State of Utah

GARY R. HERBERT
Governor

GREG BELL
Lieutenant Governor

Department of
Environmental Quality

Amanda Smith
Executive Director

DIVISION OF ENVIRONMENTAL
RESPONSE AND REMEDIATION

Brent H. Everett
Director

ERRC-175-11

October 26, 2011

Ryan Dunham, Site Assessment Manager
U.S. EPA, Region 8
1595 Wynkoop Street 8EPR-B
Denver, Colorado 80202-1129

Dear Mr. Dunham:

Per your instructions, enclosed is a hard copy of the *Site Reassessment (SRA) Report* for the **Redwood Road Dump** site (referred to as the "Site"). The only change from the hardcopy sent July 11, 2011, is a modification of the Site Conceptual Model (Figure 3). I have also enclosed a copy of the previous signature page and a new signature page modified to include your signature information. If acceptable, please return a copy of the signed signature page for inclusion in our Site files. Please contact Neil Taylor at (801) 536-4102 if you have any questions concerning the Site Reassessment Report.

Sincerely,

Dale T. Urban P.G.
Site Assessment Section Manager
Division of Environmental Response and Remediation

DTU/NBT/eds

Enclosure(s)

SITE RE-ASSESSMENT (SRA) REPORT

Redwood Road Dump
Salt Lake County, Utah
UTD980961502

Prepared by: Neil Taylor
Utah Department of Environmental Quality
Division of Environmental Response and Remediation

Approved: N. Taylor Date: 10/7/2011
Neil Taylor, UDEQ Project Manager

Approved: Dale T. Urban Date: 10/25/11
Dale T. Urban, UDEQ Site Assessment Section Manager

Approved: _____ Date: _____
Ryan Dunham, Site Assessment Manager, EPA Region 8

State of Utah
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DIVISION OF ENVIRONMENTAL
RESPONSE AND REMEDIATION

Brent H. Everett
Director

ERRC-105-11

July 11, 2011

Margaret Williams, Site Assessment Manager
USEPA Region 8
1595 Wynkoop St 8EPR-B
Denver, Colorado 80202-1129

Dear Ms Williams:

Enclosed for your review is the *Site Reassessment (SRA) Report* for the **Redwood Road Dump** site (referred to as the "Site"). The Site was the primary landfill for Salt Lake City from 1923 until 1962. The Site is estimated to contain approximately 1,340,000 cubic yards of refuse and fill. Interstate 215 was constructed through the center of the Site in 1988 creating an eastern and western refuse pile.

The northern portion of the western landfill is used for the City's automobile impound lot. Salt and gravel are stored on the southern portion of the western landfill. A City vehicle washing and refueling facility is under construction on City property northwest of the eastern landfill. Snow cleared from downtown Salt Lake City in the winter is placed on the highest portion of the eastern landfill by City streets personnel, potentially increasing the volume of contaminated landfill leachate. A 1991 Site Investigation and a 2000 Targeted Brownfields Assessment have established the following:

Elevated concentrations of lead (2,610 mg/kg), benzo (a) pyrene (5,000 µg/kg) and dibenz (a, h) anthracene (1,000 µg/kg) were identified in subsurface soils. Elevated concentrations of arsenic (1,290 µg/L) antimony (34.2 µg/L), selenium (14.8 µg/L) and pentachlorophenol (3 µg/L) have been found in Site groundwater. The sampling of downgradient wells was not included in the previous studies. Therefore, the extent of downgradient groundwater contamination is unknown.

City Drain Canal surface water lead concentrations rise from a non-detectable background concentration to a high of 59.2 µg/L downstream from the Site. This concentration significantly exceeds the surface water Criteria Continuous Concentration of 2.5 µg/L. Arsenic levels increase from a background concentration of 61 µg/L to 82.8 µg/L after surface water passes the Site. A wetland environment exists ten miles downstream of the Site at the Great Salt Lake. Approximately 50 miles of wetland frontage occur within the 15 mile target distance limit. Several duck hunting clubs are located within these wetland areas. Site drainage enters the Great Salt Lake at Farmington Bay Wildlife Refuge.

We recommend that an Expanded Site Investigation include; (1) the sampling of downgradient shallow wells and wetiands and, (2) the resampling of groundwater and surface water. Inorganic and organic sampling data can then be evaluated with previously collected results to better understand threats to wetlands and wildlife and the potential for site listing on the National Priorities List.

After reviewing the SRA report, please inform us of any comments or changes that need to be incorporated in the final version of the document. Please contact Neil Taylor at (801) 536-4102 if you have any questions.

Sincerely,

Dale T. Urban P.G.
Site Assessment Section Manager
Division of Environmental Response and Remediation

DTU/NBT/eds

Enclosure(s)

SITE RE-ASSESSMENT (SRA) REPORT

Redwood Road Dump

Salt Lake County, Utah

UTD980961502

Utah Department of Environmental Quality
Division of Environmental Response and Remediation
Prepared by: Neil Taylor

SITE RE-ASSESSMENT (SRA) REPORT

Redwood Road Dump
Salt Lake County, Utah
UTD980961502

Prepared by: Neil Taylor
Utah Department of Environmental Quality
Division of Environmental Response and Remediation

Approved: N. Taylor Date: 5/17/11
Neil Taylor, UDEQ Project Manager

Approved: Dale T Urban Date: 7/1/2011
Dale T. Urban, UDEQ Site Assessment Section Manager

Approved: _____ Date: _____
Margaret Williams, Site Assessment Manager, EPA Region 8

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1.0 INTRODUCTION

Under authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended by the Superfund Amendments and Reauthorization Act (SARA), and in accordance with applicable provisions of the National Contingency Plan, the Utah Department of Environmental Quality, Division of Environmental Response and Remediation (DERR) has prepared this Site Reassessment Report (SRA) for the **Redwood Road Dump,** UTD980961502 (referred to as the "Site") in Salt Lake City, Salt Lake County, Utah. This SRA was prepared under a cooperative agreement between DERR and the U.S. Environmental Protection Agency, Region 8 (EPA). The purpose of the Site details described herein is to report information concerning current Site conditions, assess the threat posed to human health and the environment from hazardous materials or potential releases of hazardous materials and to support decisions regarding further investigation under CERCLA or other appropriate authority. Additionally, contaminant pathways/targets and near future uses of the Site were examined to identify if any possible changes to the property were imminent. The Site Visit Report is included as Appendix A. The EPA Preliminary Assessment Worksheet is provided as Appendix B.

2.0 SITE OBJECTIVES

The objectives of the activities performed during the SRA were related to assessing if hazardous substances located on-site pose a threat to human health or the environment.

The objectives of this SRA were to:

- Determine the continued presence of contamination in selected media;
- Assess the potential contamination characteristics;
- Assess the potential routes for contaminant migration;
- Assess the suspected exposure pathways;
- Identify potential targets that may be affected by on-site contamination as well as other targets that may be impacted by the migration of the contamination via the suspected exposure pathways; and
- Determine if continued assessment under CERCLA is warranted.

3.0 SITE LOCATION DESCRIPTION

3.1 SITE HISTORY AND PREVIOUS WORK

The Site extends west from 1900 West Street to 2200 West Street, and south from 500 South Street to Indiana Avenue (800 South) in Salt Lake City, Utah (Figure 1). The Site is approximately 70 acres in size and is owned by Salt Lake City Corporation (DERR, 1995). The Site is located in the SE l/4 of the SE 1/4 of the NE 1/4 of Section 9, Township 1 South, Range 1 West, Salt Lake Base Meridian (USGS, 1962). The Site is bisected by Interstate 215 (I-215) and includes an eastern and western refuse pile. The Salt Lake City Road Maintenance and Automobile Impound Lot is located directly north (across 500 South Street) of the western portion of the Site.

The Site was the primary landfill for Salt Lake City from 1923 to 1962, when it was closed to public dumping (DERR, 1995). The Site is estimated to contain approximately 1,340,000 cubic yards of refuse and fill (DERR, 1995). A manifest system was not in place at the landfill during its operation and no records remain of waste content or quantities dumped at the Site (UBSHW, 1987). In addition, no regulations were in place to limit possible hazardous waste additions to the landfill. The Site was reported to take in household, commercial and industrial wastes. The Site has experienced numerous sub-surface fires, occasional bad odors, caving and differential settling due to decomposing refuse (UBSHW, 1987).

The eastern portion of the Site was used from 1962 to 1995 by Salt Lake City Corporation's Parks and Recreation Department and Public Services Department for the disposal of leaves, grass clippings, tree trimmings and storm sewer sludge (DERR, 1995). I-215 was constructed through the center of the Site in 1988 creating an eastern and western refuse pile. It is believed that waste characteristics at the Site include municipal wastes such as household, commercial, industrial and organic materials.

A report entitled "Preliminary Investigations Disposition of Garbage Materials in Abandoned Landfill" (PI) was prepared for the Utah Department of Transportation (UDOT), Salt Lake City, Utah, by Dr. David W. Eckhoff in July of 1977 (Eckoff, 1977). The investigation found that mixed garbage and refuse had been dumped and burned on the Site. Twenty auger holes were drilled into the landfill. Forty three measurements for explosive gas were taken at five foot intervals within the drill holes. The borehole explosive gas concentrations are provided in Appendix C, Table 1.

The refuse and cover material in the interstate right-of-way was moved to the east pile during the construction of I-215 in 1988 (DERR, 1995). A Preliminary Assessment (PA) of the Site was prepared by the Utah Department of Health's Bureau of Solid and Hazardous Waste in 1987. A 1991 Site Inspection (SI) sampling event included seven groundwater samples, three surface water samples, ten soil samples and three sediment samples (DERR, 1992). The monitoring well physical groundwater parameters are provided in Appendix C, Table 2. The organic data results for groundwater and surface water samples are provided in Appendix C, Table 3. The inorganic analyses for groundwater and surface water samples are provided in Appendix C, Table 4. The organic analyses for soil and sediment samples are provided in Appendix C, Table 5. The inorganic analyses for soil and sediment samples are provided in Appendix C, Table 6. The original report sample location map is provided as Appendix C, Figure 5. Figure 5a places the approximate sample locations on a 2008 satellite photograph. Figure 5b provides arsenic concentrations for soil and groundwater samples. The original report Site groundwater map is provided as Figure 6.

EPA Region 8 gave the Site a higher priority for further investigation under CERCLA on January 27, 1992 (USEPA, 1992). DERR conducted a Site Inspection Prioritization (SIP) for the Site in September, 1995. The report concluded that the Site may present hazards to those working and living near it, as well as to transients and bottle collectors

(DERR, 1995). Although the Site is vegetated and surface runoff is slow, the SIP concluded that the accumulated refuse, soil, and shallow groundwater contain hazardous substances and these present a threat to human health and the environment.

Chromium and lead contaminated soils were illegally placed on the central part of the eastern landfill some time during December of 1991 by Tool Design Engineering and Manufacturing facility personnel (DSHW, 2010). Chromium concentrations in samples collected from the soil ranged from 1,240 mg/kg to 3,300 mg/kg. Lead concentrations ranged from 1,000 mg/kg to 1,800 mg/kg. The contaminated soils were discovered in 1992. Approximately 310 cubic yards of soil was removed from the landfill under the supervision of the Division of Solid and Hazardous Waste and Terracon Consultants in November 1997. All eight cleanup verification samples were non-detect for chromium. Seven of eight confirmation samples were non-detect for lead with the remaining sample yielding 0.1 mg/kg lead (Terracon, 1997). The EPA residential screening level for lead is generally 400 mg/kg.

DERR conducted a Targeted Brownsfields Assessment (TBA) for the western portion of the Site and the Salt Lake City Road Maintenance and Automobile Impound Lot in June, 2000. Selected figures from that assessment together with 2008 satellite photo overlays are provided as Appendix D. Field work was conducted to assist Salt Lake City Corporation in gathering additional information about the Site (DERR, 2001). Appendix D, Figure 1 identifies the approximate location of trenches cut and sample locations. Phase I consisted of using a backhoe to cut trenches into the subsurface to evaluate the extent and type of refuse present. Soil samples were collected from selected locations. Phase II consisted of installing 15 direct push borings across the western landfill. Soil, soil gas, groundwater and surface water samples were collected and submitted for laboratory analysis of volatile organics, semivolatile organics, metals and pesticides. Field observations from the June 15, 2000 trenching and investigation activities suggest the extent of refuse in the western landfill is potentially limited to the landfill's eastern bench.

The Portland Cement Superfund site is located directly south of the eastern landfill and Indiana Avenue on approximately 71 acres. The risks posed by the Portland cement site were derived from cement kiln dust and chromium bearing bricks which were landfilled within the Site boundaries. The dust contained several heavy metals including: arsenic, cadmium, chromium, lead, manganese and molybdenum. The contaminated soil, kiln dust and chromium bricks were removed from the Portland cement site from 1992 through 1997. The Portland Cement site Record of Decision for Operable Unit Three (groundwater) states that groundwater contamination is contained in the shallowest aquifer within the Portland Cement site boundaries by a canal on the eastern boundary of the Portland Cement site known as the "City Drain", a City sewer line on the east and north of the site, and a storm water ditch west of I-215. Analytical results of semiannual groundwater monitoring beneath the Portland Cement site indicate that the contaminant plume is limited to shallow groundwater within the Portland Cement site boundaries (DERR, 2007).

3.2 CURRENT SITE CONDITIONS AND NEAR FUTURE USES

The northern portion of the western landfill and the sliver of land directly north of the western landfill across 500 South Street are used for Salt Lake City's automobile impound lot. Salt and gravel are stored on the southern portion of the western landfill. Both landfills are perimeter fenced (DERR, 2010a). The landfills are closed to the public with no dumping allowed (Pope, 2010). The eastern landfill is elevated about 10 feet above the natural ground surface and is covered with soil and natural vegetation. The landfill is about 300 yards wide and 400 yards long. Various materials are stored on a flat area northeast of the eastern landfill. Some of these materials include soil from the City cemetery, wooden posts, large flowerpots for decorative downtown projects, and large utility poles.

A City vehicle washing and refueling facility is under construction on City property northwest of the eastern landfill. The City chips trees, limbs and leaves on a large asphalted area southeast of the eastern landfill. This material is later hauled to the county landfill for composting. Plans are being considered to extend this asphalted area further north and convert the area into a temporary model airplane airport. Access to the landfill outside the asphalted area will remain restricted (Pope, 2010).

Snow cleared from downtown Salt Lake City is placed on the highest portion of the eastern landfill by City streets personnel. An area on the elevated eastern landfill has been leveled and covered with clay and gravel for this purpose.

3.3 GEOLOGY, HYDROGEOLOGY, HYDROLOGY AND METEOROLOGY

The Site is located within the Jordan River Valley of the Great Basin Section of the Basin and Range Physiographic Province. The Jordan River Valley is bounded by the Wasatch Mountains to the east, the Oquirrh Mountains to the west, the Traverse Mountain Range to the south, and the Great Salt Lake to the north. Basin-fill deposits were eroded from the Wasatch and Oquirrh Mountains and deposited in the Salt Lake Valley. The general stratigraphy of the area is characterized by several hundred to several thousand feet of unconsolidated and semi-consolidated basin fill deposits. Mountain streams and historical lakes carried most of the sediment into the basin and ancient Lake Bonneville. The fine-grained sediments were deposited in deeper portions of Lake Bonneville. The coarser-grained sediments were deposited along the margins of ancient Lake Bonneville near the mountains as its level eventually receded to its present level as the Great Salt Lake (Waddell, et al, 1987).

Precipitation that falls as rain or snow in the mountain ranges flows down the range fronts and recharges the deep aquifer within the Salt Lake Valley. The shallow water table aquifer is generally recharged by downward infiltration from precipitation, canals, irrigated lands and streams as well as by upward leakage from the underlying confined aquifer (Waddell, et al, 1987). Surficial basin fill deposits within the Salt Lake Valley generally consist of a series of Quaternary lacustrine, alluvial fan, sand dune, mud-rock flow, ash falls, glacial and flood plain sediments. Groundwater occurs within these

valley fill deposits as a complex series of aquifers (Waddell, et al, 1987). The deeper aquifer lies in Quaternary deposits of clay, silt, sand, and gravels that are hydraulically interconnected with individual beds of sand and gravel ranging in thickness from less than one foot to tens of feet. The maximum thickness of the principal aquifer is greater than 1,000 feet in the northern portion of the valley. Most deep wells in the Salt Lake Valley are completed in sediments at depths of less than 1,200 feet.

Municipal wells within four miles of the Site are completed at depths of 1,100 feet and less (DERR, 1992). There are no wells currently in use on-site (DERR, 2010a). Drilling logs from the four monitoring wells installed at the Site in 1991, in addition to the well logs from the neighboring Portland Cement site (UTD980718670) reveal a lithology of clay, silt and sand beneath the landfill (DERR, 1995). A soil survey of the Salt Lake area identified the soils at the Site as dumps (Du), Salt Air Silty Clay Loam (Sa), Loamy Borrow Pits (Lo), Sandy Terrace Escarpments (Sc), and Decker Fine Sandy Loam (De) (DERR, 1992).

Groundwater flow in the shallow aquifer although complex, due to the interaction with local surface water and underground utility pathways, is generally to the northwest. Appendix C, Figure 6 provides known groundwater contours and the anticipated groundwater flow direction. A 42 inch sanitary sewer is buried at an average depth of 17 feet below grade on the eastern border of the Site. The bedding material of the sewer line appears to be removing groundwater from the shallow aquifer and routing it to the City Drain. Groundwater flow under the eastern landfill also appears to be toward the City Drain (DERR, 1992).

The Salt Lake Valley is located in the Great Basin drainage system, which is a closed system with no outlets. The Jordan River and its tributaries form the main drainage for the valley. The Jordan River is a Class 3C stream and discharges into the Great Salt Lake. The Surplus Canal and the City Drain are located in close proximity to the Site. The City Drain is located west of I-215 and just east of the western landfill. The surplus Canal is a losing stream and likely receives no contribution from contaminated groundwater (EPA, 1998). The "North Ditch" drains the City property northeast of the eastern landfill. The ditch is piped to a storm drain that flows to the City Drain. The City Drain is the primary groundwater discharge point. The City Drain joins the Sewer Canal approximately six miles to the north of the site. The Sewer Canal eventually discharges into the Great Salt Lake. The Surplus Canal is located approximately 1,000 feet to the west of the Site. The discharge points for the Jordan River, the Surplus Canal and the Sewer Canal into the Great Salt Lake are characterized by freshwater marshes. The discharge points are within the confines of the Farmington Bay Waterfowl Management Area (DERR, 1992).

The Salt Lake Valley is characterized as being semiarid. The normal maximum temperature ranges from 37.0° F. in January to 93.7° F in July. The normal minimum temperature ranges from 19.7° F in January to 61.8° F in July. The average annual rainfall is 15.31 inches per year with a normal monthly high of 2.21 inches in April and a normal monthly low of 0.72 inches in July. The average annual snowfall is 58.0 inches.

The estimated pan evaporation is a 3.91 inches per year. The winds are predominantly from the south and southeast and have a mean speed of four to five miles per hour (Ashcroft, 1992).

3.4 SITE CONCEPTUAL MODEL

Water from precipitation and snow dumping flow through the unlined landfill waste. The leachate contaminates shallow groundwater. The contaminated groundwater flows to the City Drain Canal which bisects the site and is carried north by surface water flow into wetlands and bird habitats. Contaminated groundwater also flows to the northwest in the subsurface, potentially contaminating shallow, private water wells. The site conceptual model is illustrated as a flow chart in Figure 3.

4.0 PATHWAY ANALYSIS

4.1 SITE WASTE SOURCES QUANTITY AND CHARACTERISTICS

Both west and east landfills contain municipal trash and unknown quantities of hazardous materials. Both petroleum and chemical wastes were found in soil borings that were part of a 1977 UDOT landfill waste investigation. The volume of the landfills is calculated at approximately 1,338,000 cubic yards (Eckoff, 1977). The landfills are not properly contained to minimize leaching of materials into the shallow groundwater.

4.2 GROUNDWATER MIGRATION PATHWAY

4.2.1 TARGETS

Seventeen municipal wells from three cities are located within the four mile target distance range. All wells are located east or south of the Site and hydraulically upgradient (DDW, 2010a; DDW, 2010b). All three city water systems are blended with multiple groundwater and surface water sources. Table 1 identifies the population served by the three public water systems having wells located within four miles of the Site.

Table 1
Population Receiving Groundwater from Wells Located within Four Miles of the Site

System Name	Population Served
Granger-Hunter Improvement District	106,000
Salt Lake City	387,506
South Salt Lake	18,000
Total Population Served	511,506

Approximately 4,102 underground points of diversion are located within four miles of the Site. The uses for the large majority are for "domestic" or irrigation purposes and most are upgradient of the Site (DWR, 2010). The closest downgradient well is approximately 400 yards northwest of the Site, north of 500 South and east of the Surplus Canal. The

well is 2 inches in diameter, 280 feet deep and was drilled in 1947. All downgradient wells within 1.5 miles are from 200 to 400 feet deep, artesian wells, drawing from the deeper, confined aquifer. It is likely that shallow groundwater flows into the City Drain Canal that bisects the site.

4.2.2 SUMMARY OF PAST RESULTS

4.2.2.1 DERR 1991 Site Inspection

Four monitoring wells installed by EPA and two Portland Cement CERCLA Site monitoring wells to the south of the Site were sampled (Appendix C, Figure 5). A duplicate sample was also collected from RD-MW-02.

Appendix C, Tables 3 and 4 summarize the analytical results for the seven groundwater samples. All samples were analyzed for volatiles, base-neutral/acid extractables, pesticides, PCBs and metals. There were no pesticide or volatile compounds detected in the groundwater samples. There were no organic chemical concentrations found above Superfund Chemical Data Matrix (SCDM) benchmarks (SCDM, 2004). Appendix C, Table 4 lists the inorganic analyses. A summary of the metals detected near or above SCDM benchmarks is provided in the table below. Arsenic was detected at 314 µg/L, 248 µg/L and 179 µg/L in three of the four downgradient wells compared to 19 µg/L in the background well. Sample RD-MW-05 contained 34.2 µg/L antimony. Selenium was detected in RD-MW-01 at 14.8 µg/L.

Table 2
Redwood Road Dump 1991 Site Inspection
Metals Detected in Groundwater above SCDM Benchmarks

Metal	MCL (µg/L)	RDSC (µg/L)	CRSC (µg/L)	Highest Concentration Detected (µg/L)
Arsenic	10	11	0.57	314
Antimony	6	15	-	34.2
Selenium	50	180		14.8

MCL = Drinking Water Maximum Contaminant Level
RDSC = Reference Dose Screening Concentration
CRSC = Cancer Risk Screening Concentration

4.2.2.2 DERR 2000 Targeted Brownfields Assessment

Approximately 15 direct push borings were installed across the Site during the 2000 TBA. Soil, soil gas, groundwater and surface water samples were collected and submitted for volatile organic, semivolatile organic, pesticides, PCBs and dissolved metals analysis.

Sampling results from the June 2000 TBA revealed pentachlorophenol in sample RRD-11 at an estimated concentration of 3 µg/L. The MCL for this compound is 1 µg/L. No other organics were detected in the groundwater above SCDM benchmarks (DERR, 2001).

Arsenic was detected in many groundwater samples above the MCL of 10 µg/L. Arsenic was found in sample RRD-1 at 1,290 µg/L and in RRD- 2 at 1,000 µg/L. Both sample locations are north of the Site (Appendix D, Figure 5). Dissolved arsenic was reported in RRD-7 at an estimated concentration of 1,170 µg/L. Other groundwater samples ranged from 2.4 µg/L to 236 µg/L. No other dissolved metals were detected in the groundwater above SCDM benchmarks. The sampling locations and groundwater arsenic concentrations from the June 2000 sampling event are included as Appendix D, Figure 5.

4.2.3 DATA GAPS

No shallow groundwater samples have been collected farther downgradient (northwest) of the Site than the City impound lot north of 500 South. The closest downgradient well, located approximately 400 yards northwest of the Site, has not been sampled. No groundwater sampling has been conducted since June 2000. The present extent of downgradient arsenic groundwater contamination is therefore unknown.

4.3 SOIL EXPOSURE PATHWAY

4.3.1 TARGETS

The Redwood Road Dump is enclosed by chain link and barbed wire fences. This barrier prevents unauthorized vehicle access (DERR, 2010a). There is no on-site population or residences. There are no schools or day cares located within 200 feet of the site.

4.3.2 SUMMARY OF PAST RESULTS

4.3.2.1 UDOT 1977 Preliminary Inspection

One rotary hole and 19 auger holes were drilled into the landfill from April to May 1977. Forty three refuse (soil) samples were analyzed for total solids, volatile solids, BOD, and moisture content. Explosive gas concentrations were measured for a few holes in April 1977 and measured twice in May 1977 for all holes at various depths. Borehole explosive gas concentrations ranged from zero to 27 percent by volume (Eckoff, 1977). Explosive gas concentrations are provided as Appendix C, Table 1.

Several locations repeatedly yielded methane concentrations above the lower explosive limit (LEL). Two of the sampling locations showed methane concentrations above 10 percent by volume. In 12 of the 20 borings, petroleum products were found at or near the water table. One of the drill holes, G-3C, cited the presence of a "chemical waste" at a depth of 8-10 feet. Thickness of the refuse in the landfill was determined to vary

between one foot and 29 feet, with the refuse-natural ground interface undulating between elevations of 4216-4224 feet above sea level.

4.3.2.2 DERR 1991 Site Inspection

Ten soil samples were collected numbering RD-SO-01 through RD-SO-10. Sample locations are shown in Appendix C, Figure 5 and 5a. Eight of the ten were surface samples. Sample RD-SO-02 is the background sample. Samples RD-SO-06 and RD-SO-07 can be considered source samples of "oily waste" taken near the water table from monitoring wells MW- 2 and MW-4. It does not appear that these two samples were submitted for inorganic analysis. Sample results can be found in Appendix C, Tables 5-6.

Appendix C, Tables 5 and 6 summarize the analytical data results for soil and sediment samples. Site soils contain above background concentrations of 21 BNA compounds, five VOA compounds, 12 pesticide compounds, and one PCB compound. None are above SCDM benchmarks. The PCB compound, aroclor-1260, was detected in RD-SO-09 at 150 ppb. Table 6 indicates a release of at least 10 metals to the soil has occurred at the Site. Concentrations of barium, calcium, chromium, copper, iron, lead, mercury, nickel, sodium, and zinc were detected over three times that of the background sample. None were above SCDM benchmarks. However, lead has no established SCDM benchmark. Lead was detected in sample SO-10 at 2,610 mg/kg in the northern corner of the western landfill. This sample was taken directly above the refuse inside a hole previously used to excavate old bottles about three feet below ground surface.

4.3.2.3 DERR 2000 Targeted Brownfields Assessment

Soil samples were collected during installation of the direct push groundwater samples and from selected trench locations across the Site. Soil samples were collected directly at the soil/water interface. Most soil samples were collected between seven to nine feet below ground surface. Soil sample locations are provided as Appendix D, Figure 1 and provide 2008 satellite imagery for the sample locations.

Lead was reported in sample T-3 at 1,760 mg/kg. Lead was reported in sample SB-2 at an estimated concentration of 1,930 mg/kg. Poly nuclear aromatic hydrocarbon compounds were detected from the base of a trench cut (SB-2) along the central portion of the east bench. Soil samples collected from the base of the 10 foot trench cut revealed benzo (a) pyrene at 5,000 ug/kg and dibenz (a,h) anthracene at 1,000 ug/kg. The SCDM CRSC for both compounds is 880 ug/kg. Selected figures from the study are provided in Appendix D. Figure 4 is the original report sample map identifying the benzo (a) pyrene concentrations found in soil samples from the western landfill. Figure 4a is the historic report sample map detailing the lead concentrations at the western landfill.

No VOCs, SVOCs or PCBs/Pesticides were detected in any other samples above SCDM benchmarks or the EPA Region 3 commercial/industrial soil screening criteria. Arsenic was reported in all soil samples collected from the western landfill. The highest reported

concentration was 43.9 mg/kg with the remaining concentrations ranging from 6.0 mg/kg to 25 mg/kg.

4.3.3 DATA GAPS

Only limited subsurface soil hazardous constituent analysis has been conducted for the eastern landfill.

4.4 SURFACE WATER PATHWAY

4.4.1 TARGETS

There are no surface drinking water sources within the 15 mile target distance limit. Surface waters are not used for fishing within 15 downstream miles. A wetland environment exists at the Great Salt Lake which is approximately 10 miles downstream of the Site (Appendix B, Figures on pages 10 and 11). Approximately 50 miles of wetland frontage occur within the 15 mile target distance limit (USDI, 1990). Several duck hunting clubs are located within these wetland areas (DWLR, 2010). The Site is located in a 100 year flood zone (FEMA, 2010).

4.4.2 SUMMARY OF PAST RESULTS

4.4.2.1 DERR 1991 Site Inspection

Three surface water samples were collected at the Site, as well as three sediment samples (see Appendix C, Figure 5 and 5a). A quality control trip blank water sample was also taken. Upgradient and downgradient water samples were collected from the City Drain and a water sample was taken from the unnamed north ditch. The up-gradient City Drain sample served as the background sample. Sediment samples were taken in the same general location as the surface water samples.

Surface water sample results tables from this investigation are provided in Appendix C (Tables 3-6). The SCDM surface water environmental pathway benchmark for acute exposure is the Criteria Maximum Concentration (CMC) and the benchmark for chronic exposure is the Criterion Chronic Concentration (CCC). The environmental toxicity of metals in surface water depends upon water hardness. As the water hardness of the City Drain has not been determined, the default CMC and CCC values for a water hardness of 100 mg/L is provided. Lead was detected in the north ditch sample at 23.6 μg/L. The CMC for lead is 65 μg/L and the CCC for lead is 2.5 μg/L. Antimony was detected at 25 μg/L from RD-SW-02. No CMC or CCC for antimony has been established. Arsenic was also detected in the upgradient City Drain sample at 53.4 μg/L and in the downgradient sample at 59.2 μg/L (CMC = 340 μg/L, CCC = 150 μg/L).

Appendix C, Table 5 identifies the 11 BNA, six pesticide and two VOA compounds that were detected in the sediment samples. The majority of these contaminants were detected in the north ditch, indicating they most probably originated from the landfill.

The north ditch sediment sample contained three metal concentrations that were more than three times the concentration in the upgradient City Drain sediment sample. These metals include lead (68.2 mg/kg), magnesium (33,000 mg/kg) and zinc (222 mg/kg).

4.4.2.2 DERR 2000 Targeted Brownfields Assessment

Surface water samples RRD-SW-1, RRD-SW-2 and RRD-SW-3 were collected from the City Drain which borders the western landfill on the east. RRD-SW-4 was collected from the northern portion of a possible wetland area identified on the central portion of the eastern landfill. RRD-SW-5 was a duplicate of RRD-SW-4.

Appendix D, Tables 3, 6, 9 and 12 summarize the surface water analytical results. Arsenic was reported in the southernmost (background) surface water sample (RRD-SW-1) at 61 µg/L, in RRD-SW-2 at 79.7 µg/L and in RRD-SW-3 at 82.8 µg/L. All measured surface water arsenic concentrations were below the CMC (340 µg/L) and the CCC (150 µg/L). Lead increased from the background non-detect concentration to 56.1 µg/L at RRD-SW-2 and 50.3 µg/L at RRD-SW-3 (CMC = 65 µg/L, CCC = 2.5 µg/L). No other metals were reported above SCDM benchmarks.

4.4.3 DATA GAPS

Determining the appropriate metal toxicity benchmark requires knowing the average hardness of City Drain surface water. This value has not yet been determined.

4.5 AIR MIGRATION PATHWAY

4.5.1 TARGETS

There is no on-site population or residences at the Redwood Road Dump. There are no schools or day cares located within 200 feet of the site. There is a population of 130,095 within the four-mile Target Distance Limit (DERR, 2010b). Table 3 lists the target population within various distances. Both western and eastern landfills are fenced. Two means of access are available to the eastern landfill; one is from the north through a gate which is locked at night, and one from the south through a road barrier. Approximately 50 miles of wetland frontage occur within the 15 mile target distance limit (USDI, 1990).

Table 3
Population Totals within Four Miles of the Redwood Road Dump

Distance	Population	Cumulative Population
0.25 Miles	50	50
0-0.5 Miles	2,202	2,252
0.5-1 Miles	8,644	10,896
1-2 Miles	23,053	33,950
2-3 Miles	33,186	67,136
3-4 Miles	62,959	130,095

4.5.2 SUMMARY OF PAST RESULTS

4.5.2.1 UDOT 1977 Preliminary Inspection

One rotary hole and 19 auger holes were drilled into the landfill from April to May 1977. Explosive gas concentrations were measured for a few holes in April 1977 and measured twice in May 1977 for all holes at various depths. Several locations repeatedly yielded methane concentrations above the lower explosive limit (LEL).

4.5.2.2 DERR 2000 Targeted Brownfields Assessment

Soil gas samples were collected from two locations along the eastern bench of the western landfill in accordance with the protocol established in the TBA Workplan and analyzed for methane. Methane was reported in SG-1 at 23,000 ppmV (46 percent of the lower explosive limit). Methane was not reported in SG-2 above the level of detection.

4.5.3 DATA GAPS

None identified.

5.0 SUMMARY AND CONCLUSIONS

The Site was the primary landfill for Salt Lake City from 1923 until 1962 and is estimated to contain approximately 1,340,000 cubic yards of refuse and fill. The Site was reported to take in household, commercial and industrial wastes. I-215 was constructed through the center of the Site in 1988 creating an eastern and western refuse pile. The refuse and cover material in the interstate right-of-way was moved to the east pile during the construction. Thickness of the refuse in the landfill varies between one foot and 29 feet, with the refuse-natural ground interface undulating between elevations of 4216-4224 feet.

Chromium and lead contaminated soils were illegally placed on the central part of the eastern landfill some time during December of 1991. The contaminated soils were removed from the landfill in November 1997.

The northern portion of the western landfill is used for Salt Lake City's automobile impound lot. Salt and gravel are stored on the southern portion of the western landfill. The eastern landfill is elevated about 10 feet above the natural ground surface and is covered with soil and natural vegetation. The eastern landfill is about 300 yards wide and 400 yards long. Various materials are being stored on a flat area northeast of the eastern landfill.

A City vehicle washing and refueling facility is under construction on City property northwest of the eastern landfill. Plans are being considered to extend this asphalted area further north and convert the area into a temporary model airplane airport. Snow cleared

from downtown Salt Lake City in the winter is placed on the highest portion of the eastern landfill by City streets personnel.

The Portland Cement Superfund site is located directly south of the eastern landfill and south of Indiana Avenue. Semiannual monitoring of the contaminated groundwater beneath the Portland Cement site indicates that the shallow aquifer contaminant plume continues to be contained within the Portland Cement site boundaries.

The 1991 SI and 2000 Targeted Brownfields Assessment have established the following:

- Soil - Concentrations of barium, calcium, chromium, copper, iron, mercury, nickel, sodium, and zinc were detected in surface soils over 3 times that of the background sample. In particular, lead was detected in the subsurface soils as high as 2,610 mg/kg.

  Concentrations of benzo (a) pyrene (5,000 μg/kg) and dibenz (a, h) anthracene (1,000 μg/kg) were identified in subsurface soils above SCDM benchmarks. The SCDM CRSC for both compounds is 880 μg/kg. There is no on-site population or residences at the Redwood Road Dump. There are no schools or day cares located within 200 feet of the site.

- Groundwater - The presence of arsenic (1,290 μg/L) antimony (34.2 μg/L), selenium (14.8 μg/L), pentachlorophenol (3 μg/L) have been found in Site groundwater above SCDM benchmarks. Arsenic contamination above the 10 μg/L groundwater MCL is widespread. However, the closest downgradient well, located approximately 400 yards northwest of the Site, has not been sampled. The extent of downgradient groundwater contamination to the northwest is, therefore, unknown. Seventeen municipal wells from three cities are located within the four mile target distance limit. All are located east or south of the Site and hydraulically upgradient. All downgradient wells are privately owned.

- Surface water – The City Drain Canal bisects the site. Water from the canal eventually enters the Great Salt Lake at Farmington Bay Wildlife Refuge approximately 10 miles downstream of the site. Approximately 50 miles of wetland frontage occur within the 15 mile target distance limit (USDI, 1990). Several duck hunting clubs are located within these wetland areas. There are no surface drinking water sources within the 15 mile target distance limit of the Site. Surface waters are not used for fishing within 15 downstream miles.

  City Drain Canal surface water lead concentrations rise from a non-detectable background concentration to a high of 59.2 μg/L downstream of the Site. This concentration significantly exceeds the surface water CCC of 2.5 μg/L. However, although elevated levels of lead have been detected in subsurface site soils, elevated levels of lead have not been detected in Site groundwater. Arsenic levels

increase from a background concentration of 61 μg/L to 82.8 μg/L downstream of the Site.

6.0 REFERENCES

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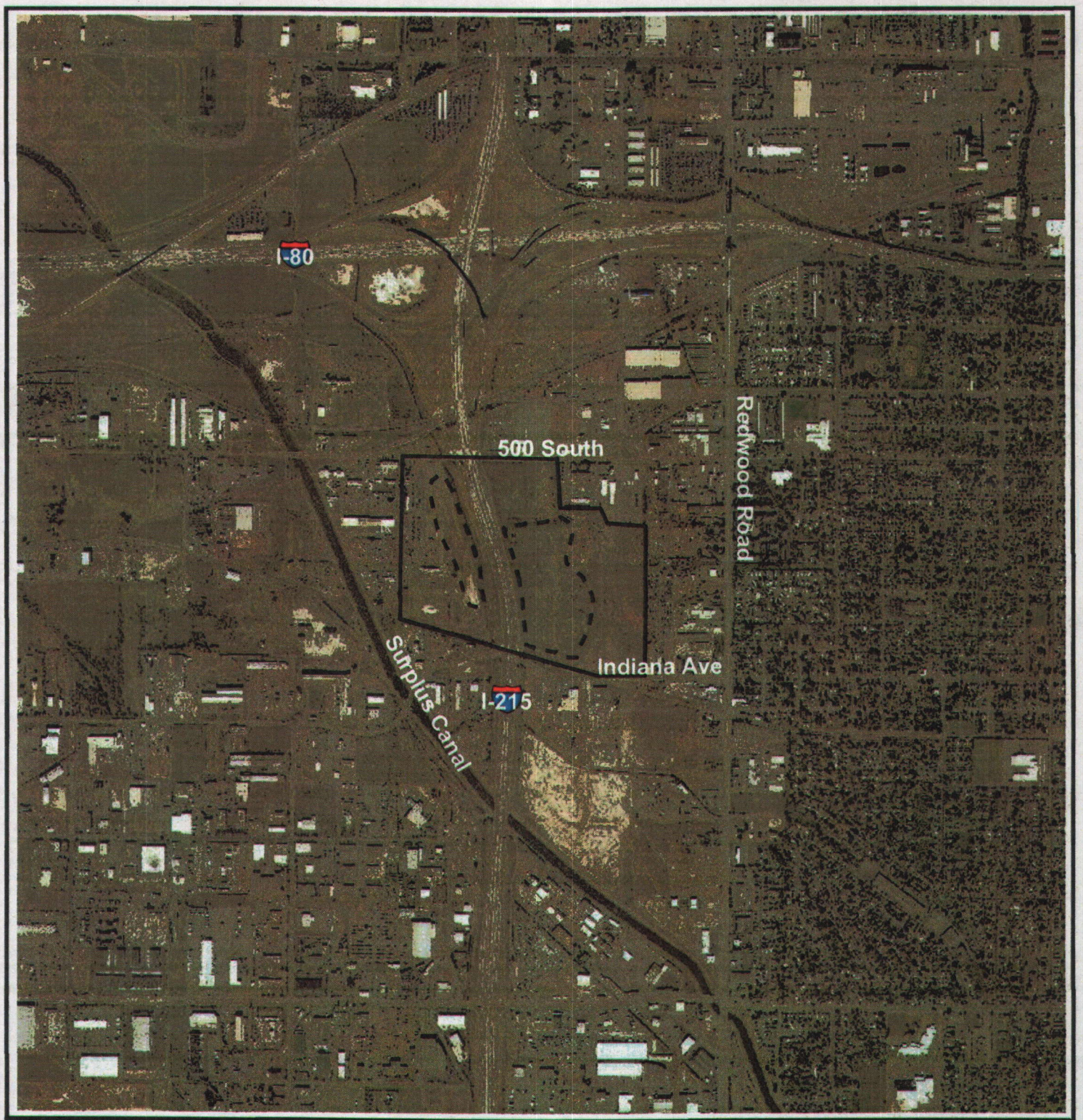
FIGURES



Site Boundary

Landfills

0.25 0.125 0 0.25 Miles

N
W E
S

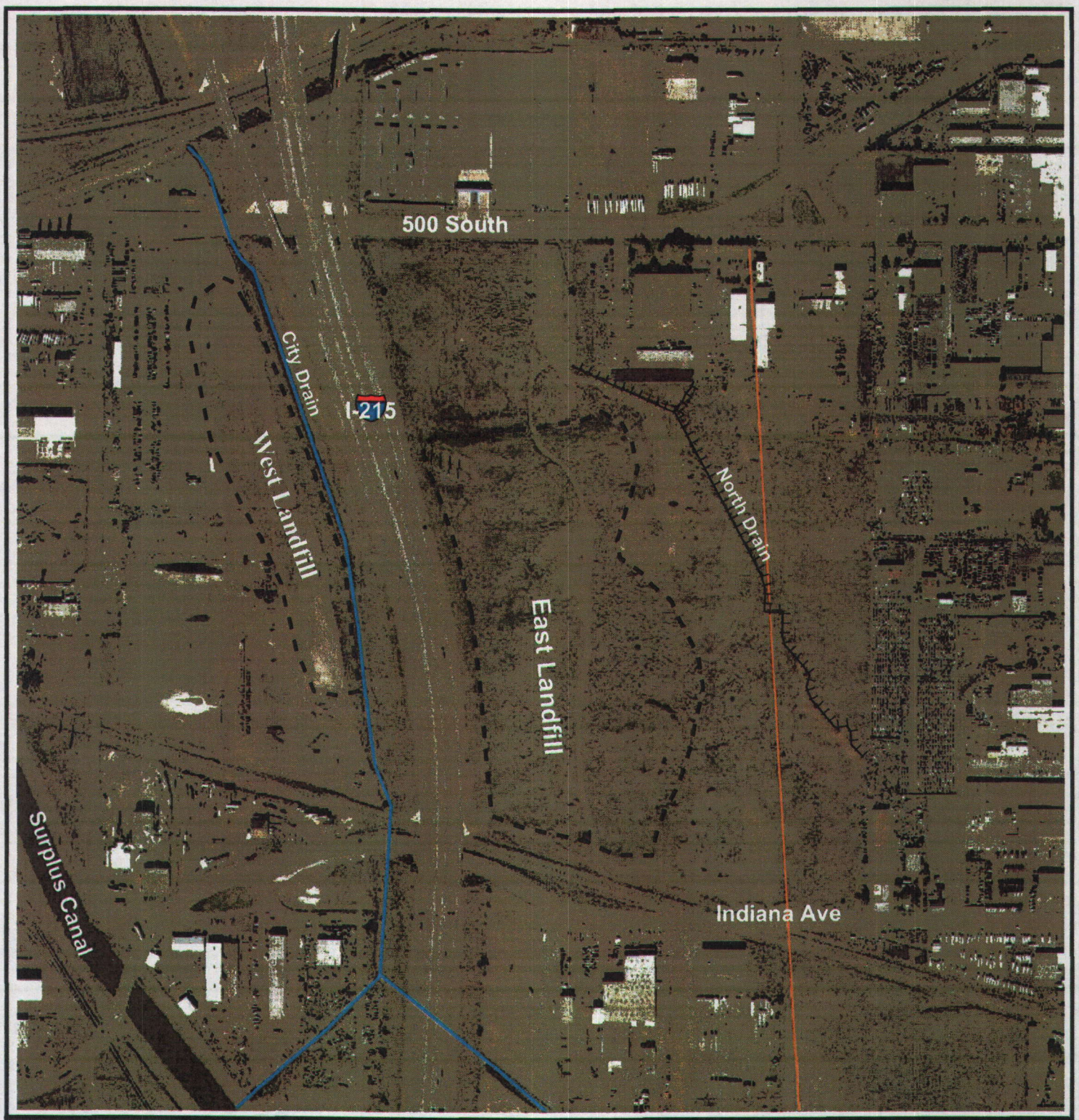
Utah Department of Environmental Quality
Division of Environmental Response and Remediation

Figure 1
Site Location Map
Redwood Road Dump Site

Salt Lake County, Utah

by: Neil B. Taylor

Date: 04/08/2010



Sewer

Landfills

City Drain

NorthDrain

400 200 0 400 Feet

N

W E

S

Utah Department of Environmental Quality
Division of Environmental Response and Remediation

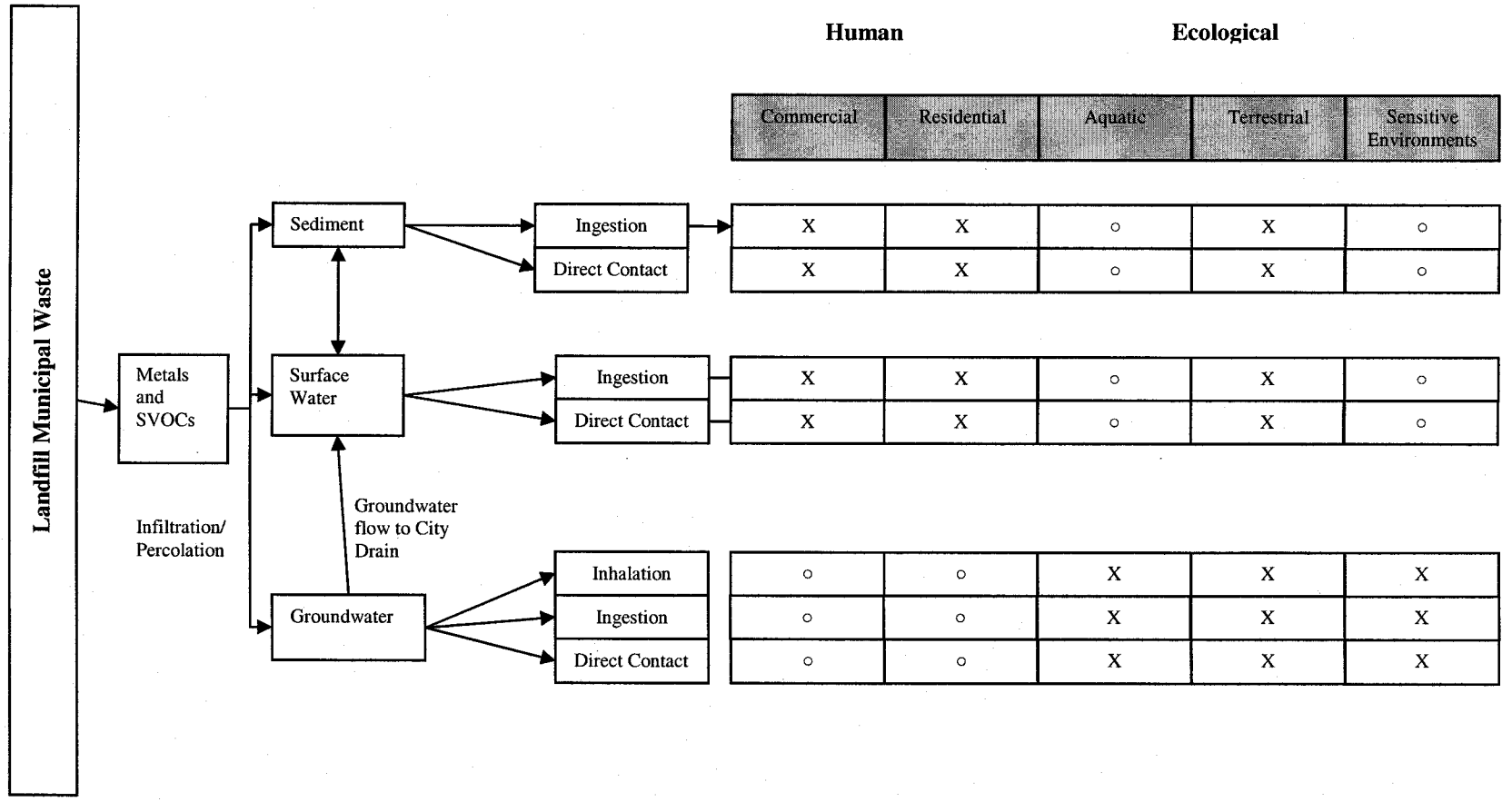
Figure 2
Site Map
Redwood Road Dump Site

Salt Lake County, Utah

by: Neil B. Taylor

Date: 04/08/2010

Figure 3 Redwood Road Dump Site Conceptual Model



APPENDIX A

SITE VISIT REPORT

SITE VISIT REPORT
For the Redwood Road Dump
CERCLIS ID UTD980961502

On March 9 and 22, 2010 Neil Taylor with the Utah Department of Environmental Quality, Division of Environmental Response and Remediation conducted a site visit of properties associated with the investigation of the Redwood Road Dump (Site). This report describes the Site visits. Supporting photographs can be found at the end of the visit description. On March 22, Neil Taylor was accompanied by Val Pope, Parks Division Manager with the Salt Lake City Department of Public Services.

The Site is located between 500 South on the North and Indiana Avenue on the South and from 1900 West on the East to 2200 West on the West. The Redwood Road Dump consists of western and eastern covered landfills. Historically the landfills were one unit but are now bisected by I-215. Both landfills are covered with soil and vegetated with native grasses.

We first entered the eastern landfill using an access road located directly behind the Parks Division building which is located at 1963 West 500 South. Various materials are being stored on the flat area northeast of the elevated and covered eastern landfill. Some of these materials include soil from the city cemetery, wooden posts, large flowerpots for decorative use downtown, and large utility poles.

A city vehicle washing and refueling facility is under construction just northwest of the eastern landfill. Trees limbs and leaves are chipped up on a large asphalted area southeast of the eastern landfill. This material is later hauled to the county landfill for composting. Snow cleared from downtown in the winter is dumped on the highest portion of the eastern landfill. An area on the elevated eastern landfill has been leveled and covered with clay and gravel for this purpose.

An open ditch runs north northeast from the Southeastern property drainage to behind the Parks Division building. The drainage is then piped from the Southwest quarter of the Parks building to a storm drain on 500 South. The "North Drain" described in previous site investigation reports, no longer appears to exist.

The narrow, elevated, western portion of the landfill is located just west of I-215 and the City Drain canal and east of a variety of city and private properties running down Delong Street (2105 West). A row of commercial businesses are located on the northern portion of Delong Street. The city impound lot is located east of these properties. The northern half of the western landfill is located east of the city impound lot.

The Salt Lake City Streets Division owns the southern half of Delong Street. This includes the southern half of the western landfill. The elevated southern half of the landfill is being used for storage of a variety of gravel used in street repair and tree limbs.

Figure 1

Looking southwest on site access road, east of the eastern landfill. Soil piles are from city cemetery. Elevated area in the background is the eastern landfill.

Figure 2

Stored logs in front of raised edge of eastern landfill.

Figure 3

City vehicle washing and fueling facility under construction north of the eastern landfill (looking south).

Figure 4

Large truck washing facility north of the eastern landfill. Elevated area in the background is the eastern landfill (looking south).

Figure 5

An asphalted area located southeast of the eastern landfill and used for storage of chipped trees, limbs and leaves (looking northeast).

Figure 6

Northern end of the western landfill located next to I-215 and east of the city impound lot in the foreground (looking southeast).

Figure 7

Looking east at the high-voltage power poles installed through the top of the western landfill. Observation point is from the city's storage yard located directly west of the western landfill.

Figure 8

Looking northeast from the Salt Lake City Streets Division Delong storage yard to the cleared summit of the western landfill. Note the pile of vegetation stored at the top of the western landfill.

APPENDIX B

EPA PRELIMINARY ASSESSMENT WORKSHEET

EPA PRELIMINARY ASSESSMENT WORKSHEET

PREPARER'S NAME: Neil Taylor

SITE NAME: Redwood Road Dump

DATE: July 19, 2011

MAJOR CONSIDERATIONS

A) DOES ANY QUALITATIVE OR QUANTITATIVE INFORMATION EXIST THAT MAY INDICATE AN OBSERVED RELEASE TO AIR, GROUNDWATER, SOIL OR SURFACE WATER? ☒ YES ☐ NO

Describe: A 1991 Site Investigation (SI) identified the presence of 21 Base Neutral Extractable (BNA) compounds, five Volatile Organic Compounds (VOCs), 12 pesticides and aroclor -1260, a PCB compound. Widespread arsenic contamination above the 10 µg/L drinking water MCL was found in shallow groundwater. Analytical results from a 2001 Targeted Browndsfield Assessment (TBA) for the western portion of the Site revealed levels of benzo (a) pyrene as high as 5,000 mg/kg in soil and lead in soils at concentrations ranging from 204 mg/kg to 1760 mg/kg Dissolved arsenic was reported in the groundwater at concentrations as high as 1,290 µg/L .

B) IF THE ANSWER TO #1 IS YES, IS THERE EVIDENCE OF DRINKING WATER SUPPLY CONTAMINATION OR ANY OTHER TARGET CONTAMINATION (i.e. food chain, recreation areas, or sensitive environments)? ☐ YES ☒ NO

Describe: _____

C) ARE THERE SENSITIVE ENVIRONMENTS WITHIN A 4-MILE RADIUS OR 15 DOWNSTREAM MILES OF THE SITE? ☒ YES ☐ NO IF YES, DESCRIBE IF ANY OF THE FOLLOWING APPLY:

1) Multiple sensitive environments? A wetland environment exists at the Great Salt Lake which is 10 miles downstream of the site. Approximately 50 miles of wetland frontage occur within the target distance limit (USDI, 1990). Several duck hunting clubs are located within these wetland areas.

2) Federally designated sensitive environment(s)? Site drainage enters the Great Salt Lake at Farmington Bay Wildlife Refuge.

3) Sensitive environment(s) downstream on a small or slow flowing surface water body? Wetlands are located along the perifery of the Great Salt Lake as described in question 1.

D) IS THE SITE LOCATED IN AN AREA OF KARST TERRAIN? ☐ YES ☒ NO

Describe: _____

E) DOES THE WASTE SOURCE LIE FULLY OR PARTIALLY WITHIN A WELLHEAD PROTECTION AREA AS DESIGNATED ACCORDING TO SECTION 1428 OF THE SAFE DRINKING WATER ACT? ☐ YES ☒ NO

Describe: __

F) DOES ANY QUALITATIVE OR QUANTITATIVE INFORMATION EXIST THAT PEOPLE LIVE OR ATTEND SCHOOL ON ONSITE CONTAMINATED PROPERTY? ☐ YES ☒ NO

Describe: _____

SITE INFORMATION

1. SITE NAME: Redwood Road Dump

   ADDRESS: 2000 West Indiana Ave

   CITY: Salt Lake City COUNTY: Salt Lake STATE: UT

   ZIP: 84104 EPA ID: UTD980961502 LATITUDE: 40 45 18 LONGITUDE: 111 56 52.5

2. DIRECTIONS TO SITE (From nearest public road): In Salt Lake City, proceed west from Redwood Road and 500 South to 500 South and 2000 West.

3. SITE OWNERSHIP HISTORY (Use additional sheets, if necessary):

   A. Name of current owner: Salt Lake City Corporation

      Address: 2001 South State St Suite S4400

      City: Salt Lake City County: Salt Lake

      State: 0 Zip: 84190 Dates: From 1923 To Present

      Phone: 801-468-2299

   B. Name of previous owner: _____

      Address: _____

      City: _____ County: _____

      State: __ Zip: _____ Dates: From _____ To _____

      Phone: _____

   C. Name of previous owner: _____

      Address: _____

      City: _____ County: _____

      State: 0 Zip: _____ Dates: From _____ To _____

      Phone: _____

   D. Name of previous owner: _____

      Address: _____

City: _____ County: _____

State: 0 Zip: _____ Dates: From _____ To_____

Phone: _____

Source of ownership data: BSHW, 1987

4. TYPE OF OWNERSHIP (Check all that apply):

☐ Private ☐ State ☒ Municipal ☐ Federal ☐ County

☒ Other (describe): ___

5. NAME OF SITE OPERATOR: Val Pope, Director, Salt Lake City Parks

Address: 1965 West 500 South

City: Salt Lake City County: Salt Lake

State: 0 Zip: 84101 Dates: From _____ To_____

Phone: 801-972-7800

BACKGROUND/OPERATING HISTORY

6. DESCRIBE OPERATING HISTORY OF SITE: The Site was the primary landfill for Salt Lake City from 1923 until 1962. The Site is estimated to contain approximately 1,340,000 cubic yards of refuse and fill. The Site was reported to take in household, commercial and industrial wastes. I-215 was constructed through the center of the Site in 1988 creating an eastern and western refuse pile. The refuse and cover material in the Interstate right-of-way was moved to the east pile during the construction. Thickness of the refuse in the landfill varies between one foot and 29 feet, with the refuse-natural ground interface undulating between elevations of 4216-4224 feet.

Source of information: BSHW, 1987; DERR, 1995; Eckoff, 1977

7. DESCRIBE THE NATURE OF SITE OPERATIONS (property size, manufacturing, waste disposal, storage, etc.): The northern portion of the western landfill is used for the City's automobile impound lot. Salt and gravel are stored on the southern portion of the western landfill. The eastern landfill is elevated about 10 feet above the natural ground surface and is covered with soil and natural vegetation. The landfill is about 300 yards wide and 400 yards long. Various materials are being stored on a flat area northeast of the eastern landfill.

Source of information: DERR, 2010a; Terracon, 1997

8. DESCRIBE ANY EMERGENCY OR REMEDIAL ACTIONS THAT HAVE OCCURRED AT THE SITE: Chromium and lead contaminated soils were illegally placed on the central part of the eastern landfill some time during December of 1991. The contaminated soils were removed from the landfill in November 1997. Several drums were removed on August 10, 1993 that contained investigation derived wastes from monitoring well installation by EPA contractors during sampling activities in the spring of 1991.

   Source of information: Terracon, 1997; DERR, 1995

9. ARE THERE RECORDS OR KNOWLEDGE OF ACCIDENTS OR SPILLS INVOLVING SITE WASTES?
   ☐ YES ☒ NO

   Describe: _____

   Source of information: _____

   DISCUSS EXISTING SAMPLING DATA AND BRIEFLY SUMMARIZE DATA QUALITY (e.g., sample objective, age/comparability, analytical methods, detections limits and QA/QC): Samples collected during the 1991 SI and 2001 TBA were collected according to the EPA protocols and analyzed at EPA contract laboratories. Data collected from the site was validated by EPA or EPA contractors.

   Source of information: DERR, 1992; DERR 2001

WASTE CONTAINMENT/HAZARDOUS SUBSTANCE IDENTIFICATION

11. FOR EACH SOURCE AT THE SITE, SUMMARIZE ON TABLE 1 (attached): 1) Methods of hazardous substance disposal, storage or handling; 2) size/volume/area of all features/ structures that might contain hazardous waste; 3) condition/integrity of each storage disposal feature or structure; 4) types of hazardous substances handled.

12. BRIEFLY EXPLAIN HOW WASTE QUANTITY WAS ESTIMATED (e.g., historical records or manifests, permit applications, air photo measurements, etc.): A report entitled "Preliminary Investigations Disposition of Garbage Materials in Abandoned Landfill" (PI) was prepared for the Utah Department of Transportation (UDOT), Salt Lake City, Utah, by Dr. David W. Eckhoff in July of 1977. The investigation found that mixed garbage and refuse had been dumped and burned on the site. Twenty auger holes were drilled into the landfill from which the volume and type of waste was calculated.

    Source of information: Eckhoff, 1977

13. DESCRIBE ANY RESTRICTIONS OR BARRIERS ON ACCESSIBILITY TO ONSITE WASTE MATERIALS: Both east and west landfills are fenced and access restricted

    Source of Information: DERR, 2010a

GROUNDWATER CHARACTERISTICS

14. IS THERE ANY POSITIVE OR CIRCUMSTANTIAL EVIDENCE OF A RELEASE TO GROUNDWATER?
☒ YES ☐ NO

Describe: In 1991, arsenic was detected at 314 µg/L, 248 µg/L and 179 µg/L in three of four downgradient wells compared to 19 µg/L in a background well. Antimony was detected at 34.2 µg/L in one well and above background concentrations. In 2000, arsenic was detected in many groundwater samples above the MCL of 10 µg/L. Arsenic was found at 1,290 µg/L and at 1,000 µg/L in two sample wells located north of the Site. Dissolved arsenic was reported in on the western edge of the western landfill at an estimated concentration of 1,170 µg/L. Other groundwater samples ranged from 2.4 µg/L to 236 µg/L

Source of information: DERR, 1992; DERR, 2001

15. ON TABLE 2 (attached), GIVE NAMES, DESCRIPTIONS, AND CHARACTERISTICS OR GEOLOGIC/ HYDROGEOLOGIC UNITS UNDERLYING THE SITE.

16. NET PRECIPITATION: 2 inches

Source of information: Ashcroft, 1992

SURFACE WATER CHARACTERISTICS

17. ARE THERE SURFACE WATER BODIES WITHIN 2 MILES OF THE SITE?

☒ Ditches ☐ Lakes ☐ Pond ☐ Creeks ☐ Rivers

☒ Other (Describe) Canals

18. DISCUSS THE PROBABLE SURFACE RUNOFF PATTERNS FROM THE SITE TO SURFACE WATERS: The Surplus Canal and the City Drain are located in close proximity to the site. The "North Ditch" drains the City property northeast of the eastern landfill. The ditch is piped to a storm drain that flows to the City Drain. The City Drain is located west of I-215 and just east of the western landfill. The City Drain is the primary groundwater discharge point. The City Drain joins the Sewer Canal approximately six miles to the north. The Sewer Canal eventually discharges into the Great Salt Lake approximately 10 miles downstream of the Site. The Surplus Canal is located approximately 1,000 feet to the west of the Site. The discharge points for the Jordan River, the Surplus Canal and the Sewer Canal into the Great Salt Lake are characterized by freshwater marshes. The discharge points are within the confines of the Farmington Bay Waterfowl Management Area

19. PROVIDE A SIMPLIFIED SKETCH OF SURFACE RUNOFF AND SURFACE WATER FLOW SYSTEM FOR 15 DOWNSTREAM MILES (see item #35).

20. IS THERE ANY POSITIVE OR CIRCUMSTANTIAL EVIDENCE OF SURFACE WATER CONTAMINATION?
☒ YES ☐ NO

Describe: Arsenic was reported in the background City Drain water sample at 61 µg/L and at 82.8 µg/L downstream of the Site. Lead rose from the background non-detect concentration to 56.1 µg/L downstream of the Site.

Source of information: DERR, 2000

21. ESTIMATE THE SIZE OF THE UPGRADIENT DRAINAGE AREA FROM THE SITE: Unknown acres

Source of information: ___

22. DETERMINE THE AVERAGE ANNUAL STREAM FLOW OF DOWNSTREAM SURFACE WATERS

Water Body: City Drain Flow: 1 cfs

Water Body: _____ Flow: _____ cfs

23. IS THE SITE OR PORTIONS THEREOF LOCATED IN SURFACE WATER? ☐ YES ☒ NO

24. IS THE SITE LOCATED IN A FLOODPLAIN ☒ YES ☐ NO (indicate flood frequency)? 100 yr

25. IDENTIFY AND LOCATE (see item #35) ANY SURFACE WATER RECREATION AREA WITHIN 15 DOWNSTREAM MILES OF THE SITE: The Great Salt Lake is used for recreational boating and waterfowl hunting.

26. TWO YEAR 24-HOUR RAINFALL: 1.79

Source of information: Ashcroft, 1992

TARGETS

27. DISCUSS GROUNDWATER USAGE WITHIN FOUR MILES OF THE SITE: Seventeen municipal wells from three cities are located within the 4-mile target distance range. All are located east or south of the Site and hydraulically up-gradient. Approximately 4,102 underground points of diversion are located within four miles of the Site. The uses for the large majority are for "domestic" or irrigation purposes and most are upgradient of the Site. The closest downgradient well is approximately 400 yards northwest of the site, north of 500 South and east of the surplus canal. The well is 2 inches in diameter, 280 feet deep and was drilled in 1947.

Source of information: DDW, 2010a; DDW, 2010b; DWR, 2010

28. SUMMARIZE THE POPULATION SERVED BY GROUNDWATER ON THE TABLE BELOW:

DISTANCE (miles)	POPULATION	CUMULATIVE POPULATION
0 - ¼	50	50
¼ - ½	2202	2252
½ - 1	8644	10896
1 - 2	23053	33950
2 - 3	33186	67136
3 - 4	62959	130095

Source of information: DDW, 2010a

29. IDENTIFY AND LOCATE (see item #35) POPULATION SERVED BY SURFACE WATER INTAKES WITHIN 15 DOWNSTREAM MILES OF THE SITE: 0

Source of information: DDW, 2010b

30. DESCRIBE AND LOCATE FISHERIES WITHIN 15 DOWNSTREAM MILES OF THE SITE (i.e., provide standing crop of production and acreage, etc.): None

Source of information: USDI, 1990; UtahFishing, 2010

31. DETERMINE THE DISTANCE FROM THE SITE TO THE NEAREST OF EACH OF THE FOLLOWING LAND USES

Description	Distance (Miles)
Commercial/Industrial/Institutional	0
Single Family Residential	0
Multi-Family Residential	0
Park	1
Agricultural	3

Source of information: DERR, 2010a

32. SUMMARIZE THE POPULATION WITHIN A FOUR-MILE RADIUS OF THE SITE:

DISTANCE (miles)	POPULATION	CUMULATIVE POPULATION
0 - ¼	50	50
¼ - ½	2202	2252
½ - 1	8644	10896
1 - 2	23053	33950
2 - 3	33186	67136
3 - 4	62959	130095

Source of information: DERR, 2010b

OTHER REGULATORY INVOLVEMENT

33. DISCUSS ANY PERMITS:

County: None

State: None

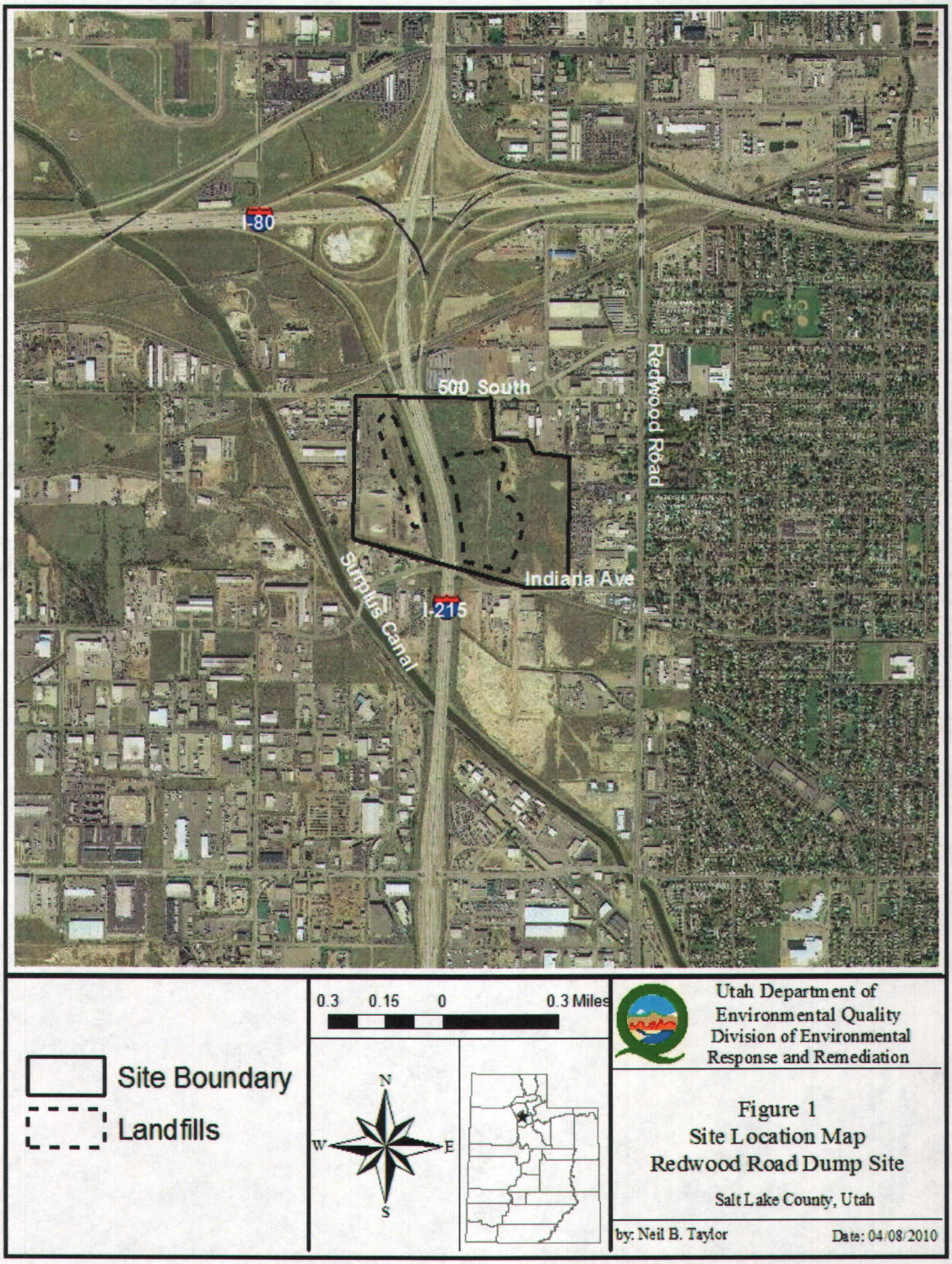
Federal: None

Other: None

Source of information: _____

34. SKETCH OF SITE

Include all pertinent features, e.g., wells, storage areas, underground storage tanks, waste areas, buildings, access roads, areas of ponded water, etc. Attach additional sheets with sketches of enlarged areas, if necessary.



35. SURFACE WATER FEATURES

Provide a simplified sketch of the surface runoff and surface water flow system for 15 downstream miles. Include all pertinent features, e.g., intakes, recreation areas, fisheries, gauging stations, etc.

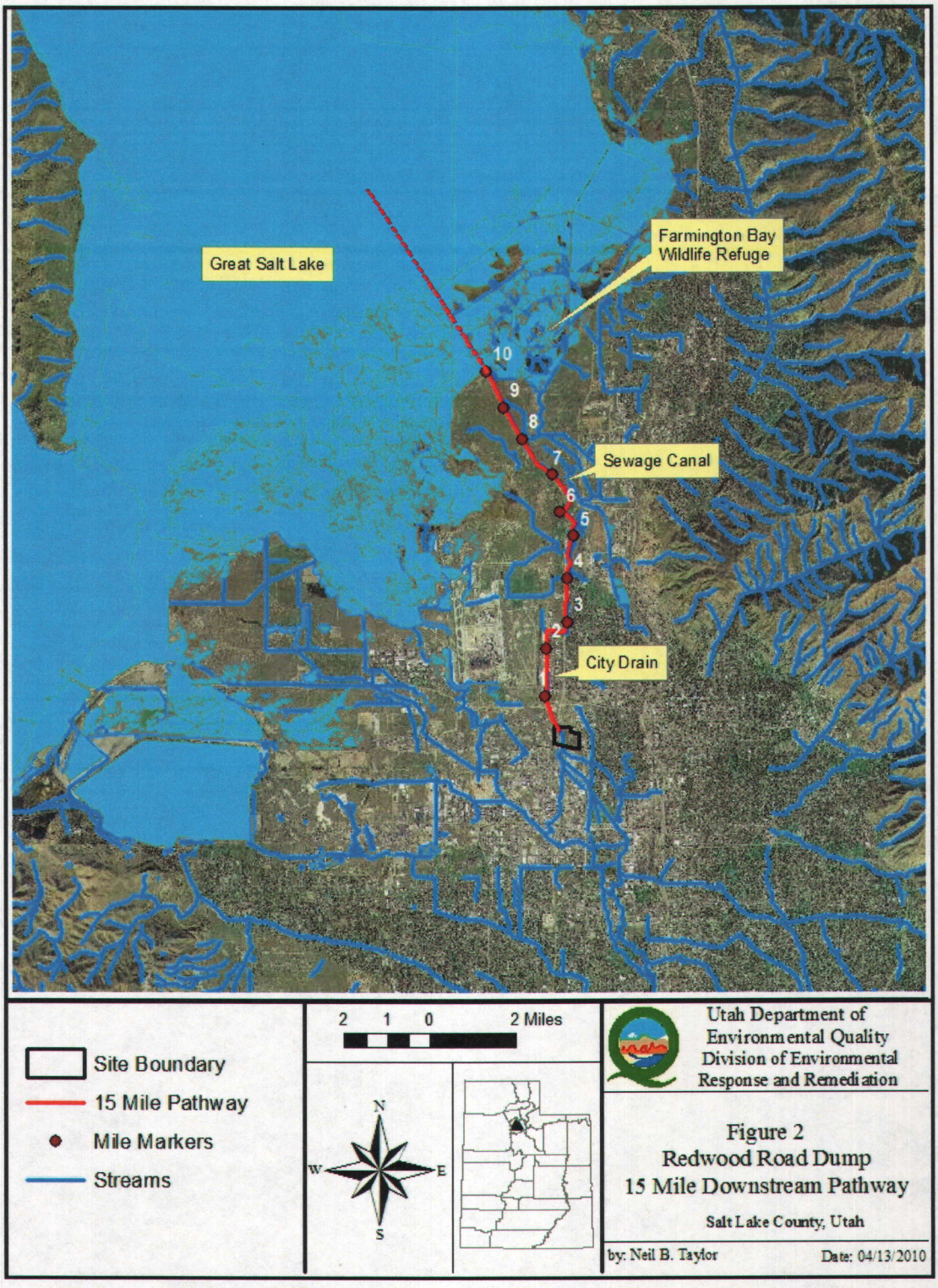


TABLE 1

WASTE CONTAINMENT AND HAZARDOUS SUBSTANCE IDENTIFICATION *

SOURCE TYPE	SIZE (volume/Area)	ESTIMATED WASTE QUANTITY	SPECIFIC COMPOUNDS	CONTAINMENT	SOURCE OF INFORMATION
Municipal Waste	1,338,000 cu yd	Unknown	Unknown	None	DERR, 1995

*Use additional sheets if necessary.

** Evaluate containment of each source from the perspective of each migration pathway (e.g., groundwater pathway - non-existent, natural or synthetic liner, corroding underground storage tank; surface water - inadequate freeboard, corroding bulk tanks; air - unstable slag piles, leaking drums, etc.)

TABLE 2

HYDROGEOLOGIC INFORMATION *

STRATA NAME/DESCRIPTION	THICKNESS (ft)	HYDRAULIC CONDUCTIVITY (cm/sec)	TYPE OF DISCONTINUITY**	SOURCE OF INFORMATION
Fine-grained lacustrine deposits composed of brown clayey silts and silty sands.)	200 feet	Approximately 10^{-4}	canals	DWR, 2010
Alternating clay and water bearing gravel	200	Approximately 10^{-3}	Undetermined	DWR, 2010

*Use additional sheets if necessary.

** Identify the type of discontinuity within four-miles from the site (e.g., river, strata "pinches out", etc.)

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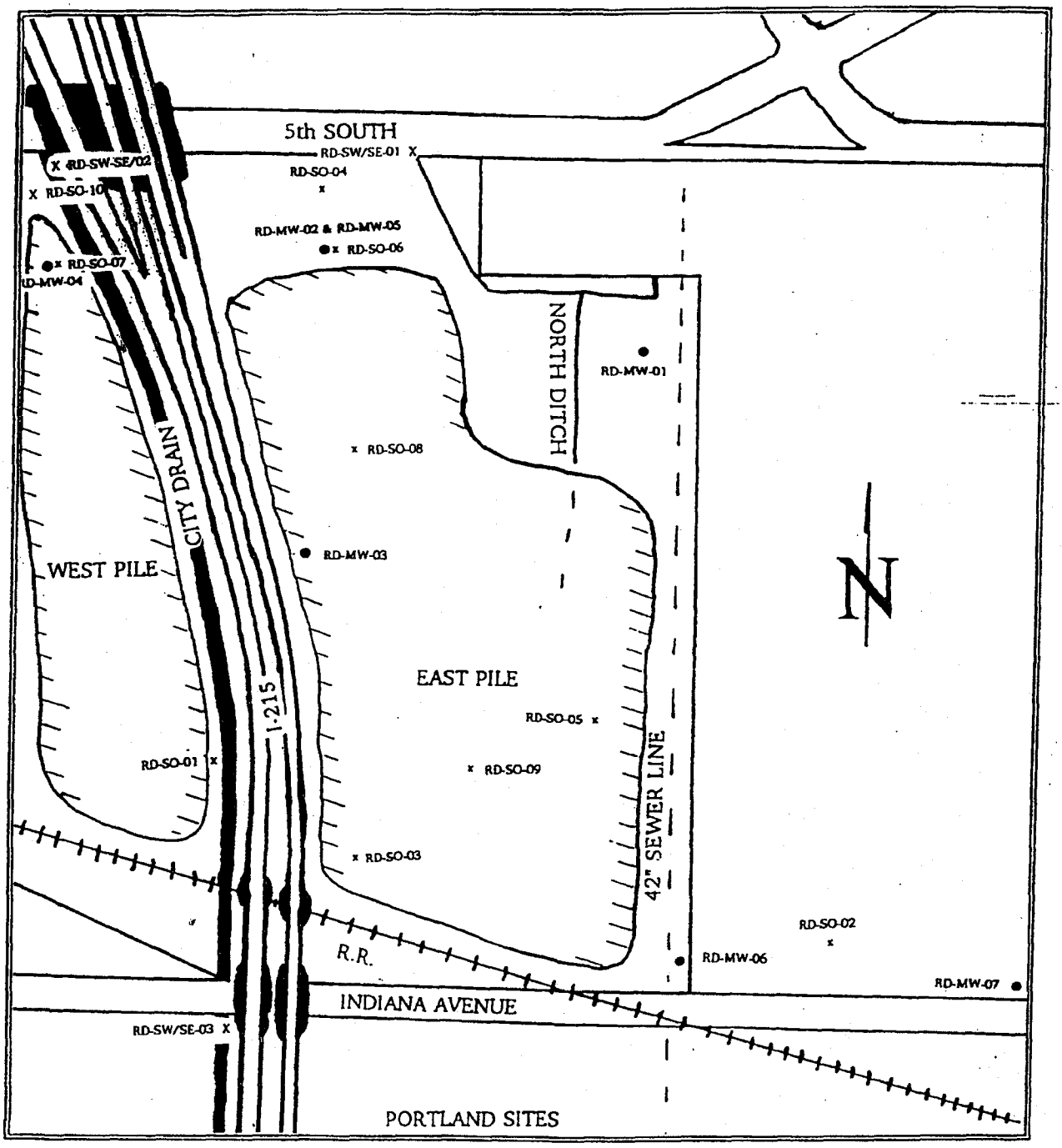
APPENDIX C

UTAH DEPARTMENT OF TRANSPORTATION
1997 PRELIMINARY INVESTIGATION
SELECTED DATA TABLES
AND
UTAH DIVISION OF ENVIRONMENTAL RESPONSE AND REMEDIATION
1991 SITE INVESTIGATION
SELECTED FIGURES AND DATA TABLES

FIGURES

LIST OF FIGURES



- Monitor Well Location
- x Sample Location

UTAH DEPARTMENT OF HEALTH		
BUREAU OF ENVIRONMENTAL RESPONSE AND REMEDIATION		
Sample Location Map Redwood Road Dump Site Figure 5		
By TH	Date 6/11/91	Scale Not to Scale

Soil Sample
Monitoring Well
Surface Water/Sediment
Landfills

130 65 0 130 Meters

N
W E
S

Utah Department of Environmental Quality
Division of Environmental Response and Remediation

Figure 5a
Approx. Sample Location Map
Redwood Road Dump Site
2008 Satellite Photo Overlay
Salt Lake County, Utah

by: Neil B. Taylor

Date: 04/08/2010

Soil Sample

Monitoring Well

Landfills

400 200 0 400 Feet

N

W E

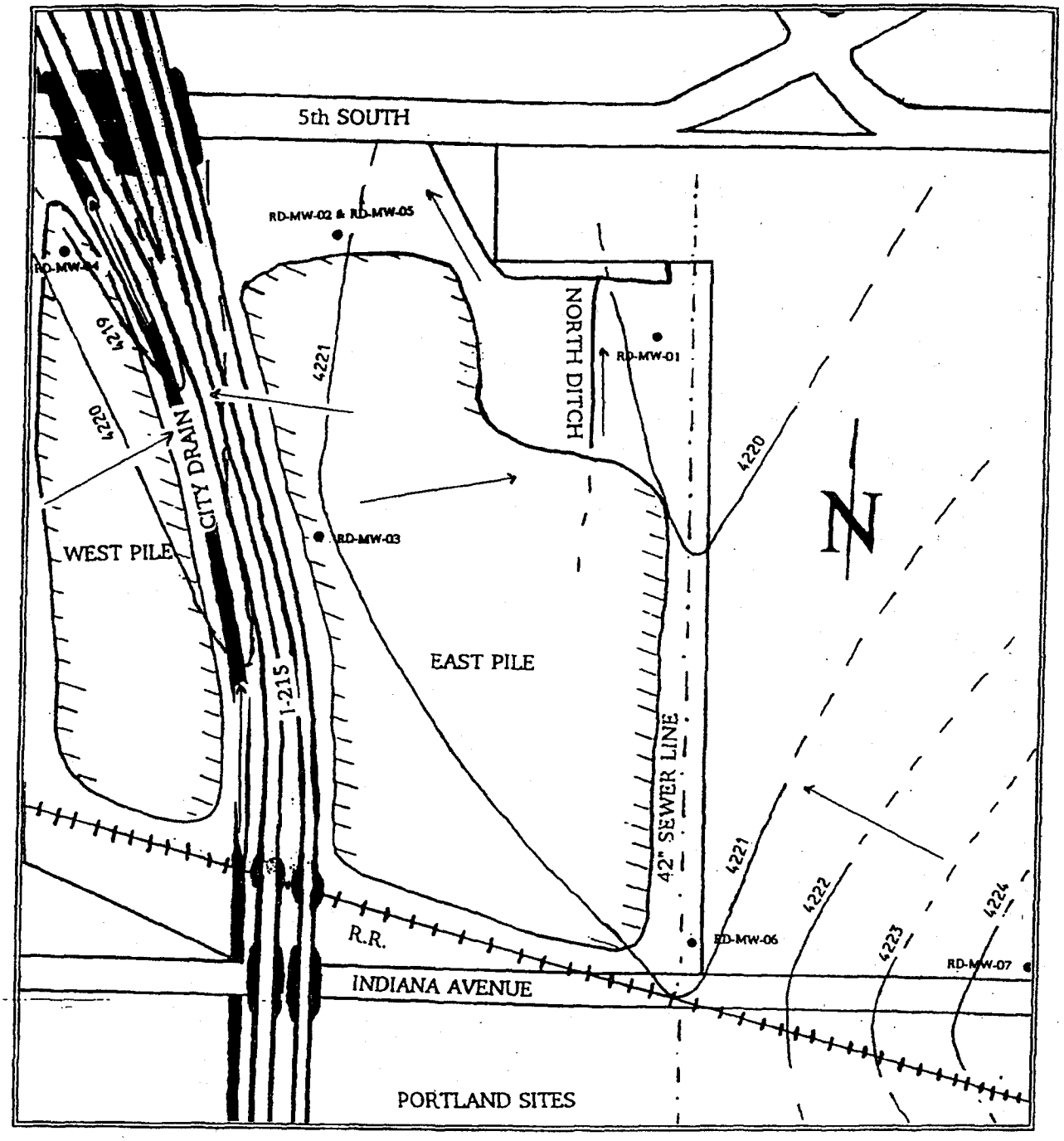
S

Utah Department of Environmental Quality
Division of Environmental Response and Remediation

Figure 5b
Soil and Groundwater Arsenic Concentrations
Redwood Road Dump Site
Salt Lake County, Utah

by: Neil B. Taylor

Date: 04/08/2010



4222 Groundwater Contour (shallow)

Groundwater and Suface Water Flow Direction

• Monitor Well Location

42" Sewer Line

UTAH DEPARTMENT OF HEALTH

BUREAU OF ENVIRONMENTAL RESPONSE AND REMEDIATION

Groundwater Map

Redwood Road Dump Site

Figure 6

By	Date	Scale
TH	6/11/91	Not to Scale

(based upon monitor well data and Portland Cement 2 & 3 Sites potentiometric maps)

TABLES

LIST OF TABLES

TABLE 1

1977 LANDFILL BOREHOLE

EXPLOSIVE GAS CONCENTRATIONS*

ALL VALUES ARE PERCENT BY VOLUME

PROBE NO.	28 April '77	3 May '77	5 May '77
G-1A-5-6	N.R.**	0	0
G-1A-10-11	N.R.	0.3	0
G-2A-5-6	N.R.	0	0
G-2A-10-11	N.R.	0	0
G-3A-5-6	N.R.	0	0
G-3A-10-11	N.R.	0	T<1
G-3A-15-16	N.R.	6.0	11
A-4A-5-6	N.R.	0	0
G-4A-10-11	N.R.	0	0
G-4A-14-15	N.R.	0	0
G-5A-5-6	N.R.	0	0
G-5A-10-11	N.R.	0	0
G-7A-5-6	N.R.	0	0
G-7A-9-10	N.R.	0	0
G-1B-4236	6.7	2.25	9
G-1B-5-6	T<1	0	0
G-2B-5-6	0	0	0
G-2B-10-11	1-2	2.25	1.5
G-2B-15-16	6	0	5
G-3B-5-6	0-3	0	0
G-3B-10-11	8	0	0
G-3B-15-16	18	9	15
G-4B-5-6	20	19	17
G-4B-10-11	20	17	20
G-4B-15-16	20	17	27
G-5B-1.5 + 6.5	N.R.	0	0
G-5B-10-11	N.R.	0	0
G-6B-5-6	N.R.	0	0
G-6B-10-11	N.R.	0	0
G-7B-4235	N.R.	0	0
G-7B-5-6	N.R.	0	0
G-8B-5-5 1/2	N.R.	0	0
G-1C-5-6	N.R.	0	0
G-1C-10-11	N.R.	0.7	5
G-2C-5-6	N.R.	0	0
C-2C-10-11	N.R.	0.8	0
G-3C-5-6	N.R.	0	0
C-3C-10-11	N.R.	1.8	3
G-3C-15-16	N.R.	No Probe	No Probe
G-5C-5-6	0	0	0
G-5C-10-11	<1	0.7	0.7
G-6C-5-6	N.R.	0	0
G-6C-9-10	N.R.	0.4	0

* Lower Explosive Limit is approximately 4 percent

** No Reading Taken

TABLE 2 - Physical Groundwater Parameters

1991 Site Investigation Monitoring Wells

Well Number	pH	Specific Conductivity (µmhos)	Temperature (°C)	Sediment Content (%)	Groundwater Elevation (feet)
RD-MW-01					4218.30
RD-MW-02					4228.99
RD-MW-03					4229.06
RD-MW-04					4224.08
RD-MW-01	7.97	19440		7	
RD-MW-02	7.35	1635		7	
RD-MW-03	7.51	9345		5	
RD-MW-04	7.47	25750		8	
RD-MW-01	7.10	20900	12.10		4219.46
RD-MW-02	7.00	1783	13.20		4221.13
RD-MW-03	6.80	1040	22.30		4221.14
RD-MW-04	6.80	31100	21.10		4219.31
RD-MW-06	7.30	2640	9.30		4220.91
RD-MW-07	7.30	2780	10.60		4224.34

Sediment Content = Visusal Estimate of Percentage of Sediment Content in Groundwater

Groundwater Elevation in Feet Above Mean Sea Level

ORGANIC DATA RESULTS FOR GROUNDWATER AND SURFACE WATER SAMPLES
Redwood Road Dump, Salt Lake County, Utah

Measured in ppb (parts per billion)

Sample Number	RD-GW-01	RD-GW-02	RD-GW-03	RD-MW-04	RD-GW-05	RD-GW-06	RD-MW-07	RD-SW-01	RD-SW-02	RD-SW-03
Traffic Number	HN922	HN923	HN924	HN925	HN926	HN927	HN928	HN918	HN919	HN920
Sample Location	Downgradient	Downgradient	Downgradient	Downgradient	Duplicate of	Background	Background	North Ditch	City Drain D	City Drain U
Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	RD-MW-02	Groundwater	Groundwater	Surface Water	Surface Water	SW-Background
VOLATILES										
Tetrachloroethene										7J
SEMIVOLATILES										
Bis (2-Ethylhexyl) Phthalate									2J	
Phenanthrene		1J								
Fluoranthene					3J					
Pyrene					3J					
N-Nitrosodiphenylamine (1)		2J								

J - the associated numerical value is an estimated because:

1. the Quality Control criteria were not met, or
2. the amount detected in the sample is below the contract required detection limit - Organic analysis only

TABLE 3
1991 SITE INVESTIGATION SAMPLING RESULTS

INORGANIC ANALYSES FOR GROUNDWATER AND SURFACE WATER SAMPLES
Redwood Road Dump, Salt Lake County, Utah

Measured in ppb (parts per billion)

Sample Number	RD-MW-01	RD-MW-02	RD-MW-03	RD-MW-04	RD-MW-05	RD-MW-06	RD-MW-07	RD-SW-01	RD-SW-02	RD-SW-03
Traffic Number	MHN636	MHN637	MHN638	MHN639	MHN640	MHN641	MHN642	MHN632	MHN633	MHN634
Sample Location	Downgradient	Downgradient	Downgradient	Downgradient	Duplicate of	Bgd/Upgradient	Bgd/Upgradient	North Ditch	City Drain Dgd	City Drain Ugd
Sample Type	Groundwater	Groundwater	Groundwater	Groundwater	RD-MW-02	Groundwater	Groundwater	Surface Water	Surface Water	SW- Background
Aluminum	234	385	260	560	251	104	108	1,380	728	666
Antimony	<24.0	<24.0	<24.0	<24.0	34.2	<24.0	<24.0	<24.0	25	<24.0
Arsenic	248	40.8	314	179	41.1	11.6	19	16.7	53.4	59.2
Barium	29.9J	429j	472J	81.7J	395J	37.7J	57.4J	69.4J	72.7J	76.6J
Beryllium	<1.0	<1.0	<1.0	<1.0	2.3	<1.0	<1.0	<1.0	<1.0	<1.0
Cadmium	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
Calcium	30,600	59,600	13,400	38,800	55,800	54,600	92,300	46,500	56,300	70,800
Chromium	10	<6.0	27.2	<6.0	<6.0	<6.0	8	<6.0	<6.0	<6.0
Cobalt	8.2	<5.0	17.3	8.2	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Copper	96.1	<5.0	15.2	5.4	6.7	21.9	26.2	19	14.7	24.3
Iron	148	1,260	2,570	659	1,210	44.9	53.7	1,460	1060	710
Lead	<1.0	9.7	4.8	1.1	3.3	<1.0	<1.0	23.6	8	4.8
Magnesium	92,900	63,200	110,000	162,000	59,900	101,000	87,300	16,000	36,500	48,200
Manganese	97.7	538	350	775	500	36.9	222	33	92.4	98.5
Mercury	<.20J	<.20j	<.20J	<.20J	<.20J	<.20J	<.20J	<.20J	<.20J	<.20J
Nickel	40	15.9	30.4	26.2	<12.0	<12.0	<12.0	<12.0	<12.0	<12.0
Potassium	157,000	70,300	141,000	196,000	67,100	39,600	57,400	14,400	37,000	53,900
Selenium	14.8J	<1.0j	<1.0J	<10.0J	<1.0J	<1.0J	7.1J	2.5J	3J	2.5J
Silver	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
Sodium	5,420,000	202,000	495,000	6,250,000	197,000	352,000	362,000	112,000	460,000	598,000
Thallium	<10.0R	<1.0j	<10.0J	<10.0R	<1.0J	<1.0J	<1.0J	<10.0J	<10.0J	<10.0
Vanadium	78.3	4.6	17.2	37.4	7.2	8.1	10.4	6.8	8.4	6.1
Zinc	29.8	16.4	51	19.7	19	33	23.6	62.7	53.9	62.3

J - the associated numerical value is an estimated because:

1. the Quality Control criteria were not met, or
2. the amount detected in the sample is below the contract required detection limit - Organic analysis only

R - Quality Control indicates that any positive values or reported detection limits are not reliable. Reported value is "rejected". Resampling or reanalysis may be necessary to verify the presence or absence of the compound.

TABLE 4
1991 SITE INVESTIGATION SAMPLING RESULTS

ORGANIC ANALYSES FOR SOIL AND SEDIMENT SAMPLES
Redwood Road Dump, Salt Lake County, Utah

Measured in ppb (parts per billion)

Sample Number	RD-SO-01	RD-SO-02	RD-SO-03	RD-SO-04	RD-SO-05	RD-SO-06	RD-SO-07	RD-SO-08	RD-SO-09	RD-SO-10	RD-SE-01	RD-SE-02	RD-SE-03
Traffic Number	HN907	HN908	HN909	HN910	HN911	HL951	HL952	HN912	HN913	HN914	HN915	HN916	HN917
Sample Location	Downgradient	Background	Downgradient	Downgradient	Downgradient	RD-MW-02	RD-MW-04	Downgradient	Downgradient	Downgradient	North Ditch	City Drain, Dwn	City Drain, Up
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Sediment	Sediment	Sed- Backgrnd
SEMIVOLATILES													
Acenapthene							80J						
Acenaphthylene	25J												
Anthracene	270J						140J		140J		50J		
Benzo (a) Pyrene	1200		34J	63J					290J		96J		
Benzo (a) anthracene	1700		34J	67J			410J		430		140J		
Benzo (b) fluoranthene	1100		25J	72J			410J		280J		110J		
Benzo (k) fluoranthene	1100		30J	79J			410J		280J		110J		
Benzo (g,h,i) Perylene			140J										
bis (2-Ethylhexyl) phtalate	86J		74J	63J	68J		620J	34J	82J			140J	100J
Carbazole	63J						63J						
Chrysene	1500		35J	83J			760J		350J		150J		
Dibenzofuran							54J						
Di-n-butylphtalate	47J			37J				34J	47J				
Fluoranthene	2,700		56J	110J			1,000		800		240J		
Fluorene							110J						
Indeno (1,2,33-cd) Pyrene	660			77J					200J				
Napthalene							120J						
N-Nitrosodiphenylamine	<88J	<130		<63	<81J						110J		
Phenanthrene	1200		38J	84J			1000		500		240J		
Pyrene	2700		58J	130J			410J		650		280J		59J
2-Methylnapthalene							86J						
VOLATILES													
Acetone			6J			53J	270				16J		
Benzene							6J						
Carbon Disulfide													5J
Ethylbenzene							8J						
Xylenes (total)							61						
PESTICIDES/PCB's													
alpha-Chlordane									1.6J				
Aroclor - 1260									150				
Dieldrin									6.5J		.56J		
Endosulfan II				1.1J							2.5J		
Endrin	.70J			.56J					1.7J				
Endrin aldehyde				.99J									
Endrin ketone									12				
gamma-Chlordane	.54J		.64J	.97J					6.5J		1.3J		
Heptachlor	1J			1.5J	.23J				.80J		.74J	.22J	
Methoxychlor	6J	4.3J	1.9J	5.9J				1.6J	67	2.5J	7.3J		
4,4' - DDD		14		1J					11		.56J		
4,4' - DDE		5.2		1.2J					4.7J				
4,4' - DDT		16	1.1J	2.3J					30J				

J - the associated numerical value is an estimated because:

1. the Quality Control criteria were not met, or
2. the amount detected in the sample is below the contract required detection limit - Organic analysis only

R - Quality Control indicates that any positive values or reported detection limits are not reliable. Reported value is "rejected". Resampling or reanalysis may be necessary to verify the presence or absence of the compound.

TABLE 5
1991 SITE INVESTIGATION SAMPLING RESULTS

INORGANIC ANALYSES FOR SOIL AND SEDIMENT SAMPLES
Redwood Road Dump, Salt Lake County, Utah

Measured in mg/kg (parts per million) *

Sample Number	RD-SO-01	RD-SO-02	RD-SO-03	RD-SO-04	RD-SO-05	RD-SO-08	RD-SO-09	RD-SO-10	RD-SE-01	RD-SE-02	RD-SE-03
Traffic Number	MHN621	MHN622	MHN623	MHN624	MHN625	MHN626	MHN627	MHN628	MHN629	MHN630	MHN631
Sample Location	Downgradient	Background	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	Downgradient	North Ditch	City Drain, Dwn	City Drain, Up
Sample Type	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Soil	Sediment	Sediment	Sed-Backgrnd
Aluminum	10,400	8,250	5,650	9,920	8,980	5,590	6,770	23,600	8,070	1,210	13,800
Antimony	28.8J	<6.6J	12.8J	<5.9J	8.4J	30J	14.9J	15.9J	11.9J	12.4J	45.8J
Arsenic	21.2J	10.8J	3.3J	9.4J	8.8J	4.7J	11.5J	28J	4.9J	7J	22J
Barium	534	198	87.5	126	145	61.6	263	1,760	230	38.2	117
Beryllium	<1.2	<.49	<.39	<.58	<.82	<.54	<.81	<1.5	<.86	<.28	<1.0
Cadmium	6.2	<3.3J	<.68	<.85	<.69	<.84	<1.3	<3.3	<1.1	<.69	<.85
Calcium	33,700	36,700	61,300	50,700	40,300	292,000	57,500	80,200	79,100	107,000	51,400
Chromium	56.7	14.2	14.6	16.5	12.4	21.8	17.2	125	12.6	2.5	18.4
Cobalt	14.5	4.1	4.3	6	5.7	1.5	4.4	16.3	5.8	1.7	8.5
Copper	375	59.9	17.9	47.5	22	11.4	58	235	40.5	5.6	55.8
Iron	104,000	9,710	8,590	14,800	13,800	9,900	12,800	165,000	21,500	4,520	19,000
Lead	553	219	15.5	214	24.5	15.5	268	2,610	68.2	5.2	23.8
Magnesium	8,360	21,100	5,270	12,400	9,030	9,770	8,430	17,200	33,000	36,800	16,400
Manganese	529	250	171	293	328	117	246	645	261	129	345
Mercury	.41J	<.14J	<.11J	.22J	<.12J	<.11J	0.22J	0.77J	0.15J	<.11J	<.14J
Nickel	72.7	9.1	7.4	13.8	14.4	11.7	13	52.5	10.9	7.2	17.5
Potassium	3,200	3,550	1,580	3,290	2,860	1,740	2,270	1,560	2,910	345J	5,110
Selenium	<.25J	<.28J	<.22J	<.25J	<.23J	<.23J	<.26J	<.86J	<.26J	<.23J	<.28J
Silver	2	<1.1	<.89	0.98	<.92	<.91	<.97	1.4	<1.0	<.92	<1.1
Sodium	1,040	836	121	566	86	255	181	2,910	625	272	3,770
Thallium	0.36	0.32	<.22	0.32	0.26	<.23	<.24	<.27	<.26	<.23	0.31
Vanadium	26.3	21.8	15.6	24.1	17.6	44.8	18	39.3	18.8	7	29.1
Zinc	2,580	112	49.7	103	55.2	28.9	207	1,570	222	18.3	80.2

J - the associated numerical value is an estimated because:

1. the Quality Control criteria were not met, or
2. the amount detected in the sample is below the contract required detection limit - Organic analysis only

*Units erroneously given as "ppb (parts per billion)" in 1995 SIP
Corrected on 05/10/2011 to "mg/kg (parts per million)

TABLE 6
1991 SITE INVESTIGATION SAMPLING RESULTS

APPENDIX D

UTAH DIVISION OF ENVIRONMENTAL RESPONSE AND REMEDIATION TARGETED BROWNFIELDS ASSESSMENT ANALYTICAL RESULTS REPORT

WESTERN PORTION OF THE REDWOOD ROAD DUMP AND THE SALT LAKE CITY ROAD MAINTENANCE AND AUTOMOBILE IMPOUND LOT SELECTED FIGURES AND DATA TABLES

LIST OF FIGURES

FIGURES

LIST OF FIGURES

TBA Soil Sample
TBA Trench
TBA Surface Water Sample
TBA Soil/Groundwater
Landfills

320 160 0 320 Feet

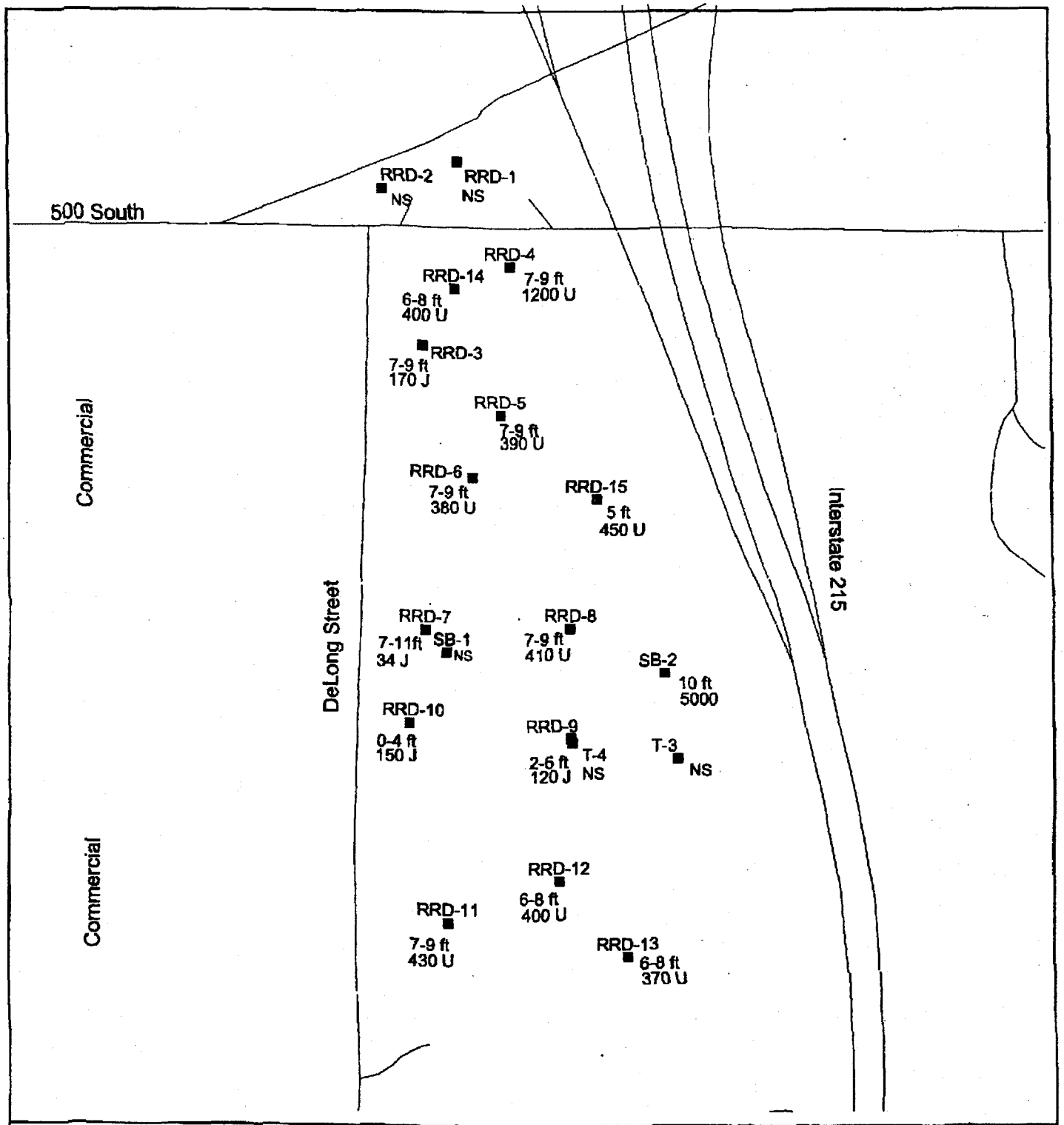
N
W E
S

Utah Department of Environmental Quality
Division of Environmental Response and Remediation

Figure 1
Approx. Sample Location Map
Redwood Road Dump
2001 TBA, 2008 Photo
Salt Lake County, Utah

by: Neil B. Taylor

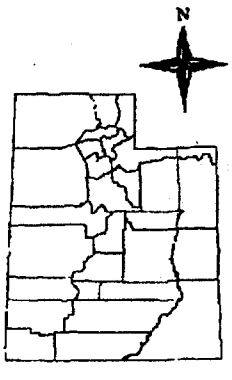
Date: 04/08/2010



0 200 400 600 800 Feet

LEGEND

- Roads
- Soil Sample Location
- 5000 - Benzo (a) pyrene concentration (ug/kg)
- 7 - 9 ft - Depth of Soil Sample
- NS - Sample not collected from this location
- U - Laboratory Quantitation Limit
- J - Estimated Value

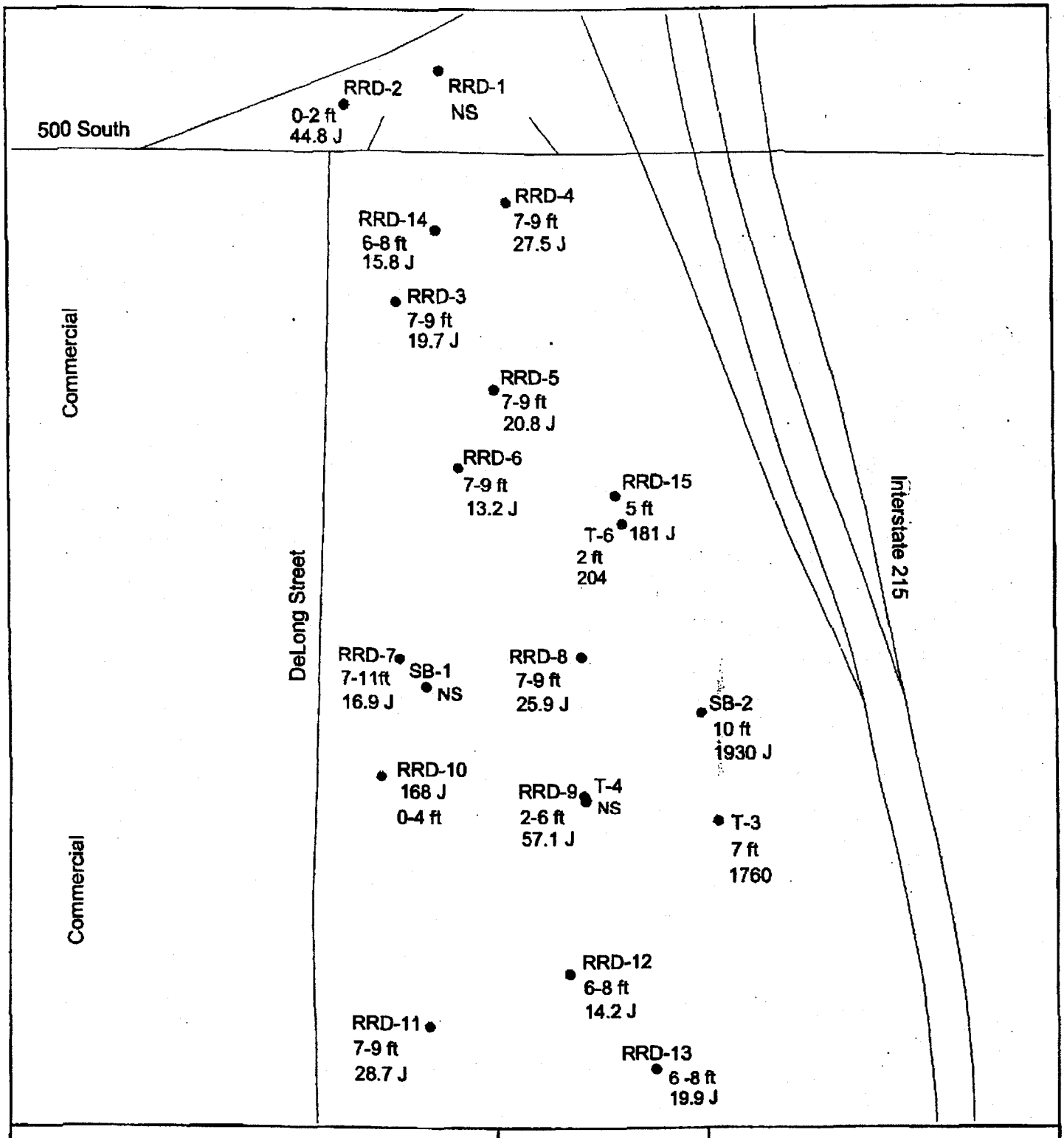


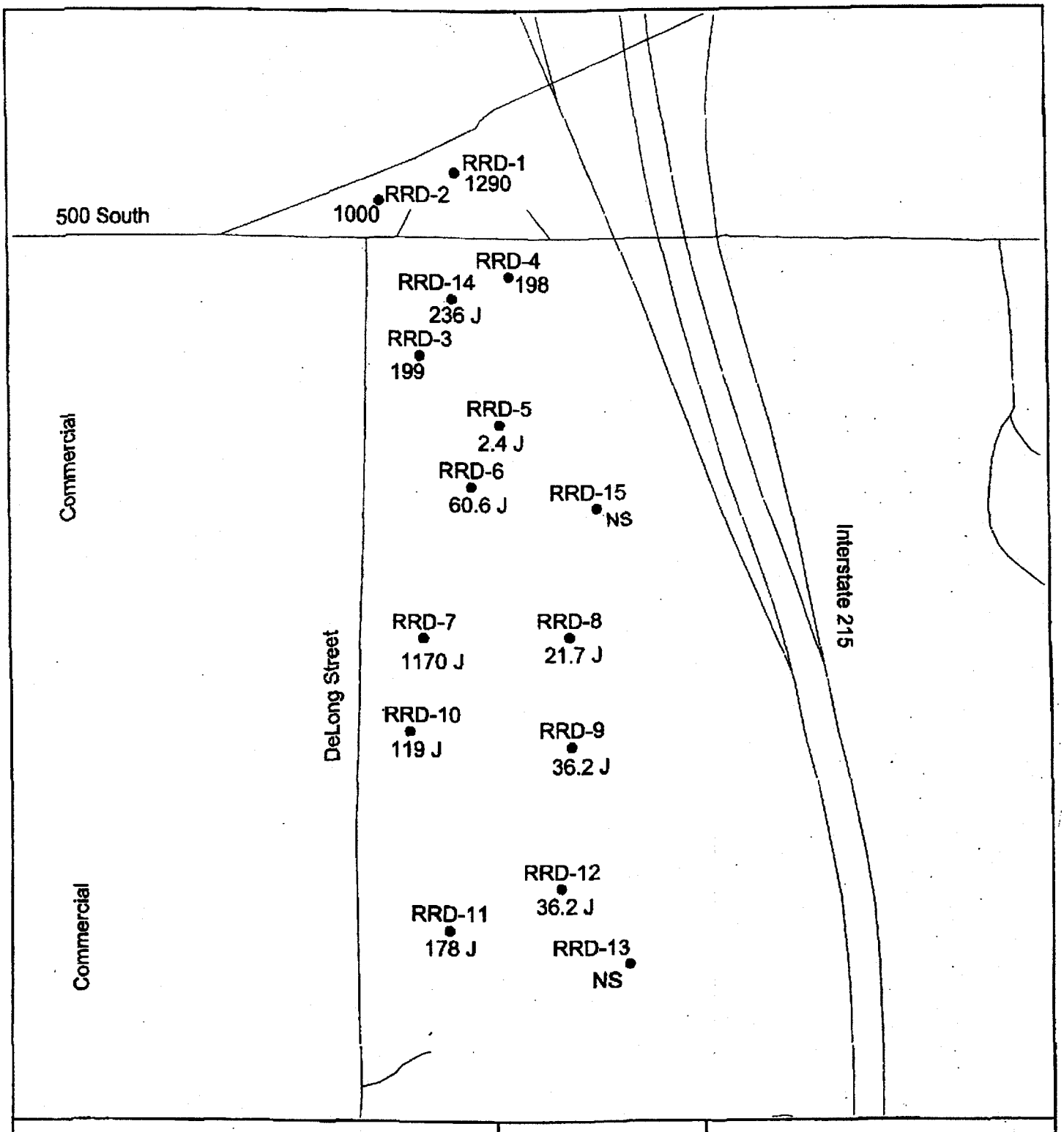
Site Location

Utah Department
of Environmental Quality
Division of Environmental
Response and Remediation

Figure 4
Benzo (a) Pyrene Concentrations in Soil
Redwood Road Dump TBA

By: B. Rees Date: April 30, 2001


500 South
RRD-2
0-2 ft
44.8 J
RRD-1
NS
RRD-4
7-9 ft
27.5 J
RRD-14
6-8 ft
15.8 J
RRD-3
7-9 ft
19.7 J
RRD-5
7-9 ft
20.8 J
RRD-6
7-9 ft
13.2 J
RRD-15
5 ft
T-6
181 J
2 ft
204
Commercial
DeLong Street
Interstate 215
RRD-7
7-11ft
16.9 J
SB-1
NS
RRD-8
7-9 ft
25.9 J
SB-2
10 ft
1930 J
RRD-10
168 J
0-4 ft
RRD-9
T-4
NS
2-6 ft
57.1 J
T-3
7 ft
1760
Commercial
RRD-12
6-8 ft
14.2 J
RRD-11
7-9 ft
28.7 J
RRD-13
6 -8 ft
19.9 J
0
200
400
600
800 Feet
LEGEND
Roads
Soil Sample Location
28.7 J - Estimated Lead Concentration (mg/kg)
7 -9 ft - Depth of Soil Sample
NS - Sample not collected
N
Site Location
Utah Department
of Environmental Quality
Division of Environmental
Response and Remediation
Figure 4a
Lead Concentrations in Soil
Redwood Road Dump TBA
By: B. Rees Date: May 1, 2001



0 200 400 600 800 Feet

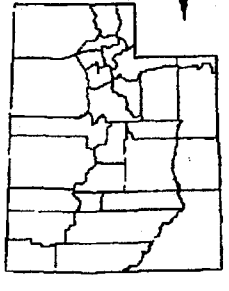
LEGEND

Roads

• Groundwater Sample Location

178 J - Dissolved Arsenic (ug/L)

NS - Sample not collected



Site Location

Utah Department
of Environmental Quality
Division of Environmental
Response and Remediation

Figure 5
Dissolved Arsenic in Groundwater
Redwood Road Dump TBA

By: B. Rees Date: April 27, 2001

TABLES

Table 3

Total Metals in Surface Water
SLC Redwood Road Dump Targeted Brownfields Assessment

	Sample Number	N/A	RRD-SW-1		RRD-SW-2		RRD-SW-3		RRD-SW-4		RRD-SW-5	
	Traffic Number	N/A	MHET62		MHEX79		MHEX78		MHET63		MHET64	
	Sample Location	N/A	Southern portion of canal		Central portion of canal		Northern portion of canal		Northern portion of wetlands		Duplicate of SW-4	
	Sample Date	N/A	6/23/2000		6/23/2000		6/23/2000		6/23/2000		6/23/2000	
	Sample Type	MCL or EPA Region III Tap Water Screening Criteria	Surface Water		Surface Water		Surface Water		Surface Water		Surface Water	
Cas No.	Analyte	µg/L	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
7429-90-5	Aluminum		61.7	J	5,440		4,690		9.0	UJ	17.9	J
7440-36-0	Antimony	15	4.6		7.0		6.9		3.0	U	3.0	U
7440-38-2	Arsenic	50	61		79.7		82.8		4.0		6.1	
7440-39-3	Barium	2,000	67.9		243		239		133		131	
7440-41-7	Beryllium	73	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
7440-43-9	Cadmium	5	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
7440-70-2	Calcium		93,300		125,000		123,000		25,500		25,800	
7440-47-3	Chromium (total)	100	1.0	U	14.8		13.1		1.0	U	1.0	U
7440-48-4	Cobalt	2,200	6.0	U	6.0	U	6.0	U	6.0	U	6.0	U
7440-50-8	Copper	1,300	2.1	U	89.7		86		1.0	U	1.0	U
7439-89-6	Iron		379		7,550		6,510		124		144	
7439-92-1	Lead	15	1.0	U	56.1		50.3		1.0	U	1.0	U
7439-95-4	Magnesium		63,800		69,300		67,300		17,200		17,100	
7439-96-5	Manganese	730	162		310		308		152		120	
7439-97-6	Mercury	2	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
7440-02-0	Nickel	730	4.1		12.2		13.1		1.0	U	1.0	U
7440-09-7	Potassium		27,100		31,600		27,600		7,980		7,690	
7782-49-2	Selenium	50	3.0	U	3.0	U	3.0	U	3.0	U	3.0	U
7440-22-4	Silver	100	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
7440-23-5	Sodium		454,000	J	483,000	J	411,000	J	131,000	J	132,000	J
7440-28-0	Thallium	2.6	2.0	UJ	2.0	UJ	2.0	UJ	2.0	UJ	2.0	UJ
7440-62-2	Vanadium	262	5.3		17		14.6		1.0	U	1.0	U
7440-66-6	Zinc	5,000	13.1	U	221		214		3.0	U	3.0	U

Results equal to or greater than MCLs or EPA Region III Tap Water Screening criteria are shown in bold

bgs - below ground surface

NA Not Applicable

Q - Qualifier

ug/L - parts per billion

J - The associated numerical value is an estimated quantity because the Quality Control criteria were not met

UJ - The reported amount is estimated because Quality Control criteria were not met. Element or compound was not detected.

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its app

R - Reported value is "rejected."

U - The analyte was not detected above the laboratory quantitation limit.

Table 6
VOCs in Surface Water
SLC Redwood Road Dump
Targeted Brownfields Assessment

	Sample Number	N/A	RRD-SW-1		RRD-SW-2		RRD-SW-3		RRD-SW-4		RRD-SW-5	
	Traffic Number	N/A	HX437		HX435		HX434		HX438		HX439	
	Sample Location	N/A	Southern portion of canal		Central portion of canal		Northern portion of canal		Northern portion of wetlands		Duplicate of SW-4	
	Sample Date	N/A	6/23/2000		6/23/2000		6/23/2000		6/23/2000		6/23/2000	
	Sample Type	MCL or EPA Region III Tap Water Screening Criteria	Surface Water		Surface Water		Surface Water		Surface Water		Surface Water	
Cas No.	Analyte	µg/L	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
75-71-8	Dichlorodifluoromethane	350	10	U	10	U	10	U	10	U	10	U
74-87-3	Chloromethane	2.1	10	U	10	U	10	U	10	U	10	U
75-01-4	Vinyl Chloride	2	10	U	10	U	10	U	10	U	10	U
74-83-9	Bromomethane	8.5	10	U	10	U	10	U	10	U	10	U
75-00-3	Chloroethane	3.6	10	U	10	U	10	U	10	U	10	U
75-69-4	Trichlorofluoromethane	1,300	10	U	10	U	10	U	10	U	10	U
75-35-4	*1,1-Dichloroethene*	7	10	U	10	U	10	U	10	U	10	U
76-13-1	Trichlorotrifluoroethane	59,000	10	U	10	U	10	U	10	U	10	U
67-64-1	Acetone	610	10		12		10	U	10	U	10	U
75-15-0	Carbon Disulfide	1,000	10	U	10	U	10	U	10	U	10	U
79-20-9	Methyl Acetate	6,100	10	U	10	U	10	U	10	U	10	U
75-09-2	Methylene Chloride	4.1	10	U	10	U	10	U	10	U	10	U
156-60-5	trans-1,2-Dichloroethene	100	10	U	10	U	10	U	10	U	10	U
1634-04-4	Methyl Tert-Butyl Ether	8,300	10	U	10	U	10	U	10	U	10	U
75-34-3	1,1-Dichloroethane	800	10	U	10	U	10	U	10	U	10	U
156-59-2	cis-1,2-Dichloroethene	70	10	U	10	U	10	U	10	U	10	U
78-93-3	2-Butanone (MEK)	1,900	10	U	10	U	10	U	10	U	10	U
67-66-3	Chloroform	0.15	0.6	J	0.4	J	10	U	10	U	10	U
71-55-6	1,1,1-Trichloroethane	200	10	U	10	U	10	U	10	U	10	U
110-82-7	Cyclohexane	180,000	10	U	10	U	10	U	10	U	10	U
56-23-5	Carbon Tetrachloride	5	10	U	10	U	10	U	10	U	10	U
71-43-2	Benzene	5	10	U	10	U	10	U	10	U	10	U
107-06-2	1,2-Dichloroethane	5	10	U	10	U	10	U	10	U	10	U
79-01-6	Trichloroethene (TCE)	5	10	U	10	U	10	U	10	U	10	U
108-87-2	Methylcyclohexane	6,300	10	U	10	U	10	U	10	U	10	U
78-87-5	1,2-Dichloropropane	5	10	U	10	U	10	U	10	U	10	U
75-27-4	*Bromodichloromethane*	0.17	10	U	10	U	10	U	10	U	10	U
10061-01-5	cis-1, 3-Dichloropropene		10	U	10	U	10	U	10	U	10	U
108-10-1	4-Methyl-2-Pentanone (MIK)	140	10	U	10	U	10	U	10	U	10	U
108-88-3	Toluene	1,000	10	U	10	U	10	U	10	U	10	U
10061-02-6	trans-1,3-Dichloropropene		10	U	10	U	10	U	10	U	10	U
79-00-5	1,1,2-Trichloroethane	5	10	U	10	U	10	U	10	U	10	U
127-18-4	Tetrachloroethene (PCE)	5	10	U	10	U	10	U	10	U	10	U
591-78-6	2-Hexanone	1,500	10	U	10	U	10	U	10	U	10	U
124-48-1	Dibromochloromethane	0.13	10	U	10	U	10	U	10	U	10	U
106-93-4	1,2-Dibromoethane	0.00075	10	U	10	U	10	U	10	U	10	U
108-90-7	Chlorobenzene	110	10	U	10	U	10	U	10	U	10	U
100-41-4	Ethylbenzene	700	10	U	10	U	10	U	10	U	10	U
1330-20-7	Xylene (Total)	10,000	10	U	10	U	10	U	10	U	10	U
100-42-5	Styrene	100	10	U	10	U	10	U	10	U	10	U
75-25-2	Bromoform (tribromomethane)	8.5	10	U	10	U	10	U	10	U	10	U
98-82-8	Isopropylbenzene		10	U	10	U	10	U	10	U	10	U
79-34-5	1,1,2,2-Tetrachloroethane	0.41	10	U	10	U	10	U	10	U	10	U
541-73-1	1,3-Dichlorobenzene	5.5	10	U	10	U	10	U	10	U	10	U
106-46-7	1,4-Dichlorobenzene	0.47	10	U	10	U	10	U	10	U	10	U
95-50-1	1,2-Dichlorobenzene	550	10	U	10	U	10	U	10	U	10	U
96-12-8	1,2-Dibromo-3-chloropropane	0.047	10	U	10	U	10	U	10	U	10	U
120-82-1	1,2,4-Trichlorobenzene	70	10	U	10	U	10	U	10	U	10	U

Results equal to or greater than MCLs or EPA, Region III Tap Water Screening criteria are shown in bold.
bgs - below ground surface
NA - Not Applicable
Q - Qualifier
ug/L - parts per billion

J - The associated numerical value is an estimated quantity because the Quality Control criteria were not met.
UJ - The reported amount is estimated because Quality Control criteria were not met.
Element or compound was not detected.
NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
R - Reported value is "rejected."
U - The analyte was not detected above the laboratory quantitation limit.

Table 9
SVOCs in Surface Water
SLC Redwood Road Dump
Targeted Brownfields Assessment

	Sample Number	N/A	RRD-SW-1		RRD-SW-2		RRD-SW-3		RRD-SW-4		RRD-SW-5	
	Traffic Number	N/A	HX437		HX435		HX434		HX438		HX439	
	Sample Location	N/A	Southern portion of canal		Central portion of canal		Northern portion of canal		Northern portion of wetlands		Duplicate of SW-4	
	Sample Date	N/A	6/23/2000		6/23/2000		6/23/2000		6/23/2000		6/23/2000	
	Sample Type	MCL or EPA Region III Tap Water Screening Criteria	Surface Water		Surface Water		Surface Water		Surface Water		Surface Water	
Cas No.	Analyte	µg/L	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
100-52-7	Benzaldehyde	3,700	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ
108-95-2	Phenol	22,000	10	U	10	U	10	U	10	U	10	U
111-44-4	bis(2-Chloroethyl) ether	0.0096	10	U	10	U	10	U	10	U	10	U
95-57-8	2-Chlorophenol	30	10	U	10	U	10	U	10	U	10	U
95-48-7	2-Methylphenol	1,800	10	U	10	U	10	U	10	U	10	U
108-60-1	2,2'-oxybis(1-Chloropropane)		10	U	10	U	10	U	10	U	10	U
98-86-2	Acetophenone	0.042	10	U	10	U	10	U	10	U	10	U
106-44-5	4-Methylphenol	180	10	U	10	U	10	U	10	U	10	U
621-64-7	N-Nitroso-di-n-propylamine		10	U	10	U	10	U	10	U	10	U
67-72-1	Hexachloroethane		10	U	10	U	10	U	10	U	10	U
98-95-3	Nitrobenzene	3.5	10	U	10	U	10	U	10	U	10	U
78-59-1	Isophorone	70	10	U	10	U	10	U	10	U	10	U
88-75-5	2-Nitrophenol		10	U	10	U	10	U	10	U	10	U
105-67-9	2,4-Dimethylphenol	730	10	U	10	U	10	U	10	U	10	U
111-91-1	bis(2-Chloroethoxy) methane		10	U	10	U	10	U	10	U	10	U
120-83-2	2,4-Dichlorophenol	110	10	U	10	U	10	U	10	U	10	U
91-20-3	Naphthalene	6.5	10	U	10	U	10	U	10	U	10	U
106-47-8	4-Chloroaniline	150	10	U	10	U	10	U	10	U	10	U
87-68-3	Hexachlorobutadiene	0.86	10	U	10	U	10	U	10	U	10	U
105-60-2	Caprolactam	18,000	10	U	10	U	10	U	10	U	10	U
59-50-7	4-Chloro-3-methylphenol		10	U	10	U	10	U	10	U	10	U
91-57-6	2-Methylnaphthalene	120	10	U	10	U	10	U	10	U	10	U
77-47-4	Hexachlorocyclopentadiene	260	10	U	10	U	10	U	10	U	10	U
88-06-2	2,4,6-Trichlorophenol	6.1	10	U	10	U	10	U	10	U	10	U
95-95-4	2,4,5-Trichlorophenol	3,700	25	U	25	U	25	U	25	U	25	U
92-52-4	1,1-Biphenyl		10	U	10	U	10	U	10	U	10	U
91-58-7	2-Chloronaphthalene		10	U	10	U	10	U	10	U	10	U
88-74-4	2-Nitroaniline		25	U	25	U	25	U	25	U	25	U
131-11-3	Dimethylphthalate	370,000	10	U	10	U	10	U	10	U	10	U
606-20-2	2,6-Dinitrotoluene	37	10	U	10	U	10	U	10	U	10	U
208-96-8	Acenaphthylene		10	U	10	U	10	U	10	U	10	U
99-09-2	3-Nitroaniline		25	U	25	U	25	U	25	U	25	U
83-32-9	Acenaphthene	370	10	U	10	U	10	U	10	U	10	U
51-28-5	2,4-Dinitrophenol	73	25	U	25	U	25	U	25	U	25	U
100-02-7	4-Nitrophenol	290	25	U	25	U	25	U	25	U	25	U
132-64-9	Dibenzofuran	24	10	U	10	U	10	U	10	U	10	U
121-14-2	2,4-Dinitrotoluene	73	10	U	10	U	10	U	10	U	10	U
84-66-2	Diethylphthalate	29,000	10	U	0.4	J	10	U	10	U	10	U
86-73-7	Fluorene	240	10	U	10	U	10	U	10	U	10	U
7005-72-3	4-Chlorophenyl-phenylether		10	U	10	U	10	U	10	U	10	U
100 01-6	4-Nitroaniline		25	U	25	U	25	U	25	U	25	U
534-52-1	4,6-Dinitro-2-methylphenol		25	U	25	U	25	U	25	U	25	U
86-30-6	N-nitrosodiphenylamine (1)		10	U	10	U	10	U	10	U	10	U
101-55-3	4-Bromophenyl-phenylether		10	U	10	U	10	U	10	U	10	U
118-74-1	Hexachlorobenzene	0.042	10	U	10	U	10	U	10	U	10	U
1912-24-9	Atrazine	0.3	10	UJ	10	UJ	10	UJ	10	UJ	10	UJ
87-86-5	Pentachlorophenol	0.56	25	U	25	U	25	U	25	U	25	U
85-01-8	Phenanthrene		10	U	10	U	10	U	10	U	10	U
120-12-7	Anthracene	1,800	10	U	10	U	10	U	10	U	10	U
86-74-8	Carbazole	3.3	10	U	10	U	10	U	10	U	10	U
84-74-2	Di-n-butylphthalate		10	U	10	U	10	U	10	U	10	U
206-44-0	Fluoranthene	1,500	10	U	10	U	10	U	10	U	10	U
129-00-0	Pyrene	180	10	U	10	U	10	U	10	U	10	U
85-68-7	Butylbenzylphthalate	7,300	10	U	10	U	10	U	10	U	10	U
91-94-1	3,3' -Dichlorobenzidine	0.15	10	U	10	U	10	U	10	U	10	U
56-55-3	Benzo (a) anthracene	0.092	10	U	10	U	10	U	10	U	10	U
218-01-9	Chrysene	9.2	10	U	10	U	10	U	10	U	10	U
117-81-7	bis (2-Ethylhexyl) phthalate	4.8	10	U	10	U	10	U	10	U	10	U
117-84-0	Di-n-octylphthalate		10	U	10	U	10	U	10	U	10	U
205-99-2	Benzo (b) fluoranthene	0.092	10	U	10	U	10	U	10	U	10	U
207-08-9	Benzo (k) fluoranthene	0.92	10	U	10	U	10	U	10	U	10	U
50-32-8	Benzo (a) pyrene	0.0092	10	U	10	U	10	U	10	U	10	U
193-39-5	Indeno (1,2,3-cd) pyrene		10	U	10	U	10	U	10	U	10	U
53-70-3	Dibenz (a, h) anthracene	0.0092	10	U	10	U	10	U	10	U	10	U
191-24-2	Benzo (g,h,i) perylene		10	U	10	U	10	U	10	U	10	U

Results equal to or greater than MCLs or EPA, Region III Tap Water Screening criteria are shown in bold.

bgs - below ground surface

NA - Not Applicable

Q - Qualifier

ug/L - parts per billion

J - The associated numerical value is an estimated quantity because the Quality Control criteria were not met.

UJ - The reported amount is estimated because Quality Control criteria were not met.
Element or compound was not detected.

NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

R - Reponed value is "rejected."

U - The analyte was not detected above the laboratory quantitation limit.

Table 12
PCBs/Pesticides in Surface Water
SLC Redwood Road Dump
Targeted Brownfields Assessment

	Sample Number	N/A	RRD-SW-1		RRD-SW-2		RRD-SW-3		RRD-SW-4		RRD-SW-5	
	Traffic Number	N/A	HX437		HX435		HX434		HX438		HX439	
	Sample Location	N/A	Southern portion of canal		Central portion of canal		Northern portion of canal		Northern portion of wetlands		Duplicate of SW-4	
	Sample Date	N/A	6/23/2000		6/23/2000		6/23/2000		6/23/2000		6/23/2000	
	Sample Type	MCL or EPA Region III Tap Water Screening Criteria	Surface Water		Surface Water		Surface Water		Surface Water		Surface Water	
Cas No.	Analyte	µg/L	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q	µg/L	Q
319-84-6	alpha-BHC (Hexachlorocyclohexane)	0.011	0.050	U	0.0036	J	0.0081	J	0.050	U	0.050	U
319-85-7	beta-BHC (Hexachlorocyclohexane)	0.037	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
319-86-8	delta-BHC (Hexachlorocyclohexane)		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
58-89-9	gamma-BHC (Lindane)	0.2	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
76-44-8	Heptachlor	0.4	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
309-00-2	Aldrin	0.0039	**0.024**	J	**0.020**	J	**0.030**	J	**0.044**	J	0.050	U
1024-57-3	Heptachlor epoxide	0.2	0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
959-98-8	Endosulfan I		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
60-57-1	Dieldrin	0.0042	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
72-55-9	4,4-DDE		0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
72-20-8	Endrin	2	0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
33213-65-9	Endosulfan II		0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
72-54-8	4,4-DDD		0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
1031-07-8	Endosulfan sulfate		0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
50-29-3	4,4-DDT		0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
72-43-5	Methoxychlor	40	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
53494-70-5	Endrin ketone		0.10	U	0.10	U	0.10	U	0.10	U	0.10	U
7421-93-4	Endrin aldehyde		0.0049	J	0.10	U	0.0077	J	0.0054	J	0.0038	J
5103-71-9	alpha-Chlordane		0.050	U	0.050	U	0.050	U	0.050	U	0.050	U
5103-74-2	gamma-Chlordane		0.050	U	0.050	U	0.050	J	0.050	U	0.050	U
8001-35-2	Toxaphene	0.061	5.0	U	5.0	U	5.0	U	5.0	U	5.0	U
12674-11-2	Aroclor-1016	0.96	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
11104-28-2	Aroclor-1221	0.033	2.0	U	2.0	U	2.0	U	2.0	U	2.0	U
11141-16-5	Aroclor-1232	0.033	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
53469-21-9	Aroclor-1242	0.033	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
12672-29-6	Aroclor-1248	0.033	1.0	U	1.0	U	1.8	U	1.8	U	1.0	U
11097-69-1	Aroclor-1254	0.033	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U
11096-82-5	Aroclor-1260	0.033	1.0	U	1.0	U	1.0	U	1.0	U	1.0	U

Results equal to or greater than EPA Region III Tap Water Screening criteria are shown in bold.
bgs - below ground surface
NA - Not Applicable
NM - Not Measured
Q - Qualifier
ug/L - parts per billion

J - The associated numerical value is an estimated quantity because the Quality Control criteria were not met.
UJ - The reported amount is estimated because Quality Control criteria were not met. Element or compound was not detected.
NJ - The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.
R - Reported value is "rejected."
U - The analyte was not detected above the laboratory quantitation limit.