Eureka Mills Superfund Site
Eureka, Utah

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY • REGION 8 • MARCH 2011

Operable Unit 4 Groundwater, Surface Water, and Ecological Risk Proposed Plan

Introduction

The U.S. Environmental Protection Agency (EPA) and the Utah Department of Environmental Quality (UDEQ) request comments on the proposed plan for Operable Unit 4 (OU4) of the Eureka Mills Superfund Site (site). The proposed plan presents the EPA's and UDEQ's preferred alternative for OU4, which addresses:

- Human health risks from site groundwater
- Human health risks from site surface water
- Ecological risks within undeveloped areas of the site

EPA studied the impacts of historical mining on groundwater, surface water, and the environment. Given EPA's role on these studies, EPA is the lead agency for the site and is issuing this proposed plan. UDEQ is the support agency for the site and has been consulted on this proposed plan, as required by the *Comprehensive Environmental Response, Compensation, and Liability Act* (CERCLA), commonly referred to as Superfund.

As an aid to the reader, we have included a acronym list at the end of this document.

This proposed plan provides an overview of:

- Site background and history
- Site contamination and risk
- Activities that EPA has completed at the site
- The preferred response action for OU4

EPA, in consultation with UDEQ, will select a final remedy for the site after reviewing and considering community input submitted during the 30-day public comment period. EPA and UDEQ may modify the preferred alternative based on new information or public comments.

EPA is issuing this proposed plan as part of its public participation responsibilities under CERCLA Section 117(a) and Section

(Continued on page 2)

MARK YOUR CALENDAR

PUBLIC COMMENT PERIOD:

Monday, April 4, 2011 to Tuesday, May 3, 2011

EPA and UDEQ will accept written comments to the proposed plan during the public comment period.

Written comments should be submitted to:

Paula Schmittdiel,
U.S. Environmental Protection Agency, Region 8
1595 Wynkoop Street
Denver, Colorado 80202-1129
Mail Code: 8EPR-SR
E:mail: schmittdiel.paula@epa.gov

PUBLIC MEETING:

Monday, April 11, 2011 at the Eureka City Hall at 15 N Church St in Eureka, Utah

EPA and UDEQ will accept verbal comments at the public meeting for the proposed plan.

For more information about the Eureka Mills Superfund Site, see the Administrative Record at the following locations:

Eureka Mills Superfund Site Information Repository
Eureka City Hall
15 North Church Street
Eureka, UT 84628
(435) 433-6915

EPA Superfund Records Center
1595 Wynkoop Street
Denver, CO 80202
(303) 312-6473

UDEQ Division of Environmental
Response and Remediation
195 North 1950 West,
Salt Lake City, Utah
801-536-4100

Questions? Contact Jennifer Lane at:

303-312-6813 or lane.jennifer@epa.gov

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300.430(f)(3) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP).

This proposed plan summarizes information that can be found in greater detail in the Remedial Investigation report (RI), Feasibility Study (FS), the Baseline Ecological Risk Assessment (BERA) and other documents found in Administrative Record for this site. Relevant documents from the Administrative Record can be viewed at the Eureka Mills Superfund Site Information Repository at Eureka City Hall, at UDEQ's office in Salt Lake City, or at the EPA Superfund Records Center in Denver, CO. EPA and UDEQ encourage the public to review these documents to gain a better understanding of the site and the studies EPA has completed on surface water, groundwater, and the environment that led to this proposed plan.

Site Background

Eureka is situated in a southwest trending valley on the west side of the East Tintic Mountains in northeast Juab County, about 80 miles southwest of Salt Lake City, Utah (Figure 1). Elevations in Eureka range from 6,700 feet to 6,300 feet above sea level. The town has a population of 766 as of the 2000 census.

Eureka is part of Utah's historic Tintic Mining District. It was founded in 1870 upon the discovery of a high-grade mineralized outcrop containing silver and lead. The area was extensively mined until 1958 and has experienced sporadic mining activity since. Mines near Eureka produced ores of silver, gold, lead, copper, iron, zinc, and cadmium.

Scope and Role of the Action

This proposed plan is for OU4 at the site. "Operable Units" (OU) are used to define separate activities undertaken at the same Superfund site. OU4 includes groundwater, surface water, and ecological risks associated with non-residential areas in the outskirts of Eureka. Other operable units at the site (see Figure 2) addressed human health risks of site soils and included the following:

- OU 00 - Site-Wide, including residential areas
- OU 1 - May Day – Godiva Shaft and Tunnel
- OU 2 - Bullion Beck – Gemini Mine Waste Piles
- OU 3 - Central Eureka Mining Areas (Chief Consolidated Mining Company)

Remedial action for each of these operable units was completed in October 2010 in accordance with the site Record of Decision (ROD) for lead contaminated soils (2002 ROD). OU4 is the final operable unit to be addressed at the site.

Figure 1 - Site Location Map

Site History and Response Actions

The State of Utah and EPA began investigating impacts of historic mining activities on the environment and residential areas of Eureka in 2000. High concentrations of lead and arsenic in soil combined with elevated blood lead levels in children living in Eureka led to Time Critical soil removal actions in 2001 and 2002. Based on the findings of the Site Investigation in 2000, the site was placed on the National Priorities List (NPL) in September 2002.

In 2002, EPA completed studies and published a ROD for lead contaminated soils, which were found to pose an imminent and substantial endangerment to public health. Site areas requiring soil remediation were divided into four operable units; refer to Figure 2 for the remediation areas and operable unit boundaries. Lead is the primary soil contaminant of concern (COC) at the site. Other soil COCs were found to be co-located with lead. For additional detail on the 2002 ROD and studies completed in 2002, refer to the following documents in the Administrative Record:

- Remedial Investigation Report for Operable Units 00-3 at the Eureka Mills Site, Eureka, Utah, July 2002 (RI). The scope of the investigation included soils, tap water, air, residential interior and exterior paint, and other residential indoor sources of lead contamination.
- Feasibility Study Report for Operable Units 00-3 at the Eureka Mills Site, Eureka, Utah, September 2002 (FS). The feasibility study evaluated a range of alternatives to

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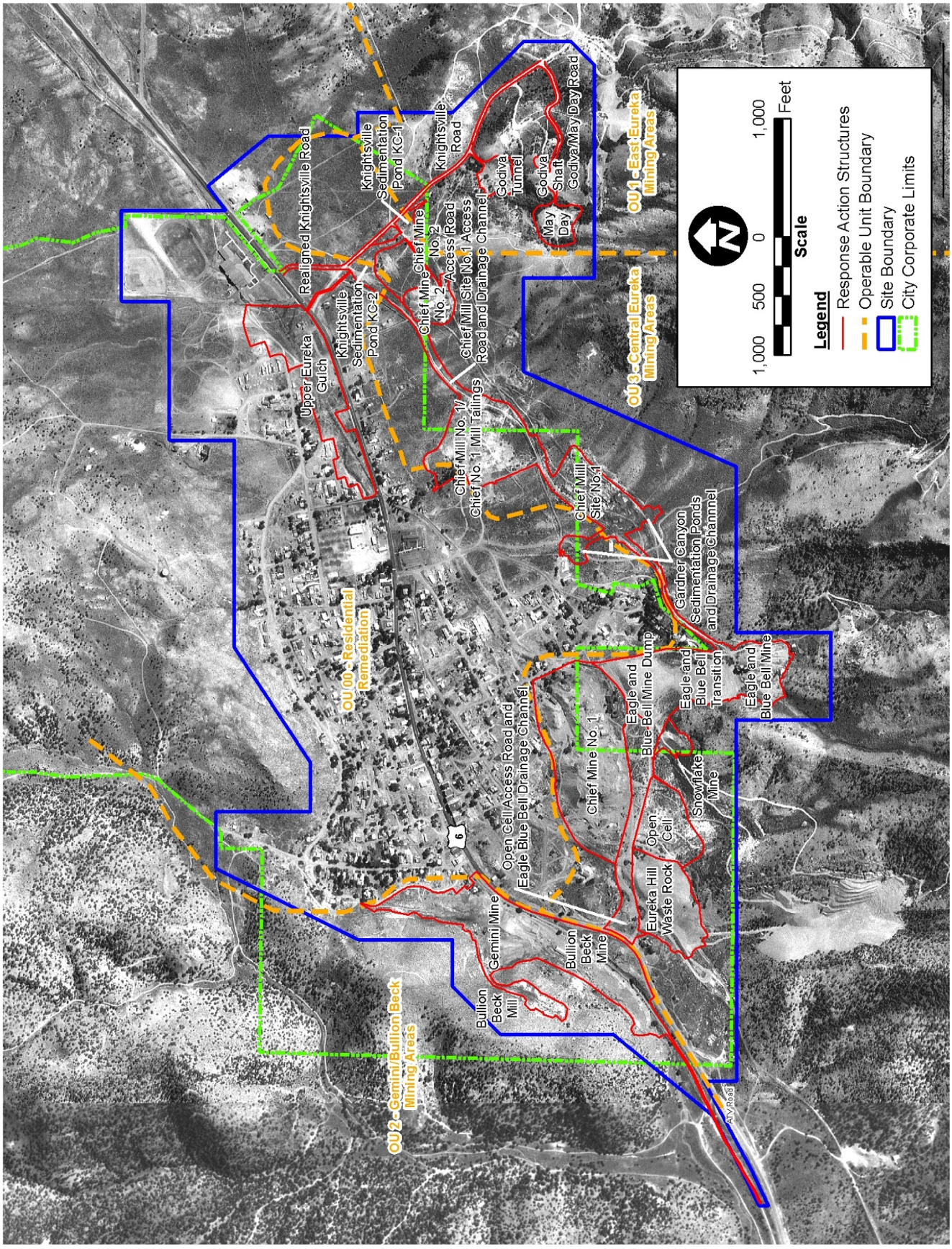
Figure 2 - Site Plan



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address the contamination and risks found during the remedial investigation.

- Record of Decision for Lead-Contaminated Soil, Operable Units 00 through 3 at the Eureka Mills NPL Site, Eureka, Utah, September 2002 (ROD). The ROD documents EPA's reason for its selection of the cleanup remedy.

Remedial Designs (a design of the selected cleanup remedy or RD) for OUs 00 through 3 were completed in 2003. Remedial Action (construction of the cleanup remedy or RA) was initiated in August 2003 and completed in October 2010. Components of the RA included:

- Cleanup of approximately 700 residential and commercial properties with lead in soil concentrations greater than 231 ppm. The cleanup generally consisted of removal of 18 inches of soil and construction of an 18-inch cap consisting of vegetated soil or rock.
- Capping of 13 mine waste piles near Eureka that posed a human health risk with an 18-inch cap of vegetated soil or rock.
- Construction of a disposal cell (Open Cell) for contaminated soils that may be excavated during future construction activities.
- Assisting the City of Eureka with developing an excavation ordinance to control excavation activities that could disturb contaminated materials.
- Public health actions, including information programs, periodic blood lead testing of children, and a program for evaluating sources of indoor lead exposure.

Potentially responsible parties (e.g., mine owners) performed portions of the RA, including capping the May Day, Godiva, and Chief Mine #2 mine waste piles, remediating the property referred to as Upper Eureka Gulch (see Figure 2), and providing materials and resources for other RA tasks. Remaining RA activities were performed by EPA under the authority of the Superfund Program.

In 2007, EPA initiated studies of OU4, which were completed in 2010. The results of these studies are presented in the following documents:

- Groundwater/Surface Water Remedial Investigation Report, Eureka Mills Superfund Site Operable Unit 4, July 2010 (GW/SW RI). This document describes groundwater and surface water studies and provides conclusions on the impacts (if any) to the groundwater and surface water from historical mining activities.
- Baseline Ecological Risk Assessment for the Eureka Mills Site, February 2010 (BERA). This document assesses risks to ecological receptors including plants, invertebrates, birds, and mammals.
- Focused Feasibility Study Report for Ecological Risk, Eureka Mills Superfund Site Operable Unit 4, March 2011 (FFS). This document develops and evaluates cleanup alternatives to lower the risk to bird populations.

Site Characteristics

Groundwater

Shallow groundwater at the site resides in unconsolidated alluvium and weathered bedrock. A deeper aquifer also exists in lower sedimentary bedrock units. The depth to the lower aquifer is between 1500 and 2000 feet below ground surface. Due to the impracticality and cost of drilling and of pumping water from these depths, placing drinking water wells in the deeper aquifer is not a reasonably anticipated future use.

Groundwater flow is generally east to west, following topography, with a directional component towards the valley bottom of Eureka Gulch.

Numerous water wells have been installed in Eureka, most in the early 1900s when the wells served as sources of drinking water for residences. The wells were generally shallow and drilled into soils overlying bedrock. In some cases, deeper wells were drilled into upper bedrock units, all within what is considered the shallow aquifer under the site.

According to a well survey completed during the GW/SW RI, 20 wells still exist in Eureka. None of these wells are known to be used for drinking water as all residents are connected to the Eureka municipal water system. The municipal system derives water from two sources: a system of five wells located east of Eureka, in Homansville, and a well located near Tintic Junction, approximately 2 miles west of Eureka. Each of these sources is hydraulically isolated from the shallow groundwater aquifer at the site. A review of Eureka City's data from their water testing (as required of municipal suppliers) from each source do not have elevated concentrations of metals that would indicate impact from historical mining.

In order to further characterize the nature and extent of possible groundwater contamination, EPA installed four monitoring wells downgradient of mine waste piles in soils overlying bedrock and in some cases shallow bedrock units. The depth to the

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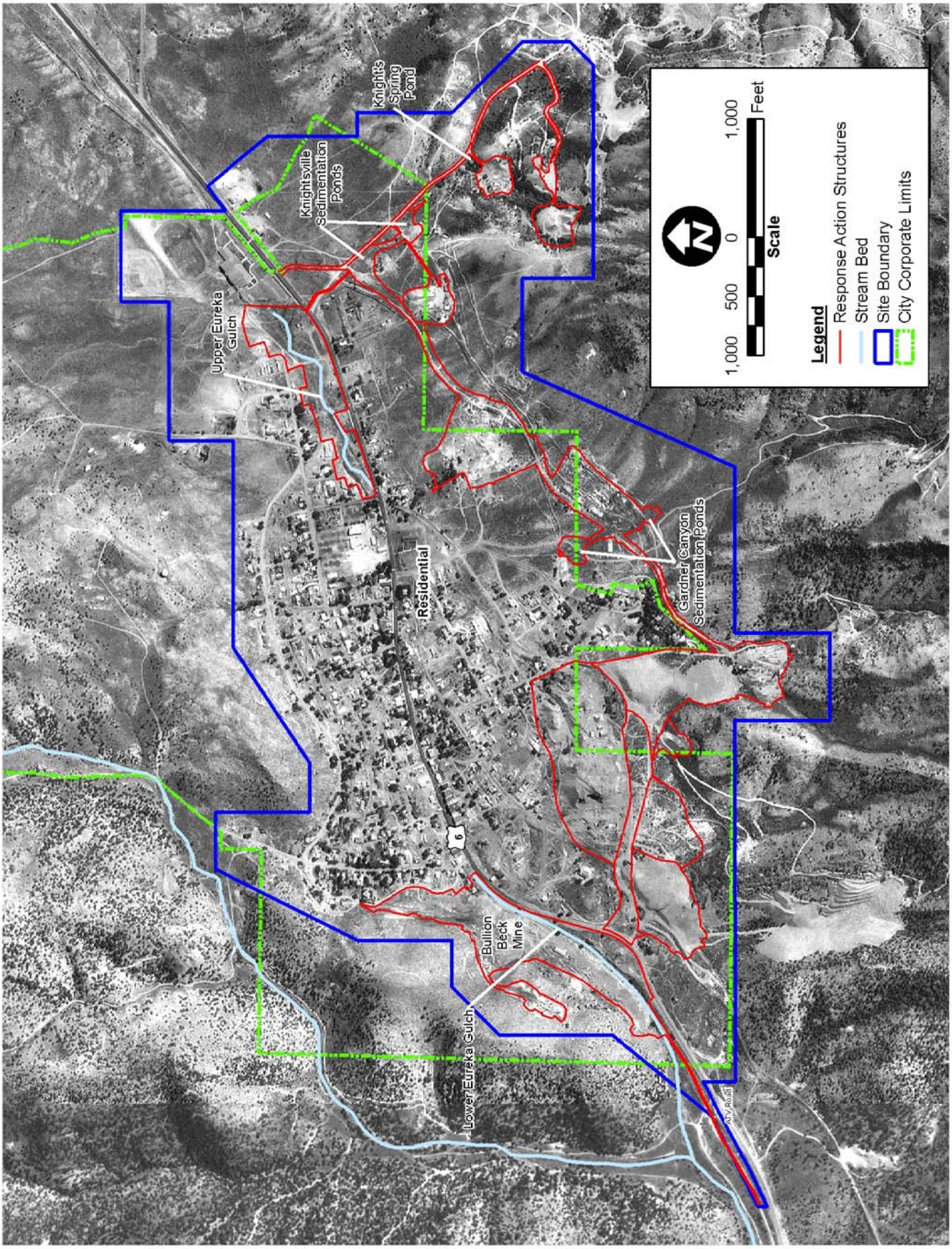
Figure 3—Map of Surface Water Bodies



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shallow aquifer was found to range from 5 feet to more than 60 feet depending on the location of the well. The selected locations of the monitoring wells were the most likely places where contaminant releases to the shallow aquifer might occur from waste material associated with historical mining. The soil materials of the shallow aquifer tend to be fairly tight and thus do not produce much water. Consequently, one of the four monitoring wells installed by EPA did not produce enough water to sample for water quality.

Groundwater samples were collected from existing private wells identified in the well survey and from the monitoring wells. A total of 14 wells were sampled 3 to 5 times over the course of the investigation and analyzed for heavy metal concentrations. The following table summarizes samples that exceeded the Federal Maximum Contaminant Level (MCL) or Action Level (AL):

Summary of Metals Detected Above MCL

in Groundwater

Metal	Maximum Detected Concentration	Samples Detected Above MCL	MCL
Arsenic	19.7 µg/L	1 of 56	10 µg/L
Lead	230 µg/L	2 of 56	15 µg/L*

* This is a Federal Action Level; there is not an MCL for lead

MCLs and ALs are the highest concentrations of specific metals allowed in drinking water. Of the 56 samples collected, one sample had an exceedance of the arsenic MCL and the lead action level and another sample had an exceedance of the lead action level. These two samples were collected from different wells on different dates. Additional sampling of these two wells to confirm the presence of contamination did not find any exceedances of the MCL or AL for either lead or arsenic.

While the cause of the exceedances is not entirely clear, the conclusion from the remedial investigation was that there were no impacts from historical mining activities found in the shallow groundwater aquifer and that no further action is recommended.

Surface Water

Site surface water features are shown in Figure 3. The State of Utah's designated uses of surface water in the Eureka Gulch watershed include:

- Secondary recreation (activities with a low likelihood for ingestion, such as fishing)
- Severely habitat limited waters
- Agricultural

The following characterize site surface water features:

Chemical	Dissolved Metal Concentration (µg/L)	Utah State Criteria (µg/L)
Arsenic	13.1	100
Cadmium	2.3	10
Chromium	2.1	100
Copper	4.7	200
Lead	9	100
Selenium	5	50

Eureka Gulch. Eureka Gulch has a stream that passes through the central part of Eureka, alongside Highway 6. Approximately 6.5 miles southwest of the site, the Eureka Gulch stream joins with the Tanner Creek drainage. Typically the Eureka Gulch stream carries water only after a rainstorm or during snowmelt and is not considered to be a viable aquatic habitat or

usable for recreation.

Knightsville and Gardner Canyon Sedimentation Ponds. Man-made sedimentation ponds are located at the base of the Knightsville and Gardner Canyons. These ponds capture potentially contaminated run-off from residual sources in the canyon during storms and spring melt periods to prevent the recontamination of remediated areas at the site. The ponds vary in size and are lined with rip-rap. Based on observations made since the first ponds were constructed in 2004, the ponds will rarely contain water for more than a few days during snowmelt. Since the ponds usually do not contain water, there is no likely human exposure to surface water and the ponds are not expected to support aquatic life or provide a consistent source of drinking water for wildlife.

Knight's Spring Pond. Knight's Spring Pond is a small pond fed by a spring and formed by a man-made embankment. It is located adjacent to Knightsville Road and is the only permanent water body located within the site boundaries. The pond was measured to be 24 feet in diameter and 3.5 feet deep during the spring of 2007. It serves as a watering source for wildlife and domesticated sheep that utilize the surrounding land for grazing. It may also serve as habitat for aquatic organisms.

Surface water samples were collected from Knight's Spring Pond and from Eureka Gulch monitoring stations when surface water was present. A total of 10 samples were collected. The following table compares the highest metal concentration encountered and the Utah State numerical water quality standards

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for agriculture. Of the applicable State designated uses for Eureka Gulch and Knight's Spring Pond (tributaries to Tanner Creek), only the agricultural designated use includes numerical standards for metals.

None of the surface water samples analyzed exceeded the applicable State of Utah surface water quality standards for metals. There was no evidence of recreational use of Knight's Spring Pond.

In summary, recreational use is unlikely at the site given the lack of large surface water areas or the existence of any surface water for more than a few days during the year. Since none of the sample results exceeded the State's water quality standards no further action is recommended.

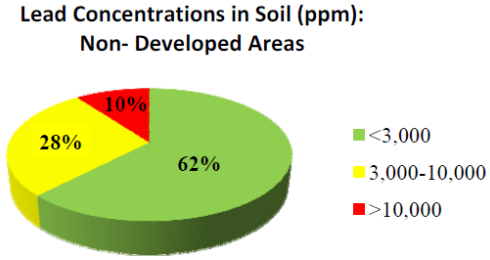
Sediment

Sediments are silts, sand, organic matter, or minerals that accumulate on the bottom of a water body. The only water body within the site that contains water for the majority of time is Knight's Spring Pond. Ten sediment samples were collected from Knight's Spring Pond and analyzed for heavy metals to investigate ecological risks. The results indicate that several metals exceed sediment screening levels for benthic invertebrates (animals without backbones that generally live on or within the sediment, such as clams and worms). For more information about concentrations of heavy metals and sediments, refer to the BERA. Although there are some exceedances of screening levels, the size of the pond prohibits significant use by aquatic life, thus, there is no unacceptable risk to aquatic population. No further action addressing sediment in the pond is recommended.

Soils

Soils data collected throughout the life of the project was used for assessment of ecological risk. In aggregate, approximately 1,000 samples have been collected in non-developed areas around Eureka and analyzed for heavy metals. The results indicate that soils immediately outside Eureka and on the mountain slopes surrounding Eureka have elevated metal concentrations, predominately lead.

Refer to the following chart for a summary of lead concentration in soil (measured in ppm):



Baseline Ecological Risk Assessment

In order to evaluate potential risk to terrestrial life forms (plants, animals, invertebrates). EPA and UDEQ performed a baseline ecological risk assessment or BERA. In addition to the BERA, a site-specific risk model was used to further evaluate risks to birds.

The study area for the BERA included the undeveloped areas north and south of the City to the ridgelines defining the valley in which Eureka is located, and west of the site to include a reach of Eureka Gulch. The terrain within the study area encompasses a range of elevations and habitats, including sagebrush and pinion-juniper stands, thick mountain shrublands, and wooded areas of deciduous and mixed coniferous trees. The area is characterized by very steep slopes that are heavily vegetated. These habitats provide ample forage and nesting opportunities for numerous bird and mammal species. Parts of the site are covered by mine waste piles. Some of these piles have been capped with clean rock material because of the risk they pose to human health from blowing dust, surface runoff, or direct contact.

Refer to Figure 4 for an interpretation of the habitat types present within the study area.

Environmental and biological data collected throughout the study area were used for characterization of ecological risks. These data were drawn from the analysis of more than 1,000 soil, surface water, groundwater, and sediment samples; plant, earthworm and insect tissues; and toxicity/bioaccumulation tests on plants and earthworms.

<u>Plants and Invertebrates</u>

The primary exposure pathway for both plants and soil invertebrates (worms, insects, larvae) is direct contact with contaminated soil. For plants, exposure may also occur due to deposition of dust on leaf surfaces, but this pathway is of minor concern compared to root exposures in surface soil and subsurface soils and therefore was not evaluated in the BERA. Based on evaluation of the data, the following conclusions were drawn:

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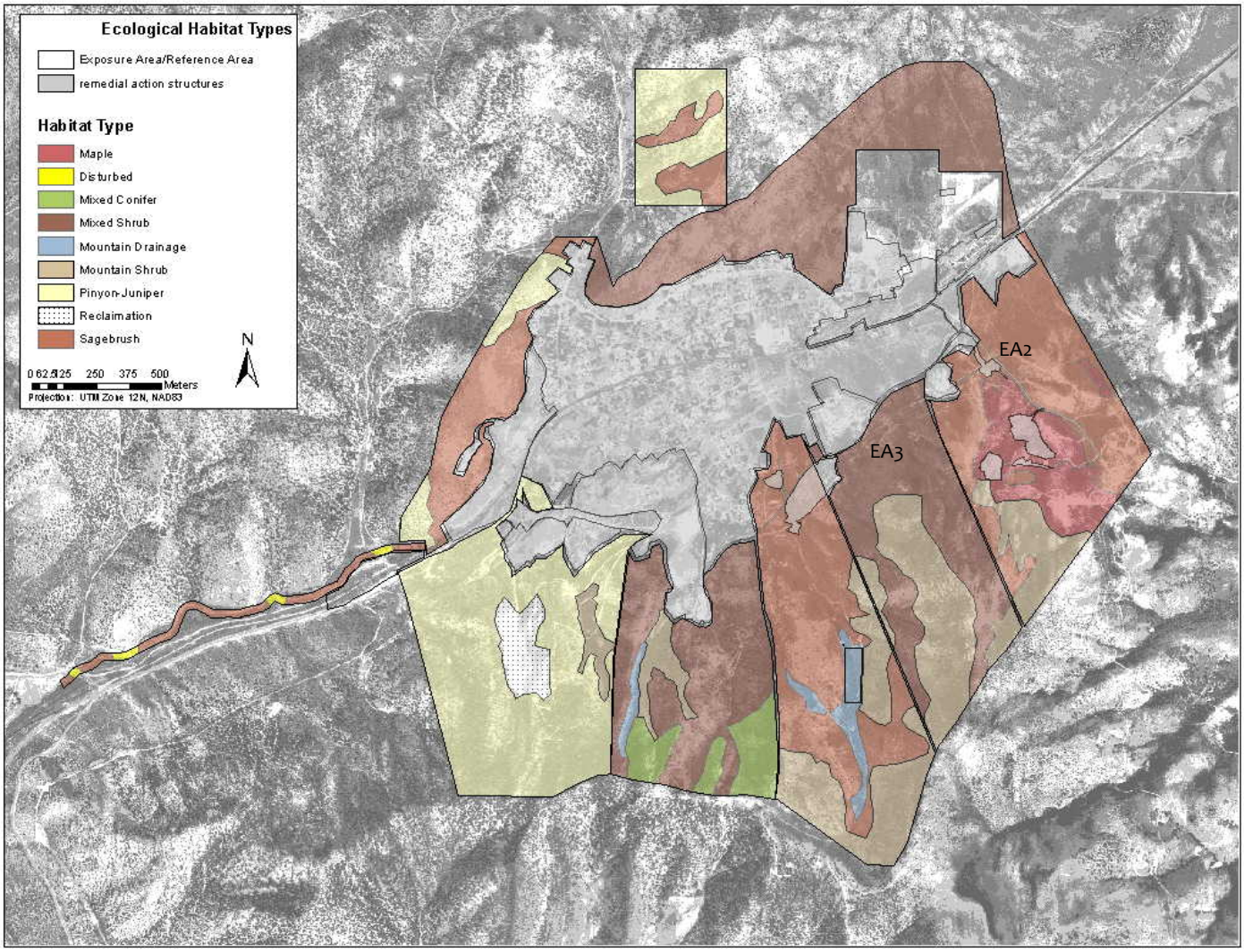
Figure 4 - Map of Ecological Habitat Types



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- *For plants, concentrations of metals in site soil are not high enough to be of general concern in most areas, but in isolated locations elevated concentrations may cause slight toxicity to individual plant species.*
- *Concentrations of metals in site soil are present at levels that may cause some reduction in soil invertebrate growth at some locations, but the overall survival of soil invertebrates at the site is not likely to be adversely impacted.*

Birds and Mammals

Effects on birds and mammals were evaluated using 10 different species that differed in feeding habits and home range size. A "home range" is the area that an animal typically uses in the course of its daily activities. For the purposes of the BERA, home range sizes were classified as low, medium, and large:

- Small home ranges - 2 acres or less
- Medium home ranges - greater than 2 acres but less than 200 acres
- Large home ranges - more than 200 acres and may be many square miles

Birds and mammals may be exposed to site related contaminants by four main pathways:

- Ingestion of contaminants in prey
- Incidental ingestion of surface soil while eating

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- Ingestion of contaminated water
- Incidental ingestion of sediment while drinking

Birds and mammals may also be exposed by direct contact and inhalation exposure to airborne dusts, but these exposure pathways are usually considered to be minor in comparison to exposures from ingestion and were not evaluated quantitatively. Based on the BERA, which included an evaluation of the chemical data combined with expected exposures to wildlife using the site, the following conclusions were drawn by EPA:

- *Risks to most birds and mammals with large home ranges are considered to be minimal.*
- *Potentially significant risks may occur for small- and medium home range birds. These risks are due to ingestion of lead and other metals in soil and sediment and also from the ingestion of metals in food (primarily insect tissue) at the site.*
- *Ingestion of lead in soil contributes the most to the risk.*

The BERA process is a thorough evaluation of the potential risk to ecological receptors. There are many uncertainties in these types of assessments because limited species-specific information is available to model specific animals. Because potentially significant risks were identified, EPA conducted additional studies that focused on birds with small and medium home ranges. A bird survey was conducted at the site by experts from the U.S. Fish and Wildlife Service. Information from the bird survey was used to develop a more realistic site-specific exposure model that evaluated foraging habits and habitat use in the contaminated areas. Five representative bird species were selected for modeling. The site-specific model was conducted on areas in the southeast corner of the site, west of Knightsville Road (Exposure Area 2 (EA2); See Figure 4). This area is contaminated with lead and is predominantly covered by shrub maples, which provides the most suitable habitat for these bird types.

The level of risk predicted by the site-specific model was lower than that found by the initial BERA assessment, reflecting the model's more realistic exposure scenarios. Three of the five representative bird species were found not to be at risk from lead exposures, but low risks (decreased egg production) to American Robins, Brewers Sparrows, and birds with similar foraging habits were predicted by the model. The risks to American Robins, Brewers Sparrows, and similar birds were characterized as low in magnitude and limited to a relatively small area of the site.

Summary of Site Risks

Human Health Risk

Groundwater was investigated through research of available data and from several rounds of sampling and analysis. Samples were collected from existing private wells within Eureka and from monitoring wells installed by EPA down-gradient of mine waste piles. Each well was sampled on multiple occasions. Samples were analyzed for metals and compared with applicable regulatory criteria and, where a regulatory criterion was not available, to values published by EPA. While there were two metals that exceeded the MCLs and ALs in two cases ; in neither case did repeat sampling of the same wells result in an exceedance of the MCL or AL. Based on the sampling results, EPA concluded that groundwater does not pose a risk to human health has recommended no further action for groundwater.

The only permanent surface water body at the site is Knight's Spring Pond. Surface water and sediment samples were collected from this pond, as well as from Eureka Gulch, which was found to occasionally contain small puddles of water following rain events. Based on the designated use for surface water, results from analysis of surface water samples were compared to State of Utah agricultural water quality standards for metals. None of these standards was exceeded; therefore, EPA concluded that there are no unacceptable risks to human health from surface water at the site. EPA is recommending no further action for surface water.

Sediment was assessed for risk to aquatic organisms. Sediment data were compared to aquatic toxicity benchmarks. The comparison indicated a potential for risks to aquatic organisms; however, due to the limited size of Knight's Spring pond, EPA has concluded that insufficient habitat exists at the site to support aquatic life and would not be an unacceptable risk to aquatic organisms. Therefore, no further action is recommended.

Ecological Risk

Data collected from the sampling and analysis of soil, sediment, surface water, insects, plants, and earthworms, as well as toxicity tests, field surveys for plants and birds, and historic environmental data were used to evaluate the risk from historic mining activities to the environment in the baseline ecological risk assessment.

Based on the BERA analysis, EPA concluded that there were no significant risks to plants, mammals, or invertebrates. However, a potential risk to small and medium home range bird species

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was identified. To further evaluate the identified risk, EPA employed a model that more rigorously evaluated species-specific feeding behaviors and habitat preferences than the model used in the initial BERA analysis.

Based on the additional modeling, the American Robin and birds with similar home ranges and foraging strategies had the highest probability of adverse health effects (i.e., decreased egg production), primarily from the ingestion of lead in soils. The model estimated that 29% (+/- 11%) of American Robins would be exposed to risk above a level of concern. EPA has concluded that while there is a risk to individual birds, there is not unacceptable risk to the population. However, EPA elected to develop the FFS to evaluate alternatives to lower the risk to American Robins and similar species. The following paragraphs describe and summarize the evaluation of alternatives developed in the FFS.

Remedial Action Objectives

The evaluation of the data and other information gathered during the GW/SW RI showed no impacts to either the groundwater or surface water. Due to the lack of evidence indicating an impact (i.e., metal concentrations above the MCLs, ALs or State water quality standards), EPA did not conduct a human health risk assessment or a feasibility study for either groundwater or surface water. Since the data does not indicate any impacts to the groundwater or surface water, no further action is recommended for groundwater or surface water.

Low risk was identified for American Robins and similar species due to lead concentrations in soil within preferred habitat areas. The Remedial Action Objective (RAO) established for OU4 to lower ecological risk is:

Enhance sustainability of American Robin and Brewer's Sparrow populations within site habitat areas by protecting them from the adverse effects of lead in soil.

Summary of Remedial Alternatives

The detailed analysis of the remedial alternatives can be found in the FFS. A summary of the remedial alternatives for OU4 ecological risks are presented below.

ALTERNATIVE 1 - NO FURTHER ACTION

Under this alternative, EPA would take No Further Action at the site to prevent ecological exposure to the soil contamination.

Cost Summary:

Estimated Total Capital Cost:	$0
Estimated Total Operation and Maintenance (O&M) Cost (30-year, present worth cost):	$0
Estimated Construction Time frame:	N/A

ALTERNATIVE 2 - SOIL CAPPING

This alternative would involve interrupting the exposure pathway for birds by placing a clean soil cap consisting of 12 inches of uncontaminated soil and 6 inches of uncontaminated topsoil over the contaminated soil. To determine the areal extent of remediation necessary to achieve the RAO for OU4, the site-specific model evaluated two capping scenarios that would reduce risks to receptors. The model focused on Exposure Area 2 (EA2), which was found during bird surveys to have relatively high diversity of species and the highest likely receptor use and exposure. It is also the area on site with the highest concentrations of lead in soil. The optimal scenario from the model is capping approximately nine acres of maple habitat in EA2. Because the area to cap is relatively steep, it was estimated that approximately one-third of the area, or 3 acres, would be capped with armor stone. This option would require removing existing vegetation, limited excavation, and no soil disposal.

Cost Summary:

Estimated Total Capital Cost:	$2,300,000
Estimated Total O&M Cost (30-year, present worth cost):	$96,000
Estimated Construction Time frame:	3 months

Evaluation of Alternatives

The NCP requires EPA to use nine criteria to evaluate the different remediation alternatives individually and in comparison in order to select a remedy. The following table provides a summary of those nine criteria. This section of the proposed plan also provides a brief discussion of the performance of each of the alternatives against the nine criteria, noting how each compares to the other alternatives being considered. More detailed analysis of the alternatives can be found in the Focused Feasibility Study for OU4.

Overall Protection of the Environment

The EPA has concluded that the risk to American Robins and similar species from the elevated lead concentrations in soil within the preferred habitat area is acceptable. The FFS was developed to investigate lowering the risk. The No Further Ac-

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Evaluation Criteria for CERCLA Remedial Alternatives
Overall Protection of Human Health and the Environment evaluates whether an alternative eliminates, reduces, or controls threats to public health and/or the environment through treatment, engineering controls, or institutional controls.
Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) evaluates whether an alternative meets Federal and State environmental statutes, regulations, and other requirements that pertain to the site, or whether an ARAR waiver is justified.
Long-Term Effectiveness and Permanence considers the ability of an alternative to maintain protection of human health and/or the environment over time.
Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment evaluates an alternative's use of treatment to reduce the harmful effects of principal contaminants, their ability to move in the environment, and the amount of contamination present.
Short-Term Effectiveness considers the length of time needed to implement an alternative and the risks the alternative poses to workers, residents, and the environment during implementation.
Implementability considers the technical and administrative feasibility of implementing an alternative, including factors such as the relative availability of goods and services.
Cost includes estimated capital and annual O&M costs as well as present worth cost. Present worth cost is the total cost of an alternative over time in terms of today's dollar value. Cost estimates are expected to be accurate within a range of +50 to -30 percent.
State Acceptance considers whether the State agrees with the recommendations as described in the RI/FFS and this proposed plan.
Community Acceptance considers whether the local community agrees with the analyses and the Preferred Alternative. Comments received during the public comment period for this proposed plan are an important indicator of community acceptance.

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tion Alternative does not lower the identified risk, whereas the Capping Alternative minimizes birds' exposure to the lead contaminated soil. While the No Further Action Alternative does not take action to lower risks to birds, it does have the benefit of not disrupting the existing habitat.

Many other species of wildlife also use the habitat that would be destroyed during construction of the Capping Alternative. In addition, the Capping Alternative would permanently eliminate some of the habitat because a third of the remediation area would be capped with armor stone due to the steep slopes.

Compliance with Applicable or Relevant and Appropriate Requirements

There are no chemical, location, or action specific ARARs directly applicable to the protection of wildlife.

Long-Term Effectiveness and Permanence

The No Further Action Alternative would not lower potential impacts to individual birds from exposure to soil contaminants. Based on the BERA modeling, the Capping Alternative would provide long-term reduction of risk to birds and, with operation and maintenance efforts, provide a permanent solution.

Reduction of Toxicity, Mobility, or Volume of Contaminants through Treatment

None of the alternatives include treatment.

Short-Term Effectiveness

As a consequence of the Capping Alternative, habitat for the affected species and for all wildlife would be lost in the short-term. There is currently a mature stand of trees in the EA-2 area and it is estimated that it would take 15 to 30 years for the habitat area that is destroyed to be completely restored. In addition, the Capping Alternative would eliminate a third of the prime maple habitat due to the steep slopes that would be capped with rock. The No Further Action Alternative would leave a potential for exposure to soil contaminants.

Implementability

Capping of a limited area in EA-2 would involve some construction difficulties, but other remedial measures taken at the site have shown capping on steep slopes to be achievable. Material for construction of the cap is not currently available locally, which will increase difficulty and cost. Depending on vegetation type, revegetation/habitat restoration could take from 15 to 30 years to accomplish.

No Further Action does not require implementation.

Cost

The following summarizes the capital, operation, and maintenance costs (30-year) for the different alternatives. It is recognized that statutory 5-year review of the project will be required

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under each alternative. The cost for 5-year review of OU4 is not included.

SUMMARY OF ESTIMATED COSTS

- **No Further Action Alternative**
  - Capital Cost: $0
  - Operation and Maintenance Cost: $0
- **Capping Alternative**
  - Capital Cost: $2.3M
  - Operation and Maintenance Cost: $96,000

State Acceptance

The State of Utah supports the Preferred Alternative.

Community Acceptance

Community acceptance of the Preferred Alternative will be evaluated after the public comment period ends and will be described in the ROD for OU4.

Summary of the Preferred Alternative

EPA studied the impact of historical mining activities to groundwater and surface water and based on the data collected, it is proposing the following actions for the protection of human health:

1. For groundwater, EPA is recommending No Further Action be taken.

EPA's recommendation is based on the lack of evidence showing any metals in the groundwater that exceed the MCLs or ALs.

2. For surface water, EPA is recommending No Further Action be taken.

EPA's recommendation is based on the lack of evidence showing any metals in the surface water that exceed the State's water quality standards.

3. For ecological risks, EPA is recommending "No Further Action" as the preferred alternative at OU4.

EPA's preference for the No Further Action Alternative is based on several factors:

- the limited population of at-risk wildlife observed using the contaminated site areas
- EPA's conclusion that population level risks were acceptable
- the difficulty and cost associated with capping and restoring the prime maple vegetation in areas that are currently vegetated
- the presence and use by co-existing species assumed to use the same habitat that are not at risk

While this option does not take action to lower risks to the small population of birds that are potentially at risk, it does have the benefit of not disrupting the existing habitat. EPA believes that based on the site-specific characteristics and populations using this site, the harm of disrupting the habitat being used by many other animals outweighs the benefit that would be gained for the small population of American Robins and similar species. Destruction of habitat areas that support these bird species to remove the contamination would not enhance the sustainability of the American Robin and Brewer's Sparrow populations and thus would not meet the Remedial Action Objective.

Community Participation

EPA is requesting that the public comment on the recommendations for No Further Action for the groundwater, surface water and ecological risk presented above. Formal comments on this proposed plan can be submitted during the public comment period or at the public meeting.

The 30-day public comment period is being held from:

Monday, April 4, 2011 through Tuesday, May 3, 2011

Please note that comments received outside of the public comment period are considered informal and may not receive a response. Comments may also be provided during the public meeting that will be held at from 6:00 to 7:00 p.m. on:

Monday, April 11, 2011 at the Eureka City Hall at 15 N Church St in Eureka, Utah.

EPA and the regulatory agencies will consider all formal comments prior to making a final decision for OU4. All comments and responses will be documented in the *Responsiveness Summary*, which will be part of the official record and published in the Record of Decision. Copies of the Responsiveness Summary will be mailed to anyone who submits a formal comment. In addition, EPA will announce the decision through the local media and on the EPA website.

Interested parties may submit comments in several ways:

Mail written comments to:

Paula Schmittdiel
U.S. Environmental Protection Agency, Region 8

(Continued on page 13)

(Continued from page 12)

1595 Wynkoop Street
Denver, Colorado 80202-1129
Mail Code: 8EPR-SR2

Fax written comments to:

Paula Schmittdiel at 303-312-7151

E-mail comments to:

Schmittdiel.Paula@epamail.epa.gov

Offer verbal comments during the public meeting on Monday, April 11, 2011.

Points of Contact

EPA

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List of Acronyms

AL	Action Level
ARARs	Applicable or Relevant and Appropriate Requirements
BERA	Baseline Ecological Risk Assessment
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
COC	contaminant of concern
EA	Exposure Area
EPA	Environmental Protection Agency
FFS	Focused Feasibility Study
GW/SW RI	Groundwater / Surface Water Remedial Investigation Report
MCL	Federal Maximum Contaminant Level
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NPL	National Priorities List
O&M	Estimated Total Operation and Maintenance
OU	Operable Unit
ppm	parts per million
RA	Remedial Action
RAO	Remedial Action Objective
RD	Remedial Design
RI	Remedial Investigation
ROD	Record of Decision
UDEQ	Utah Department of Environmental Quality