CITY OF SOUTH JORDAN
GRAMA Record Request
Fax: 801-254-3393

SOUTH JORDAN UTAH

The following form should be completely filled out and returned to the City Recorder's office. The City is allowed 10 business days in which to respond to your request. Presently, South Jordan City Charges .25¢ per page. The City may assess other fees for records compiled in a form other than that maintained. Research or Services Fee may be charged as provided by Utah Code 63G-2-203.

Requestor's Name: Dee Torres

Address: [redacted] City: Pleasant View

State: Ut Zip: 84414 Daytime Phone: [redacted] Fax: _____

In accordance with the **G**overnmental **R**ecords **A**ccess **M**anagement **A**ct, I am seeking the following record(s) **specifically described as:**

We are in the process of purchasing a home at 4353 W. Lennox Dr. South Jordan
We are requesting any documents that include this address and surrounding area associated with the EPA Kennecott Cleanup for Bingham Creek that would affect the home and property of 4353 W Lennox drive
We would also like to see documents about building permits associated with this home.
We have EPA files but need direct information about this address

which I believe are collected, filed and/or used by the City of South Jordan, 1600 W. Towne Center Drive, South Jordan, Utah 84095 (801) 254-3742.

X I would like to view/inspect the record(s).

_____ I would like to receive a copy of the record(s) described above. I understand that the City charges a fee for copies of records and the copies will be provided subject to fees being paid. I authorize cost of up to $_____. If costs are greater than the amount I have specified, I further understand that the office will contact me and will not respond to a request for copies if I have not authorized adequate costs.

Dee Torres
Signature

2/26/14
Date

==========

CITY'S RESPONSE TO RECORD REQUEST – FOR OFFICE USE ONLY

✓ APPROVED – Requestor notified on Feb 28, 2014

_____ DENIED – Written denial sent on _____, 20 ___

_____ Requestor notified that this office does not maintain record; and, if known, was also notified of name and address of agency that does maintain record on _____, 20 ___

_____ Extension of time for extraordinary circumstances. Required notice sent _____, 20 ___

COPY FEES: $ 25.00. ~~If waived,~~ approved by: Anna West

RECEIVED
MAY 22 1996
ENGINEER DIVISION

BINGHAM CREEK CHANNEL SITE

PHASE II SITE

REMOVAL ACTION

KENNECOTT PROPERTY LINE TO REDWOOD ROAD

(PLUS PROPERTY AT NORTHWEST CORNER

OF 3200 WEST AND 9000 SOUTH)

SITE NO. T4

Submitted By:

Kennecott

JUNE, 1993

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1.0 INTRODUCTION

This work plan is submitted to comply with requirements in Section VIII of the Unilateral Administrative Order for Removal Action (UAO), Docket No. CERCLA VIII-93-10 for Bingham Creek Channel Phase II, SSID #T4, including its attached Statement of Work. The waste material which is the subject of this UAO is exempt from designation as hazardous waste under the Bevill amendment. In addition, the court has recently ruled in the Iron Mountain case *(United States v. Iron Mountain Mines, Inc., Cov. No. S-91-768 MLS,* in the U. S. District Court for the Eastern District of California) that Bevill exempt waste is not subject to the requirements of CERCLA. Nevertheless, Kennecott Utah Copper (KUC) intends to proceed with the work described in and required by the UAO.

Bingham Creek originates in Bingham Canyon and was the primary drainage from the mining district in this area. Bingham Creek historically flowed east approximately 14 miles to the confluence with the Jordan River in Midvale, Utah. The Large Bingham Reservoir on Kennecott property (Section 17, Township 3 South, Range 2 West, Salt Lake Base and Meridian) now captures the head-water flow from the canyon. Bingham Creek Channel essentially begins at the east toe of the reservoir.

Kennecott and its contractors will be performing the excavation, transport, and placement of the mill tailings that are the subject of the Unilateral Administrative Order (UAO). The tailings will be placed in the Bluewater I Repository located on Kennecott property. Although Kennecott will perform the work necessary to satisfy the requirements of the UAO, ARCO will fund 50 percent of the work through payments made to Kennecott.

The following Work Plan details the removal action. Removal procedures, air monitoring methodologies (Appendix A), health and safety requirements (Appendix B) and soil sampling protocols (Appendix C) are consistent with those used during other removal actions conducted by KUC and at similar sites. **Potential applicable or relevant and appropriate requirements (ARARs) are outlined in Appendix D and will be adhered to on-site.** The removal action will be conducted during the 1993 construction season.

1.1 Site Summary

Bingham Creek Channel is predominantly a dry creek channel, except for water transported during run-off and storm events. Analytical results show values of lead and arsenic to 23,000 parts-per-million (ppm) and 890 ppm respectively. This Work Plan pertains only to the portion of Bingham Creek Channel between the Kennecott eastern property line and Brookside Trailer Park near Redwood Road (Dwg.No.453-T-173), and it also includes the property located at the northeast corner of 3200 West and 9000 South.

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Bingham Creek Channel meanders through residential areas, vacant/agricultural land, golf courses, parks, and commercial/industrial property to its discharge point at the Jordan River. The depositional characteristics of the tailings vary from west to east due to natural channel features.

1.1.1 *Tailings Deposits*

Tailings in the creek channel between the KUC-property boundary and the Jordan River are generally found in pockets on inside bends of the channel. Tailings in upper portions of the channel (investigated during sampling events) which appeared to be isolated, unconnected deposits on the insides of channel bends were nearly always continuous accumulations. The thin layers between large deposits had been covered with others soils subsequent to deposition.

The depth of tailings generally decreases east of the KUC property line. Thick deposits (2-4 feet) of tailings are found in deep, narrow portions of the channel. Thinner deposits (1-2 feet) of tailings are found where the channel broadens out and becomes relatively flat.

The tailings are usually yellow, fine-grained material. In several areas the tailings have been mixed with native soil and stream gravels giving the soils and gravels an uncharacteristic color and texture (brown-orange and tan). In most cases, the visual demarkation between tailings and the native soil is clearly identifiable.

On a visually guided basis, approximately 92,000 CY of tailings and contaminated soils have been identified for removal between the Kennecott property line and 3200 West. The volume of tailings to be excavated from 3200 West to Brookside Trailer Park is expected to be significantly less. The property at the northeast corner of 3200 West and 9000 South has an unknown quantity of tailings and soils above the EPA's selected lead cleanup concentration of 2000 ppm. Investigation in this area will continue during the 1993 construction season and if necessary, removal will be scheduled for the 1994 season.

2.0 SCOPE OF REMOVAL ACTION

Bingham Creek Channel has been divided into removal "Areas" from the KUC-property line near the brick plant to the Brookside Trailer Park. Ten Areas have been delineated along this reach of Bingham Creek based on major roads, logical access points, and channel characteristics, (Dwg.No.453-T-173) Section 6 of this Work Plan describes these areas in detail.

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The work to be completed under this Work Plan includes the excavation, transport, and placement of tailings and associated contaminated soils from the designated Areas in Bingham Creek Channel. The contaminated material will be placed in the Bluewater I repository on KUC Property. The Work Plan also allows essential field discretion for the EPA On-site coordinator (OSC) to adjust for site-specific circumstances.

2.1 Objective of Removal Action

The objective of this removal action is to remove visible tailings and associated contaminated soils from the identified Areas in Bingham Creek Channel between the KUC-property line and Brookside Trailer Park and the property at the northeast corner of 3200 West and 9000 South as required by the UAO.

The removal action will be conducted by dividing the creek channel into Areas to provide flexibility in scheduling, gaining access, and public notification. The following sections detail the removal action.

2.2 UAO Action Levels

Based on UAO requirements to remove materials with lead concentrations at or above 2,000 ppm or to depths generally not to exceed 3 ft. in the channel, tailings and contaminated soils will be removed on a visually guided basis, with a minimum amount of overexcavation, and placed in the repository. The lateral extent of soil removal will generally be limited to the channel banks and undeveloped flood plain. If any residential properties are included in these removal activities, 500 ppm lead and 18 inches maximum removal depth will be used as clean up criteria.

Post removal verification sampling will be conducted by KUC representatives. Following removal of the required amount of soil/tailings in a particular removal area, the post-removal sampling personnel will collect soil for laboratory analysis. Sampling procedures and protocols described in Appendix C will be followed. Once the laboratory analysis indicate the level of lead in soil is below 2000 ppm, the removal area will be designated "clean". If the analytical results indicate soil lead levels exceed the clean up level, additional soils will be removed and the channel will be re-sampled. If the maximum removal depth of three feet is reached and soil lead concentrations still exceed 2000 ppm (or visual tailings are evident), Kennecott will remove additional material or recontour the area.

If there are any areas in the channel where the full three feet of tailings are not removed (deeper than three feet), Kennecott will document the lateral extent of the tailings and submit the data to the EPA and the City of West Jordan. Due to the channel grade control and amount of clean soil cover

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being used, no long term operation and maintenance requirements are anticipated for the channel (other than verification that the re-vegetation efforts were successful).

Vegetation which does not interfere with removal procedures or vehicle traffic will not be removed. The channel will be regraded with clean fill from either the banks of the channel and/or from a clean borrow source. The post removal sampling grid will include the channel banks. The analytical results will then indicate soil lead levels (including channel banks) and determine if the side slope material is appropriate for fill.

2.3 Removal Procedures

The lead tailings will be removed using appropriate excavation and transport equipment depending the characteristics of the channel and material deposition. Property access agreements will be secured by KUC prior to any work implementation.

Following removal activities, containment berms and/or siltation dams will be constructed, if necessary, at the boundaries of areas where excavation has already occurred and contaminated areas to prevent cross contamination. Placement of these items will be evaluated on site as necessary.

2.3.1 *Types of Equipment*

Based on results from field investigations and related experience, a tracked excavator and a dozer will be appropriate for removing tailings from deep channel areas. Smaller-sized rubber-tire excavators may also be used to remove tailings in isolated and difficult access areas. The tracked excavator will be used to remove tailings and load haul trucks in the channel and a dozer will be employed to prepare the channel for truck traffic and build access ramps. The tracked excavator and dozer will be used to recontour channel slopes.

In areas where the channel and slopes become relatively flat, a dozer, loader, and excavator will be used to excavate and load material. Other equipment such as scrapers and motor graders may be employed to remove tailings in broad, flat areas, build and maintain haul roads, load stockpiled material, and build containment berms, as appropriate. Mass excavation techniques will be utilized when practicable.

Site specific conditions may allow more than one area of excavation to be managed concurrently. This opportunity will be evaluated once removal activities commence.

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2.3.2 *Recont :ring and Revegetation*

Prior to excavation activities in each Area, photos and/or video will be taken to document existing channel contours and flow lines. Grade control will be established by surveying a channel cross section every 200 linear feet (these cross section lines will coincide with the post-removal sampling grid). Existing culverts (inverts) will be surveyed for the affected length of the channel. This method and frequency will provide sufficient data for recontouring crews to re-establish channel grade.

The removal and re-contouring activities for the majority of the channel will leave the creek in a more-stable condition. The channel banks in many areas are currently steep and un-vegetated. There are several areas in the channel where water ponds and flow is essentially stopped indicating a naturally varying flow line (channel grade). While it is the intention of the field crew to leave the channel side slopes and grade in suitable conditions, over time those conditions will be altered by natural erosional forces. When the natural slope is disturbed to remove tailings, it will be recontoured at a slope no steeper than 1.5H:1V. Natural slopes that are steeper than 1.5H:1V and are not disturbed during the removal action will be left as found. Fill material for recontouring the channel can be removed from both slopes in places, but limited import material may be necessary.

Appropriate channel geometry along with grade control will be used to minimize erosion on both the channel slopes and bottom. Following re-contouring and re-grading, the soil will be scarified six to eight inches. The area will be re-seeded and fertilized using the following:

- Western Wheatgrass 5.0 pounds/acre (p/a)
- Thick Spice Wheatgrass 4.0 p/a
- Slender Wheatgrass 4.0 p/a
- Streambank Wheatgrass 4.0 p/a
- Desert Marigold 1.5 p/a
- California Poppy 1.5 p/a
- 16:8:8 (nitrogen:phosphorus:potassium) mix fertilizer

The seed and fertilizer will be mixed with wood fiber mulch and a tackifier and applied using hydroseed techniques at a rate of 1500 p/a.

2.3.3 *Engineering Controls - Excavation and Loading Area*

Engineering controls, such as water application before and during excavation and loading will ensure that both occupational exposures and airborne emissions from the

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work zone are below accepted levels for total suspended particulate (TSP), lead, and arsenic. The action levels for lead and arsenic are 30 ug/m3 and five ug/m3, respectively. The Permissible Exposure Limit (PEL) for TSP is 15,000 ug/m3. Additional engineering controls will be employed as necessary.

Air samples will be collected and analyzed according to the Sampling and Analysis Plan included in Appendix A.

2.4 Personal Protection

A site-specific Health and Safety Plan (HASP) has been prepared for this project based on available information from all investigative activities completed to date. The plan (Appendix B) names key project personnel and describes physical and chemical hazards believed to be present, training required for workers, personal protective equipment, the medical monitoring program, air monitoring, work zone delineation and security, decontamination procedures, and general safe work practices.

Level D personal protective equipment (basic OSHA construction safety equipment) will be appropriate for all workers engaged in excavation, transportation, and repository activities. Personal protective equipment will be upgraded based on results from air monitoring, if necessary.

3.0 TRANSPORT PROCEDURES

Tailings will be hauled from loading areas (within the designated Area) to the repository using appropriate haulage trucks. The size of haul trucks may vary due to space limitations at the loading areas and repository or other site access requirements.

Excavated material that is not directly hauled to the repository will be transported to and stockpiled in a loading zone. Once a sufficient amount of material has been stockpiled, it will be loaded and hauled to the repository. Stockpiles will be maintained to prevent wind and water erosion prior to loading. Haul trucks will be tarped from the loading zone to the repository to control potential release of contaminants.

3.1 Types of Equipment

Trucks with capacities of roughly 10 to 12 CY will be used to transport excavated material from the channel to the loading zone for temporary storage. The small end-dumps are capable of maneuvering throughout the channel and channel haul roads. These units will back to the loading equipment, load, and haul excavated material out through the unexcavated channel bottom. The end dumps will exit the channel using earthen ramps onto the unpaved haul road. Ramps will be constructed as required to maximize the efficiency of the operation and will be

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removed wh the operation is compl ed. As conditions dictate, the size and types of equipment may be modified to match channel conditions

A broad, flat depositional environment is one in which large transports (capacities of 15 to 20 CY) can maneuver and be directly loaded. Direct loading will increase efficiency and eliminate stockpiling material. The transports will have secured gates and will be tarped.

3.2 Staging Areas

Excavated material from Bingham Creek Channel will be transported to and stockpiled in staging areas as necessary (reference Dwg. No.453-T-174 to 179 and 451-T-182 to 185, and Sections 6.1 to 6.10). Once a sufficient amount of material has been stockpiled, it will be reloaded into larger transports and hauled to the repository. Staging areas include both the temporary stockpiles and decontamination zones. Staging areas will be used to minimize transport traffic into and out of the work zones, avoiding the spreading of contaminated material. The staging areas will also serve as a controlled zone for decontamination facilities and a general maintenance area.

The staging areas will be decontaminated, if necessary, after operations are completed by removing the top two-to-four inches of soil. This soil will be hauled to the repository along with the other excavated material.

3.3 Haul Routes

Excavated tailings will be transported to the repository on KUC property using the network of haul roads presented on Dwg. No.453-T-173. The designated haul routes include unpaved haul roads from excavated portions of the channel to staging areas, and public roads from staging areas to the repository. Public road weight limits will be adhered to and drivers will be trained in aspects of transporting over public roads. All haul roads in the designated Areas will have berms on both sides to contain any spillage that may occur. Once removal activities are complete for an Area, unpaved haul roads will be decontaminated by removing spillage, if present. This material will be transported to the repository.

3.4 Decontamination Procedures

Haul trucks leaving the loading zone and repository will be inspected prior to travel over haul roads. Removal crews will be responsible for physically removing soil deposits or spillage from the vehicle with brushes or brooms. Other machinery will be similarly decontaminated upon completion of activities in each designated Area. Decontamination equipment will be maintained in the temporary staging area. Soils collected from decontamination procedures will be placed in the repository.

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Haul roads will be decontaminated as described above. A visual inspection of the haul roads will be conducted prior to cessation of the removal activities. Decontamination will consist of removing any material that may have spilled enroute. This material will be disposed in the repository.

3.5 Engineering Controls - Haul Routes and Staging Areas

Water spray on haul roads and tarped haul trucks will be the only engineering controls required for airborne emissions. Frequent air monitoring will be conducted to document airborne emissions from the designated Area and to determine the need for additional control measures.

3.6 Emergency Spill Contingency Plan

Any accidental spills of contaminated material that may occur during transportation will be responded to by Kennecott. The following measures will be implemented:

- All truck transports will be equipped with radios to notify the Kennecott project coordinators in the event of an accidental spill.

- Appropriate equipment will be available from the removal site to respond to any emergency spill situations.

4.0 REPOSITORY LOCATION

The Bluewater I Repository is located in Bluewater I drainage basin between two ridge tops within a natural draw. It occupies an area of approximately 63 acres, all contained within Kennecott's present leach collection system. The Repository is identified as two sections, Bluewater I North occupying approximately 20 acres, and Bluewater I South occupying approximately 43 acres. Dirt haul roads provide access to the repository.

4.1 Description

Based on EPA's estimates, the repository will receive approximately 92,000 CY of tailings and associated contaminated soils from the area between 4800 West and 3200 West. It is anticipated that the soils removed for this project during the 1993 construction season will be placed in Bluewater I North Repository. Placement of the clay liner has been completed for this section of the Repository. The Bluewater I South section of the Repository will be constructed in a similar manner.

Prior to disposal of contaminated soil in the repository, the surface was prepared by compacting existing soil and subsequently placing 12" of clay. The clay was placed in two 6" (minimum) compacted lifts to a minimum of 90% relative compaction to achieve a minimum permeability of 10×10^{-7} cm/sec. The previously developed and permitted quality

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assurance ogram will be used to sure liner and cap integrity.

A seepage collection drain system was installed in the low points of the natural drainage. The drain system consists of 3/4" minus washed gravel surrounding 4" and 6" diameter perforated HDPE collection pipe underlain and overlain with a pervious geotextile filter fabric. The seepage collection drain system runs the center length of the repository to a 6" diameter non-perforated HDPE pipe line that will carry seepage water to a concrete inspection box located adjacent to Bluewater I lined canal. The seepage collection concrete inspection box will be provided with the capability for flow measurement. This box will be located adjacent to and discharge into the Kennecott leach collection system.

The contaminated soils will be deposited, graded and compacted in 8" lifts (to a minimum of 90% relative compaction) over the clay liner and drain system.

When all of the soils have been removed from the cleanup areas or the weather dictates termination of the construction work, the portion of the Repository completed to designed tailings elevation will be capped. The Repository cap will consist of low permeability clay compacted in two lifts to a minimum of 12" total thickness to provide a moisture barrier cap. The moisture barrier will be covered with an additional layer of 34" of clayey soil compacted in 8" lifts to a minimum 90% relative compaction, designed to achieve a permeability of 10 x 10^{-5} cm/sec.

An 8" layer of locally-sourced topsoil will be placed on top of the cap materials and subsequently vegetated with native grasses.

Storm water runoff from the cap and basin flanks will be collected and diverted into a drainage ditch located around the perimeter of the repository. The surface water will be released downslope of the repository into the natural drainage.

Kennecott will provide EPA with a report that describes the "as-built" construction details after the repository is completed.

4.2 Air Monitoring

Air monitoring at the repository will be conducted by Kennecott to assess levels of airborne arsenic, lead (as indicator metals), and TSP. Quantitative air monitoring will be conducted to document repository personnel exposure levels using appropriate monitoring equipment.

Samples of ambient air at the perimeter of work zones will occasionally be collected during excavation and repository work activities.

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4.3 Decontamination Procedures

See Section 3.4.

4.4 Engineering Controls

See Sections 2.3.3 and 3.5.

4.5 Emergency Spill Contingency Plan

See Section 3.6.

4.6 Personal Protection

See Section 2.4.

5.0 REPOSITORY OPERATIONS AND MAINTENANCE

After the tailings and contaminated soils have been placed and the repository has been capped, the repository will be monitored and maintained as required by Kennecott's Ground Water Discharge Permit # UGW350002. The seepage collection system and surface water diversion system will be inspected regularly. The systems will be cleaned and maintained to ensure their integrity. The repository cap will be inspected for structural defects on the same frequency. Vegetation will be observed at each inspection and repaired or maintained as necessary. If liquid is detected in the seepage collection sump during an inspection, it will be sampled and analyzed for total lead and total arsenic. Sampling and analytical procedures will follow EPA guidelines. If contaminated seepage from the seepage collection system is confirmed, inspection frequency will be increased. If flow subsides, the inspection frequency will correspondingly be reduced. If flow continues to indicate a problem, a plan for corrective measures will be developed.

6.0 AREA DESCRIPTIONS

Bingham Creek Channel has been divided into Areas from the Kennecott Eastern property line to the Brookside Trailer Park. The following sections describe the Area boundaries, staging areas, and haul routes. Site security will be established for each Area and will correspond to the work zone boundaries.

6.1 Area A

Area A is bounded to the west by the Kennecott Eastern property line and to the east by Skye Drive, as shown on Dwg. No.453-T-174. The gravel plant is also included in this Area, but due to historic gravel mining operations which have disturbed the channel, no tailings removal is anticipated along this reach of the channel. Residences line the entire north side of Bingham Creek Channel east of 4800 West while the south side borders Glenmoor Golf Course. The channel averages 10-20 feet in depth, is heavily vegetated along the south side, and has sporadic vegetation along the north bank.

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There has been approximately 11,524 CY of tailings estimated on a visually guided basis in this area. Fill material for recontouring can be removed from the north bank of the channel with minimal disruption to existing vegetation. An attempt will be made to leave all existing vegetation undisturbed.

6.1.1 *Area A Delineation*

Area A will be delineated by lighted barricades and signs approximately 20-30 feet south of the channel and 60-80 feet to the north as shown on the drawing. Area A will include the haul roads and staging area at 4800 West and extend to Skye Drive. The Area may be adjusted in the field to best accommodate removal activities.

6.1.2 *Staging Area*

The staging area for Area A is located directly south of where Bingham Creek Channel crosses 4800 West. South of the stockpile area will be a zone for inspecting and, if necessary, decontaminating trucks before leaving for the repository.

6.1.3 *Haul Routes*

The haul road for most of Area A will be approximately 60 feet north of, and parallel to, the center of Bingham Creek Channel. Where lack of available space prevents use of the north side, the channel bottom will serve as the haul road. Ramps will be constructed to access the channel bottom from the haul road. At the west end of the area the haul road will cross the unpaved section of 4800 West and turn south for approximately 600 feet to the staging area. The haul route to the KUC repository from the staging area will proceed through the adjacent gravel plant to Old Bingham Highway.

6.2 Area B

Area B is bounded on the west by Skye Drive and on the east by 4000 West as shown on Dwg.No.453-T-175. The north side of the channel is lined with residences for approximately 500 feet on the west end of the unit while the remaining north side is agricultural land and vacant lots. Glenmoor Golf Course and agricultural land are present on the south side of the channel to Laurel Ridge Road. From Laurel Ridge Road to 4000 West, residences are present along the south side of the channel. Throughout Area B, the channel is approximately 10-20 feet deep, the north slope of the channel is sporadically vegetated and the south slope supports thick vegetation. There has been approximately 27,120 CY of tailings estimated on a visually guided basis in this area. Fill material for recontouring can be removed from the north slope of the channel and adjacent fields with minimal disruption of vegetation.

6.2.1 *Area B Delineation*

Area B will be delineated by lighted barricades and signs approximately 20-30 feet south of the channel and 100-200

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feet north of the channel. Area B will extend from Skye Drive to 4000 West including the haul roads and staging area. Area B may be adjusted in the field to best accommodate removal activities.

6.2.2 *Staging Area*

The staging area for Area B is located north of the channel opposite Laurel Ridge Road which intersects Bingham Creek Channel, as shown on the drawing. Northwest of the stockpile area will be a zone for inspecting and decontaminating trucks, if necessary, before leaving the staging area.

6.2.3 *Haul Routes*

The haul road for Area B will be on the north side of the channel, approximately 80-100 feet from the center of the channel. An existing unpaved road on the north side (with minor improvements) will serve as the haul road. Several access ramps will be constructed throughout Area B. A temporary canal crossing will be constructed over the Provo Reservoir Canal at the east end of Area B. Subject to receiving permission from the land owner, an alternate haul road could be constructed along the fence line between Section 6 and 7 (T.3.S., R.1.W.) leading to Old Bingham Highway.

6.3 Area C

Area C is bounded on the west by 4000 West and on the east by 3710 West as shown on Dwg.No.453-T-176. The south side and western half of the north side of the channel are lined with residences while the remaining north side consists of agricultural land. A public park approximately 700 feet long exists at the east end of Area C, near 3710 West (visible tailings are not present here). The park will be investigated at the time of removal for this Area and tailings with lead concentrations above the cleanup levels will be removed if encountered. Throughout Area C, the channel is approximately 10-15 feet deep and both slopes are sporadically vegetated except for the western end of the south slope, which is heavily vegetated. There has been approximately 4742 CY of tailings estimated on a visually guided basis in this area. Fill material for recontouring the channel can be removed from the north slope with minimal disruption of vegetation. If tailings are removed from the park, fill material will be places and re-vegetated.

6.3.1 *Area C Delineation*

Area C will be delineated by lighted barricades and signs approximately 20-30 feet south of the channel and 50-60 feet north of the channel. Area C will extend from 4000 West to the western boundary of the City of West Jordan Park, including the haul roads and staging area. Area C may be adjusted in the field to best accommodate removal activities.

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6.3.2 *Staging Area*

The staging area is located near the approximate center of Area C as shown on the drawing. Northwest of the stockpile area will be a zone for inspecting and, if necessary, decontaminating trucks before leaving for the repository.

6.3.3 *Haul Routes*

The haul road for Area C will be on the north side of the channel, approximately 40-60 feet from the center of the channel. Where lack of available space prevents use of the north side, the channel bottom will serve as the haul road. Several access ramps will be constructed throughout Area C. The main haul road to the KUC repository will exit the staging area to the west and intersect 4000 West approximately 350 feet north of the channel.

6.4 Area D

Area D is bounded on the west by 3710 West and on the east by 9000 South as shown on Dwg. No.453-T-177. The entire north side and the western-most 300 feet of the south side of the channel in Area D are residential. The remainder of the south side is vacant lots. Throughout Area D, the channel is approximately 10-15 feet deep and both slopes are sporadically vegetated. There has been approximately 8714 CY of tailings estimated on a visually guided basis in this area. Fill material for recontouring the channel can be removed from both slopes in places, but imported material may be necessary.

6.4.1 *Area D Delineation*

Area D will be delineated by lighted barricades and signs approximately 20-30 feet north of the channel and 30-40 feet south of the channel. Area D will extend from 3710 West to 9000 South, and will include the haul roads and staging area. Area D may be adjusted in the field to best accommodate removal activities.

6.4.2 *Staging Area*

The staging area for is located 650 feet west of 9000 South, at the approximate center of Area D as shown on the drawing. East of the stockpile area will be a zone for inspecting and, if necessary, decontaminating trucks before leaving for the repository.

6.4.3 *Haul Routes*

The haul road for Area D will be on the south side of the channel, approximately 10-20 feet from the center of the channel. Where lack of available space prevents use of the north side, the channel bottom will serve as the haul road. Several access ramps will be constructed

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throu[illegible]ut Area D, approximately 2 -250 feet apart. The main haul road to the KUC repository will exit the decontamination zone to the east and intersect 9000 South approximately 150 feet south of the channel.

6.5 Area E

Area E is bounded on the southwest by 9000 South and on the east by Utah Lake Distributing Canal, as shown on Dwg.No.453-T-178. The entire north side of the channel is bordered by vacant land owned by Holy Cross Hospital while the south side of the channel is agricultural and vacant land. Approximately 12,000 CY of tailings and soil on Holy Cross Hospital property were excavated during the 1992 construction season. That excavation was governed by a separate work plan approved by the EPA.

The east portion of the channel is broad and in some areas, difficult to distinguish. The present owner has stated that fill material was placed in the channel to level the property. No tailings are visible in the east one-third of the channel in Area E. There have been approximately 3600 CY of tailings estimated for removal remaining in the east portion of Area E. Imported material may be necessary for recontouring the remaining portion of Area E.

6.5.1 *Area E Delineation*

Area E will be delineated by lighted barricades and signs approximately 30-40 feet north of the channel and 20-30 feet south of the channel. Area E will extend from 9000 South to the Utah Lake Distributing Canal, and will include the haul roads and staging area. Area E may be adjusted in the field to best accommodate removal activities.

6.5.2 *Staging Area*

The staging area for Area E is located 500 feet east of 9000 South as shown on the drawing. West of the stockpile area will be a zone for inspecting and, if necessary, decontaminating trucks before leaving the staging area for the repository.

6.5.3 *Haul Routes*

The haul road for Area E will be on the north side of the channel, approximately 10-20 feet from the center of the channel. Where lack of available space prevents use of the north side, the channel bottom will serve as the haul road. Several access ramps will be constructed throughout Area E. The main haul road to the KUC repository will exit the decontamination zone to the west and intersect 9000 South approximately 50 feet north of the channel.

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6.6 Area F

Area F is bounded on the west by the Utah Lake Distributing Canal and on the east by the beginning of Bingham Creek Ditch, as shown on Dwg.No.453-T-179. This portion of the channel is the beginning of the Delta Area (characterized by wide deposition of tailings). The channel in Area F is entirely bordered by vacant land. Throughout Area F, the channel is approximately three to five feet deep and sparsely vegetated. There has been approximately 24,300 CY of tailings estimated on a visually guided bases in this area. Fill material for recontouring the channel may be removed from adjacent vacant land or, if necessary, imported.

6.6.1 *Area F Delineation*

Area F will be delineated by lighted barricades and signs approximately 150-200 feet north of the channel and 75-200 feet south of the channel. Area F will extend from the Utah Lake Distribution Canal to Bingham Creek Ditch, and will include the haul roads and staging area. Area F may be adjusted in the field to best accommodate removal activities.

6.6.2 *Staging Area*

The staging area for Area F is located 650 feet east of Utah Lake Distribution Canal as shown on the drawing. North of the stockpile area will be a zone for inspecting and, if necessary, decontaminating trucks before leaving the staging area for the repository.

6.6.3 *Haul Routes*

The haul road for Area F will be on the north side of the channel, approximately 10-20 feet from the center of the channel. Where lack of available space prevents use of the north side, the channel bottom will serve as the haul road. Several access ramps will be constructed throughout Area F. The main haul road to the KUC repository will exit the decontamination zone to the north and parallel the Utah Lake Distribution Canal where it intersects 9000 South.

6.7 Area G

Area G is another nonresidential portion of the Delta Area. This area is referenced to as the Milton Rigby/Ireco property and it is bounded on the east by the Utah Lake Distributing Canal, on the north by D & RGW railway bed, and on the south by 8600 South, as shown on Dwg. No. 453-T-182. This portion of the channel is characterized by braided deposition and unknown tailings depth. Throughout Area G, there is no distinct channel and the area is sparsely vegetated. There has been approximately 17,200 CY of tailings estimated on a visually guided basis in this area. Fill material for recontouring Area G, if required, will be imported.

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6.7.1 *Area G Delineation*

Area G will be delineated as shown on the drawing by lighted barricades and signs placed along the work zone boundaries. Area G will include the haul roads and staging area. Area G may be adjusted in the field to best accommodate removal activities.

6.7.2 *Staging Area*

The location of the staging area for Area G, including a decontamination zone will change as the location of the excavation changes. The decontamination zone will be located where transports exit onto 8600 South.

6.7.3 *Haul Routes*

The tailings in Area G will be excavated and transported to the staging area using 10-12 CY transports. Because Area G is relatively flat, haul roads will be constructed where they will maximize efficiency. Larger transports will then haul stockpiled material to the repository. The transports will be inspected and, if necessary, decontaminated before leaving the work zone onto 8600 South.

6.8 Area H

Area H is another non-residential, 9.2 acre lot on the northeast corner of 9000 South and 3200 West, as shown on Dwg. No. 453-T-183. This property is relatively flat and no visible tailings are evident. This property is outside the channel and the area is sparsely vegetated. There has been approximately 7,200 CY of estimated for removal.

6.8.1 *Area H Delineation*

Area H will be delineated as shown on the drawing by lighted barricades and signs placed along the work zone boundaries. Area H will include the haul roads and staging area. Area H may be adjusted in the field to best accommodate removal activities.

6.8.2 *Staging Area*

The location of the staging area for Area H, including a decontamination zone will change as the location of the excavation changes. The decontamination zone and main staging area will be located where transports exit onto 9000 South.

6.8.3 *Haul Routes*

The contaminated soils in Area H will be excavated and/or "wind rowed" and transported to the staging area using scrapers. The material may also be directly loaded from wind rows into transports. The most efficient method of excavating and loading tailings from this Area will be evaluated on site. Because Area H is relatively flat,

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haul r ds will be constructed wh : they will maximize efficiency. Larger transports will then haul stockpiled material to the repository. The transports will be inspected and, if necessary, decontaminated before leaving the work zone to 9000 South.

6.9 Area I

Area I is bounded on the west by 2700 West and on the east by 2200 West as shown on Dwg.No.453-T-184. The north side of the channel in Area I is bordered by private residences, an LDS church, and vacant lots for the western most two-thirds of channel. The south side of the channel borders the Mountain View Golf Course for the western most two-thirds of the channel. The eastern two-thirds of the channel in Area I has been filled and the Vista Montana Phase 1 subdivision was constructed. A bare field adjacent to 2200 West owned by the City of West Jordan has been used as a dump, and the channel is difficult to demarcate in this area. Non-mining wastes that may be present in this dump are not the subject of the UAO, and will not be removed. Throughout Area I, the channel is approximately five to ten feet deep and both slopes are sporadically vegetated. There has been approximately 3280 CY of tailings estimated for removal in this area. Fill material for recontouring the channel can be removed from both slopes and adjacent fields in places, but imported material may be necessary.

6.9.1 *Area I Delineation*

Area I will be delineated by lighted barricades and signs approximately 20-30 feet to the north and south sides of the channel. Area I will extend from 2700 West to 2200 West, and will include the haul roads and staging areas. Area I may be adjusted in the field to best accommodate removal activities.

6.9.2 *Staging Area*

Several staging areas for this Area will best facilitate removal crews and provide minimal disruption to the public and properties. The staging areas currently anticipated are planned as shown on the drawing. The staging areas will provide zones for loading stockpiled material and a zone for inspecting and, if necessary, decontaminating trucks before leaving for the repository.

6.9.3 *Haul Routes*

The haul roads for Area I will be on the north side of the channel, approximately 10-20 feet from the center of the channel. Where lack of available space prevents use of the north side, the channel bottom will serve as the haul road. Several access ramps will be constructed throughout Area I, approximately 200-250 feet apart. The haul road will exit the staging area to north and intersect 8410 South which will connect with the main haul route to the KUC repository.

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6.10 Area J

Area J is bounded on the west by 2200 West and on the east by Brookside Trailer Park as shown on Dwg.No.453-T-185. The western half of the channel in Area J is bordered by vacant properties on both the north and south sides. The eastern half of the channel is bordered by vacant and residential properties on the north and south sides. Throughout Area J, the channel is approximately five to fifteen feet deep and both slopes are sporadically vegetated. The channel throughout the trailer park is shallow and has grass banks (no tailings are visible). There has been approximately 3980 CY of tailings estimated for removal in this area. Fill material for recontouring the channel can be removed from both slopes and vacant lots in places, but imported material may be necessary.

6.10.1 *Area J Delineation*

Area J will be delineated by lighted barricades and signs approximately 20-30 feet north and south of the channel. Area J will extend from 2200 West to Redwood Road, and will include the haul roads and staging areas. Area J may be adjusted in the field to best accommodate removal activities.

6.10.2 *Staging Area*

Two staging areas will best accommodate removal crews in Area J. One staging area will be located in the approximate center of the western half of the area and another in the approximate center of the eastern half as shown on the drawing. The staging area will contain a stockpile area and a zone for inspecting and, if necessary, decontaminating trucks before leaving for the repository.

6.10.3 *Haul Routes*

The haul road for Area J will be on the north side of the channel, approximately 10-20 feet from the center of the channel. Where lack of available space prevents use of the north side, the channel bottom or the south side will serve as the haul road. Several access ramps will be constructed throughout Area J, approximately 200-250 feet apart. The haul road for the western half of the channel will exit the decontamination zone to the north and intersect 8410 South. The haul road for the eastern half of the channel will exit the decontamination zone to the south and intersect 8200 South. These haul roads will connect with the main haul road network to the Kennecott repository.

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7.0 SCHEDULE OF MAJOR MILESTONES FOR WORK PLAN

Submittal of Final Work Plan to EPA	June 10, 1993
EPA Review/Approval of Final Work Plan	June, 1993
Excavation/Haulage	Equipment will be made available for excavation and haulage of materials to the repository within two weeks of EPA approval of the Final Work Plan. Actual removal activities will commence, weather permitting, once necessary property access agreements are in place and any necessary public meetings have been conducted.

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APPENDIX A

AIR MONITORING AND ANALYSIS PLAN

A.1.0 INTRODUCTION

Kennecott Utah Copper will be conducting remediation and reclamation projects on its property and selected offsite properties. This air monitoring plan will be part of individual, site-specific work plans and presents the methodology to be used by Kennecott for conducting air sampling. If additional site-specific air monitoring information is required for a particular project, an addendum will be included with this plan.

Air monitoring samples will be collected at the excavation work zones, the repository, along haul roads, and for selected personnel to monitor for airborne emissions during material excavation, haulage and placement. The sampling will be conducted using hi-flow battery powered personnel sampling pumps and hi-volume ambient air pumps. Both of these pumps draw air through sampling media that is analyzed for the constituents of concern. The quantitative air sampling will be used to monitor employee exposures, work zone boundaries, and the repository (or other areas of placement). Miniature real-time aerosol monitors (Miniram) may be used when immediate results are needed for respirable dust.

The purpose of air monitoring is threefold:

- Document employee exposure, if any;
- Document work-zone and repository particulate emissions; and
- Evaluate the effectiveness of dust control methods.

A.1.1 BACKGROUND AIR SAMPLING PROCEDURES

Background air samples will be collected prior to any removal, hauling or placement activities. Previously collected data may serve as background data. The availability and useability of historical background data will be evaluated on a case-by-case basis. Hi-flow (2.0 L/min) and/or hi-volume (20.0 L/min) samples will be collected at the removal work zone and repository. The background samples will be used to determine a suitable reference data base for comparison with airborne particulate and metal concentrations measured during the project.

A.1.2 PERSONAL AIR SAMPLING PROCEDURES

Personal monitoring will be performed with hi-flow personal battery powered sampling pumps drawing air through sampling media following National Institute for Occupational Safety and Health (NIOSH) methodologies. The number of personal samples

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collected will be based on NIOSH recommendations and good industrial hygiene practice. Sampling procedures may be altered at the discretion of field sampling personnel as site-specific conditions warrant. NIOSH sampling results are quantitative and will be used to document work zone and repository air quality and potential worker exposures. MINIRAM monitors may be used to qualitatively measure personnel exposures.

A.1.3 WORK ZONE SAMPLING PROCEDURES

Air samples will be collected at the removal and placement work zones to determine particulate emission concentrations and document work zone air quality. The samples will be collected with both hi-flow and hi-volume (if necessary) sampling pumps drawing air through sampling media following National Institute for Occupational Safety and Health (NIOSH) methodologies. Sampling procedures may be altered at the discretion of field sampling personnel as site-specific conditions warrant. MINIRAM monitors may be used to qualitatively measure work zone and perimeter emissions.

A.2.0 AIR SAMPLING PROCEDURE

The following standard operating procedure (SOP) will be followed for all quantitative sampling conducted.

A.2.1 AIR SAMPLING SEQUENCE

The following procedures will be followed for all collected air samples.

1. Fill out logbook header at the beginning of the day;
2. Calibrate sampling pumps;
3. Connect filter cassette to pump, remove the inlet plug from filter cassette and turn on pump;
4. Document initial information about the individual samples and conditions in a field logbook, including calibrations, start times, locations and a map or diagram; and
5. Ensure required quality assurance field blank (1 per 10 samples) is opened and placed near a sampling pump (field blank) or a trip blank is carried during sampling routine.

At days end:

6. Turn off pumps, record stop time in field log, and plug cassettes;
7. Recalibrate pumps and record information in both the field logbook and the calibration documentation forms;

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8. Place the pumps on charge overnight;

9. Prepare chain of custody forms for all samples; and

10. Either securely store or, package and ship samples, including chain of custodies.

Sequence events are described in detail in the following sections.

A.2.2 LOGBOOK HEADER

An up-to-date sampling field notebook will be maintained by project personnel during all sampling activities. The general information recorded for each day's sampling includes:

- Date;
- Name of overall sampling event;
- Sampling personnel;
- Climatic conditions; and
- Equipment location and operating times.

Any other pertinent information will be recorded in the field notebook.

A.2.3 PUMP CALIBRATION

Air pumps will be calibrated on a quarterly basis using a graduated buret and a soap solution or other commercially accepted primary standard calibration device. With the first method, the pump is hooked up to an inverted buret, air is drawn through the open mouth of the buret, and a soap bubble is formed with a soap solution across the buret mouth. As the bubble is drawn up the buret across two pre-determined graduations, a stopwatch is used to record the elapsed time. From the graduated volume and elapsed time, the volume per time, or flow rate, can be calculated. The pump flow rate can then be adjusted as desired. Enter this calibration data on a calibration form as documentation. If a primary calibration device other than a buret is used, the pumps will be calibrated according to the manufacturers protocol.

Daily pump calibrations will be conducted using a secondary calibration device such as a rotometer. The rotometer must be calibrated against a primary standard. A calibration curve is then developed between the two standards.

A.2.4 LOGBOOK SAMPLE ENTRIES

Quality assurance and quality control (QA/QC) procedures for air sampling require completion of a sampling log. For each sample collected (including blanks), the field sample logbook and office logs must contain:

- Sample number;
- Sampling location;
- Start and stop calibrated air flows;

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- Average air flow;
- Start and stop time;
- Sampled volume;
- Sampling method (i.e. NIOSH);
- Field observations; and
- A map or diagram.

Significant deviations from sampling protocol shall be formally noted in the field log, along with visiting personnel and any unusual circumstances which might affect the sampling.

A.2.5 QC BLANKS

One QC blank should be submitted with each 10 samples (10%). The blanks are unsampled cassettes that are returned to the lab with the other samples as a test for contamination during sampling and transport. Quality control procedures are outline in following sections.

A.2.6 CASSETTE LABEL

To prevent sample misidentification, each sample cassette is affixed with a label. The following information will be recorded on the sample container:

- Date sample collected;
- Sampling pump identification number;
- Sample cassette number; and
- Chain-of-custody number.

A.2.7 CHAIN OF CUSTODY

To establish the documentation necessary to trace sample possession from the time of collection, a chain-of-custody record will be filled out for each sample and accompany every set of samples. The record will include the following:

- The project number;
- Air sample analysis request;
- Sample number;
- Flow rate;
- Length of sampling time;
- Signature of the collector;
- Sample date;
- Signature of person(s) involved in the chain of possession; and
- Time(s) and date(s) of change(s) of possession.

A.2.8 SAMPLE PACKAGING AND SHIPPING

Samples will be packaged in clean areas that are remote from potential contaminant sources. Packing material will be used to stabilize the cassettes during shipment, if necessary. Samples will be picked up, delivered or shipped for analysis once a sufficient amount of cassettes have been collected.

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A.2.9 ANALYTICAL METHODS

The air samples collected using NIOSH methods will generally be analyzed for lead and arsenic (as indicator metals), and total airborne dust (see Appendix B, section 3.2). Other sampling upon request may include silica, asbestos, other metals, or any other constituent of concern. Samples will be analyzed using NIOSH standard methods. Samples for total airborne dust will be collected using cassettes containing pre-weighed filters, and will be analyzed gravimetrically.

A.3.0 QUALITY ASSURANCE AND QUALITY CONTROL

The purpose of data quality assessment is to confirm that data generated during the QA program is accurate and consistent with program objectives. The quality of the data will be assessed based on accuracy and completeness. Accuracy is a determination of how close the measurement is to the true value and will be assessed by the cleanliness of blanks. Completeness is a measure of the amount of valid data obtained, compared to the amount that was expected under normal conditions. Ninety (90%) percent completeness is the goal of Kennecott air monitoring. The project data objectives for accuracy and completeness are consistent with guidelines established by NIOSH and OSHA.

A.3.1 SAMPLING CALIBRATIONS

Personal sampling pump flow will be calibrated following NIOSH protocol. The pumps will be calibrated at the beginning and end of sampling each day. The cassette used for pre-calibration will also be used for post-calibration. The two calibrations must be within 20% of each other or the day's sampling for that pump will be invalidated.

A.3.2 QC SAMPLES

Internal quality-control checks will be conducted to evaluate the quality of data based on field conditions and constraints. The field QA/QC program will be conducted in addition to laboratory QA/QC. The following quality-control checks will be performed:

- Field Blank - Opened but unsampled filter cassette placed near an active sampler. The cassette is closed and returned to the lab with the other samples as a test for contamination during sampling and transport.

- Trip Blank - Unopened cassette that is subject to the same handling as sampled cassettes. The trip blank is returned to the lab as a test for contamination during handling and/or prior to receiving the cassette from the lab.

The above internal QC samples will be evaluated to determine if the field and transport procedures are adequate to provide

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valid analytical data. One field blank or trip blank will be collected and analyzed for each 10 samples. The evaluation process for QC samples is outlined below.

A.3.3 DATA REDUCTION, VALIDATION AND REPORTING

All data will be reported in appropriate units. All raw data will be reviewed and validated against calibration records to ensure that data are reliable and that the data are in compliance with QA/QC objectives. Upon completion, a copy of the signed laboratory report will be retained for future reference. Raw data from field measurements and sample collection activities that are used in project reports will be appropriately identified.

QC records, showing accumulated precision and accuracy data, will be maintained in the laboratory and reported along with analytical results. Poor quality results require that the problem be determined and corrected in a timely manner.

A.3.4 CORRECTIVE MEASURES

If QC system or performance audits detect conditions or data that do not meet QC requirements, corrective action will be initiated. The nature of the action will depend on the circumstances of each situation and may include:

- Evaluating and amending sampling and analytical procedures; and
- Accepting data, acknowledging level of uncertainty.

Any corrective measures taken during the monitoring program will be described in the monthly and final reports.

A.3.5 QA REPORTS TO MANAGEMENT

Final field and laboratory reports will be submitted to the QA/QC Officer for review; issues requiring clarification will then be addressed. Following review by the QA/QC Officer, final field and laboratory reports will be submitted to the Project Manager on a monthly basis and at the completion of individual projects. The reports will include the following:

- Total number of samples collected for the month/project;
- Total number of samples voided for the month\project;
- Total number of blanks for the month/project;
- Percent blanks and percent complete for the month/project;
- Number of days lost due to weather or other unforseen circumstances;
- Text description of project activities.

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APPENDIX B

HEALTH AND SAFETY PLAN

B.1.0 INTRODUCTION

This Health and Safety Plan (HASP) applies to activities related to Kennecott tailings, waste rock, and similar contaminated materials removal, haulage, and placement activities. The work will be conducted by employees, contractors, and subcontractors of Kennecott. This site-specific plan will be available at all times at the work area for review by employees, contractors, subcontractors, regulatory agencies, or representatives thereof. All visitors and regulatory personnel are expected to be familiar with and comply with all aspects of this plan.

The HASP is designed to identify, evaluate, and control health and safety hazards associated with Kennecott Plant Projects Group soils and waste rock remediation projects. The plan is based upon existing information regarding the entire site (properties east of Bingham Pit), similar work conducted to date on Kennecott property, and past experience at other sites. Addressed are specific safety and health hazards and procedures necessary to protect the employees conducting the various remediation projects. If an individual project has a health and safety issue or circumstance that is not addressed in this plan, an addendum will be included prior to the start of work activities.

It is anticipated that field conditions will vary during specific projects. As actual site conditions change, sections of the HASP may change, and will be subject to approval by the Health and Safety Officer (HSO). Such changes will be communicated to all employees.

B.2.0 COMPREHENSIVE WORK PLAN

A comprehensive work plan for the operations to be conducted precedes this HASP. The work plan describes work tasks, objectives, personnel requirements, and methods for conducting excavation, haulage, and placement of materials in the designated repository.

B.3.0 JOB HAZARD ANALYSIS

The potential hazards associated with site activities include both chemical and physical hazards. Equipment operators and laborers directly involved in day-to-day project activities have the greatest potential for exposure to these hazards. Haulage truck operators and site supervisors generally have lower potential exposure to these hazards.

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B.3.1 PHYSIC HAZARDS

This section describes normal physical construction site hazards.

B.3.1.1 Heat Exhaustion

Heat exhaustion occurs when the body loses so much water and electrolytes through very heavy sweating that fluid depletion (hypovolemia) occurs. For sweating to be a effective cooling mechanism, the sweat must be able to evaporate from the body surface. If evaporation does not take place, cooling will not occur. Heat exhaustion is a potential hazard associated with elevated body temperatures caused by high ambient air temperatures and high humidity, heavy physical labor, wearing personal protective equipment, and/or any combination thereof. This hazard will be evaluated on a day-to-day basis by the Construction Superintendent and HSO.

B.3.1.2 Cold Exposure

Cold injury (frostbite and hypothermia) and impaired work ability are potential hazards at low ambient air temperatures and/or when the wind chill factor is low. The symptoms associated with cold exposure are excessive shivering, loss of control of muscle activity, becoming lethargic and losing interest in combatting cold, and finally decreased vital signs. This hazard will be evaluated on a day-to-day basis.

B.3.1.3 Inclement Weather

Rain, snow, extreme low or high temperatures, or high winds may occur during scheduled work activities. All employees will be trained in the hazards of exposure to cold and/or wet conditions. Protective clothing for cold and/or wet, slippery conditions will be used when needed. Severe weather conditions may result in cessation of work activities at the discretion of the Project Manager, Construction Superintendent or HSO.

B.3.1.4 Utility Lines

Overhead utility lines are present near the work area but should not pose hazard. All operators and ground personnel should always be aware of all overhead hazards and warn each other of potential danger. All underground utilities will be located and clearly marked prior to excavation. Appropriate precautions will be taken when working around overhead utilities.

B.3.1.5 Noise

Exposure to elevated noise is expected for heavy-equipment operators and potentially some ground personnel. This hazard will be controlled by wearing the appropriate level of hearing protection. Either ear plugs or muffs will be encouraged for heavy-equipment operators, laborers, and any other personnel

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working ne[illegible] the equipment. The SO will assist in determining the proper level of hearing protection to be worn by site personnel.

B.3.1.6 Construction

As on all construction sites, there is potential for personal injury. American National Standards Institute (ANSI) approved equipment will be required. Hard hats, steel toe boots, and safety glasses will be required to guard against head, foot, and eye injuries. All required construction equipment will have appropriate audible or visual warning alarms. Applicable MSHA and OSHA regulations will be followed and enforced.

The excavation standard outlined in 29 CFR 1926 will be adhered to at all times. A competent person shall inspect all excavations that personnel must enter to ensure proper sloping has been achieved. This inspection must take place before any person enters the excavation.

B.3.1.7 Dust Suppression

Dust may be generated during excavation, transportation and placement of material. Water spray, tarping of transport vehicles, or other controls will be used, as necessary, to control dust levels. Air monitoring will be conducted to ensure occupational exposures to emissions from work areas are below accepted safe levels.

The OSHA time weighted average (TWA) for silica (SiO2) prior to December 30, 1992 is 10.0 milligrams per cubic meter. December 30, 1992 the standard will be changed to 0.05 milligrams per cubic meter (29 CFR 1910.1000). The OSHA Permissible Exposure Limit (PEL) for total suspended particulate (TSP) is 15,000 micrograms per cubic meter in air for any 8-hour time-weighted average (29 CFR 1910.1000).

B.3.1.8 Other Physical Hazards

Other physical hazards such as insect bites, stings, etc. may occur during construction and placement operations. Precautions will be taken to prevent these hazards.

B.3.2 CHEMICAL HAZARDS

Based on available information regarding the site, metals of concern identified in the tailings, waste rock and soils are arsenic and lead. Other metals are present but arsenic and lead have been selected as hazard indicators due to their low action levels (AL) and PELs. If additional chemical hazards become evident, such as silica, appropriate measures will be taken to monitor and protect the health and safety of personnel on the site and prevent off-site migration. All employees will be notified of any new hazards as they become known.

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B.3.2.1 Arsenic

Arsenic is a solid material with no odor. Potential exposure routes are through inhalation or ingestion. Skin contact can also result in adverse effects. Some arsenic compounds may cause irritation of the eyes, mucous membranes, respiratory system, and skin. Dermatitis can also result from poor personal hygiene when working around these materials. Excessive inhalation of arsenic may result in respiratory problems such as coughing and chest pain. Other symptoms include giddiness, headache, and extreme weakness preceding gastrointestinal irregularities. Prolonged exposure can result in weight loss, nausea, diarrhea, pigmentation of skin, and loss of hair. Arsenic is considered a carcinogen; a cancer-causing substance.

The OSHA AL for arsenic is 5.0 micrograms per cubic meter in air for an 8-hour time-weighted average (29 CFR 1910.1018). The OSHA PEL for arsenic is 10 micrograms per cubic meter in air for an 8-hour time-weighted average.

B.3.2.2 Lead

Lead is a solid material with no odor. Potential exposure routes are through inhalation or ingestion. The early effects of overexposure to lead are nonspecific and are difficult to distinguish from the symptoms of minor seasonal illnesses, except by laboratory testing. The symptoms are decreased physical fitness, fatigue, sleep disturbance, headache, aching bones and muscles, abdominal pains, and decreased appetite. More advanced effects include anemia, pallor, a "lead Line" on the gums, and decreased hand grip strength. Lead colic produces intense abdominal pain with nausea and vomiting. Headache, convulsions, coma, delirium, and kidney damage can occur. Lead is not considered a carcinogen but it is classified as a reproductive toxin and a teratogen (fetal malformation).

The OSHA AL for lead is 30 micrograms per cubic meter in air for an 8-hour time-weighted average (29 CFR 1910.1025). The OSHA PEL for inorganic lead is 50 micrograms per cubic meter in air for an 8-hour time weighted average.

B.3.3 HAZARD MITIGATION

The hazards identified in the above sections, and any additional hazards which arise or are identified during work activities will be mitigated by personal protective equipment (PPE), engineering controls, and other safety procedures. Physical hazards will be mitigated by the implementation and enforcement of standard operating procedures described in Section 9.0. Chemical hazards will be identified through the air monitoring program described in Section 7.0 and mitigated by the use of PPE, engineering and site controls.

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B.4.0 PERSONAL PROTECTIVE EQUIPMENT

Occupational exposures to arsenic, lead, and TSP are expected to be well below action levels specified in CFR 1910.1018, 1025, and 1000, respectively. Therefore, the level of personal protection to be utilized for all initial site activities is Level D. Level D personal protective equipment (PPE) shall consist of a hard hat (ANSI Z89), safety glasses (ANSI Z87), steel-toed boots (ANSI Z41 with substantial leather 6-inch uppers) and cotton coveralls. Gloves and hearing protection may be required for task specific work. Work zone visitors will be required to wear applicable safety equipment depending on the duration and extent of involvement at the site. The level of protection will be adjusted according to results of employee exposure monitoring, specific job functions, or as site conditions change.

B.5.0 TRAINING REQUIREMENTS

The Kennecott HSO will be responsible for deciding which oversight agency , MSHA or OSHA, has jurisdiction for each project. There may be instances where both agencies will have enforcement jurisdiction.

OSHA related project employees will receive as a minimum 24 hours of Hazardous Substance Training. These employees will also receive a minimum of eight hours of on-the-job training. All employees and supervisors working in the excavation hauling and placement of contaminated material will be required to have 40-hours of hazardous substance training. These employees will receive a minimum of twenty four hours of on-the-job training. Copies of training certificates and other training documentation should be kept on file near the job site.

MSHA related project employees will receive at a minimum of eight hours of training required by MSHA regulations. These employees will be required to demonstrate that they have job related experience. If employees do not have job related experience, they will be required to receive twenty four hours of MSHA training. All employees and supervisors working in the excavation hauling and placement of contaminated material will be required to have 40-hours of hazardous substance training. Certificates and training documentation should be kept near the job site.

Employees will be trained to a level required by their job function and responsibility before being permitted to engage in field activities. Pre-employment safety information will include:

- Names of personnel and alternates responsible for site safety and health;
- Chemical and physical hazards present on the site;
- Work practices by which risks from hazards can be minimized;

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- Detailed review of this HASP and Kennecott Emergency Protocols;
- Safe use of engineering controls and equipment on the site;
- Use of personal protective equipment; and
- Medical surveillance requirements, including recognition of symptoms and signs which might indicate overexposure to hazards.

Site safety meetings (tailgate meetings) will be held at least weekly to notify personnel of specific hazards, air monitoring results, changes in the HASP, or other topics determined by the HSO and construction superintendent. Specific meetings will be held at the initiation of new or different field activities and at the time of any crew changes. Kennecott will conduct weekly supervisor planning/safety meetings.

B.6.0 DECONTAMINATION PROCEDURES

Equipment decontamination will be conducted on site as appropriate. Equipment decontamination will consist of physically removing visible contamination from contact points of the equipment at completion of work tasks and before leaving the work area. The removed material will be transported to the designated repository. Equipment can be decontaminated at the Kennecott decontamination station if it is close enough to work activities or can be transported to the station without contaminating roads.

Personal decontamination will consist of removing and leaving outer PPE at the work zone or safety trailer and good personal hygiene. Employees will be required to wash with soap and water at each break, lunch period and at the end of the work shift. Decontamination trailers may be on-site for particular jobs.

A temporary staging area will be set up at the perimeter of the work zones if necessary. Outer PPE will be removed and will remain in the staging area. The staging area or safety trailer will have facilities for washing exposed skin. Workers and visitors will be required to pass through and use the staging area when exiting the work zone.

Decontamination procedures will be monitored by the HSO to determine their effectiveness. If such procedures are found to be ineffective, they will be altered to correct any deficiencies.

B.7.0 AIR MONITORING

Air monitoring will be conducted to evaluate the potential for employee exposure to airborne contaminants and to determine the overall contribution of work activities to ambient air quality. Prior to any activities on site, background air samples will be collected to establish a datum for site

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activities. During excavation and placement activities, quantitative and potentially qualitative air sampling will be conducted to determine employee exposures.

All air samples will be collected and analyzed according to the appropriate National Institute of Occupational Safety and Health (NIOSH) method for determining concentrations of arsenic, lead, and TSP (see Appendix A to the Work Plan).

B.7.1 OCCUPATIONAL AIR MONITORING

Quantitative personal samples will be collected using constant-flow pumps that are calibrated using a rotameter or "bubble tube" to draw between 1.0 and 2.0 liters of air per minute. The samples will be handled under chain-of-custody procedures and delivered to a qualified laboratory for analysis (See Appendix A to the Work Plan).

Employees with the highest potential for exposure will be selected for personal monitoring. At the start of field activities and periodically thereafter, occupational air samples will again be collected and analyzed for arsenic, lead and TSP. Additional air monitoring will be conducted whenever there is a change in work conditions which can be expected to result in new or additional exposure levels or whenever an employee complains of symptoms which may be attributable to exposure to lead or arsenic.

Qualitative work zone air monitoring may be conducted using real-time instruments which measure the light-scattering effect of particulates.

B.8.0 MEDICAL SURVEILLANCE PROGRAM

A medical surveillance program provides a means of selection of employees who are physically able to safely perform the work assigned and monitor their health on a regular basis. The medical surveillance program to be implemented for this project will comply with 29 CFR 1910.120(f).

The program consists of a pre-employment medical evaluation to determine fitness for the job assignment, an annual evaluation based on length of assignment or attending physicians opinion (no greater than biennially), and an end-of-employment evaluation. In addition, a special evaluation is warranted when an employee indicates that they may have developed symptoms resulting from a possible exposure to hazardous substances.

Medical surveillance will be conducted for all site personnel who may be exposed to arsenic and lead in excess of PELs, without regard to the use of respirators, for 30 days or more per year. All personnel participating in the medical surveillance program will have an examination which equals or exceeds the following:

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- Medica and Occupational History;
- Physical Examination;
- Pulmonary Function Test;
- Six Frequency Audiogram;
- Urinalysis, with microscopic morphology and dipstick;
- Complete Blood Count;
- CHEM 20 Chemistry Screen;
- SAM 10 Drug Screen;
- Chest X-Ray (examined by a 'B' reader); and
- Blood lead and 24-hour urine speciated arsenic levels.

All contractor personnel with the potential for chemical exposure are required to have medical monitoring which equals or exceeds this program. Visitors and regulatory personnel who will enter the work area may be required to demonstrate participation in a medical program which is equivalent to or exceeds this program. The HSO will determine which personnel must meet training and medical-monitoring requirements.

Prior to the start of project activities, all employees with potential for airborne contaminant exposure will have a baseline evaluation conducted for lead levels in blood and urine speciated arsenic levels. These evaluations are to be repeated at the completion of work activities or at the end of employment. If an employee is removed from a project to conduct work at another site off Kennecott property, that employee shall receive an additional bio-metals exam before leaving and upon return to the Kennecott project, regardless of the off-site duration.

Copies of the physician's written opinion for the capability of the individual to work in areas with a potential for arsenic and lead exposure and the ability to wear a respirator will be maintained by the HSO for all workers on site. The completed and signed respirator fit test form will be kept in the same file.

B.9.0 STANDARD OPERATING PROCEDURES/SAFE WORK PRACTICES

Standard operating procedures and safe work practices for this project consist of Kennecott General Safety for Contractors, Kennecott Emergency Protocols, and the following:

- No alcohol, firearms, or illegal drugs will be allowed on Site.

- Any employee under a physician's care and/or taking prescribed medication must notify the Site Health and Safety Officer.

- Eating, drinking, smoking and chewing tobacco or gum are allowed only in designated areas and never in the removal work zone or at the dump site.

- All personnel shall listen for warning signals on construction equipment and shall yield to equipment.

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- All equipment operators shall pay careful attention to workers on the ground who may be in their path and provide warning to these people before moving. All employees working regularly on the ground will wear orange vests with reflective tape. Operators shall also pay deliberate attention to all types of utility lines and sources.

- All personnel are required to be familiar with and abide by the security rules, and emergency procedures.

- All personnel must report any injuries, vehicle accidents, and/or illnesses to their supervisor. This includes minor or slight injuries.

- All newly hired employees must pass a pre-work assignment physical and subsequent exams as required by this plan.

- All personnel must participate in the air-quality exposure monitoring program by wearing personal monitors or sampling devices designated by the Site Health and Safety Officer.

- All personnel must abide by all safety rules and procedures as described in the work rules and/or throughout the project.

- Remember, safety starts with you.

B.10.0 NAMES AND NUMBERS OF KEY PERSONNEL

The following persons have been identified to oversee the safety and health of employees involved with Kennecott work activities:

Mr. Paul Riley - Kennecott Plant Projects Group Safety, Health and Safety Officer
Telephone - 569-7010
Mobile - 580-1497
Radio - #3-13

Fire/Medical Emergency - 6211

Copperton Clinic - 6095

Contractor Site Superintendent

Contractor Designated Safety Director

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Signature Form

By signing below, I have read and understand the Health and Safety Plan above and the attached referenced documents. I will abide by all safety guidelines established herein.

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APPENDIX C

SOIL SAMPLING AND ANALYSIS PLAN

C.1.0 INTRODUCTION

Remediation activities on Kennecott property and selected, adjacent properties will involve tailings, sludges and contaminated soils. Post removal sampling will be conducted. This Sampling and Analysis Plan (SAP) establishes the guidelines for collecting representative samples. Each project will likely have unique characteristics requiring different approaches to sampling such as composite or discrete, grid or line, and depth or surface sampling. Therefore an addendum to this plan will be included for site-specific sampling requirements. For the purposes of this plan, the tailings and soil will all be referred to as soil.

Following removal activities soil will be sampled and analyzed to document concentrations of the constituents of concern. Discrete and composite soil samples will be collected and quantitatively analyzed. The sampling program for quantitative analysis is designed to fulfill the data requirements of the removal action which include:

- The samples collected are representative of the materials sampled;
- Sample integrity is maintained and documented;
- Proper measurements and information are recorded;
- Sample volumes are sufficient for the required analytical procedures;
- Analytical results adequately characterize soil; and
- The sampling protocol is efficient and relatively uncomplicated.

C.2.0 POST-REMOVAL SAMPLING PROCEDURE

The following sections outline the standard operating procedure (SOP) to be followed in conducting sampling for quantitative analysis. The site-specific Health and Safety Plan shall be complied with at all times during sampling.

The attached addendum discusses site-specific sampling requirements such as subsample locations, distance between subsamples, grid layout, and other necessary aspects of the plan.

C.2.1 SAMPLE COLLECTION

The soil samples will be collected using disposable plastic or decontaminated stainless steel hand tools. The quantity of material sampled at each sub-site will be approximately 1/4 to 1/2 lbs unless specified. Soil samples will be collected from

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0 - 4 inches at the sampling location. If subsurface samples are required, as in a trench, they will be collected from within two inches of the actual measured interval.

C.2.1.1 Generation of Composite

Sample containers will be 12" x 17" polyethylene bags. Each bag will be taped closed and labeled after sample collection. Composite sample mixing will occur by thoroughly shaking the sample in a vertical and horizontal motion or thorough mixing in a stainless steel bowl.

C.2.1.2 Sampling Sequence

The following sequence of events will be followed for all collected soil samples.

1. Fill out logbook header at the beginning of the day;

2. Document initial information about the individual samples and conditions in a field logbook, including a map or diagram;

3. Label container with sample number, date, time, any comments, and samplers' initials;

4. Collect the sample. As a precautionary measure always collect twice the required sample volume;

5. Place soil samples in separate sample containers;

6. Record sample description in the field logbook; and

7. Ensure required duplicates, splits and other QA/QC samples are included (10 percent, i.e. every tenth sample).

At day end:

8. Prepare chain-of-custody forms for all samples;

9. Package and deliver or ship samples, including chain of custodies.

Each sequence event is described in detail in the following sections.

C.2.1.3 Logbook Header

An up-to-date sampling field notebook will be maintained by on-site personnel during all sampling activities. The general information recorded for each days' sampling event includes:

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assessed by a review of duplicate analyses. Accuracy is a determination of how close the measurement is to the true value and will be assessed via spike recovery in sample matrices. Completeness is a measure of the amount of valid data obtained, compared to the amount that was expected under normal conditions. Ninety-five (95%) percent completeness is the goal of this removal action. The project data objectives for precision, accuracy, and completeness are consistent with guidelines established by the EPA Contract Lab Program.

C.2.5 QA/QC SAMPLES

Ten percent of all samples will be split and analyzed at a second lab. The analysis comparisons will be made to ensure accurate and reproducible results are ascertained from each laboratory.

One decontamination rinsate sample will be collected for ten percent of all soil samples collected if non-disposable sampling implements are used.

C.2.6 ANALYTICAL METHOD

The soil samples will be analyzed for the constituents of concern according to EPA Methods. The soil samples and splits will be analyzed at two Certified Environmental Laboratories in Salt Lake City, Utah.

All analytical procedures will be consistent with federal guidance Solid Waste (SW) - 846 (test methods for evaluating solid waste).

C.2.7 DATA REDUCTION, VALIDATION, AND REPORTING

All data will be reported in appropriate units. All raw data will be reviewed and validated against calibration records to ensure that data are reliable, and that data are in compliance with QA/QC objectives. Upon completion, a copy of the signed laboratory report will be submitted to the appropriate agency for review.

Raw data from field measurements and sample collection activities that are used in project reports will be appropriately identified.

QC records showing accumulated precision and accuracy data will be maintained in the laboratory and reported along with analytical results. Poor quality results require that the problem be determined and corrected.

C.2.8 CORRECTIVE ACTION

If QC results detect conditions or data that do not meet QC requirements, corrective action will be initiated. The nature of the action will depend on the circumstances unique to each situation and may include:

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- L .e;
- Name of overall sampling event;
- Sampling personnel; and
- Climatic conditions.

C.2.1.4 Logbook Sample Entries

QA/QC procedures for soil sampling require completion of a field sampling log. The sampling log is an extremely important piece of documentation and should be completed with great attention to detail. For each sample collected, the logbook must contain:

- sample number;
- location with measurements if necessary;
- time;
- sampling method;
- field observations; and
- a map or diagram.

Significant deviations from sampling protocol should be formally noted in the field log, along with visiting personnel and unusual circumstances which might affect the sampling.

C.2.1.5 Container Label

To prevent misidentification of samples, each sample container will be affixed with a label. Labels will be written with indelible ink and will be sufficiently durable to remain on the container. The following information will be recorded on the sample container:

- Sample identification number;
- Initials of sampling personnel;
- Date and time of collection; and
- Location and other pertinent comments.

C.2.1.6 Decontamination

All non-disposable sampling equipment will be cleaned when moving to a different sampling point to prevent cross-contamination. All samples will be collected with

disposable plastic spoons. In the event if hand tools are needed, the equipment decontamination procedures are as follows:

1. Remove gross contaminants;

2. Wash with Algonox or other lab soap;

3. Rinse with tap water;

4. Triple-rinse with deionized water;

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5. Repeat all or part of the procedure, if necessary.

Field personnel conducting the equipment decontamination and sampling will be required to wear protective gloves and the personal protective wear required under the HASP. The decontamination procedures used will be recorded in the field logbook.

C.2.2 CHAIN-OF-CUSTODY

Chain-of-custody forms should be available in the field. If for any reason, the sampling foreman must leave, he should sign off of the chain-of-custody form and his assistant or replacement should sign on and assume responsibility for sample custody.

To establish the documentation necessary to trace sample possession from the time of collection, a chain-of-custody record will be filled out and accompany every set of samples. The record will include the following:

- List of sample numbers;
- Signature of collector;
- Date and time of collection;
- Sample types;
- Number of containers;
- Parameters requested for analysis for each sample;
- Signature of person(s) involved in the chain of possession; and
- Inclusive dates of possession.

C.2.3 SAMPLE PACKAGING AND SHIPPING

Sample preparation and packaging will be conducted in clean areas that are remote from potential contaminant sources. The soil sample containers will be cleaned and secured in shipping containers. Packing material will be provided to stabilize the shipping containers if necessary.

Samples will be delivered to the laboratory daily or when an appropriate number of samples have been collected. In cases where samples will leave the immediate control of project personnel, a seal will be affixed to the sample container to ensure that the samples have not been disturbed during storage or transportation. The integrity of the seal will be observed and documented upon arrival at the laboratory.

C.2.4 QUALITY ASSURANCE OBJECTIVES

The purpose of data quality assessment is to assure that data generated under the QA program is accurate and consistent with program objectives. The quality of the data will be assessed based on precision, accuracy, and completeness. Precision is the degree to which a measurement is reproducible and will be

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- Reanalyzing the samples, if holding time criteria permit;
- Resampling and analyzing;
- Evaluating and amending sampling and analytical procedures; and
- Accepting data, acknowledging level of uncertainty.

C.3.0 QA REPORTS TO MANAGEMENT

Final field and laboratory reports will be submitted to the QA/QC Officer for review; issues requiring clarification will then be addressed. Following review by the QA/QC Officer, final field and laboratory reports will be submitted to the Project Manager or client representative on a monthly basis and/or at the completion of individual projects.

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ADLENDUM TO APPENDIX C
PROCEDURE FOR OBTAINING SPLIT SAMPLES

Split Samples will be obtained in the following manner:

- Collect sufficient sample material following standard operating procedures and site specific requirements. Enough material must be collected to provide property owners and/or agency oversite personnel with a field split, if requested. If soil conditions are such that a representative split sample cannot be attained (muddy/extremely wet conditions), a duplicate sample will be provided. A duplicate sample is collected from the same subsite locations.

- The remaining sample portion, enough to produce three evenly porportioned samples, will be delivered to the analytical laboratory.

The Analytical Laboratory will:

- Dry the sample material following appropriate temperature and drying requirements, for parameters being tested.

- Homogenize the dried sample material by chopping, stirring and mixing.

- Divide the homogenized sample material to produce three representative splits. Two splits will be analyzed for Kennecott and the third delivered to the agency as requested. Extra sample portions will be archived by the laboratory.

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APPENDIX D

APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

Applicable or relevant and appropriate requirements (ARARs), to the extent practicable, will be attained for the Removal Action. Remediation of surface water and ground water is not within the scope of this Removal Action and will not be adversely impacted. The following provides a detailed description of potential ARARs, by categories, for this Removal Action, and specific actions proposed during work activities to attain those ARARs.

EPA SPECIFIED ARARs FOR THE BINGHAM CREEK CHANNEL PHASE 2 REMOVAL ACTION

CHEMICAL SPECIFIC ARARs	ACTION
LEAD • Utah Air Conservation Act R307-1-3.1.8(A), R307-1-4.5.2 and R307-1-3.2	• Dust and particulate control measures • Personnel and work zone monitoring
PARTICULATE MATTER • Utah Air Conservation Act R307-1 UAC, 19-2-101 ET SEC UCA	• Dust and particulate control measures • Personnel and work zone monitoring
OSHA STANDARDS • 29 CFR Subparts 1910.1000, 1910.1018(c), and 1910.1025 (c) • Utah Occupational Safety and Health R574-101-2, UAC	• Dust and particulate control measures • Personnel and work zone monitoring
WATER QUALITY STANDARDS • R317-2 UAC AND R317-8 UAC, Utah Water Quality Act, 19-5-101 ET SEC UCA	• Engineering controls to minimize potential impacts to surface water

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EPA SPECIFIED ARARs FOR THE BINGHAM CREEK CHANNEL PHASE 2 REMOVAL ACTION (Continued)

LOCATION SPECIFIC ARARs	
SIGNIFICANT DATA	
• 40 CFR, Subpart C, Subpart 6.301(c) Archaeological and Historic Preservation Act, 16 USC Subpart 469	• Site inventory/mapping if features are present • Notification of proper authorities in case of historic/archaeological site discovery
SIGNIFICANT STRUCTURES	
• 40 CFR Subpart C, Section 6.301(b) and 36 CFR Part 800, National Historic Preservation Act, 16 USC Subpart 470 et seq	• If detected during mapping, the Site Historical Preservation Officer (SHPO) will be contacted
PLACEMENT	
• Executive Order on Flood Plain Management (Exec. Order No. 11,988)	• Controls will be implemented to minimize adverse impacts to wetlands and/or the flood plain
• Wetlands Protection (Exec. Order No. 11,990)	• Engineering controls to minimize adverse impacts to fish and wildlife habitat
• Fish & Wildlife Coordination Act, 16 USC Sect. 661-666	
• 30 CFR 816.11, Surface Mining Control and Reclamation Act, 30 USC Sections 1201-1328 R618-875 UCA	• Work Plan approved methodologies will be used in reclaiming the site and repository
• Utah Mined Land Reclamation Act, R643-875 ET SEC UCA	
ACTION SPECIFIC ARARs	
GENERAL ARARs	
• 20 CFR Part 1926, 20 CFR Subparts 1910.120, and 1910-132, Occupational Health and Safety Act, 29 USC Subpart 651-678	• Develop site-specific Health and Safety Plan (Appendix B, Work Plan)
• R574-101-2, UAC; Subpart 126, Subpart 216, and Subpart 102 of Utah Occupational Safety and Health Act	• Develop site-specific Health and Safety Plan

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UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION VIII

IN THE MATTER OF: BINGHAM CREEK CHANNEL PHASE II, SSID # T4 ATLANTIC RICHFIELD COMPANY (ARCO), KENNECOTT CORPORATION and KENNECOTT UTAH COPPER CORPORATION Respondents. Proceeding Under Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended, 42 U.S.C. § 9606(a).	UNILATERAL ADMINISTRATIVE ORDER FOR REMOVAL ACTION DOCKET NO.: CERCLA-VIII-93-10

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Exhibit 1: Statement of Work

Exhibit 2: Maps of Area

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I. JURISDICTION

1. This Unilateral Administrative Order ("Order") is issued pursuant to the authority vested in the President of the United States by Section 106(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. § 9606(a). This authority was delegated to the Administrator of the United States Environmental Protection Agency ("EPA") on January 23, 1987, by Executive Order No. 12,580, 52 Fed. Reg. 2,923 (1987), and has been further delegated to the Regional Administrators by EPA Delegation No. 14-14-B, and to the Director of the Hazardous Waste Management Division of EPA Region VIII.

II. PARTIES BOUND

2. This Order shall apply to and be binding upon Kennecott Corporation, Kennecott Utah Copper Corporation (together referred to as "Kennecott") and Atlantic Richfield Company ("ARCO") (collectively referred to as "Respondents") and upon all directors, officers, principals, employees, agents, successors, and assigns of Respondents. No change in corporate status of Respondents shall in any way alter, diminish, or otherwise affect Respondents' obligations and responsibilities under this Order.

3. Respondents shall be responsible for carrying out all actions required of Respondents by the terms and conditions of this Order.

III. DEFINITIONS

4. For purposes of this Order, the following terms shall have the meanings set forth below:

"**Contractor**" means any person, including the contractors, subcontractors, or agents, retained or hired by Respondents to undertake any Work under this Order.

"**Day**" means calendar day, unless otherwise specified.

"**Deliverable**" means any written product describing the Work performed or to be performed, including but not limited to, the Sampling and Analysis Plan, Alternative Analysis, Health and Safety Plan or Phase II Work Plan, that Respondents are required to submit under the terms of this Order.

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"NCP" means the National Oil and Hazardous Substances Pollution Contingency Plan, 40 C.F.R. Part 300.

"Order" means this Order, the exhibits attached to this Order, and all documents which are incorporated into this Order according to the procedures set forth herein.

"Site" means the Bingham Creek Channel Phase II Site including the areal extent of contamination and all suitable areas necessary for implementation of the removal action, including any temporary staging or storage areas for contaminated soils. The Site includes the area described in Paragraph 6, below, and depicted on the maps attached as Exhibit 2.

"Statement of Work" or "SOW" means the Statement of Work which is attached hereto as Exhibit 1 and incorporated herein by reference.

"Work" means all tasks required by this Order, including all activities related to the performance of such activities.

5. All other terms, not otherwise defined herein, shall have their ordinary meaning unless defined in CERCLA or the NCP, in which case the CERCLA or NCP definition shall control.

IV. FINDINGS OF FACT

SITE DESCRIPTION AND HISTORY

6. The Bingham Creek Channel Phase II Site includes the Bingham Creek Channel and its associated floodplain and alluvial fans from the Brookside Trailer Park east of Redwood Road to the base of the Large Bingham Reservoir located on Kennecott property. Also included in the Site is the area located at the corner of 3200 West and 9000 South ("Northeast corner"). The Site is located in Salt Lake and Tooele counties, Utah (see maps attached as Exhibit 2). The rock and\or concrete lined channel through the Jordan View subdivision is not included in the Work under this Removal action.

7. From approximately 1904 until 1932, companies, including Utah Apex Company and Utah Copper Company, mined and milled lead and/or copper ores in Bingham Canyon. The residual "tailings" material from the milling operation, which contained lead and arsenic, was disposed of in waste piles near the mills or directly into Bingham Creek. Normal runoff events and flooding transported the tailings down Bingham Creek and deposited them along the banks of the channel.

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8. In 1905 Utah Copper Company built a tailings impoundment north of Bingham Creek on property later acquired by Kennecott (hereinafter "Kennecott Tailings"). In 1914, Utah Apex Company built a tailings impoundment south of Bingham Creek on property later acquired by ARCO (hereinafter "ARCO Tailings"). Tailings from some of the mills in Bingham Canyon were disposed of into these impoundments while Utah Apex Company and Utah Copper Company were the respective owners of these properties. Sampling activities conducted by EPA in September 1992, at the Kennecott Tailings, revealed lead levels ranging between 270 and 8400 mg/Kg. Sampling activities conducted at the ARCO Tailings at the same time showed an average lead concentration of 6,244 mg/Kg with a range of 1,800 to 15,000 mg/Kg.

9. Runoff events and flooding caused tailings to erode from the Kennecott and ARCO Tailings into Bingham Creek Channel. At present the channel flows intermittently due to localized storms and snow melt. However, this flow in the channel has and will continue to transport fine-grained particles such as those particles present in the tailings. In addition, a County engineering study estimates that flow in a 100 year flood event would be approximately 400 cubic feet per second. This volume of flow in the channel would transport significant volumes tailings-related material deposited in the channel.

10. Sampling and analyses performed by EPA and Kennecott independently have identified lead, arsenic and other hazardous substances at the Site. In July/August 1992, EPA collected 85 samples from the Bingham Creek Channel between 4800 West and 3200 West and found lead and arsenic averaging 5,661 mg/Kg and 202 mg/Kg, respectively. The concentrations of lead ranged from 200 to 23,000 mg/Kg and the concentrations of arsenic ranged from 9 to 890 mg/Kg. Similar levels of lead and arsenic are found progressively up the channel as demonstrated by samples collected by Kennecott in 1990. Samples collected by EPA from 8600 South down channel through the Brookside Trailer Park also show elevated lead.

ENDANGERMENT

11. Arsenic is a human carcinogen. Arsenic can be acutely and chronically poisonous and can be fatal if ingested or inhaled in sufficient quantities by humans, livestock, and wildlife. Arsenic compounds are absorbed into the body primarily through inhalation or ingestion.

12. Lead is a cumulative poison which can cause neurologic, kidney, and blood cell damage in humans. Some lead compounds are also animal carcinogens adversely affecting the lungs and kidneys. Children under the age of seven years are especially sensitive to the effects of lead.

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13. Several exposure routes are associated with lead and arsenic contamination conditions at the Bingham Creek Channel Site. Direct contact, ingestion, inhalation, and inhalation resulting in ingestion of the lead and/or arsenic contaminated soils and dust pose the primary exposure pathways.

RELEASE OR THREAT OF RELEASE

14. During site assessment (1990 - 1992) activities, EPA identified lead and arsenic in the soil of residential properties in the vicinity of Bingham Creek Channel as a potential threat to human health and welfare. EPA performed a removal action to mitigate the potential threat posed by the contaminated soil in 50 residential properties. The presence of the large volume of tailings at the Site containing high concentrations of lead and arsenic poses a continuing threat of release down-channel and recontamination of previously remediated residential property. The health based action level for lead at the above mentioned residential removal was 2,500 mg/Kg. This level was designed to address only the most critical levels of contamination.

15. Population growth adjacent to and near the Bingham Creek Channel continues to accelerate. The 1980 census report indicated that approximately 1,360 people lived within a 4 mile radius of the Site. The 1990 census report indicated that the population is approximately 2,450 for the corresponding area. New residential development along the channel continues and more is planned.

RESPONDENTS

16. ARCO is the owner and/or operator of the ARCO Tailings, a facility along Bingham Creek Channel, from which hazardous substances were disposed of and/or released into Bingham Creek. ARCO, through its predecessor in interest, owned or operated, at the time of disposal, facilities along Bingham Creek Channel from which hazardous substances were disposed of and/or released into Bingham Creek. ARCO, a corporation incorporated under the laws of the State of Delaware, is qualified to perform the actions set forth in this Order.

17. Kennecott is the owner and/or operator of facilities along Bingham Creek Channel from which hazardous substances were disposed of and/or released into Bingham Creek. Kennecott and/or its predecessor in interest owned or operated, at the time of disposal, facilities along Bingham Creek Channel from which hazardous substances were disposed of and/or released into Bingham Creek. Kennecott, two corporations incorporated under the laws of the State of Delaware, is qualified to perform the actions set forth in this Order.

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RESPONSE ACTIONS

18. An enforcement action was taken at Bingham Creek Channel (Phase I) during 1991, pursuant to Administrative Order on Consent, Docket No. CERCLA VIII-91-11. To date, no CERCLA enforcement actions have taken place in the area defined as Bingham Creek Channel, Phase II.

19. On January 28, 1993, EPA Region VIII signed an Action Memorandum documenting the need for this removal action (Phase II), outlining the proposed action and explaining the basis for the decision to take such action.

V. CONCLUSIONS OF LAW

20. The ARCO Tailings, the Kennecott Tailings and the Site are each a "facility" as defined in Section 101(9) of CERCLA, 42 U.S.C. § 9601(9).

21. Respondents are "persons" as defined in Section 101(21) of CERCLA, 42 U.S.C. § 9601(21).

22. Lead and arsenic found on the Site are "hazardous substances" as defined in Section 101(14)(B) of CERCLA, U.S.C. § 9601(14)(B).

23. The past, present, and potential future migration of hazardous substances into the environment described in Section IV of this Order constitute a "release" or threat of "release" as defined in Section 101(22) of CERCLA, 42 U.S.C. § 9601(22).

24. As current and past owners and operators of the Site, and/or as generators of hazardous substances at the Site, Respondents are responsible parties under section 107(a)(1), (2) and (3) of CERCLA, 42 U.S.C. § 9607(a)(1), (2) and (3).

VI. DETERMINATIONS

25. Based on the preceding Findings of Fact and Conclusions of Law and on the Administrative Record for the Site, EPA has determined that:

26. There has been a release and there exists a threat of further release into the environment of hazardous substances from the Site which may present an imminent and substantial endangerment to the public health, welfare, or the environment.

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27. To protect the public health, welfare, or the environment, and to prevent and mitigate the imminent and substantial endangerment thereto, it is necessary that a Removal action be taken to abate the release and threat of release of hazardous substances at and from the Site. The activities required by this Order are not inconsistent with the NCP.

VII. NOTICE TO THE STATE

28. EPA has notified the State of Utah of this action pursuant to Section 106(a) of CERCLA, 42 U.S.C. § 9606(a).

VIII. WORK TO BE PERFORMED

29. Based upon the foregoing Findings of Fact, Conclusions of Law, and Determinations, and pursuant to the authority of Section 106(a) of CERCLA, Respondents are ORDERED to plan, implement, perform, and complete all actions required by this Order in accordance with the standards, criteria, specifications, requirements, and schedule set forth in this Order and the attached Statement of Work ("SOW"). The SOW is hereby incorporated by reference into this Order as Exhibit 1.

30. The final EPA-approved work plan ("Work Plan") shall be incorporated into and made an enforceable part of this Order. Respondents shall undertake all tasks described in the Work Plan and complete all tasks according to the approved schedule.

31. All work under this Order is subject to oversight by and the prior approval of EPA. Respondents shall obtain EPA approval for all documents and reports required by the Work Plan and all proposed modifications to documents or reports previously approved by EPA. Commencing or undertaking any removal action at this Site without prior EPA approval is a violation of this Order.

32. The plans, documents, and reports required by the Work Plan shall be subject to review and approval or modification by EPA. Unless otherwise specified in the Work Plan schedule, Respondents shall, within fourteen (14) days of receipt of any EPA disapproval, submit a revised document addressing all deficiencies and incorporating any modifications specified by EPA. At the time a revised document is submitted, Respondents shall submit a cover letter describing their response to each EPA comment and modification and a certification that no other changes were made. Failure to incorporate or address any EPA comment or modification in accordance with these procedures is a violation of this Order. EPA may unilaterally modify any plan, document, or report if Respondents do not make the required modifications.

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33. All Work shall be conducted and completed in accordance with CERCLA, the NCP, EPA guidance, and any amendments thereto which become effective prior to the date of completion of Work under this Order. Respondents shall be responsible for identifying and using other guidelines, policies, procedures, and information that may be appropriate for performing the Work.

34. Activities undertaken by Respondents shall be in compliance with all other Federal, State, and local laws and regulations, including permit requirements, unless an exemption is provided by Section 121(e) of CERCLA, 42 U.S.C. § 9621(e). Respondents shall identify all permits, licenses, and approvals which may be required for performance of the Work in sufficient time to obtain such permit, license or approval, where not exempt under CERCLA, and to perform Work as scheduled.

35. Respondents shall perform all Work in a high-quality manner. Deliverables shall be edited for content, organization, grammar, and spelling before submittal to EPA. Failure to perform or prepare Work of high quality shall be considered a violation of this Order.

36. Respondents shall employ sound scientific, engineering, and construction practices in performing Work pursuant to this Order. All tasks performed shall be under the direction and supervision of qualified personnel or contractors with experience in the types of tasks required for implementation of the Work. Respondents shall provide a copy of this Order and any relevant modifications to this Order to any contractor retained or hired to perform any Work and shall condition the performance of Work on compliance with the relevant requirements of this Order.

37. On or before the effective date of this Order, Respondents shall notify EPA, in writing, of the name, title, and qualifications of the personnel and contractors to be used in carrying out the Work. Respondents shall demonstrate to EPA that proposed personnel and contractors possess the qualifications, experience, technical capability, and management capability necessary to perform the Work in a safe and timely manner, consistent with the requirements of this Order. If EPA disapproves of any personnel or contractor, Respondents shall within fourteen (14) days submit the name of another person or contractor and the information outlined above. Any change in personnel or contractor performing Work under this Order shall be submitted, with the information outlined above, to EPA for approval at least seven (7) days before Respondents make such change.

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38. All waste disposal conducted by Respondents pursuant to this Order shall comply with all requirements of CERCLA, 42 U.S.C. § 9601-9675, and all regulations and guidance promulgated thereunder.

39. Respondents shall cooperate and coordinate with each other in the performance of activities required by this Order.

IX. REPORTING REQUIREMENTS

40. Beginning thirty (30) days after EPA approves Respondents' Work Plan or seven (7) days before construction activities begin, whichever occurs first and during the course of Work under this Order, Respondents shall submit the following reports to EPA and the State:

a. **Weekly Progress.** Respondents shall submit weekly progress reports containing the following information and any information required by the Work Plan:

(1) A description of the actions taken toward achieving compliance with this Order, including plans and actions completed, during the reporting period;

(2) A description and estimate of the percentage of the Work completed;

(3) A description of any activities that deviated from or were carried out in addition to those provided for in the Work Plan, which occurred during the reporting period;

(4) Summaries of significant findings pertaining to the removal action during the reporting period;

(5) Summaries of all changes made in the removal action during the previous week;

(6) A description of unresolved problems or potential problems encountered during the reporting period that may cause a performance delay and a description of efforts made to mitigate those problems and/or delays;

(7) Change orders, nonconformance reports, claims made, and actions taken to rectify problems;

(8) Changes in personnel during the reporting period;

(9) Projected work for the next reporting period and a schedule of activities for the next month; and,

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(10) Copies of inspection logs and results of all sampling, tests, and other data (including validated analytical data with supporting documentation on Contract Laboratory Program Form I's or in a similar format) received or produced by Respondents during the course of work during the previous week.

These reports shall be provided to EPA and the State by Thursday morning of each week from the effective date of the Order until EPA terminates the Order or otherwise authorizes Respondents to discontinue such reporting.

41. Respondents shall submit all deliverables under this Order by hand delivery or overnight or certified mail, return receipt requested, to the following persons or to such other persons as EPA hereafter may designate in writing:

a. Documents submitted to EPA shall be sent in quadruplicate to:

Steve Way (8HWM-ER)
On-Scene Coordinator
U.S. Environmental Protection Agency
Region VIII
999 18th Street, Suite 500
Denver, Colorado 80202-2405

b. Copies of documents submitted to EPA shall also be submitted simultaneously to:

Brent H. Everett
UDERR
1950 West North Temple
Salt Lake City, UT 84114-4840

42. In the event of any significant change in conditions, emergency circumstances, or immediate endangerment to public health, welfare, or the environment at the Site, Respondents shall immediately notify the EPA On-Scene Coordinator, or if unavailable, his or her supervisor or other appropriate EPA personnel. Respondents shall provide EPA with written notice of the event within seven (7) days of its occurrence. The written notice shall include a detailed description of the event, including time and location, any known causes of the event, the consequences of the event to public health, welfare, and the environment, and actions taken, or to be taken, to stop or mitigate the event.

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X. PROJECT MANAGER, ON-SCENE COORDINATOR

43. Within seven (7) days of the effective date of this Order, Respondents shall designate a technical Project Manager and an Alternate Project Manager and shall notify EPA in writing of their names, titles, affiliations, addresses, and telephone numbers. The Project Manager shall be responsible for overseeing implementation of this Order. To the maximum extent possible, communications concerning technical aspects of this Order shall be coordinated through the Project Manager for Respondents and the On-Scene Coordinator designated by EPA. Respondents' Alternate Project manager shall receive communications if the Project Manager is unavailable. EPA retains the right to disapprove of any Project Manager or Alternate Project Manager designated by Respondents.

44. Respondents may replace their Project Manager or Alternate Project Manager by notifying EPA's On-Scene Coordinator in writing of the replacement's name, title, affiliation, address, and telephone number at least five (5) days before the replacement.

45. The EPA On-Scene Coordinator has the authority vested in the On-Scene Coordinator by the NCP. The absence of the EPA On-Scene Coordinator from the Site shall not be a cause for stoppage or delay of Work.

XI. SITE ACCESS AND SAMPLING

46. Respondents shall in no way hinder or impede access by EPA, the State, or their authorized representatives to the Site or any other areas where the Work is conducted. Respondents shall not prohibit such persons from being present on the Site or such other areas at any and all times or from observing any and all Work conducted pursuant to this Order. All persons who engage in activity under this Order shall be available to and shall cooperate with EPA in its oversight of Work under this Order.

47. To the extent that access to property other than property owned by Respondents is required for the proper and complete performance of Work under this Order, Respondents shall use their best efforts to obtain a written right of access for access to such property within ten (10) days of the effective date of this Order. Respondents shall provide EPA and the State with a copy of such right of access within fourteen (14) days of the effective date of this Order. Such agreements shall ensure access for EPA, the State, and their authorized representatives. If Respondents are unable within the deadline specified to obtain such access for themselves, EPA, the State, and their authorized representatives, they shall notify EPA immediately by telephone,

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and in writing within three (3) days thereafter, of their failure and efforts made to obtain access.

48. Nothing herein shall limit or otherwise affect EPA's or the State's right of entry pursuant to any applicable statute, regulation, or legal authority.

49. Respondents shall provide EPA and the State written notice at least seven (7) days prior to collecting samples pursuant to this Order. Upon request, Respondents shall provide EPA, the State, and their authorized representatives with split or duplicate samples. Respondents shall allow EPA and the State to take any other samples and conduct any tests and inspections EPA or the State deems necessary.

50. All sampling activity is subject to EPA direction and approval.

51. All sampling and analyses performed pursuant to this Order shall conform to EPA guidance regarding sampling, quality assurance/quality control ("QA/QC"), data validation, and chain of custody procedures. Respondents shall ensure that EPA and State personnel and their authorized representatives are allowed access to any laboratory utilized by Respondents in implementing this Order. Respondents shall ensure that the laboratory participates in a QA/QC program equivalent to that which is followed by EPA. Upon request, Respondents shall have such laboratory analyze samples submitted by EPA for quality-assurance monitoring.

52. If Respondents obtain any samples from property owned by a third party, Respondents shall provide the third party with a receipt describing the samples obtained, and an opportunity to request and obtain split samples. Respondents shall also promptly provide such third party with a copy of the results of any analyses made.

XII. DOCUMENTATION, AVAILABILITY OF INFORMATION, AND RECORD RETENTION

53. For the period during which this Order is in effect, Respondents shall permit EPA, the State, and their authorized representatives to inspect and copy all non-privileged records, files, maps, and other documents, writings, or depictions pertaining to implementation of this Order.

54. Respondents shall maintain a running log of privileged documents on a document-by-document basis containing the date, author(s), addressee(s), the privilege claimed (e.g., attorney work product, attorney-client), and the factual basis for the assertion of the privilege. The privilege log shall be kept on file and available for inspection. EPA may at any time challenge

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claims of privilege through negotiations or otherwise as provided by law or the Federal Rules of Civil Procedure.

55. Respondents may assert a business confidentiality claim pursuant to 40 C.F.R. § 2.203(b) with respect to part or all of any information they submit to EPA pursuant to the terms of this Order, provided such claim is allowed by Section 104(e)(7) of CERCLA, 42 U.S.C. § 9604(e)(7). All claims will be reviewed and allowed or disallowed pursuant to 40 C.F.R. Park 2, Subpart B. EPA shall only disclose information covered by a business confidentiality claim to the extent permitted by and by means of the procedures set forth at 40 C.F.R. Part 2, Subpart B. If no such claim accompanies the information when it is received by EPA, EPA may make it available to the public without further notice to Respondents.

56. Respondents shall preserve during the pendency of this Order and for a minimum of six (6) years after termination of this Order, all records and documents in their possession or in the possessions of their divisions, employees, agents, contractors, or attorneys which relate in any way to this Order or Work performed hereunder, notwithstanding any document retention policy to the contrary. At the end of this six year period, Respondents shall make such records available to EPA for inspection or shall provide the original or copies of such documents to EPA. If EPA requests that some or all documents be preserved beyond this six year period, Respondents shall either comply with EPA's request or provide to EPA the original or legible copies of the retained documents.

XIII. MODIFICATIONS TO ORDER

57. No oral advice, guidance, suggestions, assurances, or comments by EPA or its authorized representatives shall modify the terms or conditions of this Order or relieve Respondents of their obligations under this Order.

58. If Respondents seek to deviate from the approved Work Plan, Respondents' Project Manager shall submit a written request to EPA outlining the proposed Work Plan modification and the basis therefor. If EPA approves the Work Plan modification in writing, such modification shall be deemed incorporated into this Order. Deviation from the Work Plan without EPA's prior approval is a violation of this Order.

XIV. EFFECTIVE DATE AND CONFERENCE OPPORTUNITY

59. This Order shall be effective twenty-one (21) days from the Date of Issuance. Each Respondent shall, within seven (7) days from the Date of Issuance, notify EPA, in writing, of its intent to comply with this Order or to request the opportunity to negotiate an Administrative Order on Consent (AOC). If either

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Respondent submits a Notice of Intent to negotiate an AOC, this Order shall, with respect to that Respondent, be superceded by any fully executed AOC, which results from these negotiations. Twenty-one (21) days, calculated from the Date of Issuance of this Order, shall be allowed for the negotiation of an AOC. The schedule for performance of Work shall be calculated from the effective date of this Order or from the effective date of the superceding AOC once it is fully executed.

60. Respondents may request a conference with EPA, to occur no later than seven (7) days after the Date of Issuance, to discuss this Order, including its applicability, the appropriateness of activities required to be undertaken, and other issues and contentions relevant to issuance of this Order. Any request for a conference shall be made to Karen S. Kellen, Assistant Regional Counsel, EPA Region VIII, 999 18th Street, Suite 500, Denver, Colorado 80202-2405, (303) 391-6201. At any such conference, Respondents may appear in person or through an attorney or other designated representative. Such conference is not, and shall not be deemed to be, an adversarial hearing or part of a proceeding to challenge this Order, and no official stenographic record of such proceeding shall be kept.

61. If Respondent(s) does not submit a letter of Intent to Negotiate, each Respondent shall, no later than seven (7) days after the Date of Issuance, inform EPA in writing as to whether it intends to comply with the Order. If Respondent(s) submits a letter of Intent to Negotiate but does not reach agreement with EPA within twenty-one (21) days of the Date of Issuance of this Order, then, within twenty-four (24) hours of the Effective Date of this Order, each Respondent shall inform EPA in writing as to whether it intends to comply with this Order. A failure to respond or to indicate an intention to comply with this Order by such date shall be deemed to mean that Respondent(s) does not intend to comply with this Order.

XV. RESERVATIONS, DISCLAIMERS

62. In the event that EPA determines that the activities performed pursuant to this Order or any emergency circumstances may pose a threat to public health or welfare or the environment, EPA may direct Respondents to stop further implementation of Work pursuant to this Order or may take or order further actions to abate the threat. This provision is not to be construed to limit any powers EPA may have under CERCLA, the NCP, or any law or regulation.

63. Nothing herein shall preclude EPA from taking action to enforce this Order, nor from taking any action pursuant to Sections 104, 106, 107, or 122 of CERCLA, 42 U.S.C. §§ 9604, 9606, 9607, or 9622, nor any and all actions pursuant to CERCLA or any other available legal authority, including without

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limitation, seeking injunctive relief, monetary penalties, or punitive damages. Nothing herein shall preclude EPA from undertaking any additional enforcement actions and/or other actions it may deem necessary for any purpose, including the prevention or abatement of an imminent and substantial danger to the public health or welfare or the environment arising from Site conditions.

64. Neither EPA nor the United States, by issuance of this Order, assumes any liability for any acts or omissions of Respondents, nor employees, agents, contractors, or consultants of Respondents, in carrying out Work pursuant to this Order. Neither EPA nor the United States shall be held a party to any contract entered into by Respondents, nor by their employees, agents, contractors, or consultants in carrying out Work pursuant to this Order.

65. Nothing in this Order shall affect any right, claim, interest, defense, or cause of action of any party against any entity not subject to this Order for any liability it may have arising from or relating in any way to the Site. Nothing in this Order shall be deemed to constitute a decision on preauthorization of funds under Section 111(a)(2) of CERCLA, 42 U.S.C. § 9611(a)(2).

66. Nothing in this Order shall constitute or be construed as a satisfaction or release from liability for Respondents, nor their agents, contractors, lessees, successors, or assigns with respect to any conditions or claims arising as a result of past, current, or future operations at the Site, ownership of the Site, or use or disposal of hazardous substances at the Site.

67. EPA reserves its rights to seek, pursuant to Section 107 of CERCLA, 42 U.S.C. § 9607, recovery from Respondents of the United States' costs incurred in oversight, administration, and enforcement of this Order, and any other past and future costs incurred by the United States in connection with response activities at the Site not otherwise reimbursed by Respondents.

68. Nothing in this Order shall be construed to release Respondents from any liability for failure to perform the Work in accordance with this Order.

XVI. ASSURANCE OF ABILITY TO COMPLETE WORK

69. Respondents shall establish and maintain a financial instrument, trust account, or other financial mechanism such as one of those set forth at 40 C.F.R. Part 264.143, acceptable to EPA, funded sufficiently to perform the work and any other obligations required under this Order, including a margin for cost overruns. Within fifteen (15) days of the effective date of this Order, Respondents shall either fund the financial

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instrument or trust account or demonstrate to the satisfaction of EPA that their financial resources are sufficient to perform the work required under this Order projected for the period beginning with the effective date of the Order through the end of the current calendar year quarter. On or before the 15th calendar day of each calendar year quarter thereafter, Respondents shall either fund the financial instrument or trust account or demonstrate to the satisfaction of EPA that their financial resources are sufficient to perform the work and other activities required under this Order projected for the succeeding calendar year quarter. Within five (5) days of the funding of any account or other mechanism or the demonstration of ability to perform Work, Respondents shall report such to the On-Scene Coordinator.

70. If at any time the net worth of the financial instrument or trust account is insufficient or the other demonstration of financial ability is inadequate to assure performance of the Work and other obligations under the Order for the upcoming quarter, Respondents shall provide written notice to EPA within seven (7) days after the net worth of the financial instrument, trust account or other demonstration of financial ability becomes insufficient or inadequate. The written notice shall describe why the financial instrument, trust account or other demonstration of financial ability is insufficient and shall explain what actions have been or will be taken to fund the financial instrument or trust account adequately or to demonstrate to the satisfaction of EPA that it has the financial resources to continue the Work through the time period required. EPA reserves the right to terminate this Order if funding becomes or will become inadequate.

XVII. ENFORCEMENT

71. Should Respondents violate this Order or any portion thereof, EPA may carry out the required actions unilaterally, pursuant to Section 104 of CERCLA, 42 U.S.C. § 9604, and/or may seek judicial enforcement of this Order pursuant to Section 106 of CERCLA, 42 U.S.C. § 9606. Respondents may also be subject to an action for cost recovery, civil penalties of up to $25,000 per day per violation of this Order, and/or punitive damages (including treble damages), as provided in Sections 106(b), 107(a) and 107(c)(3) of CERCLA, 42 U.S.C. §§ 9606(b), 9607(a) and 9607(c)(3), respectively, for failure to comply with the terms of this Order.

XVIII. TERMINATION AND SATISFACTION

72. Respondents shall submit a written Notice of Completion to EPA upon completion of all Work described in this Order indicating that, in Respondents' opinion, the tasks required by the Order have been completed. The Notice of Completion shall

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contain the following statement which shall be signed by a responsible official representing each Respondent:

> I certify that the information contained in or accompanying this Notice of Completion is true, accurate, and complete. As to (the) (those) identified portion(s) of this Notice of Completion for which I cannot personally verify (its) (their) truth and accuracy, I certify as the official having supervisory responsibility for the person(s) who, acting under my direct instructions, made the verification that this information is true, accurate, and complete.

73. The term "responsible official" means: (a) A president, secretary, treasurer or vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy- or decision-making functions for the corporation; or, (b) the manager of one or more manufacturing, production, or operating facilities employing more than 250 persons or have gross annual sales or expenditure exceeding $35 million, if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.

74. EPA shall make the final determination as to the sufficiency and/or acceptability of all Work conducted under this Order, including but not limited to each required submittal and activity completed. EPA may inspect the Site for adequacy of Respondents' performance of the Work. EPA will notify Respondents, in writing, of any deficiencies and the actions required to correct these deficiencies at the Site. Respondents shall take the necessary corrective measures to address any deficiencies, identified by EPA. This Order shall terminate upon Respondents' receipt of written notice from EPA that Respondents have complied with all terms of this Order.

IT IS SO ORDERED

Robert L. Duprey, Director
Hazardous Waste Management Division
Region VIII
U.S. Environmental Protection Agency

2-18-93
Date of Issuance

Effective Date: March 11, 1993

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EXHIBIT I

BINGHAM CREEK CHANNEL SITE
PHASE 2
SSID # T4

STATEMENT OF WORK

February 10, 1993

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BINGHAM CREEK CHANNEL - PHASE 2

SSID # T4
STATEMENT OF WORK

I. SITE HISTORY AND BACKGROUND

Bingham Creek originates in the Bingham Canyon and was the primary drainage from the mining district in this area. Although historically, water from the mining district flowed in the channel, the Large Bingham Reservoir now contains nearly all the flow from the canyon. The reservoir is located in Western Salt Lake County, Utah approximately one-half mile East of Copperton, Utah in Section 17, Township 3 South, Range 2 West, Salt Lake Base and Meridian. The channel starts at the toe of the reservoir.

The channel passes through several miles of Kennecott property before reaching a county gravel plant and a brick factory, and then entering residential areas at 4800 West. The channel is accessible year-round and is used as a recreational area and trail by residents in the area. It serves as a storm water drainage during runoff events and receives irrigation wastewater.

Sampling in 1992 by the EPA indicated high levels of lead and arsenic in the soil in Bingham Creek Channel. Samples were collected through residential reaches and from upper reaches on ARCO and Kennecott property. The tailings in the upper reaches also indicated elevated levels of lead and arsenic consistent with those found down channel.

Lead and arsenic were identified at the Site as the contaminants of concern. These are hazardous substances, as defined by § 101(14) of CERCLA, that were released into the environment through mining and beneficiation processes in the Bingham Canyon. Mining waste (tailings), were discharged directly to Bingham Channel and deposited along the banks of the channel upstream from the residential areas. The mining waste was transported primarily by normal runoff events and flooding. The last major flood through the Bingham Creek Channel occurred in 1983. Precipitation events continue to erode tailings into the channel.

Contaminated soil is also wind-blown and disturbed during development activities. Dust-size particles (especially those with diameters of 100 microns or less), are a significant source of exposure, and are transported by wind and human

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activities from source areas into yards and homes. Also, irrigating systems contribute to migration of contaminated soil in the channel; the channel receives water released from the irrigation canals.

Analytical results for 85 samples show that the lead levels in the channel soil between 3200 West and 4800 West range from 290 mg/Kg to 23,000 mg/Kg, and arsenic levels range from 19 mg/Kg to 890 mg/Kg. The mean concentrations are 5661 mg/Kg lead and 202 mg/Kg arsenic. Previous sampling indicates that lead levels range even higher in some areas of the channel.

A significant potential for continued human exposure to hazardous substances exists at the Site. Several miles of the channel have soil with an average concentration of lead in excess of 2500 mg/Kg. Approximately 70% of the material from 85 samples tested at the Site passed through a 250 micron mesh, which is the particle size considered most available for human exposure. In addition, concentrated deposits of tailings with high lead levels are frequently observed at depths from six inches to several feet below the surface of the channel.

II. PURPOSE - OVERVIEW

This Statement of Work (SOW) defines the objectives and scope of work that is involved in fulfilling the requirements of the Unilateral Administrative Order (Docket # CERCLA VIII-93-10). The purpose of the work described herein is to address the uncontrolled tailings with elevated lead and arsenic present at the Site and prevent the release or potential release of hazardous substances. This action is designed to protect residents in the area who may be exposed to lead and arsenic levels that may pose a health threat. The scope is limited and is focussed on the channel as a source area that poses a potential for human exposure to high levels of hazardous substance in the channel and poses the potential for recontamination of residential properties remediated in a Removal action implemented in 1991. It should be noted that the threat posed by arsenic will be addressed by this Removal Action. The primary contaminant of concern at the Site is lead.

The scope of work required in this action includes but is not limited to the channel invert, side slopes, and associated flood plain areas. The priority is placed on the channel through the residential reach, which extends from Redwood Road (including Brookside Trailer Park), to 4800 West. The channel reach up gradient from 4800 West is also included in the scope of this Removal Action. Also included in the scope is the area located at the northeast corner of 3200 West and 9000

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South. However, generally the action does not include residential properties unless the property is adjacent to or inherently part of the channel, flood plain, or alluvial fans and concentrations of lead in the soil exceed the action level.

The action requires the removal of soil containing lead at concentrations greater than 2,000 mg/Kg or to depths generally not to exceed 3 feet in the channel and placing an adequate cover over contaminated areas to prevent exposure and continued migration of contaminated soil. The channel will be regraded with clean fill from either the banks of the channel or from an off-site borrow source.

Specific elements of the response action are described in more detail below.

A. Channel Area:

The response action calls for removing soil containing lead concentrations greater than 2,000 mg/Kg from the channel, and placing an adequate cover over contaminated areas to prevent exposure. The channel will be regraded with clean fill from either the banks of the channel or from an off-site source.

1. Soil removal depths will depend on conditions in the channel and contaminant depth; generally, the removal depth will not exceed three feet, except in limited areas where pockets of deep deposits may be effectively removed. The lateral extent of soil removal will generally be limited to the channel banks and undeveloped flood plain with lead concentrations in excess of 2,000 mg/Kg.

2. Channel grade and contours will be restored, and soil fill will have sufficient clay content to prevent erosion, due to normal runoff flow and 100 year flood events in the channel. Restoration of the channel must be based on appropriate designs for open channel flow.

3. Vegetation will be re-established where necessary to restore the landscape and stabilize the channel.

4. Culverts, spillways, rip-rap, stilling basins or other systems will be installed as necessary.

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5. Contaminated soil will be consolidated and transported to a repository for storage.

The estimated volume of soil that may be removed from the channel between 3200 and 4800 West is 92,000 cubic yards. However, this is not a limit to the amount to be removed. The soil volume requiring removal in the channel below 3200 West is uncertain. It is expected, however, to be significantly less than the upper reaches.

If conditions prohibit adequate removal of contaminated soil, a second approach to stabilizing the channel and preventing exposure is constructing a concrete channel. EPA will determine when and if this approach is appropriate. Conditions that may warrant concrete channelization include side slope stability and proximity to structures such as roads or buildings adjacent to the channel. This option will also require some soil removal in the channel and up the embankments as described above. However, concrete channelization will not be used unless necessary to adequately stabilize the channel to prevent contaminant migration.

A retention or settling basin on the up gradient end of the remediated area may be necessary to prevent recontamination, if the Removal is not completed through the upper reach of the channel.

B. **Lots 9000 South/3200 West:**

The Removal Action calls for removing a minimum of 18 to 24 inches of contaminated soil (lead greater than 2000 mg/Kg). Additional sampling is necessary, however, to identify exact boundaries.

1. Soil excavated from this area must be transported to the approved repository for storage.

2. The area must be restored to original grade and re-vegetated. All haul roads and soil staging areas must be rehabilitated.

Specific requirements that must be addressed in the Work Plan are described below.

III. REMOVAL WORK PLAN

The Respondent shall prepare a draft Work Plan for submittal to EPA 30 days after the effective date of the Order. The Work Plan must describe how the approved Removal action for

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the Site as described above will be implemented by the Respondents. The Work Plan must include at a minimum the following elements:

A. SELECTED RESPONSE ACTION AND SITE DESCRIPTION

Describe the EPA approved Removal action with a short overview of the tasks required to implement the Removal. Also provide a description of the Site relating specific areas to the elements of the response action. This section must address the physical characteristics of the channel and the engineering design required for restoration of the channel. The Work Plan must include a digitized copy (for computer) and graphic presentation of current surveyed channel cross sections. The Respondents must coordinate with EPA before obtaining the channel cross sections to determine the location and interval requirements for those measurements.

B. MATERIALS HANDLING AND STORAGE

Methods of materials handling for contaminated soils, clean soils, and stabilized soils (if required) must be described. This section shall include methods and equipment for excavation, transportation on-site, temporary stockpiling, and final placement of stabilized material (if required). Maps depicting access routes, stockpile areas, work areas, etc., shall be provided.

C. DISPOSAL FACILITY

If an off-site disposal facility is used to meet the requirements of the response action, the plan shall list the name and location of the facility. If an on-site repository is selected, the design specifications and construction QA/QC plans must be submitted in the Work Plan. The EPA shall have final approval of the use of the proposed disposal facility.

D. TRANSPORTATION

Transportation of contaminated material to the repository and the routes for hauling off-site borrow material is to be addressed. This section shall discuss the types of vehicles, routing and load limits. Primary and alternate routing from the Site to the disposal facility shall be listed. Maps of the route shall be attached. Any required permits shall be obtained from the appropriate agency. Appropriate traffic control measures must be provided for during hauling activities.

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E. ENGINEERING CONTROLS

Controls to prevent release of contaminants off-site shall be addressed in this section. Also to be addressed are the final grading, contouring, erosion controls, and re-vegetation of the Site. Methods for dust suppression from the trucks (tarping, wet loads) and from the roadways, shall be addressed. This requirement also includes necessary retention or stilling basins to mitigate recontamination of the channel from upper reaches that may not be addressed during the construction season.

1. DUST SUPPRESSION

Methods of dust control to be used during excavation, transportation, and placement of soil must be addressed.

2. EROSION CONTROL

Methods of erosion control, both during and after completion of the Removal, must be addressed. Long term monitoring of erosion control methods must also be addressed.

3. FINAL CONTOURING

The channel must be re-established to ensure the appropriate flow capacity using standard methods of open channel design. The Site shall be recontoured to meet with existing native ground contours, and to minimize erosion due to air and water action. During construction grade control must be maintained with engineering surveying. Generally, only those measures necessary to ensure the stability of the channel will be required and no additional work such as replacement of existing culverts related to routine flood control measures will be required.

4. RE-VEGETATION

Methods of re-vegetation for the final configuration on the site shall be addressed. The mixture of seed to be used for vegetation shall be approved by the EPA.

F. SAMPLING and ANALYSIS/TESTING PROCEDURES

Sampling and analysis will be necessary to fulfill the requirements of the response. Soil sampling will be necessary to delineate perimeter areas for excavation, defining the depth and lateral extent of contamination and similar objectives. The respondents must determine the potential for leaching of hazardous substances from the

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soil to be placed in the repository. A sampling plan for confirmation of concentrations of hazardous substances in the removal area after excavation of soil must be implemented. To the extent it is necessary to collect multimedia samples, the procedures and plans for sampling all environmental media must be addressed in the Work Plan.

Also, data related to the repository design specification and materials testing must be provided as necessary, and the appropriate testing procedures must be addressed in the Work Plan.

Details for the sampling and analyses procedures must be provided in the sampling and analysis plan (SAP) as described in Section IV.

G. WORK AREAS

Work areas shall be outlined. Maps of the proposed work areas shall be provided.

H. SITE SECURITY

Security shall be maintained at the Site and the work plan must describe in general the plans for maintaining security.

I. PERSONNEL AND EQUIPMENT REQUIREMENTS

The work plan must identify labor mix and the number and types of equipment required to implement the action. Key management/supervisory personnel who will be available on-site must be identified.

J. PERSONNEL AND EQUIPMENT DECONTAMINATION

Decontamination procedures for personnel on-site shall be addressed in this section. Decontamination procedures for all equipment used on-site shall be listed. Disposal of decontamination materials shall be addressed. Criteria for release of equipment off-site shall be addressed.

K. OPERATION AND MAINTENANCE

Requirements for ensuring the long term effectiveness of the Removal such as monitoring ground water, maintenance of the capping, erosion control and site security will be addressed in the Removal Work Plan. If necessary, sampling to determine if contaminated soil has migrated

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into clean areas must be implemented during construction and after demobilization.

L. ARARs

The Respondent must specify in the Work Plan how the applicable or relevant and appropriate requirements will be complied with during and after the implementation of the Removal action.

M. REPORTING AND DOCUMENTATION

1. WEEKLY REPORTS

In addition to the weekly reporting specified in the Order, weekly reports submitted to the EPA must also detail Site activities, volumes of materials excavated, volumes of materials stockpiled, volumes of materials stabilized (if required), volumes of materials transported off-site, and any injuries/accidents on-site. Additional reporting will be made immediately available in the event of an emergency or deviation from the Removal Work Plan. Confirmation soil sampling results must be summarized and reported also.

2. FINAL REPORT

A final report detailing all major tasks and critical data regarding volumes, area and depths associated with materials excavated, stabilized, transported and placed in storage shall be submitted to EPA 60 days after completion of all work on the Site. The report shall detail all confirmation samples taken on-site and the analytical data from the sampling. Long term erosion protection/monitoring shall also be addressed in the final report. An engineering survey of the channel must also be provided in graphic and digitized formats for conditions before and after the implementation of the response action. In addition, photographic documentation of the final channel construction must be provided in the report.

IV. Sample Analysis Plan (SAP)

The Respondents will develop a site specific Sampling and Analysis Plan (SAP). The individual sections, as outlined below, must be addressed in the SAP. The SAP must be submitted to EPA for comment and approval as part of the Work Plan. The SAP shall be applicable to all phases of work performed under the Order. The SAP must include the following

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elements and it must be consistent with the Quality Assurance/Quality Control Guidance for Removal Activities - Sampling QA/QC Plan and Data Validation Procedures, April 1990 (EPA/540/G-90/004).

A. SITE HISTORY AND BACKGROUND

A brief site history and background introduction will be given. The availability and quality of existing data for the Site will be addressed in this section. Previously obtained analytical results from sampling activities shall be described and used to develop the SAP. EPA will determine the usefulness of existing data and the need to expand upon that data. To the extent that existing data is relied upon to direct activities during the response action, a summary of the existing data shall be submitted with the Work Plan.

B. RATIONALE FOR SAMPLING DESIGN

The rational for the overall sampling design, and for specific matrices and locations, must be given. Representative sampling procedures for soil must be applied for determination of heavy metals concentrations. Specifically, statistically random approaches for selecting specific locations for grab samples must be employed.

C. SAMPLES - LOCATIONS AND NUMBERS

The location and number of samples to be taken for each subcategory below shall be listed.

1. TAILINGS AND SOILS
   a. SURFACE
   b. SUBSURFACE

2. WATER
   a. SURFACE
   b. SUBSURFACE

3. AIR

D. EQUIPMENT DECONTAMINATION CHECK SAMPLES

E. ANALYTICAL METHODS

EPA approved analytical procedures shall be utilized for each matrix. The table shall list the EPA reference number for the procedure and the detection limits for each matrix. Conditions may warrant using X-ray florescence (XRF) for screening soil samples

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during the removal operations. Appropriate confirmation analyses using standard EPA methods would also be required.

The Respondent's laboratory shall be identified to the EPA for approval prior to Site operations. The EPA at its option, may perform an audit on the laboratory selected.

1. SOIL

2. WATER

3. AIR

F. QA/QC PROTOCOLS

Quality Assurance/Quality Control procedures must be consistent with accepted EPA standards as described in the above referenced guidance. Generally, quality assurance objective 2 (QA2) must be achieved for the sampling and analyses at the Site. However, QA1 (including XRF analytical methods) data may be used with appropriate quality control and confirmation analyses.

G. SAMPLING PROCEDURES

The plan shall address the procedures for obtaining representative samples for each matrix as listed below:

1. TAILINGS (SURFACE AND SUBSURFACE)

2. SOILS (SURFACE AND SUBSURFACE)

3. SURFACE WATER

4. GROUND WATER

5. AIR

6. EQUIPMENT DECONTAMINATION SAMPLES

H. SAMPLE CUSTODY

Procedures for sample custody, logbooks, recordkeeping, in the field and in the laboratory must be described in the SAP.

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I. SPLIT SAMPLES

Split samples will be available for EPA during all sampling activities. In any case where the analytical results differ, the EPA shall have the final determination as to which results shall be used in determining clean-up objectives.

J. DATA REDUCTION, VALIDATION, AND REPORTING

Reduction of the analytical data, validation procedures for the data, and final reporting format for the data shall be addressed.

K. DATA QUALITY OBJECTIVES

The Data Quality Objectives for all sampling activities must be described in the SAP. Generally QA1 and QA2 objectives are appropriate. Procedures for achieving the necessary Q level including the laboratory and field duplicate samples, matrix spikes, performance Evaluation samples, limits of detection must be described.

L. DECONTAMINATION

Decontamination areas and methods, for equipment and personnel, shall be addressed.

M. REPORTING AND DOCUMENTATION OF ANALYTICAL DATA

A final report detailing all sampling activity on-site, analytical data, procedures used for sampling, analytical procedures used, QA/QC controls, and data validation results shall be presented to the EPA within 30 days of completion of the removal phase of work. Summary reports of analytical results must be submitted to EPA 21 days after the sample collection dates for each sampling event, or 7 days after receiving analytical results whichever is less. When analytical results are obtained during the implementation of the Removal action that effect soil removal decisions such data must be made available to EPA immediately.

V. PROJECT SCHEDULE

A schedule of operations for the Removal must be developed addressing the specific tasks to be accomplished, the anticipated start date, the duration of the tasks, and the projected completion date. This must include the sequence in

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which the specific reaches of the channel are scheduled for earth moving and re-habilitation activities.

VI. HEALTH & SAFETY

A Site Health and Safety (H&S) plan for all anticipated activities at the Site must be developed and submitted to EPA prior to initiation of work on Site, pursuant to the Order. The H&S plan shall cover anticipated activities and personnel for both Phases of work under this Order. The plan shall address required training, medical monitoring, and personnel health and safety. In addition, a site specific safety plan shall be developed for Site activities.

A. REQUIRED TRAINING

All personnel on-site shall complete the training required by the Occupational Health and Safety Agency (OSHA) (1910.120) for workers on hazardous waste sites. Documentation of such training shall be provided to the EPA prior to any on-site activities.

B. MEDICAL MONITORING

A medical monitoring program for workers on-site shall be established as required by OSHA.

C. SITE SAFETY PLAN

A site specific safety plan shall be developed prior to mobilization on Site for any activity. The plan shall describe the tasks to be performed, the hazards (both physical and chemical) on site, the hazards for each task, personnel on site and their responsibilities, hazard monitoring, designated levels of protection for each task (protective clothing, respiratory protection (level A, B, C, or D.)), decontamination procedures and areas, and emergency information (phone numbers for EMS, ambulance, hospital, etc., hospital route with map).

VIII. ACCESS AND PERMITS

Access to the Site shall be secured from the landowners of the specific site and from owners of adjacent lands where required for access to the Site. The Respondent shall obtain, in advance of operations, all required state and local transportation, construction, and operating permits as appropriate for a Removal action pursuant to CERCLA.

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STATEMENT OF WORK SCHEDULE OF TASKS
BINGHAM CREEK CHANNEL SITE - PHASE 2

TASKS/DELIVERABLES	START DATE	DUE DATE/ESTIMATED COMPLETION DATE
Draft Work Plan and SAP		30 days after UAO effective date
Final Work Plan and SAP	upon receipt of EPA comments	14 days after EPA comments received
Health\Safety Plan		45 days after UAO effective date
Sampling Activities	7 Days after SAP approved by EPA	ongoing
Removal Action	May 15, 1993	October 30, 1993
Draft Final Report		60 days after response completed
Final Report	after EPA comments received on draft	30 days after EPA comments received
O & M	Completion of Removal action	ongoing

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EXHIBIT 2

Maps of the Area

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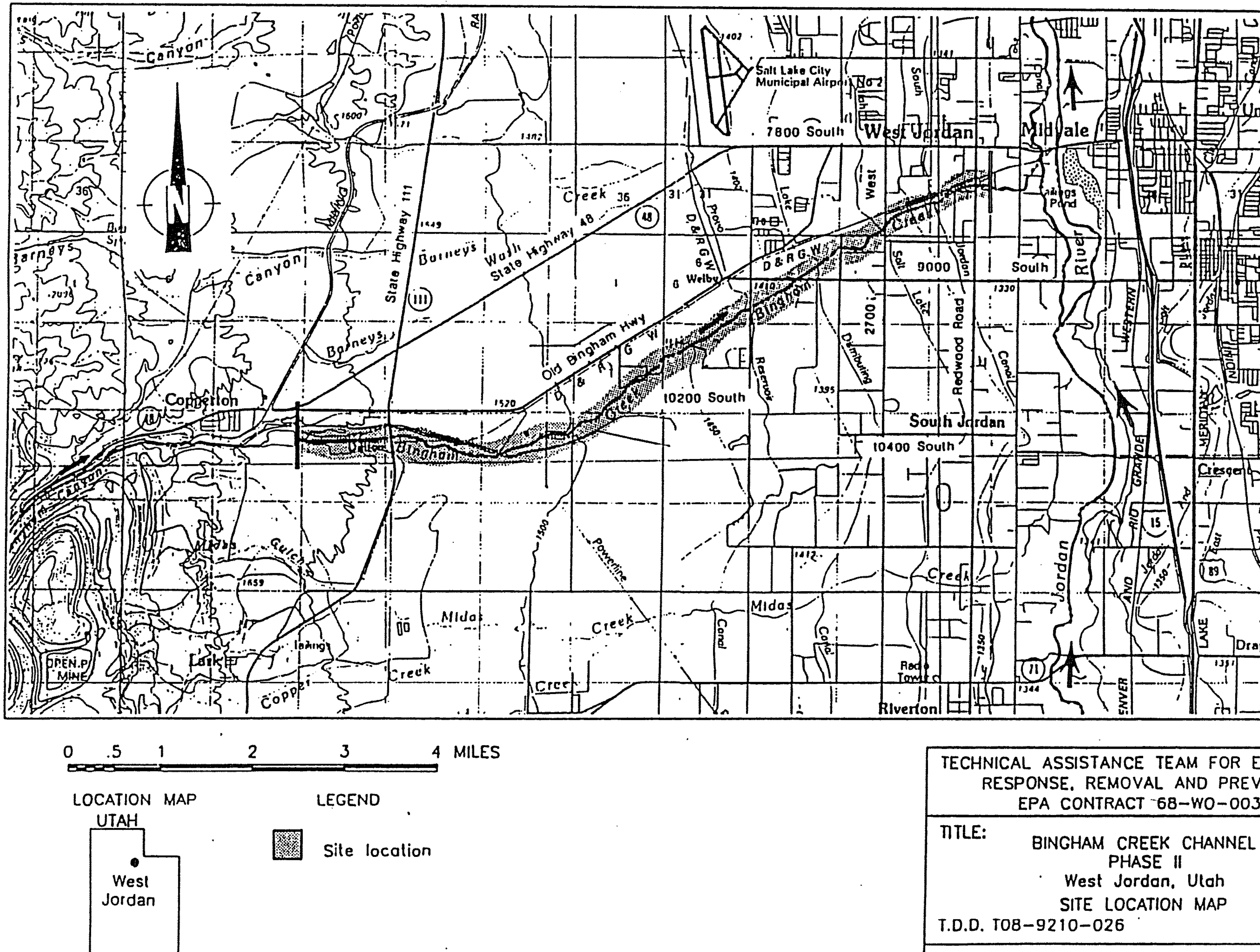

TECHNICAL ASSISTANCE TEAM FOR EMERGENCY RESPONSE, REMOVAL AND PREVENTION
EPA CONTRACT 68-WO-0037

TITLE: BINGHAM CREEK CHANNEL
PHASE II
West Jordan, Utah
SITE LOCATION MAP
T.D.D. T08-9210-026

ecology & environment, inc.
DENVER, COLORADO

FIG. 1

Date: 12/92 Drawn by: RSM Scale: ____

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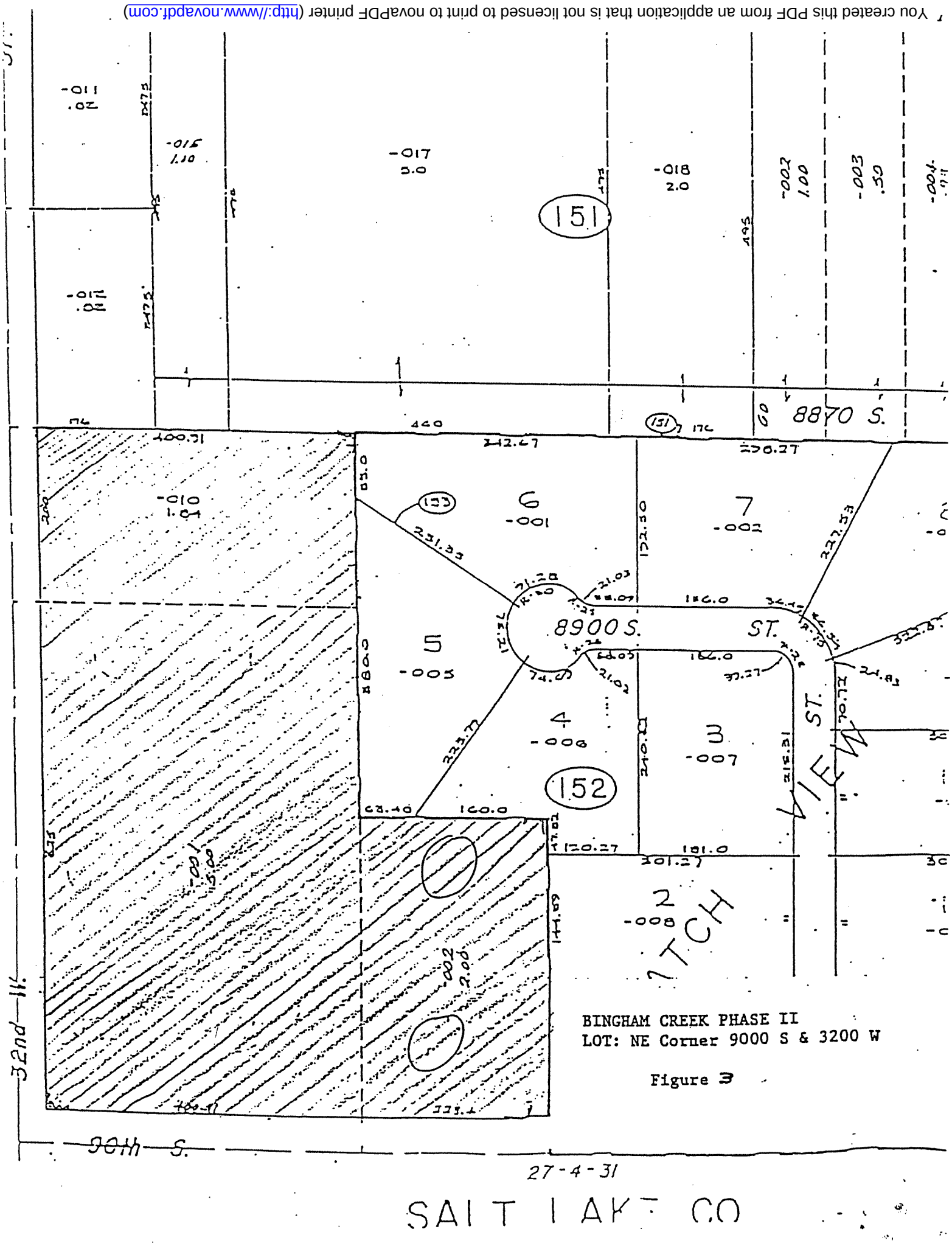

BINGHAM CREEK PHASE II
LOT: NE Corner 9000 S & 3200 W

Figure 3

ENVIRONMENTAL COMMITMENT FOR TODAY AND THE FUTURE

Daybreak has been carefully planned to incorporate key social and environmental features in its design. These important choices demonstrate Kennecott Land's commitment to sustainable development and environmental quality.

- *All Kennecott Land homes are Energy Star-certified, making it the largest single Energy Star community in Utah and one of the largest in the country.*
- *More than 1000 acres or 30% of Daybreak has been planned as "open space." This open space will be irrigated with secondary water and landscaped with water-wise native plants.*
- *Three-quarters of all home construction waste is being recycled in a unique program with on-site builders.*
- *Our storm water management system has been designed to retain 100 percent of storm water on site in an effort to preserve precious groundwater resources.*
- *Kennecott Land has a vigorous dust control program for construction activities far exceeding standard industry practice.*

Combined, these efforts will help ensure our natural resources will be available to future generations, and that Utah will remain a healthy and desirable place to live.

Kennecott Land is the only land developer in the USA with an environmental management system certified by the International Organization for Standardization (ISO 14001 certification).

Envision Utah awarded Kennecott Land with two Governor's Awards for Quality Growth for sustainable development achievements at Daybreak. In 2002 Kennecott Land received the Grand Achievement Award for Design and Planning and in 2003 an Award of Merit for ecosystem approach to planting design, plant procurement and landscape maintenance.

Kennecott Land

5295 South 300 West, Suite 475
Murray, Utah 84107
801.743.4624

Additional information can be found online at:

Kennecott Land
www.kennecottland.com

Kennecott Utah Copper
www.kennecott.com

U.S. Environmental Protection Agency
www.epa.gov

Jordan Valley Water Conservancy District
www.jvwcd.org

Utah Department of Environmental Quality
www.eq.state.ut.us

Rio Tinto
www.riotinto.com

ISO Environmental Certification
www.iso.org

DAYBREAK'S ENVIRONMENTAL HISTORY

INTRODUCTION

Kennecott Land is dedicated to building enduring communities on the Salt Lake Valley's West Bench. We manage our land holdings and build our communities in ways that ensure future generations will have the opportunity to enjoy great neighborhoods, beautiful land, abundant water, and clean air.

As part of Rio Tinto, a world-wide mining company, Kennecott Land is well-versed in the reclamation needs of mining operations and is sensitive to the public's questions and concerns about past mining activities. We hope the information contained in this report will help you understand our significant work and commitment to ensure clean and safe soil and water in our first community of Daybreak.

Peter McMahon,
President of Kennecott Land

HISTORY

Utah's first mining district was born in the early 1860s when reports of significant mineral deposits in the Oquirrh Mountains were confirmed. Over the next 140 years the industry went through enormous changes in both prosperity and modernization. In 1989, one of the world's largest mining companies, Rio Tinto, purchased Kennecott Utah Copper. In 2001, Kennecott Land was created to manage and develop the non-mining land and water assets acquired over the past century by the copper company.

SOIL CONDITIONS AT DAYBREAK

Kennecott Land has met the U.S. Environmental Protection Agency's standards for soil conditions for residential development at Daybreak. A small part (around 13%) of the community sits on the former site of evaporation ponds used in conjunction with mining operations in Bingham Canyon. The following chronicles the development and removal of soil beneath those holding ponds.

- *In 1936, the Bingham mine constructed evaporation ponds to store and evaporate mine water originating from the Bingham Canyon watershed.*
- *Over time additional ponds were constructed to increase capacity and the area became known as the South Jordan Evaporation Ponds (SJEP).*
- *The ponds were used until 1965 and after that for periodic storage of rainwater until 1987. The entire area was discontinued for holding pond use in 1987.*
- *Studies in the early 1990s concluded that there were elevated levels of heavy metals in the soil where the holding ponds had been located. Kennecott Utah Copper took responsibility for the impacts and agreed to reclaim and remediate the SJEP area. This was undertaken in agreement with the U.S. Environmental Protection Agency (EPA).*
- *A massive clean-up operation began in 1994 and involved the removal of pond sediment and six additional inches of underlying native soil to an off-site location. Some sediment was deemed appropriate to consolidate on-site. In 2001 the EPA issued a Record of Decision that stated that the clean-up remedy was complete, that 'no further action' was needed and the site was suitable for residential development. Despite the EPA's sign-off, Kennecott Land went beyond standard industry practice by removing the remaining consolidated pond sediment from the site.*

WATER AT DAYBREAK

Residents at Daybreak get their drinking and household water from the Jordan Valley Water Conservancy District as do other residents of the southwest Salt Lake Valley. Parks and open spaces at Daybreak will be irrigated through the use of an innovative secondary water collection and distribution system. Secondary water (originating from Utah Lake) will be piped in through existing canals, treated at a holding pond on the western edge of the property, and then stored in a recreational lake on Daybreak property. The water will then be distributed for irrigation to the parks and open spaces adjacent to the lake.

SOUTHWEST VALLEY GROUNDWATER

More than 300 feet beneath the surface of the southwest valley (including South Jordan, West Jordan, Riverton and Herriman) is a plume of groundwater that has been impacted by early mining operations in the Oquirrh Mountains. This water was found to contain higher than normal levels of sulfate. The presence of the groundwater plume does not constitute a health or safety risk or concern to individuals who live, work, or recreate at Daybreak. However, Kennecott Utah Copper is working with the Utah Department of Environmental Quality and the Jordan Valley Water Conservancy District to implement a clean-up plan that will have long-term environmental benefits. Here are the facts:

- *The groundwater plume is approximately 300 feet beneath the surface of Daybreak and is not used at Daybreak or any other community in the southwest valley.*
- *In August of 2004, Kennecott Utah Copper signed an agreement to perform a groundwater clean-up in conjunction with the Utah Department of Environmental Quality and the Jordan Valley Water Conservancy District.*
- *The project has a 40-year timeline and involves the construction of reverse-osmosis filtration plants that Kennecott Utah Copper will be financing. At the end of this period the size of the plumes will have decreased by up to 90 percent.*
- *This cleanup will provide an extra 7000 acre feet of clean water per year to the Jordan Valley Water Conservancy District.*