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PHASE I ENVIRONMENTAL SITE ASSESSMENT

Site: Parcel SS-86, Summit County, Utah

Prepared for

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On behalf of

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Project SLC1029

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EXECUTIVE SUMMARY

This Executive Summary presents the results of the Phase I Environmental Site Assessment (ESA) performed by Geosyntec Consultants (Geosyntec) on an approximately 138-acre parcel of undeveloped land located in Summit County, Utah (herein referenced as the "Subject Property" or "Site"). The Site is identified as Tax Map Parcel SS-86 in Summit County's tax map indexing system. This Phase I ESA was prepared for Stoel Rives, LLP (Stoel Rives) on behalf of the Town of Hideout, Utah (herein referenced as "the Client") in accordance with the scope of work, terms, and conditions described in Geosyntec's proposal to Stoel Rives, dated 21 January 2021. The objective of this Phase I ESA in accordance with ASTM Standard E 1527-13 (ASTM 2013) was to identify, to the extent feasible, "Recognized Environmental Conditions" (RECs) at the Site, as defined by ASTM E 1527-13.

The Subject Property is located at approximately 40°40'30.2" N 111°26'32.6" W along Richardson Flat Road in Summit County, Utah, and is surrounded by a mixture of undeveloped, historic mining, commercial and residential land. The Site is comprised of a discontinuous parcel, which is bisected from east to west by a historic Union Pacific railroad grade that has been converted into a hiking and biking trail (Rail Trail). The property containing the Rail Trail in not part of the Site and is a part of a separate parcel owned by the State of Utah.

The Site is currently owned by Stichting Mayflower Mountain Fonds and is reportedly used for livestock grazing. In addition to livestock grazing, Site observations also indicated that the Subject Property has historically been trespassed and periodically used for ad-hoc recreational purposes such as hiking, off-road vehicle use, and clay pigeon target shooting.

The Site does not include any buildings or structures, and development is limited to the Richardson Flat Road, which crosses the northern portion of the Site from east to west and several other dirt roads or tracks that cross the Subject Property. An earthen embankment is present in the southeast portion of the Site. This feature crosses an ephemeral stream that drains topographically higher areas along the western, southern, and eastern margins of the Site. This feature dates back to at least the 1930s and appears to have potentially been constructed as part of an old road embankment or railroad grade. It is also speculated that it may have been constructed as a water retention feature (CMT Engineering 2020a); however, the exact purpose of the embankment is unknown.

Recognized Environmental Conditions (RECs)

- No RECs were identified during this Phase I ESA.

Controlled Recognized Environmental Conditions (CRECs)

- No CRECs were identified during this Phase I ESA.

Historical Recognized Environmental Conditions (HRECs)

- No HRECs were identified during this Phase I ESA.

De Minimis Conditions

- No De Minimis conditions were identified during this Phase I ESA.

Other Issues

- **Richardson Flat Proposed National Priorities List (NPL) Site** - The Richardson Flat tailings impoundment, is located immediately adjacent and north/northwest of the Subject Property. The tailing impoundment is owned by United Park City Mines (UPCM) and covers an area of approximately 160 acres (USEPA 2005). The impoundment is identified as Operable Unit 1 (OU1) of the Richardson Flat NPL site and received tailings from at least the late 1930s until approximately 1982. Over the course of operation, the impound received approximately 450,000 tons of mine tailings (USEPA 2005). Investigation of OU1 began in the mid-1980's. Remediation was completed in 2011 and involved stabilizing the existing tailings impoundment, diverting surface water, and consolidating/capping the mine tailings that were present within the impoundment. Based on the most recent 5-year review for Richardson Flat (USEPA 2018), the remedy for OU1 is reported to be functioning well and is protective of human health and the environment.

  Based on the previous remedial actions, its current regulatory status and its downgradient location, Geosyntec does not consider OU1 of the Richardson Flat site to pose an environmental concern to human health or the environment on the Subject Property. Additionally, environmental baseline sampling conducted within the Subject Property showed that metals concentrations (the constituents of concern for the Richardson Flat site) were below relevant screening criteria or appear to be consistent with natural background concentrations (Geosyntec 2021).

- **Recreational Clay Pigeon Target Shooting** – Evidence of periodic recreational clay pigeon target shooting was observed within the Site. Scattered shotgun shells were observed in the area east of the main dirt access road and north of the old Union Pacific railroad grade, as well as along the western margin of the Site. Extensive clay pigeon debris was also observed in the area east of the main dirt access road and south of the old Union Pacific railroad grade. Environmental baseline samples collected from the Subject Property do not indicate that the observed clay pigeon target shooting activities have significantly impacted Site soils (i.e., resulting in elevated levels of lead above relevant screening levels) (Geosyntec 2021).

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1. INTRODUCTION

Geosyntec Consultants, Inc. (Geosyntec)[1] was retained by Stoel Rives, LLP (Stoel Rives) on behalf of the Town of Hideout to conduct a Phase I Environmental Site Assessment (ESA) of an approximately 138-acre parcel of undeveloped land located in Summit County, Utah (the "Site" or "Subject Property"). The Site is identified as Tax Map Parcel SS-86 in Summit County's tax map indexing system. The Site location is shown on **Figure 1** (Site Location Map). A Site Layout Map that identifies features observed during the Site reconnaissance is shown on **Figure 2** (Site Layout Map). Facilities and undeveloped land surrounding the Site are shown on **Figure 3** (Site Vicinity Map).

1.1 Objective

This Phase I ESA was conducted in general accordance with the scope and limitations of the guidance contained within the ASTM International (ASTM) Practice E1527-13. The objective of performing this Phase I ESA in accordance with ASTM Standard E1527-13 was to identify, to the extent feasible, "recognized environmental conditions[2]" (RECs) at the Subject Property as the term REC is defined by ASTM E1527-13. Deviations or exceptions to the guidance contained in the ASTM E1527-13 standard of practice are described in Section 1.4.

Geosyntec's effort is to provide the User with a Phase I ESA that identifies potential or known surface or subsurface environmental impacts at the Site. For the purposes of this Phase I ESA report, the Town of Hideout is the "User," defined as "*the party seeking to use Practice E 1527-13 to complete an environmental site assessment of the property*…" in partial fulfillment of the requirements of the All Appropriate Inquiry Rule under 40 CFR 312.

1.2 Scope of Services

The Phase I ESA scope of work included the following:

- Review of pertinent information/documents;

[1] The defined term "Geosyntec" refers to Geosyntec Consultants, Inc., except where Services are rendered in Michigan it refers to Geosyntec Consultants of Michigan, Inc.; in New York it refers to B&B Geologists and Engineers of New York, P.C.; in Puerto Rico it refers to Geosyntec Consultants of Puerto Rico, P.C.; in North Carolina it refers to Geosyntec Consultants of NC, P.C.; in Canada it refers to Geosyntec Consultants International, Inc.; in the United Kingdom it refers to Geosyntec Consultants, Ltd.; and in Australia it refers to Geosyntec Consultants Pty Ltd.

[2] As defined by ASTM E1527-13, a Recognized Environmental Condition is: "the presence or likely presence of any hazardous substances or petroleum products in, on or at a property (1) due to [a] release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment." The definition further states that "[*d]e minimis* conditions are not recognized environmental conditions."

- Review of environmental databases regarding the Site itself, as well as sites in the vicinity of the Subject Property pursuant to the ASTM E1527-13 Standard;
- Review of historical land usage via historical aerial photographs, fire insurance maps, city directories, property tax files, and topographic maps, as available;
- Visit to the Site for a visual reconnaissance of the major interior and exterior Site features and use of adjoining properties; and
- Preparation of a Phase I ESA report.

In accordance with Geosyntec's scope of work for this project, "non-scope considerations", as defined in ASTM E1527-13, were not evaluated as part of this Phase I ESA, unless as noted in Section 8.

Geosyntec's authorization to conduct and complete the scope of work are as follows:

Table 1. Scope of Services Details

Scope Item	Detailed Information
Site Name or Reference	Parcel SS-86
Site Address	The Site does not have a formal address. The Site is approximately located at 40°40'30.2" N 111°26'32.6" W, along Richardson Flat Road
City, State, and zip code	Summit County, UT 84098
Parcel ID	Summit County Parcel SS-86
Proposal Date	21 January 2021
Authorization Date	1 April 2021
Database Report Date	9 April 2021
Site Visit Date	13 April 2021
Geosyntec Site Personnel	David Harnsberger
Report Preparer(s)	David Harnsberger, Brian Smith
Report Reviewer(s)	Brent Robinson
Environmental Professional[1]	David Harnsberger, Brian Smith, and Brent Robinson

Note 1: The Environmental Professional meets the requirements as stated in ASTM Practice E1527-13.

The professional qualifications of the senior reviewers, including the signatory Environmental Professional, are presented in Section 11.

1.3 Significant Assumptions

Geosyntec took no significant assumptions into account as part of this project, except as noted in the proposal.

1.4 Limitations, Deviations, and Exceptions

This Phase I ESA was conducted according to the agreed-upon scope of work consistent with the ASTM Practice E1527-13, except as follows:

- Geosyntec was not able to identify the exact nature or use of the earthen embankment in the southeastern portion of the Site. This feature appears to have potentially been constructed as road embankment or historic rail grade, but the exact nature of this feature could not be determined. Other documents indicate that it may have been constructed as water retention feature (CMT Engineering 2020a).
- Geosyntec was not provided with and did not identify contact information for prior Site owners. However, since relevant historical documents were obtained, this limitation is not considered to be significant.
- Geosyntec contacted Mr. Bill Coleman, the current property owner's Realtor/Representative to arrange an interview with the current owner. Several follow attempts were also made. As of the date of release of this report, no response or follow-up from Mr. Coleman had been received. However, since relevant historical documents were obtained, this limitation is not considered to be significant.

This Phase I ESA contains a property description and history, an environmental database review, a summary of observations made during the site reconnaissance, and descriptions of information obtained during interview(s) of person(s) knowledgeable about the Subject Property. This Phase I ESA did not include sampling rock, soil, groundwater, surface water, soil vapor, air, or on-site substances or materials.

The findings and conclusions presented in this Phase I ESA are the result of professional interpretation of the information collected at the time of this study. Specified information contained in this report has been obtained from publicly available sources and other secondary sources of information. Although care has been taken in compiling this information, Geosyntec has not independently validated this information and provides no warranty as to its accuracy or completeness. The Phase I ESA does not necessarily include an exhaustive search of all available records. Therefore, Geosyntec cannot "certify" or guarantee that any property is free of environmental impairment; no warranties regarding the environmental quality of the Subject Property are expressed or implied.

1.5 Special Terms and Conditions

No special contractual terms or conditions were considered as part of this project, except as noted in the proposal.

1.6 User Reliance

This Phase I ESA report has been prepared solely for the benefit of Stoel Rives and the Town of Hideout. Geosyntec has issued the Phase I ESA report to Stoel Rives on behalf of the Town of Hideout and grants them the right to rely on the report contents. Except as specifically set forth in Geosyntec's proposal to Stoel Rives to perform this work, no third party shall have the right to rely on Geosyntec opinions rendered in connection with the Services without Geosyntec's written consent, which may be conditioned on the third party's agreement to be bound to acceptable conditions and limitations similar to those agreed to by Stoel Rives. Please note that Geosyntec's consent to provide a right-to-rely on the Phase I ESA report is subject to Stoel Rives approval and to agreement to Geosyntec's terms and conditions associated with Geosyntec's performance of this specific Phase I ESA

2. SITE DESCRIPTION

The site description presented herein is derived from information provided by the User and information gathered during the research of historical records and the reconnaissance, unless referenced otherwise.

2.1 Site Location and General Characteristics

The Site is located at approximately 40°40'30.2" N 111°26'32.6" W along Richardson Flat Road in Summit County, Utah, and is surrounded by a mixture of undeveloped, historic mining, commercial, and residential land. The approximately 138-acre Site is comprised of a discontinuous parcel (**Table 2)**, which is bisected from east to west by an historic Union Pacific railroad grade that has been converted into a hiking and biking trail (Rail Trail). The property containing the Rail Trail in not part of the Site and is located on a separate parcel owned by the State of Utah. The location of the Site is shown on **Figure 1**. The site layout and features observed during the Site reconnaissance and surrounding properties are shown on **Figure 2** and **Figure 3**, respectively. Ownership information, where available, is provided in **Appendix A**.

Table 2. Parcel Information

Parcel ID	Zoning	Approximate Area (Acres)	Land Use/Description
SS-86	Mountain Remote	Approximately 138	Undeveloped land

Source: Record of Survey map prepared by Boundary Consultants (see Appendix A)

2.2 Current and Former Uses of the Site

The Site is currently owned by Stichting Mayflower Mountain Fonds and is reportedly used for livestock grazing. In addition to livestock grazing, Site observations also indicated that the Subject Property has historically been trespassed and periodically used for ad-hoc recreational purposes such as hiking, off-road vehicle use, and clay pigeon target shooting.

2.3 Description of Structures, Roads, Other Improvements on the Site

Site does not include any buildings or structures, and development is limited to the Richardson Flat Road, which crosses the northern portion of the Site from east to west and several other dirt roads or tracks that cross the Subject Property. An earthen embankment is present in the southeast portion of the Site. This feature crosses an ephemeral stream that drains topographically higher areas along the western, southern, and eastern margins of the Site. This feature dates back to at least the 1930s and appears to have potentially been constructed as part of an old road embankment or perhaps railroad grade, although no visual or other evidence for a potential railroad was

identified during the Site visit or in any of the historical documents that were reviewed (topographic maps, aerials, etc.). It is also speculated that it may have been constructed as a water retention feature (CMT Engineering 2020a); however, the exact purpose of this feature is unknown.

Current Site features observed during the site reconnaissance are presented in **Figure 2**.

2.4 Current and Prior Use of Adjoining Properties

Since 2016, the vicinity surrounding the Site has consisted primarily of industrial/historic mining, residential, and undeveloped land. The land use immediately surrounding the Site is noted in **Table 3** below.

Table 3. Site Vicinity Land Use

Direction	Current Geosyntec-Observed Use[1]	Identified Prior Use
North	Operable Unit 1 (OU1) of the Richardson Flat Tailings (Richardson Flat), Proposed National Priorities List (NPL) site (northwest), undeveloped land (north and northeast)	Industrial/Mining (northwest); Undeveloped Land (north and northeast)
South	Undeveloped Land	Undeveloped Land
East	Town of Hideout - Residential Subdivisions with light commercial infill	Undeveloped Land
West	OU1 of the Richardson Flat Proposed NPL site. (northwest), undeveloped land (west and southwest)	Industrial/Mining(northwest); Undeveloped Land (west and southwest)

Note 1: Observations from Geosyntec's site visit.

The adjacent properties were briefly inspected during the site reconnaissance (from accessible vantage points at the Site or public rights-of-way) to observe the associated land use practices (e.g., condition, housekeeping, evidence of chemical usage/spills). Observations made for the adjoining properties are described later in this report (Section 5). The Richardson Flat site contains a former tailings impoundment that has been capped and is discussed in detail in Section 4.3.2.

2.5 Physical Setting

A summary of the physical setting of the Site and vicinity, including topography, geology/ hydrogeology, and water resources, is presented in **Table 4**. Environmental Risk Information Services (ERIS) provided Geosyntec with a Physical Setting Report (PSR) for the area, including the Site, which serves as a source of certain information. Other sources of information in **Table 4** are noted accordingly.

Table 4. Physical Setting

Topic	Information	Source
Topography		
USGS 7.5-Minute Quadrangle Map	Park City East, UT	U.S. Geological Survey (USGS)
Elevation	The elevation of the Site ranges from approximately 6,630 feet to 6,840 feet above mean sea level (ft MSL)	ERIS PSR
General Topographic Gradient	The topography of the Site is varied with rolling hills and valleys. The topographic gradient varies depending on location, but the overall topographic gradient of the Site is to the north/northwest.	USGS Quadrangle Map and Site Reconnaissance
Soils & Geology		
Site Soils	Surface soil on slopes steeper than 15 percent along the western, southern, and eastern margins of the Site are comprised of well drained Ayoub, Dunford, and Melling gravelly loam. These loams consist of colluvium and slope alluviums derived from andesite. Surface soil on slopes less than 10 percent in an area trending northwest towards the northwest corner of the Site is comprised of well drained Echo Creek Kovich loams on stream terraces. The parent material consists of alluvium derived from sandstone, quartzite, and shale.	ERIS PSR
Area Geology	The Site vicinity is underlain primarily by Oligocene -aged volcanic rocks consisting of dacite and rhyolite. These volcanic rocks are blanketed by Quaternary alluvium and colluvium in the eastern portion of the Site and lie stratigraphically above early Triassic mud- and limestone in the northwestern portion of the Site.	ERIS PSR

Table 4. Physical Setting

Topic	Information	Source
Water Resources		
Nearest Water Body	An ephemeral stream drains topographically higher areas along the western, southern, and eastern margins of the Site. The drainage traverses the full north south axis of the Site from the center of the southern boundary of the parcel to the northwest corner. This drainage ultimately flows to Silver Creek which is located approximately 0.9 mile to the west/northwest. This drainage contains infrequent water, generally only in the spring from snowmelt or during high precipitation events. The Site does not contain any perennial surface water bodies.	US Fish & Wildlife Wetland Map, ERIS PSR and USGS Quadrangle Map
Estimated Groundwater Flow Direction[3]	Groundwater flow direction likely varies across the Site based on topography but is generally estimated to flow towards the north/northwest following the overall topographic gradient of the area.	ERIS PSR and CMT Engineering 2020a
Depth to Groundwater	Based on soil boring and the test pit data from the Site, groundwater was detected at depths ranging from approximate 2 and 12 feet bgs near the northwest corner of the Site, along the bottom ephemeral drainage. Depth to groundwater likely varies significantly with topography, soil type, underlying geology, and frequency of precipitation and is likely significantly deeper in the topographically higher areas.	CMT Engineering 2020b, Geosyntec 2021
Wetlands (on site)	No mapped wetlands have been identified within the boundary of the Site. An ephemeral stream runs from the center of the southern boundary to the northwest corner of the Site, and although marshy areas around the channel of the stream were wet on the day of the site reconnaissance, the data suggests they have not been classified as wetlands.	NWI, US Fish & Wildlife Wetland Map. ERIS PSR
Wells (on site)	No water, oil or gas wells were reported by ERIS or observed on site during the Site visit.	ERIS PSR & Site Reconnaissance

[3] Local groundwater flow direction may vary depending on area groundwater pumping, surface water bodies, land use and development, localized topography, and other macro and micro features.

Table 4. Physical Setting

Topic	Information	Source
Nearby[4] Wells (off site)	• No wells were identified in the Public Water Systems Violations and Enforcement Data nor were any wells found in the Safe Drinking Water Information System within 1 mile of the Site. • Seven wells were identified in the USGS National Water Information System database. These wells are not typically monitored for water quality. • No wells were listed in the Public Water Wells database within 1 mile of the Site. • Numerous wells were identified in the Utah Water Rights Database within 1 mile. These wells function to serve domestic, irrigation, mining, municipal, power, and stock watering purposes. All these wells are located outside the immediate drainage areas of the Site. Numerous monitoring wells are also present within the Richardson Flat site located northwest of the Subject Property.	ERIS PSR, Richardson Flat Focused Remedial Investigation Report (RMEC 2004)

[4] ERIS searched federal and state water well databases within one mile of the Subject Property boundary.

3. USER-PROVIDED INFORMATION

This section describes the information provided to Geosyntec by the Town of Hideout (the User of this Phase I ESA). This includes information that was provided in the User Questionnaire (**Appendix C**).

3.1 Title Records

Geosyntec was not provided with and did not review title records for the Site. A property title search was not included in the scope of Geosyntec's services.

3.2 Environmental Liens or Activity and Use Limitations

The User stated, "We have been told that the property in question does not have any environmental liens." No other information regarding environmental liens or activity and land use limitations associated with the Site property was provided or encountered.

3.3 Specialized Knowledge

Other than awareness that the adjoining property (OU1 of the Richardson Flat site) is being managed under EPA oversight, the User indicated that they do not have specialized knowledge of environmental conditions at the Site.

3.4 Knowledge of Hazardous Substances or Petroleum Products

The User is not aware of any hazardous substances or petroleum products in, on, or under the Site, but noted there may be a concern for the potential presence of contamination at the Site due to its proximity to the Richardson Flat site.

3.5 Commonly Known or Reasonably Ascertainable Information

The User is not aware of any commonly known or reasonably ascertainable information within the local community about the Site that is material to RECs in connection with the Site other than its awareness of its proximity to the Richardson Flat site.

3.6 Valuation Reduction for Environmental Issues

The User is not aware of any reduction in value of the Site in response to knowledge or data to suggest the Site is involved with any level of ongoing environmental liability (as defined in AAI[5]).

[5] The "All Appropriate Inquiry Rule", enacted under the 2002 Brownfields Amendments to the Comprehensive Environmental Response, Compensation, and Liability Act; 40 CFR 312

3.7 Degree of Obviousness

The User has considered the degree of obviousness of the presence or likely presence of releases or threatened releases at the Site and the ability to detect releases or threatened releases by appropriate investigation. The User has not observed any conditions indicating the presence or likely presence of releases or threatened releases at the Site.

3.8 Litigation, Administrative Proceedings, and Notices

The User is not aware of: (i) any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the Site; (ii) any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the Site; or (iii) any notices from any governmental entity regarding any possible violations of environmental laws or possible liability relating to hazardous substances or petroleum products associated with the Site.

3.9 Reason for Performing This Phase I ESA

Geosyntec understands that Stoel Rives engaged Geosyntec to perform this Phase I ESA on behalf of the Town of Hideout to identify potential RECs (as defined in ASTM E1527-13) at the Site and to help identify any potential environmental liabilities associated with the Subject Property.

3.10 Pertinent Documents

The User provided several pertinent documents for the Site. These documents are summarized in Section 4.5 and are included in **Appendix C**.

4. RECORDS REVIEW

Geosyntec reviewed the following records, to the extent we found these to be available and reasonably ascertainable:

- Identified federal, state, and local environmental databases
- Identified historical aerial photographs
- Identified historical topographic maps
- Identified fire insurance maps
- Identified city directories
- Local authority permits and records
- Available property tax information

In addition to the standard sources above, Geosyntec reviewed available Site-related documents provided by the User and reviewed environmental files obtained from regulatory agencies, where appropriate.

4.1 Standard Environmental Records Sources

4.1.1 Database Search Approach

Geosyntec contracted ERIS to provide portions of the records reviewed, as described below. ERIS conducted the environmental database search to ascertain whether the Site or neighboring properties were suspected of having environmental conditions that could have impacted the surface or subsurface at the Site. ERIS reported specific records and search distances (from the approximate Site boundaries) for the environmental databases to be consistent with ASTM Practice E 1527-13 and are discussed in the ERIS Database Report (ERIS 2021f) presented in **Appendix B**. Database descriptions are included in the ERIS report.

The following sections discuss listings that are projected to be located upgradient of the Site and have reported (or suspected) contamination or that have the potential for significant contamination that could have impacted the Site (such as National Priorities List [NPL] or Resource Conservation and Recovery Act [RCRA] Corrective Action sites). The locations of these listed sites are shown on the Overview Map and Detail Map in the ERIS Database Report (**Appendix B**).

4.1.2 Database Search Results – Subject Property

ERIS did not identify any database listings for the Subject Property.

4.1.3 Database Search Results – Vicinity Properties

The search of environmental databases identified five site listings for properties within 1 mile of the Subject Property, some of which were in databases indicative of releases. A summary of reviewed database listings is included below:

- One listing refers to a retired mine adit (tunnel) of unknown origin listed less than 0.1 mile south-southeast and upgradient of the Site in the Mineral Resource Data System (MRDS) database. Based on a review of current and historical aerial photographs and topographic maps and observations of the area, the adit appears to be associated with a small historic mining claim or prospect and is no longer present. Evidence of significant historic mining activity was not observed near the adit (e.g., surface structures, waste rock piles, tailings, etc.). Based on the closed status of this feature and lack of significant mining activity, Geosyntec does not consider it to present an environmental concern for the Subject Property.
- Two listings refer to the Richardson Flat site, which is located immediately northwest of the Subject Property and was listed in the Superfund Decision Documents database. ERIS reports that the site is in NPL Status "Proposed" and Non-NPL Status "Remedial Activities Under EPA Enforcement" as of 23 February 2021. Additional information regarding this listing was retrieved via Utah Department of Environmental Quality (UDEQ) and United States Environmental Protection Agency (USEPA) databases and is further discussed in Sections 4.3.3 and 4.4.
- The remaining two listings provide information for a pair of sand and gravel quarries listed in the MRDS database and are located less than 0.5 mile east and over the adjacent ridgeline from the Subject Property. The listings date of 29 October 2002 shows the historical quarries to overlap with an area of new residential development. The quarries are not considered to present an environmental concern to the Site based on the nature of the operations, distances from the Site, and likely closed status of the properties.

Details of the sites are summarized in the ERIS Database Report (**Appendix B**).

4.1.4 Unplottable Sites

ERIS identified three "unplottable sites" that were not mapped by ERIS due to the lack of sufficient address information. Using the address information in the listings, Geosyntec was able to determine that the properties are either more than a mile from the Subject Property or outside of the immediate drainage basin of the property. In addition, Geosyntec was able to determine that the listings are compliance related and do not present an indication of a potential release that would present an environmental concern to the Subject Property.

4.2 Historical Use Information

Geosyntec contracted ERIS to provide standard historical records, including aerial photographs, topographic maps, city directories, and fire insurance maps (ERIS, 2021a-e). The sections below identify and summarize the historical information sources reviewed for the Subject Property and vicinity. A summary of the findings from the review of the historical sources is provided in **Table 5**. Copies of the historical records reports are included in **Appendix B**.

4.2.1 Historic Aerial Photographs

ERIS provided aerial photographs from 1937, 1953, 1962, 1977, 1981, 1983, 1993, 1997, 2006, 2009, 2011, 2014, 2016, and 2018.

4.2.2 Historical Topographic Maps

ERIS supplied portions of USGS topographic maps of the Site and vicinity for 1955, 1999, and 2017.

4.2.3 City Directories

Available business directories, including cross reference and telephone directories, were reviewed for 1240-3345 of Richardson Flat Rd and 13700-14000 of Jordanelle Pkwy for 1991, 2001, 2006, 2009, 2014, and 2018.

4.2.4 Fire Insurance Maps

Based on ERIS' search of fire insurance maps, there was no coverage for the Site.

4.2.5 Property Tax Files

Geosyntec researched publicly available online tax records through Summit County's online records system. The information retrieved included property boundary information, property owner, and property size. The owner for the parcel of the Site is listed as "Stichting Mayflower Mountain Fonds." A current parcel map and the retrieved tax parcel information are provided in **Appendix A.**

Table 5. Historical Records Review

Aerial Photographs (APs)	Topographic Maps	City Directory (CD) and Fire Insurance Maps
Site: The 1937 AP shows the presence of the current Richardson Flat Road in the northern portion of the Site, as well as several other dirt tracks or roads. A "V" shaped linear feature is also observed crossing the Site. This feature appears to extend from the location of the current access road in northwest corner of the Site, to the embankment that is observed crossing the ephemeral drainage in the south-central portion of the Site and then extending to the northeast. This feature appears to perhaps be a potential road or railroad grade; however, the exact nature of this feature is unknown. A previous Phase I ESA conducted on the Site also speculated that it may have been constructed as a water retention feature (CMT Engineering 2020a). The old Union Pacific railroad grade that bisects the Site is also observed in the earliest AP from 1937 (i.e., Union Pacific rail grade that is not part of the Subject Property). Richardson Flat Road appears graded and in use at least as early as the 1937 AP and was observed to be paved in the 2009 AP. The main dirt access road and the vehicle parking and turn around areas near where it terminates at Richardson Flat Road appear graded and built out starting with the 1977 AP. The old Union Pacific railroad grade that bisects the Site appears to have been removed from service as of the 1993 AP. No other physical modifications to the ground surface appear in APs dating from 1993 through 2018. **Vicinity**: The Richardson Flat tailings impoundment is observed in the 1937 AP. From 1937 to 1962, dirt access roads and the grade for the old Union Pacific railroad appear as the only other development within a half mile of the	**Site**: The only feature shown within the Site boundary in the 1955 aerial photograph was the Richardson Flat Road, which appears to have existed as a 4x4 dirt road at that time. The Richardson Flat Road enters the Site from the west and extends over the ridgeline to the east and joins with Highway 248. The 1999 topographic map shows a dirt road running north-south over the western half of the Site. These features are more easily observed, but unchanged in the 2017 topographic map. **Vicinity**: The Union Pacific rail line. which bisects the Site, and the Richardson Flat tailings Pond, which is present to the north/northwest of the Site, are observed in the 1955 topographic map. Several other dirt roads in the surrounding area and Highway 248 to the north were also observed. The Union Pacific rail line is no longer present in the 1999 topographic map. The 2017 topographic map shows the development to the Town of Hideout to the east of the Site.	**Site and vicinity**: The Site and vicinity properties returned no listings in the City Directory or Fire Insurance Maps records requests.

Aerial Photographs (APs)	Topographic Maps	City Directory (CD) and Fire Insurance Maps
Subject Property. Highway 248 to the northeast first appears in the 1962 AP. Sand and gravel quarries and their initial access road over the ridgeline to the east first appear in the 1977 AP. By 1997, the tailings pond for OU1 is capped. By 2009, the Richardson Flat Park-and-Ride had been built over the capped tailings. Commercial development over the ridgeline to the east within the Town of Hideout becomes visible in the 2006 and 2009 APs. Residential development in this area first appears in 2016.		

4.3 Local, County, State, and Federal Files

Geosyntec searched county, and state agencies public information systems for past and present environmental records of the Site. Relevant information is summarized below. Copies of relevant regulatory agency documents are presented in **Appendix D**.

4.3.1 City or County Records

Environmental records for properties and facilities in the State of Utah are managed by the UDEQ and are not handled at the City or County level. See section 4.3.2 for a summary of documents for the Site and its surrounding properties obtained from the UDEQ EDocs website[6].

4.3.2 State/Federal Records

Geosyntec searched the UDEQ EDocs[6] website for information relevant to the environmental condition of the Site and vicinity properties. No records were returned for the Subject Property, but numerous records were returned for the Richardson Flat site to the north/northwest; relevant documents are provided in **Appendix D**. A summary of pertinent environmental conditions, including known impacts, historical investigations, and remediation, is discussed below.

Richardson Flat Tailings Proposed NPL Site

The Richardson Flat site consists of four OUs which have been impacted by historic mining activities and/or wastes. OU1, which consists of the historical Richardson Flat tailings impoundment, is located immediately adjacent and north/northwest of the Subject Property. The tailing impoundment is owned by United Park City Mines (UPCM) and covers an area of approximately 160 acres (USEPA 2005). The impoundment received tailings from at least the late 1930s until approximately 1982. Over the course of operation, the impound received approximately 450,000 tons of tailings (USEPA 2005). OU2 and OU3 encompass approximately 2,000 acres of the Lower Silver Creek floodplain, which have been impacted by the discharge of mine tailings and are located downstream of OU1 (the nearest OU2/OU3 boundary is approximately 1 mile west of the Site). OU4 is comprised of a surface water discharge to Lower Silver Creek known as the Prospector Drain, which is located approximately 2.5 miles west of the Site. The constituents of concern for the Richardson Flat site include aluminum, arsenic, cadmium, copper, lead, mercury, nickel, and zinc (USEPA 2021).

Investigation of OU1 began in the mid-1980's. Remediation of OU1 was completed in 2011 and involved stabilizing the existing tailings impoundment, diverting surface water, and consolidating/ capping the mine tailings that were present within the impoundment. Capping of the impoundment has been completed except for select areas within OU1 that have a temporary 6-inch soil cover to facilitate potential further consolidation of wastes from OU2 and OU3. Investigations have shown

[6] http://eqedocs.utah.gov/

that groundwater flows to the north-northwest within the boundary of OU1 and that the capped impoundment does not present a risk to offsite groundwater as metals concentrations and other water quality parameters are higher in wells outside the OU1 boundary than within. Based on the most recent 5-year review for Richardson Flat (USEPA 2018), the remedy for OU1 is reported to be functioning well and is protective of human health and the environment; however, it is noted that institutional controls for the OU1 called for in the Record of Decision have not yet been implemented (USEPA 2018). Future institutional controls would likely include formal land and groundwater use limitations for the Richardson Flat site. EPA is working with the responsible party for OU1 to develop an institutional control plan, which will address this issue (USEPA 2018). Investigation of the remaining OUs (OUs 2, 3, and 4) is ongoing, and final remedial actions have not been determined.

Based on the previous remedial actions, the current regulatory status and its downgradient location, Geosyntec does not consider OU1 of the Richardson Flat site to pose an environmental concern to the Subject Property. This is supported by the environmental baseline sampling conducted at the Site, as discussed in Section 4.4. Additionally, OUs 2, 3, and 4 are also not considered to pose a concern to the Site due to their distance and downgradient location from the Site.

4.4 Environmental Baseline Sampling

In conjunction with the Phase I ESA, Geosyntec was retained by Stoel Rives on behalf of the Town of Hideout to conduct environmental baseline sampling activities within Parcel SS-86 (Geosyntec 2021). The sampling was conducted to establish baseline environmental conditions within the Subject Property relative to the presence of the Richardson Flat site, which is located immediately to the northwest of the Subject Property, and to assess overall conditions as part of the potential annexation of the Site by the Town of Hideout and the potential future development of the property.

Sampling activities were conducted during April 2021 and included the collection of 14 surface soil samples (approximately 1 sample per each 10 acres), two groundwater samples, and two surface water samples. Groundwater samples were collected from temporary borings installed in the northwest corner of the Site, near the downgradient edge of the Subject Property. Surface water samples were collected from the small ephemeral drainage that emanates from the central portion of the Site and flows to the north-northwest to assess general surface water conditions. Samples were analyzed for the constituents of concern for the Richardson Flat site and other select metals.

Baseline sample results do not show evidence of impacts to the Subject Property from the Richardson Flat site. Concentrations of arsenic in soil, and arsenic and antimony in one of the surface water samples, were detected above relevant screening criteria; however, these concentrations appear to be related to naturally occurring concentrations of these constituents and not related to the Richardson Flat site. All other metals concentrations in the environmental baseline samples were below relevant screening criteria.

4.5 Other Documents Reviewed

Geosyntec was provided a recent Phase I ESA Report (June 18, 2020), an addendum to the Phase I ESA Report (11 October 2020), and a Geotechnical Engineering Study (11 October 2020) prepared by CMT Engineering Laboratories (CMT Engineering). These documents are summarized below and included as **Appendix C**.

CMT Engineering. 2020a. *Phase I Environmental Site Assessment and Addendum; Summit County Parcel SS-86*

Based on the observations, research, and interviews that CMT Engineering conducted in preparing their Phase I ESA report, the authors concluded that No RECs or HRECs were identified in connection with the Subject Property or adjacent, surrounding properties. CMT initially identified OU1 of the Richardson Flat tailings site as a CREC, concluding that the OU1 boundary overlapped the extreme northwest corner of the target property and advising that "Land Use Covenants (LUCs) and/or associated Activity and Use Limitations (AULs) associated with institutional controls currently being drafted for OU1 of the Richardson Flat site may limit future land use on the extreme northwest corner of the target property;" however, in a follow-up via their Phase I ESA Addendum letter, CMT Engineering indicated that a review of a plat map for Parcel SS-86 had revealed that the area previously thought to be contained within the OU1 boundary is owned by Summit County and is not part of Parcel SS-86. Thus, CMT updated their previous Phase I ESA conclusions to indicate "OU1 does not represent a REC in connection with the target property." The annotated plat map CMT Engineering used to adjust their conclusion regarding OU1 is included as an attachment to the addendum letter in **Appendix C**.

CMT Engineering. 2020b. *Geotechnical Engineering Study; Richardson Flat; Highway 248 and Highway 189; Summit County, Utah*

The objectives of this study were to define and evaluate geotechnical conditions for the proposed development of approximately 700 acres of land located south of Highway 248 and east of Highway 189, which includes the Site and several surrounding parcels. CMT Engineering sought to provide appropriate foundation, earthwork, pavement, and seismic recommendations to be utilized in the design and construction of the proposed development. A CMT Engineering Engineer supervised the excavation of 86 test pits extending to an average depth of ten feet below the existing ground surface. Soil samples obtained from the walls of the test pits were shipped to CMT's laboratory for testing of geophysical properties. On review of the field observations and laboratory analytical data, CMT Engineering advised that conventional spread and/or continuous footings could be utilized to support proposed structures, provided the recommendations in their report are followed. A detailed discussion of their design and construction criteria is presented in their report which is provided in **Appendix C**.

5. SITE RECONNAISSANCE

The site reconnaissance was performed by Geosyntec representative, David Harnsberger, on 13 April 2021. Site photographs taken during the reconnaissance are included in **Appendix E**. Adjoining properties were peripherally observed from the perimeter of the Subject Property.

As part of the reconnaissance, Geosyntec looked for evidence of hazardous substances used, stored, or discarded on the Subject Property. Geosyntec also inspected the Subject Property for:

- Areas of disturbed or discolored soil, suspect equipment, and building materials that may contain hazardous substances;
- Areas of distressed vegetation, wastewater discharge areas, and storage tanks/septic systems;
- Waste management and disposal areas, lagoons, pits, and sumps; and
- Surface water management areas and stained surfaces.

There were no conditions that limited the Site reconnaissance.

5.1 Utility Service and Materials Management Provider Information

In its present undeveloped state, utility service has not been extended to the Subject Property. Proposed future development at the Site will likely be serviced by municipal and private utility providers to facilitate development.

5.2 Interior and Exterior Observations

Observations made during the site reconnaissance for the Subject Property are documented in **Table 7**.

5.3 Adjacent Property Reconnaissance

During the site reconnaissance, Geosyntec observed the adjoining properties from the Site or public vantage points in an attempt to identify possible sources of obvious environmental impairment that could affect soil and groundwater quality at or result in vapor migration into the Site as a result of surface water runoff, groundwater transport, or similar pathways. Aside from the previously identified Richardson Flat site, no evidence of chemical storage or releases to the ground at adjacent properties was observed during the Site reconnaissance. See Section 4.3.2 for further discussion of the Richardson Flat site.

Table 7. Interior and Exterior Observations

ASTM Section	Feature or Condition	Description
Interior and Exterior Observations		
9.4.2.3	General Usage of Hazardous Substances	No evidence of the use of hazardous substances was observed on site the day of Geosyntec's Site visit.
9.4.2.4	Aboveground Storage Tanks (ASTs)	No ASTs were observed on site the day of Geosyntec's Site visit.
9.4.2.4	Underground Storage Tanks (USTs)	No evidence of USTs was observed on site the day of Geosyntec's Site visit.
9.4.2.5	Odors	No notable odors were identified on site the day of Geosyntec's Site visit.
9.4.2.6	Pools of Liquids	No pools of liquids were observed on site the day of Geosyntec's Site visit.
9.4.2.7	Drums and Containers ≥ 5 Gallons	No drums or containers, hazardous substance or petroleum product containers, or unidentified containers were observed on site the day of Geosyntec's Site visit.
9.4.2.8	Hazardous Substances and Petroleum Products Containers	
9.4.2.9	Unidentified Containers	
9.4.2.10	Indication of PCBs	No evidence of PCB use or release was observed on site the day of Geosyntec's Site visit.

Table 7. Interior and Exterior Observations

ASTM Section	Feature or Condition	Description
Interior Observations		
9.4.3.1	Heating and Cooling Systems	The Site does not contain any buildings or structures, and no heating or cooling systems were observed during Geosyntec's Site visit.
9.4.3.2	Stains/Corrosion	The Site does not contain any buildings or structures, and no interior areas of staining or corrosion were observed during Geosyntec's Site visit.
9.4.3.3	Drains and Sumps	The Site does not contain any buildings or structures, and no interior drains or sumps were observed.
Exterior Observations		
9.4.4.1	Pits, Ponds, or Lagoons	Standing surface water was observed in two small depressions at the northeast corner of the Site, along the south side of Richardson Flat Road. These ponds form the bottom of the drainage for the ephemeral stream that drains the central portion of the Site. Additionally, standing water was observed in what appeared to be a seep or small spring in the upper portion of the drainage. No oily sheens, odors, or other signs of impact were observed associated with the ponds. Low-lying depressions were also observed along the southern margin of the embankment in the south-central portion the Site. These depressions were dry on the day of Geosyntec's Site visit, but show evidence of previously ponded water (muddy, low-lying areas with reduced density of vegetation.)
9.4.4.2	Stained Soil or Pavement	No stained soil or pavement was observed on site the day of Geosyntec's Site visit.
9.4.4.3	Stressed Vegetation	No obviously stressed vegetation indicative of a chemical discharge or application was observed at the Site.

Table 7. Interior and Exterior Observations

ASTM Section	Feature or Condition	Description
9.4.4.4	Solid Waste	Scattered shotgun shells and various debris was observed in the area east of the main dirt access road and north of the old Union Pacific railroad grade as well as along the western margin of the Site (see Figure 2). Extensive clay pigeon debris was also observed in the area east of the main dirt access road and south of the old Union Pacific railroad grade. A large, metal motorcycle ramp was observed located south of the embankment in the south-central portion. The ramp appeared weathered and out of use. General refuse and debris and expended shotgun shells were also observed in this area. As discussed in Section, 4.4, environmental baseline sampling was conducted in conjunction with the Phase I ESA activities (Geosyntec 2021). A total of 14 surface soil samples were collected from across the Site, including serval samples within the area where evidence of target shooting activities were observed (shotgun shells, clay pigeon debris, etc.). A review of the results from these samples shows that lead concentrations in areas where evidence of target shooting was observed, as well as other areas of the Site, are below the USEPA Regional Screening Level (RSL) of 400 mg/kg (residential soil screening level) and do not indicate that the observed target shooting activities have significantly impacted Site soils.
9.4.4.5	Wastewater and Stormwater Discharge	No current or historic sources of wastewater were identified within the Site. Stormwater infiltrates or collects and travels as sheet flow in the direction dictated by topography. An ephemeral stream drains topographically higher areas along the western, southern, and eastern margins of the Site. The drainage traverses the full north south axis of the Site from the center of the southern boundary of the parcel to the northwest corner. A large concrete culvert was observed where the old Union Pacific railroad grade bisects the northern end of the Site within this drainage. This stream ultimately flows to Silver Creek located approximately 0.9 miles to the west/northwest.

Table 7. Interior and Exterior Observations

ASTM Section	Feature or Condition	Description
9.4.4.6	Wells	No water supply or groundwater monitoring wells were observed on site.
9.4.4.7	Septic Systems	Geosyntec did not observe evidence of any existing or former septic system on site the day of the Site visit.

6. INTERVIEWS

6.1 Interview with Current Owner/Occupant

On the 22 April 2021, Geosyntec attempted to contact Mr. Bill Coleman, the current property owner's Realtor/Representative to arrange an interview with the current owner. Several follow attempts were also made. As of the date of release of this report, no response or follow-up from Mr. Coleman had been received. This is considered a data gap (see Section 7), but is not considered to be significant due to the lack overall development at the Site and other historical resources that were reviewed (e.g., topographic maps, aerial photographs, etc.).

6.2 Interview with Previous Owner/Occupant

Geosyntec requested but was not provided with contact information for previous owners/operators of the Site. Interviews with prior owners/occupants were not conducted as part of this assessment. This is considered a data gap (see Section 7), but is not considered to be significant due to the lack development at the Site and other historical resources that were reviewed (topographic maps, aerial photographs, etc.)

6.3 Interview with Local Agencies

Geosyntec contacted local, county, and state agencies to identify potentially relevant records regarding the Site, as discussed in Section 4.3.

7. FINDINGS AND CONCLUSIONS

Geosyntec has conducted a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 of the Subject Property, which is comprised of an approximately 138-acre parcel of undeveloped land located in Summit County, Utah. The Site is identified as Tax Map Parcel SS-86 in Summit County's tax map indexing system. Any exceptions to, or deletions from, this practice are described in Section 1.4 of this report.

Following the Findings and Opinions section (Section 7.1), we present identified data gaps and conclusions (Sections 7.2 and 7.3) regarding any identified RECs, Historical RECs (HRECs), Controlled (CRECs), or de *minimis conditions* associated with the Site.

7.1 Findings and Opinions

This assessment has revealed no evidence of RECs, CRECs, HRECs, or *de minimis* conditions in connection with the Subject Property.

Recognized Environmental Conditions

As defined by ASTM E1527-13, a REC is: *"the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to release to the environment; (2) under conditions indicative of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions."*

- No RECs were identified during this Phase I ESA

Controlled Recognized Environmental Conditions

A CREC is "*a recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).*"

- No CRECs were identified during this Phase I ESA.

Historical Recognized Environmental Conditions

An HREC is "*a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable*

regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls).”

- No HRECs were identified during this Phase I ESA.

De Minimis Conditions

A *de minimis* condition is a condition that “*generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies*”.

- No *de minimis* conditions were identified during this Phase I ESA.

Other Issues

- **Richardson Flat Proposed National Priorities List (NPL) Site** - The Richardson Flat tailings impoundment, is located immediately adjacent and north/northwest of the Subject Property. The tailing impoundment is owned by United Park City Mines (UPCM) and covers an area of approximately 160 acres (USEPA 2005). The impoundment is identified as Operable Unit 1 (OU1) of the Richardson Flat NPL site and received tailings from at least the late 1930s until approximately 1982. Over the course of operation, the impound received approximately 450,000 tons of mine tailings (USEPA 2005). Investigation of OU1 began in the mid-1980’s. Remediation was completed in 2011 and involved stabilizing the existing tailings impoundment, diverting surface water, and consolidating/capping the mine tailings that were present within the impoundment. Based on the most recent 5-year review for Richardson Flat (USEPA 2018), the remedy for OU1 is reported to be functioning well and is protective of human health and the environment.

  Based on the previous remedial actions, its current regulatory status and its downgradient location, Geosyntec does not consider OU1 of the Richardson Flat site to pose an environmental concern to human health or the environment on the Subject Property. Additionally, environmental baseline sampling conducted within the Subject Property showed that metals concentrations (the constituents of concern for the Richardson Flat site) were below relevant screening criteria or appear to be consistent with natural background concentrations (Geosyntec 2021).

- **Recreational Clay Pigeon Target Shooting** – Evidence of periodic recreational clay pigeon target shooting was observed within the Site. Scattered shotgun shells were observed in the area east of the main dirt access road and north of the old Union Pacific railroad grade, as well as along the western margin of the Site. Extensive clay pigeon debris was also observed in the area east of the main dirt access road and south of the old Union

Pacific railroad grade. Environmental baseline samples collected from the Subject Property do not indicate that the observed clay pigeon target shooting activities have significantly impacted Site soils (i.e., resulting in elevated levels of lead above relevant screening levels) (Geosyntec 2021).

7.2 Data Gaps

In accordance with ASTM E1527-13, this section documents data gaps in the information obtained and reviewed as part of this Phase I ESA and discusses the associated significance. A data gap is defined as being "*a lack of or inability to obtain information required by this practice [ASTM E1527-13] despite good faith efforts by the environmental professional to gather such information*".

Identified data gaps are presented below:

- Geosyntec was not able to identify the exact nature or use of the earthen embankment in the southeastern portion of the Site. This feature appears to have potentially been constructed as a road embankment or historic rail grade, but the exact nature of this feature could not be determined. Other documents indicate that it may have been constructed as water retention feature (CMT Engineering 2020a).
- Geosyntec was not provided with and did not identify contact information for prior Site owners. However, since relevant historical documents were obtained, this limitation is not considered to be significant.
- Geosyntec contacted Mr. Bill Coleman, the current property owner's Realtor/Representative to arrange an interview with the current owner. Several follow-up attempts were also made. As of the date of release of this report, no response or follow-up from Mr. Coleman had been received. However, since relevant historical documents were obtained, this limitation is not considered to be significant.

Collectively, these data gaps are not considered to be significant to the Findings or the identification of RECs, given the fact that information was identified related to the Site from alternative sources.

7.3 Conclusions

Geosyntec has conducted a Phase I ESA in conformance with the scope and limitations of ASTM Practice E1527-13 of the Subject Property. Any exceptions to, or deviations from, this practice are described in Section 1.4 of this report. This assessment has revealed no evidence of RECs, CRECs, or HRECs in connection with the Subject Property. No significant data gaps were identified.

8. NON-SCOPE CONSIDERATIONS

This section presents client-requested non-scope considerations for additional due diligence that exceed AAI requirements, as previously described in Section 1.2. Geosyntec did not include any non-scope considerations as part of this Phase I ESA.

9. REFERENCES

ASTM. 2013. *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment*. ASTM International.

CMT Engineering. 2020a. *Phase I Environmental Site Assessment; Summit County Parcel SS-86*. Prepared for Mr. Nate Brockbank, Western States Ventures. June 18.

CMT Engineering. 2020b. *Geotechnical Engineering Study; Richardson Flat*. Prepared for Mr. Nate Brockbank, Western States Ventures. October 14.

ERIS. 2021a. *Fire Insurance Maps Report.* April 7.

ERIS. 2021b. *Topographic Maps Report*. April 7.

ERIS. 2021c. Historical Aerials Report. April 9.

ERIS. 2021d. *Physical Setting Report*. April 7.

ERIS. 2021e. 2021. *City Directory Report*. April 12.

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Resource & Environmental Management Consultants (REMC). 2004. *Draft Focused Remedial Investigation Report for Richardson Flat Tailings Site; Site ID UT980952840*. Prepared for United Park City Mines Company. May 7.

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USEPA. 2018. *Second Five-Year Review Report for Richardson Flat Tailings Superfund Site Summit County, Utah*. Prepared by USEPA Region 8: Denver, CO. August 10.

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10. ENVIRONMENTAL PROFESSIONAL STATEMENT

I declare that, to the best of my professional knowledge and belief, I meet the definition of an Environmental professional as defined in §312.10 of 40 CFR Part 312. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the Subject Property. I have developed and performed all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.



Signed by Brent C. Robinson, P.E. - Geosyntec Consultants



Signed by Brian Smith - Geosyntec Consultants



Signed by David F. Harnsberger - Geosyntec Consultants

11. QUALIFICATIONS OF STAFF

Brent Robinson, PE

Mr. Robinson is a Senior Principle and manages Geosyntec's Salt Lake City office. He has 28 years of diverse civil engineering and environmental consulting experience. He is a Utah Registered Professional Engineer (P.E.) and has extensive experience in environmental due diligence (Phase I and Phase II assessments), site assessments and investigations, feasibility studies, engineer design, construction management, remediation, environmental compliance and permitting.

Brent has excellent working relationships with UDEQ and USEPA and has conducted work (due diligence assessments, remediation activities, EWA preparation, soil and site management plan preparation/implementation, etc.) on numerous mining related sites in Utah.

Brian Smith

Mr. Smith has over 19 years of environmental consulting experience working in the fields of environmental site characterization, regulatory permitting and compliance. He has extensive experience working under local, state and federal regulatory programs related to the cleanup and management of waste materials at historic mine sites and industrial facilities.

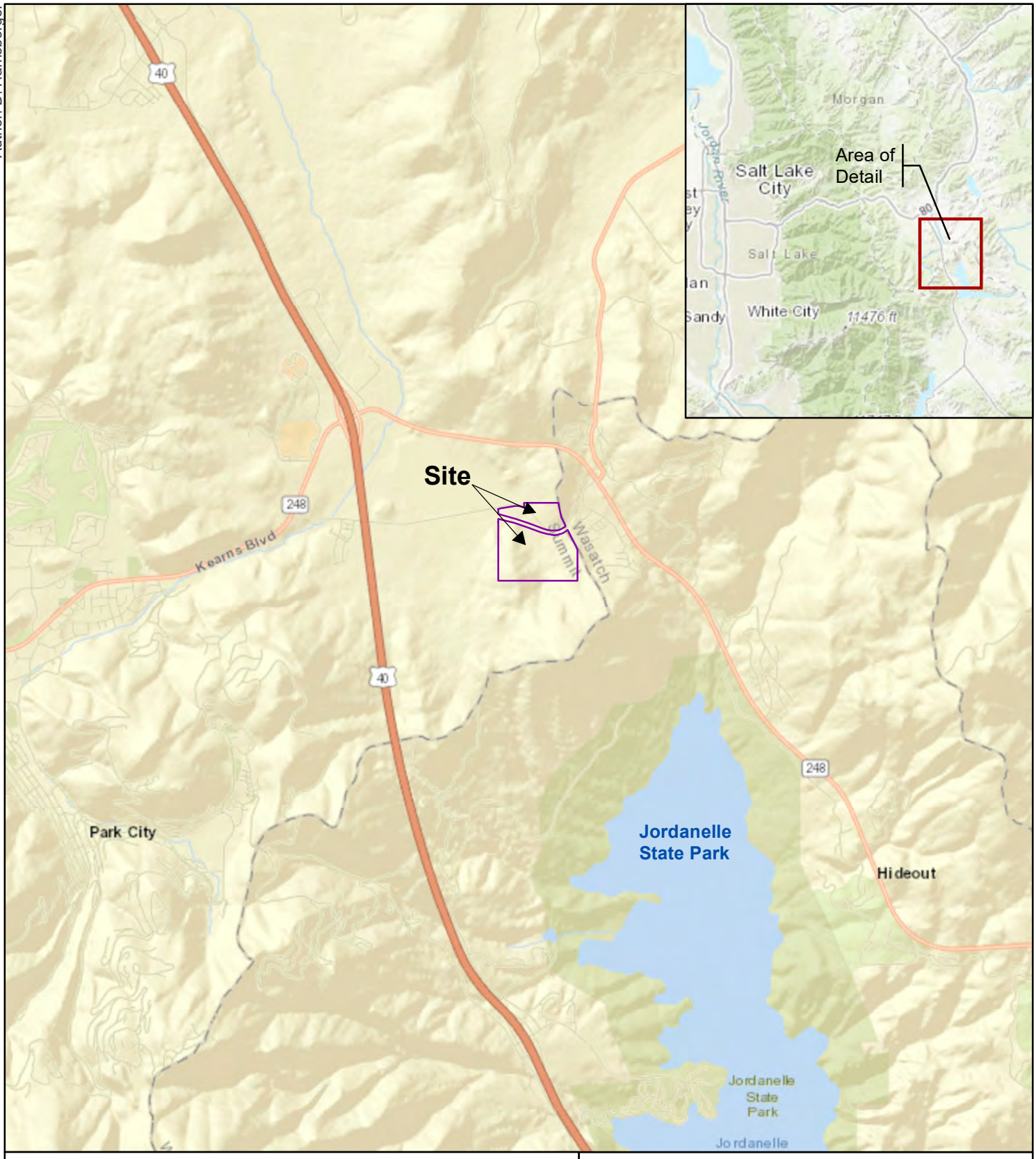
Project experience includes environmental due diligence, site investigation, remediation, risk assessment, feasibility study, waste characterization and negotiating with regulators and stakeholders on behalf of clients to achieve site development or closure objectives. Mr. Smith has assisted clients with successful commercial and residential development projects on historic mining related sites within the Richardson Flat, Midvale Slag and Kennecott Superfund sites, as well as a wide variety of other historic mining related properties. Project work on these sites has included Phase I/II assessments; investigation and characterization of mining related contamination to soil, sediment, surface water and groundwater; preparation of detailed site management plans to address impacted media during development; performing risk assessments; assisting clients with developing and implementing institutional controls; and working collaboratively with clients and regulators to achieve overall project objectives.

David Harnsberger

Mr. Harnsberger is a Project Professional in Geosyntec's Salt Lake City office. Mr. Harnsberger holds a B.S. in Environmental Earth Science from the University of Utah and a M.S. in Geological Science from East Carolina University. Areas of expertise gained during his eight years of consulting experience include environmental site investigation and remediation, due diligence assessments (Phase I and Phase II), vapor intrusion assessment, environmental permitting, stormwater management, spill prevention and pollution control plans, and CERCLA/RCRA waste characterization. Mr. Harnsberger has experience and training in the ASTM E1527 standard and meets the requirements of an "Environmental Professional", as described in EPA's All Appropriate Inquiries Rule.

FIGURES

Author: D. Harnsberger



Legend

Site Boundary

N

0 6,000 Feet

Site Location Map

Parcel SS-86
Phase I Environmental Site Assessment
Summit County, Utah

Geosyntec consultants

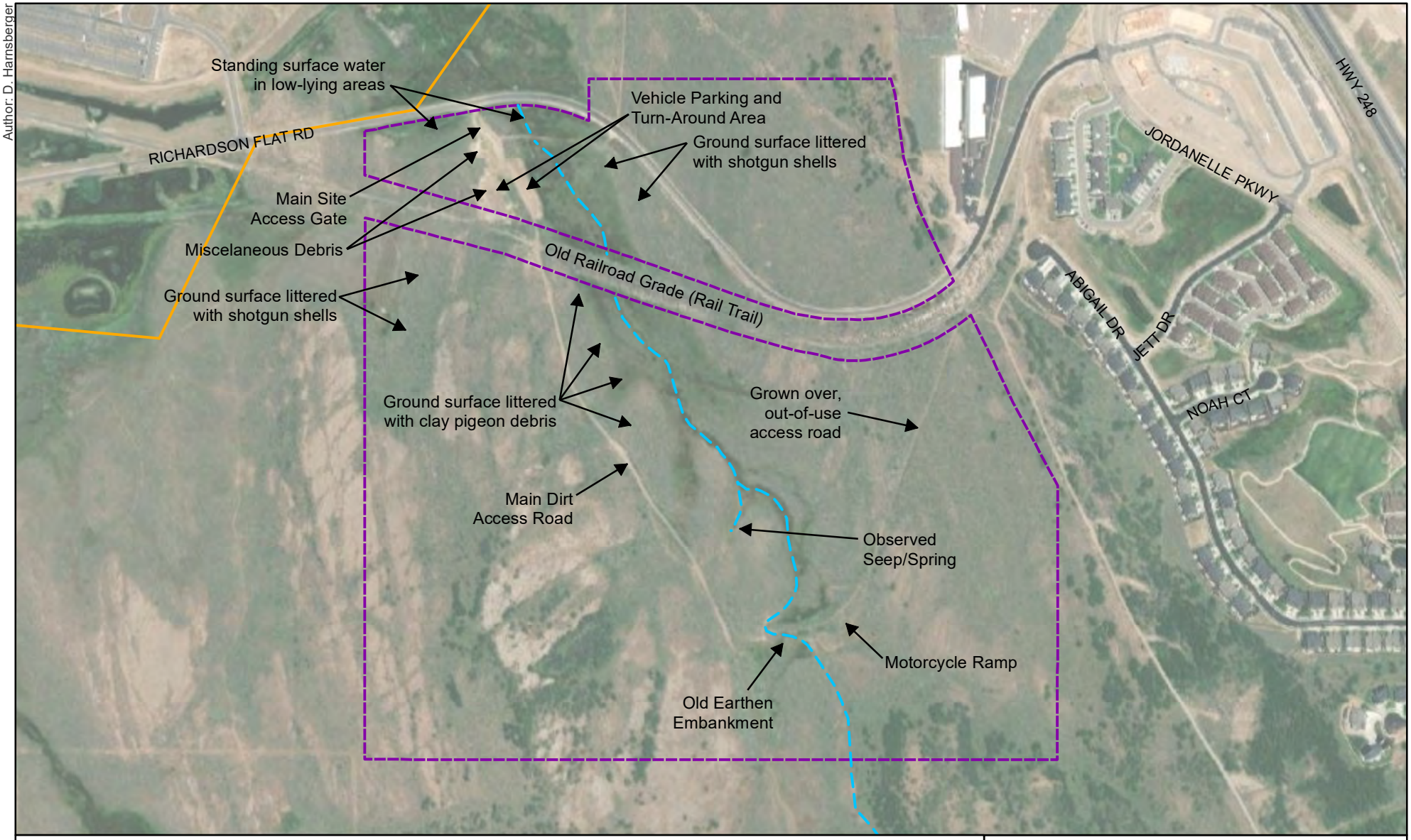
Stoel Rives LLP

Figure 1

Geosyntec Proj. No. SLC1029

May 2021

C:\DFH Local GIS Drive\DFH Projects\Stoel Rives\Richardson Flat\Projects_MXD\Phase I\Figure 1. Site Location Map (Phase I).mxd 5/11/2021 2:03:10 PM



Legend

- Ephemeral Stream
- Site Boundary
- Richardson Flat Tailings Superfund Site OU1

Basemap Source:
ESRI World Imagery, 2019

N

0 700 Feet

Site Layout Map

Parcel SS-86
Phase I Environmental Site Assessment
Summit County, Utah

Geosyntec consultants | Stoel Rives LLP

Geosyntec Proj. No. SLC1029 | May 2021

Figure 2

C:\DFH Local GIS Drive\DFH Projects\Stoel Rives\Richardson Flat\Projects_MXD\Phase I\Figure 2. Site Layout Map (Phase I).mxd 5/12/2021 2:42:07 PM

Author: D. Harnsberger



Legend

Site Boundary

Richardson Flat Tailings Superfund Site OU1

Basemap Source:
ESRI World Imagery, 2019

N

0 1,000 Feet

Site Vicinity Map

Parcel SS-86
Phase I Environmental Site Assessment
Summit County, Utah

Geosyntec consultants | Stoel Rives

Figure 3

Geosyntec Proj. No. SLC1029 | May 2021

C:\DFH Local GIS Drive\DFH Projects\Stoel Rives\Richardson Flat\Projects_MXD\Phase I\Figure 3. Site Vicinity Map (Phase I).mxd 5/11/2021 2:24:44 PM

APPENDICES

APPENDIX A
Tax and Parcel Information

Account 0153548

Location

Account Number 0153548

Acres 146.63

Situs ,

Tax District 10 - PCSD A,J,K,U (C-C) (E-E)

Parcel Number SS-86

Legal SE1/4 SEC 1T2SR4E SLBM WITH EXCEPTS OF MINERAL RIGHTS CONT 160 ACRES HQC172 VWD451 YWD65 M38-575 M107-87M110-183 M142-305 M185-18,M190-321 (SEE QCD VARIOUS PARTIES TO STICHTING MAYFLOWER RECREATIONAL FONDS 55/175 & STICHTING MAYFLOWER MOUNTAIN FONDS120/175 INT M220-236TO 481) (LESS 13.37 ACRES ASSESSED IN WASATCH CO) BAL 146.63 ACRES (NOTE: SEE THE INTEREST OF SUMMIT COUNTY QCD F-25 ENTRY # 40671 FOUND AS THE LAST DESC PARCEL WHICH IS 2 AC M/L AMBIGUOUSLY DESCRIBED)

Geo Neighborhood 17-06-01 - Misc Land

Owner

Name STICHTING MAYFLOWER MOUNTAIN FONDS

P.O. BOX 160
3720 AD BILTHOVEN
NETHERLANDS

Value

Market (2020) $496,805

Taxable $2,578

Tax Area: 10 **Tax Rate**: 0.007527

Type	Actual	Assessed	Acres
Land	$496,805	$2,578	146.630

Transfers

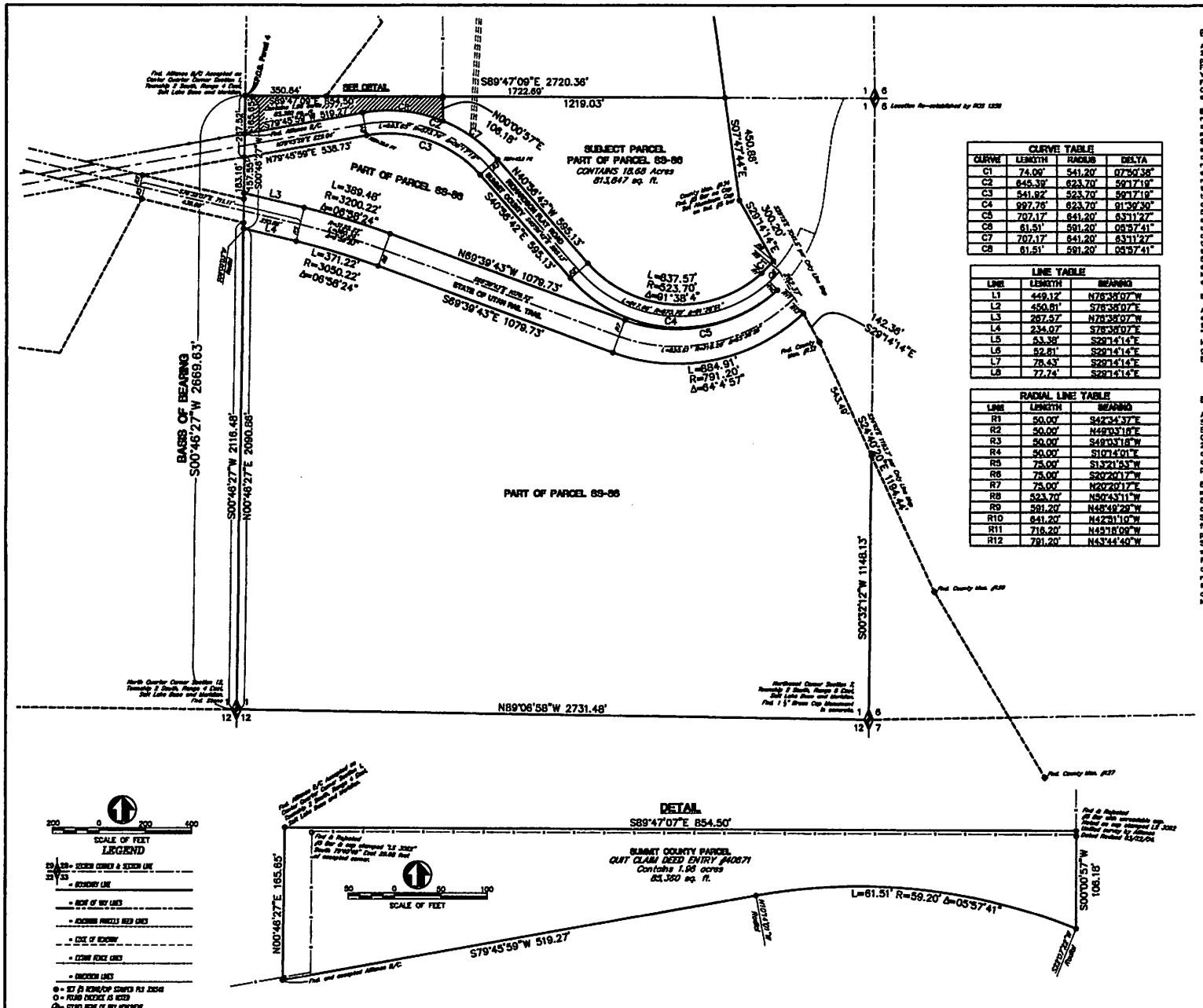
Entry Number	Form Name	Recording Date
01146208		11/02/2020 12:31:38 PM

Tax

Tax Year	Taxes
*2021	$19.40
2020	$19.40

* Estimated

Images



CURVE TABLE			
CURVE	LENGTH	RADIUS	DELTA
C1	74.06'	541.20'	07°50'38"
C2	845.39'	623.70'	58°17'19"
C3	541.92'	523.70'	59°17'19"
C4	997.76'	623.70'	91°39'30"
C5	707.17'	641.20'	63°11'27"
C6	61.51'	591.20'	05°57'41"
C7	707.17'	641.20'	63°11'27"
C8	61.51'	591.20'	05°57'41"

LINE TABLE		
LINE	LENGTH	BEARING
L1	449.12'	N76°38'07"W
L2	450.81'	S76°38'07"E
L3	267.57'	N76°38'07"W
L4	234.07'	S76°38'07"E
L5	53.38'	S29°14'14"E
L6	52.81'	S29°14'14"E
L7	75.43'	S29°14'14"E
L8	77.74'	S29°14'14"E

RADIAL LINE TABLE		
LINE	LENGTH	BEARING
R1	50.00'	S42°34'37"E
R2	50.00'	N49°03'19"E
R3	50.00'	S49°03'18"W
R4	50.00'	S10°14'01"E
R5	75.00'	S13°21'53"W
R6	75.00'	S20°20'17"W
R7	75.00'	N20°20'17"E
R8	523.70'	N50°43'11"W
R9	591.20'	N48°49'28"W
R10	641.20'	N42°31'10"W
R11	716.20'	N45°18'09"W
R12	791.20'	N43°44'40"W

DESCRIPTION:

PARCEL SS-86 NORTH OF RICHARDSON FLAT ROAD:

A parcel of land lying and situate in the Southeast Quarter of Section 1, Township 2 South, Range 4 East, Salt Lake Base and Meridian. Comprising a 30.93 acre portion of Summit County Tax Parcel Number SS-86 lying North of the Richardson Flat Road. Basis of Bearing for Subject being NORTH as determined by the Utah NAD 83 System or North 00°48'27" East 2633.79 feet measured between the Number Five Rebar and Cap Stamped "Alliance Eng." monumenting the Center Quarter Corner and the G.L.O. Stone Monument monumenting the North Quarter Corner of said Section 1. Subject parcel being more particularly described as follows:

Beginning at the Center Quarter Corner of said Section 1, which is a number five rebar and cap stamped "Alliance Eng." thence South 89°47'09" East 2272.63 feet coincident with the north line of the Southeast Quarter of said Section 1 to a number five rebar and cap stamped "PLS 358546" and a point on the Summit-Wasatch County Line; Thence the following two (2) courses coincident with said County Line, 1) South 07°47'44" East 450.68 feet to a number five rebar and cap stamped "PLS 358546"; 2) South 29°14'14" East 300.20 feet to a number five rebar and cap stamped "PLS 358546" and a point on the north right of way line of Richardson Flat Road; Thence the following five (5) courses coincident with said right of way, 1) Westerly 74.06 feet along the arc of a 541.20 foot radius curve to the right (center bears North 07°43'11" West) through a central angle of 07°50'38" to a number five rebar and cap stamped "PLS 358546" and a point on the arc of a 623.70 foot radius curve; 2) Northwesterly 637.57 feet along the arc of said 623.70 foot radius curve to the right (center bears North 43°34'47" West) through a central angle of 61°38'04" to a point of tangency and a number five rebar and cap stamped "PLS 358546"; 3) North 40°36'42" West 595.13 feet to a point of curvature; 4) Westerly 845.39 feet along the arc of a 623.70 foot radius curve to the left (center bears South 49°03'18" West) through a central angle of 58°17'19" to a point of tangency and a number five rebar and cap stamped "PLS 358546"; 5) South 79°45'59" West 519.27 feet to a point on the Center Quarter Section Line and a number five rebar and cap stamped "Alliance Eng."; Thence North 00°48'27" East 165.65 feet coincident with said Quarter Section to the point of beginning.

EXCEPTING THEREFROM THE FOLLOWING DESCRIBED PARCEL:

A parcel of land described in that certain Quit Claim Deed recorded May 16, 1923, as Entry 40671, in Book F, at Page 21 of the Summit County Records as follows:

The grantors further quit claim to said grantee [Summit County] all the land lying on the north side of said right of way, [State Highway FAP 93-B] and the north line of the NW ¼ of the SE ¼ of Sec. 1, Tp. 2 S R 4 E, reserving however all mineral rights in said lands to the grantees.

(The foregoing clause applies only to land lying west of the fence on the east side of said strip, next to the Pace Road, containing two acres more or less.)

EXCEPTION PARCEL BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

A parcel of land lying and situate in the Northeast Quarter of the Southeast Quarter of Section 1, Township 2 South, Range 4 East, Salt Lake Base and Meridian. Comprising the 1.96 acres described in that certain Quit Claim Deed recorded May 16, 1923 as Entry 40684, in Book F, at Pages 25-26 of the Summit County Records. Basis of Bearing for subject description being South 00°48'27" West 2668.83 feet measured between the center quarter corner and south quarter corner of said Section 1. Subject parcel being more particularly described as follows:

Beginning at the Center Quarter Corner of said Section 1 which is a number five rebar and cap stamped "Alliance" thence South 89°47'07" East 854.50 feet coincident with the quarter section line to a number five rebar and cap stamped "PLS 358546"; Thence departing said quarter section line South 00°00'57" West 108.18 feet along the prolongation on ancient wire fence line to a number five rebar and cap stamped "PLS 358546" and a point on the northerly right of way line of Richardson Flat Road (A.K.A. State Highway FAP 93-B); Thence the following two (2) course coincident with said right of way 1) Westerly 61.51 feet along the arc of a 591.20 foot radius curve to the left (center bears South 22°07'22" West) through a central angle of 05°57'41" to a point of tangency and a number five rebar and cap stamped "PLS 358546"; 2) South 79°45'59" West 519.27 feet to a number five rebar and cap stamped "PLS 358546" and a point on the west line of said Southeast Quarter Section; Thence North 00°48'27" East 165.65 feet to the point of beginning.

RECORD OF SURVEY OF
SUMMIT COUNTY TAX PARCEL SS-86
LYING AND SITUATE IN THE SECTION 1, TOWNSHIP 2 SOUTH, RANGE 5 EAST,
SALT LAKE BASE AND MERIDIAN, SUMMIT COUNTY, UTAH

Boundary Consultants
5564 West 2425 North, Hooper, Utah 84315, 801-792-1669
daves@boundaryconsultants.biz

DEH | DEH | DEH

DATE: 08-23-20 | SCALE: 1"=200' | JOB NO: 1355037

SHEET 1 OF 1

APPENDIX B

Historical Source Records and Database Reports

DATABASE REPORT

Project Property:	*Parcel SS-86 Phase I and Baseline Sampling* *Parcel SS-86* *Heber City UT*
Project No:	*TBD Salt Lake City*
Report Type:	*Database Report*
Order No:	*21040700811*
Requested by:	*Geosyntec Consultants*
Date Completed:	*April 9, 2021*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

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Executive Summary

Property Information:

Project Property:	*Parcel SS-86 Phase I and Baseline Sampling* *Parcel SS-86 Heber City UT*
Project No:	*TBD Salt Lake City*

Coordinates:

Latitude:	*40.67165638*
Longitude:	*-111.43946572*
UTM Northing:	*4,502,401.68*
UTM Easting:	*462,857.40*
UTM Zone:	*UTM Zone 12T*

Elevation: *6,636 FT*

Order Information:

Order No:	*21040700811*
Date Requested:	*April 7, 2021*
Requested by:	*Geosyntec Consultants*
Report Type:	*Database Report*

Historicals/Products:

Aerial Photographs	*Historical Aerials (Boundaries)*
City Directory Search	*CD - 2 Street Search*
ERIS Xplorer	*ERIS Xplorer*
Excel Add-On	*Excel Add-On*
Fire Insurance Maps	*US Fire Insurance Maps*
Physical Setting Report (PSR)	*Physical Setting Report (PSR)*
Topographic Map	*Topographic Maps*

Executive Summary: Report Summary

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
Standard Environmental Records								
Federal								
DOE FUSRAP	Y	1	0	0	0	0	0	0
NPL	Y	1	0	0	0	0	0	0
PROPOSED NPL	Y	1	0	0	0	0	**1**	**1**
DELETED NPL	Y	0.5	0	0	0	0	-	0
SEMS	Y	0.5	0	0	0	0	-	0
ODI	Y	0.5	0	0	0	0	-	0
SEMS ARCHIVE	Y	0.5	0	0	0	0	-	0
IODI	Y	0.5	0	0	0	0	-	0
CERCLIS	Y	0.5	0	0	0	0	-	0
CERCLIS NFRAP	Y	0.5	0	0	0	0	-	0
CERCLIS LIENS	Y	PO	0	-	-	-	-	0
RCRA CORRACTS	Y	1	0	0	0	0	0	0
RCRA TSD	Y	0.5	0	0	0	0	-	0
RCRA LQG	Y	0.25	0	0	0	-	-	0
RCRA SQG	Y	0.25	0	0	0	-	-	0
RCRA VSQG	Y	0.25	0	0	0	-	-	0
RCRA NON GEN	Y	0.25	0	0	0	-	-	0
FED ENG	Y	0.5	0	0	0	0	-	0
FED INST	Y	0.5	0	0	0	0	-	0
LUCIS	Y	0.5	0	0	0	0	-	0
ERNS 1982 TO 1986	Y	PO	0	-	-	-	-	0
ERNS 1987 TO 1989	Y	PO	0	-	-	-	-	0
ERNS	Y	PO	0	-	-	-	-	0
FED BROWNFIELDS	Y	0.5	0	0	0	0	-	0
FEMA UST	Y	0.25	0	0	0	-	-	0
FRP	Y	0.25	0	0	0	-	-	0
HIST GAS STATIONS	Y	0.25	0	0	0	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
REFN	Y	0.25	0	0	0	-	-	0
BULK TERMINAL	Y	0.25	0	0	0	-	-	0
SEMS LIEN	Y	PO	0	-	-	-	-	0
SUPERFUND ROD	Y	1	0	0	**1**	0	0	**1**
State								
SWF/LF	Y	0.5	0	0	0	0	-	0
HSWF	Y	0.5	0	0	0	0	-	0
LUST	Y	0.5	0	0	0	0	-	0
LAST	Y	0.5	0	0	0	0	-	0
DELISTED LST	Y	0.5	0	0	0	0	-	0
UST	Y	0.25	0	0	0	-	-	0
UST LAPSE	Y	0.25	0	0	0	-	-	0
AST	Y	0.25	0	0	0	-	-	0
DTNK	Y	0.25	0	0	0	-	-	0
INST	Y	0.5	0	0	0	0	-	0
RESPONSE	Y	0.5	0	0	0	0	-	0
VCP	Y	0.5	0	0	0	0	-	0
BROWNFIELDS	Y	0.5	0	0	0	0	-	0
Tribal								
INDIAN LUST	Y	0.5	0	0	0	0	-	0
INDIAN UST	Y	0.25	0	0	0	-	-	0
DELISTED ILST	Y	0.5	0	0	0	0	-	0
DELISTED IUST	Y	0.25	0	0	0	-	-	0
County	***No County standard environmental record sources available for this State.***							

Additional Environmental Records

Federal

PFAS NPL	Y	0.5	0	0	0	0	-	0
FINDS/FRS	Y	PO	0	-	-	-	-	0
TRIS	Y	PO	0	-	-	-	-	0
PFAS TRI	Y	0.5	0	0	0	0	-	0
PFAS WATER	Y	0.5	0	0	0	0	-	0
HMIRS	Y	0.125	0	0	-	-	-	0
NCDL	Y	0.125	0	0	-	-	-	0

Database	Searched	Search Radius	Project Property	Within 0.12mi	0.125mi to 0.25mi	0.25mi to 0.50mi	0.50mi to 1.00mi	Total
TSCA	Y	0.125	0	0	-	-	-	0
HIST TSCA	Y	0.125	0	0	-	-	-	0
FTTS ADMIN	Y	PO	0	-	-	-	-	0
FTTS INSP	Y	PO	0	-	-	-	-	0
PRP	Y	PO	0	-	-	-	-	0
SCRD DRYCLEANER	Y	0.5	0	0	0	0	-	0
ICIS	Y	PO	0	-	-	-	-	0
FED DRYCLEANERS	Y	0.25	0	0	0	-	-	0
DELISTED FED DRY	Y	0.25	0	0	0	-	-	0
FUDS	Y	1	0	0	0	0	0	0
FORMER NIKE	Y	1	0	0	0	0	0	0
PIPELINE INCIDENT	Y	PO	0	-	-	-	-	0
MLTS	Y	PO	0	-	-	-	-	0
HIST MLTS	Y	PO	0	-	-	-	-	0
MINES	Y	0.25	0	0	0	-	-	0
SMCRA	Y	1	0	0	0	0	0	0
MRDS	Y	1	0	**1**	0	**2**	0	**3**
URANIUM	Y	1	0	0	0	0	0	0
ALT FUELS	Y	0.25	0	0	0	-	-	0
SSTS	Y	0.25	0	0	0	-	-	0
PCB	Y	0.5	0	0	0	0	-	0
State								
SPILLS	Y	0.125	0	0	-	-	-	0
CDL	Y	PO	0	-	-	-	-	0
DRYCLEANERS	Y	0.25	0	0	0	-	-	0
DELISTED DRYCLEANERS	Y	0.25	0	0	0	-	-	0
TIER 2	Y	0.125	0	0	-	-	-	0
Tribal	***No Tribal additional environmental record sources available for this State.***							
County	***No County additional environmental record sources available for this State.***							
Total:			0	**1**	**1**	**2**	**1**	**5**

**** PO – Property Only***
**** 'Property and adjoining properties' database search radii are set at 0.25 miles.***

Executive Summary: Site Report Summary - Project Property

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number

No records found in the selected databases for the project property.

Executive Summary: Site Report Summary - Surrounding Properties

Map Key	DB	Company/Site Name	Address	Direction	Distance (mi/ft)	Elev Diff (ft)	Page Number
1	MRDS	UNKNOWN TUNNEL	SUMMIT COUNTY PARK CITY UT 84060	SSE	0.03 / 164.71	97	15
2	SUPERFUND ROD	RICHARDSON FLAT TAILINGS	1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E PARK CITY UT 84060	WNW	0.23 / 1,197.18	0	16
3	MRDS	UT. DEPT. OF HWYS. NO. 22053	WASATCH COUNTY KAMAS UT 84036	E	0.42 / 2,234.90	-69	16
4	MRDS	UT DEPT OF HWYS NO 22053	WASATCH COUNTY KAMAS UT 84036	E	0.44 / 2,319.48	-117	17
5	PROPOSED NPL	RICHARDSON FLAT TAILINGS	1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E PARK CITY UT 84060 ***EPA ID:*** UTD980952840	NW	0.91 / 4,813.30	11	17

Executive Summary: Summary by Data Source

Standard

Federal

PROPOSED NPL - National Priority List - Proposed

A search of the PROPOSED NPL database, dated Feb 23, 2021 has found that there are 1 PROPOSED NPL site(s) within approximately 1.00 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
RICHARDSON FLAT TAILINGS	1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E PARK CITY UT 84060 ***EPA ID**: UTD980952840*	NW	0.91 / 4,813.30	5

SUPERFUND ROD - Superfund Decision Documents

A search of the SUPERFUND ROD database, dated Feb 23, 2021 has found that there are 1 SUPERFUND ROD site(s) within approximately 1.00 miles of the project property.

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
RICHARDSON FLAT TAILINGS	1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E PARK CITY UT 84060	WNW	0.23 / 1,197.18	2

Non Standard

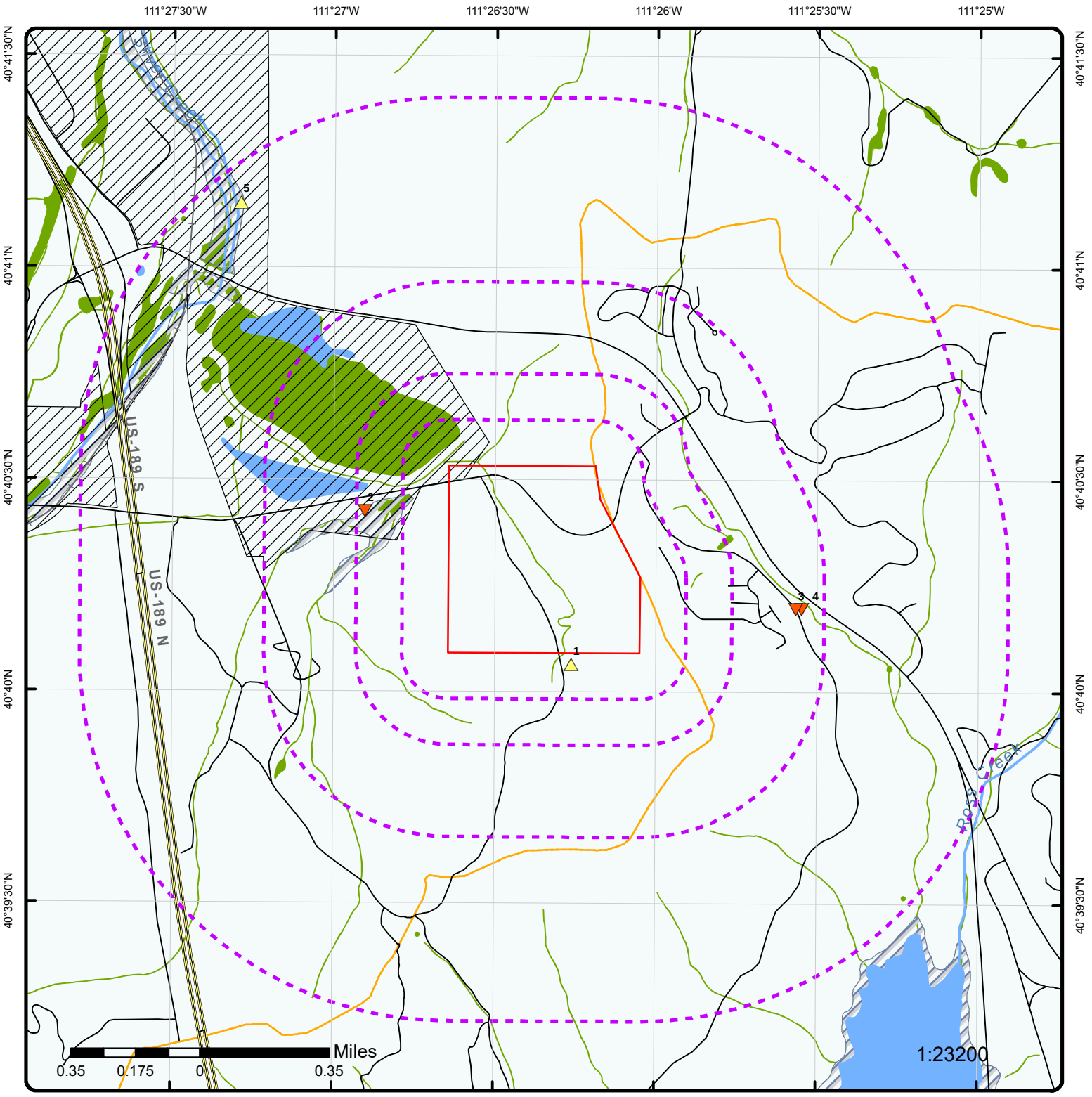
Federal

MRDS - Mineral Resource Data System

A search of the MRDS database, dated Mar 15, 2006 has found that there are 3 MRDS site(s) within approximately 1.00 miles of the project property.

Equal/Higher Elevation	Address	Direction	Distance (mi/ft)	Map Key
UNKNOWN TUNNEL	SUMMIT COUNTY PARK CITY UT 84060	SSE	0.03 / 164.71	1

Lower Elevation	Address	Direction	Distance (mi/ft)	Map Key
UT. DEPT. OF HWYS. NO. 22053	WASATCH COUNTY KAMAS UT 84036	E	0.42 / 2,234.90	3
UT DEPT OF HWYS NO 22053	WASATCH COUNTY KAMAS UT 84036	E	0.44 / 2,319.48	4



Map: 1.0 Mile Radius

Order Number: 21040700811

Address: Parcel SS-86, Heber City, UT

ERIS

- Project Property
- Buffer Outline
- Eris Sites with Higher Elevation
- Eris Sites with Same Elevation
- Eris Sites with Lower Elevation
- Eris Sites with Unknown Elevation
- County Boundary
- Rails
- Major Highways
- Major Highways Ramps
- Major Roads
- Major Roads Ramps
- Secondary Roads
- Secondary Roads Ramps
- Local Roads and Ramps
- State Boundary
- National Priority List Sites
- National Wetland
- Indian Reserve Land
- 100 Year Flood Zone
- 500 Year Flood Zone
- Historic Fill
- FWS Special Designation Areas
- State Brownfield Sites
- State Brownfield Areas
- State Superfund Areas:Dept. of Defense
- State Superfund Areas:NPL
- WQARF Areas
- Federal Lands: Dept. of Defense (owned/administered areas)

Source: © 2016 ESRI

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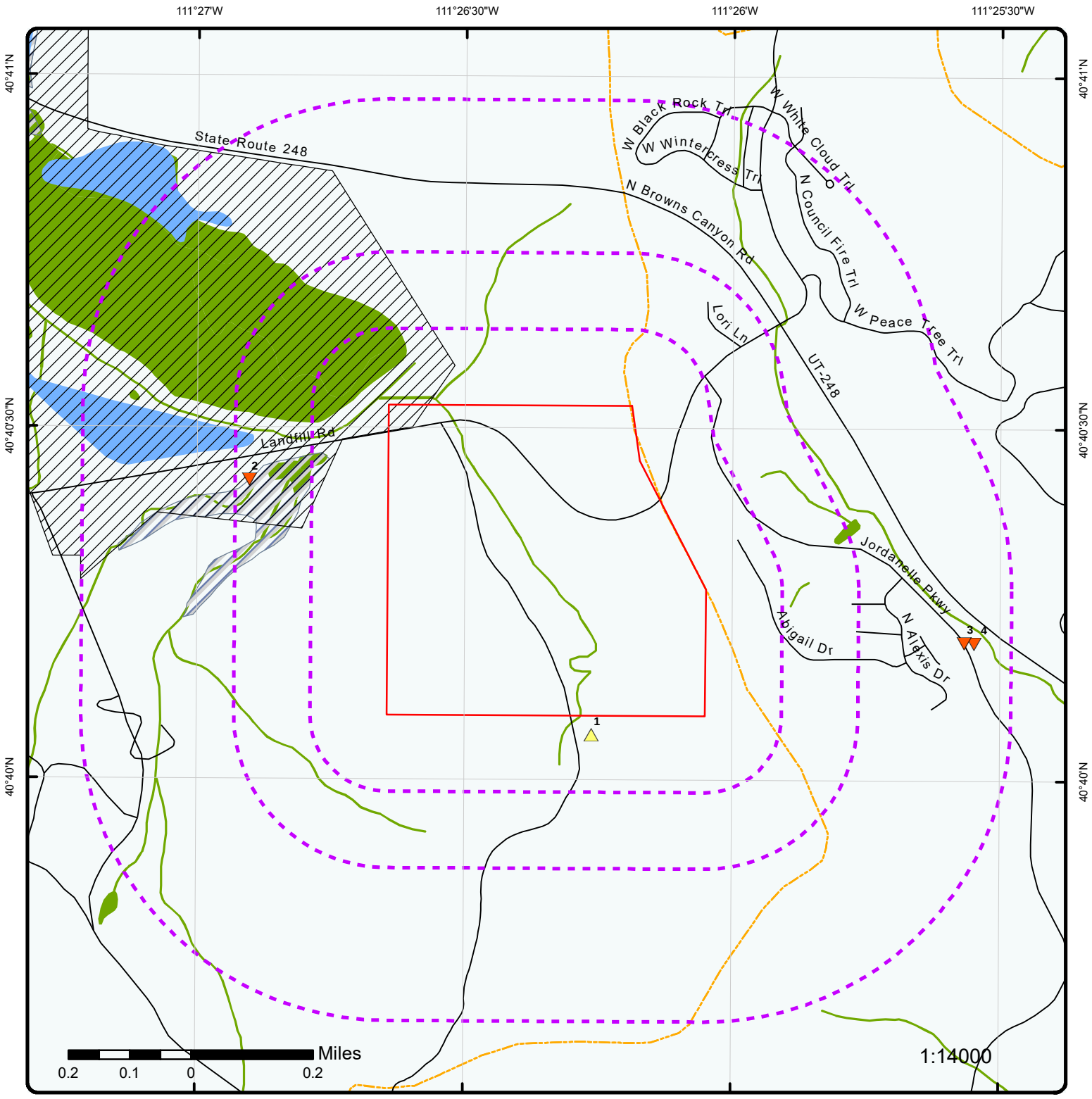

Map: 0.5 Mile Radius

Order Number: 21040700811

Address: Parcel SS-86, Heber City, UT

ERIS

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	100 Year Flood Zone	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	500 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	Historic Fill	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI

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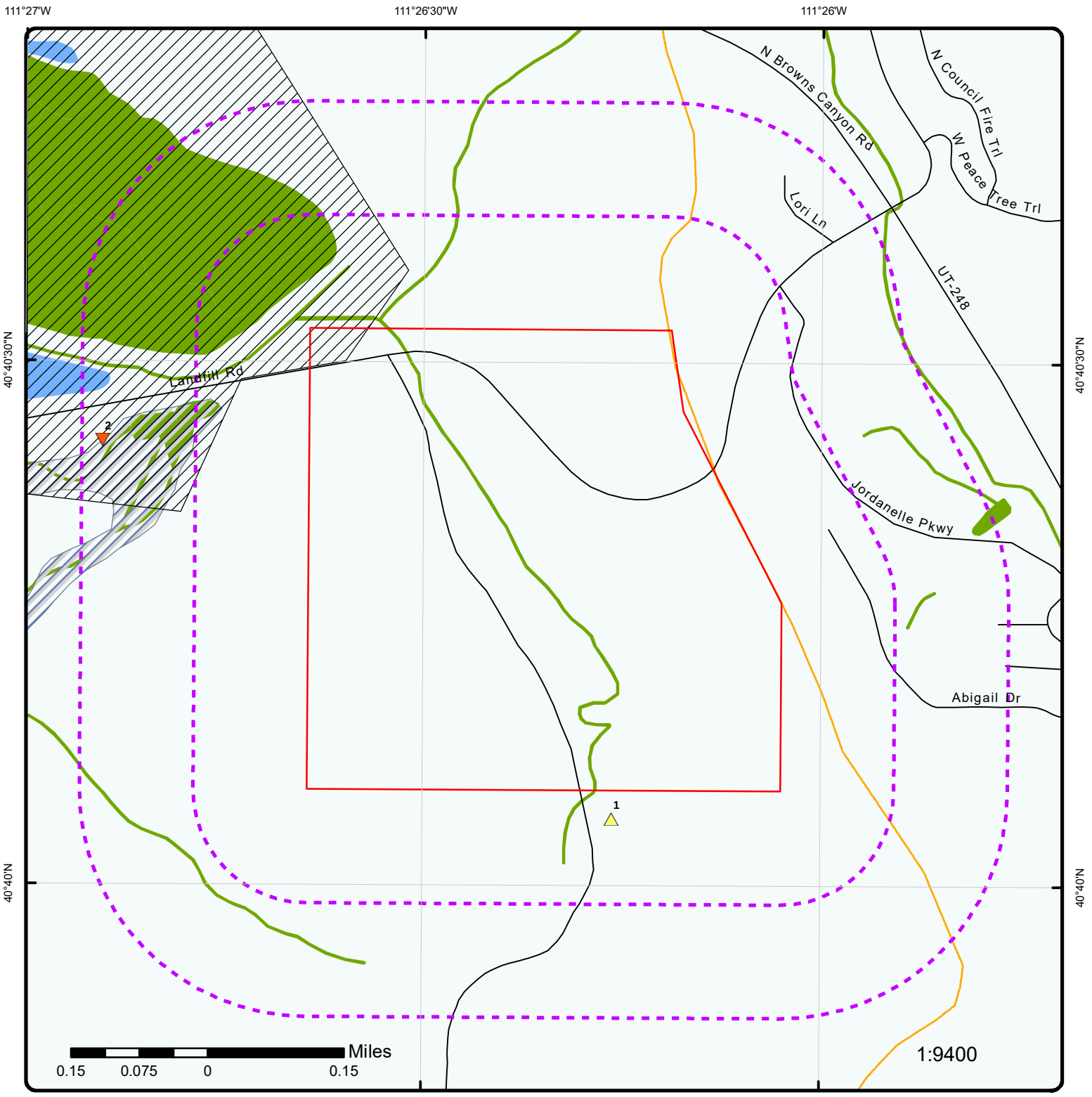

Map: 0.25 Mile Radius

Order Number: 21040700811

Address: Parcel SS-86, Heber City, UT

ERIS

Project Property	Rails	State Boundary	FWS Special Designation Areas
Buffer Outline	Major Highways	National Priority List Sites	State Brownfield Sites
Eris Sites with Higher Elevation	Major Highways Ramps	National Wetland	State Brownfield Areas
Eris Sites with Same Elevation	Major Roads	Indian Reserve Land	State Superfund Areas:Dept. of Defense
Eris Sites with Lower Elevation	Major Roads Ramps	100 Year Flood Zone	State Superfund Areas:NPL
Eris Sites with Unknown Elevation	Secondary Roads	500 Year Flood Zone	WQARF Areas
County Boundary	Secondary Roads Ramps	Historic Fill	Federal Lands: Dept. of Defense (owned/administered areas)
	Local Roads and Ramps		

Source: © 2016 ESRI

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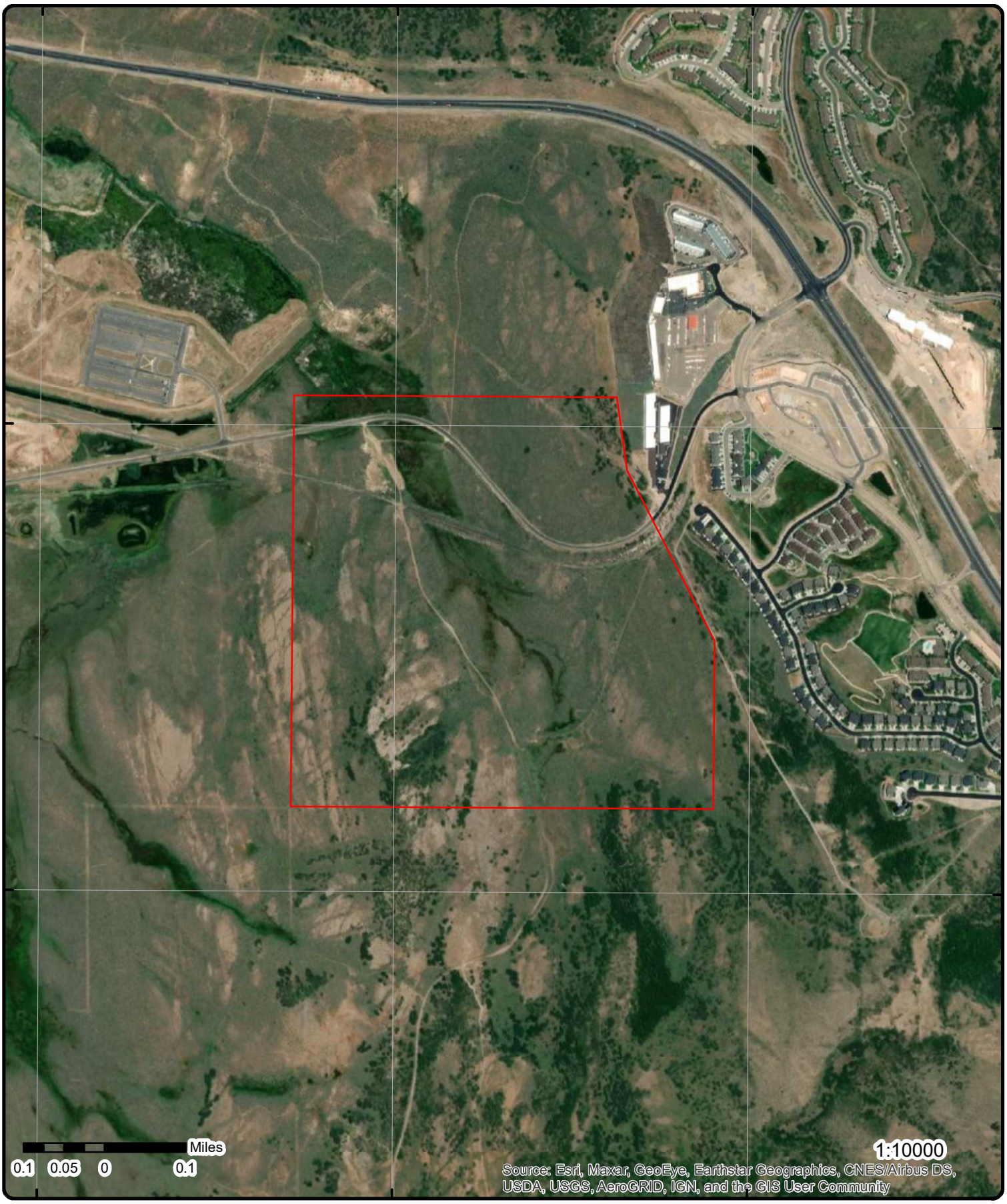


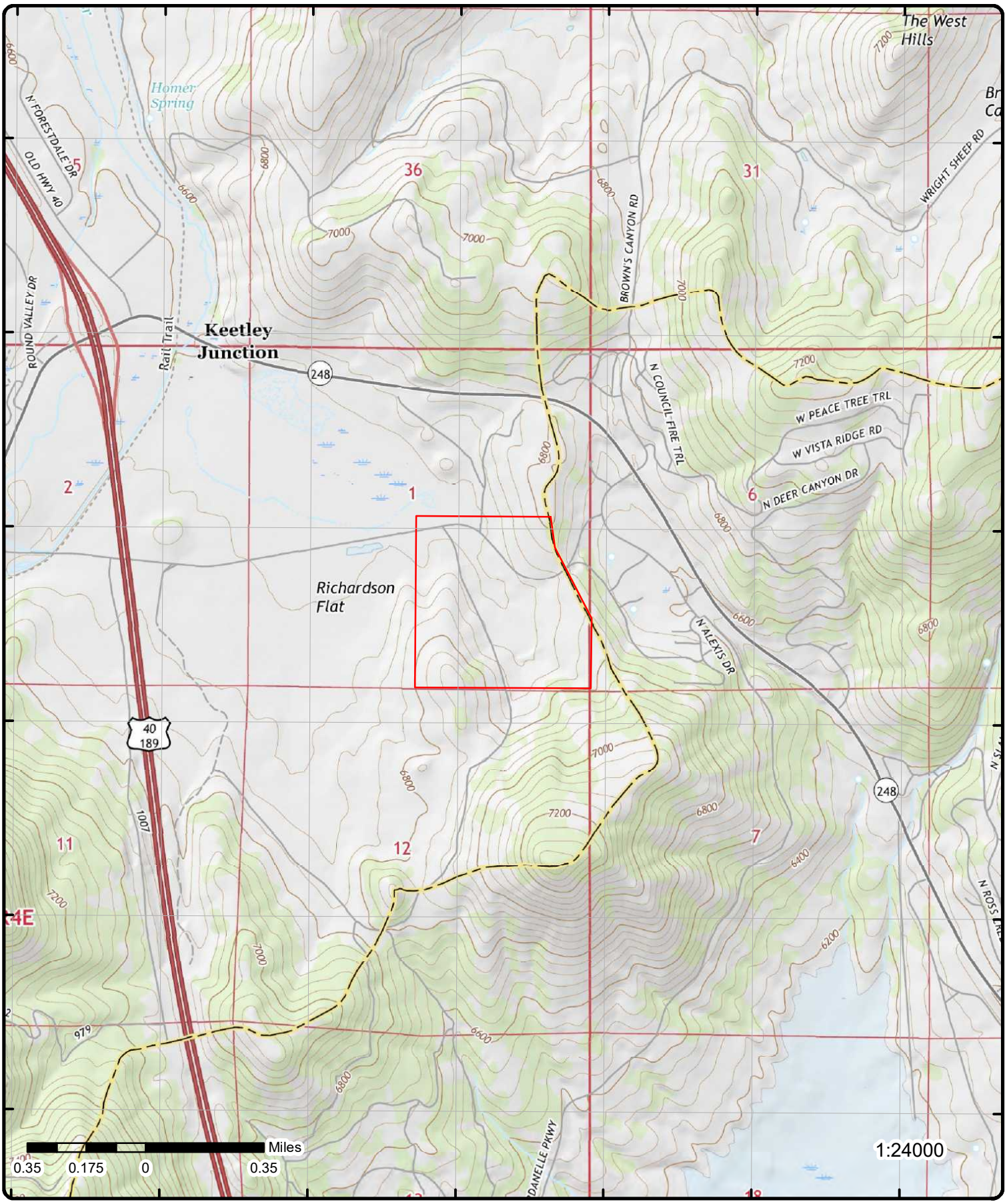
Aerial Year: 2019

Address: Parcel SS-86, Heber City, UT

Source: ESRI World Imagery

Order Number: 21040700811

© ERIS Information Inc.



Topographic Map

Year: 2017

Order Number: 21040700811

Address: Parcel SS-86, UT

Quadrangle(s): Park City East, UT

Source: USGS Topographic Map

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Detail Report

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
1	1 of 1	SSE	0.03 / 164.71	6,732.99 / 97	UNKNOWN TUNNEL SUMMIT COUNTY PARK CITY UT 84060	MRDS

Dep ID: 10011508
Dev Status: OCCURRENCE
Code List: AG AU
Url: http://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10011508
I1: 13
Latitude: 40.667725
Longitude: -111.437683

Commodity

I1: 79
Code: PB
Commodity: Lead
Commodity Type: Metallic
Commodity Group: Lead
Importance: Primary
Line: 2
Inserted By: MRDS migration
Insert Date: 29-OCT-2002 09:00:24
Updated By: USGS
Update Date: 29-OCT-2002 09:00:30

I1: 83
Code: AU
Commodity: Gold
Commodity Type: Metallic
Commodity Group: Gold
Importance: Secondary
Line: 4
Inserted By: MRDS migration
Insert Date: 29-OCT-2002 09:00:24
Updated By: USGS
Update Date: 29-OCT-2002 09:00:30

I1: 83
Code: CU
Commodity: Copper
Commodity Type: Metallic
Commodity Group: Copper
Importance: Secondary
Line: 5
Inserted By: MRDS migration
Insert Date: 29-OCT-2002 09:00:24
Updated By: USGS
Update Date: 29-OCT-2002 09:00:30

I1: 79
Code: AG
Commodity: Silver
Commodity Type: Metallic
Commodity Group: Silver
Importance: Primary
Line: 1
Inserted By: MRDS migration
Insert Date: 29-OCT-2002 09:00:24
Updated By: USGS
Update Date: 29-OCT-2002 09:00:30

I1: 83
Code: ZN
Commodity: Zinc
Commodity Type: Metallic
Commodity Group: Zinc
Importance: Primary
Line: 3
Inserted By: MRDS migration
Insert Date: 29-OCT-2002 09:00:24
Updated By: USGS
Update Date: 29-OCT-2002 09:00:30

Names

I1: 18
Status: Current
Site Name: Unknown Tunnel
Line: 1
Inserted By: MRDS migration
Insert Date: 29-OCT-02
Updated By: USGS
Update Date: 29-OCT-02

Names

I1: 18
Inserted By: MRDS migration

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB

Status:	Previous	**Insert Date:**	29-OCT-02
Site Name:	New Park Group	**Updated By:**	USGS
Line:	2	**Update Date:**	29-OCT-02

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
2	1 of 1	WNW	0.23 / 1,197.18	6,635.95 / 0	RICHARDSON FLAT TAILINGS 1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E PARK CITY UT 84060	SUPERFUND ROD

EPA ID:	UTD980952840
Site ID:	0800705
NPL Status:	Proposed
Non NPL Status:	Remedial Activities Under EPA Enforcement
County:	SUMMIT
Region:	08
Data Source(s):	U.S. EPA SUPERFUND PROGRAM - Source: SEMS Superfund Public User Database - FOIA-002 Records of Decision (RODS), ROD Amendments, and Explanation of Significant Differences (ESDs); Searchable Superfund Decision Documents database (https://www.epa.gov/superfund/search-superfund-documents), made available by the US Environmental Protection Agency (EPA). Retrieved on February 23, 2021.

Document Information

Doc ID:	2035008
Date:	07/06/2005
Pub No:	
Description:	
PDF Link:	https://semspub.epa.gov/src/document/08/2035008
Title:	RECORD OF DECISION (ROD) RICHARDSON FLAT TAILINGS, PARK CITY,UT (EPA SIGNED ROD ON 07/06/2005)(98 pp, 3.07 MB)

Action Information

Seq ID:	1
Action Name:	GOVT ROD for PRP Remedy
Operable Unit Name:	RICHARDSON FLAT
Actual Comp Date:	07/06/05

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
3	1 of 1	E	0.42 / 2,234.90	6,567.39 / -69	UT. DEPT. OF HWYS. NO. 22053 WASATCH COUNTY KAMAS UT 84036	MRDS

Dep ID:	10011513	**I1:**	13
Dev Status:	PAST PRODUCER	**Latitude:**	40.669922
Code List:	SDG	**Longitude:**	-111.426086
Url:	http://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10011513		

Commodity

I1:	30	**Line:**	1
Code:	SDG	**Inserted By:**	MRDS migration
Commodity:	Sand and Gravel, Cons	**Insert Date:**	29-OCT-2002 09:00:24
Commodity Type:	Non-metallic	**Updated By:**	USGS
Commodity Group:	Sand and Gravel	**Update Date:**	29-OCT-2002 09:00:30
Importance:	Primary		

Names

I1:	18	**Inserted By:**	MRDS migration
Status:	Current	**Insert Date:**	29-OCT-02
Site Name:	Ut. Dept. of Hwys. No. 22053	**Updated By:**	USGS
Line:	1	**Update Date:**	29-OCT-02

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
4	1 of 1	E	0.44 / 2,319.48	6,519.49 / -117	UT DEPT OF HWYS NO 22053 WASATCH COUNTY KAMAS UT 84036	MRDS

Dep ID: 10154962
Dev Status: PAST PRODUCER
Code List: SDG
Url: http://mrdata.usgs.gov/mrds/show-mrds.php?dep_id=10154962

I1: 17
Latitude: 40.669922
Longitude: -111.425781

Commodity

I1: 54
Code: SDG
Commodity: Sand and Gravel, Cons
Commodity Type: Non-metallic
Commodity Group: Sand and Gravel
Importance: Primary

Line: 1
Inserted By: MAS migration
Insert Date: 29-OCT-2002 09:00:24
Updated By: USGS
Update Date: 29-OCT-2002 09:01:34

Names

I1: 27
Status: Current
Site Name: Ut Dept of Hwys No 22053
Line: 2

Inserted By: MAS migration
Insert Date: 29-OCT-02
Updated By: USGS
Update Date: 29-OCT-02

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
5	1 of 1	NW	0.91 / 4,813.30	6,647.25 / 11	RICHARDSON FLAT TAILINGS 1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E PARK CITY UT 84060	PROPOSED NPL

EPA ID: UTD980952840
SITE ID: 0800705
SEMS ID: 800705

Latitude: 40.680556
Longitude: -111.444444

NPL (SEMS FOIA 003)

Final Date: 02/07/92
Federal Facility: No
SAA (Superfund Alt.): NO

County: SUMMIT
Latitude: +40.706879
Longitude: -111.466970

NPL Status Information (EPA's Where You Live Map)

Sits ID: 1337
Status: Proposed NPL Site
Construction Completion No: 0
Construction Completion:
Proposed Date: 02/07/1992
Listing Date:
NOID Date:
Deletion Date:
Site Listing Narrative: UTD980952840 (PDF)
Site Progress Profile: Richardson Flat Tailings
Proposed Fr Notice: 02/07/1992 (PDF)
Listing Fr Notice:
NOID Fr Notice:
Deletion Fr Notice:
Restoration Fr Notice:
Site Had a Partial Deletion: No

Unplottable Summary

Total: 3 Unplottable sites

DB	Company Name/Site Name	Address	City	Zip	ERIS ID
FINDS/FRS	BK STORAGE	1240 W RICHARDSON FLAT ROAD	KAMAS UT	84036	884916254
FINDS/FRS	PARK CITY HEIGHTS	RICHARDSON FLAT ROAD AND PIPER WAY	PARK CITY UT	84060	885136479
FINDS/FRS	QUINN'S JUNCTION WATER TREATMENT PLANT	3800 RICHARDSON FLAT ROAD	PARK CITY UT	84060	885137247

Unplottable Report

Site: ***BK STORAGE***
1240 W RICHARDSON FLAT ROAD KAMAS UT 84036

FINDS/FRS

Registry ID:	110070710115
FIPS Code:	
HUC Code:	16020101
Site Type Name:	STATIONARY
Location Description:	
Supplemental Location:	
Create Date:	06-APR-20
Update Date:	
Interest Types:	ICIS-NPDES NON-MAJOR
SIC Codes:	
SIC Code Descriptions:	
NAICS Codes:	
NAICS Code Descriptions:	
Conveyor:	FRS-GEOCODE
Federal Facility Code:	
Federal Agency Name:	
Tribal Land Code:	
Tribal Land Name:	
Congressional Dist No:	01
Census Block Code:	490439644023025
EPA Region Code:	08
County Name:	
US/Mexico Border Ind:	
Latitude:	40.67331
Longitude:	-111.43562
Reference Point:	ENTRANCE POINT OF A FACILITY OR STATION
Coord Collection Method:	ADDRESS MATCHING-BLOCK FACE
Accuracy Value:	500
Datum:	NAD83
Source:	
Facility Detail Rprt URL:	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110070710115
Program Acronyms:	

NPDES:UTR380517

Site: ***PARK CITY HEIGHTS***
RICHARDSON FLAT ROAD AND PIPER WAY PARK CITY UT 84060

FINDS/FRS

Registry ID:	110070711638
FIPS Code:	
HUC Code:	16020101
Site Type Name:	STATIONARY
Location Description:	
Supplemental Location:	
Create Date:	06-APR-20
Update Date:	
Interest Types:	ICIS-NPDES NON-MAJOR
SIC Codes:	
SIC Code Descriptions:	
NAICS Codes:	
NAICS Code Descriptions:	
Conveyor:	ICIS
Federal Facility Code:	
Federal Agency Name:	
Tribal Land Code:	
Tribal Land Name:	

Congressional Dist No:	01
Census Block Code:	490439644023022
EPA Region Code:	08
County Name:	
US/Mexico Border Ind:	
Latitude:	40.67343
Longitude:	-111.46159
Reference Point:	
Coord Collection Method:	
Accuracy Value:	
Datum:	NAD83
Source:	
Facility Detail Rprt URL:	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110070711638
Program Acronyms:	

NPDES:UTR361025

Site: ***QUINN'S JUNCTION WATER TREATMENT PLANT***
3800 RICHARDSON FLAT ROAD PARK CITY UT 84060

FINDS/FRS

Registry ID:	110070705338
FIPS Code:	
HUC Code:	16020101
Site Type Name:	STATIONARY
Location Description:	
Supplemental Location:	
Create Date:	05-APR-20
Update Date:	
Interest Types:	ICIS-NPDES NON-MAJOR
SIC Codes:	
SIC Code Descriptions:	
NAICS Codes:	
NAICS Code Descriptions:	
Conveyor:	FRS-GEOCODE
Federal Facility Code:	
Federal Agency Name:	
Tribal Land Code:	
Tribal Land Name:	
Congressional Dist No:	01
Census Block Code:	490439644023011
EPA Region Code:	08
County Name:	
US/Mexico Border Ind:	
Latitude:	40.67431
Longitude:	-111.46859
Reference Point:	ENTRANCE POINT OF A FACILITY OR STATION
Coord Collection Method:	ADDRESS MATCHING-BLOCK FACE
Accuracy Value:	500
Datum:	NAD83
Source:	
Facility Detail Rprt URL:	https://ofmpub.epa.gov/frs_public2/fii_query_detail.disp_program_facility?p_registry_id=110070705338
Program Acronyms:	

NPDES:UTR395951

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ERIS updates databases as set out in ASTM Standard E1527-13, Section 8.1.8 Sources of Standard Source Information:

"Government information from nongovernmental sources may be considered current if the source updates the information at least every 90 days, or, for information that is updated less frequently than quarterly by the government agency, within 90 days of the date the government agency makes the information available to the public."

Standard Environmental Record Sources

Federal

Formerly Utilized Sites Remedial Action Program: DOE FUSRAP

The U.S. Department of Energy (DOE) established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from the Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations. The DOE Office of Legacy Management (LM) established long-term surveillance and maintenance (LTS&M) requirements for remediated FUSRAP sites. DOE evaluates the final site conditions of a remediated site on the basis of risk for different future uses. DOE then confirms that LTS&M requirements will maintain protectiveness.

Government Publication Date: Mar 4, 2017

National Priority List: NPL

National Priorities List (Superfund)-NPL: EPA's (United States Environmental Protection Agency) list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. The NPL, which EPA is required to update at least once a year, is based primarily on the score a site receives from EPA's Hazard Ranking System. A site must be on the NPL to receive money from the Superfund Trust Fund for remedial action.

Government Publication Date: Feb 23, 2021

National Priority List - Proposed: PROPOSED NPL

Includes sites proposed (by the EPA, the state, or concerned citizens) for addition to the NPL due to contamination by hazardous waste and identified by the Environmental Protection Agency (EPA) as a candidate for cleanup because it poses a risk to human health and/or the environment.

Government Publication Date: Feb 23, 2021

Deleted NPL: DELETED NPL

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Government Publication Date: Feb 23, 2021

SEMS List 8R Active Site Inventory: SEMS

The Superfund Program has deployed the Superfund Enterprise Management System (SEMS), which integrates multiple legacy systems into a comprehensive tracking and reporting tool. This inventory contains active sites evaluated by the Superfund program that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The Active Site Inventory Report displays site and location information at active SEMS sites. An active site is one at which site assessment, removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted.

Government Publication Date: Jan 28, 2021

Inventory of Open Dumps, June 1985: ODI

The Resource Conservation and Recovery Act (RCRA) provides for publication of an inventory of open dumps. The Act defines "open dumps" as facilities which do not comply with EPA's "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR 257).

Government Publication Date: Jun 1985

SEMS List 8R Archive Sites: SEMS ARCHIVE

The Superfund Enterprise Management System (SEMS) Archived Site Inventory displays site and location information at sites archived from SEMS. An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time.

Government Publication Date: Jan 28, 2021

EPA Report on the Status of Open Dumps on Indian Lands: IODI

Public Law 103-399, The Indian Lands Open Dump Cleanup Act of 1994, enacted October 22, 1994, identified congressional concerns that solid waste open dump sites located on American Indian or Alaska Native (AI/AN) lands threaten the health and safety of residents of those lands and contiguous areas. The purpose of the Act is to identify the location of open dumps on Indian lands, assess the relative health and environment hazards posed by those sites, and provide financial and technical assistance to Indian tribal governments to close such dumps in compliance with Federal standards and regulations or standards promulgated by Indian Tribal governments or Alaska Native entities.

Government Publication Date: Dec 31, 1998

Comprehensive Environmental Response, Compensation and Liability Information System - CERCLIS: CERCLIS

Superfund is a program administered by the United States Environmental Protection Agency (EPA) to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The EPA administers the Superfund program in cooperation with individual states and tribal governments; this database is made available by the EPA.

Government Publication Date: Oct 25, 2013

CERCLIS - No Further Remedial Action Planned: CERCLIS NFRAP

An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. The Archive designation means that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list this site on the National Priorities List (NPL). This decision does not necessarily mean that there is no hazard associated with a given site; it only means that, based upon available information, the location is not judged to be a potential NPL site.

Government Publication Date: Oct 25, 2013

CERCLIS Liens: CERCLIS LIENS

A Federal Superfund lien exists at any property where EPA has incurred Superfund costs to address contamination ("Superfund site") and has provided notice of liability to the property owner. A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 30, 2014

RCRA CORRACTS-Corrective Action: RCRA CORRACTS

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. At these sites, the Corrective Action Program ensures that cleanups occur. EPA and state regulators work with facilities and communities to design remedies based on the contamination, geology, and anticipated use unique to each site.

Government Publication Date: Jan 22, 2021

RCRA non-CORRACTS TSD Facilities: RCRA TSD

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. This database includes Non-Corrective Action sites listed as treatment, storage and/or disposal facilities of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA).

Government Publication Date: Jan 22, 2021

RCRA Generator List: RCRA LQG

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Government Publication Date: Jan 22, 2021

RCRA Small Quantity Generators List: RCRA SQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Small Quantity Generators (SQGs) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Government Publication Date: Jan 22, 2021

RCRA Very Small Quantity Generators List: RCRA VSQG

RCRA Info is the EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Very Small Quantity Generators (VSQG) generate 100 kilograms or less per month of hazardous waste, or one kilogram or less per month of acutely hazardous waste. Additionally, VSQG may not accumulate more than 1,000 kilograms of hazardous waste at any time.

Government Publication Date: Jan 22, 2021

RCRA Non-Generators: RCRA NON GEN

RCRA Info is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Non-Generators do not presently generate hazardous waste.

Government Publication Date: Jan 22, 2021

Federal Engineering Controls-ECs: FED ENG

Engineering controls (ECs) encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Aug 26, 2020

Federal Institutional Controls- ICs: FED INST

Institutional controls are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Although it is EPA's (United States Environmental Protection Agency) expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable, ICs play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site.

Government Publication Date: Aug 26, 2020

Land Use Control Information System: LUCIS

The LUCIS database is maintained by the U.S. Department of the Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

Government Publication Date: Sep 1, 2006

Emergency Response Notification System: ERNS 1982 TO 1986

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1982-1986

Emergency Response Notification System: ERNS 1987 TO 1989

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1987-1989

Emergency Response Notification System: ERNS

Database of oil and hazardous substances spill reports made available by the United States Coast Guard National Response Center (NRC). The NRC fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. These data contain initial incident data that has not been validated or investigated by a federal/state response agency.

Government Publication Date: Nov 9, 2020

The Assessment, Cleanup and Redevelopment Exchange System (ACRES) Brownfield Database: FED BROWNFIELDS

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. This database is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Jan 6, 2021

FEMA Underground Storage Tank Listing: FEMA UST

The Federal Emergency Management Agency (FEMA) of the Department of Homeland Security maintains a list of FEMA owned underground storage tanks.

Government Publication Date: Dec 31, 2017

Facility Response Plan: FRP

List of facilities that have submitted Facility Response Plans (FRP) to EPA. Facilities that could reasonably be expected to cause "substantial harm" to the environment by discharging oil into or on navigable waters are required to prepare and submit Facility Response Plans (FRPs). Harm is determined based on total oil storage capacity, secondary containment and age of tanks, oil transfer activities, history of discharges, proximity to a public drinking water intake or sensitive environments.

Government Publication Date: Dec 2, 2020

Historical Gas Stations: HIST GAS STATIONS

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

Government Publication Date: Jul 1, 1930

Petroleum Refineries: REFN

List of petroleum refineries from the U.S. Energy Information Administration (EIA) Refinery Capacity Report. Includes operating and idle petroleum refineries (including new refineries under construction) and refineries shut down during the previous year located in the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, and other U.S. possessions. Survey locations adjusted using public data.

Government Publication Date: Jul 10, 2020

Petroleum Product and Crude Oil Rail Terminals: BULK TERMINAL

List of petroleum product and crude oil rail terminals made available by the U.S. Energy Information Administration (EIA). Includes operable bulk petroleum product terminals located in the 50 States and the District of Columbia with a total bulk shell storage capacity of 50,000 barrels or more, and/or the ability to receive volumes from tanker, barge, or pipeline; also rail terminals handling the loading and unloading of crude oil that were active between 2017 and 2018. Petroleum product terminals comes from the EIA-815 Bulk Terminal and Blender Report, which includes working, shell in operation, and shell idle for several major product groupings. Survey locations adjusted using public data.

Government Publication Date: Apr 28, 2020

LIEN on Property: SEMS LIEN

The EPA Superfund Enterprise Management System (SEMS) provides LIEN information on properties under the EPA Superfund Program.

Government Publication Date: Jan 28, 2021

Superfund Decision Documents: SUPERFUND ROD

This database contains a listing of decision documents for Superfund sites. Decision documents serve to provide the reasoning for the choice of (or) changes to a Superfund Site cleanup plan. The decision documents include Records of Decision (ROD), ROD Amendments, Explanations of Significant Differences (ESD), along with other associated memos and files. This information is maintained and made available by the US EPA (Environmental Protection Agency).

Government Publication Date: Feb 23, 2021

State

Solid Waste Facilities and Landfills: SWF/LF

The Division of Solid and Hazardous Waste of the Department of Environmental Quality (DEQ) maintains a list of permitted solid waste and landfill facilities.

Government Publication Date: Feb 2, 2021

Historical Solid Waste and Landfill Facilities: HSWF

The Division of Solid and Hazardous Waste of the Department of Enviromental Quality (DEQ) maintains a list of historically closed landfills. Public Land Survey System (PLSS) locations provided by the source are subject to accuracy limitations inherent to the PLSS system.

Government Publication Date: Sep 22, 2014

Sites With Leaking Underground Storage Tanks (LUST): LUST

List of Leaking Underground Storage Tank (LUST) Sites made available by the Underground Storage Tank Branch of the Department of Environmental Quality (DEQ), Division of Environmental Response and Remediation (DERR). Includes
sites from the LUST Sites List as well as LUST sites from the DEQ Environmental Interactive Map.

Government Publication Date: Jan 19, 2021

Sites With Leaking Aboveground Storage Tanks (LAST): LAST

The Division of Environmental Response and Remediation (DERR) has entered into an agreement with the Division of Water Quality (DWQ) to assume oversight of petroleum releases from above ground storage tanks (ASTs).

Government Publication Date: Feb 2, 2021

Delisted Leaking Storage Tank: DELISTED LST

This database contains a list of closed leaking storage tank sites that were removed from the Utah State Underground Storage Tank program of the Department of Environmental Quality (DEQ).

Government Publication Date: Jan 19, 2021

Sites With Underground Storage Tanks (UST): UST

A list of Underground Storage Tank (UST) sites made available by the Underground Storage Tank Branch of the Department of Environmental Quality (DEQ), Division of Environmental Response and Remediation (DERR). Includes sites
from the UST Sites list as well as UST sites from the DEQ Environmental Interactive Map.

Government Publication Date: Jan 19, 2021

Tanks Lapse List: UST LAPSE

A list of tank facilities that do not have an active Certificate of Compliance due to lapsing, revocation, or installation in process. The listed USTs at these facilities are ineligible to receive deliveries of fuel. Made available by the Underground Storage Tanks Compliance Branch of the Utah Department of Environmental Quality.

Government Publication Date: Jan 27, 2021

Sites With Aboveground Storage Tanks (AST): AST

A list of aboveground storage tank sites made available by the Division of Environmental Response and Remediation (DERR) of the Department of Environmental Quality (DEQ).

Government Publication Date: Feb 2, 2021

Delisted Storage Tanks: DTNK

This database contains a list of closed storage tank sites that were removed from the Utah State Underground Storage Tank program of the Department of Environmental Quality (DEQ).

Government Publication Date: Jan 19, 2021

Sites with Institutional Controls: INST

Sites included in the Voluntary Cleanup Program (VCP), Superfund and Underground Storage Tank Facilities list that have environmental convenants and institutional controls in place.

Government Publication Date: Mar 1, 2021

Response Action Sites: RESPONSE

The Voluntary Cleanup Program/Brownfields Section of the Department of Environmental Quality (DEQ) maintains a list of sites at which Response Actions are planned or have been completed.

Government Publication Date: Feb 24, 2020

Voluntary Cleanup Site List: VCP

The Utah Voluntary Cleanup Program (VCP) of the Department of Environmental Quality (DEQ) was created to promote the voluntary cleanup of contaminated sites. The VCP is intended to encourage redevelopment of Brownfields and other impacted sites by providing a streamlined cleanup program.

Government Publication Date: Nov 11, 2020

List of Targeted and Non-targeted Brownfields: BROWNFIELDS

List of Brownfields Projects, either targeted or not targeted for cleanup, made available by the Department of Environmental Quality (DEQ) Division of Environmental Response and Remediation (DERR). The DERR conducts Brownfields activities under authorities of the Voluntary Release Cleanup Act, Hazardous Substances Mitigation Act and the Small Business Liability Relief Brownfields Revitalization Act. These statutes provide mechanisms by which the DERR oversees the assessment and cleanup of Brownfields.

Government Publication Date: Jan 19, 2021

Tribal

Leaking Underground Storage Tanks (LUSTs) on Indian Lands: INDIAN LUST

LUSTs on Tribal/Indian Lands in Region 8, which includes Utah.

Government Publication Date: Apr 14, 2020

Underground Storage Tanks (USTs) on Indian Lands: INDIAN UST

USTs on Tribal/Indian Lands in Region 8, which includes Utah.

Government Publication Date: Apr 14, 2020

Delisted Tribal Leaking Storage Tanks: DELISTED ILST

Leaking Underground Storage Tank facilities which have been removed from the Regional Tribal LUST lists made available by the EPA.

Government Publication Date: Apr 14, 2020

Delisted Tribal Underground Storage Tanks: DELISTED IUST

Underground Storage Tank facilities which have been removed from the Regional Tribal UST lists made available by the EPA.

Government Publication Date: Apr 14, 2020

County

No County standard environmental record sources available for this State.

Additional Environmental Record Sources

Federal

PFOA/PFOS Contaminated Sites: PFAS NPL

List of sites where PFOA or PFOS contaminants have been found in drinking water or soil. Made available by the Federal Environmental Protection Agency (EPA).

Government Publication Date: Mar 1, 2021

Facility Registry Service/Facility Index: FINDS/FRS

The Facility Registry Service (FRS) is a centrally managed database that identifies facilities, sites, or places subject to environmental regulations or of environmental interest. FRS creates high-quality, accurate, and authoritative facility identification records through rigorous verification and management procedures that incorporate information from program national systems, state master facility records, and data collected from EPA's Central Data Exchange registrations and data management personnel. This list is made available by the Environmental Protection Agency (US EPA).

Government Publication Date: Nov 2, 2020

Toxics Release Inventory (TRI) Program: TRIS

The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U. S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment. One of TRI's primary purposes is to inform communities about toxic chemical releases to the environment.

Government Publication Date: Feb 19, 2020

Perfluorinated Alkyl Substances (PFAS) Releases: PFAS TRI

List of Toxics Release Inventory (TRI) facilities at which the reported chemical is a Per- or polyfluorinated alkyl substance (PFAS) included in the Environmental Protection Agency (EPA)'s consolidated PFAS Master List of PFAS Substances. The EPA's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of over 650 toxic chemicals from thousands of U.S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment.

Government Publication Date: Feb 19, 2020

Perfluorinated Alkyl Substances (PFAS) Water Quality: PFAS WATER

The Water Quality Portal (WQP) is a cooperative service sponsored by the United States Geological Survey (USGS), the Environmental Protection Agency (EPA), and the National Water Quality Monitoring Council (NWQMC). This listing includes records from the Water Quality Portal where the characteristic (environmental measurement) is in the Environmental Protection Agency (EPA)'s consolidated PFAS Master List of PFAS Substances.

Government Publication Date: Jul 20, 2020

Hazardous Materials Information Reporting System: HMIRS

US DOT - Department of Transportation Pipeline and Hazardous Materials Safety Administration (PHMSA) Incidents Reports Database taken from Hazmat Intelligence Portal, U.S. Department of Transportation.

Government Publication Date: Sep 1, 2020

National Clandestine Drug Labs: NCDL

The U.S. Department of Justice ("the Department") provides this data as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy.

Government Publication Date: Oct 5, 2020

Toxic Substances Control Act: TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.
The CDR enables EPA to collect and publish information on the manufacturing, processing, and use of commercial chemical substances and mixtures (referred to hereafter as chemical substances) on the TSCA Chemical Substance Inventory (TSCA Inventory). This includes current information on chemical substance production volumes, manufacturing sites, and how the chemical substances are used. This information helps the Agency determine whether people or the environment are potentially exposed to reported chemical substances. EPA publishes submitted CDR data that is not Confidential Business Information (CBI).

Government Publication Date: Apr 11, 2019

Hist TSCA: HIST TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.
The 2006 IUR data summary report includes information about chemicals manufactured or imported in quantities of 25,000 pounds or more at a single site during calendar year 2005. In addition to the basic manufacturing information collected in previous reporting cycles, the 2006 cycle is the first time EPA collected information to characterize exposure during manufacturing, processing and use of organic chemicals. The 2006 cycle also is the first time manufacturers of inorganic chemicals were required to report basic manufacturing information.

Government Publication Date: Dec 31, 2006

FTTS Administrative Case Listing: FTTS ADMIN

An administrative case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

FTTS Inspection Case Listing: FTTS INSP

An inspection case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

Potentially Responsible Parties List: PRP

Early in the cleanup process, the Environmental Protection Agency (EPA) conducts a search to find the potentially responsible parties (PRPs). EPA looks for evidence to determine liability by matching wastes found at the site with parties that may have contributed wastes to the site.

Government Publication Date: Feb 23, 2021

State Coalition for Remediation of Drycleaners Listing: SCRD DRYCLEANER

The State Coalition for Remediation of Drycleaners (SCRD) was established in 1998, with support from the U.S. Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation. Coalition members are states with mandated programs and funding for drycleaner site remediation. Current members are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Government Publication Date: Nov 08, 2017

Integrated Compliance Information System (ICIS): ICIS

The Integrated Compliance Information System (ICIS) is a system that provides information for the Federal Enforcement and Compliance (FE&C) and the National Pollutant Discharge Elimination System (NPDES) programs. The FE&C component supports the Environmental Protection Agency's (EPA) Civil Enforcement and Compliance program activities. These activities include Compliance Assistance, Compliance Monitoring and Enforcement. The NPDES program supports tracking of NPDES permits, limits, discharge monitoring data and other program reports.

Government Publication Date: Jan 6, 2021

Drycleaner Facilities: FED DRYCLEANERS

A list of drycleaner facilities from Enforcement and Compliance History Online (ECHO) online search. The Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

Government Publication Date: Feb 17, 2021

Delisted Drycleaner Facilities: DELISTED FED DRY

List of sites removed from the list of Drycleaner Facilities (sites in the EPA's Integrated Compliance Information System (ICIS) with NAIC or SIC codes identifying the business as a drycleaner establishment).

Government Publication Date: Feb 17, 2021

Formerly Used Defense Sites: FUDS

Formerly Used Defense Sites (FUDS) are properties that were formerly owned by, leased to, or otherwise possessed by and under the jurisdiction of the Secretary of Defense prior to October 1986, where the Department of Defense (DoD) is responsible for an environmental restoration. This list is published by the U.S. Army Corps of Engineers.

Government Publication Date: Jan 28, 2020

Former Military Nike Missile Sites: FORMER NIKE

This information was taken from report DRXTH-AS-IA-83A016 (Historical Overview of the Nike Missile System, 12/1984) which was performed by Environmental Science and Engineering, Inc. for the U.S. Army Toxic and Hazardous Materials Agency Assessment Division. The Nike system was deployed between 1954 and the mid-1970's. Among the substances used or stored on Nike sites were liquid missile fuel (JP-4); starter fluids (UDKH, aniline, and furfuryl alcohol); oxidizer (IRFNA); hydrocarbons (motor oil, hydraulic fluid, diesel fuel, gasoline, heating oil); solvents (carbon tetrachloride, trichloroethylene, trichloroethane, stoddard solvent); and battery electrolyte. The quantities of material a disposed of and procedures for disposal are not documented in published reports. Virtually all information concerning the potential for contamination at Nike sites is confined to personnel who were assigned to Nike sites. During deactivation most hardware was shipped to depot-level supply points. There were reportedly instances where excess materials were disposed of on or near the site itself at closure. There was reportedly no routine site decontamination.

Government Publication Date: Dec 1, 1984

PHMSA Pipeline Safety Flagged Incidents: PIPELINE INCIDENT

A list of flagged pipeline incidents made available by the U.S. Department of Transportation (US DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA regulations require incident and accident reports for five different pipeline system types.

Government Publication Date: Jul 7, 2020

Material Licensing Tracking System (MLTS): MLTS

A list of sites that store radioactive material subject to the Nuclear Regulatory Commission (NRC) licensing requirements. This list is maintained by the NRC. As of September 2016, the NRC no longer releases location information for sites. Site locations were last received in July 2016.

Government Publication Date: Aug 5, 2020

Historic Material Licensing Tracking System (MLTS) sites: HIST MLTS

A historic list of sites that have inactive licenses and/or removed from the Material Licensing Tracking System (MLTS). In some cases, a site is removed from the MLTS when the state becomes an "Agreement State". An Agreement State is a State that has signed an agreement with the Nuclear Regulatory Commission (NRC) authorizing the State to regulate certain uses of radioactive materials within the State.

Government Publication Date: Jan 31, 2010

Mines Master Index File: MINES

The Master Index File (MIF) contains mine identification numbers issued by the Department of Labor Mine Safety and Health Administration (MSHA) for mines active or opened since 1971. Note that addresses may or may not correspond with the physical location of the mine itself.

Government Publication Date: Nov 3, 2020

Surface Mining Control and Reclamation Act Sites: SMCRA

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by the Office of Surface Mining Reclamation and Enforcement (OSMRE) to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of Abandoned Mine Land (AML) impacts, as well as information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Government Publication Date: Dec 18, 2020

Mineral Resource Data System: MRDS

The Mineral Resource Data System (MRDS) is a collection of reports describing metallic and nonmetallic mineral resources throughout the world. Included are deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references. This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS. The USGS has ceased systematic updates of the MRDS database with their focus more recently on deposits of critical minerals while providing a well-documented baseline of historical mine locations from USGS topographic maps.

Government Publication Date: Mar 15, 2006

Uranium Mill Tailings Radiation Control Act Sites: URANIUM

The Legacy Management Office of the Department of Energy (DOE) manages radioactive and chemical waste, environmental contamination, and hazardous material at over 100 sites across the U.S. The L.M. Office manages this database of sites registered under the Uranium Mill Tailings Control Act (UMTRCA).

Government Publication Date: Mar 4, 2017

Alternative Fueling Stations: ALT FUELS

List of alternative fueling stations made available by the US Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Biodiesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE). The National Renewable Energy Laboratory (NREL) obtains information about new stations from trade media, Clean Cities coordinators, a Submit New Station form on the Station Locator website, and through collaborating with infrastructure equipment and fuel providers, original equipment manufacturers (OEMs), and industry groups.

Government Publication Date: Jan 18, 2021

Registered Pesticide Establishments: SSTS

List of active EPA-registered foreign and domestic pesticide-producing and device-producing establishments based on data from the Section Seven Tracking System (SSTS). The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 7 requires that facilities producing pesticides, active ingredients, or devices be registered. The list of establishments is made available by the EPA.

Government Publication Date: Mar 31, 2020

Polychlorinated Biphenyl (PCB) Notifiers: PCB

Facilities included in the national list of facilities that have notified the United States Environmental Protection Agency (EPA) of Polychlorinated Biphenyl (PCB) activities. Any company or person storing, transporting or disposing of PCBs or conducting PCB research and development must notify the EPA and receive an identification number.

Government Publication Date: Nov 19, 2020

State

Spill Reports 1988 current through February 7, 2013: SPILLS

Regulated industry, permitted facilities, waste transporters and others are required by state laws to report chemical spills and other environmental incidents within certain time frames, depending on the type of incident. These incidents are reported to The Division of Environmental Response & Remediation (DERR) of the Department of Environmental Quality (DEQ).

Government Publication Date: Jan 15, 2021

Methamphetamine Contaminated Properties: CDL

Utah Administrative Rule 19-6-901 Illegal Drug Operations Site Reporting and Decontamination Act requires local health departments to maintain a list of properties believed to be contaminated by the illegal manufacture of drugs. These properties were reported to the Salt Lake Valley Health Department by a complaint or report from a law enforcement agency and the Department has determined that reasonable evidence exists that the property is contaminated. Once a property is decontaminated, it is removed from this list.

Government Publication Date: Sep 30, 2020

Dry Cleaning Facilities: DRYCLEANERS

The Division of Air Quality of the Department of Environmental Quality (DEQ) maintains a list of regulated dry cleaners that use perchlorethylene (PCE).

Government Publication Date: Nov 19, 2020

Delisted Drycleaners: DELISTED DRYCLEANERS

A list of sites which once appeared on - and have since been removed from - the list of regulated dry cleaners that use perchlorethylene (PCE) made available by the Division of Air Quality of the Department of Environmental Quality (DEQ).

Government Publication Date: Nov 19, 2020

Tier 2 Chemical Inventory Program: TIER 2

A list of Tier 2 facilities managed by the Division of Environmental Response and Remediation (DERR) of the the Utah Department of Environmental Quality (DEQ).

Government Publication Date: Oct 27, 2020

Tribal

No Tribal additional environmental record sources available for this State.

County

No County additional environmental record sources available for this State.

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

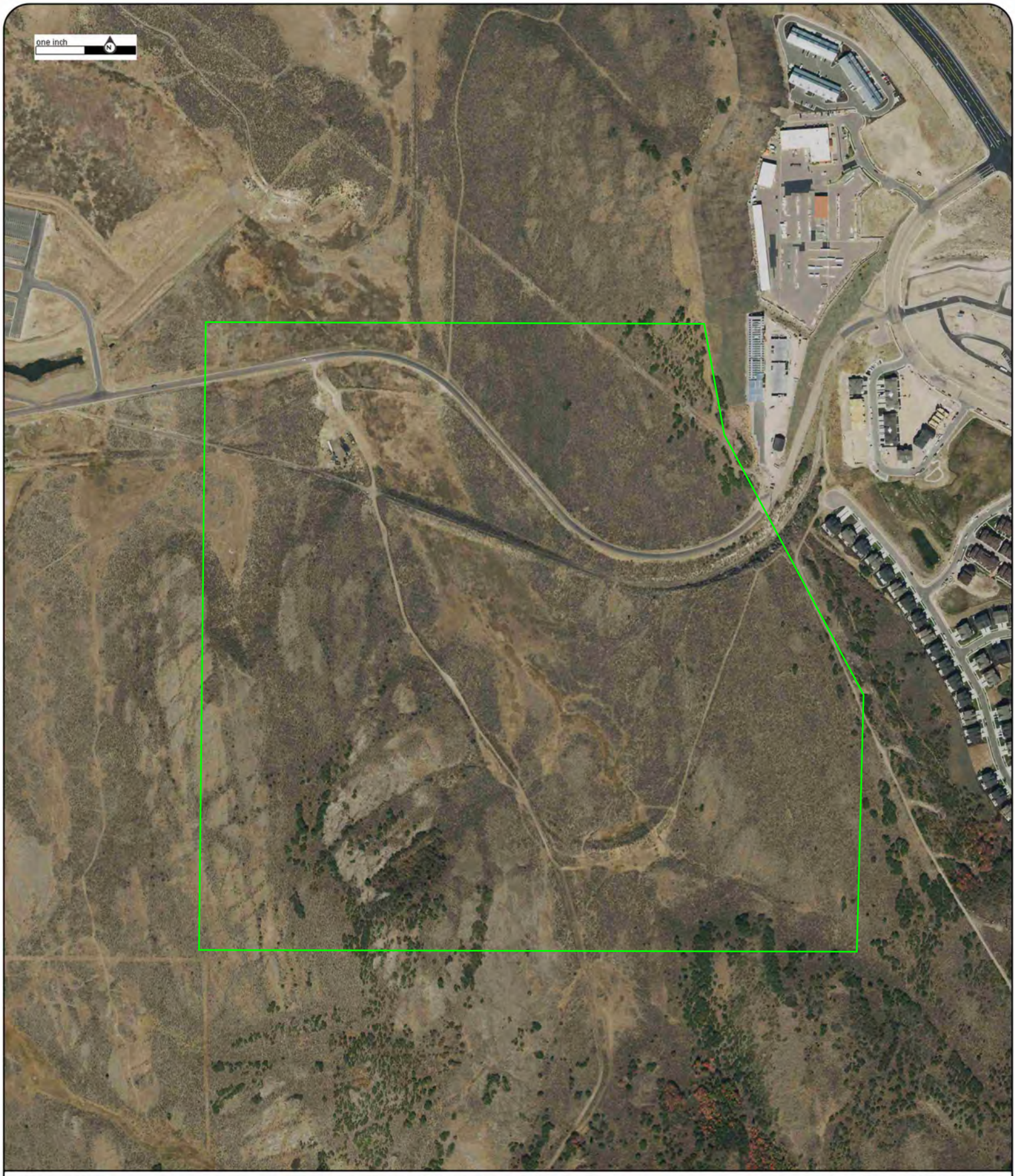
ERIS

HISTORICAL AERIALS

Project Property:	Parcel SS-86 Phase I and Baseline Sampling Parcel SS-86 Heber City UT
Requested By:	Geosyntec Consultants
Order No:	21040700811
Data Completed:	April 09,2021

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

Date	Source	Scale	Comments
2018	National Agriculture Information Program	1" to 500'	
2016	National Agriculture Information Program	1" to 500'	
2014	National Agriculture Information Program	1" to 500'	
2011	National Agriculture Information Program	1" to 500'	
2009	National Agriculture Information Program	1" to 500'	
2006	National Agriculture Information Program	1" to 500'	
1997	US Geological Survey	1" to 500'	
1993	US Geological Survey	1" to 500'	
1983	National High Altitude Photography	1" to 500'	
1981	National Aeronautics Space Administration	1" to 500'	
1977	Bureau of Land Management	1" to 500'	
1962	Agriculture and Soil Conservation Service	1" to 500'	
1953	US Geological Survey	1" to 500'	
1937	Agriculture and Soil Conservation Service	1" to 500'	



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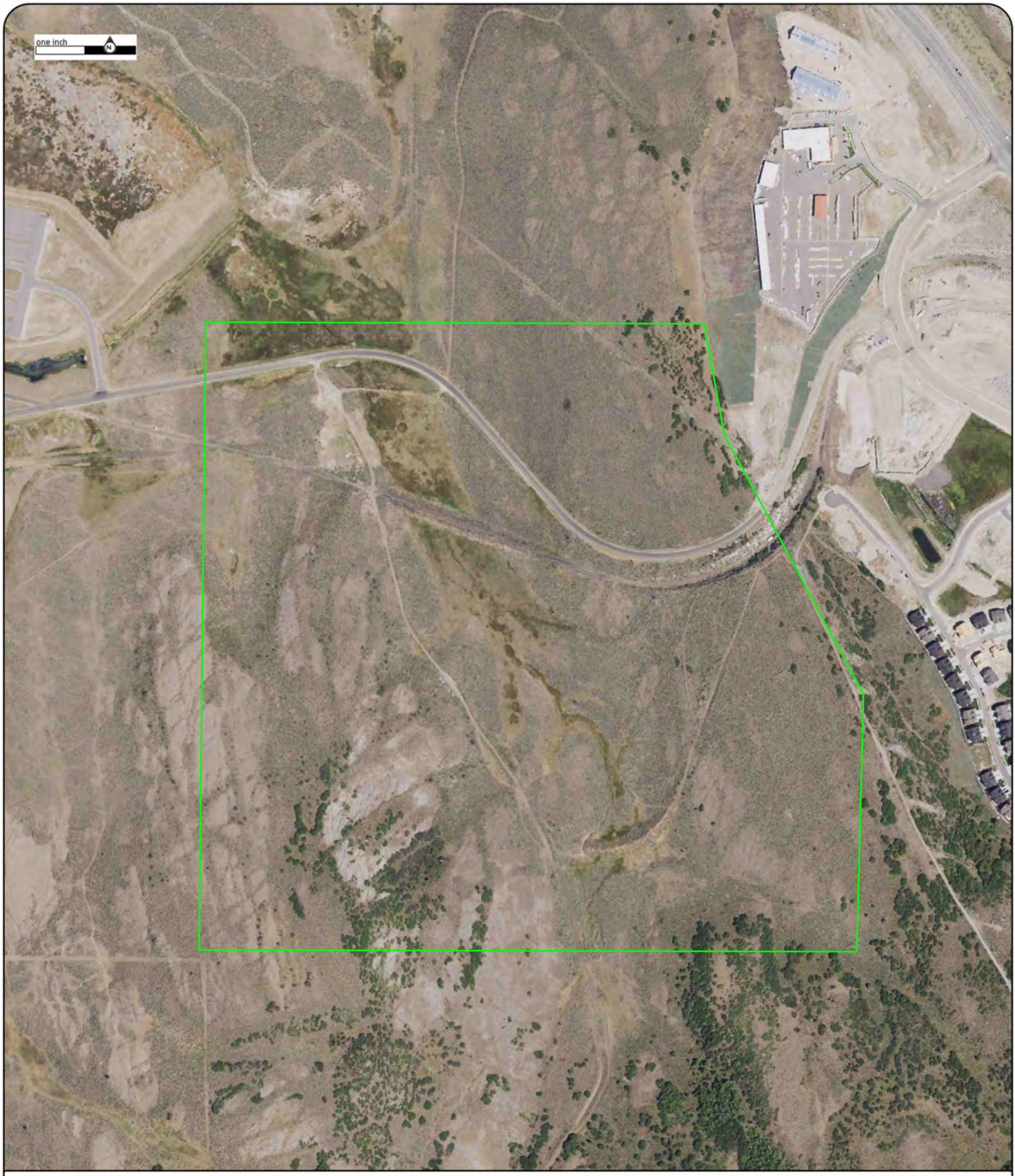
Approx Center:40.67165638/-111.43946572

Order No:21040700811

ERIS



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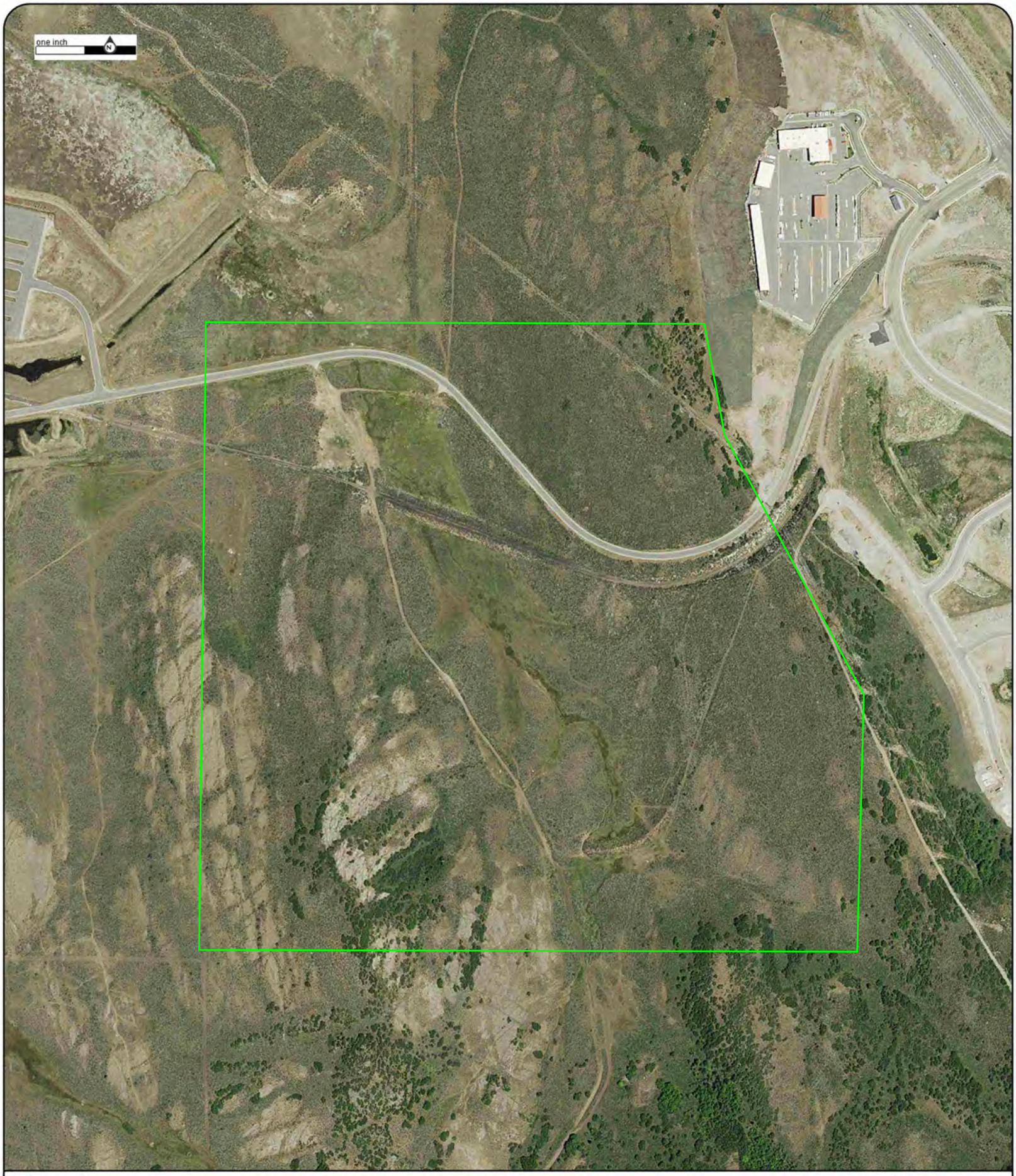
ERIS



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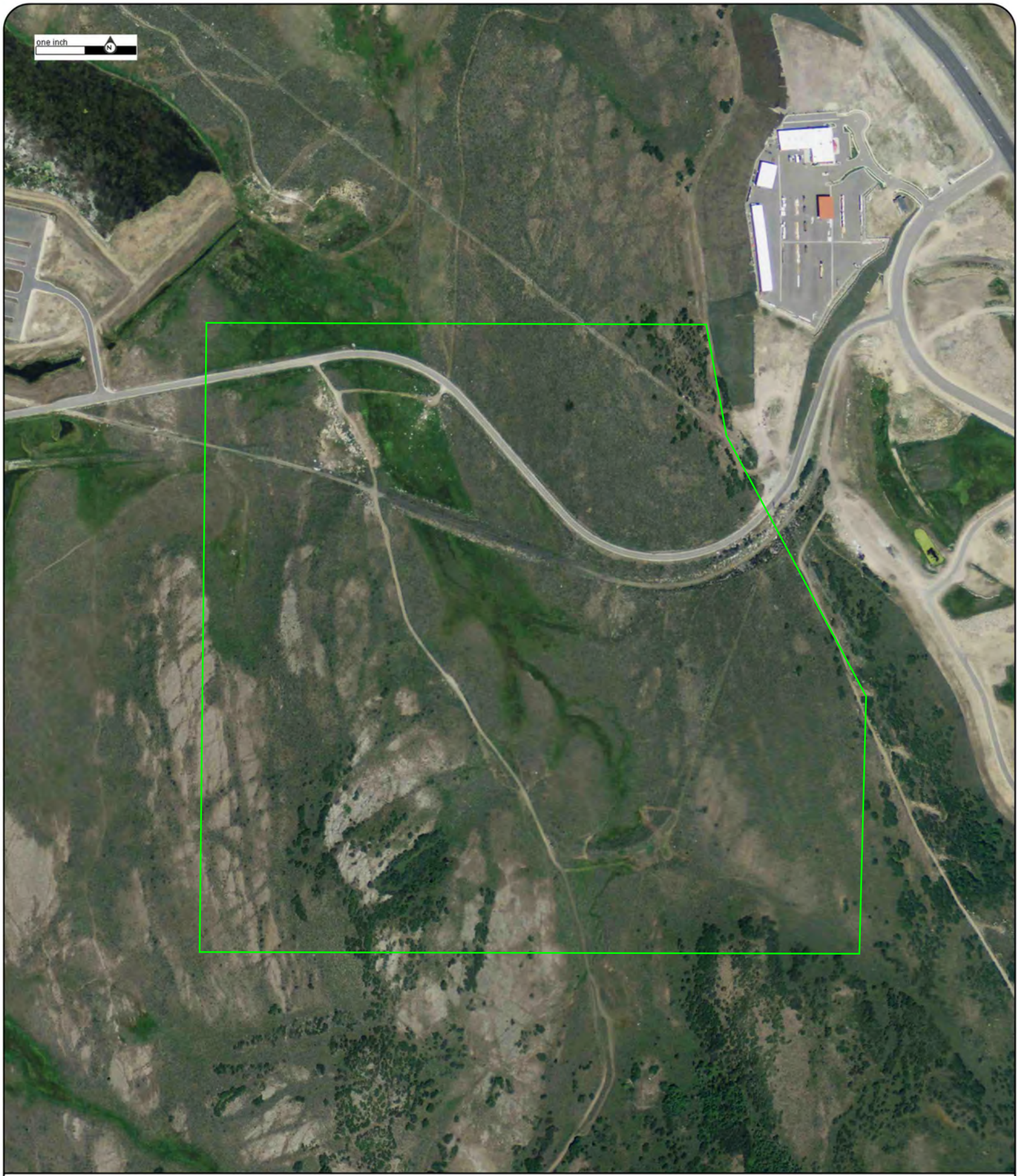
ERIS



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Order No:21040700811

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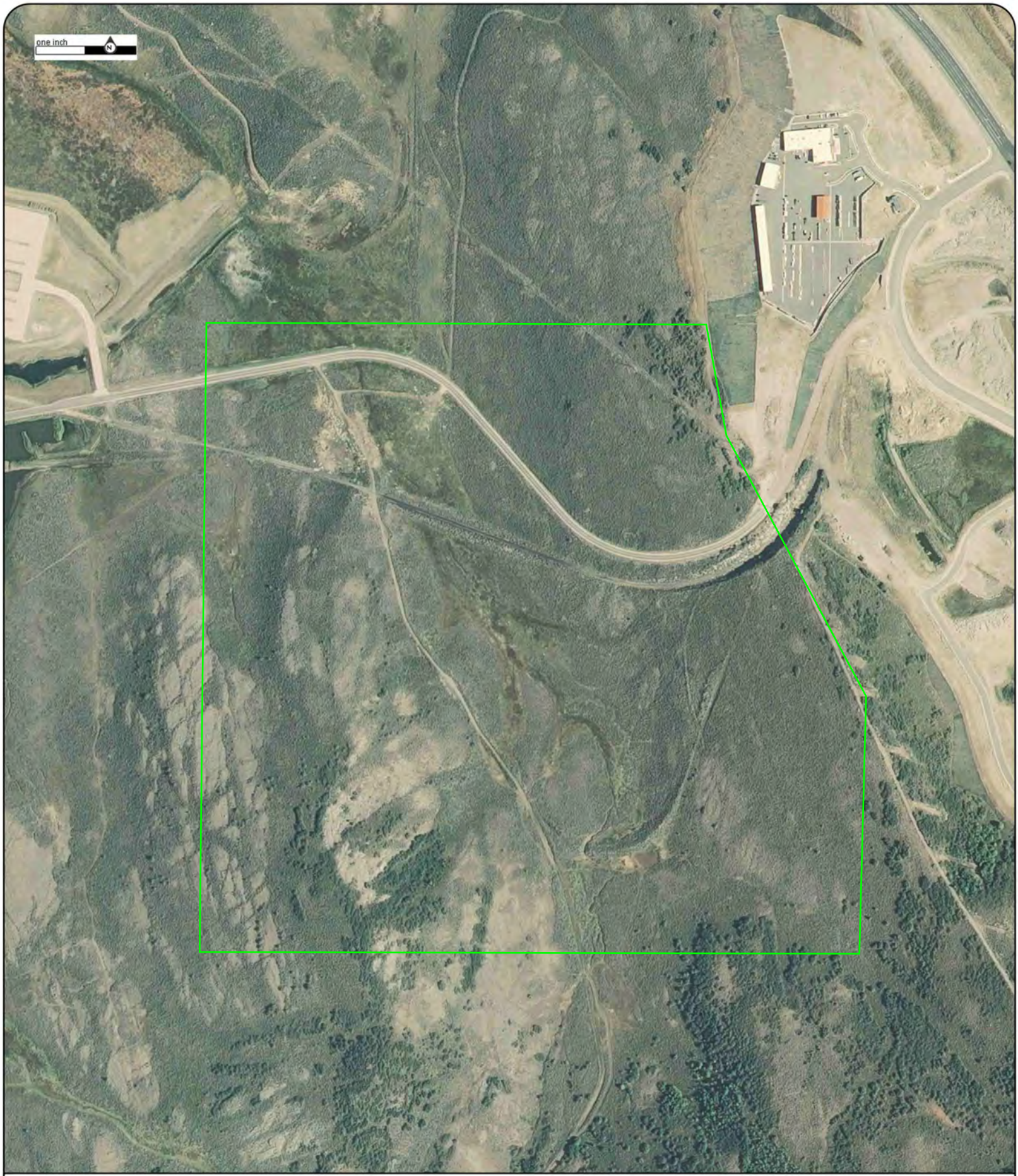

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Order No:21040700811

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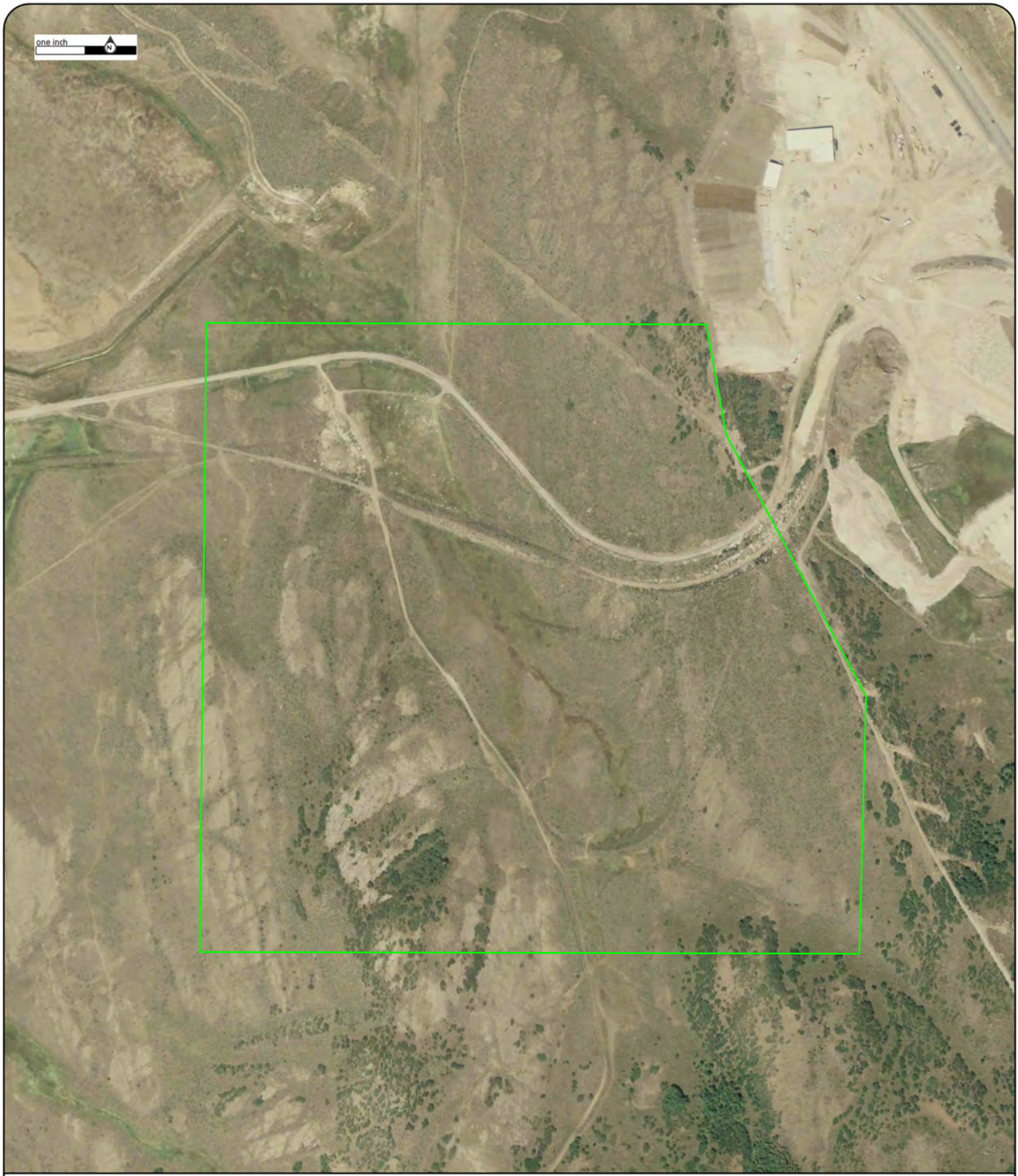

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Approx Center:40.67165638/-111.43946572

Order No:21040700811

ERIS



Year:1997
Source:USGS
Scale:1" to 500'
Comment:

Address:Parcel SS-86, Heber City, UT
Approx Center:40.67165638/-111.43946572

Order No:21040700811

ERIS



Year:1993
Source:USGS
Scale:1" to 500'
Comment:

Address:Parcel SS-86, Heber City, UT
Approx Center:40.67165638/-111.43946572

Order No:21040700811

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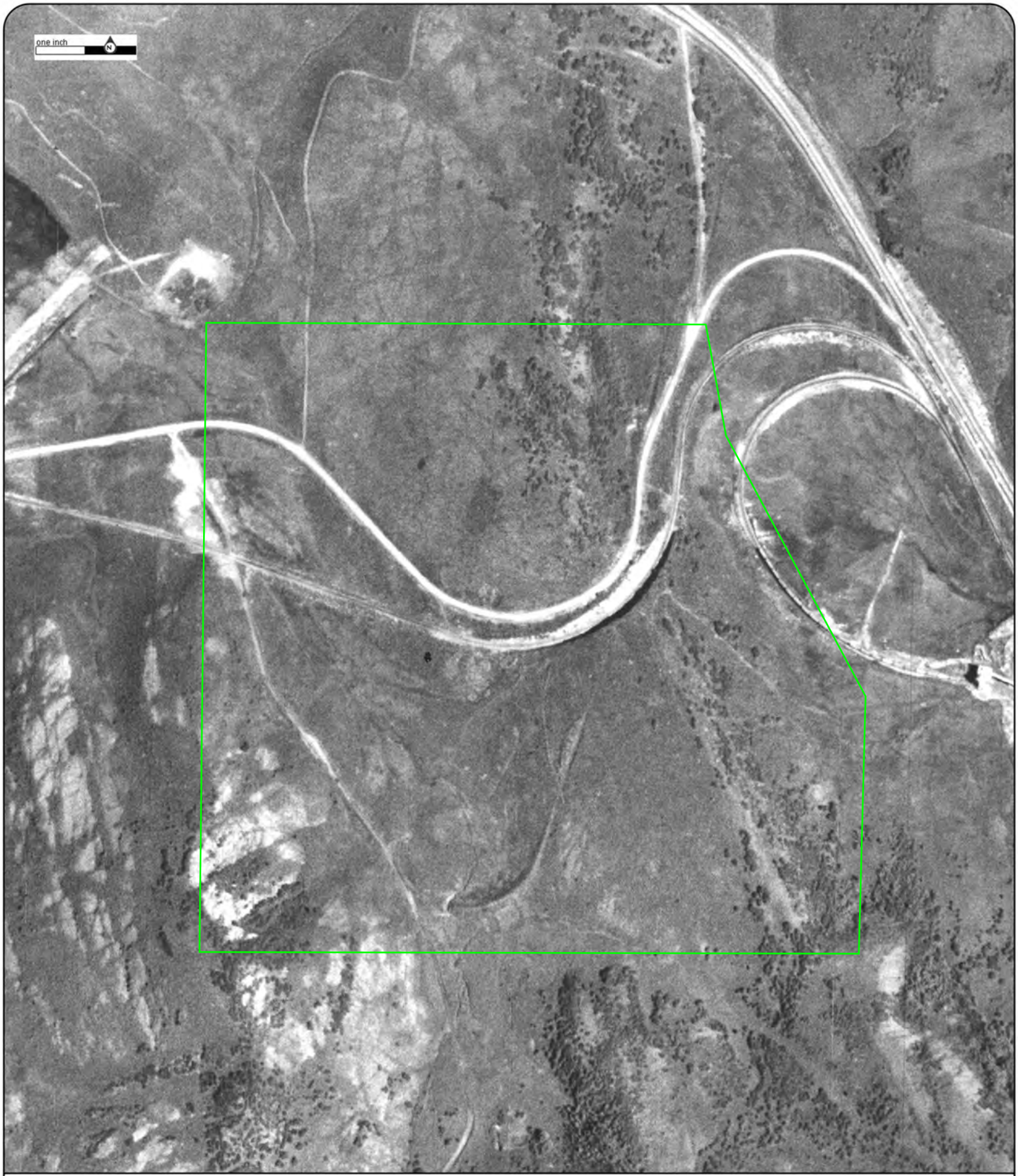

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Approx Center:40.67165638/-111.43946572

Order No:21040700811

ERIS



Year:1981
Source:NASA
Scale:1" to 500'
Comment:

Address:Parcel SS-86, Heber City, UT
Approx Center:40.67165638/-111.43946572

Order No:21040700811

ERIS



Year:1977
Source:BLM
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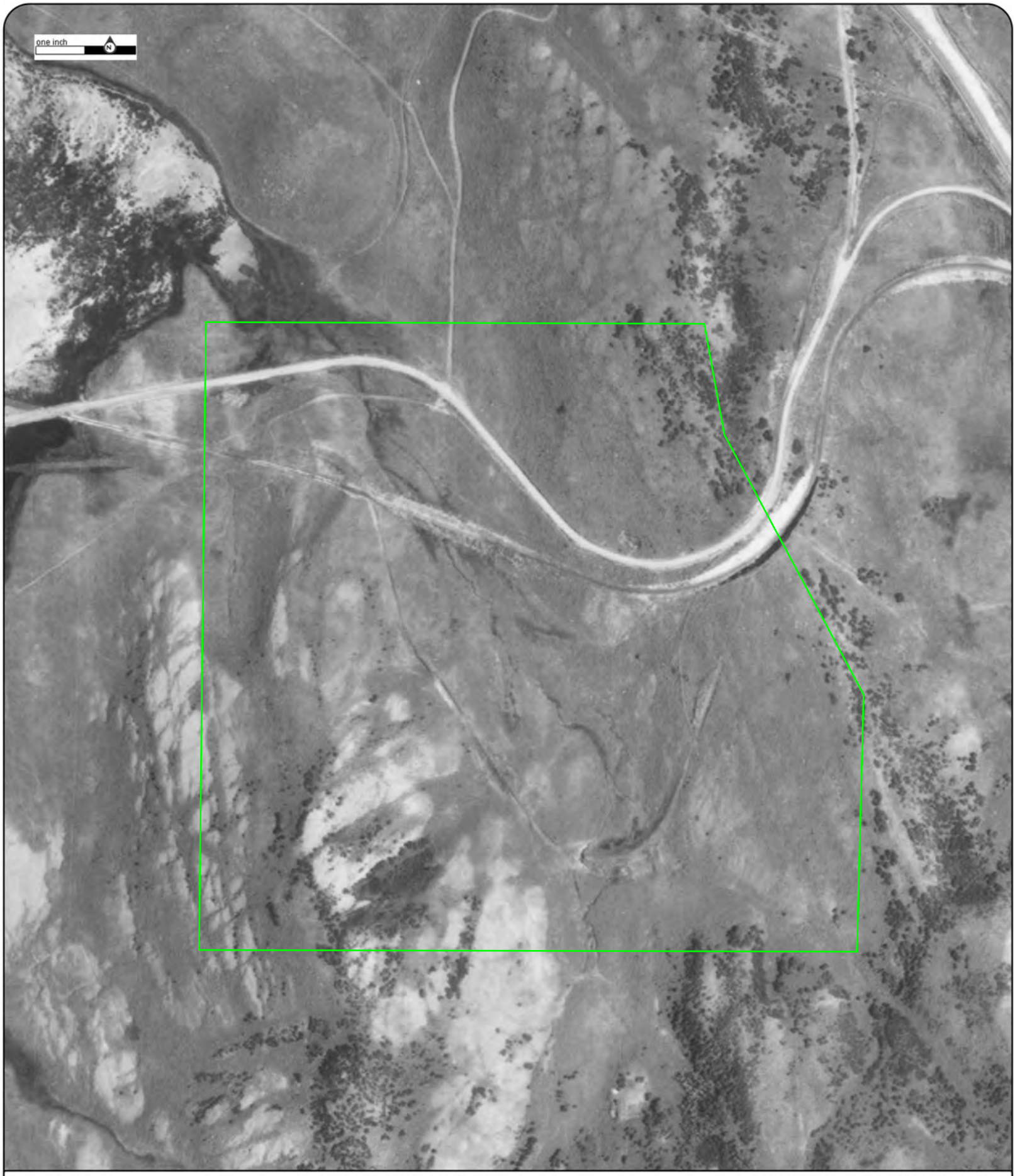
Approx Center:40.67165638/-111.43946572

Order No:21040700811

ERIS



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Order No:21040700811

ERIS



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Approx Center:40.67165638/-111.43946572

Order No:21040700811

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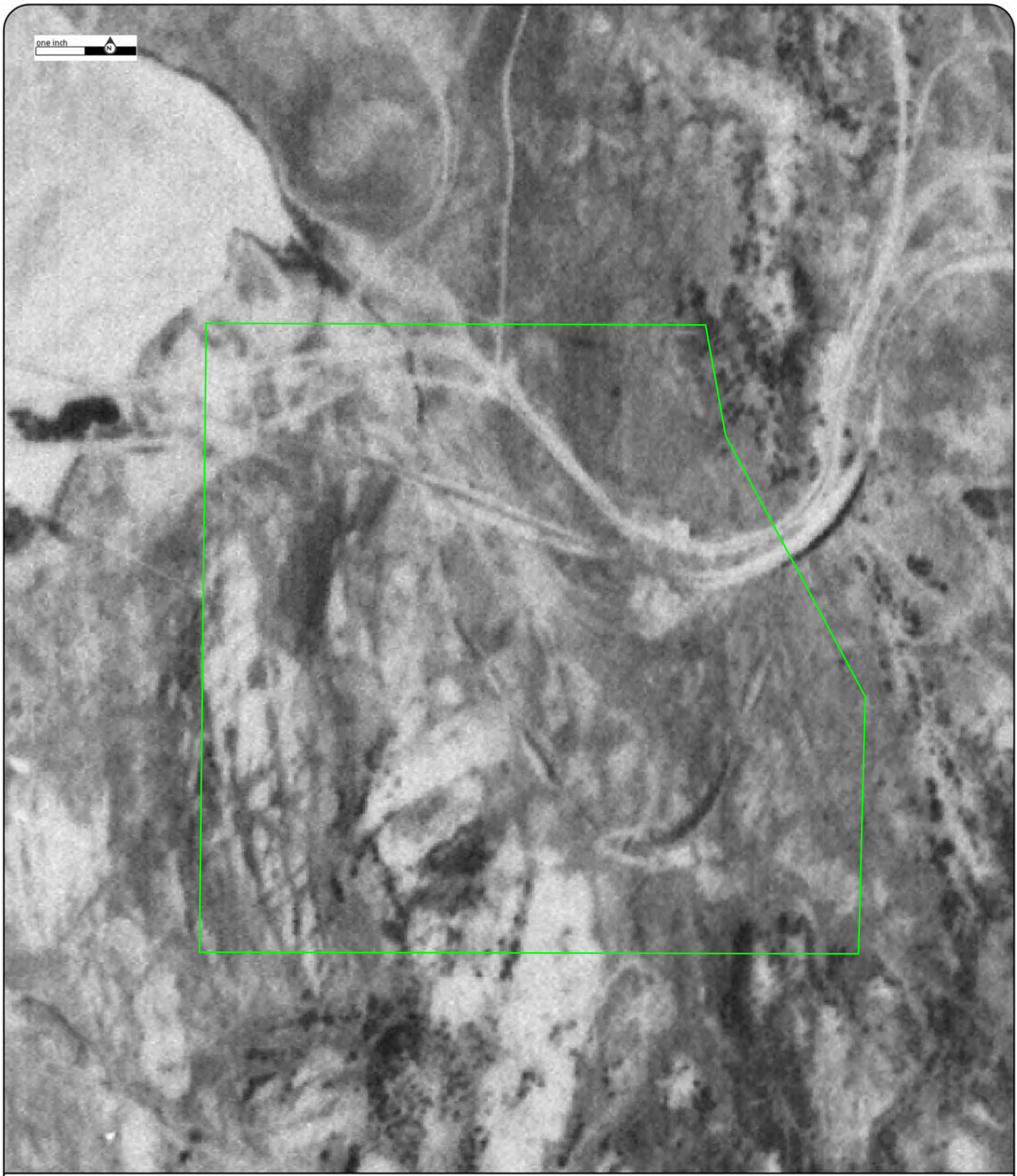

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Scale:1" to 500'
Comment:

Address:Parcel SS-86, Heber City, UT
Approx Center:40.67165638/-111.43946572

Order No:21040700811

ERIS

ERIS

CITY DIRECTORY

Project Property:	*Parcel SS-86 Phase I and Baseline Sampling* *Parcel SS-86* *Heber City, UT*
Project No:	*TBD Salt Lake City*
Requested By:	*Geosyntec Consultants*
Order No:	*21040700811*
Date Completed:	*April 12, 2021*

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

April 12, 2021
RE: CITY DIRECTORY RESEARCH
Parcel SS-86 Phase I and Baseline Sampling
Parcel SS-86 Heber City, UT

Thank you for contacng ERIS f or an City Directory Search for the site described above. Our staff has conducted a reverse lisng City Dir ectory search to determine prior occupants of the subject site and adjacent properes. W e have provided the nearest addresses(s) when adjacent addresses are not listed. If we have searched a range of addresses, all addresses in that range found in the Directory are included.

Note: Reverse Lisng Dir ectories generally are focused on more highly developed areas. Newly developed areas may be covered in the more recent years, but the older directories will tend to cover only the "central" parts of the city. To complete the search, we have either uliz ed the ACPL, Library of Congress, State Archives, and/or a regional library or history center as well as mulple digiz ed directories. These do not claim to be a complete collecon of all r everse lisng city dir ectories produced.

ERIS has made every effort to provide accurate and complete informaon but shall not be held liable f or missing, incomplete or inaccurate informaon. To complete this search we used the general range(s) below to search for relevant findings. If you believe there are addional addr esses or streets that require searching please contact us at 866-517-5204.

Search Criteria:
1240-3345 of Richardson Flat Rd
13700-14000 of Jordanelle Pkwy

Search Results Summary

Date	Source	Comment
2018	DIGITAL BUSINESS DIRECTORY	
2014	DIGITAL BUSINESS DIRECTORY	
2009	DIGITAL BUSINESS DIRECTORY	
2006	COLE	
2001	COLE	
1991	COLE	

2018
SOURCE: DIGITAL BUSINESS DIRECTORY

JORDANELLE PKWY

NO LISTING FOUND FOR THIS YEAR...

2018
SOURCE: DIGITAL BUSINESS DIRECTORY

RICHARDSON FLAT RD

NO LISTING FOUND FOR THIS YEAR...

2014
SOURCE: DIGITAL BUSINESS DIRECTORY

JORDANELLE PKWY

NO LISTING FOUND FOR THIS YEAR...

2014
SOURCE: DIGITAL BUSINESS DIRECTORY

RICHARDSON FLAT RD

NO LISTING FOUND FOR THIS YEAR...

2009
SOURCE: DIGITAL BUSINESS DIRECTORY

JORDANELLE PKWY

NO LISTING FOUND FOR THIS YEAR...

2009
SOURCE: DIGITAL BUSINESS DIRECTORY

RICHARDSON FLAT RD

NO LISTING FOUND FOR THIS YEAR...

2006
SOURCE: COLE

JORDANELLE PKWY

STREET NOT LISTED

2006
SOURCE: COLE

RICHARDSON FLAT RD

STREET NOT LISTED

2001
SOURCE: COLE

JORDANELLE PKWY

STREET NOT LISTED

2001
SOURCE: COLE

RICHARDSON FLAT RD

STREET NOT LISTED

1991
SOURCE: COLE

JORDANELLE PKWY

STREET NOT LISTED

1991
SOURCE: COLE

RICHARDSON FLAT RD

STREET NOT LISTED

--- END REPORT ---

ERIS

FIRE INSURANCE MAPS

Project Property:	Parcel SS-86 Phase I and Baseline Sampling Parcel SS-86 Heber City UT
Project No:	TBD Salt Lake City
Requested By:	Geosyntec Consultants
Order No:	21040700811
Date Completed:	April 07, 2021

Please note that no information was found for your site or adjacent properties.

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

PSR
PHYSICAL SETTING REPORT

Property Information

Order Number:		21040700811p
Date Completed:		April 7, 2021
Project Number:		TBD Salt Lake City
Project Property:		Parcel SS-86 Phase I and Baseline Sampling Parcel SS-86 Heber City UT
Coordinates:		
	Latitude:	40.67165638
	Longitude:	-111.43946572
	UTM Northing:	4502401.68132 Meters
	UTM Easting:	462857.40064 Meters
	UTM Zone:	UTM Zone 12T
	Elevation:	6,636.28 ft
	Slope Direction:	NNE

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Geologic Information....15
Soil Information....17
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Summary....33
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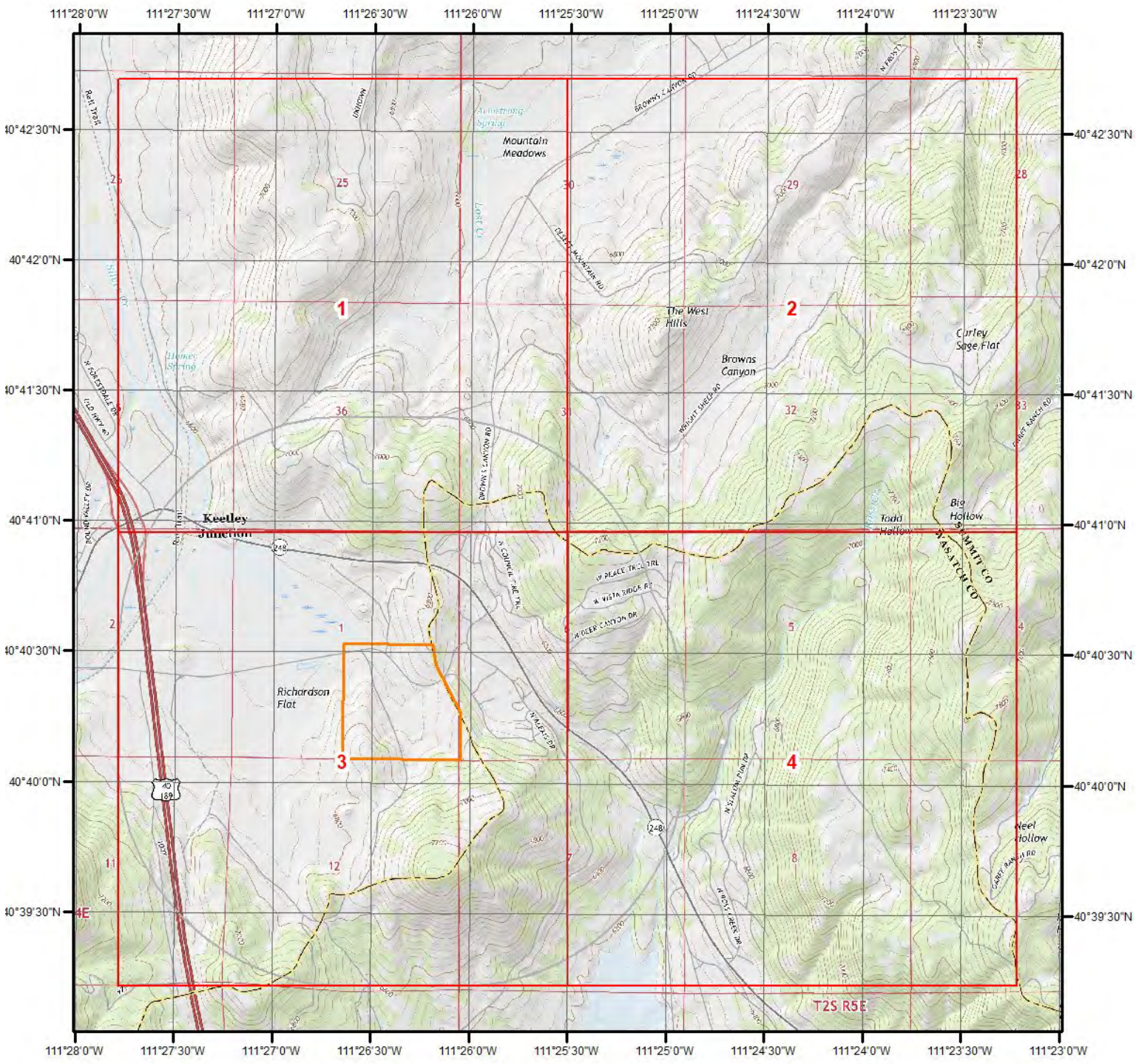
The ERIS ***Physical Setting Report - PSR*** provides comprehensive information about the physical setting around a site and includes a complete overview of topography and surface topology, in addition to hydrologic, geologic and soil characteristics. The location and detailed attributes of oil and gas wells, water wells, public water systems and radon are also included for review.

The compilation of both physical characteristics of a site and additional attribute data is useful in assessing the impact of migration of contaminants and subsequent impact on soils and groundwater.

Disclaimer

This Report does not provide a full environmental evaluation for the site or adjacent properties. Please see the terms and disclaimer at the end of the Report for greater detail.

Topographic Information



Current USGS Topo (2017)

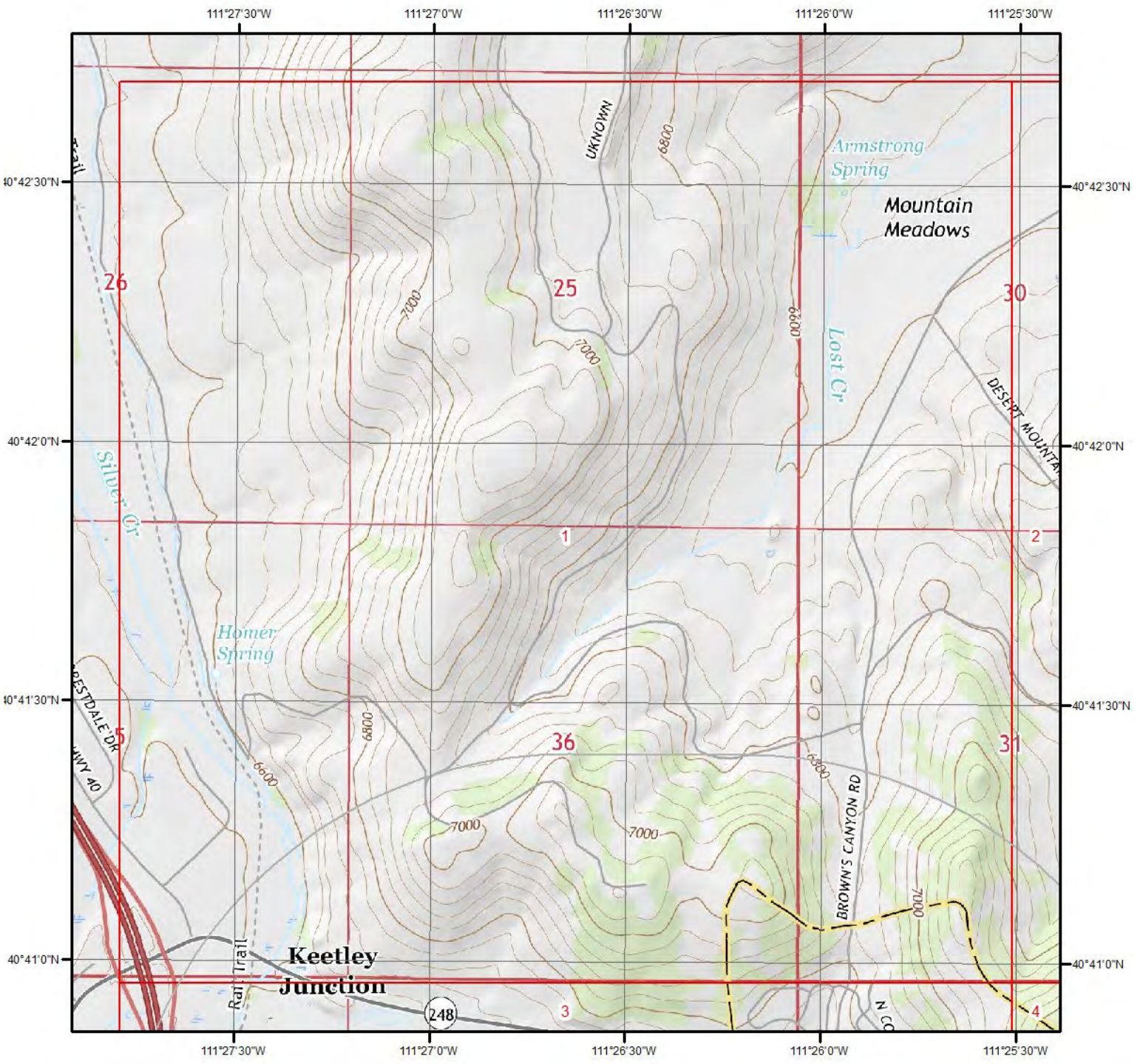
0 0.2 0.4 0.8 1.2 1.6 Miles

N

Quadrangle(s): Brighton,UT; Francis,UT; Heber City,UT; Kamas,UT; Park City East,UT; Park City West,UT

Source: USGS 7.5 Minute Topographic Map

Topographic Information



Current USGS Topo - Page 1

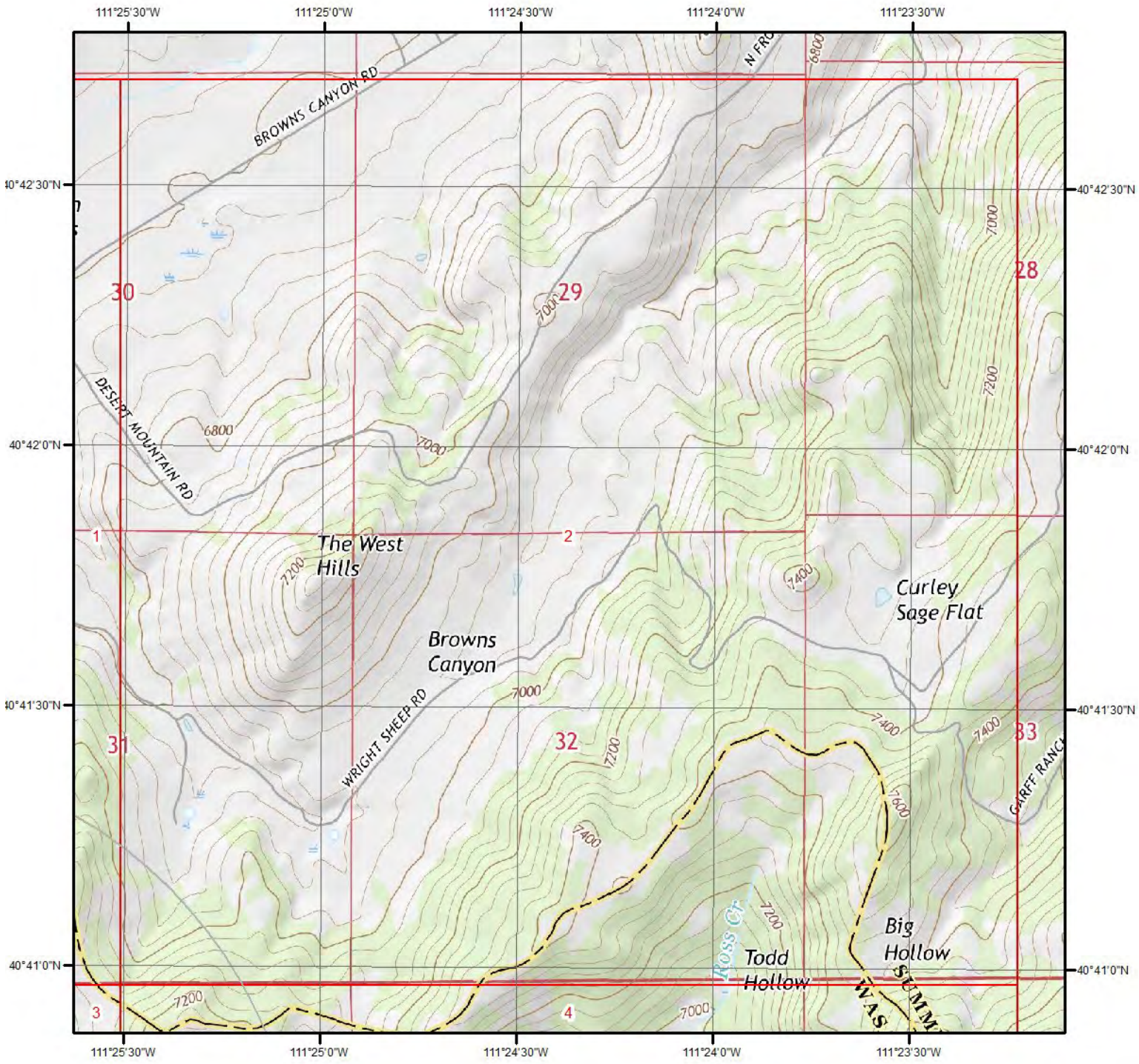
0 0.2 0.4 0.8 Miles

N

Quadrangle(s): Park City East,UT

Source: USGS 7.5 Minute Topographic Map

Topographic Information



Current USGS Topo - Page 2

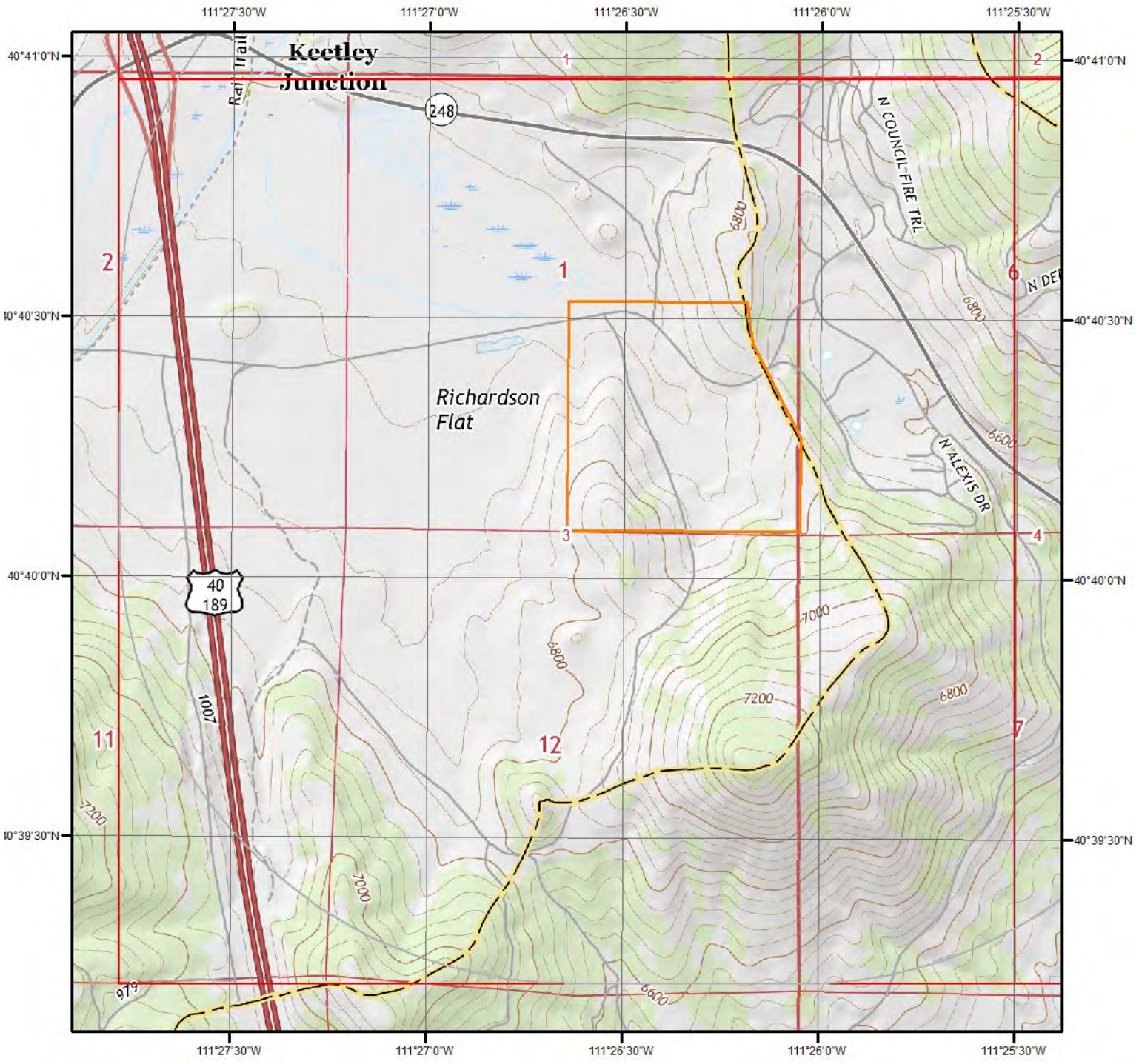
0 0.2 0.4 0.8 Miles

N

Quadrangle(s): Park City East,UT

Source: USGS 7.5 Minute Topographic Map

Topographic Information



Current USGS Topo - Page 3

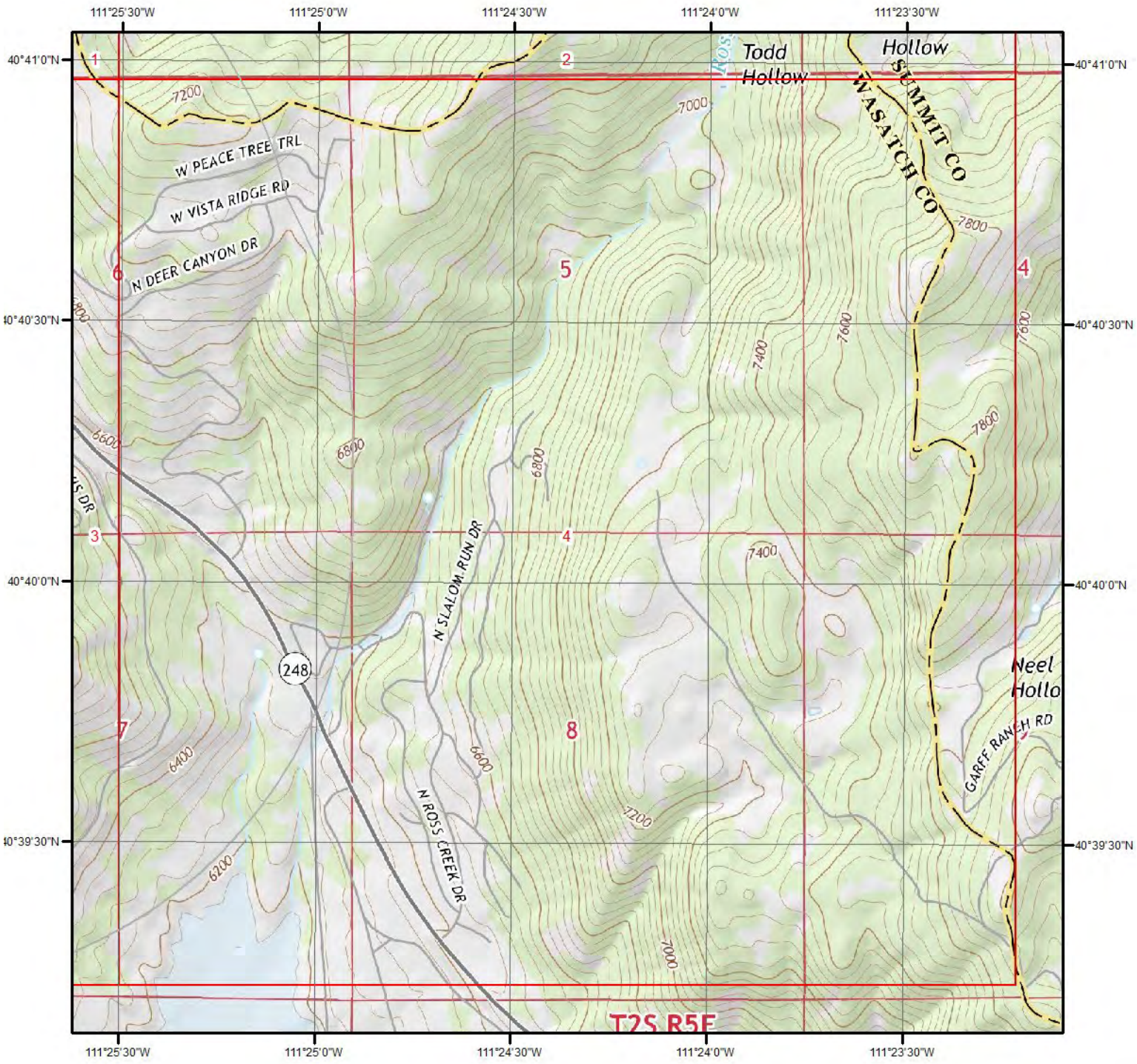
0 0.2 0.4 0.8 Miles

N

Quadrangle(s): Park City East,UT

Source: USGS 7.5 Minute Topographic Map

Topographic Information



Current USGS Topo - Page 4

0 0.2 0.4 0.8 Miles

N

Quadrangle(s): Park City East,UT

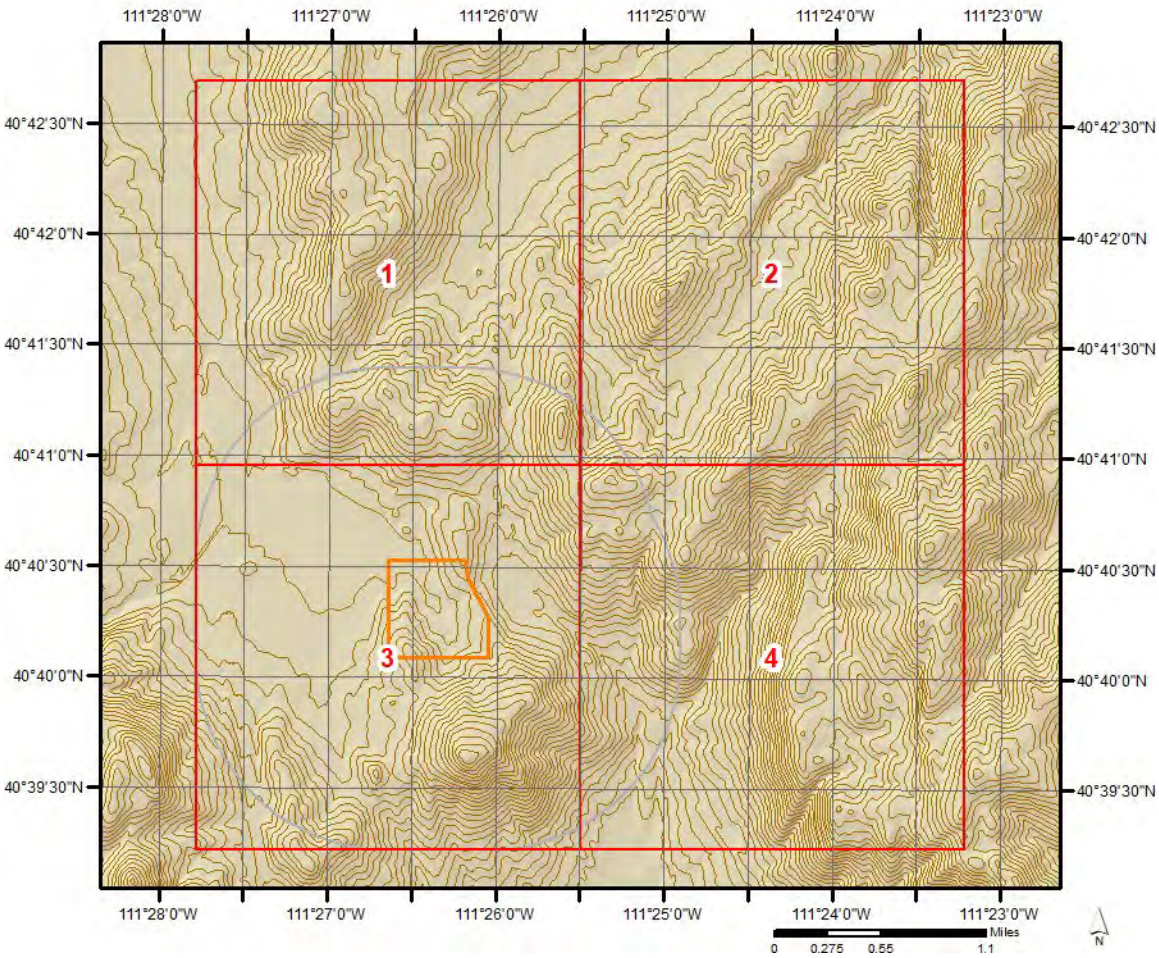
Source: USGS 7.5 Minute Topographic Map

Topographic Information

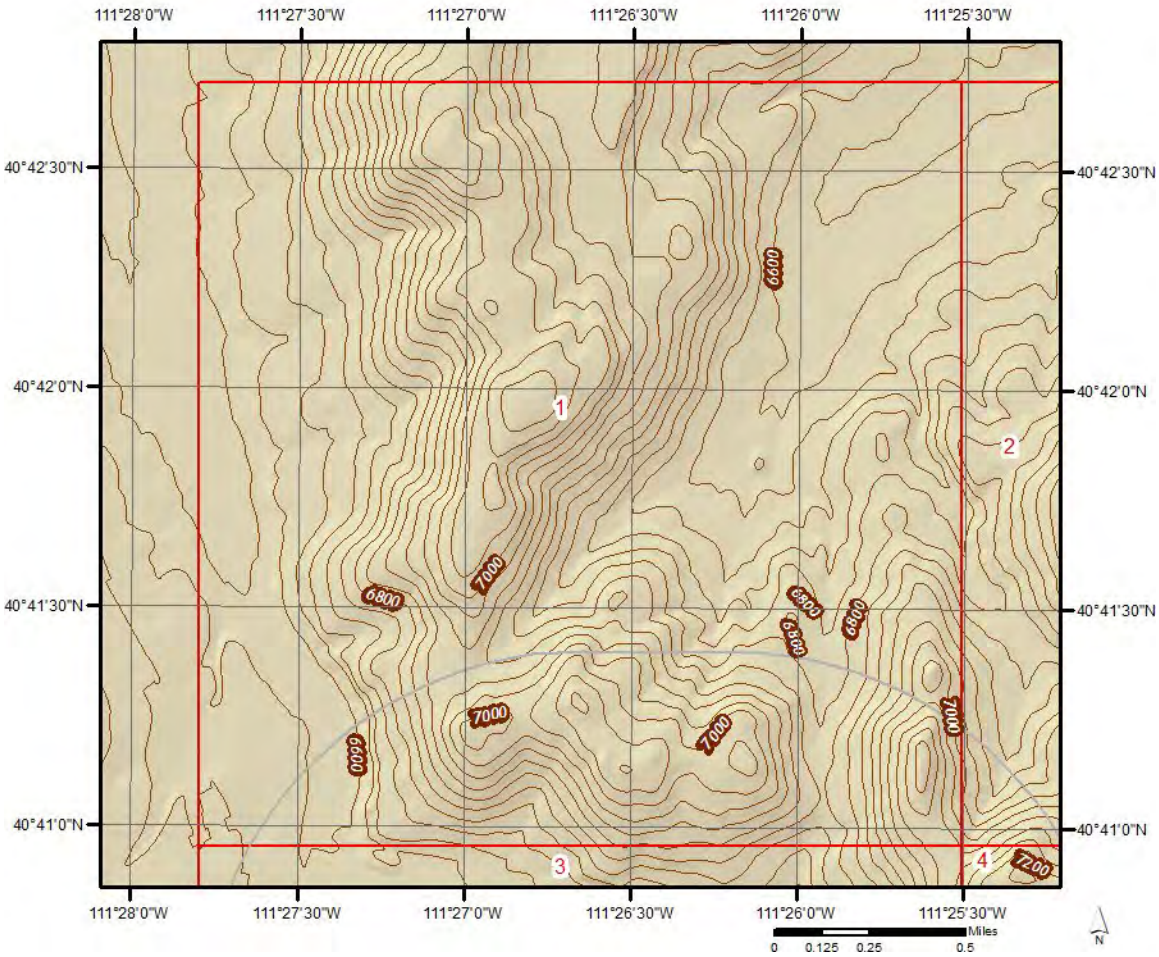
The previous topographic map(s) are created by seamlessly merging and cutting current USGS topographic data. Below are shaded relief map(s), derived from USGS elevation data to show surrounding topography in further detail.

Topographic information at project property:

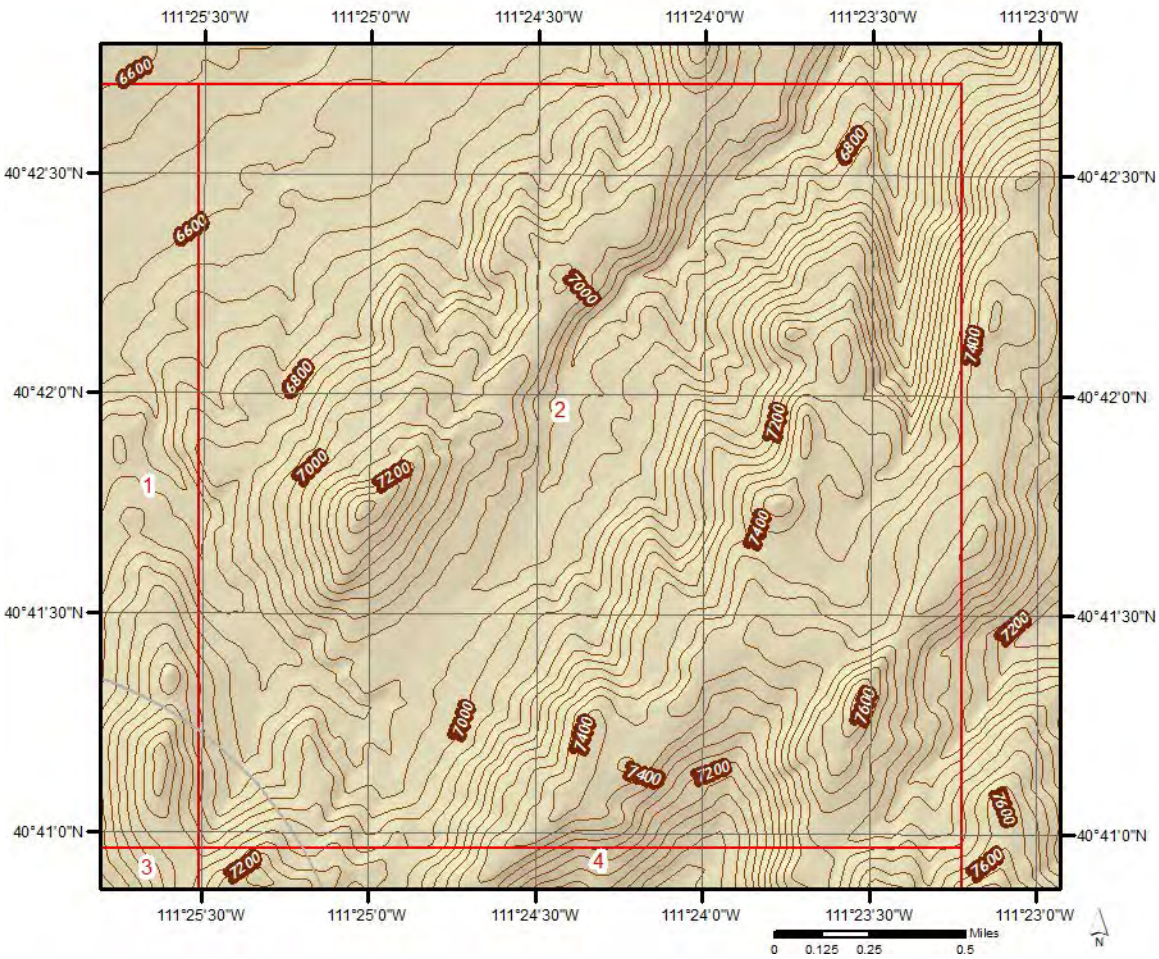
Elevation:	6,636.28 ft
Slope Direction:	NNE



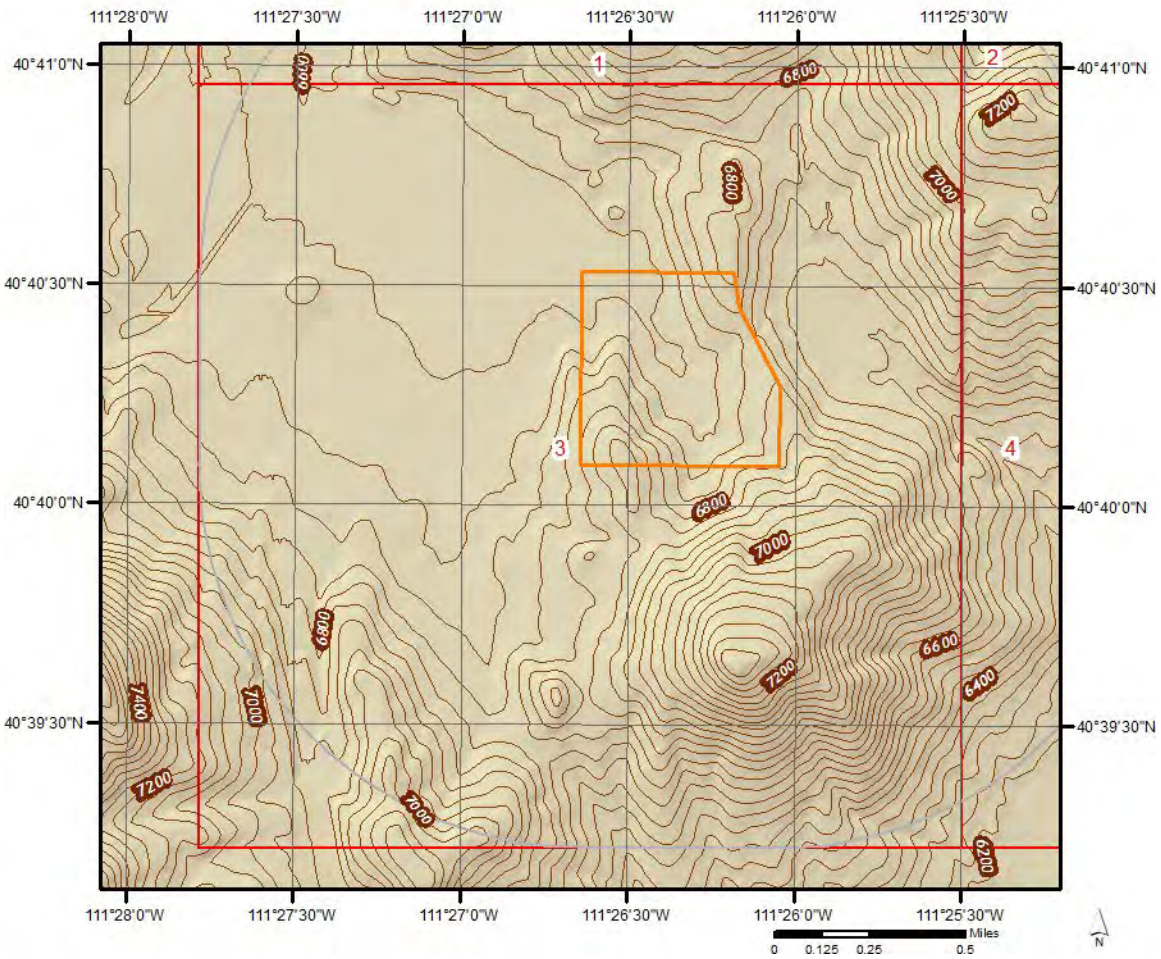
Topographic Information



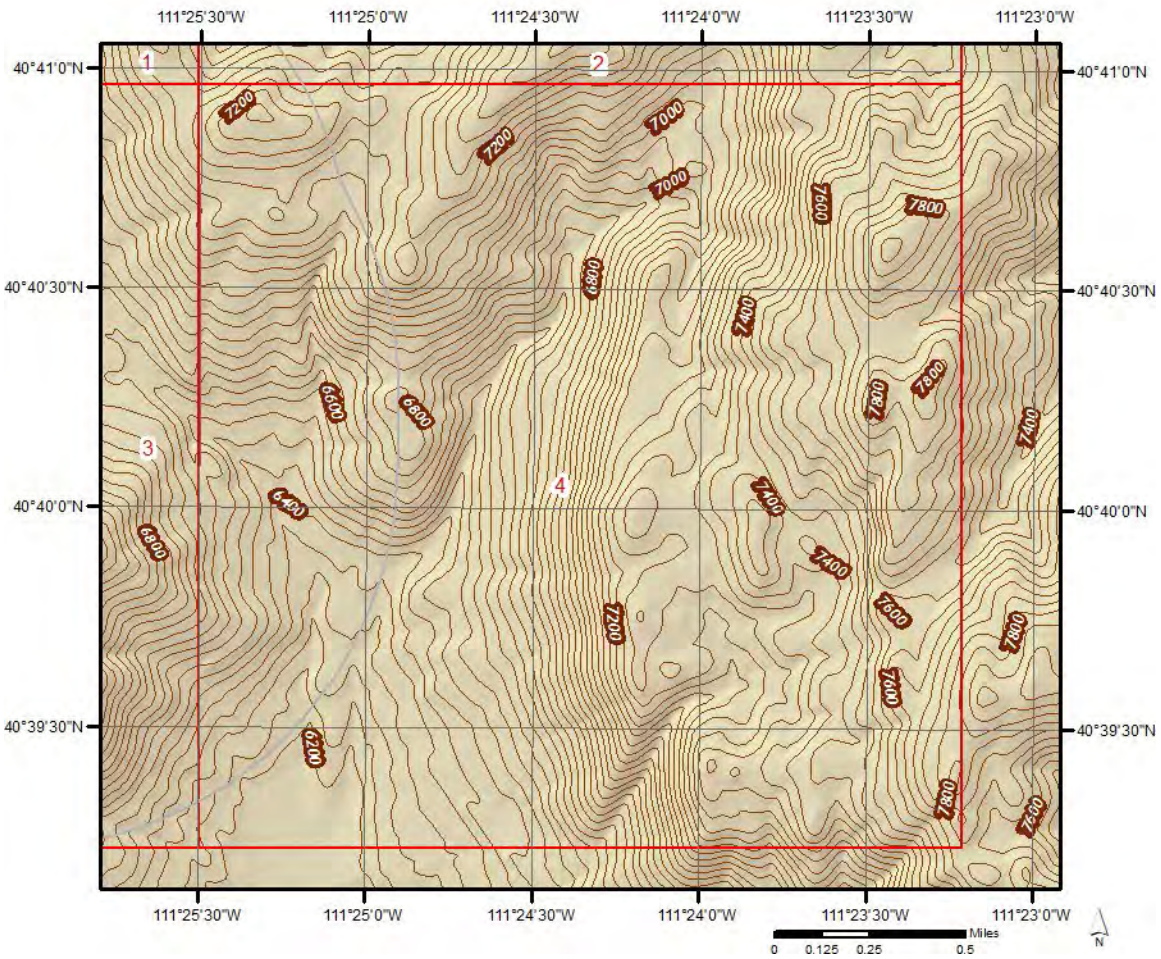
Topographic Information



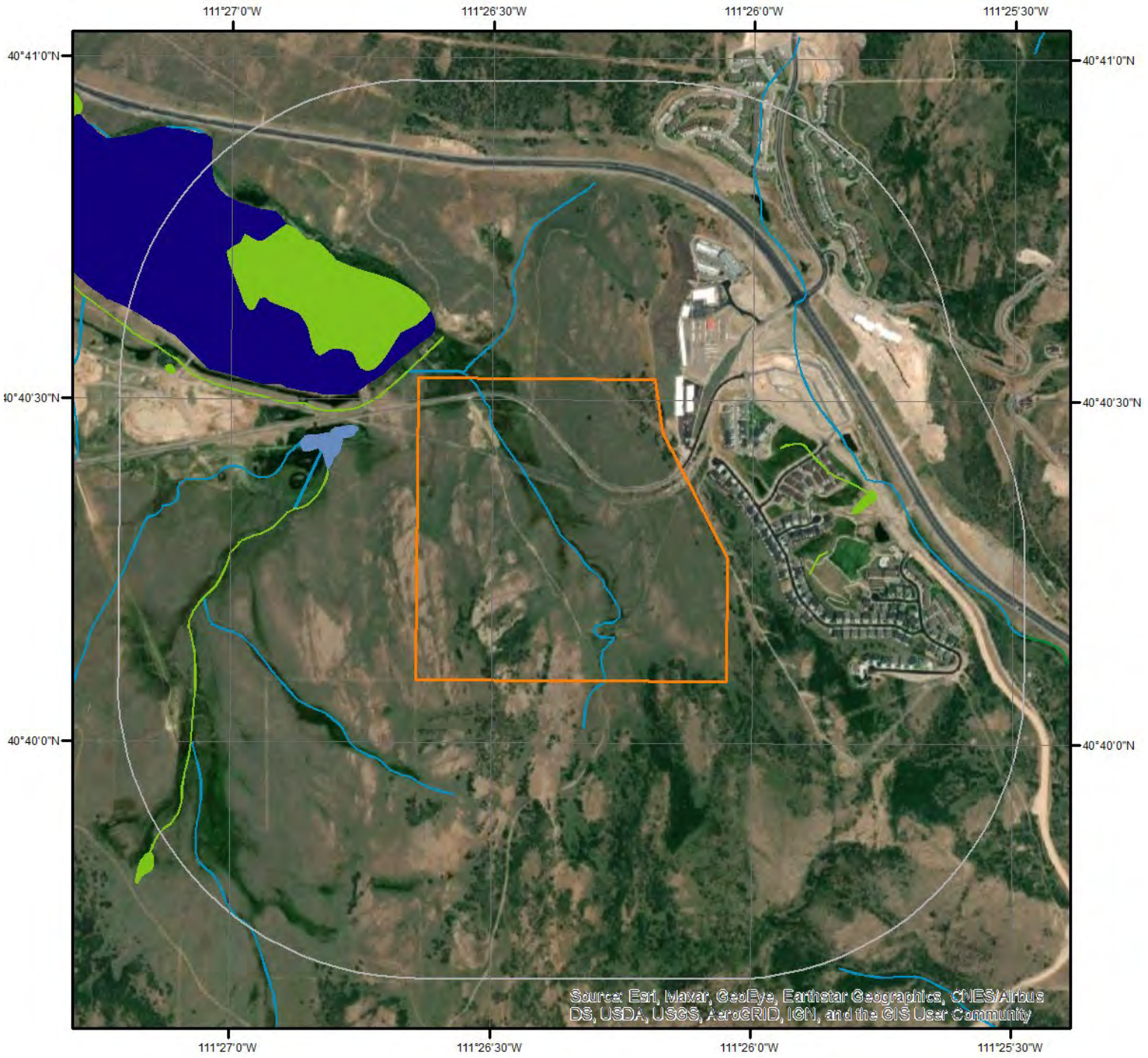
Topographic Information



Topographic Information



Hydrologic Information



Wetland

Miles
0 0.1 0.2 0.4
N

This map shows wetland existence using data from US Fish & Wildlife.
Data coverage is shown to the right. Gray indicates no data available in the area.

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

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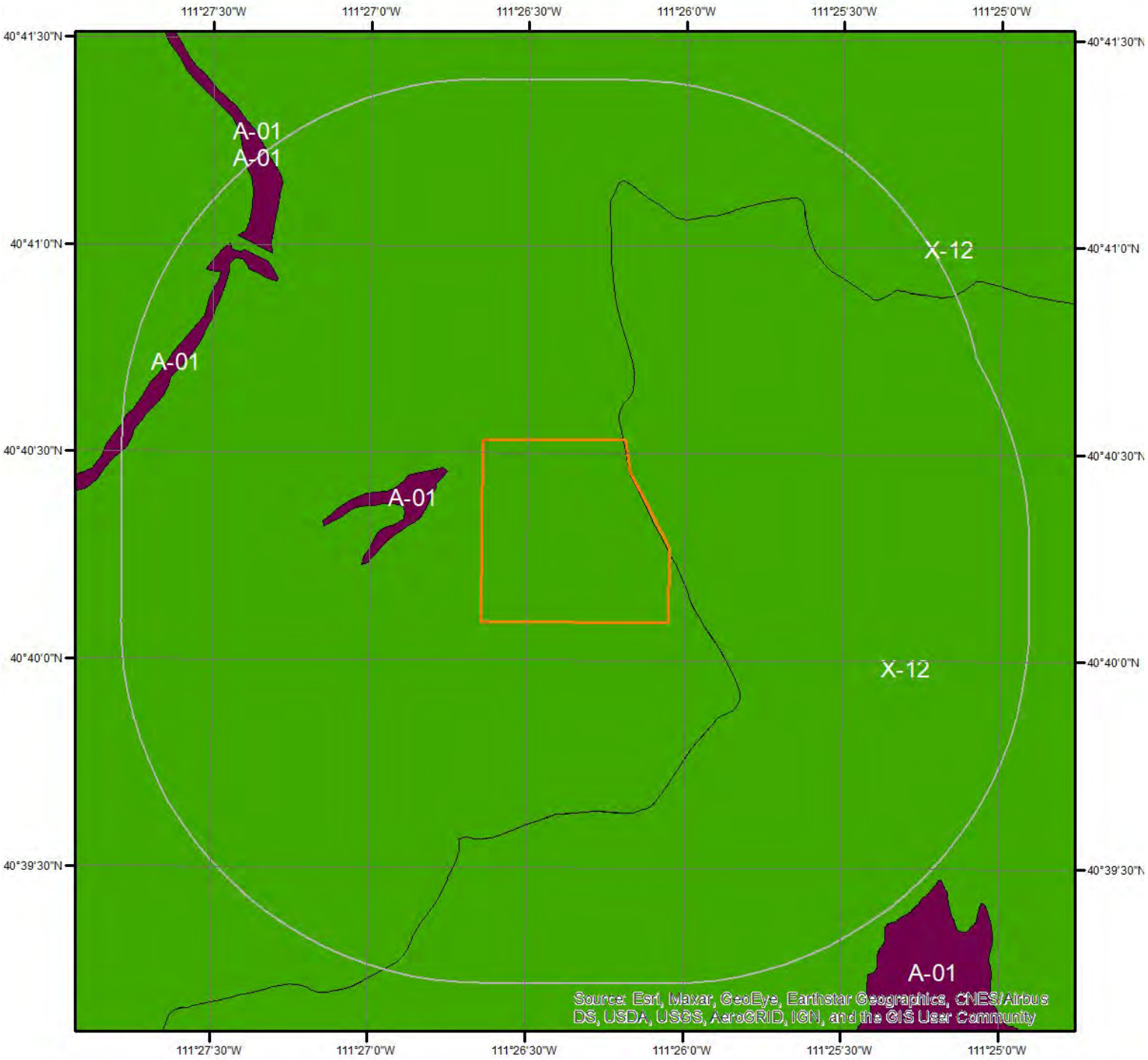
Hydrologic Information



Flood Hazard Zones

Miles
0 0.2 0.4

This map shows FEMA flood hazard zones. FIRM panels are shown to the right, and blank indicates no data is available.

A	AO	X
A99	V	OPEN WATER
AE	VE	NOT POPULATED
AH	D	AREA NOT INCLUDED

N

49051C0025E

ERIS

Hydrologic Information

The Wetland Type map shows wetland existence overlaid on an aerial imagery. The Flood Hazard Zones map shows FEMA flood hazard zones overlaid on an aerial imagery. Relevant FIRM panels and detailed zone information is provided below.

Available FIRM Panels in area:	49043C0940C(effective:2006-03-16) 49043C0950C(effective:2006-03-16) 49051C0025E(effective:2012-03-15)

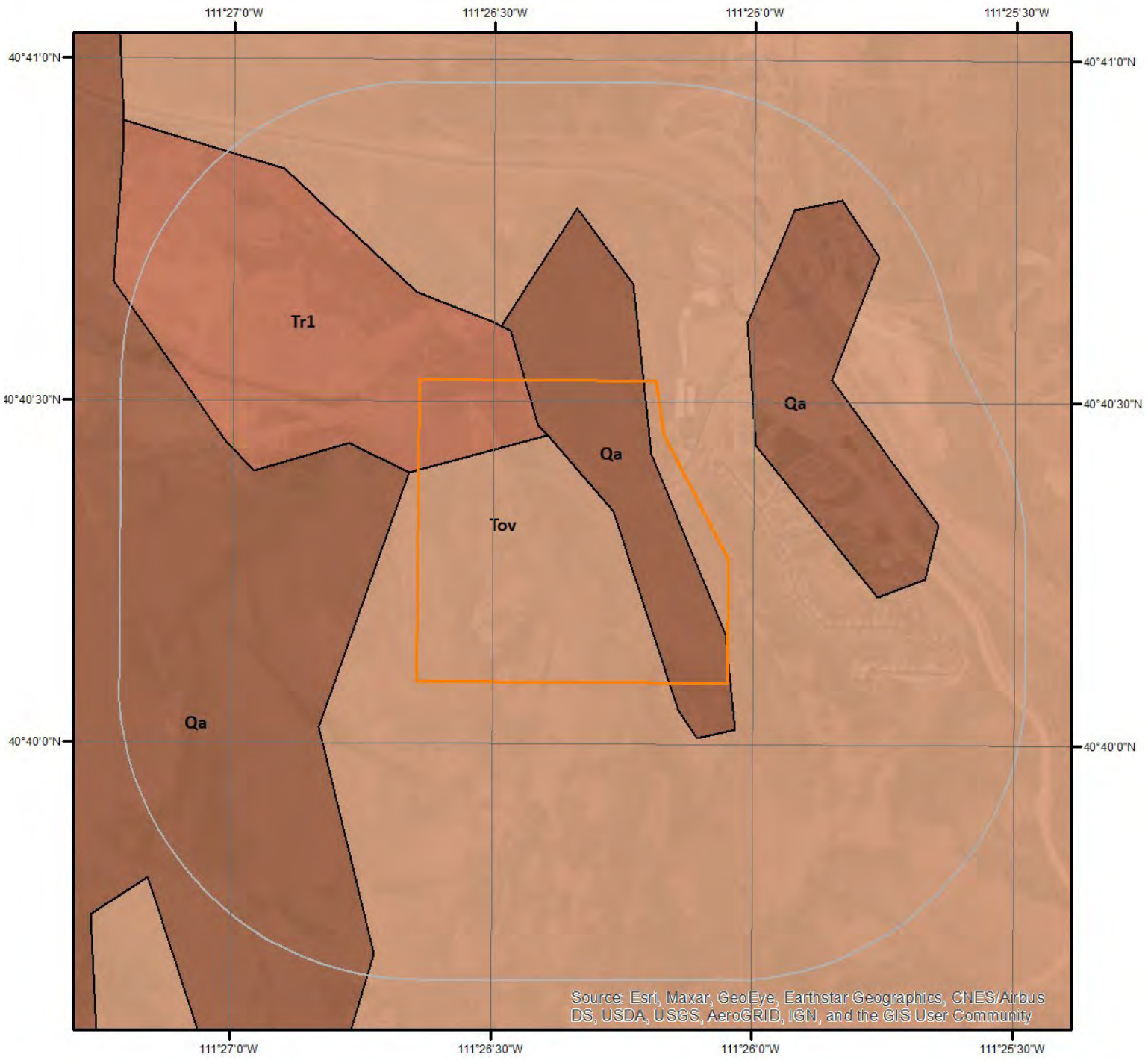
Flood Zone A-01

Zone:	A
Zone subtype:	

Flood Zone X-12

Zone:	X
Zone subtype:	AREA OF MINIMAL FLOOD HAZARD

Geologic Information



Miles
0 0.2 0.4

N

Geologic Units

This maps shows geologic units in the area. Please refer to the report for detailed descriptions.

ERIS

Geologic Information

The previous page shows USGS geology information. Detailed information about each unit is provided below.

Geologic Unit Tov

Unit Name:	Oligocene volcanic rocks
Unit Age:	Late Eocene to Oligocene
Primary Rock Type:	dacite
Secondary Rock Type:	rhyolite
Unit Description:	No description available.

Geologic Unit Qa

Unit Name:	Quaternary alluvium and colluvium
Unit Age:	Quaternary
Primary Rock Type:	alluvium
Secondary Rock Type:	colluvium
Unit Description:	No description available.

Geologic Unit Tr1

Unit Name:	Triassic (1) sedimentary rocks in Salt Lake City-Coalville-Randolph region
Unit Age:	Early Triassic
Primary Rock Type:	mudstone
Secondary Rock Type:	limestone
Unit Description:	No description available.

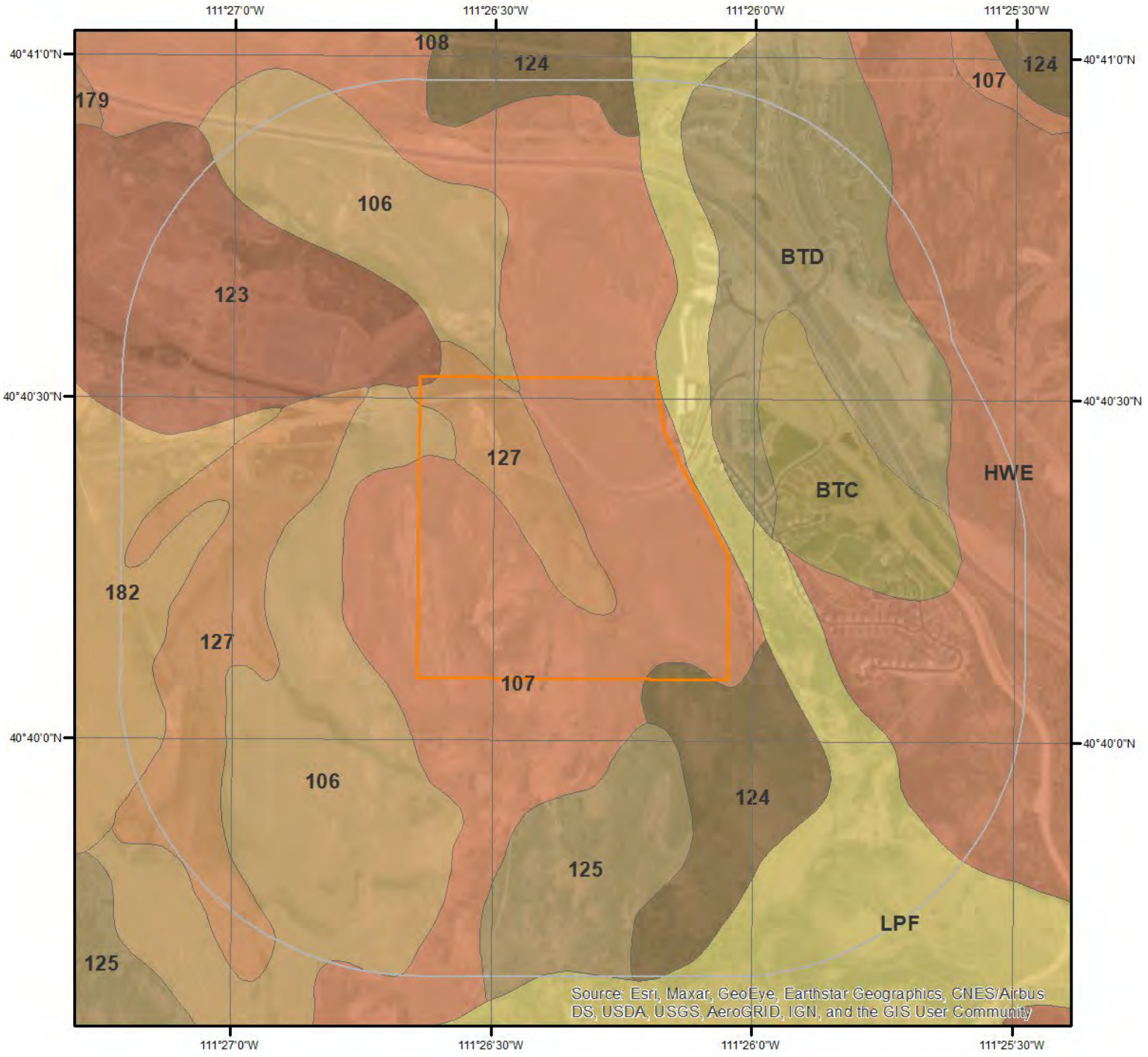
Geologic Unit Qa

Unit Name:	Quaternary alluvium and colluvium
Unit Age:	Quaternary
Primary Rock Type:	alluvium
Secondary Rock Type:	colluvium
Unit Description:	No description available.

Geologic Unit Qa

Unit Name:	Quaternary alluvium and colluvium
Unit Age:	Quaternary
Primary Rock Type:	alluvium
Secondary Rock Type:	colluvium
Unit Description:	No description available.

Soil Information



SSURGO Soils

0 0.2 0.4 Miles

N

This maps shows SSURGO soil units around the target property. Please refer to the report for detailed soil descriptions.

ERIS

Soil Information

The previous page shows a soil map using SSURGO data from USDA Natural Resources Conservation Service. Detailed information about each unit is provided below.

Map Unit 106 (4.78%)

Map Unit Name:	Ayoub cobbly loam, 2 to 15 percent slopes
Bedrock Depth - Min:	89cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.

Major components are printed below

Ayoub(85%)

horizon A(0cm to 15cm)	Cobbly loam
horizon Bt1(15cm to 30cm)	Gravelly clay loam
horizon Bt2(30cm to 46cm)	Gravelly clay loam
horizon Bt3(46cm to 58cm)	Gravelly clay loam
horizon C(58cm to 89cm)	Very cobbly loam
horizon R(89cm to 114cm)	Bedrock

Component Description:

Minor map unit components are excluded from this report.

Map Unit: 106 - Ayoub cobbly loam, 2 to 15 percent slopes

Component: Ayoub (85%)
The Ayoub component makes up 85 percent of the map unit. Slopes are 2 to 15 percent. This component is on mountain slopes. The parent material consists of slope alluvium derived from andesite over residuum weathered from andesite. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA406UT Mountain Gravelly Loam (mountain Big Sagebrush) ecological site. Nonirrigated land capability classification is 6s. This soil does not meet hydric criteria.

Component: Dunford (5%)
Generated brief soil descriptions are created for major components. The Dunford soil is a minor component.

Component: Ant Flat (5%)
Generated brief soil descriptions are created for major components. The Ant Flat soil is a minor component.

Component: Melling (5%)
Generated brief soil descriptions are created for major components. The Melling soil is a minor component.

Map Unit 107 (11.45%)

Map Unit Name:	Ayoub-Dunford-Melling complex, 15 to 30 percent slopes
Bedrock Depth - Min:	48cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.

Major components are printed below

Ayoub(45%)

horizon A(0cm to 15cm)	Cobbly loam

horizon Bt1(15cm to 30cm)	Gravelly clay loam
horizon Bt2(30cm to 46cm)	Gravelly clay loam
horizon Bt3(46cm to 58cm)	Gravelly clay loam
horizon C(58cm to 89cm)	Very cobbly loam
horizon R(89cm to 114cm)	Bedrock
Melling(20%)	
horizon A(0cm to 15cm)	Extremely stony loam
horizon Bt(15cm to 48cm)	Very cobbly clay loam
horizon R(48cm to 73cm)	Bedrock
Dunford(20%)	
horizon A(0cm to 25cm)	Cobbly loam
horizon Bt1(25cm to 53cm)	Gravelly clay loam
horizon Bt2(53cm to 91cm)	Gravelly clay loam
horizon R(91cm to 116cm)	Bedrock

Component Description:

Minor map unit components are excluded from this report.

Map Unit: 107 - Ayoub-Dunford-Melling complex, 15 to 30 percent slopes

Component: Ayoub (45%)
The Ayoub component makes up 45 percent of the map unit. Slopes are 15 to 30 percent. This component is on mountain slopes. The parent material consists of colluvium and slope alluvium derived from andesite. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA406UT Mountain Gravelly Loam (mountain Big Sagebrush) ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Dunford (20%)
The Dunford component makes up 20 percent of the map unit. Slopes are 15 to 30 percent. This component is on mountain slopes. The parent material consists of colluvium and slope alluvium derived from andesite. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA410UT Mountain Gravelly Loam (oak) ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Melling (20%)
The Melling component makes up 20 percent of the map unit. Slopes are 15 to 30 percent. This component is on mountain slopes. The parent material consists of colluvium and/or slope alluvium. Depth to a root restrictive layer, bedrock, lithic, is 12 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA446UT Mountain Shallow Loam (mountain Big Sagebrush) ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Fewkes (5%)
Generated brief soil descriptions are created for major components. The Fewkes soil is a minor component.

Component: Echocreek (4%)
Generated brief soil descriptions are created for major components. The Echocreek soil is a minor component.

Component: Hades (3%)
Generated brief soil descriptions are created for major components. The Hades soil is a minor component.

Component: Rock outcrop (3%)
Generated brief soil descriptions are created for major components. The Rock outcrop soil is a minor component.

Map Unit 123 (2.72%)

Soil Information

Map Unit Name:	Dumps, mines

No more attributes available for this map unit

Component Description:

Minor map unit components are excluded from this report.

Map Unit: 123 - Dumps, mines

Component: Dumps, mines (100%)
Generated brief soil descriptions are created for major soil components. The Dumps, mines is a miscellaneous area.

Map Unit 124 (3.87%)

Map Unit Name:	Dunford-Ayoub-Melling complex, 15 to 30 percent slopes
Bedrock Depth - Min:	48cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.

Major components are printed below

Dunford(45%)	
horizon A(0cm to 25cm)	Cobbly loam
horizon Bt1(25cm to 53cm)	Gravelly clay loam
horizon Bt2(53cm to 91cm)	Gravelly clay loam
horizon R(91cm to 116cm)	Bedrock
Melling(20%)	
horizon A(0cm to 15cm)	Extremely stony loam
horizon Bt(15cm to 48cm)	Very cobbly clay loam
horizon R(48cm to 73cm)	Bedrock
Ayoub(20%)	
horizon A(0cm to 15cm)	Cobbly loam
horizon Bt1(15cm to 30cm)	Gravelly clay loam
horizon Bt2(30cm to 46cm)	Gravelly clay loam
horizon Bt3(46cm to 58cm)	Gravelly clay loam
horizon C(58cm to 89cm)	Very cobbly loam
horizon R(89cm to 114cm)	Bedrock

Component Description:

Minor map unit components are excluded from this report.

Map Unit: 124 - Dunford-Ayoub-Melling complex, 15 to 30 percent slopes

Component: Dunford (45%)
The Dunford component makes up 45 percent of the map unit. Slopes are 15 to 30 percent. This component is on mountain slopes. The parent material consists of colluvium and slope alluvium derived from andesite. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA410UT Mountain Gravelly Loam (oak) ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Melling (20%)
The Melling component makes up 20 percent of the map unit. Slopes are 15 to 30 percent. This component is on mountain slopes. The parent material consists of colluvium derived from andesite over residuum weathered from andesite. Depth to a root restrictive layer, bedrock, lithic, is 12 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface

horizon is about 4 percent. This component is in the R047XA446UT Mountain Shallow Loam (mountain Big Sagebrush) ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Ayoub (20%)
The Ayoub component makes up 20 percent of the map unit. Slopes are 15 to 30 percent. This component is on mountain slopes. The parent material consists of colluvium and slope alluvium derived from andesite. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA406UT Mountain Gravelly Loam (mountain Big Sagebrush) ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Rock outcrop (5%)
Generated brief soil descriptions are created for major components. The Rock outcrop soil is a minor component.

Component: Hades (4%)
Generated brief soil descriptions are created for major components. The Hades soil is a minor component.

Component: Echocreek (3%)
Generated brief soil descriptions are created for major components. The Echocreek soil is a minor component.

Component: Fewkes (3%)
Generated brief soil descriptions are created for major components. The Fewkes soil is a minor component.

Map Unit 125 (1.12%)

Map Unit Name:	Dunford-Ayoub-Melling complex, 30 to 60 percent slopes
Bedrock Depth - Min:	48cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.

Major components are printed below

Dunford(45%)	
horizon A(0cm to 25cm)	Cobbly loam
horizon Bt1(25cm to 53cm)	Gravelly clay loam
horizon Bt2(53cm to 91cm)	Gravelly clay loam
horizon R(91cm to 116cm)	Bedrock
Melling(20%)	
horizon A(0cm to 15cm)	Extremely stony loam
horizon Bt(15cm to 48cm)	Very cobbly clay loam
horizon R(48cm to 73cm)	Bedrock
Ayoub(20%)	
horizon A(0cm to 15cm)	Cobbly loam
horizon Bt1(15cm to 30cm)	Gravelly clay loam
horizon Bt2(30cm to 46cm)	Gravelly clay loam
horizon Bt3(46cm to 58cm)	Gravelly clay loam
horizon C(58cm to 89cm)	Very cobbly loam
horizon R(89cm to 114cm)	Bedrock

Component Description:

Minor map unit components are excluded from this report.

Map Unit: 125 - Dunford-Ayoub-Melling complex, 30 to 60 percent slopes

Component: Dunford (45%)
The Dunford component makes up 45 percent of the map unit. Slopes are 30 to 60 percent. This component is on mountain slopes. The parent material consists of colluvium derived from andesite. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60

inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA410UT Mountain Gravelly Loam (oak) ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Component: Ayoub (20%)
The Ayoub component makes up 20 percent of the map unit. Slopes are 30 to 60 percent. This component is on mountain slopes. The parent material consists of colluvium derived from andesite. Depth to a root restrictive layer, bedrock, lithic, is 20 to 40 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA406UT Mountain Gravelly Loam (mountain Big Sagebrush) ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Component: Melling (20%)
The Melling component makes up 20 percent of the map unit. Slopes are 30 to 60 percent. This component is on mountain slopes. The parent material consists of colluvium derived from andesite. Depth to a root restrictive layer, bedrock, lithic, is 12 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA446UT Mountain Shallow Loam (mountain Big Sagebrush) ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Component: Rock outcrop (5%)
Generated brief soil descriptions are created for major components. The Rock outcrop soil is a minor component.

Component: Hades (4%)
Generated brief soil descriptions are created for major components. The Hades soil is a minor component.

Component: Fewkes (3%)
Generated brief soil descriptions are created for major components. The Fewkes soil is a minor component.

Component: Echocreek (3%)
Generated brief soil descriptions are created for major components. The Echocreek soil is a minor component.

Map Unit 127 (2.19%)

Map Unit Name:	Echocreek-Kovich loams, 0 to 10 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	46cm
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.
Major components are printed below	
Echocreek(65%)	
horizon Ap(0cm to 18cm)	Loam
horizon A1(18cm to 46cm)	Loam
horizon A2(46cm to 66cm)	Loam
horizon Bk1(66cm to 97cm)	Loam
horizon Bk2(97cm to 114cm)	Loam
horizon Bk3(114cm to 152cm)	Loam
Kovich(20%)	
horizon A1(0cm to 23cm)	Loam
horizon A2(23cm to 56cm)	Clay loam
horizon A3(56cm to 74cm)	Clay loam
horizon 2C(74cm to 112cm)	Fine sandy loam
horizon 3C(112cm to 152cm)	Very gravelly loamy fine sand

Component Description:

Soil Information

Minor map unit components are excluded from this report.

Map Unit: 127 - Echocreek-Kovich loams, 0 to 10 percent slopes

Component: Echocreek (65%)
The Echocreek component makes up 65 percent of the map unit. Slopes are 2 to 10 percent. This component is on stream terraces. The parent material consists of alluvium derived from sandstone, quartzite and shale. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA310UT Upland Loam (basin Wildrye) ecological site. Nonirrigated land capability classification is 4s. Irrigated land capability classification is 3e. This soil does not meet hydric criteria. The calcium carbonate equivalent within 40 inches, typically, does not exceed 9 percent. There are no saline horizons within 30 inches of the soil surface.

Component: Kovich (20%)
The Kovich component makes up 20 percent of the map unit. Slopes are 0 to 3 percent. This component is on flood plains. The parent material consists of alluvium derived from sandstone, quartzite and shale. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is poorly drained. Water movement in the most restrictive layer is moderately high. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is low. This soil is occasionally flooded. It is not ponded. A seasonal zone of water saturation is at 18 inches during April, May, June. Organic matter content in the surface horizon is about 8 percent. This component is in the R047XA008UT Intezonal Wet Fresh Meadow (sedge) ecological site. Nonirrigated land capability classification is 7w. Irrigated land capability classification is 6w. This soil meets hydric criteria.

Component: Toddspan (10%)
Generated brief soil descriptions are created for major components. The Toddspan soil is a minor component.

Component: Wanship (5%)
Generated brief soil descriptions are created for major components. The Wanship soil is a minor component.

Map Unit 182 (31.74%)

Map Unit Name:	Yeates Hollow-Henefer complex, 30 to 60 percent slopes
Bedrock Depth - Min:	109cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.

Major components are printed below

Yeates Hollow(55%)	
horizon A(0cm to 30cm)	Very stony loam
horizon Bt1(30cm to 64cm)	Very cobbly clay
horizon Bt2(64cm to 94cm)	Very cobbly clay
horizon Bt3(94cm to 109cm)	Extremely cobbly clay loam
horizon R(109cm to 134cm)	Bedrock
Henefer(30%)	
horizon A1(0cm to 18cm)	Gravelly loam
horizon A2(18cm to 30cm)	Gravelly loam
horizon Bt1(30cm to 53cm)	Cobbly clay
horizon Bt2(53cm to 76cm)	Cobbly clay
horizon Bt3(76cm to 94cm)	Very gravelly clay loam
horizon Bt3(94cm to 109cm)	Very gravelly clay loam
horizon Bt5(109cm to 127cm)	Very cobbly sandy clay loam
horizon Bt5(127cm to 152cm)	Very cobbly sandy clay loam

Component Description:

Minor map unit components are excluded from this report.

Map Unit: 182 - Yeates Hollow-Henefer complex, 30 to 60 percent slopes

Soil Information

Component: Yeates Hollow (55%)
The Yeates Hollow component makes up 55 percent of the map unit. Slopes are 30 to 60 percent. This component is on mountain slopes. The parent material consists of colluvium derived from conglomerate, sandstone and quartzite. Depth to a root restrictive layer, bedrock, lithic, is 40 to 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is low. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA461UT Mountain Stony Loam (mountain Big Sagebrush) ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Component: Henefer (30%)
The Henefer component makes up 30 percent of the map unit. Slopes are 30 to 60 percent. This component is on mountain slopes. The parent material consists of colluvium derived from quartzite, sandstone and shale. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is moderate. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA432UT Mountain Loam (oak) ecological site. Nonirrigated land capability classification is 7e. This soil does not meet hydric criteria.

Component: Fewkes (6%)
Generated brief soil descriptions are created for major components. The Fewkes soil is a minor component.

Component: Heiners (5%)
Generated brief soil descriptions are created for major components. The Heiners soil is a minor component.

Component: Rock outcrop (4%)
Generated brief soil descriptions are created for major components. The Rock outcrop soil is a minor component.

Map Unit BTC (0.97%)

Map Unit Name:	Broadhead soils, 6 to 15 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.

Major components are printed below

Broadhead(55%)	
horizon A11(0cm to 13cm)	Loam
horizon A12(13cm to 30cm)	Loam
horizon B2t(30cm to 86cm)	Clay
horizon B3(86cm to 112cm)	Clay loam
horizon C(112cm to 152cm)	Silt loam
Broadhead(30%)	
horizon A11(0cm to 13cm)	Cobbly loam
horizon A12(13cm to 30cm)	Loam
horizon B2t(30cm to 86cm)	Clay
horizon B3(86cm to 112cm)	Clay loam
horizon C(112cm to 152cm)	Silt loam

Component Description:

Minor map unit components are excluded from this report.

Map Unit: BTC - Broadhead soils, 6 to 15 percent slopes

Component: Broadhead (55%)
The Broadhead component makes up 55 percent of the map unit. Slopes are 6 to 15 percent. This component is on terminal moraines, alluvial fans. The parent material consists of colluvium and/or slope alluvium derived from andesite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is

not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA432UT Mountain Loam (oak) ecological site. Nonirrigated land capability classification is 6e. Irrigated land capability classification is 4e. This soil does not meet hydric criteria.

Component: Broadhead (30%)
The Broadhead component makes up 30 percent of the map unit. Slopes are 6 to 15 percent. This component is on terminal moraines, alluvial fans. The parent material consists of colluvium and/or slope alluvium derived from andesite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA432UT Mountain Loam (oak) ecological site. Nonirrigated land capability classification is 6e. Irrigated land capability classification is 3e. This soil does not meet hydric criteria.

Component: OTHER SOILS (10%)
Generated brief soil descriptions are created for major soil components. The OTHER SOILS soil is a minor component.

Component: Rasband (5%)
Generated brief soil descriptions are created for major soil components. The Rasband soil is a minor component.

Map Unit BTD (2.54%)

Map Unit Name:	Broadhead soils, 15 to 25 percent slopes
Bedrock Depth - Min:	null
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	C - Soils in this group have moderately high runoff potential when thoroughly wet. Water transmission through the soil is somewhat restricted.

Major components are printed below

Broadhead(55%)	
horizon A11(0cm to 13cm)	Loam
horizon A12(13cm to 30cm)	Loam
horizon B2t(30cm to 86cm)	Clay
horizon B3(86cm to 112cm)	Clay loam
horizon C(112cm to 152cm)	Silt loam
Broadhead(30%)	
horizon A1(0cm to 13cm)	Cobbly loam
horizon A2(13cm to 30cm)	Loam
horizon Bt1(30cm to 86cm)	Clay
horizon Bt2(86cm to 112cm)	Clay loam
horizon C(112cm to 152cm)	Silt loam

Component Description:

Minor map unit components are excluded from this report.

Map Unit: BTD - Broadhead soils, 15 to 25 percent slopes

Component: Broadhead (55%)
The Broadhead component makes up 55 percent of the map unit. Slopes are 15 to 25 percent. This component is on terminal moraines, alluvial fans. The parent material consists of colluvium and/or slope alluvium derived from andesite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA432UT Mountain Loam (oak) ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: Broadhead (30%)
The Broadhead component makes up 30 percent of the map unit. Slopes are 15 to 25 percent. This component is on alluvial fans, terminal moraines. The parent material consists of colluvium and/or slope alluvium derived from andesite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately

low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA432UT Mountain Loam (oak) ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: OTHER SOILS (10%)
Generated brief soil descriptions are created for major soil components. The OTHER SOILS soil is a minor component.

Component: Rasband (5%)
Generated brief soil descriptions are created for major soil components. The Rasband soil is a minor component.

Map Unit HWE (30.51%)

Map Unit Name:	Horrocks-Broadhead association, steep
Bedrock Depth - Min:	104cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	B - Soils in this group have moderately low runoff potential when thoroughly wet. Water transmission through the soil is unimpeded.

Major components are printed below

Horrocks(50%)	
horizon A1(0cm to 13cm)	Very cobbly sandy clay loam
horizon B21t(13cm to 36cm)	Very cobbly sandy clay loam
horizon B22t(36cm to 69cm)	Extremely cobbly sandy clay loam
horizon C(69cm to 104cm)	Extremely cobbly sandy loam
horizon R(104cm to 114cm)	Unweathered bedrock
Broadhead(35%)	
horizon A11(0cm to 13cm)	Loam
horizon A12(13cm to 30cm)	Loam
horizon B2t(30cm to 86cm)	Clay
horizon B3(86cm to 112cm)	Clay loam
horizon C(112cm to 152cm)	Silt loam

Component Description:

Minor map unit components are excluded from this report.

Map Unit: HWE - Horrocks-Broadhead association, steep

Component: Horrocks (50%)
The Horrocks component makes up 50 percent of the map unit. Slopes are 15 to 40 percent. This component is on terminal moraines. The parent material consists of till derived from andesite. Depth to a root restrictive layer, bedrock, lithic, is 40 to 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 6 percent. This component is in the R047XA461UT Mountain Stony Loam (mountain Big Sagebrush) ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria.

Component: Broadhead (35%)
The Broadhead component makes up 35 percent of the map unit. Slopes are 25 to 40 percent. This component is on terminal moraines. The parent material consists of colluvium and/or slope alluvium derived from andesite. Depth to a root restrictive layer is greater than 60 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is moderately low. Available water to a depth of 60 inches (or restricted depth) is high. Shrink-swell potential is moderate. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 4 percent. This component is in the R047XA432UT Mountain Loam (oak) ecological site. Nonirrigated land capability classification is 6e. This soil does not meet hydric criteria.

Component: ROCK OUTCROP (15%)
Generated brief soil descriptions are created for major soil components. The ROCK OUTCROP soil is a minor component.

Soil Information

Map Unit LPF (8.1%)

Map Unit Name:	Little Pole very cobbly sandy clay loam, 40 to 60 percent slopes
Bedrock Depth - Min:	41cm
Watertable Depth - Annual Min:	null
Drainage Class - Dominant:	Well drained
Hydrologic Group - Dominant:	D - Soils in this group have high runoff potential when thoroughly wet. Water movement through the soil is restricted or very restricted.

Major components are printed below

Little Pole(90%)

horizon A11(0cm to 13cm)	Very cobbly sandy clay loam
horizon A3, B2(13cm to 41cm)	Very cobbly sandy clay loam
horizon R(41cm to 51cm)	Weathered bedrock

Component Description:

Minor map unit components are excluded from this report.

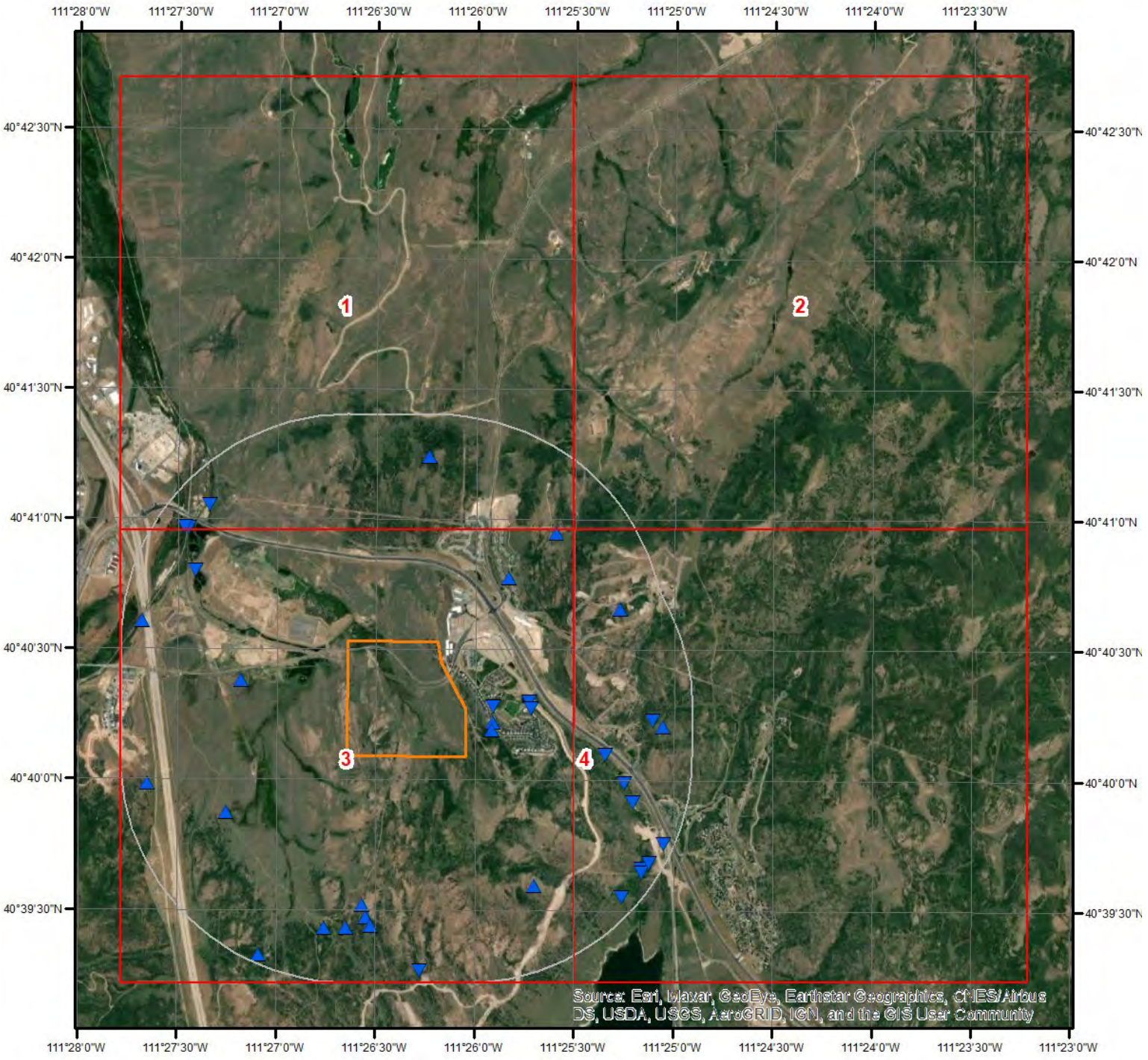
Map Unit: LPF - Little Pole very cobbly sandy clay loam, 40 to 60 percent slopes

Component: Little Pole (90%)
The Little Pole component makes up 90 percent of the map unit. Slopes are 40 to 60 percent. This component is on mountainsides. The parent material consists of colluvium and/or slope alluvium over residuum weathered from andesite. Depth to a root restrictive layer, bedrock, lithic, is 10 to 20 inches. The natural drainage class is well drained. Water movement in the most restrictive layer is very low. Available water to a depth of 60 inches (or restricted depth) is very low. Shrink-swell potential is low. This soil is not flooded. It is not ponded. There is no zone of water saturation within a depth of 72 inches. Organic matter content in the surface horizon is about 3 percent. This component is in the R047XA446UT Mountain Shallow Loam (mountain Big Sagebrush) ecological site. Nonirrigated land capability classification is 7s. This soil does not meet hydric criteria. There are no saline horizons within 30 inches of the soil surface.

Component: ROCK OUTCROP (5%)
Generated brief soil descriptions are created for major soil components. The ROCK OUTCROP soil is a minor component.

Component: BROADHEAD (5%)
Generated brief soil descriptions are created for major soil components. The BROADHEAD soil is a minor component.

Wells and Additional Sources



Wells & Additional Sources

- Sites with Higher Elevation
- Sites with Same Elevation
- Sites with Lower Elevation
- Sites with Unknown Elevation

N

0 0.3 0.6 1.2 Miles

ERIS

Wells and Additional Sources



Wells & Additional Sources - Page 1

- ▲ Sites with Higher Elevation
- ■ Sites with Same Elevation
- ▼ Sites with Lower Elevation
- ○ Sites with Unknown Elevation

Miles
0 0.15 0.3 0.6

N

ERIS

Wells and Additional Sources



Wells & Additional Sources - Page 2

- ▲ Sites with Higher Elevation
- ■ Sites with Same Elevation
- ▼ Sites with Lower Elevation
- ○ Sites with Unknown Elevation

Miles
0 0.15 0.3 0.6

N

ERIS

Wells and Additional Sources



Wells & Additional Sources - Page 3

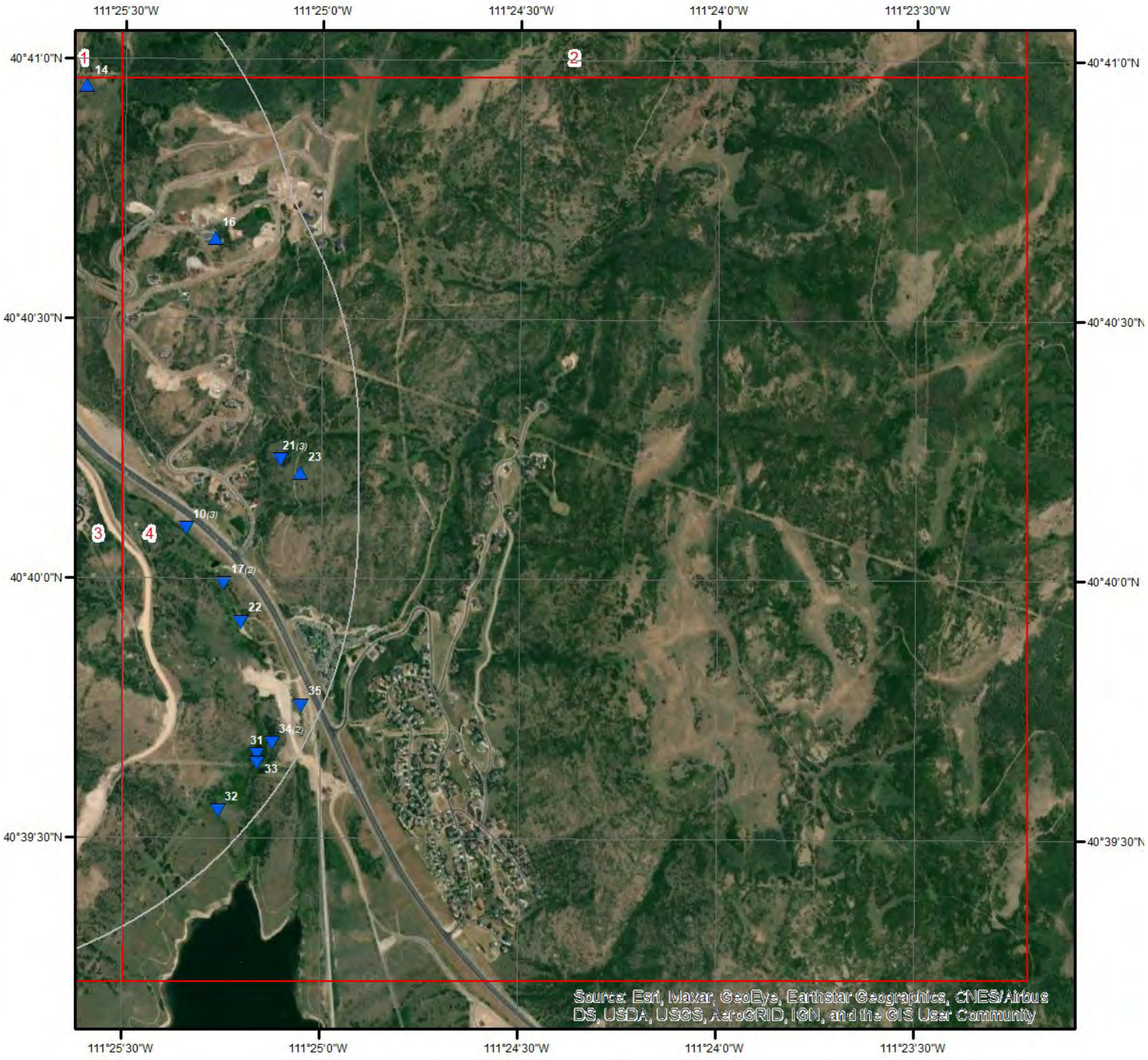
- ▲ Sites with Higher Elevation
- ■ Sites with Same Elevation
- ▼ Sites with Lower Elevation
- ○ Sites with Unknown Elevation

Miles
0 0.15 0.3 0.6

N

ERIS

Wells and Additional Sources



Wells & Additional Sources - Page 4

- Sites with Higher Elevation
- Sites with Same Elevation
- Sites with Lower Elevation
- Sites with Unknown Elevation

Miles
0 0.15 0.3 0.6

N

ERIS

Wells and Additional Sources Summary

Federal Sources

Public Water Systems Violations and Enforcement Data

Map Key	ID	Distance (ft)	Direction
	No records found		

Safe Drinking Water Information System (SDWIS)

Map Key	ID	Distance (ft)	Direction
	No records found		

USGS National Water Information System

Map Key	Monitoring Loc Identifier	Distance (ft)	Direction
1	USGS-404017111255201	635.56	E
4	USGS-404018111254101	1,488.80	E
6	USGS-404023111270801	2,474.09	W
15	USGS-403926111263601	4,008.67	SSW
19	USGS-404048111272201	3,902.29	WNW
26	USGS-404026111273001	4,816.47	WNW
28	USGS-404058111272401	4,541.73	NW

State Sources

Oil and Gas Wells

Map Key	ID	Distance (ft)	Direction
	No records found		

Public Water System Facilities

Map Key	ID	Distance (ft)	Direction
	No records found		

Water Rights Database

Map Key	Water Right No	Distance (ft)	Direction
2	0055003P00	637.67	ESE
2	55-9669	637.67	ESE
2	55-11203	637.67	ESE
2	55-9669	637.67	ESE
2	55-9632	637.67	ESE
2	55-9443	637.67	ESE
2	55-9443	637.67	ESE
2	55-9699	637.67	ESE
2	55-9544	637.67	ESE
2	55-9631	637.67	ESE
2	55-9632	637.67	ESE

Wells and Additional Sources Summary

3	55-7928	630.25	ESE
5	55-3097	1,536.59	E
7	55-11147	2,206.62	NE
8	1255007M00	3,469.42	S
9	35-8832	3,100.95	WSW
10	55-1471	3,271.77	ESE
10	55-1471	3,271.77	ESE
10	55-5725	3,271.77	ESE
11	1255007M00	3,768.86	S
12	55-9664	3,419.44	SE
13	1255007M00	3,968.29	S
14	55-11147	3,730.07	NE
16	1855003M00	4,270.68	ENE
17	55-7765	3,767.17	ESE
17	55-7808	3,767.17	ESE
18	55-8519	4,036.85	SSW
20	0035001P00	4,312.35	N
21	55-9544	4,365.61	E
21	55-9443	4,365.61	E
21	55-9443	4,365.61	E
22	55-7764	4,059.97	ESE
23	55-7928	4,606.67	E
24	35-5580	4,688.02	WSW
25	55-7771	5,009.57	S
27	35-8820	4,505.48	NW
27	35-10525	4,505.48	NW
27	35-11981	4,505.48	NW
27	35-11804	4,505.48	NW
27	35-10447	4,505.48	NW
27	35-10525	4,505.48	NW
27	35-1587	4,505.48	NW
27	35-10447	4,505.48	NW
27	35-10074	4,505.48	NW
27	35-12946	4,505.48	NW
27	35-10075	4,505.48	NW
27	35-11805	4,505.48	NW
27	35-11980	4,505.48	NW
27	35-5706	4,505.48	NW
27	35-13202	4,505.48	NW
27	35-13194	4,505.48	NW
27	35-13194	4,505.48	NW
29	35-10282	4,629.06	NW
30	35-13202	5,069.26	SSW
31	55-8586	4,873.36	SE
32	55-7868	4,908.25	SE
33	55-7018	4,926.96	SE
34	55-1471	4,951.76	ESE
34	55-1471	4,951.76	ESE
35	55-7808	5,054.48	ESE

USGS National Water Information System

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
1	E	0.12	635.56	6,630.06	FED USGS

Organiz Identifier:	USGS-UT	Formation Type:	Park City Volcanics
Organiz Name:	USGS Utah Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	WASATCH
Construction Date:		Latitude:	40.6713394
Source Map Scale:		Longitude:	-111.4318594
Monitoring Loc Name:	(D- 2- 5) 6cca-S1		
Monitoring Loc Identifier:	USGS-404017111255201		
Monitoring Loc Type:	Spring		
Monitoring Loc Desc:			
HUC Eight Digit Code:	16020203		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	6610.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	50		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
4	E	0.28	1,488.80	6,594.86	FED USGS

Organiz Identifier:	USGS-UT	Formation Type:	
Organiz Name:	USGS Utah Water Science Center	Aquifer Name:	
Well Depth:	260	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	WASATCH
Construction Date:	19650101	Latitude:	40.6716172

Source Map Scale:		Longitude:	-111.4288037
Monitoring Loc Name:	(D- 2- 5) 6cdb- 1		
Monitoring Loc Identifier:	USGS-404018111254101		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	16020203		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	6620.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	20		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
6	W	0.47	2,474.09	6,639.40	FED USGS

Organiz Identifier:	USGS-UT	Formation Type:	
Organiz Name:	USGS Utah Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	SUMMIT
Construction Date:		Latitude:	40.673006
Source Map Scale:	24000	Longitude:	-111.4529717
Monitoring Loc Name:	(D- 2- 4) 1cbc- 1		
Monitoring Loc Identifier:	USGS-404023111270801		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	16020101		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		

Horiz Coord Refer System:	NAD83
Vertical Measure:	6630.
Vertical Measure Unit:	feet
Vertical Accuracy:	20
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
15	SSW	0.76	4,008.67	6,762.86	FED USGS

Organiz Identifier:	USGS-UT	Formation Type:	Park City Volcanics
Organiz Name:	USGS Utah Water Science Center	Aquifer Name:	
Well Depth:	123	Aquifer Type:	
Well Depth Unit:	ft	Country Code:	US
Well Hole Depth:	123	Provider Name:	NWIS
W Hole Depth Unit:	ft	County:	WASATCH
Construction Date:	19721009	Latitude:	40.6571731
Source Map Scale:	24000	Longitude:	-111.4440816
Monitoring Loc Name:	(D- 2- 4)12cda- 1		
Monitoring Loc Identifier:	USGS-403926111263601		
Monitoring Loc Type:	Well		
Monitoring Loc Desc:			
HUC Eight Digit Code:	16020203		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	1		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	6740.		
Vertical Measure Unit:	feet		
Vertical Accuracy:	20		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
19	WNW	0.74	3,902.29	6,609.01	FED USGS

Organiz Identifier:	USGS-UT	Formation Type:	Holocene Alluvium
Organiz Name:	USGS Utah Water Science Center	Aquifer Name:	

Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	SUMMIT
Construction Date:		Latitude:	40.6799502
Source Map Scale:		Longitude:	-111.4568611
Monitoring Loc Name:	(D- 2- 4) 2aac-S1		
Monitoring Loc Identifier:	USGS-404048111272201		
Monitoring Loc Type:	Spring		
Monitoring Loc Desc:			
HUC Eight Digit Code:	16020101		
Drainage Area:			
Drainage Area Unit:			
Contrib Drainage Area:			
Contrib Drainage Area Unit:			
Horizontal Accuracy:	5		
Horizontal Accuracy Unit:	seconds		
Horizontal Collection Mthd:	Interpolated from MAP.		
Horiz Coord Refer System:	NAD83		
Vertical Measure:	6600.00		
Vertical Measure Unit:	feet		
Vertical Accuracy:	20		
Vertical Accuracy Unit:	feet		
Vertical Collection Mthd:	Interpolated from topographic map.		
Vert Coord Refer System:	NGVD29		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
26	WNW	0.91	4,816.47	6,644.12	FED USGS

Organiz Identifier:	USGS-UT	Formation Type:	
Organiz Name:	USGS Utah Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	SUMMIT
Construction Date:		Latitude:	40.6767833
Source Map Scale:		Longitude:	-111.4613333
Monitoring Loc Name:	Silver Creek above Richardson Flat, UT		
Monitoring Loc Identifier:	USGS-404026111273001		
Monitoring Loc Type:	Stream		
Monitoring Loc Desc:			
HUC Eight Digit Code:	16020101		
Drainage Area:	9.72		
Drainage Area Unit:	sq mi		
Contrib Drainage Area:			

Contrib Drainage Area Unit:	
Horizontal Accuracy:	.5
Horizontal Accuracy Unit:	seconds
Horizontal Collection Mthd:	Interpolated from MAP.
Horiz Coord Refer System:	NAD83
Vertical Measure:	6632
Vertical Measure Unit:	feet
Vertical Accuracy:	10
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
28	NW	0.86	4,541.73	6,595.73	FED USGS

Organiz Identifier:	USGS-UT	Formation Type:	
Organiz Name:	USGS Utah Water Science Center	Aquifer Name:	
Well Depth:		Aquifer Type:	
Well Depth Unit:		Country Code:	US
Well Hole Depth:		Provider Name:	NWIS
W Hole Depth Unit:		County:	SUMMIT
Construction Date:		Latitude:	40.6827279
Source Map Scale:		Longitude:	-111.4574168

Monitoring Loc Name:	SILVER CREEK AT KEETLEY JUNCTION
Monitoring Loc Identifier:	USGS-404058111272401
Monitoring Loc Type:	Stream
Monitoring Loc Desc:	
HUC Eight Digit Code:	16020101
Drainage Area:	
Drainage Area Unit:	
Contrib Drainage Area:	
Contrib Drainage Area Unit:	
Horizontal Accuracy:	5
Horizontal Accuracy Unit:	seconds
Horizontal Collection Mthd:	Interpolated from MAP.
Horiz Coord Refer System:	NAD83
Vertical Measure:	6600.
Vertical Measure Unit:	feet
Vertical Accuracy:	20
Vertical Accuracy Unit:	feet
Vertical Collection Mthd:	Interpolated from topographic map.
Vert Coord Refer System:	NGVD29

Water Rights Database

Wells and Additional Sources Detail Report

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	ESE	0.12	637.67	6,660.41	WATER WELLS

Water Right No:	0055003P00	Priority Dt:	
Well ID No:	22259	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	0
Source:	Non-Production Well: Test	Lat:	40.670359627139
Uses:		Long:	-111.431844427499
Uses Desc:		Location:	S4500 E650 NW 06 2S 5E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=0055003P00		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	ESE	0.12	637.67	6,660.41	WATER WELLS

Water Right No:	55-9669	Priority Dt:	20020718
Well ID No:	22259	Cubic Ft/s:	0
Change/ Exch No:	a26676	Acre (Ft):	292.044
Source:	Underground Water Wells (6)	Lat:	40.670359627139
Uses:	M	Long:	-111.431844427499
Uses Desc:	M-Municipal	Location:	S4500 E650 NW 06 2S 5E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=a26676		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	ESE	0.12	637.67	6,660.41	WATER WELLS

Water Right No:	55-11203	Priority Dt:	20000508
Well ID No:	0	Cubic Ft/s:	5.5
Change/ Exch No:	a24462	Acre (Ft):	0
Source:	Ontario Drain Tunnel and Provo River	Lat:	40.670359627139
Uses:	IMOS	Long:	-111.431844427499
Uses Desc:	I-Irrigation; M-Municipal ; O-Other; S-Stockwatering	Location:	S4500 E650 NW 06 2S 5E SL

Status:	APPLAPP
Status Desc:	Appl to Appropriate; Approved
Status of Application:	A
Status of Application Desc:	Approved
Type of Right:	Underground
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains
Web Link:	https://www.waterrights.utah.gov/search/?q=a24462

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	ESE	0.12	637.67	6,660.41	WATER WELLS

Water Right No:	55-9669	Priority Dt:	20020910
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	t27055	Acre (Ft):	292.044
Source:	Underground Water Wells (6)	Lat:	40.670359627139
Uses:	M	Long:	-111.431844427499
Uses Desc:	M-Municipal	Location:	S4500 E650 NW 06 2S 5E SL
Status:	APPLLAP		
Status Desc:	Appl to Appropriate; Permanently Lapsed: failed to show proof w/in allotted time		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=t27055		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	ESE	0.12	637.67	6,660.41	WATER WELLS

Water Right No:	55-9632	Priority Dt:	20011029
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	a26086	Acre (Ft):	159
Source:	Underground Water Wells (4) existing/other appls.	Lat:	40.670359627139
Uses:	M	Long:	-111.431844427499
Uses Desc:	M-Municipal	Location:	S4500 E650 NW 06 2S 5E SL
Status:	APPLAMEN		
Status Desc:			
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=a26086		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	ESE	0.12	637.67	6,660.41	WATER WELLS

Water Right No:	55-9443	Priority Dt:	20000911
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	t24922	Acre (Ft):	205.2
Source:	Underground Water Wells (32)	Lat:	40.670359627139
Uses:	M	Long:	-111.431844427499
Uses Desc:	M-Municipal	Location:	S4500 E650 NW 06 2S 5E SL
Status:	APPLWD		
Status Desc:	Appl to Appropriate; Withdrawn		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=t24922		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	ESE	0.12	637.67	6,660.41	WATER WELLS

Water Right No:	55-9443	Priority Dt:	20000911
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	a24923	Acre (Ft):	205.2
Source:	Underground Water Wells (32)	Lat:	40.670359627139
Uses:	M	Long:	-111.431844427499
Uses Desc:	M-Municipal	Location:	S4500 E650 NW 06 2S 5E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=a24923		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	ESE	0.12	637.67	6,660.41	WATER WELLS

Water Right No:	55-9699	Priority Dt:	20021108
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	a27147	Acre (Ft):	368.52
Source:	Underground Water Wells (6)	Lat:	40.670359627139
Uses:	M	Long:	-111.431844427499
Uses Desc:	M-Municipal	Location:	S4500 E650 NW 06 2S 5E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		

Status of Application Desc:	Approved
Type of Right:	Underground
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains
Web Link:	https://www.waterrights.utah.gov/search/?q=a27147

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	ESE	0.12	637.67	6,660.41	WATER WELLS

Water Right No:	55-9544	Priority Dt:	20001213
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	a25137	Acre (Ft):	85.5
Source:	Underground Water Wells (32)	Lat:	40.670359627139
Uses:	M	Long:	-111.431844427499
Uses Desc:	M-Municipal	Location:	S4500 E650 NW 06 2S 5E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=a25137		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	ESE	0.12	637.67	6,660.41	WATER WELLS

Water Right No:	55-9631	Priority Dt:	20011029
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	a26085	Acre (Ft):	363.75
Source:	Underground Water Wells (5)	Lat:	40.670359627139
Uses:	M	Long:	-111.431844427499
Uses Desc:	M-Municipal	Location:	S4500 E650 NW 06 2S 5E SL
Status:	APPLAMEN		
Status Desc:			
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=a26085		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
2	ESE	0.12	637.67	6,660.41	WATER WELLS

Water Right No:	55-9632	Priority Dt:	20070124
Well ID No:	0	Cubic Ft/s:	0

Change/ Exch No:	a32391	Acre (Ft):	522.75
Source:	Underground Water Wells (4) existing/other appls.	Lat:	40.670359627139
Uses:	M	Long:	-111.431844427499
Uses Desc:	M-Municipal	Location:	S4500 E650 NW 06 2S 5E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=a32391		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
3	ESE	0.12	630.25	6,691.81	WATER WELLS

Water Right No:	55-7928	Priority Dt:	1862
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	16.75
Source:	Todd Hollow and Springs	Lat:	40.6698620140718
Uses:	DS	Long:	-111.431872949391
Uses Desc:	D-Domestic; S-Stockwatering	Location:	N660 E660 SW 06 2S 5E SL
Status:	DIL		
Status Desc:	Diligence Claim: claim on surface water filed prior to 1903		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Point to Point		
Type of Right Desc:	Point To Point diversions are not developed points of diversion. The reference is to a stream segment from which stock may drink. Often designated in 40 acre parcels.		
Web Link:	https://www.waterrights.utah.gov/search/?q=55-7928		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
5	E	0.29	1,536.59	6,609.12	WATER WELLS

Water Right No:	55-3097	Priority Dt:	19651011
Well ID No:	0	Cubic Ft/s:	0.016
Change/ Exch No:		Acre (Ft):	0
Source:	Underground Water Well	Lat:	40.6711922217508
Uses:	O	Long:	-111.428599786603
Uses Desc:	O-Other	Location:	N1140 E1570 SW 06 2S 5E SL
Status:	APPLCERT		
Status Desc:	Appl to Appropriate; Certificated: official documentation serving as evidence of a perfected water right		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Underground		

Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains
Web Link:	https://www.waterrights.utah.gov/search/?q=55-3097

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
7	NE	0.42	2,206.62	6,779.36	WATER WELLS

Water Right No:	55-11147	Priority Dt:	19920619
Well ID No:	0	Cubic Ft/s:	6.339
Change/ Exch No:	a16873	Acre (Ft):	0
Source:	Provo River	Lat:	40.679563136809
Uses:	IO	Long:	-111.430533245136
Uses Desc:	I-Irrigation; O-Other	Location:	S1150 E1030 NW 06 2S 5E SL
Status:	APPLWD		
Status Desc:	Appl to Appropriate; Withdrawn		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=a16873		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
8	S	0.66	3,469.42	6,839.51	WATER WELLS

Water Right No:	1255007M00	Priority Dt:	
Well ID No:	436241	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	0
Source:	Non-Production Well: Test	Lat:	40.6586531988659
Uses:		Long:	-111.442761544285
Uses Desc:		Location:	S3500 E3000 SE 02 2S 4E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Abandonded Well		
Type of Right Desc:	well whose purpose and use have been permanently discontinued.		
Web Link:	https://www.waterrights.utah.gov/search/?q=1255007M00		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
9	WSW	0.59	3,100.95	6,722.75	WATER WELLS

Water Right No:	35-8832	Priority Dt:	19150226
Well ID No:	0	Cubic Ft/s:	0.022
Change/ Exch No:		Acre (Ft):	0
Source:	Crystal Spring Number 2	Lat:	40.6645454138682

Uses:	D	Long:	-111.454177291367
Uses Desc:	D-Domestic	Location:	S1338 W155 NE 11 2S 4E SL
Status:	APPLCERT		
Status Desc:	Appl to Appropriate; Certificated: official documentation serving as evidence of a perfected water right		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-8832		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
10	ESE	0.62	3,271.77	6,448.34	WATER WELLS

Water Right No:	55-1471	Priority Dt:	19760701
Well ID No:	0	Cubic Ft/s:	0.089
Change/ Exch No:	a9008	Acre (Ft):	0
Source:	Fisher Creek	Lat:	40.6682492818838
Uses:	DS	Long:	-111.422353133664
Uses Desc:	D-Domestic; S-Stockwatering	Location:	0 W2000 NE 07 2S 5E SL
Status:	APPLREJ		
Status Desc:	Appl to Appropriate; Rejected		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=a9008		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
10	ESE	0.62	3,271.77	6,448.34	WATER WELLS

Water Right No:	55-1471	Priority Dt:	1886
Well ID No:	0	Cubic Ft/s:	0.09
Change/ Exch No:		Acre (Ft):	0
Source:	Ross Creek & Unnamed Spring	Lat:	40.6682492818838
Uses:	DS	Long:	-111.422353133664
Uses Desc:	D-Domestic; S-Stockwatering	Location:	S0 W2000 NE 07 2S 5E SL
Status:	DILWUC		
Status Desc:			
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=55-1471		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
10	ESE	0.62	3,271.77	6,448.34	WATER WELLS

Water Right No:	55-5725	Priority Dt:	19760407
Well ID No:	0	Cubic Ft/s:	0.015
Change/ Exch No:		Acre (Ft):	0
Source:	Ross Creek	Lat:	40.6682492818838
Uses:		Long:	-111.422353133664
Uses Desc:		Location:	0 W2000 NE 07 2S 5E SL
Status:	APPLREJ		
Status Desc:	Appl to Appropriate; Rejected		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=55-5725		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
11	S	0.71	3,768.86	6,780.85	WATER WELLS

Water Right No:	1255007M00	Priority Dt:	
Well ID No:	436242	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	0
Source:	Non-Production Well: Test	Lat:	40.657830843092
Uses:		Long:	-111.44239554803
Uses Desc:		Location:	S3800 E3100 SE 02 2S 4E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Abandonded Well		
Type of Right Desc:	well whose purpose and use have been permanently discontinued.		
Web Link:	https://www.waterrights.utah.gov/search/?q=1255007M00		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
12	SE	0.65	3,419.44	6,713.89	WATER WELLS

Water Right No:	55-9664	Priority Dt:	20020327
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	a26480	Acre (Ft):	11.94
Source:	Provo River and Underground Water Well	Lat:	40.6599176775878
Uses:	I	Long:	-111.428283959158
Uses Desc:	I-Irrigation	Location:	N2399 W1020 S4 07 2S 5E SL
Status:	APPLLAP		

Status Desc:	Appl to Appropriate; Permanently Lapsed: failed to show proof w/in allotted time
Status of Application:	T
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another
Type of Right:	Rediversion
Type of Right Desc:	Diversion point, which diverts water which was previously diverted and released upstream. Usually associated with reservoir storage.
Web Link:	https://www.waterrights.utah.gov/search/?q=a26480

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
13	S	0.75	3,968.29	6,738.11	WATER WELLS

Water Right No:	1255007M00	Priority Dt:	
Well ID No:	436240	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	0
Source:	Non-Production Well: Test	Lat:	40.6572830653044
Uses:		Long:	-111.442031373163
Uses Desc:		Location:	S4000 E3200 SE 02 2S 4E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Abandonded Well		
Type of Right Desc:	well whose purpose and use have been permanently discontinued.		
Web Link:	https://www.waterrights.utah.gov/search/?q=1255007M00		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
14	NE	0.71	3,730.07	7,089.87	WATER WELLS

Water Right No:	55-11147	Priority Dt:	19920619
Well ID No:	0	Cubic Ft/s:	6.339
Change/ Exch No:	a16873	Acre (Ft):	0
Source:	Provo River	Lat:	40.6824746682608
Uses:	IO	Long:	-111.426584365135
Uses Desc:	I-Irrigation; O-Other	Location:	S95 E2130 NW 06 2S 5E SL
Status:	APPLWD		
Status Desc:	Appl to Appropriate; Withdrawn		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=a16873		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
16	ENE	0.81	4,270.68	7,085.65	WATER WELLS

Water Right No:	1855003M00	Priority Dt:	
Well ID No:	442049	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	0
Source:	Non-Production Well: Closed Loop Heat Exchange	Lat:	40.6776042850806
Uses:		Long:	-111.42117100652
Uses Desc:		Location:	N837 W1696 E4 06 2S 5E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=1855003M00		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
17	ESE	0.71	3,767.17	6,380.27	WATER WELLS

Water Right No:	55-7765	Priority Dt:	1886
Well ID No:	0	Cubic Ft/s:	0.03
Change/ Exch No:		Acre (Ft):	0
Source:	Ross Creek	Lat:	40.6664702885465
Uses:	I	Long:	-111.420753020133
Uses Desc:	I-Irrigation	Location:	S620 E1080 N4 07 2S 5E SL
Status:	PAC		
Status Desc:			
Status of Application:	U		
Status of Application Desc:	Unapproved		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=55-7765		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
17	ESE	0.71	3,767.17	6,380.27	WATER WELLS

Water Right No:	55-7808	Priority Dt:	1886
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	0
Source:	Ross Creek	Lat:	40.6664702885465
Uses:	DS	Long:	-111.420753020133
Uses Desc:	D-Domestic; S-Stockwatering	Location:	S620 E1080 N4 07 2S 5E SL
Status:	PAC		
Status Desc:			
Status of Application:	U		

Status of Application Desc:	Unapproved
Type of Right:	Point to Point
Type of Right Desc:	Point To Point diversions are not developed points of diversion. The reference is to a stream segment from which stock may drink. Often designated in 40 acre parcels.
Web Link:	https://www.waterrights.utah.gov/search/?q=55-7808

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
18	SSW	0.76	4,036.85	6,775.54	WATER WELLS

Water Right No:	55-8519	Priority Dt:	19721005
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	E583	Acre (Ft):	100
Source:	Provo River	Lat:	40.6571886200162
Uses:	D	Long:	-111.445945855788
Uses Desc:	D-Domestic	Location:	N1200 E2300 SW 12 2S 4E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=E583		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
20	N	0.82	4,312.35	7,007.59	WATER WELLS

Water Right No:	0035001P00	Priority Dt:	
Well ID No:	22727	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	0
Source:	Non-Production Well: Test	Lat:	40.6873638160741
Uses:		Long:	-111.437184590609
Uses Desc:		Location:	N1700 W800 SE 36 1S 4E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=0035001P00		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
21	E	0.83	4,365.61	6,601.11	WATER WELLS

Water Right No:	55-9544	Priority Dt:	20001213

Wells and Additional Sources Detail Report

Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	a25137	Acre (Ft):	85.5
Source:	Underground Water Wells (32)	Lat:	40.6704603599759
Uses:	M	Long:	-111.418400182209
Uses Desc:	M-Municipal	Location:	N800 W900 SE 06 2S 5E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=a25137		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
21	E	0.83	4,365.61	6,601.11	WATER WELLS

Water Right No:	55-9443	Priority Dt:	20000911
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	a24923	Acre (Ft):	205.2
Source:	Underground Water Wells (32)	Lat:	40.6704603599759
Uses:	M	Long:	-111.418400182209
Uses Desc:	M-Municipal	Location:	N800 W900 SE 06 2S 5E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=a24923		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
21	E	0.83	4,365.61	6,601.11	WATER WELLS

Water Right No:	55-9443	Priority Dt:	20000911
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	t24922	Acre (Ft):	205.2
Source:	Underground Water Wells (32)	Lat:	40.6704603599759
Uses:	M	Long:	-111.418400182209
Uses Desc:	M-Municipal	Location:	N800 W900 SE 06 2S 5E SL
Status:	APPLWD		
Status Desc:	Appl to Appropriate; Withdrawn		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Underground		

Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains
Web Link:	https://www.waterrights.utah.gov/search/?q=t24922

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
22	ESE	0.77	4,059.97	6,357.48	WATER WELLS

Water Right No:	55-7764	Priority Dt:	1886
Well ID No:	12537	Cubic Ft/s:	0.015
Change/ Exch No:		Acre (Ft):	0
Source:	Underground Water Well	Lat:	40.6652510346933
Uses:	DI	Long:	-111.420024158953
Uses Desc:	D-Domestic; I-Irrigation	Location:	S1065 E1280 N4 07 2S 5E SL
Status:	UGWC		
Status Desc:	Undergrd Water Claim: undgrd water in use prior to 1935		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=55-7764		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
23	E	0.87	4,606.67	6,663.78	WATER WELLS

Water Right No:	55-7928	Priority Dt:	1862
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	16.75
Source:	Todd Hollow and Springs	Lat:	40.6700790815773
Uses:	DS	Long:	-111.41753229809
Uses Desc:	D-Domestic; S-Stockwatering	Location:	N660 W660 SE 06 2S 5E SL
Status:	DIL		
Status Desc:	Diligence Claim: claim on surface water filed prior to 1903		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Point to Point		
Type of Right Desc:	Point To Point diversions are not developed points of diversion. The reference is to a stream segment from which stock may drink. Often designated in 40 acre parcels.		
Web Link:	https://www.waterrights.utah.gov/search/?q=55-7928		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
24	WSW	0.89	4,688.02	6,753.05	WATER WELLS

Water Right No:	35-5580	Priority Dt:	1862
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	9.45
Source:	Springs	Lat:	40.6663870370056

Uses:	DS	Long:	-111.460805707506
Uses Desc:	D-Domestic; S-Stockwatering	Location:	S660 E660 N4 11 2S 4E SL
Status:	DIL		
Status Desc:	Diligence Claim: claim on surface water filed prior to 1903		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Point to Point		
Type of Right Desc:	Point To Point diversions are not developed points of diversion. The reference is to a stream segment from which stock may drink. Often designated in 40 acre parcels.		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-5580		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
25	S	0.95	5,009.57	6,576.79	WATER WELLS

Water Right No:	55-7771	Priority Dt:	1876
Well ID No:	0	Cubic Ft/s:	0.5
Change/ Exch No:		Acre (Ft):	0
Source:	Sage Hen Hollow Stream	Lat:	40.6544219769855
Uses:	IS	Long:	-111.437927790933
Uses Desc:	I-Irrigation; S-Stockwatering	Location:	N370 W1055 NE 13 2S 4E SL
Status:	PAC		
Status Desc:			
Status of Application:	U		
Status of Application Desc:	Unapproved		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=55-7771		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-8820	Priority Dt:	1861
Well ID No:	5758	Cubic Ft/s:	0.86
Change/ Exch No:		Acre (Ft):	205.83
Source:	Silver Creek, Dorrity & Pace Springs	Lat:	40.684141385376
Uses:	DIMS	Long:	-111.455706842802
Uses Desc:	D-Domestic; I-Irrigation; M-Municipal ; S-Stockwatering	Location:	N500 W625 SE 35 1S 4E SL
Status:	DEC		
Status Desc:	Decree: judgemental decision on a civil action in a district court		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-8820		

Wells and Additional Sources Detail Report

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-10525	Priority Dt:	19971112
Well ID No:	0	Cubic Ft/s:	2.11
Change/ Exch No:	a21683	Acre (Ft):	521.55
Source:	Silver Creek, Dorrity & Pace Springs	Lat:	40.684141385376
Uses:	IM	Long:	-111.455706842802
Uses Desc:	I-Irrigation; M-Municipal	Location:	N500 W625 SE 35 1S 4E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=a21683		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-11981	Priority Dt:	1861
Well ID No:	5758	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	22.522
Source:	Silver Creek, Dorrity & Pace Springs	Lat:	40.684141385376
Uses:	DIS	Long:	-111.455706842802
Uses Desc:	D-Domestic; I-Irrigation; S-Stockwatering	Location:	N500 W625 SE 35 1S 4E SL
Status:	DEC		
Status Desc:	Decree: judgemental decision on a civil action in a district court		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-11981		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-11804	Priority Dt:	1861
Well ID No:	5758	Cubic Ft/s:	1.869
Change/ Exch No:		Acre (Ft):	450.18
Source:	Silver Creek, Dorrity & Pace Springs	Lat:	40.684141385376

Uses:	IS	Long:	-111.455706842802
Uses Desc:	I-Irrigation; S-Stockwatering	Location:	N500 W625 SE 35 1S 4E SL
Status:	DEC		
Status Desc:	Decree: judgemental decision on a civil action in a district court		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-11804		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-10447	Priority Dt:	1861
Well ID No:	5758	Cubic Ft/s:	1.725
Change/ Exch No:		Acre (Ft):	415.71
Source:	Silver Creek, Dorrity & Pace Springs	Lat:	40.684141385376
Uses:	DIS	Long:	-111.455706842802
Uses Desc:	D-Domestic; I-Irrigation; S-Stockwatering	Location:	N500 W625 SE 35 1S 4E SL
Status:	DECTERM		
Status Desc:	Decree: judgemental decision on a civil action in a district court; Terminated		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-10447		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-10525	Priority Dt:	1861
Well ID No:	5758	Cubic Ft/s:	2.11
Change/ Exch No:		Acre (Ft):	521.55
Source:	Silver Creek, Dorrity & Pace Springs and Seepage	Lat:	40.684141385376
Uses:	IM	Long:	-111.455706842802
Uses Desc:	I-Irrigation; M-Municipal	Location:	N500 W625 SE 35 1S 4E SL
Status:	DEC		
Status Desc:	Decree: judgemental decision on a civil action in a district court		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-10525		

Wells and Additional Sources Detail Report

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-1587	Priority Dt:	19640413
Well ID No:	5758	Cubic Ft/s:	0
Change/ Exch No:	E148	Acre (Ft):	30
Source:	Wanship Reservoir	Lat:	40.684141385376
Uses:	I	Long:	-111.455706842802
Uses Desc:	I-Irrigation	Location:	N500 W625 SE 35 1S 4E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=E148		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-10447	Priority Dt:	19970707
Well ID No:	0	Cubic Ft/s:	1.725
Change/ Exch No:	a21295	Acre (Ft):	415.71
Source:	Silver Creek, Dorrity & Pace Springs	Lat:	40.684141385376
Uses:	DIMS	Long:	-111.455706842802
Uses Desc:	D-Domestic; I-Irrigation; M-Municipal ; S-Stockwatering	Location:	N500 W625 SE 35 1S 4E SL
Status:	APPLWD		
Status Desc:	Appl to Appropriate; Withdrawn		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=a21295		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-10074	Priority Dt:	1861
Well ID No:	5758	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	-3.96
Source:	Silver Creek, Springs, Seepage Water	Lat:	40.684141385376
Uses:	I	Long:	-111.455706842802

Uses Desc:	I-Irrigation	Location:	N500 W625 SE 35 1S 4E SL
Status:	DEC		
Status Desc:	Decree: judgemental decision on a civil action in a district court		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-10074		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-12946	Priority Dt:	1861
Well ID No:	5758	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	3.96
Source:	Silver Creek, Springs, Seepage Water	Lat:	40.684141385376
Uses:	I	Long:	-111.455706842802
Uses Desc:	I-Irrigation	Location:	N500 W625 SE 35 1S 4E SL
Status:	DEC		
Status Desc:	Decree: judgemental decision on a civil action in a district court		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-12946		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-10075	Priority Dt:	1861
Well ID No:	5758	Cubic Ft/s:	0.418
Change/ Exch No:		Acre (Ft):	104.1
Source:	Silver Creek, Dorrity and Pace Springs	Lat:	40.684141385376
Uses:	IM	Long:	-111.455706842802
Uses Desc:	I-Irrigation; M-Municipal	Location:	N500 W625 SE 35 1S 4E SL
Status:	DEC		
Status Desc:	Decree: judgemental decision on a civil action in a district court		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-10075		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-11805	Priority Dt:	1861
Well ID No:	5758	Cubic Ft/s:	0.25
Change/ Exch No:		Acre (Ft):	60
Source:	Silver Creek, Dorrity & Pace Springs	Lat:	40.684141385376
Uses:	I	Long:	-111.455706842802
Uses Desc:	I-Irrigation	Location:	N500 W625 SE 35 1S 4E SL
Status:	DEC		
Status Desc:	Decree: judgemental decision on a civil action in a district court		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-11805		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-11980	Priority Dt:	1861
Well ID No:	5758	Cubic Ft/s:	0.212
Change/ Exch No:		Acre (Ft):	51.018
Source:	Silver Creek, Dorrity & Pace Springs	Lat:	40.684141385376
Uses:	DIS	Long:	-111.455706842802
Uses Desc:	D-Domestic; I-Irrigation; S-Stockwatering	Location:	N500 W625 SE 35 1S 4E SL
Status:	DEC		
Status Desc:	Decree: judgemental decision on a civil action in a district court		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-11980		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-5706	Priority Dt:	18610101
Well ID No:	5758	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	397.21
Source:	Silver Crk.Dorrity Spg.Pace & L. Pace	Lat:	40.684141385376
Uses:	DIMS	Long:	-111.455706842802
Uses Desc:	D-Domestic; I-Irrigation; M-	Location:	N500 W625 SE 35 1S 4E SL

	Municipal ; S-Stockwatering
Status:	DEC
Status Desc:	Decree: judgemental decision on a civil action in a district court
Status of Application:	P
Status of Application Desc:	Perfected: proof filed, right certificated
Type of Right:	Surface
Type of Right Desc:	Streams, rivers, creeks, any water above ground
Web Link:	https://www.waterrights.utah.gov/search/?q=35-5706

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-13202	Priority Dt:	1861
Well ID No:	5758	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	167.42
Source:	Silver Creek, Dorrity & Pace Springs	Lat:	40.684141385376
Uses:	DIS	Long:	-111.455706842802
Uses Desc:	D-Domestic; I-Irrigation; S-Stockwatering	Location:	N500 W625 SE 35 1S 4E SL
Status:	DEC		
Status Desc:	Decree: judgemental decision on a civil action in a district court		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-13202		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-13194	Priority Dt:	1861
Well ID No:	5758	Cubic Ft/s:	0.147
Change/ Exch No:		Acre (Ft):	36.652
Source:	Silver Creek, Dorrity & Pace Springs	Lat:	40.684141385376
Uses:	DIS	Long:	-111.455706842802
Uses Desc:	D-Domestic; I-Irrigation; S-Stockwatering	Location:	N500 W625 SE 35 1S 4E SL
Status:	DEC		
Status Desc:	Decree: judgemental decision on a civil action in a district court		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=35-13194		

Wells and Additional Sources Detail Report

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
27	NW	0.85	4,505.48	6,595.59	WATER WELLS

Water Right No:	35-13194	Priority Dt:	20200511
Well ID No:	5758	Cubic Ft/s:	0.147
Change/ Exch No:	a45866	Acre (Ft):	34.65
Source:	Silver Creek, Dorrity & Pace Springs	Lat:	40.684141385376
Uses:	IS	Long:	-111.455706842802
Uses Desc:	I-Irrigation; S-Stockwatering	Location:	N500 W625 SE 35 1S 4E SL
Status:	APPLAPP		
Status Desc:	Appl to Appropriate; Approved		
Status of Application:	A		
Status of Application Desc:	Approved		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=a45866		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
29	NW	0.88	4,629.06	6,596.80	WATER WELLS

Water Right No:	35-10282	Priority Dt:	19960729
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	t20241	Acre (Ft):	2
Source:	Silver Creek and Weber River	Lat:	40.6827602933169
Uses:	O	Long:	-111.457771423842
Uses Desc:	O-Other	Location:	0 W1200 NE 02 2S 4E SL
Status:	APPLWD		
Status Desc:	Appl to Appropriate; Withdrawn		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=t20241		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
30	SSW	0.96	5,069.26	6,939.70	WATER WELLS

Water Right No:	35-13202	Priority Dt:	20161220
Well ID No:	442238	Cubic Ft/s:	0
Change/ Exch No:	a42212	Acre (Ft):	167.42
Source:	Underground Water Well	Lat:	40.6554537425505
Uses:	I	Long:	-111.451468691607
Uses Desc:	I-Irrigation	Location:	N576 E765 SW 12 2S 4E SL

Status:	APPLAPP
Status Desc:	Appl to Appropriate; Approved
Status of Application:	A
Status of Application Desc:	Approved
Type of Right:	Underground
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains
Web Link:	https://www.waterrights.utah.gov/search/?q=a42212

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
31	SE	0.92	4,873.36	6,253.66	WATER WELLS

Water Right No:	55-8586	Priority Dt:	19840824
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:	E2309	Acre (Ft):	1
Source:	Deer Creek Reservoir	Lat:	40.6609837617787
Uses:	DO	Long:	-111.419332548585
Uses Desc:	D-Domestic; O-Other	Location:	S2650 W1175 NE 07 2S 5E SL
Status:	APPLLAP		
Status Desc:	Appl to Appropriate; Permanently Lapsed: failed to show proof w/in allotted time		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=E2309		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
32	SE	0.93	4,908.25	6,250.86	WATER WELLS

Water Right No:	55-7868	Priority Dt:	1876
Well ID No:	0	Cubic Ft/s:	0.015
Change/ Exch No:		Acre (Ft):	0
Source:	Unnamed Springs	Lat:	40.6591801193301
Uses:	S	Long:	-111.420972573955
Uses Desc:	S-Stockwatering	Location:	S570 W1635 E4 07 2S 5E SL
Status:	DIL		
Status Desc:	Diligence Claim: claim on surface water filed prior to 1903		
Status of Application:	P		
Status of Application Desc:	Perfected: proof filed, right certificated		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=55-7868		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
33	SE	0.93	4,926.96	6,251.09	WATER WELLS

Water Right No:	55-7018	Priority Dt:	19840620
Well ID No:	0	Cubic Ft/s:	0.015
Change/ Exch No:		Acre (Ft):	0
Source:	Underground Water Well	Lat:	40.6607238021051
Uses:	D	Long:	-111.419323633448
Uses Desc:	D-Domestic	Location:	S10 W1175 E4 07 2S 5E SL
Status:	APPLREJ		
Status Desc:	Appl to Appropriate; Rejected		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Underground		
Type of Right Desc:	Wells, tunnels, sumps, and undgrd drains		
Web Link:	https://www.waterrights.utah.gov/search/?q=55-7018		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
34	ESE	0.94	4,951.76	6,285.61	WATER WELLS

Water Right No:	55-1471	Priority Dt:	19760701
Well ID No:	0	Cubic Ft/s:	0.089
Change/ Exch No:	a9008	Acre (Ft):	0
Source:	Fisher Creek	Lat:	40.6613567344997
Uses:	DS	Long:	-111.418703872024
Uses Desc:	D-Domestic; S-Stockwatering	Location:	S2515 W1000 NE 07 2S 5E SL
Status:	APPLREJ		
Status Desc:	Appl to Appropriate; Rejected		
Status of Application:	T		
Status of Application Desc:	Terminated: adjudication term; right most likely has been consolidated into another		
Type of Right:	Surface		
Type of Right Desc:	Streams, rivers, creeks, any water above ground		
Web Link:	https://www.waterrights.utah.gov/search/?q=a9008		

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
34	ESE	0.94	4,951.76	6,285.61	WATER WELLS

Water Right No:	55-1471	Priority Dt:	1886
Well ID No:	0	Cubic Ft/s:	0.09
Change/ Exch No:		Acre (Ft):	0
Source:	Ross Creek & Unnamed Spring	Lat:	40.6613567344997
Uses:	DS	Long:	-111.418703872024
Uses Desc:	D-Domestic; S-Stockwatering	Location:	S2515 W1000 NE 07 2S 5E SL
Status:	DILWUC		
Status Desc:			
Status of Application:	P		
Status of Application	Perfected: proof filed, right certificated		

Wells and Additional Sources Detail Report

Desc:	
Type of Right:	Surface
Type of Right Desc:	Streams, rivers, creeks, any water above ground
Web Link:	https://www.waterrights.utah.gov/search/?q=55-1471

Map Key	Direction	Distance (mi)	Distance (ft)	Elevation (ft)	DB
35	ESE	0.96	5,054.48	6,332.08	WATER WELLS

Water Right No:	55-7808	Priority Dt:	1886
Well ID No:	0	Cubic Ft/s:	0
Change/ Exch No:		Acre (Ft):	0
Source:	Ross Creek	Lat:	40.6625702164179
Uses:	DS	Long:	-111.417478183821
Uses Desc:	D-Domestic; S-Stockwatering	Location:	N660 W660 E4 07 2S 5E SL
Status:	PAC		
Status Desc:			
Status of Application:	U		
Status of Application Desc:	Unapproved		
Type of Right:	Point to Point		
Type of Right Desc:	Point To Point diversions are not developed points of diversion. The reference is to a stream segment from which stock may drink. Often designated in 40 acre parcels.		
Web Link:	https://www.waterrights.utah.gov/search/?q=55-7808		

Radon Information

This section lists any relevant radon information found for the target property.

Federal EPA Radon Zone for *SUMMIT* County: **2**
Federal EPA Radon Zone for *WASATCH* County: **2**

Zone 1: Counties with predicted average indoor radon screening levels greater than 4 pCi/L
Zone 2: Counties with predicted average indoor radon screening levels from 2 to 4 pCi/L
Zone 3: Counties with predicted average indoor radon screening levels less than 2 pCi/L

Federal Area Radon Information for *SUMMIT* County

No Measures/Homes:	14
Geometric Mean:	1.5
Arithmetic Mean:	3
Median:	3.2
Standard Deviation:	2.6
Maximum:	4.9
% >4 pCi/L:	29
% >20 pCi/L:	0
Notes on Data Table:	TABLE 1. Screening indoor radon data from the State of Utah's indoor radon survey. Data represent long-term alpha-track detector readings collected during 1987-88. Compiled from data in Sprinkel and Solomon (1990)

Federal Area Radon Information for *WASATCH* County

No Measures/Homes:	1
Geometric Mean:	***
Arithmetic Mean:	3.6
Median:	3.6
Standard Deviation:	3.6
Maximum:	3.6
% >4 pCi/L:	0
% >20 pCi/L:	0
Notes on Data Table:	TABLE 1. Screening indoor radon data from the State of Utah's indoor radon survey. Data represent long-term alpha-track detector readings collected during 1987-88. Compiled from data in Sprinkel and Solomon (1990)

Appendix

Federal Sources

FEMA National Flood Hazard Layer — **FEMA FLOOD**

The National Flood Hazard Layer (NFHL) data incorporates Flood Insurance Rate Map (FIRM) databases published by the Federal Emergency Management Agency (FEMA), and any Letters Of Map Revision (LOMRs) that have been issued against those databases since their publication date. The FIRM Database is the digital, geospatial version of the flood hazard information shown on the published paper FIRMs. The FIRM Database depicts flood risk information and supporting data used to develop the risk data. The FIRM Database is derived from Flood Insurance Studies (FISs), previously published FIRMs, flood hazard analyses performed in support of the FISs and FIRMs, and new mapping data, where available.

Indoor Radon Data — **INDOOR RADON**

Indoor radon measurements tracked by the Environmental Protection Agency(EPA) and the State Residential Radon Survey.

Public Water Systems Violations and Enforcement Data — **PWSV**

List of drinking water violations and enforcement actions from the Safe Drinking Water Information System (SDWIS) made available by the Drinking Water Protection Division of the US EPA's Office of Groundwater and Drinking Water. Enforcement sensitive actions are not included in the data released by the EPA. Address information provided in SWDIS may correspond either with the physical location of the water system, or with a contact address.

Radon Zone Level — **RADON ZONE**

Areas showing the level of Radon Zones (level 1, 2 or 3) by county. This data is maintained by the Environmental Protection Agency (EPA).

Safe Drinking Water Information System (SDWIS) — **SDWIS**

The Safe Drinking Water Information System (SDWIS) contains information about public water systems as reported to US Environmental Protection Agency (EPA) by the states. Addresses may correspond with the location of the water system, or with a contact address.

Soil Survey Geographic database — **SSURGO**

The Soil Survey Geographic database (SSURGO) contains information about soil as collected by the National Cooperative Soil Survey at the Natural Resources Conservation Service (NRCS). Soil maps outline areas called map units. The map units are linked to soil properties in a database. Each map unit may contain one to three major components and some minor components.

U.S. Fish & Wildlife Service Wetland Data — **US WETLAND**

The U.S. Fish & Wildlife Service Wetland layer represents the approximate location and type of wetlands and deepwater habitats in the United States.

USGS Current Topo — **US TOPO**

US Topo topographic maps are produced by the National Geospatial Program of the U.S. Geological Survey (USGS). The project was launched in late 2009, and the term "US Topo" refers specifically to quadrangle topographic maps published in 2009 and later.

USGS Geology — **US GEOLOGY**

Seamless maps depicting geological information provided by the United States Geological Survey (USGS).

USGS National Water Information System — **FED USGS**

The U.S. Geological Survey (USGS)'s National Water Information System (NWIS) is the nation's principal repository of water resources data. This database includes comprehensive information of well-construction details, time-series data for gage height, streamflow, groundwater level, and precipitation and water use data.

State Sources

Oil and Gas Wells — **OGW**

Oil and Gas Well Data made available by the Utah Automated Geographic Reference Center.

Appendix

Public Water System Facilities **PWS**

A list of Public Water System Facilities made available by the Utah Department of Environment Quality (DEQ) Division of Drinking Water. This dataset includes wells, springs, and surface-water intakes used by public water systems.

Water Rights Database **WATER WELLS**

A list of points of diversion (wells) from the Water Rights database. Uses included are domestic, irrigation, mining, municipal, power, and stockwatering. This data is provided by the Department of Natural Resources' Division of Water Rights.

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TOPOGRAPHIC MAPS

Project Property:	Parcel SS-86 Phase I and Baseline Sampling Parcel SS-86 Heber City UT
Project No:	TBD Salt Lake City
Requested By:	Geosyntec Consultants
Order No:	21040700811
Date Completed:	April 07, 2021

Environmental Risk Information Services
A division of Glacier Media Inc.
1.866.517.5204 | info@erisinfo.com | erisinfo.com

We have searched USGS collections of current topographic maps and historical topographic maps for the project property. Below is a list of maps found for the project property and adjacent area. Maps are from 7.5 and 15 minute topographic map series, if available.

Year	Map Series
2017	7.5
1999	7.5
1955	7.5

Topographic Maps included in this report are produced by the USGS and are to be used for research purposes including a phase I report. Maps are not to be resold as commercial property.
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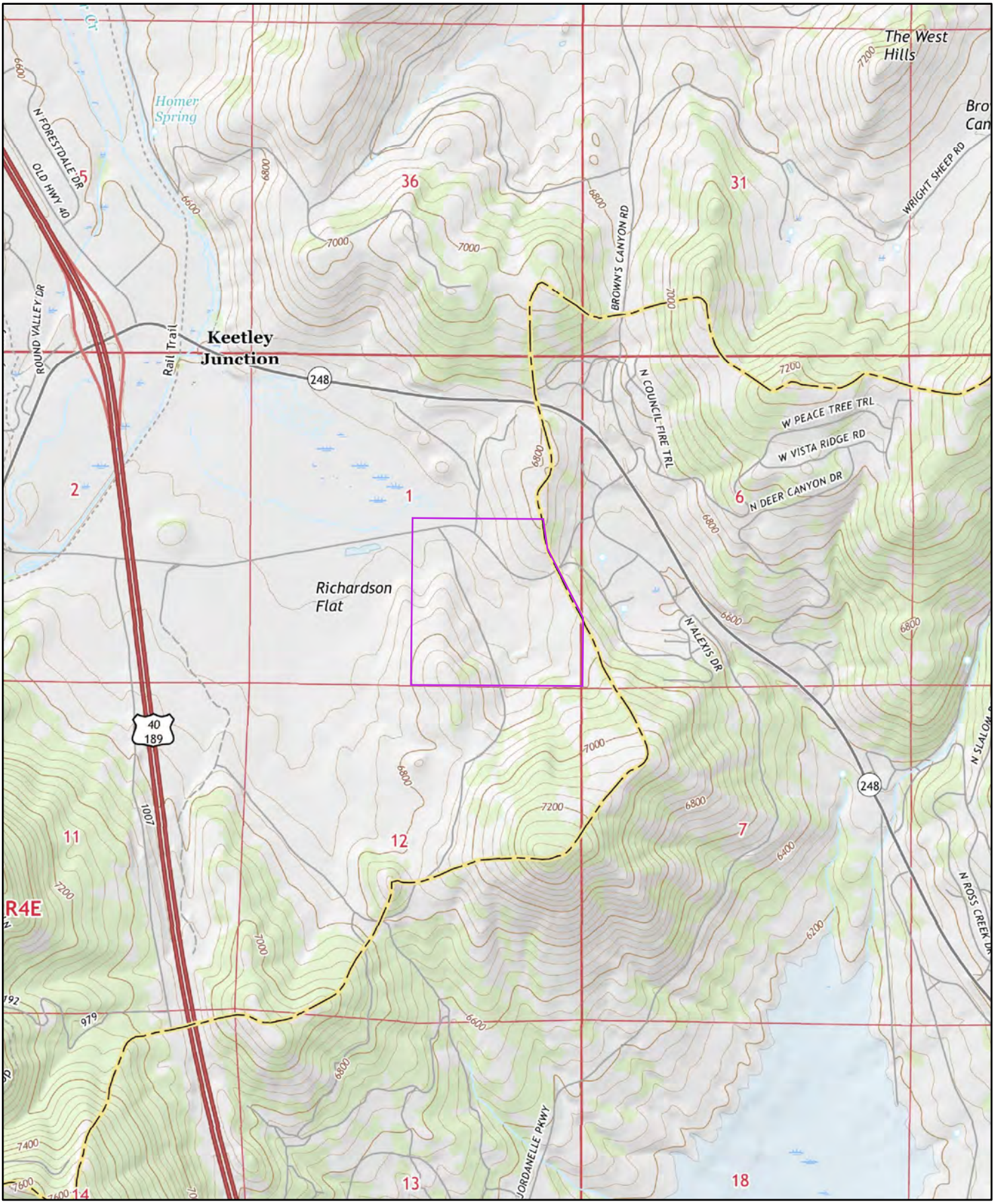


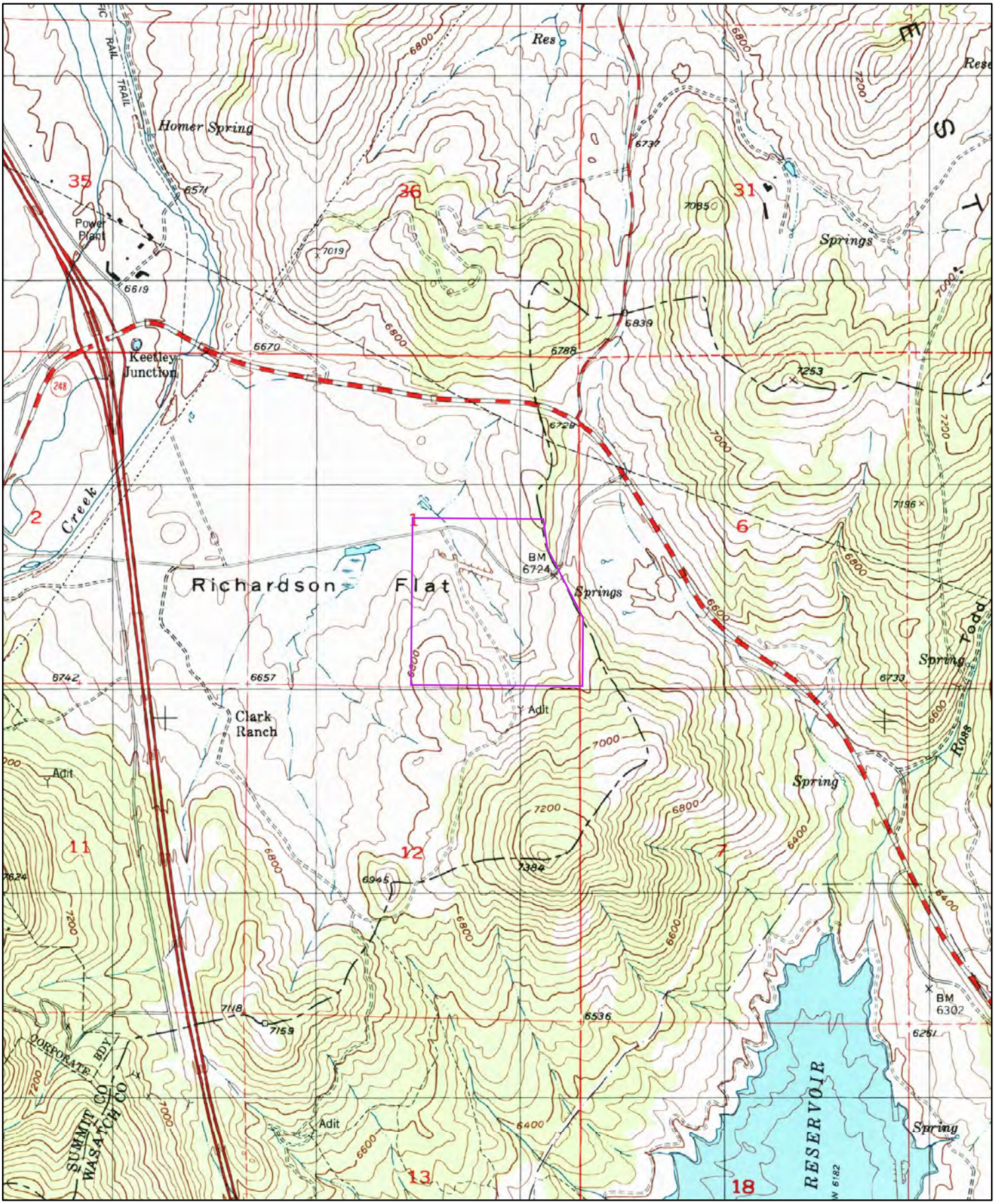
2017

0 0.2 0.4 0.8 Miles

Order No. 21040700811

Quadrangle(s): Park City East,UT

Source: USGS 7.5 Minute Topographic Map



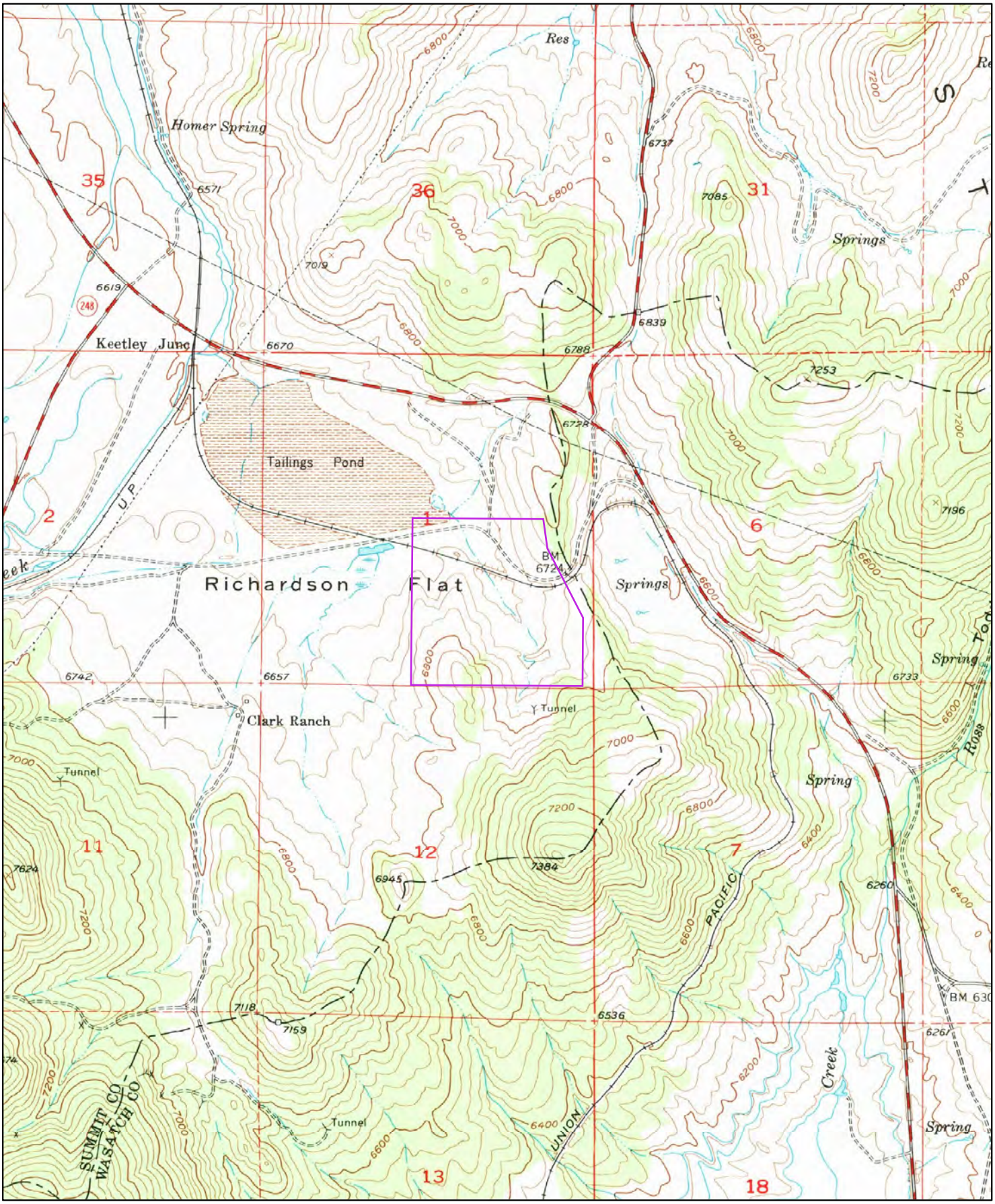
1999

0 0.2 0.4 0.8 Miles

Order No. 21040700811

Quadrangle(s): Park City East,UT

Source: USGS 7.5 Minute Topographic Map



1955

0 0.2 0.4 0.8 Miles

Order No. 21040700811

Quadrangle(s): Park City East,UT

Source: USGS 7.5 Minute Topographic Map

APPENDIX C
User-Provided Documents

USER QUESTIONNAIRE

Site Name: _____ **Completed By:** **Philip J Rubin, Mayor, Hideout Utah**
(name) (title)

Site Address:_____ **Date Completed: 13 April, 2021**

This questionnaire is provided to the client pursuant to guidance in ASTM E1527-13. In order to qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "Brownfields Amendments"), the user must provide the following information (if available) to the environmental professional. Geosyntec requests that this information be provided at the start of this project to ensure the information can be accounted for and the project can be completed on schedule and budget. Failure to provide this information could result in a determination that "all appropriate inquiry" is not complete.

(1.) Environmental cleanup liens that are filed or recorded against the site (40 CFR 312.25).

Are you aware of any environmental cleanup liens against the site that are filed or recorded under federal, tribal, state or local law?

We have been told that the property in question does not have any environmental liens.

(2.) Activity and land use limitations (AULs) that are in place on the site or that have been filed or recorded in a registry (40 CFR 312.26).

Are you aware of any AULs, such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law?

We are not aware of AULs, such as engineering controls, land use restrictions or institutional controls that are in place at the site and/or have been filed or recorded in a registry under federal, tribal, state or local law.

(3.) Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR 312.28).

As the user of this Phase I ESA do you have any specialized knowledge or experience related to the site or nearby properties? For example, are you involved in the same line of business as the current or former occupants of the site or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of

We are aware that the adjoining property (OU-1) in under EPA oversight. However, we do not know the specifics of the EPA concerns

---

(4.) Relationship of the purchase price to the fair market value of the site if it were not contaminated (40 CFR 312.29).

Does the purchase price being paid for this site reasonably reflect the fair market value of the site? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the site?

We are not the buyer but we understand that the purchase prices is inline with comparable properties.

(5.) Commonly known or reasonably ascertainable information about the property (40 CFR 312.30).
Are you aware of commonly known or reasonably ascertainable information about the site that would help the environmental professional to identify conditions indicative of releases or threatened releases? For example, as user:

(a.) Do you know the past uses of the site? It has been vacant for some time. We are not aware of prior uses.
(b.) Do you know of specific chemicals that are present or once were present at the site? We are not aware of any specific chemicals that are present or once were present at the site.
(c.) Do you know of spills or other chemical releases that have taken place at the site? We are not aware of any spills or other chemical releases that have taken place at the site
(d.) Do you know of any environmental cleanups that have taken place at the site? We are not aware of any environmental cleanups that have taken place at the site

---

(6.) The degree of obviousness of the presence of likely presence of contamination at the site, and the ability to detect the contamination by appropriate investigation (40 CFR 312.31).

As the user of this ESA, based on your knowledge and experience related to the site are there any obvious indicators that point to the presence or likely presence of contamination at the site?

The site is in direct proximity to an EPA managed location, and that makes us concerned that the subject site may have contamination.

NOTE 1: For the purposes of this Phase I ESA, the "user" is defined as follows: *The user is the party seeking to use ASTM E1527-13 to complete an environmental site assessment of the sits. A user may include, without limitation, a potential purchaser of site, a potential tenant of site, an owner of site, a lender, or a site manager. The user has specific obligations for completing a successful application of this practice as outlined in EPA's All Appropriate Inquiry Rule.*

NOTE 2: In the case of a "yes" answer to any of the above questions, Geosyntec requests the client provide additional elaboration or documentation where applicable to fully explain the answer.

USER QUESTIONNAIRE
ADDITIONAL INFORMATION

Please note that in addition to answering the above questions (and providing the additional elaboration or documentation where applicable [such as in the case of a "yes" answer to any of the questions in the "User Questionnaire" provided on the previous page]), certain other information should be collected by the User, if available, and provided to the environmental professional. This information is intended to assist the environmental professional but is not necessarily required to qualify for one of the LLPs. From ASTM E1527-13, the information includes:

(a) the reason why the Phase I ESA is required

We are considering allowing development of the site, and want to ensure that there is no health or safety risk at the site

(b) the type of site and type of site transaction, for example, sale, purchase, exchange, etc.

This property is being purchased by a developer who is looking to develop the site. The conditions of sale are unknown to us.

(c) the complete and correct address for the site (a map or other documentation showing site location and boundaries is helpful)

(d) the scope of services desired for the Phase I ESA (including whether any parties to the property transaction may have a required standard scope of services on whether any considerations beyond the requirements of ASTM E1527-13 are to be considered)

(e) identification of all parties who will rely on the Phase I ESA report

The Town of Hideout Utah and the Developer will make decisions based on the outcome of the report

(f) identification of the site contact and how the contact be reached

---

(g) any special terms and conditions which must be agreed upon by the environmental professional

The development agreement requires the developer to maintain a testing protocol to ensure that the site remains free of contamination (assuming the Phase I reflects that the property is free of contamination). The environmental professional would recommend the testing protocol.

(h) any other knowledge or experience with the site that may be pertinent to the environmental professional (for example, copies of any available prior environmental site assessment reports, documents, correspondence, etc., concerning the site and its environmental condition)

We have provided the prior studies to the environmental professionals

October 11, 2020

Mr. Nate Brockbank
Western States Ventures
362 West Pierpont Avenue
Salt Lake City, Utah 84101

Re:
Addendum to Phase I Environmental Site Assessment
Summit County Parcel SS-86
SE of S.R. 248 and U.S. Highway 40
Summit County, Utah
CMT Project No. 14715

Mr. Brockbank,
CMT Engineering Laboratories, Inc. (CMT) previously completed a Phase I Environmental Site Assessment[1] (ESA) for Summit County Parcel SS-86 on June 18, 2020. The Phase I ESA identified one controlled recognized environmental condition (CREC) in connection with the target property. The CREC is associated with the Richardson Flat tailing impoundment (OU1 of the Richardson Flat Tailings site) that was identified extending onto the northwest corner of the target property. The Phase I ESA report concluded the following:

"One CREC was identified with OU1 of the Richardson Flat Tailings site, the boundary of which extends onto the extreme northwest corner of the target property (see section 8.1). We do not believe the CREC currently poses an environmental risk to the target property, however, Land Use Covenants (LUCs) and/or associated Activity and Use Limitations (AULs) associated with institutional controls currently being drafted for OU1 of the Richardson Flat Tailings site may limit future land use on the extreme northwest corner of the target property."

We understand that the northwest corner of the target property identified in the Phase I ESA report as being part of OU1 is actually owned by Summit County and is not part of the target property. An annotated plat map showing this property is included with this addendum letter. Based on this understanding, none of the target property is included in OU1 of the Richardson Flat Tailings site and OU1 does not represent a REC in connection with the target property.

[1] CMT Engineering Laboratories, Inc., 2020, Phase I Environmental Site Assessment, Summit County Parcel SS-86, SE of S.R. 248 and U.S. Highway 40, Summit County, Utah; Unpublished consultant's report, CMT Project No. 14715, June 18, 2020.

All other findings and conclusions of the referenced Phase I ESA report for the target property remain valid and can be relied upon.

We appreciate the opportunity to provide our services on this project. If we can answer any questions or be of further assistance, please call.

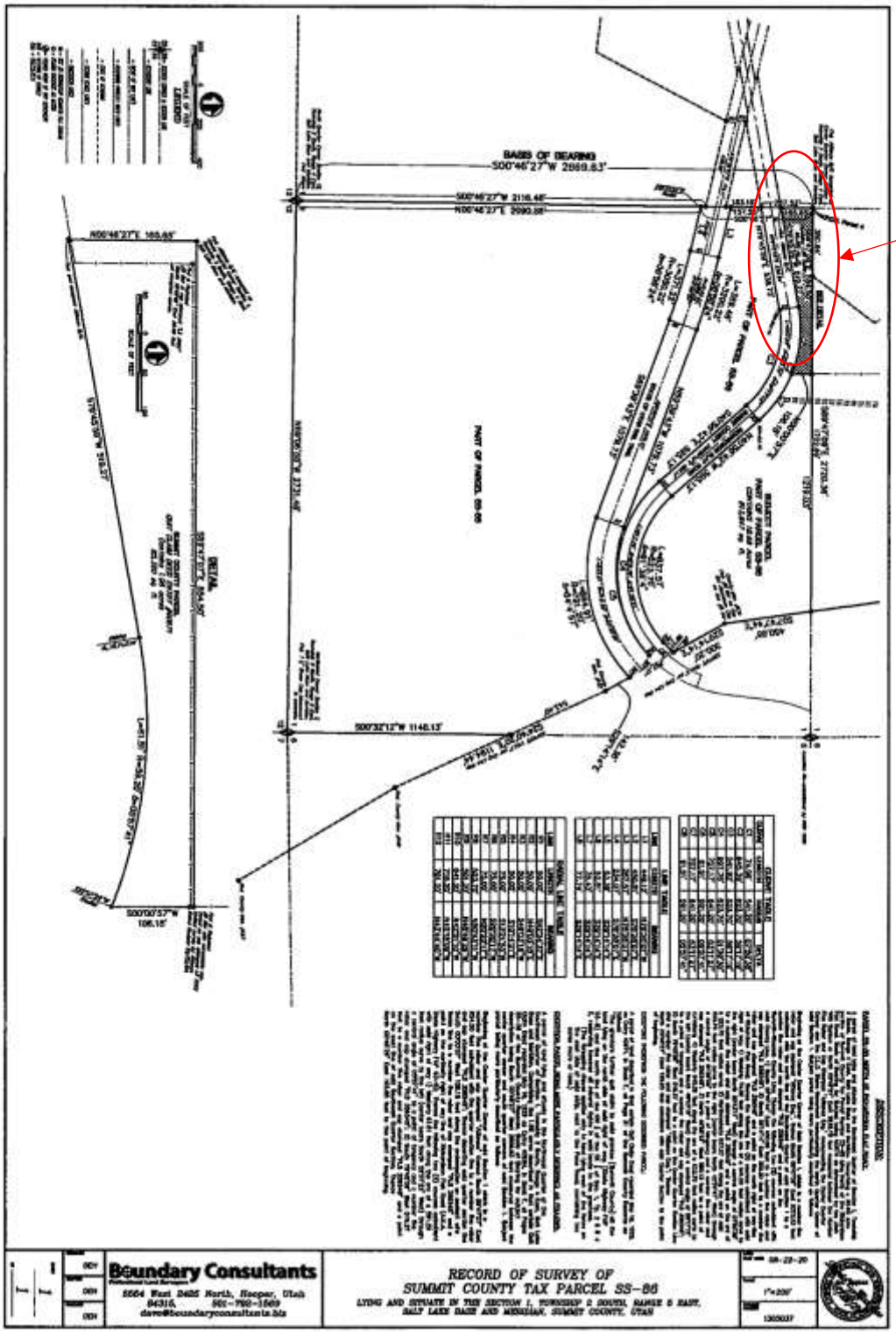
Respectively,
CMT Engineering Laboratories



Mark C. Larsen, P.G.
Senior Geologist/ Environmental Professional

Attachments:

Annotated Plat Map



Property partially within OU1 of the Richardson Flat Tailings Site owned by Summit Co. and not included within Parcel SS-86 (Target Property)

CMT ENGINEERING LABORATORIES



ENGINEERING • ENVIRONMENTAL (ESA I & II)
MATERIALS TESTING • SPECIAL INSPECTIONS
ORGANIC CHEMISTRY

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Summit County Parcel SS-86

SE of S.R. 248 and U.S. Highway 40
Summit County, Utah
CMT Project No. 14715

FOR:
Mr. Nate Brockbank
Western States Ventures
362 West Pierpont Avenue
Salt Lake City, Utah 84101

June 18, 2020

EXECUTIVE SUMMARY

CMT Engineering Laboratories has completed a Phase I Environmental Site Assessment for the target property located in Summit County, Utah. This Phase I Environmental Site Assessment was performed in general conformance with the scope and limitations of ASTM Standard E 1527-13. The target property consists of 1 parcel with the following Summit County Parcel ID Number: SS-86. In total, the parcel comprises approximately 146.63 acres. The target property is currently predominantly open, undeveloped land with varied terrain included steep hill slopes and flat fields/meadows. The northern portion of the property is crossed by Richardson Flats Road which runs from east to west across the site. An old railroad grade also crosses the northern portion of property and the swath of land occupied by the grade is not included in the boundaries of the target property. The tracks have been removed from the grade and it is no longer in use for rail travel. Several unpaved roads and trails also cross the target property and an earthen berm was previously built across a drainage on the south-central portion of the property, presumably to retain water within the drainage.

The target property has historically remained undeveloped land with the exception of the road and railroad grade crossings on the northern portion of the property.

Our review of current State and Federal environmental databases, engineering control registries, and institutional control registries, and a Radius Map Report prepared by GeoSearch, identified three regulated sites or facilities on or within the required search radii of the target property (Sections 8.1 and 8.2).

Based on the observations, research, and interviews conducted while performing this Phase I Environmental Site Assessment for the target property, no RECs or HRECs, as defined by ASTM Standard E 1527-13 were identified in connection with the target property or adjacent, surrounding properties. One CREC was identified with OU1 of the Richardson Flat Tailings site, the boundary of which extends onto the extreme northwest corner of the target property (see section 8.1). We do not believe the CREC currently poses an environmental risk to the target property, however, Land Use Covenants (LUCs) and/or associated Activity and Use Limitations (AULs) associated with institutional controls currently being drafted for OU1 of the Richardson Flat Tailings site may

limit future land use on the extreme northwest corner of the target property. No known sources of potential vapor migration or intrusion at the target property were identified in this assessment.

The current owners of the target property, nor their representatives, responded to a site assessment questionnaire within the timeframe of this assessment. If a response is received after this Phase I ESA is submitted which changes the conclusion of this report, an addendum will be submitted.

With the exception of Park City, no other government officials or departments responded to a records request within the timeframe of this assessment. If any responses are received after this Phase I ESA is submitted which changes the conclusion of this report, an addendum will be submitted.

No other significant data gaps that would alter the findings and conclusions of this report where encountered.

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APPENDICES

Appendix A: Site Inspection Checklist / Site Photographs
Appendix B: Historical Aerials Package / Historical Topographic Maps / FIM Report
Appendix C: Radius Report
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1.0-INTRODUCTION

CMT Engineering Laboratories was retained by Western States Ventures to conduct a Phase I Environmental Site Assessment (ESA) for Summit County Parcel SS-86 in Summit County, Utah. The site will be referred to herein as the target property.

The purpose of the Phase I ESA is to evaluate the conditions on the target property and adjoining properties related to current or historical site uses in order to identify the presence or likely presence of any Recognized Environmental Conditions (RECs) in connection with the property or adjoining properties.

Recognized environmental conditions are defined by the American Society for Testing and Materials' (ASTM) Standard E 1527-13 as "The presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: (1) due to any release to the environment; (2) under conditions inductive of a release to the environment; or (3) under conditions that pose a material threat of a future release to the environment. De minimis conditions are not recognized environmental conditions"

As defined in the ASTM Standard, a de minimis condition is "a condition that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies."

ASTM Standard E 1527-13 also includes the designation of Controlled REC (CREC). As defined in the ASTM Standard a CREC is "A recognized environmental condition resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority (for example, as evidenced by the issuance of a no further action letter or equivalent, or meeting risk-based criteria established by regulatory authority), with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls (for example, property use restrictions, activity and use limitations, institutional controls, or engineering controls)."

Historical RECs (HRECs) are defined in the ASTM Standard as "A past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a

regulatory authority, without subjecting the property to environmental controls. The final decision on whether a past release is an HREC rests with the environmental professional (EP), and will be influenced by the current impact of the past release to the Site."

The Phase I ESA meets the requirements of the United States Environmental Protection Agency's (US EPA) Appropriate Inquiries (AAI) Rule (2005) and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (1980) (Also known as Superfund). Meeting the requirements of the AAI Rule allows for qualification of landowner liability protection (LLP) under the CERCLA Brownfield Amendments (2002). The American Society for Testing and Materials (ASTM) has published the *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* as Standard Designation E 1527-13. This standard meets the AAI requirements which became effective on November 6, 2013.

The target property is found at Latitude: 40.671497° N and Longitude: -111.439192° W. The location of the target property is shown on **Figure 1,** on the following page.



FIGURE 1, VICINITY MAP

2.0-OBJECTIVES

2.1 Scope of Work

The purpose of the Phase I Environmental Site Assessment (ESA) is to evaluate the conditions on the target property and adjoining properties related to current or historical site uses in order to identify the presence or likely presence of any Recognized Environmental Conditions (RECs) in connection with the property or adjoining properties. At a minimum, the Phase I ESA typically includes a review of publicly available, reasonably ascertainable, and practically reviewable environmental records and historical data, a reconnaissance of the target property and surrounding properties, interviews with property owners, site managers, and/or occupants, and interviews with pertinent government officials to assess the presence or the potential presence of recognized environmental conditions at the target property.

This Phase I ESA is generally consistent with the current ASTM Standard (ASTM E 1527-13) and industrial accepted standards as defined within the following scope-of-work:

1. Conduct an on-site, non-intrusive/non-analytical reconnaissance of the target property and a limited reconnaissance of adjoining, surrounding properties. The reconnaissance is performed by a qualified and experienced geologist or engineer from CMT Engineering Laboratories.

2. Review and interpret a limited number of historical aerial photographs, historical topographic maps, and, when available, city directories, and historical fire insurance maps that include the location of the target property in order to evaluate historical site usage.

3. Research available geological and hydrological data for the location of the target property and vicinity.

4. Conduct a comprehensive review of the most recent Federal and State environmental databases and control registries relative to the target property and surrounding properties within the ASTM E 1527-13 recommended search radius from the target property. CMT Engineering Laboratories contracts with GeoSearch to conduct searches of Federal and State environmental databases and control registries and to provide a radius map report of the search findings. CMT also performs searches of available State and Federal databases through various State of Utah Department of Environmental Quality (DEQ) and Federal Environmental Protection Agency (EPA) internet sites. At a minimum, Federal National Priorities Lists (NPL); Target property, 1-mile radius of property, and the following databases and control registries are reviewed:

- Comprehensive Environmental Response Compensation and Liability Index System (CERCLIS) lists; Target property and 0.5-mile radius of property

- Resource Conservation and Recovery Act (RCRA) Corrective Action Report (CORRACTS) Treatment, Storage, Disposal facilities (TSD) list; Target property and 1-mile radius of property

- Resource Conservation and Recovery Act (RCRA) non-Corrective Action Report (non-CORRACTS) Treatment, Storage, Disposal facilities (TSD) list; Target property and 0.5-mile radius of property

- Resource Conservation and Recovery Act (RCRA) Generators list; Target property and 0.25-mile radius of property
- Utah Landfill Inventory List; Target property and 0.5-mile radius of property
- Utah Underground Storage Tank (UST) and Above Ground Storage Tank (AST) Sites lists; Target property and 0.25-mile radius
- Utah Leaking Underground Storage Tank (LUST) and Leaking Above Ground Storage Tank (LAST) Sites lists; Target property and 0.5-mile radius of property
- Utah SPILLS (reported petroleum and hazardous materials releases) list; Target property

A number of other databases and control registries are reviewed for the target property and surrounding properties within required search distances as part of the GeoSearch Radius Report. A complete list of the databases and control registries reviewed is included in the GeoSearch Radius Report in **Appendix C**.

5. Conduct an assessment of potential vapor migration/ encroachment at the target property.

6. Conduct interviews of current and/or past property owners, managers, or occupants concerning the present and past site usage, conditions, and events at the target property.

7. Conduct interviews of, or submit information requests to, pertinent government and regulatory officials, agencies, and departments concerning present and past site usage, conditions, and events at the target property and surrounding areas.

8. Provide a summary of the findings of our assessment and any pertinent conclusions and opinions pertaining to our findings.

2.2 Limitations of Assessment

CMT Engineering Laboratories has performed this assessment with the usual care and thoroughness of a consulting professional based on the scope-of-work, limits of time, cost, and publicly available, reasonably ascertainable, and practically reviewable information. We have made no attempt to determine the marketability of the target property or its suitability for any particular use, and such a determination should not be inferred based solely on this report. The information and findings presented in this report is not, and should not be, considered a warranty regarding the presence or non-presence of recognized environmental conditions in connection with the target property.

The presence of RECs in connection with the subject property may warrant additional investigation or studies to better evaluate and classify target property conditions and determine potential environmental liabilities on property owners, occupants, or operators.

The historical information sources researched for this Phase I Environmental Site Assessment revealed the uses of the target property from the present back to 1937 (historical aerial photographs) and 1903 (historical topographic maps). This meets the 1940- minimum research limit per the ASTM Standard E 1527-05 § 8.3.2.

The Phase I ESA does not address the following Non-ASTM E 1527-13 scope items:

- Asbestos-containing building materials
- Lead based paint
- Naturally occurring radon
- Lead in drinking water
- Wetlands
- Regulatory compliance
- Cultural and historical resources
- Industrial hygiene
- Health and safety
- Ecological resources
- Endangered species
- Indoor air quality
- Biological agents
- Mold
- PCB Light Ballasts
- Environmental Lien Search
- Chain of Title Report

The evaluation of any of the above listed considerations is beyond the scope of this assessment and would require additional assessment by an appropriate, qualified professional.

This assessment has been non-intrusive and non-analytical in nature which is typical of a Phase I Environmental Site Assessment. Therefore, CMT Engineering Laboratories makes no claims relative to surficial or subsurface conditions in relation to the target property or in relation to conditions which would require analytical testing to evaluate. It is understood that a Phase I ESA, such as the one reported herein, does not and cannot eliminate all of the environmental risks and liabilities associated with the target property. This report consists of our professional opinions made in accordance with the procedures and principles as outlined in ASTM E1527-13. This warranty is in lieu of all other warranties either expressed or implied.

2.3 Reliance

A Phase I ESA performed in accordance with ASTM E1527-13 and completed less than 180 days prior to the date of acquisition or date of intended transaction is presumed to be valid. After 180 days, or if additional

information becomes known, or if significant, pertinent changes occur to the conditions of the target property, then all or portions of the environmental site assessment may need to be updated prior to the date of acquisition or date of intended transaction. After one year of the date of this report, the assessment should be considered void and should not be relied upon. After one year of the date of this report, a new Environmental Site Assessment of the target property would be required.

This report is prepared for the sole use and benefit of Western States Ventures and its duly-authorized representatives, affiliates, and assigns, and may not be relied upon by any other person or entity without the written authorization (reliance letter) of CMT Engineering Laboratories.

2.4 Commonly Used Acronyms

The Following list contains some of the commonly used acronyms used in this report and supporting documentation. The list is not considered to be all inclusive.

AST	Above Ground Storage Tank
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERCLIS	CERCLA Information System
CREC	Controlled Recognized Environmental Condition
CWA	Clean Water Act
DERR	Division of Environmental Remediation and Response (UDEQ)
ERNA	Emergency Response Notification System
EWA	Enforceable Written Assurances
FINDS	Facility Index System/Facility Registry System
FIFRA	Federal Insecticide, Fungicide, & Rodenticide Act
FTTS	FIFRA/TSCA Tracking System
HIST FTTS	Historical FTTS
HREC	Historical Recognized Environmental Condition
ICIS	Integrated Compliance Information System
NPDES	National Pollutant Discharge Elimination System
LUST	Leaking Underground Storage Tank
NFA	No Further Action
RCRA	Resource Conservation and Recovery Act
RCRA-CESQG	RCRA Conditionally Exempt Small Quantity Generator
RCRA-NONGEN	RCRA Non-Generator
RCRA-SQG	RCRA Small Quantity Generator
RCRA-LQG	RCRA Large Quantity Generator
RCRA TSDF	RCRA Treatment, Storage and Disposal Facilities
REC	Recognized Environmental Condition
TRIS	Toxic Chemical Release Inventory System

TSCA	Toxic Substance Control Act
UDEQ	Utah Department of Environmental Quality
U.S. EPA	United States Environmental Protection Agency
UST	Underground Storage Tank

3.0-PREVIOUS REPORTS

CMT Engineering was not provided copies of any previous environmental assessment reports for the target property and we are not aware of any such reports.

4.0-SITE DESCRIPTION

4.1 Location

The target property is located southeast of the intersection of S.R. 248 and U.S. Highway 40 in the Richardson Flat area of the southwest portion of Summit County, Utah. Richardson Flats Road crosses the northern portion of the target property from east to west. The location of the target property is shown on **Figure 1**. The target property consists of 1 parcel with the following Summit County Parcel ID Number: SS-86. In total, the parcel comprises approximately 146.63 acres. The approximate boundaries of the entire target property are shown on **Figure 2** below.



FIGURE 2, SITE MAP

4.3 Current Property Use

The target property is currently predominantly open, undeveloped land with varied terrain included steep hill slopes and flat fields/meadows. The northern portion of the property is crossed by Richardson Flats Road which runs from east to west across the site. An old railroad grade also crosses the northern portion of property and the swath of land occupied by the grade is not included in the boundaries of the target property. The tracks have been removed from the grade and it is no longer in use for rail travel. Several unpaved roads and trails also cross the target property and an earthen berm was previously built across a drainage on the south-central portion of the property, presumably to retain water within the drainage. Several photographs of the target property and adjacent areas are included in **Appendix A**.

4.4 Structural Description

There are no existing permanent structures on the target property.

4.5 Neighboring Properties

The current uses of the surrounding, adjacent properties is as follows:

North: Undeveloped hill slopes and fields/meadows with a stream.

East: Richardson Flats road and commercial and residential development.

South: Undeveloped hill slopes and meadows.

West: Undeveloped hill slopes and meadows, Richardson Flats Road, and a park and ride lot to the northwest.

5.0-SITE RECONNAISSANCE

5.1 Methodology

A reconnaissance of the target property and adjacent, surrounding properties was conducted on June 5, 2020. The weather conditions at the time of the reconnaissance were mostly clear with a temperature of approximately 75 to 80 degrees (F). The purpose of the reconnaissance was to visually observe the target property and adjacent properties for evidence of potential or actual recognized environmental conditions (RECs). The reconnaissance was non-intrusive and non-analytical in nature. A summary of the observed

conditions on the target property and adjacent, surrounding properties was documented in an inspection checklist which is included in **Appendix A**.

5.2 Observations

5.2.1 Proposed Construction and Materials

CMT is not aware of specific, future development plans for the target property.

5.2.2 Utilities

There are no existing structures on the target property. It is anticipated that any future development on the target property will be serviced by municipal and private utility providers who provide sanitary sewer, culinary water, electric power, natural gas and communication utilities in the area.

5.2.3 Hazardous Substances and Petroleum Products

No hazardous materials or petroleum products were observed on the target property.

5.2.4 Staining

No surficial staining was observed on the target property.

5.2.5 Storage Tanks

No evidence of an underground storage tank (UST) or an above ground storage tank (AST) was observed during the site reconnaissance or within the Utah Department of Environmental Quality's (UDEQ) interactive UST data map. See Section 8.1, On-Site Environmental Conditions, for more details.

5.2.6 Asbestos Containing Materials (ACMs)

No structures that could contain ACMs were observed on the target property.

5.2.7 Odors

No unusual odors that could be attributed to hazardous substances or petroleum products were encountered at the target property.

5.2.8 Pools, drains, or Sumps

No pools, drains, or sumps were observed on or adjacent to the target property.

5.2.9 Unidentified Substance Containers

No unidentified containers of any type were observed on or adjacent to the target property.

5.2.10 Polychlorinated Biphenyls (PCBs)

No potential sources that could contain PCBs were observed on or adjacent to the target property.

5.2.11 Pits, Ponds, or Lagoons

No pits, ponds, or lagoons were observed on or adjacent to the target property. A small, spring-fed stream emanates from the central portion of the property and flows north-northwest off of the property. The small amount of water in the stream was clear with no sheens and appeared to support plant and animal life.

5.2.12 Stressed Vegetation

No stressed vegetation was observed on or adjacent to the target property.

5.2.13 Solid Waste

During the site reconnaissance, several small piles of refuse/debris were observed along an unpaved road on the northwest portion of the property. The refuse/debris appeared to be household items illegally dumped on the property. No staining was observed in conjunction with the refuse/debris and the refuse/debris was observed to be non-hazardous and does not represent an REC.

5.2.14 Water Wells and Water Service

Acronym	Search Radius (miles)	TP/AP	1/8 Mile (>TP/AP)	1/4 Mile (>1/8)	1/2 Mile (>1/4)	1 Mile (>1/2)	>1 Mile	Total
Federal USGS Wells	0.5000	0	1	0	2	NS	NS	3
Water Wells	0.5000	0	14	0	1	NS	NS	15
Total		**0**	**15**	**0**	**3**	**0**	**0**	**18**

NS = Not Searched
TP/AP = Target Property/Adjacent Property
The GeoPlus Water Well Report is included in **Appendix D.**

5.2.15 Oil and Gas Wells

Acronym	Search Radius (miles)	TP/AP	1/8 Mile (>TP/AP)	1/4 Mile (>1/8)	1/2 Mile (>1/4)	1 Mile (>1/2)	>1 Mile	Total
Oil and Gas Wells	0.5000	0	0	0	0	NS	NS	0
Total		**0**	**0**	**0**	**0**	**0**	**0**	**0**

NS = Not Searched
TP/AP = Target Property/Adjacent Property
The GeoPlus Oil and Gas Report is included in **Appendix D.**

5.2.16 Septic Systems

No evidence of a septic system was observed on the property.

6.0-PAST SITE LAND USE

The history of the target property has been assessed by reviewing a limited number of historic aerial photographs, historical topographic maps, historic city directories, Sanborn Fire Insurance Maps, and a review of Summit County Parcel assessor's maps where available.

6.1 Property Information

The target property is comprised of 1 parcel. The parcel information below was identified on the Utah County parcel assessor's website:

PARCEL NO	ADDRESS	ACRES	OWNER
SS-86	Null	146.63	Stichting Mayflower Mountain Fonds

6.2 Fire Insurance Maps

A Fire Insurance Map Report prepared by GeoSearch indicates that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information. Sanborn fire insurance maps were typically produced from the late 1800s to the 1950s and, in some areas, more recently. When no mapping is available for a location, it typically indicates that the location had sparse to no development at the time the mapping was completed. The target property is an unmapped property. A copy of the Fire Insurance Map Report prepared by GeoSearch is included in **Appendix B**.

6.3 Aerial Photographs

An aerial photo decade package was provided by GeoSearch. The following historical aerial photograph years that include the location of the target property were reviewed: 1937, 1953, 1962, 1967, 1976, 1983, 1987, 1993, 1997, 2003, 2004, 2006, 2009, 2011, 2014, 2016 and 2018. Our observations and interpretations of the photographs are summarized below:

1937: The aerial indicates that Richardson Flats Road was unpaved and crossed the northern portion of the property. The existing railroad grade bisecting the northern portion of the property was also present. The earthen berm across the drainage on the south-central portion of the property (Section 4.3) is also visible in the photo. The remainder of the property appears to have been undeveloped hill slopes and meadows with a few unpaved roads/trails. What appears to be the Richardson Flats Tailings area is visible beyond to the northwest. None of the tailings piles in the area appear to have encroached onto or immediately adjacent to the target property. The remainder of the surrounding, adjacent areas appear to have been undeveloped land.

1953: The aerial shows no significant change from the previous imagery.

1962: The aerial shows no significant change from the previous imagery.

1967: The aerial shows no significant change from the previous imagery.

1976: The aerial shows no significant change from the previous imagery.

1983: The aerial shows no significant change from the previous imagery.

1987: The aerial shows no significant change from the previous imagery.

1993: The aerial shows no significant change on the target property from the previous imagery. Some work appeared to be in progress in the Richardson Flats Tailings area to the northwest.

1997: The aerial shows no significant change from the previous imagery.

2003: The aerial shows overhead power lines adjacent to the east and crossing the northeast corner of the target property. The aerial shows no other significant change from the previous imagery.

2004: The aerial shows some new road development beyond to the east, including S.R. 248. The aerial shows no other significant change from the previous imagery

2006: The aerial shows the beginnings of the existing commercial and residential development to the east and northeast of the target property. The aerial shows no other significant change from the previous imagery.

2009: The aerial indicates that Richardson Flats Road had been paved. Several commercial structures to the northeast had been completed. The aerial shows no other significant change from the previous imagery.

2011: The aerial shows some of the dumped debris/rubbish on the northwest portion of the target property. Road and drainage work appeared to have been completed in the Richardson Flats Tailings area to the northwest.

2014: The aerial shows no significant change from the previous imagery.

2016: The aerial indicates that additional commercial development and new residential development was in progress to the east and northeast of the target property. The aerial shows no other significant change from the previous imagery.

2018: The aerial indicates that additional commercial development and residential development was in progress to the east and northeast of the target property. The aerial shows no other significant change from the previous imagery. Since 2018, more residential development to the east has occurred.

The GeoSearch Historical Aerials Package reviewed for this assessment is included in **Appendix B**.

6.4 Topographic Maps

CMT Engineering Laboratories reviewed and interpreted readily available historical topographic maps that include the location of the target property and surrounding areas. The maps reviewed include the U.S. Geological Survey, "Coalville, Utah" and "Park City East, Utah" Topographic Maps dated 1903, 1955, 1999, and 2014. A summary of the observations of the reviewed maps is provided below.

1903: The map shows Richardson Flats Road crossing the northern portion of the target property location. No other development is mapped on the target property. Several other unimproved roads are mapped to the north, northeast, and northwest as well as a railroad grade to the northwest.

1955: The map shows Richardson Flats Road (unimproved) and the railroad grade crossing the northern half of the target property. The spring-fed spring emanating on the south-central portion of the property and flowing north-northwest is also mapped. The Richardson Flats Tailings Pond is shown to the northwest of the property and is mapped extending onto the extreme northwest corner of the property.

1999: The map shows an unpaved road/trail crossing the western half of the property from north to south. No other changes are shown on the property. The Richardson Flats Tailings Pond to the northwest is no longer mapped. No other significant changes are shown.

2014: The map shows streets associated with the existing commercial and residential development to the east and northeast of the target property as well as other existing roads and highways in the area.

The GeoSearch Historical Topographic Maps reviewed for this assessment are included in **Appendix B**.

6.5 City Directories

A search was made by GeoSearch in the City Directories for the site and surrounding vicinity. No listings for the target property were identified within the City Directories. Several listings for properties in the vicinity were identified in the City Directories. A copy of the City Directories Report prepared by GeoSearch is included in **Appendix D**.

7.0-GEOLOGIC AND HYDROLOGIC EVALUATION

7.1 Subsurface

The target property is located in the Richardson Flat area of southwest Summit County, Utah. The area is bound by the Wasatch Mountain Range to the west and the West Hills and Uinta Mountains beyond to the east and is part of the Wasatch Hinterlands section of the Middle Rocky Mountain Physiographic Province of north-central Utah. The Wasatch Hinterlands are described by Stokes (1986) as "a belt of mixed, moderately rugged topography" located between the Wasatch Mountains to the west and the Uinta Mountains to the east. Stokes further describes the area as having "varied and unorganized topography with hilly areas dominating valley areas." The target property sits at an elevation ranging between approximately 6,620 and 6,860 feet above sea level.

The geology of the Park City East 7.5 minute quadrangle, including the location of the target property, has been mapped by Biek (2017). The surficial geology over the location of the site and adjacent properties is relatively complex as shown on the included portion of the referenced geologic map in **Figure 3** on the following page. The following table summarizes the geologic units mapped at the target property and adjacent areas.

Geologic Units Mapped on and Adjacent to Site

Map Unit	Description	Age
Qh	Artificial fill	Historical
Qafc	Fan alluvium and colluvium	Holocene to upper Pleistocene
Tkrf	Lava flows of Richardson Flat (Keetley Volcanics)	lower Oligocene to upper Eocene
Tksc	Volcanic mudflow breccia of Silver Creek (Keetley Volcanics)	Lower Oligocene to upper Eocene

Unit Qh mapped on the target property is associated with the earthen berm crossing the drainage on the south-central portion of the property. It should also be noted that Unit Qhm associated with the Richardson Flat Tailings site to the northwest does not extend to or onto the target property. The surficial geology and general topography of the target property and surrounding area is shown on **Figure 3** below.

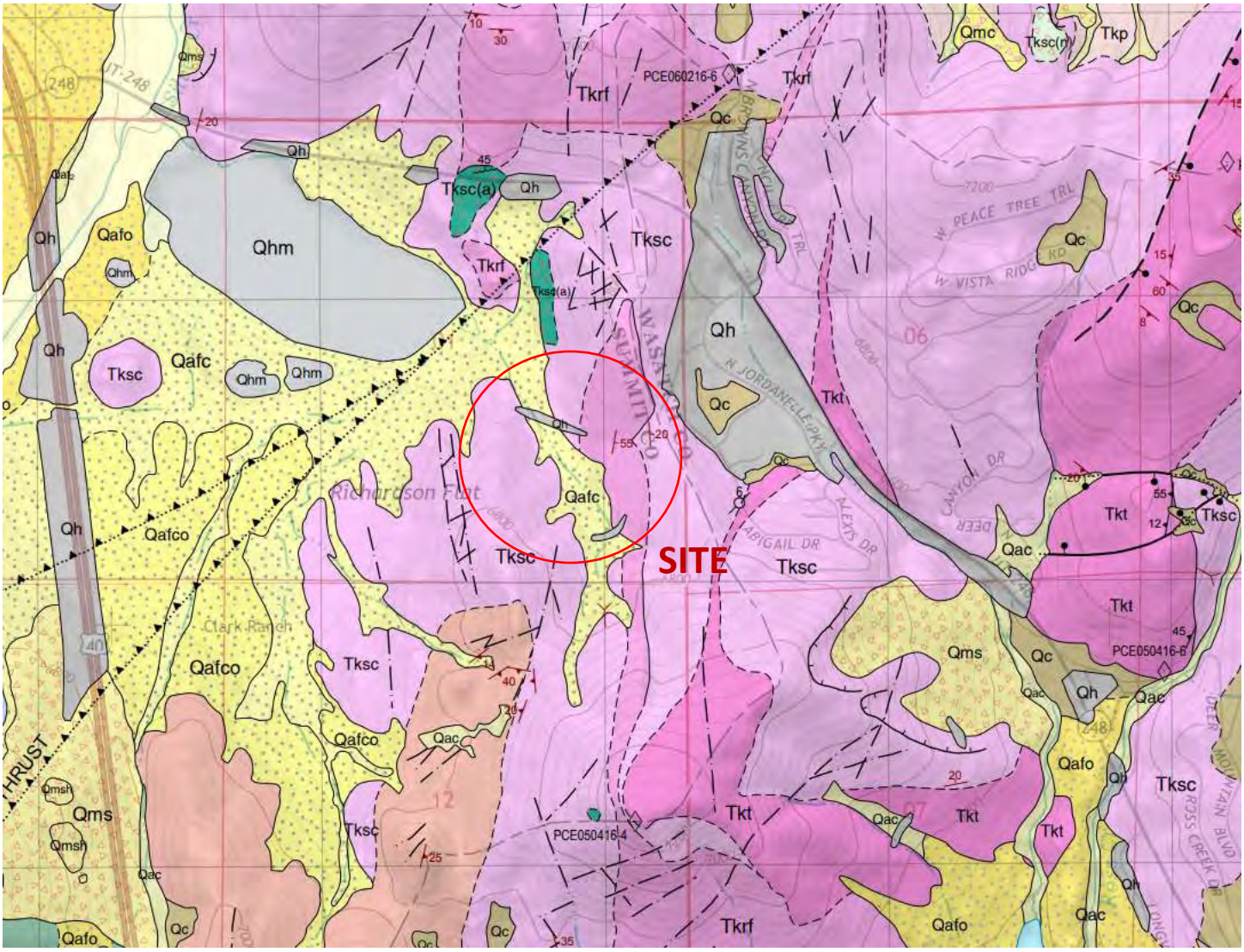


FIGURE 3, GEOLOGIC MAP

7.3 Hydrology

An investigation of groundwater levels and flow direction at the target property is beyond the scope of this assessment. Regional groundwater flow is inferred to be generally toward the north and northwest at the location of the property based on topography. However, regional and local groundwater flow directions and elevations are likely significantly influenced by precipitation, irrigation, surface drainage, variations in

topography, and variations in subsurface geology. There is a potential for seasonal fluctuations in groundwater flow directions and groundwater levels at the location of the target property.

8.0-FEDERAL AND STATE DATABASE REVIEW

Current Federal and State environmental databases, engineering control registries, and institutional control registries, including: NPL, CERCLIS, RCRA, LUST, UST, and Utah Landfill Inventory, were reviewed in order to assess potential environmental liabilities associated with the target property and/or properties within a specified search radius. For a comprehensive summary of findings refer to GeoSearch Radius Report in **Appendix C**. Detailed explanations of the databases and control registries searched are also included in the Radius Report. In addition to the GeoSearch Radius Report, CMT Engineering conducted a search of available Utah DEQ databases through their internet web site.

The following sections list the mapped, regulated sites/facilities that were found during the search of available ("reasonably ascertainable") environmental and control registry records either on the target property or within the required ASTM E1527-13 search radius from the target property.

8.1 On-Site Environmental Conditions

The following table list environmental database listings that were identified within the boundary of the target property.

ACRONYM	FACILITY	STREET	REC
CERCLIS	Richardson Flat Tailings	3.5 Miles NE of Park City, Park City, UT	CREC
ECHOR08	Richardson Flat Tailings	NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	CREC
FRSUT	Richardson Flat Tailings	NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	CREC
ICIS	Richardson Flat Tailings	NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	CREC
PNPL	Richardson Flat Tailings	1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	CREC
RODS	Richardson Flat Tailings	1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	CREC
SEMS	Richardson Flat Tailings	1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	CREC

The following site history for the Richardson Flat Tailings is from the U.S. EPA:

(https://cumulis.epa.gov/supercpad/SiteProfiles/index.cfm?fuseaction=second.Cleanup&id=0800705#bkground)

"The Richardson Flat Tailings site is located near Park City, Utah. The site is comprised of multiple Operable Units, or areas, including a tailings impoundment that holds about seven million tons of tailings (Richardson Flat tailings impoundment – OU1), an approximately six-mile-long reach of Silver Creek with an unknown amount of upland, riparian and instream tailings deposits, and draining water from a second tailings impoundment (Prospector Square tailings impoundment). EPA proposed the site for listing on the Superfund Program's National Priorities List (NPL) in 1988, but ultimately decided not to pursue final listing on the NPL. EPA and two potentially responsible parties (PRPs) are currently evaluating the Silver Creek tailings deposits and the water draining from the second tailings impoundment. For these portions of the site, EPA and the PRPs are currently collecting environmental data to understand the nature and extent of contamination and to inform remedy selection.

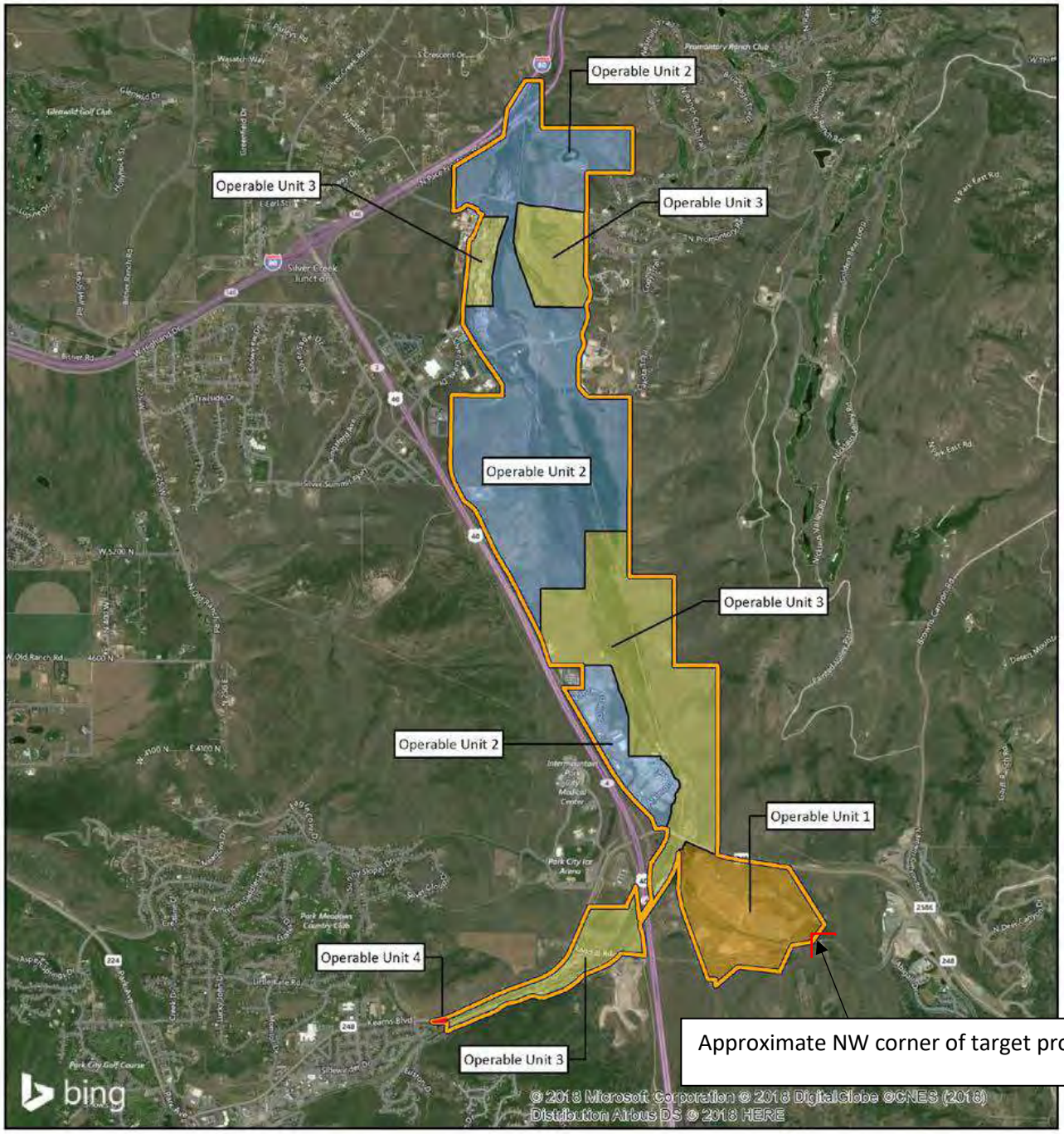
The Richardson Flat tailings impoundment (OU1) consists of a tailings dam and an impoundment area. Historic aerial photos show that a tailings pile existed as early as 1953. The most recent tailings disposal in the area took place from 1975 to 1981, when United Park City Mines (UPMC) leased its mining operations to Noranda Mining and Park City Ventures. The location of the tailings impoundment is owned by UPCM. In 1989, EPA and State of Utah officials observed mine tailings at the site sinking into an on-site diversion ditch and Silver Creek. During the 1990s, UPCM did some voluntary work at the site, including covering most of the tailings pile with clean, low-permeability soil and reseeding the site. The diversion ditch was also improved.

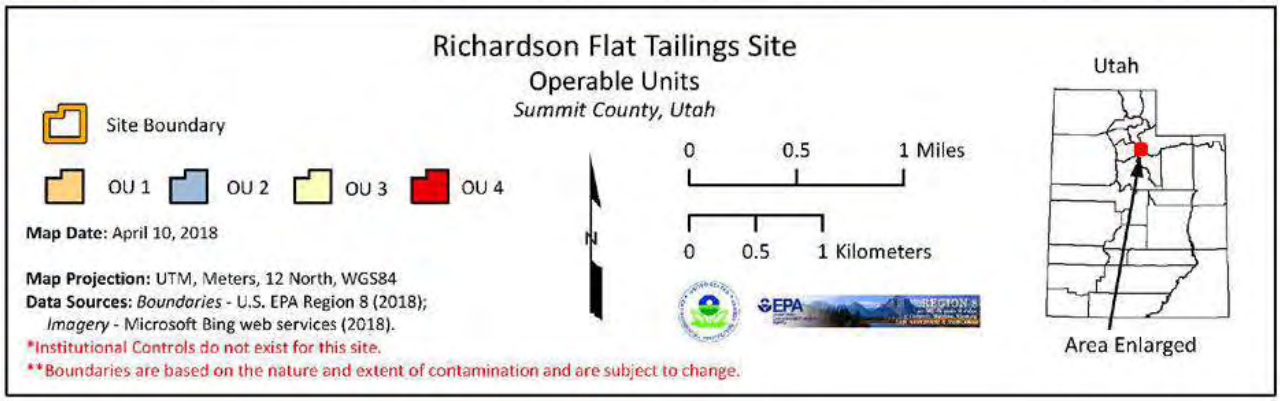
Remedy construction at OU1 was completed by UPCM, with EPA oversight, included consolidating tailings material within the main impoundment, installing a wedge buttress to support the main embankment, and removal of sediments within the wetland area. All of these actions are complete. The Richardson Flat tailings impoundment is to be capped after remedial actions are completed at other portions of the site, which may affect the tailings impoundment.

EPA and the Utah Department of Environmental Quality (UDEQ) are conducting a five-year review of the Operable Unit 1 (Richardson Flat tailings impoundment) remedy for the Richardson Flat Tailings site. The

purpose of the five-year review is to make sure that selected cleanup actions effectively protect human health and the environment. This is the second five-year review for the site. It will be completed in summer 2018."

CMT has reviewed the referenced 2018 Five-year Review of the Richardson Flat Tailings site (RFTS) and a copy of the Five-year Review is included in **Appendix E**. A map from the Five-year review showing the boundaries of the RFTS and its operable units is included on the following page. We have shown the approximate northwest corner of the target property on the map in relation to the RFTS site.


Operable Unit 2
Operable Unit 3
Operable Unit 3
Operable Unit 2
Operable Unit 3
Operable Unit 2
Operable Unit 1
Operable Unit 4
Operable Unit 3
Approximate NW corner of target property
bing
© 2018 Microsoft Corporation © 2018 DigitalGlobe ©CNES (2018)
Distribution Airbus DS © 2018 HERE


Richardson Flat Tailings Site
Operable Units
Summit County, Utah
Site Boundary
OU 1
OU 2
OU 3
OU 4
Map Date: April 10, 2018
Map Projection: UTM, Meters, 12 North, WGS84
Data Sources: Boundaries - U.S. EPA Region 8 (2018);
Imagery - Microsoft Bing web services (2018).
*Institutional Controls do not exist for this site.
**Boundaries are based on the nature and extent of contamination and are subject to change.
N
0 0.5 1 Miles
0 0.5 1 Kilometers
EPA
Utah
Area Enlarged

Operable Unit 1 (OU1) of the RFTS has received considerable attention and remediation work to this point. Additional work is in discussion or planning stages and institutional controls for the site are being implemented. The boundary of OU1 extends onto the extreme NW corner of the target property. The remainder of the entire RFTS area is located down-gradient of the target property and all surface drainage flows to the north and northwest, away from the target property. Based on our review of historical aerial photographs (Section 6.3) and the geologic map included in Section 7.0, no tailings or other fill associated with OU1 of the RFTS appears to have encroached onto the target property. According to the 2018 Five-year review, there is no risk to off-site groundwater sources from OU1. Tailings have been removed from all areas outside of the current impoundment area on OU1, including areas adjacent to the northwest portion of the target property. The nearest current operation and monitoring areas within the OU1 area are more than 150 feet to the northwest of the target property and tailing impoundment areas awaiting additional remediation are located more than 1,500 feet to the west and northwest of the target property. Institutional controls being drafted for the OU1 area under an existing Record of Decision (ROD) will reportedly institute land use restrictions and shallow groundwater use restrictions for the OU1 area.

Based on our research and understanding, we conclude that the RFTS OU1 area, as well as all other OUs within the RFTS do not pose a significant environmental risk to the target property. We conclude that OU1 of the RFTS represents a CREC in relation to the target property, and specifically to the extreme northwest portion of the target property within the OU1 boundary where future institutional controls associated with OU1 may impact site use on that portion of the target property. The remainder of the target property outside of the OU1 boundary would not be subject the institutional controls and related site use restrictions. No additional assessments are recommended at this time with respect to the target property and OU1 of the RFTS.

8.2 Off-Site Environmental Conditions

The table below lists the regulated sites or facilities that were identified within the required search radii of the target property.

ACRONYM	FACILITY	STREET	DISTANCE (miles)	DIRECTION	REC
USICISNPDES	BK Storage	1240 W. Richardson Flat Rd, Kamas, UT	0.017	ENE	No
USMRDS	Unknown Tunnel	Summit Co. Park City, UT	0.034	S	No

The water discharge permit for the BK Storage site, identified in the USICISNPDS Database expired in May of 2019 and was likely in place as a requirement during construction at the site. No violations or enforcement actions associated with the permit were reported. The unknown tunnel identified in the USMRDS database is mapped just south of the target property. CMT did not observed the tunnel or any related spoils or tailings at the time of our site reconnaissance or in our aerial photograph review. No orphan sites were identified within the Radius Map Report.

8.2.1 RCRA Sites

The RCRA Generators database is searched within a one-quarter mile radius of the site. The RCRA database lists facilities that have notified the EPA of hazardous waste activity. There are 3 categories of hazardous waste generators:

1. Generators of no more than 100 kilograms per month (kg/mo), known as conditionally exempt small-quantity generators (CESQG).
2. Generators of 100 to 1,000 kg/mo, known as small-quantity generators (SQG).
3. Generators of 1,000 kg or more in a month, known as large-quantity generators (LQG).

No RCRA sites were identified within the required search distance of the target property.

8.2.2 Underground Storage Tank Sites

No underground storage tanks sites were identified within the required search distance of the target property.

8.2.3 National Priority List Sites

Other than the previously discussed RFTS (Section 8.1), no other NPL or CERCLIS sites were identified within the required search distance of the target property.

8.2.4 Vapor Migration

No sites/facilities that could pose a significant risk of subsurface vapor migration and related building vapor encroachment at the target property were found in our search of the referenced databases and control registries.

9.0-INTERVIEWS

9.1 Owners

The current owners of the target property, nor their representatives, responded to a site assessment questionnaire within the timeframe of this assessment. If a response is received after this Phase I ESA is submitted which changes the conclusion of this report, an addendum will be submitted.

9.2 Government Agencies and Officials

CMT submitted a records request under the Government Records Access and Management Act (GRAMA) to Summit County and any other pertinent government entities in the area for any available records pertaining to potential recognized environmental conditions or potential environmentally detrimental events on or in the immediate vicinity of the target property. Park City responded to the request on June 10, 2020 with information pertaining to Park City Heights VCP site. However, this site does not appear to be on or adjacent to the target property and does not represent an REC. At the time of submittal of this report, no other government officials or agencies have responded to the records request. If any responses are received following the submittal of this report which change the findings and conclusions of the ESA for the target property, an addendum will be submitted.

9.3 Others Familiar with the Target Property

No other individuals or entities familiar with the target property were interviewed at the time of this assessment.

10.0-DATA GAPS

The current owners of the target property, nor their representatives, responded to a site assessment questionnaire within the timeframe of this assessment. If a response is received after this Phase I ESA is submitted which changes the conclusion of this report, an addendum will be submitted.

With the exception of Park City, no other government officials or departments responded to a records request within the timeframe of this assessment. If any responses are received after this Phase I ESA is submitted which changes the conclusion of this report, an addendum will be submitted.

No other significant data gaps that would alter the findings and conclusions of this report where encountered.

11.0-FINDINGS

Based on the observations, research, and interviews conducted while performing this Phase I Environmental Site Assessment for the target property, no RECs or HRECs, as defined by ASTM Standard E 1527-13 were identified in connection with the target property or adjacent, surrounding properties. One CREC was identified with OU1 of the Richardson Flat Tailings site, the boundary of which extends onto the extreme northwest corner of the target property (see section 8.1). We do not believe the CREC currently poses an environmental risk to the target property, however, Land Use Covenants (LUCs) and/or associated Activity and Use Limitations (AULs) associated with institutional controls currently being drafted for OU1 of the Richardson Flat Tailings site may limit future land use on the extreme northwest corner of the target property. No known sources of potential vapor migration or intrusion at the target property were identified in this assessment.

12.0-CONCLUSIONS

CMT Engineering has performed a Phase I Environmental Site Assessment in general conformance with the scope and limitations of ASTM Standard E 1527-13 for the target property. This assessment did not identify any RECs or HRECs in connection with the Target property or adjacent, surrounding properties. One CREC in connection with an adjacent site was identified (Sections 8.1 and 11.0).

13.0-STATEMENT OF QUALIFICATIONS

The reviews of state and federal environmental regulatory agency records (institution and engineering control registries), and available historical records, completed for this study were conducted by a qualified member of our engineering staff. The interviews/records requests of property owners/managers, government officials, and other pertinent individuals were conducted by a qualified member of our engineering staff. The qualifications of the environmental professional(s) who conducted this assessment are presented in **Appendix F**.

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in §312.10 of this part (40 CFR Part 312, All Appropriate Inquiries Rule). We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR part 312.

14.0-GENERAL INFORMATION AND CONDITIONS

The Phase I Environmental Assessment provided by CMT Engineering for the target property was performed in accordance with presently accepted practices of the engineering consulting profession in this area. The degree of care exercised in preparing this report is consistent with other local consulting firms. Our findings and conclusions are not presented as scientific certainties, but rather as professional opinions based on the limited data obtained during this study. Changes in the conditions of the target property and surrounding properties can occur with the passage of time, whether due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards and regulations may occur, whether the result of legislation, from the broadening of knowledge, or from other reasons. Accordingly, the findings of this report may be invalidated wholly or partially by changes beyond our control. The information obtained from the record research and the interviews pertaining to the target property is considered to be reliable. However, CMT Engineering does not warrant or guarantee that the information provided by referenced sources is accurate and/or complete.

15.0-CLOSURE

We appreciate the opportunity to be of service to you on this project. If you have any questions, please call.

CMT Engineering Laboratories

Lindsey Bradshaw
Environmental Technician

LICENSED PROFESSIONAL GEOLOGIST
No. 5293214
MARK CURTIS LARSEN
6/18/2020
STATE OF UTAH

Mark C. Larsen, P.G.
Engineering Geologist

16.0-REFERENCES

Biek, R.F., 2017*, Interim Geologic Map of the Park City East Quadrangle, Summit and Wasatch Counties, Utah;* USGS Open File Report 677, Scale 1:24,000.

Stokes, W.L., 1986, *Geology of Utah*; Utah Museum of Natural History, University of Utah, and Utah Geological and Mineral Survey, Department of Natural Resources, p. 243

Summit County Land Records Website:
https://summitcounty.maps.arcgis.com/apps/webappviewer/index.html?id=85c6c55514ae4d4f9218202e364fec73

Utah Department of Environmental Quality internet site: http://www.deq.utah.gov/.

Historical Aerials Package, Radius Report, Oil and Gas Report, Physical Setting Report, Water Well Report, Fire Insurance Map Report, City Directories Report, and Historical Topographic Maps Report
Prepared By: GeoSearch
PO Box 60789
Colorado Springs, CO 80960
Toll Free: 866-962-7772
www.geosearch.com

APPENDIX A

SITE INSPECTION CHECKLIST

SITE PHOTOGRAPHS

CMT Phase I ESA Inspection Checklist

SITE DATA

Site Name: Summit County Parcel SS-86 Site #_____ CMT Job # 14715

Property Address: SE of SR 248 and US Hwy 40

City:_____ County: Summit County State: UT Zip:_____

Date of Inspection: 6/5/20 Prepared For: Western States Ventures

Environmental Inspector: Mark Larsen, P.G.

PROPERTY DESCRIPTION AND USE

Owner: Stichting Mayflower Mountain Fonds Phone Number:_____

Address:_____

Contact:_____ Phone Number:_____

Occupant:_____ Phone Number:_____

Site Description: The target property is located southeast of the intersection of S.R. 248 and U.S. Highway 40 in the Richardson Flat area of the southwest portion of Summit County, Utah. Richardson Flats Road crosses the northern portion of the target property from east to west. The target property consists of 1 parcel with the following Summit County Parcel ID Number: SS-86. In total, the parcel comprises approximately 146.63 acres. The target property is currently predominantly open, undeveloped land with varied terrain included steep hill slopes and flat fields/meadows. The northern portion of the property is crossed by Richardson Flats Road which runs from east to west across the site. An old railroad grade also crosses the northern portion of property and the swath of land occupied by the grade is not included in the boundaries of the target property.

Current Property Use: Undeveloped land

Past Property Use: Undeveloped land

SITE INSPECTION - NEIGHBORING PROPERTIES

Date: 6/5/20 Subject Property: Summit Co. Parcel SS-86

NORTH

Name: Undevelopd land

Address:

Description: open land, fields, hillsides.

Observed usage: ___ Residential ___ Commercial ___ Industrial x Vacant

Observed hazards: None

EAST

Name: Commercial and Residential Dev.

Address:

Description: Several businesses, houses, condos

Observed usage: x Residential x Commercial Industrial Vacant

Observed hazards: None

SOUTH

Name: Undeveloped land

Address:

Description: open hills, meadows

Observed usage: Residential Commercial Industrial x Vacant

Observed hazards: None

WEST

Name: Undeveloped land

Address:

Description: open hills, meadows, fields

Observed usage: Residential Commercial Industrial x Vacant

Observed hazards: None

Site Name: Summit Co. Parcel SS-86

GENERAL FIELD OBSERVATIONS

Undeground Storage Tanks: ____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Oily Sheens on Water: ____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Discarded Batteries: ____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Surface Water: x ____ Yes____ No____ Unknown / ____Interior _____ Exterior

Spring feed stream on central and NW portion of site. Clean. No sheens, supports plants and animals

Solid Waste: x ____ Yes____ No____ Unknown / ____Interior _____ Exterior

Some non-hazardous debris rubbish dumped on NW portion of site along dirt road.

Transformers: ____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Drums/Containers: ____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Odors: ____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Site Name: Summit Co. Parcel SS-86

GENERAL FIELD OBSERVATIONS CONTINUED

Above Ground Storage Tanks: ____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Wells: ____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Floor Drains and Floor Slumps: Yes No Unknown / Interior Exterior
No site structures

Urea Formaldehyde Insulation: ____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Lead Paint:____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Stained Soil/Pavement:____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Stressed Vegetation:____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Pits/Ponds/Lagoons:____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

Site Name: Summit Co. Parcel

GENERAL FIELD OBSERVATIONS CONTINUED

Radon: ____ Yes____ No x ____ Unknown / ____Interior _____ Exterior

Stains or Corrosion (floors, walls, ceiling):____ Yes x ____ No____ Unknown/ ____Interior _____ Exterior

Heating/Cooling (gas,electric,etc):____ Yes x ____ No____ Unknown / ____Interior _____ Exterior

–

Comments: No site structures

PREVIOUS ENVIRONMENTAL ACTIVITY

Environmental Documentation:_____ Solid Waste Disposal_____

Environmental Site Assessment_____ Hazardous Waste Disposal_____

Environmental Audit_____ Waste Water (NPDES)_____

Permits_____

Comments:_____

Site Name: Summit Co. Parcel SS-86

CHEMICAL, GAS & MINERAL INSPECTION

UREA FORMALDEHYDE FOAM INSULATION UFFI

Yes	No	Unknown	
☐	☑	☐	Was any evidence of formaldehyde Foam Insulation observed on the property?

LEAD PAINT

Yes	No	Unknown	
☐	☑	☐	Was any visible evidence peeling, cracking or flaking paint observed?
☐	☑	☐	Was any visible evidence of lead paint on the ceilings, walls or floors of any structures observed on the property?

PESTICIDES | HERBICIDES

Yes	No	
☐	☑	Does it appear pesticides or herbicides have been used in excess of normal household use?
☐	☑	Is the property used for agricultural purpose?
☐	☑	Are there any noticeable pesticide odors?

POLYCHLORINATED BIPHENYL (PCBs)

Yes	No	
☐	☑	Were any transformers, electrical devices or hydraulic equipment observed on the property labeled as containing PCB's?
☐	☑	Was there evidence of PCB contamination to the soil or groundwater observed on the property?
☐	☑	Were there any fluorescent lights ballasts labeled as containing PCB's observed?

RADON

Yes	No	Unknown	
☐	☐	☑	Is there reason to suspect that radon may be a problem in the dwelling or the immediate property's locality?
☐	☐	☑	Has radon screening been conducted which indicates that the property may have elevated levels of radon?

Name: Mark Larsen, P.G.

Signature: _____

Date: 6/5/20

Site Name: Summit Co. Parcel SS-86

SITE INSPECTION - SKETCHES - INTERIOR

Site Name: Summit Co. Parcel SS-86

SITE INSPECTION - SKETCHES - EXTERIOR



Photo 1 View of the central portion of the target property, looking south.



Photo 2 View of the old railroad grade bisecting the northern half of the target property, looking east.



Photo 3 Area with several piles of debris and rubbish on the northwest portion of the target property, looking north.



Photo 4 Pile of rubbish on the northwest portion of the target property.



Photo 5 View of the northwest portion of the target property on the north side of Richardson Flat Road, looking northeast.

APPENDIX B

HISTORICAL AERIALS PACKAGE
HISTORICAL TOPOGRAPHIC MAPS
FIM REPORT

GeoSearch
On time. On target. In touch.™

Historical Aerial Photographs

***NEW:** GeoLens by Geosearch*

Target Property:

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Summit, Utah 84060

Prepared For:

CMT Engineering Laboratories-Utah

Order #: 147850
Job #: 355540
Project #: 14715
Date: 6/8/2020

Target Property Summary

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Summit, Utah 84060

USGS Quadrangle: ***Park City East***
Target Property Geometry: ***Area***

Target Property Longitude(s)/Latitude(s):
(-111.434224549, 40.668211114), (-111.434224549, 40.671124376), (-111.435458365, 40.672937239), (-111.436284485, 40.674222905), (-111.436595622, 40.675492272), (-111.443955603, 40.675467861), (-111.443977061, 40.674450742), (-111.441498700, 40.674043889), (-111.439749899, 40.673620761), (-111.438408795, 40.673246452), (-111.437418952, 40.672920965), (-111.436989799, 40.672912827), (-111.436732307, 40.672929102), (-111.436399713, 40.672986062), (-111.436206594, 40.673059297), (-111.435863271, 40.673222040), (-111.435766712, 40.673254589), (-111.435541406, 40.672896553), (-111.436120763, 40.672628025), (-111.436700120, 40.672481554), (-111.437054172, 40.672473417), (-111.437536969, 40.672514103), (-111.438330903, 40.672766358), (-111.439350143, 40.673067434), (-111.440337196, 40.673319686), (-111.441334977, 40.673555664), (-111.443373456, 40.673905559), (-111.443985000, 40.673995067), (-111.443963542, 40.671749197), (-111.443962636, 40.668229755), (-111.439091745, 40.668221617)

Aerial Research Summary

Date	Source	Scale	Frame
2018	USDA	1" = 500'	N/A
2016	USDA	1" = 500'	N/A
2014	USDA	1" = 500'	N/A
2011	USDA	1" = 500'	N/A
2009	USDA	1" = 500'	N/A
2006	USDA	1" = 500'	N/A
2004	USDA	1" = 500'	N/A
2003	USDA	1" = 500'	N/A
07/08/1997	USGS	1" = 500'	N/A
08/23/1993	USGS	1" = 500'	N/A
09/18/1987	USGS	1" = 500'	322-28
09/05/1983	USGS	1" = 500'	747-35
08/24/1976	USGS	1" = 500'	2-186
07/10/1967	ASCS	1" = 1320'	PI-3
08/01/1962	ASCS	1" = 500'	3-22
07/03/1953	USGS	1" = 500'	1-42
1937	ASCS	1" = 500'	U79

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N
W E
S

Richardson Flats Parcel SS-86
USDA
2018

GeoSearch

JOB #: 355540 - 06/08/2020



N
W E
S

Richardson Flats Parcel SS-86
USDA
2016

GeoSearch

JOB #: 355540 - 06/08/2020



N
W E
S

Richardson Flats Parcel SS-86
USDA
2014

GeoSearch

JOB #: 355540 - 06/08/2020

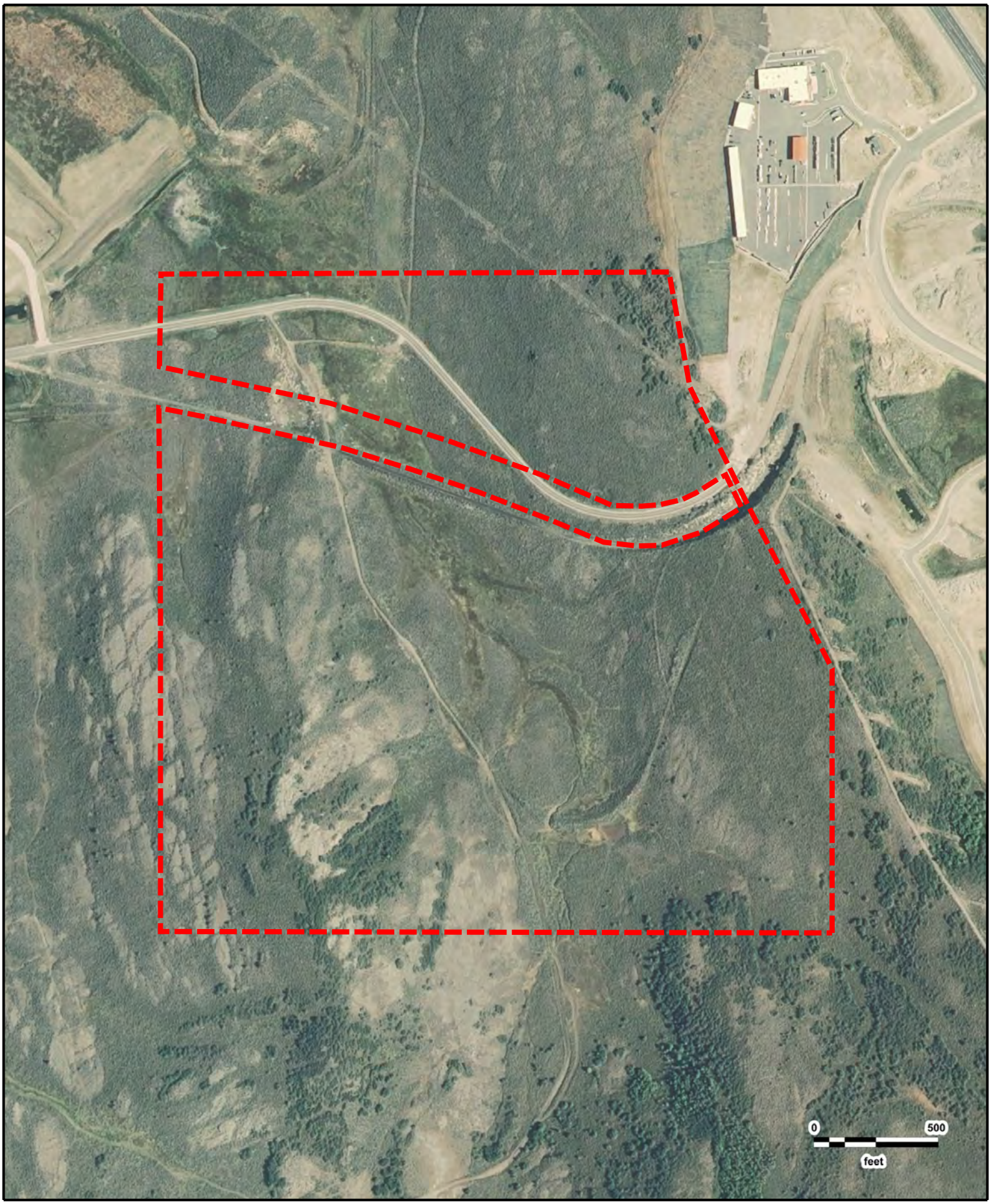


N
W E
S

Richardson Flats Parcel SS-86
USDA
2011

GeoSearch

JOB #: 355540 - 06/08/2020

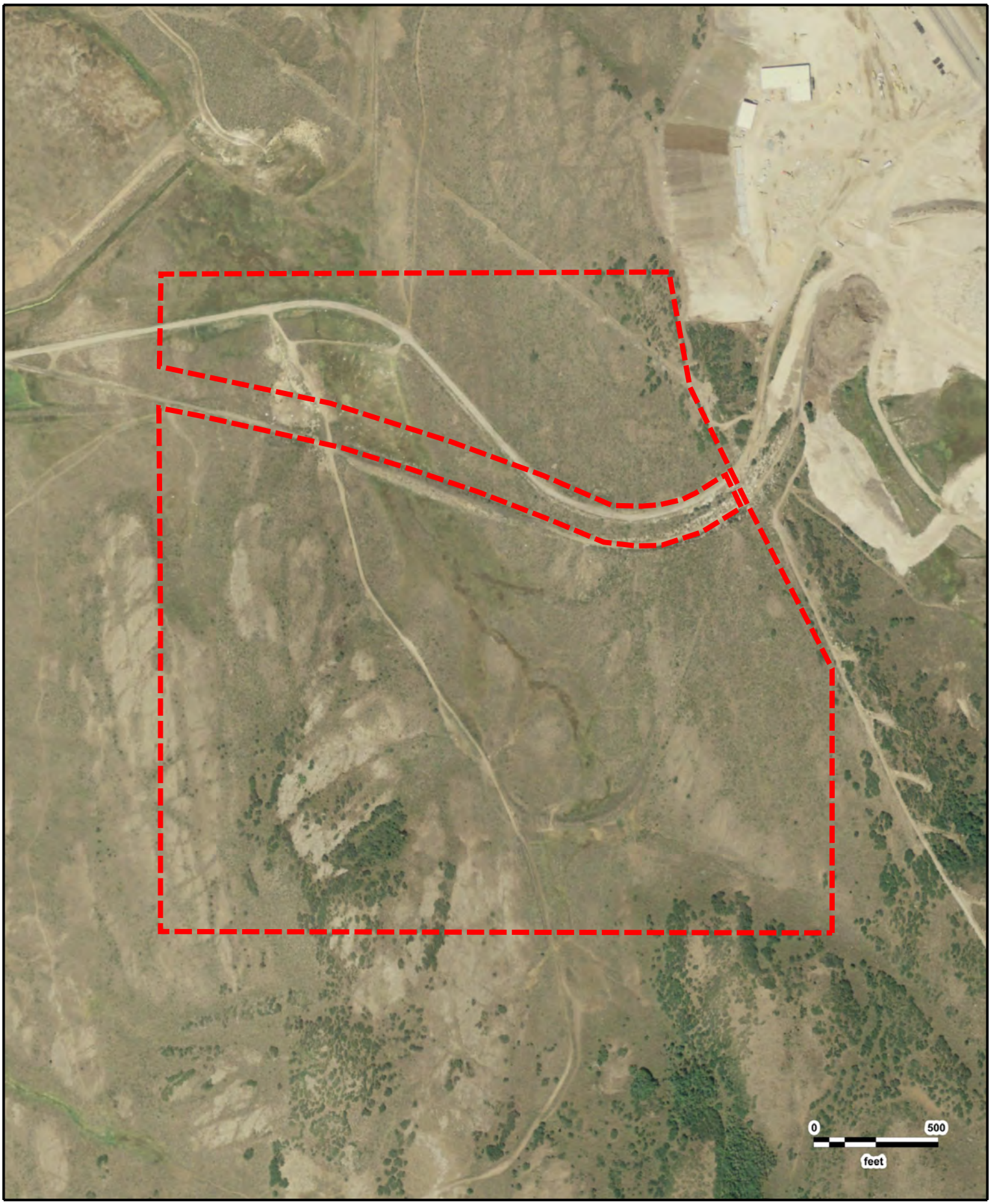


N
W E
S

Richardson Flats Parcel SS-86
USDA
2009

GeoSearch

JOB #: 355540 - 06/08/2020



N
W E
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Richardson Flats Parcel SS-86
USDA
2006

GeoSearch

JOB #: 355540 - 06/08/2020



N
W E
S

Richardson Flats Parcel SS-86
USDA
2004

GeoSearch

JOB #: 355540 - 06/08/2020



N
W E
S

Richardson Flats Parcel SS-86
USDA
2003

GeoSearch

JOB #: 355540 - 06/08/2020



N
W E
S

Richardson Flats Parcel SS-86
USGS
07/08/1997

GeoSearch

JOB #: 355540 - 06/08/2020

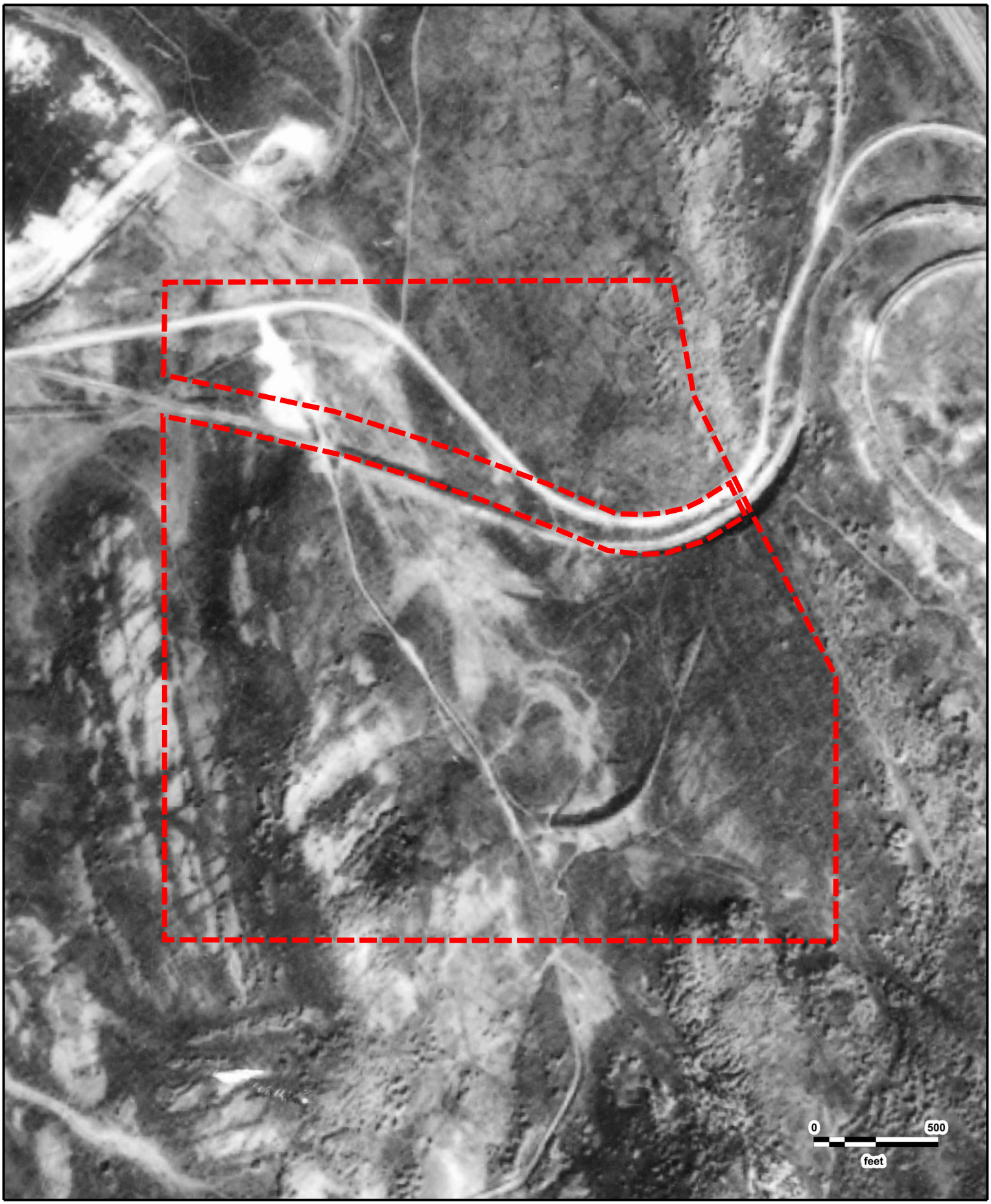


N
W E
S

Richardson Flats Parcel SS-86
USGS
08/23/1993

GeoSearch

JOB #: 355540 - 06/08/2020



N
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Richardson Flats Parcel SS-86
USGS
09/18/1987

GeoSearch

JOB #: 355540 - 06/08/2020



N
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S

Richardson Flats Parcel SS-86
USGS
09/05/1983

GeoSearch

JOB #: 355540 - 06/08/2020



N
W E
S

Richardson Flats Parcel SS-86
USGS
08/24/1976

GeoSearch

JOB #: 355540 - 06/08/2020

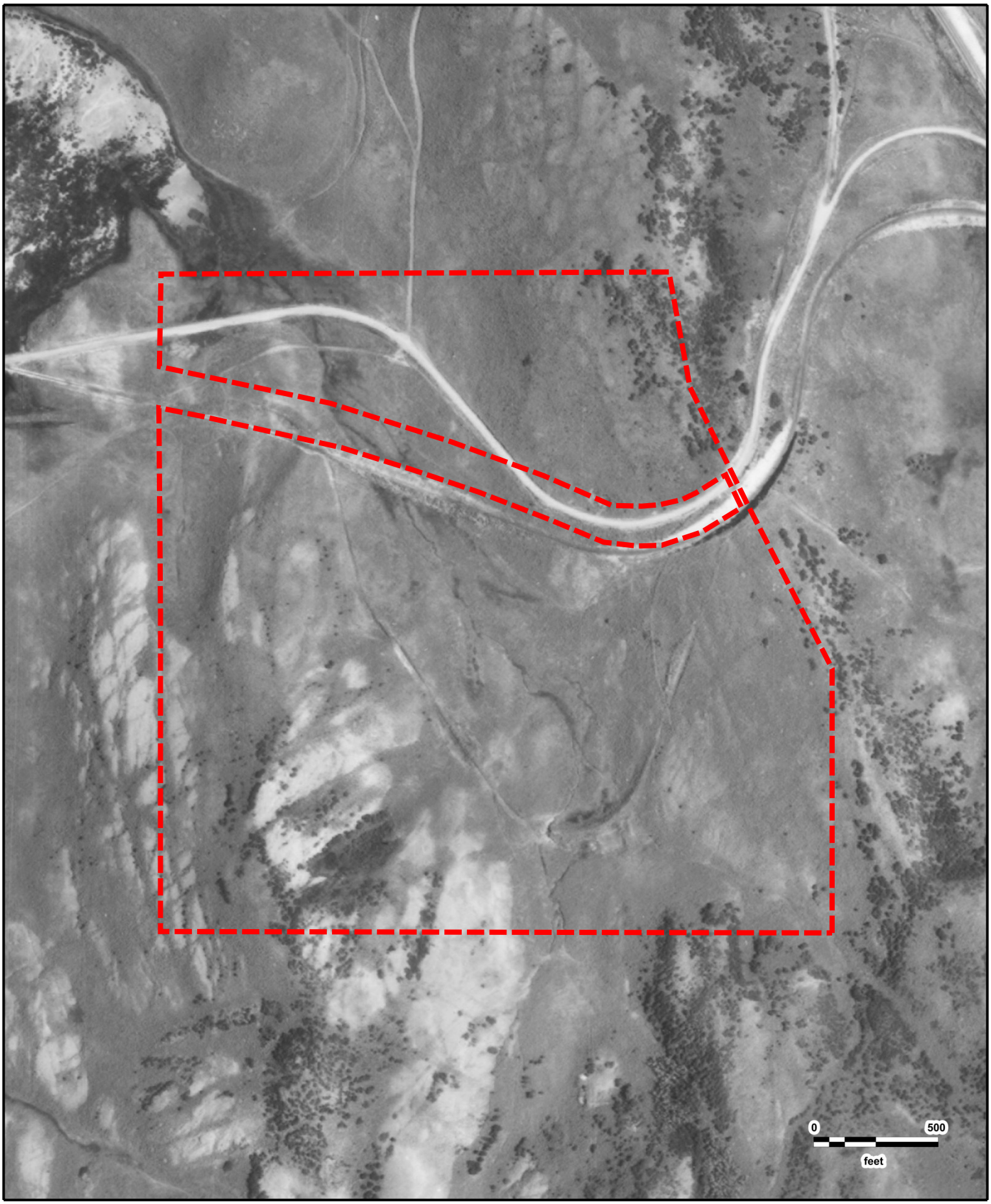


N
W E
S

Richardson Flats Parcel SS-86
ASCS
07/10/1967

GeoSearch

JOB #: 355540 - 06/08/2020



N
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Richardson Flats Parcel SS-86
ASCS
08/01/1962

GeoSearch

JOB #: 355540 - 06/08/2020



N
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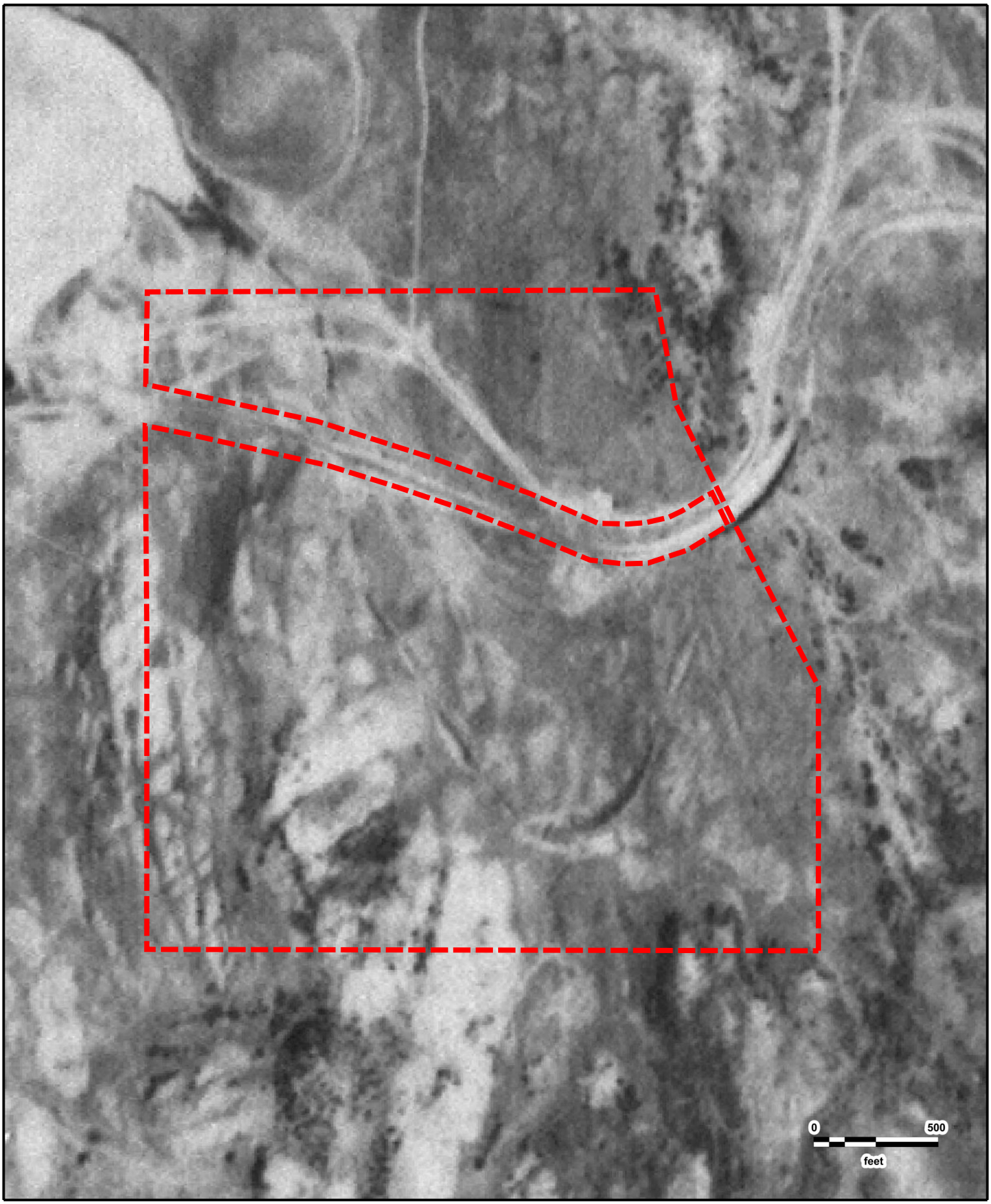
S

Richardson Flats Parcel SS-86
USGS
07/03/1953

GeoSearch

JOB #: 355540 - 06/08/2020



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Richardson Flats Parcel SS-86
ASCS
1937

GeoSearch

JOB #: 355540 - 06/08/2020

GeoSearch
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Fire Insurance Map Abstract

Target Property:

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Summit County, Utah 84060

Prepared For:

CMT Engineering Laboratories-Utah

Order #: 147850
Job #: 355543
Project #: 14715
PO #: 14715
Date: 06/08/2020

Fire Insurance Map Research Results

Date: 06/08/2020
GS Job Number: 147850
Company Name: CMT Engineering Laboratories-Utah
Project Number: 14715
Site Information: Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Utah 84060

Research Results: No Coverage Available

The collections of fire insurance maps listed below were reviewed according to the site information supplied by client. Based on the information provided, no coverage is available.

Library of Congress
University Publications of America
Other Libraries (universities, state, local, etc.).

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Historical Topographic Maps

NEW: *GeoLens by Geosearch*

Target Property:

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Summit, Utah 84060

Prepared For:

CMT Engineering Laboratories-Utah

Order #: 147850
Job #: 355539
Project #: 14715
Date: 6/8/2020

Target Property Summary

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Summit, Utah 84060

USGS Quadrangle: ***Park City East***
Target Property Geometry: ***Area***

Target Property Longitude(s)/Latitude(s):
(-111.434224549, 40.668211114), (-111.434224549, 40.671124376), (-111.435458365, 40.672937239), (-111.436284485, 40.674222905), (-111.436595622, 40.675492272), (-111.443955603, 40.675467861), (-111.443977061, 40.674450742), (-111.441498700, 40.674043889), (-111.439749899, 40.673620761), (-111.438408795, 40.673246452), (-111.437418952, 40.672920965), (-111.436989799, 40.672912827), (-111.436732307, 40.672929102), (-111.436399713, 40.672986062), (-111.436206594, 40.673059297), (-111.435863271, 40.673222040), (-111.435766712, 40.673254589), (-111.435541406, 40.672896553), (-111.436120763, 40.672628025), (-111.436700120, 40.672481554), (-111.437054172, 40.672473417), (-111.437536969, 40.672514103), (-111.438330903, 40.672766358), (-111.439350143, 40.673067434), (-111.440337196, 40.673319686), (-111.441334977, 40.673555664), (-111.443373456, 40.673905559), (-111.443985000, 40.673995067), (-111.443963542, 40.671749197), (-111.443962636, 40.668229755), (-111.439091745, 40.668221617)

Topographic Map Summary

Date	Quadrangle	Scale
2014	PARK CITY EAST, UT	1" = 2000'
1999	PARK CITY EAST, UT	1" = 2000'
1955	PARK CITY EAST, UT	1" = 2000'
1903	COALVILLE, UT	1" = 10420'

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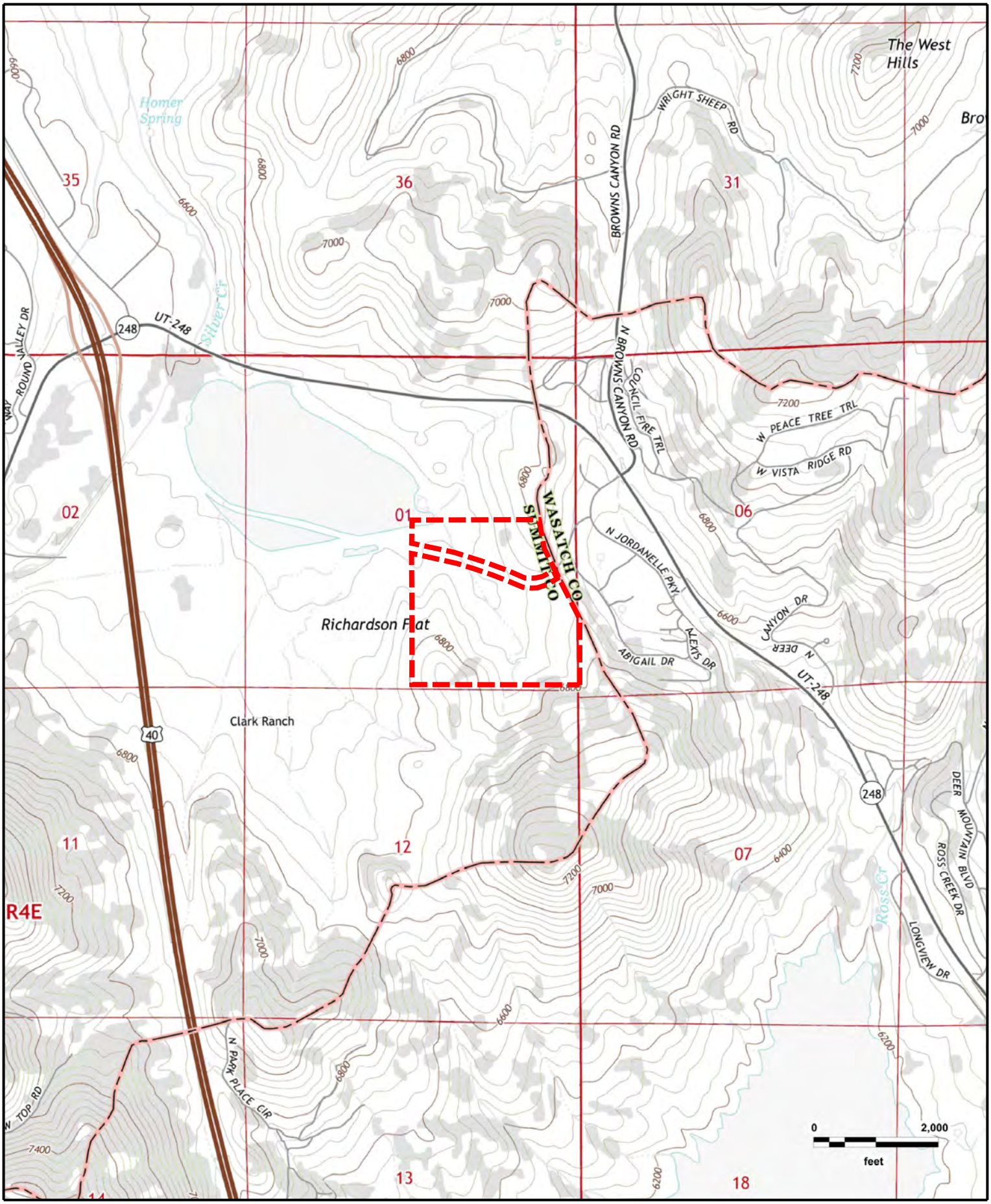

N
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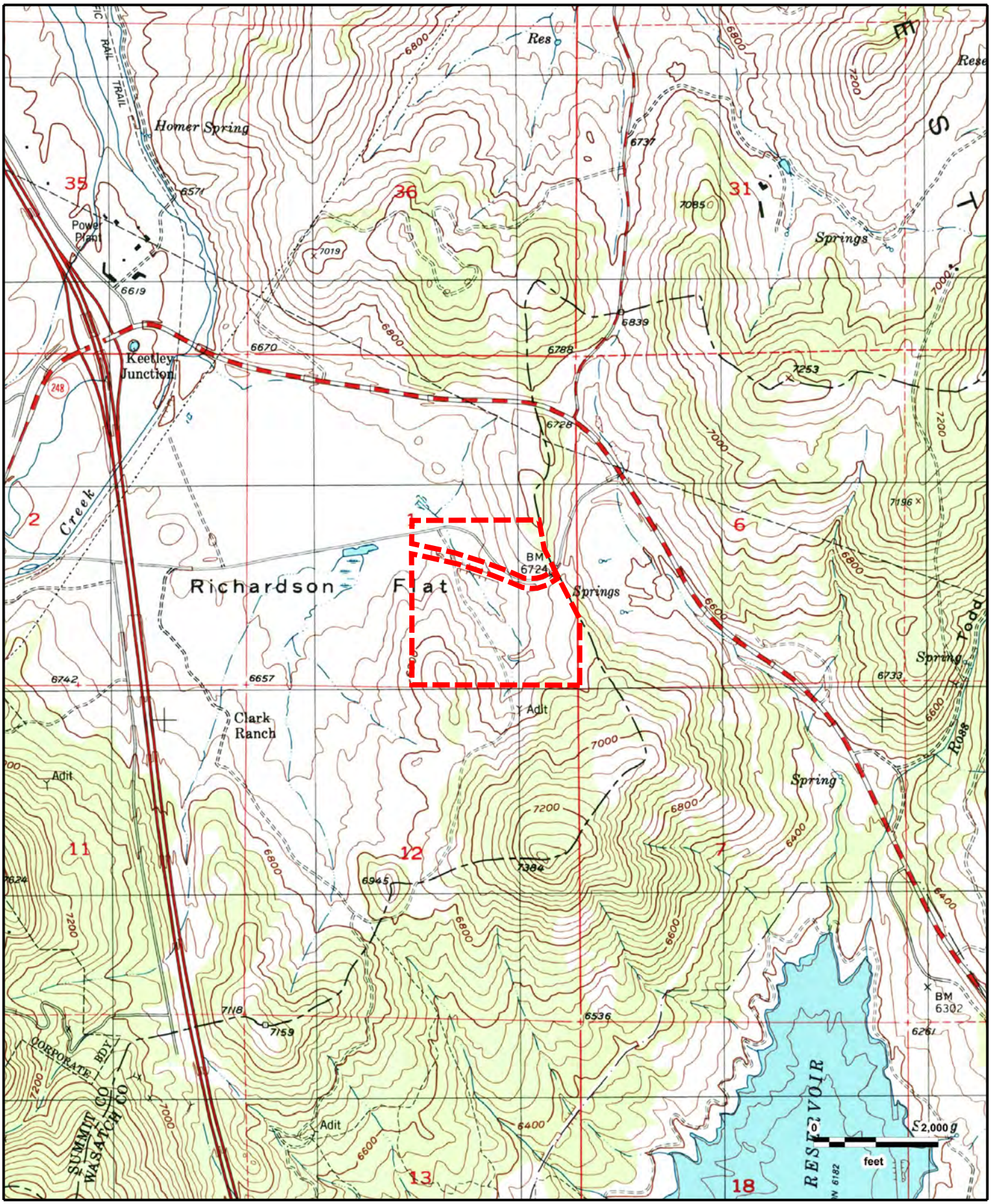
Richardson Flats Parcel SS-86
PARK CITY EAST, UT (2014)

GeoSearch

JOB #: 355539 - 06/08/2020

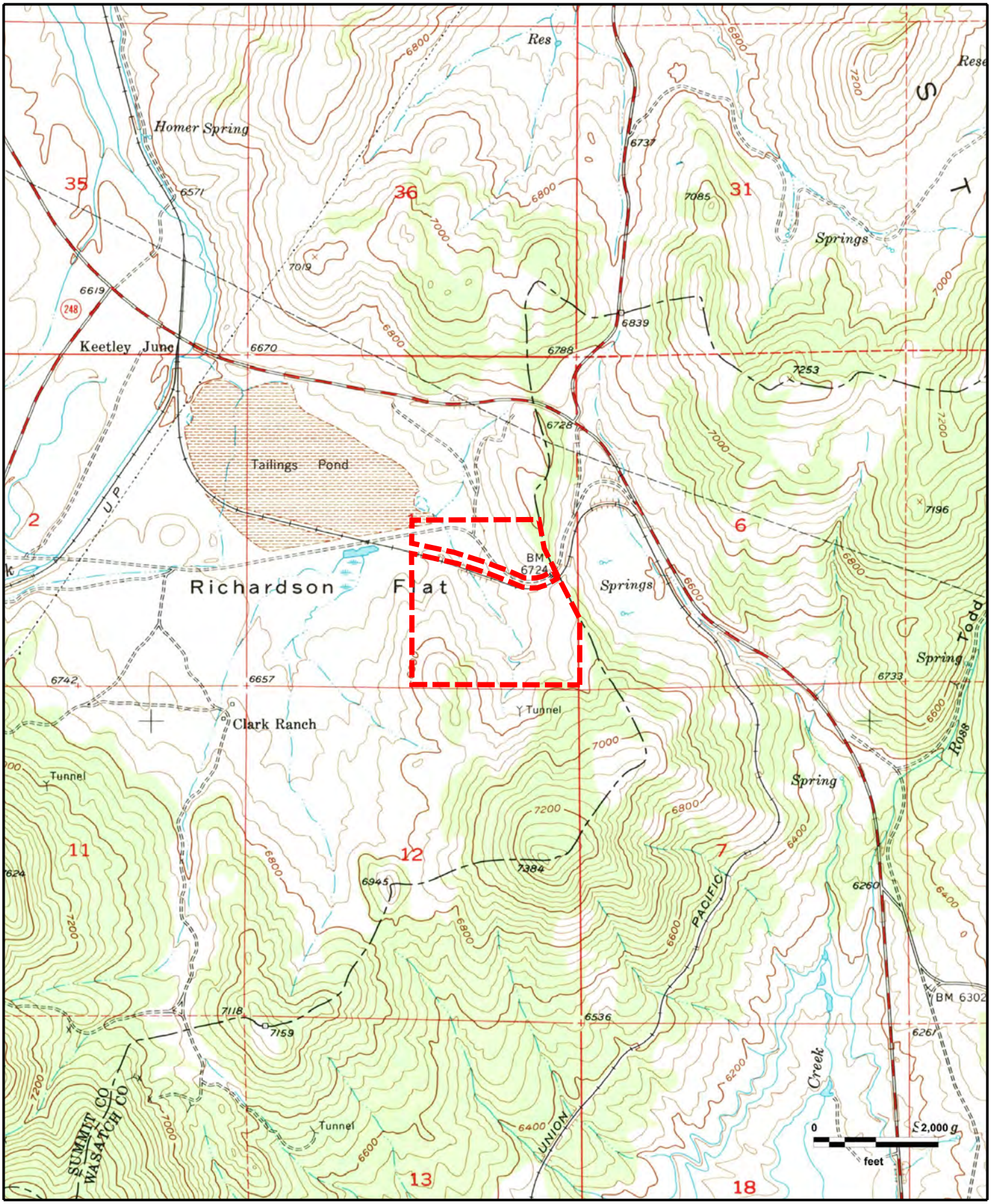


N
W E
S

Richardson Flats Parcel SS-86
PARK CITY EAST, UT (1999)

GeoSearch

JOB #: 355539 - 06/08/2020

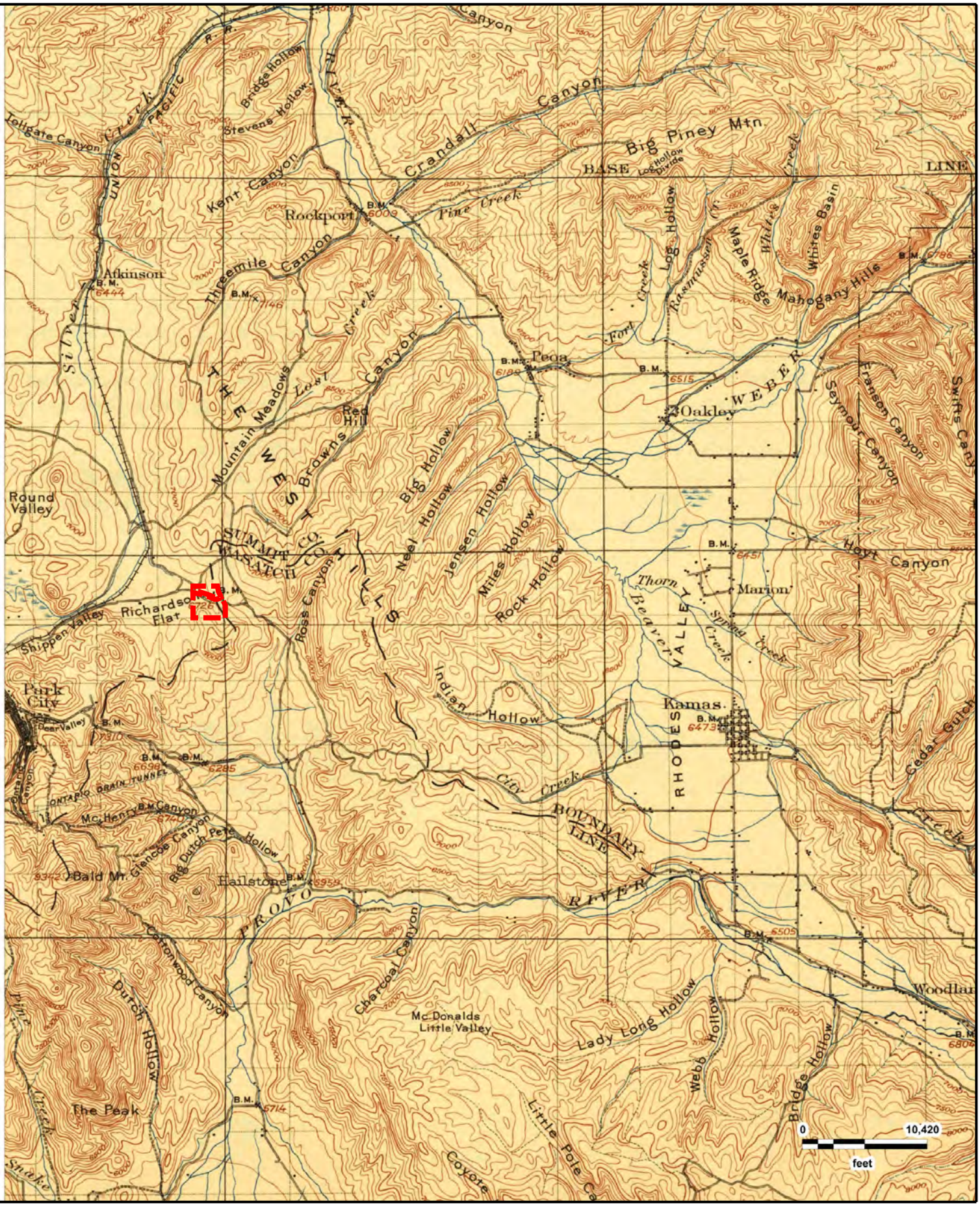


N
W E
S

Richardson Flats Parcel SS-86
PARK CITY EAST, UT (1955)

GeoSearch

JOB #: 355539 - 06/08/2020



Richardson Flats Parcel SS-86
COALVILLE, UT (1903)

GeoSearch

JOB #: 355539 - 06/08/2020

APPENDIX C

RADIUS MAP
REPORT

Radius Report

GeoLens by GeoSearch

Target Property:

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Summit County, Utah 84060

Prepared For:

CMT Engineering Laboratories-Utah

Order #: 147850
Job #: 355537
Project #: 14715
PO #: 14715
Date: 06/05/2020

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Unlocatable Report . . . . . See Attachment

Zip Report . . . . . See Attachment

Disclaimer

This report was designed by GeoSearch to meet or exceed the records search requirements of the All Appropriate Inquiries Rule (40 CFR ï¿½312.26) and the current version of the ASTM International E1527, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process or, if applicable, the custom requirements requested by the entity that ordered this report. The records and databases of records used to compile this report were collected from various federal,state and local governmental entities. It is the goal of GeoSearch to meet or exceed the 40 CFR ï¿½312.26 and E1527 requirements for updating records by using the best available technology. GeoSearch contacts the appropriate governmental entities on a recurring basis. Depending on the frequency with which a record source or database of records is updated by the governmental entity, the data used to prepare this report may be updated monthly, quarterly, semi-annually, or annually.

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Target Property Summary

Target Property Information

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Utah 84060

Coordinates
Area centroid (-111.43944, 40.6715475)
6,643 feet above sea level

USGS Quadrangle
Park City East, UT

Geographic Coverage Information

County/Parish: Summit (UT) , Wasatch (UT)
ZipCode(s):
Coalville UT: 84017
Heber City UT: 84032
Kamas UT: 84036
Park City UT: 84060, 84098

Database Summary

FEDERAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
EMERGENCY RESPONSE NOTIFICATION SYSTEM	ERNSUT	0	0	TP/AP
FEDERAL ENGINEERING INSTITUTIONAL CONTROL SITES	EC	0	0	TP/AP
LAND USE CONTROL INFORMATION SYSTEM	LUCIS	0	0	TP/AP
RCRA SITES WITH CONTROLS	RCRASC	0	0	TP/AP
RESOURCE CONSERVATION & RECOVERY ACT - GENERATOR	RCRAGR08	0	0	0.1250
RESOURCE CONSERVATION & RECOVERY ACT - NON-GENERATOR	RCRANGR08	0	0	0.1250
BROWNFIELDS MANAGEMENT SYSTEM	BF	0	0	0.5000
DELISTED NATIONAL PRIORITIES LIST	DNPL	0	0	0.5000
NO LONGER REGULATED RCRA NON-CORRACTS TSD FACILITIES	NLRRCRAT	0	0	0.5000
RESOURCE CONSERVATION & RECOVERY ACT - NON-CORRACTS TREATMENT, STORAGE & DISPOSAL FACILITIES	RCRAT	0	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM	SEMS	1	0	0.5000
SUPERFUND ENTERPRISE MANAGEMENT SYSTEM ARCHIVED SITE INVENTORY	SEMSARCH	0	0	0.5000
NATIONAL PRIORITIES LIST	NPL	0	0	1.0000
NO LONGER REGULATED RCRA CORRECTIVE ACTION FACILITIES	NLRRCRAC	0	0	1.0000
PROPOSED NATIONAL PRIORITIES LIST	PNPL	1	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - CORRECTIVE ACTION FACILITIES	RCRAC	0	0	1.0000
RESOURCE CONSERVATION & RECOVERY ACT - SUBJECT TO CORRECTIVE ACTION FACILITIES	RCRASUBC	0	0	1.0000

SUB-TOTAL		2	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
AEROMETRIC INFORMATION RETRIEVAL SYSTEM / AIR FACILITY SUBSYSTEM	AIRSAFS	0	0	TP/AP
BIENNIAL REPORTING SYSTEM	BRS	0	0	TP/AP
CERCLIS LIENS	SFLIENS	0	0	TP/AP
CLANDESTINE DRUG LABORATORY LOCATIONS	CDL	0	0	TP/AP
EPA DOCKET DATA	DOCKETS	0	0	TP/AP
ENFORCEMENT AND COMPLIANCE HISTORY INFORMATION	ECHOR08	1	0	TP/AP
FACILITY REGISTRY SYSTEM	FRSUT	2	0	TP/AP

Database Summary

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
HAZARDOUS MATERIALS INCIDENT REPORTING SYSTEM	HMIRSR08	0	0	TP/AP
HAZARDOUS WASTE COMPLIANCE DOCKET FACILITIES	HWCD	0	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM (FORMERLY DOCKETS)	ICIS	1	0	TP/AP
INTEGRATED COMPLIANCE INFORMATION SYSTEM NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	ICISNPDES	1	0	TP/AP
MATERIAL LICENSING TRACKING SYSTEM	MLTS	0	0	TP/AP
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM	NPDESR08	0	0	TP/AP
PCB ACTIVITY DATABASE SYSTEM	PADS	0	0	TP/AP
PERMIT COMPLIANCE SYSTEM	PCSR08	0	0	TP/AP
SEMS LIEN ON PROPERTY	SEMSLIENS	0	0	TP/AP
SSEHRI PFAS CONTAMINATION SITES	SSEHRIPFAS	0	0	TP/AP
SECTION SEVEN TRACKING SYSTEM	SSTS	0	0	TP/AP
TOXIC SUBSTANCE CONTROL ACT INVENTORY	TSCA	0	0	TP/AP
TOXICS RELEASE INVENTORY	TRI	0	0	TP/AP
ALTERNATIVE FUELING STATIONS	ALTFUELS	0	0	0.2500
FEMA OWNED STORAGE TANKS	FEMAUST	0	0	0.2500
HISTORICAL GAS STATIONS	HISTPST	0	0	0.2500
INTEGRATED COMPLIANCE INFORMATION SYSTEM DRYCLEANERS	ICISCLEANERS	0	0	0.2500
MINE SAFETY AND HEALTH ADMINISTRATION MASTER INDEX FILE	MSHA	0	0	0.2500
MINERAL RESOURCE DATA SYSTEM	MRDS	1	0	0.2500
OPEN DUMP INVENTORY	ODI	0	0	0.5000
SURFACE MINING CONTROL AND RECLAMATION ACT SITES	SMCRA	0	0	0.5000
URANIUM MILL TAILINGS RADIATION CONTROL ACT SITES	USUMTRCA	0	0	0.5000
DEPARTMENT OF DEFENSE SITES	DOD	0	0	1.0000
FORMER MILITARY NIKE MISSILE SITES	NMS	0	0	1.0000
FORMERLY USED DEFENSE SITES	FUDS	0	0	1.0000
FORMERLY UTILIZED SITES REMEDIAL ACTION PROGRAM	FUSRAP	0	0	1.0000
RECORD OF DECISION SYSTEM	RODS	1	0	1.0000

SUB-TOTAL		7	0	

Database Summary

STATE (UT) LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
INSTITUTIONAL ENGINEERING CONTROLS REGISTRY	ICEC	0	0	TP/AP
REGISTERED UNDERGROUND STORAGE TANKS	RUST	0	0	0.2500
BROWNFIELD PROPERTIES	BF	0	0	0.5000
CERCLIS SITES	CERCLIS	1	0	0.5000
LANDFILL AND SOLID WASTE DISPOSAL SITES	LFSWDS	0	0	0.5000
LEAKING UNDERGROUND STORAGE TANKS	LUST	0	0	0.5000
VOLUNTARY CLEANUP PROGRAM SITES	VCP	0	0	0.5000
NATIONAL PRIORITIES LIST	NPL	0	0	1.0000
SUB-TOTAL		1	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
SPILLS LISTING	SPILLS	0	0	TP/AP
TIER II FACILITIES	TIERII	0	0	TP/AP
SUB-TOTAL		0	0	

Database Summary

TRIBAL LISTING

Standard Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	USTR08	0	0	0.2500
LEAKING UNDERGROUND STORAGE TANKS ON TRIBAL LANDS	LUSTR08	0	0	0.5000
OPEN DUMP INVENTORY ON TRIBAL LANDS	ODINDIAN	0	0	0.5000
SUB-TOTAL		0	0	

Additional Environmental Records

Database	Acronym	Locatable	Unlocatable	Search Radius (miles)
INDIAN RESERVATIONS	INDIANRES	0	0	1.0000
SUB-TOTAL		0	0	
TOTAL		10	0	

Database Radius Summary

FEDERAL LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
AIRSAFS	0.0200	0	NS	NS	NS	NS	NS	0
BRS	0.0200	0	NS	NS	NS	NS	NS	0
CDL	0.0200	0	NS	NS	NS	NS	NS	0
DOCKETS	0.0200	0	NS	NS	NS	NS	NS	0
EC	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
ECHOR08	0.0200	1	NS	NS	NS	NS	NS	1
ERNSUT	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
FRSUT	0.0200	2	NS	NS	NS	NS	NS	2
HMIRSR08	0.0200	0	NS	NS	NS	NS	NS	0
HWCD	0.0200	0	NS	NS	NS	NS	NS	0
ICIS	0.0200	1	NS	NS	NS	NS	NS	1
ICISNPDES	0.0200	1	NS	NS	NS	NS	NS	1
LUCIS	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
MLTS	0.0200	0	NS	NS	NS	NS	NS	0
NPDESR08	0.0200	0	NS	NS	NS	NS	NS	0
PADS	0.0200	0	NS	NS	NS	NS	NS	0
PCSR08	0.0200	0	NS	NS	NS	NS	NS	0
RCRASC	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
SEMSLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SFLIENS	0.0200	0	NS	NS	NS	NS	NS	0
SSEHRIPFAS	0.0200	0	NS	NS	NS	NS	NS	0
SSTS	0.0200	0	NS	NS	NS	NS	NS	0
TRI	0.0200	0	NS	NS	NS	NS	NS	0
TSCA	0.0200	0	NS	NS	NS	NS	NS	0
RCRAGR08	**0.1250**	**0**	**0**	**NS**	**NS**	**NS**	**NS**	**0**
RCRANGR08	**0.1250**	**0**	**0**	**NS**	**NS**	**NS**	**NS**	**0**
ALTFUELS	0.2500	0	0	0	NS	NS	NS	0
FEMAUST	0.2500	0	0	0	NS	NS	NS	0
HISTPST	0.2500	0	0	0	NS	NS	NS	0
ICISCLEANERS	0.2500	0	0	0	NS	NS	NS	0
MRDS	0.2500	0	1	0	NS	NS	NS	1
MSHA	0.2500	0	0	0	NS	NS	NS	0
BF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
DNPL	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
NLRRCRAT	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**

Database Radius Summary

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
ODI	0.5000	0	0	0	0	NS	NS	0
RCRAT	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SEMS	**0.5000**	**1**	**0**	**0**	**0**	**NS**	**NS**	**1**
SEMSARCH	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
SMCRA	0.5000	0	0	0	0	NS	NS	0
USUMTRCA	0.5000	0	0	0	0	NS	NS	0
DOD	1.0000	0	0	0	0	0	NS	0
FUDS	1.0000	0	0	0	0	0	NS	0
FUSRAP	1.0000	0	0	0	0	0	NS	0
NLRRCRAC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
NMS	1.0000	0	0	0	0	0	NS	0
NPL	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
PNPL	**1.0000**	**1**	**0**	**0**	**0**	**0**	**NS**	**1**
RCRAC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RCRASUBC	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**
RODS	1.0000	1	0	0	0	0	NS	1
SUB-TOTAL		8	1	0	0	0	0	9

Database Radius Summary

STATE (UT) LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
ICEC	**0.0200**	**0**	**NS**	**NS**	**NS**	**NS**	**NS**	**0**
SPILLS	0.0200	0	NS	NS	NS	NS	NS	0
TIERII	0.0200	0	NS	NS	NS	NS	NS	0
RUST	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
BF	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
CERCLIS	**0.5000**	**1**	**0**	**0**	**0**	**NS**	**NS**	**1**
LFSWDS	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
LUST	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
VCP	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
NPL	**1.0000**	**0**	**0**	**0**	**0**	**0**	**NS**	**0**

SUB-TOTAL		1	0	0	0	0	0	1

Database Radius Summary

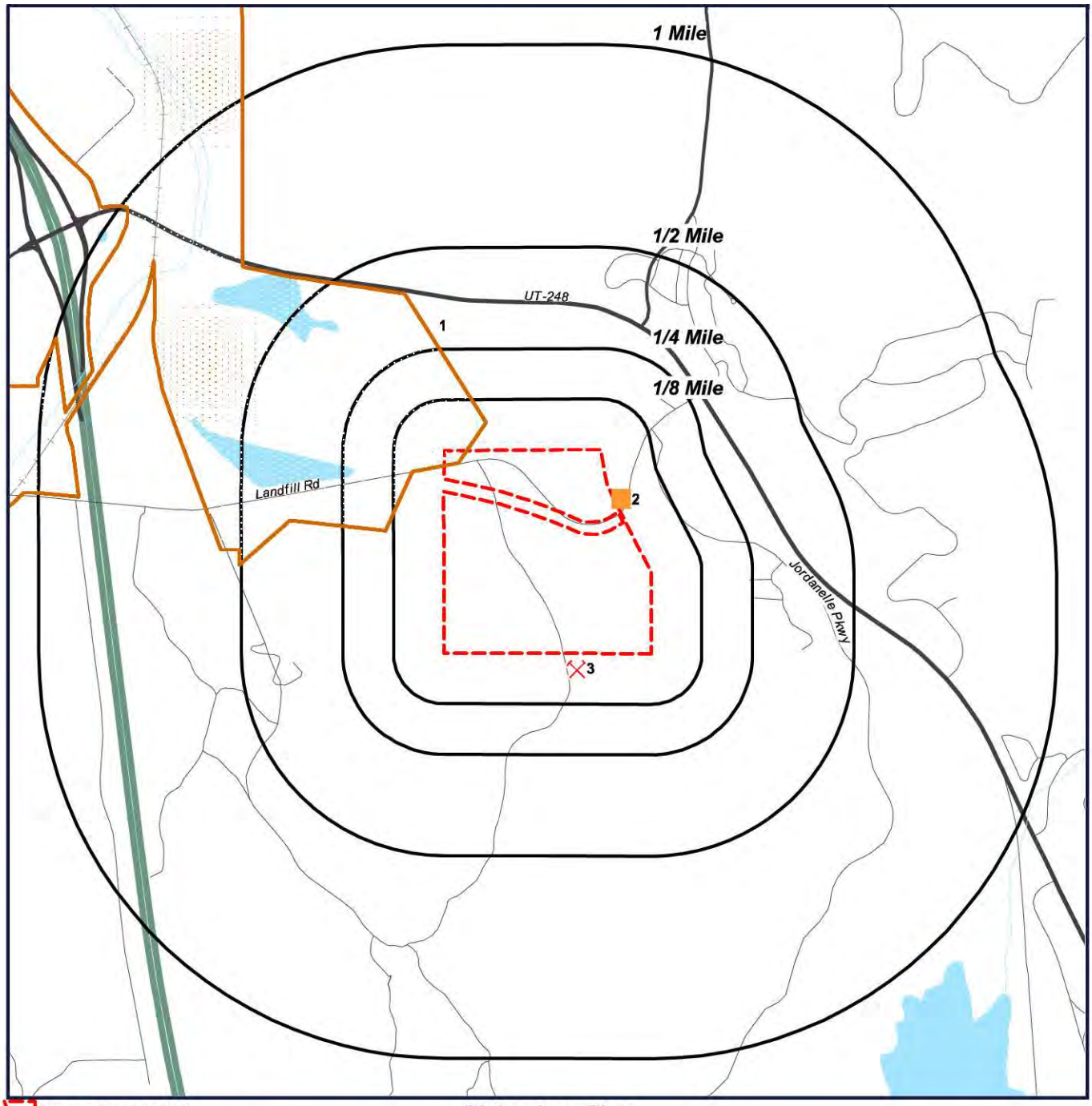
TRIBAL LISTING

*Standard environmental records are displayed in **bold**.*

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
USTR08	**0.2500**	**0**	**0**	**0**	**NS**	**NS**	**NS**	**0**
LUSTR08	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
ODINDIAN	**0.5000**	**0**	**0**	**0**	**0**	**NS**	**NS**	**0**
INDIANRES	1.0000	0	0	0	0	0	NS	0
SUB-TOTAL		0	0	0	0	0	0	0
TOTAL		9	1	0	0	0	0	10

NOTES:
NS = NOT SEARCHED
TP/AP = TARGET PROPERTY/ADJACENT PROPERTY

Radius Map 1



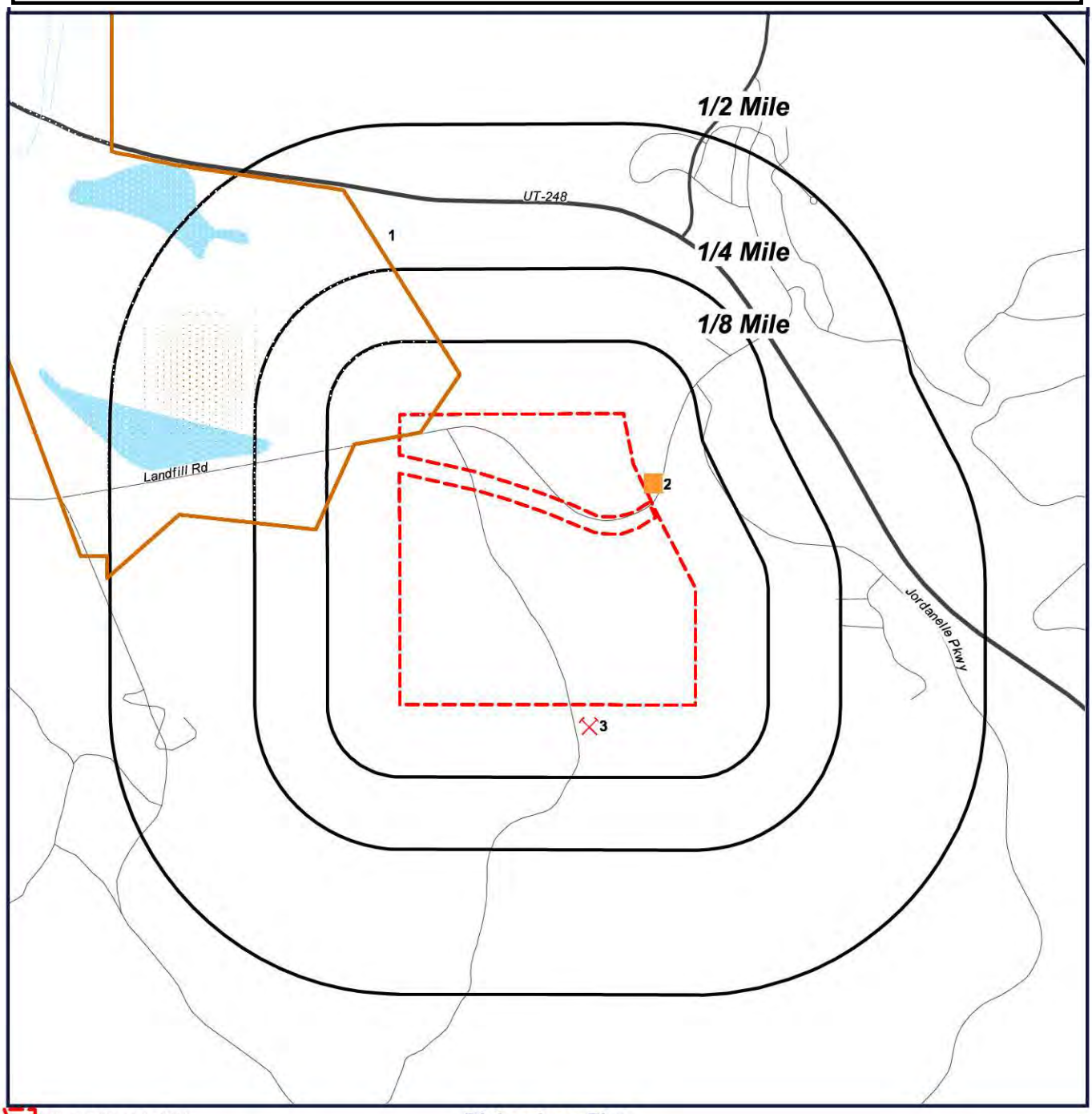
Target Property (TP)
ICIS
PNPL
FRSUT
CERCLIS
SEMS
ECHOR08
RODS
ICISNPDES
MRDS

Richardson Flats
Parcel SS-86
Near 1185 W LORI LN
Heber, Utah
84060

N
W E
S

0' 1000' 2000' 3000'
SCALE: 1" = 2000'

Radius Map 2



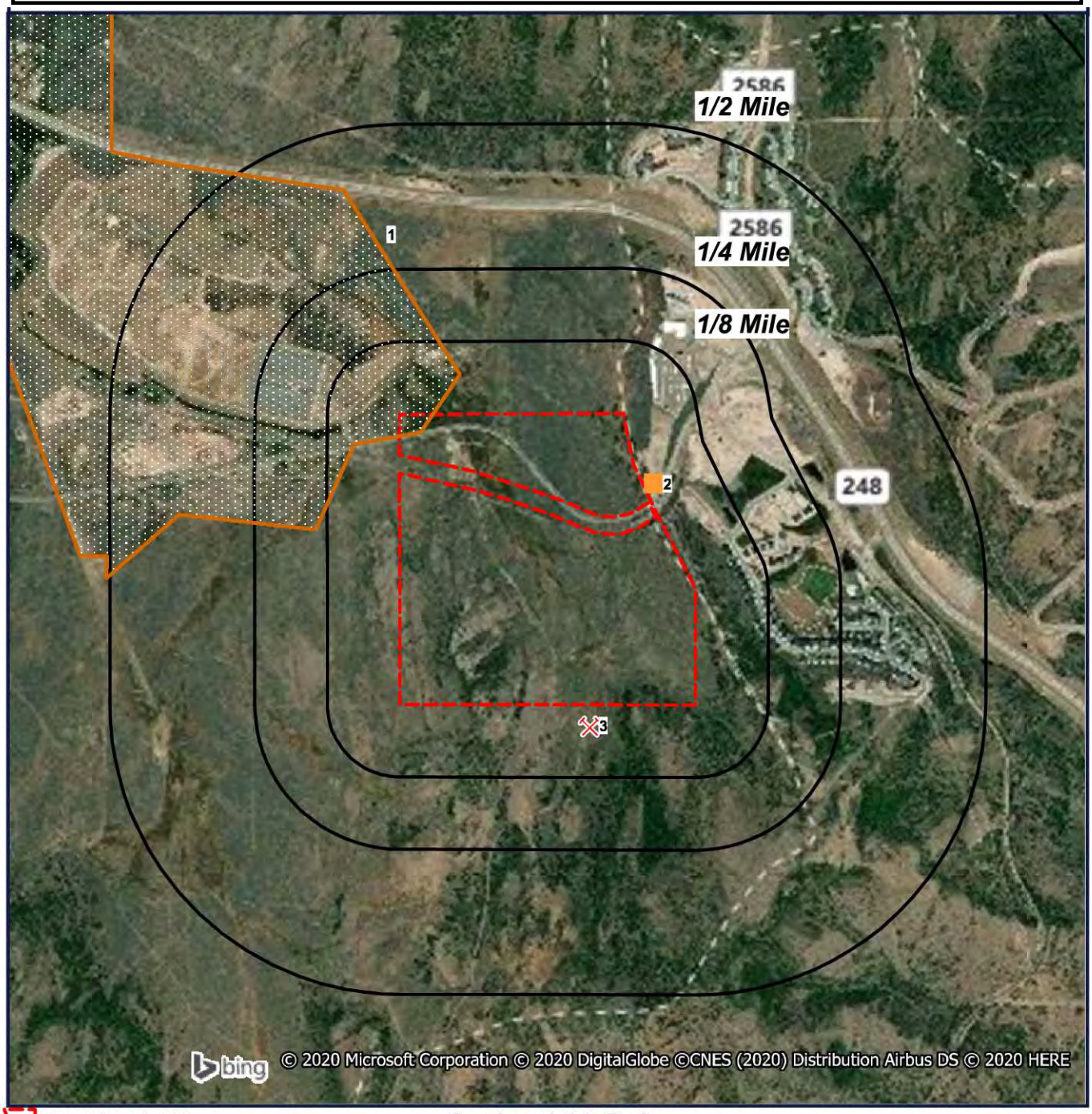
Target Property (TP)
ICIS
PNPL
FRSUT
CERCLIS
SEMS
ECHOR08
RODS
ICISNPDES
MRDS

Richardson Flats
Parcel SS-86
Near 1185 W LORI LN
Heber, Utah
84060

N
W E
S

0' 700' 1400' 2100'
SCALE: 1" = 1400'

Ortho Map



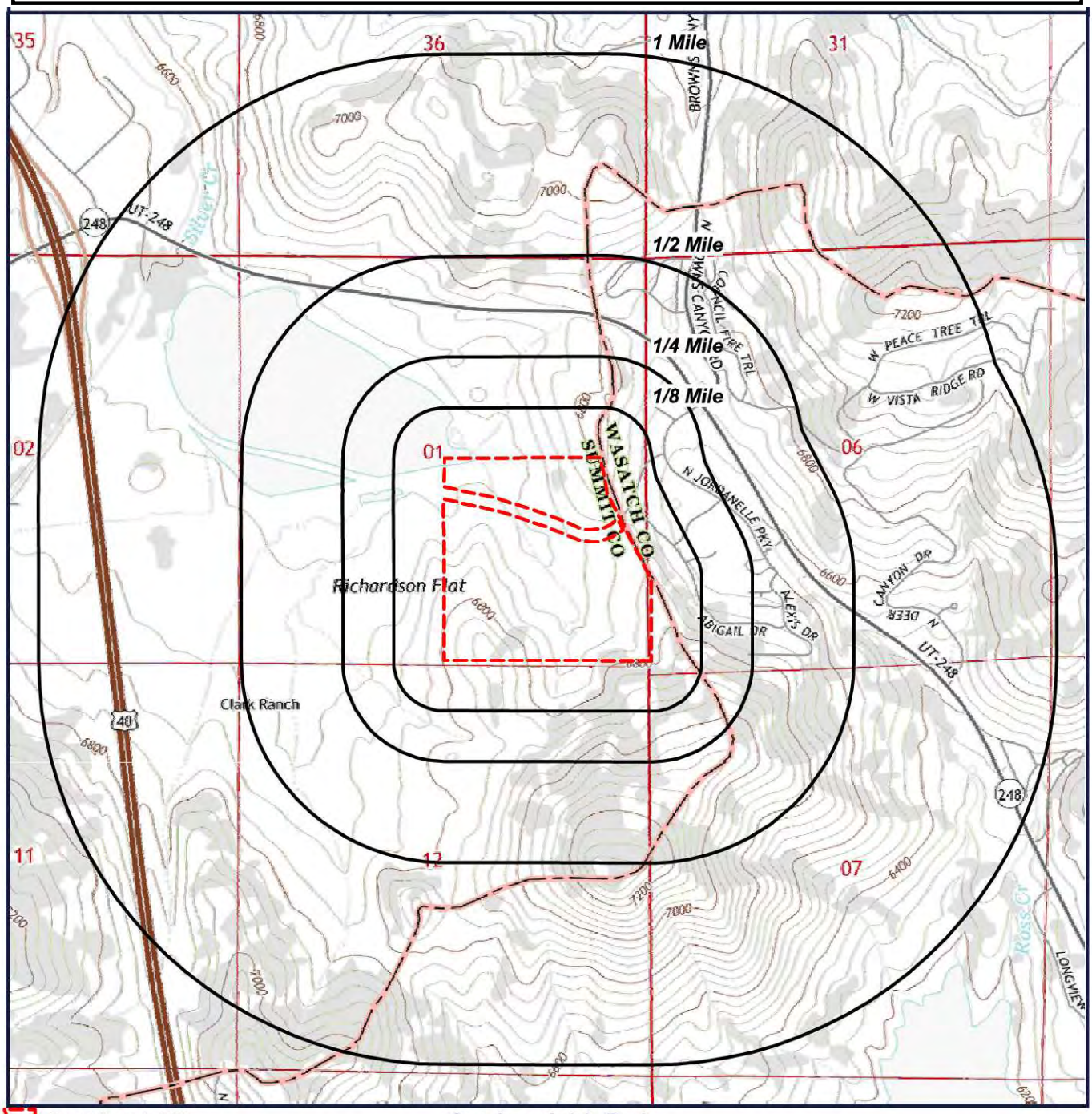
Target Property (TP)
ICIS
PNPL
FRSUT
CERCLIS
SEMS
ECHOR08
RODS
ICISNPDES
MRDS

Quadrangle(s): Park City East Richardson Flats
Parcel SS-86
Near 1185 W LORI LN
Heber, Utah
84060

N
W E
S

0' 700' 1400' 2100'
SCALE: 1" = 1400'

Topographic Map



Target Property (TP)

Quadrangle(s): Park City East
Source: USGS, 02/13/2014
Richardson Flats
Parcel SS-86
Near 1185 W LORI LN
Heber, Utah
84060

N
W E
S

0' 1000' 2000' 3000'
SCALE: 1" = 2000'

Located Sites Summary

*NOTE: Standard environmental records are displayed in **bold**.*

Map ID#	Database Name	Site ID#	Relative Elevation	Distance From Site	Site Name	Address	PAGE #
1	***CERCLIS***	***UTD980952840***	***Lower (6,494 ft.)***	***TP***	***RICHARDSON FLAT TAILINGS***	***3.5 MI NE OF PARK CITY, PARK CITY, UT 84060***	***17***
1	ECHOR08	110009347812	Lower (6,494 ft.)	TP	RICHARDSON FLAT TAILINGS	NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	18
1	FRSUT	110009347812	Lower (6,494 ft.)	TP	RICHARDSON FLAT TAILINGS	NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	19
1	FRSUT	110020117078	Lower (6,494 ft.)	TP	RICHARDSON FLATS TAILINGS	NORTH WEST 1/4, SECTION 1, TOWNSHIP 2S, RANGE 4E, PARK CITY, UT 84060	20
1	ICIS	110009347812	Lower (6,494 ft.)	TP	RICHARDSON FLAT TAILINGS	NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	21
1	***PNPL***	***UTD980952840***	***Lower (6,494 ft.)***	***TP***	***RICHARDSON FLAT TAILINGS***	***1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060***	***22***
1	RODS	UTD980952840	Lower (6,494 ft.)	TP	RICHARDSON FLAT TAILINGS	1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	32
1	***SEMS***	***UTD980952840***	***Lower (6,494 ft.)***	***TP***	***RICHARDSON FLAT TAILINGS***	***1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060***	***33***
2	ICISNPDES	UTR380517INPDES	Higher (6,739 ft.)	0.017 mi. ENE (90 ft.)	BK STORAGE	1240 W RICHARDSON FLAT ROAD, KAMAS, UT 84036	47
3	MRDS	10011508	Higher (6,733 ft.)	0.034 mi. S (180 ft.)	UNKNOWN TUNNEL	SUMMIT COUNTY, PARK CITY, UT 84060	49

Site Summary By Database

*NOTE: Standard environmental records are displayed in **bold**.*

Map ID#	Database Name	Site ID#	Relative Elevation	Distance From Site	Site Name	Address
1	***CERCLIS***	***UTD980952840***	***Lower (6,494 ft.)***	***TP***	***RICHARDSON FLAT TAILINGS***	***3.5 MI NE OF PARK CITY, PARK CITY, UT 84060***
1	ECHOR08	110009347812	Lower (6,494 ft.)	TP	RICHARDSON FLAT TAILINGS	NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060
1	FRSUT	110009347812	Lower (6,494 ft.)	TP	RICHARDSON FLAT TAILINGS	NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060
1	FRSUT	110020117078	Lower (6,494 ft.)	TP	RICHARDSON FLATS TAILINGS	NORTH WEST 1/4, SECTION 1, TOWNSHIP 2S, RANGE 4E, PARK CITY, UT 84060
1	ICIS	110009347812	Lower (6,494 ft.)	TP	RICHARDSON FLAT TAILINGS	NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060
2	ICISNPDES	UTR380517INPDES	Higher (6,739 ft.)	0.017 mi. ENE (90 ft.)	BK STORAGE	1240 W RICHARDSON FLAT ROAD, KAMAS, UT 84036
3	MRDS	10011508	Higher (6,733 ft.)	0.034 mi. S (180 ft.)	UNKNOWN TUNNEL	SUMMIT COUNTY, PARK CITY, UT 84060
1	***PNPL***	***UTD980952840***	***Lower (6,494 ft.)***	***TP***	***RICHARDSON FLAT TAILINGS***	***1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060***
1	RODS	UTD980952840	Lower (6,494 ft.)	TP	RICHARDSON FLAT TAILINGS	1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060
1	***SEMS***	***UTD980952840***	***Lower (6,494 ft.)***	***TP***	***RICHARDSON FLAT TAILINGS***	***1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060***

Elevation Summary

Elevations are collected from the USGS 3D Elevation Program 1/3 arc-second (approximately 10 meters) layer hosted at the NGTOC. .

Target Property Elevation: 6643 ft.

*NOTE: Standard environmental records are displayed in **bold**.*

EQUAL/HIGHER ELEVATION

Map ID#	Database Name	Elevation	Site Name	Address	Page #
2	ICISNPDES	6,739 ft.	BK STORAGE	1240 W RICHARDSON FLAT ROAD, KAMAS, UT 84036	47
3	MRDS	6,733 ft.	UNKNOWN TUNNEL	SUMMIT COUNTY, PARK CITY, UT 84060	49

LOWER ELEVATION

Map ID#	Database Name	Elevation	Site Name	Address	Page #
1	***CERCLIS***	***6,494 ft.***	***RICHARDSON FLAT TAILINGS***	***3.5 MI NE OF PARK CITY, PARK CITY, UT 84060***	***17***
1	ECHOR08	6,494 ft.	RICHARDSON FLAT TAILINGS	NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	18
1	FRSUT	6,494 ft.	RICHARDSON FLAT TAILINGS	NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	19
1	FRSUT	6,494 ft.	RICHARDSON FLATS TAILINGS	NORTH WEST 1/4, SECTION 1, TOWNSHIP 2S, RANGE 4E, PARK CITY, UT 84060	20
1	ICIS	6,494 ft.	RICHARDSON FLAT TAILINGS	NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	21
1	***PNPL***	***6,494 ft.***	***RICHARDSON FLAT TAILINGS***	***1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060***	***22***
1	RODS	6,494 ft.	RICHARDSON FLAT TAILINGS	1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060	32
1	***SEMS***	***6,494 ft.***	***RICHARDSON FLAT TAILINGS***	***1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060***	***33***

CERCLIS Sites (CERCLIS)

MAP ID# 1

Distance from Property: 0.000 mi. (0 ft.) X
Elevation: 6,494 ft. (Lower than TP)

FACILITY INFORMATION

GEOSEARCH ID: **UTD980952840**
DERR ID: **UTD980952840**
CIMID: **490000015295**
SITE DESCRIPTION: **CERCLA**
FACILITY NAME: **RICHARDSON FLAT TAILINGS**
ADDRESS: **3.5 MI NE OF PARK CITY**
PARK CITY, UT 84060
COUNTY: **SUMMIT**
PROJECT MANAGER: **MO SLAM**
CONTACT PHONE: **8015364178**
PROJECT DESCRIPTION: **THE RICHARDSON FLAT TAILINGS SITE CONSISTS OF 160 ACRES. FROM 1975 UNTIL 1981, MINE TAILINGS FROM THE KEETLY ONTARIO MINE AND OTHER MINING OPERATIONS IN THE AREA WERE DISPOSED OF AT THE SITE AND CURRENTLY RANGE UP TO 10 FEET IN DEPTH. UNTIL 1987, MINE TAILINGS WERE REMOVED FROM THE SITE AND USED AS BACKFILL FOR SEWER CONSTRUCTION PROJECTS. CURRENTLY, MINE TAILINGS AT THE SITE ARE BEING COVERED BY SOIL EXCAVATED FROM ON-SITE AREAS. SITE FEATURES INCLUDE A POND THAT COVERS THE NORTHEASTERN CORNER OF THE SITE AND IS CONTAINED BY A DAM AT THE NORTHWESTERN CORNER, AND A DITCH IN THE CENTRAL PORTION OF THE SITE.**
EMERGENCY RESPONSE BRANCH: **NO**
NATIONAL PRIORITY LIST: **NO**
PROPOSED FOR NPL: **YES**
ARCHIVED FOR CERCLIS: **NO**

Back to Report Summary

Enforcement and Compliance History Information (ECHOR08)

MAP ID# 1

Distance from Property: 0.000 mi. (0 ft.) X
Elevation: 6,494 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: **110009347812**
REGISTRY ID: **110009347812**
NAME: **RICHARDSON FLAT TAILINGS**
ADDRESS: **NW 1/4 SEC 1 T2S R 4E**
PARK CITY, UT 84060
COUNTY: **SUMMIT**
FACILITY LINK: *Facility Detail Report*

Back to Report Summary

MAP ID# 1

Distance from Property: 0.000 mi. (0 ft.) X
Elevation: 6,494 ft. (Lower than TP)

FACILITY INFORMATION

REGISTRY ID: **110009347812**

NAME: **RICHARDSON FLAT TAILINGS**

LOCATION ADDRESS: **NW 1/4 SEC 1 T2S R 4E**
PARK CITY, UT 84060

COUNTY: **SUMMIT**

EPA REGION: **08**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

RICHARDSON FLATS

RICHARDSON FLAT TAILINGS

PROGRAM/S LISTED FOR THIS FACILITY

ICIS - INTEGRATED COMPLIANCE INFORMATION SYSTEM

SEMS - SEMS

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

NO SIC DATA REPORTED

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

NO NAICS DATA REPORTED

Back to Report Summary

Facility Registry System (FRSUT)

MAP ID# 1

Distance from Property: 0.000 mi. (0 ft.) X
Elevation: 6,494 ft. (Lower than TP)

FACILITY INFORMATION

REGISTRY ID: **110020117078**

NAME: **RICHARDSON FLATS TAILINGS**

LOCATION ADDRESS: **NORTH WEST 1/4, SECTION 1, TOWNSHIP 2S, RANGE 4E**
PARK CITY, UT 84060

COUNTY: **SUMMIT**

EPA REGION: **08**

FEDERAL FACILITY: **NOT REPORTED**

TRIBAL LAND: **NOT REPORTED**

ALTERNATIVE NAME/S:

RICHARDSON FLATS TAILINGS

PROGRAM/S LISTED FOR THIS FACILITY

CIM - UTAH - COMMON IDENTIFIER MECHANISM

STANDARD INDUSTRIAL CLASSIFICATION/S (SIC)

NO SIC DATA REPORTED

NORTH AMERICAN INDUSTRY CLASSIFICATION/S (NAICS)

NO NAICS DATA REPORTED

Back to Report Summary

MAP ID# 1

Distance from Property: 0.000 mi. (0 ft.) X
Elevation: 6,494 ft. (Lower than TP)

SITE INFORMATION

GEOSEARCH ID: **110009347812**
REGISTRY ID: **110009347812**
NAME: **RICHARDSON FLAT TAILINGS**
ADDRESS: **NW 1/4 SEC 1 T2S R 4E**
PARK CITY UT 84060
STANDARD INDUSTRIAL CLASSIFICATION: **NOT REPORTED**

REGIONAL DOCKETS

- NO REGIONAL DOCKETS REPORTED

RELATED ACTIVITIES

- NO RELATED ACTIVITIES REPORTED

VIOLATIONS

CASE NUMBER: **HQ-2003-6003**
RANK ORDER: **NOT REPORTED**
VIOLATION: **CLOSURE & POST-CLOSURE REQUIREMENTS**

CASE IDENTIFIER

CASE NUMBER: **HQ-2003-6003**
FISCAL YEAR: **2003**
CASE NAME: **ASARCO & SOUTHERN PERU COPPER COMPANY**
ACTIVITY TYPE: **JUDICIAL**
ACTIVITY STATUS: **SETTLEMENT PRESENT**
ACTIVITY STATUS DATE: **2/3/2003**
LEAD: **EPA**
CASE STATUS DATE: **2/3/2003**
DOJ DOCKET NUMBER: **NOT REPORTED**
ENFORCEMENT OUTCOME: **NOT REPORTED**
MULTIMEDIA FLAG: **NOT REPORTED**
ENFORCEMENT SUMMARY:

CASE WAS BROUGHT UNDER THE FEDERAL DEBT COLLECTION PROCEDURES ACT AND THE FEDERAL PRIORITIES ACT TO ENJOIN THE TRANSFER OF STOCK ASSETS HELD BY ASARCO TO AN ASSOCIATED SUBSIDIARY, AMERICAS MINING CO., OF THE PARENT COMPANY GRUPO MEXICO. THE SETTLEMENT CREATED A DEDICATED ENVIRONMENTAL TRUST WITH $100M @ 7% FOR 8 YEARS FOR A GROSS VALUE OF $125M.

ENFORCEMENT TYPE

ENFORCEMENT TYPE: **CIVIL JUDICIAL ACTION**

POLLUTANTS CITED

POLLUTANT DESCRIPTION: **CONTAMINATED SEDIMENT**

Back to Report Summary

MAP ID# 1

Distance from Property: 0.000 mi. (0 ft.) X
Elevation: 6,494 ft. (Lower than TP)

SITE INFORMATION

EPA ID #: **UTD980952840**
NAME: **RICHARDSON FLAT TAILINGS**
ADDRESS: **1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E**
PARK CITY, UT 84060 SUMMIT
EPA REGION: **REGION 8**
FEDERAL FACILITY INDICATOR: **NO**
NPL STATUS: **NOT REPORTED**
NON-NPL STATUS: **NOT REPORTED**
PROPOSED DATE: **2/7/1992**
SITE SCORE: **50.23**

ACTIONS

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **FIVE-YEAR REVIEW**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **10/26/2012**
ACTION COMPLETION DATE: **3/14/2013**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SILVER CREEK TAILINGS (04)**
ACTION NAME: **ADMINISTRATIVE ORDER ON CONSENT**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **NOT AVAILABLE**
ACTION COMPLETION DATE: **2/19/2013**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **NATIONAL PRIORITIES LIST RESPONSIBLE PARTY SEARCH**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **11/20/2008**
ACTION COMPLETION DATE: **9/30/2009**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **LOWER SILVER CREEK (02)**
ACTION NAME: **ADMINISTRATIVE ORDER ON CONSENT**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **NOT AVAILABLE**

ACTION COMPLETION DATE: **9/29/2009**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **CLAIM IN BANKRUPTCY PROCEEDING**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **6/27/2006**
ACTION COMPLETION DATE: **6/5/2009**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **CONSENT DECREE**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **3/13/2009**
ACTION COMPLETION DATE: **6/5/2009**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **LODGED BY DOJ**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **NOT AVAILABLE**
ACTION COMPLETION DATE: **3/13/2009**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **TECHNICAL ASSISTANCE**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **7/24/2008**
ACTION COMPLETION DATE: **1/20/2009**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **POTENTIALLY RESPONSIBLE PARTY REMEDIAL DESIGN**
LEAD: **RESPONSIBLE PARTY**
ACTION START DATE: **8/7/2007**

ACTION COMPLETION DATE: **2/7/2008**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **CONSENT DECREE**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **8/7/2007**
ACTION COMPLETION DATE: **10/4/2007**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **REMEDIAL DESIGN/REMEDIAL ACTION NEGOTIATIONS**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **3/21/2006**
ACTION COMPLETION DATE: **10/4/2007**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **LODGED BY DOJ**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **NOT AVAILABLE**
ACTION COMPLETION DATE: **8/28/2007**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **COMMUNITY INVOLVEMENT**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **1/8/2007**
ACTION COMPLETION DATE: **7/1/2007**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **ALTERNATIVE DISPUTE RESOLUTION**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **3/6/2006**

ACTION COMPLETION DATE: **12/8/2006**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **SECTION 107 LITIGATION**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **12/9/2005**
ACTION COMPLETION DATE: **11/28/2006**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **CONSENT DECREE**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **8/10/2006**
ACTION COMPLETION DATE: **11/28/2006**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **LODGED BY DOJ**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **NOT AVAILABLE**
ACTION COMPLETION DATE: **9/5/2006**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **POTENTIALLY RESPONSIBLE PARTY REMEDIAL INVESTIGATION/FEASIBILITY STUDY**
LEAD: **RESPONSIBLE PARTY**
ACTION START DATE: **9/28/2000**
ACTION COMPLETION DATE: **7/6/2005**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **RECORD OF DECISION**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **NOT AVAILABLE**

ACTION COMPLETION DATE: **7/6/2005**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **COMMUNITY INVOLVEMENT**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **7/21/2003**
ACTION COMPLETION DATE: **9/28/2004**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **ECOLOGICAL RISK ASSESSMENT**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **5/1/2001**
ACTION COMPLETION DATE: **1/30/2004**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **RISK/HEALTH ASSESSMENT**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **10/9/2001**
ACTION COMPLETION DATE: **3/15/2003**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **REMEDIAL INVESTIGATION/FEASIBILITY STUDY NEGOTIATIONS**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **6/7/2000**
ACTION COMPLETION DATE: **9/28/2000**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **ADMINISTRATIVE ORDER ON CONSENT**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **NOT AVAILABLE**

ACTION COMPLETION DATE: **9/28/2000**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **NATIONAL PRIORITIES LIST RESPONSIBLE PARTY SEARCH**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **8/23/1991**
ACTION COMPLETION DATE: **12/7/1992**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **SITE INSPECTION**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **NOT AVAILABLE**
ACTION COMPLETION DATE: **9/3/1992**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **POTENTIALLY RESPONSIBLE PARTY REMEDIAL INVESTIGATION/FEASIBILITY STUDY**
LEAD: **RESPONSIBLE PARTY**
ACTION START DATE: **9/29/1989**
ACTION COMPLETION DATE: **7/1/1992**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **PROPOSAL TO NATIONAL PRIORITIES LIST**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **NOT AVAILABLE**
ACTION COMPLETION DATE: **2/7/1992**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **HAZARD RANKING SYSTEM PACKAGE**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **NOT AVAILABLE**

ACTION COMPLETION DATE: **7/15/1991**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **AERIAL SURVEY**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **6/30/1991**
ACTION COMPLETION DATE: **6/30/1991**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **REMOVED FROM THE PROPOSED NATIONAL PRIORITIES LIST**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **NOT AVAILABLE**
ACTION COMPLETION DATE: **2/11/1991**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **REMOVAL ASSESSMENT**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **8/30/1990**
ACTION COMPLETION DATE: **8/30/1990**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **SPECIAL NOTICE ISSUED**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **NOT AVAILABLE**
ACTION COMPLETION DATE: **2/10/1989**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **NATIONAL PRIORITIES LIST RESPONSIBLE PARTY SEARCH**
LEAD: **FEDERAL ENFORCEMENT**
ACTION START DATE: **8/13/1987**

ACTION COMPLETION DATE: **7/14/1988**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **PROPOSAL TO NATIONAL PRIORITIES LIST**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **NOT AVAILABLE**
ACTION COMPLETION DATE: **6/24/1988**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **PRELIMINARY ASSESSMENT**
LEAD: **STATE, FUND FINANCED**
ACTION START DATE: **NOT AVAILABLE**
ACTION COMPLETION DATE: **12/1/1984**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **DISCOVERY**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **NOT AVAILABLE**
ACTION COMPLETION DATE: **10/1/1984**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **LOWER SILVER CREEK (02)**
ACTION NAME: **POTENTIALLY RESPONSIBLE PARTY REMEDIAL INVESTIGATION/FEASIBILITY STUDY**
LEAD: **RESPONSIBLE PARTY**
ACTION START DATE: **9/29/2009**
ACTION COMPLETION DATE: **NOT REPORTED**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **POTENTIALLY RESPONSIBLE PARTY REMEDIAL ACTION**
LEAD: **RESPONSIBLE PARTY**
ACTION START DATE: **2/7/2008**

ACTION COMPLETION DATE: **NOT REPORTED**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **RICHARDSON FLAT (01)**
ACTION NAME: **TECHNICAL ASSISTANCE**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **1/4/2007**
ACTION COMPLETION DATE: **NOT REPORTED**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SILVER CREEK TAILINGS (04)**
ACTION NAME: **ENGINEERING EVALUATION/COST ANALYSIS**
LEAD: **RESPONSIBLE PARTY**
ACTION START DATE: **4/11/2013**
ACTION COMPLETION DATE: **NOT REPORTED**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

AREA OF SITE ADDRESSED (OU): **SITEWIDE (00)**
ACTION NAME: **TECHNICAL ASSISTANCE**
LEAD: **EPA FUND-FINANCED**
ACTION START DATE: **9/25/2013**
ACTION COMPLETION DATE: **NOT REPORTED**
CONTACT TITLE: **REMEDIAL PROJECT MANAGER (RPM)**
CONTACT NAME: **KATHRYN HERNANDEZ**
CONTACT PHONE NUMBER: **(303) 312-6101**

CONTAMINANTS

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Back to Report Summary

Record of Decision System (RODS)

MAP ID# 1

Distance from Property: 0.000 mi. (0 ft.) X
Elevation: 6,494 ft. (Lower than TP)

EPA ID: **UTD980952840**
SITE ID: **0800705**
NAME: **RICHARDSON FLAT TAILINGS**
ADDRESS: **1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E, PARK CITY, UT 84060**
COUNTY: **SUMMIT**
REGION: **08**

FACILITY DETAIL(S)

SEQ ID: **1**
OPERABLE UNIT NAME: **RICHARDSON FLAT**
ACTION NAME: **GOVT ROD FOR PRP REMEDY**
ACTUAL COMPLETION DATE: **7/6/2005**
NPL STATUS: **PROPOSED**
NON NPL STATUS: **NOT REPORTED**

Back to Report Summary

MAP ID# 1

Distance from Property: 0.000 mi. (0 ft.) X
Elevation: 6,494 ft. (Lower than TP)

FACILITY INFORMATION

EPA ID#: **UTD980952840**
SITE ID#: **0800705**
NAME: **RICHARDSON FLAT TAILINGS**
ADDRESS: **1 MILE E. OF TOWN NEAR US 40 NW 1/4 SEC 1 T2S R 4E**
PARK CITY, UT 84060
COUNTY: **SUMMIT**
FEDERAL FACILITY: **NO - NOT A FEDERAL FACILITY**
NPL: **PROPOSED FOR NPL**
NON NPL STATUS: **NOT REPORTED**

Below information was gathered from the prior CERCLIS update completed in 10/2013 update:
NON-NPL STATUS DATE: **NOT REPORTED**
PHYSICAL CLASSIFICATION OF SITE / INCIDENT: **MINES/TAILINGS**

FEDERAL REGISTER INFORMATION

DATE	VOLUME	PAGE #	ACTION	HRS SCORE
06/24/1988	**53**	**23988**	**PROPOSED TO THE FINAL NPL**	**39.13000**
02/11/1991	**56**	**5598**	**REMOVED FROM PROPOSED TO THE NPL**	**50.20000**
02/07/1992	**57**	**4824**	**PROPOSED TO THE FINAL NPL**	**39.13000**

SITE DESCRIPTION

THE RICHARDSON FLAT TAILINGS (RFT) SITE (SITE) IS LOCATED 1.5 MILES NORTHEAST OF PARK CITY, UTAH, AND IS PART OF A 650 ACRE PROPERTY OWNED BY UNITED PARK CITY MINES (UPCM) COMPANY. THE SITE IS A TAILINGS IMPOUNDMENT THAT COVERS 160 ACRES IN THE NORTHWEST CORNER OF THE PCM PROPERTY, A SMALL PORTION OF THE MUCH LARGER UPPER SILVER CREEK WATERSHED. SILVER CREEK IS THE PRIMARY SURFACE WATER SOURCE FOUND IN THE AREA AND IS COMPRISED OF RUNOFF FROM THREE SIGNIFICANT DRAINAGES IN THE WATERSHED, INCLUDING ONTARIO CANYON, EMPIRE CANYON AND DEER VALLEY. SILVER CREEK IS CURRENTLY LISTED ON UTAH'S 303(D) LIST FOR ZINC AND CADMIUM AND IS TARGETED FOR TOTAL MAXIMUM DAILY LOAD (TMDL) DEVELOPMENT. HISTORIC MINING ACTIVITIES IN THE CANYONS LEFT BEHIND SIX ACTIVE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION AND LIABILITY INFORMATION SYSTEM (CERCLIS) SITES, INCLUDING EMPIRE CANYON, SILVER CREEK TAILINGS, AND SILVER MAPLE CLAIMS, EACH ONE IMPACTING SILVER CREEK IN SOME WAY. WHILE ZINC AND CADMIUM ARE THE PRIMARY HEAVY METALS FOUND IN SILVER CREEK, LEAD AND ARSENIC ARE THE MAIN CONTAMINANTS IN THE SEDIMENTS AND SOILS OF THE WATERSHED. BECAUSE OF THE VOLUME OF MINING ACTIVITY THROUGHOUT THE DISTRICT AND THE DYNAMICS OF THE WATERSHED HYDROGEOLOGY, IT IS DIFFICULT TO TARGET ANY ONE SITE AS THE MAIN SOURCE OF CONTAMINATION AFFECTING SILVER CREEK AND THE ENVIRONMENTAL MEDIA WITHIN THE WATERSHED. THE OVERALL REMEDIAL GOAL FOR THE WATERSHED IS TO CLEAN UP THE SURROUNDING SITES, INCLUDING THE SITE, THEREBY ELIMINATING CURRENT AND FUTURE HAZARDS TO HUMAN HEALTH AND WELFARE AND THE SURROUNDING ENVIRONMENT.

THE RFT SITE IS A GEOMETRICALLY CLOSED BASIN, BOUND BY HIGHWAY 248 TO THE NORTH, A MAIN EMBANKMENT TO THE WEST, AND DIVERSION DITCHES TO THE SOUTH AND THE NORTHEAST. SILVER CREEK CAN BE FOUND ON THE NORTHWEST BORDER OF THE SITE, SEPARATED FROM THE SITE BY A SMALL STRETCH OF WETLANDS AND RIPARIAN VEGETATION. THE IMPOUNDMENT WAS USED AS A MINE TAILINGS RESERVOIR PRIOR TO 1950. THE SITE NOW HOUSES APPROXIMATELY SEVEN MILLION TONS OF SAND-SIZED CARBONACEOUS PARTICLES AND MINERALS CONTAINING ZINC, SILVER, LEAD, AND OTHER METALS. USE OF THE SITE BY UPCM ENDED IN 1982. TO DATE, THE SITE IS NOT LISTED ON THE NATIONAL PRIORITIES LIST (NPL). THE SITE WAS CONSIDERED FOR LISTING IN BOTH 1988 AND 1992. UPCM, THE PRIMARY POTENTIALLY RESPONSIBLE PARTY (PRP), HAS TAKEN RESPONSIBILITY FOR FUNDING THE MAJORITY OF THE REMEDIAL

ACTION AT THE SITE.

THE SITE, AND MUCH OF THE SURROUNDING AREA, IS PRIVATELY OWNED BY UPCM. UPCM HAS CONSISTENTLY INDICATED A DESIRE TO RETAIN TITLE AND LIMIT FUTURE USE TO RECREATIONAL ACTIVITIES AT THE SITE. WHILE NO FINAL DECISION HAS BEEN MADE, USES THAT RANGE FROM OPEN SPACE WILDLIFE HABITAT TO ATHLETIC FIELDS ARE CURRENTLY BEING DISCUSSED. ANY TYPE OF RECREATIONAL USE IS CONSISTENT WITH SURROUNDING LAND USES, AND BOTH PARK CITY AND SUMMIT COUNTY HAVE INDICATED GENERAL AGREEMENT WITH RECREATIONAL PROPOSALS. PARK CITY IS PROACTIVE IN OBTAINING AND PRESERVING OPEN SPACE. THERE IS NO INDICATION THAT HIGHER USES OF THE LAND, SUCH AS RESIDENTIAL, ARE REASONABLY FORESEEABLE.

THE SURFACE WATER FEATURES AT THE SITE, INCLUDING THE SOUTH DIVERSION DITCH, THE WETLANDS AREA BELOW THE EMBANKMENT, THE SITE POND AND SILVER CREEK ARE USED AS HABITAT BY A LIMITED NUMBER OF VEGETATIVE SPECIES, FISH, AND WILDLIFE. ALL OF THE SURFACE WATER AND SHALLOW GROUND WATER ON THE SITE EVENTUALLY DISCHARGES TO SILVER CREEK. SILVER CREEK IS CLASSIFIED BY THE STATE OF UTAH AS A POTENTIAL DRINKING WATER SOURCE, A RECREATIONAL USE FEATURE, A COLD WATER FISHERY, AND A POTENTIAL IRRIGATION SOURCE. AT PRESENT, SILVER CREEK IS USED FOR IRRIGATION AND RECREATIONAL FISHING ONLY, AND NO CHANGES ARE EXPECTED. THE STATE OF UTAH IS CONSIDERING ISSUING AN ADVISORY AGAINST FISHING DUE TO ELEVATED METAL LEVELS IN SILVER CREEK. SILVER CREEK IS LISTED ON THE STATE'S CLEAN WATER ACT SECTION 303(D) LIST OF IMPAIRED WATER BODIES BECAUSE ZINC AND CADMIUM LEVELS EXCEED CHRONIC STANDA RDS FOR PROTECTION OF AQUATIC WILDLIFE.

SILVER CREEK HAS BEEN IMPACTED BY THE LEGACY OF MINING ACTIVITIES, THOUGH THE REMEDIAL INVESTIGATION CONFIRMED THAT THE SITE IS NOT, AT PRESENT, A SIGNIFICANT CONTRIBUTOR OF METALS TO THE CREEK. THE GOAL IS TO REMEDIATE THE ENTIRE WATERSHED, IMPROVING THE ECOLOGICAL QUALITY OF THE AREA, THEREBY ALLOWING FOR CONTINUED BENEFICIAL USE OF THE WATERSHED AND THE SITE BY A VARIETY OF LIVING ORGANISMS.

GROUND WATER IN THE IMMEDIATE AREA IS USED ONLY FOR PRIVATE WELLS, AND NO WELLS ARE KNOWN TO BE LOCATED WITHIN A HALF MILE OF THE SITE. MOST AREA DRINKING WATER WELLS ARE FINISHED IN THE DEEPER CONSOLIDATED SEDIMENTARY ROCKS THAT CAN SUSTAIN AQUIFERS AND PRODUCE SUFFICIENT YIELDS FOR CULINARY WELLS. IN THE SITE AREA, THESE FORMATIONS ARE VERY DEEP AND ARE COVERED BY THE KEETLEY VOLCANICS.

THE VOLCANIC ROCKS ARE GENERALLY NOT SUITABLE TO SUSTAIN AQUIFERS AND SERVE AS MORE OF A CONFINING UNIT. THE SHALLOW GROUND WATER AT THE SITE IS GENERALLY ASSOCIATED WITH THE ALLUVIAL SYSTEM OF SILVER CREEK. THIS WATER IS VERY HIGH IN SOLIDS AND IS ALSO OFTEN CONTAMINATED DUE TO WATER QUALITY IN SILVER CREEK AND TAILINGS THAT ARE PRESENT ALONG THE CREEK IN MANY AREAS. THERE ARE NO KNOWN USES FOR THIS WATER AT THIS TIME.

IN 1953, UPCM WAS FORMED THROUGH THE CONSOLIDATION OF SILVER KING COALITION MINES COMPANY AND PARK UTAH CONSOLIDATED MINES COMPANY. AT THAT TIME, THE SITE WAS ALREADY BEING USED AS AN IMPOUNDMENT FOR MINE TAILINGS CONSISTING PRIMARILY OF SAND-SIZED CARBONACEOUS PARTICLES AND MINERALS CONTAINING LEAD, ZINC, SILVER AND OTHER METALS. ADDITIONALLY, TAILINGS WERE TRANSPORTED TO AND PLACED IN SEVERAL DISTINCT LOW ELEVATION AREAS IN THE SOUTHEAST PORTION OF THE SITE JUST OUTSIDE OF THE MAIN IMPOUNDMENT.

IN 1970, WITH RENEWED MINING ACTIVITY IN THE AREA, PARK CITY VENTURES (PCV), A JOINT VENTURE PARTNERSHIP BETWEEN ANACONDA COPPER COMPANY AND AMERICAN SMELTING COMPANY (ASARCO), ENTERED INTO A LEASE AGREEMENT WITH UPCM. THIS AGREE MENT ALLOWED PCV TO DEPOSIT ADDITIONAL MINE TAILINGS AT THE SITE; HOWEVER, THE SITE HAD TO BE PARTIALLY RECONSTRUCTED. DESIGN, CONSTRUCTION AND OPERATION SPECIFICATIONS WERE APPROVED BY THE STATE OF UTAH. THESE SPECIFICATIONS INCLUDED INSTALLATION OF A LARGE EMBANKMENT ALONG THE WESTERN EDGE OF THE IMPOUNDMENT, AND CONSTRUCTION OF CONTAINMENT DIKE STRUCTURES ALONG THE SOUTHERN AND EASTERN BOARDERS OF THE SITE FOR ADDITIONAL TAILINGS STORAGE. PCV ALSO CREATED A DIVERSION DITCH SYSTEM ALONG THE HIGHER SLOPES NORTH OF THE IMPOUNDMENT AND OUTSIDE

OF THE CONTAINMENT DIKES ALONG THE EAST AND SOUTH PERIMETERS OF THE IMPOUNDMENT TO COLLECT SURFACE RUN OFF. AS PART OF THE APPROVAL PROCESS FOR THE RENEWED USE OF THE SITE, THE STATE OF UTAH REQUIRED INSTALLATION OF GROUNDWATER MONITORING WELLS NEAR THE BASE OF THE MAIN EMBANKMENT.

OVER THE COURSE OF PVC'S USE OF THE SITE, ABOUT 450,000 TONS OF TAILINGS WERE DEPOSITED AT THE SITE THROUGH A SLURRY PIPELINE THAT ORIGINATED AT THEIR MILL FACILITY. IT WAS RECOMMENDED THAT THE TAILINGS BE DEPOSITED AROUND THE PERIMETER OF THE SITE, MOVING TOWARDS THE CENTER OF THE SITE OVER TIME. HOWEVER, PVC CHOSE TO DEPOSIT THE TAILINGS FROM THE SLURRY PIPELINE IN ONE CONSTANT AREA IN THE CENTER OF THE IMPOUNDMENT, CREATING A STEEP, CONE-LIKE STRUCTURE IN THE MIDDLE OF THE IMPOUNDMENT. AFTER PVC DISCONTINUED THEIR USE OF THE SITE IN 1982, HIGH WINDS CAUSED TAILINGS FROM THE CONE-SHAPED FEATURE TO BECOME AIRBORNE, CREATING A POTENTIALLY SIGNIFICANT EXPOSURE PATHWAY. THESE OPERATIONS SHAPED THE TOPOGRAPHY OF THE IMPOUNDMENT WHICH STILL EXISTS TODAY.

FROM 1980 TO 1982, NORANDA MINING, INC. LEASED THE MINING AND MILLING OPERATIONS AND PLACED AN ADDITIONAL 70,000 TONS OF TAILINGS AT THE SITE. SINCE THEN NO FURTHER USE OF THE SITE HAS OCCURRED, BUT UPCM BEGAN TAKING ACTIONS AIMED AT IMPROVING ENVIRONMENTAL CONDITIONS OF THE SITE ALMOST IMMEDIATELY AFTER OPERATIONS STOPPED. THIS WORK CONTINUED INTERMITTENTLY THROUGH THE MID-1990S.

EPA BECAME AWA RE OF THE SITE IN THE MID-1980S. AFTER INITIAL SITE ASSESSMENT WORK, EPA PROPOSED THE SITE FOR LISTING ON THE NPL IN 1988. AFTER CONSIDERING PUBLIC COMMENT, EPA DID NOT PURSUE THE SITE FOR LISTING ON THE NPL. BY 1992, THE HAZARD RANKING SYSTEM (HRS) HAD BEEN REVISED AND EPA AGAIN PROPOSED THE SITE FOR LISTING ON THE NPL. ULTIMATELY, EPA DECIDED NOT TO PURSUE FINAL LISTING ON THE NPL, AND THE SITE REMAINS PROPOSED FOR THE NPL AT THIS TIME.

SUBSEQUENT TO THE SECOND NPL PROPOSAL, THE EPA REGION 8 SUPERFUND EMERGENCY RESPONSE BRANCH CONDUCTED AN INVESTIGATION UNDER THE "MAKE SITES SAFE" INITIATIVE IN 1993. THIS INVESTIGATION CONCLUDED THAT CONDITIONS OF THE SITE DID NOT WARRANT EMERGENCY REMOVAL ACTIONS, BUT MAY PRESENT UNACCEPTABLE RISKS TO HUMAN HEALTH AND THE ENVIRONMENT AND SHOULD BE ADDRESSED THROUGH LONG-TERM REMEDIAL ACTION.

THROUGHOUT THE 1990S, EPA AND THE UTAH DEPARTMENT OF ENVIRONMENTAL QUALITY (UDEQ) WERE HOPING UPCM WOULD ADDRESS THE SITE THROUGH THE UTAH VOLUNTARY CLEANUP PROGRAM. UPCM DECIDED AGAINST THIS, BUT AT THE SAME TIME CONTINUED TO VOLUNTARILY TAKE STEPS TO IMPROVE ENVIRONMENTAL CONDITIONS AT THE SITE. ADDITIONALLY, UPCM BEGAN COLLECTING HYDROGEOLOGIC DATA, WHICH WAS USED TO BETTER UNDERSTAND THE GROUNDWATER FLOW AND DEPTH OF TAILINGS AT THE SITE. IN 1999, EPA, UDEQ, UPCM, PARK CITY MUNICIPAL CORPORATION, AND OTHER STAKEHOLDERS FORMED THE UPPER SILVER CREEK WATERSHED STAKEHOLDER'S GROUP (USCWSG). THIS COMMUNITY-BASED ORGANIZATION WAS FORMED TO HELP EPA ADDRESS SUPERFUND-RELATED ENVIRONMENTAL ISSUES IN THE PARK

CITY AREA IN A COOPERATIVE FASHION, INCLUDING ISSUES RELATED TO THE SITE. THE USCWSG HAS BEEN VERY SUCCESSFUL AND SEVERAL INVESTIGATIONS AND CLEANUPS HAVE OCCURRED IN PARK CITY AS A RESULT. EARLY IN USCWSG'S HISTORY, UPCM AND EPA AGREED TO ADDRESS THE SITE AS AN "NPL EQUIVALENT" SITE, USING THE SAME PROCESS FOR INVESTIGATION AND CLEANUP THAT IS REQUIRED FOR A NPL SITE.

EPA AND UPCM SIGNED AN ADMINISTRATIVE ORDER ON CONSENT (AOC) ON SEPTEMBER 28, 2000 WHICH CALLED FOR UPCM TO CONDUCT A REMEDIAL INVESTIGATION/ FOCUSED FEASIBILITY STUDY (RI/FFS) FOR THE SITE. EPA AND UPCM HAVE CONTINUOUSLY WORKED WELL TOGETHER SINCE THE INCEPTION OF THE USCWSG, AND BECAUSE OF THIS, EPA WAS ABLE TO EMPLOY INCREASINGLY REDUCED OVERSIGHT FOR THE RI/FFS AS IT PROGRESSED.

EPA CONDUCTED TWO POTENTIALLY RESPONSIBLE PARTY (PRP) SEARCHES FOR THE SITE THAT IDENTIFIED SEVERAL PARTIES THAT MAY HAVE SOME LIABILITY FOR CLEANUP OF THE SITE. THE SITE OWNER, UPCM, HAS CONDUCTED THE

RI/FFS PURSUANT TO AN ADMINISTRATIVE ORDER ON CONSENT (AOC). EPA HAS BEEN FACILITATING THE ALLOCATION OF COSTS OF INVESTIGATION AND CLEANUP BETWEEN THE PRP'S AND UPCM HAS INDICATED ITS WILLINGNESS TO ENTER INTO A CONSENT DECREE (CD) WITH EPA FOR CONDUCT OF REMEDIAL DESIGN AND REMEDIAL ACTION.

THE SITE IS LOCATED IN A RURAL AREA WITHIN A BROAD VALLEY OF MOSTLY UNDEVELOPED RANGELAND WITHIN THE SILVER CREEK WATERSHED, APPROXIMATELY TWO MILES OUTSIDE THE PARK CITY LIMITS. THE DEER VALLEY AND PARK CITY SKI RESORTS SIT AT THE TOP OF THE WATERSHED AND SERVE AS RECREATIONAL USE AREAS FOR SKIERS IN THE WINTER AND BIKERS/HIKERS IN THE WARMER MONTHS. AS SILVER CREEK PASSES THROUGH PARK CITY AND INTO THE SURROUNDING SUBURBAN AREAS, THE LAND USE IS PRIMARILY RESIDENTIAL AND COMMERCIAL, CHANGING TO RECREATIONAL AND AGRICULTURAL IN THE AREAS SURROUNDING RICHARDSON FLAT.

MOST OF THE LAND AROUND THE SITE IS UNDEVELOPED OPEN SPACE. MINING ACTIVITIES AT THE SITE CEASED IN 1982. SINCE THAT TIME, THE SITE HAS NOT BEEN USED AND HAS REMAINED OPEN SPACE. A SMALL RECREATIONAL TRAIL SKIRTS THE SITE ALONG SILVER CREEK. THERE ARE A FEW SMALL INDUSTRIAL OPERATIONS IN THE VICINITY OF THE SITE, INCLUDING A CONCRETE PLANT ON A NEARBY PARCEL. PARK CITY AND OTHER RESORT-LIKE RESIDENTIAL DEVELOPMENTS ARE EXPANDING IN THE GENERAL AREA, BUT NONE ARE CLOSER THAN ONE MILE AWAY.

A RECORD OF DECISION (ROD) ADDRESSING OPERABLE UNIT (OU) 1 WAS COMPLETED ON JULY 6, 2005.

SITE HISTORY **- NO SITE HISTORY INFORMATION AVAILABLE -**

ACTIONS

TYPE: **NR - REMOVED FROM THE PROPOSED NATIONAL PRIORITIES LIST**
START DATE: **NOT REPORTED**
COMPLETION DATE: **02/11/1991**
ACTION TYPE DEFINITION:
SITE REMOVED FROM THE PROPOSED LIST BEFORE ACHIEVING FINAL STATUS, OR REMOVED FROM THE FINAL LIST.

TYPE: **NP - PROPOSAL TO NATIONAL PRIORITIES LIST**
START DATE: **NOT REPORTED**
COMPLETION DATE: **06/24/1988**
ACTION TYPE DEFINITION:
SITE PROPOSED FOR INCLUSION ON THE NATIONAL PRIORITY LIST BASED ON THE HAZARD RANKING SYSTEM (HRS) SCORE FOR THE SITE.

TYPE: **LO - LODGED BY DOJ**
START DATE: **NOT REPORTED**
COMPLETION DATE: **03/13/2009**
ACTION TYPE DEFINITION:
AN ENFORCEMENT INSTRUMENT (E.G. CONSENT DECREE) IS LODGED BY DOJ WITH THE COURT.

TYPE: **LO - LODGED BY DOJ**
START DATE: **NOT REPORTED**
COMPLETION DATE: **08/28/2007**
ACTION TYPE DEFINITION:
AN ENFORCEMENT INSTRUMENT (E.G. CONSENT DECREE) IS LODGED BY DOJ WITH THE COURT.

TYPE: **LO - LODGED BY DOJ**
START DATE: **NOT REPORTED**
COMPLETION DATE: **09/05/2006**

ACTION TYPE DEFINITION:
AN ENFORCEMENT INSTRUMENT (E.G. CONSENT DECREE) IS LODGED BY DOJ WITH THE COURT.

TYPE: **LO - LODGED BY DOJ**
START DATE: **NOT REPORTED**
COMPLETION DATE: **09/05/2006**
ACTION TYPE DEFINITION:
AN ENFORCEMENT INSTRUMENT (E.G. CONSENT DECREE) IS LODGED BY DOJ WITH THE COURT.

TYPE: **NS - NATIONAL PRIORITIES LIST RESPONSIBLE PARTY SEARCH**
START DATE: **08/13/1987**
COMPLETION DATE: **07/14/1988**
ACTION TYPE DEFINITION:
THE NATIONAL PRIORITY LIST (NPL) POTENTIALLY RESPONSIBLE PARTY (PRP) SEARCH IS USED TO IDENTIFY PRPS AT A FINAL NPL OR PROPOSED NPL SITE. ACTIONS TYPICALLY INCLUDE TITLE SEARCH, FINANCIAL ASSESSMENTS, AND REVIEW OF APPLICABLE RECORDS. THE NPL PRP SEARCH SHOULD BEGIN UPON COMPLETION OF THE SCREENING SITE INVESTIGATION AND SHOULD BE CONDUCTED CONCURRENT WITH THE NATIONAL PRIORITIES LISTING PROCESS.

TYPE: **HR - HAZARD RANKING SYSTEM PACKAGE**
START DATE: **NOT REPORTED**
COMPLETION DATE: **07/15/1991**
ACTION TYPE DEFINITION:
A NUMERIC ESTIMATE OF THE RELATIVE SEVERITY OF A HAZARDOUS SUBSTANCE RELEASE OR POTENTIAL RELEASE BASED ON: (1) THE RELATIVE POTENTIAL OF SUBSTANCES TO CAUSE HAZARDOUS SITUATIONS; (2) THE LIKELIHOOD AND RATE AT WHICH THE SUBSTANCES MAY AFFECT HUMAN AND ENVIRONMENTAL RECEPTORS; AND (3) THE SEVERITY AND MAGNITUDE OF POTENTIAL EFFECTS. THE SCORE IS COMPUTED USING THE HAZARD RANKING SYSTEM (HRS).

TYPE: **SG - SPECIAL NOTICE ISSUED**
START DATE: **NOT REPORTED**
COMPLETION DATE: **02/10/1989**
ACTION TYPE DEFINITION:
ISSUANCE UNDER CERCLA SECTION 122 OF A SPECIAL NOTICE LETTER TO POTENTIALLY RESPONSIBLE PARTIES (PRPS). THE ISSUANCE OF A SPECIAL NOTICE LETTER BY EPA TRIGGERS A NEGOTIATION MORATORIUM. SPECIAL NOTICE LETTERS CAN BE ISSUED FOR REMOVAL, REMEDIAL INVESTIGATION/FEASIBILITY STUDY, REMEDIAL DESIGN/REMEDIAL ACTION NEGOTIATIONS.

TYPE: **JF - ECOLOGICAL RISK ASSESSMENT**
START DATE: **05/01/2001**
COMPLETION DATE: **01/30/2004**
ACTION TYPE DEFINITION:
ASSESSMENT OF THE BASELINE RISKS POSED BY THE SITE TO ECOLOGICAL RECEPTORS.

TYPE: **NS - NATIONAL PRIORITIES LIST RESPONSIBLE PARTY SEARCH**
START DATE: **08/23/1991**
COMPLETION DATE: **12/07/1992**
ACTION TYPE DEFINITION:

THE NATIONAL PRIORITY LIST (NPL) POTENTIALLY RESPONSIBLE PARTY (PRP) SEARCH IS USED TO IDENTIFY PRPS AT A FINAL NPL OR PROPOSED NPL SITE. ACTIONS TYPICALLY INCLUDE TITLE SEARCH, FINANCIAL ASSESSMENTS, AND REVIEW OF APPLICABLE RECORDS. THE NPL PRP SEARCH SHOULD BEGIN UPON COMPLETION OF THE SCREENING SITE INVESTIGATION AND SHOULD BE CONDUCTED CONCURRENT WITH THE NATIONAL PRIORITIES LISTING PROCESS.

TYPE: **NS - NATIONAL PRIORITIES LIST RESPONSIBLE PARTY SEARCH**
START DATE: **11/20/2008**
COMPLETION DATE: **09/30/2009**
ACTION TYPE DEFINITION:
THE NATIONAL PRIORITY LIST (NPL) POTENTIALLY RESPONSIBLE PARTY (PRP) SEARCH IS USED TO IDENTIFY PRPS AT A FINAL NPL OR PROPOSED NPL SITE. ACTIONS TYPICALLY INCLUDE TITLE SEARCH, FINANCIAL ASSESSMENTS, AND REVIEW OF APPLICABLE RECORDS. THE NPL PRP SEARCH SHOULD BEGIN UPON COMPLETION OF THE SCREENING SITE INVESTIGATION AND SHOULD BE CONDUCTED CONCURRENT WITH THE NATIONAL PRIORITIES LISTING PROCESS.

TYPE: **PA - PRELIMINARY ASSESSMENT**
START DATE: **NOT REPORTED**
COMPLETION DATE: **12/01/1984**
ACTION TYPE DEFINITION:
COLLECTION OF DIVERSE EXISTING INFORMATION ABOUT THE SOURCE AND NATURE OF THE SITE HAZARD. IT IS EPA POLICY TO COMPLETE THE PRELIMINARY ASSESSMENT WITHIN ONE YEAR OF SITE DISCOVERY.

TYPE: **FN - REMEDIAL INVESTIGATION/FEASIBILITY STUDY NEGOTIATIONS**
START DATE: **06/07/2000**
COMPLETION DATE: **09/28/2000**
ACTION TYPE DEFINITION:
DISCUSSIONS BETWEEN EPA AND THE POTENTIALLY RESPONSIBLE PARTIES (PRPS) ON LIABILITY FOR AND CONDUCT OF A REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS).

TYPE: **RS - REMOVAL ASSESSMENT**
START DATE: **08/30/1990**
COMPLETION DATE: **08/30/1990**
ACTION TYPE DEFINITION:
COLLECTING SITE CHARACTERISTICS TO DETERMINE WHETHER OR NOT A REMOVAL MUST BE PERFORMED.

TYPE: **MA - STATE SUPPORT AGENCY COOPERATIVE AGREEMENT**
START DATE: **04/26/1996**
COMPLETION DATE: **08/15/2001**
ACTION TYPE DEFINITION:
FEDERAL RENUMERATION OF STATE ADMINISTRATIVE COSTS OF PARTICIPATION IN SITE-SPECIFIC REMEDIAL PLANNING OR IMPLEMENTATION ACTIVITIES.

TYPE: **SI - SITE INSPECTION**
START DATE: **NOT REPORTED**
COMPLETION DATE: **09/03/1992**
ACTION TYPE DEFINITION:
THE PROCESS OF COLLECTING SITE DATA AND SAMPLES TO CHARACTERIZE THE SEVERITY OF THE HAZARD FOR THE

HAZARD RANKING SCORE AND/OR ENFORCEMENT SUPPORT.

TYPE: **SV - SECTION 107 LITIGATION**
START DATE: **12/09/2005**
COMPLETION DATE: **11/28/2006**
ACTION TYPE DEFINITION:
JUDICIAL REFERRAL UNDER S107 TO RECOVERY FROM POTENTIALLY RESPONSIBLE PARTIES (PRPS).

TYPE: **TA - TECHNICAL ASSISTANCE**
START DATE: **01/04/2007**
COMPLETION DATE: **NOT REPORTED**
ACTION TYPE DEFINITION:
PARTICIPATION IN THE CONDUCT OF FUND-FINANCED REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS).

TYPE: **TA - TECHNICAL ASSISTANCE**
START DATE: **07/24/2008**
COMPLETION DATE: **01/20/2009**
ACTION TYPE DEFINITION:
PARTICIPATION IN THE CONDUCT OF FUND-FINANCED REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS).

TYPE: **TA - TECHNICAL ASSISTANCE**
START DATE: **09/25/2013**
COMPLETION DATE: **NOT REPORTED**
ACTION TYPE DEFINITION:
PARTICIPATION IN THE CONDUCT OF FUND-FINANCED REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS).

TYPE: **RO - RECORD OF DECISION**
START DATE: **NOT REPORTED**
COMPLETION DATE: **07/06/2005**
ACTION TYPE DEFINITION:
THE FINAL RECORD OF DECISION (ROD) IS SIGNED BY THE APPROPRIATE AGENCY INDICATING THAT THE AGENCY HAS CHOSEN THE REMEDY FOR SITE REMEDIATION. ROD SIGNATURE IS SIGNIFIED BY THE COMPLETE DATE.

TYPE: **BF - POTENTIALLY RESPONSIBLE PARTY REMEDIAL ACTION**
START DATE: **02/07/2008**
COMPLETION DATE: **NOT REPORTED**
ACTION TYPE DEFINITION:
PROVIDES FOR OVERSIGHT OF POTENTIALLY RESPONSIBLE PARTY (PRP) RESPONSE ACTION FOR REMEDIAL ACTION (RA), INCLUDING ALL ACTIVITIES FOR MONITORING AND SUPERVISING THE PERFORMANCE OF THE RESPONSIBLE PARTIES TO DETERMINE WHETHER SUCH PERFORMANCE IS CONSISTENT WITH THE REQUIREMENTS OF THE ADMINISTRATIVE ORDERS ON CONSENT, UNILATERAL ADMINISTRATIVE ORDERS, CONSENT DECREES, JUDICIAL DECREES, INFORMATION AGREEMENTS, AND COMPLIANCE SCHEDULES.

TYPE: **NP - PROPOSAL TO NATIONAL PRIORITIES LIST**
START DATE: **NOT REPORTED**
COMPLETION DATE: **02/07/1992**

ACTION TYPE DEFINITION:
SITE PROPOSED FOR INCLUSION ON THE NATIONAL PRIORITY LIST BASED ON THE HAZARD RANKING SYSTEM (HRS) SCORE FOR THE SITE.

TYPE: **AC - ADMINISTRATIVE ORDER ON CONSENT**
START DATE: **NOT REPORTED**
COMPLETION DATE: **09/28/2000**
ACTION TYPE DEFINITION:
A VOLUNTARY AND ENFORCEABLE AGREEMENT PURSUANT TO CERCLA, SIGNED BY EPA AND POTENTIALLY RESPONSIBLE PARTIES (PRPS), WHEREBY THE PRPS AGREE TO PERFORM AND/OR PAY FOR SOME OR ALL OF THE RESPONSE COSTS INVOLVED IN SITE CLEANUP. THE ORDER DESCRIBES THE PRP RESPONSE TO BE TAKEN AT A SITE, STIPULATED PENALTIES, INDEMNIFICATION, EFFECTIVE DATE, AND MAY BE SUBJECT TO PUBLIC COMMENT. IT CAN BE FOR REMOVAL, REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS), REMEDIAL DESIGN (RD), AND REMEDIAL ACTION (RA),PRE-SARA; BUT ONLY REMOVAL AND RI/FS, POST-SARA.

TYPE: **AC - ADMINISTRATIVE ORDER ON CONSENT**
START DATE: **NOT REPORTED**
COMPLETION DATE: **09/29/2009**
ACTION TYPE DEFINITION:
A VOLUNTARY AND ENFORCEABLE AGREEMENT PURSUANT TO CERCLA, SIGNED BY EPA AND POTENTIALLY RESPONSIBLE PARTIES (PRPS), WHEREBY THE PRPS AGREE TO PERFORM AND/OR PAY FOR SOME OR ALL OF THE RESPONSE COSTS INVOLVED IN SITE CLEANUP. THE ORDER DESCRIBES THE PRP RESPONSE TO BE TAKEN AT A SITE, STIPULATED PENALTIES, INDEMNIFICATION, EFFECTIVE DATE, AND MAY BE SUBJECT TO PUBLIC COMMENT. IT CAN BE FOR REMOVAL, REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS), REMEDIAL DESIGN (RD), AND REMEDIAL ACTION (RA),PRE-SARA; BUT ONLY REMOVAL AND RI/FS, POST-SARA.

TYPE: **AC - ADMINISTRATIVE ORDER ON CONSENT**
START DATE: **NOT REPORTED**
COMPLETION DATE: **02/19/2013**
ACTION TYPE DEFINITION:
A VOLUNTARY AND ENFORCEABLE AGREEMENT PURSUANT TO CERCLA, SIGNED BY EPA AND POTENTIALLY RESPONSIBLE PARTIES (PRPS), WHEREBY THE PRPS AGREE TO PERFORM AND/OR PAY FOR SOME OR ALL OF THE RESPONSE COSTS INVOLVED IN SITE CLEANUP. THE ORDER DESCRIBES THE PRP RESPONSE TO BE TAKEN AT A SITE, STIPULATED PENALTIES, INDEMNIFICATION, EFFECTIVE DATE, AND MAY BE SUBJECT TO PUBLIC COMMENT. IT CAN BE FOR REMOVAL, REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS), REMEDIAL DESIGN (RD), AND REMEDIAL ACTION (RA),PRE-SARA; BUT ONLY REMOVAL AND RI/FS, POST-SARA.

TYPE: **AD - ALTERNATIVE DISPUTE RESOLUTION**
START DATE: **03/06/2006**
COMPLETION DATE: **12/08/2006**
ACTION TYPE DEFINITION:
DECISION TO TAKE COST RECOVERY ACTION BY USE OF ALTERNATIVE DISPUTE RESOLUTION (ADR) INCLUDING MEDIATION, ARBITRATION AND MINI-TRIAL.

TYPE: **AN - REMEDIAL DESIGN/REMEDIAL ACTION NEGOTIATIONS**
START DATE: **03/21/2006**

COMPLETION DATE: **10/04/2007**
ACTION TYPE DEFINITION:
DISCUSSIONS AND INFORMATION EXCHANGE BETWEEN POTENTIALLY RESPONSIBLE PARTIES (PRPS) AND EPA (OR STATE) OVER THE LIABILITY OF THE PRP, WILLINGNESS, AND ABILITY TO CONDUCT THE REMEDIAL DESIGN AND/OR THE REMEDIAL ACTION AS IDENTIFIED IN THE RECORD OF DECISION (ROD).

TYPE: **AS - AERIAL SURVEY**
START DATE: **06/30/1991**
COMPLETION DATE: **06/30/1991**
ACTION TYPE DEFINITION:
PROVIDE AERIAL PHOTOGRAPHY, MULTISPECTRAL SCANNER (MSS), FORWARD LOOKING INFRARED (FLIR), AND HISTORICAL AERIAL PHOTOGRAPHS WITH ANALYSES SUPPORT FOR REGIONAL OFFICES AND OERR REQUIREMENTS FOR PRE-REMEDIAL AND REMEDIAL ACTIONS. THE AERIAL SURVEY SUPPORT PROVIDES FOUR TYPES OF REMOTE SENSING PROJECTS: (1) EMERGENCY RESPONSE PROJECTS FOR RAPID ACQUISITION AND ASSESSMENT, (2) SINGLE DATE PROJECTS TO ACQUIRE CURRENT DATA, (3) INTENSIVE SITE ANALYSES TO ACQUIRE IMAGERY OVER A PERIOD OF TIME USINGHISTORICAL AERIAL PHOTOGRAPHS DATING BACK AS FAR AS 1920, (4) WASTE SITE INVENTORIES TO ESTABLISH BASELINE REFERENCE OVER LARGE AREAS. CERCLA HAZARDOUS WASTE SITES.

TYPE: **BD - POTENTIALLY RESPONSIBLE PARTY REMEDIAL INVESTIGATION/FEASIBILITY STUDY**
START DATE: **09/29/1989**
COMPLETION DATE: **07/01/1992**
ACTION TYPE DEFINITION:
PROVIDES FOR OVERSIGHT OF POTENTIALLY RESPONSIBLE PARTY (PRP) RESPONSE ACTION FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS), INCLUDING ALL ACTIVITIES FOR MONITORING AND SUPERVISING THE PERFORMANCE OF THE RESPONSIBLE PARTIES TO DETERMINE WHETHER SUCH PERFORMANCE IS CONSISTENT WITH THE REQUIREMENTS OF THE ADMINISTRATIVE ORDERS ON CONSENT, UNILATERAL ADMINISTRATIVE ORDERS, CONSENT DECREES, JUDICIAL DECREES, INFORMATION AGREEMENTS, AND COMPLIANCE SCHEDULES.

TYPE: **BD - POTENTIALLY RESPONSIBLE PARTY REMEDIAL INVESTIGATION/FEASIBILITY STUDY**
START DATE: **09/28/2000**
COMPLETION DATE: **07/06/2005**
ACTION TYPE DEFINITION:
PROVIDES FOR OVERSIGHT OF POTENTIALLY RESPONSIBLE PARTY (PRP) RESPONSE ACTION FOR REMEDIAL INVESTIGATION/FEASIBILITY STUDY (RI/FS), INCLUDING ALL ACTIVITIES FOR MONITORING AND SUPERVISING THE PERFORMANCE OF THE RESPONSIBLE PARTIES TO DETERMINE WHETHER SUCH PERFORMANCE IS CONSISTENT WITH THE REQUIREMENTS OF THE ADMINISTRATIVE ORDERS ON CONSENT, UNILATERAL ADMINISTRATIVE ORDERS, CONSENT DECREES, JUDICIAL DECREES, INFORMATION AGREEMENTS, AND COMPLIANCE SCHEDULES.

TYPE: **FE - FIVE-YEAR REVIEW**
START DATE: **10/26/2012**
COMPLETION DATE: **03/14/2013**
ACTION TYPE DEFINITION:
A REVIEW THAT IS CONDUCTED AT A MINIMUM OF EVERY FIVE YEARS TO DETERMINE IF THE IMPLEMENTATION AND PERFORMANCE OF A REMEDY IS PROTECTIVE OR WILL BE PROTECTIVE OF HUMAN HEALTH AND THE ENVIRONMENT.

TYPE: **BE - POTENTIALLY RESPONSIBLE PARTY REMEDIAL DESIGN**

START DATE: **08/07/2007**
COMPLETION DATE: **02/07/2008**
ACTION TYPE DEFINITION:
PROVIDES FOR OVERSIGHT OF POTENTIALLY RESPONSIBLE PARTY (PRP) RESPONSE ACTION FOR REMEDIAL DESIGN (RD), INCLUDING ALL ACTIVITIES FOR MONITORING AND SUPERVISING THE PERFORMANCE OF THE RESPONSIBLE PARTIES TO DETERMINE WHETHER SUCH PERFORMANCE IS CONSISTENT WITH THE REQUIREMENTS OF THE ADMINISTRATIVE ORDERS ON CONSENT, UNILATERAL ADMINISTRATIVE ORDERS, CONSENT DECREES, JUDICIAL DECREES, INFORMATION AGREEMENTS, AND COMPLIANCE SCHEDULES.

TYPE: **CB - CLAIM IN BANKRUPTCY PROCEEDING**
START DATE: **06/27/2006**
COMPLETION DATE: **06/05/2009**
ACTION TYPE DEFINITION:
LEGAL ACTION PERFORMED BY EPA REGIONAL ATTORNEYS TO ESTABLISH EPA AS A CREDITOR WHEN POTENTIALLY RESPONSIBLE PARTY (PRP) HAS FILED FOR BANKRUPTCY.

TYPE: **CD - CONSENT DECREE**
START DATE: **08/10/2006**
COMPLETION DATE: **11/28/2006**
ACTION TYPE DEFINITION:
JUDICIAL AGREEMENT BETWEEN THE FEDERAL GOVERNMENT AND THE POTENTIALLY RESPONSIBLE PARTIES (PRPS) FULLY OR PARTIALLY SETTLING A CLAIM UNDER CERCLA. THIS AGREEMENT MAY SETTLE LITIGATION OR MAY BE PRESENTED CONCURRENTLY WITH THE COMPLAINT (ACHIEVED THROUGH NEGOTIATIONS). THE AGREEMENT MAY BE FOR RESPONSE WORK, COST RECOVERY, OR BOTH.

TYPE: **CD - CONSENT DECREE**
START DATE: **08/10/2006**
COMPLETION DATE: **11/28/2006**
ACTION TYPE DEFINITION:
JUDICIAL AGREEMENT BETWEEN THE FEDERAL GOVERNMENT AND THE POTENTIALLY RESPONSIBLE PARTIES (PRPS) FULLY OR PARTIALLY SETTLING A CLAIM UNDER CERCLA. THIS AGREEMENT MAY SETTLE LITIGATION OR MAY BE PRESENTED CONCURRENTLY WITH THE COMPLAINT (ACHIEVED THROUGH NEGOTIATIONS). THE AGREEMENT MAY BE FOR RESPONSE WORK, COST RECOVERY, OR BOTH.

TYPE: **CD - CONSENT DECREE**
START DATE: **08/07/2007**
COMPLETION DATE: **10/04/2007**
ACTION TYPE DEFINITION:
JUDICIAL AGREEMENT BETWEEN THE FEDERAL GOVERNMENT AND THE POTENTIALLY RESPONSIBLE PARTIES (PRPS) FULLY OR PARTIALLY SETTLING A CLAIM UNDER CERCLA. THIS AGREEMENT MAY SETTLE LITIGATION OR MAY BE PRESENTED CONCURRENTLY WITH THE COMPLAINT (ACHIEVED THROUGH NEGOTIATIONS). THE AGREEMENT MAY BE FOR RESPONSE WORK, COST RECOVERY, OR BOTH.

TYPE: **CD - CONSENT DECREE**
START DATE: **03/13/2009**
COMPLETION DATE: **06/05/2009**

ACTION TYPE DEFINITION:
JUDICIAL AGREEMENT BETWEEN THE FEDERAL GOVERNMENT AND THE POTENTIALLY RESPONSIBLE PARTIES (PRPS) FULLY OR PARTIALLY SETTLING A CLAIM UNDER CERCLA. THIS AGREEMENT MAY SETTLE LITIGATION OR MAY BE PRESENTED CONCURRENTLY WITH THE COMPLAINT (ACHIEVED THROUGH NEGOTIATIONS). THE AGREEMENT MAY BE FOR RESPONSE WORK, COST RECOVERY, OR BOTH.

TYPE: **CR - COMMUNITY INVOLVEMENT**
START DATE: **07/21/2003**
COMPLETION DATE: **09/28/2004**
ACTION TYPE DEFINITION:
THE COMMUNITY RELATIONS ACTIVITIES, I.E., PLAN, IMPLEMENTATION AND RESPONSIVENESS SUMMARY THAT MUST BE COMPLETED AT A SITE TO ADDRESS COMMUNITY CONCERNS.

TYPE: **CR - COMMUNITY INVOLVEMENT**
START DATE: **01/08/2007**
COMPLETION DATE: **07/01/2007**
ACTION TYPE DEFINITION:
THE COMMUNITY RELATIONS ACTIVITIES, I.E., PLAN, IMPLEMENTATION AND RESPONSIVENESS SUMMARY THAT MUST BE COMPLETED AT A SITE TO ADDRESS COMMUNITY CONCERNS.

TYPE: **DS - DISCOVERY**
START DATE: **NOT REPORTED**
COMPLETION DATE: **10/01/1984**
ACTION TYPE DEFINITION:
THE PROCESS BY WHICH A POTENTIAL HAZARDOUS WASTE SITE IS BROUGHT TO THE ATTENTION OF THE EPA. THE PROCESS CAN OCCUR THROUGH THE USE OF SEVERAL MECHANISMS SUCH AS A PHONE CALL OR REFERRAL BY ANOTHER GOVERNMENT AGENCY.

TYPE: **ED - RISK/HEALTH ASSESSMENT**
START DATE: **10/09/2001**
COMPLETION DATE: **03/15/2003**
ACTION TYPE DEFINITION:
ASSESSMENT OF THE BASELINE RISKS POSED BY THE SITE TO HUMAN HEALTH.

TYPE: **EE - ENGINEERING EVALUATION/COST ANALYSIS**
START DATE: **04/11/2013**
COMPLETION DATE: **NOT REPORTED**
ACTION TYPE DEFINITION:
STUDY TO IDENTIFY THE OBJECTIVES OF A REMOVAL ACTION AND TO ANALYZE THE COST EFFECTIVENESS AND IMPLEMENTABILITY OF THE VARIOUS ALTERNATIVES THAT MAY BE USED TO SATISFY THESE OBJECTIVES.

TYPE: **BD - POTENTIALLY RESPONSIBLE PARTY REMEDIAL INVESTIGATION/FEASIBILITY STUDY**
START DATE: **09/29/2009**
COMPLETION DATE: **NOT REPORTED**
ACTION TYPE DEFINITION:
PROVIDES FOR OVERSIGHT OF POTENTIALLY RESPONSIBLE PARTY (PRP) RESPONSE ACTION FOR REMEDIAL

INVESTIGATION/FEASIBILITY STUDY (RI/FS), INCLUDING ALL ACTIVITIES FOR MONITORING AND SUPERVISING THE PERFORMANCE OF THE RESPONSIBLE PARTIES TO DETERMINE WHETHER SUCH PERFORMANCE IS CONSISTENT WITH THE REQUIREMENTS OF THE ADMINISTRATIVE ORDERS ON CONSENT, UNILATERAL ADMINISTRATIVE ORDERS, CONSENT DECREES, JUDICIAL DECREES, INFORMATION AGREEMENTS, AND COMPLIANCE SCHEDULES.

CONTAMINANTS

WASTE SOURCE MEDIA CONTAMINATED NAME: **SEDIMENT**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **310 MG/KG**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **ARSENIC**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SEDIMENT**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **179 MG/KG**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **CADMIUM**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SEDIMENT**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **2559 MG/KG**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **COPPER**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SEDIMENT**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **6520 MG/KG**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **LEAD**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SEDIMENT**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **6.2 MG/KG**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **MERCURY**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SEDIMENT**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **97 MG/KG**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **NICKEL**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SEDIMENT**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **44560 MG/KG**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **ZINC**

CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SOIL/TAILINGS**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **32700 MG/KG**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **ALUMINUM (METAL)**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SOIL/TAILINGS**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **2400 MG/KG**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **ARSENIC**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SOIL/TAILINGS**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **5900 MG/KG**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **LEAD**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SOIL/TAILINGS**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **85 MG/KG**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **MERCURY**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SOIL/TAILINGS**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **33800 MG/KG**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **ZINC**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SURFACE WATER**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **750 UG/L**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **ARSENIC**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SURFACE WATER**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **46.3 UG/L**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **CADMIUM**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SURFACE WATER**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **260 UG/L**

CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **LEAD**
CONTAMINANT GROUP NAME: **METALS**

WASTE SOURCE MEDIA CONTAMINATED NAME: **SURFACE WATER**
CONSTITUTENT CONTAMINANT MAXIMUM CONCENTRATION VALUE: **83000 UG/L**
CONSTITUTENT CONTAMINANT OF CONCERN FLAG: **YES**
HAZARDOUS SUBSTANCE NAME: **ZINC**
CONTAMINANT GROUP NAME: **METALS**

LISTING OF PUBLISHED INSTITUTIONAL CONTROL SITE REPORT **- NOT AN INSTITUTIONAL CONTROL SITE -**

Back to Report Summary

MAP ID# 2

Distance from Property: 0.017 mi. (90 ft.) ENE
Elevation: 6,739 ft. (Higher than TP)

FACILITY INFORMATION

GEOSEARCH ID: **UTR380517INPDES**
NPDES ID: **UTR380517** FACILITY #: **110070710115**
NAME: **BK STORAGE**
PHYSICAL ADDRESS: **1240 W RICHARDSON FLAT ROAD**
KAMAS UT 84036
COUNTY: **NOT REPORTED**
FACILITY TYPE: **NOT REPORTED**
IMPAIRED WATERS: **NOT REPORTED**

STANDARD INDUSTRIAL CLASSIFICATION

- NOT REPORTED -

PERMITS

FACILITY TYPE INDICATOR: **NON-POTABLE WATER**
PERMIT TYPE: **GENERAL PERMIT COVERED FACILITY**
MAJOR MINOR FACILITY: **MINOR DISCHARGER**
PERMIT STATUS: **EXPIRED**
WATER BODY: **NOT REPORTED**
PERMIT NAME: **MENLOVE CONSTRUCTION**
AGENCY TYPE: **STATE**
ORIGINAL ISSUE DATE: **5/9/2018**
ISSUE DATE: **5/9/2018**
ISSUING AGENCY: **UTAH DIVISION OF WATER QUALITY**
EFFECTIVE DATE: **5/9/2018**
EXPIRATION DATE: **5/9/2019**
RETIREMENT DATE: **NOT REPORTED**
TERMINATION DATE: **NOT REPORTED**
PERMIT COMPLIANCE STATUS: **YES**
PERMIT SUBJECT TO DMR RUN: **NOT REPORTED**
REPORTABLE NONCOMPLIANCE TRACKING IS ON: **YES**

INSPECTIONS

- NO INSPECTIONS REPORTED -

HISTORIC COMPLIANCE

- NO HISTORIC COMPLIANCE REPORTED -

SINGLE EVENT VIOLATIONS

- NO SINGLE EVENT VIOLATIONS REPORTED -

FORMAL ENFORCEMENT ACTIONS

- NO FORMAL ENFORCEMENT ACTIONS REPORTED -

EFFLUENT VIOLATIONS

- NOT REPORTED -

EFFLUENT VIOLATIONS contd..

- NOT REPORTED -

EFFLUENT VIOLATIONS contd..

Integrated Compliance Information System National Pollutant Discharge Elimination System (ICISNPDES)

- NOT REPORTED -

Back to Report Summary

MAP ID# 3

Distance from Property: 0.034 mi. (180 ft.) S
Elevation: 6,733 ft. (Higher than TP)

FACILITY INFORMATION

GEOSEARCH ID: **10011508**
DEP ID: **10011508**
MINE NAME: **UNKNOWN TUNNEL**
ADDRESS: **SUMMIT COUNTY**
PARK CITY, UT 84060
DEVELOPMENT STATUS: **OCCURRENCE**

COMMODITY DETAILS

COMMODITY: **SILVER**
COMMODITY TYPE: **METALLIC**
COMMODITY GROUP: **SILVER**
IMPORTANCE: **PRIMARY**

COMMODITY: **LEAD**
COMMODITY TYPE: **METALLIC**
COMMODITY GROUP: **LEAD**
IMPORTANCE: **PRIMARY**

COMMODITY: **ZINC**
COMMODITY TYPE: **METALLIC**
COMMODITY GROUP: **ZINC**
IMPORTANCE: **PRIMARY**

COMMODITY: **GOLD**
COMMODITY TYPE: **METALLIC**
COMMODITY GROUP: **GOLD**
IMPORTANCE: **SECONDARY**

COMMODITY: **COPPER**
COMMODITY TYPE: **METALLIC**
COMMODITY GROUP: **COPPER**
IMPORTANCE: **SECONDARY**

MATERIAL DETAILS

NO MATERIAL DETAILS REPORTED

NAME DETAILS

SITE NAME: **UNKNOWN TUNNEL**
STATUS: **CURRENT**
SITE NAME: **NEW PARK GROUP**
STATUS: **PREVIOUS**

Back to Report Summary

Unlocated Sites Summary

This list contains sites that could not be mapped due to limited or incomplete address information.

No Records Found

Environmental Records Definitions - FEDERAL

AIRSAFS Aerometric Information Retrieval System / Air Facility Subsystem

VERSION DATE: 10/20/14

The United States Environmental Protection Agency (EPA) modified the Aerometric Information Retrieval System (AIRS) to a database that exclusively tracks the compliance of stationary sources of air pollution with EPA regulations: the Air Facility Subsystem (AFS). Since this change in 2001, the management of the AIRS/AFS database was assigned to EPA's Office of Enforcement and Compliance Assurance. Enforcement and Compliance History Online (ECHO) Clean Air Act data from AFS are frozen and reflect data as of October 17, 2014, the EPA retired this system for Clean Air Act stationary sources.

BRS Biennial Reporting System

VERSION DATE: 12/31/15

The United States Environmental Protection Agency (EPA), in cooperation with the States, biennially collects information regarding the generation, management, and final disposition of hazardous wastes regulated under the Resource Conservation and Recovery Act of 1976 (RCRA), as amended. The Biennial Report captures detailed data on the generation of hazardous waste from large quantity generators and data on waste management practices from treatment, storage and disposal facilities. Currently, the EPA states that data collected between 1991 and 1997 was originally a part of the defunct Biennial Reporting System and is now incorporated into the RCRAInfo data system.

CDL Clandestine Drug Laboratory Locations

VERSION DATE: 02/25/20

The U.S. Department of Justice ("the Department") provides this information as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments. The Department does not establish, implement, enforce, or certify compliance with clean-up or remediation standards for contaminated sites; the public should contact a state or local health department or environmental protection agency for that information.

DOCKETS EPA Docket Data

VERSION DATE: 12/22/05

The United States Environmental Protection Agency Docket data lists Civil Case Defendants, filing dates as far back as 1971, laws broken including section, violations that occurred, pollutants involved, penalties assessed and superfund awards by facility and location. Please refer to ICIS database as source of current data.

EC Federal Engineering Institutional Control Sites

VERSION DATE: 05/22/20

This database includes site locations where Engineering and/or Institutional Controls have been identified as part of a selected remedy for the site as defined by United States Environmental Protection Agency official remedy decision documents. The data displays remedy component information for Superfund decision documents issued in fiscal years 1982-2017, and it includes final and deleted NPL sites as well as sites with a Superfund Alternative Approach (SAA) agreement in place. The only sites included that are not on the NPL, proposed for NPL, or removed from proposed NPL, are those with an SAA Agreement in place. A site listing does not indicate that the institutional and engineering controls are currently in place nor will be in place once the remedy is complete; it only indicates that the decision to include either of them in the remedy is documented as of the completed date of the document. Institutional controls are actions, such as legal controls, that help minimize the potential for human exposure to contamination by ensuring appropriate land or resource use. Engineering controls include caps, barriers, or other device engineering to prevent access, exposure, or continued migration of contamination.

ECHOR08 Enforcement and Compliance History Information

VERSION DATE: 10/27/19

The U.S. Environmental Protection Agency's Enforcement and Compliance History Online (ECHO) database, provides compliance and enforcement information for facilities nationwide. This database includes facilities regulated as Clean Air Act stationary sources, Clean Water Act direct dischargers, Resource Conservation and Recovery Act hazardous waste handlers, Safe Drinking Water Act public water systems along with other data, such as Toxics Release Inventory releases.

ERNSUT Emergency Response Notification System

VERSION DATE: 04/05/20

This National Response Center database contains data on reported releases of oil, chemical, radiological, biological, and/or etiological discharges into the environment anywhere in the United States and its territories. The data comes from spill reports made to the U.S. Environmental Protection Agency, U.S. Coast Guard, the National Response Center and/or the U.S. Department of Transportation.

FRSUT Facility Registry System

VERSION DATE: 04/05/20

The United States Environmental Protection Agency's Office of Environmental Information (OEI) developed the Facility Registry System (FRS) as the centrally managed database that identifies facilities, sites or places subject to environmental regulations or of environmental interest. The Facility Registry System replaced the Facility Index System or FINDS database.

HMIRSR08 Hazardous Materials Incident Reporting System

VERSION DATE: 05/20/20

The HMIRS database contains unintentional hazardous materials release information reported to the U.S.

Department of Transportation located in EPA Region 8. This region includes the following states: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

HWCD Hazardous Waste Compliance Docket Facilities

VERSION DATE: 04/29/19

This list of the Federal Agency Hazardous Waste Compliance Docket Facilities is maintained by the United States Environmental Protection Agency (EPA). According to the EPA, Section 120(c) of CERCLA requires EPA to establish a listing, known as the Federal Facility Hazardous Waste Compliance Docket (Docket), of Federal facilities which are managing or have managed hazardous waste; or have had a release of hazardous waste. Thus, the Docket identifies all Federal facilities that must be evaluated to determine whether they pose a risk to human health and the environment and it makes this information available to the public. In order for the Docket to remain current and accurate it requires periodic updating.

ICIS Integrated Compliance Information System (formerly DOCKETS)

VERSION DATE: 03/28/20

ICIS is a case activity tracking and management system for civil, judicial, and administrative federal Environmental Protection Agency enforcement cases. ICIS contains information on federal administrative and federal judicial cases under the following environmental statutes: the Clean Air Act, the Clean Water Act, the Resource Conservation and Recovery Act, the Emergency Planning and Community Right-to-Know Act - Section 313, the Toxic Substances Control Act, the Federal Insecticide, Fungicide, and Rodenticide Act, the Comprehensive Environmental Response, Compensation, and Liability Act, the Safe Drinking Water Act, and the Marine Protection, Research, and Sanctuaries Act.

ICISNPDES Integrated Compliance Information System National Pollutant Discharge Elimination System

VERSION DATE: 04/26/20

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. This database is provided by the U.S. Environmental Protection Agency.

LUCIS Land Use Control Information System

VERSION DATE: 09/01/06

The LUCIS database is maintained by the U.S. Department of the Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

MLTS Material Licensing Tracking System

VERSION DATE: 06/29/17

MLTS is a list of approximately 8,100 sites which have or use radioactive materials subject to the United States

Nuclear Regulatory Commission (NRC) licensing requirements. Disclaimer: Due to agency regulations and policies, this database contains applicant/licensee location information which may or may not be related to the physical location per MLTS site.

NPDESR08 National Pollutant Discharge Elimination System

VERSION DATE: 04/01/07

Authorized by the Clean Water Act, the National Pollutant Discharge Elimination System (NPDES) permit program controls water pollution by regulating point sources that discharge pollutants into waters of the United States. The NPDES database was collected from the U.S. Environmental Protection Agency (EPA) from December 2002 through April 2007. Refer to the ICIS and/or ICIS-NPDES database as source of current data. This database includes permitted facilities located in EPA Region 8. This region includes the following states: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

PADS PCB Activity Database System

VERSION DATE: 10/09/19

PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of Polychlorinated Biphenyls (PCB) who are required to notify the U.S. Environmental Protection Agency of such activities.

PCSR08 Permit Compliance System

VERSION DATE: 08/01/12

The historic Permit Compliance System tracked enforcement status and permit compliance of facilities controlled by the National Pollutant Discharge Elimination System (NPDES) under the Clean Water Act. This database includes permitted facilities located in EPA Region 8 states: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming. This system has since been modernized by United States Environmental Protection Agency and is now integrated into the Integrated Compliance Information System (ICIS). Please refer to the ICIS database as the current source for this data.

RCRASC RCRA Sites with Controls

VERSION DATE: 05/14/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with institutional controls in place.

SEMSLIENS SEMS Lien on Property

VERSION DATE: 03/23/20

The U.S. Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs. This is a listing of SEMS sites with a lien on the property.

SFLIENS CERCLIS Liens

VERSION DATE: 06/08/12

A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which United States Environmental Protection Agency has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties. This database contains those CERCLIS sites where the Lien on Property action is complete. Please refer to the SEMSLIENS database as source of current data.

SSEHRIPFAS SSEHRI PFAS Contamination Sites

VERSION DATE: 12/12/19

This PFAS Contamination Site Tracker database is compiled by the Social Science Environmental Health Research Institute (SSEHRI) at Northeastern University. According to the SSEHRI, the database records qualitative and quantitative data from each known site of PFAS contamination, including timeline of discovery, sources, levels, health impacts, community response, and government response. The goal of this database is to compile information and support public understanding of the rapidly unfolding issue of PFAS contamination. All data presented was extracted from government websites, news articles, or publicly available documents, and this is cited in the tracker. Disclaimer: The source conveys this database undergoes regular updates as new information becomes available, some sites may be missing and/or contain information that is incorrect or outdated, as well as their information represents all contamination sites SSEHRI is aware of, not all possible contamination sites. This data is not intended to be used for legal purposes. Limited location details are available with this data. Please access the following source link for the most current information: https://pfasproject.com/pfas-contamination-site-tracker/

SSTS Section Seven Tracking System

VERSION DATE: 02/01/17

The United States Environmental Protection Agency tracks information on pesticide establishments through the Section Seven Tracking System (SSTS). SSTS records the registration of new establishments and records pesticide production at each establishment. The Federal Insecticide, Fungicide and Rodenticide Act (FIFRA) requires that production of pesticides or devices be conducted in a registered pesticide-producing or device-producing establishment. ("Production" includes formulation, packaging, repackaging, and relabeling.)

TRI Toxics Release Inventory

VERSION DATE: 12/31/18

The Toxics Release Inventory, provided by the United States Environmental Protection Agency, includes data on toxic chemical releases and waste management activities from certain industries as well as federal and tribal facilities. This inventory contains information about the types and amounts of toxic chemicals that are released each year to the air, water, and land as well as information on the quantities of toxic chemicals sent to other facilities for further waste management.

TSCA Toxic Substance Control Act Inventory

VERSION DATE: 12/31/16

The Toxic Substances Control Act (TSCA) was enacted in 1976 to ensure that chemicals manufactured, imported, processed, or distributed in commerce, or used or disposed of in the United States do not pose any unreasonable risks to human health or the environment. TSCA section 8(b) provides the United States Environmental Protection Agency (EPA) authority to "compile, keep current, and publish a list of each chemical substance that is manufactured or processed in the United States." This TSCA Chemical Substance Inventory contains non-confidential information on the production amount of toxic chemicals from each manufacturer and importer site. The EPA has collected Chemical Data Reporting (CDR) data since in 1986 (as Inventory Update Reporting). Collections occur approximately every four years and reporting requirements changed from collection to collection.

RCRAGR08 Resource Conservation & Recovery Act - Generator

VERSION DATE: 03/23/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities currently generating hazardous waste. EPA Region 8 includes the following states: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

RCRANGR08 Resource Conservation & Recovery Act - Non-Generator

VERSION DATE: 03/23/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities classified as non-generators. Non-Generators do not presently generate hazardous waste. EPA

Region 8 includes the following states: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

ALTFUELS Alternative Fueling Stations

VERSION DATE: 04/30/20

Nationwide list of alternative fueling stations made available by the U.S. Department of Energy's Office of Energy Efficiency & Renewable Energy. Includes Bio-diesel stations, Ethanol (E85) stations, Liquefied Petroleum Gas (Propane) stations, Ethanol (E85) stations, Natural Gas stations, Hydrogen stations, and Electric Vehicle Supply Equipment (EVSE).

FEMAUST FEMA Owned Storage Tanks

VERSION DATE: 12/01/16

This is a listing of FEMA owned underground and aboveground storage tank sites. For security reasons, address information is not released to the public according to the U.S. Department of Homeland Security.

HISTPST Historical Gas Stations

VERSION DATE: NR

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

ICISCLEANERS Integrated Compliance Information System Drycleaners

VERSION DATE: 03/28/20

This is a listing of drycleaner facilities from the Integrated Compliance Information System (ICIS). The U.S. Environmental Protection Agency (EPA) tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments. The following Primary SIC Codes are included in this data: 7211, 7212, 7213, 7215, 7216, 7217, 7218, and/or 7219; the following Primary NAICS Codes are included in this data: 812320, 812331, and/or 812332.

MRDS Mineral Resource Data System

VERSION DATE: 03/15/16

MRDS (Mineral Resource Data System) is a collection of reports describing metallic and nonmetallic mineral resources throughout the world. Included are deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references. This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS.

MSHA Mine Safety and Health Administration Master Index File

VERSION DATE: 09/20/19

The Mine dataset lists all Coal and Metal/Non-Metal mines under MSHA's jurisdiction since 1/1/1970. It includes such information as the current status of each mine (Active, Abandoned, NonProducing, etc.), the current owner and operating company, commodity codes and physical attributes of the mine. Mine ID is the unique key for this data. This information is provided by the United States Department of Labor - Mine Safety and Health Administration (MSHA).

BF Brownfields Management System

VERSION DATE: 04/09/20

Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. The United States Environmental Protection Agency maintains this database to track activities in the various brown field grant programs including grantee assessment, site cleanup and site redevelopment. This database included tribal brownfield sites.

DNPL Delisted National Priorities List

VERSION DATE: 04/22/20

This database includes sites from the United States Environmental Protection Agency's Final National Priorities List (NPL) where remedies have proven to be satisfactory or sites where the original analyses were inaccurate, and the site is no longer appropriate for inclusion on the NPL, and final publication in the Federal Register has occurred.

NLRRCRAT No Longer Regulated RCRA Non-CORRACTS TSD Facilities

VERSION DATE: 03/23/20

This database includes RCRA Non-Corrective Action TSD facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements. This listing includes facilities that formerly treated, stored or disposed of hazardous waste.

ODI Open Dump Inventory

VERSION DATE: 06/01/85

The open dump inventory was published by the United States Environmental Protection Agency. An "open dump" is defined as a facility or site where solid waste is disposed of which is not a sanitary landfill which meets the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944) and which is not a facility for disposal of hazardous waste. This inventory has not been updated since June 1985.

RCRAT Resource Conservation & Recovery Act - Non-CORRACTS Treatment, Storage & Disposal Facilities

VERSION DATE: 03/23/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities recognized as hazardous waste treatment, storage, and disposal sites (TSD).

SEMS Superfund Enterprise Management System

VERSION DATE: 04/23/20

The U.S. Environmental Protection Agency's (EPA) Office of Solid Waste and Emergency Response, Office of Superfund Remediation and Technology Innovation (OSRTI), has implemented The Superfund Enterprise Management System (SEMS), formerly known as CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) to track and report on clean-up and enforcement activities taking place at Superfund sites. SEMS represents a joint development and ongoing collaboration between Superfund's Remedial, Removal, Federal Facilities, Enforcement and Emergency Response programs.

SEMSARCH Superfund Enterprise Management System Archived Site Inventory

VERSION DATE: 04/23/20

The U.S. Environmental Protection Agency’s (EPA) Superfund Enterprise Management System Archived Site Inventory (List 8R Archived) replaced the CERCLIS NFRAP reporting system in 2015. This listing reflects sites at which the EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program.

SMCRA Surface Mining Control and Reclamation Act Sites

VERSION DATE: 11/26/19

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by the Office of Surface Mining Reclamation and Enforcement (OSMRE) to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

USUMTRCA Uranium Mill Tailings Radiation Control Act Sites

VERSION DATE: 03/04/17

The Legacy Management Office of the Department of Energy (DOE) manages radioactive and chemical waste,

environmental contamination, and hazardous material at over 100 sites across the U.S. The L.M. Office manages this database of sites registered under the Uranium Mill Tailings Control Act (UMTRCA).

DOD Department of Defense Sites

VERSION DATE: 12/01/14

This information originates from the National Atlas of the United States Federal Lands data, which includes lands owned or administered by the Federal government. Army DOD, Army Corps of Engineers DOD, Air Force DOD, Navy DOD and Marine DOD areas of 640 acres or more are included.

FUDS Formerly Used Defense Sites

VERSION DATE: 12/31/18

The Formerly Used Defense Sites (FUDS) inventory includes properties previously owned by or leased to the United States and under Secretary of Defense Jurisdiction, as well as Munitions Response Areas (MRAs). The remediation of these properties is the responsibility of the Department of Defense. This data is provided by the U.S. Army Corps of Engineers (USACE), the boundaries/polygon data are based on preliminary findings and not all properties currently have polygon data available. DISCLAIMER: This data represents the results of data collection/processing for a specific USACE activity and is in no way to be considered comprehensive or to be used in any legal or official capacity as presented on this site. While the USACE has made a reasonable effort to insure the accuracy of the maps and associated data, it should be explicitly noted that USACE makes no warranty, representation or guaranty, either expressed or implied, as to the content, sequence, accuracy, timeliness or completeness of any of the data provided herein. For additional information on Formerly Used Defense Sites please contact the USACE Public Affairs Office at (202) 528-4285.

FUSRAP Formerly Utilized Sites Remedial Action Program

VERSION DATE: 03/04/17

The U.S. Department of Energy (DOE) established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from the Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations. The DOE Office of Legacy Management (LM) established long-term surveillance and maintenance (LTS&M) requirements for remediated FUSRAP sites. DOE evaluates the final site conditions of a remediated site on the basis of risk for different future uses. DOE then confirms that LTS&M requirements will maintain protectiveness.

NLRRCRAC No Longer Regulated RCRA Corrective Action Facilities

VERSION DATE: 03/23/20

This database includes RCRA Corrective Action facilities that are no longer regulated by the United States Environmental Protection Agency or do not meet other RCRA reporting requirements.

NMS Former Military Nike Missile Sites

VERSION DATE: 12/01/84

This information was taken from report DRXTH-AS-IA-83A016 (Historical Overview of the Nike Missile System, 12/1984) which was performed by Environmental Science and Engineering, Inc. for the U.S. Army Toxic and Hazardous Materials Agency Assessment Division. The Nike system was deployed between 1954 and the mid-1970's. Among the substances used or stored on Nike sites were liquid missile fuel (JP-4); starter fluids (UDKH, aniline, and furfuryl alcohol); oxidizer (IRFNA); hydrocarbons (motor oil, hydraulic fluid, diesel fuel, gasoline, heating oil); solvents (carbon tetrachloride, trichloroethylene, trichloroethane, stoddard solvent); and battery electrolyte. The quantities of material a disposed of and procedures for disposal are not documented in published reports. Virtually all information concerning the potential for contamination at Nike sites is confined to personnel who were assigned to Nike sites. During deactivation most hardware was shipped to depot-level supply points. There were reportedly instances where excess materials were disposed of on or near the site itself at closure. There was reportedly no routine site decontamination.

NPL National Priorities List

VERSION DATE: 04/22/20

This database includes United States Environmental Protection Agency (EPA) National Priorities List sites that fall under the EPA's Superfund program, established to fund the cleanup of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action.

PNPL Proposed National Priorities List

VERSION DATE: 04/22/20

This database contains sites proposed to be included on the National Priorities List (NPL) in the Federal Register. The United States Environmental Protection Agency investigates these sites to determine if they may present long-term threats to public health or the environment.

RCRAC Resource Conservation & Recovery Act - Corrective Action Facilities

VERSION DATE: 03/23/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities with corrective action activity.

RCRASUBC Resource Conservation & Recovery Act - Subject to Corrective Action Facilities

VERSION DATE: 03/23/20

The Resource Conservation and Recovery Act (RCRA) gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances. This listing refers to facilities subject to corrective actions.

RODS Record of Decision System

VERSION DATE: 04/22/20

These decision documents maintained by the United States Environmental Protection Agency describe the chosen remedy for NPL (Superfund) site remediation. They also include site history, site description, site characteristics, community participation, enforcement activities, past and present activities, contaminated media, the contaminants present, and scope and role of response action.

ICEC Institutional Engineering Controls Registry

VERSION DATE: 03/12/20

This list of institutional/engineering controls is maintained by the Utah Department of Environmental Quality (DEQ). This list is a compilation of four lists: 1) UST Branch: Facilities with Environmental Institutional Controls; 2) CERCLA Branch: Superfund Environmental Covenants; 3) CERCLA Branch: Voluntary Cleanup Program: Certificate of Completion; 4) CERCLA Branch: Voluntary Cleanup Program: Environmental Covenant. The DEQ is required to maintain a record of the properties subject to environmental covenants/institutional controls established under Utah Code, Title 19, Chapter 10. This lists Leaking Underground Storage Tank sites, CERCLA/Superfund Branch Sites, and Voluntary Cleanup sites that have environmental controls established under this statute and pursuant to Utah Code Ann. §§ 57-25-101 et seq and controls established prior to the enactment of this statute. The controls have been recorded by the owner of the real property in the county recorder's office in the county where the real property is located.

SPILLS Spills Listing

VERSION DATE: 04/15/20

This list of environmental incidents is maintained by the Utah Department of Environmental Quality. Data also includes chemical spilled and media impacted.

TIERII Tier II Facilities

VERSION DATE: 05/20/20

This list is a compilation of two Tier II databases. The first database is maintained by the Utah Department of Environmental Quality (DEQ) Division of Environmental Response and Remediation (DERR). The second database is maintained by the Utah Automated Geographic Reference Center (AGRC), containing locations of Tier II facilities under the Emergency Planning and Community Right-to-Know Act (EPCRA). Qualifying facilities report on hazardous and toxic chemicals and are labeled either tier I or tier II. Locations are based on coordinates derived from maps and GPS data. These locations represent sites, not contaminated areas.

RUST Registered Underground Storage Tanks

VERSION DATE: 05/18/20

This is a compilation of two statewide lists of open and closed underground storage tanks managed by the Utah Department of Environmental Quality Division of Environmental Response & Remediation. The first list is obtained from the Underground Storage Tanks (UST) Program. The UST Program staff oversees: UST notification, installation, inspection, removal, and compliance with State and Federal UST regulations concerning release prevention and remediation. The second list is obtained from the Division of Environmental Response & Remediation's FACILITYUST geodatabase.

BF Brownfield Properties

VERSION DATE: 03/24/20

This database of brownfields (targeted) and other brownfield (non-targeted) properties is maintained by the Utah Department of Environmental Quality's Division of Environmental Response and Remediation (DERR). Sites are extracted from the Utah Environmental Interactive Map. The DERR assumes no responsibility or liability for the accuracy of the location of these properties.

CERCLIS CERCLIS Sites

VERSION DATE: 03/24/20

This database of Comprehensive Environmental Response, Compensation, and Liability System sites is maintained by the Utah Department of Environmental Quality's Division of Environmental Response and Remediation (DERR). The CERCLA Branch of the DERR performs site investigations of potentially contaminated sites within the State of Utah to determine whether or not they pose a threat to human health and the environment and should be included on the Federal Superfund National Priorities List. Sites are extracted from the Utah Environmental Interactive Map. The DERR assumes no responsibility or liability for the accuracy of the location of these properties.

LFSWDS Landfill and Solid Waste Disposal Sites

VERSION DATE: 05/07/20

This list of permitted solid waste facilities is maintained by the Utah Department of Environmental Quality Solid Waste Program. The Solid Waste Program administers permitting and compliance programs for non-hazardous solid waste treatment, storage and disposal facilities throughout the State.

LUST Leaking Underground Storage Tanks

VERSION DATE: 05/18/20

This list of leaking underground storage tanks (LUST) is provided by the Utah Department of Environmental Quality Division of Environmental Response & Remediation Underground Storage Tanks Branch. The Leaking Underground Storage Tank section oversees remediation of contamination from USTs.

VCP Voluntary Cleanup Program Sites

VERSION DATE: 03/24/20

This list of Voluntary Cleanup Program sites is maintained by the Utah Department of Environmental Quality's Division of Environmental Response and Remediation (DERR). In 1997, the Utah Voluntary Cleanup Program (VCP) was created to promote the voluntary cleanup of contaminated sites. The VCP is intended to encourage redevelopment of Brownfields and other impacted sites by providing a streamlined cleanup program. This database also includes some Voluntary Cleanup information from the Utah Automated Geographic Reference Center (AGRC) for informational purposes. Locations are based on coordinates derived from maps and GPS data. The DERR assumes no responsibility or liability for the accuracy of the location of these facilities.

NPL National Priorities List

VERSION DATE: 03/24/20

The National Priorities List (NPL) is maintained by the Utah Department of Environmental Quality's Division of Environmental Response and Remediation (DERR). Before a cleanup of a hazardous waste site can take place under Superfund, it must be included on the National Priority List. The NPL is a published list of hazardous waste sites that are eligible for extensive, long-term cleanup action under the Superfund program. When no responsible party can be found, listing on the NPL allows EPA and the State to access the Superfund Trust fund to pay for site cleanup. Sites are extracted from the Utah Environmental Interactive Map. The DERR assumes no responsibility or liability for the accuracy of the location of these properties.

Environmental Records Definitions - TRIBAL

USTR08 Underground Storage Tanks On Tribal Lands

VERSION DATE: 10/03/19

This database, provided by the United States Environmental Protection Agency (EPA), contains underground storage tanks on Tribal lands located in EPA Region 8. This region includes the following states: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

LUSTR08 Leaking Underground Storage Tanks On Tribal Lands

VERSION DATE: 10/03/19

This database, provided by the United States Environmental Protection Agency (EPA), contains leaking underground storage tanks on Tribal lands located in EPA Region 8. This region includes the following states: Colorado, Montana, North Dakota, South Dakota, Utah, and Wyoming.

ODINDIAN Open Dump Inventory on Tribal Lands

VERSION DATE: 11/08/06

This Indian Health Service database contains information about facilities and sites on tribal lands where solid waste is disposed of, which are not sanitary landfills or hazardous waste disposal facilities, and which meet the criteria promulgated under section 4004 of the Solid Waste Disposal Act (42 U.S.C. 6944).

INDIANRES Indian Reservations

VERSION DATE: 09/27/17

The Department of Interior and Bureau of Indian Affairs maintains this database that includes American Indian Reservations, off-reservation trust lands, public domain allotments, Alaska Native Regional Corporations and Recognized State Reservations.

APPENDIX D

CITY DIRECTORY REPORT
WATER WELL REPORT
OIL GAS REPORT
PHYSICAL SETTINGS REPORT

Historical By Street Number

Target Property:

Hwy 248,

Heber City, UT 84060

Prepared For:
CMT Engineering Laboratories-Utah

Order #: 147778

Project #: 14715

Date: 6/4/2020

City Directory Historical by Street Number

1 Hwy 248	No Listing (1990-1995); Street Begins (2001-2006); No Listing (2008-2019)
12200 Hwy 248	No Listing (1990-1995); Marilyn Henderson (2001); No Listing (2006-2019)
2903 Hwy 248	No Listing (1990-1995); Dustin M Sexton (2001-2006); No Listing (2008-2019)
2990 Hwy 248	No Listing (1990-2001); Alex G Peterson (2006); No Listing (2008-2019)
2995 Hwy 248	No Listing (1990-1995); Michael Phillips (2001); Gary Hulon (2006); Mac Financial (2006); No Listing (2008-2019)
3000 Hwy 248	No Listing (1990-2001); No Current Listing (2006); No Listing (2008-2019)
3095 Hwy 248	No Listing (1990-1995); Gregory S Myers (2001-2006); No Listing (2008-2019)
3500 Hwy 248	No Listing (1990-2001); No Current Listing (2006); No Listing (2008-2019)
3650 Hwy 248	No Listing (1990-1995); David Cummings (2001); Dc Excavating (2001); Dc Equipment Llc (2006); Dc Land & Livestock Lc (2006); No Listing (2008-2019)
3800 Hwy 248	No Listing (1990-2001); Craig D Cummings (2006); No Listing (2008-2019)
3880 Hwy 248	No Listing (1990-1995); Celtron Rsrch&Dev (2001); No Listing (2006-2019)
3900 Hwy 248	No Listing (1990-1995); Dave Cummings (2001); D Trnsprt&Excavtg (2001); No Listing (2006-2019)
4188 Hwy 248	No Listing (1990-2001); Duff Berg (2006); No Listing (2008-2019)
439 Hwy 248	No Listing (1990-2001); Albert & Louise Wagstaff (2006); Jr Wagsraff (2006); No Listing (2008-2019)
4700 Hwy 248	No Listing (1990-1995); Robert Mcfartane (2001); No Listing (2006-2019)
4820 Hwy 248	No Listing (1990-2001); Jim Conway (2006); No Listing (2008-2019)
493 Hwy 248	No Listing (1990-2001); Karl Bartell (2006); No Listing (2008-2019)
499 Hwy 248	No Listing (1990-2001); Debbie L Wagstaff (2006); Karl Willie Wagstaff (2006); Wagstaff Mow & Trim (2006); No Listing (2008-2019)
500 Hwy 248	No Listing (1990-2001); William Woolf (2006); No Listing (2008-2019)
545 Hwy 248	No Listing (1990-2001); Jim L Yost (2006); No Listing (2008-2019)

Comments: Hwy 248 is also listed as W Hwy 248 and State Rd 248.

Historical By Street Number

Target Property:

Richardson Flat Rd,

Heber City, UT 84060

Prepared For:
CMT Engineering Laboratories-Utah

Order #: 147778

Project #: 14715

Date: 6/4/2020

City Directory Historical by Street Number

1 Richardson Flat Rd	No Listing (2001-2019)

Comments:

GeoPlus Water Well Report

GeoLens by GeoSearch

Target Property:

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Summit County, Utah 84060

Prepared For:

CMT Engineering Laboratories-Utah

Order #: 147850
Job #: 355541
Project #: 14715
PO #: 14715
Date: 06/05/2020

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Target Property Summary

Target Property Information

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Utah 84060

Coordinates
Area centroid (-111.43944, 40.6715475)
6,643 feet above sea level

USGS Quadrangle
Park City East, UT

Geographic Coverage Information

County/Parish: Summit (UT) , Wasatch (UT)
ZipCode(s):
Coalville UT: 84017
Kamas UT: 84036
Park City UT: 84060

Database Radius Summary

FEDERAL LISTING

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
NWIS	0.5000	0	1	0	2	NS	NS	3
SUB-TOTAL		0	1	0	2	0	0	3

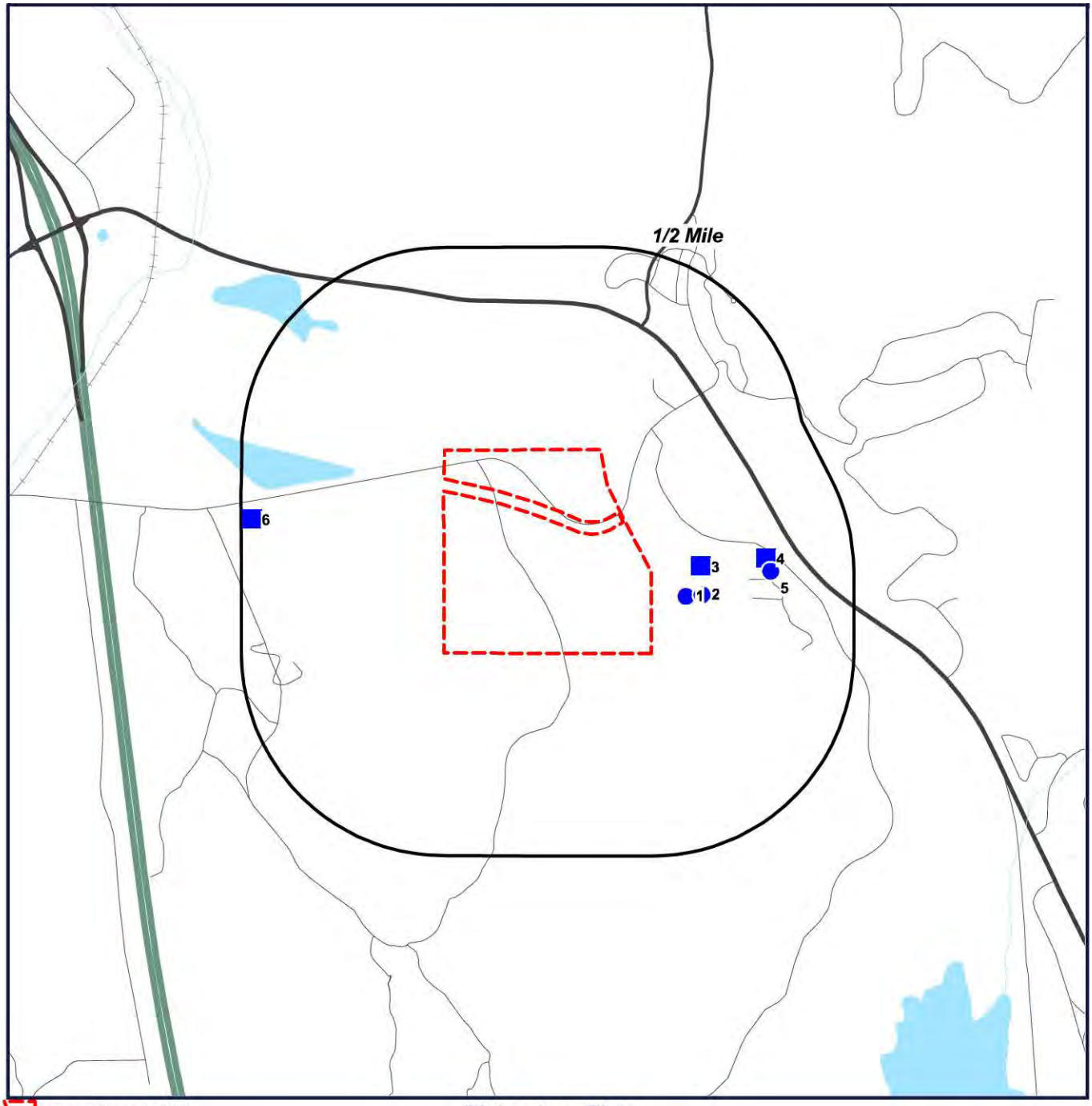
Database Radius Summary

STATE (UT) LISTING

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
WW	0.5000	0	14	0	1	NS	NS	15
SUB-TOTAL		0	14	0	1	0	0	15
TOTAL		0	15	0	3	0	0	18

NOTES:
NS = NOT SEARCHED
TP/AP = TARGET PROPERTY/ADJACENT PROPERTY

Waterwell Map



Target Property (TP)
WW
NWIS

Richardson Flats
Parcel SS-86
Near 1185 W LORI LN
Heber, Utah
84060

N
W
E
S

0' 1000' 2000' 3000'
SCALE: 1" = 2000'

Located Sites Summary

Map ID#	Database Name	Site ID#	Relative Elevation	Distance From Site	Site Name	Address	PAGE #
1	WW	1775292344	Higher (6,713 ft.)	0.085 mi. E (449 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY, UT 84032	8
1	WW	4022998451	Higher (6,713 ft.)	0.085 mi. E (449 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY, UT 84032	9
1	WW	996892433	Higher (6,713 ft.)	0.085 mi. E (449 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY, UT 84032	10
2	WW	0000259	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	11
2	WW	0142688	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	12
2	WW	0146214	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	13
2	WW	0146425	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	14
2	WW	0147535	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	15
2	WW	0147540	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	16
2	WW	0148159	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	17
2	WW	0148573	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	18
2	WW	0166100	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	19
2	WW	0166641	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	20
2	WW	0177179	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	21
3	NWIS	USGS_4040171 11255201	Lower (6,636 ft.)	0.125 mi. E (660 ft.)	(D- 2- 5) 6CCA-S1		22
4	NWIS	USGS_4040181 11254101	Lower (6,619 ft.)	0.286 mi. E (1510 ft.)	(D- 2- 5) 6CDB- 1		23
5	WW	0072204	Lower (6,619 ft.)	0.294 mi. E (1552 ft.)		N1140 E1570 SW 06 2S 5E SL, HEBER CITY 84032	24
6	NWIS	USGS_4040231 11270801	Lower (6,637 ft.)	0.471 mi. W (2487 ft.)	(D- 2- 4) 1CBC- 1		25

Site Summary By Database

Map ID#	Database Name	Site ID#	Relative Elevation	Distance From Site	Site Name	Address
3	NWIS	USGS_404017111255201	Lower (6,636 ft.)	0.125 mi. E (660 ft.)	(D- 2- 5) 6CCA-S1	
4	NWIS	USGS_404018111254101	Lower (6,619 ft.)	0.286 mi. E (1510 ft.)	(D- 2- 5) 6CDB- 1	
6	NWIS	USGS_404023111270801	Lower (6,637 ft.)	0.471 mi. W (2487 ft.)	(D- 2- 4) 1CBC- 1	
1	WW	1775292344	Higher (6,713 ft.)	0.085 mi. E (449 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY, UT 84032
1	WW	4022998451	Higher (6,713 ft.)	0.085 mi. E (449 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY, UT 84032
1	WW	996892433	Higher (6,713 ft.)	0.085 mi. E (449 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY, UT 84032
2	WW	0000259	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032
2	WW	0142688	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032
2	WW	0146214	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032
2	WW	0146425	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032
2	WW	0147535	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032
2	WW	0147540	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032
2	WW	0148159	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032
2	WW	0148573	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032
2	WW	0166100	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032
2	WW	0166641	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032
2	WW	0177179	Higher (6,713 ft.)	0.124 mi. E (655 ft.)		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032
5	WW	0072204	Lower (6,619 ft.)	0.294 mi. E (1552 ft.)		N1140 E1570 SW 06 2S 5E SL, HEBER CITY 84032

Elevation Summary

Elevations are collected from the USGS 3D Elevation Program 1/3 arc-second (approximately 10 meters) layer hosted at the NGTOC. .

Target Property Elevation: 6643 ft.

EQUAL/HIGHER ELEVATION

Map ID#	Database Name	Elevation	Site Name	Address	Page #
1	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY, UT 84032	8
1	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY, UT 84032	9
1	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY, UT 84032	10
2	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	11
2	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	12
2	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	13
2	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	14
2	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	15
2	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	16
2	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	17
2	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	18
2	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	19
2	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	20
2	WW	6,713 ft.		S4500 E650 NW 06 2S 5E SL, HEBER CITY 84032	21

LOWER ELEVATION

Map ID#	Database Name	Elevation	Site Name	Address	Page #
3	NWIS	6,636 ft.	(D- 2- 5) 6CCA-S1		22
4	NWIS	6,619 ft.	(D- 2- 5) 6CDB- 1		23
5	WW	6,619 ft.		N1140 E1570 SW 06 2S 5E SL, HEBER CITY 84032	24
6	NWIS	6,637 ft.	(D- 2- 4) 1CBC- 1		25

Water Wells (WW)

MAP ID# 1

Distance from Property: 0.085 mi. (449 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **1775292344**
WRNUM: **55-9632**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **WESTERN STATES WATER, INTERESTED PARTY**
SOURCE: **UNDERGROUND WATER WELLS (4) EXISTING/OTHER APPLS.**
USE: **MUNICIPAL**
PRIORITY DATE: **20011029**
SUMMARY STATUS: **TERMINATED: ADJUDICATION TERM; RIGHT MOST LIKELY HAS BEEN CONSOLIDATED INTO ANOTHER OR RENUMBERED.**
DRILLING METHOD: **NOT REPORTED**
TOTAL DEPTH (FT.): **NOT REPORTED**
FINISH DEPTH (FT.): **NOT REPORTED**
SCREEN DEPTH (FT.): **NOT REPORTED**
WELL DOC LINK: NOT REPORTED

Back to Report Summary

MAP ID# 1

Distance from Property: 0.085 mi. (449 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **4022998451**
WRNUM: **55-9669**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **SOUTH KAMAS IRRIGATION COMPANY**
SOURCE: **UNDERGROUND WATER WELLS (6)**
USE: **MUNICIPAL**
PRIORITY DATE: **20020910**
SUMMARY STATUS: **TERMINATED: ADJUDICATION TERM; RIGHT MOST LIKELY HAS BEEN CONSOLIDATED INTO ANOTHER OR RENUMBERED.**
DRILLING METHOD: **NOT REPORTED**
TOTAL DEPTH (FT.): **NOT REPORTED**
FINISH DEPTH (FT.): **NOT REPORTED**
SCREEN DEPTH (FT.): **NOT REPORTED**
WELL DOC LINK: NOT REPORTED

Back to Report Summary

MAP ID# 1

Distance from Property: 0.085 mi. (449 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **996892433**
WRNUM: **55-9443**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **WESTERN STATES WATER**
SOURCE: **UNDERGROUND WATER WELLS (32)**
USE: **MUNICIPAL**
PRIORITY DATE: **20000911**
SUMMARY STATUS: **APPROVED**
DRILLING METHOD: **NOT REPORTED**
TOTAL DEPTH (FT.): **NOT REPORTED**
FINISH DEPTH (FT.): **NOT REPORTED**
SCREEN DEPTH (FT.): **NOT REPORTED**
WELL DOC LINK: NOT REPORTED

Back to Report Summary

MAP ID# 2

Distance from Property: 0.124 mi. (655 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **0000259**
WRNUM: **0055003P00**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **KRISTIN MCLACHLAN FOR JORDANELLE SPECIAL SERVICE DIST**
SOURCE: **NON-PRODUCTION WELL: TEST**
USE: **NOT REPORTED**
PRIORITY DATE: **NOT REPORTED**
SUMMARY STATUS: **APPROVED**
DRILLING METHOD: **FLOODED REVERSE CIRCULATION**
TOTAL DEPTH (FT.): **20.00000**
FINISH DEPTH (FT.): **20.00000**
SCREEN DEPTH (FT.): **20.00000**
WELL DOC LINK: *Click Here*

Back to Report Summary

MAP ID# 2

Distance from Property: 0.124 mi. (655 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **0142688**
WRNUM: **55-11203**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **JORDANELLE SPECIAL SERVICE DIST., INTERESTED PARTY**
SOURCE: **ONTARIO DRAIN TUNNEL AND PROVO RIVER**
USE: **IRRIGATION, MUNICIPAL, OTHER, STOCKWATERING**
PRIORITY DATE: **20000508**
SUMMARY STATUS: **APPROVED**
DRILLING METHOD: **NOT REPORTED**
TOTAL DEPTH (FT.): **NOT REPORTED**
FINISH DEPTH (FT.): **NOT REPORTED**
SCREEN DEPTH (FT.): **NOT REPORTED**
WELL DOC LINK: *Click Here*

Back to Report Summary

MAP ID# 2

Distance from Property: 0.124 mi. (655 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **0146214**
WRNUM: **55-9443**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **EXTENSION IRRIGATION COMPANY**
SOURCE: **UNDERGROUND WATER WELLS (32)**
USE: **MUNICIPAL**
PRIORITY DATE: **20000911**
SUMMARY STATUS: **APPROVED**
DRILLING METHOD: **NOT REPORTED**
TOTAL DEPTH (FT.): **NOT REPORTED**
FINISH DEPTH (FT.): **NOT REPORTED**
SCREEN DEPTH (FT.): **NOT REPORTED**
WELL DOC LINK: *Click Here*

Back to Report Summary

MAP ID# 2

Distance from Property: 0.124 mi. (655 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **0146425**
WRNUM: **55-9544**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **EXTENSION IRRIGATION COMPANY**
SOURCE: **UNDERGROUND WATER WELLS (32)**
USE: **MUNICIPAL**
PRIORITY DATE: **20001213**
SUMMARY STATUS: **APPROVED**
DRILLING METHOD: **NOT REPORTED**
TOTAL DEPTH (FT.): **NOT REPORTED**
FINISH DEPTH (FT.): **NOT REPORTED**
SCREEN DEPTH (FT.): **NOT REPORTED**
WELL DOC LINK: *Click Here*

Back to Report Summary

MAP ID# 2

Distance from Property: 0.124 mi. (655 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **0147535**
WRNUM: **55-9631**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **JORDANELLE SPECIAL SERVICE DISTRICT**
SOURCE: **UNDERGROUND WATER WELLS (5)**
USE: **MUNICIPAL**
PRIORITY DATE: **20011029**
SUMMARY STATUS: **TERMINATED: ADJUDICATION TERM; RIGHT MOST LIKELY HAS BEEN CONSOLIDATED INTO ANOTHER OR RENUMBERED.**
DRILLING METHOD: **NOT REPORTED**
TOTAL DEPTH (FT.): **NOT REPORTED**
FINISH DEPTH (FT.): **NOT REPORTED**
SCREEN DEPTH (FT.): **NOT REPORTED**
WELL DOC LINK: *Click Here*

Back to Report Summary

MAP ID# 2

Distance from Property: 0.124 mi. (655 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **0147540**
WRNUM: **55-9632**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **JORDANELLE SPECIAL SERVICE DISTRICT**
SOURCE: **UNDERGROUND WATER WELLS (4) EXISTING/OTHER APPLS.**
USE: **MUNICIPAL**
PRIORITY DATE: **20011029**
SUMMARY STATUS: **TERMINATED: ADJUDICATION TERM; RIGHT MOST LIKELY HAS BEEN CONSOLIDATED INTO ANOTHER OR RENUMBERED.**
DRILLING METHOD: **NOT REPORTED**
TOTAL DEPTH (FT.): **NOT REPORTED**
FINISH DEPTH (FT.): **NOT REPORTED**
SCREEN DEPTH (FT.): **NOT REPORTED**
WELL DOC LINK: *Click Here*

Back to Report Summary

MAP ID# 2

Distance from Property: 0.124 mi. (655 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **0148159**
WRNUM: **55-9669**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **JORDANELLE SPECIAL SERVICE DISTRICT**
SOURCE: **UNDERGROUND WATER WELLS (6)**
USE: **MUNICIPAL**
PRIORITY DATE: **20020718**
SUMMARY STATUS: **APPROVED**
DRILLING METHOD: **FLOODED REVERSE CIRCULATION**
TOTAL DEPTH (FT.): **20.00000**
FINISH DEPTH (FT.): **20.00000**
SCREEN DEPTH (FT.): **20.00000**
WELL DOC LINK: *Click Here*

Back to Report Summary

Water Wells (WW)

MAP ID# 2

Distance from Property: 0.124 mi. (655 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **0148573**
WRNUM: **55-9699**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **JORDANELLE SPECIAL SERVICE DISTRICT**
SOURCE: **UNDERGROUND WATER WELLS (6)**
USE: **MUNICIPAL**
PRIORITY DATE: **20021108**
SUMMARY STATUS: **APPROVED**
DRILLING METHOD: **NOT REPORTED**
TOTAL DEPTH (FT.): **NOT REPORTED**
FINISH DEPTH (FT.): **NOT REPORTED**
SCREEN DEPTH (FT.): **NOT REPORTED**
WELL DOC LINK: *Click Here*

Back to Report Summary

MAP ID# 2

Distance from Property: 0.124 mi. (655 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **0166100**
WRNUM: **55-9443**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **EXTENSION IRRIGATION COMPANY**
SOURCE: **UNDERGROUND WATER WELLS (32)**
USE: **MUNICIPAL**
PRIORITY DATE: **20000911**
SUMMARY STATUS: **TERMINATED: ADJUDICATION TERM; RIGHT MOST LIKELY HAS BEEN CONSOLIDATED INTO ANOTHER OR RENUMBERED.**
DRILLING METHOD: **NOT REPORTED**
TOTAL DEPTH (FT.): **NOT REPORTED**
FINISH DEPTH (FT.): **NOT REPORTED**
SCREEN DEPTH (FT.): **NOT REPORTED**
WELL DOC LINK: *Click Here*

Back to Report Summary

MAP ID# 2

Distance from Property: 0.124 mi. (655 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **0166641**
WRNUM: **55-9669**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **JORDANELLE SPECIAL SERVICE DISTRICT**
SOURCE: **UNDERGROUND WATER WELLS (6)**
USE: **MUNICIPAL**
PRIORITY DATE: **20020910**
SUMMARY STATUS: **TERMINATED: ADJUDICATION TERM; RIGHT MOST LIKELY HAS BEEN CONSOLIDATED INTO ANOTHER OR RENUMBERED.**
DRILLING METHOD: **NOT REPORTED**
TOTAL DEPTH (FT.): **NOT REPORTED**
FINISH DEPTH (FT.): **NOT REPORTED**
SCREEN DEPTH (FT.): **NOT REPORTED**
WELL DOC LINK: *Click Here*

Back to Report Summary

MAP ID# 2

Distance from Property: 0.124 mi. (655 ft.) E
Elevation: 6,713 ft. (Higher than TP)

FACILITY INFORMATION

UNIQUE ID: **0177179**
WRNUM: **55-9632**
LOCATION: **S4500 E650 NW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **JORDANELLE SPECIAL SERVICE DISTRICT**
SOURCE: **UNDERGROUND WATER WELLS (4) EXISTING/OTHER APPLS.**
USE: **MUNICIPAL**
PRIORITY DATE: **20070124**
SUMMARY STATUS: **APPROVED**
DRILLING METHOD: **NOT REPORTED**
TOTAL DEPTH (FT.): **NOT REPORTED**
FINISH DEPTH (FT.): **NOT REPORTED**
SCREEN DEPTH (FT.): **NOT REPORTED**
WELL DOC LINK: *Click Here*

Back to Report Summary

United States Geological Survey National Water Information System (NWIS)

MAP ID# 3

Distance from Property: 0.125 mi. (660 ft.) E
Elevation: 6,636 ft. (Lower than TP)

GEOSEARCH ID: **USGS_404017111255201**
REPORTING AGENCY: **US GEOLOGICAL SURVEY**
SITE IDENTIFICATION NUMBER: **404017111255201**
STATION NAME: **(D- 2- 5) 6CCA-S1**
SITE TYPE: **SP**
LATITUDE: **40.671339400**
LONGITUDE: **-111.431859400**
DISTRICT CODE: **49**
STATE CODE: **49**
COUNTY CODE: **051**
COUNTRY CODE: **US**
LAND NET LOCATION DESCRIPTION: **NESWSWS06 T**
NAME OF LOCATION MAP: **NOT REPORTED**
SCALE OF LOCATION MAP: **NOT REPORTED**
DATE OF FIRST CONSTRUCTION: **NOT REPORTED**
DATE SITE ESTABLISHED OR INVENTORIED: **NOT REPORTED**
LOCAL AQUIFER: **PARK CITY VOLCANICS**
WELL DEPTH: **NOT REPORTED**
HOLE DEPTH: **NOT REPORTED**
SOURCE OF DEPTH DATA: **NOT REPORTED**
PROJECT NUMBER: **NOT REPORTED**
PEAK-STREAMFLOW DATA BEGIN DATE: **--**
PEAK-STREAMFLOW DATA END DATE: **--**
PEAK-STREAMFLOW DATA COUNT: **0**
WATER-QUALITY DATA BEGIN DATE: **1983-08-31**
WATER-QUALITY DATA END DATE: **1983-08-31**
WATER-QUALITY DATA COUNT: **1**
FIELD WATER-LEVEL MEASUREMENTS BEGIN DATE: **--**
FIELD WATER-LEVEL MEASUREMENTS END DATE: **--**
FIELD WATER-LEVEL MEASUREMENTS COUNT: **0**
SITE-VISIT DATA BEGIN DATE: **1983-08-31**
SITE-VISIT DATA END DATE: **1983-08-31**
SITE-VISIT DATA COUNT: **1**

Back to Report Summary

MAP ID# 4

Distance from Property: 0.286 mi. (1,510 ft.) E
Elevation: 6,619 ft. (Lower than TP)

GEOSEARCH ID: **USGS_404018111254101**
REPORTING AGENCY: **US GEOLOGICAL SURVEY**
SITE IDENTIFICATION NUMBER: **404018111254101**
STATION NAME: **(D- 2- 5) 6CDB- 1**
SITE TYPE: **GW**
LATITUDE: **40.671617190**
LONGITUDE: **-111.428803700**
DISTRICT CODE: **49**
STATE CODE: **49**
COUNTY CODE: **051**
COUNTRY CODE: **US**
LAND NET LOCATION DESCRIPTION: **NWSESWS06 T**
NAME OF LOCATION MAP: **NOT REPORTED**
SCALE OF LOCATION MAP: **NOT REPORTED**
DATE OF FIRST CONSTRUCTION: **01/01/1965**
DATE SITE ESTABLISHED OR INVENTORIED: **NOT REPORTED**
LOCAL AQUIFER: **NOT REPORTED**
WELL DEPTH: **260 FEET**
HOLE DEPTH: **NOT REPORTED**
SOURCE OF DEPTH DATA: **O**
PROJECT NUMBER: **464915800**
PEAK-STREAMFLOW DATA BEGIN DATE: **--**
PEAK-STREAMFLOW DATA END DATE: **--**
PEAK-STREAMFLOW DATA COUNT: **0**
WATER-QUALITY DATA BEGIN DATE: **1967-05-17**
WATER-QUALITY DATA END DATE: **1967-05-17**
WATER-QUALITY DATA COUNT: **2**
FIELD WATER-LEVEL MEASUREMENTS BEGIN DATE: **1965-11-01**
FIELD WATER-LEVEL MEASUREMENTS END DATE: **1965-11-01**
FIELD WATER-LEVEL MEASUREMENTS COUNT: **1**
SITE-VISIT DATA BEGIN DATE: **--**
SITE-VISIT DATA END DATE: **--**
SITE-VISIT DATA COUNT: **0**

Back to Report Summary

MAP ID# 5

Distance from Property: 0.294 mi. (1,552 ft.) E
Elevation: 6,619 ft. (Lower than TP)

FACILITY INFORMATION

UNIQUE ID: **0072204**
WRNUM: **55-3097**
LOCATION: **N1140 E1570 SW 06 2S 5E SL**
TYPE: **UNDERGROUND**
OWNER NAME: **CHEVRON U.S.A. INC.**
SOURCE: **UNDERGROUND WATER WELL**
USE: **OTHER**
PRIORITY DATE: **19651011**
SUMMARY STATUS: **PERFECTED: PROOF FILED, RIGHT CERTIFICATED**
DRILLING METHOD: **CABLE TOOL**
TOTAL DEPTH (FT.): **480.00000**
FINISH DEPTH (FT.): **310.00000**
SCREEN DEPTH (FT.): **150.00000**
WELL DOC LINK: *Click Here*

Back to Report Summary

United States Geological Survey National Water Information System (NWIS)

MAP ID# 6

Distance from Property: 0.471 mi. (2,487 ft.) W
Elevation: 6,637 ft. (Lower than TP)

GEOSEARCH ID: **USGS_404023111270801**
REPORTING AGENCY: **US GEOLOGICAL SURVEY**
SITE IDENTIFICATION NUMBER: **404023111270801**
STATION NAME: **(D- 2- 4) 1CBC- 1**
SITE TYPE: **GW**
LATITUDE: **40.673005980**
LONGITUDE: **-111.452971700**
DISTRICT CODE: **49**
STATE CODE: **49**
COUNTY CODE: **043**
COUNTRY CODE: **US**
LAND NET LOCATION DESCRIPTION: **SWNWSWS01 T**
NAME OF LOCATION MAP: **PARK CITY EAST**
SCALE OF LOCATION MAP: **24000**
DATE OF FIRST CONSTRUCTION: **NOT REPORTED**
DATE SITE ESTABLISHED OR INVENTORIED: **06/16/1994**
LOCAL AQUIFER: **NOT REPORTED**
WELL DEPTH: **NOT REPORTED**
HOLE DEPTH: **NOT REPORTED**
SOURCE OF DEPTH DATA: **NOT REPORTED**
PROJECT NUMBER: **474922100**
PEAK-STREAMFLOW DATA BEGIN DATE: **--**
PEAK-STREAMFLOW DATA END DATE: **--**
PEAK-STREAMFLOW DATA COUNT: **0**
WATER-QUALITY DATA BEGIN DATE: **--**
WATER-QUALITY DATA END DATE: **--**
WATER-QUALITY DATA COUNT: **0**
FIELD WATER-LEVEL MEASUREMENTS BEGIN DATE: **1994-06-16**
FIELD WATER-LEVEL MEASUREMENTS END DATE: **1995-09-05**
FIELD WATER-LEVEL MEASUREMENTS COUNT: **15**
SITE-VISIT DATA BEGIN DATE: **--**
SITE-VISIT DATA END DATE: **--**
SITE-VISIT DATA COUNT: **0**

Back to Report Summary

NWIS United States Geological Survey National Water Information System

VERSION DATE: 01/02/20

The U.S. Geological Survey (USGS) National Water Information System (NWIS) includes water inventory data originating from all 50 states, plus border and territorial sites, including data from as early as 1899. This database includes selected site types limited to Groundwater Sites and Spring Sites from the 1.5 million plus sites within NWIS. Surface-Water, Atmospheric, and Other Site types are excluded. Disclaimer: Water Data for the Nation is the USGS public web interface to much of the data stored and managed within NWIS. It is not, however, configured to present all NWIS data and users may need to contact local Water Science Centers to obtain some information. NWIS data is updated on a regularly scheduled basis, and current condition data is generally updated upon receipt at local Water Science Centers.

WW Water Wells

VERSION DATE: 03/18/20

This list of water wells is a compilation of two databases maintained by the Utah Division of Water Rights. The first database is extracted from the Utah Division of Water Rights PUBDUMP Well database Well Features table. The second database is extracted from the Utah Division of Water Rights WRPOD (water right point of diversion) shapefile. This database is a complete record of water point of diversion locations created from data in the Utah Division of Water Rights database. The database is a complete record with the following exceptions: (1) The Division's point of diversion referencing policy includes a provision which allows some point of diversion locations to be described more as areas than discrete points. (2) Utah State Law required applications to divert surface water to be filed with the State Engineer after 1903 and groundwater after 1935. There may be existing diversions which began prior to those dates which are not included in the Division of Water Right records. (3) Data in the Division of Water Rights database was entered over an eight year period from paper files maintained by the office. Data entered in the database has been subsequently verified by staff. However, errors are occasionally detected in the database as a result of entry operations either from current staff activities or the original entry project. The Division makes an ongoing effort to maintain the database free of errors and omissions; however users of the data are responsible to verify it is suitable for their purpose.

GeoPlus Oil & Gas Report

GeoLens by GeoSearch

Target Property:

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Summit County, Utah 84060

Prepared For:

CMT Engineering Laboratories-Utah

Order #: 147850
Job #: 355542
Project #: 14715
PO #: 14715
Date: 06/05/2020

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Disclaimer

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Target Property Summary

Target Property Information

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Utah 84060

Coordinates
Area centroid (-111.43944, 40.6715475)

USGS Quadrangle
Park City East, UT

Geographic Coverage Information

County/Parish: Summit (UT) , Wasatch (UT)
ZipCode(s):
Coalville UT: 84017
Kamas UT: 84036
Park City UT: 84060

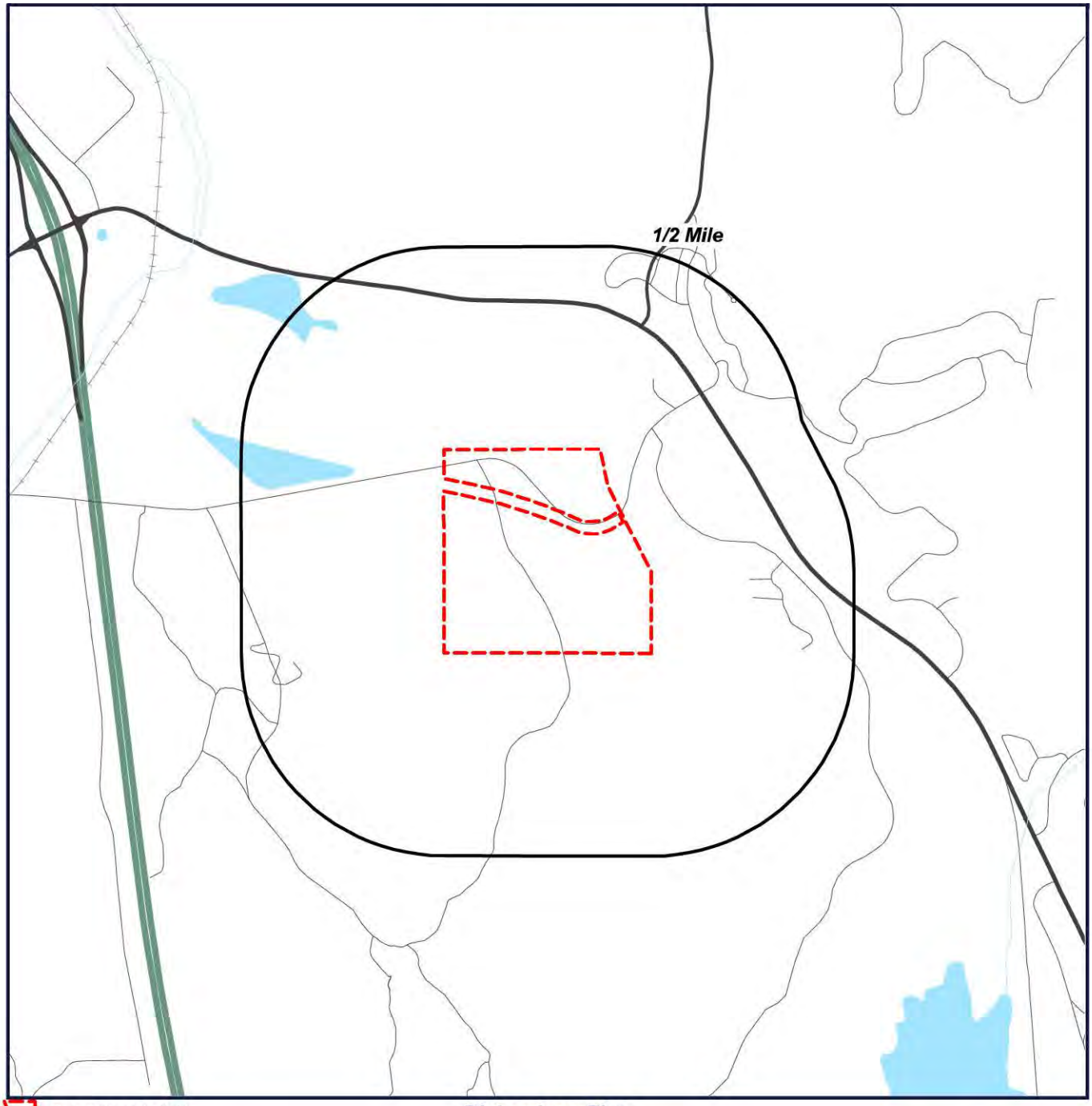
Database Radius Summary

STATE (UT) LISTING

Acronym	Search Radius (miles)	TP/AP (0 - 0.02)	1/8 Mile (> TP/AP)	1/4 Mile (> 1/8)	1/2 Mile (> 1/4)	1 Mile (> 1/2)	> 1 Mile	Total
OG	0.5000	0	0	0	0	NS	NS	0
SUB-TOTAL		0	0	0	0	0	0	0
TOTAL		0	0	0	0	0	0	0

NOTES:
NS = NOT SEARCHED
TP/AP = TARGET PROPERTY/ADJACENT PROPERTY

OIL & GAS WELL MAP



Target Property (TP)

Well Location

Richardson Flats
Parcel SS-86
Near 1185 W LORI LN
Heber, Utah
84060

N
W E
S

0' 1000' 2000' 3000'
SCALE: 1" = 2000'

Located Sites Summary

No Records Found.

Site Summary By Database

No Records Found.

OG Oil and Gas Wells

VERSION DATE: 05/10/20

This list of Oil and Gas Wells is maintained by the Utah Automated Geographic Reference Center. This list is a combination of 5 datasets. These datasets depict oil and gas well surface points, units and fields polygons from the Utah Department of Natural Resources, Oil, Gas and Mining Division. On June 1, 2017, the Utah Division of Oil, Gas and Mining retired 5 old databases and went online with a new database. This prompted many changes to the data field names and content previously provided in the AGRC files. This new database was developed by contractors sponsored in part by the U.S. Department of Energy and the Ground Water Protection Council and provides the opportunity for the Division to collect more descriptive down-hole information for each wellbore permitted and drilled. Initially, much of the down-hole information will not be available because there was no place to save it in the previous databases. Eventually, as new wells are drilled and old legacy data is entered, more descriptive data will become available for the wells in Utah.

GeoPlus Physical Setting Maps

Target Property:

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Summit County, Utah 84060

Prepared For:

CMT Engineering Laboratories-Utah

Order #: 147850
Job #: 355544
Project #: 14715
PO #: 14715
Date: 06/05/2020

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Target Property Summary

Target Property Information

Richardson Flats Parcel SS-86
Near 1185 W LORI LN
Heber, Utah 84060

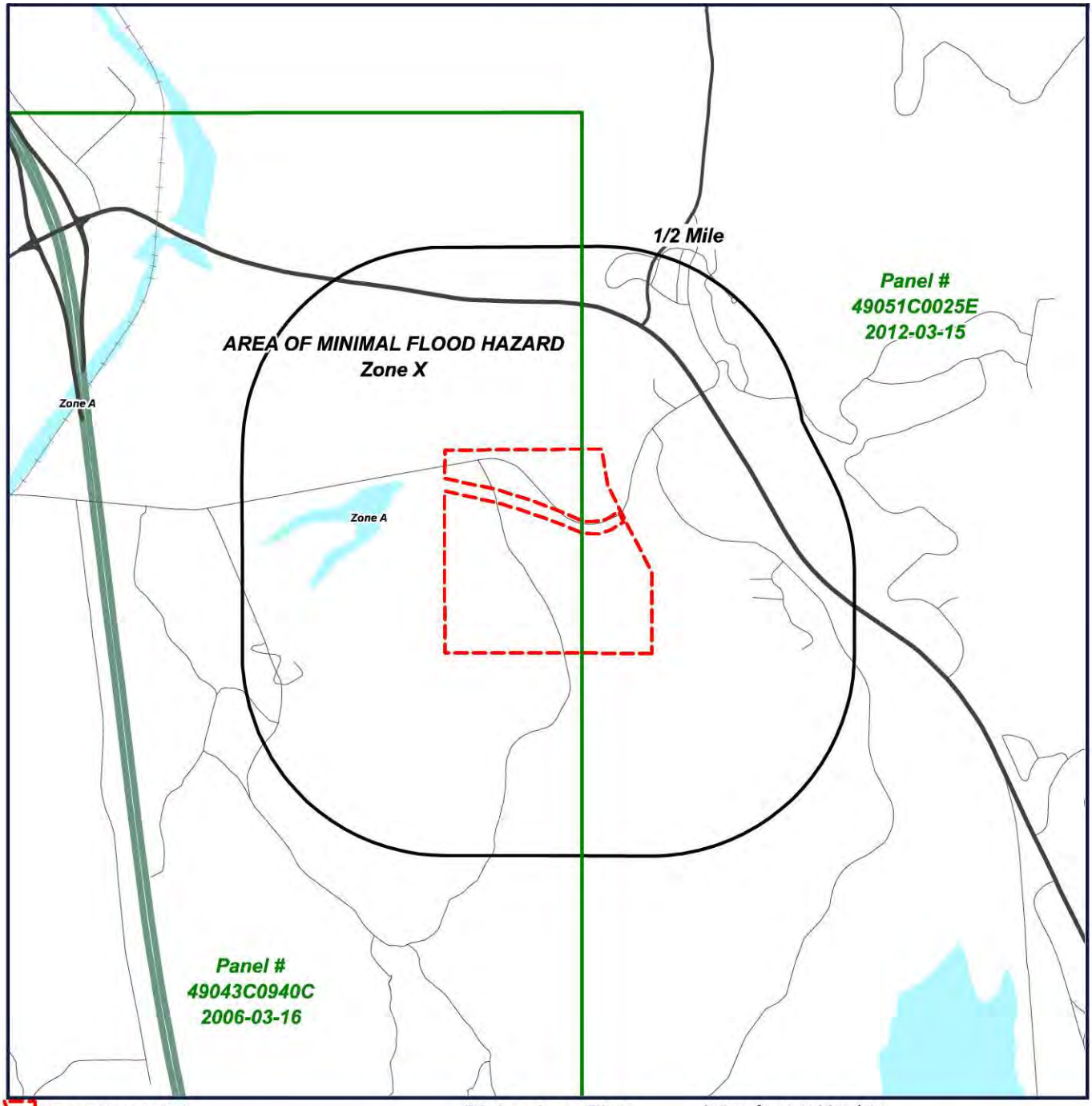
Coordinates
Area centroid (-111.43944, 40.6715475)
6,643 feet above sea level

USGS Quadrangle
Park City East, UT

Geographic Coverage Information

County/Parish: Summit (UT) , Wasatch (UT)
ZipCode(s):
Coalville UT: 84017
Kamas UT: 84036
Park City UT: 84060

FEMA Map



Target Property (TP)

Richardson Flats
Parcel SS-86
Near 1185 W LORI LN
Heber, Utah
84060

Letter of map revision date:
8/15/2019
Latest study effective date:
12/07/2017

N
W E
S

Without Base Flood Elevation (BFE)
Zone A, V, A99
With BFE or Depth Zone AE, AO, AH, VE, AR

Regulatory Floodway

0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile - Zone X

Future Conditions 1% Annual Chance Flood Harzard - Zone X

Area with Reduced Flood Risk due to Levee - Zone X

Area with Flood Risk due to Levee - Zone D

Digital Data Not Available

0' 1000' 2000' 3000'
SCALE: 1" = 2000'

FEMA Report

FEMA - Federal Emergency Management Agency

The National Flood Hazard Layer (NFHL) data used in this report is derived from the Federal Emergency Management Agency. The NFHL dataset is a compilation of effective Flood Insurance Rate Map (FIRM) databases (a collection of the digital data that are used in GIS systems for creating new Flood Insurance Rate Maps) and Letters of Map Change (Letters of Map Amendment and Letters of Map Revision only) that create a seamless GIS data layer for United States and its territories. The NFHL is updated as new study or LOMC data becomes effective. Note: Currently, not all areas have modernized FIRM database data available. As a result, users may need to refer to the effective Flood Insurance Rate Map for effective flood hazard information.

FEMA Flood Zone Definitions within Search Radius

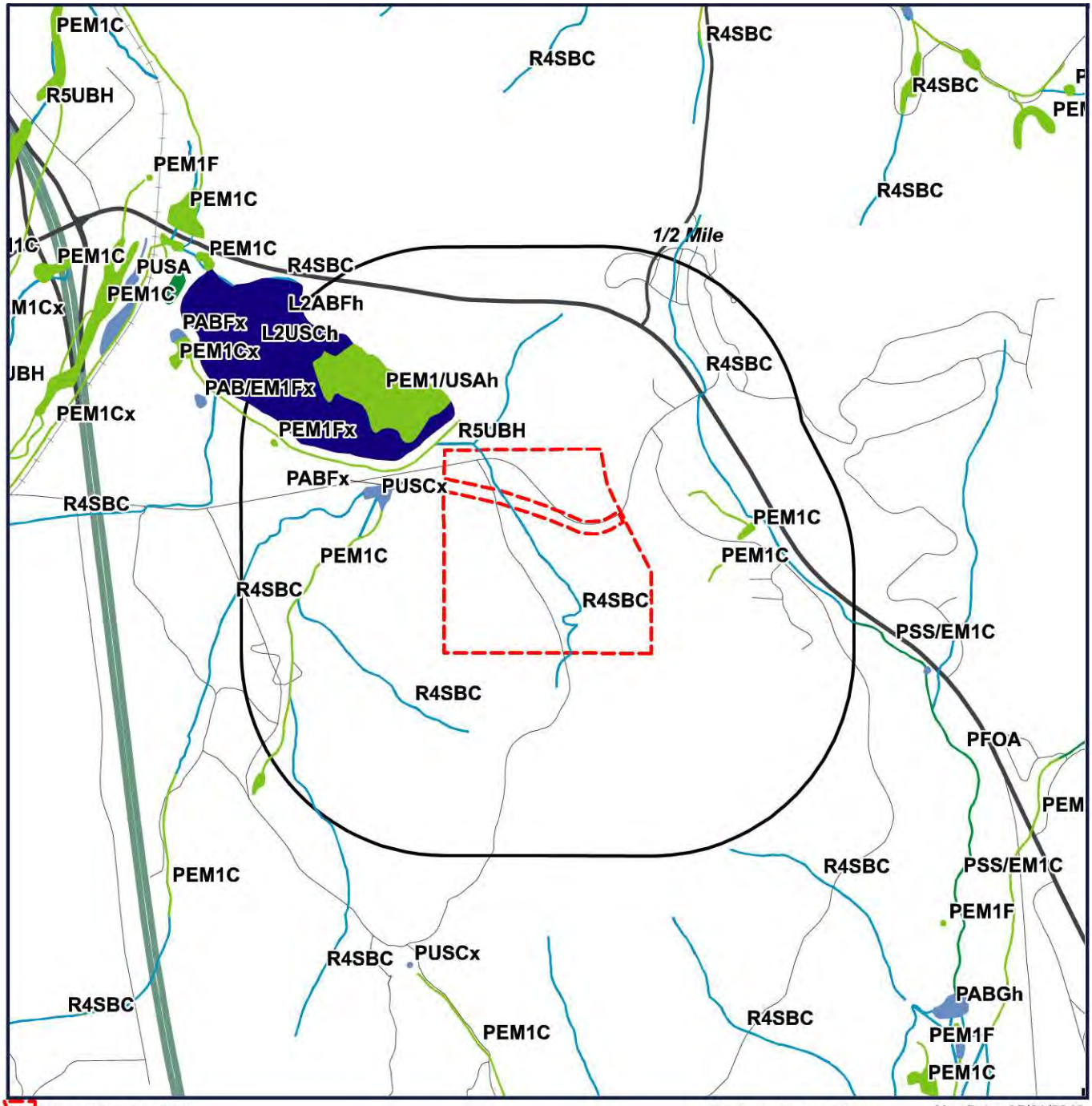
Zone A	Zone A

Areas subject to inundation by the 1-percent-annual-chance flood event. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown.

Zone X	Zone X

An area that is determined to be outside the 100 and 500 year floodplains.

NWI Map



Target Property (TP)

ESTUARINE AND MARINE DEEPWATER

ESTUARINE AND MARINE WETLAND

FRESHWATER EMERGENT WETLAND

FRESHWATER FORESTED/ SHRUB WETLAND

LAKE

OTHER

RIVERINE

FRESHWATER POND

NDA - DIGITAL DATA NOT AVAILABLE

Richardson Flats
Parcel SS-86
Near 1185 W LORI LN
Heber, Utah
84060

Map Date: 05/01/2018

N
W E
S

0' 1000' 2000' 3000'

SCALE: 1" = 2000'

NWI Report

NWI - National Wetlands Inventory

The US NWI digital data bundle is a set of records of wetlands location and classification as defined by the U.S. Fish & Wildlife Service. This dataset is one of a series available in 7.5 minute by 7.5 minute blocks containing ground planimetric coordinates of wetlands point, line, and area features and wetlands attributes. When completed, the series will provide coverage for all of the contiguous United States, Hawaii, Alaska, and U.S. protectorates in the Pacific and Caribbean. The digital data as well as the hardcopy maps that were used as the source for the digital data are produced and distributed by the U.S. Fish & Wildlife Service's National Wetlands Inventory project. Currently, this data is only available in select counties throughout the United States.

NWI Definitions within Search Radius

L2ABFh

SYSTEM: **LACUSTRINE**
SUBSYSTEM: **LITTORAL**
CLASS: **AQUATIC BED**
WATER REGIME: **SEMIPERMANENTLY FLOODED**
SPECIAL MODIFIER: **DIKED/IMPOUNDED**

L2USCh

SYSTEM: **LACUSTRINE**
SUBSYSTEM: **LITTORAL**
CLASS: **UNCONSOLIDATED SHORE**
WATER REGIME: **SEASONALLY FLOODED**
SPECIAL MODIFIER: **DIKED/IMPOUNDED**

PABFx

SYSTEM: **PALUSTRINE**
CLASS: **AQUATIC BED**
SPECIAL MODIFIER: **EXCAVATED**

PEM1/USAh

SYSTEM: **PALUSTRINE**
CLASS: **EMERGENT**
SUBCLASS: **BROAD-LEAVED DECIDUOUS**
SPECIAL MODIFIER: **DIKED/IMPOUNDED**

PEM1C

SYSTEM: **PALUSTRINE**
CLASS: **EMERGENT**
SUBCLASS: **BROAD-LEAVED DECIDUOUS**
WATER REGIME: **SEASONALLY FLOODED**

PEM1Cx

SYSTEM: **PALUSTRINE**
CLASS: **EMERGENT**
SUBCLASS: **BROAD-LEAVED DECIDUOUS**
WATER REGIME: **SEASONALLY FLOODED**

SPECIAL MODIFIER: **EXCAVATED**

PEM1Fx

SYSTEM: **PALUSTRINE**

CLASS: **EMERGENT**

SUBCLASS: **BROAD-LEAVED DECIDUOUS**

WATER REGIME: **SEMIPERMANENTLY FLOODED**

SPECIAL MODIFIER: **EXCAVATED**

PUSCx

SYSTEM: **PALUSTRINE**

CLASS: **UNCONSOLIDATED SHORE**

SPECIAL MODIFIER: **EXCAVATED**

R4SBC

SYSTEM: **RIVERINE**

SUBSYSTEM: **INTERMITTENT**

CLASS: **STREAMBED**

WATER REGIME: **SEASONALLY FLOODED**

R5UBH

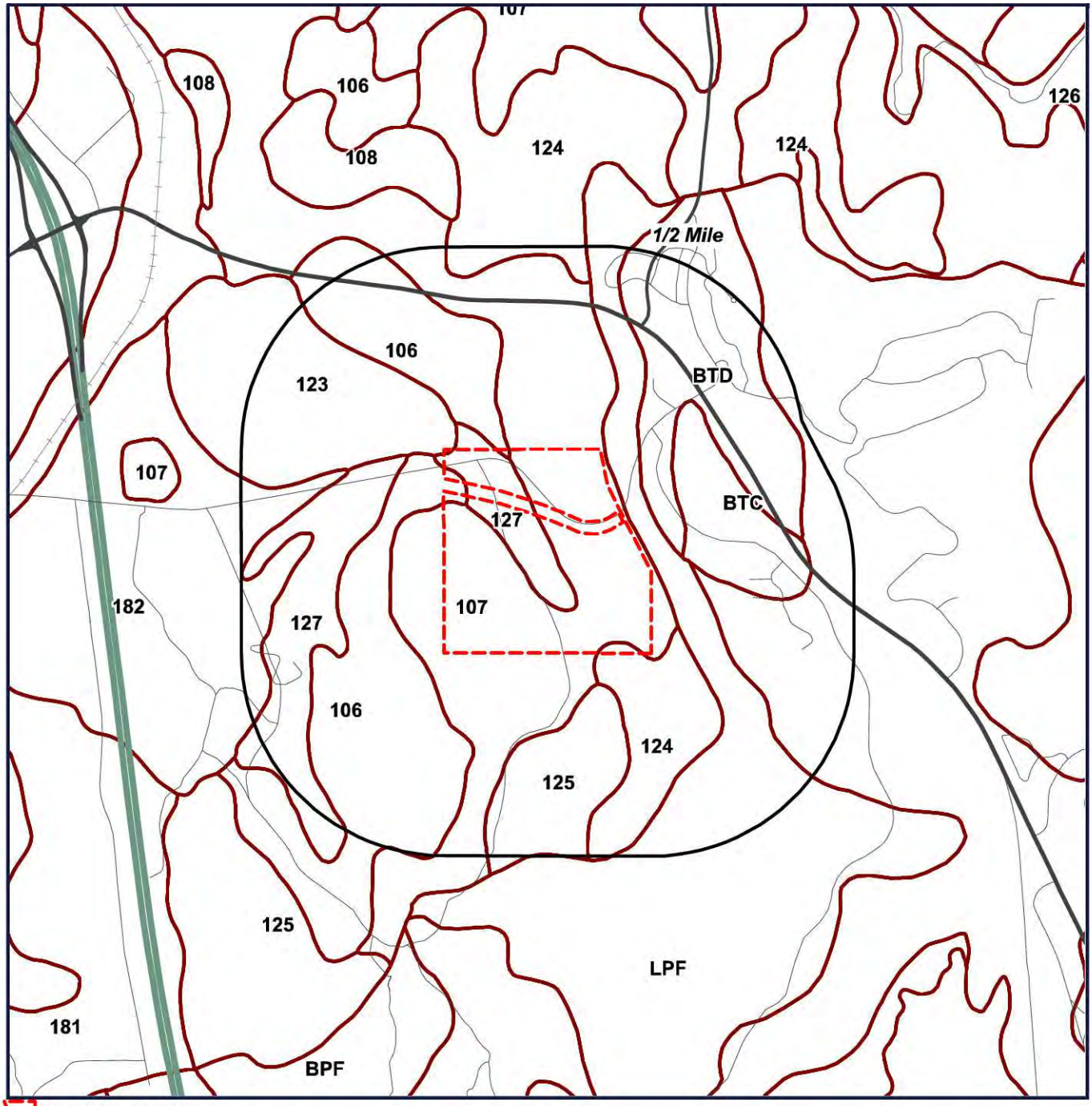
SYSTEM: **RIVERINE**

SUBSYSTEM: **UNKNOWN PERENNIAL**

CLASS: **UNCONSOLIDATED BOTTOM**

WATER REGIME: **PERMANENTLY FLOODED**

Soil Map



Target Property (TP)

SOIL BOUNDARY

NOTCOM - DIGITAL DATA NOT AVAILABLE/NOT COMPLETE

Richardson Flats
Parcel SS-86
Near 1185 W LORI LN
Heber, Utah
84060

N
W E
S

0' 1000' 2000' 3000'
SCALE: 1" = 2000'

SOIL Report

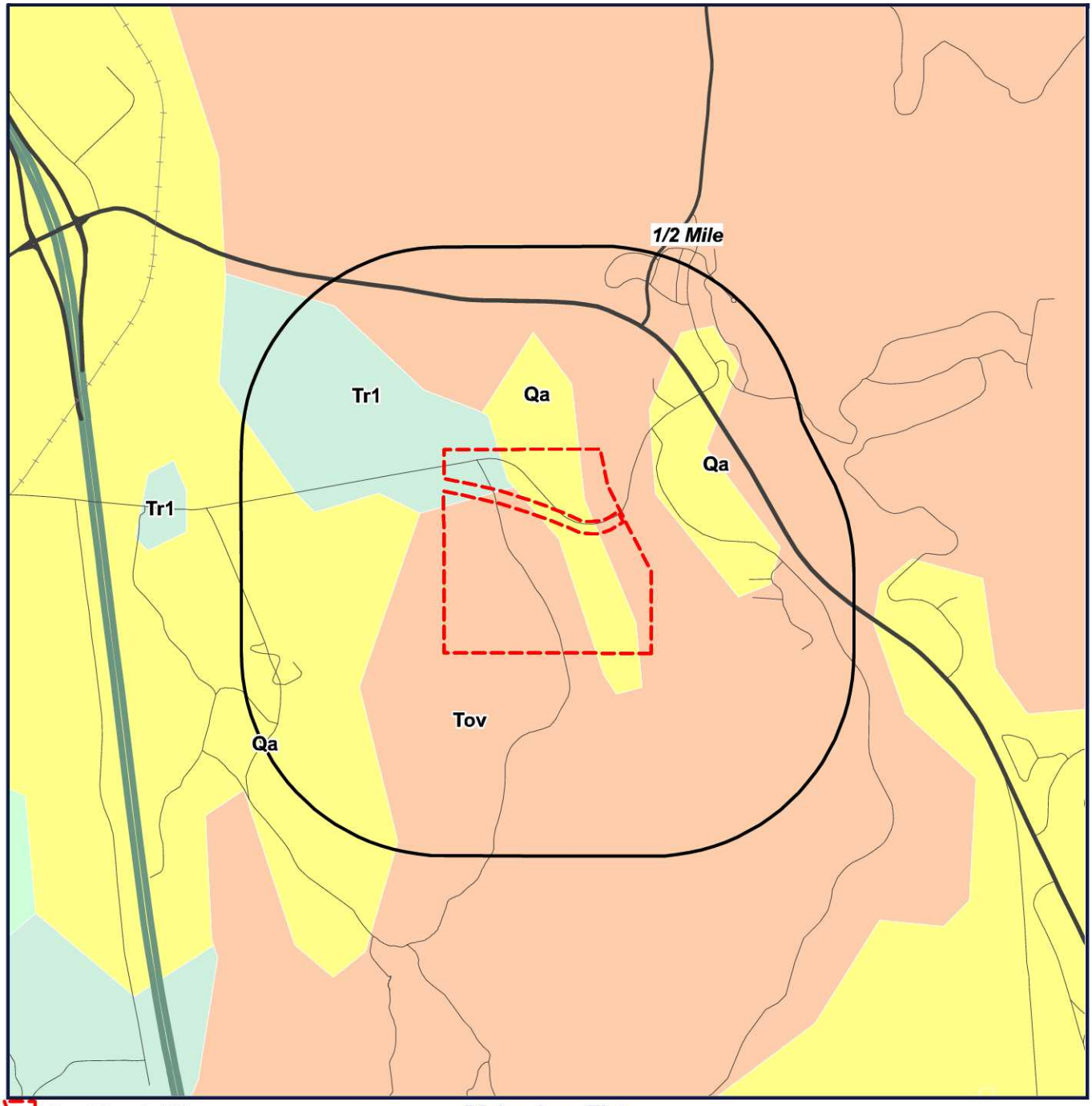
Soil Surveys

The soil data used in this report is obtained from the Natural Resources Conservation Service (NRCS). The NRCS is the primary federal agency that works with private landowners to help them conserve, maintain and improve their natural resources. The soil survey contains information that can be applied in managing farms and ranches; in selecting sites for roads, ponds, buildings and other structures; and in determining the suitability of tracts of land for farming, industry and recreation. This data is available in select counties throughout the United States.

SOIL Code Definitions within Search Radius

BTC	Broadhead soils, 6 to 15 percent slopes
BTD	Broadhead soils, 15 to 25 percent slopes
HWE	Horrocks-Broadhead association, steep
LPF	Little Pole very cobbly sandy clay loam, 40 to 60 percent slopes
106	Ayoub cobbly loam, 2 to 15 percent slopes
107	Ayoub-Dunford-Melling complex, 15 to 30 percent slopes
123	Dumps, mines
125	Dunford-Ayoub-Melling complex, 30 to 60 percent slopes
124	Dunford-Ayoub-Melling complex, 15 to 30 percent slopes
127	Echocreek-Kovich loams, 0 to 10 percent slopes
182	Yeates Hollow-Henefer complex, 30 to 60 percent slopes

Geology Map



Target Property (TP)

Richardson Flats
Parcel SS-86
Near 1185 W LORI LN
Heber, Utah
84060

N
W E
S

0' 1000' 2000' 3000'
SCALE: 1" = 2000'

GEOLOGY Report

US GEOLOGY

THE GEOLOGY DATA USED IN THIS REPORT ORIGINATES FROM THE USGS. THE FIRST STAGE IN DEVELOPING STATE DATABASES FOR THE CONTERMINOUS UNITED STATES WAS TO ACQUIRE DIGITAL VERSIONS OF ALL EXISTING STATE GEOLOGIC MAPS. ALTHOUGH A SIGNIFICANT NUMBER OF DIGITAL STATE MAPS ALREADY EXISTED, A NUMBER OF STATES LACKED THEM. FOR THESE STATES NEW DIGITAL COMPILATIONS WERE PREPARED IN COOPERATION WITH STATE GEOLOGIC SURVEYS OR BY THE NSA (NATIONAL SURVEYS AND ANALYSIS) PROJECT. THESE NEW DIGITAL STATE GEOLOGIC MAPS AND DATABASES WERE CREATED BY DIGITIZING ALREADY EXISTING PRINTED MAPS, OR, IN A FEW CASES, BY MERGING EXISTING LARGER SCALE DIGITAL MAPS.

GEOLOGY Definitions within Search Radius

GEOLOGY SYMBOL: **Qa**
UNIT NAME: **Quaternary alluvium and colluvium**
UNIT AGE: **Quaternary**
UNIT DESCRIPTION:
NOT REPORTED
ADDITIONAL UNIT INFORMATION:
NOT REPORTED
ROCKTYPE/S: **alluvium; colluvium;**

GEOLOGY SYMBOL: **Tov**
UNIT NAME: **Oligocene volcanic rocks**
UNIT AGE: **Late Eocene to Oligocene**
UNIT DESCRIPTION:
NOT REPORTED
ADDITIONAL UNIT INFORMATION:
NOT REPORTED
ROCKTYPE/S: **dacite; rhyolite; andesite; basalt**

GEOLOGY SYMBOL: **Tr1**
UNIT NAME: **Triassic (1) sedimentary rocks in Salt Lake City-Coalville-Randolph region**
UNIT AGE: **Early Triassic**
UNIT DESCRIPTION:
NOT REPORTED
ADDITIONAL UNIT INFORMATION:
tidal flat to shallow marine
ROCKTYPE/S: **mudstone; limestone; siltstone; sandstone; evaporite**

APPENDIX E

SUPPORTING
DOCUMENTATION

100005323

SECOND FIVE-YEAR REVIEW REPORT FOR RICHARDSON FLAT TAILINGS SUPERFUND SITE SUMMIT COUNTY, UTAH

Prepared by

U.S. Environmental Protection Agency
Region 8
Denver, Colorado

Betsy Smidinger
Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

8/10/18
Date

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LIST OF ABBREVIATIONS AND ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CD	Consent Decree
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
IC	Institutional Control
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PCMC	Park City Municipal Corporation
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
UPCM	United Park City Mines
USFWS	United States Fish and Wildlife Service
UTDEQ	Utah Department of Environmental Quality
UU/UE	Unlimited Use and Unrestricted Exposure

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the second FYR for the Richardson Flat Tailings Site (the Site). The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site is located in and around Park City, within Summit County, Utah, in the Silver Creek watershed. Mining activities began in the upgradient mining district in the late 1860s. The Site, located in and around Silver Creek, downstream of the mining district, has been impacted by mining waste. The Site consists of four operable units (OUs) (Figure 1). This FYR addresses OU1, the Richardson Flat tailings impoundment (Figure 2). Remedial action has occurred at OU1, as discussed in Section II. Site characterization investigations are ongoing at the remaining OUs. OU2 encompasses approximately 1,216 acres along Lower Silver Creek north and east of Highway 40. OU3 encompasses approximately 856 acres located east of Park City in areas along Silver Creek. These two OUs are comprised of mine tailings that have come to be located in the Lower Silver Creek floodplain. Investigations are ongoing to determine the nature and extent of contamination within the flood plain and upland areas. OU4 is an ongoing discharge known as Prospector Drain. The drain was installed during the 1970s to lower the water table in order to develop Prospector Park and Prospector Square (a park and housing development) on tailings material. In 2008, Park City Municipal Corporation (PCMC) constructed a biocell to reduce the concentrations of cadmium and zinc in the water captured by the drain. Supplemental flow that is not processed through the biocell is bypassed to Silver Creek. Investigations are ongoing to determine the nature and extent of contamination at OU4.

EPA remedial project manager (RPM) Robert Parker led the FYR. Participants included Mo Slam from the Utah Department of Environmental Quality (UTDEQ), EPA community involvement coordinator (CIC) Katherine Jenkins, and Ryan Burdge and Treat Suomi of Skeo. The review began on 5/31/2017.

Site Background

OU1 consists of approximately 258 acres of land, including a tailings impoundment that covers approximately 160 acres of land. The impoundment was a mine tailings reservoir created prior to 1950. It is now the location of approximately 7 million tons of sand-sized carbonaceous particles and minerals containing zinc, silver, lead and other metals. Appendix A and B include a list of relevant site documents and site chronology.

According to the Remedial Investigation (RI) report, few details are known about the original embankment along the western area of OU1, but it is believed to have been constructed as part of the original tailings impoundment. In the 1970s, to accommodate additional tailings, an operator constructed a large earth embankment along the western edge of the impoundment, perimeter containment dikes along the southern and eastern borders of the impoundment and a diversion ditch system north of the impoundment and along the southern and eastern containment dikes. The impoundment was last used as a repository for new tailings in 1982. Currently, most of OU1 is a covered tailings impoundment bounded by containment dikes with the main embankment to the northwest (Figure 3). A parking area is located at the eastern end of OU1.

Silver Creek flows along the northwest border of the OU, separated from OU1 by a small stretch of wetlands and

riparian vegetation. Most of the land around OU1 is undeveloped open space, although there is development interest in the Silver Creek valley in the general area of OU1. OU1 lies within a 650 acre parcel owned by United Park City Mines (UPCM), a potentially responsible party (PRP). While no final decision has been made on future use at OU1, potential uses range from open space wildlife habitat to athletic fields. Currently, a recreation trail passes through the Site alongside Silver Creek.

Surface water features at OU1 include the south diversion ditch, the wetlands area below the embankment and a pond. All the surface water and shallow groundwater at OU1 eventually discharge to Silver Creek, which is classified by the State as a potential drinking water source, a recreational use feature, a cold-water fishery and a potential irrigation source.

A 12-square mile downgradient well inventory conducted during the RI determined that all wells are deeper than 150 feet and there are no known wells located within a half mile of OU1. The shallow groundwater at OU1 is generally associated with the alluvial system of Silver Creek. The Silver Creek alluvial aquifer is very high in total dissolved solids and is often contaminated due to water quality in Silver Creek and tailings that are present along the creek in many areas. The OU1 RI concluded that OU1 does not present a risk to the Silver Creek alluvial aquifer due to the relative contaminant concentrations between shallow groundwater present at OU1 and higher concentrations present in the alluvial groundwater. The potential for impacts to the Silver Creek alluvial aquifer by OU1 should be re-evaluated in future FYRs due to future OU 2 and 3 remediation efforts. There are no known current uses for the shallow aquifer.

Figure 1: Site Operable Units

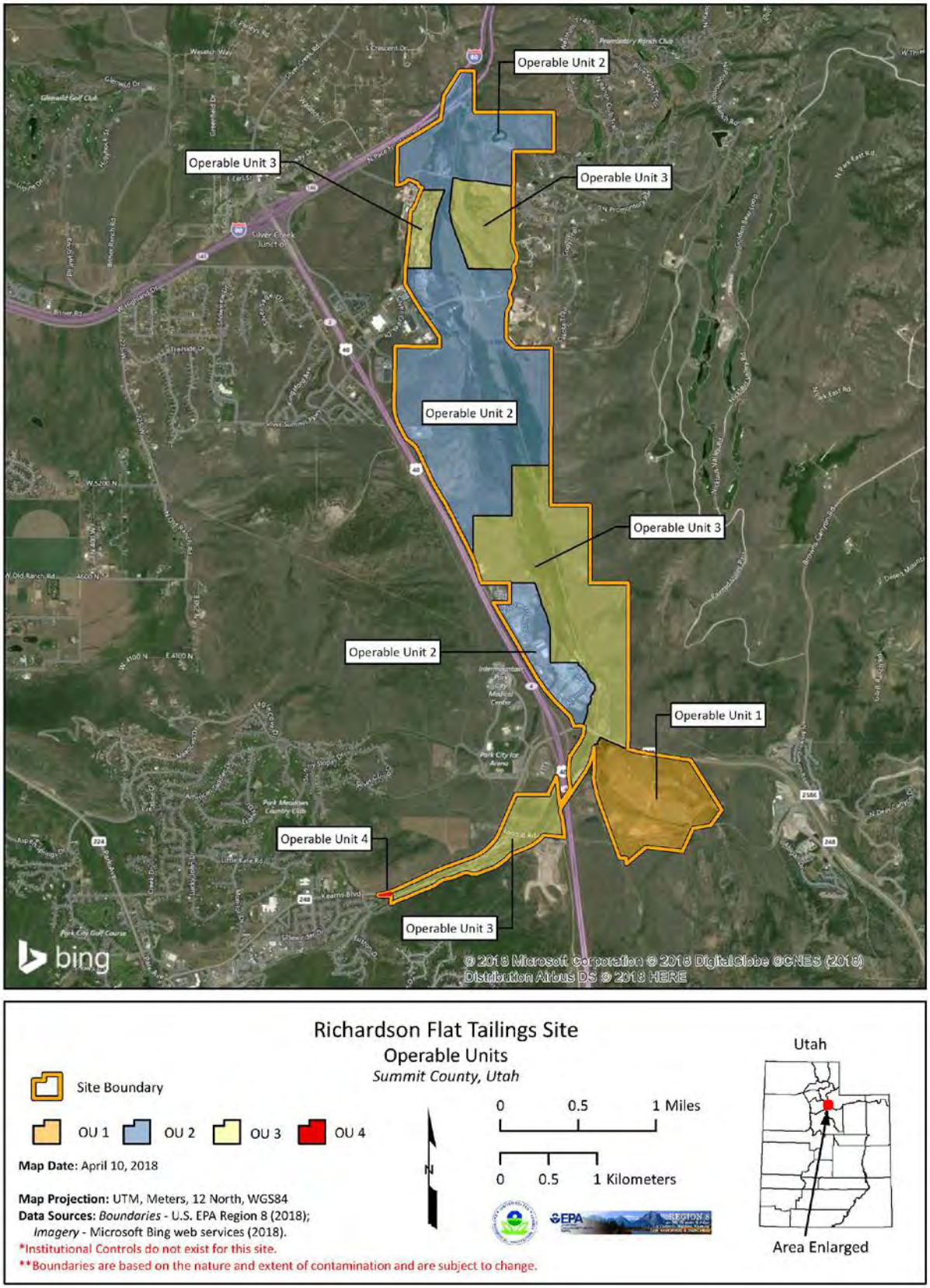
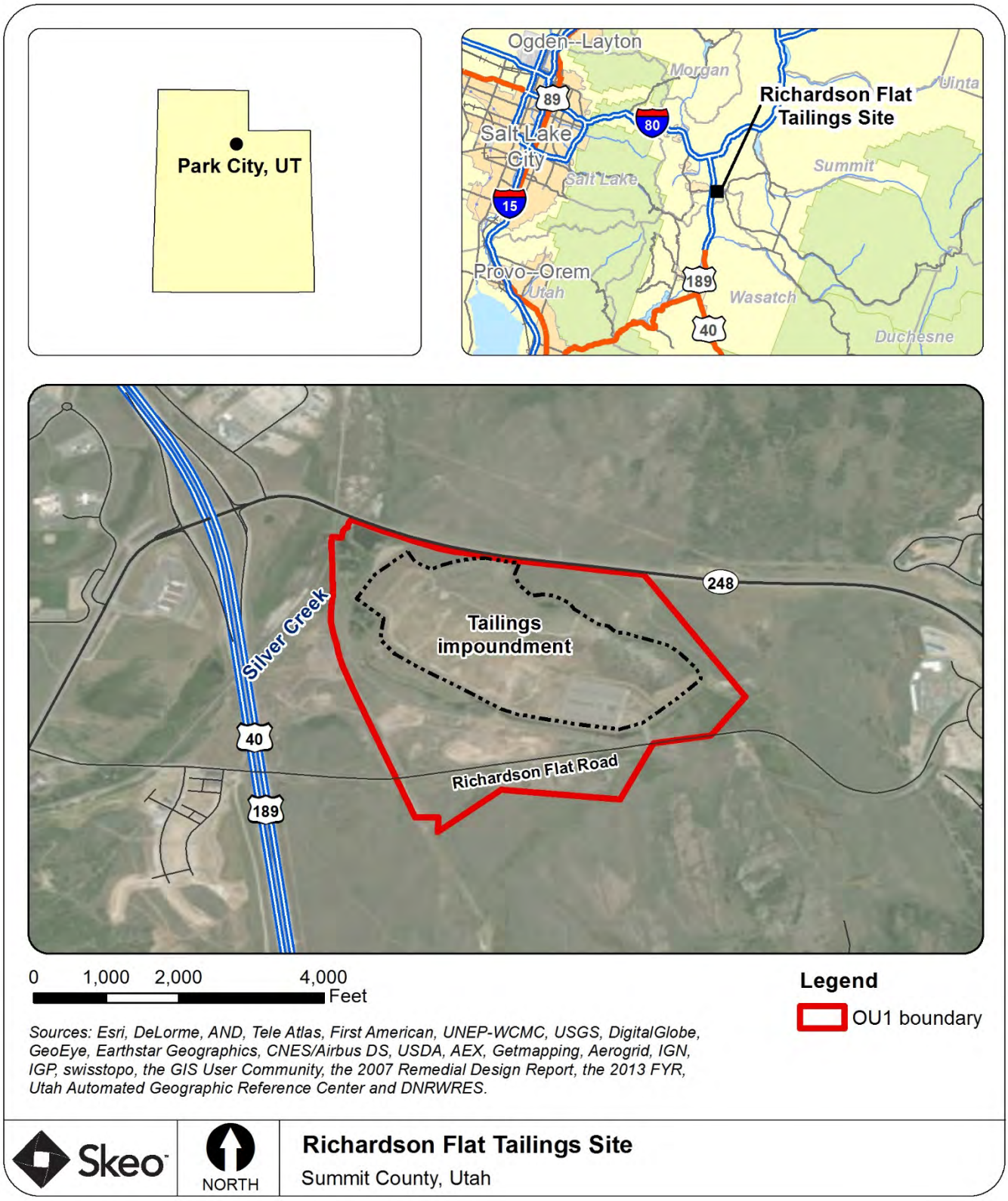


Figure 2: Site Location Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site

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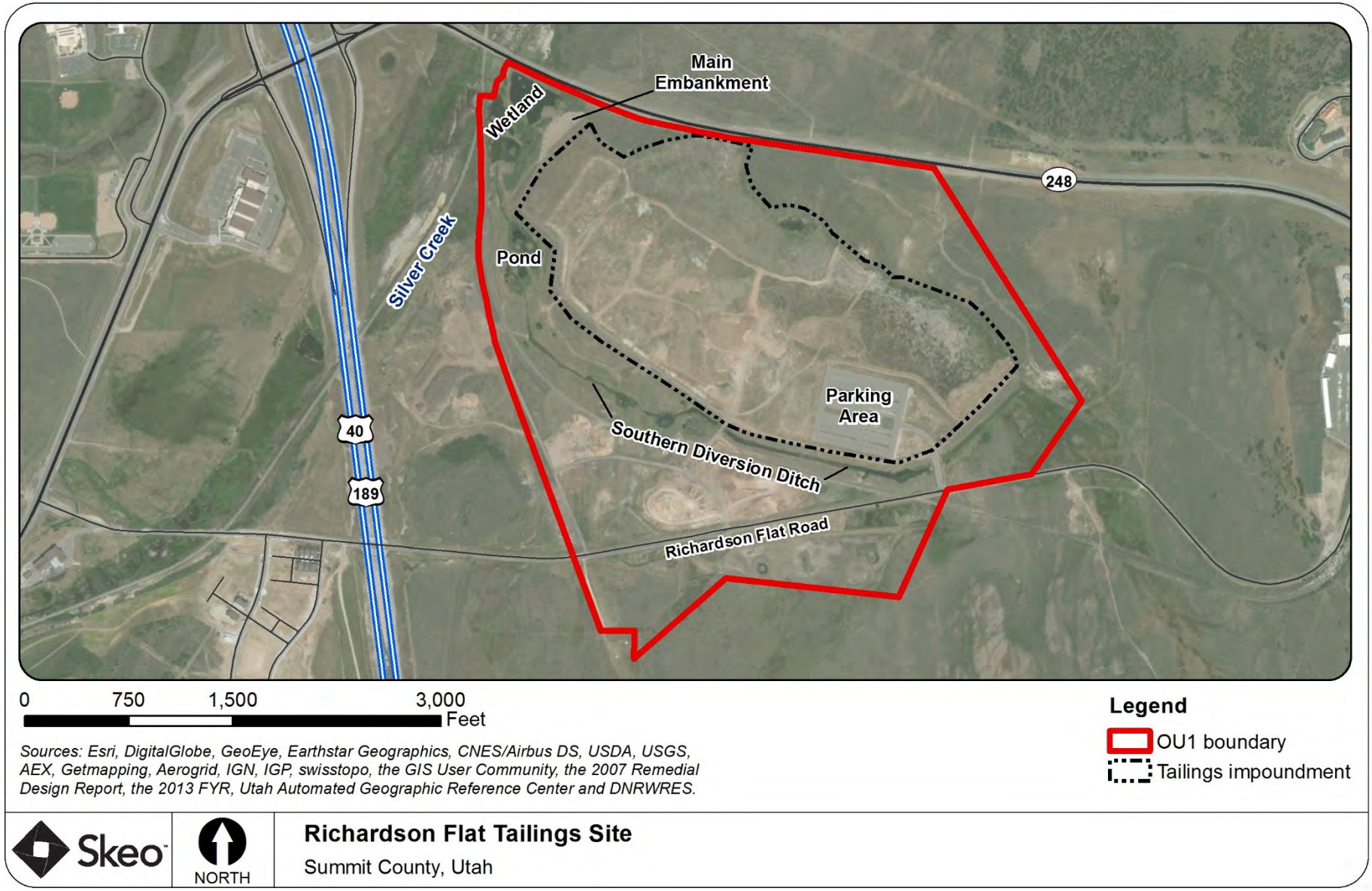
Figure 3: Detailed Map of OU1



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Richardson Flat Tailings		
EPA ID: UTD980952840		
Region: 8	**State:** Utah	**City/County:** Park City/Summit
SITE STATUS		
NPL Status: Proposed		
Multiple OUs? Yes	**Has the Site achieved construction completion?** No	
REVIEW STATUS		
Lead agency: EPA		
Author name: Rob Parker with contractor support provided by Skeo		
Author affiliation: EPA Region 8 and Skeo		
Review period: 5/31/2017 – 3/14/2018		
Date of site inspection: 9/21/2017		
Type of review: Statutory		
Review number: 2		
Triggering action date: 3/14/2013		
Due date *(five years after triggering action date)*: 3/14/2018		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

EPA began initial site assessments in 1984. High-volume air sampling at OU1 in 1986 found that arsenic, cadmium, lead and zinc had been released to the air. EPA originally proposed the Site for listing on the National Priorities List (NPL) in 1988. After considering public comment, EPA removed the Site from NPL consideration in 1991. By 1992, the Hazard Ranking System (HRS) had been revised, and EPA again proposed the Site for listing on the NPL. Ultimately, EPA decided not to pursue final listing on the NPL, and the Site remains proposed for the NPL.

On September 28, 2000, EPA and UPCM signed an Administrative Order on Consent requiring UPCM to conduct a remedial investigation/focused feasibility study for OU1. Sampling confirmed contamination with heavy metals, primarily zinc, lead and arsenic, in the sediments and surface water of the south diversion ditch, the on-site wetland and Silver Creek. OU1's 2003 baseline human health risk assessment determined there were potential future risks from lead and arsenic to recreational users, the targeted use population. EPA deemed remedial action

was necessary to maintain and improve the soil cover placed on the tailings and to prevent disturbances to the soil cover that could allow for exposure to the underlying tailings.

The ecological risk assessment identified substantial risks to ecological receptors at OU1 from exposure to zinc, cadmium, lead and arsenic found in environmental media at the Site. Exposure pathways included direct contact with the sediments in the south diversion ditch and the wetlands area. These exposure areas also presented risks to ecological receptors through contact or ingestion of surface water and sediment porewater found at the Site.

Response Actions

During the 1990s, prior to the Record of Decision (ROD), UPCM completed voluntary work at OU1, including covering most of the tailings pile with clean, low-permeability soil and reseeding the Site. UPCM also improved the diversion ditch.

EPA selected the final OU1 remedy in the Site's 2005 ROD. To address existing and potential risks, as well as to accommodate the anticipated future recreational and ecological use of OU1, EPA developed nine remedial action objectives (RAOs):

- Reduce risks to wildlife receptors in the wetland area and south diversion ditch such that hazard indexes for lead are less than or equal to 1.
- Ensure that recreational users, including children, continue to have no more than a 5 percent chance of exceeding a blood lead level of 10 micrograms per deciliter from exposure to lead in soils.
- Ensure that recreational users, including children, continue to have no more than 1×10^{-4} chance of contracting cancer from exposure to arsenic in soils.
- Eliminate the risk of catastrophic failure of the tailings impoundment.
- Ensure that surface water discharged from the Site meets applicable Utah water quality standards.
- Eliminate the possibility of future groundwater use and withdrawal at the Site.
- Allow for a variety of future recreational uses.
- Allow for future disposal of mine tailings from the Park City area within the tailings impoundment until the remedy is complete.
- Minimize post-cleanup disturbance of tailings and contaminated soil. Provide controls that ensure any necessary disturbance at the Site follows prescribed methods.

The selected remedy addressed mine tailings located in several areas of OU1, including the main impoundment, a section south of the diversion ditch, and the wetlands below the embankment. Other media addressed through the selected remedy were sediments and surface water located within the OU1 boundary.

Major components of the remedy include:

- Excavate tailings in critical areas outside the impoundment and place tailings inside the impoundment.
- Augment the soil cover to achieve a depth of at least 18 inches of soil (containing less than 500 mg/kg lead) above tailings.
- Allow for placement of additional mine waste from the Silver Creek watershed within the impoundment which, upon completion, will require 18 inches of cover.
- Cover sediments in diversion ditch with clean fill.
- Excavate contaminated sediments and soils in the wetland below the embankment and place sediments inside the impoundment. A sediment remediation goal of 310 milligrams per kilogram (mg/kg) lead was established.
- Fortify the existing embankment to prevent catastrophic failure.
- Implement institutional controls (easements and land use restrictions) to protect soil cover and prevent groundwater use.

- Monitor surface water. Water quality samples were collected at the mouth of the diversion ditch quarterly for two years after construction was completed to ensure that discharges into Silver Creek met applicable water quality standards. (See Appendix H)

As discussed previously, the OU1 ROD contemplated the consolidation of mine wastes at OU1 from other cleanup locations in the Silver Creek watershed. Certain areas of OU1, including F-2 and F-3, have a temporary 6 inch soil cover to facilitate further consolidation while EPA continues OU2 and OU3 site characterization to determine if additional material will be brought to these areas prior to placing the full 18 inch cover material. Furthermore, the OU1 Consent Decree (CD) authorized, until EPA issues the Certificate of Completion, UPCM to accept mine waste, subject to EPA written approval. EPA last provided this approval in 2010. Appropriate cover material, as required by the ROD, will be placed prior to issuance of a Certificate of Completion. As part of a separate, EPA lead time critical removal action at a nearby school, additional off-site lead-contaminated materials were placed and covered in the impoundment in 2016. Additional soils that have been brought on-site to be used as future cover or fill material have been screened at 500 mg/kg lead, if originating from potentially contaminated areas, to ensure compliance with the ROD.

The OU1 RI concluded that OU1 does not present a risk to off-site groundwater due to a confining layer below contaminated groundwater that limits migration to deeper aquifers and the relative contaminant concentrations between shallow groundwater present at OU1 and higher concentrations present in the nearby Silver Creek alluvial groundwater. The potential for contaminant contribution from OU1 to Silver Creek alluvial groundwater should be re-evaluated in future FYRs due to ongoing remediation efforts within OU2 and OU3 at the Site. Regardless, on-site shallow groundwater contains metals at concentrations that exceed drinking water standards. Groundwater use at the Site will be restricted through institutional controls to ensure no unacceptable exposures.

Status of Implementation

UPCM initiated the OU1 remedial design on August 7, 2007, and completed it on October 7, 2007. Remedial action began on February 7, 2008. Remedy construction at OU1 was completed by UPCM, with EPA oversight, and included consolidating tailings material within the main impoundment, installing a wedge buttress to support the main embankment, and removing sediments in the wetland area. The remedial activities occurred in a phased approach, based on the tasks described in the remedial design (Figure C-1). In 2011, UPCM completed planned construction activities for OU1, except for the additional cover material in certain locations where only temporary cover currently exists. Additional cover material will be needed in these locations once it is determined consolidation of mine waste material is complete or no longer necessary.

The main embankment fortification consisted of constructing a wedge buttress in 2008, in accordance with a 2001 slope stability evaluation. From 2008-2011, all tailings in critical areas outside the impoundment were excavated and moved inside the impoundment (see Appendix C for maps of removal areas). Approximately 46,000 cubic yards of contaminated material were removed from the embankment wetland. Wetland restoration consisted of grading and revegetation with appropriate plant species. As required by the Remedial Design/Remedial Action Plan, confirmation sampling verified that soils remaining in each source removal area and soils placed as cover contain less than 500 mg/kg lead and 100 mg/kg arsenic. Lead concentrations for source removal in the embankment wetland were set at 500 mg/kg for soils and 310 mg/kg for sediments. Sediment sampling results from 23 source removal lead confirmation samples collected in the embankment wetland area averaged 43.1 mg/kg, ranging from 33 to 126 mg/kg. Post-construction measurements of the impoundment indicated that all areas measured contain at least 18 inches of clean fill material, with the exception of areas F-2 and F-3. Tailings excavated from the embankment area and additional regional sources were placed in impoundment areas F-2 and F-3 and covered with a temporary 6-inch soil cover while EPA continues OU2 and OU3 site characterization to determine if additional material will be brought to these areas prior to placing the full 18 inch cover material.

Surface water monitoring was performed to monitor migration of metals from the Site. The results of all samples were significantly below the TMDL limits for the Silver Creek Watershed. (See Appendix H)

Institutional Control (IC) Review

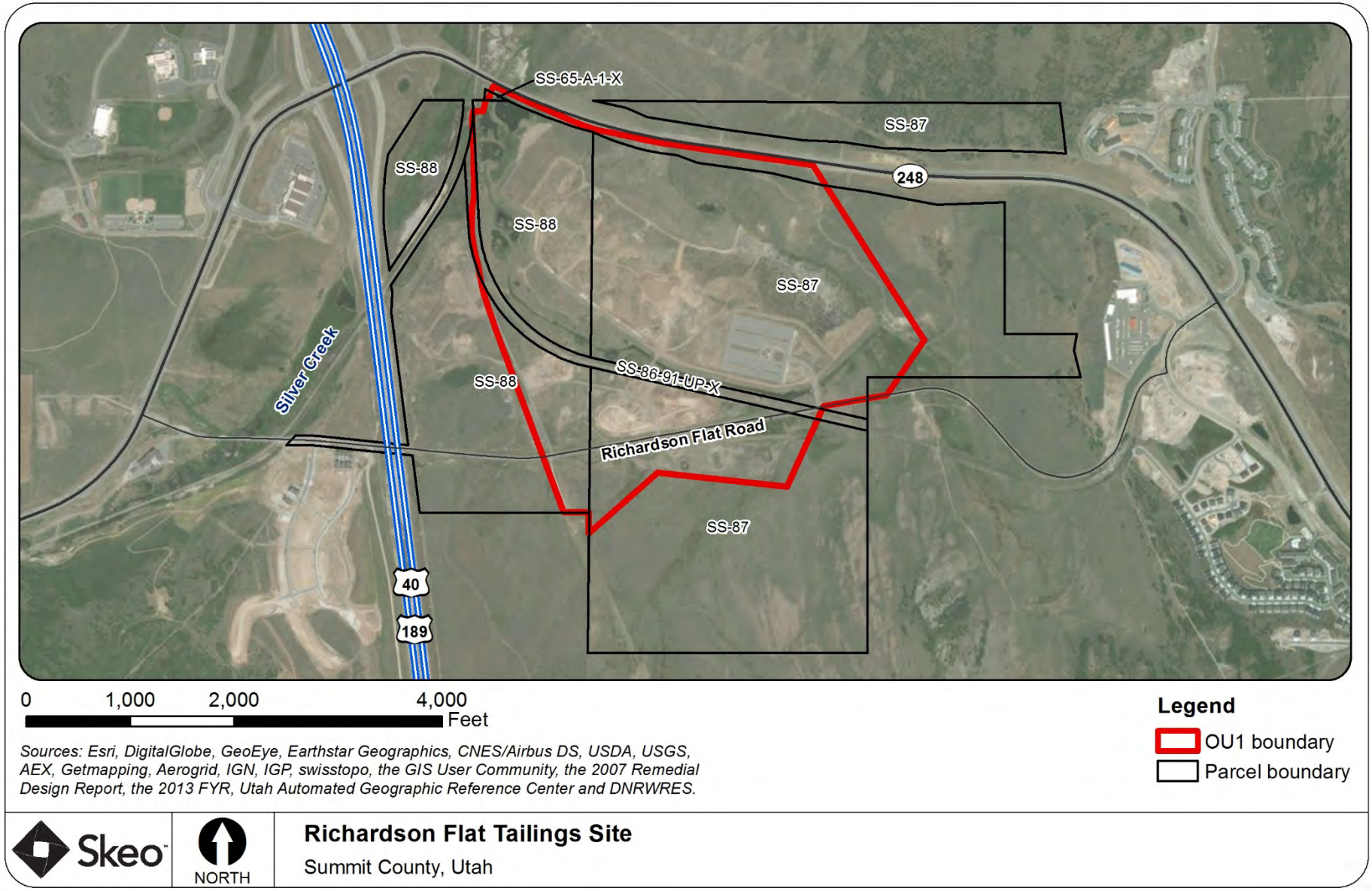
Institutional controls called for in the ROD are not yet in place (Table 1). The property is currently zoned as rural residential. The ROD states that two primary institutional controls will be implemented to mitigate potential risks and ensure the long-term protectiveness of the remedy:

- *Groundwater use restrictions within the site boundary:* the goal is to preclude any use of shallow groundwater, as well as eliminate any significant alteration of the existing hydrogeologic system, such as mixing of aquifers.
- *Land use restrictions within the site boundary:* the goal is to preclude non-recreational uses and to ensure that the soil cover, or similar protections, are maintained.

Table 1: Summary of Planned and/or Implemented Institutional Controls (ICs)

Media, Engineered Controls, and Areas That Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	Yes	Site area within Parcels SS-87 and SS-88	Permanently restrict new groundwater well installation and use of shallow groundwater within the impoundment area.	To be determined
Soils	Yes	Yes	Site area within Parcels SS-87 and SS-88	Permanently limit the land use to open space with wildlife habitat and non-motorized recreational use. Permanently preserve the low-permeability tailings cap and specify the ongoing erosion control and maintenance requirements. Permanently prohibit unauthorized excavation at the Site and of the cap material.	To be determined

Figure 4: Institutional Control Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Systems Operations/Operation and Maintenance (O&M)

OU1 is still in remedial action pending additional cover material in areas where future consolidation may occur. Some O&M activities are underway, including monitoring of site conditions, erosion, vegetation condition, water runoff and invasive plant management, as needed. Long-term surface water monitoring is not required pursuant to the ROD.

III. PROGRESS SINCE THE PREVIOUS REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the status of those recommendations.

Table 2: Protectiveness Determinations/Statements from the 2013 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Short-term Protective	The remedy at OU1 currently protects human health and the environment because tailings and sediments have been excavated, tailings have been contained through capping with clean soil and surface waters exiting the Site meet existing water quality standards. However, in order for the remedy to be protective in the long term, the following action needs to be taken: implementation of institutional controls that include restrictions on future land and groundwater use.

Table 3: Status of Recommendations from the 2013 FYR

Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date
Institutional controls called for in the ROD are not yet in place.	Implement necessary institutional controls to ensure the soil cover is protected and the shallow groundwater is not used. EPA and the PRP will identify the appropriate control instrument and the PRP will be responsible for implementation.	Under Discussion	EPA is working with the PRP to develop an institutional control plan.	NA

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement and Site Interviews

A public notice was published in the *Park Record* newspaper, on10/25/2017 (Appendix D). It stated that the FYR was underway and invited the public to submit any comments to the EPA. The results of the review and the report will be made available at the Site's information repository, Park City Public Library, located at 255 Park Avenue, Park City, Utah 84060.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy implemented to date**.** The interviews are summarized below and included in Appendix E.

Mo Slam, UDEQ: Mr. Slam is the project manager for UTDEQ. He believes the PRPs have done a good job with the remedy construction and maintenance to date. However, he noted the long-term use and maintenance of the Site need to be clarified.

Chris Cline, U.S. Fish and Wildlife Service (USFWS): Ms. Cline is responsible for the Natural Resource Damage Assessment and Restoration for the Silver Creek watershed. She indicated the Site looks good, notably the established native vegetation and erosion controls. However, she expressed concern that not all areas of the Site were adequately sampled during the remedial design and that the potential for ecological exposure remains on unexcavated areas of the Site.

Jim Blankenau, Park City: Mr. Blankenau is the Environmental Regulatory Program Manager for Park City. He is aware of the Site. He is not aware of any issues.

Kerry Gee, UPCM: Mr. Gee is the project manager for UPCM. He believes the remedy is performing as intended and that quality habitat is now established on-site. He reported no issues at the Site.

Jami Brackin, Summit County: Ms. Brackin is the Summit County Deputy Attorney. She has been aware of the Site since 2004 and is not aware of any issues. She noted that, in the absence of institutional controls, current zoning does not prevent development at the Site.

Data Review

Surface Water
UPCM collected surface water samples annually from 2008 to 2013 and again in 2015 as part of OU2 and OU3 investigations to determine the effects of remediation on surface water quality. Surface water samples were collected primarily from the main flow of the embankment wetland, as well as at various points of the southern diversion ditch. The results of all samples were consistently below the surface water standards for the Silver Creek watershed (Appendix H).

Review of Cover Material Sampling
During her interview regarding the Site, Ms. Cline expressed concern that not all areas of the Site were adequately sampled during the remedial design, specifically a seasonal wet area on the northern portion of the impoundment. Subsequent to the interview with Ms. Cline, EPA reviewed the Phase 2 Task Completion Report, which included an evaluation of cover material in the area referenced by Ms. Cline. As reported in the Phase 2 TCR, UPCM collected samples at 6, 12 and 18 inches from 20 locations within area F-8. All samples were analyzed with XRF and reported to be below 500 mg/kg lead.

Site Inspection

The Site inspection for OU1 took place on 9/21/2017. Participants included EPA RPM Robert Parker, EPA CIC Katherine Jenkins, Mo Slam, Doug Bacon and Dave Allison from UTDEQ, Chris Cline from the USFWS, Alan Jones from the Bureau of Land Management, Jim Blankenau from Park City, Kerry Gee from UPCM, and Ryan Burdge and Treat Suomi from EPA FYR contractor Skeo. The purpose of the inspection was to assess the protectiveness of the remedy. The Site inspection checklist and photographs are included in appendices F and G.

Site inspection participants drove and walked relevant portions of the OU, including the stormwater diversion features, capped areas, the tailings impoundment and buttress, the wetland area, and the parking area. All areas were in good condition. Vegetation in the cover areas and wetlands appeared to be well established. The PRP reported no issues related to erosion or trespassing, but noted that invasive plants are increasingly present and increasingly challenging to manage.

Following the Site inspection, Skeo staff visited the designated document repository at the Park City Public Library. Site documents were unavailable at the time, but will be provided following completion of this FYR.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Yes, the OU1 remedy is performing as intended. Tailings outside of the impoundment have been excavated and placed under clean fill in the impoundment and the main embankment has been stabilized. Revegetation growth on remediated areas has performed well and the constructed wetland areas support healthy vegetation. Flora and fauna have recovered to levels that indicate that some natural resource services have been restored to the Site. Sampling indicated surface water exiting the Site is below Silver Creek water quality parameters.

The OU1 RI concluded that OU1 does not present a risk to off-site groundwater due to a confining layer below contaminated groundwater to protect deeper aquifers and the relative contaminant concentrations between shallow groundwater present at OU1 and higher concentrations present in the nearby Silver Creek alluvial groundwater. The potential for contaminant contribution from OU1 to Silver Creek alluvial groundwater should be re-evaluated in future FYRs due to ongoing remediation efforts within OU2 and OU3 at the Site.

Institutional controls to protect the soil cover and restrict groundwater use have not yet been implemented. The property is currently zoned as rural residential, which limits but does not prohibit residential development. However, the Site is owned by the PRP and public access is restricted through fencing, signage and an on-site presence. Recorded and legally enforceable restrictions as called for in the ROD are necessary to ensure no potential exposures in the future.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection still valid?

Yes. The exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the OU1 remedy selection are still valid. The surface water exiting OU1 has consistently been below the relevant Silver Creek water quality standards.

The cleanup goal for lead of 500 mg/kg is based on anticipated recreational use. The remedy anticipated a future recreational use of the Site and public access to the Site is currently restricted to the paved parking area.

The human health cleanup levels for the Site were based on EPA guidance which recommended 10 µg/dL as the blood lead level of concern. In December 2016, EPA issued a memorandum which recommended that EPA consider the current scientific literature that suggests adverse health effects may be associated with blood lead levels below µg/dL. EPA Region 8 will continue to use the current EPA policy, until the Agency finalizes and update its policy."

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

No.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the FYR:
None

Issues and Recommendations Identified in the FYR:				
OU(s):	**Issue Category: Institutional Controls**			
	Issue: Institutional controls called for in the ROD are not yet in place.			
	Recommendation: Implement necessary institutional controls to ensure the soil cover is protected and the shallow groundwater is not used.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	5/31/2019

OTHER FINDINGS

An additional recommendation was identified during the FYR. This recommendation does not affect current and/or future protectiveness.

- Although some maintenance activities are performed, a final O&M plan has not been prepared for OU1.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)		
Operable Unit: OU1	*Protectiveness Determination:* Short-term Protective	*Planned Addendum Completion Date:*
Protectiveness Statement: The remedy at OU1 currently protects human health and the environment because tailings and sediments have been excavated, tailings are contained through capping with clean soil and surface waters exiting the Site are below water quality standards. However, for the remedy to be protective in the long term, the following action needs to be taken: implement institutional controls that include restrictions on future land and groundwater use.		

VIII. NEXT REVIEW

The next FYR Report for the Richardson Flat Tailings Site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

2005. United States Environmental Protection Agency, Record of Decision, Richardson Flat Tailings, EPA ID UT980952840.

2007. Resource Management Consultants, Inc., Remedial Design/Remedial Action Plan (RD/RA), Richardson Flat, Site ID Number: UT980952840.

2007. Resource Management Consultants, Inc., Phase 1 Field Construction Plan for 2008 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2007. Resource Management Consultants, Inc., Phase 1 Task Completion Report, Richardson Flat, Site ID Number: UT980952840.

2008. Resource Management Consultants, Inc., Phase 2 Task Completion Report for 2008 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2009. Resource Management Consultants, Inc., Phase 3 Task Completion Report for 2009 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2010. Resource Management Consultants, Inc., Phase 4 Task Completion Report for 2010 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2011. Resource Management Consultants, Inc., Phase 5 Task Completion Report for 2011 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2011. Resource Management Consultants, Inc., Task Area Map, Richardson Flat, Site ID Number: UT980952840.

2012-2017. United Park City Mines Quarterly Status Reports, Richardson Flat, Site ID Number: UT980952840

2013. United States Environmental Protection Agency, Five-Year Review, Richardson Flat Tailings, EPA ID UT980952840.

APPENDIX B – SITE CHRONOLOGY

Table B-1: Site Chronology

Event	Date
EPA discovered contamination	October 1, 1984
PRP UPCM initiated the Site's remedial investigation/feasibility study	September 29, 1989
EPA proposed the Site for listing on the NPL	February 7, 1992
PRP UPCM completed the Site's remedial investigation/feasibility study	July 1, 1992
The EPA signed the Site's ROD for OU1	July 6, 2005
PRP UPCM initiated the Site's remedial design for OU1	August 7, 2007
PRP UPCM completed the Site's remedial design for OU1	
PRP UPCM initiated the remedial action for OU1	February 7, 2008
PRP UPCM and the EPA signed an administrative settlement agreement and order on consent for a remedial investigation/focused feasibility study for OU2	September 29, 2009
EPA approved completion of construction activities outlined in the remedial design	November 2011
EPA signed the Site's first FYR Report	March 14, 2013

APPENDIX C – SITE MAPS

Figure C-1: Remedial Design Task Areas

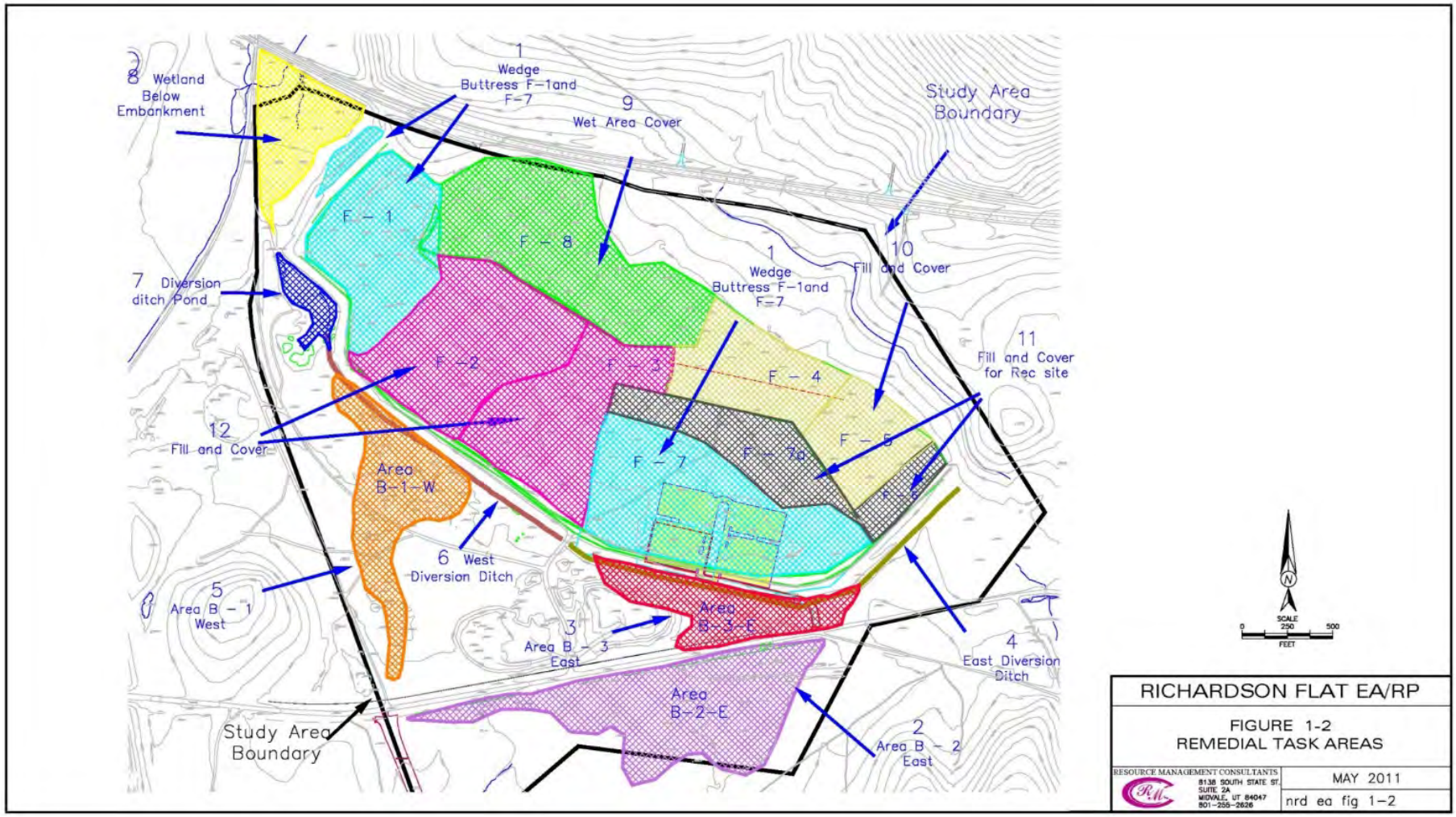


Figure C-2: 2008 Phase 2 Completion Map

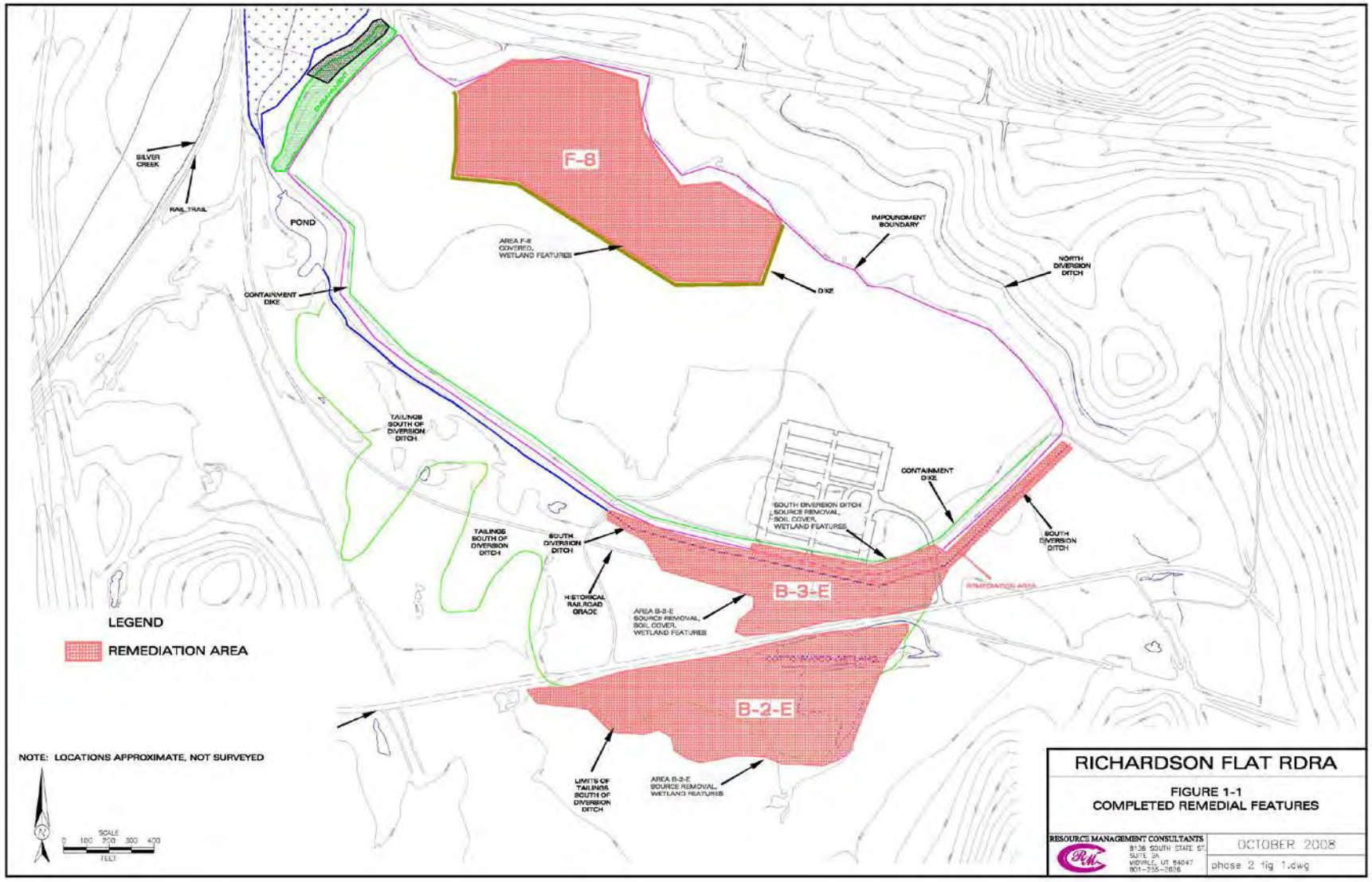


Figure C-3: 2009 Phase 3 Completion Map

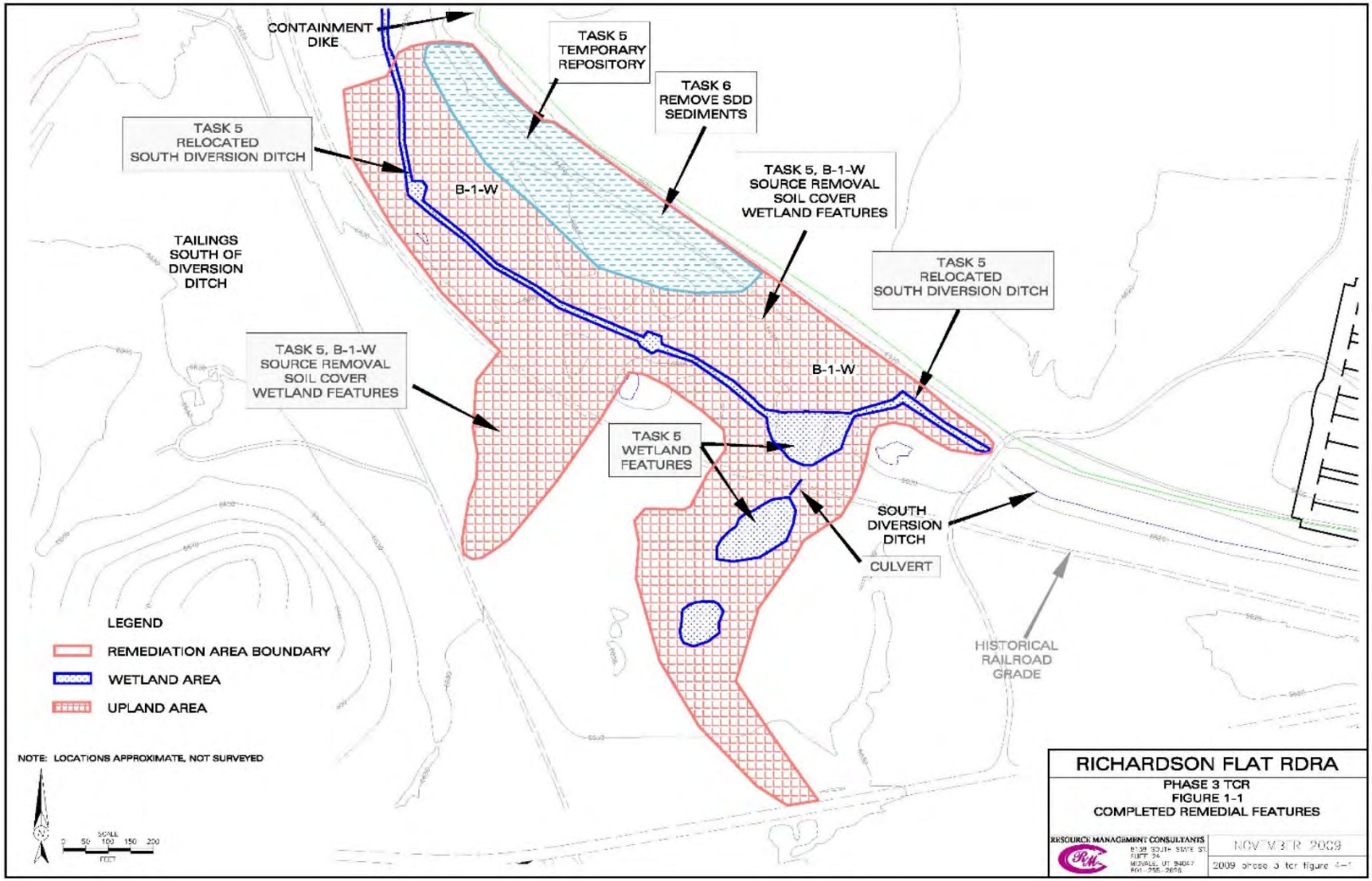


Figure C-4: 2010 Phase 4 Completion Map

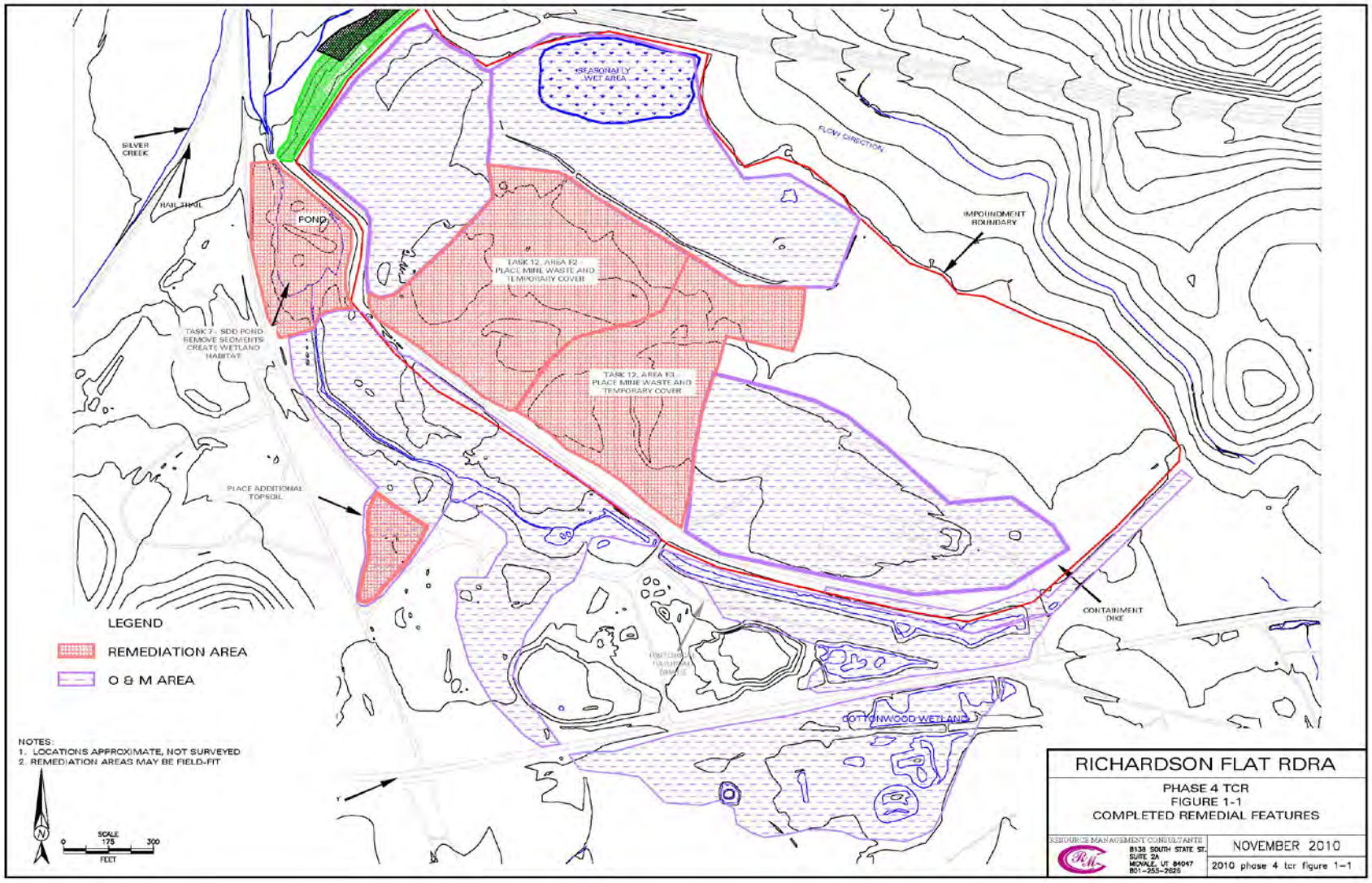
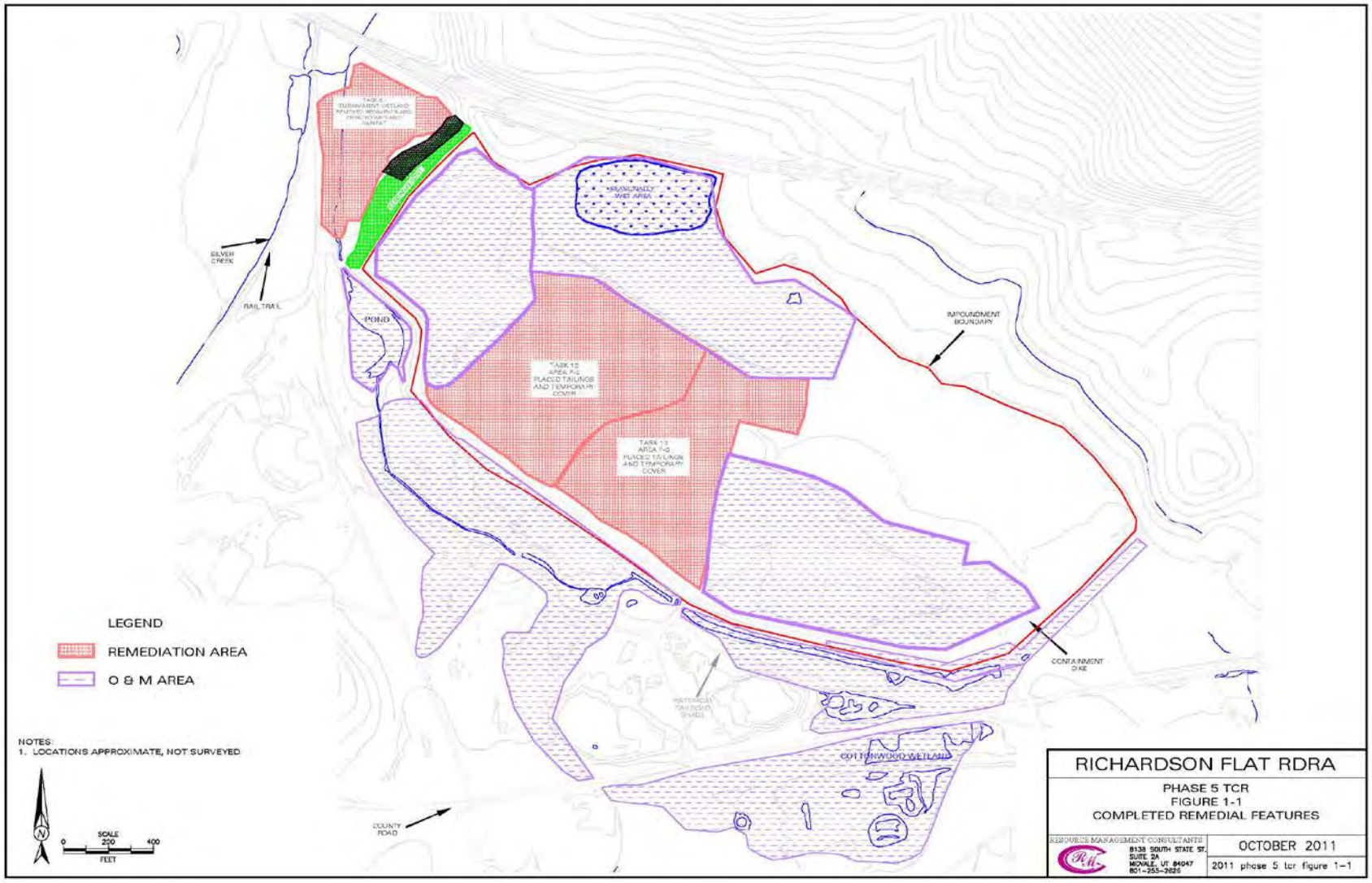


Figure C-5: 2011 Phase 5 Completion Map



APPENDIX D – PRESS NOTICE

EPA United States Environmental Protection Agency

The U.S. Environmental Protection Agency, Region 8 Announces the Second Five-Year Review for the Richardson Flat Tailings Superfund Site, Park City, Utah

The U.S. Environmental Protection Agency (EPA), in cooperation with the Utah Department of Environmental Quality (UTDEQ), is conducting the second five-year review for operable unit 1 (OU1) of the Richardson Flat Tailings Superfund site in Park City, Utah. The purpose of the five-year review is to make sure that the cleanup actions completed to date are adequately protecting human health and the environment. The five-year review for OU1 is scheduled to be completed by February 2018.

The 160-acre site is located southeast of the intersection of State Highway 248 and U.S. Highway 40 approximately 2 miles northeast of Park City, Utah. EPA proposed the Site for listing on the National Priorities List (NPL) in 1992.A tailings dam and impoundment on site were used to capture and hold mill tailings from 1953 until 1981, resulting in contamination of soil, groundwater, surface water and air.

EPA and UTDEQ selected a remedy in a 2005 Record of Decision (ROD). Cleanup activities at OU1 include excavation, containment, future disposal of mine tailings from the Park City area within the tailings impoundment, placement of restrictions on future land and groundwater use, and surface water monitoring.

We want to hear from you! Community members are always encouraged to share information that may help EPA and UTDEQ make determinations regarding the protectiveness and effectiveness of the remedies at the site. Please contact Katherine Jenkins if you would like to send your comments or be interviewed.

Share input with us by mail or email:

Katherine Jenkins, EPA Community Involvement Coordinator
Phone: 303-312-6351 • Email: jenkins.katherine@epa.gov
Mailing Address: U.S. EPA Region 8 (EPR-SR)
1595 Wynkoop Street, Denver, CO 80202-1129

Additional site information is available at:

EPA Superfund Records Center
1595 Wynkoop Street
Denver, CO 80202-1129
303-312-7273

Or online at: https://www.epa.gov/superfund/richardson-flat

2013 Five-Year Review:

https://semspub.epa.gov/work/08/1260303.pdf

2005 Record of Decision:

https://semspub.epa.gov/work/08/2035008.pdf

APPENDIX E – INTERVIEW FORMS

Richardson Flat Tailings Site — Five-Year Review Interview Form

Site Name: Richardson Flat Tailings **EPA ID No.:** UTD980952840

Interviewer Name: Katherine Jenkins **Affiliation:** EPA
Subject Name: Kerry Gee **Affiliation:** UPCM
Subject Contact Information:
Time: 12:30 p.m. **Date:** 09/21/2017
Interview Location: City Hall

Interview Format (circle one): **In Person** Phone Mail Other:

Interview Category: **Potentially Responsible Parties (PRPs), Property Owner**

1. What is your overall impression of EPA oversight on the remedial activities at the Richardson Flat tailings impoundment?
   EPA oversight at OU1 is fine. There is not very much to reference as this is the current RPM's second trip to the Site. There is not much is going on, so the oversight is adequate.

2. What have been the effects of the Richardson Flat tailings impoundment on the surrounding community, if any?
   For last five years, we have not brought out any waste except for EPA's waste from the middle school. That was an impact. At one point the community relied on Richardson Flat as a place to dump various soil wastes, but that stopped in 2010. I believe that ending was a major impact.

3. What is your assessment of the current performance of the remedy in place at the Richardson Flat tailings impoundment?
   I think the remedy is fine. It is working and the Site provides good habitat. This was the first year that we had a significant winter precipitation and the on-site vegetation was hearty this spring. We observed a lot of waterfowl and birds this year. We continue to need to address beaver activity and invasive plants.

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?
   No.

5. What is the current land use and does it compare to the anticipated land use, specifically open space and recreational use, anticipated in the remedy decision?
   Current land use is UPCM dealing with granular materials coming into the Site that are not contaminated. The RDRA has a closure plan, including financial assurance, about $1 million to close it out as a repository.

6. Have there been any problems with unusual or unexpected activities at the Richardson Flat tailings impoundment, such as emergency response, vandalism or trespassing?
   We always trespassing issues, mostly kids motorbiking south of the road when the water is low. In the past we have caught those people. A sheepherder south of the road informs us about any trespassing issues.

7. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.
   No, we do not have a continuous O&M actions. We have a single O&M staff who is there once per week and sprays invasive plants when she can. If there were a program, we would have to hire people to do that. I am on-site one time per week. The soil loader is there pretty much every day.

8. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.
   We do not have anybody out there all the time. We have not sampled since 2015 for the OU2/3.

9. Do you feel well-informed regarding the Richardson Flat tailings impoundment activities and remedial progress? If not, how might EPA better convey site-related information in the future?
   No. I would like to be informed when the RPM is going to be in town.

10. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?
    We need more staff but are currently unable to hire right now.

Richardson Flat Tailings Site — Five-Year Review Interview Form

Site Name: Richardson Flat Tailings **EPA ID No.:** UTD980952840

Interviewer Name: Katherine Jenkins **Affiliation:** EPA
Subject Name: Mo Slam **Affiliation:** UT DEQ
Subject Contact Information:
Time: 1:00 p.m. **Date:** 09/21/2017
Interview Location: City Hall

Interview Format (circle one): **In Person** Phone Mail Other:

Interview Category: State Agency

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?
   It is fairly good. So far they have done a good job. They have done the maintenance so far, but we do not yet know the reuse

2. What is your assessment of the current performance of the remedy in place at the Richardson Flat tailings impoundment?
   It is currently protective of human health and the environment.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?
   No, none at all.

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.
   The RPM and I have ongoing communications. The results are favorable.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Richardson Flat tailings impoundment remedy?
   There are no state changes.

6. Are you comfortable with the status of the institutional controls at the Richardson Flat tailings impoundment? If not, what are the associated outstanding issues?
   UPCM is managing the Site property and controls well. There is a gate, fence, signs. No one is getting on site and being exposed.

7. Are you aware of any changes in projected land use(s) at the Site?
   The plans are not concrete. The Site is a work in progress, so the reuse is not and cannot yet be known. It is all still ongoing.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Richardson Flat tailings impoundment's remedy?
   I have concerns about long-term O&M. UPCM has done good so far, but now they are having financial problems. Because of this, we do not know how they will manage long-term. Maintenance could be in limbo and it is not clear what will happen in the future.

Richardson Flat Tailings Site — Five-Year Review Interview Form

Site Name: Richardson Flat Tailings **EPA ID No.:** UTD980952840

Interviewer Name: Katherine Jenkins **Affiliation:** EPA
Subject Name: Chris Cline **Affiliation:** USFWS
Subject Contact Information:
Time: 1:30 p.m. **Date:** 09/21/2017
Interview Location: City Hall

Interview Format (circle one): **In Person** Phone Mail Other:

Interview Category: Government Agency

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?
   Overall impression is it is doing pretty well for limping along on three legs. Going out there today, we saw there is the revegetation and erosion controls part of the remedy, which overlaps with the restoration. I am impressed with the veg and overall lack of weeds. Good cover of native vegetation throughout. Seems like with the limited resources, from the NRD value standpoint, it looks pretty good. Site is starting to get thru first stage of succession, indicating the Site is stable enough. But I am concerned about the future.

   I have been involved in NRDA with UPCM. OU1 outstanding issue: we were in negotiations for NRDA, but the PRP went ahead and did what they wanted to. They did good work and now want credit for it, said they went above and beyond requirement, so did a "desktop assessment" and made an economic model. Earned a credit, but they need to maintain and were supposed to develop a monitoring plan but did not. The model assumed perpetuity for restoration. USFWS needs something saying it is perpetuity, but UPCM wants to reserve right to develop. UPCM was supposed to get back with a map of what would not be developed. In theory, they have and want the credits, but FWS not willing to give it yet. In the future, it depends not only on UPCM, but also City and County. Who owns, who maintains, etc.

2. What is your assessment of the current performance of the remedy in place at the Richardson Flat tailings impoundment?
   In the parts that are covered and vegetated, it looks pretty good. I am still concerned about area of possible future impoundment, fact it is little cover and a depression and seasonal wetland that was never sampled. The samplers did not want to get feet wet, so it was not sampled during the remedial investigation. That area is used by wildlife during spring when there is water, so there is a potential exposure. The idea seemed to be it was ok because it was to be filled and covered, but that has yet to happen. Silver Creek is pretty well segregated from the wetland, which is good. Visually looks good.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?
   No, but I am not in that loop. In the past, kite-skiing. ATV use has been an issue in the past.

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.
   I have no broad communication with community. I participated in some stakeholder meetings with the previous RPM and spoke about Richardson Flat as an example of restoration for OU2/3. Did some Rich Flat fact sheets that give history of site, cleanup process, restoration, etc. The community meeting was probably four years ago.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Richardson Flat tailings impoundment remedy?
   No. I would be a lot more concerned about local zoning requirements

6. Are you comfortable with the status of the institutional controls at the Richardson Flat tailings impoundment? If not, what are the associated outstanding issues?
   No. Long-term oversight and ownership/management. Security is a secondary concern. Also concerned lack of sufficient cap in some areas.

7. Are you aware of any changes in projected land use(s) at the Site?
   I am aware there may be changes, but it is not clear where it is headed.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Richardson Flat tailings impoundment's remedy?
   Not really. The endpoints of the remedy, should continue. For site management, invasive species are starting to come in, but the PRP are financially limited. They may need to be handled differently.

Richardson Flat Tailings Site — Five-Year Review Interview Form

Site Name: Richardson Flat Tailings **EPA ID No.:** UTD980952840

Interviewer Name: Katherine Jenkins **Affiliation:** EPA
Subject Name: Jami Brackin **Affiliation:** Summit County
Subject Contact Information:
Time: 2:30 p.m. **Date:** 09/21/2017
Interview Location: Park City Library

Interview Format (circle one): **In Person** Phone Mail Other:

Interview Category: Local Government

1. Are you aware of the former environmental issues at the Richardson Flat tailings impoundment (Site)and the cleanup activities that have taken place to date?
   Yes. My role began 2004 with the assessment of Lower Silver Creek, and I became aware of the OU1. I became a go-to person for the county. We have monitored the cleanup, capacity, and restoration. As of 2010, we thought we knew the remaining capacity, EPA sent a letter in 2010 saying UPCM could take XX yards, but not more. The County is interested in expanding the overall acreage of UPCM property. We all want a way for Park City to not have to bring soils to Tooele. Summit County has capacity for OU2/3. As long as we all have capacity, then it is ok. All needs to be considered since they are related.

2. Do you feel well-informed regarding the Richardson Flat tailings impoundment activities and remedial progress? If not, how might EPA convey site-related information in the future?
   EPA has been good about keeping us informed. I refer people to the EPA webpage. It is helpful. People can find info, the orders, sampling, etc.

3. Are you aware of the current land use of the Richardson Flat tailings impoundment? If so, what is the current land use and does it compare to the anticipated land use, specifically open space and recreational use, anticipated in the remedy decision.
   Current zoning is 1 [residence] per 20 [acres]. So, it is developable, in theory. But, the current county general plan there is the potential for some multimodal development in the western corner [outside the repository] to transfer people out near that intersection. The total property is 640 acres for UPCM.

4. Are you aware of any changes in projected land use(s) at the Richardson Flat tailings impoundment?
   There are a lot of ideas. Map in the general plan that shows the Site.

5. Have there been any problems with unusual or unexpected activities at the Richardson Flat tailings impoundment, such as emergency response, vandalism or trespassing?
   No, actually OU1 has not had issues. No complaints for that property.
6. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Richardson Flat tailings impoundment remedy?
   Not that I'm aware.

7. Has EPA kept involved parties and surrounding neighbors informed of activities at the Richardson Flat tailings impoundment? How can EPA best provide site-related information in the future?
   For the activities on site, info is so. For county, I just ask UPCM. It would be great if the webpage had all the info

8. Do you have any comments, suggestions or recommendations regarding the project?
   No.

Richardson Flat Tailings Site — Five-Year Review Interview Form

Site Name: Richardson Flat Tailings **EPA ID No.:** UTD980952840

Interviewer Name: Katherine Jenkins **Affiliation:** EPA
Subject Name: Jim Blankenau **Affiliation:** Park City
Subject Contact Information:
Time: 2:00 p.m. **Date:** 09/21/2017
Interview Location: City Hall

Interview Format (circle one): **In Person** Phone Mail Other:

Interview Category: Local Government

1. Are you aware of the former environmental issues at the Richardson Flat tailings impoundment (Site)and the cleanup activities that have taken place to date?
   Yes.

2. Do you feel well-informed regarding the Richardson Flat tailings impoundment activities and remedial progress? If not, how might EPA convey site-related information in the future?
   I feel much more informed more recently, especially since recent site visits. The website has been updated, which is helpful for me. The OSC website is nice, because it has the documents. I do point people to the website, especially the OSC site. If someone is doing a Phase 1 assessment and Richardson Flat comes up, it helps them to close out the environmental condition.

3. Are you aware of the current land use of the Richardson Flat tailings impoundment? If so, what is the current land use and does it compare to the anticipated land use, specifically open space and recreational use, anticipated in the remedy decision.
   Yes, I am aware of the current land use and the City knows about chance of expansion. I am aware of the parking facility.

4. Are you aware of any changes in projected land use(s) at the Richardson Flat tailings impoundment?
   Not aware of any specific land use changes. County may have more information.

5. Have there been any problems with unusual or unexpected activities at the Richardson Flat tailings impoundment, such as emergency response, vandalism or trespassing?
   Not that I am aware of. We did have to move our telemetry system from the parking area and had to add a repeater due to the taller mounds of staged dirt.

6. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Richardson Flat tailings impoundment remedy?
   No, I am not aware of any.

7. Has EPA kept involved parties and surrounding neighbors informed of activities at the Richardson Flat tailings impoundment? How can EPA best provide site-related information in the future?
   The website is good. Continued active communication. City owns property in OU2/3, which is different. We do get a lot of questions about the dirt piles, including "why can't I take my dirt there." City council would love short videos, and the City could maybe promote it.

8. Do you have any comments, suggestions or recommendations regarding the project?
   No.

APPENDIX F – SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: Richardson Flat Tailings	**Date of Inspection:** 09/21/2017
Location and Region: Park City, Utah, EPA Region 8	**EPA ID: UTD980952840**
Agency, Office or Company Leading the Five-Year Review: EPA Region 8	**Weather/Temperature:** 40 degrees, sunny

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
- ☐ Access controls
- ☒ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other: _____
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☒ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (check all that apply)

1. **O&M Site Manager** Kerry Gee _____ _____
   Name Title Date
   Interviewed ☐ at site ☒ at office ☐ by phone Phone: _____
   Problems, suggestions ☐ Report attached: _____

2. **O&M Staff** _____ _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems/suggestions ☐ Report attached: _____

3. **Local Regulatory Authorities and Response Agencies** (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.

   Agency UTDEQ
   Contact Mo Slam Project Manager _____ _____
   Name Title Date Phone No.
   Problems/suggestions ☐ Report attached: _____

   Agency USFWS
   Contact Chris ClineName _____ _____ _____
   Title Date Phone No.
   Problems/suggestions ☐ Report attached:_____

   Agency Park City
   Contact Jim Blankeneau Environmental Regulatory Program Manager _____ _____
   Name Title Date Phone No.
   Problems/suggestions ☐ Report attached:_____

   Agency Summit County
   Contact Jamie Brackin Deputy _____ _____

Name	Attorney Title	Date	Phone No.	
Problems/suggestions ☐ Report attached: _____				
Agency _____				
Contact _____ Name	_____ Title	_____ Date	_____ Phone No.	
Problems/suggestions ☐ Report attached: _____				

4. **Other Interviews** (optional) ☐ Report attached: _____

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)

1. **O&M Documents**

☐ O&M manual	☐ Readily available	☐ Up to date	☐ N/A
☒ As-built drawings	☐ Readily available	☒ Up to date	☐ N/A
☒ Maintenance logs	☒ Readily available	☒ Up to date	☐ N/A

Remarks: _____

2.	**Site-Specific Health and Safety Plan**	☒ Readily available	☐ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	Readily available	☐ Up to date	N/A

Remarks: _____

3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

4. **Permits and Service Agreements**

☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
☐ Other permits: _____	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

7.	**Groundwater Monitoring Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

9. **Discharge Compliance Records**

☐ Air	☐ Readily available	☐ Up to date	☒ N/A
☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

10. **Daily Access/Security Logs** ☐ Readily available ☐ Up to date ☒ N/A

Remarks: _____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for state

☒ PRP in-house ☐ Contractor for PRP

☐ Federal facility in-house ☐ Contractor for Federal facility

☐ _____

2. **O&M Cost Records**

☐ Readily available ☐ Up to date

☐ Funding mechanism/agreement in place ☒ Unavailable

Original O&M cost estimate: _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs during Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing Damaged** ☒ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: _____

B. Other Access Restrictions

1. **Signs and Other Security Measures** ☐ Location shown on site map ☐ N/A

Remarks: "No trespassing" signs are posted.

C. Institutional Controls (ICs)

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by): _____

Frequency: _____

Responsible party/agency: _____

Contact _____ _____ _____ _____

Name Title Date Phone no.

Reporting is up to date ☐ Yes ☐ No ☒ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☒ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☒ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☐ ICs are adequate ☒ ICs are inadequate ☒ N/A

Remarks: Current access restrictions prevent unacceptable exposures. Long-term land use and groundwater restictions are called for in the ROD. However, they are not yet implemented.

D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks: _____

2. **Land Use Changes On Site** ☒ N/A

Remarks: _____

3. **Land Use Changes Off Site** ☒ N/A

Remarks: _____

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads Damaged** ☐ Location shown on site map ☐ Roads adequate ☐ N/A

Remarks: _____

B. Other Site Conditions

Remarks: Native vegetation is well established.

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (low spots) ☐ Location shown on site map ☒ Settlement not evident

Arial extent: _____ Depth: _____

Remarks: _____

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident

Lengths: _____ Widths: _____ Depths: _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
Arial extent: _____ Depth: _____
Remarks: _____

4. **Holes** ☐ Location shown on site map ☒ Holes not evident
Arial extent: _____ Depth: _____
Remarks: _____

5. **Vegetative Cover** ☒ Grass ☒ Cover properly established
☐ No signs of stress ☐ Trees/shrubs (indicate size and locations on a diagram)
Remarks: _____

6. **Alternative Cover** (e.g., armored rock, concrete) ☒ N/A
Remarks: _____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident
Arial extent: _____ Height: _____
Remarks: _____

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident

☐ Wet areas	☐ Location shown on site map	Arial extent: _____
☐ Ponding	☐ Location shown on site map	Arial extent: _____
☐ Seeps	☐ Location shown on site map	Arial extent: _____
☐ Soft subgrade	☐ Location shown on site map	Arial extent: _____

Remarks: _____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map
☒ No evidence of slope instability
Arial extent: _____
Remarks: _____

B. Benches ☐ Applicable ☒ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks: _____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks: _____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks: _____

C. Letdown Channels ☐ Applicable ☒ N/A

(Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side

slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ No evidence of settlement
   Arial extent: _____ Depth: _____
   Remarks: _____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
   Material type:_____ Arial extent: _____
   Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
   Arial extent: _____ Depth: _____
   Remarks: _____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
   Arial extent: _____ Depth: _____
   Remarks: _____

5. **Obstructions** Type: _____ ☐ No obstructions
   ☐ Location shown on site map Arial extent: _____
   Size: _____
   Remarks: _____

6. **Excessive Vegetative Growth** Type: _____
   ☐ No evidence of excessive growth
   ☐ Vegetation in channels does not obstruct flow
   ☐ Location shown on site map Arial extent: _____
   Remarks: _____

D. Cover Penetrations ☐ Applicable ☒ N/A

1. **Gas Vents** ☐ Active ☐ Passive
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

2. **Gas Monitoring Probes**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

4. **Extraction Wells Leachate**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A

Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A

Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

1. **Gas Treatment Facilities**

☐ Flaring ☐ Thermal destruction ☐ Collection for reuse

☐ Good condition ☐ Needs maintenance

Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)

☐ Good condition ☐ Needs maintenance ☐ N/A

Remarks: _____

F. Cover Drainage Layer ☐ Applicable ☒ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A

Remarks: _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

Remarks: _____

G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A

1. **Siltation** Area extent: _____ Depth: _____ ☐ N/A

☐ Siltation not evident

Remarks: _____

2. **Erosion** Area extent: _____ Depth: _____

☐ Erosion not evident

Remarks: _____

3. **Outlet Works** ☐ Functioning ☐ N/A

Remarks: _____

4. **Dam** ☐ Functioning ☐ N/A

Remarks: _____

H. Retaining Walls ☐ Applicable ☒ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident

Horizontal displacement: _____ Vertical displacement: _____

Rotational displacement: _____

Remarks: _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident

Remarks: _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☒ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident

Area extent: _____ Depth: _____

Remarks: _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A

☐ Vegetation does not impede flow

Area extent: _____ Type: _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident

Area extent: _____ Depth: _____

Remarks: _____

4. **Discharge Structure** ☐ Functioning ☐ N/A

Remarks: _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident

Area extent: _____ Depth: _____

Remarks: _____

2. **Performance Monitoring** Type of monitoring: _____

☐ Performance not monitored

Frequency: _____ ☐ Evidence of breaching

Head differential: _____

Remarks: _____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable ☒ N/A

A. Groundwater Extraction Wells, Pumps and Pipelines ☐ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing and Electrical**

☐ Good condition ☐ All required wells properly operating ☐ Needs maintenance ☐ N/A

Remarks: _____

2. **Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

B. Surface Water Collection Structures, Pumps and Pipelines ☐ Applicable ☐ N/A

1. **Collection Structures, Pumps and Electrical**

   ☐ Good condition ☐ Needs maintenance

   Remarks: _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances**

   ☐ Good condition ☐ Needs maintenance

   Remarks: _____

3. **Spare Parts and Equipment**

   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

   Remarks: _____

C. Treatment System ☐ Applicable ☐ N/A

1. **Treatment Train** (check components that apply)

   ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation

   ☐ Air stripping ☐ Carbon adsorbers

   ☐ Filters: _____

   ☐ Additive (e.g., chelation agent, flocculent): _____

   ☐ Others: _____

   ☐ Good condition ☐ Needs maintenance

   ☐ Sampling ports properly marked and functional

   ☐ Sampling/maintenance log displayed and up to date

   ☐ Equipment properly identified

   ☐ Quantity of groundwater treated annually: _____

   ☐ Quantity of surface water treated annually: _____

   Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

   ☐ N/A ☐ Good condition ☐ Needs maintenance

   Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

   ☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance

   Remarks: _____

4. **Discharge Structure and Appurtenances**

   ☐ N/A ☐ Good condition ☐ Needs maintenance

   Remarks: _____

5. **Treatment Building(s)**

   ☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair

   ☐ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

D. Monitoring Data

1. **Monitoring Data**

☐ Is routinely submitted on time ☐ Is of acceptable quality

2. **Monitoring Data Suggests:**

☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

X. OTHER REMEDIES

If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).

Most construction specified in the remedial design has been completed. Vegetation is well established and erosion is not an issue. Two areas of the impoundment received regionally sourced mine waste and covered with a temporary 6-inch soil cover while EPA determines if additional material will be brought to these areas prior to placing the full 18 inch fill material.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

Regular inspections assess vegetation, invasives, erosion and general site conditions. Maintenance is performed as needed.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None noted.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None noted.

APPENDIX G – SITE INSPECTION PHOTOS



"No trespassing" sign near public trail and on-site wetland.


Off-site public trail near wetland.



Embankment wetland and wedge buttress (right, background).



Staged clean fill.



Pond in low-lying area.



West-facing view across the parking area.



Restored diversion ditch.



Parking area.

APPENDIX H – SURFACE WATER MONITORING DATA

Table H-1: Surface Water Data

Sample Location	Sample Date	Sample ID	Total Cadmium (mg/L)	Dissolved Cadmium (mg/L)	Total Zinc (mg/L)	Dissolved Zinc (mg/L)
			TMDL = 0.0008 mg/L		TMDL = 0.39 mg/L	
Main Flow from OU1 Embankment Wetland	11/10/2011	RF-13	<0.00018	<0.00018	0.0298	0.0263
	4/4/2012	OU1-MF	<0.00018	<0.00018	0.0294	0.0334
	5/17/2012	OU1-MF	<0.00018	<0.00018	0.0153	<0.005
	7/18/2012	OU1-MF	<0.0005	<0.0005	0.00688	<0.005
	4/4/2013	OU1-MF	<0.0005	<0.0005	0.337	0.28
	3/13/2015	OU1-0-SW-PFOU1	<0.0005	<0.0005	0.0143	0.0106
	5/28/2015	OU1-0-SW-PFOU2	<0.0005	<0.0005	0.00578	<0.005
	9/1/2015	OU1-0-SW-PFOU3	<0.0005	<0.0005	0.00522	<0.005
	10/9/2015	OU1-0-SW-PFOU4	<0.0005	<0.0005	<0.005	<0.005
Channel downstream of south diversion ditch pond and upstream of embankment wetland at OU1	8/24/2011	RF 6-2	<0.00018	<0.00018	0.0126	0.0066
	11/10/2011	RF 6-2	<0.00018	<0.00018	0.0788	0.0372
Small seep channel on west side of OU1 embankment wetland	11/10/2011	SC-3a	<0.00018	<0.00018	0.187	0.118
Embankment Wetland	8/18/2011	1	Not sampled	Not sampled	0.0822	0.073

Sample Location	Sample Date	Sample ID	Total Cadmium (mg/L)	Dissolved Cadmium (mg/L)	Total Zinc (mg/L)	Dissolved Zinc (mg/L)
			TMDL = 0.0008 mg/L		TMDL = 0.39 mg/L	
	8/18/2011	2	Not sampled	Not sampled	0.0397	0.0215
	8/18/2011	3	Not sampled	Not sampled	0.101	0.0555
	8/18/2011	4	Not sampled	Not sampled	0.0765	0.0606
	8/18/2011	5	Not sampled	Not sampled	0.0351	0.0134
	4/4/2012	OU1-LP	0.000323	<0.00018	0.0446	0.0276
	4/4/2012	OU1-TS	<0.00018	<0.00018	0.147	0.0834
	7/18/2012	OU1-HWY Pond	<0.0005	<0.0005	0.0094	0.00672
Southern Diversion Ditch	7/18/2012	OU1-RF4	<0.0005	<0.0005	0.0162	0.0144

June 10, 2020

Charlotte Irvine
707 24th Street
Ogden, Utah 84401

Re: GRAMA Request

Dear Ms. Irvine:

Park City Municipal has received your GRAMA request dated June 3, 2020, for fire, health, planning/recording records with regard to environmental incidents for 4225 Countryside Circle.

Based on your request, we are providing the following documents:

1. Park City Heights VCP Certificate of Completion Document (attached)
2. Voluntary Cleanup Program- Completed Sites. (Elizabeth Palmer, Project Manager for Park City Heights)
http://eqedocs.utah.gov/SpecialSrchs.aspx?SSName=DERR_CERCLA_CofC

Pursuant to Municipal Code 5-5-1, you may appeal this decision to the City Manager by filing a notice of appeal within 30 days of the date of this letter. The appeal must include the following: (1) Your name, mailing address, and daytime phone number; (2) relief sought; and (3) a short statement of facts, reasons, and legal authority in support of the appeal. The City Manager will make determination within 5 business days of receipt of the appeal. If the City Manager fails to make a determination within this period, this shall be considered the equivalent of an order denying the appeal.

Sincerely,

Michelle Kellogg, MMC
Park City Recorder
445 Marsac Avenue
Park City, UT 84060
(435)615-5007

Phase I Environmental Site Assessment (ESA)

Due 6/17/2020
Submitted 6/3/2020, 14:50
Received 6/3/2020, 15:02

Open Records Portal Request

Requestor	Agency
Charlotte Irvine	Park City
charlotte.irvine@cmtlaboratories.com 801-927-8745 707 24th Street Ogden, Utah 84401	Marsac Municipal Bldg P.O. Box 1480 Park City, UT 84060 Michelle Kellogg Matthew Dias

Main Request

Hello,

I am conducting a Phase I Environmental Site Assessment (ESA) for the adjoining properties listed below:

Address: Near 4225 Countryside Cir, Park City, Utah 84060

Summit County Parcel #s â PP-28-1, PP-28-2, SS-86, SS87-B-X, SS-125 and SS-125-C

FIRE: Are there any records of environmental incidents or potentially environmentally detrimental events on or in the immediate vicinity of the property?

HEALTH: Are there any records of environmental incidents, releases, or violations involving the use, storage, transport, release, and/or disposal of hazardous materials and/or petroleum products on or in the immediate vicinity of the property?

PLANNING/RECORDING: Are there any records or knowledge or any recognized environmental conditions or environmentally detrimental events on, or in the immediate vicinity of the property?

Please let me know if you have any questions.

Charlotte Irvine
801.927-8745
Charlotte.Irvine@cmtlaboratories.com

Date range of requested records: *1/1/1940 - 6/2/2020*

Additional Details

Requester is the authorized representative of the subject of the record
Requester would like to view or inspect the records only

ENTRY NO. 01058682
11/23/2016 10:22:05 AM B: 2385 P: 0574
Certificate PAGE 1/6
MARY ANN TRUSSELL, SUMMIT COUNTY RECORDER
FEE 0.00 BY UTAH DEPARTMENT OF ENVIROMENTAL QUALITY

When recorded return to:
Utah Department of Environmental Quality
Division of Environmental Response and Remediation
Attention: Voluntary Program Coordinator
Post Office Box 144840
Salt Lake City, Utah 84114-4840

RECEIVED
DEC 13 2016
Environmental Response & Remediation

RE: Park City Heights Voluntary Cleanup Program Site (VCP #C077)
Park City, Summit County, Utah

CERTIFICATE OF COMPLETION

1. Compliance with Terms of Voluntary Cleanup Program

The Executive Director of the Utah Department of Environmental Quality ("UDEQ"), through his undersigned designee below, has determined that Ivory Development LLC, hereinafter referred to as "Applicant," has completed a UDEQ supervised voluntary cleanup of the real property described in Attachment A ("Property or "Site"), in accordance with sections 19-8-108 and 19-8-110 of the Utah Code Annotated and the Voluntary Cleanup Agreement entered into on July 16, 2012 and amended on February 13, 2014. The Applicant is granted this Certificate of Completion ("COC") pursuant to section 19-8-111, subject to the conditions set forth in paragraph three below.

2. Acknowledgment of Protection from Liability

This COC acknowledges protection from liability provided by section 19-8-113 of the Utah Code Annotated to an Applicant who is not responsible for the contamination under the provisions listed in subsection 19-8-113(1)(b) at the time the Applicant applies to enter into a Voluntary Cleanup Agreement, and to future owners who acquire the Property covered by this COC, and to lenders who make loans secured by the Property covered by the COC.

As set forth in section 19-8-113, this release of liability is not available to an owner or lender who was originally responsible for a release of contamination, or to an owner or lender who changes the land use from the use specified in Section 3 of the COC, if the changed use or uses may reasonably be expected to result in increased risks to human health or the environment, or to an owner or lender who causes further releases on the Property. Also, there is no release from liability if the COC is obtained by fraud, misrepresentation, or the knowing failure to disclose material information.

Finally, protection from liability is limited to contamination identified in the documents related to the investigation and cleanup of the Property.

SCANNED
DERR-2016-016307

3. Specified Land Use for Certificate of Completion

The Property will be developed for residential use, and common and green space. The Property may be used for these purposes subject to the Site Management Plan ("SMP") dated March 10, 2016, as may be amended from time to time, and that certain Environmental Covenant ("EC") recorded with the Summit County Recorder on September 6, 2016, Book 2371, pages 0550 – 0558.

This COC is issued based on compliance with the SMP and EC. Among other requirements, the SMP or EC or both require:

a. Park City Heights Phase I Subdivision, Parcel H, shall remain designated as open space and be limited to use as a repository, as set forth in the SMP. Inspections and reporting shall be conducted in accordance with the SMP;
b. The concrete wall between Richardson Flat Operable Unit 3 and the Property shall be maintained and inspected;
c. Groundwater shall not be accessed for drinking water, bathing, or irrigation purposes;
d. Workers will be notified and follow health and safety requirements if they come in contact with impacted soil;
e. Continued reimbursement to the UDEQ for its oversight of the EC and SMP; and
f. Continued consent to access by the UDEQ to monitor compliance with the EC and SMP.

4. Unavailability of Release of Liability

Use of the Property that is not consistent with Section 3 including failure to comply with the SMP and/or EC and provisions of this COC shall constitute a change in land use expected to result in increased risks to human health and the environment making the release of liability in Section 2 above unavailable.

5. Amended Certificate of Completion

There is no expectation that compliance with the SMP and EC will cease to be a condition of this COC so long as contaminated soils remain on the Site above levels protective for unrestricted land use. Further remediation under the VCP would be needed to qualify for a new or amended COC that does not include compliance with the SMP and EC as a condition of land use.

6. Availability of Records

All documents discussed in this COC are on file and may be reviewed at the UDEQ/Division of Environmental Response and Remediation ("DERR") office located at 195 North 1950 West, Salt Lake City, Utah.

7. Final Signature for Ivory Development LLC Certificate of Completion

Dated this 10th day of November 2016.

Brent H. Everett

Brent H. Everett, Director
Division of Environmental Response and Remediation
And Authorized Representative of the
Executive Director of the Utah
Department of Environmental Quality

STATE OF UTAH)

:ss.

COUNTY OF SALT LAKE)

On this 10th day of November, 2016, personally appeared before me, Brent H. Everett who duly acknowledged that he signed the above Certificate of Completion as an authorized representative of the Executive Director of the Utah Department of Environmental Quality.

SHANE R. BEKKEMELLOM
Notary Public State of Utah
My Commission Expires on:
October 3, 2020
Comm. Number: 690398

Shane R. Bekkemellom

NOTARY PUBLIC

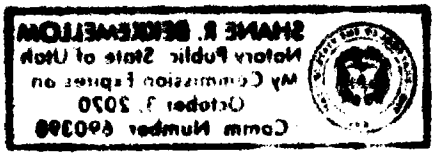
Residing At: Cottonwood Heights, Utah

My Commission Expires October 3, 2020

Attachment A: Legal Property Description

ATTACHMENT A

Ivory Development LLC
Legal Property Description



PCA-92 PCA-SS-122 PCA-PP-S-46 PCH-1-lot

Tax ID#: 22-06-103-014, 22-06-103-015, 22-06-103-016, 22-06-103-017, and 22-06-103-018

Legal Property Description

Park City Heights Subdivision

A parcel of land located in the South Half of Section 2 and portions of Section 11, Township 2 South, Range 4 East, Salt Lake Base and Meridian, said parcel being more particularly described as follows:

Beginning at a Park City Boundary Aluminum Cap marking the West Quarter Corner of Section 11, Township 2 South, Range 4 East, Salt Lake Base and Meridian; and running

thence North 00°19'41" East 1,474.01 feet along the West Section Line of said Section 11, also being along the Easterly Boundary Line of the Hidden Meadows Subdivision Annexation Plat recorded as Entry No. 425892 in the Office of the Summit County Recorder;

thence North 63°17'52" East 344.36 feet along the Easterly Boundary Line of said Hidden Meadows Subdivision Annexation Plat;

thence North 75°52'07" East 1,501.92 feet along the Easterly Boundary Line of said Hidden Meadows Subdivision Annexation Plat;

thence North 38°46'13" West 606.70 feet along the Easterly Boundary Line of said Hidden Meadows Subdivision Annexation Plat;

thence North 39°40'23" West 214.68 feet along the Easterly Boundary Line of said Hidden Meadows Subdivision Annexation Plat to the North Section Line of said Section 11;

thence South 88°46'45" East 89.54 feet along the North Section Line of said Section 11 to the 1/16 Corner of said Section 2;

thence North 00°00'41" East 1,415.34 feet along the 1/16th Section Line of said Section 2 to the Southerly Right-of-Way Line of the abandoned Union Pacific Railroad Property;

thence North 68°35'10" East 611.63 feet along the Southerly Right-of-Way Line of said abandoned Union Pacific Railroad Property;

thence Northeasterly 622.07 feet along the arc of a 1,532.69 foot radius curve to the left (center bears North 21°24'50" West and the chord bears North 56°57'32" East 617.81 feet with a central angle of 23°15'16") along the Southerly Right-of-Way Line of said abandoned Union Pacific Railroad Property to the Southerly Right-of-Way Line of Richardson Flat Road (UDOT FAP 93-B);

thence South 89°20'19" East 143.65 feet along the Southerly Right-of-Way Line of Richardson Flat Road (UDOT FAP 93-B);

thence Southeasterly 252.20 feet along the arc of a 2,814.90 foot radius curve to the right (center bears South 00°39'41" West and the chord bears South 86°46'19" East 252.11 feet with a central angle of 05°08'00") along the Southerly Right-of-Way Line of Richardson Flat Road (UDOT FAP 93-B);

thence South 84°12'19" East 300.22 feet along the Southerly Right-of-Way Line of Richardson Flat Road (UDOT FAP 93-B) to the Westerly Right-of-Way Line of State Highway 40;

thence South 07°02'52" East 965.75 feet along the Westerly Right-of-Way Line of said State Highway 40;

thence South 07°03'48" East 1,299.91 feet along the Westerly Right-of-Way Line of said State Highway 40;

thence South 42°31'04" West 3,012.86 feet;

thence South 103.66 feet to the projection of the Northerly Boundary Line of the Morning Star Estates Subdivision recorded as Entry No. 376621 in the Office of the Summit County Recorder;

thence North 89°30'31" West 1,368.96 feet along the Northerly Boundary Line of said Morning Star Estates Subdivision and its projections thereof to the point of beginning.

Contains 8,518,648 Square Feet or **195.561 Acres**

0486087 PCH-1-1
IVORY DEVELOPMENT LLC
978 E WOODOAK LN
SALT LAKE CITY, UT 84117

0486094 PCH-1-2
IVORY DEVELOPMENT LLC
978 E WOODOAK LN
SALT LAKE CITY, UT 84117

0486102 PCH-1-3
IVORY DEVELOPMENT LLC
978 E WOODOAK LN
SALT LAKE CITY, UT 84117

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APPENDIX F

STATEMENT OF
QUALIFICATIONS



MARK **LARSEN, P.G., E.P.**

GEOLOGIST | ENVIRONMENTAL PROFESSIONAL

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EDUCATION

Bachelor of Science Geology,
University of Utah, Salt Lake City,
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PROFESSIONAL LICENSES

Professional Geologist,
State of Utah,
License # 5293214-2250
Expires 3/3/19

AFFILLIATIONS

Association of Environmental and
Engineering Geologists (AEG)
Associated Member

PROFESSIONAL EXPERIENCE

Mr. Larsen is an engineering geologist in the CMT Vineyard, Utah office. Mr. Larsen is responsible for procuring new geologic and environmental site assessment work and ensuring that the work is completed in a responsive, responsible, and professional manner. Mr. Larsen also assists the engineers in our geotechnical division with the geologic aspects of geotechnical projects.

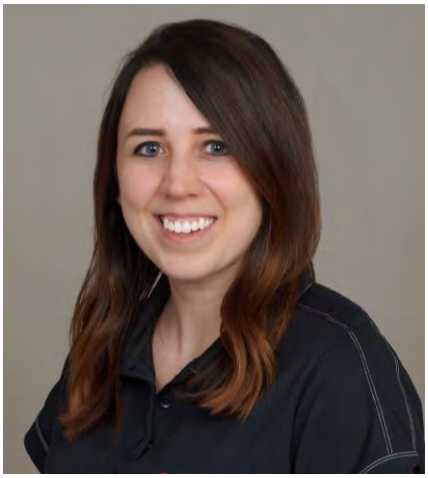
Mr. Larsen's experience includes all aspects of geologic site classification and geologic hazards evaluation for all sizes of projects from single-family residential to multi-story commercial structures. In his 20 years of experience, Mr. Larsen has served as a project engineering geologist for a variety of private residential, commercial, industrial, and government projects. These include surface fault rupture hazard studies, landslide/slope stability studies, rock fall hazard studies, and debris flow/alluvial fan flooding hazard studies. This work includes preparing the geologic study programs, overseeing and conducting the field work, geologic analysis, report preparation, and consultation with project geotechnical engineers, site owners/managers, and construction managers.

CAPABILITIES

Geologic Hazards Assessment, Environmental Site Assessment, Geologic Site Characterization, Geotechnical Engineering Field Sampling

RELATED PROJECT EXPERIENCE

Mr. Larsen has performed numerous Phase I Environmental Site Assessments throughout the State of Utah.



LINDSEY **BRADSHAW**

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EDUCATION

Bachelor of Arts, Interior Design,
Utah State University,
2009

ASTM Phase I &II ESA Class,
Las Vegas,
2014

ACCOMPLISHMENTS

Conducted, written, and managed over 500 Environmental Site Assessments

PROFESSIONAL EXPERIENCE

Ms. Bradshaw is an environmental specialist with more than 6 years of experience, mostly along the Wasatch Front and Rocky Mountain region. She joined CMT May 1, 2017 as an environmental specialist working in our Vineyard Office in Utah County.

Ms. Bradshaw has served as a project environmental specialist manager for a variety of commercial, industrial and government projects. These include hotels, stores, schools, storage facilities, multi-tenant and single-family residential development, industrial warehouses, gas stations, and banks. As a project manager, she has successfully implemented the scope of work, managed labor and material costs, and prepared useful Phase I and II Environmental Site Assessment reports.

RELATED PROJECT EXPERIENCE

- Phase I, II, and III ESA, Maple Hills Residential Subdivision, West Jordan, Utah
- Phase I, II, and III ESA, Terrace Hill Residential Subdivision, West Jordan, Utah
- Phase I, II, and III ESA, 9th and 9th Development, Salt Lake City, Utah
- Phase I, II, and III ESA, Pilgrims Loop Office Building, Lehi, Utah
- Phase I, II, and III ESA, Proposed Retail Development, Morgan, Utah
- Phase I and II ESA, Apollo Road Warehouse Structures, Salt Lake City, Utah
- Phase I and II ESA, Existing Gas Station & Convenient Store, Riverdale, Utah
- Phase I and II ESA, Existing Gas Station and Convenient Store, Logan, Utah
- Phase I and II ESA, Medical Building & Parking Structure, Murray, Utah
- Phase I and II ESA, Proposed Office Structures, Millcreek, Utah
- Phase I and II ESA, Proposed Retail Development, Sandy, Utah
- Phase I and II ESA, Gun Range Development, Murray, Utah
- Phase I and II ESA, Semi-Truck and Trailer Facility, Salt Lake City, Utah
- Phase I and II ESA, Proposed Industrial Development, North Salt Lake, Utah
- Phase I and II ESA, Existing Retail Shops, Sandy, Utah
- Phase I and II ESA, Proposed Industrial Development, Salt Lake City, Utah

CMT ENGINEERING LABORATORIES



ENGINEERING •GEOTECHNICAL •ENVIRONMENTAL (ESA I & II) •
MATERIALS TESTING •SPECIAL INSPECTIONS •
ORGANIC CHEMISTRY • PAVEMENT
DESIGN •GEOLOGY

GEOTECHNICAL ENGINEERING STUDY

Richardson Flats

Highway 248 and Highway 189
Summit County, Utah

CMT PROJECT NO. 14744

FOR:
Nate Brockbank
Western States Ventures
362 West Pierpont Avenue
Salt Lake City, Utah 84101

October 14, 2020

October 14, 2020

Nate Brockbank
Western States Ventures
362 West Pierpont Avenue
Salt Lake City, Utah 84101

Subject: Geotechnical Engineering Study
Highway 248 and Highway 189
Summit County, Utah
CMT Project No. 14744

Mr. Brockbank:

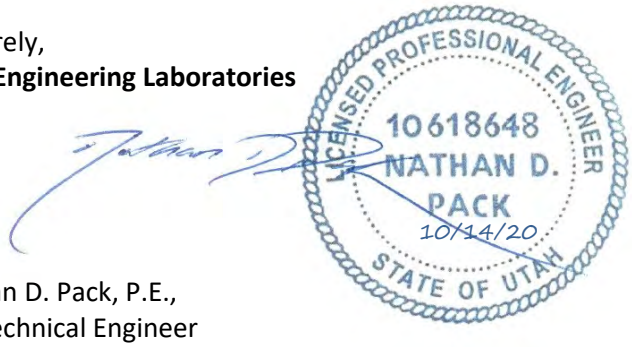
Submitted herewith is the report of our geotechnical engineering study for the subject site. This report contains the results of our findings and an engineering interpretation of the results with respect to the available project characteristics. It also contains recommendations to aid in the design and construction of the earth related phases of this project.

On June 1 through 17, a CMT Engineering Laboratories (CMT) engineer was on-site and supervised the excavation of 86 test pits extending to a depth of about feet below the existing ground surface. Soil samples were obtained during the field operations and subsequently transported to our laboratory for further testing and observation.

Conventional spread and/or continuous footings may be utilized to support the proposed structures, provided the recommendations in this report are followed. A detailed discussion of design and construction criteria is presented in this report.

We appreciate the opportunity to work with you at this stage of the project. CMT offers a full range of Geotechnical Engineering, Geological, Material Testing, Special Inspection services, and Phase I and II Environmental Site Assessments. With 9 offices throughout Utah, Idaho and Arizona, our staff is capable of efficiently serving your project needs. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at (801) 492-4132.

Sincerely,
CMT Engineering Laboratories



Nathan D. Pack, P.E.,
Geotechnical Engineer

Reviewed by:



Jeffrey J. Egbert, P.E., LEED A.P., M. ASCE
Senior Geotechnical Engineer

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APPENDIX

Figure 1: Site Plan
Figures 2 -87: Test Pit Logs
Figure 88: Key to Symbols

1.0 INTRODUCTION

1.1 General

CMT Engineering Laboratories (CMT) was retained to conduct a geotechnical subsurface study for the proposed development of approximately 700 acres for three different sites namely The Hollows, Sage Hen Hollows, and East Park. The parcel is situated on the southeast of Highway 248 and Highway 189 in Summit County, Utah, as shown in the **Vicinity Map** below.



VICINITY MAP

1.2 Objectives, Scope and Authorization

The objectives and scope of our study were planned in discussions between Mr. Nate Brockbank of Western States Ventures, and Mr. Nate Pack of CMT Engineering Laboratories (CMT). In general, the objectives of this

study were to define and evaluate the subsurface soil and groundwater conditions at the site, and provide appropriate foundation, earthwork, pavement and seismic recommendations to be utilized in the design and construction of the proposed development.

In accomplishing these objectives, our scope of work has included performing field exploration, which consisted of the excavating/logging/sampling of 86 test pits, performing laboratory testing on representative samples of the subsurface soils collected in the test pits, and conducting an office program, which consisted of correlating available data, performing engineering analyses, and preparing this summary report. This scope of work was authorized by returning a signed copy of our proposal dated October 18, 2018 and executed on October 20, 2018.

1.3 Description of Proposed Construction

We understand that the proposed structures will predominantly be single-family residences, with some multifamily buildings as well. We project the structures will have two levels of wood frame construction above grade and a single level of reinforced concrete below grade (basement). We project that maximum structural loads for the residences will be on the order of 4,000 pounds per lineal foot for walls and 50,000 pounds for columns. Floor slab loads are anticipated to be relatively light, with an average uniform loading not exceeding 100 pounds per square foot. If the loading conditions are different than we have projected, please notify us so that any appropriate modifications to our conclusions and recommendations contained herein can be made.

We anticipate that asphalt-paved residential streets will be constructed as part of the development. Traffic is projected to consist of a light volume of automobiles and pickup trucks, one or two daily medium-weight delivery trucks, a weekly garbage truck, and an occasional fire truck.

Site development will require some earthwork in the form of minor cutting and filling. A site grading plan was not available at the time of this report, but we project that maximum cuts and fills may be on the order of 6 to 10 feet. If deeper cuts or fills are planned, CMT should be notified to provide additional recommendations, if needed.

1.4 Executive Summary

Proposed structures can be supported upon conventional spread and continuous wall foundations. The most significant geotechnical aspects regarding site development include the following:

1. Up to 7 feet of topsoil was found in parts of the site, which will require removal beneath structures;
2. Potentially collapsible and expansive soils are present within the upper 5 feet in the lower elevation areas of the site. The collapsible soils visually contained pinholes, as confirmed by consolidation/collapse tests that indicated these soils have a collapse potential of 3%. The expansive soils are a Fat Clay (CH) and were confirmed by consolidation/expansive tests that indicated these soils have an expansive potential of up to 0.75%
3. Shallow bedrock encountered in some areas.

4. Foundations and floor slabs may be placed on suitable, undisturbed, non-collapsible/expansive natural soils or on properly placed and compacted structural fill extending to suitable, undisturbed natural soils.

CMT must assess that topsoil, undocumented fills, potentially collapsible and/or expansive soils, debris, disturbed or unsuitable soils have been removed and that suitable soils have been encountered prior to placing site grading fills, footings, slabs, and pavements.

In the following sections, detailed discussions pertaining to the site and subsurface descriptions, geologic/seismic setting, earthwork, foundations, lateral resistance, lateral pressure, floor slabs, and pavements are provided.

2.0 FIELD EXPLORATION

2.1 General

In order to define and evaluate the subsurface soil and groundwater conditions 86 test pits were excavated with a backhoe at the site to varying depths up to approximately 17 feet below the existing ground surface. Locations of the test pits are shown on **Figure 1, Site Plan**, included in the Appendix. The field exploration was performed under the supervision of an experienced member of our geotechnical staff.

Representative soil samples were collected by obtaining disturbed "grab" samples and cutting relatively undisturbed "block" samples from within each test pit. The samples were sealed in plastic bags prior to transport to the laboratory.

The subsurface soils encountered in the test pits were logged and described in general accordance with ASTM[1] D-2488. Soil samples were collected as described above, and were classified in the field based upon visual and textural examination. These field classifications were supplemented by subsequent examination and testing of select samples in our laboratory. Graphical representations of the subsurface conditions encountered are presented on each individual Test Pit Log, **Figures 2 through 87**, included in the Appendix. A Key to Symbols defining the terms and symbols used on the logs, is provided as **Figure 88** in the Appendix.

When backfilling the test pits, only minimal effort was made to compact the backfill and no compaction testing was performed. Thus, settlement of the backfill in the test pits over time should be anticipated.

[1]American Society for Testing and Materials

3.0 LABORATORY TESTING

Selected samples of the subsurface soils were subjected to various laboratory tests to assess pertinent engineering properties, as follows:

1. Moisture Content, ASTM D-2216, Percent moisture representative of field conditions
2. Dry Density, ASTM D-2937, Dry unit weight representing field conditions
3. Atterberg Limits, ASTM D-4318, Plasticity and workability
4. Gradation Analysis, ASTM D-1140/C-117, Grain Size Analysis
5. One Dimension Consolidation, ASTM D-2435, Consolidation properties

To provide data necessary for our settlement analyses, a consolidation test was performed on each of 15 representative samples of the subsurface soils encountered across the site. Based upon data obtained from the consolidation testing, the samples tested are moderately over-consolidated, moderately compressible under additional loading, and have a collapse potential of approximately 0.5% to 2.8%, or have an expansive potential of approximately 0.2% to 0.7 (executive summary says 0.75?)% at a load of 1,000 psf when water was added (see the **Lab Summary Table** below). Detailed results of the consolidation/collapse/swell tests are maintained within our files and can be transmitted to you, if so desired.

Laboratory test results are presented on the test pit logs (**Figures 2 through 87**) and in the following Lab Summary table:

LAB SUMMARY TABLE

TEST PIT	DEPTH (feet)	SOIL CLASS	SAMPLE TYPE	MOISTURE CONTENT(%)	DRY DENSITY (pcf)	GRADATION			ATTERBERG LIMITS			COLLAPSE (-)/ EXPANSION(+)
						GRAV.	SAND	FINES	LL	PL	PI	
TP-1	6	CL	Block	27	88.7	0	22.5	77.5	38	17	21	-0.65
TP-2	3	SM	Bag	16		6.8	79.2	14		NP		
TP-5	3	SM	Bag	15		3.8	88.5	7.7				
TP-7	3	SC	Bag	18		3.9	49.9	46.2	36	23	13	
TP-10	6	CL	Bag	14		22.4	9.6	68	39	21	18	
TP-11	3	SM	Bag	20		3	55.1	41.9		NP		
TP-14	3	CL	Block	23	90.4	7.3	24.4	68	38	17	21	-0.44
TP-15	8	ML	Bag	10		3.1	21.4	75.5		NP		
TP-17	2.5	CH	Block	28	86	0.6	18.4	81	65	24	41	+0.72
TP-18	5	SC	Block	17	100.8	2.4	51.6	46	38	16	22	+0.22
TP-20	7	ML	Block	31	78.8	0.4	22.3	77.3		NP		-1.234
TP-22	5	SM	Bag	23		2.9	65.7	31.4		NP		
TP-24	7	CL	Block	22		1.5	25.6	72.9	39	18	21	
TP-25	9	SM	Block	40	74.2	0.6	62.1	37.3		NP		
TP-27	8	CL	Bag	20		0.5	39.8	59.7	31	21	10	
TP-30	6	SM	Bag	19		11.9	68.8	19.3		NP		
TP-32	3	SM	Bag	10		6.6	83.3	10.1		NP		
TP-34	3	SM	Bag	18		4.3	66.5	29.2		NP		
TP-36	3	SM	Bag	10		3.4	86.5	10.1		NP		
TP-37	6	SM	Bag	19		1.1	56.6	42.3		NP		
TP-38	3	SC	Block	24	79	1.8	50.7	47.5	52	36	16	-0.5
TP-39	8	CH	Block	44	73	0.5	14.1	85.4	55	28	27	
TP-40	9	CL	Block	27	90.6	0.6	38.6	60.8	35	21	14	-.2
TP-42	6	SM	Bag	17		0.3	53.3	46.4		NP		
TP-46	3	CL	Bag	16		0	43.2	56.8	38	21	17	
TP-48	6	SM	Bag	26		0.8	65.7	33.5		NP		
TP-50	6	CH	Block	28	77.8	0.7	35	64.3	50	22	28	-2.8
TP-52	9	CH	Block	24	94.8	0.1	6.9	93	58	19	39	
TP-53	10	SP	Bag	33		0.1	95.9	4		NP		
TP-55	2	SC	Bag	23.5		3	56.2	40.8	28	16	12	
TP-57	6	CH	Block	32	75.2	0	10.3	89.7	60	29	31	-2.6
TP-59	3	SM	Bag	17		1.5	52	46.5		NP		
TP-61	9	SC	Bag	25		4.2	50	45.8	28	15	13	
TP-62	9	CL	Block	22	92.3	0.3	34.7	65	36	18	18	-0.6
TP-64		CL	Block	22		0.4	12.4	87.2	47	19	28	
TP-66		SC	Block	21		9.4	46.2	44.4	31	15	16	
TP-68	10	SP-SC	Block	7.5		10.2	77.2	12.6	38	18	20	
TP-71	6	CL	Block	30	87	0	18.4	81.6	43	17	26	-0.25
TP-72	6	CL	Block	16		0.8	31.4	67.8	42	24	18	
TP-73	3	SM	Bag	14		4.3	77	18.7		NP		
TP-76	9	SM	Block	10	102.1	0.6	49.8	49.6		NP		-1.8
TP-77	6	SM	Bag	23		4.4	69.1	26.5		NP		
TP-79	6	CL	Bag	19		2.4	31.8	65.8	42	18	24	
TP-81	9	SM	Bag	30		0	53.6	46.4		NP		

4.0 GEOLOGIC & SEISMIC CONDITIONS

4.1 Geologic Setting

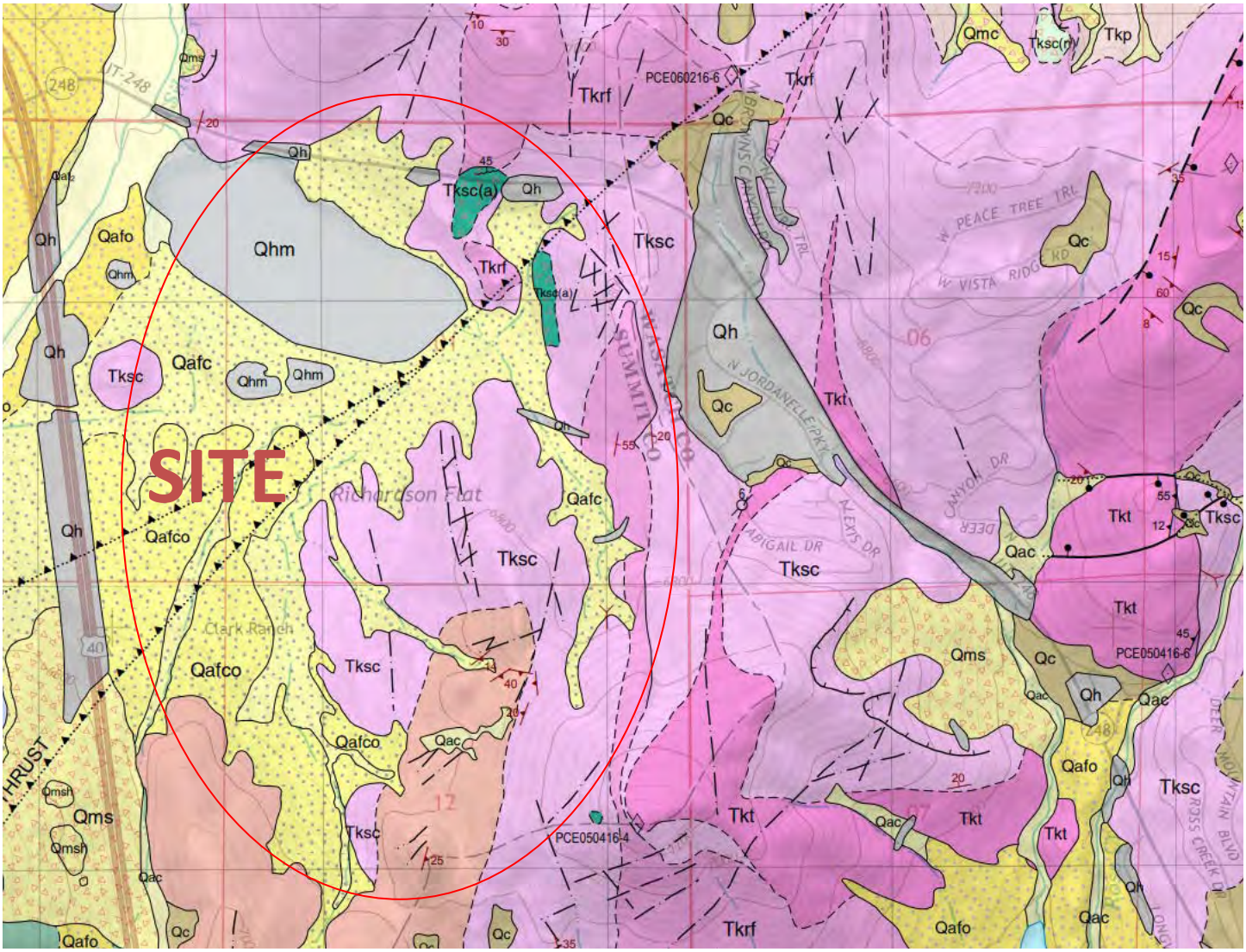
The subject property is located in the Richardson Flat area of southwest Summit County, Utah. The area is bound by the Wasatch Mountain Range to the west and the West Hills and Uinta Mountains beyond to the east and is part of the Wasatch Hinterlands section of the Middle Rocky Mountain Physiographic Province of north-central Utah. The Wasatch Hinterlands are described by Stokes (1986) as "a belt of mixed, moderately rugged topography" located between the Wasatch Mountains to the west and the Uinta Mountains to the east. Stokes further describes the area as having "varied and unorganized topography with hilly areas dominating valley areas." The subject site lies mostly within hilly terrain at an elevation ranging between approximately 6,590 and 7,360 feet above sea level.

The geology of the Park City East 7.5 minute quadrangle, including the location of the subject property, has been mapped by Biek[2]. The surficial geology over the location of the site and adjacent properties is relatively complex and is comprised largely of Tertiary extrusive volcanic rocks of the Keetley Volcanic Group. The following table summarizes the geologic units mapped at the subject property and adjacent areas.

Geologic Units Mapped on and Adjacent to Site

Map Unit	Description	Age
Qafc	Fan alluvium and colluvium	Holocene to upper Pleistocene
Qac	Alluvium and colluvium	Holocene to upper Pleistocene
Tkrf	Lava flows of Richardson Flat (Keetley Volcanics)	lower Oligocene to upper Eocene
Tksc	Volcanic mudflow breccia of Silver Creek (Keetley Volcanics)	Lower Oligocene to upper Eocene
Tksh	Lava flows and volcanic mudflow breccia of Sage Hen Hollow (Keetley Volcanics)	Upper Eocene
Tkt	Lava flows of Todd Hollow (Keetley Volcanics)	Lower Oligocene

[2] Biek, R.F., 2017*, Interim Geologic Map of the Park City East Quadrangle, Summit and Wasatch Counties, Utah;* USGS Open File Report 677, Scale 1:24,000.



GEOLOGIC MAP

4.2 Faulting

No active surface fault traces are shown on the referenced geologic map crossing, adjacent to, or projecting toward the subject site. The nearest mapped active (Holocene) fault is the Salt Lake City Segment of the Wasatch Fault Zone approximately 19 miles to the west. No landslide deposits or features, including lateral spread deposits, are mapped on or adjacent to the site on a landslide map of the Salt Lake City 30' x 60' Quadrangle[3].

The Wasatch Fault is considered a "normal" fault because movement along the fault is typically vertical. The east side of the fault, or the mountain block, typically moves upward relative to the valley block on the west

[3] Elliott, A.H., and Harty, K.M., 2010, Landslide Maps of Utah, Salt Lake City 30' x 60' Quadrangle; Utah Geological Survey Map 246DM, Plate 9 of 46, Scale 1:100,000.

side of the fault. The fault generally dips to the west below the valleys. In an earthquake, the point where the fault initially ruptures is called the 'focus" and generally occurs about 10 miles below the surface. The point on the surface directly above the focus, the epicenter, typically out in the valley, is usually where the strongest ground shaking occurs. The Wasatch Fault is one of the longest and most active normal faults in the world.

4.3 Seismicity

4.3.1 Site Class

Utah has adopted the International Building Code (IBC) 2018, which determines the seismic hazard for a site based upon 2014 mapping of bedrock accelerations prepared by the United States Geologic Survey (USGS) and the soil site class. The USGS values are presented on maps incorporated into the IBC code and are also available based on latitude and longitude coordinates (grid points). For site class definitions, IBC 2018 Section 1613.2.2 refers to Chapter 20, Site Classification Procedure for Seismic Design, of ASCE[4] 7-16. Given the subsurface soils encountered at the site in our explorations, which only extended to a depth of about 17.0 feet, it is our opinion the site best fits Site Class D – Stiff Soil Profile (without data, or default) (Site Class C with shallow bedrock?), which we recommend for seismic structural design.

4.3.2 Seismic Design Category

The 2014 USGS mapping utilized by the IBC provides values of peak ground, short period and long period accelerations for the Site Class B/C boundary and the Maximum Considered Earthquake (MCE). This Site Class B boundary represents average bedrock values for the Western United States and must be corrected for local soil conditions. The Seismic Design Categories in the International Residential Code (IRC 2018 Table R301.2.2.1.1) are based upon the Site Class as addressed in the previous section. For Site Class D at site grid coordinates of 40.663659 degrees north latitude and -111.446954 degrees west longitude, $\mathbf{S_{DS}}$ is 0.497 and the **Seismic Design Category** is D_0.

4.3.3 Liquefaction

The site is located within an area designated by the Utah Geologic Survey[5] as having "Very Low" liquefaction potential. Liquefaction is defined as the condition when saturated, loose, sandy soils lose their support capabilities because of excessive pore water pressure which develops during a seismic event. Clayey soils, even if saturated, will generally not liquefy during a major seismic event. A special liquefaction study was not performed for this site. We encountered unsaturated, medium dense to dense sand and gravel soils within the depths we explored in most of the test pits. In the other test pits the soils we encountered consisted of silt/clay, typically not liquefiable, also shallow bedrock. These conditions indicate that liquefaction of these soils is not likely to occur. In a few of the test pits we did encountered saturated sand and silt layers embedded with clay layers. In our opinion, the soils we encountered support the mapped very low liquefaction potential designation

[4]American Society of Civil Engineers
[5] Utah Geological Survey, "Liquefaction-Potential Map, Utah,".https://ugspub.nr.utah.gov/publications/circular/c-106/c-106liquefaction.pdf

4.4 Other Geologic Hazards

The site is not located within a known or mapped potential debris flow, stream flooding[6], or rock fall hazard area. Drainage channels on the slopes at the site have the potential to transport water and minor sediment runoff during spring snowmelt and during and following localized heavy precipitation events.

5.0 SITE CONDITIONS

5.1 Surface Conditions

At the time the test pits were excavated the site consisted of naturally vegetated vacant land. Based upon aerial photos readily available online dating back to 1993, the site appears to have been relatively unchanged since that time. The site is bounded on the north by Highway 248, on the west by Highway 189 and on the remaining sides by vacant land with a residential development on a portion of the east side. (see **Vicinity Map** in **Section 1.1** above).

5.2 Subsurface Soils

At the locations of the test pits we typically encountered about 2 to 12 inches of topsoil, with a few locations having up to 7 feet, at the surface. Natural soils were observed beneath the topsoil, consisting of a SILT loam (ML), silty CLAY (CL) with sand, fat CLAY (CH), silty SAND (SM), coarse SAND (SP) trace occurrences with clay (SP-SC), silty GRAVEL (GM) with sand and cobbles, fractured rock (GP), weathered bedrock (typically SM, sometimes SC), and GRAVEL with varying silt content(GP-GM) cobbles, sand and boulders extending to the full depth penetrated in each test pit, with a max depth of 17 feet or refusal. The silt/clay soils were dry to wet, and estimated to be medium stiff to very stiff in consistency. They also exhibited moderate over consolidation and strength characteristics, as well as a moderate potential for collapse or expanse when wetted. The natural gravel and sand soils were dry to wet, and estimated to be medium dense to very dense. They are also projected to exhibit moderately high strength and low compressibility characteristics.

For a more descriptive interpretation of subsurface conditions, please refer to the test pit logs, **Figures 2 through 87**, which graphically represent the subsurface conditions encountered. The lines designating the interface between soil types on the logs generally represent approximate boundaries - in situ, the transition between soil types may be gradual.

5.3 Groundwater

Groundwater was encountered in test pits 39, 52-54, 57, 60, 61, 63-65, and 71 at depths of about 4 to 10.5 feet below existing grade at the time of our field exploration.

[6] https://msc.fema.gov/portal/search?AddressQuery=park%20city%2C%20utah#searchresultsanchor

Groundwater levels can fluctuate seasonally and in response to numerous other factors such as heavy precipitation, irrigation of neighboring land, and other unforeseen factors. The detailed evaluation of these and other factors, which may be responsible for ground water fluctuations, is beyond the scope of this study.

5.4 Site Subsurface Variations

Based on the results of the subsurface explorations and our experience, variations in the continuity and nature of subsurface conditions should be anticipated. Due to the heterogeneous characteristics of natural soils, care should be taken in interpolating or extrapolating subsurface conditions between or beyond the exploratory locations.

Also, when logging and sampling of the test pits was completed, the test pits were backfilled with the excavated soils but minimal to no effort was made to compact these soils. Thus, the test pit backfill should be considered undocumented fill and settlement of the backfill in the test pits over time should be anticipated.

6.0 SITE PREPARATION AND GRADING

6.1 General

All deleterious materials should be stripped from the site prior to commencement of construction activities. This includes loose and disturbed soils, topsoil, vegetation, etc. Based upon the conditions observed in the test pits there is topsoil on the surface of the site which we estimated to be typically about 2 to 12 inches in depth, with a few locations having up to 7 feet in thickness. When stripping and grubbing, topsoil should be distinguished by the apparent organic content and not solely by color.

The potentially collapsible soils may remain in pavement areas if:

1. They are properly prepared/partially replaced as outlined below;
2. No more than 3 feet of subsequent overlying site grading fills are installed above any remaining sequence of potentially collapsible soils;
3. Any planned subsurface detention systems are installed well away and down gradient from nearby structures, and preferably below any remaining sequence of potentially collapsible clay soils; and
4. Adequate site drainage is maintained to reduce the potential for subsurface soil saturation.
5. The owner accepts the risk that some settlement of pavement areas could occur if the underlying potentially collapsible soils become wetted, which could result in minor to significant maintenance.

Proper preparation of potentially collapsible soils in pavement areas shall consist of removing the upper 24 inches, scarifying to a minimum depth of 8 inches and compacting the soils in place. The exposed subgrade must then be proofrolled by passing moderate-weight rubber tire-mounted construction equipment over the surface at least twice. If excessively soft or loose soils are encountered, they must be removed (up to a maximum depth of 2 feet) and replaced with structural fill.

The site should be observed by a CMT geotechnical engineer to assess that suitable natural soils have been exposed and any deleterious materials, loose and/or disturbed soils have been removed, prior to placing site grading fills, footings, slabs, and pavements.

Fill placed over large areas to raise overall site grades can induce settlements in the underlying natural soils. If more than 6 feet of site grading fill is anticipated over the natural ground surface, we should be notified to assess potential settlements and provide additional recommendations as needed. These recommendations may include placement of the site grading fill far in advance to allow potential settlements to occur prior to construction.

6.2 Temporary Excavations

Excavations deeper than 8 to 10 feet are not anticipated at the site. Groundwater was not encountered throughout the majority of the site within the depths explored, about 10 to 17 feet at the time of our field explorations. Groundwater was encountered in test pits 39, 52-54, 57, 60, 61, 63-65, and 71 at depths of about 4 to 10.5 feet below existing grade, and dewatering of such excavations near these locations will likely be required.

Some of the natural soils encountered at this site consisted of silt/clay. In clayey (cohesive) soils, temporary construction excavations not exceeding 4 feet in depth may be constructed with near-vertical side slopes. Temporary excavations up to 8 feet deep, above or below groundwater, may be constructed with side slopes no steeper than one-half horizontal to one vertical (0.5H:1V). To reduce disturbance of the natural silt/clay soils during excavation, we recommend that smooth edge buckets/blades be utilized.

The other natural soils encountered at this site consisted of sand/gravel. For sandy/gravelly (cohesionless) soils, temporary construction excavations not exceeding 4 feet in depth should be no steeper than one-half horizontal to one vertical (0.5H:1V). For excavations up to 8 feet and above groundwater, side slopes should be no steeper than one horizontal to one vertical (1H:1V). Excavations encountering saturated cohesionless soils will be very difficult to maintain, and will require very flat side slopes and/or shoring, bracing and dewatering.

Shallow bedrock was also encountered in some locations which may require heavy or specialized equipment to excavate.

All excavations must be inspected periodically by qualified personnel. If any signs of instability or excessive sloughing are noted, immediate remedial action must be initiated. All excavations should be made following OSHA safety guidelines.

6.3 Fill Material

Following are our recommendations for the various fill types we anticipate will be used at this site:

FILL MATERIAL TYPE	DESCRIPTION | RECOMMENDED SPECIFICATION
Structural Fill	Placed below structures, flatwork and pavement. Well-graded sand/gravel mixture, with maximum particle size of 4 inches, a minimum 70% passing 3/4-inch sieve, a minimum 15% passing and a maximum 30% passingthe No. 200 sieve, and a maximum Plasticity Index of 10.
Site Grading Fill	Placed over larger areas to raise the site grade. Sandy to gravelly soil, with a maximum particle size of 6 inches, a minimum 70% passing 3/4-inch sieve, and a maximum 50% passing No. 200 sieve.
Non-Structural Fill	Placed below non-structural areas, such as landscaping. On-site soils or imported soils, with a maximum particle size of 8 inches, including silt/clay soils not containing excessive amounts of degradable/organic material (see discussion below).
Stabilization Fill	Placed to stabilize soft areas prior to placing structural fill and/or site grading fill. Coarse angular gravels and cobbles 1 inch to 8 inches in size. May also use 1.5-inch to 2.0-inch gravel placed on stabilization fabric, such as Mirafi RS280i, or equivalent (see **Section 6.6**).

On-site sand and gravel soils may be suitable for use as structural fill, if found or processed to meet the specifications given above, but also may be used as site grading fill and non-structural fill.

On-site silt/clay soils may be used as site grading fill and non-structural fill, but are also moisture-sensitive. Note that such moisture-sensitive soils are inherently more difficult to work with in proper moisture conditioning (they are very sensitive to changes in moisture content), requiring very close moisture control during placement and compaction. This will be very difficult, if not impossible, during wet and cold periods of the year. We also recommend the site grading fill thickness using on-site silt/clay soils be a maximum of 3 feet below structures, to minimize potential settlements.

All fill material should be approved by a CMT geotechnical engineer prior to placement.

6.4 Fill Placement and Compaction

The various types of compaction equipment available have their limitations as to the maximum lift thickness that can be compacted. For example, hand operated equipment is limited to lifts of about 4 inches and most "trench compactors" have a maximum, consistent compaction depth of about 6 inches. Large rollers, depending on soil and moisture conditions, can achieve compaction at 8 to 12 inches. The full thickness of each lift should be compacted to at least the following percentages of the maximum dry density as determined by ASTM D-1557 (or AASHTO[7] T-180) in accordance with the following recommendations:

[7] American Association of State Highway and Transportation Officials

LOCATION	TOTAL FILL THICKNESS (FEET)	MINIMUM PERCENTAGE OF MAXIMUM DRY DENSITY
Beneath an area extending at least 4 feet beyond the perimeter of structures, and below flatwork and pavement (applies to structural fill and site grading fill) extending at least 2 feet beyond the perimeter	0 to 5 5 to 10	95 98
Site grading fill outside area defined above	0 to 5 5 to 10	92 95
Utility trenches within structural areas	--	96
Roadbase and subbase	-	96
Non-structural fill	0 to 5 5 to 8	90 92

Structural fills greater than 8 feet thick are not anticipated at the site. For best compaction results, we recommend that the moisture content for structural fill/backfill be within 2% of optimum. Field density tests should be performed on each lift as necessary to verify that proper compaction is being achieved.

6.5 Utility Trenches

For the bedding zone around the utility, we recommend utilizing sand bedding fill material that meets current APWA[8] requirements.

All utility trench backfill material below structurally loaded facilities (foundations, floor slabs, flatwork, parking lots/drive areas, etc.) should be placed at the same density requirements established for structural fill in the previous section. Above the bedding zone, we recommend that utility trench backfill have a minimum 20% fines, to reduce permeability (refer to **Section 6.3** above). In addition, utilities should be installed as close to the bottom of the potentially collapsible soils as reasonably possible.

Most utility companies and local governments are requiring Type A-1a or A-1b (AASHTO Designation) soils (sand/gravel soils with limited fines) be used as backfill over utilities within public rights of way, and the backfill be compacted over the full depth above the bedding zone to at least 96% of the maximum dry density as determined by AASHTO T-180 (ASTM D-1557). The natural sand and gravel soils at this site will not likely meet these specifications.

Where the utility does not underlie structurally loaded facilities and public rights of way, on-site fill and natural soils may be utilized as trench backfill above the bedding layer, provided they are properly moisture conditioned and compacted to the minimum requirements stated above in **Section 6.4**.

[8] American Public Works Association

6.6 Stabilization

The natural silt/clay soils at this site will likely be susceptible to rutting and pumping. The likelihood of disturbance or rutting and/or pumping of the existing natural soils is a function of the load applied to the surface, as well as the frequency of the load. Consequently, rutting and pumping can be minimized by avoiding concentrated traffic, minimizing the load applied to the surface by using lighter equipment and/or partial loads, by working in drier times of the year, or by providing a working surface for the equipment. Rubber-tired equipment particularly, because of high pressures, promotes instability in moist/wet, soft soils. If rutting or pumping occurs, traffic should be stopped and the disturbed soils should be removed and replaced with stabilization material. Typically, a minimum of 18 inches of the disturbed soils must be removed to be effective. However, deeper removal is sometimes required.

To stabilize soft subgrade conditions (if encountered), a mixture of coarse, clean, angular gravels and cobbles and/or 1.5- to 2.0-inch clean gravel should be utilized, as indicated above in **Section 6.3**. Often the amount of gravelly material can be reduced with the use of a geotextile fabric such as Mirafi RS280i or equivalent. Its use will also help avoid mixing of the subgrade soils with the gravelly material. After excavating the soft/disturbed soils, the fabric should be spread across the bottom of the excavation and up the sides a minimum of 18 inches. Otherwise, it should be placed in accordance with the manufacturer's recommendation, including proper overlaps. The gravel material can then be placed over the fabric in compacted lifts as described above.

7.0 FOUNDATION RECOMMENDATIONS

The following recommendations have been developed on the basis of the previously described project characteristics, including the maximum loads discussed in **Section 1.3**, the subsurface conditions observed in the field and the laboratory test data, and standard geotechnical engineering practice.

7.1 Foundation Recommendations

Based on our geotechnical engineering analyses, the proposed structures may be supported upon conventional spread and/or continuous wall foundations placed on suitable, undisturbed non-collapsible/expansive natural soils and/or on structural fill extending to suitable natural soils. Footings may be designed using a net bearing pressure of 1,500 psf if placed on suitable, undisturbed, natural clay/ silt soils, 2,000 if placed on suitable, undisturbed, natural sand and gravel soils, or 2,000 psf if placed on a minimum 18 inches of structural fill.
The term "net bearing pressure" refers to the pressure imposed by the portion of the structure located above lowest adjacent final grade, thus the weight of the footing and backfill to lowest adjacent final grade need not be considered. The allowable bearing pressure may be increased by 1/3 for temporary loads such as wind and seismic forces.

We also recommend the following:

1. Exterior footings subject to frost should be placed at least 30 inches below final grade.
2. Interior footings not subject to frost should be placed at least 16 inches below grade.

3. Continuous footing widths should be maintained at a minimum of 18 inches.
4. Spot footings should be a minimum of 24 inches wide.

7.2 Installation

Under no circumstances shall foundations be placed directly on potentially collapsible or expansive soils, on undocumented fill, topsoil with organics, sod, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. If unsuitable soils are encountered, they must be completely removed and replaced with properly compacted structural fill.

Where footings would otherwise be placed on potentially collapsible or expansive soils, we recommend these soils be completely removed or over-excavated a minimum 24 inches, whichever is less, and replaced with properly compacted structural fill.

Deep, large roots may be encountered where trees and larger bushes are located or were previously located at the site; such large roots should be removed. Excavation bottoms should be examined by a CMT geotechnical engineer to confirm that suitable bearing materials soils have been exposed.

All structural fill used below footings or floor slabs should meet the requirements for such, and should be placed and compacted in accordance with **Section 6** above. The width of structural replacement fill below footings should be equal to the width of the footing plus 1 foot for each foot of fill thickness. For instance, if the footing width is 2 feet and the structural fill depth beneath the footing is 2 feet, the fill replacement width should be 4 feet, centered beneath the footing.

The minimum thickness of structural fill below footings should be equivalent to one-third the thickness of structural fill below any other portion of the foundations. For example, if the maximum depth of structural fill is 6 feet, all footings for the new structure should be underlain by a minimum 2 feet of structural fill.

7.3 Estimated Settlement

Foundations designed and constructed in accordance with our recommendations could experience some settlement, but we anticipate that total settlements of footings founded as recommended above will not exceed 1 inch, with differential settlements on the order of 0.5 inches over a distance of 25 feet. We expect approximately 50% of the total settlement to initially take place during construction.

7.4 Lateral Resistance

Lateral loads imposed upon foundations due to wind or seismic forces may be resisted by the development of passive earth pressures and friction between the base of the footings and the supporting soils. In determining frictional resistance, a coefficient of 0.30 for natural silt/clay soils or 0.40 for natural sand/gravel soils and structural fill, may be utilized for design. Passive resistance provided by properly placed and compacted structural fill above the water table may be considered equivalent to a fluid with a density of 350 pcf. A

combination of passive earth resistance and friction may be utilized if the friction component of the total is divided by 1.5.

8.0 LATERAL EARTH PRESSURES

We project that basement walls up to 8 feet tall will be constructed at this site. The lateral earth pressure values given below are for a backfill material that will consist of drained sand/gravel soils (less than 10% passing No. 200 sieve) placed and compacted in accordance with the recommendations presented herein. If other soil types will be used as backfill, we should be notified so that appropriate modifications to these values can be provided, as needed.

The lateral pressures imposed upon subgrade facilities will depend upon the relative rigidity and movement of the backfilled structure. For rigid basement walls that are not more than 10 inches thick, sand/gravel backfill may be designed using an at-rest equivalent fluid pressure of 55 pcf (psf/ft). This value assumes that the soil surface behind the wall is horizontal and that the backfill within 3 feet of the wall will be compacted with hand-operated compacting equipment.

For seismic loading of rigid basement walls up to 8 feet tall, we recommend using a uniform (rectangular) at-rest lateral pressure of 125 psf for design.

9.0 FLOOR SLABS

Floor slabs may be established upon suitable, undisturbed, natural soils and/or on structural fill extending to suitable natural soils (same as for foundations). Also, floor slabs should be kept at least 3 feet above groundwater levels, where encountered. Under no circumstances shall floor slabs be established directly on potentially collapsible/expansive soils, or any topsoil, undocumented fills, loose or disturbed soils, sod, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water. Where floor slabs would otherwise be placed on potentially collapsible or expansive soils, we recommend these soils be completely removed or over-excavated a minimum 18 inches, whichever is less, and replaced with properly compacted structural fill.

In order to facilitate curing of the concrete, we recommend that floor slabs be directly underlain by at least 4 inches of “free-draining” fill, such as “pea” gravel or 3/4-inch to 1-inch minus, clean, gap-graded gravel. To help control normal shrinkage and stress cracking, the floor slabs should have the following features:

1. Adequate reinforcement for the anticipated floor loads with the reinforcement continuous through interior floor joints;
2. Frequent crack control joints; and
3. Non-rigid attachment of the slabs to foundation walls and bearing slabs.

10.0 DRAINAGE RECOMMENDATIONS

10.1 Surface Drainage

Some of the natural subsurface soils encountered in our explorations are potentially collapsible/expansive when subjected to water, thus it is very important to the long-term performance of foundations and floor slabs that water not be allowed to collect near the foundation walls and infiltrate into the underlying soils. We recommend the following:

1. All areas around each structure should be sloped to provide drainage away from the foundations. We recommend a minimum slope of 6 inches in the first 10 feet away from the structure. This slope should be maintained throughout the lifetime of the structure.

2. All roof drainage should be collected in rain gutters with downspouts designed to discharge at least 10 feet from the foundation walls or well beyond the backfill limits, whichever is greater.

3. Adequate compaction of the foundation backfill should be provided. We suggest a minimum of 90% of the maximum laboratory density as determined by ASTM D-1557. Water consolidation methods should not be used under any circumstances.

4. Landscape sprinklers should be aimed away and maintained a distance of at least 4 feet, from the foundation walls. The sprinkling systems should be designed with proper drainage and be well-maintained. Over watering should be avoided.

5. Other precautions that may become evident during construction.

10.2 Foundation Subdrains

Groundwater on a few parts of this site is relatively shallow. If floor slabs will be placed deeper than approximately 3 feet below the existing ground surface, we recommend that perimeter foundation subdrains in the low elevation level drainage areas be installed.

Foundation subdrains should consist of a 4-inch diameter perforated or slotted plastic or PVC pipe surrounded by clean gravel. The invert of the subdrain should be at least 2 feet below the top of the lowest adjacent floor slab. The gravel portion of the drain should extend a minimum 2 inches laterally and below the perforated pipe and at least 1 foot above the top of the lowest adjacent floor slab. The gravel zone must be installed immediately adjacent to the perimeter footings and the foundation walls. To reduce the possibility of plugging, the gravel must be wrapped with a geotextile, such as Mirafi 140N or equivalent. Prior to the installation of the footing subdrain, the below-grade walls should be dampproofed. The slope of the subdrain should be at least 0.5%. The gravel placed around the drain pipe should be clean 3/4-inch to 1-inch minus gap-graded gravel and/or “pea” gravel. The foundation subdrains can be discharged into the area subdrains, storm drains, or other suitable down-gradient location.

11.0 PAVEMENTS

We anticipate the natural silt/clay soils will exhibit poor pavement support characteristics when saturated or nearly saturated. Based on our laboratory testing experience with similar soils, our pavement design utilized a California Bearing Ratio (CBR) of 3 for the natural silt/clay soils.

All pavement areas must be prepared as discussed above in **Section 6.1**. Under no circumstances shall pavements be established over topsoil, non-engineered fills (if encountered), loose or disturbed soils, sod, rubbish, construction debris, other deleterious materials, frozen soils, or within ponded water.

In roadway areas, subsequent to stripping and prior to the placement of pavement materials, the exposed subgrade must be proof rolled by passing moderate-weight rubber tire-mounted construction equipment over the surface at least twice. If excessively soft or otherwise unsuitable soils are encountered, we recommend they be removed to a minimum of 18 inches below the subgrade level and replaced with structural fill.

Given the projected traffic as discussed above in **Section 1.3**, the following pavement sections are recommended for approximately 6 ESAL's (18-kip equivalent single-axle loads) per day:

MATERIAL	PAVEMENT SECTION THICKNESS (inches)	
Asphalt	**3**	**3**
Road-Base	**10**	**6**
Subbase	**0**	**6**
Total Thickness	**13**	**15**

Untreated base course (UTBC) should conform to city specifications, or to 1-inch-minus UDOT specifications for A–1-a/NP, and have a minimum CBR value of 70%. Material meeting our specification for structural fill can be used for subbase, as long as the fines content (percent passing No. 200 sieve) does not exceed 15%. Roadbase and subbase material should be compacted as recommended above in **Section 6.4**. Asphalt material generally should conform to APWA requirements, having a ½-inch maximum aggregate size, a 75-gyration Superpave mix containing no more than 15% of recycled asphalt (RAP) and a PG58-28 binder.

12.0 QUALITY CONTROL

We recommend that CMT be retained to as part of a comprehensive quality control testing and observation program. With CMT on-site we can help facilitate implementation of our recommendations and address, in a timely manner, any subsurface conditions encountered which vary from those described in this report. Without such a program CMT cannot be responsible for application of our recommendations to subsurface conditions which may vary from those described herein. This program may include, but not necessarily be limited to, the following:

12.1 Field Observations

Observations should be completed during all phases of construction such as site preparation, foundation excavation, structural fill placement and concrete placement.

12.2 Fill Compaction

Compaction testing by CMT is required for all structural supporting fill materials. Maximum Dry Density (Modified Proctor, ASTM D-1557) tests should be requested by the contractor immediately after delivery of any fill materials. The maximum density information should then be used for field density tests on each lift as necessary to ensure that the required compaction is being achieved.

12.3 Excavations

All excavation procedures and processes should be observed by a geotechnical engineer from CMT or their representative. In addition, for the recommendations in this report to be valid, all backfill and structural fill placed in trenches and all pavements should be density tested by CMT. We recommend that freshly mixed concrete be tested by CMT in accordance with ASTM designations.

13.0 LIMITATIONS

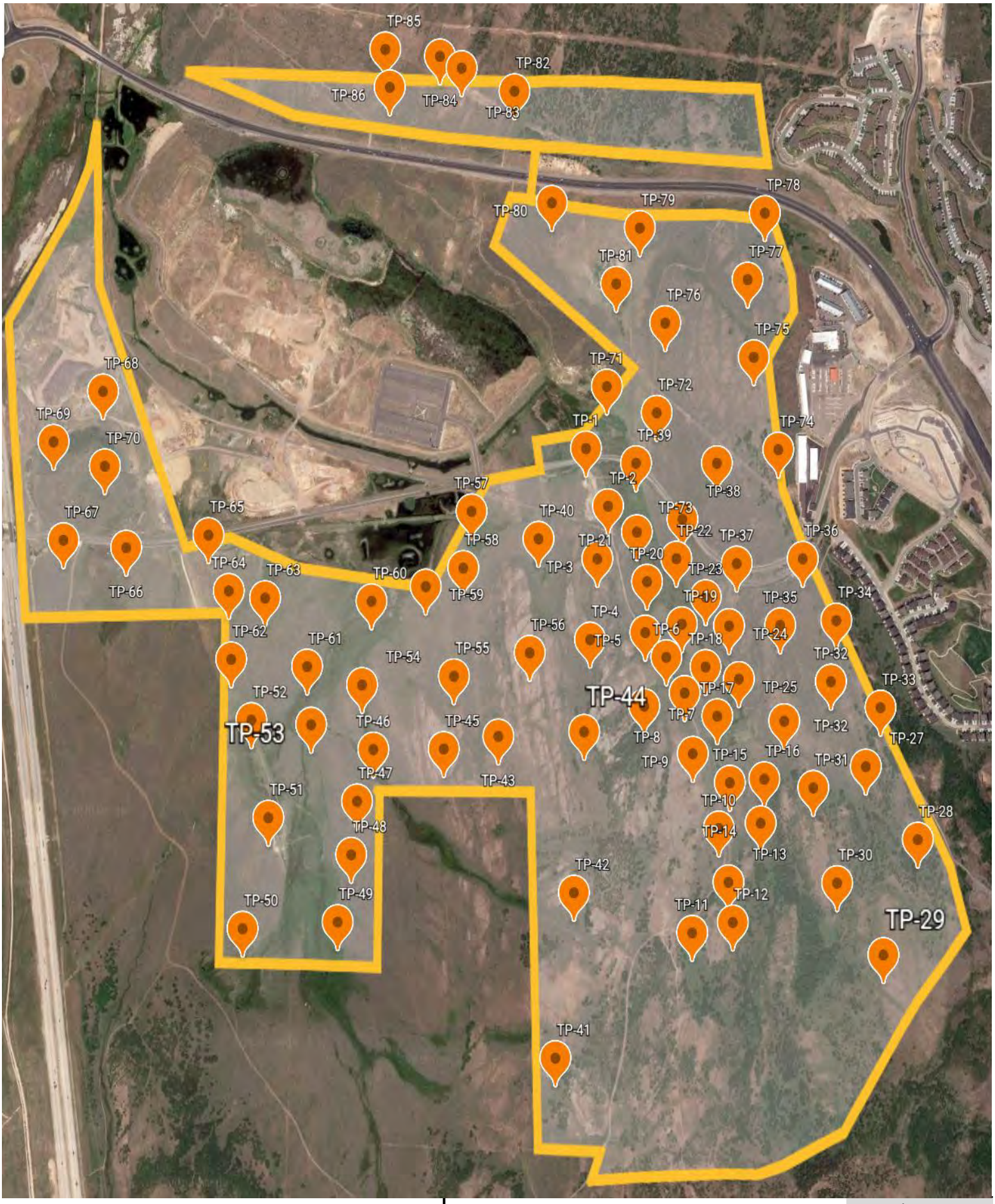
The recommendations provided herein were developed by evaluating the information obtained from the subsurface explorations and soils encountered therein. The exploration logs reflect the subsurface conditions only at the specific location at the particular time designated on the logs. Soil and ground water conditions may differ from conditions encountered at the actual exploration locations. The nature and extent of any variation in the explorations may not become evident until during the course of construction. If variations do appear, it may become necessary to re-evaluate the recommendations of this report after we have observed the variation.

Our professional services have been performed, our findings obtained, and our recommendations prepared in accordance with generally accepted geotechnical engineering principles and practices. This warranty is in lieu of all other warranties, either expressed or implied.

We appreciate the opportunity to be of service to you on this project. If we can be of further assistance or if you have any questions regarding this project, please do not hesitate to contact us at (801) 492-4132. To schedule materials testing, please call (801) 381-5141.

APPENDIX

SUPPORTING
DOCUMENTATION



Richardson Flats

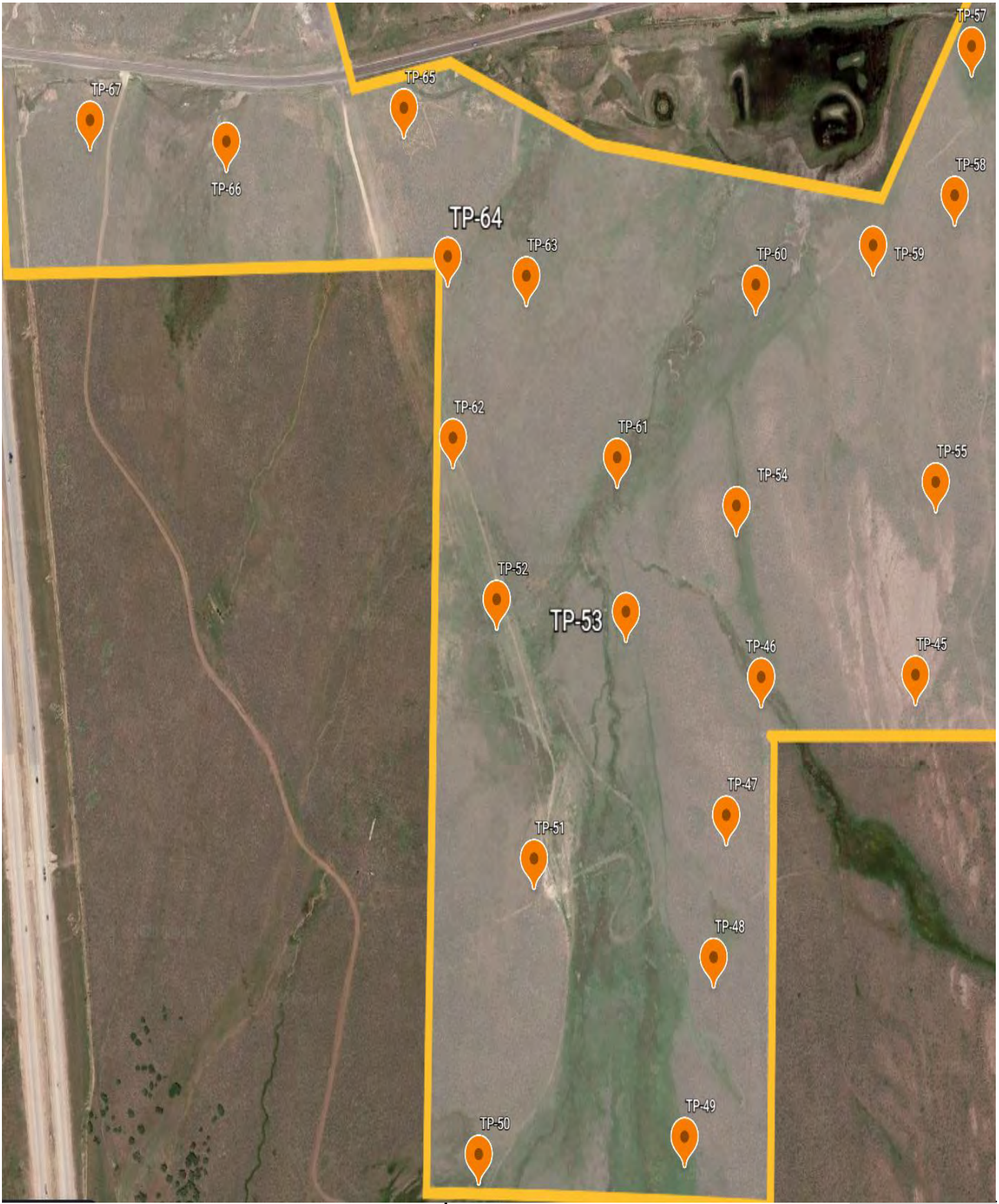
Highway 248 and Highway 189, Summit County, Utah

CMT ENGINEERING LABORATORIES

Full Site Plan

Date:	1-Jun-20
Job #	14744

Figure: 1



Richardson Flats South West

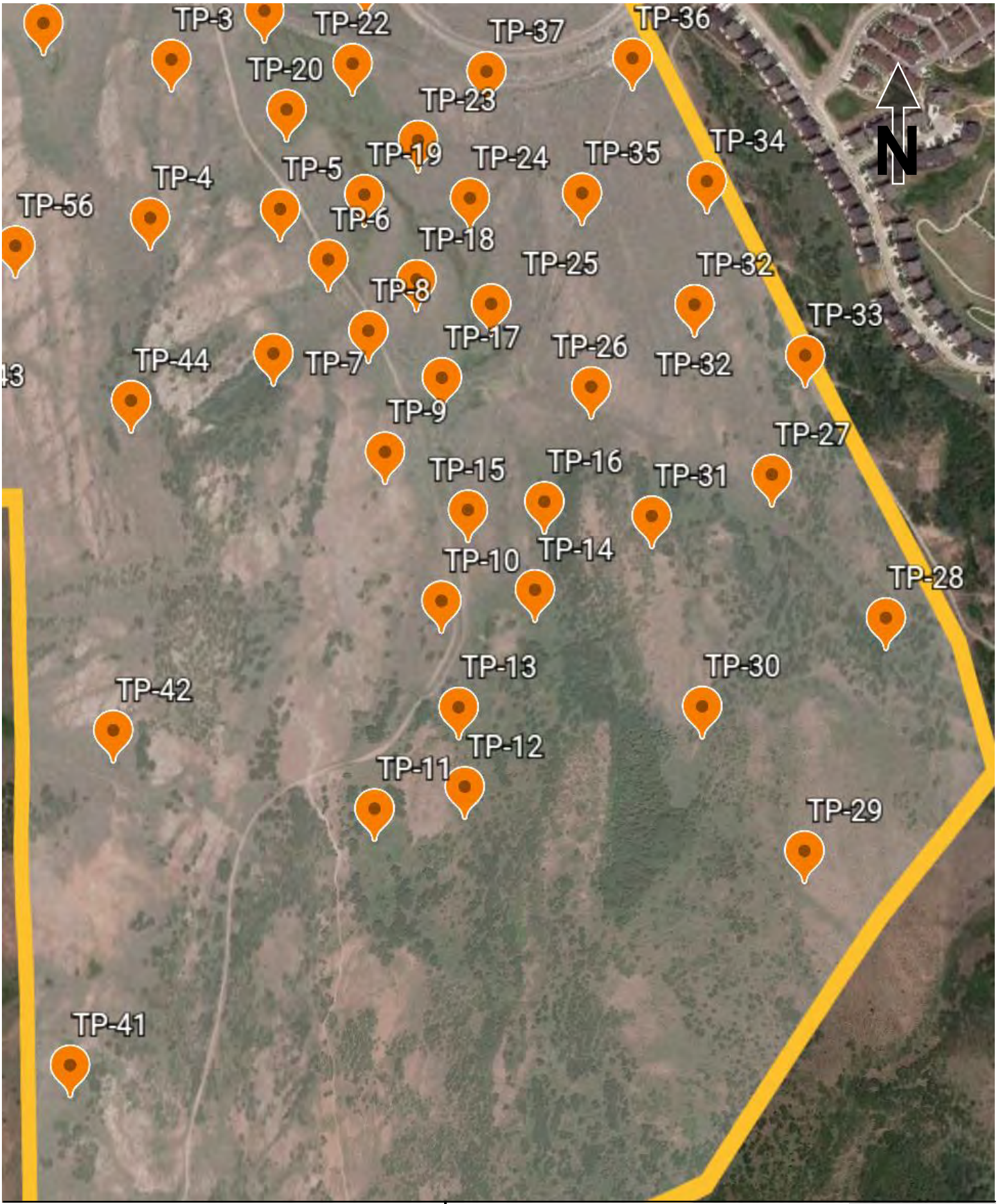
Highway 248 and Highway 189, Summit County, Utah

CMT ENGINEERING LABORATORIES

Site Plan

Date:	1-Jun-20
Job #	14744

Figure: 1A



Richardson Flats South East

Highway 248 and Highway 189, Summit County, Utah

CMT ENGINEERING LABORATORIES

Site Plan

Date:	1-Jun-20
Job #	14744

Figure:

1B



Richardson Flats North West

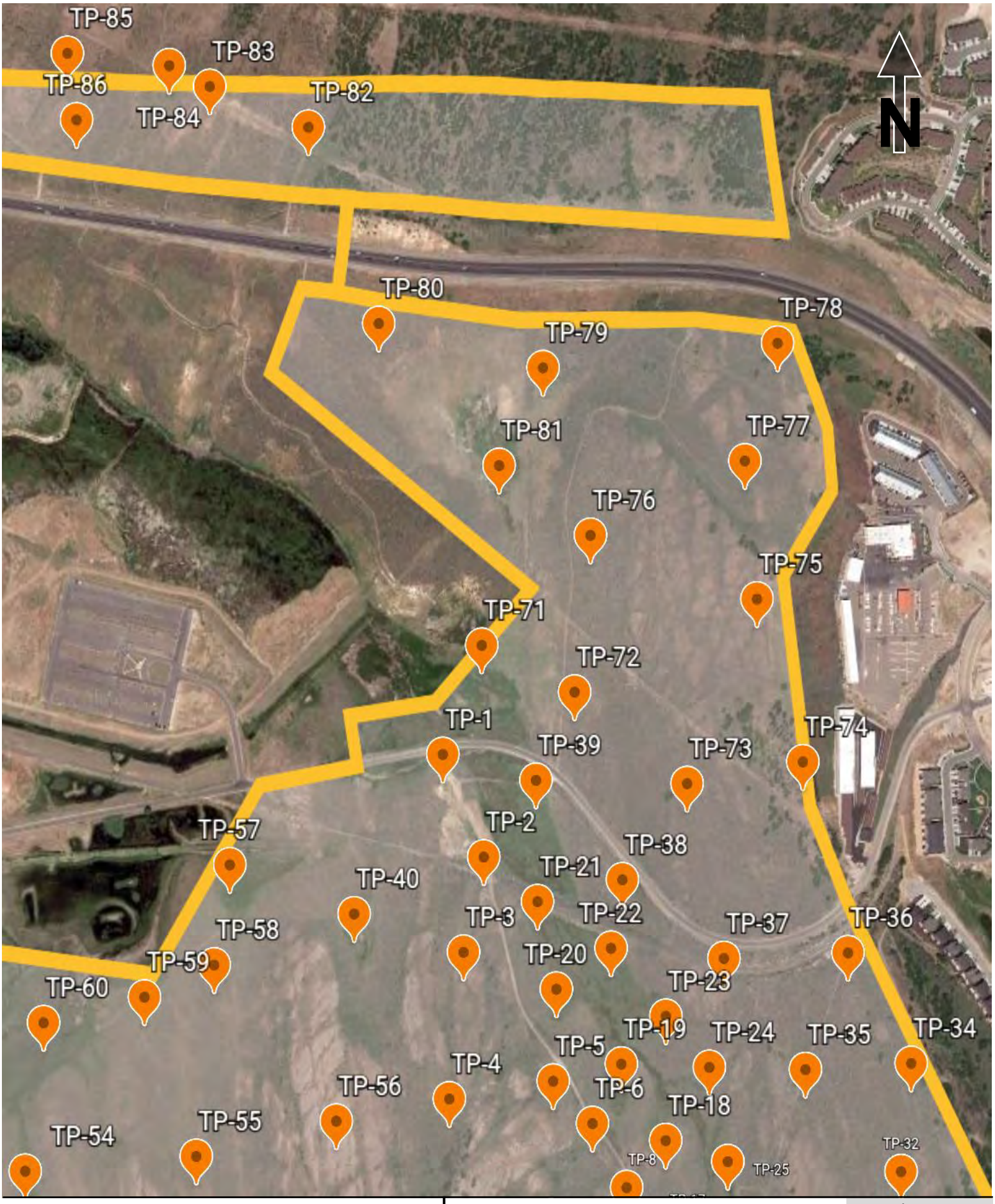
Highway 248 and Highway 189, Summit County, Utah

CMT ENGINEERING LABORATORIES

Site Plan

Date:	1-Jun-20
Job #	14744

Figure: 1C



Richardson Flats

Highway 248 and Highway 189, Summit County, Utah

CMT ENGINEERING LABORATORIES

Full Site Plan

Date:	1-Jun-20
Job #	14744

Figure:

1D

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-1

Total Depth: 13'
Water Depth: 12'

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Fill; gravel and sand										
		Brown CLAY (CL) with fine sand moist, stiff										
2				1								
4												
6				2	27	89	0	22	78	38	17	21
8												
				3								
10												
12 ▽		Tan/Gray/Light Brown Clayey SAND (SC) dense wet		4								
		END AT 13'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 12 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 2

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-2

Total Depth: 5'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; gravel and sand with grass										
		Brown GRAVEL (GP) with sand										
2		Weathered ROCK										
		dry, very dense		5	16		44	41	15			NP
4												
		REFUSAL AT 5'										
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 3

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-3

Total Depth: 3'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Fill; gravel and sand with vegetation/roots										
		Weathered ROCK										
2		dry, very dense		6								
		REFUSAL AT 3'										
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 4

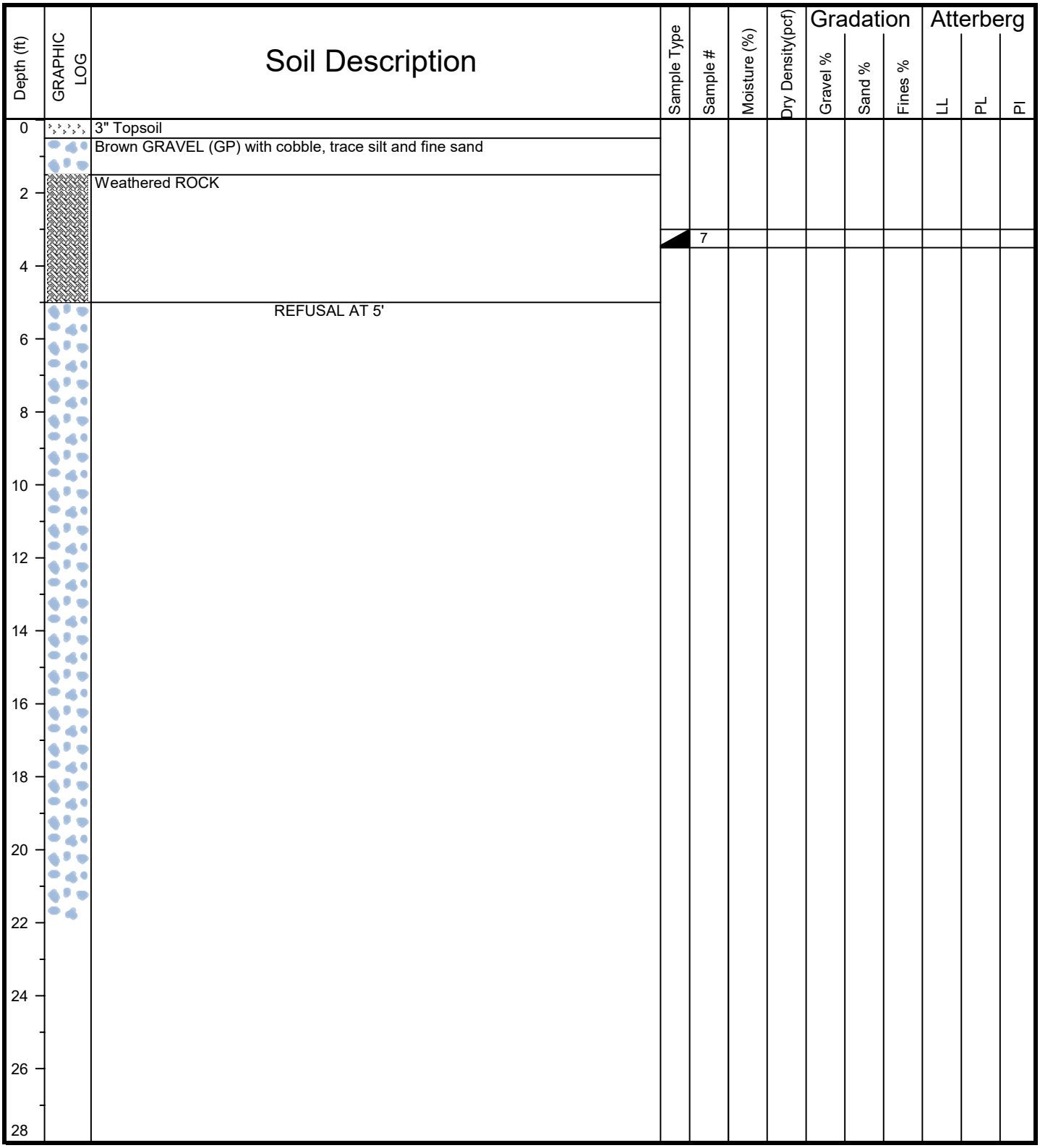
Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-4

Total Depth: 5'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744



Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 5

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-5

Total Depth: 7'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Brown GRAVEL (GP) with cobble and silt										
		Weathered ROCK with gravel										
		dry, very dense										
2												
				8	15		80	12	8			
4												
				9								
6												
		REFUSAL AT 7'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 6

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-6

Total Depth: 3.5'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		3" Topsoil										
		Weathered ROCK										
2		dry, very dense		10								
		REFUSAL AT 3.5'										
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 7

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-7

Total Depth: 5'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Dark Brown Clayey SAND (SC) with gravel slightly moist, stiff										
2				11	18		25	29	46	36	23	13
4		Weathered ROCK dry, very dense										
		REFUSAL AT 5.0'										
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Page: 1 of 1

Figure: 8

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-8

Total Depth: 2.5'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		3" Topsoil										
		Weathered ROCK										
		dry, very dense										
2				12								
		REFUSAL AT 2.5'										
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 9

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-9

Total Depth: 5'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Weathered ROCK										
		dry, very dense										
2												
				13								
4												
		REFUSAL AT 5.0'										
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 10

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-10

Total Depth: 12.5'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; dark brown silty loam										
2		Brown CLAY (CL) moist, stiff		14								
4		grades light brown with fine sand and gravel slightly moist to dry										
6				15	14		18	14	68	39	21	18
8		very stiff										
10		grades with more gravel		16								
12				17								
		END AT 12.5'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 11

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-11

Total Depth: 6.5'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil										
		Dark Brown Silty SAND (SM), trace gravel moist, stiff										
2												
				18	20		28	30	42			NP
4												
6		Weathered ROCK dry, very dense										
		END AT 6.5'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Page: 1 of 1

Figure: 12

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-12

Total Depth: 5'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Dark Brown Clayey SILT (ML) with sand moist, stiff										
2				19								
4		Weathered ROCK										
		END AT 5'										
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 13

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-13

Total Depth: 5'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Brown Gravelly SILT (ML)										
2												
				20								
4		Weathered ROCK										
		dry, very dense										
		END AT 5'										
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 14

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-14

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
2		Brown CLAY (CL) with sand, trace gravel										
4				21	23	90	5	27	68	38	17	21
6				22								
8		Light Brown Clayey GRAVEL (GP)										
10				23								
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

Figure: 15

GSL ENGINEERING

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-15

Total Depth: 14'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil										
		Brown SILT (ML) with sand, trace gravel										
2		moist, soft										
4				24								
6												
8				25	10		4	20	76			NP
10												
12												
14		END AT 14'										
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

GMT ENGINEERING

Figure: 16

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-16

Total Depth: 10'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Brown Silty Loam										
2		Brown Silty SAND (SM) moist, dense		26								
4												
6				27								
8		GRAVEL (GC) with cobbles, sand and clay										
10		END AT 10'		28								
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

Figure: 17

GBT ENGINEERING

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-17

Total Depth: 13'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
2		Dark Brown Silty Loam										
4		Brown Fat CLAY (CH)		29	28	86	1	18	81	65	24	41
8				30								
10												
12				31								
		Brown GRAVEL (GC) with clay mosit, medium dense										
14		END AT 13'										
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

Figure: 18

GMT ENGINEERING

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-18

Total Depth: 10'
Water Depth: (see Remarks)

Date: 6/1/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Silty Loam moist, stiff										
2		Brown Clayey GRAVEL (GC) with sand moist, medium dense										
				32								
4												
				33	17	101	31	23	46	38	16	22
6												
8												
				34								
10		END AT 10'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

GMT ENGINEERING

Figure: 19

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-19

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		8" Topsoil										
2		Silty Loam with clay and sand Brown Sandy SILT (ML) moist, dense		1								
4												
6												
8				2								
10												
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 20

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-20

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
2		Dark Brown to Brown SILT (ML) with sand and trace clay moist, medium dense										
				3								
4												
6												
				4	31	79	4	19	77			NP
8												
10												
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 21

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-21

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil										
2		Brown SILT (ML) moist		5								
4												
6		Brown Silty SAND (SM) moist, medium dense										
8		Brown/Orange/Tan SAND (SP) with silt, clay and gravel moist, dense		6								
10												
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 22

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-22

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
2				7								
4		Brown/Orange/Tan Silty SAND (SM) moist, medium dense										
6				8	23		2	67	31			NP
8												
10				9								
12		dense END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 23

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-23

Total Depth: 10'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Brown Silty SAND (SM)										
2				10								
4												
		Light Brown Weathered ROCK/SAND with gravel and cobbles dry, very dense										
6												
				11								
8												
10		END AT 10'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 24

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-24

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil; silty loam moist, medium dense										
4		Silty CLAY (CL) moist, very stiff		12	22		4	23	73	39	18	21
10		Coarse SAND (SP-SC) with trace clay dry, dense										
12		END AT 12'										

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 25

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-25

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; silty loam with organics										
2				13								
4		Silty Fine SAND (SM) with clay										
6				14								
8		Coarse SAND (SP) with silt and fine sand lenses moist, medium dense										
				15	40	74	1	62	37			NP
10												
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 26

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-26

Total Depth: 1.5'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		3" Vegetated Gravel										
		Weathered ROCK dry, very dense										
1.5		REFUSAL AT 1.5'										
2												
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 27

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-27

Total Depth: 13'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
2		Dark Brown Silty Loam										
				16								
4												
6		Coarse SAND (SP-SM) with silt and gravel, trace clay, occasional boulder										
8				17	20		1	39	60	31	21	10
10		Weathered ROCK with sand										
12				18								
		END AT 13'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 28

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-28

Total Depth: 10'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil with gravel										
		Brown Silty SAND (SM)										
2		moist, medium dense										
				19								
4		Weathered ROCK with boulders										
		slightly moist, medium dense to dense										
6				20								
8												
		dry, very dense		21								
10		REFUSAL AT 10'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 29

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-29

Total Depth: 5'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		4" Topsoil										
		Brown SILT (ML) with cobbles and sand, trace gravel										
2		Weathered ROCK										
				22								
4												
		REFUSAL AT 5'										
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 30

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-30

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil										
		Dark Brown SILT (ML) with sand and clay										
2												
				23								
4												
		Brown Silty SAND (SM) with clay moist, hard/dense										
6				24	19		12	69	19			NP
8												
				25								
10												
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 31

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-31

Total Depth: 1'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		3" Topsoil with organics										
		Cobbles and Boulders (G)										
		END AT 1'										
2												
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 32

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-32

Total Depth: 6.5'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil and Rock										
2		Light Brown Silty SAND (SM) with gravel dry, dense		26	10		50	40	10			NP
4												
6				27								
		REFUSAL AT 6.5'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 33

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-33

Total Depth: 7'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		4" Topsoil										
		Brown Silty SAND (SM) with cobbles moist, medium dense										
2		Weathered ROCK with coarse sand, silt, gravel and cobbles dry, dense										
				28								
4												
6				29								
		END AT 7'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 34

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-34

Total Depth: 5.5'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Weathered Rock grading to Silty Sand dry, very dense										
2												
				30	18		32	39	29			
4												
		REFUSAL AT 5.5'										
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 35

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-35

Total Depth: 5.5'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Weatherd Rock with sand										
		dry, very dense										
2												
				31								
4												
		REFUSAL AT 5.5'										
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 36

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-36

Total Depth: 6'
Water Depth: (see Remarks)

Date: 6/2/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Weathered Rock with sand and silt										
2												
				32	10		55	35	10			NP
4												
6		END AT 6'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 37

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-37

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Brown SAND (SP-SM) with silt, clay, gravel and cobbles slightly moist, medium dense										
2												
				1								
4												
		Weathered Rock grades to Sand and Gravel with silt and cobbles dry, very dense										
6				2	19		3	55	42			NP
8												
				3								
10												
12		REFUSAL AT 10'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 38

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-38

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
2		Tan/Brown Clayey SAND (SC) with silt, gravel and pinholes moist, medium dense		4	24	79	18	34	48	52	36	16
4		Brown/Orange/Tan SAND (SP-SM) with silt, gravel and clay										
6				5								
8												
10				6								
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 39

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-39

Total Depth: 12'
Water Depth: 4'

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil; dark brown silt and clay with organics and sand moist, medium dense										
4		Brown Sandy CLAY (CL) wet stiff										
6		Blue Fat CLAY (CH) wet, stiff										
8				7	44	73	1	14	85	55	28	27
10		Brown/Orange/Tan SAND (SP-SM) with silt, gravel and clay wet, medium dense										
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 4 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 40

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-40

Total Depth: 13'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
2		Brown Sandy CLAY (CL) moist, stiff		8								
4												
6				9								
8		grades light gray dry, hard										
10				10	27	91	1	38	61	35	21	14
12		END AT 13'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 41

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-41

Total Depth: 10'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil; silty loam with roots										
2		Tan Clayey SAND (SC) moist, medium dense		11								
4		Weathered Rock grades to Sand with silt, gravel and cobbles dry, dense										
6				12								
8												
10		REFUSAL AT 10'		13								
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 42

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-42

Total Depth: 17'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil										
		Dark Brown SILT (ML) with sand and clay										
2												
				14								
4		Tan/Brown/Dark Brown SAND (SP-SM) with silt										
		moist, dense										
6				15	17		0	54	46			NP
8		grades gray/brown										
				16								
10												
12				17								
14												
				18								
16												
		REFUSAL AT 17'										
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 43

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-43

Total Depth: 1.5'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Weathered ROCK dry, very dense										
2		END AT 1.5'										
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 44

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-44

Total Depth: 5'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Weathered ROCK										
		dry, very dense										
2												
				19								
4												
		REFUSAL AT 5'										
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 45

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-45

Total Depth: 1.5'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		4" Topsoil										
		Weathered ROCK dry, very dense										
		REFUSAL AT 1.5'		20								
2												
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 46

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-46

Total Depth: 8.5'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; silty loam										
2		Brown Sandy CLAY (CL) with silt		21	16		0	43	57	38	21	17
4		Light Brown/Orange/Gray Weathered ROCK with clay, silt and sand dry, very dense										
6				22								
8		REFUSAL AT 8.5'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 47

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-47

Total Depth: 6.5'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
2		Brown Silty SAND (SM) with cobbles moist, medium dense Light Brown/Tan Clayey SAND (SC) with silt, gravel and cobbles		23								
4												
6				24								
		REFUSAL AT 6.5'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 48

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-48

Total Depth: 10'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil; dark brown silty loam with organics										
2		Light Brown Silty SAND (SM) with clay very moist, medium dense										
				25								
4												
6				26	26		4	62	34			NP
		Gray/Orange/Tan Coarse SAND (SP) with fine sand, gravel and cobbles, trace clay and boulders										
8												
				27								
10		REFUSAL AT 10'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 49

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-49

Total Depth: 12'
Water Depth: 7'

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil; highly organic silty loam — very moist										
2				28								
4		— very moist										
6				29								
8		Brown Silty CLAY (CL) — wet, stiff										
10				30								
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 7 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 50

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-50

Total Depth: 14'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
2		Yellow/Tan FAT CLAY (CH) moist, stiff		31								
4												
6				32	28	78	1	35	64	50	22	28
8		Brown/Tan Clayey SAND (SC) with silt moist, medium dense										
10				33								
12				34								
14		END AT 14'										
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 51

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-51

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil										
		Brown Silty Loam										
2		Tan Silty CLAY (CL) with sand moist, stiff										
				35								
4		Brown/Tan Sandy CLAY (CL) with trace gravel very stiff										
6				36								
8												
				37								
10		grades with more sand										
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 52

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-52

Total Depth: 12'
Water Depth: 8'

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil										
2		Highly Calcified Silty CLAY (CL) with fine sand moist, very stiff		38								
4		Brown Silty CLAY (CL) with sand										
6				39								
8		Light Brown Fat CLAY (CH) wet very stiff		40	24	95	0	7	93	58	19	39
10												
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 8 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 53

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-53

Total Depth: 12'
Water Depth: 9'

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil										
2		Brown Clayey SAND (SC) moist, medium dense		41								
4												
6		Brown Sandy CLAY (CL) moist, stiff		42								
8												
10		Light Blue Coarse SAND (SP) wet medium dense		43	33		0	96	4			NP
12		REFUSAL AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 9 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 54

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-54

Total Depth: 12'
Water Depth: 4.5'

Date: 6/3/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil										
2		Brown Sandy CLAY (CL0 moist, stiff		44								
4		Brown/Orange SAND (SP) with clay and gravel wet medium dense										
6				45								
8												
10				46								
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 4.5 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 55

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-55

Total Depth: 3'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Brown Sandy SILT (ML)										
2		Weather Rock grades to Sandy Clay	◢	1	24		14	45	41	28	16	12
		REFUSAL AT 3'										
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 56

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-56

Total Depth: 1'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Cemented Rock										
		REFUSAL AT 1'										
2												
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 57

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-57

Total Depth: 12'
Water Depth: 8'

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil										
2		Brown Fat CLAY (CH) with sand and pinholes moist, stiff		2								
4												
6				3	32	75	0	10	90	60	29	31
8		Blue/Light Blue CLAY (CL) with silt, coarse sand and gravel, trace pinholes wet very stiff		4								
10												
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 8 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 58

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-58

Total Depth: 6.5'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Brown Fine SAND (SP)										
2				5								
		Weathered Rock dry, very dense										
4												
6				6								
		REFUSAL AT 6.5'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 59

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-59

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		4" Topsoil										
		Dark Brown Silty Loam										
2		Brown Silty SAND (SM)										
				7	17		2	51	47			NP
4												
6		Brown Silty CLAY (CL) with pinholes		8								
8												
				9								
10												
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 60

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-60

Total Depth: 12'
Water Depth: 4.5'

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil										
2		Light Brown/Tan CLAY (CL) with silt — moist, stiff		10								
4	▽											
		Coarse SAND (SP) with rounded gravel — wet, loose										
6				11								
8												
		Blue CLAY (CL) with fine sand and silt — wet, stiff		12								
10												
		GRAVEL (GP) with sand — wet, loose										
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 4.5 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 61

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-61

Total Depth: 12'
Water Depth: 5.5'

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil										
2		Red/Brown Silty CLAY (CL) with sand moist, stiff		13								
4												
6		GRAVEL (GP) with sand wet loose		14								
8												
10		Tan/Brown Clayey SAND (SC) with silt wet, medium dense		15	25		21	33	46	28	15	13
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 5.5 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 62

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-62

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
2		Brown CLAY (CL) with silt moist, very stiff		16								
4												
6		GRAVEL (GP) with sand very moist, loose		17	22	92	0	35	65	36	18	18
8												
10		Brown Sandy CLAY (CL) with trace gravel moist, stiff		18								
12		GRAVEL (GP) with boulders very dense REFUSAL AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 63

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-63

Total Depth: 14'
Water Depth: 10'

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil										
		Dark Brown Silty Loam										
2		Red/Brown Mottled CLAY (CL) with silt										
				19								
4												
6				20								
8		Red/Brown CLAY (CL) with gravel, trace sand and cobbles										
10		wet		21								
12												
14		END AT 14'										
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 10 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 64

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-64

Total Depth: 12'
Water Depth: 10'

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		4" Topsoil										
		Brown Silty Loam										
2		Red/Brown Silty CLAY (CL) with gravel and sand, moist, stiff		22								
4												
6				23								
8												
10		wet		24	22		1	12	87	47	19	28
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 10 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 65

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-65

Total Depth: 12'
Water Depth: 10'

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil										
		Brown Clayey SILT (ML) moist										
2												
				25								
4		grades light brown with pinholes										
6				26								
		Brown Fat CLAY (CL) with trace sand moist										
8												
				27								
10		wet										
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 10 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 66

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-66

Total Depth: 13'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Topsoil										
2		Reddish-Brown Silty CLAY (CL) moist grades tan		28								
4												
6		Red/Tan/Light Blue/Brown Clayey SAND (SC) moist		29	21		22	34	44	31	15	16
8												
10				30								
12												
		END AT 13'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 67

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-67

Total Depth: 11'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Red/Brown Silty CLAY (CL)										
2												
				31								
4												
6				32								
		Red/Brown Clayey SAND (SC) with gravel and silt										
8												
				33								
10		END AT 11'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 68

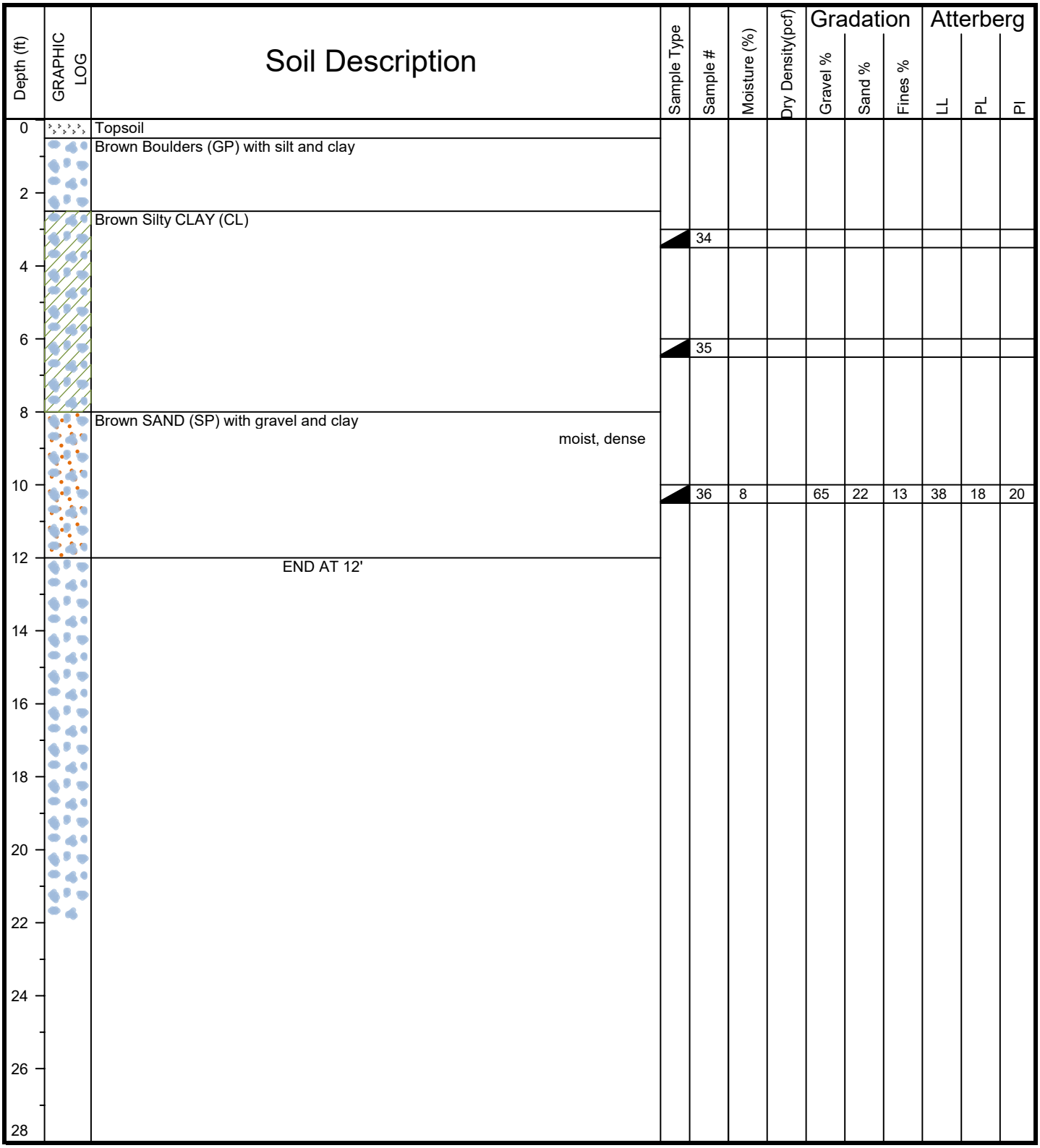
Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-68

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744



Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 69

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-69

Total Depth: 8'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		3" Topsoil										
		Brown Angular ROCK (GP) with silt and trace sand										
2												
				37								
4												
6												
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Page: 1 of 1

Figure: 70

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-70

Total Depth: 8'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		3" Topsoil										
		Brown Boulders (GP) with cobbles, gravel, trace sand and silt — medium dense										
4		Weathered Rock with coarse sand, gravel, clay and silt										
				38								
6		grades with larage boulders — dense										
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 71

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-71

Total Depth: 10'
Water Depth: 4'

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Dark Brown Silty Loam										
2		Brwon SILT (ML) with sand and gravel		39								
4 ▽		Brown/Blue CLAY (CL) with sand — wet, stiff										
6				40	30	87	0	18	82	43	17	26
8		GRAVEL (GP) with cobbles, sannd and trace clay — wet, dense		41								
10		END AT 10'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater encountered during excavation at depth of 4 feet.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 72

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-72

Total Depth: 6.5'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Brown Fat CLAY (CH) moist, stiff										
2				42								
		Weathered Rock grades to Sandy Clay dry, hard										
4												
6				43	16		9	23	68	42	24	18
		REFUSAL AT 6.5'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 73

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-73

Total Depth: 10'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Brwon ROCK (GP) with silty loam										
2		Weathered Rock grades to Silty Sand (SM) with gravel and cobbles										
				44	14		7	74	19			NP
4												
6				45								
8												
				46								
10		END AT 10'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 74

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-74

Total Depth: 3.5'
Water Depth: (see Remarks)

Date: 6/4/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		3" Topsoil										
		ROCK (GP) with boulders, cobbles and gravel dry, very dense										
2				47								
		END AT 3.5'										
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 75

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-75

Total Depth: 3'
Water Depth: (see Remarks)

Date: 2/20/17
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Weathered ROCK										
2				1								
		END AT 3'										
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Farrer Excavation
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 76

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-76

Total Depth: 10'
Water Depth: (see Remarks)

Date: 2/20/17
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Silty Loam with boulders										
2		Red Fat CLAY (CH) with tan silty sand veins moist, very stiff										
				2								
4		Red Silty SAND (SM) with fat clay layers moist, dens										
6				3								
8		grades with cobbles very dense		4	10	102	1	49	50			NP
10		REFUSAL AT 10'										
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Farrer Excavation
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 77

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-77

Total Depth: 6.5'
Water Depth: (see Remarks)

Date: 2/20/17
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Weatherd Rock grades to Silty Sand (SM) dry, very dense										
2				5								
4		grades with boulders										
6				6	23		10	63	27			NP
		END AT 6.5'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Farrer Excavation
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 78

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-78

Total Depth: 5'
Water Depth: (see Remarks)

Date: 6/6/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Boulders (GP) with silty loam										
2												
4												
		END AT 5'										
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 79

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-79

Total Depth: 12.5'
Water Depth: (see Remarks)

Date: 6/6/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		8" Topsoil										
		Silty Loam										
2		Light Gray/Tan CLAY (CL) with orange sand seams moist, stiff		7								
4		Brown Silty CLAY (CL) with sand and cobbles, trace gravel hard										
6				8	19		21	13	66	42	18	24
8												
				9								
10												
12		END AT 12.5'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 80

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-80

Total Depth: 1.5'
Water Depth: (see Remarks)

Date: 6/6/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		ROCK										
				10								
2		REFUSAL AT 1.5'										
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 81

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-81

Total Depth: 12'
Water Depth: (see Remarks)

Date: 6/6/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation Gravel %	Gradation Sand %	Gradation Fines %	Atterberg LL	Atterberg PL	Atterberg PI
0		Highly Organic Topsoil										
2		Brown/Gray/Tan CLAY (CL) with silt moist, stiff										
4												
6		Light Blue Sandy SILT (ML) with clay moist, stiff		11								
8												
10		Brown Silty SAND (SM) with clay moist, medium dense		12	30		0	54	46			NP
12		END AT 12'										
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 82

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-82

Total Depth: 7.5'
Water Depth: (see Remarks)

Date: 6/17/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		8" Topsoil										
2		Brown Silty Loam		13								
4		Yellow Weathered Rock grades to Silty Sand (SM) dry, very dense										
6				14								
8		END AT 7.5'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 83

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-83

Total Depth: 1'
Water Depth: (see Remarks)

Date: 6/17/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		ROCK (GP) dry, very dense										
		REFUSAL AT 1'										
2												
4												
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 84

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-84

Total Depth: 8'
Water Depth: (see Remarks)

Date: 6/17/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation: Gravel %	Gradation: Sand %	Gradation: Fines %	Atterberg: LL	Atterberg: PL	Atterberg: PI
0		Topsoil										
2		Brown Silty Loam										
4		Yellow Weathered Rock grades to Silty Sand (SM) dry, very dense		15								
6				16								
8		END AT 8'										
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 85

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-85

Total Depth: 3.5'
Water Depth: (see Remarks)

Date: 6/17/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Brown Silty Loam with cobbles										
2		Yellow Weathered ROCK dry, very dense										
				17								
4		REFUSAL AT 3.5'										
6												
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 86

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Test Pit Log TP-86

Total Depth: 6.5'
Water Depth: (see Remarks)

Date: 6/17/20
Job #: 14744

Depth (ft)	GRAPHIC LOG	Soil Description	Sample Type	Sample #	Moisture (%)	Dry Density(pcf)	Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI
0		Topsoil										
		Brown Silty Loam										
2		Light Brown CLAY (CL) with sand and silt slightly moist, hard		18								
4		Weathered ROCK dry, very dense										
6				19								
		REFUSAL AT 6.5'										
8												
10												
12												
14												
16												
18												
20												
22												
24												
26												
28												

Remarks: Groundwater not encountered during excavation.

Coordinates: °, °
Surface Elev. (approx): Not Given

Equipment: Rubber Tire Backhoe
Excavated By: Skyline Construction
Logged By: Nate Pack

CMT ENGINEERING LABORATORIES

Figure: 87

Richardson Flats

Highway 248 and Highway 189, Park City, Utah

Key to Symbols

Date: 2/20/17

Job #: 14744

① Depth (ft)	② GRAPHIC LOG	③ Soil Description	④ Sample Type	⑤ Sample #	⑥ Moisture (%)	⑦ Dry Density(pcf)	⑧ Gradation			Atterberg		
							Gravel %	Sand %	Fines %	LL	PL	PI

COLUMN DESCRIPTIONS

Depth (ft.): Depth (feet) below the ground surface (including groundwater depth - see water symbol below).

Graphic Log: Graphic depicting type of soil encountered (see below).

Soil Description: Description of soils encountered, including Unified Soil Classification Symbol (see below).

Sample Type: Type of soil sample collected at depth interval shown; sampler symbols are explained below-right.

Sample #: Consecutive numbering of soil samples collected during field exploration.

Moisture (%): Water content of soil sample measured in laboratory (percentage of dry weight of sample).

Dry Density (pcf): The dry density of a soil measured in laboratory (pounds per cubic foot).

Gradation: Percentages of Gravel, Sand and Fines (Silt/Clay), obtained from lab test results of soil passing the No. 4 and No. 200 sieves.

Atterberg: Individual descriptions of Atterberg Tests are as follows:

LL = Liquid Limit (%): Water content at which a soil changes from plastic to liquid behavior.

PL = Plastic Limit (%): Water content at which a soil changes from liquid to plastic behavior.

PI = Plasticity Index (%): Range of water content at which a soil exhibits plastic properties (= Liquid Limit - Plastic Limit).

STRATIFICATION	
Description	**Thickness**
Seam	Up to ½ inch
Lense	Up to 12 inches
Layer	Greater than 12 in.
Occasional	1 or less per foot
Frequent	More than 1 per foot

MODIFIERS
Trace
<5%
Some
5-12%
With
> 12%

MOISTURE CONTENT
Dry: Absence of moisture, dusty, dry to the touch.
Moist: Damp / moist to the touch, but no visible water.
Wet: Visible water, usually soil below groundwater.

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS SYMBOLS	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS More than 50% of material is larger than No. 200 sieve size.	GRAVELS The coarse fraction retained on No. 4 sieve.	CLEAN GRAVELS (< 5% fines)	GW	Well-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
			GP	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or No Fines
		GRAVELS WITH FINES (≥ 12% fines)	GM	Silty Gravels, Gravel-Sand-Silt Mixtures
			GC	Clayey Gravels, Gravel-Sand-Clay Mixtures
	SANDS The coarse fraction passing through No. 4 sieve.	CLEAN SANDS (< 5% fines)	SW	Well-Graded Sands, Gravelly Sands, Little or No Fines
			SP	Poorly-Graded Sands, Gravelly Sands, Little or No Fines
		SANDS WITH FINES (≥ 12% fines)	SM	Silty Sands, Sand-Silt Mixtures
			SC	Clayey Sands, Sand-Clay Mixtures
FINE-GRAINED SOILS More than 50% of material is smaller than No. 200 sieve size.	SILTS AND CLAYS Liquid Limit less than 50%		ML	Inorganic Silts and Sandy Silts with No Plasticity or Clayey Silts with Slight Plasticity
			CL	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean Clays
			OL	Organic Silts and Organic Silty Clays of Low Plasticity
	SILTS AND CLAYS Liquid Limit greater than 50%		MH	Inorganic Silts, Micacious or Diatomacious Fine Sand or Silty Soils
			CH	Inorganic Clays of High Plasticity, Fat Clays
			OH	Organic Silts and Organic Clays of Medium to High Plasticity
HIGHLY ORGANIC SOILS			PT	Peat, Soils with High Organic Contents

Note: Dual Symbols are used to indicate borderline soil classifications (i.e. GP-GM, SC-SM, etc.).

SAMPLER SYMBOLS

- Block Sample
- Bulk/Bag Sample
- Modified California Sampler 3.5" OD, 2.42" ID
- D&M Sampler
- Rock Core
- Standard Penetration Split Spoon Sampler
- Thin Wall (Shelby Tube)

WATER SYMBOL

- Encountered Water Level
- Measured Water Level

(see Remarks on Logs)

1. The results of laboratory tests on the samples collected are shown on the logs at the respective sample depths.
2. The subsurface conditions represented on the logs are for the locations specified. Caution should be exercised if interpolating between or extrapolating beyond the exploration locations.
3. The information presented on each log is subject to the limitations, conclusions, and recommendations presented in this report.

CMT ENGINEERING LABORATORIES

Figure: 88

APPENDIX D

Regulatory or Agency Files

100005323

SECOND FIVE-YEAR REVIEW REPORT FOR RICHARDSON FLAT TAILINGS SUPERFUND SITE SUMMIT COUNTY, UTAH

Prepared by

U.S. Environmental Protection Agency
Region 8
Denver, Colorado

Betsy Smidinger
Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

8/10/18
Date

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LIST OF ABBREVIATIONS AND ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CD	Consent Decree
CFR	Code of Federal Regulations
CIC	Community Involvement Coordinator
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
IC	Institutional Control
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PCMC	Park City Municipal Corporation
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
RI	Remedial Investigation
ROD	Record of Decision
RPM	Remedial Project Manager
UPCM	United Park City Mines
USFWS	United States Fish and Wildlife Service
UTDEQ	Utah Department of Environmental Quality
UU/UE	Unlimited Use and Unrestricted Exposure

I. INTRODUCTION

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 CFR Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the second FYR for the Richardson Flat Tailings Site (the Site). The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the Site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site is located in and around Park City, within Summit County, Utah, in the Silver Creek watershed. Mining activities began in the upgradient mining district in the late 1860s. The Site, located in and around Silver Creek, downstream of the mining district, has been impacted by mining waste. The Site consists of four operable units (OUs) (Figure 1). This FYR addresses OU1, the Richardson Flat tailings impoundment (Figure 2). Remedial action has occurred at OU1, as discussed in Section II. Site characterization investigations are ongoing at the remaining OUs. OU2 encompasses approximately 1,216 acres along Lower Silver Creek north and east of Highway 40. OU3 encompasses approximately 856 acres located east of Park City in areas along Silver Creek. These two OUs are comprised of mine tailings that have come to be located in the Lower Silver Creek floodplain. Investigations are ongoing to determine the nature and extent of contamination within the flood plain and upland areas. OU4 is an ongoing discharge known as Prospector Drain. The drain was installed during the 1970s to lower the water table in order to develop Prospector Park and Prospector Square (a park and housing development) on tailings material. In 2008, Park City Municipal Corporation (PCMC) constructed a biocell to reduce the concentrations of cadmium and zinc in the water captured by the drain. Supplemental flow that is not processed through the biocell is bypassed to Silver Creek. Investigations are ongoing to determine the nature and extent of contamination at OU4.

EPA remedial project manager (RPM) Robert Parker led the FYR. Participants included Mo Slam from the Utah Department of Environmental Quality (UTDEQ), EPA community involvement coordinator (CIC) Katherine Jenkins, and Ryan Burdge and Treat Suomi of Skeo. The review began on 5/31/2017.

Site Background

OU1 consists of approximately 258 acres of land, including a tailings impoundment that covers approximately 160 acres of land. The impoundment was a mine tailings reservoir created prior to 1950. It is now the location of approximately 7 million tons of sand-sized carbonaceous particles and minerals containing zinc, silver, lead and other metals. Appendix A and B include a list of relevant site documents and site chronology.

According to the Remedial Investigation (RI) report, few details are known about the original embankment along the western area of OU1, but it is believed to have been constructed as part of the original tailings impoundment. In the 1970s, to accommodate additional tailings, an operator constructed a large earth embankment along the western edge of the impoundment, perimeter containment dikes along the southern and eastern borders of the impoundment and a diversion ditch system north of the impoundment and along the southern and eastern containment dikes. The impoundment was last used as a repository for new tailings in 1982. Currently, most of OU1 is a covered tailings impoundment bounded by containment dikes with the main embankment to the northwest (Figure 3). A parking area is located at the eastern end of OU1.

Silver Creek flows along the northwest border of the OU, separated from OU1 by a small stretch of wetlands and

riparian vegetation. Most of the land around OU1 is undeveloped open space, although there is development interest in the Silver Creek valley in the general area of OU1. OU1 lies within a 650 acre parcel owned by United Park City Mines (UPCM), a potentially responsible party (PRP). While no final decision has been made on future use at OU1, potential uses range from open space wildlife habitat to athletic fields. Currently, a recreation trail passes through the Site alongside Silver Creek.

Surface water features at OU1 include the south diversion ditch, the wetlands area below the embankment and a pond. All the surface water and shallow groundwater at OU1 eventually discharge to Silver Creek, which is classified by the State as a potential drinking water source, a recreational use feature, a cold-water fishery and a potential irrigation source.

A 12-square mile downgradient well inventory conducted during the RI determined that all wells are deeper than 150 feet and there are no known wells located within a half mile of OU1. The shallow groundwater at OU1 is generally associated with the alluvial system of Silver Creek. The Silver Creek alluvial aquifer is very high in total dissolved solids and is often contaminated due to water quality in Silver Creek and tailings that are present along the creek in many areas. The OU1 RI concluded that OU1 does not present a risk to the Silver Creek alluvial aquifer due to the relative contaminant concentrations between shallow groundwater present at OU1 and higher concentrations present in the alluvial groundwater. The potential for impacts to the Silver Creek alluvial aquifer by OU1 should be re-evaluated in future FYRs due to future OU 2 and 3 remediation efforts. There are no known current uses for the shallow aquifer.

Figure 1: Site Operable Units

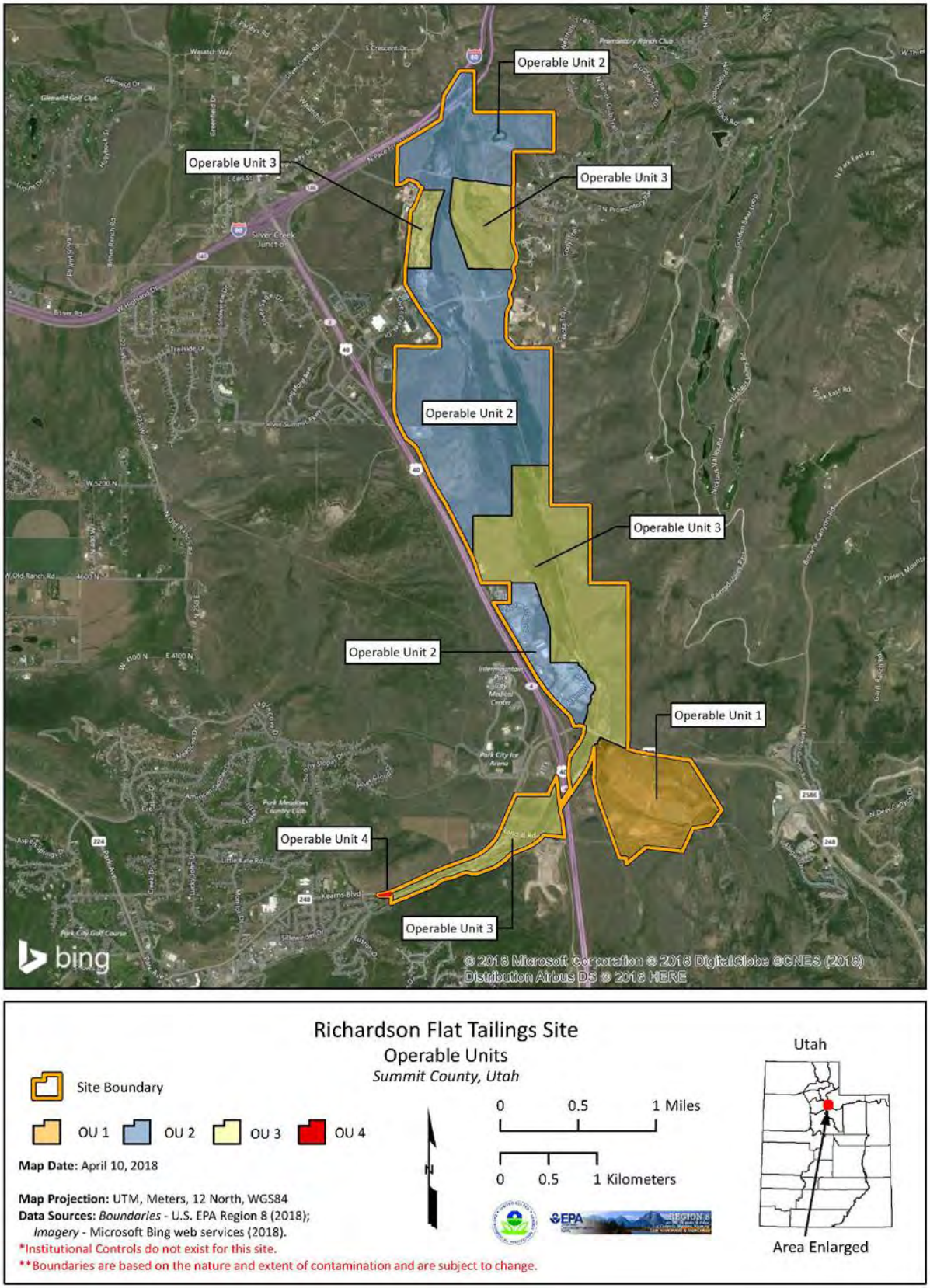
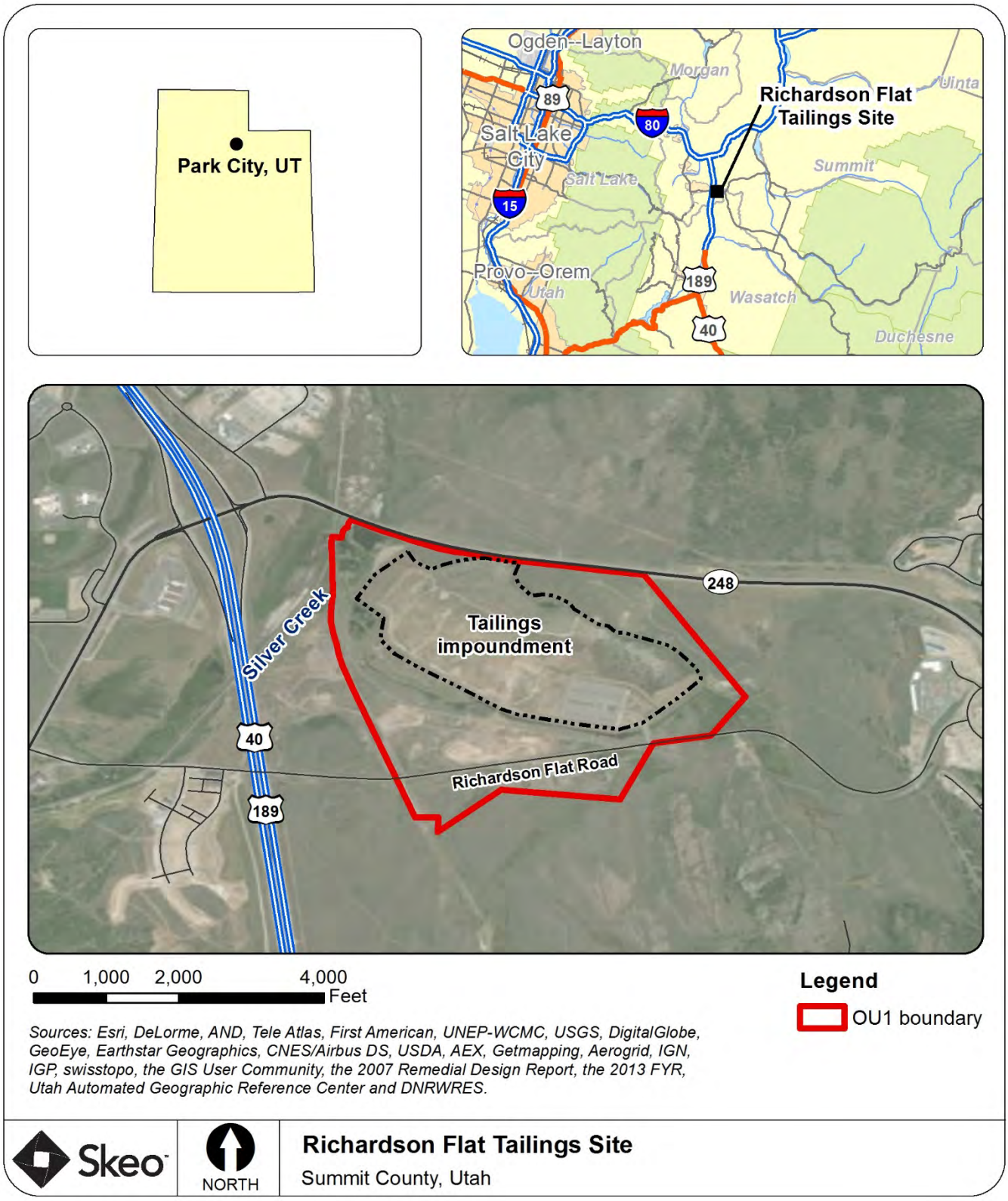


Figure 2: Site Location Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site

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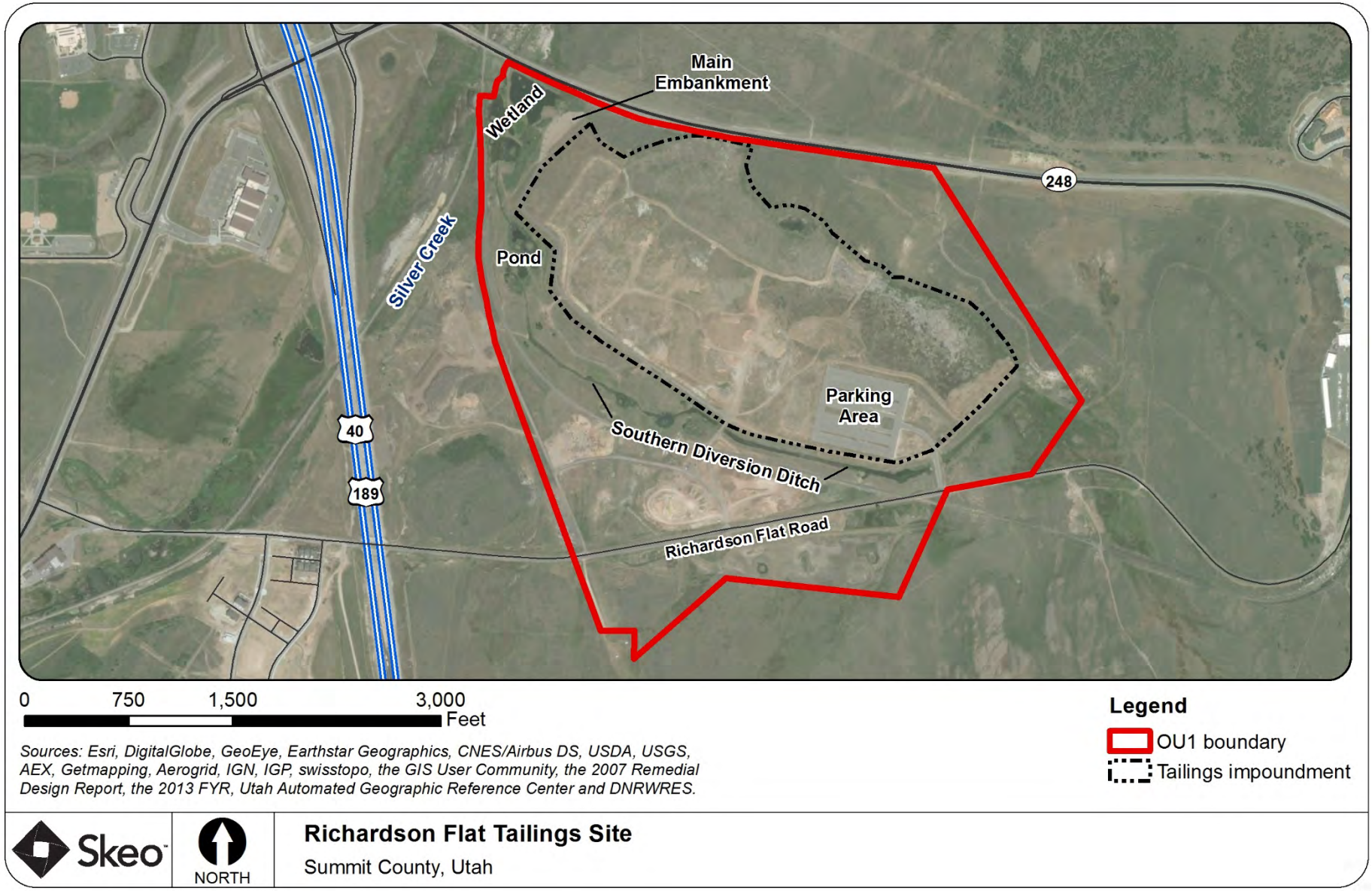
Figure 3: Detailed Map of OU1



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION		
Site Name: Richardson Flat Tailings		
EPA ID: UTD980952840		
Region: 8	**State:** Utah	**City/County:** Park City/Summit
SITE STATUS		
NPL Status: Proposed		
Multiple OUs? Yes	**Has the Site achieved construction completion?** No	
REVIEW STATUS		
Lead agency: EPA		
Author name: Rob Parker with contractor support provided by Skeo		
Author affiliation: EPA Region 8 and Skeo		
Review period: 5/31/2017 – 3/14/2018		
Date of site inspection: 9/21/2017		
Type of review: Statutory		
Review number: 2		
Triggering action date: 3/14/2013		
Due date *(five years after triggering action date)*: 3/14/2018		

II. RESPONSE ACTION SUMMARY

Basis for Taking Action

EPA began initial site assessments in 1984. High-volume air sampling at OU1 in 1986 found that arsenic, cadmium, lead and zinc had been released to the air. EPA originally proposed the Site for listing on the National Priorities List (NPL) in 1988. After considering public comment, EPA removed the Site from NPL consideration in 1991. By 1992, the Hazard Ranking System (HRS) had been revised, and EPA again proposed the Site for listing on the NPL. Ultimately, EPA decided not to pursue final listing on the NPL, and the Site remains proposed for the NPL.

On September 28, 2000, EPA and UPCM signed an Administrative Order on Consent requiring UPCM to conduct a remedial investigation/focused feasibility study for OU1. Sampling confirmed contamination with heavy metals, primarily zinc, lead and arsenic, in the sediments and surface water of the south diversion ditch, the on-site wetland and Silver Creek. OU1's 2003 baseline human health risk assessment determined there were potential future risks from lead and arsenic to recreational users, the targeted use population. EPA deemed remedial action

was necessary to maintain and improve the soil cover placed on the tailings and to prevent disturbances to the soil cover that could allow for exposure to the underlying tailings.

The ecological risk assessment identified substantial risks to ecological receptors at OU1 from exposure to zinc, cadmium, lead and arsenic found in environmental media at the Site. Exposure pathways included direct contact with the sediments in the south diversion ditch and the wetlands area. These exposure areas also presented risks to ecological receptors through contact or ingestion of surface water and sediment porewater found at the Site.

Response Actions

During the 1990s, prior to the Record of Decision (ROD), UPCM completed voluntary work at OU1, including covering most of the tailings pile with clean, low-permeability soil and reseeding the Site. UPCM also improved the diversion ditch.

EPA selected the final OU1 remedy in the Site's 2005 ROD. To address existing and potential risks, as well as to accommodate the anticipated future recreational and ecological use of OU1, EPA developed nine remedial action objectives (RAOs):

- Reduce risks to wildlife receptors in the wetland area and south diversion ditch such that hazard indexes for lead are less than or equal to 1.
- Ensure that recreational users, including children, continue to have no more than a 5 percent chance of exceeding a blood lead level of 10 micrograms per deciliter from exposure to lead in soils.
- Ensure that recreational users, including children, continue to have no more than 1×10^{-4} chance of contracting cancer from exposure to arsenic in soils.
- Eliminate the risk of catastrophic failure of the tailings impoundment.
- Ensure that surface water discharged from the Site meets applicable Utah water quality standards.
- Eliminate the possibility of future groundwater use and withdrawal at the Site.
- Allow for a variety of future recreational uses.
- Allow for future disposal of mine tailings from the Park City area within the tailings impoundment until the remedy is complete.
- Minimize post-cleanup disturbance of tailings and contaminated soil. Provide controls that ensure any necessary disturbance at the Site follows prescribed methods.

The selected remedy addressed mine tailings located in several areas of OU1, including the main impoundment, a section south of the diversion ditch, and the wetlands below the embankment. Other media addressed through the selected remedy were sediments and surface water located within the OU1 boundary.

Major components of the remedy include:

- Excavate tailings in critical areas outside the impoundment and place tailings inside the impoundment.
- Augment the soil cover to achieve a depth of at least 18 inches of soil (containing less than 500 mg/kg lead) above tailings.
- Allow for placement of additional mine waste from the Silver Creek watershed within the impoundment which, upon completion, will require 18 inches of cover.
- Cover sediments in diversion ditch with clean fill.
- Excavate contaminated sediments and soils in the wetland below the embankment and place sediments inside the impoundment. A sediment remediation goal of 310 milligrams per kilogram (mg/kg) lead was established.
- Fortify the existing embankment to prevent catastrophic failure.
- Implement institutional controls (easements and land use restrictions) to protect soil cover and prevent groundwater use.

- Monitor surface water. Water quality samples were collected at the mouth of the diversion ditch quarterly for two years after construction was completed to ensure that discharges into Silver Creek met applicable water quality standards. (See Appendix H)

As discussed previously, the OU1 ROD contemplated the consolidation of mine wastes at OU1 from other cleanup locations in the Silver Creek watershed. Certain areas of OU1, including F-2 and F-3, have a temporary 6 inch soil cover to facilitate further consolidation while EPA continues OU2 and OU3 site characterization to determine if additional material will be brought to these areas prior to placing the full 18 inch cover material. Furthermore, the OU1 Consent Decree (CD) authorized, until EPA issues the Certificate of Completion, UPCM to accept mine waste, subject to EPA written approval. EPA last provided this approval in 2010. Appropriate cover material, as required by the ROD, will be placed prior to issuance of a Certificate of Completion. As part of a separate, EPA lead time critical removal action at a nearby school, additional off-site lead-contaminated materials were placed and covered in the impoundment in 2016. Additional soils that have been brought on-site to be used as future cover or fill material have been screened at 500 mg/kg lead, if originating from potentially contaminated areas, to ensure compliance with the ROD.

The OU1 RI concluded that OU1 does not present a risk to off-site groundwater due to a confining layer below contaminated groundwater that limits migration to deeper aquifers and the relative contaminant concentrations between shallow groundwater present at OU1 and higher concentrations present in the nearby Silver Creek alluvial groundwater. The potential for contaminant contribution from OU1 to Silver Creek alluvial groundwater should be re-evaluated in future FYRs due to ongoing remediation efforts within OU2 and OU3 at the Site. Regardless, on-site shallow groundwater contains metals at concentrations that exceed drinking water standards. Groundwater use at the Site will be restricted through institutional controls to ensure no unacceptable exposures.

Status of Implementation

UPCM initiated the OU1 remedial design on August 7, 2007, and completed it on October 7, 2007. Remedial action began on February 7, 2008. Remedy construction at OU1 was completed by UPCM, with EPA oversight, and included consolidating tailings material within the main impoundment, installing a wedge buttress to support the main embankment, and removing sediments in the wetland area. The remedial activities occurred in a phased approach, based on the tasks described in the remedial design (Figure C-1). In 2011, UPCM completed planned construction activities for OU1, except for the additional cover material in certain locations where only temporary cover currently exists. Additional cover material will be needed in these locations once it is determined consolidation of mine waste material is complete or no longer necessary.

The main embankment fortification consisted of constructing a wedge buttress in 2008, in accordance with a 2001 slope stability evaluation. From 2008-2011, all tailings in critical areas outside the impoundment were excavated and moved inside the impoundment (see Appendix C for maps of removal areas). Approximately 46,000 cubic yards of contaminated material were removed from the embankment wetland. Wetland restoration consisted of grading and revegetation with appropriate plant species. As required by the Remedial Design/Remedial Action Plan, confirmation sampling verified that soils remaining in each source removal area and soils placed as cover contain less than 500 mg/kg lead and 100 mg/kg arsenic. Lead concentrations for source removal in the embankment wetland were set at 500 mg/kg for soils and 310 mg/kg for sediments. Sediment sampling results from 23 source removal lead confirmation samples collected in the embankment wetland area averaged 43.1 mg/kg, ranging from 33 to 126 mg/kg. Post-construction measurements of the impoundment indicated that all areas measured contain at least 18 inches of clean fill material, with the exception of areas F-2 and F-3. Tailings excavated from the embankment area and additional regional sources were placed in impoundment areas F-2 and F-3 and covered with a temporary 6-inch soil cover while EPA continues OU2 and OU3 site characterization to determine if additional material will be brought to these areas prior to placing the full 18 inch cover material.

Surface water monitoring was performed to monitor migration of metals from the Site. The results of all samples were significantly below the TMDL limits for the Silver Creek Watershed. (See Appendix H)

Institutional Control (IC) Review

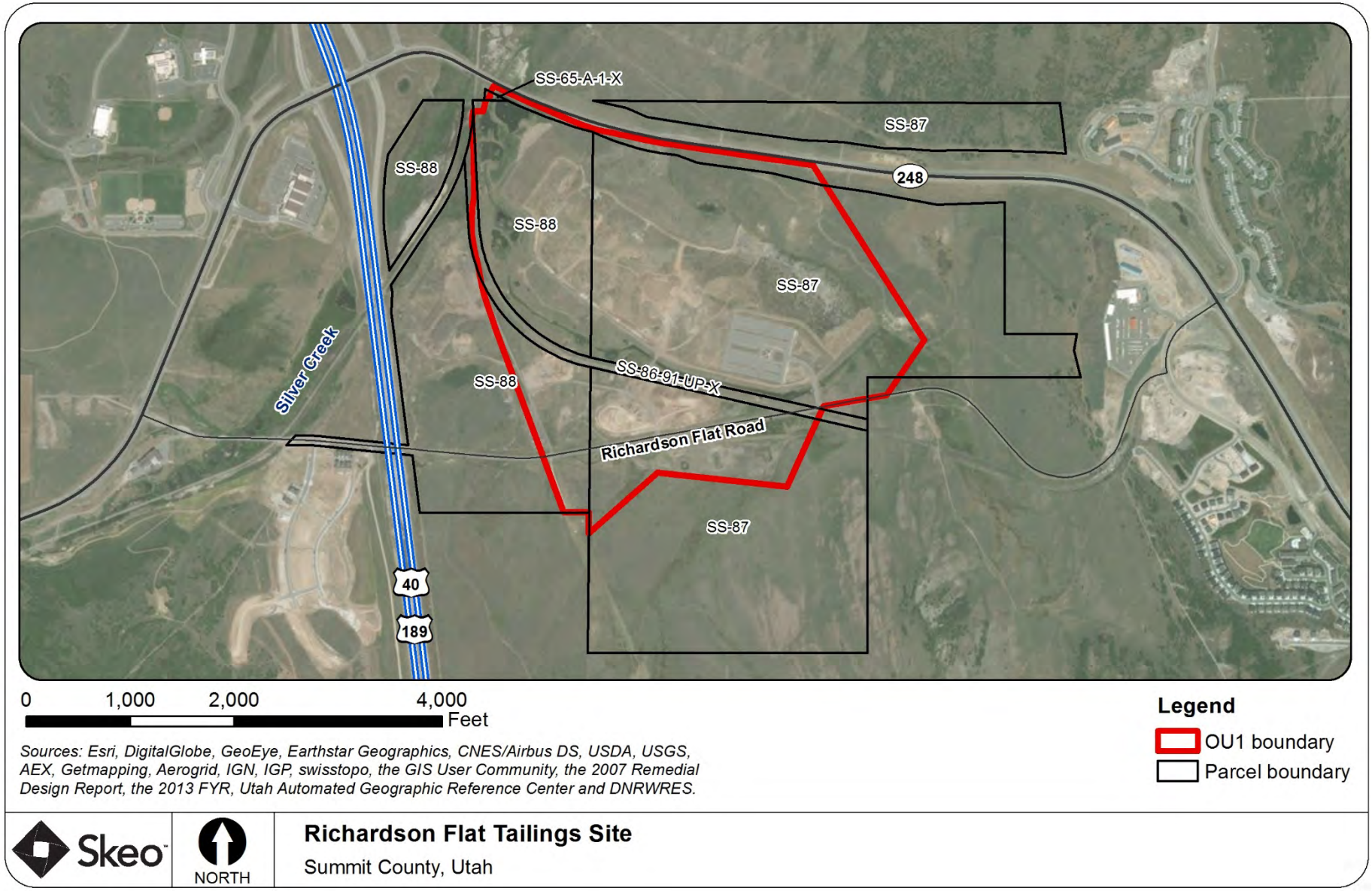
Institutional controls called for in the ROD are not yet in place (Table 1). The property is currently zoned as rural residential. The ROD states that two primary institutional controls will be implemented to mitigate potential risks and ensure the long-term protectiveness of the remedy:

- *Groundwater use restrictions within the site boundary:* the goal is to preclude any use of shallow groundwater, as well as eliminate any significant alteration of the existing hydrogeologic system, such as mixing of aquifers.
- *Land use restrictions within the site boundary:* the goal is to preclude non-recreational uses and to ensure that the soil cover, or similar protections, are maintained.

Table 1: Summary of Planned and/or Implemented Institutional Controls (ICs)

Media, Engineered Controls, and Areas That Do Not Support UU/UE Based on Current Conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Parcel(s)	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	Yes	Site area within Parcels SS-87 and SS-88	Permanently restrict new groundwater well installation and use of shallow groundwater within the impoundment area.	To be determined
Soils	Yes	Yes	Site area within Parcels SS-87 and SS-88	Permanently limit the land use to open space with wildlife habitat and non-motorized recreational use. Permanently preserve the low-permeability tailings cap and specify the ongoing erosion control and maintenance requirements. Permanently prohibit unauthorized excavation at the Site and of the cap material.	To be determined

Figure 4: Institutional Control Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

Systems Operations/Operation and Maintenance (O&M)

OU1 is still in remedial action pending additional cover material in areas where future consolidation may occur. Some O&M activities are underway, including monitoring of site conditions, erosion, vegetation condition, water runoff and invasive plant management, as needed. Long-term surface water monitoring is not required pursuant to the ROD.

III. PROGRESS SINCE THE PREVIOUS REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the status of those recommendations.

Table 2: Protectiveness Determinations/Statements from the 2013 FYR

OU #	Protectiveness Determination	Protectiveness Statement
1	Short-term Protective	The remedy at OU1 currently protects human health and the environment because tailings and sediments have been excavated, tailings have been contained through capping with clean soil and surface waters exiting the Site meet existing water quality standards. However, in order for the remedy to be protective in the long term, the following action needs to be taken: implementation of institutional controls that include restrictions on future land and groundwater use.

Table 3: Status of Recommendations from the 2013 FYR

Issue	Recommendations	Current Status	Current Implementation Status Description	Completion Date
Institutional controls called for in the ROD are not yet in place.	Implement necessary institutional controls to ensure the soil cover is protected and the shallow groundwater is not used. EPA and the PRP will identify the appropriate control instrument and the PRP will be responsible for implementation.	Under Discussion	EPA is working with the PRP to develop an institutional control plan.	NA

IV. FIVE-YEAR REVIEW PROCESS

Community Notification, Community Involvement and Site Interviews

A public notice was published in the *Park Record* newspaper, on10/25/2017 (Appendix D). It stated that the FYR was underway and invited the public to submit any comments to the EPA. The results of the review and the report will be made available at the Site's information repository, Park City Public Library, located at 255 Park Avenue, Park City, Utah 84060.

During the FYR process, interviews were conducted to document any perceived problems or successes with the remedy implemented to date**.** The interviews are summarized below and included in Appendix E.

Mo Slam, UDEQ: Mr. Slam is the project manager for UTDEQ. He believes the PRPs have done a good job with the remedy construction and maintenance to date. However, he noted the long-term use and maintenance of the Site need to be clarified.

Chris Cline, U.S. Fish and Wildlife Service (USFWS): Ms. Cline is responsible for the Natural Resource Damage Assessment and Restoration for the Silver Creek watershed. She indicated the Site looks good, notably the established native vegetation and erosion controls. However, she expressed concern that not all areas of the Site were adequately sampled during the remedial design and that the potential for ecological exposure remains on unexcavated areas of the Site.

Jim Blankenau, Park City: Mr. Blankenau is the Environmental Regulatory Program Manager for Park City. He is aware of the Site. He is not aware of any issues.

Kerry Gee, UPCM: Mr. Gee is the project manager for UPCM. He believes the remedy is performing as intended and that quality habitat is now established on-site. He reported no issues at the Site.

Jami Brackin, Summit County: Ms. Brackin is the Summit County Deputy Attorney. She has been aware of the Site since 2004 and is not aware of any issues. She noted that, in the absence of institutional controls, current zoning does not prevent development at the Site.

Data Review

Surface Water
UPCM collected surface water samples annually from 2008 to 2013 and again in 2015 as part of OU2 and OU3 investigations to determine the effects of remediation on surface water quality. Surface water samples were collected primarily from the main flow of the embankment wetland, as well as at various points of the southern diversion ditch. The results of all samples were consistently below the surface water standards for the Silver Creek watershed (Appendix H).

Review of Cover Material Sampling
During her interview regarding the Site, Ms. Cline expressed concern that not all areas of the Site were adequately sampled during the remedial design, specifically a seasonal wet area on the northern portion of the impoundment. Subsequent to the interview with Ms. Cline, EPA reviewed the Phase 2 Task Completion Report, which included an evaluation of cover material in the area referenced by Ms. Cline. As reported in the Phase 2 TCR, UPCM collected samples at 6, 12 and 18 inches from 20 locations within area F-8. All samples were analyzed with XRF and reported to be below 500 mg/kg lead.

Site Inspection

The Site inspection for OU1 took place on 9/21/2017. Participants included EPA RPM Robert Parker, EPA CIC Katherine Jenkins, Mo Slam, Doug Bacon and Dave Allison from UTDEQ, Chris Cline from the USFWS, Alan Jones from the Bureau of Land Management, Jim Blankenau from Park City, Kerry Gee from UPCM, and Ryan Burdge and Treat Suomi from EPA FYR contractor Skeo. The purpose of the inspection was to assess the protectiveness of the remedy. The Site inspection checklist and photographs are included in appendices F and G.

Site inspection participants drove and walked relevant portions of the OU, including the stormwater diversion features, capped areas, the tailings impoundment and buttress, the wetland area, and the parking area. All areas were in good condition. Vegetation in the cover areas and wetlands appeared to be well established. The PRP reported no issues related to erosion or trespassing, but noted that invasive plants are increasingly present and increasingly challenging to manage.

Following the Site inspection, Skeo staff visited the designated document repository at the Park City Public Library. Site documents were unavailable at the time, but will be provided following completion of this FYR.

V. TECHNICAL ASSESSMENT

QUESTION A: Is the remedy functioning as intended by the decision documents?

Yes, the OU1 remedy is performing as intended. Tailings outside of the impoundment have been excavated and placed under clean fill in the impoundment and the main embankment has been stabilized. Revegetation growth on remediated areas has performed well and the constructed wetland areas support healthy vegetation. Flora and fauna have recovered to levels that indicate that some natural resource services have been restored to the Site. Sampling indicated surface water exiting the Site is below Silver Creek water quality parameters.

The OU1 RI concluded that OU1 does not present a risk to off-site groundwater due to a confining layer below contaminated groundwater to protect deeper aquifers and the relative contaminant concentrations between shallow groundwater present at OU1 and higher concentrations present in the nearby Silver Creek alluvial groundwater. The potential for contaminant contribution from OU1 to Silver Creek alluvial groundwater should be re-evaluated in future FYRs due to ongoing remediation efforts within OU2 and OU3 at the Site.

Institutional controls to protect the soil cover and restrict groundwater use have not yet been implemented. The property is currently zoned as rural residential, which limits but does not prohibit residential development. However, the Site is owned by the PRP and public access is restricted through fencing, signage and an on-site presence. Recorded and legally enforceable restrictions as called for in the ROD are necessary to ensure no potential exposures in the future.

QUESTION B: Are the exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the remedy selection still valid?

Yes. The exposure assumptions, toxicity data, cleanup levels and RAOs used at the time of the OU1 remedy selection are still valid. The surface water exiting OU1 has consistently been below the relevant Silver Creek water quality standards.

The cleanup goal for lead of 500 mg/kg is based on anticipated recreational use. The remedy anticipated a future recreational use of the Site and public access to the Site is currently restricted to the paved parking area.

The human health cleanup levels for the Site were based on EPA guidance which recommended 10 µg/dL as the blood lead level of concern. In December 2016, EPA issued a memorandum which recommended that EPA consider the current scientific literature that suggests adverse health effects may be associated with blood lead levels below µg/dL. EPA Region 8 will continue to use the current EPA policy, until the Agency finalizes and update its policy."

QUESTION C: Has any other information come to light that could call into question the protectiveness of the remedy?

No.

VI. ISSUES/RECOMMENDATIONS

Issues/Recommendations
OU(s) without Issues/Recommendations Identified in the FYR:
None

Issues and Recommendations Identified in the FYR:				
OU(s):	**Issue Category: Institutional Controls**			
	Issue: Institutional controls called for in the ROD are not yet in place.			
	Recommendation: Implement necessary institutional controls to ensure the soil cover is protected and the shallow groundwater is not used.			
Affect Current Protectiveness	**Affect Future Protectiveness**	**Party Responsible**	**Oversight Party**	**Milestone Date**
No	Yes	PRP	EPA	5/31/2019

OTHER FINDINGS

An additional recommendation was identified during the FYR. This recommendation does not affect current and/or future protectiveness.

- Although some maintenance activities are performed, a final O&M plan has not been prepared for OU1.

VII. PROTECTIVENESS STATEMENT

Protectiveness Statement(s)		
Operable Unit: OU1	*Protectiveness Determination:* Short-term Protective	*Planned Addendum Completion Date:*
Protectiveness Statement: The remedy at OU1 currently protects human health and the environment because tailings and sediments have been excavated, tailings are contained through capping with clean soil and surface waters exiting the Site are below water quality standards. However, for the remedy to be protective in the long term, the following action needs to be taken: implement institutional controls that include restrictions on future land and groundwater use.		

VIII. NEXT REVIEW

The next FYR Report for the Richardson Flat Tailings Site is required five years from the completion date of this review.

APPENDIX A – REFERENCE LIST

2005. United States Environmental Protection Agency, Record of Decision, Richardson Flat Tailings, EPA ID UT980952840.

2007. Resource Management Consultants, Inc., Remedial Design/Remedial Action Plan (RD/RA), Richardson Flat, Site ID Number: UT980952840.

2007. Resource Management Consultants, Inc., Phase 1 Field Construction Plan for 2008 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2007. Resource Management Consultants, Inc., Phase 1 Task Completion Report, Richardson Flat, Site ID Number: UT980952840.

2008. Resource Management Consultants, Inc., Phase 2 Task Completion Report for 2008 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2009. Resource Management Consultants, Inc., Phase 3 Task Completion Report for 2009 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2010. Resource Management Consultants, Inc., Phase 4 Task Completion Report for 2010 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2011. Resource Management Consultants, Inc., Phase 5 Task Completion Report for 2011 Construction Season, Richardson Flat, Site ID Number: UT980952840.

2011. Resource Management Consultants, Inc., Task Area Map, Richardson Flat, Site ID Number: UT980952840.

2012-2017. United Park City Mines Quarterly Status Reports, Richardson Flat, Site ID Number: UT980952840

2013. United States Environmental Protection Agency, Five-Year Review, Richardson Flat Tailings, EPA ID UT980952840.

APPENDIX B – SITE CHRONOLOGY

Table B-1: Site Chronology

Event	Date
EPA discovered contamination	October 1, 1984
PRP UPCM initiated the Site's remedial investigation/feasibility study	September 29, 1989
EPA proposed the Site for listing on the NPL	February 7, 1992
PRP UPCM completed the Site's remedial investigation/feasibility study	July 1, 1992
The EPA signed the Site's ROD for OU1	July 6, 2005
PRP UPCM initiated the Site's remedial design for OU1	August 7, 2007
PRP UPCM completed the Site's remedial design for OU1	
PRP UPCM initiated the remedial action for OU1	February 7, 2008
PRP UPCM and the EPA signed an administrative settlement agreement and order on consent for a remedial investigation/focused feasibility study for OU2	September 29, 2009
EPA approved completion of construction activities outlined in the remedial design	November 2011
EPA signed the Site's first FYR Report	March 14, 2013

APPENDIX C – SITE MAPS

Figure C-1: Remedial Design Task Areas

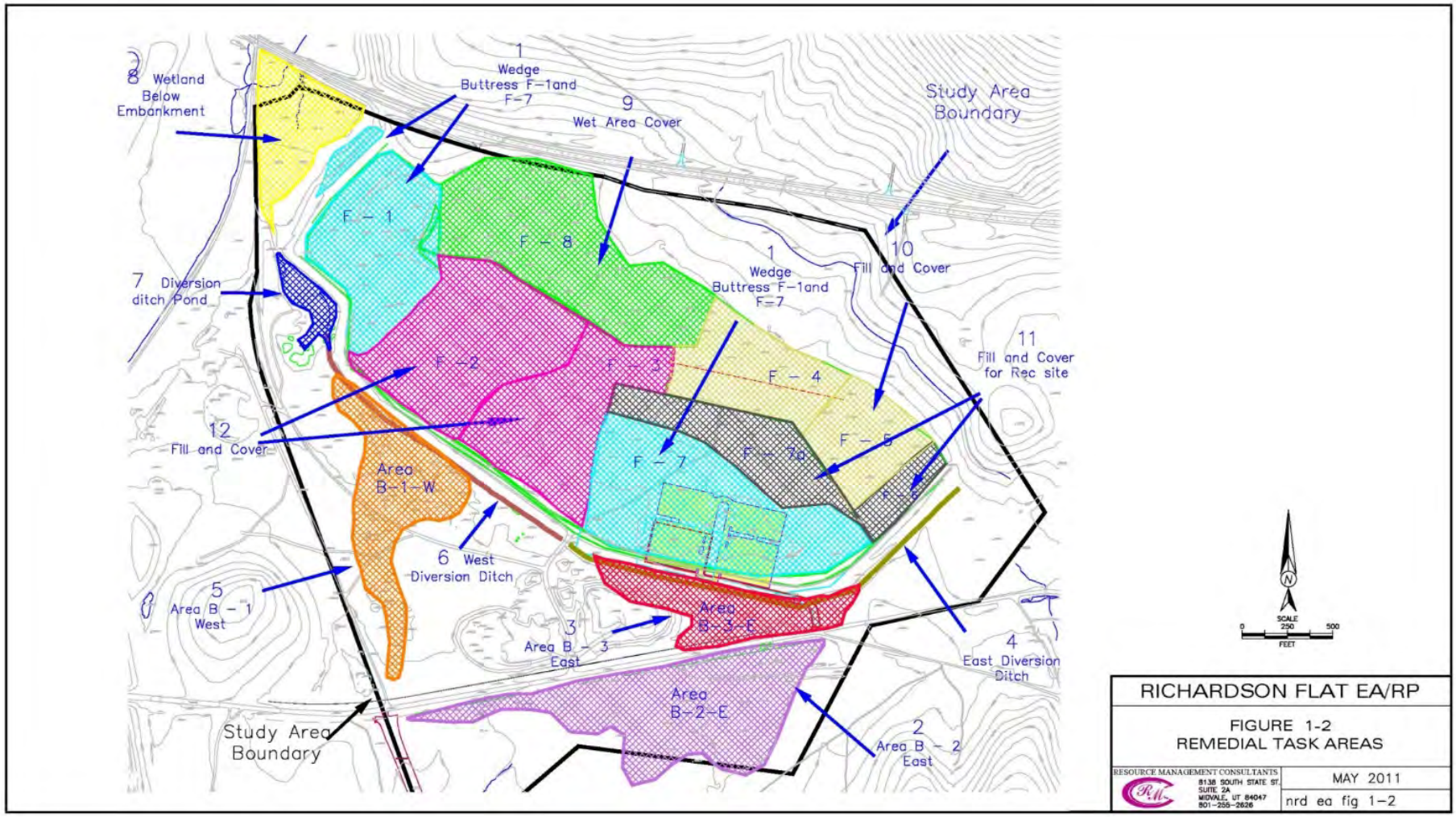


Figure C-2: 2008 Phase 2 Completion Map

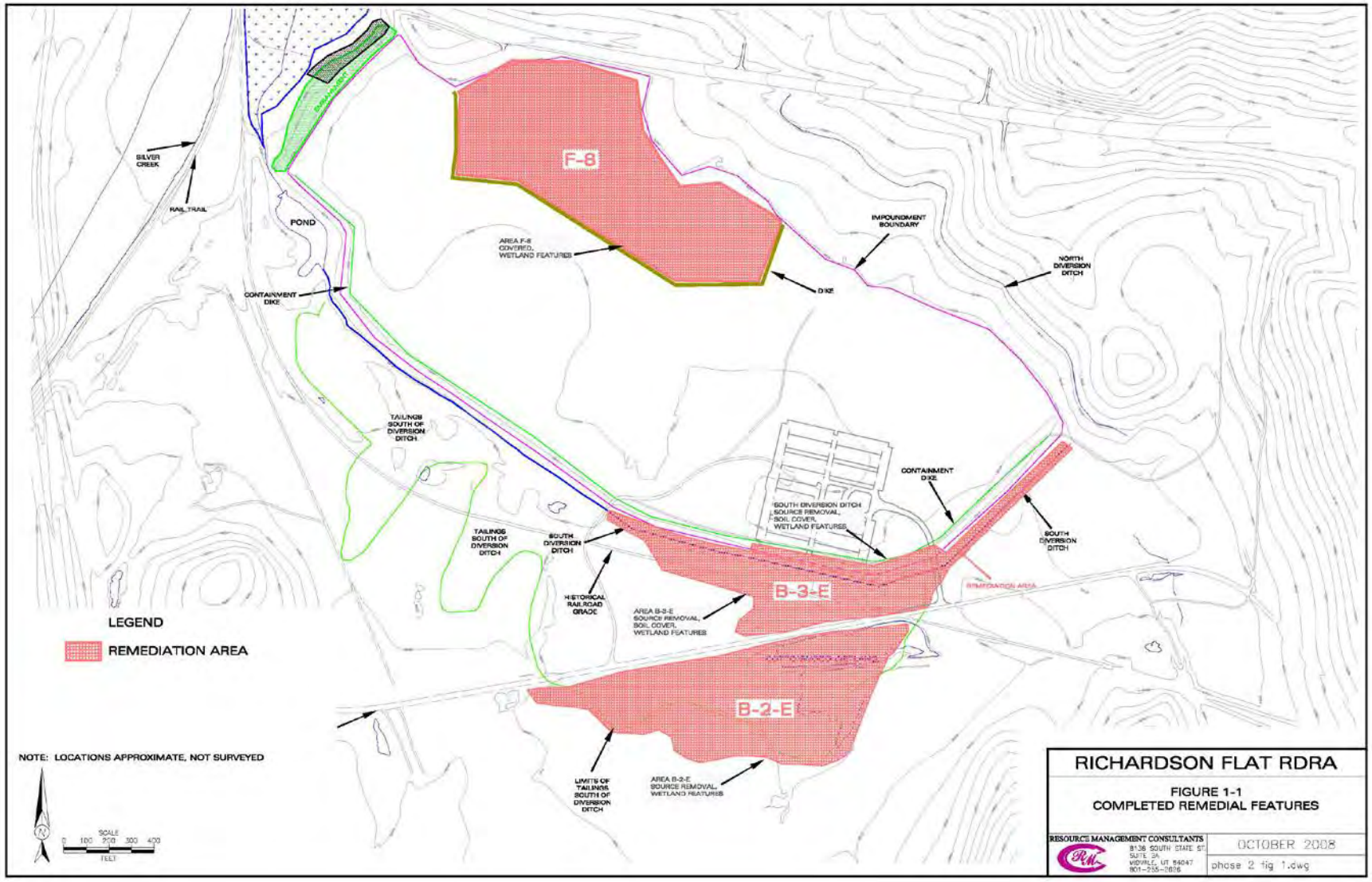


Figure C-3: 2009 Phase 3 Completion Map

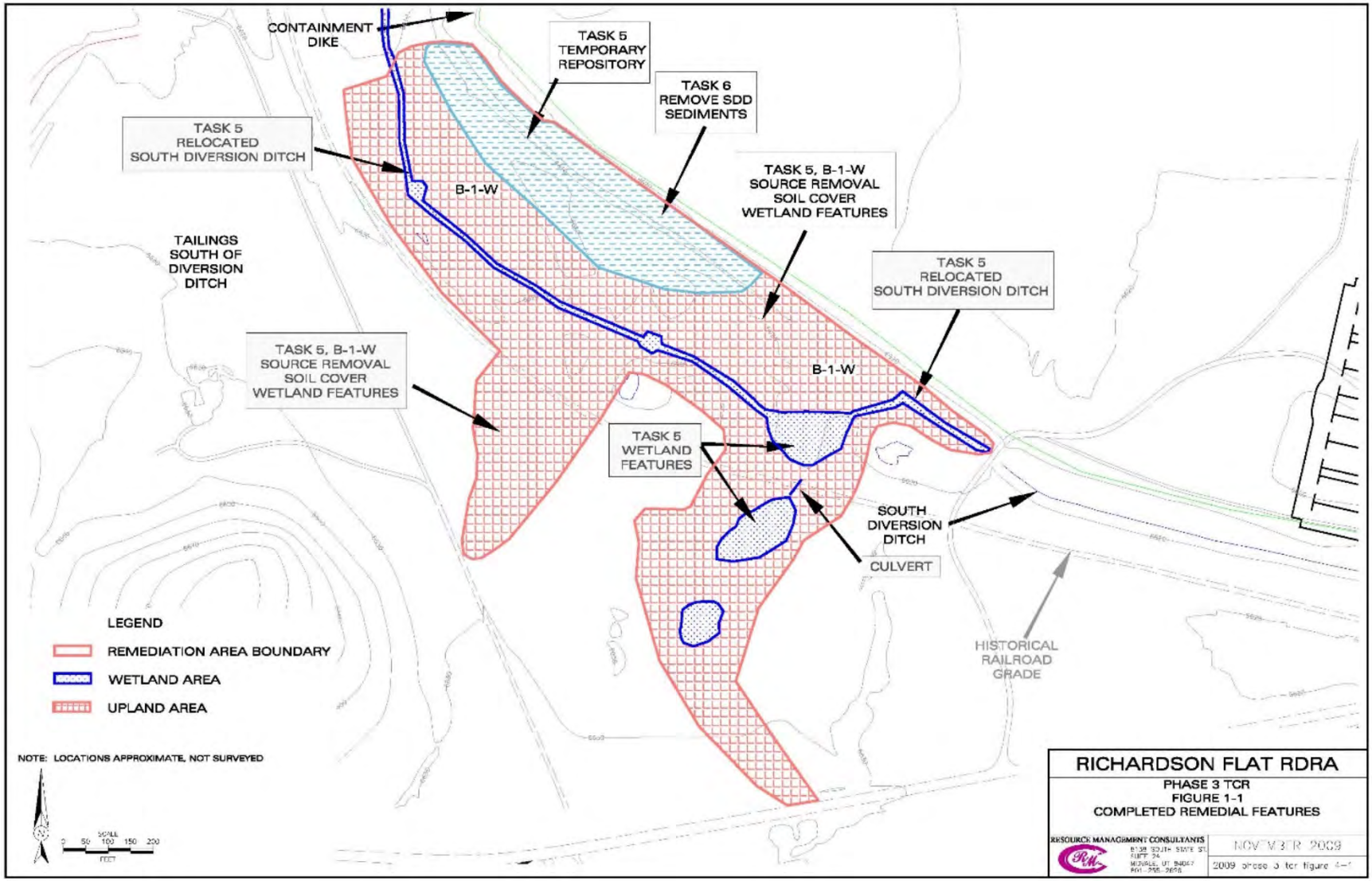


Figure C-4: 2010 Phase 4 Completion Map

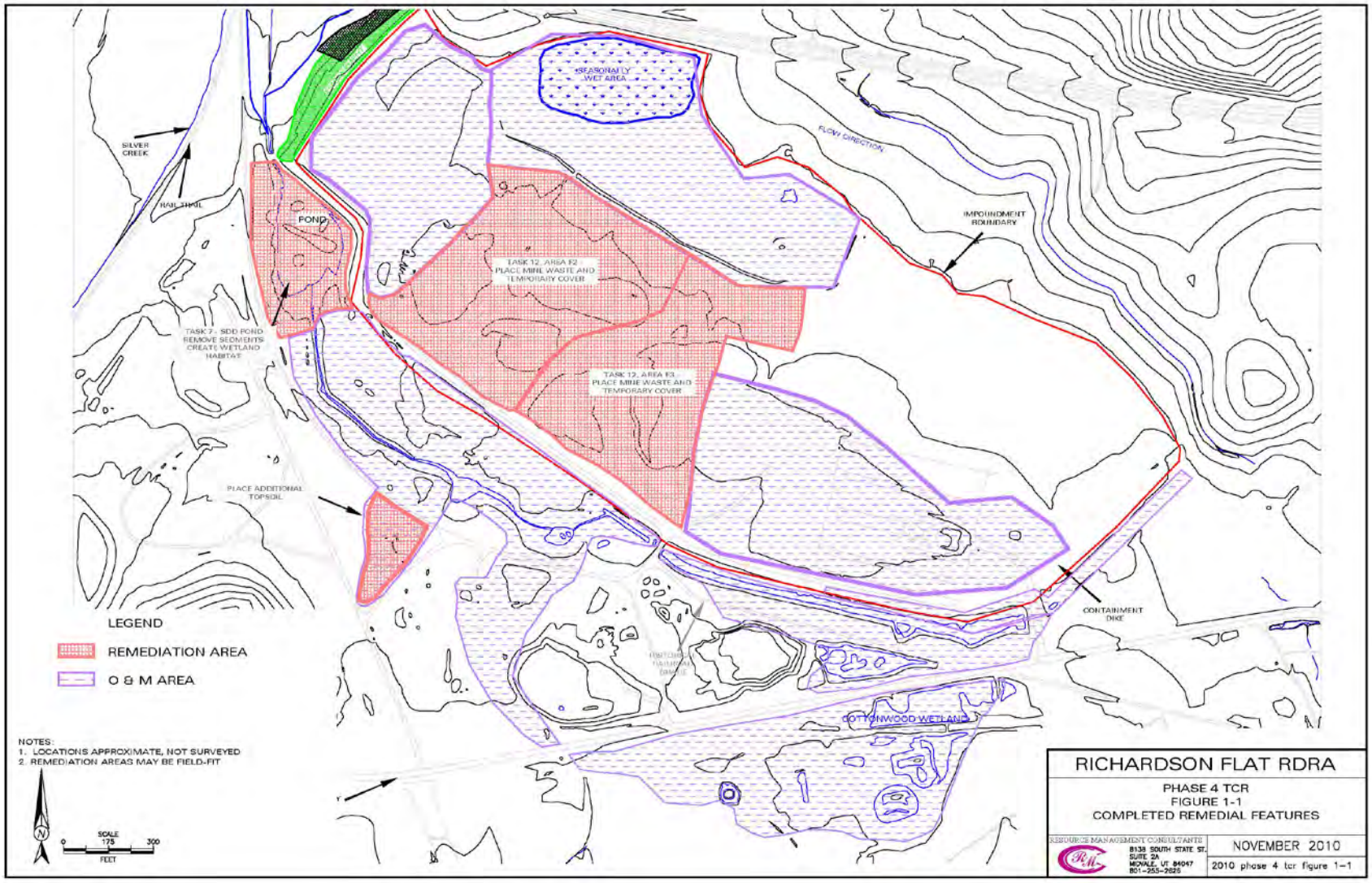
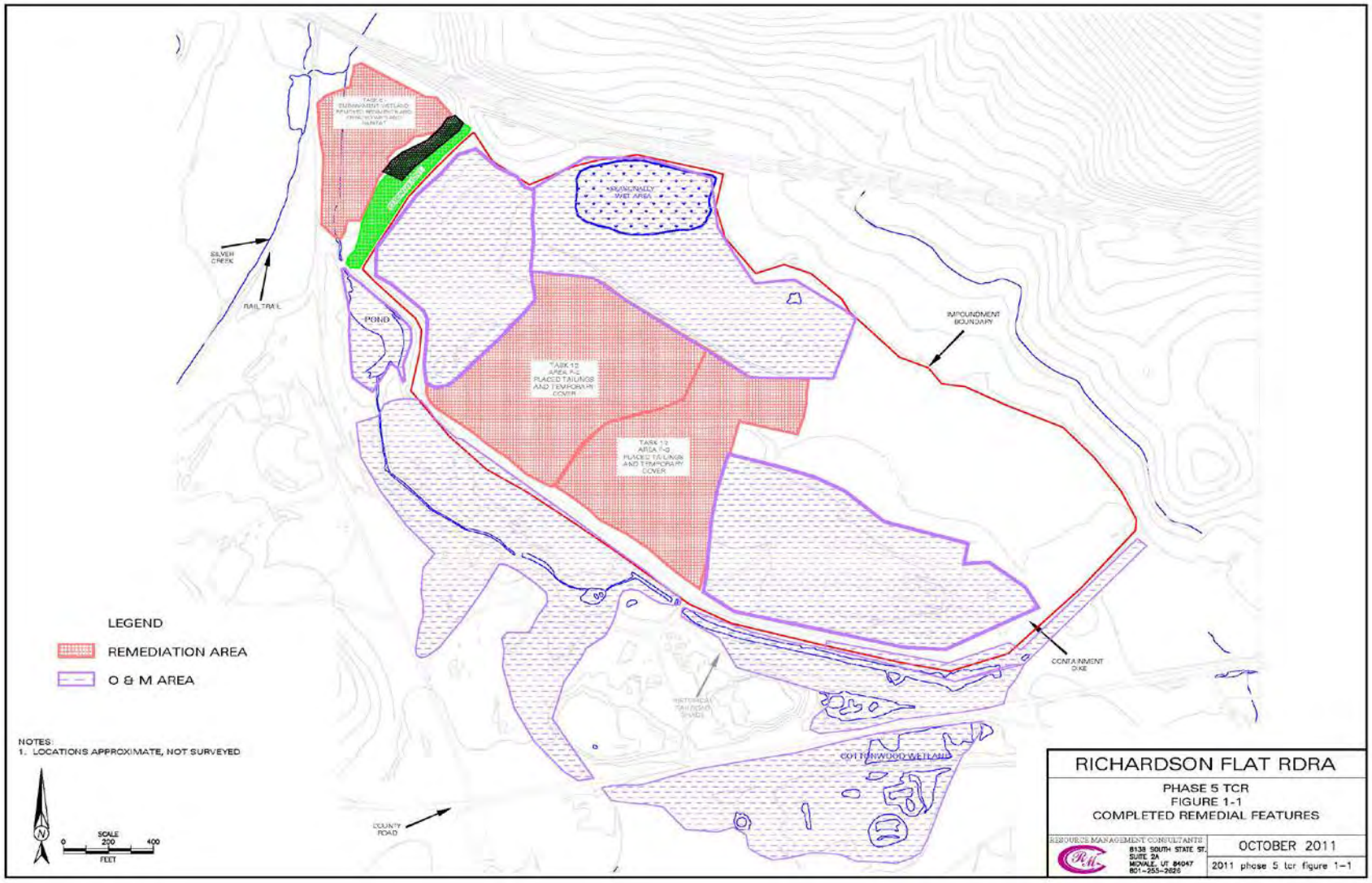


Figure C-5: 2011 Phase 5 Completion Map



APPENDIX D – PRESS NOTICE

EPA United States Environmental Protection Agency

The U.S. Environmental Protection Agency, Region 8 Announces the Second Five-Year Review for the Richardson Flat Tailings Superfund Site, Park City, Utah

The U.S. Environmental Protection Agency (EPA), in cooperation with the Utah Department of Environmental Quality (UTDEQ), is conducting the second five-year review for operable unit 1 (OU1) of the Richardson Flat Tailings Superfund site in Park City, Utah. The purpose of the five-year review is to make sure that the cleanup actions completed to date are adequately protecting human health and the environment. The five-year review for OU1 is scheduled to be completed by February 2018.

The 160-acre site is located southeast of the intersection of State Highway 248 and U.S. Highway 40 approximately 2 miles northeast of Park City, Utah. EPA proposed the Site for listing on the National Priorities List (NPL) in 1992.A tailings dam and impoundment on site were used to capture and hold mill tailings from 1953 until 1981, resulting in contamination of soil, groundwater, surface water and air.

EPA and UTDEQ selected a remedy in a 2005 Record of Decision (ROD). Cleanup activities at OU1 include excavation, containment, future disposal of mine tailings from the Park City area within the tailings impoundment, placement of restrictions on future land and groundwater use, and surface water monitoring.

We want to hear from you! Community members are always encouraged to share information that may help EPA and UTDEQ make determinations regarding the protectiveness and effectiveness of the remedies at the site. Please contact Katherine Jenkins if you would like to send your comments or be interviewed.

Share input with us by mail or email:

Katherine Jenkins, EPA Community Involvement Coordinator
Phone: 303-312-6351 • Email: jenkins.katherine@epa.gov
Mailing Address: U.S. EPA Region 8 (EPR-SR)
1595 Wynkoop Street, Denver, CO 80202-1129

Additional site information is available at:

EPA Superfund Records Center
1595 Wynkoop Street
Denver, CO 80202-1129
303-312-7273

Or online at: https://www.epa.gov/superfund/richardson-flat

2013 Five-Year Review:

https://semspub.epa.gov/work/08/1260303.pdf

2005 Record of Decision:

https://semspub.epa.gov/work/08/2035008.pdf

APPENDIX E – INTERVIEW FORMS

Richardson Flat Tailings Site — Five-Year Review Interview Form

Site Name: Richardson Flat Tailings **EPA ID No.:** UTD980952840

Interviewer Name: Katherine Jenkins **Affiliation:** EPA
Subject Name: Kerry Gee **Affiliation:** UPCM
Subject Contact Information:
Time: 12:30 p.m. **Date:** 09/21/2017
Interview Location: City Hall

Interview Format (circle one): **In Person** Phone Mail Other:

Interview Category: **Potentially Responsible Parties (PRPs), Property Owner**

1. What is your overall impression of EPA oversight on the remedial activities at the Richardson Flat tailings impoundment?
   EPA oversight at OU1 is fine. There is not very much to reference as this is the current RPM's second trip to the Site. There is not much is going on, so the oversight is adequate.

2. What have been the effects of the Richardson Flat tailings impoundment on the surrounding community, if any?
   For last five years, we have not brought out any waste except for EPA's waste from the middle school. That was an impact. At one point the community relied on Richardson Flat as a place to dump various soil wastes, but that stopped in 2010. I believe that ending was a major impact.

3. What is your assessment of the current performance of the remedy in place at the Richardson Flat tailings impoundment?
   I think the remedy is fine. It is working and the Site provides good habitat. This was the first year that we had a significant winter precipitation and the on-site vegetation was hearty this spring. We observed a lot of waterfowl and birds this year. We continue to need to address beaver activity and invasive plants.

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?
   No.

5. What is the current land use and does it compare to the anticipated land use, specifically open space and recreational use, anticipated in the remedy decision?
   Current land use is UPCM dealing with granular materials coming into the Site that are not contaminated. The RDRA has a closure plan, including financial assurance, about $1 million to close it out as a repository.

6. Have there been any problems with unusual or unexpected activities at the Richardson Flat tailings impoundment, such as emergency response, vandalism or trespassing?
   We always trespassing issues, mostly kids motorbiking south of the road when the water is low. In the past we have caught those people. A sheepherder south of the road informs us about any trespassing issues.

7. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.
   No, we do not have a continuous O&M actions. We have a single O&M staff who is there once per week and sprays invasive plants when she can. If there were a program, we would have to hire people to do that. I am on-site one time per week. The soil loader is there pretty much every day.

8. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.
   We do not have anybody out there all the time. We have not sampled since 2015 for the OU2/3.

9. Do you feel well-informed regarding the Richardson Flat tailings impoundment activities and remedial progress? If not, how might EPA better convey site-related information in the future?
   No. I would like to be informed when the RPM is going to be in town.

10. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?
    We need more staff but are currently unable to hire right now.

Richardson Flat Tailings Site — Five-Year Review Interview Form

Site Name: Richardson Flat Tailings **EPA ID No.:** UTD980952840

Interviewer Name: Katherine Jenkins **Affiliation:** EPA
Subject Name: Mo Slam **Affiliation:** UT DEQ
Subject Contact Information:
Time: 1:00 p.m. **Date:** 09/21/2017
Interview Location: City Hall

Interview Format (circle one): **In Person** Phone Mail Other:

Interview Category: State Agency

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?
   It is fairly good. So far they have done a good job. They have done the maintenance so far, but we do not yet know the reuse

2. What is your assessment of the current performance of the remedy in place at the Richardson Flat tailings impoundment?
   It is currently protective of human health and the environment.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?
   No, none at all.

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.
   The RPM and I have ongoing communications. The results are favorable.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Richardson Flat tailings impoundment remedy?
   There are no state changes.

6. Are you comfortable with the status of the institutional controls at the Richardson Flat tailings impoundment? If not, what are the associated outstanding issues?
   UPCM is managing the Site property and controls well. There is a gate, fence, signs. No one is getting on site and being exposed.

7. Are you aware of any changes in projected land use(s) at the Site?
   The plans are not concrete. The Site is a work in progress, so the reuse is not and cannot yet be known. It is all still ongoing.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Richardson Flat tailings impoundment's remedy?
   I have concerns about long-term O&M. UPCM has done good so far, but now they are having financial problems. Because of this, we do not know how they will manage long-term. Maintenance could be in limbo and it is not clear what will happen in the future.

Richardson Flat Tailings Site — Five-Year Review Interview Form

Site Name: Richardson Flat Tailings **EPA ID No.:** UTD980952840

Interviewer Name: Katherine Jenkins **Affiliation:** EPA
Subject Name: Chris Cline **Affiliation:** USFWS
Subject Contact Information:
Time: 1:30 p.m. **Date:** 09/21/2017
Interview Location: City Hall

Interview Format (circle one): **In Person** Phone Mail Other:

Interview Category: Government Agency

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?
   Overall impression is it is doing pretty well for limping along on three legs. Going out there today, we saw there is the revegetation and erosion controls part of the remedy, which overlaps with the restoration. I am impressed with the veg and overall lack of weeds. Good cover of native vegetation throughout. Seems like with the limited resources, from the NRD value standpoint, it looks pretty good. Site is starting to get thru first stage of succession, indicating the Site is stable enough. But I am concerned about the future.

   I have been involved in NRDA with UPCM. OU1 outstanding issue: we were in negotiations for NRDA, but the PRP went ahead and did what they wanted to. They did good work and now want credit for it, said they went above and beyond requirement, so did a "desktop assessment" and made an economic model. Earned a credit, but they need to maintain and were supposed to develop a monitoring plan but did not. The model assumed perpetuity for restoration. USFWS needs something saying it is perpetuity, but UPCM wants to reserve right to develop. UPCM was supposed to get back with a map of what would not be developed. In theory, they have and want the credits, but FWS not willing to give it yet. In the future, it depends not only on UPCM, but also City and County. Who owns, who maintains, etc.

2. What is your assessment of the current performance of the remedy in place at the Richardson Flat tailings impoundment?
   In the parts that are covered and vegetated, it looks pretty good. I am still concerned about area of possible future impoundment, fact it is little cover and a depression and seasonal wetland that was never sampled. The samplers did not want to get feet wet, so it was not sampled during the remedial investigation. That area is used by wildlife during spring when there is water, so there is a potential exposure. The idea seemed to be it was ok because it was to be filled and covered, but that has yet to happen. Silver Creek is pretty well segregated from the wetland, which is good. Visually looks good.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?
   No, but I am not in that loop. In the past, kite-skiing. ATV use has been an issue in the past.

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.
   I have no broad communication with community. I participated in some stakeholder meetings with the previous RPM and spoke about Richardson Flat as an example of restoration for OU2/3. Did some Rich Flat fact sheets that give history of site, cleanup process, restoration, etc. The community meeting was probably four years ago.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Richardson Flat tailings impoundment remedy?
   No. I would be a lot more concerned about local zoning requirements

6. Are you comfortable with the status of the institutional controls at the Richardson Flat tailings impoundment? If not, what are the associated outstanding issues?
   No. Long-term oversight and ownership/management. Security is a secondary concern. Also concerned lack of sufficient cap in some areas.

7. Are you aware of any changes in projected land use(s) at the Site?
   I am aware there may be changes, but it is not clear where it is headed.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Richardson Flat tailings impoundment's remedy?
   Not really. The endpoints of the remedy, should continue. For site management, invasive species are starting to come in, but the PRP are financially limited. They may need to be handled differently.

Richardson Flat Tailings Site — Five-Year Review Interview Form

Site Name: Richardson Flat Tailings **EPA ID No.:** UTD980952840

Interviewer Name: Katherine Jenkins **Affiliation:** EPA
Subject Name: Jami Brackin **Affiliation:** Summit County
Subject Contact Information:
Time: 2:30 p.m. **Date:** 09/21/2017
Interview Location: Park City Library

Interview Format (circle one): **In Person** Phone Mail Other:

Interview Category: Local Government

1. Are you aware of the former environmental issues at the Richardson Flat tailings impoundment (Site)and the cleanup activities that have taken place to date?
   Yes. My role began 2004 with the assessment of Lower Silver Creek, and I became aware of the OU1. I became a go-to person for the county. We have monitored the cleanup, capacity, and restoration. As of 2010, we thought we knew the remaining capacity, EPA sent a letter in 2010 saying UPCM could take XX yards, but not more. The County is interested in expanding the overall acreage of UPCM property. We all want a way for Park City to not have to bring soils to Tooele. Summit County has capacity for OU2/3. As long as we all have capacity, then it is ok. All needs to be considered since they are related.

2. Do you feel well-informed regarding the Richardson Flat tailings impoundment activities and remedial progress? If not, how might EPA convey site-related information in the future?
   EPA has been good about keeping us informed. I refer people to the EPA webpage. It is helpful. People can find info, the orders, sampling, etc.

3. Are you aware of the current land use of the Richardson Flat tailings impoundment? If so, what is the current land use and does it compare to the anticipated land use, specifically open space and recreational use, anticipated in the remedy decision.
   Current zoning is 1 [residence] per 20 [acres]. So, it is developable, in theory. But, the current county general plan there is the potential for some multimodal development in the western corner [outside the repository] to transfer people out near that intersection. The total property is 640 acres for UPCM.

4. Are you aware of any changes in projected land use(s) at the Richardson Flat tailings impoundment?
   There are a lot of ideas. Map in the general plan that shows the Site.

5. Have there been any problems with unusual or unexpected activities at the Richardson Flat tailings impoundment, such as emergency response, vandalism or trespassing?
   No, actually OU1 has not had issues. No complaints for that property.
6. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Richardson Flat tailings impoundment remedy?
   Not that I'm aware.

7. Has EPA kept involved parties and surrounding neighbors informed of activities at the Richardson Flat tailings impoundment? How can EPA best provide site-related information in the future?
   For the activities on site, info is so. For county, I just ask UPCM. It would be great if the webpage had all the info

8. Do you have any comments, suggestions or recommendations regarding the project?
   No.

Richardson Flat Tailings Site — Five-Year Review Interview Form

Site Name: Richardson Flat Tailings **EPA ID No.:** UTD980952840

Interviewer Name: Katherine Jenkins **Affiliation:** EPA
Subject Name: Jim Blankenau **Affiliation:** Park City
Subject Contact Information:
Time: 2:00 p.m. **Date:** 09/21/2017
Interview Location: City Hall

Interview Format (circle one): **In Person** Phone Mail Other:

Interview Category: Local Government

1. Are you aware of the former environmental issues at the Richardson Flat tailings impoundment (Site)and the cleanup activities that have taken place to date?
   Yes.

2. Do you feel well-informed regarding the Richardson Flat tailings impoundment activities and remedial progress? If not, how might EPA convey site-related information in the future?
   I feel much more informed more recently, especially since recent site visits. The website has been updated, which is helpful for me. The OSC website is nice, because it has the documents. I do point people to the website, especially the OSC site. If someone is doing a Phase 1 assessment and Richardson Flat comes up, it helps them to close out the environmental condition.

3. Are you aware of the current land use of the Richardson Flat tailings impoundment? If so, what is the current land use and does it compare to the anticipated land use, specifically open space and recreational use, anticipated in the remedy decision.
   Yes, I am aware of the current land use and the City knows about chance of expansion. I am aware of the parking facility.

4. Are you aware of any changes in projected land use(s) at the Richardson Flat tailings impoundment?
   Not aware of any specific land use changes. County may have more information.

5. Have there been any problems with unusual or unexpected activities at the Richardson Flat tailings impoundment, such as emergency response, vandalism or trespassing?
   Not that I am aware of. We did have to move our telemetry system from the parking area and had to add a repeater due to the taller mounds of staged dirt.

6. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Richardson Flat tailings impoundment remedy?
   No, I am not aware of any.

7. Has EPA kept involved parties and surrounding neighbors informed of activities at the Richardson Flat tailings impoundment? How can EPA best provide site-related information in the future?
   The website is good. Continued active communication. City owns property in OU2/3, which is different. We do get a lot of questions about the dirt piles, including "why can't I take my dirt there." City council would love short videos, and the City could maybe promote it.

8. Do you have any comments, suggestions or recommendations regarding the project?
   No.

APPENDIX F – SITE INSPECTION CHECKLIST

FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST

I. SITE INFORMATION

Site Name: Richardson Flat Tailings	**Date of Inspection:** 09/21/2017
Location and Region: Park City, Utah, EPA Region 8	**EPA ID: UTD980952840**
Agency, Office or Company Leading the Five-Year Review: EPA Region 8	**Weather/Temperature:** 40 degrees, sunny

Remedy Includes: (Check all that apply)

- ☒ Landfill cover/containment
- ☐ Access controls
- ☒ Institutional controls
- ☐ Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other: _____
- ☐ Monitored natural attenuation
- ☐ Groundwater containment
- ☐ Vertical barrier walls

Attachments: ☒ Inspection team roster attached ☐ Site map attached

II. INTERVIEWS (check all that apply)

1. **O&M Site Manager** Kerry Gee _____ _____
   Name Title Date
   Interviewed ☐ at site ☒ at office ☐ by phone Phone: _____
   Problems, suggestions ☐ Report attached: _____

2. **O&M Staff** _____ _____ _____
   Name Title Date
   Interviewed ☐ at site ☐ at office ☐ by phone Phone: _____
   Problems/suggestions ☐ Report attached: _____

3. **Local Regulatory Authorities and Response Agencies** (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.

   Agency UTDEQ
   Contact Mo Slam Project Manager _____ _____
   Name Title Date Phone No.
   Problems/suggestions ☐ Report attached: _____

   Agency USFWS
   Contact Chris ClineName _____ _____ _____
   Title Date Phone No.
   Problems/suggestions ☐ Report attached:_____

   Agency Park City
   Contact Jim Blankeneau Environmental Regulatory Program Manager _____ _____
   Name Title Date Phone No.
   Problems/suggestions ☐ Report attached:_____

   Agency Summit County
   Contact Jamie Brackin Deputy _____ _____

Name	Attorney Title	Date	Phone No.	
Problems/suggestions ☐ Report attached: _____				
Agency _____				
Contact _____ Name	_____ Title	_____ Date	_____ Phone No.	
Problems/suggestions ☐ Report attached: _____				

4. **Other Interviews** (optional) ☐ Report attached: _____

III. ON-SITE DOCUMENTS AND RECORDS VERIFIED (check all that apply)

1. **O&M Documents**

☐ O&M manual	☐ Readily available	☐ Up to date	☐ N/A
☒ As-built drawings	☐ Readily available	☒ Up to date	☐ N/A
☒ Maintenance logs	☒ Readily available	☒ Up to date	☐ N/A

Remarks: _____

2.	**Site-Specific Health and Safety Plan**	☒ Readily available	☐ Up to date	☐ N/A
	☐ Contingency plan/emergency response plan	Readily available	☐ Up to date	N/A

Remarks: _____

3.	**O&M and OSHA Training Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

4. **Permits and Service Agreements**

☐ Air discharge permit	☐ Readily available	☐ Up to date	☒ N/A
☐ Effluent discharge	☐ Readily available	☐ Up to date	☒ N/A
☐ Waste disposal, POTW	☐ Readily available	☐ Up to date	☒ N/A
☐ Other permits: _____	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

5.	**Gas Generation Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

6.	**Settlement Monument Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

7.	**Groundwater Monitoring Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

8.	**Leachate Extraction Records**	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

9. **Discharge Compliance Records**

☐ Air	☐ Readily available	☐ Up to date	☒ N/A
☐ Water (effluent)	☐ Readily available	☐ Up to date	☒ N/A

Remarks: _____

10. **Daily Access/Security Logs** ☐ Readily available ☐ Up to date ☒ N/A

Remarks: _____

IV. O&M COSTS

1. **O&M Organization**

☐ State in-house ☐ Contractor for state

☒ PRP in-house ☐ Contractor for PRP

☐ Federal facility in-house ☐ Contractor for Federal facility

☐ _____

2. **O&M Cost Records**

☐ Readily available ☐ Up to date

☐ Funding mechanism/agreement in place ☒ Unavailable

Original O&M cost estimate: _____ ☐ Breakdown attached

Total annual cost by year for review period if available

From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached
From: _____ Date	To: _____ Date	_____ Total cost	☐ Breakdown attached

3. **Unanticipated or Unusually High O&M Costs during Review Period**

Describe costs and reasons: _____

V. ACCESS AND INSTITUTIONAL CONTROLS ☒ Applicable ☐ N/A

A. Fencing

1. **Fencing Damaged** ☒ Location shown on site map ☒ Gates secured ☐ N/A

Remarks: _____

B. Other Access Restrictions

1. **Signs and Other Security Measures** ☐ Location shown on site map ☐ N/A

Remarks: "No trespassing" signs are posted.

C. Institutional Controls (ICs)

1. **Implementation and Enforcement**

Site conditions imply ICs not properly implemented ☐ Yes ☒ No ☐ N/A

Site conditions imply ICs not being fully enforced ☐ Yes ☒ No ☐ N/A

Type of monitoring (e.g., self-reporting, drive by): _____

Frequency: _____

Responsible party/agency: _____

Contact _____ _____ _____ _____

Name Title Date Phone no.

Reporting is up to date ☐ Yes ☐ No ☒ N/A

Reports are verified by the lead agency ☐ Yes ☐ No ☒ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☒ No ☐ N/A

Violations have been reported ☐ Yes ☐ No ☒ N/A

Other problems or suggestions: ☐ Report attached

2. **Adequacy** ☐ ICs are adequate ☒ ICs are inadequate ☒ N/A

Remarks: Current access restrictions prevent unacceptable exposures. Long-term land use and groundwater restictions are called for in the ROD. However, they are not yet implemented.

D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks: _____

2. **Land Use Changes On Site** ☒ N/A

Remarks: _____

3. **Land Use Changes Off Site** ☒ N/A

Remarks: _____

VI. GENERAL SITE CONDITIONS

A. Roads ☒ Applicable ☐ N/A

1. **Roads Damaged** ☐ Location shown on site map ☐ Roads adequate ☐ N/A

Remarks: _____

B. Other Site Conditions

Remarks: Native vegetation is well established.

VII. LANDFILL COVERS ☒ Applicable ☐ N/A

A. Landfill Surface

1. **Settlement** (low spots) ☐ Location shown on site map ☒ Settlement not evident

Arial extent: _____ Depth: _____

Remarks: _____

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident

Lengths: _____ Widths: _____ Depths: _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident
Arial extent: _____ Depth: _____
Remarks: _____

4. **Holes** ☐ Location shown on site map ☒ Holes not evident
Arial extent: _____ Depth: _____
Remarks: _____

5. **Vegetative Cover** ☒ Grass ☒ Cover properly established
☐ No signs of stress ☐ Trees/shrubs (indicate size and locations on a diagram)
Remarks: _____

6. **Alternative Cover** (e.g., armored rock, concrete) ☒ N/A
Remarks: _____

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident
Arial extent: _____ Height: _____
Remarks: _____

8. **Wet Areas/Water Damage** ☒ Wet areas/water damage not evident

☐ Wet areas	☐ Location shown on site map	Arial extent: _____
☐ Ponding	☐ Location shown on site map	Arial extent: _____
☐ Seeps	☐ Location shown on site map	Arial extent: _____
☐ Soft subgrade	☐ Location shown on site map	Arial extent: _____

Remarks: _____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map
☒ No evidence of slope instability
Arial extent: _____
Remarks: _____

B. Benches ☐ Applicable ☒ N/A

(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks: _____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks: _____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks: _____

C. Letdown Channels ☐ Applicable ☒ N/A

(Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side

slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ No evidence of settlement
   Arial extent: _____ Depth: _____
   Remarks: _____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
   Material type:_____ Arial extent: _____
   Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
   Arial extent: _____ Depth: _____
   Remarks: _____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
   Arial extent: _____ Depth: _____
   Remarks: _____

5. **Obstructions** Type: _____ ☐ No obstructions
   ☐ Location shown on site map Arial extent: _____
   Size: _____
   Remarks: _____

6. **Excessive Vegetative Growth** Type: _____
   ☐ No evidence of excessive growth
   ☐ Vegetation in channels does not obstruct flow
   ☐ Location shown on site map Arial extent: _____
   Remarks: _____

D. Cover Penetrations ☐ Applicable ☒ N/A

1. **Gas Vents** ☐ Active ☐ Passive
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

2. **Gas Monitoring Probes**
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

3. **Monitoring Wells** (within surface area of landfill)
   ☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
   ☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A
   Remarks: _____

4. **Extraction Wells Leachate**

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ Evidence of leakage at penetration ☐ Needs maintenance ☐ N/A

Remarks: _____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A

Remarks: _____

E. Gas Collection and Treatment ☐ Applicable ☒ N/A

1. **Gas Treatment Facilities**

☐ Flaring ☐ Thermal destruction ☐ Collection for reuse

☐ Good condition ☐ Needs maintenance

Remarks: _____

2. **Gas Collection Wells, Manifolds and Piping**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)

☐ Good condition ☐ Needs maintenance ☐ N/A

Remarks: _____

F. Cover Drainage Layer ☐ Applicable ☒ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A

Remarks: _____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A

Remarks: _____

G. Detention/Sedimentation Ponds ☐ Applicable ☒ N/A

1. **Siltation** Area extent: _____ Depth: _____ ☐ N/A

☐ Siltation not evident

Remarks: _____

2. **Erosion** Area extent: _____ Depth: _____

☐ Erosion not evident

Remarks: _____

3. **Outlet Works** ☐ Functioning ☐ N/A

Remarks: _____

4. **Dam** ☐ Functioning ☐ N/A

Remarks: _____

H. Retaining Walls ☐ Applicable ☒ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident

Horizontal displacement: _____ Vertical displacement: _____

Rotational displacement: _____

Remarks: _____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident

Remarks: _____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☒ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident

Area extent: _____ Depth: _____

Remarks: _____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A

☐ Vegetation does not impede flow

Area extent: _____ Type: _____

Remarks: _____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident

Area extent: _____ Depth: _____

Remarks: _____

4. **Discharge Structure** ☐ Functioning ☐ N/A

Remarks: _____

VIII. VERTICAL BARRIER WALLS ☐ Applicable ☒ N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident

Area extent: _____ Depth: _____

Remarks: _____

2. **Performance Monitoring** Type of monitoring: _____

☐ Performance not monitored

Frequency: _____ ☐ Evidence of breaching

Head differential: _____

Remarks: _____

IX. GROUNDWATER/SURFACE WATER REMEDIES ☐ Applicable ☒ N/A

A. Groundwater Extraction Wells, Pumps and Pipelines ☐ Applicable ☐ N/A

1. **Pumps, Wellhead Plumbing and Electrical**

☐ Good condition ☐ All required wells properly operating ☐ Needs maintenance ☐ N/A

Remarks: _____

2. **Extraction System Pipelines, Valves, Valve Boxes and Other Appurtenances**

☐ Good condition ☐ Needs maintenance

Remarks: _____

3. **Spare Parts and Equipment**

☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

Remarks: _____

B. Surface Water Collection Structures, Pumps and Pipelines ☐ Applicable ☐ N/A

1. **Collection Structures, Pumps and Electrical**

   ☐ Good condition ☐ Needs maintenance

   Remarks: _____

2. **Surface Water Collection System Pipelines, Valves, Valve Boxes and Other Appurtenances**

   ☐ Good condition ☐ Needs maintenance

   Remarks: _____

3. **Spare Parts and Equipment**

   ☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided

   Remarks: _____

C. Treatment System ☐ Applicable ☐ N/A

1. **Treatment Train** (check components that apply)

   ☐ Metals removal ☐ Oil/water separation ☐ Bioremediation

   ☐ Air stripping ☐ Carbon adsorbers

   ☐ Filters: _____

   ☐ Additive (e.g., chelation agent, flocculent): _____

   ☐ Others: _____

   ☐ Good condition ☐ Needs maintenance

   ☐ Sampling ports properly marked and functional

   ☐ Sampling/maintenance log displayed and up to date

   ☐ Equipment properly identified

   ☐ Quantity of groundwater treated annually: _____

   ☐ Quantity of surface water treated annually: _____

   Remarks: _____

2. **Electrical Enclosures and Panels** (properly rated and functional)

   ☐ N/A ☐ Good condition ☐ Needs maintenance

   Remarks: _____

3. **Tanks, Vaults, Storage Vessels**

   ☐ N/A ☐ Good condition ☐ Proper secondary containment ☐ Needs maintenance

   Remarks: _____

4. **Discharge Structure and Appurtenances**

   ☐ N/A ☐ Good condition ☐ Needs maintenance

   Remarks: _____

5. **Treatment Building(s)**

   ☐ N/A ☐ Good condition (esp. roof and doorways) ☐ Needs repair

   ☐ Chemicals and equipment properly stored

Remarks: _____

6. **Monitoring Wells** (pump and treatment remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

D. Monitoring Data

1. **Monitoring Data**

☐ Is routinely submitted on time ☐ Is of acceptable quality

2. **Monitoring Data Suggests:**

☐ Groundwater plume is effectively contained ☐ Contaminant concentrations are declining

E. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)

☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition

☐ All required wells located ☐ Needs maintenance ☐ N/A

Remarks: _____

X. OTHER REMEDIES

If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).

Most construction specified in the remedial design has been completed. Vegetation is well established and erosion is not an issue. Two areas of the impoundment received regionally sourced mine waste and covered with a temporary 6-inch soil cover while EPA determines if additional material will be brought to these areas prior to placing the full 18 inch fill material.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

Regular inspections assess vegetation, invasives, erosion and general site conditions. Maintenance is performed as needed.

C. Early Indicators of Potential Remedy Problems

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.

None noted.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

None noted.

APPENDIX G – SITE INSPECTION PHOTOS



"No trespassing" sign near public trail and on-site wetland.


Off-site public trail near wetland.



Embankment wetland and wedge buttress (right, background).



Staged clean fill.



Pond in low-lying area.



West-facing view across the parking area.



Restored diversion ditch.



Parking area.

APPENDIX H – SURFACE WATER MONITORING DATA

Table H-1: Surface Water Data

Sample Location	Sample Date	Sample ID	Total Cadmium (mg/L)	Dissolved Cadmium (mg/L)	Total Zinc (mg/L)	Dissolved Zinc (mg/L)
			TMDL = 0.0008 mg/L		TMDL = 0.39 mg/L	
Main Flow from OU1 Embankment Wetland	11/10/2011	RF-13	<0.00018	<0.00018	0.0298	0.0263
	4/4/2012	OU1-MF	<0.00018	<0.00018	0.0294	0.0334
	5/17/2012	OU1-MF	<0.00018	<0.00018	0.0153	<0.005
	7/18/2012	OU1-MF	<0.0005	<0.0005	0.00688	<0.005
	4/4/2013	OU1-MF	<0.0005	<0.0005	0.337	0.28
	3/13/2015	OU1-0-SW-PFOU1	<0.0005	<0.0005	0.0143	0.0106
	5/28/2015	OU1-0-SW-PFOU2	<0.0005	<0.0005	0.00578	<0.005
	9/1/2015	OU1-0-SW-PFOU3	<0.0005	<0.0005	0.00522	<0.005
	10/9/2015	OU1-0-SW-PFOU4	<0.0005	<0.0005	<0.005	<0.005
Channel downstream of south diversion ditch pond and upstream of embankment wetland at OU1	8/24/2011	RF 6-2	<0.00018	<0.00018	0.0126	0.0066
	11/10/2011	RF 6-2	<0.00018	<0.00018	0.0788	0.0372
Small seep channel on west side of OU1 embankment wetland	11/10/2011	SC-3a	<0.00018	<0.00018	0.187	0.118
Embankment Wetland	8/18/2011	1	Not sampled	Not sampled	0.0822	0.073

Sample Location	Sample Date	Sample ID	Total Cadmium (mg/L)	Dissolved Cadmium (mg/L)	Total Zinc (mg/L)	Dissolved Zinc (mg/L)
			TMDL = 0.0008 mg/L		TMDL = 0.39 mg/L	
	8/18/2011	2	Not sampled	Not sampled	0.0397	0.0215
	8/18/2011	3	Not sampled	Not sampled	0.101	0.0555
	8/18/2011	4	Not sampled	Not sampled	0.0765	0.0606
	8/18/2011	5	Not sampled	Not sampled	0.0351	0.0134
	4/4/2012	OU1-LP	0.000323	<0.00018	0.0446	0.0276
	4/4/2012	OU1-TS	<0.00018	<0.00018	0.147	0.0834
	7/18/2012	OU1-HWY Pond	<0.0005	<0.0005	0.0094	0.00672
Southern Diversion Ditch	7/18/2012	OU1-RF4	<0.0005	<0.0005	0.0162	0.0144

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Environmental Response & Remediation

Richardson Flat Tailings Site
Park City, Utah

Record of Decision

DECLARATION OF THE RECORD OF DECISION

SITE NAME AND LOCATION

The Richardson Flat Tailings Site (Site) is located is located 1.5 miles northeast of Park City, Utah, and is part of a 650 acre property owned by United Park City Mines (UPCM) Company. The Site is a tailings impoundment that covers 160 acres in the northwest corner of the UPCM property, a small portion of the much larger Upper Silver Creek Watershed. The U.S. Environmental Protection Agency (EPA) Comprehensive Environmental Response, Compensation and Liability Information system (CERCLIS) Site Identification Number is UT980952840.

STAEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) presents the selected remedy for the Richardson Flat Tailings Site. This ROD has been developed in accordance with the requirements of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980, 42 U.S. Code (USC) §9601 et. seq. as amended, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan(NCP), 40 CFR Part 300. The decision is based on the Administrative Record for the Site.

This remedy was selected by EPA Region 8. The Utah Department of Environmental Quality (UDEQ) concurs with the selected remedy.

ASSESSMENT OF THE SITE

The response action selected in the ROD is necessary to protect public health and the environment from actual or threatened releases of hazardous substances into the environment. Such a release or threat of release may present an imminent and substantial endangerment to public health or welfare or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The selected remedy addresses mine tailings located in several areas of the Site, including the main impoundment, a section south of the diversion ditch, and the wetlands below the embankment. Other media addressed through the selected remedy are sediments and surface water located within the Site boundary. The mine tailings and other media are not considered principal threat waste; therefore, appropriate remedial actions for the waste include excavation of the tailings and containment of the tailings through capping. Additionally, the selected remedy allows for future disposal of mine tailings from the Park City area within the tailings impoundment and placement of restrictions on future land and groundwater use.

Major Components

- Tailings in critical areas outside the impoundment (Area B) are excavated and moved inside the impoundment
- Existing soil cover is augmented to achieve a depth of at least 18 inches of soil above tailings
- Sediments in diversion ditch are covered with clean gravel
- Contaminated sediments and soils in the wetland below the embankment are excavated and material is placed within the impoundment. Wetlands will be restored.
- Mine waste from the Park City area is placed within the impoundment and covered with 18 inches of soil above the tailings. Disposal of mine waste will cease once the remedy has been implemented
- Embankment is fortified to prevent catastrophic failure
- Institutional controls (easements and land use restrictions) are implemented to protect soil cover and prevent ground water use
- Surface water monitoring is ongoing

STAUTORY DETERMINATIONS

The selected remedy is protective of human health, and welfare, and the environment, complies with federal and state requirements that are applicable or relevant and appropriate for the remedial action, is cost effective and utilizes permanent solutions and alternative treatment technologies to the extent practicable.

Because this remedy will result in hazardous substances or pollutants or contaminants remaining on Site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within 5 years after initiation of the remedial action to ensure that the remedy is, or will be, protective of human health and the environment.

ROD DATA CERTIFICATION CHECKLIST

The following information is included in the Decision Summary section of this ROD. Additional information can be found in the Administrative Record for this Site.

- Chemicals of Concern (COC's) and their respective concentrations. (Section 7.1.1 and Section 7.2.1)

- Baseline risk represented by the COCs. (Section 7)

- Cleanup levels established for COCs and the basis for the levels. (Section 7.2.5)

- Whether source materials constituting principal threats are found at the Site. (Section 11)

- Current and reasonably anticipated future land use assumptions and current and beneficial uses of groundwater used in the baseline risk assessment and ROD. (Section 6)

- Potential land and groundwater use that will be available at the Site as a result of the selected remedy. (Section 12.4)

- Estimated capital, operation and maintenance (O&M), and total present worth costs; discount rate; and the number of years over which the remedy cost estimates are projected. (Section 12.3)

- Key factors that led to selecting the remedy. (Section 12.1)

AUTHORIZING SIGNATURE

This Record of Decision documents the selected remedial action to address the contamination at the Richardson Flat Tailing site.

The following authorized official at EPA Region 8 approves the selected remedy as described in this ROD.

Max H. Dodson
Assistant Regional Administrator
Office of Ecosystems Protection and Remediation
U.S. Environmental Protection Agency, Region 8

7/6/05
Date

The following authorized official at the State of Utah concurs with the selected remedy for the Richardson Flat Tailings site as described in this ROD.

Dianne R. Nielson, Ph.D.
Executive Director
Utah Department of Environmental Quality

7/29/05
Date

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DECISION SUMMARY

SECTION 1

SITE NAME, LOCATION AND DESCRIPTION

The Richardson Flat Tailings (RFT) site (Site) is located 1.5 miles northeast of Park City, Utah, and is part of a 650 acre property owned by United Park City Mines (UPCM) Company (Figure 1). The Site is a tailings impoundment that covers 160 acres in the northwest corner of the UPCM property, a small portion of the much larger Upper Silver Creek Watershed (Figure 2). Silver Creek is the primary surface water source found in the area and is comprised of runoff from three significant drainages in the watershed, including Ontario Canyon, Empire Canyon and Deer Valley (Figure 3). Silver Creek is currently listed on Utah's 303(d) list for zinc and cadmium and is targeted for total maximum daily load (TMDL) development. Historic mining activities in the canyons left behind six active Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) sites, including Empire Canyon, Silver Creek Tailings, and Silver Maple Claims, each one impacting Silver Creek in some way. While zinc and cadmium are the primary heavy metals found in Silver Creek, lead and arsenic are the main contaminants in the sediments and soils of the watershed. Because of the volume of mining activity throughout the district and the dynamics of the watershed hydrogeology, it is difficult to target any one site as the main source of contamination affecting Silver Creek and the environmental media within the watershed. The overall remedial goal for the watershed is to clean up the surrounding sites, including the Site, thereby eliminating current and future hazards to human health and welfare and the surrounding environment.

The RFT site is a geometrically closed basin, bound by highway 248 to the north, a main embankment to the west, and diversion ditches to the south and the northeast (Figure 4). Silver Creek can be found on the northwest border of the Site, separated from the Site by a small stretch of wetlands and riparian vegetation. The impoundment was used as a mine tailings reservoir prior to 1950. The Site now houses approximately seven million tons of sand-sized carbonaceous particles and minerals containing zinc, silver, lead, and other metals. Use of the Site by UPCM ended in 1982. To date, the Site is not listed on the National Priorities List (NPL). The Site was considered for listing in both 1988 and 1992. UPCM, the primary potentially responsible party (PRP), has taken responsibility for funding the majority of the remedial action at the Site.

SECTION 2

SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 HISTORICAL LAND USE

In 1953, UPCM was formed through the consolidation of Silver King Coalition Mines Company and Park Utah Consolidated Mines Company. At that time, the Site was already being used as an impoundment for mine tailings consisting primarily of sand-sized carbonaceous particles and minerals containing lead, zinc, silver and other metals. Additionally, tailings were transported to and placed in several distinct low elevation areas in the southeast portion of the Site just outside of the main impoundment.

In 1970, with renewed mining activity in the area, Park City Ventures (PCV), a joint venture partnership between Anaconda Copper Company and American Smelting Company (ASARCO), entered into a lease agreement with UPCM. This agreement allowed PCV to deposit additional mine tailings at the Site; however, the Site had to be partially reconstructed. Dames and Moore provided PCV with design, construction and operation specifications which were approved by the State of Utah. These specifications included installation of a large embankment along the western edge of the impoundment, and construction of containment dike structures along the southern and eastern boarders of the Site for additional tailings storage. PCV also created a diversion ditch system along the higher slopes north of the impoundment and outside of the containment dikes along the east and south perimeters of the impoundment to collect surface run off. As part of the approval process for the renewed use of the Site, the State of Utah required installation of groundwater monitoring wells near the base of the main embankment.

Over the course of PVC's use of the Site, about 450,000 tons of tailings were deposited at the Site through a slurry pipeline that originated at their mill facility. Dames and Moore had recommended that the tailings be deposited around the perimeter of the Site, moving towards the center of the Site over time. However, PVC chose to deposit the tailings from the slurry pipeline in one constant area in the center of the impoundment, creating a steep, cone-like structure in the middle of the impoundment. After PVC discontinued their use of the Site in 1982, high winds caused tailings from the cone-shaped feature to become airborne, creating a potentially significant exposure pathway. These operations shaped the topography of the impoundment which still exists today.

From 1980 to 1982, Noranda Mining, Inc. leased the mining and milling operations and placed an additional 70,000 tons of tailings at the Site. Since then no further use of the Site has occurred, but UPCM began taking actions aimed at improving environmental conditions of the Site almost immediately after operations stopped. This work continued intermittently through the mid-1990s. These actions are described in the Site Characteristics Section of this Record of Decision (ROD).

2.2 INVESTIGATION HISTORY

EPA became aware of the Site in the mid-1980s. After initial site assessment work, EPA proposed the Site for listing on the NPL in 1988. After considering public comment, EPA did not pursue the Site for listing on the NPL. By 1992, the Hazard Ranking System (HRS) had been revised and EPA again proposed the Site for listing on the NPL. Ultimately, EPA decided not to pursue final listing on the NPL, and the Site remains proposed for the NPL at this time.

Subsequent to the second NPL proposal, the EPA Region 8 Superfund Emergency Response Branch conducted an investigation under the "Make Sites Safe" Initiative in 1993. This investigation concluded that conditions of the Site did not warrant emergency removal actions, but may present unacceptable risks to human health and the environment and should be addressed through long-term remedial action.

Throughout the 1990s, EPA and the Utah Department of Environmental Quality (UDEQ) were hoping UPCM would address the Site through the Utah Voluntary Cleanup Program. UPCM decided against this, but at the same time continued to voluntarily take steps to improve environmental conditions at the Site. Additionally, UPCM began collecting hydrogeologic data, which was used to better understand the groundwater flow and depth of tailings at the Site.

In 1999, EPA, UDEQ, UPCM, Park City Municipal Corporation, and other stakeholders formed the Upper Silver Creek Watershed Stakeholder's Group (USCWSG). This community-based organization was formed to help EPA address Superfund-related environmental issues in the Park City area in a cooperative fashion, including issues related to the Site. The USCWSG has been very successful and several investigations and cleanups have occurred in Park City as a result. Early in USCWSG's history, UPCM and EPA agreed to address the Site as an "NPL equivalent" site, using the same process for investigation and cleanup that is required for a NPL Site.

2.2 ENFORCEMENT HISTORY

EPA and UPCM signed an Administrative Order on Consent (AOC) on September 28, 2000 which called for UPCM to conduct a Remedial Investigation/ Focused Feasibility Study (RI/FFS) for the Site. EPA and UPCM have continuously worked well together since the inception of the USCWSG, and because of this, EPA was able to employ increasingly reduced oversight for the RI/FFS as it progressed. The RI/FFS conducted by UPCM provided the data and information used in this ROD.

EPA conducted two Potentially Responsible Party (PRP) Searches for the Site that identified several parties that may have some liability for cleanup of the Site. The Site owner, UPCM, has conducted the RI/FFS pursuant to an Administrative Order on Consent (AOC). EPA has been facilitating the allocation of costs of investigation and cleanup between the PRP's and UPCM has indicated its willingness to enter into a Consent Decree (CD) with EPA for conduct of remedial design and remedial action.

SECTION 3

COMMUNITY PARTICIPATION

EPA recently published a Proposed Plan describing the preferred remedy at the Site. The Proposed Plan, released for public comment on September 4, 2004, was followed by a public meeting held on September 28, 2004. The public comment period on the proposed plan ran from September 5, 2004 to October 4, 2004. All comments received during this period are addressed in the Responsiveness Summary of this ROD

Throughout the 1980's and early 1990s, there was significant opposition to cleanup of the Site under CERCLA authority. Public participation consisted primarily of comments on the proposed listings and letters to EPA urging that neither site be listed on the NPL.

Since the formation of the USCWSG in 1999, community participation in Park City has increased and improved. The USCWSG meets regularly, in well-advertised open meetings. The participants receive updates on individual sites in the watershed and discuss issues in a cooperative format. The USCWSG has developed a web-site, funded by UPCM, which details actions related to the environmental investigations and cleanup. The EPA project manager discusses the Site periodically with the local radio talk show and the local newspaper reporter. An information repository, which includes the Administrative Record (AR) for the Site, was established at the Park City Library and Education Center. Numerous public meetings have occurred on both general issues and to fulfill requirements for particular sites in the watershed. Fact Sheets are produced annually with updates on progress. Throughout conduct of the RI/FFS at the Site, UPCM and EPA have provided information to the public through all of these routes.

SECTION 4

SCOPE AND ROLE OF RESPONSE ACTION

The Site is one of several historic mining sites in the Upper Silver Creek Watershed. At present, six of these sites are listed in the CERCLIS database, and several more are being considered for future Superfund action. The past and present impacts to surface water and sediment in Silver Creek result from the cumulative contributions of these sites over decades. Because of the high density of sites in a relatively small area, as well as the long history involved, it is often difficult to apportion specific problems to a particular site or time period. For example, sites upstream of Richardson Flat, such as Empire Canyon or Prospector Square, have impacted surface water and sediment conditions at and below Richardson Flat. However, it is difficult to determine exactly what contribution each made. For this reason, EPA has sought to investigate and remediate the Upper Silver Creek Watershed as a whole, rather than trying to investigate each site seperately. This ensures that remedies selected for the individual sites are complementary to each other and work toward the goal of cleaning up the entire watershed. This ROD addresses only the actions necessary to address acnual and potential impacts specific to the Site, but it is part of a broader strategy to clean up the entire Silver Creek Watershed in a consistent, efficient manner.

The remedy selected by EPA and documented in this ROD includes remedial actions necessary to protect human health or welfare or the environment. The ROD is based primarily upon information set forth in the RI/FFS recently conducted by UPCM. An important purpose of the RI/FFS and associated risk assessment was to evaluate the efficacy of these voluntary actions and the risks posed by the Site in its *current* condition. For instance, there is a soil cover across the tailings impoundment that was put in place by UPCM in the 1990s. The RI/FFS evaluated the soil cover and showed it protects groundwater and other media at the site from becoming heavily contaminated. The risk assessment determined that under the current conditions, threats to human health are low. However, it is clear that in the absence of this soil cover, both human and ecological receptors would be exposed to high concentrations of heavy metals and contaminants would be free to migrate from the Site, thereby increasing the risk to human health and the environment. Thus, decisions on remedial actions must consider not only the risks posed by current conditions, but also the risks posed if current conditions changed. The selected remedy will enhance and ensure the integrity of the soil cover, reinforce the tailings embankment, and protect surface and ground waters from additional metals loading by containing the low level threat waste, thereby mitigating and abating the actual and potential risks to human health or welfare or the environment at the Site. Further, institutional controls will minimize potential, future, uncontrolled, human contact with contamination in any of the Site media.

SECTION 5

SUMMARY OF SITE CHARACTERISTICS

This section summarizes the information obtained through the investigations and feasibility studies. It includes a description of the Site conceptual model on which the investigations, risk assessments and response actions are based. The major characteristics of the Site and the nature and extent of contamination are summarized below. More detailed information is available in the Administrative Record for the Site.

5.1 SITE CONCEPTUAL MODEL

The illustrated site conceptual model depicted in Figure 5 is a representation of the location, and movement of contamination at the Site and any potential impacts that may occur to human health, the environment, or beneficial uses of resources. Presently, the tailings in the main impoundment (Area A) and the tailings south of the diversion ditch (Area B) are considered the primary waste sources. Impacted media at the Site include sediments in the south diversion ditch and the wetland area, and the surface waters. Surface water sources include the wetlands area, Silver Creek, the site pond, and intermittent flow in the diversion ditches and unnamed drainages. Seasonally, accumulated precipitation and snow melt can be found on the surface of the main impoundment. There is a clay layer underlying the tailings in Area A and Area B, so infiltration of groundwater into the underlying aquifer is limited. Additionally, heavy metal releases from the tailings are currently contained to a certain degree by a low permeability soil cap that was placed there by UPCM in the 1990's. Therefore, potential exposure to future Site users including high and low-intensity recreational visitors is limited. However, these possible exposure pathways include ingestion of soils/tailings and sediment, dermal exposure to surface water, and inhalation of particulates in air. The ecological exposure pathways and receptors are described in detail in Section 7.2, Ecological Risk.

5.2 OVERVIEW OF THE RICHARDSON FLAT TAILINGS SITE

The Site is located in a broad valley with undeveloped rangeland. The Site is about 6,570 feet above mean sea level and is characterized by a cool, dry, semi-arid climate (RMC, 2003). Meteorological stations located in Park City, Utah and Kamas, Utah estimate an annual precipitation of about 20 inches of water, an average low temperature of about 30°F, and an average high temperature of about 57°F (RMC, 2003).

5.2.1 Site Features

As described in the Site History, mine tailings have been deposited at the Site since 1950. For two decades, tailings were systematically deposited in the impoundment via a slurry line and eventually filled in all low lying areas (Area A). In 1970, PCV took over the use of the impoundment, which required several structural changes and improvements, including

enlargement of the main embankment in the northwestern corner of the Site, construction of containment dikes along the southern and eastern borders of the impoundment, and construction of a diversion ditch system outside the impoundment along the east and south perimeters. On the south end of the impoundment, the diversion ditch was cut through an area of existing tailings, resulting in some tailings being located outside (south of) the present day boundaries of the impoundment (Area B). These additions, as well as the tailings south of the diversion ditch, make up the main surface features of the Site. The Study Area Boundary includes the tailings south of the diversion ditch and the main impoundment. The Site characteristics can be found in Figure 4.

Impoundment and Containment Dikes

The majority of the tailings at the Site are contained in the impoundment basin, with a large earth embankment in place along the western edge of the Site (Area A). The "main embankment" is vegetated and is approximately 40 feet wide at the top, 800 feet long, and has a maximum height of 25 feet. A series of man-made dikes contain the tailings along the southern and eastern perimeter of the impoundment. The northern edge of the impoundment is naturally higher than the perimeter dikes.

Off-Impoundment Tailings

Additional tailings materials are present outside and to the south of the current impoundment area (Area B). During historic operations of the tailings pond, tailings accumulated in three naturally low-lying areas adjacent to the impoundment. Starting in 1983, UPCM covered these off-impoundment tailings with a low-permeability, vegetated soil cover. However, recent surveys of off-impoundment cover soils indicate that, at some locations, soil cover is thin or absent, leaving exposed surface tailings (RMC, 2001a). In addition to these off-impoundment tailings deposits, prevailing winds from the southeast carried tailings from the main impoundment and deposited them in the surrounding areas.

Diversion Ditches and Drainages

A diversion ditch system borders the north, south, and east sides of the impoundment to prevent surface water runoff from the surrounding land from entering the impoundment. Precipitation falling on the impoundment area creates a limited volume of seasonal surface water. The north diversion ditch collects snowmelt and storm water runoff from upslope, undisturbed areas north of the impoundment and carries it in an easterly direction towards the origin of the south diversion ditch. An unnamed ephemeral drainage to the southeast of the impoundment also enters the south diversion ditch at this point. Additional water from spring snowmelt and storm water runoff enters the south diversion ditch from other areas lying south of the impoundment at a point near the southeast corner of the diversion ditch structure.

Site Wetlands and Pond

Water in the south diversion ditch flows from east to west and ultimately empties into Silver

Creek near the north border of the Site. Before its confluence with Silver Creek, water from the south diversion ditch enters a small one acre pond (RMC, 2003). Water exiting the pond flows in a discrete channel where it mixes with flow from Silver Creek in a wetlands area below the main embankment (RMC, 2003). Near the northwestern corner of the wetlands area, Silver Creek flows into the wetland beneath the rail trail bridge. Water flow exits the wetlands area back into Silver Creek via a concrete box culvert under State Highway 248 (RMC, 2003).

Silver Creek

Silver Creek flows approximately 500 feet from the main embankment along the west edge of the Site. The headwaters of Silver Creek are comprised of three signifigant drainages in the Upper Silver Creek Watershed; the Ontario Canyon, the Empire Canyon and Deer Valley. Flows from Ontario and Empire Canyons occur in the late spring to early summer months in response to snowmelt and rainfall, while Deer Valley flows appear to be perennial and originate from snowmelt and springs (RMC, 2000b). The largest contributor to water flow in Silver Creek near the Site is the Pace-Homer (Dority Springs) Ditch, which derives most of its flow from ground water (USEPA, 2001). The outflow from the Pace-Homer Ditch enters Silver Creek at several locations below the Prospector Square area. Significant riparian zones and wetlands exist near the Site in areas that consist of accumulated tailings piles.

5.2.2 Hydrogeology

Ground water of concern at the Site occurs in shallow aquifers below the original ground surface. These aquifers are primarily fed from local surface water recharge and are small and local in nature. They generally flow from southeast to northwest toward Silver Creek. Below these shallow aquifers, at varying depths, lies the bedrock aquifer of the Keetley Volcanics, which contains varying amounts of ground water depending upon local conditions. The hydraulic gradient in all aquifers is generally upward, but the connection between the bedrock aquifer and the shallow aquifers is weak.

The Site is located in a low gradient valley surrounded by small hills. The erosion and weathering of these hills, also part of the Keetley Volcanics, formed the original soil surface upon which the tailings were placed, as well as the soils used to cover the impoundment after its closure. These soils are rich in clay and exhibit a very low permeability, making them very important to the ground water and surface water hydrology of the Site. Beneath the tailings, the original ground surface acts as a confining unit for ground water movement, preventing water in the tailings from infiltrating downward into the shallow aquifers, as well as preventing water in the shallow aquifers from moving upward into the tailings. On the surface, the soils used to cover the tailings function as a nearly impermeable cap, effectively preventing infiltration of surface water into the tailings. The tailings are effectively encapsulated above and below by low permeability, clay rich soil. At present, the surface of the impoundment is convex and forms a closed basin, so precipitation that falls directly on the impoundment remains there until it evaporates or is used by plants. Spring snow melt and heavy rains cause a large, temporary area of ponded water on the east side of the impoundment. This ponded area remains for a significant duration after snow melt, with little recharge from precipitation, which shows the effectiveness of the cover soil in

preventing significant infiltration into the tailings. The very small amount of water that does infiltrate into the tailings eventually seeps through the main embankment into a small wetland.

The diversion ditch is also critical to the Site's hydrology. The diversion ditch serves as a barrier to both surface water and shallow ground water and captures water that flows toward the impoundment. The captured water is channeled around the impoundment, through a small retention pond, and into the small wetland at the foot of the main embankment. Here it mixes with water from Silver Creek and the small amount of water seeping through the embankment. All of this water is eventually used by plants in the wetland or flows north away from the Site as surface water or shallow ground water in the alluvium of Silver Creek.

5.3 SAMPLING STRATEGY

Sampling events for the RI took place in 2001 and 2002. The RI was designed to augment existing data that were collected in previous Site investigations and to collect additional data for the Ecological Risk Assessment. During these events each media was sampled as a separate entity. Samples were collected from the various site media, including surface water, ground water, Area A and B tailings, Area A and B soil cover, and lastly, sediments in the south diversion ditch and wetlands area.

Surface and Ground Water Sources

Surface water

Sample locations were chosen to provide sufficient data to characterize seasonal water quality and quantity in the South Diversion ditch and the two unnamed drainages flowing into the South Diversion Ditch, and Silver Creek. Data were also collected to determine the effects of the Site on Silver Creek and the metal concentrations in the surface water of the South Diversion Ditch. When sampling was not limited due to lack of flow, data was collected monthly at each location through one complete seasonal time period. All dissolved metal concentration data were screened against Utah Water Quality Standards. The most stringent of these standards are the Class 3A Aquatic Wildlife Chronic Criteria (AWCC). These standards are dependent on hardness and are adjusted appropriately for an average hardness measured at each sample location.

Ground water

Due to the amount of historic ground water data, additional data collection required the addition of two new monitoring wells which were installed adjacent to Silver Creek up and down gradient of the Site. These were established to determine any shallow alluvial groundwater impacts caused by the tailings. Samples were also taken from established wells close to the South Diversion ditch to determine the metals concentrations within the ground water associated with the Area B tailings, and to determine the hydraulic gradient

Tailings

Area A

Three test pits were created within Area A to sample the tailings. The test pits allowed for observation and documentation of the physical characteristics and spatial configuration of the interface. Additionally, at each location, five discrete samples were collected at one foot vertical

increments to a depth of five feet below the soil cover. Acid/base potential data was used to assess the geochemical characteristics of the tailings materials.

Area B
Sampling in this area was completed first to determine the extent of the tailings outside of the main impoundment. The sample data were used in combination with areal photographs and historical information to determine the study area boundary. Backhoe test pits (63 total) and a series of hand tool excavations were completed in order to gather analytical and visual samples. Visual samples were used to establish the location of the tailings/clay layer interface. This sample data was also used to assess the thickness of the soil cover on top of the tailings in Area B. Analytical data was used to confirm the visual data. At seven sample locations one sample was taken from the tailings and one sample was taken from the clay layer below the tailings.

Soil cover
Area A
Soil samples (41 samples total, 0-2" each) were collected for analysis. The holes were dug down until tailings were collected from below the main impoundment soil cover to determine the depth of the soil cover and the chemistry of the surface soils. Samples were analyzed for lead and arsenic while 20% of the samples were analyzed for RCRA metals plus copper and zinc.

Area B
The same excavation and hand tool sampling techniques that were described in the Area B tailings section were used to determine soil cover thickness in this area. Additionally, this area was sampled to assess the extent and impact of windblown tailings. A series of samples were collected from three transects (28 total) and analyzed for lead and arsenic.

South Diversion Ditch Sediments
Six locations were chosen for sediment sample collection. Data were used to identify the source of zinc loading to the surface water found in the diversion ditch and to evaluate ecological risk.

Background Soils
Background surface soil samples (0-2") were collected from areas that have not been affected by tailings, found at least a mile away from the Site in all directions. All samples were analyzed for lead and arsenic, while 2 samples were analyzed for RCRA metals plus copper and zinc.

Study Area Boundary
Study area boundary samples were collected from two areas south of the tailings found outside the impoundment, and on the west and east perimeter of the main impoundment. These samples analyzed for lead and arsenic to aid in determining the study area boundary.

Ecological Sampling
Additional sampling was necessary to facilitate the completion of a thorough ecological risk assessment. Surface water and sediment sample data were collected from locations in the wetland area, site pond, and South Diversion Ditch. Vegetation samples and fish and macroinvertebrate samples were also taken. An analysis of these samples was necessary to complete the ecological

risk assessment.

5.4 KNOWN AND SUSPECTED SOURCES OF CONTAMINATION

As previously described, the Silver Creek watershed is contaminated with heavy metals resulting from years of heavy mining activity in the Park City District. Surface water from the Site enters Silver Creek after passing through a wetland area in the northwest corner of the Site. There are three main sources of contamination at the Site: (1) the tailings contained within the tailings impoundment (Area A), (2) the tailings south of the diversion ditch (Area B) and (3) the tailings within the wetland area.

Metal contamination resulting from wind blown tailings distribution was investigated. Soil samples were taken along three transects (running west to east) that were oriented perpendicular to the prevailing wind direction. One transect was located north of the impoundment while the remaining two were located south of the impoundment. These samples were collected to determine the extent of wind blown tailings contamination and to aid in the study area boundary determination. The samples were analyzed for arsenic and lead and for eight RCRA metals, including zinc. Samples taken along transect two (south of the impoundment) had higher concentrations of lead than transects one and three. It is possible that these sample locations were not covered with top soil, while the other sample locations were. Sample locations with the highest concentrations of lead are included in the study area boundary.

5.5 TYPES OF CONTAMINATION AND AFFECTED MEDIA

The Site is contaminated with heavy metals, primarily zinc, lead and arsenic which are associated with the tailings found in the three locations described in Section 5.4. The media that are affected by these metals include the sediments and surface water of the south diversion ditch, the site wetland, and Silver Creek.

Surface water

Conclusions drawn from the sample data show that zinc exceeds the water quality criteria in some parts of the South Diversion Ditch, however, surface water zinc concentrations are below the criteria where the diversion ditch meets the wetland area. A Comparison of surface water data collected from Silver Creek to the AWCC shows that zinc exceeds the criteria at both sample locations. Peak concentrations of zinc appear during spring run-off conditions.

Ground water

Data gathered from the monitoring wells were used to determine the metals concentrations within the ground water associated with the Area B tailings, and to determine the hydraulic gradient. After data gathered from these two areas were compared to Primary and Secondary Drinking Water Standards (PDWS and SDWS) and Treatment Technology Requirement (TTR) they were also compared to each other to determine whether the Site tailings are contributing zinc or other metals to the Silver Creek alluvial aquifer. Results show that ground water within the Area B tailings had lower concentrations of metals than the Silver Creek alluvial aquifer. Dissolved zinc concentrations from the Area B tailings are approximately 500 times lower than the zinc

concentrations measured in the up gradient Silver Creek alluvial aquifer. Lastly, there is no hydraulic connection between ground water stored in the Area A tailings and the underlying aquifers.

Tailings Metals Concentrations

Area A

The average lead concentration in the Area A tailings was 4,530 ppm, while the average arsenic value was 265 ppm.

Area B

The average lead and arsenic concentrations in the tailings above the clay layer were 10,434 ppm and 412 ppm respectively, while the average lead and arsenic concentrations in the clay layer below the tailings were 52 ppm and 9 ppm. Average lead and arsenic concentrations in the clay layer below the tailings in Area B are well below the background soil concentration.

Area A and B tailings data analysis

Based on the data presented above it appears that there are higher metals concentrations in the tailings in Area B as compared to Area A. However, metal concentrations in the clay layer below the tailings in Area B are lower than in background soil concentrations. Furthermore, the composition of the clay layer below Area B tailings is the same as the composition of the clay layer below the main impoundment. This leads to the conclusion that the clay layer below the tailings is serving as an adequate barrier to metals migration in Area B and A.

Soil Cover

Area A

Sample data indicate that the range of thickness of the soil cover is 0.5 to 4 feet. Analytical results show the average lead concentration to be 385 ppm, while the average arsenic concentration was 22 ppm. As there are no regulatory criteria for metals in soils, this data was used to analyze the risk of surficial soil exposure to recreational users and ecological receptors at the Site.

Area B

A series of samples were collected from three transects (28 total) and analyzed for lead and arsenic. Five of the samples were analyzed for eight RCRA metals plus zinc and copper. In conclusion, Transect 2 had a higher average concentration of lead and arsenic (1,446 ppm Pb, 75 ppm As) than transects 1 and 3, however, samples taken from this area may not have been covered by soil, causing the results to represent concentrations of lead and arsenic associated with the tailings that were already there, rather than concentrations associated with windblown tailings.

South Diversion Ditch Sediments

Analytical results show that the average concentrations for lead, arsenic and zinc are 2,578 ppm, 138 ppm and 7,878 ppm respectively. Concentrations are highest in the sample location found in the lower portion of the diversion ditch just east of the site pond.

Background Soils
The average lead concentration for the background soils is 43.3 ppm. The average arsenic concentration is 9 ppm. None of the background soil samples had elevated metals concentrations.

Study Area Boundary
Study area boundary samples were collected from two areas south of the tailings found outside the impoundment, and on the west and east perimeter of the main impoundment. These were analyzed for lead and arsenic to aid in determining the study area boundary. Analytical sample results were used to delineate the Study area Boundary. The boundary is drawn where background lead concentrations appear in the sample results.

Ecological Sampling
Additional sampling was necessary to facilitate the completion of a thorough ecological risk assessment. Surface water and sediment sample data was collected from locations in the wetland area, Site pond, and South Diversion Ditch. Vegetation samples and fish and macroinvertebrate samples were also taken. The resulting data was used to determine risk to ecological receptors in the Site area. A summary of the Ecological Risk Assessment including the findings from the ecological sampling is presented in section 7.2.

5.6 LOCATION OF CONTAMINATION AND POTENTIAL ROUTES OF MIGRATION

5.6.1 Surface water and Sediments

Sediments and surface water impacted by the tailings in Area A and B are found in the South Diversion Ditch and in the Wetland area. The contamination in these media is potentially affecting ecological receptors found in the area. Importantly, metal concentrations in the surface water of Silver Creek are lower than metals concentrations found in the surface water of the diversion ditch. Therefore, contaminated surface water found within the wetland is not adversely affecting Silver Creek.

South Diversion Ditch
Elevated concentrations of lead, arsenic, zinc and some cadmium were found in all water and sediment samples taken. The South Diversion Ditch is a dynamic environment, where elevated concentrations of metals, particularly zinc, fluctuate with seasonal runoff and correspond with peak groundwater elevation. Likely sources of elevated metals concentration found in surface water and sediments in the Diversion Ditch include the tailings located in the bottom if the ditch, the small pond area south of the Site, or from the tailings in Areas A or B.

Wetlands
Although concentrations of metals in the surface water and sediment of the wetland area are lower than those of the South Diversion Ditch, they are very likely to have impacts on the ecological environment at the Site. The average concentrations of lead, arsenic and zinc are just below those in the South Diversion Ditch. There is a mixing of surface waters that occurs in the wetland area; while water from Silver Creek enters the northern portion of the wetland, surface water also flows in from the Diversion Ditch in the southern portion of the wetland. Sample results indicate that

water entering the wetland area from Silver Creek contains higher metals concentrations than the surface water of the South Diversion Ditch.

5.6.2 Ground water

- Ground water sampling results indicate that the Site ground water has much lower concentrations of metals than the ground water within the Silver Creek alluvial ground water. A large amount of this ground water is captured in the South Diversion Ditch. Based on this data, it does not appear that the Site ground water is impacting the Silver Creek alluvial aquifer.
- As a result of the native clay layer found beneath the Area A tailings there is no hydraulic connection between the ground water associated with these tailings and the shallow alluvial aquifers or the underlying Keetley Volcanic aquifers.
- Sample results from ground water within the wetland area indicate that there are no significant impacts from the contamination found in the wetland, the embankment or the Area A tailings.

5.6.2 Soils

In the previous sections on Background Soils and Soil Cover (Section 5.5) it is made clear that impacts to the soils at the Site are minimal. Most contamination is in the form of tailings that were deposited within Area A and in some small areas within Area B. Migration of metals away from these small areas within Area B is extremely limited. Most of the small tailings deposits within Area B have been previously covered with topsoil. Any soils within Area B that have high concentrations of metals are included in the Study Area Boundary are addressed by the selected remedy.

SECTION 6

CURRENT AND POTENTIAL FUTURE LAND AND RESOURCE USES

This section describes the current and reasonably anticipated future land uses and current and potential beneficial ground and surface water uses at the Site.

Current Land Use

The Site is located in a rural area within a broad valley of mostly undeveloped rangeland within the Silver Creek Watershed, approximately two miles outside the Park City limits. The Deer Valley and Park City ski resorts sit at the top of the watershed and serve as recreational use areas for skiers in the winter and bikers/hikers in the warmer months. As Silver Creek passes through Park City and into the surrounding suburban areas, the land use is primarily residential and commercial, changing to recreational and agricultural in the areas surrounding Richardson Flat. Most of the land around the Site is undeveloped open space.

Mining activities at the Site ceased in 1982. Since that time, the Site has not been used and has remained open space. A small recreational trail skirts the Site along Silver Creek. There are a few small industrial operations in the vicinity of the Site, including a concrete plant on a nearby parcel. Park City and other resort-like residential developments are expanding in the general area, but none are closer than one mile away.

Reasonably Anticipated Future Land Use

The Site, and much of the surrounding area, is privately owned by UPCM. UPCM has consistently indicated a desire to retain title and limit future use to recreational activities at the Site. While no final decision has been made, uses that range from open space wildlife habitat to athletic fields are currently being discussed. Any type of recreational use is consistent with surrounding land uses, and both Park City and Summit County have indicated general agreement with recreational proposals. Park City is proactive in obtaining and preserving open space. There is no indication that higher uses of the land, such as residential, are reasonably foreseeable.

Ground and Surface Water Uses

The surface water features at the Site, including the south diversion ditch, the wetlands area below the embankment, the Site pond and Silver Creek are used as habitat by a limited number of vegetative species, fish, and wildlife. All of the surface water and shallow ground water on the Site eventually discharges to Silver Creek. Silver Creek is classified by the State of Utah as a potential drinking water source, a recreational use feature, a cold water fishery, and a potential irrigation source. At present, Silver Creek is used for irrigation and recreational fishing only, and no changes are expected. The State of Utah is considering issuing an advisory against fishing due to elevated metal levels in Silver Creek. Silver Creek is listed on the State's Clean Water Act Section 303(d) list of impaired water bodies because zinc and cadmium levels exceed chronic standards for protection of aquatic wildlife.

Silver Creek has been impacted by the legacy of mining activities, though the remedial investigation confirmed that the Site is not, at present, a significant contributor of metals to the creek. The goal is to remediate the entire watershed, improving the ecological quality of the area, thereby allowing for continued beneficial use of the watershed and the Site by a variety of living organisms.

Ground water in the immediate area is used only for private wells, and no wells are known to be located within a half mile of the Site. Most area drinking water wells are finished in the deeper consolidated sedimentary rocks that can sustain aquifers and produce sufficient yields for culinary wells. In the Site area, these formations are very deep and are covered by the Keetley volcanics. The volcanic rocks are generally not suitable to sustain aquifers and serve as more of a confining unit. The shallow ground water at the Site is generally associated with the alluvial system of Silver Creek. This water is very high in solids and is also often contaminated due to water quality in Silver Creek and tailings that are present along the Creek in many areas. There are no known uses for this water at this time.

SECTION 7

SUMMARY OF SITE RISKS

A baseline human health risk assessment (BHHRA) and a baseline ecological risk assessment (BERA) were performed to evaluate the potential for adverse human health and ecological effects that might occur from exposure to Site-related contaminants. Current and future risks were estimated for the baseline scenario (i.e., risks that might exist if no remediation or institutional controls were applied). The BHHRA and the BERA aided in drafting the remediation goals by providing a basis for taking action at the Site. The Chemicals of Concern and the exposure pathways were also identified through these risk assessments.

7.1 HUMAN HEALTH RISK ASSESSMENT

7.1.1 Identification of Chemicals of Concern

The BHHRA identified two contaminants, lead and arsenic, as chemicals of potential concern (COPC's) at the Site through a four step selection process. Risks to human health posed by exposure to these chemicals have been studied extensively through risk assessments completed at other Superfund sites in Utah and throughout the country. Currently, the Site has a soil cover that has a depth of 4 feet in some areas. Because of this soil cover, exposure pathways to these COPC's are limited or interrupted. However, if the integrity of this soil cover were threatened in any way by forces of nature or human intervention, the exposure pathways could become complete. Because of the high human health risk associated with lead and arsenic, and because of the potential exposure to recreational Site visitors if a remedy were not in place, lead and arsenic were selected as chemicals of concern (COC's) and risk drivers for the Site. The COC's are summarized in Tables 7-1,7-2, and 7-3.

7.1.2 Exposure Assessment

The exposure assessment identifies scenarios through which people could be affected by the COCs in Site media and estimates the extent of exposure Site users could endure. The conceptual site model illustrates the media and exposure pathways that were evaluated in the BHHRA (Figure 5). Media selected for evaluation in the BHHRA were soil/tailings, surface water, sediment, and air particulates. Because land use will be limited to recreational visitors, two separate recreational use scenarios were considered. An evaluation of the exposure pathways is also presented in Figure 6.

Low intensity User

The first scenario includes low intensity users, such as hikers, bikers and picnickers, ranging in age from young children to adults. Exposure pathways evaluated were ingestion of soil/tailings, surface water and sediment, dermal exposure to surface water and inhalation of particulates in air.

High Intensity User

Scenario two includes high intensity users such as horseback riders, ATV users, dirt bikers and

team sports players. High intensity users were assumed to exclude younger children and include teenagers and adults. The exposure pathways a high intensity user may be subjected to include ingestion of soil/tailings and inhalation of particulates in air.

7.1.3 Toxicity Assessment

The purpose of the toxicity assessment is to review and summarize the potential for each COC to cause adverse effects in exposed individuals. The toxic effects of a chemical generally depend on the inherent toxicity of a chemical, the route of exposure (ingestion, inhalation, and dermal), and the duration of exposure (subchronic, chronic or lifetime).

There is a positive relationship between dose (chemical intake through an exposure pathway), and adverse effect, so as dose increases the type and severity of adverse reponse also increases. Chemical toxicological information derived from either animal or human studies is used to estimate toxicity criteria which are numerical expressions between dose (exposure) and response (adverse health effects). Toxicity criteria are developed for the assessment of carcinogenic and non-carcinogenic health effects. Toxicity criteria include the EPA online Integrated Risk Information System (IRIS) and EPA's Health Effects Assessment Summary Tables (HEAST).

Toxicity criteria for carcinogens are provided as cancer slope factors (CSF's) in units of risk per milligram of chemical per kilogram of body weight per day (mg/kg-day). CSF's are based on the assumption that no threshold exists for carcinogenic effects and that any dose is associated with some finite carcinogenic risk. The chemical-specific CSF is multiplied by the estimated chemical intake to provide an upper-bound estimate of the increased likelihood of cancer resulting from exposure to the chemical. This risk would be in addition to any background risk of developing cancer over a lifetime due to other causes. Consequently, the risk estimates in the BHHRA are referred to as incremental or excess lifetime cancer risks. Based on data from IRIS and other published data, arsenic is classified as a known human carcinogen (EPA weight of Evidence A). Table 7-4 shows the cancer toxicity criteria for ingestion of arsenic. Lead toxicity is evaluated using other methodologies such as the Integrated Exposure Uptake Biokinetic (IEUBK) model. Estimated blood lead levels are compared to target blood-lead concentrations to assess possible risks.

Toxicity criteria for noncarcinogens are provided as reference doses (RfDs) and represent the daily exposure to a chemical that would be without adverse effects, even if the exposure occurred continuously over a lifetime. The RfD is provided in units of milligrams per kilogram per day (mg/kg-day) for comparison with chemical intake into the body. Chemical intakes that are less than the RfD are not likely to be of concern even to sensitive individuals. Chemical intakes that are greater than the RfD indicate a possibility for adverse effects. Noncancer toxicity values for COCs for ingestion/dermal exposures are presented in Table 7-5.

EPA has not published toxicity criteria for lead. This is because available data suggest that there is no threshold for adverse effects even at exposure levels that might be considered background. Any significant increase in exposure above background levels could represent a cause for concern. Instead of evaluating risk using typical intake calculations and toxicity criteria, EPA has

developed other methodologies for evaluating lead exposures. One such methodology is the Integrated Exposure Uptake Biokinetic (IEUBK) model, a computer model used to predict blood-lead levels in children exposed to lead from a variety of sources, including soil, dust, ground water, air, diet, lead-based paint, and maternal blood. Estimated blood-lead levels are compared to target blood-lead concentrations to assess possible risks. The IEUBK model is intended for use only for children up to the age of seven, as these are the most sensitive receptors to lead exposure. The model assumes daily exposure in a residential setting.

There are circumstances in which adjustments to toxicity criteria should be made to account for the relative bioavailability of a chemical due to its chemical form or its reactive form or the particular medium in which it is found. The issue of bioavailability is especially important when dealing with media from mining sites because metals in these media may exist in insoluble media. These chemical and physical properties may tend to influence (usually decrease) the adsorption or bioavailability of the metals when ingested. Because no site specific data are available for the bioavailability of arsenic in soils/tailings the default value of 0.8 was applied to the arsenic toxicity criteria.

Adverse Effects of Arsenic Exposure

Noncancer Effects

Oral exposure to acute and chronic ingestion of lower levels of arsenic often include diarrhea, vomiting, decreased blood cell formation, injury to blood vessels, damage to kidney and liver, and impaired nerve function. The most diagnostic sign of chronic arsenic exposure is an unusual pattern of skin abnormalities, including dark and white spots and a pattern of small "corns," especially on the palms and soles (ATSDR 1991).

Carcinogenic Effects

There have been a number of epidemiological studies in humans which indicate that chronic inhalation exposure to arsenic is associated with increased risk of lung cancer (USEPA 1984, ATSDR 1991). In addition, there is strong evidence from a number of human studies that oral exposure to arsenic increases the risk of skin cancer (USEPA 1984, ATSDR 1991). The most common type of cancer is squamous cell carcinoma, which appears to develop from some skin corns. Although the evidence is limited, there are some reports which indicate that chronic oral arsenic exposure may also increase risk of internal cancers, including cancer of the liver, bladder and lung, and that inhalation exposure may also increase risk of gastrointestinal, renal or bladder cancers (ATSDR 1991).

Adverse Effects of Lead Exposure

Noncancer Effects

Excess exposure to lead can result in a wide variety of adverse effects in humans. Chronic low-level exposure is usually of greater concern for young children than older children or adults. The effect of lead that is usually considered to be of greatest concern in children is impairment of the nervous system. The effects of chronic low-level exposure on the nervous system are subtle and normally cannot be detected in individuals, but only in studies of groups of children. Common measurement endpoints include various types of tests of intelligence, attention span, hand-eye coordination, etc. Such effects on the nervous system are long-lasting and may be permanent.

Additionally, studies in animals reveal that high blood lead levels during pregnancy can cause fetotoxic and teratogenic effects. Further, a characteristic effect of chronic high lead exposure is anemia stemming from lead-induced inhibition of heme synthesis and a decrease in red blood cell life span.

Cancer Effects
Studies in animals indicate that chronic oral exposure to very high doses of lead salts may cause an increased frequency of tumors of the kidney (USEPA 1989b, ACGIH 1995). However, there is only limited evidence suggesting that lead may be carcinogenic in humans, and the noncarcinogenic effects on the nervous system are usually considered to be the most important and sensitive endpoints of lead toxicity (USEPA 1988).

7.1.4 Risk Characterization

The BHHRA characterized the risk to low and high intensity recreational users through exposure to the COCs at the Site.

7.1.4.1 Evaluation of Carcinogenic Risk

For carcinogens, risks are generally expressed as the probability of an individual developing cancer over a lifetime as a result of exposure to the Site-related contaminants. This is described as "excess lifetime cancer risk" because it is an addition to the risk of cancer from other causes. Exposure to Site COPCs was evaluated by multiplying chemical specific exposure estimates (i.e. average lifetime dose) by the chemical and route specific CSF. The result was a unitless measure of probability (e.g., 1E-4) of an individual developing cancer as a result of chemical exposures at the Site. A cancer risk of 1E-04 refers to an increased chance of one in ten thousand of developing cancer as a result of site related exposure to a carcinogen over the expected duration. Typically, the USEPA considers remedial action at a site when estimated total excess cancer risk to any current or future population exceeds the range between one in ten thousand (1E-04) and one in a million (1E-06). Estimated carcinogenic risks for reasonable maximum exposure (RME) scenarios are presented in tables 7-6 and 7-7. Estimates of average risks are presented in the BHHRA.

Low Intensity Users
RME excess cancer risks were calculated for potential low intensity recreational users, which include hikers, bikers and picnickers. Risks were evaluated for the ingestion, inhalation and dermal exposure pathways. Risk from inhalation and ingestion of sediments, soils/tailings and surface water and dermal exposure to surface water were estimated to fall below EPA's threshold cancer risk of 1E-06. Risk from ingestion of soil/tailings was estimated to be 2E-05 for the RME scenario. This risk falls into EPA's acceptable range of 1E-04 and 1E-06.

High Intensity Users
RME excess cancer risks were calculated for high intensity recreational users which include horseback riders, ATV users, dirt-bikers, and sports (soccer, baseball) players. Risks were

evaluated for the ingestion of soil/tailings and the inhalation of soil as dust exposure pathways. Risk from inhalation of soil as dust was estimated to fall well below the threshold cancer risk of 1E-06. Risk from ingestion of soil/tailings was estimated to be 1.1E-05, which falls into EPA's acceptable range of 1E-04 and 1E-06.

7.1.4.2 Evaluation of Noncarcinogenic risks

The potential for noncarcinogenic effects due to exposure to a particular chemical is expressed as the hazard quotient (HQ). An HQ was calculated by dividing the dose (estimated chemical intake) of a chemical by the RfD. The HQ calculation assumes that there is a threshold level of exposure below which no adverse effects will occur. An HQ less than one indicates that there is little potential for adverse noncancer effects, even in sensitive individuals, while an HQ greater than one indicates the potential for adverse noncancer effects.
The hazard index (HI) is equal to the sum of all the HQs. A HI less than one indicates there is little potential for adverse effect from exposure to all COCs at a site. An HI greater than one indicates the potential for adverse noncancer effects from exposure to all COCs, assuming that all chemicals have the same toxic effect and that toxic effects would be additive. Estimated RME noncancer hazards for populations evaluated in the BRA are presented in Tables 7-8 and 7-9. Please refer to the BHHRA for estimates of average noncancer hazards across the Site.

Low Intensity Users
Noncancer hazards were quantified for exposure to arsenic via ingestion of soils/tailings, surface water and sediment. The risk associated with inhalation of soil as dust and dermal contact with surface water was also considered. The HI was the sum of all HQs associated with the Site for the low intensity user. The RME HI was 9.2E-02 related to arsenic exposure through the various pathways. This falls below EPA's acceptable range for exposure to non-carcinogenic contaminants, which means that it is not a human health concern by EPA's standards

High Intensity Users
Noncancer hazards were quantified for exposure to arsenic via ingestion of soils/tailings, and inhalation of soil as dust for the high intensity recreational user. The HI, the sum of the HQs, HI was 5.8E-02, which falls below EPA's acceptable range for exposure to non-carcinogenic contaminants, which means that it is not a human health concern by EPA's standards

7.1.4.3 Evaluation of Risks from Lead

Risks from lead are usually evaluated by estimation of the blood levels in exposed individuals and compared to blood lead levels within an appropriate health based guideline. The USEPA and CDC have set a goal that there should be no more than a 5% chance that a child should have a blood level over 10µg/dL. The BHHRA used the IEUBK model to first evaluate risks to a hypothetical nearby resident of a child's age (0-6 years). Second, risks to a residential child engaged in low-intensity recreational activities at the Site were evaluated. The risk to residential children engaged in recreational activity is higher than the risk to children who live nearby but don't engage in recreational activity. However, the geometric mean values are relatively low, and children engaging in recreational activities have less than a 5% chance of exceeding a blood lead

level of 10µg/dL.

Risks for exposure to lead in Site media were also evaluated for teenage and adult recreational visitors using the Bowers model. Low and high intensity recreational visitor exposure scenarios were examined. Results showed that high or low-intensity recreational use at this Site is not predicted to cause high blood lead levels which exceed a target concentration of 11.1µg/dL. The 11.1µg/dL standard is a health criterion based on the blood lead concentration that is acceptable for a pregnant adult.

7.1.5 Assessment of Uncertainties

Several assumptions used in the evaluation of lead risks at this Site may introduce uncertainty into the presented findings. Although in most cases, assumptions employed in the risk assessment process to deal with uncertainties are intentionally conservative; that is, they are more likely to lead to an overestimate rather than an underestimate of risk, it is nevertheless important to take these uncertainties into account when interpreting the risk conclusions derived for this Site. Uncertainties presented in the risk assessment include: uncertainty in lead concentrations estimates, uncertainty in lead absorption from soil, and uncertainty in the modeling approach.

Uncertainty in Lead Concentration Estimates

Evaluation of human health risk at any particular location requires accurate information on the average concentration level of a COPC at that location. Because estimating the mean is more difficult when aggregating data over a large exposure area, such as the Site, the true mean could be underestimated. Here, the 95th Upper Confidence Limit soil lead concentration was used to evaluate risks from lead. This approach is reasonable for use at the Site where lead concentrations in onsite soil/tailing materials range from 14 to 5,875 mg/kg. This conservative approach for estimating exposure to lead at the site may *overestimate* the actual risks from lead for the Site, ensuring that all of the risk estimates are more likely to be high than low.

Risks from exposure to lead were evaluated based on surficial soil data. This decision was based on the assumptions that recreational users are most likely to be exposed to surficial soils based on their activities. Based on the depth distribution observed for lead, risks from exposure to subsurface soils will be similar or less than those observed for surface soils. However, if concentrations for lead are ever found to increase as a function of depth, the risks based on surface soil exposure will *underestimate* risks for those individuals exposed to buried materials. The maximum lead concentration in soil/tailings observed at the Site at any depth is 21,380 mg/kg.

Uncertainty in Lead Absorption from Soil

Another important source of uncertainty regarding the risk from lead in soil is the degree of absorption (RBA) within the gastrointestinal tract. For the risk assessment performed at the Site, a default relative bioavailability factor for lead of 0.60 has been applied. This introduces uncertainty, and causes either an over or underestimation of risk because the selected value is not based on actual measurements for site soils. Soils are complex by nature and may have numerous

attributes which influence overall absorptions characteristics.

Uncertainty in Modeling Approach

All predictive models, including the IEUBK model and the ISE model, are subject to a number of limitations. First, there is inherent difficulty in providing the models with reliable estimates of human exposure to lead-contaminated media. For example, exposure to soil and dust is difficult to quantify because human intake of these media is likely to be highly variable, and it is very difficult to derive accurate measurements of actual intake rates. Second, it is often difficult to obtain reliable estimates of key pharmacokinetic parameters in humans (e.g., absorption fraction, distribution and clearance rates), since direct observations in humans are limited. Finally, the absorption, distribution and clearance of lead in the human body is an extremely complicated process, and any mathematical model intended to simulate the actual processes is likely to be an over-simplification. Consequently, model calculations and predictions are generally rather uncertain.

The Bowers model used to assess lead exposures in youths and adults requires a composite toxicokinetic parameter (the biokinetic slope factor) to predict the effect of exposure on blood lead levels. This value is derived mainly from studies in adult males, and it is not certain that the value is accurate for youths or for women (especially pregnant women). Also, the exposures being modeled with the Bowers model are intermittent rather than continuous, so blood lead levels in the exposed populations are expected to show temporal variability. Toxicity data are not adequate to estimate the level of health risk associated with occasional (rather than continuous) elevations in blood lead level due to intermittent exposures to elevated lead levels in the environment. However, since the observed lead levels in soil/tailings result in predicted blood lead levels that are well below the established level of concern, these uncertainties in the modeling approach do not cast serious doubt on the accuracy of the conclusion that lead levels at this Site are not of concern to older children or adults.

7.2 ECOLOGICAL RISK ASSESSMENT

Tailings released to the environment from ore milling operations generally contain metals that can, depending on the concentration and level of exposure, be toxic to ecological receptors. In accord with the eight-step process recommended by USEPA for evaluating ecological risks the ecological risk assessment process at this Site was initiated by performing a Screening-Level Ecological Risk Assessment (SLERA) (USEPA, 2003a), which was followed by the Baseline Ecological Risk Assessment (BERA, January, 2004). These ecological risk assessments were completed to describe the likelihood, nature, and extent of adverse effects to ecological receptors resulting from present and potential exposure to the COCs at the Site. The SLERA was intended to provide a preliminary evaluation of the potential for adverse effects to three classes of ecological receptors (aquatic, terrestrial, wildlife). Because a SLERA normally uses a number of simplifying assumptions and approaches and is intentionally conservative, the SLERA was not intended to support any final quantitative conclusions about the magnitude of the potential ecological risks. The SLERA was also used to identify additional data that needed to be gathered in order to complete the BERA. Once the additional data was compiled it became possible to

perform a more complete risk assessment, addressing the COC's and the risks posed through the various ecological exposure pathways within the exposure areas of the Site. The BERA was conducted using the problem formulation approach, which is an iterative process that allows risk assessors to refine the assessment as new information becomes available and to make qualitative conclusions about Site risks by using a weight of evidence evaluation. The various methods used to assess exposure and risk under the problem formulation approach as well as a description of the combined results of the SLERA and the BERA are described in the sections that follow.

7.2.1 Identification of Chemicals of Concern

Chemicals of concern (COCs) at the Site were identified through a weight of evidence evaluation that began in the SLERA. In this process, the maximum concentration of each detected metal was compared to the screening level benchmark (SL) for that metal. If this concentration was greater than the SL, the chemical was considered a chemical of potential concern (COPC) and was retained for further evaluation in the BERA. Additionally, the Site was divided into exposure areas for the purpose of the risk assessment. These areas are based on the Site characteristics and include Silver Creek (upstream and downstream), Site diversion ditches, the wetlands area, Site pond, and Area A and Area B tailings. By examining the ecological receptors and the COPCs associated with the environmental media within each exposure area, a risk management decision was made to determine the COCs for the Site. As a result of this approach, the following COCs are described based on the environmental media and the ecological receptor associated with that media. Cadmium and zinc (dissolved) were the COCs identified for surface water and aquatic receptors at the Site. Within the bulk sediment, cadmium, copper, mercury and zinc were considered COCs if benthic organisms were the receptors. Lead associated with the sediment was found to be a COC if waterfowl were the ecological receptors. The COCs, arsenic and zinc (dissolved), associated with sediment porewater could be toxic to benthic organisms. Lastly, aluminum, lead, mercury and zinc were named COCs and considered toxic to plants and soil invertebrates in contact with the soils and tailings at the Site. The COCs are summarized in Tables 7-10 through 7-14. These COC's have the potential to adversely affect growth, diversity, reproduction and survival of the various species that populate the Site.

7.2.2 Exposure Assessment

When examining exposure to ecological receptors at the Site it is important to note that in accordance with the State of Utah surface water code, the Weber River from the Stoddard diversion to its headwaters (including Silver Creek) is classified as a cold water fishery (3A) and is protected for cold water species of game fish and other cold water aquatic life, including the necessary aquatic organisms in the food chain. Because the Site provides possible habitat for fish, aquatic invertebrates, terrestrial plants, terrestrial invertebrates, mammals, birds, reptiles and amphibians, those were the receptors included in the SLERA.

Figure 7 presents the ecological conceptual site model (CSM) for the Site. As indicated in the Ecological CSM, ecological receptors that may be exposed at the Site include aquatic receptors (fish and benthic macroinvertebrates), amphibians and reptiles, terrestrial receptors (plants and soil invertebrates), and wildlife receptors (birds and mammals). Each receptor class may be

exposed to chemical contamination via contact with one or more environmental media, including surface water, sediment, seeps, aquatic food items, soil/tailings, and terrestrial food items. However, not all of these exposure pathways are likely to be of equal concern. Pathways that were supported by adequate data became the primary focus of the BERA and were included in the quantitative risk evaluation. An explanation of the elimination of certain pathways can be found in the BERA and for the purposes of this ROD, only the pathways of high ecological concern are described below.

Aquatic Receptors (Fish)

The main pathways of exposure for fish and benthic invertebrates are direct contact with surface water and sediment. Each of these pathways were evaluated quantitatively.

Terrestrial Receptors (Plants and Invertebrates)

The primary exposure pathway for both terrestrial plants and soil invertebrates is direct contact with contaminated soils. This pathway was evaluated in the SLERA; however, additional data were not collected for the BERA, so further analysis of this pathway was not conducted. It is assumed from the SLERA that direct contact with contaminated soils is a complete pathway and one of potentially high risk to terrestrial receptors.

Wildlife Receptors (Birds and Mammals)

Birds and mammals may be exposed by ingestion of food web items (either from the terrestrial environment and/or from the aquatic environment). Wildlife receptors may also ingest soil or sediment during feeding, especially for soil- or sediment-dwelling prey items. Although these exposure pathways are complete and of potential concern (USEPA, 2003a), no new data are available for contaminant concentrations in soil or in terrestrial food items, and it is expected that remedial actions planned for the site will largely address potential risks to terrestrial (upland) wildlife receptors from exposures to contaminants on the main impoundment and in off-impoundment areas (RMC, 2003). Therefore, quantitative risk characterization for the BERA focused on exposures of aquatic/semi-aquatic wildlife receptors in the wetlands area, and risks to upland terrestrial wildlife receptors were not re-evaluated in the BERA.

7.2.3 Ecological Effects Assessment

Assessment and measurement endpoints are part of the problem formulation approach used to examine ecological risk at the Site. Again, the problem formulation method is an approach to risk assessment that is designed to provide risk managers with adequate qualitative and quantitative information. As a result, risk managers can make decisions that lead to protection of the ecological environment.

Assessment endpoints are explicit statements of the characteristics of the ecological system that are to be protected. Assessment endpoints are either measured directly or are evaluated through indirect measures. Measurement endpoints represent quantifiable ecological characteristics that

can be measured, interpreted, and related to the valued ecological components chosen as the assessment endpoints (USEPA 1992, 1997).

Table 7-15 presents the assessment and measurement endpoints used to interpret potential ecological risks for the Site that were evaluated in the BERA. These measurement endpoints can be divided into three basic categories: (1) hazard quotients (HQs), (2) site-specific toxicity tests, and (3) observations of population and community demographics.

Hazard Quotients

Hazard Quotients (HQ's) are generally used by the EPA to determine whether remedial action is warranted. For example, in human health risk assessment for non-carcinogenic effects, remedial action is warranted if the HQ for a COC is greater than 1 for a particular site user. However, for the purposes of the BERA, HQs were used as one part of the weight-of-evidence evaluation along with the other factors including toxicity testing and population observations. A HQ is the ratio of the estimated exposure of a receptor at the Site to a "benchmark" exposure that is believed to be without significant risk of unacceptable adverse effect:

HQ = Exposure / Benchmark

Exposure may be expressed in a variety of ways, including:

- Concentration in an environmental medium (water, sediment, soil, diet)
- Concentration in the tissues of an exposed receptor
- Amount of chemical ingested by a receptor

In all cases, the benchmark toxicity value must be of the same type as the exposure estimate.

If the value of an HQ is less than or equal to 1, risk of unacceptable adverse effects in the exposed individual is judged to be acceptable. If the HQ exceeds 1, the risk of adverse effect in the exposed individual is of potential concern.

When interpreting HQ results for ecological receptors, it is important to remember that the assessment endpoint is usually based on the sustainability of exposed populations, and risks to some individuals in a population may be acceptable if the population is expected to remain healthy and stable. In these cases, population risk is best characterized by quantifying the fraction of all individuals that have HQ values greater than 1 and by the magnitude of the exceedences. In interpreting HQ values and distributions of HQ values, it is always important to bear in mind that the values are predictions, and are subject to the uncertainties that are inherent in both the estimates of exposure and the estimates of toxicity benchmarks. Therefore, HQ values should be interpreted as estimates rather than highly precise values and should be viewed as part of the weight-of-evidence along with the results of site-specific toxicity testing and direct observations on the structure and function of the aquatic community (see below).

Site-Specific Toxicity Tests

Site-specific toxicity tests measure the response of receptors that are exposed to Site media. This may be done either in the field or in the laboratory using media collected on the site. The chief advantage of this approach is that site-specific conditions which can influence toxicity are usually accounted for. A potential disadvantage is that, if toxic effects occur when test organisms are exposed to a Site medium, it is usually not possible to specify which chemical or combination of chemicals is responsible for the effect. Rather, the results of the toxicity testing reflect the combined effect of the mixture of chemicals present in the Site medium. In addition, it is often difficult to test the full range of environmental conditions which may occur at the Site across time and space, either in the field or in the laboratory, so these studies are not always adequate to identify the boundary between exposures that are acceptable and those that are not.

Population and Community Demographic Observations

A third approach for evaluating impacts of environmental contamination on ecological receptors is to make direct observations on the receptors in the field, seeking to determine whether any receptor population has unusual numbers of individuals (either lower or higher than expected), or whether the diversity (number of different species) of a particular category of receptors (e.g., plants, benthic organisms, small mammals, birds) is different than expected. The chief advantage of this approach is that direct observation of community status does not require making the numerous assumptions and estimates needed in the HQ approach. However, there are also a number of important limitations to this approach. The most important of these is that both the abundance and diversity of an ecological population depend on many site-specific factors (habitat suitability, availability of food, predator pressure, natural population cycles, meteorological conditions, etc.), and it is often difficult to know what the expected (non-impacted) abundance and diversity of an ecological population should be in a particular area. This problem is generally approached by seeking an appropriate "reference area" (either the site itself before the impact occurred, or some similar site that has not been impacted), and comparing the observed abundance and diversity in the reference area to that for the site.

7.2.4 Risk Characterization

As noted above, each of the measurement endpoints has advantages but also has limitations. For this reason, conclusions based on only one method of evaluation may be misleading. Therefore, the best approach for deriving reliable conclusions is to combine the findings across all of the methods for which data are available, taking the relative strengths and weaknesses of each method into account. If the methods all yield similar conclusions, confidence in the conclusion is greatly increased. If different methods yield different conclusions, a careful review must be performed to identify the basis of the discrepancy and to decide which approach provides the most reliable information.

Risk to Aquatic Receptors

As discussed above, aquatic receptors (fish, benthic invertebrates) may be exposed to Site contaminants in surface water and sediment at a number of exposure areas including Silver Creek, the south diversion ditch, the wetlands area, Site pond, and an unnamed drainage which flows into the south diversion ditch. Evaluation of potential risks by the HQ approach, site-specific toxicity testing, and population surveys are summarized below.

Risk to Aquatic Receptors		
Exposure Pathway	**Line of Evidence**	**Findings**
Direct Contact with Surface Water	Estimated HQs from measured surface water concentrations	Surface water concentrations of cadmium and zinc in Silver Creek are probably adversely impacting aquatic receptors. Zinc may also be of concern to aquatic receptors in the Site diversion ditch and wetlands area. Concentrations of several metals may be above a chronic level of concern in the unnamed drainage which flows into the Site diversion ditch.
Direct Contact with Sediment	Estimated HQs from measured bulk sediment concentrations	Wide-spread, and potentially severe, toxicity to benthic invertebrates may be occurring in Silver Creek, the site diversion ditch, the wetlands area, and the site pond due to multiple metals in bulk sediment.
	Estimated HQs from measured sediment porewater concentrations	Sediment porewater concentrations of arsenic and zinc (antimony, cadmium and lead to a lesser extent) in the wetlands area, especially in the northern portion of the wetlands, may be of concern to benthic invertebrates.
	Sediment toxicity tests (*Hyalella azteca*)	Statistically significant decreases in survival were seen for 5 of 8 stations in the wetlands area. 100% mortality was seen in 3 sampling stations located in the northern part of the wetlands area.
All exposure pathways combined	Tissue burden evaluation	Measured tissue levels of zinc suggest that benthic invertebrates and snails in the wetlands area may be adversely impacted due to site exposures. Fish in the Site pond may also be adversely impacted based on the elevated tissue levels of aluminum, lead, and zinc.
	Aquatic community evaluation	No recent data are available.

Weight of evidence conclusions
Based on these lines of evidence, metals in the wetlands area and the Site diversion ditch are probably having an adverse effect on aquatic receptors (fish and aquatic invertebrates). Antimony, arsenic, cadmium, lead, and zinc found in sediment, sediment porewater or surface water may adversly impact the aquatic receptors in the exposure areas mentioned above.

For Silver Creek, dissolved metals (especially cadmium and zinc) are likely to pose a significant risk to aquatic receptors. Because risks are elevated in surface water collected upstream of the Site, it is evident that sources in addition to the Site contribute to the toxicity. The headwaters of Silver Creek originate in the mountains south of Park City, a location that is influenced by several historic mining operations such as the Little Bell and Daly Mines. According to the findings of the Upper Silver Creek watershed evaluation (USEPA, 2001a), the Silver Maple Claims (Pace-Homer Ditch) was the largest contributor of zinc for the lower reaches of Silver Creek. Zinc loads from the Site south diversion ditch are reported to contribute only 0.03 lbs/day to Silver Creek (USEPA, 2001a). Based on this information, it appears that the Site is currently only a minor contributor to the current level of metal contamination in Silver Creek. However, if the metals present in sediments and/or surface water are reduced in Silver Creek as a result of off-site clean up activities, it may be possible that discharges from the Site could recontaminate these media and become a more dominant influence on metal loading in the future.

Risk to Wildlife Receptors

The SLERA evaluated risks to terrestrial and aquatic/semi-aquatic wildlife and concluded that ingestion exposures from most media were potentially above a level of concern. Because no new data are available for contaminant levels in soils or terrestrial food web items, and because it is expected remedial activities will address concerns over soil-related pathways, terrestrial (upland) wildlife exposures were not re-evaluated. New data for surface water, sediment, and aquatic food web items were gathered, therefore, exposures of aquatic/semi-aquatic wildlife from these pathways were quantitatively evaluated as described below.

Selection of representative species
It is not feasible to evaluate exposures and risks for each aquatic/semi-aquatic avian and mammalian species potentially present at the Site. For this reason, several species were selected to serve as representative species (surrogates) of several different semi-aquatic feeding guilds. Selection criteria for representative wildlife species include trophic level, feeding habits, and the availability of life history information. Representative wildlife receptors selected for the Site include:

Wildlife Receptors and Exposure Pathways Evaluated		
Feeding Guild	**Representative Species**	**Exposure Pathways Evaluated**
Mammalian piscivore	Mink	Ingestion of surface water, sediment, and fish
Avian piscivore	Belted Kingfisher	
Avian omnivore	Mallard Duck	Ingestion of surface water, sediment, aquatic invertebrates, and aquatic plants
Avian insectivore	Cliff Swallow	Ingestion of surface water, sediment, and emerging aquatic insects

Weight of evidence conclusions

Based on the estimated HQs and Hazard Indexes (HIs) from ingested dose, it was concluded that incidental ingestion of lead, manganese and zinc in sediments from the wetlands area, the south diversion ditch, and Site pond are likely to be causing adverse effects in waterfowl and other birds which feed in these areas. Concentrations of lead, and possibly zinc and manganese, in aquatic food items may also cause adverse effects in birds that consume fish, aquatic invertebrates, or aquatic plants from the Site

Risk to Wildlife Receptors		
Exposure Pathway	**Line of Evidence**	**Findings**
Ingestion of surface water, sediment, and aquatic food items	Estimated HQs and HIs from ingested dose (calculated from measured data)	Risks to birds are likely to be of potential concern in the wetlands, diversion ditch, and pond, primarily from lead in sediment and also from these lead in aquatic food items. Risks to the cliff swallow may be above a level of concern from manganese and zinc in aquatic invertebrates and sediment. However, correlation of manganese in sediment compared to manganese in invertebrates is inconsistent, so predicted risks may not be site-related or may reflect an overly conservative TRV.

7.2.5 Ecological Cleanup Levels

A review of the lines of evidence and numerical calculations presented in the BERA suggests that lead is a clear driver of ecological risk at the RFT Site. HIs for incidental ingestion of lead in sediment by wildlife receptors (primarily waterfowl) are generally higher than those for other COCs, pathways, and receptors. In this regard, lead can be used to establish a cleanup standard

that is conservative. Rather than establishing cleanup levels for all COCs, a cleanup level that is protective relative to incidental ingestion of lead in sediment by wildlife is considered sufficiently protective of other COCs, pathways, and receptors.

EPA selected an ecological cleanup level of 310 ppm lead in sediment. This value is based on a low-end threshold Toxicity Reference Value (TRV) from the species sensitivity distribution (SSD) for all birds, and hence it is likely to be the most appropriate value to ensure protection of all waterfowl. This approach assumes that the variability in TRVs between different species of waterfowl is similar to the variability for other types of birds. While there is considerable uncertainty, it is expected that attainment of this numerical level would reduce HI's for lead in sediment to less than one.

7.2.6 Uncertainties

Quantitative evaluation of ecological risks is generally limited by uncertainty regarding a number of important data. This lack of knowledge is usually circumvented by making estimates based on whatever limited data are available, or by making assumptions based on professional judgment when no reliable data are available. Because of these assumptions and estimates, the results of the risk calculations are themselves uncertain, and it is important for risk managers and the public to keep this in mind when interpreting the results of a risk assessment. Uncertainties related to the BERA are summarized in Table 7-16.

7.3 HUMAN HEALTH AND ECOLOGICAL RISK CONCLUSIONS

The BHHRA, which is based on present conditions at the Site, determined there are currently no unacceptable risks from lead and arsenic to the targeted use population (recreational visitors) at the Site. However, remedial action is necessary to maintain and improve the soil cover that was placed on the tailings. Disturbances to the present soil cover could allow for exposure to the underlying tailings.

There is substantial risk to ecological receptors at the Site from exposure to zinc, cadmium, lead and arsenic found in the various environmental media at the Site. Exposure pathways include direct contact with the sediments within the South Diversion Ditch and the wetlands area. These exposure areas also present risks to ecological receptors through contact or ingestion of surface water and sediment porewater found at the Site.

SECTION 8

REMEDIAL ACTION OBJECTIVES

8.1 NEED FOR REMEDIAL ACTION

The measures undertaken voluntarily by UPCM over the past two decades have significantly reduced the risks presented by contaminants at the Site. These measures, while incomplete, have effectively isolated most of the contaminated materials from the environment and generally made the Site safe for recreational use. However, the ecological risks identified and described in the previous sections, along with the physical conditions present at the Site, necessitate additional remedial action. In its current state, the Site presents unacceptable risks to aquatic wildlife receptors, both in the wetland below the embankment and in the south diversion ditch. Similarly, the Site's physical characteristics create the potential for significant migration of heavy metals off the Site and into Silver Creek, as well as the potential for future exposure to recreational users. The Remedial Action Objectives (RAOs) for the Site focus on mitigating existing ecological risks and maintaining or improving the physical conditions to prevent or minimize future releases and exposures.

8.2 REMEDIAL ACTION OBJECTIVES

To address the existing and potential risks, as well as accommodate the anticipated future recreational and ecological use of the Site, EPA has developed nine RAOs:

1. Reduce risks to wildlife receptors in the wetland area and south diversion ditch such that hazard indexes for lead are less than or equal to one.
2. Ensure that recreational users, including children, continue to have no more than a 5% chance of exceeding a blood lead level of 10 micrograms per deciliter from exposure to lead in soils
3. Ensure that recreational users, including children, continue to have no more than 1×10^{-4} chance of contracting cancer from exposure to arsenic in soils.
4. Eliminate the risk of catastrophic failure of the tailings impoundment.
5. Ensure that surface water discharged from the Site meets applicable Utah water quality standards.
6. Eliminate the possibility of future ground water use and withdrawal at the Site.
7. Allow for a variety of future recreational uses.
8. Allow for future disposal of mine tailings from the Park City area within the tailings impoundment until the remedy is complete.
9. Minimize post-cleanup disturbance of tailings and contaminated soil. Provide controls that ensure any necessary disturbance at the Site follows prescribed methods.

SECTION 9

DESCRIPTION OF ALTERNATIVES

In the FFS, four specific alternatives for remedial action, as well as a No Action alternative, were brought forward for detailed analysis. These alternatives are described in the subsections below.

9.1 DESCRIPTION OF REMEDY COMPONENTS

9.1.1 Alternative 1- No Action

It is a requirement of CERCLA and the NCP that the EPA evaluate the consequences of taking no action at the Site. This alternative is designed to establish a baseline of current conditions upon which other alternatives can be compared. Alternative 1 does not provide any additional protection of human health or the environment.

9.1.2 Alternative 2- Soil Cover, Institutional Controls and Wedge Buttress

Alternative 2 entails increasing the depth of cover over tailings in the Study Area, implementing institutional controls to manage human contact with Site materials, and installing a wedge buttress to a portion of the main embankment of the tailings impoundment. The South Diversion Ditch and wetland areas will be left undisturbed.

Major Components

- All tailings are left in current location
- Existing soil cover is augmented to achieve a depth of at least 18 inches of soil above tailings both inside and outside the impoundment
- Embankment is fortified to prevent catastrophic failure
- Institutional controls (easements and land use restrictions) to protect soil cover and prevent ground water use
- Ongoing surface water monitoring
- Mine waste from the Park City area will be placed inside the impoundment before the soil cover is augmented.

9.1.3 Alternative 3- Source Removal, Soil Cover and Wedge Buttress

Alternative 3 includes source removal and covering of Area B tailings, placing clean soil over the tailings impoundment, installation of a wedge buttress, covering of contaminated sediments in the diversion ditch, removing contaminated sediments in the wetland, and placing of restrictions on future land and groundwater use.

Major Components

- Tailings in critical areas outside the impoundment (Area B) are excavated and moved inside the impoundment
- Existing soil cover is augmented to achieve a depth of at least 18 inches of soil above tailings
- Sediments in diversion ditch are covered with clean gravel
- Contaminated sediments and soils in the wetland below the embankment are excavated and material is placed within the impoundment
- Mine waste from the Park City area is placed within the impoundment during implementation of the remedy
- Embankment is fortified to prevent catastrophic failure
- Institutional controls (easements and land use restrictions) to protect soil cover and prevent ground water use
- Ongoing surface water monitoring

9.1.4 Alternative 4- Excavation, Treatment and Offsite Disposal

This alternative entails excavating the contaminated material from the impoundment and from an area south of the diversion ditch, stabilizing it onsite, and disposing of it in a non-hazardous waste (Subtitle D) or hazardous waste (Subtitle C) landfill. Following treatment, the material would be tested using Toxicity Characteristic Leaching Procedure (TCLP) methods and disposed of in the proper landfill depending on its classification as either hazardous or non-hazardous waste. Once treatment and disposal processes are complete the site would be reclaimed by grading the area, applying six inches of topsoil and seeding the new soil with a native mix.

Major Components

- All tailings are excavated
- Tailings treated on-site through stabilization process to limit release of metals
- Tailings disposed of at off-site landfill

9.1.5 Alternative 5- Excavation, Treatment and Onsite Disposal

This alternative would include excavating the contaminated material from the impoundment and south of the diversion ditch and stabilizing it in a temporary treatment facility located adjacent to the impoundment. The treated materials would then be disposed of in a repository space within the impoundment. Upon completion of treatment and disposal activities the impoundment would be reclaimed. The Site will be graded to prevent surface water accumulation, thus reducing infiltration. Following the remedial activities, 18 inches of soil will be applied, including 12 inches of a low permeability soil and 6 inches of top soil. The top soil will be seeded with a native mix.

Major Components

- All tailings are excavated
- Tailings treated on-site through stabilization process to limit release of metals
- Tailings replaced into impoundment and covered with 18 inches of soil
- Institutional controls (easements and land use restrictions) to protect soil cover and prevent ground water use
- Ongoing surface water monitoring

9.2 COMMON ELEMENTS AND DISTINGUISHING FEATURES OF EACH ALTERNATIVE

Alternatives 1, 2, and 3 all involve managing the tailings in place to varying degrees, with alternatives 2 and 3 adding increased levels of response. The RI has shown that the existing soil cover and the Site's hydrogeologic setting have effectively isolated the tailings from the environment, so it is clear that each of these alternatives, even the No Action Alternative, will be effective to some degree. This type of managed repository for low-toxicity mine wastes is standard industry practice and can be considered a presumptive remedy. The design requirements for all alternatives are small and the time to implement each alternative is no more than two years.

Alternative 3 is distinguished from Alternative 2 by the increased protectiveness and risk reduction achieved by (1) excavating wastes in critical areas outside the impoundment, and (2) covering the diversion ditch sediments with gravel. Both alternatives 2 and 3 provide the opportunity for placement of mine waste from other locations in the Upper Silver Creek Watershed at the Site.

Alternatives 4 and 5 both involve excavation and treatment of all contaminated materials. These alternatives add additional protectiveness and limit future maintenance and management requirements such as monitoring. The design requirements for these alternatives are larger, involve significant bench and pilot testing, and the time to implement these alternatives are in excess of five years. Alternative 5 is distinguished from Alternative 4 in that treated wastes will remain on-site, as opposed to being disposed of in an off-site landfill.

9.3 EXPECTED OUTCOMES OF EACH ALTERNATIVE

Alternative 1 - No Action

- Immediately safe for recreational use
- Ecological risks not addressed
- Potential for increased future releases and exposures, including catastrophic failure of embankment

- No additional improvements in water quality
- Potential for unacceptable future ground water exposures

Alternative 2 - Soil Cover, Institutional Controls and Wedge Buttress

- Ready for recreational use in approximately two years
- Ecological risks not addressed
- Potential for catastrophic failure of embankment eliminated
- Site could be used for disposal of mine waste from other locations in the Watershed during implementation of the remedy
- Limited additional improvements in water quality
- Future ground water use restricted and potential for future exposures eliminated
- Ongoing monitoring and management required

Alternative 3 - Source Removal, Soil Cover and Wedge Buttress

- Ready for recreational use in approximately two years
- Ecological risks mitigated
- Potential for catastrophic failure of embankment eliminated
- Site could be used for disposal of mine waste from other locations in the Watershed during implementation of the remedy
- Significant improvements in water quality
- Future ground water use restricted and potential for future exposures eliminated
- Ongoing monitoring and management required

Alternative 4 - Excavation, Treatment and Offsite Disposal

- Ready for unlimited use no sooner than five years
- Ecological risks mitigated
- Potential for catastrophic failure of embankment eliminated
- Significant improvements in water quality
- Potential for future ground water exposures eliminated
- No future Site management or monitoring

Alternative 5 - Excavation, Treatment and Onsite Disposal

- Ultimate land-use potential unknown, but no use sooner than five years
- Ecological risks mitigated
- Potential for catastrophic failure of embankment eliminated
- Significant improvements in water quality
- Potential for future ground water exposures likely eliminated
- Limited Site management and monitoring required

SECTION 10

SUMMARY OF COMPARATIVE ANALYSIS

The NCP sets forth nine criteria for use in a detailed, comparative analysis of alternatives. This section summarizes the detailed analysis found in the FFS with specific discussion for each criterion followed by a summary and ranking table (10-1, 10-2).

10.1 QUALITATIVE EVALUATION OF EACH CRITERION

Overall Protection of Human Health and the Environment

This criterion addresses whether each alternative provides adequate protection of human health and the environment and describes how risks posed through each exposure pathway are eliminated, reduced, or controlled.

Alternatives 1 and 2 do not provide adequate protection of human health and the environment. Neither alternative addresses risks posed by contaminated sediments in the diversion ditch and wetland areas. Alternative 1 also does not improve physical conditions at the Site, making future releases and exposures likely.

Alternatives 3, 4, and 5 all provide adequate protection of human health and the environment. Alternative 3 addresses risks posed by contaminated sediments in the diversion ditch and wetland areas through a combination of source removal and containment. Alternatives 4 and 5 provide additional protectiveness through treatment of contaminated wastes and soils. Alternatives 3, 4, and 5 also improve physical conditions at the Site, minimizing or eliminating the potential for future releases. Alternative 3 accomplishes this with a wedge buttress, soil cover, and institutional controls to better contain the tailings. Alternatives 4 and 5 accomplish this primarily through treatment of contaminated wastes and soils.

Compliance with Applicable or Relevant and Appropriate Requirements

Section 121(d) of CERCLA and NCP Section 300.430(f)(1)(ii)(B) require that remedial actions at CERCLA sites at least attain legally applicable or relevant and appropriate federal and state requirements, standards, criteria, and limitations which are collectively referred to as "ARARs," unless such ARARs are waived under CERCLA Section 121(d)(4).

Applicable requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under Federal environmental or State environmental or facility siting laws that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance found at a CERCLA site. Only those state standards that are identified in a timely manner and that are more stringent than federal requirements may be applicable.

Relevant and appropriate requirements are those cleanup standards, standards of control, and other substantive requirements, criteria, or limitations promulgated under federal environmental or state environmental or facility siting laws that, while not applicable to a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstance at a CERCLA site, they nonetheless address problems or situations sufficiently similar to those encountered at the CERCLA site such that their use is well-suited to the particular site. Again, only those State standards that are identified in a timely manner and that are more stringent than Federal requirements may be relevant and appropriate.

Site ARAR's are summarized in Table 10-3. Alternatives 1 and 2 will not comply with all of the ARAR's, while alternatives 3, 4 and 5 will. Additionally, the Action Specific hazardous waste ARAR's dealing with federally-defined hazardous wastes under RCRA are not applicable to Bevill-exempt waste, but may be relevant and appropriate. The majority of the mine waste at Richardson, and most mining waste that is transported from other Park City mining areas is considered Bevill-exempt under federal exemptions. Therefore, the action specific ARAR's apply to any waste associated with the site that is not Bevill-exempt.

Long-Term Effectiveness and Permanence

Long-term effectiveness and permanence refers to expected residual risk and the ability of the remedy to maintain reliable protection of human health and the environment over time, once cleanup levels are met. This criterion includes the consideration of residual risk that will remain on-site following remediation and the adequacy and reliability of controls.

Due to UPCM's prior voluntary efforts, each alternative provides some degree of long-term protection, though Alternatives 1 and 2 do not adequately address all risks posed by the Site. Alternatives 2 and 3 improve upon Alternative 1 through the use of physical improvements and institutional controls to reduce the risk of future releases from the Site, with Alternative 3 including provisions that address the risks posed by the diversion ditch and wetlands. However, both these alternatives require on-going institutional controls and monitoring to ensure their continued efficacy. Alternatives 4 and 5 largely eliminate this concern through treatment of all contaminated wastes and soils.

Reduction of Toxicity, Mobility, or Volume through Treatment

Reduction of toxicity, mobility, or volume through treatment refers to the anticipated performance of the treatment technologies that may be included as part of a remedy.

Only Alternatives 4 and 5 contain provisions for active treatment. Both alternatives would reduce, though not eliminate, the toxicity and mobility of the contaminants through stabilization treatment technologies in a similar fashion. The technologies considered are proven for mine wastes, but their effectiveness varies from site to site based upon the physical characteristics of the waste. However, neither alternative would reduce the volume of material required to be managed, which may actually increase slightly due to the addition of necessary reagents.

Short-Term Effectiveness

Short-term effectiveness addresses the period of time needed to implement the remedy and any adverse impacts that may be posed to the workers, the community, and the environment during construction and operation of the remedy until cleanup levels are achieved.

Each alternative can be implemented safely with proper engineering controls, though the degree of short-term risk varies considerably among the alternatives.

Alternatives 2 and 3 can be completed in a relatively short-time period of approximately two or three construction seasons. These alternatives involve only limited on-site earthmoving and any risks would be limited to workers and trespassers. These risks are easily controlled through institution of safe work practices and engineering controls.

Alternatives 4 and 5 would take substantially more time to complete - perhaps in excess of ten years. Both alternatives not only include more earthwork than Alternatives 2 and 3, but both also involve the operation of treatment systems and the use of slightly toxic reagents. These factors serve to increase the risk to workers. Alternative 4 also involves off-site transportation and disposal, which increases the risk to the community as waste is hauled via highway. Again, these risks could be managed, though not as easily, or likely as effectively, as those in Alternatives 2 and 3.

Implementability

Implementability addresses the technical and administrative feasibility of a remedy from design through construction and operations.

All of the alternatives involve technology that is relatively basic. Alternatives 2 and 3 involve only on-site earth moving, and all of the resources are available locally. Alternatives 4 and 5 are somewhat more difficult to implement due to the inclusion of treatment technologies. However, these technologies are well established, and all of the resources necessary for implementation are readily available.

Cost

The estimated present worth costs for the alternatives, not including Alternative 1, range from $2,295,398 for Alternative 2 to $343,234,058 for Alternative 5. Alternatives 4 and 5 both involve on-site treatment, are considerably more expensive than Alternatives 2 and 3, which do not involve treatment. Cost summaries are found in Tables 10-2.

State Acceptance

The UDEQ has expressed its support for Alternatives 3, 4, and 5. However, UDEQ also recognizes that Alternatives 4 and 5 are significantly more costly.

Community Acceptance

This criterion considers whether or not the local community agrees with EPA's analyses and preferred remedial alternative. Comments received on the Proposed Plan are important indicators of community acceptance. This is a balancing criterion.

During the Proposed Plan public comment period, one set of written comments was received that related to the transportation of waste from other areas within the Watershed to the Site. Specifically, the comments were directed to the chosen transportation route. Some comments on the preferred alternative were made by Utah Department of Fish and Wildlife and they are addressed in the Responsiveness Summary. All verbal questions raised at the public meeting were addressed at the meeting by EPA staff. A transcript of the meeting is available on the website and in the information repository.

10.2 SUMMARY AND RANKING TABLE

A comparison summary and the rankings are found in table 10-1 and 10-2.

SECTION 11

PRINCIPAL THREAT WASTE

The NCP establishes an expectation that EPA will use treatment to address principal threats posed by a site wherever practical. A principal threat concept is applied to the characterization of "source material" at a Superfund site. A source material is material that includes or contains hazardous substances or pollutants, or contaminants that act as a reservoir for migration of contamination to ground water, surface water, or air, or acts as a source for direct exposure. EPA has defined principal threat wastes as those source materials considered to be highly toxic or highly mobile that generally cannot be reliably contained or would present a significant risk to human health or the environment should exposure occur.

The waste at the Site is considered a high volume, low toxicity source material in that the risk levels at the Site under the current conditions are near or within the acceptable range. This is true for existing conditions, as well as for reasonably anticipated future recreational land uses. Similarly, past experience at similar mining-related sites has shown that low-toxicity mine wastes can be reliably contained. As such, though treatment was considered as an alternative, no materials at the Site were considered principle threat wastes.

SECTION 12

THE SELECTED REMEDY

12.1 SUMMARY OF THE RATIONALE FOR THE SELECTED REMEDY

Several basic questions guide the development of the ROD and the ultimate selection of a remedy:

- What risks does the Site present?
- To what degree and how will those risks be mitigated?
- Which alternative best meets the nine remedy selection criteria set forth by the NCP?

EPA has considered these questions, as set forth in the previous sections of the ROD and in the supporting FFS, and has determined that Alternative 3, "Source Removal, Soil Cover and Wedge Buttress," is the selected remedy for the Site. Alternative 3 mitigates risks to a sufficient degree, meets all threshold standards and criteria, and has the best balance of tradeoffs with respect to balancing and modifying criteria. Alternatives 1 and 2 do not sufficiently mitigate risks and are not satisfactory candidates for a final remedy. Alternatives 4 and 5 sufficiently mitigate risks, meet all threshold standards and criteria, and offer increased protection of human health and the environment, but the costs of implementation are dramatically higher than Alternative 3. The greater costs are not justified by the relatively small improvements in overall protection of human health and the environment offered by Alternatives 4 and 5.

12.2 DETAILED DESCRIPTION OF THE SELECTED REMEDY

The selected remedy has several key components that are described in detail below:

Source Removal

Tailings and contaminated soils in Area B and in the wetland below the main embankment will be excavated and relocated to the low-lying area within the impoundment. The areas of concern will be over-excavated by 6 inches or to the depth required for removal of visible mine tailings and materials with lead concentrations greater than 310 ppm lead. Areas selected for excavation include: (1) contaminated materials in low-lying portions (subject to seasonal ponding or interaction with shallow ground water) of Area B, and (2) all of the sediments in the wetland below the impoundment. The wetland will not be excavated until upstream source areas along Silver Creek, specifically Empire Canyon, Silver Maple Claims, and the "flood plain" tailings just above the Site, are remediated. This is to ensure that clean areas are not re-contaminated, and is consistent with the overall cleanup plan for the Upper Silver Creek Watershed.

Soil Cover

A minimum 12 inch thick low permeability soil cover will be placed on all areas where tailings or contaminated materials are left in-place, including the impoundment. The cover will build upon

the existing soil cover and utilize similar materials. The cover would be placed in 6 inch lifts and compacted. Upon completion of the impermeable soil cover, 6 inches of topsoil cover will be added to provide for an 18 inch soil cover in total. The final surface would be graded to control surface storm water runoff and drainage and re-vegetated with a native seed mix to minimize erosion. Drainage swales and runoff channels may be installed where required to direct surface runoff toward the diversion ditch. Where applicable storm water runoff control structures will be constructed using erosion resistant materials such as geotextile fabric and rip-rap.

Wedge Buttress

A wedge buttress will be installed along the over-steepened portion of the embankment (for about 400 feet of the total embankment length of 800 feet). Fill will be placed along the toe of the embankment to a height of approximately 10 feet above the toe and extending horizontally out from the embankment face approximately 30 feet, or to other dimensions designed to provide an increase in stability of at least 50%. Prior to construction, the upper soil and existing vegetation and organic matter will be removed. Drain material and a filter blanket (if required) will be placed prior to the buttress fill. Seep water currently emanating from the embankment will be diverted to the South Diversion Ditch. The buttress fill material will be compacted to at least 95% of the maximum dry density as determined by ASTM D-698 at moisture content within two (2) percent of optimum. At the end of construction the buttress fill will be protected from erosion by re-vegetation.

Sediment Cover

Clean gravel (12 inches) will be placed over sediments in the south diversion ditch.

Institutional Controls

Two primary institutional controls (ICs) will be implemented to mitigate potential risks and ensure the long-term efficacy of the remedy:

1. Ground water use restrictions within the Site boundary. The goal is to preclude any use of shallow ground water, as well as eliminate any significant alteration of the existing hydrogeologic system, such as mixing of aquifers. This IC will be in the form of a deed restriction and will be the responsibility of the owner of the Site.

2. Land use restrictions within the Site boundary. The goal is to preclude non-recreational uses and to ensure the soil cover, or similar protections, are maintained. This IC will be in the form of an Environmental Covenant and will be the responsibility of the owner of the Site.

Placement of Additional Mine Waste at the Site

There are several reasons why the Richardson Flat Site is an appropriate location for the placement and consolidation of mine wastes from cleanups conducted at other locations in the Watershed. First, the nature of the mine wastes found throughout the watershed is similar.

Second, the volume of waste from other locations is extremely small relative to the volume of wastes already present in the impoundment. The impacts from such a small contribution would be negligible. Lastly, the RI has shown that the mine tailings at the Site are well contained and present no unacceptable risks to human health. The selected remedy will ensure conditions remain this way and that all other Site risks are addressed. These factors make the Site an acceptable long term repository, and, in conjunction with these factors anoff-site rule determination was made and agreed upon in date.

Monitoring

Water quality samples will be collected at the mouth of the diversion ditch quarterly for two years after construction completion to ensure discharges into Silver Creek meet applicable water quality standards.

12.3 SUMMARY OF THE ESTIMATED REMEDY COSTS

A summary of the selected remedy costs can be found in table 12-1. The present worth cost of this remedy is $3,675,868 and is presented in detail in table 12-2.

12.4 EXPECTED OUTCOMES OF THE SELECTED REMEDY

Land Use

The selected remedy allows for a variety of recreational uses. Such uses may include low-intensity uses, such as open space, or more high-intensity uses such as athletic fields. Any construction/development activities occurring on the soil cover must be designed to maintain at least 18 inches of clean soil (12 inches of low permeability soil plus 6 inches of topsoil) between the tailings and the surface and minimize infiltration through the use of low-permeability clay or other engineering controls. Future changes in land use may be contemplated but would require a reassessment of risk.

In the short-term, the selected remedy allows for placement of mine wastes from other cleanup locations in the Watershed at the Site. This will reduce the cost to implement other cleanups (by eliminating the need to haul wastes to a landfill) and aid in the overall cleanup of the Watershed. Only select locations in the impoundment (generally low spots that require fill) will be used for this purpose.

Ground Water and Surface Water Use

The selected remedy restricts ground water use only within the impoundment. This shallow ground water is very low in volume and of poor quality and will not be considered a potential drinking water source. Deeper ground water below and around the impoundment that may be considered a future drinking water source is not affected.

All surface water from the Site discharges to Silver Creek and is expected to be acceptable for all

designated uses of the creek. No drinking water uses are expected.

Final Cleanup Levels and Residual Risk

Several media are affected at the Site, but the nature of the Site and the remedy mean that most cleanup decisions were based upon physical characteristics of the Site rather than media-specific concentrations of COCs:

- In surface water, discharges from the south diversion ditch are expected to be consistently below the appropriate water quality standards for protection of aquatic wildlife. For zinc, the most critical metal, this value is dependent upon water hardness, but is generally between 0.1 and 0.8 ppm. Water discharging from the Site is expected to continue to be of better quality than Silver Creek, and will create a net improvement in water quality downstream. Surface water conditions in the wetland are contingent upon upstream remediation activities and are impossible to predict at this time. No human health risk is associated with surface water from the Site.
- In sediments, all contaminated sediments are expected to be addressed. All sediments in the diversion ditch will be covered with clean fill. All sediments in the wetland will be excavated and replaced with clean fill as necessary. Again, this is based upon the physical dimensions of these features, rather than on concentrations within the media. To ensure that all contaminated sediments are removed in the wetland, a remediation goal of 310 ppm lead was established. Soils will be over-excavated, and sampling will be conducted to ensure no sediments remain with concentrations of greater than 310 ppm lead. This is expected to bring all HI's for aquatic wildlife below one. It is impossible to predict eventual sediment concentrations as the system comes to equilibrium over time, but they are expected to be of equal quality or of improved quality than sediments in Silver Creek and protective of aquatic wildlife.
- In soils, all contamination (e.g. the entire impoundment and a few small areas outside of the impoundment) will be covered with at least eighteen inches of clean soil (12 inches of low permeability soil plus 6 inches of topsoil), so there should be no appreciable residual human health risk due to incidental exposure if the soil cover is maintained. As an additional measure, soils will be sampled and no soils with concentrations greater than 500 ppm lead will be left exposed. Such a level is far below any calculated remediation goals for recreational uses. Some risks will be associated with potential disturbance of buried tailings, but these are considered minimal and manageable with ICs.
- In ground water, only water within the impoundment is affected. This water is not expected to be used as a drinking water source, but IC's will prevent any exposure.

Socioeconomic impacts

- No significant socioeconomic impacts are expected.

SECTION 13

STATUTORY DETERMINATIONS

Under CERCLA §121 and the NCP, the lead agency must select remedies that are protective of human health and the environment, comply with applicable or relevant and appropriate requirements (unless a statutory waiver is justified), are cost-effective, and utilize permanent solutions to the extent practicable. In addition, CERCLA includes a preference for remedies that employ treatment that permanently and significantly reduces the volume, toxicity, or mobility of hazardous wastes as a principal element and a bias against off site disposal of untreated wastes. The following sections discuss how the selected remedy meets these statutory requirements.

13.1 PROTECTION OF HUMAN HEALTH AND THE ENVIRONMENT

The selected remedy ensures both short-term and long-term protection of human health and the environment in several ways:

Protection of Human Health

- The baseline human health risk assessment, as discussed in Section 7 of this ROD, shows that the Site, under current and reasonably anticipated future uses, presents no unacceptable risks to human health.
- Remedial actions will ensure that these conditions are not significantly altered in the future. The existing soil cover will be enhanced to ensure that the mine tailings do not migrate and that future exposure to mine tailings does not occur. The impoundment wall will be buttressed to ensure that no catastrophic failure occurs. Institutional controls will be established to ensure that only recreational uses are allowed, that ground water within the impoundment is not extracted, and that the soil cover remains intact.
- Implementation of the remedy is simple and straightforward, and engineering controls will be implemented to ensure that workers are protected.

Protection of the Environment

- The RI showed that surface water discharged from the Site currently meets the appropriate Utah Water Quality Standards for all metals. The Site is only a minor contributor to metal loading in Silver Creek. Remedial actions will ensure that metals discharged from the Site will be further reduced, helping to further enhance water quality in Silver Creek. Area B tailings, which apparently influence water quality in the diversion ditch, will be excavated and placed inside the impoundment. The impoundment will be graded to further reduce infiltration into tailings.
- The BERA, as discussed in Section 7 of this ROD, showed that contaminated sediments in the wetland and diversion ditch present unacceptable risks to aquatic receptors and wildlife. In the diversion ditch, the sediments will be covered with clean fill material, breaking the exposure pathway. In the wetland, which is a natural and critical habitat, the

contaminated sediments in the entire wetland will be removed and the wetland restored. These actions are expected to reduce risks to acceptable levels.

- Future land uses, all recreational in nature, are expected to largely preserve the habitat value the Site provides.
- Engineering controls will be established to ensure no cross-media contamination during implementation. Remedial actions will ensure no future migration of contamination, either within or between media. The existing Site conditions and enhanced soil cover will isolate and contain the tailings. The buttress on the impoundment will ensure no catastrophic failures and release occur. A well-ban will ensure no cross contamination of aquifers or discharge of contaminated water.

13.2 COMPLIANCE WITH APPLICABLE, RELEVANT AND APPROPRIATE REQUIREMENTS

The selected remedy is compliant with all ARARs associated with the Site. Site ARARs are summarized in Table 10-1. The Action Specific hazardous waste ARAR's are not applicable to Bevill-exempt waste. The majority of the mine waste at Richardson, and any mine waste that is transported from other Park City mining areas to the Site most likely is or will be Bevill-exempt. Therefore, the action specific hazardus waste ARAR's apply to any waste associated with the site that is not Bevill-exempt.

13.3 COST EFFECTIVENESS

The NCP mandates that the selected remedy be cost-effective. It does not mandate that the most cost-effective alternative be selected, only that the alternative that is selected meets a few basic criteria for cost-effectiveness. The nature of the Site (high volume of waste, low toxicity waste, limited number of suitable cleanup technologies) makes this determination somewhat simple. The five alternatives evaluated can be broken down into three basic categories:

- No Action (Alternative 1)
- Containment-Based (Alternatives 2 and 3)
- Treatment-Based (Alternatives 4 and 5)

Alternatives 1 and 2 did not meet minimum standards for protectiveness, and hence cannot be considered cost effective. Alternatives 4 and 5, while adding increased protectiveness and satisfying the statutory preference for treatment, increase the costs relative to Alternative 3 up to two orders of magnitude – hundreds of millions of dollars. The relatively small increase in protectiveness for such a large cost increase is not warranted. Alternative 3 is somewhat more expensive than Alternative 2, but addresses all Site risks. It is simple to implement and the basic technology is consistently used for tailings pile closures. The overall effectiveness of Alternative 3 is clearly proportional to its overall effectiveness. Tables 13-1, 13-2, 13-3 and 13-4 summarize the costs of each alternative besides alternative 1, the No Action Alternative.

13.4 UTILIZATION OF PERMANENT SOLUTIONS AND ALTERNATIVE TREATMENT FOR RESOURCE RECOVERY TECHNOLOGIES TO THE MAXIMUM EXTENT PRACTICABLE (MEP)

The selected remedy represents the best balance of trade-offs among the alternatives evaluated. Because the waste at the Site is comprised of naturally occurring inorganic minerals and metals, it is impossible to completely rid it of toxicity through treatment. It cannot be burned or significantly altered. Because of this, some degree of containment must be contemplated for the materials whether they are treated or not – either on-site or off-site containment. All of the alternatives, with the exception of the No Action alternative, include containment components, and are thus not fundamentally different in this regard. Alternatives 4 and 5, while they may be considered slightly more "permanent" than Alternative 3 because of the reduction in toxicity and use of a managed, off-site landfill, are far more costly to implement. Clearly, on-site containment is the most permanent solution that is practicable.

No resource recovery technologies are applicable for the Site. The tailings have already been processed for metal recovery during initial mining, and current economic conditions do not warrant further metal recovery at the very high cost such actions would require.

13.5 PREFERENCE FOR TREATMENT AS A PRINCIPLE ELEMENT

As stated in Section 11, there are no principle threat wastes present at the Site. The waste is high volume, low toxicity. As such, there is no waste that is particularly critical to treat. The waste can be treated, but the exceedingly high cost with relatively low reduction in toxicity is not warranted. Because of this, treatment is not a principle element of the selected remedy.

13.6 FIVE-YEAR REVIEW REQUIREMENTS

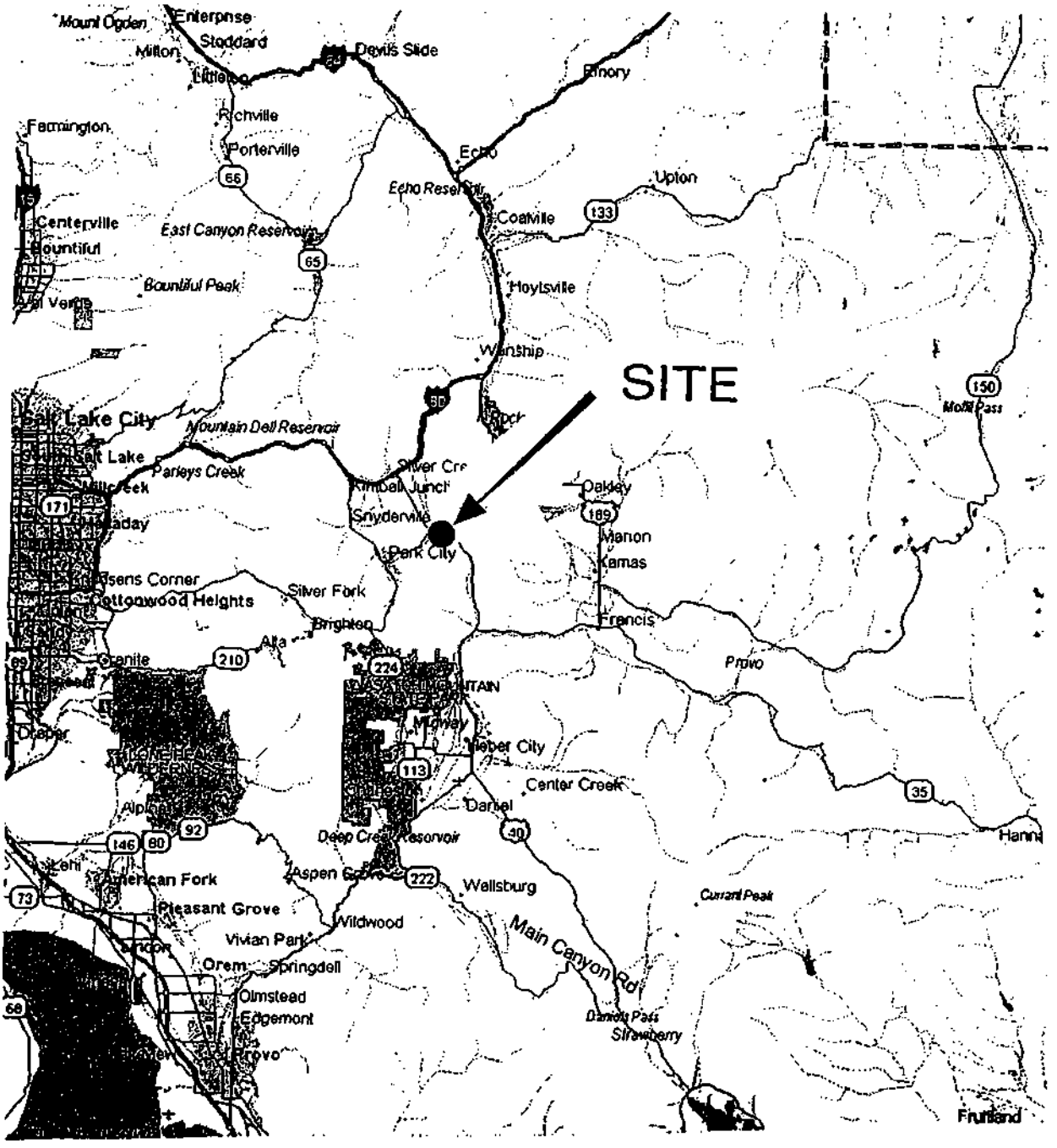
Because the selected remedy will result in hazardous substances remaining on-site above levels that allow for unlimited use and unrestricted exposure, a statutory review will be conducted within five years after initiation of remedial action to ensure the remedy is, or will be, protective of human health and the environment. Such reviews will continue every five years indefinitely to ensure the remedy remains protective over time.

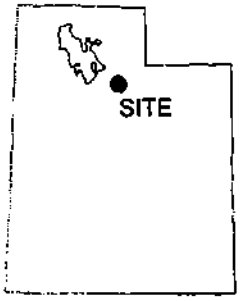
SECTION 14

DOCUMENTATION OF SIGNIFICANT CHANGES

The proposed plan was released for public comment in September of 2004. It identified as the preferred alternative the same alternative as the selected remedy identified in this ROD. This remedy includes removing small potions of tailings in Area B and disposing of them within the impoundment, installing a wedge buttress to support the main embankment, removal of sediments within the wetland area and finally capping the main impoundment. The preferred alternative did not change between the issuance of the proposed plan and the ROD.

APPENDIX A
FIGURES FOR THE RECORD OF DECISION





NOT TO SCALE

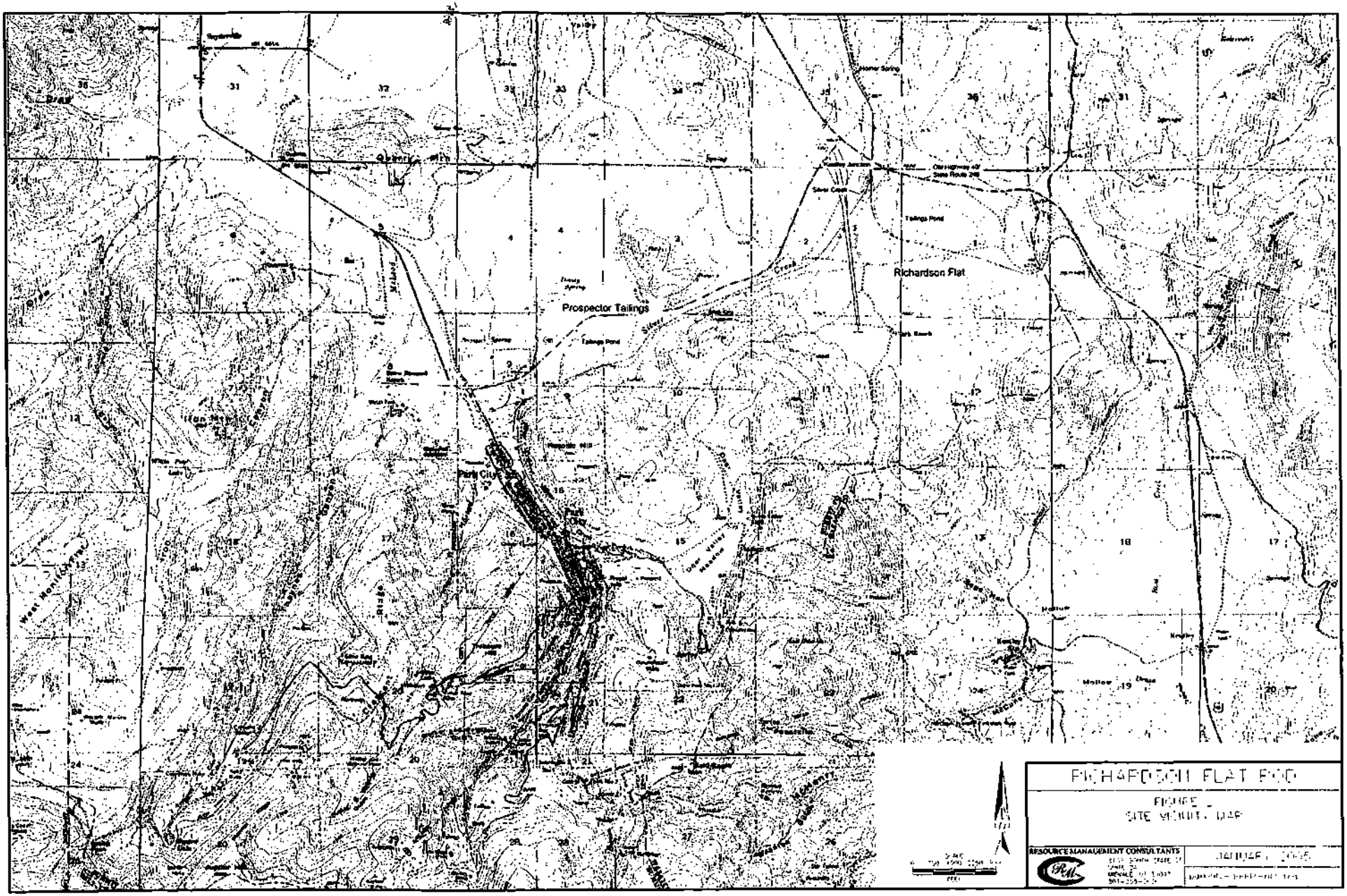
RICHARDSON FLAT RI

FIGURE 1
SITE LOCATION MAP

RESOURCE MANAGEMENT CONSULTANTS
8138 SOUTH STATE ST.
SUITE 2A
MIDVALE, UT 84047
801-255-2626

SEPTEMBER 2004

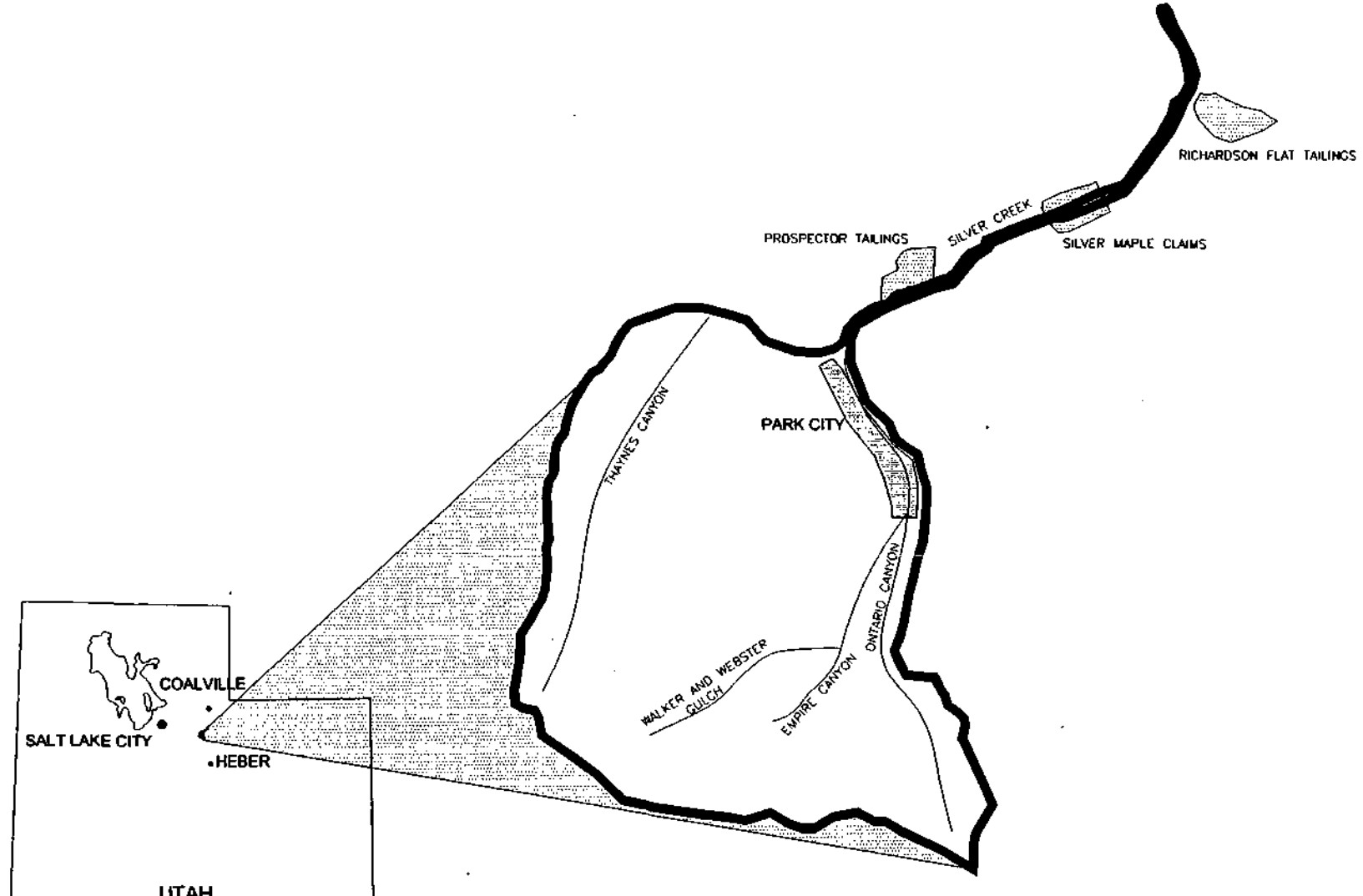
ri-site-location-map-dwg



RICHARDSON FLAT ROD

FIGURE 1
SITE VICINITY MAP

JANUARY 2005



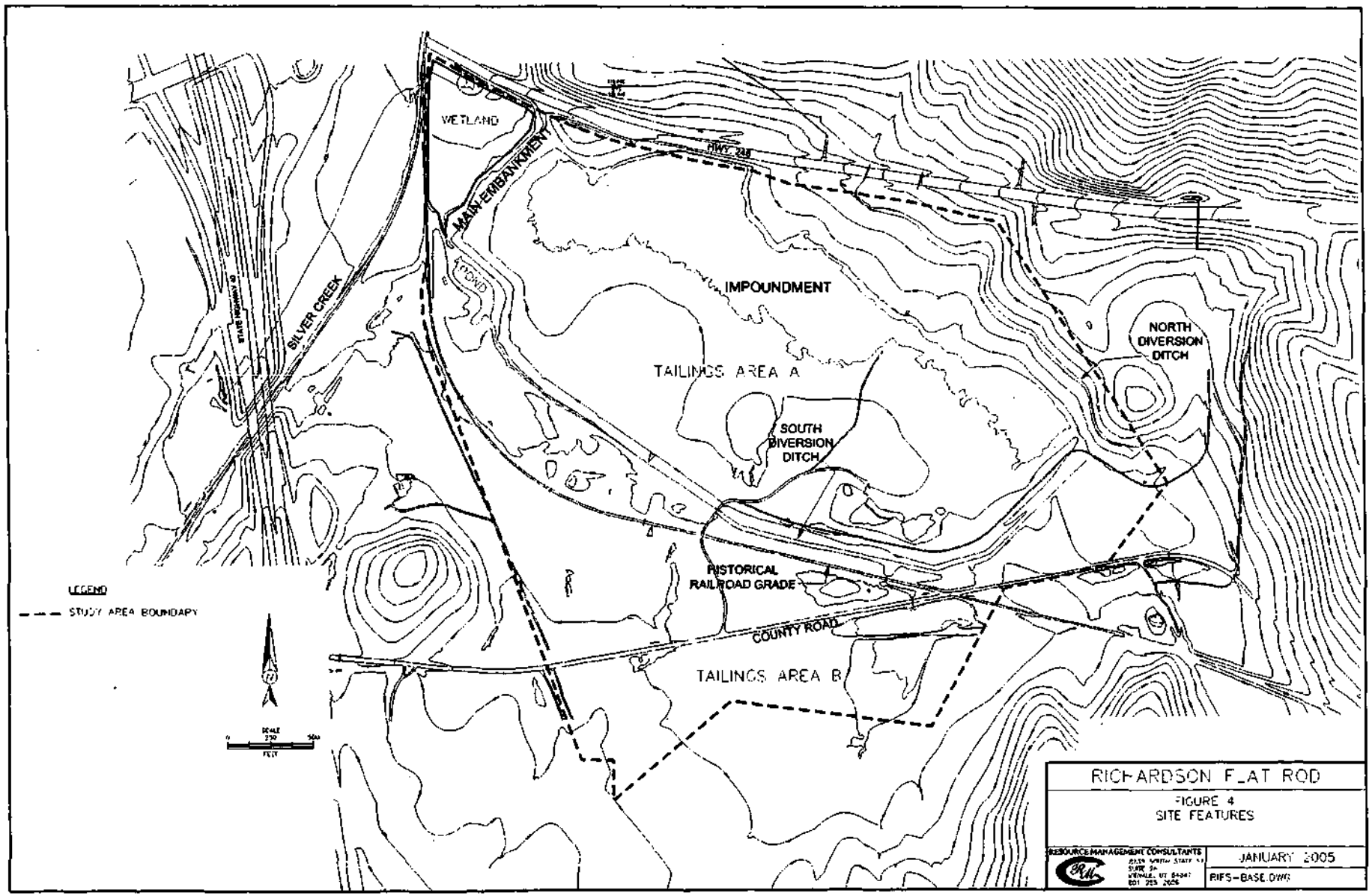
RICHARDSON FLAT RI

FIGURE 3

RESOURCE MANAGEMENT CONSULTANTS
6138 SOUTH STATE ST.
SUITE 2A
MIDVALE, UT 84047
801-255-2626

SEPTEMBER 2004

UTAH.DWG


WETLAND
MAIN EMBANKMENT
HWY 78
IMPOUNDMENT
POND
SILVER CREEK
STATE HIGHWAY 78
TAILINGS AREA A
NORTH DIVERSION DITCH
SOUTH DIVERSION DITCH
HISTORICAL RAILROAD GRADE
COUNTY ROAD
TAILINGS AREA B
LEGEND
STUDY AREA BOUNDARY
N
SCALE
FEET
RICHARDSON FLAT ROD
FIGURE 4
SITE FEATURES
RESOURCE MANAGEMENT CONSULTANTS
JANUARY 2005
RIFS-BASE.DWG

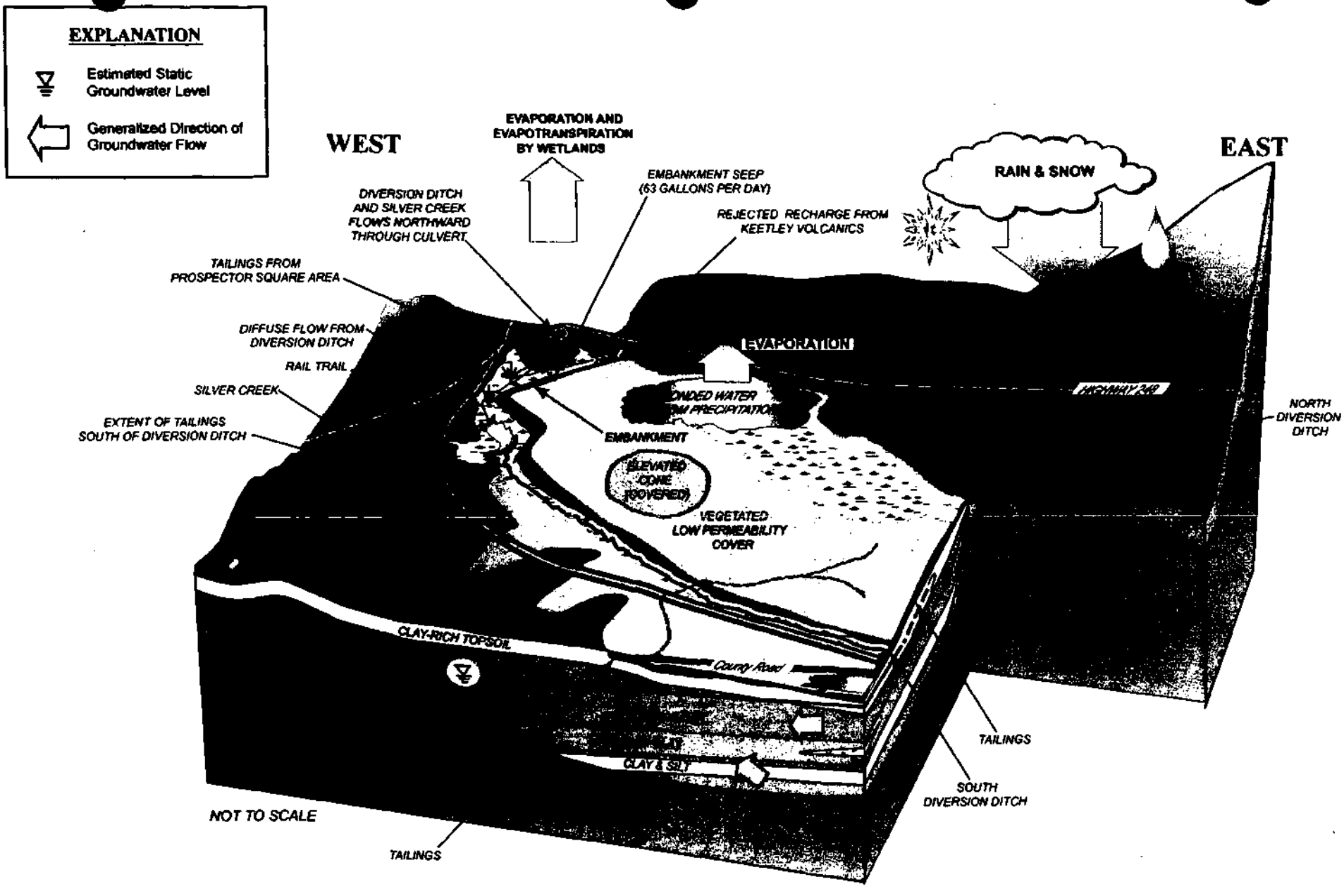


FIGURE 5

UNITED PARK CITY MINES COMPANY

CONCEPTUAL SITE MODEL

RICHARDSON FLAT

Figure 6: Conceptual Site Model for Recreational Exposure to COPCs

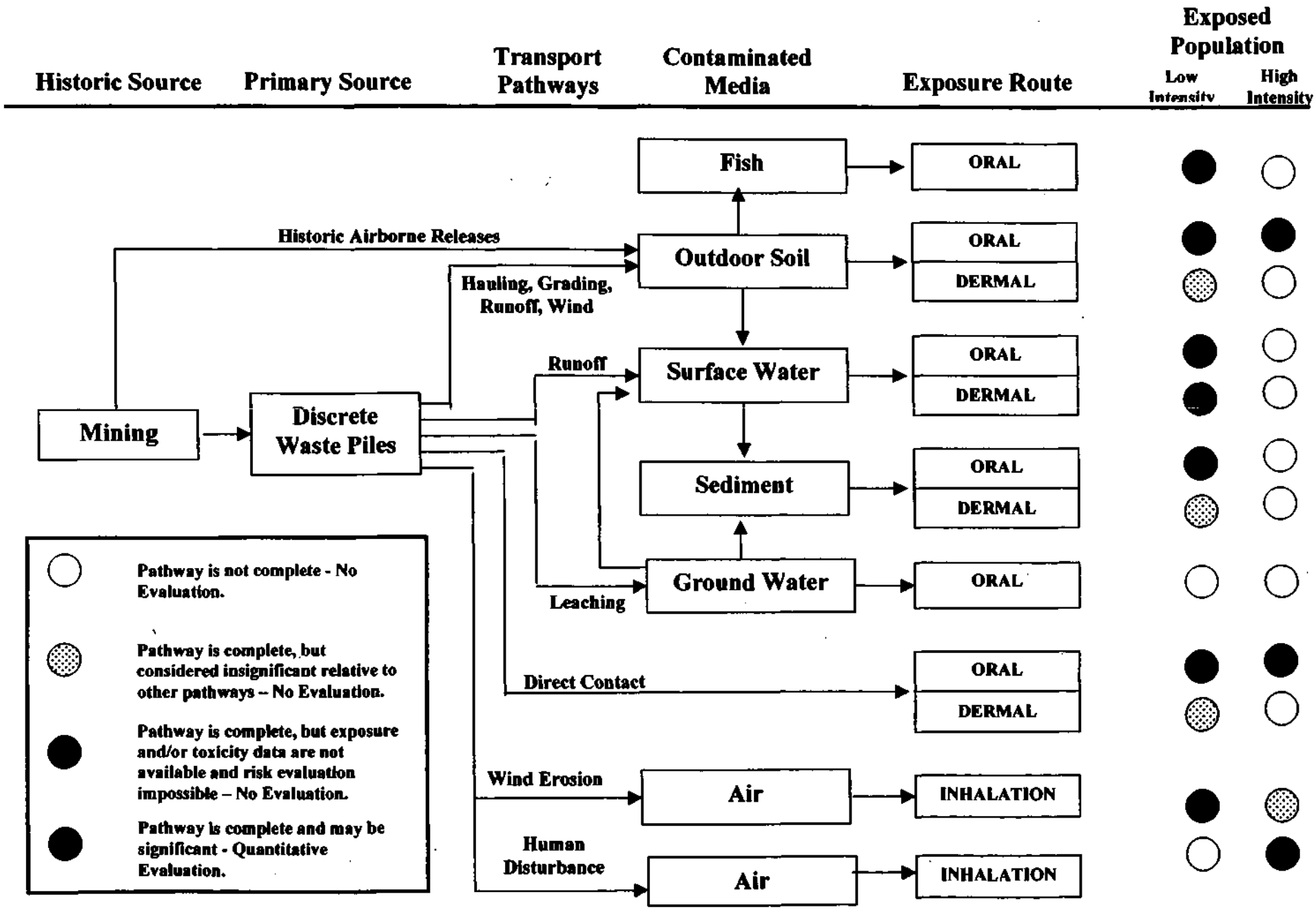
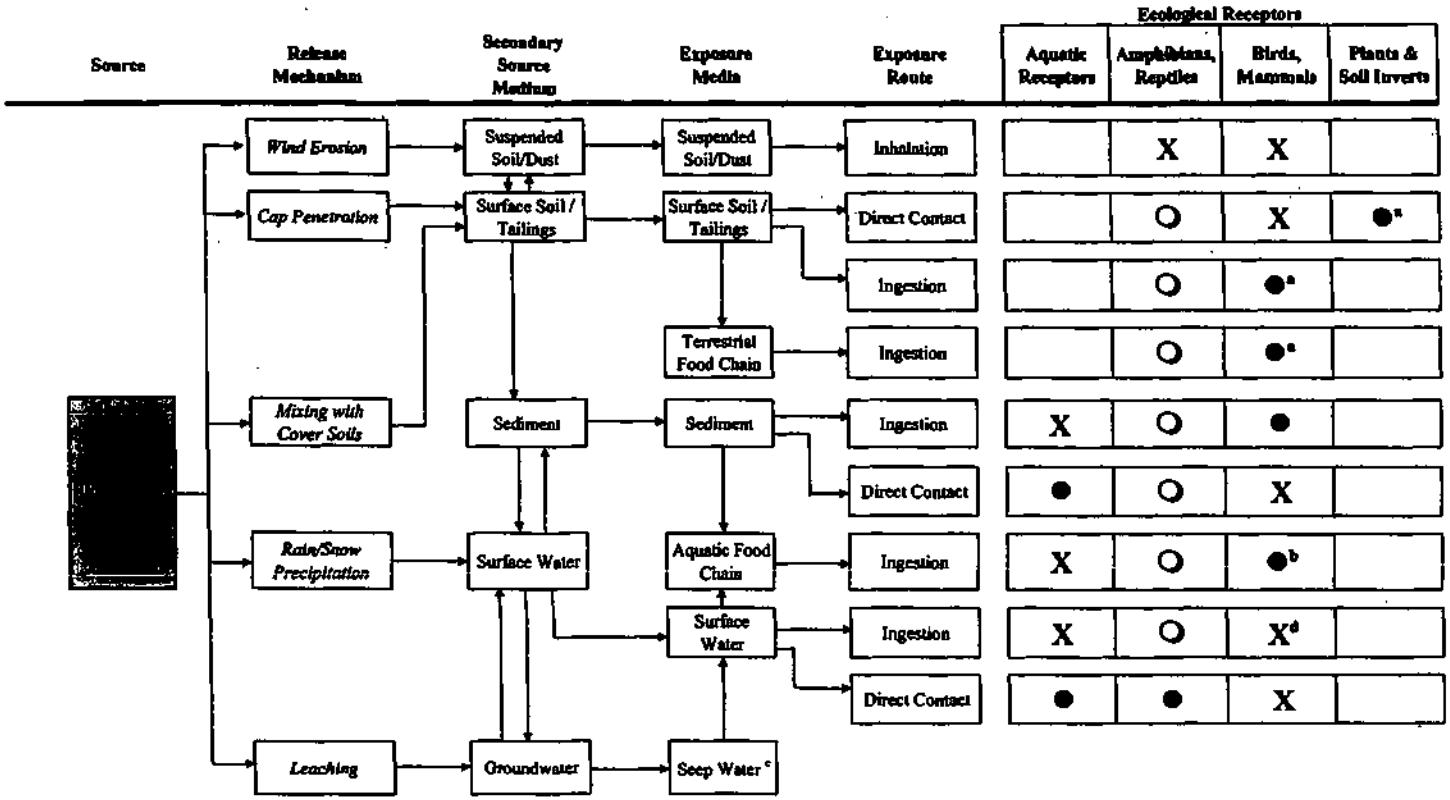


Figure 7
Richardson Flat Ecological Site Conceptual Model



LEGEND:

	Pathway not complete - no evaluation
X	Pathway complete, but considered insignificant relative to other pathways of concern
O	Pathway complete, but exposure/toxicity data are not available and quantitative risk characterization is not possible
●	Pathway complete and exposure/toxicity data are adequate for quantitative risk characterization

Footnotes:

a Terrestrial exposures for plants & soil invertebrates and wildlife will not be evaluated further in the Baseline ERA based on the expectation that additional remedial activities will address potential exposure pathways.

b Measured aquatic food item concentrations (fish, benthic invertebrates/snails, aquatic plants) are available.

c Water seeping from the toe of the main embankment may influence the wetlands area.
Measured surface water and sediment data from the wetlands area will be used to assess potential impacts from seep water in the wetlands.

d Risks to wildlife from ingestion of surface water are expected to be minor based on results provided in the SLERA.
However, because new surface water data are available, this pathway will be included in the quantitative risk characterization.

APPENDIX B
TABLES FOR THE RECORD OF DECISION

Table 7-1
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

Scenario Timeframe: Current
Medium: Sediment
Exposure Medium: Sediment

Exposure Point	Chemical of Concern	Concentration Detected		Units	Frequency of Detection	Exposure Point Concentration	Exposure Point Concentration Units	Statistical Measure
		Min	Max					
Sediment: Ingestion	Arsenic	101	310	mg/kg	12/12	200	mg/kg	95% UCL
	Lead	1,880	6,520	mg/kg	12/12	3,500	mg/kg	AM

Key:

mg/kg: milligrams per kilogram
95% UCL: 95% Upper Confidence Limit of Arithmetic Mean
MAX: Maximum Concentration
AM: Arithmetic Mean

Table 7-2
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

Scenario Time frame: Current
Medium: Surface Water
Exposure Medium: Surface Water

Exposure Point	Chemical of Concern	Concentration Detected		Units	Frequency of Detection	Exposure Point Concentration	Exposure Point Concentration Units	Statistical Measure
		Min	Max					
Surface Water - Ingestion/ dermal exposure	Arsenic	0.025	0.75	mg/L	99/291	0.012	mg/L	95% UCL
	Lead	260	0.0015	mg/L	211/425	0.13	mg/L	AM

Key

mg/L: milligrams per liter
95% UCL: 95% Upper Confidence Limit
MAX: Maximum Concentration

Table 7-3
Summary of Chemicals of Concern and Medium-Specific Exposure Point Concentrations

Scenario Time frame: Current
Medium: Soil & Tailings
Exposure Medium: Soil & Tailings

Exposure Point	Chemical of Concern	Concentration Detected		Units	Frequency of Detection	Exposure Point Concentration	Exposure Point Concentration Units	Statistical Measure
		Min	Max					
Soil& Tailings: Ingestion	Arsenic	2.5	2400	mg/kg	59/64	55	mg/kg	95% UCL
	Lead	14	5900	mg/kg	62/62	660	mg/kg	AM

Key

mg/kg: milligrams per kilogram
95% UCL: 95% Upper Confidence Limit
AM: Arithmetic Mean

Table 7-4
Cancer Toxicity Data Summary

Pathway: Ingestion

Chemical of Concern	Oral Cancer Slope Factor	Slope Factor Units	Weight of Evidence/Cancer Guideline Description	Source	Date
Arsenic	1.5	(mg/kg)/day	A	Region 3 RBC Table	8/28/2001
Lead	NA	NA	NA	NA	NA

KEY

EPA Group:
A- Human carcinogen
B1 -Probable human carcinogen - Indicates that limited human data are available
B2 -Probable human carcinogen - Indicates sufficient evidence in animals and inadequate or no evidence in humans
C -Possible human carcinogen
D -Not classifiable as a human carcinogen
E -Evidence of noncarcinogenicity

RBC- Risk Based Concentration
NA: Not Applicable

Table 7-5
Non-Cancer Toxicity Data Summary

Pathway: Ingestion

Chemical of Concern	Chronic/ Subchronic	Oral RfD Value	Oral RfD Units	Dermal RfD	Primary Target Organ	Combined Uncertainty/ Modifying Factors	Sources of RfD: Target Organ	Dates of RfD: Target Organ
Arsenic	Chronic	3.0E-04	mg/kg-day	—	skin	—	Region 3 RBC Table	8/28/01
Lead[a]	—	—	—	—	—	—	—	—

Key

(1) The dermal RfD was assumed to equal the oral RfD. No adjustment factor was applied

(2) Toxicity values were pulled from the EPA Region 3 RBC Table

a There are no established criteria for lead; evaluation is made using blood lead levels

Table 7-6
Risk Characterization Summary – Carcinogens

Scenario Timeframe: Future
Receptor Population: Low Intensity Recreational User
Receptor Age: Child-Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil/Tailings	Soil/Tailings	Ingestion	Arsenic	2E-05	---	NE	2E-05
	Dust	Inhalation	Arsenic	---	3.5E-10	NE	3.5E-10
						Soil risk total=	**2E-05**
Sediment	Sediment	Ingestion	Arsenic	3E-06	---	NE	3E-06
						Sediment Risk Total=	**3E-06**
Surface Water	Surface Water	Ingestion	Arsenic	1.8E-07	NA	---	2.0E-07
		Surface Water Direct Contact	Arsenic	---	NA	3E-08	3.0E-08
						Surface Water Risk Total	**4E-07**
						Total Risk =	**2E-05**

Key
NA: Route of exposure is not applicable to this medium.
NE: Not evaluated

Table 7-7
Risk Characterization Summary – Carcinogens

Scenario Timeframe: Future
Receptor Population: High Intensity Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil/Tailings	Soil/Tailings	Soil On-site-Direct Contact	Arsenic	1.1E-05	--	NE	1.1E-05
	Dust	Soil on-site inhalation of soil as dust	Arsenic	--	6.1E-07	NE	6.1E-07
						Total Risk =	**1.1E-05**

Key
NE: Not Evaluated

Table 7-8

Risk Characterization Summary - Non-Carcinogens

Scenario Timeframe: Future
Receptor Population: Low Intensity Recreational User
Receptor Age: Child-Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Primary Target Organ	Non-Carcinogenic Hazard Quotient			
					Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil/ Tailings	Soil/ tailings	Ingestion	Arsenic	Liver	8.0E-02	N/A	---	8.0E-02
	Dust	Inhalation	Arsenic	Liver	---	1.0E-07	---	1.0E-07
							Soil/tailings Hazard Index Total =	**8.0E-02**
Sediment	Sediment	Ingestion	Arsenic	Liver	—	—	—	1.0E-02
							Sediment Hazard Index Total	**1.0E-02**
Surface Water	Surface Water	Ingestion	Arsenic	Liver	9.0E-04	N/A	----	9.0E-04
		Dermal contact	Arsenic	Liver	----	N/A	2.0E-04	2.0E-04
							Surface Water Hazard Index Total =	**1.1E-03**
							Total Risk=	**9.0E-02**

Key

— : Toxicity criteria are not available to quantitatively address this route of exposure.
N/A: Route of exposure is not applicable to this medium.

Table 7-9
Risk Characterization Summary –Non-carcinogens

Scenario Timeframe: Future
Receptor Population: High Intensity Recreational User
Receptor Age: Adult

Medium	Exposure Medium	Exposure Point	Chemical of Concern	Carcinogenic Risk			
				Ingestion	Inhalation	Dermal	Exposure Routes Total
Soil/Tailings	Soil/Tailings	Ingestion	Arsenic	6.0E-02	--	NE	6.0E-02
	Dust	Inhalation	Arsenic	--	3.0E-04	NE	3.0E-04
						Total Risk =	6.0E-02

Key
N/A: Route of exposure is not applicable to this medium.

Table 7-10
Occurrence, Distribution, and Selection of Chemicals of Concern (COC)

Exposure Medium: Surface Water, Dissolved (Aquatic Receptors)

Chemical of Potential Concern	Min Conc.[1] (ug/L)	Max Conc.[1] (ug/L)	Mean Conc. (ug/L)	95 % UCL of the Mean [2] (ug/L)	Bkg Conc. (ug/L)	Screening Toxicity Value (ug/L)	Screening Toxicity Value Source [3]	HQ Value [4]	COC Flag (Y/N)
Cadmium	1.0	46.3	4.3	5.2	N/A	0.22 [5]	NAWQC Chronic	210	Y
Zinc	10	83,000	1,143	1,749	N/A	103 [5]	NAWQC Chronic	806	Y

Key
Conc. = Concentration
N/A = Not Applicable

Notes
[1] Minimum/ maximum detected concentration above the sample quantitation limit (SQL).
[2] The 95% Upper Confidence Limit (UCL) represents the RME concentration.
[3] NAWQC Chronic = USEPA National Ambient Water Quality Criteria for chronic exposures.
[4] Hazard Quotient (HQ) is defined as Maximum Concentration/ Screening Toxicity Value.
[5] Chronic NAWQC value is hardness-dependent; calculated based on the lowest measured hardness in site surface water samples (85 mg/L).

Table 7-11
Occurrence, Distribution, and Selection of Chemicals of Concern (COC)

Exposure Medium: Bulk Sediment (Benthic Invertebrates)

Chemical of Potential Concern	Min Conc.[1] (mg/kg)	Max Conc.[1] (mg/kg)	Mean Conc. (mg/kg)	95 % UCL of the Mean (mg/kg)	Bkg Conc. (mg/kg)	Screening Toxicity Value (mg/kg)	Screening Toxicity Value Source [3]	HQ Value [4]	COC Flag (Y/N)
Cadmium	0.78	179	47.2	96.7	N/A	0.99	TEC	181	Y
Copper	20	2,559	440	681	N/A	32	TEC	80	Y
Mercury	0.05	6.2	1.5	2.9	N/A	0.18	TEC	34	Y
Nickel	9.0	97	25	29	N/A	23	TEC	4.2	N
Zinc	118	44,560	9,538	19,302	N/A	121	TEC	368	Y

Key
Conc. = Concentration
N/A = Not Applicable

Notes
[1] Minimum/ maximum detected concentration above the sample quantitation limit (SQL).
[2] The 95% Upper Confidence Limit (UCL) represents the RME concentration.
[3] TEC = Consensus-based Threshold Effect Concentration (MacDonald et al., 2000)
[4] Hazard Quotient (HQ) is defined as Maximum Concentration/ Screening Toxicity Value.

Table 7-12
Occurrence, Distribution, and Selection of Chemicals of Concern (COC)

Exposure Medium: Sediment Porewater, Dissolved (Benthic organisms)

Chemical of Potential Concern	Min Conc.[1] (ug/L)	Max Conc.[1] (ug/L)	Mean Conc. (ug/L)	95 % UCL of the Mean [2] (ug/L)	Bkg Conc. (ug/L)	Screening Toxicity Value (ug/L)	Screening Toxicity Value Source [3]	HQ Value [4]	COC Flag (Y/N)
Arsenic	11	720	254	720 [5]	N/A	150	NAWQC Chronic	4.8	Y
Zinc	230	2,700	1,310	2,700 [5]	N/A	342	NAWQC Chronic	7.9	Y

Key
Conc. = Concentration
N/A = Not Applicable

Notes
[1] Minimum/ maximum detected concentration above the sample quantitation limit (SQL).
[2] The 95% Upper Confidence Limit (UCL) represents the RME concentration.
[3] NAWQC Chronic = USEPA National Ambient Water Quality Criteria for chronic exposures.
[4] Hazard Quotient (HQ) is defined as Maximum Concentration/ Screening Toxicity Value.
[5] 95UCL on the mean is greater than the maximum, maximum value is shown.
[6] Chronic NAWQC value is hardness-dependent; calculated based on the lowest measured hardness in site sediment porewater samples (351 mg/L).

Table 7-13
Occurrence, Distribution, and Selection of Chemicals of Concern (COC)

Exposure Medium: Sediment (Waterfowl)

Chemical of Potential Concern	Min Conc.[1] (ppm)	Max Conc.[1] (ppm)	Mean Conc. (ppm)	95 % UCL of the Mean [2] (ppm)	Bkg Conc. (ppm)	Screening Toxicity Value (mg/kg/d)	Screening Toxicity Value Source [3]	HQ Value [4]	COC Flag (Y/N)
Lead	641	42,990	6,407	9,641	N/A	1.63	EcoSSL Avian TRV	93 [5]	Y

Key
Conc. = Concentration
N/A = Not Applicable

Notes
[1] Minimum/ maximum detected concentration above the sample quantitation limit (SQL).
[2] The 95% Upper Confidence Limit (UCL) represents the RME concentration.
[3] Selected Ecological Soil Screening Level (EcoSSL) Toxicity Reference Value (TRV) for birds.
[4] Hazard Quotient (HQ) is defined as Maximum Concentration/ Screening Toxicity Value.
[5] Ingested Dose from sediment (mg/kg/d) calculated from maximum sediment concentration using exposure factors for the mallard duck.

Table 7-14
Occurrence, Distribution, and Selection of Chemicals of Concern (COC)

Exposure Medium: Soil/Tailings (Plants, Soil Invertebrates)

Chemical of Potential Concern	Min Conc.[1] (ppm)	Max Conc.[1] (ppm)	Mean Conc. (ppm)	95 % UCL of the Mean [2] (ppm)	Mean Bkg Conc. (ppm)	Screening Toxicity Value (ppm)	Screening Toxicity Value Source [3]	HQ Value [4]	COC Flag (Y/N)
Aluminum	813	32,700	10,662	18,066	N/A	50	Plant SSL	654	Y
Lead	13	31,600	1,666	3,206	42	50	Plant SSL	632	Y
Mercury	0.11	85	5	7.3	0.08	0.1	Invert. SSL	850	Y
Zinc	47	33,800	4,085	15,255	104	50	Plant SSL	676	Y

Key
Conc. = Concentration
N/A = Not Applicable

Notes
[1] Minimum/ maximum detected concentration above the sample quantitation limit (SQL).
[2] The 95% Upper Confidence Limit (UCL) represents the RME concentration.
[3] Soil Screening Level (SSL), lowest of plant SSL or soil invertebrate SSL.
[4] Hazard Quotient (HQ) is defined as Maximum Concentration/ Screening Toxicity Value.

Table 7-15
Ecological Exposure Pathways of Concern

Exposure Medium	Sensitive Environment Flag (Y or N)	Receptor	Endangered/ Threatened Species Flag (Y or N)	Exposure Routes	Assessment Endpoints	Measurement Endpoints
Sediment/Sediment porewater	N	Benthic organisms	N	Ingestion and direct contact with chemicals in sediment	Protection of aquatic invertebrates and fish from adverse effects related to exposure to chemicals in surface water and sediment	· Comparison of sampling location-specific chemical concentrations in sediment to benthic macroinvertebrate toxicity benchmarks. · Comparison of sampling location-specific chemical concentrations in sediment porewater to benthic macroinvertebrate toxicity benchmarks. · Evaluate the toxicity of site sediment to *Hyalella azteca* (growth and survival) through laboratory testing.
Surface Water	N	Fish	N	Ingestion and direct contact with chemicals in surface water		· Comparison of sampling location specific chemical concentrations in surface water to National Ambient Water Quality Criteria.
Soil/Tailings	N	soil invertebrates	N	Ingestion and direct contact with chemicals in wetland soils	Survival of terrestrial invertebrate community	· Comparison of sampling location specific chemical concentrations in soil to terrestrial toxicity benchmarks
		Terrestrial plants	N	Uptake of chemicals via root systems	Maintenance/enhancement of native site vegetation	
Dietary Intake	N	Wildlife (birds and mammals)	N	ingestion of food chain items	Protection of wildlife from adverse effects to growth, reproduction, or survival related to exposure to chemicals in surface water, sediment, and aquatic food items.	· Comparison of reach-specific chemical doses estimated from exposure point concentrations (EPCs) in surface water, sediment, and aquatic food items to toxicity reference values (TRVs) for wildlife.

Table 7-16
Summary of Uncertainties

Assessment Component	Description	Likely Direction of Error	Likely Magnitude of Error
Nature and Extent of Contamination	Samples collected may not be fully representative of variability in space or time, especially if the number of samples is small.	Unknown	Probably small
	Analytical results may be imprecise.	Unknown	Probably small
Exposure Assessment	Some exposure pathways were not evaluated.	Underestimate of risk	Probably small
	Some chemicals were not evaluated because chemical was never detected, but detection limit was too high to detect the chemical if it were present at a level of concern.	Underestimate of risk	Usually small
	Exposure parameters for wildlife receptors are based on studies at other sites.	Unknown	Probably small
	Exposure point concentrations for wildlife receptors are based on a conservative estimate of the mean concentration in the exposure area.	Overestimate of risks	Possibly significant
	Absorption from site media is assumed to be the same as in laboratory studies.	Overestimate of risks	Possibly significant
Toxicity Assessment	Many chemicals lack reliable toxicity benchmarks for some receptors for some media; these chemicals are not evaluated.	Underestimation of risk	Probably small in most cases
	Available toxicity benchmarks are often based on limited data, and values must be extrapolated across species.	Unknown	Unknown, could be significant
	Wildlife receptors selected as representative species may not capture the full range of sensitivities in site receptors.	Unknown	Probably small
	Aquatic toxicity benchmarks are based on a wide range of species, some of which do not occur at this site.	Likely to overestimate risk	Probably small
Risk Characterization	Interactions between chemicals are difficult to account for; effects of one chemical may increase, decrease, or have no effect on other chemicals.	Unknown	Unknown, but probably small
	Estimation of population-level effects from HQ calculations is difficult and subject to professional judgement.	Unknown	Unknown, probably small in most cases

Table 10-1
Summary and Comparative Analysis of Final Alternatives

Criteria	Alternative 1 No Action	Alternative 2 Soil Cover/Institutional Controls and Wedge Buttress	Alternative 3 Soil Cover/Source Removal and Wedge Buttress	Alternative 4 Excavation, treatment and Offsite Disposal	Alternative 5 Excavation, Treatment and Onsite Disposal
OVERALL PROTECTIVENESS					
Human Health- Direct contact and inhalation.	Based on results of BHHRA human health exposures at the Site are within acceptable limits.	The cover reduces direct contact, inhalation and ingestion of contaminated soil and meets human health requirements.	The cover reduces direct contact, inhalation and ingestion of contaminated soil and meets human health requirements. Potential for contact reduced by a reduction in extent of tailings. Some protection to local environment by partial source removal.	Removal, treatment and offsite disposal of contaminated material reduces and eliminates the risk of direct contact, inhalation and ingestion of contaminated soil and meets human health requirements	Removal, treatment and onsite disposal of contaminated material reduces and potentially eliminates the risk of direct contact, inhalation and ingestion of contaminated soil and meets human health requirements
Environmental Protection	Site exposures remain. There is likely to be some attenuation over time in water.	The soil cover reduces some ecological risk and will help to reduce surface water infiltration into the contaminated material and hence will improve groundwater quality. The source material stays in place	The soil cover reduces some ecological risk and will help to reduce surface water infiltration into the contaminated material. Most material will be located in the geometrically confined impoundment. Removal of groundwater and surfacewater contamination source areas will improve water quality.	Site contamination is removed and the environmental quality of Site is improved.	Site contamination is treated and the environmental quality of Site is improved.
COMPLIANCE WITH ARARS					
Chemical-specific ARAR	Not satisfied	Environmental protection is met, however all contamination remains onsite.	Air quality protection is met, however all contamination remains onsite but is located in a centralized location in a closed impoundment. Surface water and groundwater quality is improved.	Air quality protection is met and all contamination is removed from the Site. Surface water and groundwater standards are met.	Air quality protection is met and contamination is treated onsite. Surface water and groundwater standards are met.
Location-specific ARAR	Not satisfied	Location-specific ARARs are met	Location-specific ARARs are met	Location-specific ARARs are met	Location-specific ARARs are met
Action-specific ARAR	Not applicable	Federal and State regulations will be met during remedial activities	Federal and State regulations will be met during remedial activities	Federal and State regulations will be met during remedial activities	Federal and State regulations will be met during remedial activities
Other criteria/guidance	Would allow contact, however human health risks are within acceptable limits.	protects against inhalation/direct contact.	Same as Alternative 2.	Same as Alternative 2.	Same as Alternative 2.
LONG-TERM EFFECTIVENESS AND PERMANENCE					
Magnitude of residual risk	Source not removed. Existing risk will remain.	Source not removed. Existing risk will be reduced by the soil cover.	Source is partially removed. Existing risk will remain but will be reduced as most materials will be placed in centralized location in a confined impoundment and covered. Surface water and groundwater quality is improved.	Contaminated materials are removed from the Site. No residual risk.	Contaminated materials are treated and left onsite. Magnitude of residual risk is significantly reduced. No residual risk
Adequacy and reliability of controls	No controls over remaining contamination. No reliability.	Soil cover integrity will be maintained by institutional controls and monitoring. Reliability will be maximized through cover design and enforcement of institutional controls.	Soil cover integrity will be maintained by institutional controls and monitoring. Reliability will be maximized through design and enforcement of institutional controls as well as placement of tailings in geometrically confined impoundment.	None required, contaminated material will be removed from Site.	Site and treated materials will be monitored to insure that Site is not affecting human health and the environment.
REDUCTION OF TOXICITY, MOBILITY OR VOLUME					
Treatment process used	None used	None used	None used	Stabilization/fixation	Stabilization/fixation
Amount destroyed or treated	None	None	None	2,847,087 cubic yards	2,847,087 cubic yards
Reduction of toxicity, mobility or volume treatment	None	Mobility is reduced by soil cover.	Mobility is reduced by moving most contaminated materials into the geometrically confined impoundment with a soil cover. Remaining materials will be covered.	Mobility is reduced by treatment and disposal in a regulated facility. Increase in volume with a decrease in toxicity.	Mobility is reduced by treatment. Increase in volume with a decrease in toxicity.
Statutory preference for treatment	Does not satisfy	Does not satisfy	Does not satisfy	Satisfied	Satisfied
SHORT TERM EFFECTIVENESS					
Community protection	Risk not increased by remedy implementation.	Risk not increased by remedy implementation	Risk not increased if action specific ARARs are met during remediation.	Risk not increased if action specific ARARs are met during remediation. Transportation may increase community risks due to increase in truck traffic.	Risk not increased if action specific ARARs are met during remediation.
Worker protection	No risk to workers	Risk is minimal since contaminated material is not being handled.	Workers will be handling contaminated material during onsite transport, contact with contaminated fugitive dust is possible during excavation and disposal	Workers will be handling contaminated material during onsite transport and treatment, contact with contaminated fugitive dust is possible during excavation and disposal	Workers will be handling contaminated material during onsite transport and treatment, contact with contaminated fugitive dust is possible during excavation and disposal.
Environmental impacts	Continued impact from existing conditions	Dust generated during remedial activities.	Dust generated during remedial activities.	Dust generated during remedial activities. Potential effects from ditch excavation.	Dust generated during remedial activities. Potential effects from ditch excavation.
Time until action is complete	N/A	One to two construction seasons.	One to two construction seasons.	One to two construction seasons.	One to two construction seasons.
IMPLEMENTABILITY					
Ability to construct and operate	No construction or operation required.	Standard excavation and transportation technologies are easily implemented. Standard institutional controls easily implemented. Cover soil is stockpiled onsite and available locally.	Standard excavation and transportation technologies are easily implemented. Remedial contractors are locally available. Cover soil is stockpiled onsite and available locally.	Standard excavation and transportation technologies are easily implemented. Remedial contractors are locally available. Cover soil is stockpiled onsite and available locally. Bench-scale testing will need be conducted. Treatment contractors and disposal facilities are available.	Standard excavation and transportation technologies are easily implemented. Remedial contractors are locally available. Cover soil is stockpiled onsite and available locally. Bench-scale testing will need be conducted. Treatment contractors and disposal facilities are available.
Ease of additional remediation, if needed	Easy, as no remediation has been done in this alternative.	Would impact original remedy.	Would impact original remedy.	Would impact original remedy.	Would impact original remedy.
Ability to monitor effectiveness	No monitoring required.	Periodic monitoring required.	Periodic monitoring required.	Periodic monitoring required until verification that site is not affecting human or environmental health.	Periodic monitoring required until verification that site is not affecting human or environmental health.
Ability to obtain approval from other agencies	Very difficult to obtain "no action" from agencies.	Difficult to obtain approval since ground water source contamination is left in place. High level of coordination with state and federal agencies will be required for long-term monitoring and compliance.	Less difficult than Alternative 2 since ground water source contamination is removed. Moderate level of coordination with state and federal agencies will be required for long-term monitoring and compliance.	Less difficult than Alternatives 2 and 3 since contamination is removed. Moderate level of coordination with state and federal agencies will be required for short-term monitoring and compliance. Agency coordination will be required for disposal.	More difficult than Alternatives 3 and 4 since contamination remains onsite. Moderate level of coordination with state and federal agencies will be required for short-term monitoring and compliance. Agency coordination will be required for disposal and site closure.
Availability of services and capacities	No services or capacities required.	No disposal required. All services available.	No disposal required. All services available.	Disposal types and capacities need to be determined, but should be available. Large scale transportation logistics will be required.	Final volumes need to be determined, but buildup of impoundment height should provide sufficient volume capacity.
Availability of technology	None required	Required technology available.	Required technology available.	Specialized treatment technology is required but available.	Specialized treatment technology is required but available.
COST					
Direct Capital Cost	$0	$1,849,281.00	$3,509,476.50	$289,361,330	$121,902,705.25
Indirect Costs (includes O&M)	$0	$446,116.99	$753,253	$53,673,828	$22,806,000
Total Cost	$0	$2,295,397.99	$4,262,729.63	$343,334,057.85	$144,708,705.72

Note
A - Will be evaluated during the CERCLA required Public Comment period
ARAR - Applicable or Relevant and Appropriate Requirements
O&M - Operations, maintenance and monitoring

Table 10-2

Ranking of Final Alternatives

Criteria	Ranking Weight (1)	Alternative 1 No Action		Alternative 2 Soil Cover/ Institutional Controls		Alternative 3 Source Removal, Soil Cover and Wedge Buttress		Alternative 4 Excavation, Treatment and Offsite Disposal		Alternative 5 Excavation, Treatment and Onsite Disposal	
OVERALL PROTECTIVENESS		Rank (2)	Weight Factored Rank (3)	Rank (2)	Weight Factored Rank (3)	Rank (2)	Weight Factored Rank (3)	Rank (2)	Weight Factored Rank (3)	Rank (2)	Weight Factored Rank (3)
Human Health	10	1	10	4	40	4	40	5	50	5	50
Environmental protection	10	1	10	2	20	4	40	5	50	5	50
COMPLIANCE WITH ARARS											
Chemical-specific ARAR	8	1	8	2	16	3	24	5	40	5	40
Location-specific ARAR	5	1	5	2	10	4	20	5	25	4	20
Action-specific ARAR	5	1	5	3	15	4	20	5	25	4	20
Other criteria/guidance	5	1	5	2	10	2	10	5	25	4	20
LONG-TERM EFFECTIVENESS AND PERMANENCE											
Magnitude of residual risk	9	1	9	3	27	4	36	5	45	5	45
Adequacy and reliability of controls	8	1	8	3	24	4	32	5	40	5	40
REDUCTION OF TOXICITY, MOBILITY OR VOLUME											
Treatment process used	5	1	5	1	5	1	5	5	25	5	25
Amount destroyed or treated	5	1	5	1	5	1	5	4	20	4	20
Reduction of toxicity, mobility or volume treatment	7	1	7	2	14	3	21	5	35	4	28
Statutory preference for treatment	10	1	10	1	10	1	10	5	50	5	50
SHORT TERM EFFECTIVENESS											
Community protection	5	1	5	4	20	4	20	1	5	2	10
Worker protection	4	1	4	4	16	4	16	1	4	2	8
Environmental impacts	5	1	5	2	10	4	20	1	5	2	10
Time until action is complete	2	1	2	4	8	3	6	1	2	2	4
IMPLEMENTABILITY											
Ability to construct and operate	9	5	45	4	36	4	36	1	9	2	18
Ease of additional remediation, if needed	5	4	20	3	15	4	20	5	25	1	5
Ability to monitor effectiveness	6	5	30	3	18	5	30	5	30	4	24
Ability to obtain approval from other agencies	5	1	5	2	10	4	20	5	25	4	20
Availability of services and capacities	3	4	12	3	9	4	12	5	15	2	6
Availability of equipment, specialists and materials	3	4	12	5	15	4	12	5	15	2	6
Availability of technology	3	4	12	5	15	4	12	5	15	2	6
RANKING TOTALS		43	239	65	368	79	467	94	580	80	525
COST											
Present worth cost		$0.00		$2,295,397.99		$4,262,729.65		$343,234,057.85		$144,708,705.72	

(1) - Each criteria has been ranked on an overall project importance weight of 1-10 with 1 signifying the least importance and 10 signifying the greatest importance.

(2) - The compliance of each criteria has been ranked on an alternative by alternative basis on a scale of 1-5 with 1 signifying the least compliance and 5 signifying the greatest compliance.

(3) - Ranking weight multiplied by the compliance rank for each alternative.

Table 10-3
Chemical Specific ARARs

Requirement	Citation	Description	Determination	Comment
Definitions and General Requirements of Utah Water Quality Act	UAC R317-1	Provides definitions and general requirements for waste discharges to waters of the State of Utah	Applicable	Substantive standards are applicable to point source discharges of contaminants into Silver Creek (if any), but permitting requirements would be preempted by operation of 42 USC 9621(e)(1).
Utah Surface Water Quality Standards	UAC R317-2-6 UAC R317-2-13 UAC R317-2-14	Establishes use designations for Silver Creek (as tributary to the Weber River): Class 1C - Protected for domestic purposes with prior treatment processes as required by Utah Div. of Drinking Water. Class 2B - Protected for secondary contact recreation such as boating, wading. Class 3A - Protected for cold water species of game fish and aquatic life. Class 4 - Protected for agricultural uses and stock watering	Applicable	Substantive standards are applicable to point source discharges of contaminants into Silver Creek (if any), but permitting requirements would be preempted by operation of 42 USC 9621(e)(1).
Groundwater Quality	UAC R317-6	Establishes state groundwater quality standards	Applicable	Substantive standards are applicable to discharges of contaminants to ground water discharges (if any), but permitting requirements would be preempted by 42 USC 9621(e)(1).
Solid and Hazardous Waste	UAC R315-2-4(b)(7)	Criteria for the Identification and Listing of Hazardous Waste	Applicable	Mine tailings are not a solid waste and a hazardous waste if they do not cause a public health hazard or are otherwise determined to be a hazardous waste.
Solid and Hazardous Waste	UAC R311-211-3	Corrective Action Cleanup Standards Policy -UST and CERCLA sites	Applicable	RPM will establish appropriate cleanup standards based on the factors set forth in R311-211-3.
Utah Storm Water Rules	UAC R317-8-3.9	Establishes state storm water requirements	Applicable	Requires implementation of best management practices to address storm water management at the Site.

Table 10-3 (continued)
Location Specific ARARs

Requirement	Citation	Description	Determination	Comment
Protection of Wetlands	33 USC § 1344	Prohibits discharge of dredged or fill materials into waters of the United States.	Relevant and Appropriate	Although 404 permit is not required, the remedy should seek to avoid, restore, or mitigate impacts to jurisdictional wetlands as appropriate.
Historic Sites, Building and Antiquities Act	16 USC §§ 461-467	Requires protection of landmarks listed on National Registry	Applicable	Proposed activities will not adversely affect any listed landmark
National Historic Preservation	16 USC § 470	Requires protection of district, site, building, structure or object eligible for inclusion in national register of historic places	Applicable	Proposed activities will not adversely affect any such district, site, building, structure or object
Archeological and Historic Preservation Act	16 USC § 469	Requires preservation of significant historical and archeological data	Applicable	Proposed activities will not adversely affect archeological data or landmarks
Fish and Wildlife Coordination Act	16 USC § 662	Requires that actions taken in areas that may affect streams and rivers be undertaken in a manner that protects fish and wildlife	Applicable	USFWS has been consulted with regard to actions impacting Silver Creek
Endangered Species Act	16 USC § 1531	Requires protection of endangered and threatened species	Applicable	USFWS has been consulted with regard to protection of endangered and threatened species.
Migratory Bird Treaty Act	16 USC § 703 *et seq*	Requires protection of migratory nongame birds	Applicable	USFWS has been consulted with regard to protection of migratory nongame birds.
RCRA Subtitle D Solid Waste Requirements	UAC R315-303-3(4)	Establishes closure requirements for permitted solid waste landfills.	Relevant/Appropriate	Relevant and appropriate to onsite repository under Alternatives 3 and 5, to the extent technically practicable.
Air Quality	UAC R307-205-6	Emission Standards	Applicable	Requires management practices to limit fugitive emissions from tailings piles.

Table 10-3 (continued)
Action Specific ARARs

Requirement	Citation	Description	Determination	Comment
Abandoned wells	UAC R655-4	Standards for drilling and abandonment of wells.	Applicable	Applicable to the drilling or closing of wells that are abandoned or installed as part of the remedy.
Utah Storm Water Rules	UAC R317-8-3.9	Establishes state storm water requirements	Applicable	Requires implementation of best management practices to address storm water management at the Site.
Criteria for Classification of Solid Waste and Disposal Facilities and Practices	40 CFR Part 257.3	Establishes Criteria for use in determining which solid waste facilities and practices could adversely affect human health and the environment	Applicable	
Standards Applicable to Generators of Hazardous Waste	40 CFR Part 262	Establishes Standards for Generators of Hazardous Waste	Applicable	Applicable to any waste that is not Bevill-exempt.
General Facilities Standards	UAC R315-8-2	Location Standards	Applicable	Applicable to any waste that is not Bevill-exempt.
Closure and Post Closure	UAC R315-8-6	Closure Plan/Performance Standards	Applicable	Applicable to any waste that is not Bevill-exempt.

Table 10-3 (continued)
Action Specific ARARs

Waste Piles	UAC R315-8-12	Waste piles performance standards	Applicable	Applicable to any waste that is not Bevill-exempt.
Landfills	UAC R315-8-14	Performance standards for landfills	Applicable	Applicable to any waste that is not Bevill-exempt.
Risk Based Closure Standards	UAC R315-101	Establishes risk-based closure and corrective action standards	Applicable	Applicable to any waste that is not Bevill-exempt.
Corrective Action Cleanup Standards Policy	UAC R311-211	Lists general criteria in Establishing clean up standards	Applicable	
OSHA	29 USC § 651	Regulates workers health and safety	Applicable	
Utah Ground Water Quality Protection Rules	UAC R317-6	Contaminants that remain on site must not present a leaching threat to ground water	Applicable	
Standards Applicable to Hazardous Waste Transporters	40 CFR Part 263	Regulates Transportation of Hazardous Waste	Applicable	Relevant and appropriate to any waste that is not Bevill-exempt.

Table12-1
Cost Alternative 3
Source Removal/ Soil Cover and Wedge Buttress

Direct Capital Costs	Quantity	Unit	Cost	Total Cost
Diversion Ditch				
Place 1' gravel cover	956	cyd	$12.00	$11,472.00
Signs	20	sign	$50.00	$1,000.00
		Subtotal		**$12,472.00**
Tailings South of Diversion Ditch				
Site preparation (clearing, grubbing .)	50	ac	$1,000.00	$50,000.00
Excavate and haul to impoundment (partial source removal)	178,266	cy	$5.75	$1,025,029.50
Place soil cover (bring up to 12", haul, spread, compact)	27,492	cy	$4.80	$131,961.60
Place topsoil (.5') excavated and covered areas	40,062	cy	$4.80	$192,297.60
Dust control	20	days	$735.00	$14,700.00
Reconstruct tributary channel	1,481	cy	$7.50	$11,107.50
Grading (stormwater runoff control)	24	hrs	$140.00	$3,360.00
Revegetation	50	ac	$500.00	$25,000.00
		Subtotal		**$1,453,456.20**
Wetland				
Place fill for trackhoe access	3,040	cy	$4.80	$14,592.00
Excavate and haul to impoundment	13,440	cy	$5.75	$77,280.00
Restoration	10,400	cy	$10.00	$104,000.00
Silver Creek diversion	500	cy	$7.50	$3,750.00
Revegetation	7	ac	$500.00	$3,250.00
		Subtotal		**$202,872.00**
Impoundment				
Site preparation (clearing, grubbing..)	115	ac	$1,000.00	$115,000.00
Place tailings from TSDD and Wetland (grade and compact)	191,742	cy	$1.50	$287,613.00
Place soil cover (bring up to 12", haul, spread, compact)	136,853	cy	$4.60	$656,894.40
Construct drainage channel (to SDD)	1,556	cy	$7.50	$11,670.00
Place topsoil (.5')	79,218	cy	$4.80	$380,246.40
Dust control	20	days	$735.00	$14,700.00
Grading (stormwater runoff control)	80	hrs	$140.00	$11,200.00
revegetation	115	ac	$500.00	$57,500.00
		Subtotal		**$1,534,823.80**
Embankment (wedge buttress)				
Site preparation (clearing, grubbing..)	0.75	ac	$1,000.00	$750.00
Place drain material	1,210	cy	$8.00	$9,680.00
Place buttress material (includes compaction of lifts)	7,200	cy	$6.00	$43,200.00
Dust control	6	days	$735.00	$4,410.00
Erosion protection (stormwater runoff control)	300	cy	$7.50	$2,250.00
Revegetation	0.75	ac	$750.00	$562.50
		Subtotal		**$80,852.50**
Long-Term Operation and Maintenance Costs				
O&M	15	yr	$4,000.00	$60,000.00
Annual Sampling	15	yr	$2,000.00	$30,000.00
Reporting	15	yr	$5,000.00	$75,000.00
Develop Institutional Controls	1		$5,000.00	$5,000.00
Institutional Controls Monitoring and Repair (fencing, signs)	15	yr	$5,000.00	$75,000.00
		Subtotal		**$245,000.00**
			Total Direct Costs	**$3,509,476.50**
Indirect Capital Costs				
Engineering Design and Project Administration				$50,000.00
Monitoring Plan				$4,000.00
Construction Oversight (2.5 % of Direct Capital Cost)				$87,736.91
Contingency (15 % of Direct Capital Cost)				$526,421.48
Health and Safety (1 % of Capital Costs)				$35,094.77
EPA Oversight				$50,000.00
		Subtotal		**$753,253.15**
			Total Indirect Costs	**$753,253.15**
			TOTAL COSTS	**$4,262,729.65**

Table 12-2
Present Worth Cost
Alternative 3

Year	Capitol Costs	Annual O&M Costs	Periodic Costs	Total Costs	Discount Factor at 7%	Total Present Value Cost at 7%
0	803,546.00		5,000.00	808,546.00	1.00	808,546.00
1	803,546.00	16,000.00		819,546.00	0.94	766,275.51
2	803,546.00	16,000.00		819,546.00	0.87	715,463.66
3	803,546.00	16,000.00		819,546.00	0.82	668,749.54
4	803,546.00	16,000.00		819,546.00	0.76	625,313.60
5		16,000.00		16,000.00	0.71	11,408.00
6		16,000.00		16,000.00	0.67	10,656.00
7		16,000.00		16,000.00	0.62	9,968.00
8		16,000.00		16,000.00	0.58	9,312.00
9		16,000.00		16,000.00	0.54	8,704.00
10		16,000.00		16,000.00	0.51	8,128.00
11		16,000.00		16,000.00	0.48	7,600.00
12		16,000.00		16,000.00	0.44	7,104.00
13		16,000.00		16,000.00	0.42	6,640.00
14		16,000.00		16,000.00	0.39	6,208.00
15		16,000.00		16,000.00	0.36	5,792.00
Total	4,017,730.00	240,000.00	5,000.00	4,262,730.00		3,675,868.30

assumes spreading the capitol costs over 5 years
15 years of O&M

Table 13-1
Cost Alternative 2
Soil Cover/Insitutional Controls

Direct Capital Costs	Quantity	Unit	Cost	Total Cost
Diversion Ditch				
Place 1' gravel cover	956	cyd	$12.00	$11,472.00
Signs	20	sign	$50.00	$1,000.00
		Subtotal		**$12,472.00**
Tailings South of Diversion Ditch				
Site preparation (clearing, grubbing..)	50	ac	$1,000.00	$50,000.00
Place soil cover (bring up to 12")	40,062	cy	$5.75	$230,356.50
Place topsoil (.5')	40,062	cy	$4.80	$192,297.60
Dust control	20	days	$735.00	$14,700.00
Reconstruct tributary channel	1,481	cy	$7.50	$11,107.50
revegetation	50	ac	$500.00	$25,000.00
		Subtotal		**$523,461.60**
Impoundment				
Site preparation (clearing, grubbing..)	115	ac	$1,000.00	$115,000.00
Place soil cover (bring up to 12")	79,218	cy	$5.75	$455,503.50
Place topsoil (.5')	79,218	cy	$4.80	$380,246.40
Construct drainage channel (to SDD)	1,667	cy	$7.50	$12,502.50
Dust control	20	days	$735.00	$14,700.00
Grading (stormwater runoff control)	80	hrs	$140.00	$11,200.00
revegetation	115	ac	$500.00	$57,500.00
		Subtotal		**$1,046,652.40**
Embankment (wedge buttress)				
Site preparation (clearing, grubbing..)	0.75	ac	$1,000.00	$750.00
Place drain material	1,170	cy	$8.00	$9,360.00
Place buttress material (includes compaction of lifts)	7,200	cy	$6.00	$43,200.00
Dust control	6	days	$735.00	$4,410.00
Erosion protection (stormwater runoff control)	300	cy	$12.00	$3,600.00
Revegetation	0.75	ac	$500.00	$375.00
		Subtotal		**$61,695.00**
Long-Term Operation and Maintenance Costs				
O&M	15	yr	$4,000.00	$60,000.00
Annual Sampling	15	yr	$2,000.00	$30,000.00
Reporting	15	yr	$5,000.00	$75,000.00
Develop Institutional Controls	1		$10,000.00	$10,000.00
Institutional Controls Monitoring and Repair (fencing, signs)	15	yr	$2,000.00	$30,000.00
		Subtotal		**$205,000.00**
			Total Direct Costs	**$1,849,281.00**
Indirect Capital Costs				
Engineering Design and Project Administration				$50,000.00
Monitoring Plan				$4,000.00
Construction Oversight (2.5 % of Direct Capital Cost)				$46,232.03
Contingency (15 % of Direct Capital Cost)				$277,392.15
Health and Safety (1 % of Capital Costs)				$18,492.81
EPA Oversight				$50,000.00
		Subtotal		**$446,116.99**
			Total Indirect Costs	**$446,116.99**
TOTAL COSTS				**$2,295,397.99**

Table 13-2
Cost Alternative 4
Excavation, Treatment and Offsite Disposal

Direct Capital Costs	Quantity	Unit	Cost	Total Cost
Diversion Ditch (removal)				
Remove sediments and tailings haul to treatment	232,636	cy	$6.00	$1,395,816.00
revegetation	2	ac	$500.00	$1,000.00
		Subtotal		**$1,396,816.00**
Tailings South of Diversion Ditch				
Site preparation (clearing, grubbing..)	50	ac	$1,000.00	$50,000.00
Excavate and haul to treatment/loadout (tails, base and exs. cover)	394,744	cy	$5.75	$2,269,778.00
Place topsoil	40,062	cy	$4.80	$192,297.60
Dust control	20	days	$735.00	$14,700.00
Reconstruct tributary channel	1,481	cy	$7.50	$11,107.50
Grading (reclamation and stormwater runoff control)	40	hrs	$140.00	$5,600.00
revegetation	50	ac	$500.00	$25,000.00
		Subtotal		**$2,568,483.10**
Impoundment				
Site preparation (clearing, grubbing..)	115	ac	$1,000.00	$115,000.00
Excavate tailings, base and existing cover, haul to loadout	2,353,609	cy	$5.75	$13,533,251.75
Place topsoil	93,993	cy	$4.80	$451,166.40
Reconstruct original channel	3,911	cy	$7.50	$29,332.50
Dust control	30	days	$735.00	$22,050.00
Grading (stormwater runoff control)	40	hrs	$140.00	$5,600.00
revegetation	115	ac	$500.00	$57,500.00
		Subtotal		**$14,213,900.65**
Embankment				
excavate and haul	65,290	cy	$5.75	$375,417.50
Dust control	8	days	$735.00	$5,880.00
Erosion protection (stormwater runoff control)	500	cy	$7.50	$3,750.00
Revegetation	2	ac	$500.00	$1,000.00
		Subtotal		**$386,047.50**
Wetland				
Place fill for trackhoe access	3,040	cy	$4.80	$14,592.00
Excavate and haul to treatment/loadout	13,440	cy	$5.75	$77,280.00
Wetland restoration	10,365	cy	$10.00	$103,650.00
Silver Creek diversion	500	cy	$7.50	$3,750.00
		Subtotal		**$199,272.00**
Stabilization and disposal - ECDC				
Dust control	30	days	$735.00	$22,050.00
Erosion protection (stormwater runoff control)	1,000	cy	$7.50	$7,500.00
Stabilization	2,980,988	cy	$30.00	$89,429,640.00
Load to trucks	4,471,482	cy	$1.50	$6,707,223.00
Haul to landfill (43 ton belly dump trucks)	4,471,482	cy	$9.00	$40,243,338.00
disposal fees	4,471,482	cy	$30.00	$134,144,460.00
Sample analysis	250	sample	$150.00	$37,500.00
		Subtotal		**$270,591,711.00**
Long-Term Operation and Maintenance Costs				
O&M	15	yr	$4,000.00	$60,000.00
Annual Sampling	15	yr	$2,000.00	$30,000.00
Reporting	15	yr	$5,000.00	$75,000.00
Develop Institutional Controls	1		$10,000.00	$10,000.00
Institutional Controls Monitoring and Repair	15	yr	$2,000.00	$30,000.00
		Subtotal		**$205,000.00**
			Total Direct Costs	**$289,561,230.25**
Indirect Capital Costs				
Engineering Design and Project Administration				$50,000.00
Monitoring Plan				$4,000.00
Construction Oversight (2.5 % of Direct Capital Cost)				$7,239,030.76
Contingency (15 % of Direct Capital Cost)				$43,434,184.54
Health and Safety (1 % of Capital Costs)				$2,895,612.30
EPA Oversight				$50,000.00
		Subtotal		**$53,672,827.60**
			Total Indirect Costs	**$53,672,827.60**
TOTAL COSTS				**$343,234,057.85**

Table 13-3
Cost Alternative 5
Onsite Treatment and Disposal

Direct Capital Costs	Quantity	Unit	Cost	Total Cost
Diversion Ditch				
Remove sediments and tailings haul to treatment	232,636	cy	$6.00	$1,395,816.00
revegetation	2	ac	$500.00	$1,000.00
		Subtotal		**$1,396,816.00**
Tailings South of Diversion Ditch				
Site preparation (clearing, grubbing..)	50	ac	$1,000.00	$50,000.00
Excavate and haul to treatment (tails and exs. cover)	394,744	cy	$5.75	$2,269,778.00
Place topsoil	40,062	cy	$4.80	$192,297.60
Dust control	20	days	$735.00	$14,700.00
Reconstruct tributary channel	1,481	lf	$7.50	$11,107.50
Grading (reclamation and stormwater runoff control)	40	hrs	$140.00	$5,600.00
revegetation	50	ac	$500.00	$25,000.00
		Subtotal		**$2,568,483.10**
Impoundment				
Site preparation (clearing, grubbing..)	115	ac	$1,000.00	$115,000.00
Excavate tailings and existing cover, haul to loadout	2,353,609	cy	$5.75	$13,533,251.75
Place topsoil	93,993	cy	$4.80	$451,166.40
replace treated materials	4,471,482	cy	$1.50	$6,707,223.00
construct drainage channel (center to SDD)	3,911	cy	$7.50	$29,332.50
Dust control	30	days	$735.00	$22,050.00
Grading (stormwater runoff control)	40	hrs	$140.00	$5,600.00
revegetation	115	ac	$500.00	$57,500.00
		Subtotal		**$20,921,123.65**
Embankment				
excavate and haul	65,290	cy	$5.75	$375,417.50
Dust control	8	days	$735.00	$5,880.00
Erosion protection (stormwater runoff control)	500	cy	$7.50	$3,750.00
Revegetation	2	ac	$500.00	$1,000.00
		Subtotal		**$386,047.50**
Wetland				
Place fill for trackhoe access	3,040	cy	$4.80	$14,592.00
Excavate and haul to treatment/loadout	13,440	cy	$5.75	$77,280.00
Wetland restoration	10,365	cy	$10.00	$103,650.00
Silver Creek diversion	500	cy	$7.50	$3,750.00
		Subtotal		**$199,272.00**
Stabilization and Disposal - Onsite				
Dust control	60	days	$735.00	$44,100.00
Erosion protection (stormwater runoff control)	1,000	cy	$7.50	$7,500.00
Stabilization	2,980,988	cy	$30.00	$89,429,640.00
Load to trucks, haul to impoundment	4,471,482	cy	$1.50	$6,707,223.00
Sample analysis	250	sample	$150.00	$37,500.00
		Subtotal		**$96,225,963.00**
Long-Term Operation and Maintenance Costs				
O&M	15	yr	$4,000.00	$60,000.00
Annual Sampling	15	yr	$2,000.00	$30,000.00
Reporting	15	yr	$5,000.00	$75,000.00
Develop Institutional Controls	1		$10,000.00	$10,000.00
Institutional Controls Monitoring and Repair	15	yr	$2,000.00	$30,000.00
		Subtotal		**$205,000.00**
			Total Direct Costs	**$121,902,705.25**
Indirect Capital Costs				
Engineering Design and Project Administration				$50,000.00
Monitoring Plan				$4,000.00
Construction Oversight (2.5 % of Direct Capital Cost)				$3,047,567.63
Contingency (15 % of Direct Capital Cost)				$18,285,405.79
Health and Safety (1 % of Capital Costs)				$1,219,027.05
EPA Oversight				$200,000.00
		Subtotal		**$22,806,000.47**
			Total Indirect Costs	**$22,806,000.47**
TOTAL COSTS				**$144,708,705.72**

Table13-4
Cost Alternative 3
Source Removal/ Soil Cover and Wedge Buttress

Direct Capital Costs	Quantity	Unit	Cost	Total Cost
Diversion Ditch				
Place 1' gravel cover	956	cyd	$12.00	$11,472.00
Signs	20	sign	$50.00	$1,000.00
		Subtotal		**$12,472.00**
Tailings South of Diversion Ditch				
Site preparation (clearing, grubbing..)	50	ac	$1,000.00	$50,000.00
Excavate and haul to impoundment (partial source removal)	176,266	cy	$5.75	$1,025,029.50
Place soil cover (bring up to 12", haul, spread, compact)	27,492	cy	$4.80	$131,961.60
Place topsoil (.5') excavated and covered areas	40,062	cy	$4.80	$192,297.60
Dust control	20	days	$735.00	$14,700.00
Reconstruct tributary channel	1,481	cy	$7.50	$11,107.50
Grading (stormwater runoff control)	24	hrs	$140.00	$3,360.00
Revegetation	50	ac	$500.00	$25,000.00
		Subtotal		**$1,453,456.20**
Wetland				
Place fill for trackhoe access	3,040	cy	$4.80	$14,592.00
Excavate and haul to impoundment	13,440	cy	$5.75	$77,280.00
Restoration	10,400	cy	$10.00	$104,000.00
Silver Creek diversion	500	cy	$7.50	$3,750.00
Revegetation	7	ac	$500.00	$3,250.00
		Subtotal		**$202,872.00**
Impoundment				
Site preparation (clearing, grubbing..)	115	ac	$1,000.00	$115,000.00
Place tailings from TSDD and Wetland (grade and compact)	191,742	cy	$1.50	$287,613.00
Place soil cover (bring up to 12", haul, spread, compact)	136,853	cy	$4.80	$656,894.40
Construct drainage channel (to SDD)	1,556	cy	$7.50	$11,670.00
Place topsoil (.5')	79,216	cy	$4.80	$380,246.40
Dust control	20	days	$735.00	$14,700.00
Grading (stormwater runoff control)	80	hrs	$140.00	$11,200.00
revegetation	115	ac	$500.00	$57,500.00
		Subtotal		**$1,534,823.80**
Embankment (wedge buttress)				
Site preparation (clearing, grubbing..)	0.75	ac	$1,000.00	$750.00
Place drain material	1,210	cy	$8.00	$9,680.00
Place buttress material (includes compaction of lifts)	7,200	cy	$6.00	$43,200.00
Dust control	6	days	$735.00	$4,410.00
Erosion protection (stormwater runoff control)	300	cy	$7.50	$2,250.00
Revegetation	0.75	ac	$750.00	$562.50
		Subtotal		**$60,852.50**
Long-Term Operation and Maintenance Costs				
O&M	15	yr	$4,000.00	$60,000.00
Annual Sampling	15	yr	$2,000.00	$30,000.00
Reporting	15	yr	$5,000.00	$75,000.00
Develop Institutional Controls	1		$5,000.00	$5,000.00
Institutional Controls Monitoring and Repair (fencing, signs)	15	yr	$5,000.00	$75,000.00
		Subtotal		**$245,000.00**
			Total Direct Costs	**$3,509,476.50**
Indirect Capital Costs				
Engineering Design and Project Administration				$50,000.00
Monitoring Plan				$4,000.00
Construction Oversight (2.5 % of Direct Capital Cost)				$87,736.91
Contingency (15 % of Direct Capital Cost)				$526,421.48
Health and Safety (1 % of Capital Costs)				$35,094.77
EPA Oversight				$50,000.00
		Subtotal		**$753,253.15**
			Total Indirect Costs	**$753,253.15**
			TOTAL COSTS	**$4,262,729.65**

APPENDIX C

RESPONSIVENESS SUMMARY

1.1 Stakeholder Issues and EPA Responses

During the Public Comment Period for the Proposed Plan, comments were received from UPCM, the Marsac Corridor Association and Utah Department of Fish and Wildlife. Their comments and EPA's response to these comments are in the following sections.

1.1.2 Comments Received From United Park City Mines

Remedy Selection. United Park supports the remedy selected in the Proposed Plan. Like EPA, United Park believes that Alternative 3 provides more than adequate protection of human health and the environment, will prove to be effective (both in the long and short terms), will be cost-effective, and will otherwise address the remaining environmental conditions necessary to achieve final closure of the Site.

Possible Wetlands Operable Unit. The Proposed Plan states that the timing of remediation as to the small wetland area between the impoundment and Silver Creek will be delayed until upstream remediation and reclamation efforts are complete. United Park's understanding is that the wetland area will be remediated following remediation of several upstream areas, some of which are located on United Park property. In any event, because the timing for the remediation of the wetland area will not be linked to the remediation process for the remainder of the Site, United Park suggests that EPA consider designating the wetland area as a separate operable unit. EPA has the discretion to designate multiple operable units with respect to the Site. Doing so here makes sense in part because it will facilitate negotiation of the anticipated Consent Decree, enabling EPA and United Park to define construction completion as to each operable unit.

EPA Response: While EPA understands this is an option that would allow the Site to be archived by OU more quickly, EPA feels strongly that the timing of cleanup throughout the Watershed will work to everyone's advantage. By cleaning up the upstream sites along Silver Creek in a time efficient manner, the Site wetlands can then be excavated according to the plan set forth in this ROD. It is critical to EPA that the entire Silver Creek Watershed be addressed and by further dividing sites by OU or through some other approach, EPA believes this will slow the process down rather that expedite it.

Site Impacts on Silver Creek. There are a number of statements in the Proposed Plan suggesting that the Site is presently having a significant impact on water quality in Silver Creek. *See* page A-2 (first paragraph) (linking Site to other sites that are all impacting Silver Creek); page A-3 and A-4 (remediation of Site will play direct role in watershed remediation). United Park finds these statements confusing. The Remedial Investigation ("RI") for the Site determined that surface waters leaving the Site present no significant impact on water quality in Silver Creek. While it is true that surface waters in areas upstream of the south diversion ditch exhibit elevated metal concentrations, the water in the south diversion ditch outfall has consistently met surface water quality standards. The remedial action proposed for the Site is more appropriately described at addressing *potential future* impacts the Site may have on Silver Creek. While United Park recognizes that many of the issues addressing Silver Creek arose generally from historic mining operations, United Park believes it is inappropriate to group the Site with other

areas in the Silver Creek Watershed that may have actual present impacts on water quality in Silver Creek.

EPA Response: EPA recognizes that the data from the Remedial Investigation relating to the Site's impact on Silver Creek support this statement. It was written in the Proposed Plan that historic mining activities throughout the Upper Silver Creek Watershed have adversely affected Silver Creek. In Section 12, The Selected Remedy, and in Section 5, Summary of Site Characteristics, it is made clear that water from the Site that enters Silver Creek is of better quality than Silver Creek itself. It is accurate to state that the selected remedy will be protective of human health and the environment in that it will minimize any future exposures or impacts contamination at the Site may present.

Human and Ecological Risks. United Park believes that the Proposed Plan mischaracterizes the results and findings of the human health and ecological risk assessments relating to the Site. More specifically, the discussion in the Proposed Plan under Human Health Risks (page A-4) states that "if the necessary cleanup action is not taken . . . there is a risk to future recreational users at the Site because of lead and arsenic present in the tailings." In fact, the Baseline Human Health Risk Assessment ("BHHRA") conducted by EPA concluded no significant risk to recreational users of the Site from the existing soils and mine tailings unless the soil cover is somehow disturbed. With respect to the ecological risk assessment discussion, the Proposed Plan states that the Ecological Risk Assessment ("ERA") determined that ecological receptors are potentially exposed to metals in several ways, as summarized in the chart on page A-4 of the Proposed Plan. It would be more accurate to state that the ERA concluded contaminated sediment in the wetland area is the primary ecological risk driver, although surface water in a portion of the south diversion ditch may also present some risk, to a lesser degree. This conclusion is supported by Table 7-8 in the ERA.

EPA Response: Again, it is EPA's intent to make it clear that if the necessary remedial actions are not taken at the Site, which include both enhancing the soil cover and ensuring that it will remain intact in the future, potential risks to human health and the environment exist. EPA agrees with the comment addressing sediments as the primary risk driver at the Site.

Future Consolidation of Material. United Park understands the practical benefits that could arise from the future use of the Site as a consolidation area for mining materials and impacted soils. However, United Park notes the potential complications related to defining completion of construction for purposes of the remedial action described in the Proposed Plan. United Park suggests that one way to address this concern would be for EPA to provide in the ROD that: (i) any materials so consolidated at the Site during implementation of the remedial action will simply be incorporated into the remedial action and covered with the required amount of clean cover material and revegetated; and (ii) any material to be consolidated after completion of construction will be subject to institutional controls requiring that mine wastes or impacted soils consolidated at the Site after the remedial action is completed would be covered with the required amount of clean material and revegetated. This will allow United Park to achieve a state of completion with the remediation while providing maximum flexibility for the future consolidation of material from the Watershed and any potential reuse of the property.

EPA Response: EPA agrees with this comment; evidence of incoorporation of this comment into the ROD can be found in the Remedy Selection section.

1.1.3 Comments Received from the Marsac Corridor Association

One component of the remedy allows for waste to be transported from Empire Canyon and deposited at Richardson Flat. The Marsac Corridor Association (MCA) is a group of homeowners that live in the neighborhood through which trucks carrying the waste would drive. The members of the MCA had two specific comments: 1) The waste in Empire Canyon should be left in place, and 2) If the waste must be moved, it should be transported up the Mine Road and down Royal Street, rather than using only the Mine Road and Lower Marsac.

EPA Response: EPA understands MCA's concerns and has considered its comments. It is our perspective that the waste may be left in place or moved to Richardson Flat. Factors such as space to contain the waste, the cost of transportation, and potential migration of waste left in place will be considered by the parties involved in order to make a decision about the fate of the waste in Empire Canyon. EPA understands that this is a local issue and one that will be resolved through discussion and consideration amongst the stakeholders. These stakeholders include Park City, UPCM, MCA and other concerned public. A public hearing will be held by Park City in the upcoming future to resolve this issue.

1.1.4 Comments Received from United States Fish and Wildlife Service (the Service) Utah Field Office

The Service submitted comments concerning the remedy's protectiveness in relation to ecological receptors at the Site. The Service's primary concern is that the sediments found in the South Diversion Ditch, the pond at its terminus and in the wetland at the base of the embankment are not being addressed in a manner efficient enough to substantially minimize risk to ecological receptors at the site. The Service proposes excavation of the sediments in all three areas.

<u>EPA Response:</u> The sediments within the wetland area will be excavated and placed within the impoundment through the selected remedy. EPA understands that the wetland is a naturally occuring ecological phenomenon that existed before the impoundment was created. Therefore, the remedy should allow for the restoration of the wetland as a habitat for ecological receptors at the Site. However, the diversion ditch and small pond are engineered features at the site that were constructed to help contain the tailings in the impoundment and minimize groundwater infiltration from Area B into the main impoundment. Therefore, these areas will be sufficiently remediated through the described mechanisms (placement of 18 inches of gravel over contaminated sediments). While this action does not create habitat or restore habitat, it will minimize risk to ecological receptors at the Site. The requirements set forth in the NCP are met. Lastly, this does not preclude continued negotiation concerning the restoration of these features between UPCM and EPA surrounding Natural Resource Damages. These damages are currently being addressed, and they are a complicated issue. It is possible these damages could be mitigated through the restoration of other areas within the Watershed. So, until a settlement concerning these damages has been reached the exposure pathways will be interrupted with gravel and risk to ecological receptors will be minimized in the diversion ditch and the pond at its terminus as it is described in the selected remedy.

APPENDIX E
Site Visit Photographs

GEOSYNTEC CONSULTANTS
Photographic Record

Geosyntec consultants

Client: Stoel Rives LLP	**Project Number: SLC1029**
Site Name: Parcel SS-86	**Site Location: Summit County, Utah**

Photograph ID: 1

Date: 4/13/2021

Direction: S

Comments: View looking south at the gate and main dirt road that provide access to the Site from Richardson Flat Road.



Photograph ID: 2

Date: 4/13/2021

Direction: W

Comments: Standing surface water in a depression near the northwest corner of the Site.



GEOSYNTEC CONSULTANTS Photographic Record	Geosyntec consultants
Client: Stoel Rives LLP	**Project Number: SLC1029**
Site Name: Parcel SS-86	**Site Location: Summit County, Utah**

Photograph ID: 3 **Date: 4/13/2021** **Direction: W** **Comments:** Standing surface water in a low-lying ditch that runs along the southern edge of Richardson Flat Road. The ditch ends in a depression that sits just to the east of the main dirt access road and gate shown in Photograph 1.	
Photograph ID: 4 **Date: 4/13/2021** **Direction: E** **Comments:** Older, heavily vegetated berm near the southern boundary of the Site where the Site access road turns east and runs along the southern edge of the older berm. The alignment of this older berm with the site access road and its appearance in historical imagery suggest it was built to support an old railway line or mining access road, but the original intent is not clearly documented in available records.	

GEOSYNTEC CONSULTANTS Photographic Record	Geosyntec consultants
Client: Stoel Rives LLP	**Project Number: SLC1029**
Site Name: Parcel SS-86	**Site Location: Summit County, Utah**

Photograph ID: 5 **Date: 4/13/2021** **Direction: NE** **Comments:** Motorcycle ramp located near the eastern end and off the southern edge of the older berm near the southern boundary of the Site. The landing area for the ramp is shown in Photograph 10.	

Photograph ID: 6 **Date: 4/13/2021** **Direction: W** **Comments:** Low-lying, unvegetated area south of the older berm at the Site. Based on the lack of vegetation and the condition of the soil in this area, standing water likely accumulates here and in a similar sized depression immediately east of here for parts of the year.	

GEOSYNTEC CONSULTANTS Photographic Record	Geosyntec consultants
Client: Stoel Rives LLP	**Project Number: SLC1029**
Site Name: Parcel SS-86	**Site Location: Summit County, Utah**

Photograph ID: 7 **Date: 4/13/2021** **Direction: N/A** **Comments:** Scattered shotgun shells and associated debris (typical) located in the area north of the old railway berm and east of the main dirt access road at the Site. Widespread areas of this type of debris exist here and along the western margin of the Site.	
Photograph ID: 8 **Date: 4/13/2021** **Direction: SW** **Comments:** Surface water seep encountered about 100 yards north-northwest of the older berm near the southern boundary of the Site. Several of these springs/seeps occur along the eroded channel of the ephemeral stream that runs north/south through the center of the Site.	

GEOSYNTEC CONSULTANTS Photographic Record	Geosyntec consultants
Client: Stoel Rives LLP	**Project Number: SLC1029**
Site Name: Parcel SS-86	**Site Location: Summit County, Utah**

Photograph ID: 9 **Date: 4/13/2021** **Direction: SW** **Comments:** Large, discarded metal wheel located near the access gate at the northwest corner of the Site.	
Photograph ID: 10 **Date: 4/13/2021** **Direction: S** **Comments:** North facing aspect of the older berm near southern boundary of the Site. Near the center of the face, the landing ramp for the motorcycle ramp shown in Photograph 5 can be seen.	