5 meters; previous sections use 1.5 feet. For simplicity, contingencies should match to the extent possible.	
360	58	OU3 Arkansas River-Surface Water and Sediment	Additional sample locations are recommended adjacent to and downstream of the Fourth Street Depot, rather than 3 samples upstream.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

361	59	OU3 Arkansas River-Surface Water and Sediment- Number and Placement of Samples	The text states "Sampling will occur at ten locations within the alignment of the Arkansas River from the upstream margin of the Forked Gulch watershed (location 907) to below the confluence with Sand Creek, within the eastern portion of the Arkansas River confluence with the Willow Creek Drainage (location 904; Table 17-14 and Figure 17-24)." Shallow groundwater seeps into a wetland from the base of the bluff adjacent to the Canon City Recreation Center (38.43389551485413,-105.20250058499656), which may be hydrologically connected to the Arkansas River. Suggest including an additional Arkansas River surface water locations that would capture this potential pathway and other similiar groundwater interaction zones.	
362	59	OU3 Arkansas River-Surface Water and Sediment- Number and Placement of Samples	Depositional areas should be targeted for sampling. For example, If there are more downstream areas within a reasonable distance of Veterans Park that are depositional areas, it is recommended that samples be collected there, as well.	
363	60	Sample Location; contingencies	7th Paragraph. Fix "Colorado Department of Public Health and Safety".	
364	61	Analytes	A report needs to be referenced/cited to support the statement, "The trichloroethene (TCE) plume in groundwater (Figure 17-3) is contained within OU1 and does not extend into the areas of potential surface water / groundwater intermingling."	
365	61	OU3 Arkansas River-Surface Water and Sediment- Sampling Protocols	Clarify that surface water samples should be collected before sediment. For human health, disturbed surface water samples are preferred to characterize exposures during sediment disturbance.	
366	62	Table 17-14	Figure No., Analytes, and Additional Notes columns should be removed from the table and added as a notes to the extent possible, since information is the same in each cell.	
367	1 through 63	Sampling Protocols	Note that 0-6 inches unsieved will be assessed for ecological receptors. For human health, the top 0-1 inches soil best represents exposure to surface soils. USEPA guidance also recognizes surface soil for radionuclides as 0-6 inch depth. Consideration is needed to ensure that contamination within the top inch of soil is characterized. Sampling protocols should also describe sieving. For metals, sieved soils are needed to characterize concentrations in the particle size that adheres to skin and is thus incidentally ingested.  Clarify whether soil sampling be discrete samples or ISM.	
368	1 through 63	Sampling Protocols	Need to discuss decontamination procedures or whether dedicated sampling equipment will be used.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

369	13, 23, 42	Throughout	Editorial comments, Page 13: "Two wells, 371 and 379, with groundwater samples with the highest reported concentrations of molybdenum and uranium, and wells 802 and 042, with the highest reported concentrations of TCE, were selected for groundwater sampling to support determination of OU1 <i>groundwater</i> COIs and are listed in Table 17-5." Change "OU1 COIs" to "OU1 groundwater COIs". Page 23: "Each well will have a groundwater sample collected from it and each groundwater sample will be analyzed for the <i>full</i> list of COIs as listed in Table 17-1." Correct "fill list" to "full list". Page 42: "The field team <i>may</i> also make two subsequent attempts via a door knock." Correct "make also make" to "may also make".	
370	17, 24, 31	OU1 & OU2 & OU3- Groundwater and Surface Water- Analytes	For the ecological risk assessment, both filtered and unfiltered samples are needed for metals, and total/unfiltered samples are needed for the other COIs. Hardness should also be included in the analysis.	
371	Through out	Groundwater and Surface Water Analytes	Analytes for groundwater and surface water should include hardness and include both total and dissolved TAL metals.	
372	Figures, pg. 1 through 26	All	Define the brown and lime green areas in the figure legends.	
373	Figures, pg. 12 & 13	Figures 17-12,-13	Recommend combining figures and using small tables/different colors to distinguish uranium and molybdenum.	
374	Figures, pg. 15 & 16	Figures 17-15,-6	Sample locations 1001 and 1002 should be added to the Figure since soil samples will be collected from those borings.	
375	Figures, pg. 19 & 20	Figures 17-19,-20	Figures should be updated to better show both the Residence property boundary and also which samples will be collected to which depths.	
<b>Sampling Locations and Methods, Worksheet 18</b>				
376	0	Groundwater	Recommend moving Type, Analyte, SOP, and Comments to Notes at bottom of Table. Information. Other helpful columns should be evaluated for inclusion, such as: rationale, subarea, purpose, etc.	
377	0	Columns	Combine redundant columns and/or cells. Many of the tables are very repetitive and busy to the point of being hard to read. Some cells should be combined, some columns can be moved to notes, formatting changes could be made to increase readability.	
378	0	Sampling SOP	All Tables in Worksheet should include the brief SOP Title in addition to SOP number (groundwater, soil, ISM, etc).	



**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

379	0	Type	Recommend removing Duplicate from Type and adding a separate QC column or other clearer distinguishment (for example: adding a second line: "[with duplicate]"). See other comment regarding combining cells.	
380	1	Groundwater	Significant figures for depth/screen interval should be evaluated/confirmed.	
381	2	Matrix	Revise "Matrix" to "OU / Matrix", then add in OU to the column. Although Sample IDs do provide reference to which OU the sample is from, having each OU listed provides easier reference.	
382	6	OU2 Private Wells	ITRC sampling SOP is referenced and does not appear to be present in Worksheet 21. Worksheet 21 lists a Brown and Caldwell SOP for ISM Sampling.	
383	11	OU3 Fourth Street Soil	Comments column should include maximum potential depth.	
384	15	Footnote	Frequency of QA/QC samples should be identified on this worksheet.	
385	1 through 15	Table	Add a column for OU, since Worksheet #20 sample counts are not separated out by OU.	
386	Through out	Type	Indicate type of sample (e.g., total, filtered). Also include QC samples (e.g., field duplicates), and number of samples per location.	
<b>Sampling Containers, Preservative, and Hold Times, Worksheet 19 and 30</b>				
387	0	Matrix	Table should be split between Matrix, then alphabetical.	
388	0	Columns	Move accreditation, sample volume, and turnaround time columns to notes. Add note/asterisk as applicable.	
389	0	Method/SOP	Split Method and SOP into separate columns. Add SOP title into SOP column (groundwater, soil, ISM).	
390	2	Mercury	Minimum sample volume is 0.5 L, and 1L is needed for MS/MSD samples.	
391	1 to 5	Throughout	ISM samples are being collected, which will arrive at the laboratory as bulk samples. These will require special sample preparation steps that are not included in this table.	
392	1 to 5	Throughout	Fill out the sample volume column throughout document.	
393	3, 4	Volatiles	The last row "volatiles" on this page repeats the same information included two rows up in the table. Need 4 vials for samples, Cool to ≤ 6 °C, additional vials for samples with MS/MSD, accordingly to CLP Field Samplers guidance, Table D-1. Remove last row on page 3 of 5, which is a duplicate of two rows above.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

394	4	PCBs	The PCB method should be 1668 instead of 8082/8082A. Congener analysis as opposed to homologue/Aroclor analysis is needed since the PCB source has likely weathered over time.	
<b>Field QC Summary, Worksheet 20</b>				
395	0	Columns	Table is very hard to interpret. Additional columns should be added for OU and subareas. Table should be organized by: OU, Subarea, Matrix, then Analyte. MS/MSD should be a combined column. Other column should be removed.	
396	0	Quality Control	Standard QC for CERCLA is 1:10 field duplicates, 1:20 MS/MSD, daily equipment blanks per team, and a field blank per activity/subarea.  Field QC notes at end of Table clarify rationale, but it is not accurate to the table itself. Table should replace "--" with "See Table notes".	
397	2	VOCs	Trip blanks are required for VOCs for all matrices.	
398	3	Notes	Table should show all samples planned to be collected under this QAPP. Remove note regarding the number of samples in a typical year. Recommend adding in a frequency column (if applicable)- once, quarterly, etc.	
399	1 to 3	Throughout	The number of MS/MSD samples need to reflect the percentage of samples listed in worksheet 28 (1 per 20 samples). The number should round up to the next whole number, so if 126 samples are being run, then 7 MS/MSD samples are required. Fix throughout tables.	
<b>Field SOPs, Worksheet 21</b>				
400	0	SOP	Multiple SOPs (SOP 130, 140, 120, 110, 105, 060, etc) have errors with page numbers. All SOPs need to be checked and corrected.	
401	1	TOC	Remove "Modified for Project" column. No columns are marked "Y" and any SOP through a QAPP is approved for a project specific purpose, so marking if it is modified is unnecessary.	
402	1	TOC	Table is inconsistent. Remove or add "N/A" from SOP option & Comments columns. Some rows are marked as "N/A", others are not- make use of N/A consistent.  Additionally, either equipment for each SOP needs to be listed or removed. Current column is inconsistent.	
403	1	TOC	No Restricted Area check-in/check-out SOP is listed.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

404	1	Materials	Recommend evaluating SOPs to determine if field efficiencies could include the (potential) use of electronic forms for certain tasks (sample sheets, calibration logs, drilling logs, surveys). SOP 010 discusses the use of ruggedized laptops/iPad, but it is not discussed anywhere else. Recommend adding in a new section to SOP 010 that discusses the possibility of using electronic forms and how other SOPs may implement this change (if warranted) in comparison to use of pen/paper. For example, calibration, sample collection, lithological, and COC forms could likely be primarily electronic (with paper forms available as backup), since the information is similar/repetitive.	
405	1	Comments	Include "Equipment Rinsate Sampling" in the comments for SOP E-060	
406	1	Field SOPs	EPA SOPs were cited earlier in the QAPP but are not listed here.	
407	1	Originating Organization; Organization Performing Analysis	All organizations listed in Worksheet #21 should be listed on Worksheets #3 through #8.	
408	2	Soil Sampling	Soil Sampling SOP / Equipment column lists ISM, although ISM is listed as its' own line directly below. Additionally ISM sampling has no equipment listed.	
409	2	Soil Sampling	Remove ISM from Soil Sampling option since ISM already has a listed SOP (SOP-LPSS-E-105).	
410	2	SOP-LPSS-E-100	This SOP does not stipulate that there is a random component to designing the grid from which increments will be collected. It identifies equal spacing for increments as critical, which is not true. See ITRCs guidance on possible ISM sampling strategies.	
411	3	Well Development	Comment is unnecessary. SOP should include applicable variance for low recharge / unstable parameters wells.	
412	6	Materials	Recommend adding bullet point to Section 5.2 (Materials) that lists expected data logging equipment (transducers, weather stations, GPS, etc) that may be used. Can be phrased to be inclusive of unidentified equipment.	
413	18	Numbering	Section 3.2 is a typo.	
414	21	Sample Labels	If tape is not going to be utilized, text should be modified to describe how label integrity will be maintained (indelible ink, water proof labels, redundancy, etc).	
415	22	Sample Packaging	Verify if the ice will be double bagged or if two layers of plastic will separate samples from ice (samples in a bag + ice in a bag). Likely isn't necessary to double bag ice, unless bottles are not already bagged.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

416	22	Sample Packaging	Will the cooler be lined with a trash bag, or is the ice being double bagged the planned approach? Some concerns with melted ice leaking, causing shipping delays.	
417	22	Custody Seals	Section relies on the assumption that coolers used have hinges (only 1 seal needed). Two custody seals may need to be used (opposite sides) to ensure that coolers with removable lids are securely closed.  Text should be made more specific or general to encompass other cooler types.	
418	23	Sample Shipping	3rd Paragraph. It should be evaluated/described as to whether or not samples collected on a Friday should be stored over the weekend and shipped. Recommend adding text to allow for the holding of samples if necessary.	
419	28	SOP	Pages 28 through 37 appear to be duplicative of the previous text and should be deleted.	
420	73	SOP	SOP 33 is mislabeled as SOP 030 in header.	
421	87	Types of IDW	<p>Cotter cannot rely on a Licensee and/or Licensing Agency to manage IDW without an agreement in place. If an agreement cannot be reached between Cotter and a Licensee and/or Licensing Agency, then Cotter needs to identify an alternative way to manage and dispose of IDW wastes. Leaving IDW in place or in an unsecure location is not protective to human health or the environment. Options that the Agencies believe are protective of human health &amp; the environment include disposal in the primary impoundment, subtitle C landfill, or other disposal options suitable for the types of IDW generated.</p> <p>All current text referencing Licensee and/or regulating agency managing RI/FS derived wastes should be removed.</p> <p>Currently, on-site wastes that are disposed of in the Primary Impoundment include spill impacted soils and sediments collected from the Check Dam. Here are the general procedures conducted by Ensero:</p> <ul style="list-style-type: none"> <li>a) Health and safety planning- Determine if a Radiation Work Permit or Job Hazard Analysis are needed which includes determination on whether any PPEs, occupational monitoring, or surveys are needed.</li> <li>b) Collected soil samples for representativeness (if needed)</li> <li>c) Excavate soils (either with machinery or by hand with a shovel). Document the volume.</li> <li>d) Transport to the Primary Impoundment in container(s) (either bucket with a lid or in a dump truck)</li> <li>e) Place in the Primary Impoundment (empty bucket or dump truck).</li> </ul>	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

422	92	Section 8.2	State Regulations and References should be referenced.	
423	92	Section 8.3	IDW SOP should include text related to show Haz vs non-Haz assessment will be made. Is it based upon analytical data of waste constituents, analytical data from IDW itself, or RCRA Haz waste field characterization? Assumptions made in the SOP (background samples not requiring waste management, pre-characterization of wastes, etc) don't appear to be wrong, but there needs to be a more formal process described that verifies these assumptions, especially when field conditions may not be accurately known. Current Section relies too heavily on professional judgement without further description. Professional judgement should be used, but the text should better describe how these judgements will be made, using what field methods or information, use of supportive lines of evidence, what tests will be completed to make the judgement, etc.	
424	94	Section 8.4	First sentence (and second paragraph) should be revised to include a staging area or nearby location. It may not be feasible or protective to HH&E to keep individual waste streams separate in all situations. A common (temporary) staging area may be required.	
425	102	Section 8.0	Last bullet point has a typo, "verification".	
426	104	Section 8.4	"verification is typically required" should be revised to a statement, such as "verification will be required". Additionally, SOP should identify which activities require utility clearance vs which do not. Will utility clearance be completed for 0'-0.5' soil sampling or only for drilling, or for any activities deeper than x-feet, etc. If this information is included in the specific sampling SOPs, sentence should be added to reference that.	
427	117	Section 8.1.1	Additional details regarding decontamination area within the restricted area should be included. Area should be assessed for integrity of holding IDW and a liner installed if necessary. Need periodic checks/evaluations to ensure waste is not being released.	
428	117	Section 8.1.1	For any equipment or personnel release from the restricted area, radiological contamination surveys should be performed in addition to equipment decontamination activities described in this section.	
429	117	Section 8.1.1	Currently, state contractor Ensero has been disposing of their purge water from environmental sampling and equipment wash water in the truck wash station container located within the restricted area. Water collected in the truck wash station container drains to the Water Management Pond 3 also located within the restricted area.	
430	120	Section 10.2	Recommend moving Section 10.2 to SOP E-030. Since E-060 is regarding decontamination, a section focused on deficiencies/maintenance does not belong.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

			Text in E-030 can be updated to include text showing that instruments will be inspected through multiple processes (daily checks, calibration, decon, drift check, as needed, etc).	
431	125	Section 8.1.3	Section has very large blocks of text, recommend breaking down bullets to include additional sub bullets for easier field reading/review.	
432	127	Section 8.2	It describes that one of the required materials is lead donut shield. Describe the formal name of this material if available.	
433	136	Section 8.2	Step 8 should be removed as it is out of order (more applicable within Step 6). Step 6 should be clarified that vegetation/materials should be removed prior to placing in a designated bag since ISM should be the composition of equal parts of its' aliquots. Agree with Step 8 that the lab will screen out large material, but it is important that each aliquot be as close to possible for usable material.	
434	152	Sections 4, 5, & 6	Sections 4, 5, & 6 of the Surface Water Sampling QAPP are inconsistent with other SOPs. In general, there is some inconsistency on how detailed/documented these two sections are throughout all the SOPs. It should be evaluated whether other SOPs need to be updated to match.	
435	158	SOP	SOP 130 is mislabeled as A-010 starting on second page. Page numbers on SOP are wrong.	
436	164	Parameters	ORP, DO, and turbidity need to be collected and are not optional, but required.	
437	168	Note	DO stabilization criteria should be "10% if >1mg/L, or 0.1 if <1mg/L", while ORP stabilization criteria should be "plus/minus 10 mV". Stabilization updates should be consistent throughout SOP.	
438	168	Note	Well cannot be sampled if stability is not reached within 15-minutes. Need to develop a protocol for wells not reaching stability (ex.: pH, EC, Turb (below 50 NTU) are stable and 3-well volumes have been purge).	
439	171	Section 9	Duplicates should be collected at 10% intervals, not 5%.	
440	191	Section 5.1	"Stem" is misspelled as "Stern" in the heading.	
441	194	Section 8.1	Last paragraph. Paragraph says that water levels will be measured each day before drilling, but doesn't describe where (closest MW?).	
442	203	Section 1.0	DPT is included within Purpose for Borehole Logging (SOP E-210), but is not included in the drilling SOP (SOP E-200). Recommend including DPT in SOP E-200 as applicable.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

443	205	Section 8.1	Text should specify how precise/often/granularity of the logging (every 1', as often as visually required, etc.). PID/FID readings every 5' should be included.	
444	217	Section 8.3.1	Remove requirement for RML licensee to handle IDW.	
445	241	Section 8.0	Change 24 hours wait period to 48 hour.	
446	242	Section 8.2.5	Well Development needs to have development criteria similar to monitoring well sampling, plus minimum of 3 well volumes. Development should not solely rely on turbidity and professional judgement.	
447	249	Section 8.2	"Construction debris" is not previously defined or discussed regarding materials handling. IDW SOP should be updated to include waste disposal evaluation.	
448	253	SOP-LPSS-E-300, Section 7.1	Change the words "obtaining soil samples" to "obtaining radiation survey data" because this SOP is related to radiation surveys instead of soil sampling.	
449	253	SOP-LPSS-E-300, Section 7.3	Second bullet item, change the words "for sampling activities" to "for surveying activities".	
<b>Field Equipment Calibration, Maintenance, Testing, and Inspection, Worksheet 22</b>				
450	0	Acceptance Criteria and Corrective Action	Listed acceptance criteria and corrective actions are not consistent for multiple rows. All rows should have a corrective action. Some acceptance criteria listed is more appropriate for the corrective action column (see solist water level meter).	
451	0	Responsible Person	Recommend delegating responsibilities to "trained personnel" or "personnel delegated by field team leader" as applicable. Current delegation puts significant responsibility on the field team leader and is not typical for field mobilizations.	
452	1	Columns	Column should be added showing topic (groundwater samples, ISM sampling, drilling, etc).	
453	1	Frequency	Grundfos frequency should be clarified to be either/both "periodic" or "as needed (with explanation)".	
<b>Analytical SOPs, Worksheet 23</b>				
454	1	Lab SOP Number	There needs to be an SOP for sample prep for ISM samples included in this table.	
<b>Data Verification Procedures, Worksheet 35</b>				
455	0	Responsible Person	QA Manager should be involved in periodic reviews of documents to ensure standards are being met throughout the process, not just as a final conclusion.	

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

			Recommend setting a Tapered review (weekly, then monthly, then quarterly, yearly, end of project) or other more thorough involvement.	
<b>Data Validation Procedures, Worksheet 36</b>				
456	0	Data Validation Level	Stage 4 data validation should be completed for all duplicate samples (10% of all samples). Alternatively, Cotter may propose decision criteria for Stage 4 data validation.	



Relevant requirements have been identified by the CDPHE Radiation Control Program regarding the Risk Assessment Quality Assurance Project Plan		
Topic	Relevant Requirement	Reference
Radiation Protection Programs	<ul style="list-style-type: none"> <li>* Develop, document, and implement a radiation protection program</li> <li>* Use, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as is reasonably achievable (ALARA).</li> <li>* A constraint on air emissions of radioactive material to the environment, excluding radon-222 and its decay products, shall be established, such that the individual member of the public likely to receive the highest dose will not be expected to receive a total effective dose equivalent in excess of 0.1 millisievert (10 mrem) per year from these emissions. report any event that exceeds this dose constraint as provided in 4.53.2 and promptly take appropriate corrective action to ensure against recurrence.</li> </ul>	6 CCR 1007-1 Part 4: 4.5
Occupational Dose Limits	Control the occupational dose to individuals.	6 CCR 1007-1 Part 4: 4.6 - 4.10, 4.12, 4.13
Radiation Dose Limits for Individual Members of the Public	<ul style="list-style-type: none"> <li>* Conduct operations such that the total effective dose equivalent to individual members of the public from the licensed or registered operation does not exceed 1 millisievert (0.1 rem) in a year</li> <li>* The dose in any unrestricted area from external sources, exclusive of the dose contributions from patients administered radioactive material and released in accordance with 7.26, does not exceed 0.02 millisievert (0.002 rem) in any one hour.</li> <li>* In addition to the requirements of Part 4, an entity subject to the provisions of the U.S. Environmental Protection Agency's generally applicable environmental radiation standards in 40 CFR 190 (July 1, 2004) shall comply with those standards.</li> <li>* Shall make or cause to be made surveys of radiation levels in unrestricted areas and radioactive materials in effluents released to unrestricted areas to demonstrate compliance with the dose limits for individual members of the public in 4.14.</li> </ul>	6 CCR 1007-1 Part 4: 4.14, 4.15

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

<p>Surveys and Monitoring</p>	<p>Make, or cause to be made, surveys of areas, including areas of subsurface radioactivity identified at the site, that:</p> <ul style="list-style-type: none"> <li>* Are necessary to comply with Part 4</li> <li>* Are necessary under the circumstances to evaluate:               <ol style="list-style-type: none"> <li>(1) The magnitude and extent of radiation levels; and</li> <li>(2) Concentrations or quantities of residual radioactivity; and</li> <li>(3) The potential radiological hazards.</li> </ol> </li> </ul> <p>Instrumentation</p> <ul style="list-style-type: none"> <li>* Ensure that instruments and equipment used for quantitative radiation measurements, for example, dose rate and effluent monitoring, are calibrated at intervals not to exceed 12 months for the radiation measured.</li> </ul> <p>Dosimetry</p> <ul style="list-style-type: none"> <li>* All personnel dosimeters, except for direct and indirect reading pocket ionization chambers and those dosimeters used to measure the dose to any extremity, that require processing to determine the radiation dose and that are used to comply with 4.6, shall be processed and evaluated by a dosimetry processor; holding current personnel dosimetry accreditation from the National Voluntary Laboratory Accreditation Program (NVLAP) of the National Institute of Standards and Technology; and approved in this accreditation process for the type of radiation or radiations included in the NVLAP program that most closely approximates the type of radiation or radiations for which the individual wearing the dosimeter is monitored.</li> <li>* Monitor exposures from sources of radiation at levels sufficient to demonstrate compliance with the occupational dose limits.</li> <li>* Monitor occupational exposure to radiation from radiation sources and shall supply and require the use of individual monitoring devices as required by Section 4.18.</li> </ul>	<p>6 CCR 1007-1 Part 4: 4.17, 4.18</p>
<p>Storage and Control of Source of Radiation</p>	<ul style="list-style-type: none"> <li>* Secure from unauthorized removal or access sources of radiation that are stored in unrestricted areas.</li> <li>* Control and maintain constant surveillance of radioactive material that is in an unrestricted area and that is not in storage.</li> </ul>	<p>6 CCR 1007-1 Part 4: 4.25, 4.26</p>

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

Precautionary Procedures	<p>* Caution Signs. Standard Radiation Symbol. Unless otherwise authorized by the Department, the symbol prescribed by 4.27 shall use the colors magenta, or purple, or black on yellow background. The symbol prescribed is the three-bladed design</p> <p>* Posting of areas or rooms in which radioactive material is used or stored, post each area or room in which there is used or stored an amount of licensed or registered material exceeding 10 times the quantity of such material specified in Appendix 4C with a conspicuous sign or signs bearing the radiation symbol prescribed in 4.27 and the words "CAUTION, RADIOACTIVE MATERIAL(S)" or "DANGER, RADIOACTIVE MATERIAL(S)."</p> <p>* Labeling Containers. ensure that each container of radioactive material bears a durable, clearly visible label bearing the radiation symbol prescribed in 4.27 and the words "CAUTION, RADIOACTIVE MATERIAL" or "DANGER, RADIOACTIVE MATERIAL." The label shall also provide information, such as the radionuclides present, an estimate of the quantity of radioactivity, the date for which the activity is estimated, radiation levels, kinds of materials, and mass enrichment, to permit individuals handling or using the containers, or working in the vicinity of the containers, to take precautions to avoid or minimize exposures.</p> <p>* Prior to removal or disposal of empty uncontaminated containers to unrestricted areas, remove or deface the radioactive material label or otherwise clearly indicate that the container no longer contains radioactive materials.</p>	6 CCR 1007-1 Part 4: 4.3
Waste Disposal	Dispose of radioactive material only by transfer to an authorized recipient as provided in 4.38 or in Parts 3, 14, or 18 of the regulations or by a procedure approved by CDPHE (for disposal to primary impoundment.)	6 CCR 1007-1 Part 4: 4.33, 4.34
Reports	Report to the Department any radioactive materials related incident or event as described.	6 CCR 1007-1 Part 4: 4.51, 4.52, 4.53
Instructions to Workers	<p>All individuals who in the course of employment are likely to receive in a year an occupational dose in excess of 1 millisievert (100 mrem) shall be:</p> <p>* Kept informed of the storage, transfer, or use of sources of radiation;</p> <p>* Instructed in the health protection problems associated with exposure to radiation and/or radioactive material to the individual and potential offspring, in precautions or procedures to minimize exposure, and in the purposes and functions of protective devices employed; Instructed in, and required to observe, to the extent within the worker's control, the applicable provisions of these regulations for the protection of personnel from exposures to radiation or radioactive material;</p> <p>* Instructed of their responsibility to report promptly any condition which may constitute, lead to, or cause a violation of the Act, the regulations, or unnecessary exposure to radiation and/or radioactive material;</p> <p>* Instructed in the appropriate response to warnings made in the event of any unusual occurrence or malfunction that may involve exposure to radiation and/or radioactive material; and</p> <p>* Advised as to the radiation exposure reports which workers shall be furnished.</p> <p>Exposure data</p> <p>* Radiation exposure data for an individual and the results of any measurements, analyses, and calculations of radioactive material deposited or retained in the body of an individual shall be reported to the individual as specified.</p>	6 CCR 1007-1 Part 10: 10.3, 10.4

**Attachment 1: EPA and CDPHE UFP-QAPP Document Review Crosswalk**

Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3

Transportation of Radioactive Materials	Each entity who transports radioactive material outside the site of usage where transport is on public highways, or who delivers radioactive material to a carrier for transport, shall: Comply with the applicable requirements, appropriate to the mode of transport, of the regulations of the DOT, 49 CFR Parts 107, 171, 172, 173, 174, 175, 176, 177, and 390 through 397.	6 CCR 1007-1 Part 17: 17.5
Spill Reporting	Provide notice to the department as soon as practicable upon discovery of any spill or release involving toxic or radioactive materials and shall provide an initial written report within seven days after any such discovery.	CRS, Title 25, Article 11, 25-11-107, (5) (k)

Attachment 2:  
EPA Region 8 Quality Assurance Project  
Plan QA Review Crosswalk

EPA REGION 8 CERCLA UFP QAPP DOCUMENT REVIEW CROSSWALK

<b>QAPP/FSP/SAP for:</b> <i>(check appropriate box)</i> <input type="checkbox"/> GRANTEE <input type="checkbox"/> CONTRACTOR <input type="checkbox"/> EPA <input checked="" type="checkbox"/> Other:	<b>Entity</b> ( <i>grantee, contract, EPA AO, EPA Program, Other</i> ) Cotter Corporation (N.S.L)	<b>Regulatory Authority</b> and/or <b>Funding Mechanism</b>	<input type="checkbox"/> 2 CFR 1500 for Grantee/Cooperative Agreements <input type="checkbox"/> 48 CFR 46 for Contracts <input type="checkbox"/> Interagency Agreement (FFA/CERCLA) <input checked="" type="checkbox"/> EPA/Court Order AOC/PRP <input type="checkbox"/> EPA Program Funding <input type="checkbox"/> EPA Program Regulation
<b>Document Title</b> <i>[Note: Title will be repeated in Header]</i>	Phase I Risk Assessment Quality Assurance Project Plan Lincoln Park Superfund Site OU1/OU2/OU3	<b>Review cycle</b>	New
<b>QAPP/FSP/SAP Preparer</b>	Wright Environmental Services, Inc.	<b>EPA Technical Reviewer</b>	
<b>Period of Performance</b> <i>(of QAPP/FSP/SAP)</i>	12/2024 through 12/2026	<b>Date Submitted for Review</b>	July 8, 2024 TBD- xxx xx, 2024
<b>EPA Project Officer</b> <b>EPA Project Manager</b>	Paul Stoick	<b>PO Phone #</b> <b>PM Phone #</b>	303-312-6908
<b>QA Program Reviewer or Approving Official</b>	QA Reviewer: Nathan Delhiero Record ID 363 Technical Reviewers: Paul Stoick/SEMD TBD- QA Reviewer:	<b>Date of Review</b>	1 <sup>st</sup> R8 EPA QAB Received Revision 0, Dated 7/8/2024: Completed on 8/1/2024 TBD- 2 <sup>nd</sup> R8 EPA QAB Received Revision x, Dated xx/xx/2024: xx/xx/xxxx

**Documents Submitted for QAPP Review (QA Reviewer must complete):**

**1. QA Document(s) submitted for review:**

QA Document	Document Date	Document Stand-alone	Document with QAPP
QAPP	7/8/2024	Yes / No	
FSP		Yes / No	Yes / No
SAP		Yes / No	Yes / No
SOP(s)			Yes / No

**2. WP/SOW/TO/PP/RP Date** Click or tap to enter a date.  
**WP/SOW/TO/PP/RP Performance Period** Not Applicable

**3. QA document consistent with the:**  
 WP/SOW/PP? Yes /  No  
 SOW/TO for contracts? Yes / No /  NA

**4. QARF signed by R8 QAM** Yes / No /  NA  
**Funding Mechanism** IA / contract / grant /  NA  
**Amount** Not Applicable

- Notes for Document Submittals:**
- A QAPP written by a Grantee, EPA, or Federal Partner must include for review: Work Plan (WP) / Statement of Work (SOW) / Program Plan (PP) / Research Proposal (RP) and funding mechanism
  - A QAPP written by Contractor must include for review:
    - Copy of Task Order Work Assignment/SOW
    - Reference to a hard or electronic copy of the contractor's approved QMP
    - Copy of Contract SOW if no QMP has been approved
    - Copy of EPA/Court Order, if applicable
    - The QA Review must determine (with the EPA CO or PO) if a QARF was completed for the environmental data activity described in the QAPP.
  - Field Sampling Plan (FSP) and/or Sampling & Analyses Plan (SAP) must include the Project QAPP or must be a stand-alone QA document that contain all QAPP required elements (Project Management, Data Generation/Acquisition, Assessment and Oversight, and Data Validation and Usability).
    - SOPs must be submitted with a QA document that contains all QAPP required elements.

**Summary of Comments** (highlight significant concerns/issues):

1. Comment: Please update the UFP-QAPP to resolve the inconsistencies between Cotter's UFP-QAPP and the risk assessment framework outlined in EPA's Phase 1 Risk Assessment Workplan (SRC, 2024), (RAWP). An example:
  - a. State the Problem on WK #11 does not address the basis for human health and environmental concern at the site from mill operations and uranium processing by Cotter, resulting in contaminants being released into the environment as stated in Section 2.7 of the RAWP.
 Cotter Response & Date:  
 EPA Resolved (date):
  
2. Comment: There are no references to Cotter's QMP in the appropriate Wks. Please reference and cite Cotter's QMP in the appropriate worksheets (WK) of this UFP-QAPP to ensure alignment between **Cotter's QMP** and their UFP-QAPP. One example: Cotter's QMP Section 4.1 states "each employee responsible for collecting or generating any aspect of environmental information operations for the Lincoln Park Superfund Site shall read this QMP and the UFP-QAPP and sign the employee acknowledgement form (Appendix C) to verify understanding of the overall quality goals and personal responsibilities."
 Cotter Response & Date:  
 EPA Resolved (date):
  
3. Comment: For all UFP-QAPPs submitted to EPA for review and approval, each UFP-QAPP must be accompanied by a **completed Region 8 UFP-QAPP crosswalk** as stated in Cotter's QMP Section 3 "The EPA Region 8 UFP-QAPP Crosswalk will be completed and submitted with UFP-QAPPs for review by the Agencies under the AOC/SOW as discussed in Section 5.3.4 of this QMP." A blank UFP-QAPP crosswalk was received from Cotter on 7/8/2024 without entry. Cotter must respond to all comments including the Summary of Comments and the Comments column of this crosswalk, Cotter's response must also include the response date. When the revised UFP-QAPP is re-submitted, an EPA QA reviewer will review the revisions and document the review findings under "EPA Resolved (date)."
 Cotter Response & Date:  
 EPA Resolved (date):
  
4. Comment: Please reference within the text of the UFP-QAPP worksheets, each attached **SOP** and when they are to be applied, and correct mislabeled SOPs (see a. below).
  - a. Worksheet #21 identifies SOP-LPSS-E-033 as the Organic Vapor Analyzer Calibration, but the attached SOP for Organic Vapor Analyzer Calibration is titled as Number: SOP-LPSS-E-030, SOP-LPSS-E-130 is identified as the Groundwater Level Measurements, but the attached SOP is titled Number: SOP-LPSS-A-010, and SOP-LPSS-E-170 as the Air Sampling and Analysis of Samples, but the attached SOP for Air Sampling and Analysis of Samples is titled as Number: SOP-LPSS-E-105. Note: correction email for the portfolio sent by Cotter on 7/11/2024 and 7/30/24.
  - b. One example of SOPs attached but not within the scope of this UFP-QAPP is SOP-LPSS-E-240 Borehole and Monitoring Well Abandonment is attached, but as currently written, well abandonment is not within the scope of this UFP-QAPP.
  - c. Administrative SOPs LPSS-A-010 for preparation and revision of SOPs are not referenced in WK #21. LPSS-A-020 for control of documents is not referenced in WK #29. LPSS-A-040 Assessment SOP is not referenced in WK #31 ,32, 33 for Assessments and Corrective Actions.
  - d. Worksheet #18 incorrectly identifies SOP-LPSS-E-100 for Sediment Sampling, this should be SOP-LPSS-E-110
 Cotter Response & Date:  
 EPA Resolved (date):
  
5. Comment: Exhibit 2 Resident Survey Form collects Personally Identifiable Information (PII). Cotter must revise the UFP-QAPP to define their process for protecting PII in compliance with 5 U.S.C. § 552a and EPA's Privacy Policy. The *Outreach* described in WK #17 associated with the Resident Survey Form are inconsistent with organizational chart on Worksheets #3 & 5; The Community Advisory Group, members of the public, and other project stakeholders, are omitted. This is also inconsistent with Cotter's QMP Figure 2-1 and AOC Section 13 stating "The Agencies will develop and implement community relations activities for the Site and the RI/FS". Please revise the document to describe Cotter's interactions with the community throughout the QAPP, QMP and AOC.
 Cotter Response & Date:  
 EPA Resolved (date):
  
6. Comment: Please revise all statements for soils "Field duplicate samples will be collected as a *split of the primary sample*" and use **Co-located duplicate** sampling as defined in ISM as "a set of *two separate samples taken a few inches apart*", not splitting one primary sample into two. The contrast of a split versus co-located field duplicates for soil at Team Track, Nonac, Old Berta Yard and Fourth Street, would be to provide important information for example: about the spatial heterogeneity and associated sampling error. Analytical laboratory duplicates already take two subsamples from the same field sample for separate analysis, as a standard lab QC practice.
 Cotter Response & Date:  
 EPA Resolved (date):
  
7. Comment: Please include all Field Equipment Manuals referenced e.g. Solinst Water Level Meter, YSI Water Quality Monitoring System, Ludlum Model 44, etc.
 Cotter Response & Date:  
 EPA Resolved (date):
  
8. Comment: Please complete WK #37 Step 5 to state limitations of using data based on Cotter's selection of **judgmental sampling design**. For example, judgmental sampling does not allow the level of confidence (uncertainty) to be accurately quantified and inferences cannot be made outside of the units actually analyzed or to be extrapolated. Please also modify your use of professional judgement "Since statistical analysis are not relevant to this work phase, selection of sample locations is based on the professional judgement considering the current site conceptual model to meet the investigation purpose and objectives." Professional judgement should not be confused with judgmental sampling design. Cotter's UFP-QAPP defaults to *professional judgement* for NONAC soils which does not align with the risk assessment framework outlined in EPA's Phase 1 Risk Assessment Workplan. The UFP-QAPP WK #17 is inconsistent with the RAWP Section 5.1 Soil Sampling for Risk Assessment and Section 5.6.3.1 OU3-Soil for *Triplicate ISM surface soil samples*, (ITRC 2020).
 Cotter Response & Date:  
 EPA Resolved (date):
  
9. Comment: Cotter Meeting Notes are attached in WK #9, however approval of the UFP-QAPP does not mean an approval of the accuracy of Cotter's meeting notes.
 Cotter Response & Date:  
 EPA Resolved (date):
  
10. A separate EPA and CDPHE UFP-QAPP Review Crosswalk has been provided by the EPA and CDPHE technical reviewers.

Element	Acceptable Yes / No / NA	Comments:
<b>Worksheets #1 &amp; #2: Title and Approval Page</b>		
A. Document title contains identifying information: Site/project name, Site location, Operational Unit (OU), project stage, and CERCLA phase.	No	EPA Comments: Please revise the header on all pages to reflect the full document title on the cover sheet to include OU1/OU2/OU3.  Cotter Response & Date: EPA Resolved (date):
B. Includes Lead Organization (Federal Facility or PRP), Lead Organization Project Manager (name/title/signature/date), Lead Organization Quality Manager (name/title/signature/date)	Yes	
C. Includes USEPA Region 8 Remedial Project Manager/Designated Approving Official -or- Remedial Project Manager and Quality Assurance Manager (name/signature/date) Mary Goldade, EPA Region 8 Quality Assurance Manager	Yes	
D. State Regulatory Agency, if applicable (name/title/signature/date)	Yes	
E. Other stakeholders as needed, including at minimum the project manager and QA representative of the organization preparing the QAPP	Yes	
F. Plans and reports from previous investigations relevant to this project	Yes	
G. Identifies guidance used to prepare QAPP.	No	EPA Comments: Please ensure documented alignment between Cotter’s QMP and the Phase 1 Risk Assessment UFP-QAPP. Cotter must follow their QMP in preparation of the UFP-QAPP and for implementation of environmental information operations (EIO). See Summary of Comments #2.  Cotter Response & Date: EPA Resolved (date):
H. List dates of scoping sessions.	Yes	
I. List dates and titles of QAPP documents written for previous site work, if applicable:	NA	EPA Note: There is a Final Phase 1 Risk Assessment Work Plan
J. List organizational partners (stakeholders and data users) and connection with lead organization	Yes	
K. If any required QAPP elements and required information are not applicable to the project, then circle the omitted QAPP elements and required information on the attached table. Provide an explanation for their exclusion.	Yes	
L. Document should indicate both project specific and generic QAPPs should be reviewed annually by the lead organization’s project manager. Project-specific and generic QAPPs must be kept current and be revised, when necessary, when directed by the approval authority, or at least every 5 years.	No	EPA Comments: Please revise WK #1, 2 page 2 to include the requirement for annual review of the UFP-QAPP documented on Region 8 UFP-QAPP crosswalk in alignment with Cotter’s QMP. See Summary of Comments #3.  Cotter Response & Date: EPA Resolved (date):



Element	Acceptable Yes / No / NA	Comments:
<b>Worksheets #3 &amp; #5: Project Organization and QAPP Distribution</b>		
A. Organization chart provided: Depicts key personnel, lines of authority, and lines of communication among the lead agency, prime contractor, subcontractors, and regulatory agencies	Yes	
B. Documents recipients of controlled copies of the QAPP (use asterisks on chart to designate QAPP recipients)	Yes	
C. Identify reporting relationships between all organizations involved in the project, including the lead organization and all contractor and subcontractor organizations. Identify the organizations providing field sampling, on-site and off-site analysis, and data review services, including the names and telephone numbers of all project managers, project team members, and/or project contacts for each organization.	Yes	
D. Check box - EPA Contract Laboratory Services (CLP) <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Quality Management Plan <input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> NA QMP Title:	Yes	
<b>Worksheets #4, #7 &amp; #8: Personnel Qualifications and Sign-off Sheet</b>		
This worksheet lists individuals' project titles or roles; qualifications; and any specialized/non-routine training, certifications, or clearances required by the project, e.g., explosives and ordnance disposal (EOD) technician, Professional Engineer, Certified Professional Geologist, etc.	No	<p>EPA Comments: Please revise WK # 4,7,8 to reflect the specific contractors selected for all tasks identified in the UFP-QAPP, along with their specific role. Please provide the Name, Project Title/Role for each. For example: Validata Chemical Services for Data Validation, each Eurofins Laboratory, Brown &amp; Caldwell for Risk Assessment. Is there a Drilling contractor selected for well installation for this phase? Etc.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p> <p>EPA Comments: Please complete WK # 4,7,8 where TBD is currently indicated e.g., Health &amp; Safety Coordinator, Field Team Leader, Contract Project Manager, Laboratory QA Manager, Data Validation etc. Key Staff: QA Staff, Procurement Specialists, Analytical Laboratories, Contract Project Manager and Other Contractors need to be specified in the UFP-QAPP in alignment with Cotter's QMP Section 2.5.1.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p> <p>EPA Comments: Please identify Assessment Personnel, in alignment with Cotter's QMP Section 11.3.1.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<b>Worksheet #6: Communication Pathways</b>		

Element	Acceptable Yes / No / NA	Comments:
<p><b>A.</b> The communication pathways must include each step of the project (planning, sampling, analysis, and data decision)</p> <p>This worksheet should be used to document specific issues (communication drivers) that will trigger the need to communicate with other project personnel or stakeholders. Its purpose is to ensure there are procedures in place for providing the appropriate notifications and generating the appropriate documentation when handling important communications, including those involving regulatory interfaces, unexpected events, emergencies, non-conformances, and stop-work orders.</p>	No	<p>EPA Comments: Please complete WK #6 Procedure column for Analytical Corrective Actions as it is not filled out and include all Organizations as Eurofins Denver QA Manager is the only person listed, but Lancaster and St. Louis are laboratories identified in the UFP-QAPP.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<p><b>B.</b> Communication drivers are those activities that necessitate communication between different responsible entities. These drivers can include, but are not limited to:</p> <ul style="list-style-type: none"> <li>• Approval of amendments to the QAPP</li> <li>• Initiation, notification and/or approval of real time modifications</li> <li>• Notification of delays or changes to field work</li> <li>• Recommendations to stop work and initiation of corrective action</li> <li>• Reporting of issues related to analytical data quality, including, but not limited to, ability to meet reporting limits</li> </ul>	Yes	
<b>Worksheet #9: Project Planning Session Summary</b>		
<p><b>A.</b> Identifies all electronic data deliverables (EDDs) that will be submitted for the project and the required fields for each EDD, using the Region 8 Format for EQUIS Data Processor (EDP)</p>	No	<p>EPA Comments: Please identify all electronic data deliverables (EDD) and required fields for each EDD for this phase of the project.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<p><b>B.</b> Provides a worksheet for each internal and external project planning session (including phone, web-conferencing, and/or face-to-face)</p>	No	<p>EPA Comments: Please correct WK#9 for Katelyn Lavrich's Organization as EPA. Please correct Nathan Delhierro as EPA/R8.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<p><b>C.</b> Include a description of the project's scoping decisions and action items</p>	Yes	
<p><b>D.</b> Include Data Needs Worksheet – Analyte, Matrix, Regulation, User, etc.</p>	Yes	

Element	Acceptable Yes / No / NA	Comments:
E. The QAPP must document the environmental decisions that need to be made and the level of data quality needed to ensure that those decisions are based on sound scientific data.	Yes	
<b>Worksheet #10: Conceptual Site Model</b>		
A. Background information/site history (may already have been presented in Executive Summary)	Yes	EPA Note: The EPA QA review has confirmed that the information is present, as we do a completeness check against the UFP-QAPP requirements. <i>A separate EPA and CDPHE QAPP Review Crosswalk has been provided by the EPA and CDPHE technical reviewers.</i>
B. Sources of known or suspected hazardous waste	Yes	
C. Known or suspected contaminants or classes of contaminants	Yes	
D. Primary release mechanism, secondary contaminant migration, and fate and transport considerations	Yes	
E. Potential receptors and exposure pathways, land use considerations	Yes	
F. Key physical aspects of the site (e.g. site geology, hydrology, topography, climate)	Yes	
G. Current interpretation of nature and extent of contamination to the extent that it will influence project-specific decision-making, data gaps and uncertainties associated with the Conceptual Site Model	Yes	
<b>Worksheet #11: Project/Data Quality Objectives</b>		
A. Provides the project quality objectives or data quality objectives using a systematic planning process such as EPA's Data Quality Objectives Process (EPA-QA/G-4, February 2006) or the U.S. Army Corps of Engineers' Technical Project Planning Process (USACE EM 200-1-2, 29 February 2016) document	Yes	

Element	Acceptable Yes / No / NA	Comments:
<p><b>B.</b> States the problem consistent with information contained in QAPP Worksheet #10</p>	<p>No</p>	<p>EPA Comments: Please add to <i>state the problem</i> consistent with the basis for Human Health and Environmental Concern as stated in Section 2.7 in the Phase I Risk Assessment Work Plan (RAWP). See Summary of Comments #1.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p> <p>EPA Comments: Please identify all worksheet # in the footer e.g. Worksheet #11, #20, etc., so that all worksheets are readily identifiable on each page.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<p><b>C.</b> Identifies specific study questions and defines alternative outcomes; explains how the data will be used to answer questions and choose among the stated alternatives (must be more specific than “nature and extent of contamination”)</p>	<p>Yes</p>	<p>Note: The Principal Study Questions (PSQs) and Potential Outcomes are focused on Step 1 of the risk assessment process; a future baseline Risk Assessment will incorporate the Risk Assessment Guidelines for Superfund (RAGS) for baseline risk assessment e.g. exposure assessment, toxicity assessment, and risk characterization.</p>
<p><b>D.</b> Specifies the types of data that are required to fill gaps in the Conceptual Site Model; explains in specific terms how all data will be used; identifies information inputs consistent with decisions made during project scoping consistent with QAPP Worksheet #9</p>	<p>Yes</p>	
<p><b>E.</b> Specifies the target (statistical) populations and characteristics of interest; defines spatial/temporal limits and the scale of inference - which (statistical) populations will be represented by which data; develops focused list of target analytes</p>	<p>Yes</p>	
<p><b>F.</b> Defines the parameter(s) of interest, specify the types of inference and which sample results will be used to support which decisions. Uses “if...then” statements for decision problems and/or the estimator and estimation procedure for estimation problems</p>	<p>No</p>	<p>EPA Comments: Please complete the <i>Logic for Drawing Conclusions from Findings: Decision Rule:</i> in WK #11, consistent with the Decision Rules in Step 5: Develop the Analytical Approach of the RAWP. One example: what should be done if the COI does not have a RBSL? etc. See Summary of Comments #1.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<p><b>G.</b> Specifies probability limits for decision errors for projects that involve hypothesis testing and/or specifies performance (new data) or acceptance (existing data) criteria for estimations or other analytic approaches</p>	<p>Yes</p>	
<p><b>H.</b> Briefly explains the rationale for the sampling design; refers to subsequent worksheets for sampling design details and analysis design requirements</p>	<p>No</p>	<p>EPA Comments: Please detail the sampling design and rationale for ISM samples referenced in WK #17 OU2 Soils and Private Wells. The ITRC method requires establishing DU boundaries that define the scale of decision-making and/or scale the data to spatially structure the assessment and by collecting a sufficient quantity of increments for each DU, typically <b>30-100 increments</b> and total mass of 1-3 kg (workplan states 30-60 increments.) <u>Please include information on how the DU are determined</u> and detail the basis of how DUs and EUs will be defined and decisions to be made based on the Phase 1 results. Note the Incremental Sampling SOP-LPSS-E-105 is not referenced in the UFP-QAPP WK #18.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>

Element	Acceptable Yes / No / NA	Comments:
<p><b>I.</b> Assesses what analytical resources will meet the analytical needs (Regional laboratory, CLP, direct contract, subcontract), including any special requests or modified analysis for the Regional laboratory or CLP</p>	Yes	
<b>Worksheet #12: Measurement Performance Criteria</b>		
<p><b>A.</b> Provides a worksheet for each type of field or laboratory measurement; for analytical methods, criteria are determined for each matrix, analyte, and concentration level</p>	Yes	
<p><b>B.</b> Each worksheet provides quantitative measurement performance criteria in terms of precision, bias, and sensitivity</p>	Yes	
<b>Worksheet #13: Secondary Data Uses and Limitations</b>		
<p><b>A.</b> Identifies sources of secondary data (sampling and testing data collected during previous investigations, historical data, background information, interviews, modeling data, photographs, aerial photographs, topographic maps, and published literature)</p>	Yes	
<p><b>B.</b> Discusses the rationale for using this data and explains its relevance to the project</p>	Yes	
<p><b>C.</b> Identifies factors affecting the reliability of data and limitations on data use, including how limitations will be communicated to all end data users and stakeholders</p>	No	<p>EPA Comments: Please specify the “<i>performance or acceptance criteria</i>” in WK #13 for <a href="#">review of existing information</a> consistent with Cotter’s QMP Section 11.1.2.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<b>Worksheets #14 &amp; #16: Project Tasks &amp; Schedule</b>		
<p>Provides a summary of key on-site and off-site activities, the person or group responsible for each activity, planned start and end dates, deliverables to be produced, and deliverable due dates (may be table or Gantt Chart)</p>	No	<p>EPA Comments: Please revise the <i>Responsible Party</i> column in WK # 14/16 to include the specific contractors selected for all activities for: Validata Chemical Services for Data Validation, each Eurofins Laboratory, Brown &amp; Caldwell for Risk Assessment. Is there a Drilling contractor selected for well installation for this phase? Etc.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<b>Worksheet #15: Project Action Limits and Laboratory-Specific Detection/Quantitation Limits</b>		
<p><b>A.</b> Provides a worksheet for each type of field or laboratory measurement; criteria are determined for each matrix, analyte, analytical method, and concentration level</p>	No	<p>EPA Comments: Please attach each third-party laboratory (Eurofins Denver, St. Louis and Lancaster) accreditation certificates to the UFP-QAPP, consistent with Cotter’s QMP Section 11.3.1, and specify which analytical methods will be conducted at each laboratory.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>

Element	Acceptable Yes / No / NA	Comments:
<p><b>B.</b> If critical contaminants/analytes of concern have been identified, lists the Project Action Limit (actual numerical criteria) for each analyte and the reference upon which it is based (such as MCLs or other ARARs, risk assessment screening levels, etc.); If critical contaminants/analytes of concern have not yet been identified, provides target analytes and their screening levels for each analyte group and the reference upon which they are based. Identifies Project Quantitation Limit Goals below the Project Action Limit or screening level for the analyte; highlights the critical contaminants/analytes for project decision-making. If applicable, discusses where levels cited will not be analytically achievable or identifies the modifications needed to the laboratory's SOP to achieve them</p>	<p>Yes</p>	
<p><b>C.</b> Provides laboratory-specific detection and quantitation limits for comparison to Project Quantitation Limit Goal. Laboratory provides documentation that demonstrates precision and bias at the laboratory-specific quantitation limit (at lowest calibration standard)</p>	<p>No</p>	<p>EPA Comments: Please address Reporting Limits and Laboratory MDLs highlighted in red text, as the numbers must be less than the risk-based PAL, or subsequently identified as a source uncertainty and discussed in the screening-level risk assessment for inadequate detection, consistent with the RAWP Section 4 Step 6.</p> <p>The UFP-QAPP Section 10.2 Project Action Limits were changed to ½ of Reference Limits to elevate Laboratory RLs to accommodate for sample-specific RLs and 1/5<sup>th</sup> for sediments. Please provide the rationale or guidance to determine these fractions.</p> <p>EPA Note: Air sample reporting was changed from concentration to “quantity” and reported as picocuries and micrograms. EPA Regional Screening Levels are in units ug/m<sup>3</sup>) and radionuclide screening levels are in units of pCi/m<sup>3</sup>. Please ensure unit consistency for comparisons.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p> <p>EPA Comments: Please revise WK#15 to remove the word absence. “Observations between the RL and MDL, if reported, would be considered estimated (“J” values) but are valid for confirming absence or presence.” The Laboratory Reporting Limits (RLs) in the UFP-QAPP highlighted red are higher than the Project Action Limits (PAL)s. “J” flagging these values “if reported” cannot confirm the absence of an analyte where the laboratory RL is higher than the Project Action Limit.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<p><b>Worksheet #17: Sampling Design and Rationale</b></p>		
<p><b>A.</b> Provides design of the sampling/collection network, including physical and temporal boundaries, basis for dividing the site into decision units, basis for number and placement of samples, sample location maps or diagrams, alternate locations, process for determining sample locations in the field (if applicable), and field condition contingencies</p>	<p>No</p>	<p>EPA Comments: Please provide the precise geo-spatial locations of OU1 Air samples, consistent with the RAWP “Air sampling should be conducted at a minimum at the four cardinal directions along the perimeter of the Restricted Area. This will capture COI concentrations in the predominant downwind direction as well as inform Phase II sampling efforts.” Note: 2 proposed air sampling locations are identified on Figure 17-14.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p> <p>EPA Comments: Please provide the basis for collecting the number of samples in worksheets #17:</p> <ul style="list-style-type: none"> <li>a. 18 sample locations for NONAC soils,</li> <li>b. 19 samples for Fourth Street Depot Soil,</li> <li>c. 10 sample locations for Old Berta Yard Soil, and</li> <li>d. 10 sample locations for Teamtrack Soil</li> </ul> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>

Element	Acceptable Yes / No / NA	Comments:
<p><b>B.</b> Provides a discussion regarding the basis for selection of probability-based designs vs. judgmental designs</p>	<p>No</p>	<p>EPA Comments: Please provide the basis for selection of <b>“judgmental sampling design will be used to identify and sample locations of maximum concentrations”</b>.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<p><b>Worksheet #18: Sampling Locations and Methods</b></p>		
<p><b>A.</b> Provides a table with type and number of samples required for collection such as surface soil, subsurface soil, or groundwater, preferably by individual Sample ID and collection frequency (if applicable), though sample groups may be listed in a single row</p>	<p>No</p>	<p>EPA Comments: Please add the sample collection frequency to Tables in WK #18.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<p><b>B.</b> Identifies each sample type using matrix codes and descriptions found in the Region 8 Reference Values for EQUIS</p>	<p>Click here and select</p>	
<p><b>C.</b> Uses existing Station IDs where available in EQUIS for the planned location (matched by latitude/longitude).</p>	<p>No</p>	<p>EPA Comments: Please provide the 20 OU1 soil sample spatial locations identified in WK #17. <b>“The spatial locations identified in ArcGIS Pro will be exported to a GPS unit and field located at the time of sampling.”</b></p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p> <p>EPA Comments: Please add the spatial locations of the 29 private well irrigated soils for OU2 target parcels referenced WK#17. <b>“Once the target parcels have been identified, adjacent and nearby parcels will be reviewed to determine which may be suitable as reference areas”</b> for OU2 private well-irrigated soil. EPA Note: Personally Identifiable Information (PII) is being collected. See Summary of Comments #5.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<p><b>D.</b> Provides the sample collection method for each sample or sample group and references the applicable sampling SOP</p>	<p>Yes</p>	
<p><b>E.</b> Referenced sampling SOPs are attached to the QAPP</p>	<p>Yes</p>	
<p><b>F.</b> Provides the analytes or analyte groups for each sample or sample group</p>	<p>Yes</p>	
<p><b>Worksheets #19 &amp; #30: Sample Containers, Preservation, and Hold Times</b></p>		
<p><b>A.</b> Provides a worksheet for each laboratory used and lists any required accreditations/certifications for the laboratory; attaches accreditations/certifications to the QAPP</p>	<p>Yes</p>	
<p><b>B.</b> For each analyte/analyte group and matrix pair, provides the analytical method reference, accreditation expiration date for the laboratory for that analyte/matrix/method combination (if global expiration date, this may be in the header</p>	<p>Yes</p>	

Element	Acceptable Yes / No / NA	Comments:
C. For each analyte/analyte group, matrix, and analytical method, provides container(s) (Number, size, and type per sample), preservation requirements, preparation holding time, analytical holding time, and data package turnaround	Yes	
<b>Worksheet #20: Field QC Summary</b>		
For each matrix and analyte/analytical group pair, provides a summary of the number of field samples, the number, and types of field QC samples to be collected, and the total number of analyses (field and field QC samples combined)	No	<p>EPA Comments: Please revise all statements for soils “Field duplicate samples will be collected as a <i>split of the primary sample</i> at a rate of 10% of primary samples (e.g., 2 duplicate).” and use <b>Co-located duplicate</b>. See Summary of Comments #6.</p> <p>Note: SOP-LPSS-E-140 states 5% duplicates and 5% blanks for groundwater.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<b>Worksheet #21: Field SOPs</b>		
Lists SOPs (including title, revision, date, and originating organization) containing detailed procedures for all field activities, including sample collection, sample preservation, equipment cleaning and decontamination, equipment testing, maintenance, and inspection, and sampling handling and custody and notes any project-specific options or modifications, if applicable)	No	<p>EPA Comments: Please correct mislabeled Field SOPs and remove Field SOPs outside the scope of this UFP-QAPP. See Summary of Comments #4.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<b>Worksheet #22: Field Equipment Calibration, Maintenance, Testing, and Inspection</b>		
A. Provides a list of all in-situ testing instruments and field equipment	Yes	
B. Documents the procedures for calibrating, maintaining, testing, and/or inspecting all field equipment	Yes	
C. Identifies the individual(s) responsible for field equipment	Yes	
D. Includes frequency, acceptance criteria, and corrective action or references and attaches the relevant SOP or manufacturer’s instructions	No	<p>EPA Comments: Please include all Field Equipment Manuals e.g. Solinst Water Level Meter, YSI Water Quality Monitoring System, Ludlum Model 44, etc. See Summary of Comments #7.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<b>Worksheet #23: Analytical SOPs</b>		
A. List SOPs (including title, revision, and date) containing the specific sample preparation and analytical procedures to be used to perform on-site or fixed laboratory analysis for each matrix/analytical group; indicate whether the procedure produces screening or definitive data; note any project-specific options or modifications, if applicable	Yes	



Element	Acceptable Yes / No / NA	Comments:
B. Referenced analytical SOPs are attached to the QAPP	Yes	
<b>Worksheet #24: Analytical Instrument Calibration</b>		
A. Identifies all analytical instruments, whether used in the field or the laboratory	Yes	
B. For each instrument, identifies the calibration procedure and title/position responsible for corrective action; references and attaches the SOP or identifies the calibration range, frequency, and acceptance criteria, and corrective action in the table; calibration process should link the calibration to a specific instrument identification number	Yes	
<b>Worksheet #25: Analytical Instrument and Equipment Maintenance, Testing, and Inspection</b>		
For a laboratory with a quality system that conforms to ISO 17025:2017, the laboratory's quality manual may be referenced for this work sheet; otherwise, or if project-specific modifications apply, lists each analytical instrument/equipment that requires maintenance, testing, and inspection activities, list those activities, and provides the frequency, acceptance criteria, corrective action, title/position responsible for corrective action, and reference for those activities	No	<p>EPA Comments: Please attach Eurofins QA manuals for each location identified in the UFP-QAPP (Lancaster, Denver, St. Louis).</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<b>Worksheets #26 &amp; #27: Sample Handling, Custody, and Disposal</b>		
A. Lists all activities from sample labeling through sample disposal, indicating the organization and title/position responsible for each activity and the SOP reference	Yes	
B. Referenced SOPs are attached to the QAPP	Yes	
C. Example forms, sample labels, and chain-of-custody documentation are attached to the QAPP	Yes	
<b>Worksheet #28: Analytical Quality Control and Corrective Action</b>		
A. Provides a separate worksheet for each analytical method/SOP, matrix, and concentration level	Yes	
B. Identifies the type, number, and frequency of QC sample collection (field) or QC sample analysis procedure (laboratory) along with the required QC statistically derived limits/ acceptance criteria for each analyte; includes corrective action and title/position responsible for corrective action	Yes	
<b>Worksheet #29: Project Documents and Records</b>		

Element	Acceptable Yes / No / NA	Comments:
A. This worksheet should be used to record information for all documents and records that will be generated for the project. The QAPP should acknowledge the project's records will meet the CERCLA records requirements.	Yes	EPA Note: Document Control Procedure SOP-LPSS-A-020 provided in Appendix D of the QMP.
B. Provides a comprehensive list of the documents and records required for this project	Yes	EPA Note: The File naming Conventions for SOPs provided in the Document Control Procedure SOP-LPSS-A-020 in Appendix D do not match the SOPs provided in the UFP-QAPP.
C. Describes the generation, verification, and storage location/archival of hard-copy and electronic information produced during the project for sample collection and field records	Yes	
D. Describes the generation, verification, and storage location/archival of hard-copy and electronic information produced during the project for project assessments; attaches assessment checklists or other standardized forms to the QAPP	Yes	
E. Describes the generation, verification, and storage location/archival of hard-copy and electronic information produced during the project for laboratory records	Yes	
F. Provides requirements for laboratory data deliverable contents consistent with the expected stages selected for data validation (see EPA 540-R-08-005)	Yes	
G. Describes data handling equipment and procedures used to process, compile, and analyze data; provides a complete list of computer hardware and software needs; specifies requirements such as information security controls for ensuring quality of electronic information (utility, objectivity, and integrity)	Yes	
H. Provides electronic data deliverable requirements for analytical deliverables and field documentation according to the Region 8 Format for EQUIS Data Processor (EDP); describes process for assuring that Region 8 Format for EQUIS Data Processor (EDP) electronic data deliverables (EDDs) are provided to EPA Region 8 and identifies individual(s) responsible for EDD submittals	No	<p>EPA Comments: Please include the EDD format required for laboratory deliverables, e.g., SCRIBE compatible?</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<b>Worksheet #30: Analytical Services</b>		

Element	Acceptable Yes / No / NA	Comments:
Identify all laboratories or organizations that will provide analytical services for the project, including on-site screening, on-site definitive, and off-site laboratory analytical work. Group by matrix, analytical group, concentration, and sample location or ID number. If applicable, identify the subcontractor laboratories and backup laboratory or organization that will be used if the primary laboratory or organization cannot be used.	Yes	EPA Note: No backup laboratories indicated.
<b>Worksheets #31, #32 &amp; #33: Assessments and Corrective Action</b>		
A. Lists the required number, frequency, and type of assessments with approximate dates and title/position and organization of everyone responsible for performing these assessments	Yes	EPA Note: The Assessment SOP-LPSS-A-040 was provided in Appendix D of Cotter's QMP.
B. Discusses one or more of the following types of assessments: peer reviews, technical audits, surveillance, management system reviews, readiness reviews, quality system audits, performance evaluations, data quality assessments	Yes	
C. Discusses the authority and independence of the individual(s) performing the assessments in relation to those being assessed	Yes	
D. Discusses where assessment findings will be documented and how the assessment findings will be communicated to all key project staff, state, and EPA personnel responsible for the study oversight and the deliverable due dates	Yes	
E. For each assessment listed, provides the title/position and organization of the individual(s) responsible for responding to assessment findings, assessment response documentation, and timeframe for response	Yes	
<b>Worksheet #34: Data Verification and Validation Inputs</b>		
Identifies the planning documents (such as QAPP, contract, field SOPs, laboratory SOPs), field records, and laboratory records that will be used during data verification and validation; indicates whether each item will be used for verification (completeness), validation (conformance to specifications), or both	Yes	
<b>Worksheet #35: Data Verification Procedures</b>		
A. Data verification is a completeness check to confirm that all required activities were conducted, all specific records are present, and the contents of the records are complete. Documents procedures that will be used to verify project data. For each field record, references the document containing the requirements, process description, and responsible person/organization	No	<p>EPA Comments: Please attach the <b>Data Management Plan</b> referenced in WK#35 in Field Electronic Data Deliverable.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>

Element	Acceptable Yes / No / NA	Comments:
<p><b>B.</b> For each laboratory record, references the document containing the requirements, process description, and responsible person/organization</p>	Yes	EPA Note: QMP Figure 8-1 Quality Assurance Assessment and Response Process.
<p><b>C.</b> For each audit and corrective action record, references the document containing the requirements, process description, and responsible person and organization</p>	No	<p>EPA Comments: Please revise WK#35 in alignment with Cotter's QMP Table 2-1 Roles, Responsibilities, and Authorities to include <b>Cotter's role in corrective actions</b>.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>
<b>Worksheet #36: Data Validation Procedures</b>		
<p><b>A.</b> The data usability assessment is performed at the conclusion of data collection activities, using the outputs from data verification and data validation. It is the data interpretation phase, which involves a qualitative and quantitative evaluation of environmental data to determine if the project data are of the right type, quality, and quantity to support the decisions that need to be made.</p>	Yes	
<p><b>B.</b> Documents procedures that will be used to validate project data. Data validation is an analyte and sample-specific process for evaluating compliance with contract requirements, methods/SOPs, and measurement performance criteria. Procedures should be summarized in the worksheet, including specific SOP references, if applicable</p>	Yes	EPA Note: National Functional Guidelines (NFGs) are referenced. No SOPs for Validata were provided.
<p><b>C.</b> Referenced data validation SOPs are attached to the QAPP, if applicable</p>	Yes	
<p><b>D.</b> Validation procedures define validation stage code and define any data qualifiers to be applied by the data validator</p>	Yes	
<p><b>E.</b> Validation procedures include checklists to be used by the data validator</p>	Yes	
<b>Worksheet #37: Data Usability Assessment</b>		
<p><b>A. Usability Report</b> The usability report should:</p> <ul style="list-style-type: none"> <li>• Discuss and compare overall completeness of multiple data sets collected for the project for each matrix, analytical group, and concentration level.</li> <li>• Describe the limitations on the use of project data if project-required completeness is not achieved for the overall project, or when completeness is limited to a specific sampling or laboratory group, data set or SDG, matrix, analytical group, or concentration level.</li> </ul>	No	<p>EPA Comments: Please revise and complete WK#37 in alignment with Cotter's QMP Section 14 and Table 2-1 for <b>data usability</b>. Please describe the usability reports' evaluation of completeness for each matrix, analytical group, and concentration level and <b>limitations on use</b> of project data if completeness is not achieved or is limited. See Summary of Comments #8.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p>

Element	Acceptable Yes / No / NA	Comments:
B. Identifies the individual(s) responsible for reconciling the data to the project-specific requirements	Yes	
C. Describes data usability assessment process including statistics, equations, and computer algorithms to be used to analyze the data and reconcile it to project-specific requirements	No	<p>EPA Comments: Please revise and complete WK#37 Step 3 and Step 4 for statistical methodology referenced for “soil data collected using ISM in OU2”.</p> <p>Cotter Response &amp; Date: EPA Resolved (date):</p> <p>EPA Note: documented in Data Usability Report and updated CSM.</p>
D. Discusses how limitations in the final data set will be documented and communicated to all end data users and stakeholders	Yes	
E. Describes the circumstances under which data would be rejected and removed from the final data set and addresses resolution of potential data gaps	Yes	
F. Describes the data usability assessment process to confirm that the useable data are adequate to make the site decision	Yes	

**Attachment 3:  
Public Comments**

**To: Paul Stoick, EPA, and Alex Hedgepath, CDPHE**

**From:** Cotter/Lincoln Park Superfund Site Community Advisory Group

**Date:** 22 August 2024

**Re:** CAG Comments on Uniform Federal Policy Quality Assurance Project Plan for the Phase I Risk Assessment, Rev. 0, Lincoln Park Superfund Site OU1 / OU2 / OU3, Cañon City, Fremont County, Colorado EPA ID No. COD042167858

After discussion at CAG Members-Only meetings and receiving comments and recommendations from the TASC Review by Technical Advisor Hagai Nassau, Skeo/TASC Project Manager, and his team at Skeo, the CAG submits the following comments, questions, and requests regarding the UFP-QAPP. The CAG thanks you for this opportunity and requests that these comments be posted on the appropriate CDPHE website pages.

## **GENERAL COMMENTS:**

As has been true for quite some time, CAG members are concerned that a number of issues continue to be pushed forward, to future phases, to future steps of the CERCLA process. Examples of some of these issues (such as raised in our October 2023 comments on the Draft Phase 1 Risk Assessment Work Plan) are as follow:

- When and how do we approach the need for institutional controls, now and in the future, to prevent unnecessary exposure to radioactive and toxic materials that originated at the Cotter uranium mill site?
- What will the approach be – and when – to fully define OU3?
- When will there be a definitive decision about the need for a new well-use survey in the Lincoln Park area and beyond (such as the Town of Brookside)? How can exposure pathways be considered and determined to be “complete” without an up-to-date well water use survey?
- When will the deep migration pathway be fully addressed? (See specifics below re: how this is being ignored in Cotter’s QAPP.) Figures 10-15 through 10-23 should incorporate the possibility of a deep migration pathway.

## **Worksheet # 4, 7 & 8: Personnel Qualifications and Sign-Off Sheet**

The following job titles - Vice-President of Regional Affairs, Environmental Coordinator/Document Control Manager, Contractor Project Manager, QA Manager, and QA Staff - do not list their required qualifications.

**Comment:** There should be minimum qualifications listed for each technical job title, even if it relates only to experience in a given area, especially for those involved in data validation and lab analysis. Otherwise, could anyone off the street be allowed under this QAPP to perform that duty?

**Request:** Please add relevant qualifications for each of the aforementioned job titles to ensure that qualified persons are employed in these positions.

## **Worksheet #6: Communication Pathways**

**Comment:** All managers and point of contact having responsibility for collection and / or handling of samples should have “ensures maintenance of sample integrity and chain of custody” added to their responsibilities.

## **Worksheet #10: Conceptual Site Model**

### **10.3.3 Surface Water**

This section is completely lacking in addressing the substantial quantities of water (both surface and groundwater) that drain through the Cotter site and into Lincoln Park from the Wet Mountains which sit to the southwest of the site.

**Comment 1:** The narrative in Worksheet #10 suggests a semi-arid desert in the area of the Cotter Mill. That is very misleading and inaccurate.

**Request:** The amount of water that comes from the Wet Mountains should be quantified because of its substantial impact on the site.

In the third paragraph of this section, it states “There is no noted groundwater discharge to surface water in OU2 with the exception of the small eastern area near the confluence of Sand Creek and the Arkansas River.”

**Comment 2:** CAG members do not believe this is true – there are a number of ponds (in OU2 and to the east and southeast) that are known to be filled by seeps and springs.

**Request:** Figure 10-5 should include much more about the complexity of the surface and groundwater systems in the area, and the “communication” between those systems.

In the fourth paragraph, Cotter quotes from the Open File Report OF-19-11 of the Colorado Geological Survey which notes naturally occurring uranium in the Benton Group.

**Comment 3:** However, there is no indication in the Worksheet text **where** along the entire Arkansas River this might apply.

The last paragraph of this section, beginning at the bottom of p. 6, refers to a conclusion in **CLL’s 2022 Draft RI**, stating that the Willow Lakes were not impacted by Cotter operations.



**Comment:** CLL's Draft RI report was rejected by the agencies so this QAPP should not rely on its contents.

### **10.3.4 Regional Geology**

Beginning on Page 7, this section provides details about the various geologic formations in the vicinity of the Cotter mill and toward the Arkansas River.

**Comment 1:** The descriptions however, stop short of noting how some of the formations continue under the Arkansas River, surfacing on the north side of the River, an important fact in determining potential future boundaries of OU3.

**Comment 2:** Figure 10-4 also simplifies and misleads regarding regional geology by failing to indicate where the Arkansas River is on the "Generalized Geologic Cross Section."

**Recommendation:** A much more precise and helpful cross-section of the geology in the area can be found in the 2002 document, "*The Other Path*," authored by Gus Slanovich.

**Comment 3:** This error of omission is repeated in **Section 10.3.6 OU2 Geology, Lithology, and Geochemical Characteristics**, which makes no reference to the geologic formations extending under the River and surfacing to the northeast of the River.

### **10.5.1 Groundwater in OU1**

**Comments:** The narrative at the top and middle of p. 12, regarding the groundwater at the Cotter site, completely fails to mention or address the extensive underlying coal mine workings which are known to have played a major role in the movement of groundwater. In fact, the Wolf Park Mine, directly under the Cotter site, was closed permanently because of massive amounts of water flowing through the underground mine workings, leading to flooding and the deaths of mine workers.

**Request:** The history of decades of underground coal mines in the area simply cannot be overlooked when describing the flows of groundwater in the area of the Cotter site.

### **10.6.1 Groundwater**

This section continues the fiction "that groundwater contamination from vertical seepage in the Poison Canyon Formation is generally limited to the upper 50 feet of saturated thickness and vertical migration has been limited by low-permeability strata, limited vertical gradients following removal of unlined ponds, and geochemical attenuation."

**Comment:** There is no acknowledgement of the role of extensive underground coal mine workings directly under the site and to the northwest and east of the site.

**Request:** Please rectify this omission.

### **10.6.3 Soil**

The last sentence of the third paragraph (p. 15) claims: "The construction of the SCS Dams and corrective action pumping at the SCS Dam stopped the further release of surface water-transported soils and sediment from OU1 into OU2."

**Comment:** This assertion cannot be stated definitively. The SCS Dams and the pumpback system may not fully prevent the release of surface water-transported soils and sediment from OU1 into OU2 – materials from the site could be carried into OU2 from the known 1 to 3 gpm movement of water from the site into Lincoln Park (under and/or around the east SCS Dam).

**Request:** Acknowledgement of the possibility of the release of surface water-transported soils and sediments must be made.

## **10.7 Chemicals of Interest (COI) and Exposure Pathways**

In the 5<sup>th</sup> paragraph on p. 17, there is this phrase: "The only remaining complete contaminant transport mechanism from OU1 to OU2 is shallow groundwater migration, *although a deep groundwater pathway has been hypothesized.*" (Emphasis added.)

**Comment:** The EPA has directed Cotter to explore the possible deep pathway - including the impact of coal mine workings under the site, and the actual geology of the region in which site geologic formations surface on the **north** side of the Arkansas River.

**Request:** Rephrase this sentence to acknowledge the comment above.

### **10.8.1.4 Recreator**

In the paragraph at the bottom of page 19 is the following statement: "Sand Creek and its tributaries as well as ditches that flow through the Site also represent aquatic features that may be used recreationally by area residents."

**Comment:** This fails to note that there are other features that could be used recreationally such as ponds and lakes in the area.

**Request:** Please add additional aquatic features that exist to draw area residents, or at the very least, add "some of the" to the existing sentence - to read "[...] also represent some of the aquatic features [...]"

### 10.8.2.3 Exposure to Groundwater

In the section on Ingestion of Groundwater there is reference to the fact that there could still be (now and in the future) the ingestion of groundwater from private wells in Lincoln Park (and other areas).

**Comment 1:** This is a reminder of two things:

- (1) There are insufficient institutional controls to prevent the consumption of water contaminated by Cotter operations; and
- (2) There is a need for a new well water use survey.

There is a discussion of groundwater vapor intrusion and also indoor use of groundwater for showering, etc. However, this section fails to mention exposure through irrigation with sprinklers, which could also result in exposure to vapors from groundwater via evaporation.

**Comment 2:** It is known from personal communication that many people who do not use their well water for drinking or washing indoors may still use their wells for irrigating lawns and gardens, often using sprinklers.

**Requests:** For the safety and well-being of residents, institutional controls to prevent consumption of contaminated well water must be put in place and an updated well water survey must be done at the earliest convenience.

### 10.9.1 Exposure Media

The second sentence in this section states: "The Site is in a dry climate, and the plant community consists of both native and disturbed land vegetation species."

**Comment:** "The Site is in a dry climate [. . .]" is entirely misleading and inaccurate. Anyone who drives through the Lincoln Park and Brookside areas will see dense vegetation clearly fed by extensive surface and groundwater sources, wetlands, ponds, springs, seeps, and other indications that the area is in no way "a dry climate."

**Request:** Acknowledgement of the aforementioned land features must be made in this sentence in order to properly convey the true landscape.

### 10.9.2.2 Terrestrial Receptors

Terrestrial receptors are organisms that live on land and can be exposed (through inhalation, dermal contact with contaminated soil or water, or ingestion of contaminated food, water, or soil) to environmental contaminants.

These organisms can include the following:

Soil organisms: soil microbes, invertebrates - including soil-dwelling invertebrates (e.g. insect larvae, worms, nematodes), and plants

Animals: insects, small and large mammals, amphibians, reptiles, and birds

According to the EPA (epa.gov/ecobox/epa-ecobox-tools-receptors-biota), terrestrial receptors include: "Insects (e.g., pollinators such as honey bees), small mammals, large mammals, passerine birds, raptors, and soil organisms (plants, soil invertebrates, soil microbes)". They further delineate semi-aquatic receptors as "Amphibians, piscivorous birds, piscivorous mammals, plants".

**Comment:** The first two sentences of this section are incorrect: "Terrestrial receptors are living organisms that are fully terrestrial and do not come into contact with aquatic habitats. Because of their low mobility, terrestrial receptors include plants and invertebrates."

Terrestrial receptors **do** come into contact with aquatic habitats. Mobility or a lack thereof does not define what is or isn't a terrestrial receptor. Clearly - from the lists mentioned above, numerous terrestrial receptors **depend** on aquatic habitats for their survival.

**Request:** These sentences need to be rewritten in order to clarify their intended meaning and represent sound scientific facts.

### **Table 10.1 (P. 31)**

**Comment:** There is a problem with the date of the last item, which should probably read "July 4, 2005."

### **Table 10.1 (P. 35)**

**Comment:** The number of this table should be changed to "Table 10-4" so as not to be confused with the preceding Table 10-1.

## **Worksheet # 11: Project/Data Quality Objectives**

### **4. Define the Boundaries of the Study**

#### **4.1 Groundwater**

"Groundwater samples in the uppermost aquifer" are listed as part of both the *Target Population* and *Sampling Unit* portions of this section.

**Comment:** Nowhere in this section is there a mention of a deep groundwater pathway, nor even the possibility of one. It is the CAG's contention that such a pathway exists - based on multiple information previously provided to the agencies - supported by the existence of complex mine workings beneath the site. It may be assumed that potential sources of contaminants would be near the surface and diluted concentrations may migrate down and out through groundwater pathways. However, by human nature open holes into the ground are enticing dump locations.

**Request:** The CAG would like the agencies to require Cotter to sample mine entrances (both soils and groundwater) to eliminate mine shafts as potential source locations.

## **Worksheet #12: Measurement Performance Criteria**

**Comment:** The CAG suggests repeating footnote definitions beneath each QA table to make it easier to read tables.

## **Worksheet # 13: Secondary Data Uses and Limitations**

Over the years, the CAG has submitted comments regarding every major document to be written by Cotter, CLL, and Ensero. Among other valuable information, we have provided decades-worth of historical data which can inform many current conditions, as well as past decisions.

**Question:** Is any of the Site History information from the mere four document sources that which the CAG (or CCAT) has contributed to? If not, why is preferred knowledge being ignored?

## **Worksheet #15: Project Action Limits**

### **10.3 Project Action Limit Laboratory Attainment:**

The second sentence (first paragraph) states: "In most cases, the MDL is below the PAL, supporting quantitation."

**Comment 1:** This statement is incorrect, since there are trace metals MDLs (antimony, arsenic, and cobalt for groundwater and arsenic for surface water) which are above PALS.

**Comment 2:** There are also no reported MDLs for uranium (total, under metals), yet even the RL is above the PAL. This is an issue given the reported historic uranium concentrations in groundwater, especially.

**Request:** Correct this statement to reflect the needed changes, and list reported MDLs for uranium.

The first bullet states: "For most of the PALS that are below MDLs, the Reference Limit is either a very trace value or the laboratory limits are higher than for other analytes in the fraction."

**Comment 3:** See above comment.

**Request:** This would seem to indicate a need to run more than one sample dilution or perhaps calibrate the ICPMS with a custom mixed standard to accommodate the broad range of PALs of the analyte list.

### **10.3 Tables for Air, Groundwater, Sediment, Soil, and Surface**

#### **Water:**

**Comments 1 & 2:** There are no "MDLs" for radionuclides, yet most of the RLs are well above the PALs listed. There are no PALs listed for radionuclides in sediment or surface water.

**Questions:** It is understandable that there would be no reference limits for sediment, but is there no other way to set a PAL for these samples? Otherwise, how do you determine if PALs are met during the cleanup phase?

Inability to meet sensitivity requirements for a project may be addressed through many means, to be specified in the analysis project contract (note that the laboratory procedures for sample preparation and analysis provided from Eurofins allow for some variation according to project requirements).

For example, when using an analysis technique which provides results for several analytes from a single analysis (such as Gas Chromatography / Mass Spectrometry (GCMS) for organics and Inductively Coupled Plasma Mass Spectrometry (ICPMS) for trace metals), it may be necessary to run a sample at more than one dilution factor in order to achieve necessary sensitivity for all analytes. Additionally, one may use custom prepared multi-component calibration standards so that the instruments are calibrated in an appropriate range to allow the desired sensitivity for each analyte (ideally, the concentration represented by the PAL would be bracketed within the concentrations used to calibrate the instrument). Also, sensitivity for all mass spectrometry techniques may be improved by appropriate selection of ion fragments used to calculate the quantitation of the analyte and by frequent tuning of the instrument response.

For all laboratory instruments, sensitivity may be improved by adjusting the tuning of the instrument and/or adjusting data processing parameters which influence how the instrument response is translated into a concentration result.

In terms of radiochemical analyses, the sample preparation and separation techniques may be adjusted to improve sensitivity, as well as lengthening count times. For some techniques such as gamma counting, adjusting the geometry of the sample and adjustment of data analysis software parameters may improve sensitivity.

For all techniques, sensitivity may be increased by using higher grade acids or solvents for the sample preparation (note that the attached sample preparation procedures from Eurofins do not specify purity of solvents or acids to be used for extraction / sample prep). From personal experience, removing the final filter stage from the Millipore water purification system can result in improved results for some radionuclides, Thorium in particular. Use of Ultrapure grade acids for sample preparation can greatly improve radiochemical results by lowering the reagent blank results (which are often subtracted from the sample result).

**Comments 3 & 4:** Given the former information, it is not factual to claim that it is impossible to achieve MDLs comparable with or lower than the PALs if the analyses are conducted with the QA goals in mind. It is true that it is acceptable to report values between the PQL and MDL as "J" or "estimated".

**Request:** However, for samples with the MDL higher than the PAL, it is possible to report results as non-detections which are above the PALs. This could, therefore, result in a contaminant which is present at levels above its PAL being incorrectly excluded from the list of COPCs. Therefore, the CAG requests that all samples be analyzed by appropriate methods to ensure detectability of all analytes at or below PALs and that PALs are defined for all analytes.

If PALs are lower than MDLs, this should result in either re-evaluation and raising of PALs (if possible) or a change in method parameters to ensure that non-detections are truly lower than the PAL.

**Comment 5:** Given that the purpose of this exercise is to identify COPCs, making certain that COPCs are detectable by the chosen analysis methods is critical.

**Question:** Are there other methods that can be used to analyze site-related contaminants (COIs) that are denoted in red on all tables (except for the one reporting Air analytes)?

## **Worksheet #17: Sampling Design and Rationale**

### **OU1 - Groundwater:**

#### **Sampling Design and Basis for Selection – Polychlorinated Biphenyls, also**

##### **Table 17-5: Contaminants of Interest Sample Locations and Rationale:**

The second and third sentences of the worksheet paragraph state: "Since there are no monitoring wells currently located in this immediate area, a new well (1002) is proposed to supplement the quantification of PCBs in OU1 groundwater. The well will be constructed with its screen bisecting the water table within the Poison Canyon Formation and will follow the Colorado Division of Water Resources (DWR) requirements for monitoring well construction."

In OU1, the wells are proposed to a depth of less than 100'. The primary impoundment pond is at least 95' deep and is known to be leaking (according to the Phase I Risk Assessment Work Plan for the Lincoln Park Superfund Site prepared by SRC).

Depth to water measurements collected in OU1 during this same investigation suggest that shallow groundwater is generally reached between about 15 to 50 feet below the monitoring point. The potential for groundwater migration of contaminants through deep formations is not established and will be investigated as part of the RI. In 2022, CLL suggested that vertical migration of groundwater contaminants to the deep aquifer (~1,000 feet below ground surface [bgs]) is limited by reducing conditions and Site geology but recognized that additional investigation is needed to further understand the deep migration pathway." (Emphasis added)

There have been several additional findings including the paper "The Other Path" that indicates a deep path.

**Comment 1:** Based on this location (Poison Canyon Formation), monitoring wells 1001 and 1002, based on Table 17-5, should be drilled 100 feet deep each. This depth will allow a more accurate representation of the groundwater in that formation.

**Request:** The CAG requests these new wells be drilled to a depth of at least 100 feet.

**Comment 2:** To adequately investigate the probability of a Deep Path, monitoring wells also need to be drilled outside of the "bowl" and into the Raton sandstone as well as into the Trinidad sandstone. The Trinidad sandstone continues under the Arkansas River and could be the source of contamination on the North side of the river.

In his June 2007 TAG Report, (Section 3.1 The "Deep Path"), Dr Patterson gives insight into the locations necessary. (In addition, Gus Slanovich is available to meet in person and show those locations on a USGS Geological Reconnaissance map.)

The Poison Canyon is 500 feet deep or more in the bowl. A well in the Poison Canyon can determine if there is contamination within the formation but it doesn't answer where the leakage occurs.

**Requests:** The depth of the wells should be determined on whether there is contamination continuing at depth; the path of contamination needs to be measured in permeable formations outside of the bowl.

## **OU1 - Air:**

This Worksheet identifies two air sampling locations. Figure 17-14 identifies five additional air monitoring stations. Table 17-12 provides historic air sampling results for all seven air monitoring locations in addition to a Cañon City location.

Predominant wind patterns are from the west-northwest (primary) and east-southeast (secondary). Sampling location AS-202 appears to be in a proper location to intercept air blowing across the Old Ponds Area (OPA) area, during primary wind direction events. AS-204 is located at the southwest corner of the OPA and west of the primary pond location.

Proposed air sampling is consistent with historical air sampling, which is conducted under an EPA-approved QAPP. Cotter proposes to use historical data to identify sampling locations for Phase I Risk Assessment. Sampling for COIs would occur weekly for one year, and historical data will not be used to identify maximum concentrations of air constituents.



**Question 1:** Why is the COPC/COPEC selection going to rely on only two sampling locations and not the seven locations historically sampled?

**Question 2:** Note that air sampling will become more critical in the future during the remediation phase (which will increase the likelihood of transport of contaminants from the site via air particulate). Also, if the two existing samplers are used for this purpose, will that circumvent their ongoing use for the monitoring required by the RML or will co-located samplers be installed to collect samples for the RIWP?

**Request:** Cotter needs to provide a rationale for limiting air sampling to only two locations.

## **OU1 - Soil:**

### **Sampling Design and Basis for Selection:**

All soil sampling locations identified for OU1 indicate samples are to be taken at 0-6 inches depth. No soil sampling is planned along Sand Creek below the milling area (except U1\_SS0006). Cotter assumes that the soil removal action along Sand Creek addressed any contamination source concern.

No soil samples are planned on the golf course or in the drainage leading to West SCS Dam. Four soil borings in OU1 are not shown on Worksheet #17 figures (locations unknown). One might assume that soil boring samples will be collected during drilling for new monitoring wells 1001 and 1002.

On Worksheet #17, P.37 Sampling Design and Rationale for OU1 Soil, Sampling Design and Basis for Selection, the fourth bullet reads: "Concentrations of COIs on the surface will be maximal in respect to subsurface concentrations because various areas within OU1 remain unremediated at the surface."

**Comment 1:** The mill has seen numerous processing buildings demolished and the entire OPA has been moved and regraded. Even periodic road maintenance and landscaping could bury historic surface soils beyond 6 inches.

**Request:** Please provide historical records that support this claim that maximum concentrations will be located at the ground surface.

Assuming co-location will affect where Cotter decides to collect samples. The QAPP says that soil sampling locations will be identified by scanning with a gamma survey device to map radiation hot spots. Soil samples will be taken at the radiation hot spots. This sampling approach assumes that the highest metal concentrations would be located at the same spot as the highest radiation signatures.

If metals and radionuclides were deposited at different locations or are transported at different rates there is no method presented to independently find metal hot spots. Soil samples will only be collected at radionuclide hot spots. It is probable that metals and radionuclides are co-located, but this is an assumption.

**Comment 2:** The second bullet states: "Metals will be co-located with radionuclides due to the nature of the former Cañon City Mill leach." This does not even take into consideration the received waste stored on the site which is unrelated to mill operations.

**Request:** The CAG would like verification from the EPA that this assumption is correct. Perhaps several grid soil sampling events could verify this assumption.

The fourth bullet makes the following assumption: "Concentrations of COIs on the surface will be maximal in respect to subsurface concentrations because various areas within OU1 remain unremediated at the surface."

**Comments 3-5:** This could be a false assumption because different areas of the surface may have been subjected to repeated application of water either through rains over many years or through mill processes. This could result in soluble metal salts being driven deeper beneath the soil surface. Additionally, the activities which occurred during mill building destruction and the scraping of the old ponds area could have resulted in turning some contaminants beneath the soil surface further than 6 inches.

**Requests:** Since these factors would negate the assumption being made, the statement should be deleted from the list. Additionally, it would be good to acknowledge the possibility of the events mentioned in the above comments.

## **OU2 Private Well-Irrigated Soil:**

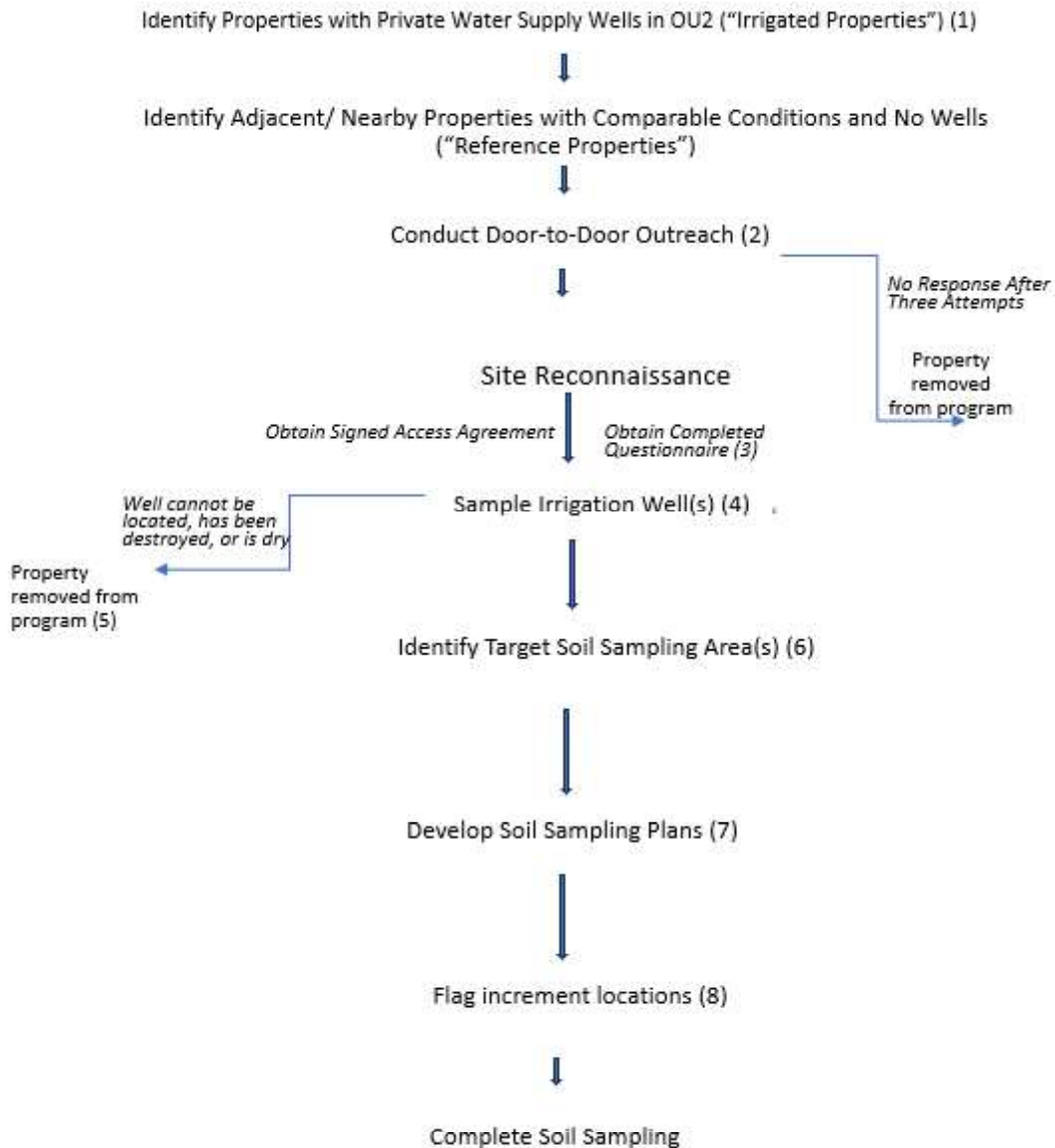
### **OU2 Private Well-Irrigated Soil Investigation Scope Rationale**

According to this section, the following details exist:

- Irrigation lands to be sampled will be identified through historical land use information and water well sampling results.
- The sampling plan specifies tap sampling for identified private wells and incremental sampling methodology for irrigated soils.
- Areas irrigated by private wells are not completely known.

The following schematic is used to show Cotter’s proposed OU2 irrigated soil investigative process:

## OU2 (Lincoln Park) Irrigated Soil Investigation



**Question 1:** Does the EPA agree with this procedure - and the accompanying forms - to identify irrigation-impacted soils?

**Question 2:** Irrigated areas have not yet been identified and exact sampling locations are not provided in the QAPP. Considering private property, will release of information to the public be limited?

### **OU3 - Team Track Soil:**

Of ten sampling locations, Cotter plans to sample surface soil to six inches deep. They only plan to analyze for radionuclides and inorganics/metals - whereas OU1 soil sampling includes the entire list of COIs.

In this worksheet (P.49), one of the listed assumptions is that no pathway exists for polychlorinated biphenyls (PCBs), trichloroethene (TCE), total petroleum hydrocarbon (TPH) or volatile organic compounds (VOCs) from historical mill activities to be present in soil at concentrations above action levels. One is then referred to the Conceptual Site Model in Worksheet #10.

This seems to conflict with EPA's response in the Risk Assessment Work Plan comment process: "Data for the full list of COIs is needed for conducting the COPC/COPEC screens. The results of the screens identify the sub-sets of contaminants for further investigation in subsequent phases."

### **OU3 - NONAC Soil:**

Once again, the proposal is to only analyze for radionuclides and inorganics/metals at twenty sampling locations. Assuming radionuclides and metals co-locate, Cotter plans to use gamma count rates to locate hot spots for both.

### **OU3 - Old Berta Yard Soil:**

Again, only radionuclides and inorganics/metals will be analyzed.

### **OU3 - Fourth Street Depot Soil:**

Again, only radionuclides and inorganics/metals will be analyzed.

**Comment 1:** Earlier, in the Risk Assessment Work Plan comments, Cotter requested on several occasions that a shorter, focused list of analytes could be tested in OU2 and OU3 areas. EPA's response was repeatedly "Data for the full list of COIs is needed for conducting the COPC/COPEC screens."

**Request:** CAG members request that soil samples from OU3 be analyzed for the full list of COIs rather than a sub-set of those listed in Table 17-1.

**Comment 2:** The Risk Assessment Work Plan noted: "The potential OU3 areas identified for this work plan include the area at 12<sup>th</sup> Avenue and Sherman Street impacted by the 1965 flooding event, the Arkansas River and the adjacent Riverwalk Trail, Willow Lakes and irrigation ditches."

**Request:** At a minimum, CAG members feel that these additional areas should be sampled in OU3.

### **OU3 Arkansas River - Surface Water and Sediment:**

Worksheets #17 and #18 indicate that the Arkansas River will be the only surface water sampling area. Yet Worksheet #11 indicates that surface water and sediments will be sampled throughout OU1 and in OU2 where groundwater is within 5 feet of ground surface.

Information for the Arkansas River (OU3) includes ten surface water sampling locations and five sediment sampling locations, and analysis for all COIs in Table 17-1, plus water hardness.

For OU2 however, all that is shown is Figure 17-26 where groundwater is potentially within five feet of groundwater. There is no additional sampling plan information provided.

**Request:** Due to the lack of any sampling plan, the CAG requests that information regarding sampling surface waters and sediments for OU1 and OU2 be provided.

Figure 17-26 shows groundwater data from an unknown time in 2022.

**Question 1:** Does EPA know of any data gaps in this Figure?

**Question 2:** Does shallow groundwater extend all the way to the mouth of Sand Creek?

**Questions 3 and 4:** Have the water table elevations changed through the years? How much do the water table elevations change through the seasons?

### **Worksheet #17: Figures**

**Figure 17-1: Operable Unit 1 Maximum Uranium Concentration Well Locations  
(also Figures 17-5, 17-6, 17-8, and 17-17)**

These figures identify three separate uranium plumes:

- 1) Main milling area and along Sand Creek,
- 2) Area north of golf course, and
- 3) Northwest of intersection of Chestnut Street and Elm Avenue.

The latter two are low concentrations but are still detected and not connected to the mill source.

**Request:** Please explain the three distinct and separate plumes in Figure 17-1.

**Question 1:** Do these plumes indicate multiple potential sources?

**Question 2:** Is adequate sampling being planned for each potential source?

## **Worksheet #18: Sampling Locations and Methods**

### **OU1/OU2/OU3 Groundwater:**

Groundwater monitoring wells appear to focus on the Sand Creek drainage towards and under the main SCS dam. There are no identified monitoring wells in the golf course area or along the historic drainage towards the West SCS Dam. Site background information and 2017 FYR do not mention the West SCS dam or any soil removal action in unnamed drainage towards the West SCS dam.

**Comment:** As a slight uranium hot spot is located just south (upgradient) of the West SCS Dam, it is imperative to sample groundwater in the golf course area and/or along the historic drainage towards this dam. Without sampling, no conclusive evidence will exist negating this as a potential migration pathway for contamination from milling operations.

**Request:** Based on the aforementioned, the CAG requests this area be sampled.



STATE OF COLORADO

Hedgepath - CDPHE, Alex <alex.hedgepath@state.co.us>

## CERCLA Project comment from Canon City

Andrea Stein <andrea@andreakstein.com>  
To: "alex.hedgepath@state.co.us" <alex.hedgepath@state.co.us>  
Cc: stoick.paul@epa.gov

Thu, Aug 22, 2024 at 3:45 PM

Hi, Alex,

I am commenting only as a citizen of Canon City; however, I do represent District 1 on Canon City City Council. These comments are \*not\* official Council comments.

Comments:

1 - Since the final Cotter cleanup process has been delayed for 40 years, I would like to see an epidemiology study conducted of records over that period of cases of cancer among Canon City residents to see if there have been anomalies or unusual levels of incidences. Since there has been flooding and wind-spread contaminants during that time, I believe it's reasonable to take a look at the numbers

2 - [Redacted] would it be possible to get a transcript of [Redacted] presentations so that we can read through the content for better understanding?

3 - It is my understanding that the wind readings at the site are not monitored 24 hours a day. That makes no sense. It's not like the nights here are windless.

4 - No one has ever given a clear explanation of why the group that was spearheading the cleanup ran out of money, and how the work will be funded going forward. Also, the group in place monitoring now appears to have a link to the failed organization. That needs to be explained plainly for all. We need to know that this cleanup will be FINISHED in a timely manner, not in another 40 years.

Thank you,

Andrea and Norman Stein  
406 Foothills Dr.  
Canon City, CO

Agency note regarding comment #2 redaction - First part of the comment not relevant to the Risk Assessment Quality Assurance Project Plan.

**To: Paul Stoick, EPA, and Alex Hedgepath, CDPHE**

**From:** Colorado Citizens Against Toxic Waste (CCAT)

**Date:** 22 August 2024

**Re:** CCAT Comments on Uniform Federal Policy Quality Assurance Project Plan for the Phase I Risk Assessment, Rev. 0, Lincoln Park Superfund Site OU1 / OU2 / OU3, Cañon City, Fremont County, Colorado

The Colorado Citizens Against Toxic Waste (CCAT) Board of Directors submit the following comments, questions, and requests regarding the UFP-QAPP. CCAT thanks you for this opportunity and requests that these comments be posted on the appropriate CDPHE website pages.

### **Worksheet 17-Introduction**

#### **COMMENT:**

“Since the purpose of this investigation is to generate sufficient data for a screening level assessment, a judgmental sampling design will be used to identify and sample locations of maximum concentrations in **NONAC soil.**”

#### **REQUEST:**

NONAC soil is a very specific location. Please explain further what is meant by this.

### **10.1 Former Cañon City Mill Operational History**

#### **P.2 of 35**

#### **COMMENT:**

“...Congo ores (ores from the African Congo) and Cotter Raffinates were also part of the ore inventory and processed at the old mill from 1966 to 1971. Congo ore raffinates and Cotter Raffinates were materials originally managed by the Manhattan Engineering District and purchased for processing of uranium and other radionuclides (e.g., protactinium-231 and ionium-230) under contract for the Atomic Energy Commission. These ores may have contained metals and other radionuclides as well.”

#### **QUESTIONS:**

Is it known what percentage of uranium was recovered from the Congo Raffinates. Where in the impoundments are these tailings from this recovery placed? Will they be tested?



**P.3 of 35**

“The rest of the ore processed was mined at the Western Slope operation, near Nucla, Colorado. The ore was dumped from trucks or railroad cars, screened for rock size, crushed to a smaller size with mechanical crushers, and then ground with rod and ball mills to produce fine sand to silt-sized particles of minus 48-mesh. Prepared ore was passed sequentially through a primary leaching stage, a primary thickener, a secondary leaching stage, and a counter-current decantation (CCD) stage that separated leached ore solids from loaded leachate, sometimes referred to as pregnant liquor. The tailings from the milling of ore from Schwartzwalder Mine were placed in the southern and northwestern areas of the Primary Impoundment. The tailings from milling Western Slope ore were placed on the northeastern portion of the Primary Impoundment.

**QUESTION:**

What percentage of Uranium was obtained from the processing of this ore and what materials were in the tailings?

**Table 10-2: Environmental and Remediation Timeline**

**COMMENTS:**

“1990-1996 SCS Dam to DeWeese Ditch Flush System constructed and operated to flush groundwater in Sand Creek” through Lincoln Park.

“1992-Three flushing tests and one fixation test to flush or fixate mill-derived constituents in the OPA with clean water were conducted.”

Reports of water in basements and crawl spaces near Pinion and Chestnut were reported. Damage to septic systems in the area was also noted.

**REQUEST:**

CCAT requests testing of soils in basements in this area to see if materials were Testing of soils in basements in this area to see if materials were carried with the flushing water.

**QAPP Worksheet #17: Sampling Design and Rationale  
OU2 –Groundwater**

**COMMENTS:**

The Town of Brookside is a statutory town of 238 people located on the south side of Cañon City. The largely residential area is a small, quiet community located on

Highway 115 in Fremont County approximately 2 miles from the former Cotter uranium mill.

According to Cotter Corporation and CDPHE mapping tools from the early 1980s, three wells in Brookside town limits and one along Highway 115 in “Hell’s Half-Acre” were tested from 1980 through 2009. At least one of these showed above maximum contaminant level for uranium. **No action was taken to determine whether Brookside residents could be affected.**

Residents of the Lincoln Park Water Use Survey Area were interviewed in January and February of 1989. Interviews were conducted by IMS Inc., a contractor retained by the Colorado Department of Health (name changed to Colorado Department of Health and Environment in 1994). 104 wells were tested in the Lincoln Park area but the water use survey in 1989 **did not test any wells in Brookside.**

In 2008 an additional Water Use Survey was conducted under the First Five-Year Review for the Lincoln Park Superfund Site Operable Unit 2 directed by the Environmental Protection Agency. Eighty-three wells were sampled once again with **none being examined in Brookside town limits.**

There are approximately 50 wells, both historical and of new construction, in the Brookside town limits.

**REQUEST:**

Wells in Brookside must be included in the interview, selection, and testing process similar to surveys in 1989 and 2008 as part of the Sampling Plan in this Phase I Risk Assessment QAPP.

**Figure 10-7**

**COMMENT:**

The drainage between Willow Creek drainage and Fawn Hollow drainage is not named.

**10.5.1 Groundwater in OU2**

**COMMENTS:**

There are photos clearly showing the **Chandler Air Shaft** with standing water on the site. There is anecdotal knowledge of water running in that area during the 2018 flood. Even in its present dry state, the site could yield information about any contamination in that area.

“The Chandler airshaft, 1 mile east of the mill, flows 10 gals/minute to ground water, and this water may be contaminated, possibly with subsurface connection to the Wolf

Park Shaft. *[It is my understanding that Cotter now owns that property. Testing that water would be the definitive proof of the deep path.]* **C. G. Patterson, Ph.D. – Final TAG Report for CCAT, Appendix A June 30, 2007”**

### **Hell’s Half-Acre seep**

1984-86 USGS documents requested that testing be done but this never happened. It is on private property.

### **McCumber Hill seep**

This seep has also been noticed for 60+ years with cattail growth and high vegetation even in dry years in this dry, rocky location. It is on private property as well. And like the seep at Hell’s Half Acre may be useful to characterize the water in that eastern flow of water in the area. Early on in the Superfund process when the thought was that a boundary could be established, the EPA considered “everything south of the Arkansas River from Grape Creek to Fawn Hollow.” Fawn Hollow area is between Hell’s Half Acre and McCumber Hill.

### **Park Avenue-Sells Lake spring**

“This groundwater emerges in seeps and springs in lower Sand Creek (which flows to the Arkansas River) and in other springs near the Arkansas River.” *Cotter RI, Executive Summary 1986*

It would make sense that any contamination moving through Lincoln Park toward the Arkansas River could emerge from sites along the bluffs above Park Avenue, near Ridgewood, and other elevated locations in the area. Of particular note in this location, is the proximity of Sells Lake. The downstream location, especially near the South 12<sup>th</sup> drainage where the 1965 flood waters likely ended up, could be important to pinpoint any contamination spread into OU3.

### **REQUESTS:**

The Chandler Air Shaft site on Colorado Legacy Land property near Fremont County Road 77 should be added to the groundwater sampling plan and tested any quarter when there is water available. We would also request an investigation of other springs and seeps in OU3, springs along Park Avenue at the bottom of the hill in Cañon City, seeps along Highway 115 near McKenzie Ave., and seeps along Highway 115 near McCumber Hill (County Road 11A).

## Table 17-1. Preliminary Contaminants of Interest (COIs) for the Lincoln Park Superfund Site

### COMMENT:

Plutonium is not listed as a COI.

Rumors of Rocky Flats waste containing PU cannot be substantiated, but there is evidence of Pu-244 from the Manhattan Waste, Belgium Congo Raffinates processing waste buried in the 1970s, the Colorado Raffinates buried in 1994, and from processing Monazite ore in the 1970s. Pu-244 is a naturally occurring isotope of Pu per 1990 Agency for Toxic Substances and Disease Registry (ATSDR) "toxicology facts" mentioned below.

**CONGO RAFFINATES:** The first batch of tailings, 100,000 tons of Manhattan waste shipped to Cotter between 1969 and 1973, was referred to as the **Congo Raffinates** which were processed at Cotter, with tailings disposed of in the impoundment, and then referred to as the "Cotter Concentrates" which were shipped offsite. The U.S. Department of Health and Human Services ATSDR reported that plutonium-244 has been detected as a y reported that plutonium-244 has been detected as a naturally occurring constituent of Belgian Congo Ore and Colorado pitchblende (ATSDR, 1990).

ATSDR Report TP-90-21, Plutonium Toxicological Profile:

**5.2.3 Soil** "Plutonium has been detected in naturally occurring constituent of some ores. Canadian pitchblende, Belgium congo pitchblende, Colorado pitchblende, Brazilian monazite, and North Carolina monazite have contained PU-244 at  $9.1 \times 10^{-12}$  kg plutonium/kg ore (Leonard 1980)."

**6 Analytical Methods** "Mass spectrometry is used by some research laboratories to determine the concentration of each plutonium isotope, including the naturally occurring plutonium-244 [...] Mass spectrometry is several orders of magnitude more sensitive than alpha spectrometry in determining the quantities of plutonium isotopes with long half-lives, which also tend to be the heavier isotopes."

In 1994, attic dust samples in Lincoln Park were collected and analyzed by Hazen Research, Inc. and Controls for Environmental Pollution, Inc. for the plaintiffs in the Dodge v Cotter case. Pu-244 was found in attics, with one sample from Joe Dodge's attic having a result of  $11.5 \pm 1.0$  pCi/g (CEP Report, 1994). When discovered by the community around 2003, residents requested soil sampling of 20 locations to analyze for Pu-244, Lead, Uranium, and Molybdenum in Lincoln Park and Cotter property soils. Cotter refused to allow for soil samples to be taken from the impoundment tailings beaches to analyze for plutonium-244 where the Manhattan waste was buried. During the 2003 sampling, citizens asked CDPHE to collect attic dust, but the State refused in all but one Lincoln Park house on the far NE corner of the Superfund site (not near where Pu-244 was originally found).

Cotter's license 369-01 amendment #26 of August 27, 1993 (page 2 of 40) section 6.5 **does** list Plutonium as one of the materials they may handle.

**REQUEST:**

Plutonium and any daughter products should be added to the list of COIs being used in testing in all Operating Units.

**QAPP Worksheet #17: Sampling Design and Rationale  
OU2 –Soils**

**COMMENT:**

Cotter produced a grid map associated with the 1998 Health Risk Assessment showing levels of Thorium and other radionuclides in the soils on the east side of their property.

**REQUEST:**

Soil testing using a similar grid should be used to determine if the contamination is in a wider area including the town of Brookside and the Head Start School near Brookside.

**QAPP Worksheet #17: Sampling Design and Rationale  
OU1 - Air**

**Radon Flux and Radon Emissions**

“Monitoring for Radon-222 and –220 will not be conducted since the risk-based action levels are far below the analytical sensitivity level for available sampling methods. Additionally, available monitoring data for the eight air monitoring stations in OU1 (Ensero, 2024) demonstrate that radon-222 is above risk-based action levels and will be included as a COPC.”

**The following comment was taken from an analysis by Sharyn Cunningham, Founding Director of CCAT and longtime Lincoln Park resident, in September of 2022:**

Cotter's 2004 Alternate Effluent Limit method determines radon concentrations for compliance by subtracting the average background of the three background stations from the concentrations at the sampling stations. The background concentration is

determined by averaging and adding two standard deviations. (Standard deviation is the spread of the data around the mean or average.)

Bernd Franke, Scientific Director at IFEU in Germany stated in his analysis: The contribution of radon-222 emissions from the Cotter property is not properly determined [...] The environmental monitoring system is not adequate and should be significantly expanded [...] In order to determine whether measured radon concentrations are in compliance with regulatory requirements, background [should be] defined as the mean plus 2 standard deviations from three locations. I could not locate a proper justification in the Environmental Report for this procedure [...] This method is associated with significant uncertainties and cannot be regarded as a suitable one to properly determine the contribution of radon-222 [...] Furthermore, the values [...] at the three stations cannot be taken as true background [...]

**REQUEST:**

CCAT requests that this issue be pursued because erroneous radon compliance will impact the Risk Assessment and Remedial Action based on it.

Jeri L Fry  
Cañon City  
Colorado

22 August 2024

Paul Stoick ([stoick.paul@epa.gov](mailto:stoick.paul@epa.gov)), EPA Remedial Project Manager  
Alex Hedgepath ([alex.hedgepath@state.co.us](mailto:alex.hedgepath@state.co.us)), CDPHE CERCLA Project Manager  
Lincoln Park/Cotter Superfund Site EPA ID No. COD042167858

**RE: Comments on July 2024 Draft Phase I Risk Assessment Quality Assurance  
Project Plan (Phase I RA QAPP)**

Dear Messrs. Stoick and Hedgepath,

Thank you for the opportunity to submit and for accepting my comments on the above referenced document. Please post my comment letter on the CDPHE website. I found these things were not mentioned in the Draft QAPP:

- 1. McKinley School.** There is no mention of McKinley Elementary School in this QAPP. The school is located in Lincoln Park 2.25 miles north and downstream from Cotter. It is half way between Grand Ave. and Sherman Ave. I, Jeri Fry, attended this school during the early 1960's when new building was done and the old school still stood. During this time fill dirt was commonly taken from the Team Track Transfer station and used around Canon City and Florence because of its wonderful consistency. This radioactive material may have been used during the McKinley School construction. In the years since 1960, there have been troubling health issues reported among McKinley teachers and students. Most recently (2024) a student who attended all elementary years at McKinley was diagnosed with a brain tumor.

**Summary of Botched historical tests at McKinley**

Source: Repository in Canon City of the Cotter Administrative Record  
Testing at McKinley Elementary School in Lincoln Park in **1992** during a private lawsuit showed uranium levels at four times the amount of naturally occurring radiation and indicated molybdenum levels 21 times the natural level. The same test indicated lead levels at 3.75 times the natural background. Testing was done by Glenn Miller Consulting of Elizabeth, Colorado and analyzed by Hazen Labs in Golden, Colorado. These concerning results were sent to the school district back in 1992 by the private lawsuit Attorney Rebecca Lorenz. She sent the results to the CDPHE and to the EPA also. The EPA responded that it referred the matter "to our counterparts" at the CDPHE. The matter seemed to be dropped after that. Research at this writing could not find any CDPHE documents that took action on the letter from Attorney Lorenz. Nor has a Report of test results been found.

Jeri Fry Comment on Draft Phase 1 QAPP

Page | 1

22 August 2024

**In 2002 the issue surface again when** Carrie Ary, then President of McKinley PTO, provided the School District a copy of the 1992 letter in which Attorney Rebecca Lorenz warned the district, *"these test results indicate there is a potential for a significant health hazard to children playing on the playground."* This was written up in the Daily Record newspaper in November 2002 article titled **RE-1 Mom Helps Fast Track McKinley Soil Testing**. School District Administrators immediately asked for the testing as reported in the Daily Record article titled **Soil Never Tested at McKinley School** (Oct 2002). This article related that CDPHE's Phill Stoffey did not remember the letter that was sent to him, but walked around the grounds with a Geiger counter as part of a program that tested all the intersection in the Superfund area. No soil sampling was done.

Phil Stoffey (deceased 2018) was the CDPHE Lincoln Park Superfund Site Project Manager beginning in 1988 until roughly 2008. David Butcher was Director, Laboratory Services Division CDPHE. These men are both quoted in these articles. Stoffey said the CDPHE did soil tests in the mid-nineties. There are results of these tests in the Royal Gorge Regional Museum and History Center which houses the Repository of the Cotter Administrative Record.

**Comment:** It appears what the community has is a reassuring letter from CDPHE without the test samples, research and analysis behind claims that all is well in Lincoln Park. This is an insult in the face of some very real concerns.

**Please include in the QAPP** a sampling plan that will properly investigate all the grounds around McKinley School. Our concern is the fill dirt used may have been contaminated. This requires a definitive answer prior to construction plans that will be digging at McKinley to construct a new gymnasium.

**2. Plutonium.** There is no mention of plutonium or radioactive lead isotopes in this QAPP.

Source: Repository in Canon City of the Cotter Administrative Record

In July of 1992 ATSDR was petitioned to evaluate Lincoln Park. This was about the time of the private lawsuit that found contamination on the McKinley School grounds. This ATSDR involvement shifted testing focus. Reports of these test results are still being researched and an educational presentation about them would continue to enlighten the community about this manmade landscape feature that lives in geologic time. From 1988 to 2008 Phil Stoffey was the CDPHE site project Manager Cotter's license CO 369-01, amendment #26 allowed them to handle plutonium. Phil Stoffey said that Rocky Flats "gloves and equipment" were brought to Cotter for disposal. Anecdotal reports said some of this went into the Canon City Landfill now known as Ecology Park on County Rd3.

**Comment:** Pu-244 was found in attic dust in 1994. (The reports are in the Canon City Repository). CCAT still has sealed samples of attic dust in storage.

**Please include in the QAPP** a plan for addressing these old questions.

**3. Wolf Park Mine inactive workings.** There is no mention of the inactive Wolf Park Coal Mine located (School section 16) in the coal rich Vermejo Formation in the geology directly under the former Cotter Uranium Mill and tailings ponds where the entirety of



OU1 is sited. Also no mention that the Wolf Park Coal Mine workings intersect with the Chandler Mine workings. Together these two mines underlay all of OU1 and the part of OU3 that is to the east and south of OU1. Mine audits manifest in OU3.

**Please include in the QAPP** a workplan for investigation of how the coal mine workings impact and confound the groundwater in the Superfund site to determine how and where the contamination has moved. Specifically, a test of the well on Adams Street off of McKinsey north of the Arkansas River which showed Cotter constituents in it in .

- 4. Littell Shaft.** This was the air shaft for the Wolf Park Mine. It is 1068 feet deep. It is located in the approximate center or of where the old tailings ponds were sited. The shaft was used to dispose of waste until it was sealed in 1979. Contaminants were found in the waters of the Wolf Park Mine (1983 Williams and Osienskey Report).

**Comment:** Two wells were attempted near this shaft and were abandoned. The questions still remain about contamination that may have entered the Wolf Park Mine workings and traveled through geological formations into OU3.

**Please include in the QAPP** workplan to gain information about status of the waters in the inactive mine workings.

- 5. PRTW** (installed 2000) is not even mentioned in this document. When its failure was recognized CDPHE started calling it the “cut off wall”; that term is not in the document either. The first and last 5-year review of the PRTW showed it wasn’t working (PRTW Assessment Published 2005). The 2002 No Further Action (Soils) Record of Decision stands and has not been further looked at. CDPHE Edger Ethington told the public at a CAG meeting (circa 2007) it was leaking 3 gallons per minute (about 5 acre-feet per year). The last EPA 5-year review of OU2 was done in 2017, these have now been discontinued. These were discretionary, according to the EPA Website, but why they were discretionary is a mystery. Without them the unaddressed leakage at the PRTW north of the SCS dam is allowed to go unmonitored.

**Please include in the QAPP** workplan to sample near the PRTW north of the Sand Creek SCS dam in OU3 to determine the status of leaking at this location.

- 6. Wolf Park Oil well.** There is no mention of this wildcat oil well that was drilled in 1929. It was located in the area where Cotter later sited their original bare ground tailings ponds.

**Comment:** This information was brought to the regulators in the CAG Meeting of November of 2022. We do not know how this feature in the middle of a tailings pond area went unknown from Cotter’s beginning. Regardless, the shaft goes down over 3,000 feet into the deepest part of the geology. At worst it could be a pathway for contamination at best is could be investigated as a way to gain knowledge about how Cotter constituents may have gone under the Arkansas River and manifest in a well North of the Arkansas River in OU3.

**Please include in the QAPP** sampling of the suspect well on Adams Street.

- 7. The persistent uranium groundwater plume centering at Chestnut St and Elm Ave.** This involves approximately 80 acres of residential area. It was shown on maps through the years as twice that amount of acreage and included McKinley School. Colorado Citizens Against ToxicWaste Inc has repeatedly brought concern to the regulators about this area where McKinley is located. The concern stemmed from a grassroots health survey that EPA encouraged CCAT to do. That survey (2004) uncovered birth defects in Lincoln Park.
- Pierre Robin “Roban” Sequence/Complex involving development of the lower jaw, displaced tongue and cleft palate. Happens 1 in 30,000 births. (In contrast cleft lip occurs once in 700 live births)
  - Alagille Syndrome – due to a Spontaneous chromosomal breaking occurs 1 in 700,000 live births. CCAT’ survey uncovered 5 Cases of Alagille Syndrome associated with Lincoln Park.
  - With the help of Fremont County Medical Association and the State Medical Board, CCAT asked for an epidemiological or toxicological study of residents of Lincoln Park
  - This prompted The Agency for Toxic Substance and Disease Registry’s assessment published 2014. This was published 30 years after the 1984 Superfund Listing which did not arm people with timely disclosure.

**Please include in the QAPP** a sampling plan that will properly investigate the soil, air and any groundwater around the neighborhood near McKinley School.

- 8. Effect of the west path of the 1965 flood.** The QAPP describes a well installation intended for the corner of Sherman Ave and 12<sup>th</sup> St. I am unclear what the logic is for a well at this location. However, the same location was impacted by the 1965 flood. The west path of the 1965 flood carried the same tailings material northward down Pine St washing deep into Lincoln Park. This is why the west SCS dam was installed in 1971 at the same time the bigger SCS dam was installed on Sand Creek.

**Please include in the QAPP** a sampling plan of soils that investigates the historic west path of the 1965 flood that washed out Pine St and flowed on north into residential yards and basements.

Thank you for considering these comments.

Respectfully submitted,



Jeri L. Fry

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Comments on Uniform Federal Policy Quality Assurance Project Plan for  
the Phase I Risk Assessment, Rev. 0, Lincoln Park Superfund Site OU1 / OU2 / OU3,  
Cañon City, Fremont County, Colorado

TASC Comment #2: A long-standing CAG concern is whether deep groundwater and previous underground mining works will be included in the risk assessment sampling plan. It does not appear that this is addressed in the QAPP. It may be assumed that potential sources of contaminants would be near the surface and diluted concentrations may migrate down and out through groundwater pathways. However, by human nature open holes into the ground are enticing dump locations. CAG community members may want to ask the Agencies to require Cotter to sample mine entrances (both soils and groundwater) to eliminate mine shafts as potential source locations.

Quoting from Gus Slanovich's paper "The Other Path"

"Vermejo Formation: Setting top of the Trinidad, the Vermejo Fm is in second position for receiving water from the mountains and at essentially the same elevation. It follows the outline of the Trinidad Sandstone, the lowest layers even crossing underneath the river.

Evidence of its proclivity to function as an aquifer is also found throughout the basin. There are springs in the south from Newlin Creek, Second Alkali Creek, Coal Creek, and Oak Creek.

Different conditions exist between the lower half and the upper half, mostly due to the carving out of the upper half in the Arkansas River valley. In the north block, the upper Vermejo Fm outcrop is found in Chandler Creek in Section 13, and to the middle of Section 23 at elevation 5550. Alluvium of Chandler Creek streambed covers any spring at this location

The lower half is within the influence of the Castle Rock Syncline where the bottom layers cross under the river. A band of the formation that does not cross under the river outcrops from Four mile to Brewster at about 5250. A documented spring is found at elevation 5260.

The Vermejo Fm outcrops in Fawn Hollow from a high of 5430 in the canyon down to that band at State Highway 115 at elevation 5240. There are indications of springs in the Fawn Hollow Canyon.

This reveals an important geometric characteristic of the layers that make up the Vermejo Fm (Figure 5). In its exposure on Sand Creek, the layers are from a high of 5460-foot elevation at SCS dam to a low of 5380 at its contact with the Trinidad SS. Due to the folding of the beds in the making of the Castle Rock Syncline and partly due to erosion, there is a lengthy path from Brookside around to Chandler Creek where the discharge elevations are bent lower. This results in more than 100 feet of hydraulic head from an input at Sand Creek to discharge along the front of the outcrop. One would expect to find springs in this part of the Vermejo Fm outcrop and there are in fact springs.

Each of the other creeks that cut across the Vermejo Fm is influenced by the geometry. We will briefly examine each beginning at Brookside and Spring Creek. More than one mile of Vermejo Fm outcrops in Spring Creek. From elevation 5440 in Section 11 to elevation 5300 at Willow Lake in Section 2, a gathering seepage crosses the Trinidad SS east of Willow Lake to its terminus in the Arkansas River bottom.

Next in line is the streambed called Ash Creek where the same pattern is repeated. The terminus is into the alluvium above Willow Lake. On Plum/Willow Creek, the upper Vermejo outcrop is in mid-Section 10 at elevation 5440 and the streambed terminates into Willow Lake. A running stream develops along the way.

Both Ash Creek and Plum/Willow Creek are the recipients of seepage not only from the Vermejo Fm but from upper sources as well.

Moving westward, the next creek is Sand Creek. Sand Creek is located on slightly higher ground and a land crest directs it west of Plum/Willow Creek. So far, in discussing the Vermejo Fm we have only alluded to Sand Creek. It was discussed with the Trinidad Sandstone and the same conditions apply to the Vermejo. That is, it is poised to draw in water at Sand Creek when runoff happens, and as shown in Figure 5, that water will move laterally to its discharge around Brewster and perhaps all the way to Chandler Creek.

There is also the likelihood that springs occur on Sand Creek when water is available from its higher-level intake on the west.

Moving westward from Sand Creek it is the formation that outcrops in the drainage where the Santa Fe Railroad track and load out are located. The outcrop is along the railroad line northwest into the Prospect Heights area. It has the exposure to both receive and release water in this valley.

Going back southward, the Vermejo Fm also enters the Forked Gulch drainage

Recapping, the beds in the Vermejo Fm transmit water into Lincoln Park, the Arkansas River Channel and all around the ring perhaps as far as upper Chandler Creek. The upper hydraulic gradient is nearly level all around the ring with numerous potential outlets. It is possible for flow to move around the ring laterally to favorable outlet conditions depending on the hydraulic head in the system. Hydraulic gradient is such

that surface runoff in Sand Creek is drawn into the Vermejo Fm and can move around the ring.”

TASC Comment #13: CAG members may want to ask EPA if there are data gaps in Figure 17-26. Does shallow groundwater extend all the way to the mouth of Sand Creek? Is the community aware of any seeps outside of the yellow-shaded area? Figure 17-26 shows groundwater data from 2022 (unknown time of year). CAG may want ask EPA if the water table elevations have changed through the years, and how much the water table changes through the seasons

The Other Path also illustrates how due to the lateral movement of the ground water other springs such as Ash Creek, Plum Creek and even Chandler Creek have received contaminants.

TASC Comment #6: CAG may want to ask EPA if the West SCS Dam identifies a potential migration pathway for contamination from milling operations and should sampling occur there. TASC also notes in a previous comment that a slight uranium hot spot is located just south (up-gradient) of the West SCS Dam

More excerpts from The Other Path

“SCS Dam: The SCS Dam was constructed in 1971; 13 years after Cotter began operation. Prior to the dams, all of the Cotter effluents drained down the Sand Creek stream. bed unabated, Cotter and the Colorado State Health Department applaud the dam a barrier to prevent the contamination from moving down Sand Creek. That may be a valid claim; however, the dam is keyed into the Raton Fm. and upper Vermejo Formation, which brings contaminated water in contact with a sandstone layer. Reportedly a pool of water is, always behind the dam, soaking into a clay layer placed to cover a part of the Sand Creek Channel. An outlet works containing the pool of water is at 5480 elevation and the spillway is at 5510 elevation. Unless there is complete, containment within an impervious lining, seepage, into the sandstone is ongoing and the contamination is traveling.”

TASC Comment #5: CAG members may want to ask EPA about the presence of three distinct and separate uranium plumes in Figure 17-1. CAG members may also want to ask EPA if these plumes indicate multiple potential sources and whether adequate sampling is being planned for each source?

Excerpts from The Other Path

“Weather events serve to transport contaminants downgrade and downward. Surface gradient is only part of the process. The underlying layers of sandstone have their own gradient, which carries fluids in the direction of least resistance. That direction may take a course opposite of where the surface would indicate.”

An in depth article from 2016

The Denver Post May 2, 2016 by Karen Crummy

“Cotter Corp.’s uranium mill near Cañon City has the state’s backing to permanently dispose of radioactive waste in its tailings ponds, despite state and independent reports over a 30-year period showing the ponds’ liners leak.

A 2004 internal state health department memo went so far as to describe the site as “unusable” for hazardous- waste disposal under state regulations.

Allowing the radioactive waste to remain on site is just the latest chapter in a 50-year saga during which regulators for the state, which owned the land during 20 years that Cotter polluted it, ignored warnings from the Environmental Protection Agency, independent firms and their own engineers.”

### **“Trouble with the liners**

The state’s ties to the Cotter mill date to 1958, when the State Land Board leased 640 acres to the company. Over the next two decades, uranium, molybdenum and other contaminants were kept in 11 unlined ponds on the site, leaching into the groundwater and migrating north along Sand Creek into the Lincoln Park neighborhood.

Two new lined impoundment ponds were constructed, and by 1983, the waste from the old ponds was put into what has become known as the secondary impoundment, and capped, and new waste was put into the primary impoundment.

During construction of the ponds, state inspectors found tears, drainage problems and damage to the liners from trucks, according to a 1981 EPA report. Five years later, an investigation by three consulting firms for the state in its lawsuit against Cotter found “the new impoundments are leaking and are a continuing source of contamination to the underlying groundwater.”

The report also noted that the weight of the cover was pushing rocks “into and through the liner.”

In 2004, state engineer Larry Bruskin found the Hypalon liner “should take no credit as a physical barrier for protection against liquid migration into the material below” and the site was “unusable” for hazardous waste disposal under Colorado health regulations.

Two months later, an independent review commissioned by the state found that while some repairs to the tears were made, “quality control . . . was based on visual observation only.”

This Sentinel Consulting Services report noted there were springs, fractured bedrock and permeable sandstone under the impoundment, suggesting “pathways exist for migration of impoundment seepage into both shallow and deep aquifers.” It also found that although a previous study “suggested that the impoundments are releasing millions of gallons of leachate into the environment each year, these estimates may be low.”

When asked about the reports, including Bruskin’s analysis that was addressed to him, Tarlton, head of the health department’s radiation control unit, said it didn’t sound familiar. While not addressing the reports, he later said regulators are monitoring the amount of seepage.

He also acknowledged the state does not know whether molybdenum or uranium is among the contaminants leaking because they are not “distinguishable from other groundwater in the area that we know is contaminated with the same constituents.”

Copy the following link to view the full article

<https://www.denverpost.com/2011/10/22/cotter-mills-ties-to-colorado-regulators-may-have-become-toxic/>

There is certainly enough evidence to show that a deep path is not only possible, but probable.

Another omission in the QAPP is the lack of a water flow measuring device on Sand Creek upstream of the impoundment ponds.

Such a device could be setup for remote monitoring during high water events which occur frequently in Sand Creek. Which would at least provide some warning to those downstream.

The only other alternative would be the construction of a retention dam upstream of the impoundments with a discharge pipeline around OU 1.

The other issues I see within the QAPP is regards to proposed soil sampling locations within OU 1 as illustrated in Figure 17-15. Those locations all seem to be within the restricted area. Ou 1 continues to the South and East; additionally, more are need to the West.



Figures 17-18 thru 23 are dealing OU 3 as if these are the only areas that make up OU 3.

Cotter has had a habit of discounting airborne contamination and limiting further investigation to the smallest area possible.

CAG has furnished Wright Environmental with material from the 1992 lawsuit which clearly shows much larger OU 3 area in need of investigation.

Thank You for the opportunity to submit comments.

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