PRELIMINARY ASSESSMENT (PA)

East Side Springs

Salt Lake County, Utah
UTN000802825

Utah Department of Environmental Quality
Division of Environmental Response and Remediation
Prepared by: Craig Barnitz

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Approved: _____ Date: 7/19/11
Craig Barnitz, UDEQ Project Manager

Approved: _____ Date: 7/19/11
Dale T. Urban, UDEQ Site Assessment Section Manager

Approved: _____ Date: 7/26/11
Margaret Williams, Site Assessment Manager,
EPA Region 8

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1.0 INTRODUCTION

In July and August of 2010, the Salt Lake City Department of Public Utilities sampled several springs on the east bench of Salt Lake City, Utah. Elevated levels for tetrachloroethylene (PCE) were detected in concentrations ranging from 2.5 µg/L to 40.4 µg/L. These springs are the result of the groundwater aquifer surfacing along the Wasatch Fault. A potential source for the PCE contamination may be the upgradient 700 South 1600 East PCE Plume site.

Under the authority of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, the Superfund Amendments and Reauthorization Act (SARA) of 1986, in accordance with the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), and through a Cooperative Agreement with the U.S. Environmental Protection Agency, Region 8 (EPA), the DERR conducted a Preliminary Assessment (PA) of the **East Side Springs** (UTN000802825).

2.0 OBJECTIVES

The objectives for conducting this Preliminary Assessment are as follows:

- Assess the current and historic conditions at the site;
- Use historical records, previously collected site data, and reference materials to identify potential sources of the contamination and to assess the potential for contaminant migration through air, soil, surface water, and groundwater pathways;
- Identify the potential routes for exposure of hazardous materials for both human health and environmental targets; and,
- Determine whether the site warrants further investigation under CERCLA.

3.0 SITE DESCRIPTION

3.1 Site Location and Description

The East Side Springs site (herein referred to as the "site") is located east of the intersection of 1300 East 800 South in the city of Salt Lake City, Salt Lake County, Utah and within Sections 4, 5, 8 and 9, Township 1 South, Range 1 East, of the Salt Lake Base Meridian (Figure 1). The geographic coordinates for the site are 40°45'7" North Latitude and 111°51'14" West Longitude as estimated in Appendix E.

The site is located in the residential neighborhoods of East Central and Yalecrest on the east bench of Salt Lake City, Utah. The site boundaries are defined between 800 South and Michigan Avenue and 1100 East and 1300 East (Figure 2). The general topography slopes to the west with an average

elevation of 4520 feet above mean sea level (USGS, 1975). The Wasatch fault is called a *normal* fault, because the slip is mostly vertical - the mountain block (Wasatch Range) moves upward relative to the adjacent downward-moving valley block (UGS, 1996). Red Butte Creek is located to the south of the site and runs to the west towards Liberty Park Pond. The 700 South 1600 East PCE Plume is located to the northeast of the site.

3.2 Site History

On October 12, 1990 the Ground Water Protection Section of the then Utah Bureau of Water Pollution Control (BWPC), was contacted by Florence Perez of the Salt Lake City Water Treatment office and informed that water collected from an irrigation well on the grounds of the Mount Olivet Cemetery detected PCE at a concentration of 32 µg/L (BWPC, 1991). The detection of PCE in the Mount Olivet Cemetery well led to the discovery of the Mount Olivet Cemetery Plume site (currently the 700 South 1600 East PCE Plume site) to the CERCLIS list.

PCE contamination was confirmed in the groundwater during a Site Inspection (SI) conducted at the 700 South 1600 East PCE Plume site in October 2004. The 2004 SI sampling activity was conducted jointly by the DERR and EPA Federal Facilities program. During this sampling activity PCE was detected in a Salt Lake City municipal well at a concentration of 2.23 µg/L. The highest detection for PCE (128 µg/L) was found in a sample collected from an irrigation well within the Mount Olivet cemetery property. Based on the PCE contamination detected in the Salt Lake City municipal well in 2004, the DERR and EPA returned to the site in 2005 along with an EPA contractor (URS) to collect groundwater samples to prepare a Hazardous Ranking System (HRS) package to propose the site to the National Priorities List (NPL). The suspected source of the contamination at the 700 South 1600 East PCE Plume site is a historic dry-cleaning facility that operated at the Veteran's Administration Hospital to the east.

In the early morning of June 12, 2010, a release of crude oil from a Chevron pipeline was discovered in the area east of Red Butte Canyon. The quantity of oil released was estimated at 800 barrels with much of the oil entering Red Butte Creek and the downgradient Liberty Park pond (SLC, 2010). As part of the overall response effort, Salt Lake City Department of Public Utilities began identifying potential downgradient receptors for the crude oil contamination. Salt Lake City identified 25 springs along the Wasatch Fault line in the area between 800 South and Michigan Avenue and 1100 East and 1300 East as potential receptors of the crude oil contamination. Sampling locations were selected to provide data that would delineate the extent of the potential crude oil contamination. Due to access and other factors, samples were collected from eleven springs, one storm drain manhole, and two artesian wells. Sampling events were conducted on June 14 and 16, July 9 and 22, and August 5, 6 and 20, 2010. Samples were delivered to ChemTech Ford in Salt Lake City and analyzed for volatile organic compounds (VOC), among other analyses, to identify the possible crude oil contamination. The laboratory analytical data detected PCE in 6 of the 11 springs sampled and in a sample collected from the storm drain manhole located at 900 South 1071 East. PCE concentrations ranged between 2.5 µg/L and 40.4 µg/L (SLC, 2011, Figure 3). The two samples

collected from the downgradient artesian wells available to the public for drinking water did not detect PCE (SLC, 2011).

3.3 Site Characersitics

3.3.1 Hydrogeology. In general, the Salt Lake Valley is composed of a four aquifer system: (1) a shallow, unconfined (water table) aquifer in the center of the valley, (2) a deep unconfined (water table) aquifer on the margins of the valley, (3) a deep, confined (artesian) aquifer in the valley center, and (4) locally perched aquifers (Waddell et. al., 1987). The shallow aquifer is recharged primarily by an upward flow of water from the deeper portions of the aquifer, and secondly by the downward infiltration of precipitation, snowmelt and surface water. The shallow aquifer is typically not used as a drinking water source because it yields water slowly, is generally of poor chemical quality (calcareous and saline-alkaline), and higher quality sources are readily available. In the shallow aquifer, the water table follows the general topography of the land surface and the direction of flow is towards the Jordan River and the Great Salt Lake (Waddell et. al., 1987).

Well logs from the 700 South 1600 East PCE Plume site show depth to groundwater at 100 feet below ground surface (bgs). Groundwater monitoring done for the 700 South 1600 East PCE Plume site shows the groundwater flow direction for the shallow unconfined aquifer when adjacent Salt Lake City and University of Utah wells along 500 South are operational is toward the northwest (URS, 1999). When these wells are not operational, the groundwater table likely follows the contour of the general topography as it slopes to the west before surfacing as springs along the Wasatch Fault near 1300 East (SLC, 2011).

3.3.2 Geology. The site is located in the Salt Lake Valley. This north-south trending intermontane valley lies on the eastern edge of the Basin and Range Physiographic Province, and on the western edge of the Colorado Plateau Province. The general geology of the valley is characterized by fine grained sediments, silts, and clays which were deposited from prehistoric Lake Bonneville, and by extensive Quarternary and Tertiary deposits of conglomerates, sands, and silts deposited by erosion of and deposition from the surrounding mountain ranges (Hintze, 1988).

3.3.3 Hydrology. The Site is located within the Jordan River Watershed. The nearest surface water body is Red Butte Creek located 1500 feet to the southeast. Red Butte Creek is a perennial stream with an average annual baseflow of 4.2 cubic feet/sec (cfs). Peak flow occurs in late April through June as a consequence of snow-melt (USGS, 2010). Red Butte Creek is a receptacle for surface water run-off in the general area before it goes underground at 1100 East (USGS, 1975). Red Butte Creek flows towards Liberty Park Pond where it is joined by Parley's Creek before continuing to the Jordan River. This particular stretch of the Jordan River is protected for secondary contact recreational use (i.e. boating, and wading), warm water species of game fish including organisms necessary for their food chain, and agricultural usage. Closer to the Great Salt Lake the Jordan River is additionally protected for waterfowl, shore birds, and other water-oriented wildlife (UDEQ/DWQ, 2011).

3.3.4 Climate. The site is located in a semi-arid continental climate (Eubank and Brough, 1979). Within this climate type the winters are fairly cold with temperatures dropping to a low in December to an average of 40.6° F and peaking in July averaging about 91.4° F (WRCC, 2010). Data from the nearby Salt Lake City weather station indicates the average annual precipitation in the area is 22.87 inches per year with a normal monthly high of 2.92 inches in April and a normal monthly low of 0.66 inches in August (WRCC, 2010). Average annual snowfall is 58.00 inches. The winds are predominantly from the southwest with a mean speed of four to five miles per hour. The next most common wind direction is from the north and northwest (Ashcroft et al., 1991; WRCC, 2010).

4.0 POTENTIAL EXPOSURE PATHWAYS

4.1 Waste Source Characteristics

The contaminant of concern at the site is PCE, however the source area(s) and the extent of the contamination at the site have not been delineated. Common uses of chlorinated solvents include industrial and dry-cleaning solvents, metal degreasing, paint and varnish removers. PCE is a commonly used dry-cleaning solvent that began production in 1923 and went largely unregulated for decades after its introduction. Chemical Safety Data Sheets distributed as late as 1968 recommend that PCE, and TCE "....may be poured on dry sand, earth, or ashes...and allowed to evaporate into the atmosphere." It wasn't until 1981 that serious consideration was given to the consequences of groundwater contamination resulting from poor solvent handling and careless disposal (Pankow and Cherry, 1996).

Due to their low viscosity, liquid chlorinated solvents can migrate unimpeded by geologic formations and at rates comparable to, or faster, than those of water. Chlorinated solvents are quite insoluble in water, so once they get into the groundwater system it is difficult to wash them from the system (Pankow and Cherry, 1996). They are more dense and less viscous than water (Schwille, 1988). As a result, they sink in water rather than float like hydrocarbons. Chlorinated solvents may therefore contaminate aquifers other than the one to which they are released by flowing through layers that confine groundwater (Pankow and Cherry, 1996). As PCE attenuates in the environment it breaks down into other chlorinated solvents including TCE and TCA. However, low degradabilities of chlorinated solvents mean that subsurface lifetimes of these compounds may be very long (Pankow and Cherry, 1996).

Most liquid chlorinated solvents have high vapor pressures, and therefore when solvents exist in the vadose zone (above the water table), a vapor plume will develop in the surrounding soil pore space (Pankow and Cherry, 1996). PCE may also migrate through the subsurface into overlying buildings resulting in degradation of indoor air quality (ITRC, 2007). The health effects of breathing in air with low levels of PCE are not known. However, based on animal studies, the Department of Health and Human Services (DHHS) has determined that PCE may reasonably be anticipated to be a carcinogen. High concentrations of PCE can cause dizziness, headache, sleepiness, confusion, nausea, difficulty speaking and walking, unconsciousness, and death (ATSDR, 2007).

Preliminary results from a hydrogeologic study, conducted on behalf of the Salt Lake City Public Utilities, indicate that the local groundwater gradient is likely to the west-southwest (SLC, 2011). This hydraulic gradient indicates that the potential source for the PCE is the 1600 East 700 South Plume (formerly Mount Olivet Cemetery Plume). Other potential upgradient sources for the contamination include five underground storage tank (UST) facilities located near the site. Two of these facilities are commercial gas stations. The first gas station, located at 877 South 1300 East, is currently vacant. The second gas station, located at 904 South 1300 East, has an attached automobile service station. The other UST facilities include facilities at State Fuel Service, Interagency Fire, and the Veteran's Administration (ArcGIS, 2011, Appendix D).

4.2 Groundwater Pathway

4.2.1 Groundwater Pathway Targets. There are 27 wells and one groundwater spring operated by eight water systems located within the 4 mile target distance area (Appendix G). These sources serve a total population of 108,525 persons in the Salt Lake Valley. The nearest well is the University of Utah well located 0.67 miles to the northeast (UDEQ/DDW, 2010). The contaminated groundwater presents a potential for the migration of contaminants to local residents via the indoor air pathway and based on the likely hydraulic gradient, threatens two downgradient artesian wells, the 8th South well and the Liberty Park drinking fountains, used as drinking water sources

4.2.2 Likelihood of Release. The groundwater pathway is the primary concern for this Preliminary Assessment. During the 2010 sampling activity conducted by Salt Lake City Public Utilities, PCE was detected in six of the 11 springs sampled and in a sample collected from a storm drain manhole located at 900 South 1071 East. PCE concentrations ranged between 2.5 µg/L and 40.4 µg/L (SLC, 2011). The two samples collected from the downgradient public artesian wells did not detect PCE.

4.3 Surface Water Pathway

4.3.1 Surface Water Pathway Targets. There are no surface drinking water sources within the 15-mile downstream target distance limit of the site (UDNR, 2011, Appendix H). The nearest surface water body to the site is the Red Butte Creek located 1500 feet southeast of the site. The Jordan River is located approximately 3.5 miles west of the site (USGS, 1975). Wetlands along the Jordan River are also potential targets for the PCE contamination. A number of fish species for sport fishing and human consumption, including trout, bass and catfish, can be found in the Jordan River. The June Sucker, common to Utah Lake, is described as rare to the Jordan River but is listed as endangered by the Endangered Species Act (SLCo, 2008).

Salt Lake City Public Utilities sampled 11 springs, one sewer manhole, and two artesian wells near the established site boundaries. The springs are located on residential property and are privately owned by the homeowners. These residences are hooked up to municipal water lines, however it is not known whether residents use these springs as secondary sources of drinking water. Young children and pets drinking or coming into contact with contaminated spring water may be at risk of

exposure.

4.3.2 Likelihood of Release. While contamination has been detected in the springs, there is no analytical data to suggest a release from the site has impacted the nearby Red Butte Creek.

4.4 Soil Exposure Pathway

4.4.1 Soil Exposure Pathway Targets. There are currently 175,542 persons residing within 4 miles of the site. The population within ¼ mile of the site is 838 (Census, 2000, Appendix F).

4.4.2 Likelihood of Release. From the available site information, the PCE detected in the springs is likely indicative of a groundwater plume migrating from an upgradient source. It does not appear that PCE was released to the soils within the site boundaries. The exposure risk to people living and working in the area through contact or inhalation of the soils appears to be low.

4.5 Air Pathway

4.5.1 Air Pathway Targets. There are currently 175,542 persons residing within 4 miles of the site. The population within ¼ mile of the site is 838. Seven of the 25 identified springs are located within a residential property and within 200 feet of the residential building (Census, 2000, Appendix F).

4.5.2 Likelihood of Release. From the available site information it does not appear that a release has occurred at the site via the air exposure pathway. It does not appear that PCE was released to the soils within the site boundaries and the concentrations for PCE detected in the springs remain relatively low. Any PCE volatizing into the ambient air through volatization and the subsequent exposure via the air exposure pathway appears to be low.

There is concern regarding the potential presence of PCE in the soil vapor near residential buildings. Further characterization of the PCE plume within the residential area needs to be completed before the vapor intrusion pathway is considered for further evaluation.

5.0 SUMMARY AND CONCLUSIONS

In the early morning of June 12, 2010, a release of crude oil from a Chevron pipeline was discovered in the area east of Red Butte Canyon. The quantity of oil released was estimated at 800 barrels with much of the oil entering Red Butte Creek and the downgradient Liberty Park pond (SLC, 2010). As part of the overall response effort, Salt Lake City Public Utilities began identifying potential downgradient receptors from the spill. Salt Lake City identified and sampled a select number of residential springs along the Wasatch Fault line in the area between 800 South and Michigan Avenue and 1100 East and 1300 East as potential receptors of the crude oil contamination including oils, volatile organics, and other components of crude oil. This information was used to select sampling locations that would help to delineate the extent of the potential crude oil contamination. Sampling

events were conducted on June 14 and 16, July 9 and 22, and August 5, 6, and 20, 2010. Samples were delivered to ChemTech Ford in Salt Lake City for analysis. The laboratory analytical data identified PCE in six of the 11 springs sampled. A sample collected from a storm drain manhole located at 900 South 1071 East also detected PCE. PCE concentrations ranged between 2.5 µg/L and 40.4 µg/L. Two samples collected from downgradient artesian wells available to the public for drinking water did not detect PCE.

A hydrogeologic study conducted on behalf of the Salt Lake City Public Utilities indicates that the local groundwater gradient is to the west-southwest (SLC, 2011). This hydraulic gradient indicates that a potential source for the PCE is the 1600 East 700 South Plume (formerly Mount Olivet Cemetery Plume). Other potential sources for the contamination include five UST facilities located near the site. Two of these facilities are commercial gas stations. The first gas station, located at 877 South 1300 East, is currently vacant and does not have a service station. The second gas station, located at 904 South 1300 East, does have an automobile service station. The other UST facilities include facilities at State Fuel Service, Interagency Fire, and the Veteran's Administration (ArcGIS, 2011).

The groundwater pathway presents a potential for the migration of contaminants to human and environmental targets via the indoor air pathway. The spring water in the area of the site is not a likely source of drinking water but is used for irrigation and has the potential to impact younger children and pets drinking or coming into contact with the spring water. The shallow groundwater table may also present a threat via the indoor air pathway. The source of the contamination remains unknown and the plume boundaries have not yet been established. The likely pathway for contaminant migration from the site is the groundwater pathway. Further investigation under CERCLA would be required to better identify upgradient contaminant sources and help determine the impacts to groundwater.

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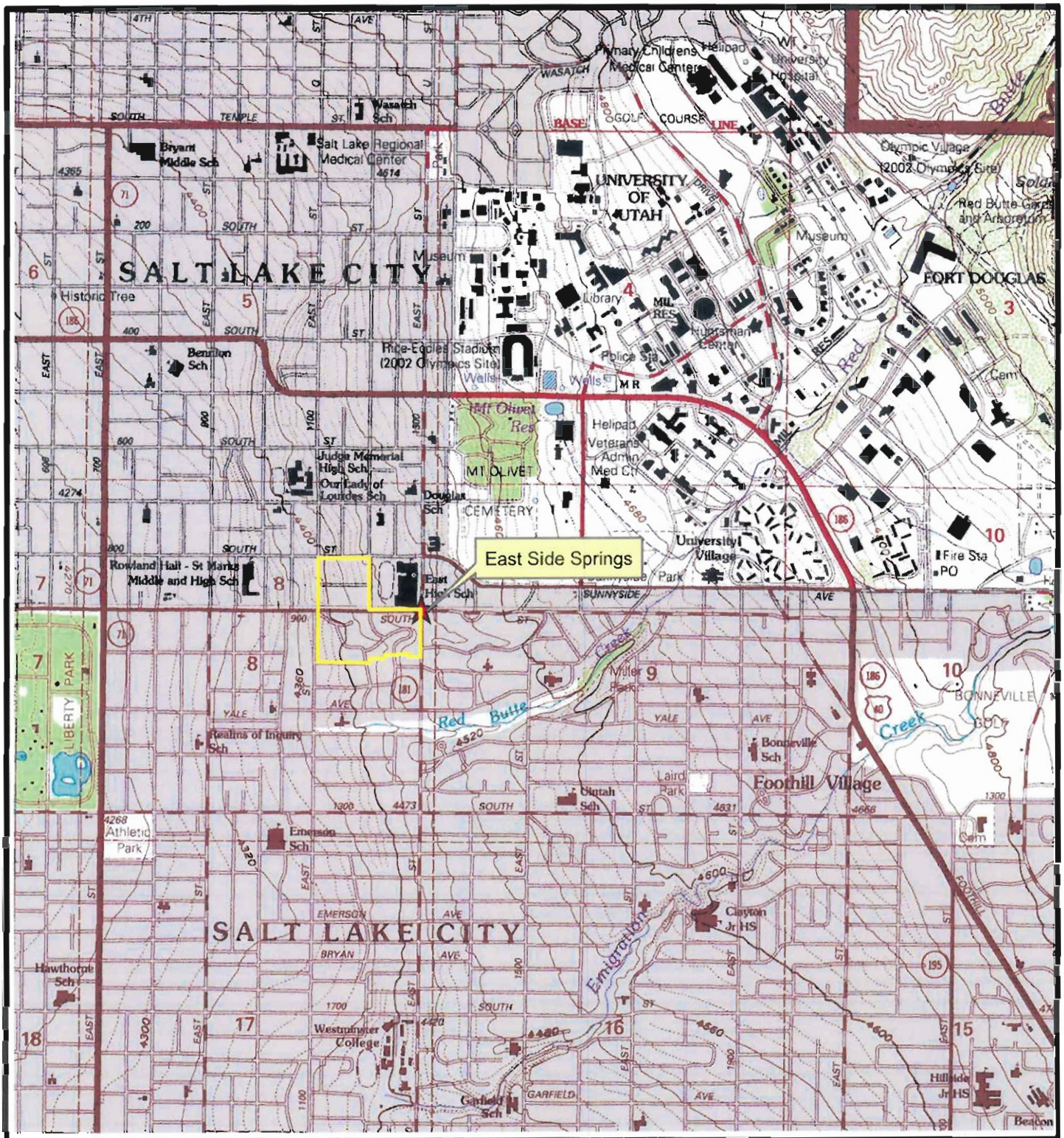
FIGURES



Utah Department of Environmental Quality
Division of Environmental Response and Remediation

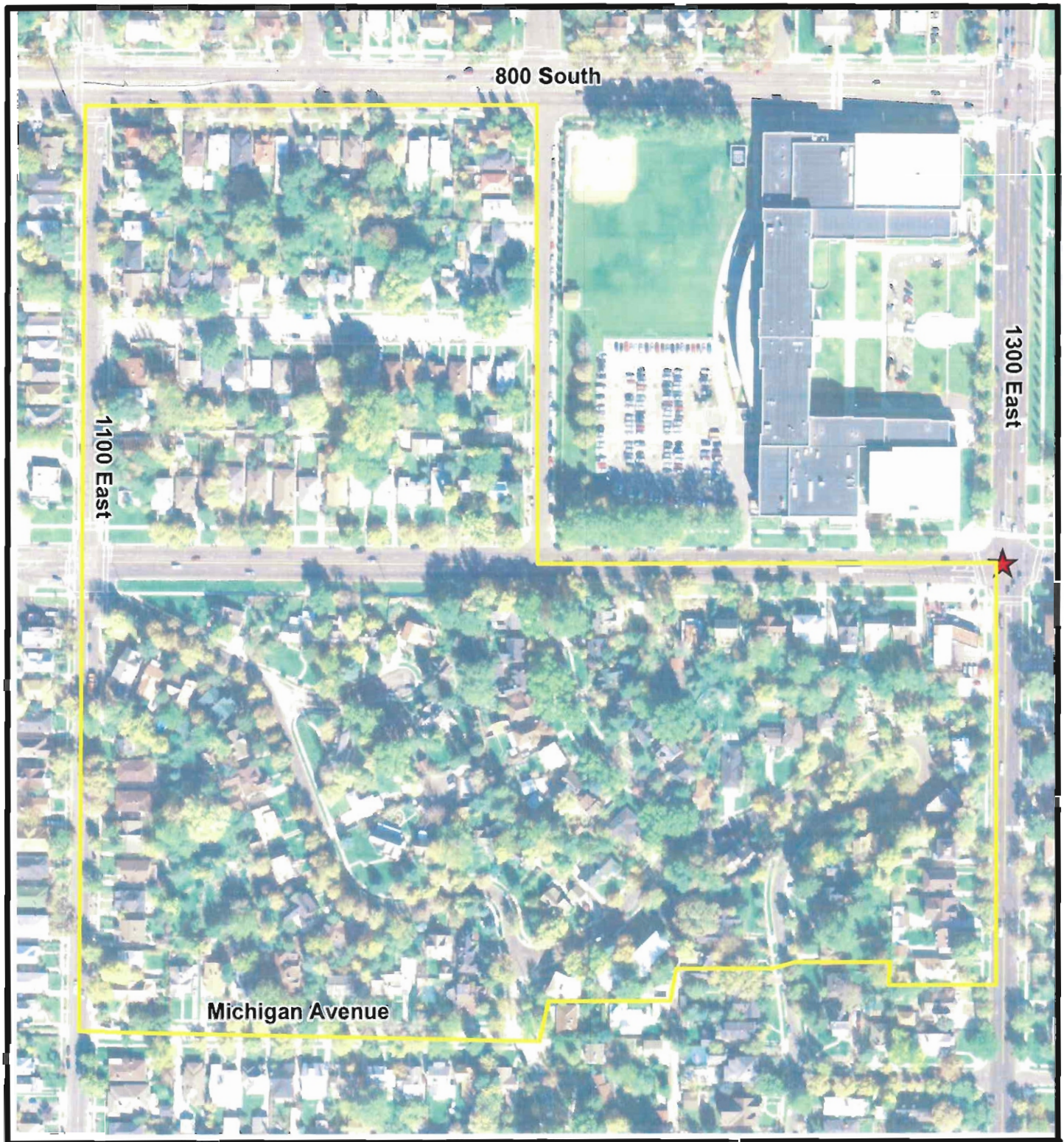
FIGURE 1

SITE LOCATION MAP

East Side Springs
Salt Lake County, Utah

by: crb

date: 12/23/2010



Legend

East Side Springs

Site Boundaries

Aerial Photo: NAIP, 2006

0 0.01 0.02 0.04 0.06 0.08

Miles

N

W E

S

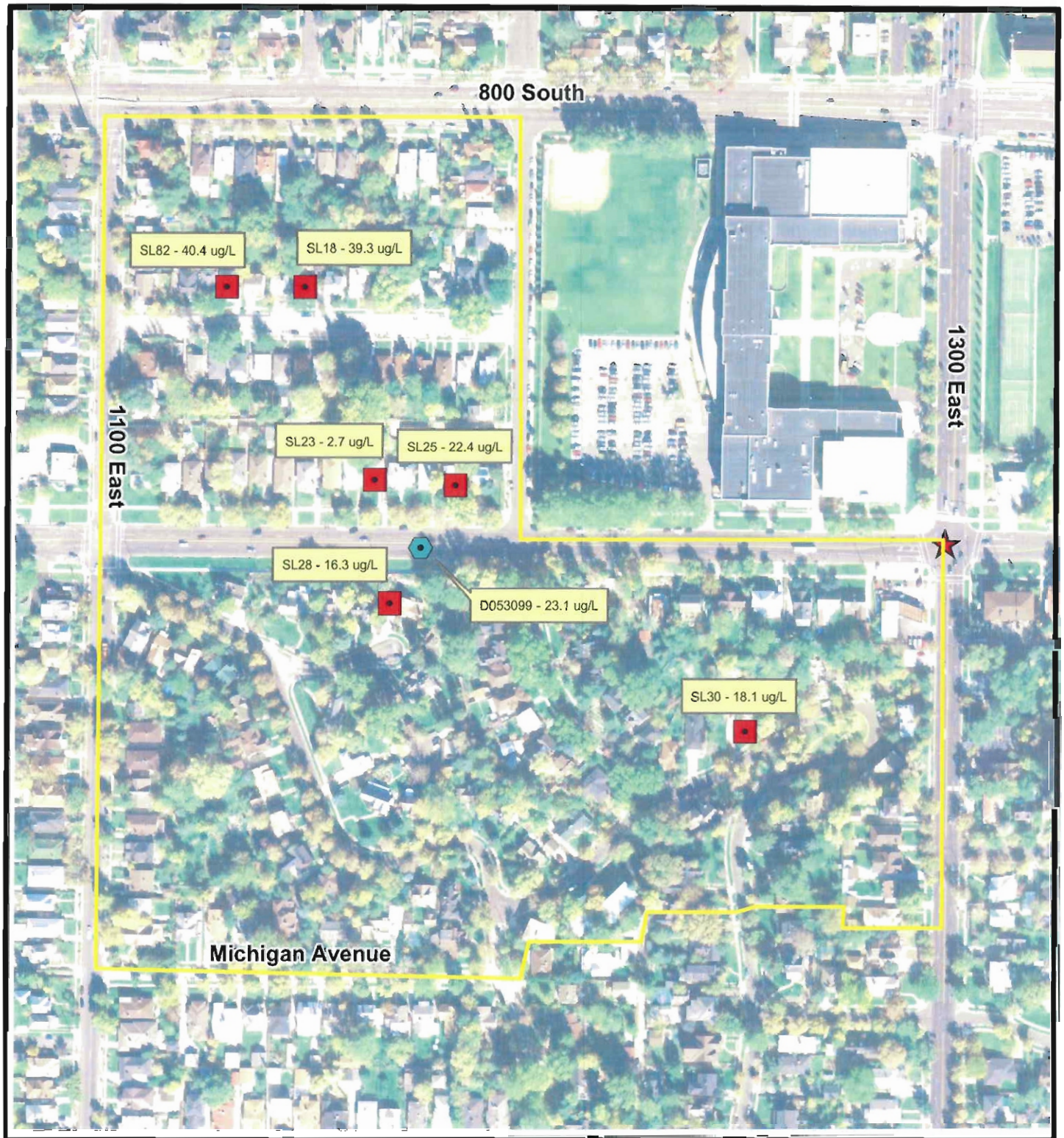
Utah Department of Environmental Quality
Division of Environmental Response and Remediation

FIGURE 2

SITE SKETCH

East Side Springs
Salt Lake County, Utah

by: crb date: 12/23/2010



Legend

- slc stormdrain
- SLC Spring Samples
- East Side Springs
- Site Boundaries

Each location was sampled several times during the summer of 2010. The highest detection for PCE for each location is provided.

Aerial Photo: NAIP, 2006

0 0.01 0.02 0.04 0.06 0.08
Miles

N
W E
S

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FIGURE 3

PCE Concentrations from SLC Sampling Activity 2010

East Side Springs
Salt Lake County, Utah

by: crb date: 12/23/2010

APPENDIX A

Preliminary Assessment Worksheet

PRELIMINARY ASSESSMENT WORKSHEET

PREPARER'S NAME: Craig Barnitz
SITE NAME: East Side Springs

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: In July/August of 2010 Salt Lake City Public Utilities collected samples from eleven springs, two artesian wells, and one storm drain located within a residential area. Sample analysis detected PCE in six of the springs and in the storm drain.

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? _____

2) Federally designated sensitive environment(s)? _____

3) Sensitive environment(s) downstream on a small or slow flowing surface water body? The 15 mile downstream target distance area terminates at the Farmington Bay Wildlife Management Area. Other smaller wetland areas exist along the banks of the Jordan River.

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: The source of the contamination is unknown. The identified PCE contamination however is not located within a wellhead protection area.

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

Describe: Samples collected in July/August 2010 from seven backyard springs detected the presence of PCE. The contamination in the springs appears to indicate that a groundwater plume exists beneath the residential area.

SITE INFORMATION

1. SITE NAME: East Side Springs

   ADDRESS: 800 South 1300 East

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

ZIP: 84102 EPA ID: UTN000802825 LATITUDE: 40°45'7" LONGITUDE: 111°51'14"

2. DIRECTIONS TO SITE (From nearest public road): Site location is 800 South 1300 East. Site boundaries extend from 800 South to Michigan Avenue and 1100 East to 1300 East.

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

   A. Name of current owner: Private Springs

      Address: 800 South to Michigan Avenue and 1100 East to 1300 East

      City: Salt Lake City County: Salt Lake

      State: UT Zip: _____ Dates: From _____ To _____

      Phone: _____

   Source of ownership data: _____

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

   ☒ Private ☐ State ☒ Municipal ☐ Federal ☐ County

   ☐ Other (describe): _____

5. NAME OF SITE OPERATOR: N/A

      Address: _____

      City: _____ County: _____

      State: __ Zip: _____ Dates: From _____ To_____

      Phone: _____

BACKGROUND/OPERATING HISTORY

6. DESCRIBE OPERATING HISTORY OF SITE: Site is located in an area of Salt Lake City zoned as single family and two-family residential. The site has no historical use of PCE. The 700 South 1600 East PCE Plume is located to the northeast of the site.

   Source of information: SLC, 2010a; SLC, 2010b

7. DESCRIBE THE NATURE OF SITE OPERATIONS (property size, manufacturing, waste disposal, storage, etc.): The site is a residential area approximately 40 acres in size.

   Source of information: ArcGIS, 2010; SLC, 2010a

8. DESCRIBE ANY EMERGENCY OR REMEDIAL ACTIONS THAT HAVE OCCURRED AT THE SITE: None

Source of information: _____

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

Describe: _____

Source of information: _____

10. DISCUSS EXISTING SAMPLING DATA AND BRIEFLY SUMMARIZE DATA QUALITY (e.g., sample objective, age/comparability, analytical methods, detections limits and QA/QC): SLC sampled 11 of the springs in th summer of 2010. PCE concentrations ranged from 2.5 ug/L to 40.4 ug/L.

Source of information: SLC, 2011

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.): Site boundaries were measured using ArcGIS and NAIP aerial photography.

    Source of information: _____

13. DESCRIBE ANY RESTRICTIONS OR BARRIERS ON ACCESSIBILITY TO ONSITE WASTE MATERIALS: On-site waste is contained to the groundwater and backyard springs. The springs are accessible to the residential population.

    Source of Information: SLC, 2011

GROUND WATER CHARACTERISTICS

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

    Describe: _____

    Source of information: SLC, 2010

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

16. NET PRECIPITATION: 22.87 Average annual precip.

    Source of information: WRCC, 2011

SURFACE WATER CHARACTERISTICS

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

    ☐ Ditches ☐ Lakes ☐ Pond ☒ Creeks ☐ Rivers

    ☒ Other (Describe) Springs

18. DISCUSS THE PROBABLE SURFACE RUNOFF PATTERNS FROM THE SITE TO SURFACE WATERS: Site is located along the Wasatch Fault and slopes significantly to the west. Storm water is largely contained in the municipal stormwater systems.

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: Eleven backyard springs were sampled in July/August 2010

    Source of information: SLC, 2011

21. ESTIMATE THE SIZE OF THE UPGRADIENT DRAINAGE AREA FROM THE SITE: 770 acres

Source of information: USGS, 1975

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

Water Body: Jordan River Flow: 17 cfs

Water Body: Red Butte Creek Flow: 2.5 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)? _____

25. IDENTIFY AND LOCATE (see item #35) ANY SURFACE WATER RECREATION AREA WITHIN 15 DOWNSTREAM MILES OF THE SITE:

26. TWO YEAR 24-HOUR RAINFALL: 22.87 Average annual precip.

Source of information: WRCC, 2011

TARGETS

27. DISCUSS GROUND WATER USAGE WITHIN FOUR MILES OF THE SITE: Shallow aquifer is not a source of drinking water within 4-miles of the site.

    Source of information: _____

28. SUMMARIZE THE POPULATION SERVED BY GROUND WATER ON THE TABLE BELOW:

DISTANCE (miles)	POPULATION	CUMULATIVE POPULATION
0 - ¼	0	0
¼ - ½	0	0
½ - 1	10223	10223
1 - 2	50	10273
2 - 3	54312	64585
3 - 4	43940	108525

    Source of information: DDW, 2010

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, 2010

30. DESCRIBE AND LOCATE FISHERIES WITHIN 15 DOWNSTREAM MILES OF THE SITE (i.e., provide standing crop of production and acreage, etc.): There are no fisheries within the 15-mile downstream target distance. However, a number of fish species for sport fishing and human consumption including trout, bass and catfish can be found in the Jordan River. The June Sucker, common to Utah Lake, is described as rare to the Jordan River but is listed as endangered by the Endangered Species Act.

    Source of information: ArcGIS, 2011; SLCo, 2008

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

Description	Distance (Miles)
Commercial/Industrial/Institutional	2
Single Family Residential	1
Multi-Family Residential	1
Park	1
Agricultural	18

    Source of information: NAIP, 2006

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

DISTANCE (miles)	POPULATION	CUMULATIVE POPULATION
0 - ¼	838	838
¼ - ½	3344	4182
½ - 1	17604	21786
1 - 2	54190	75975
2 - 3	50835	126810
3 - 4	48732	175542

Source of information: Census, 2000

OTHER REGULATORY INVOLVEMENT

33. DISCUSS ANY PERMITS:

County: None

State: None

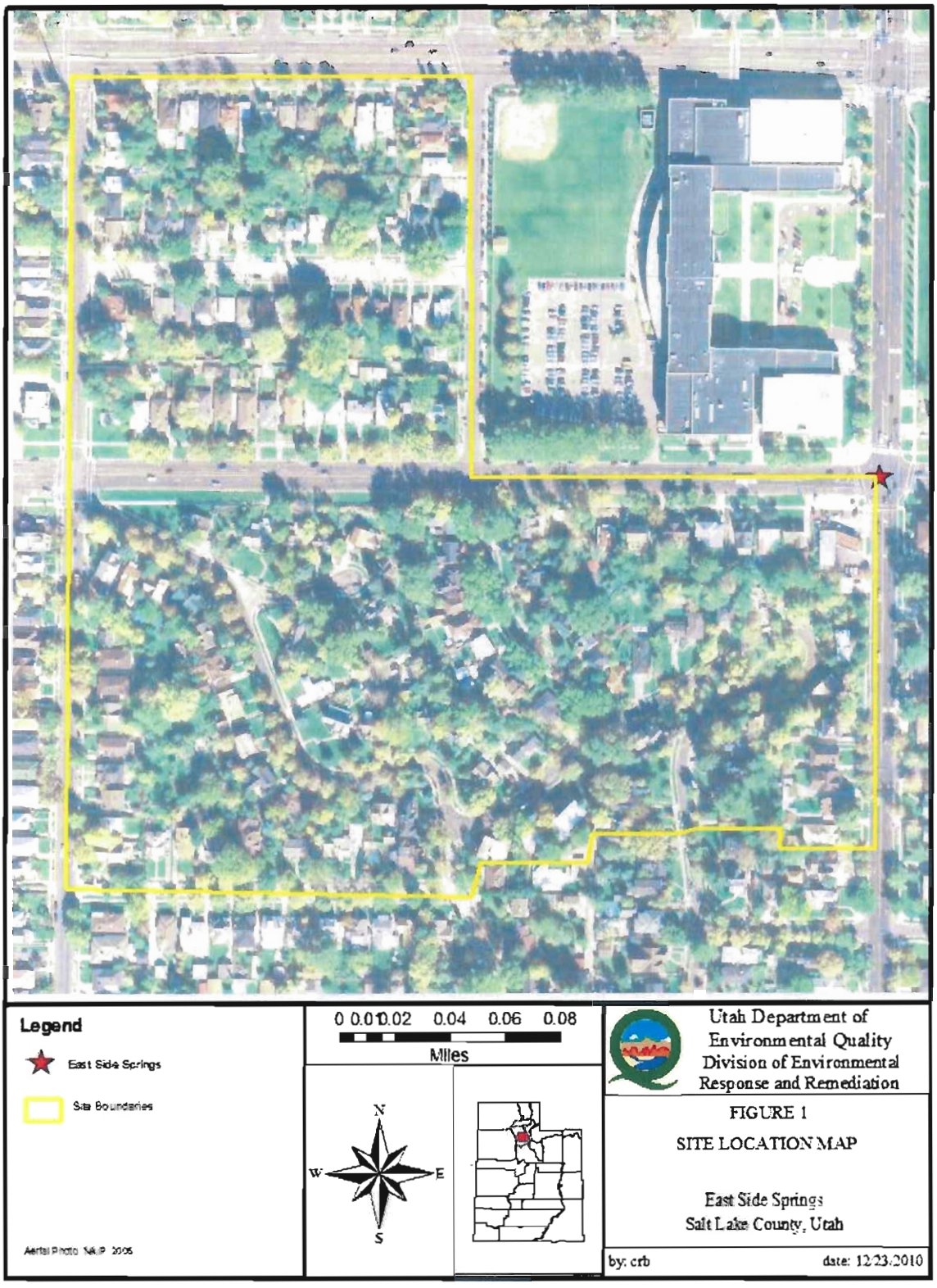
Federal: None

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.

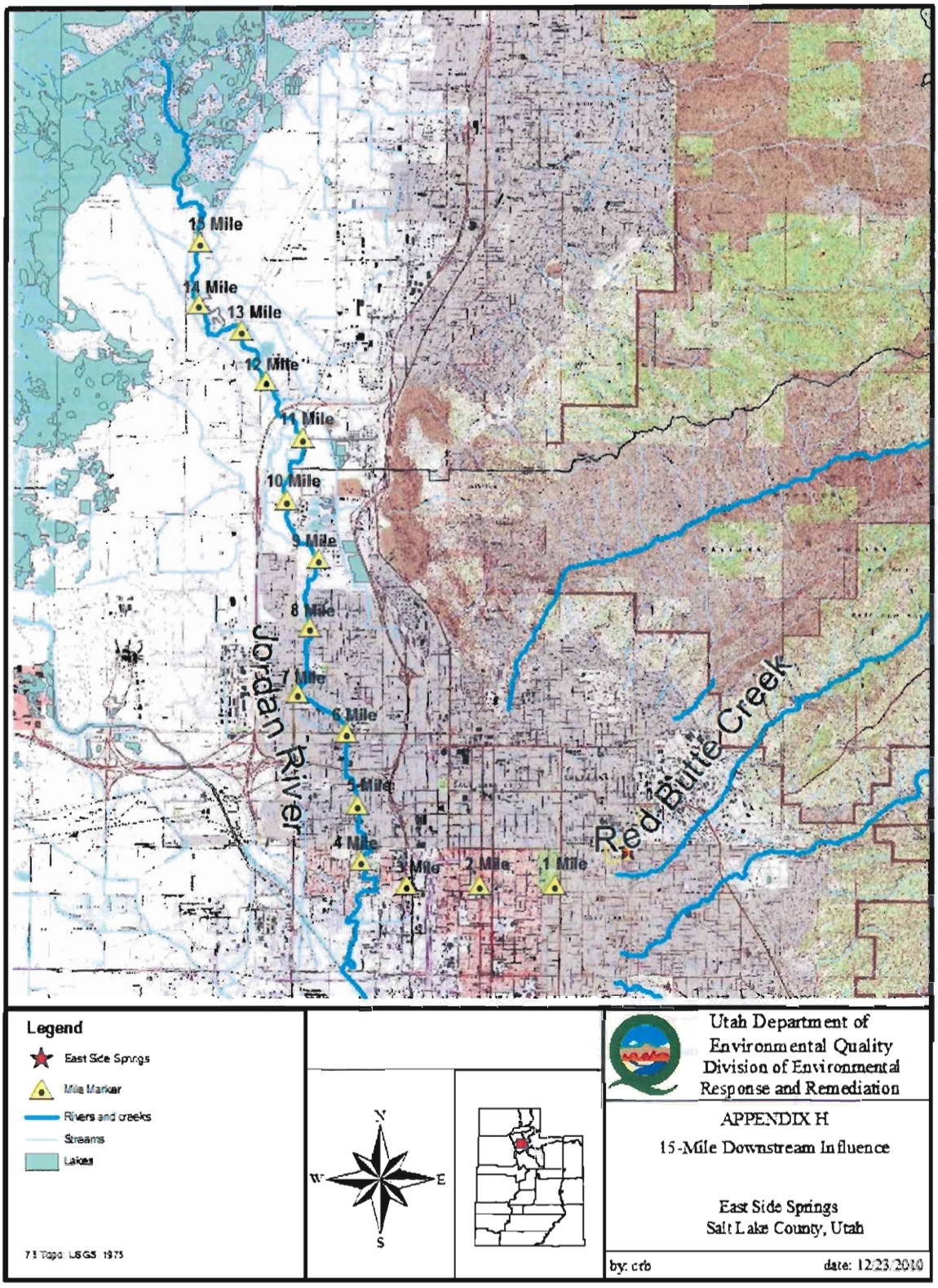


TABLE 1

WASTE CONTAINMENT AND HAZARDOUS SUBSTANCE IDENTIFICATION *

SOURCE TYPE	SIZE (volume/Area)	ESTIMATED WASTE QUANTITY	SPECIFIC COMPOUNDS	CONTAINMENT	SOURCE OF INFORMATION
Plume	40 acres	unknown	PCE	None	SLC, 2010

*Use additional sheets if necessary.

** Evaluate containment of each source from the perspective of each migration pathway (e.g., ground water 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
Unconfined shallow aquifer - clay, silt, and fine sand.	50			Hely et. al., 1971
Confining layer - relatively impermeable Quarternary deposits of clay, silt, and fine sand.	40-100			ibid.
Confined aquifer - hydraulically interconnected beds of Quarternary deposits of clay, silt, sand, and gravel	1000			ibid.
Underlying bed - impermeable consolidated and semiconsolidated Tertiary and pre-Tertiary deposits.				ibid.

*Use additional sheets if necessary.

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

REFERENCES

ArcGIS, 2011; Arc Geographic Information System

DERR, 2011; Utah Department of Environmental Quality, Division of Environmental Quality, Preliminary Assessment - East Side Springs (UTN000802825); prepared by Craig Barnitz

Census, 2000; United States Census Data

DDW, 2010; Utah Department of Environmental Quality, Division of Drinking Water, Drinking Water Wells ArcGIS data; accessed 2010

Hely, et. al., 1971; Hely, Allen G., R.W. Mower, C. Albert Harr; Water Resources of Salt Lake County, Utah; Technical Publication No. 31; U.S. Geological Survey with assistance of the Utah Department of Natural Resources, Division of Water Rights

NAIP, 2006; National Aerial Information Program, 2006; accessed with ArcGIS

SLC, 2010a; Salt Lake City Engineering, Interactive Zoning Map, website http://slcimap2.ci.slc.ut.us/website/zoning/viewer.htm

SLC, 2010b; Salt Lake City, Perchloroethylene(PCE)Information webpage http://www.slcgov.com/pce/

SLC, 2011; Personal Communication with Florence Reynolds, Laura Briefer, Arlene Larsen and Nick Kruger with Salt Lake City Public Utilities; February 8, 2011.

SLCo, 2008; Salt Lake County; Fishes in the Jordan River; compiled by Dan Potts; accessed via the website: http://www.waterresources.slco.org/pdf/fishJordanRiver08.pdf.

USGS, 1975; United States Geological Service, 7.5 Topo Map, Fort Douglas

WRCC, 2011; Western Regional Climate Center, Weather Date from the Salt Lake City Zoo (COOP) Weather Station, http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ut7655

APPENDIX B

CERLCA Eligibility Questionnaire

CERCLA ELIGIBILITY QUESTIONNAIRE

SITE NAME: East Side Springs

CITY: Salt Lake City STATE: Utah

EPA ID NUMBER: UTN000802825

I. CERCLA ELIGIBILITY	Yes	No
Did the facility cease operation prior to November 19, 1980?	___	X

If answer YES, STOP, facility is probably a CERCLA site.

If answer is NO, Continue to Part II.

II. RCRA ELIGIBILITY	Yes	No
Did the Facility file a RCRA Part A application? If YES:	___	X
1. Does the facility currently have interim status?	___	
2. Did the facility withdraw its Part A application?	___	
3. Is the facility a known or possible protective filer? (Facility filed in error).X	___	
4. Type of facility:		
Generator ___ Transporter ___ Recycler		
TSD (Treatment/Storage/Disposal)		
Does the facility have a RCRA operating or post closure permit?	___	X
Is the facility a late (after 11/19/80) or non-filer that has been identified by the EPA or the State? (Facility did not know it needed to file under RCRA).	___	X

If all answers to question in Part II are NO, STOP, the facility is a CERCLA eligible site.

If the answer to #2 or #3 is YES, STOP, the facility is a CERCLA eligible site.

If answer #2 and #3 are NO and any OTHER answer is YES, site is RCRA, continue to Part III.

III. RCRA SITES ELIGIBLE FOR NPL	Yes	No
Has the facility owner filed for bankruptcy under federal or state laws?	___	
Has the facility lost RCRA authorization to operate or shown probable unwillingness to carry out corrective action?	___	
Is the facility a TSD that converted to a generator, transporter or recycler facility after November 19, 1980?	___	

IV. EXEMPTED SUBSTANCES

Does the release involve hazardous substances other than petroleum? ___

The site may never reach the NPL. We need to be able to refer it to any other program in EPA or state agencies which may have jurisdiction, and thus be able to effect a cleanup. Responses should summarize available information pertaining to the question.

1) Is there an owner or operator?

2) (NPDES-CWA) Is there a discharge water containing pollutants with surface water through a point source (pipe, ditch, channel, conduit, etc.)?

3) (Sec. 404-CWA) Have fill or dredged material been deposited in a wetland or on the banks of a stream? Is there evidence of heavy equipment operating in ponds, streams or wetlands?

4) (UIC-SDWA) Are fluids being disposed of to the subsurface through a well, cesspool, septic system, pit, etc.?

5) (TSCA) Is it suspected that there are PCB's on the site which came from a source with greater than 50 ppm PCB's such as oil from electrical transformers or capacitors?

6) (FIFRA) Is there a suspected release of pesticides from a pesticide storage site? Are there pesticide containers on site?

7) (RCRA - Subtitle D) Is there an owner or operator who is obligated to manage solid waste storage or disposal units under State solid waste or groundwater protection regulations?

8) (UST) Is it suspected that there is a leaking underground storage tank containing a product which is a hazardous substance or petroleum?

APPENDIX C

Potential Hazardous Waste Site Preliminary Assessment Form

POTENTIAL HAZARDOUS WASTE SITE

PRELIMINARY ASSESSMENT FORM

IDENTIFICATION

State:UT | CERCLIS Number: UTN000802825

CERCLIS Discovery Date:

1. GENERAL SITE INFORMATION:

Name: East Side Springs | Street Address: 800 S. 1300 East

City: Salt Lake City | State: UT | Zip Code: 84102

County: Salt Lake City | County Code: 35 | Congressional District: UT2

Latitude: 40° 45' 7.00"

Longitude: 111° 51' 14.00"

Approximate Area of Site:

40 Acres _____ Square Feet

Status of Site:

- ☐ Active
- ☐ Inactive
- ☐ Not Specified
- ☒ Not Applicable

2. OWNER/OPERATOR INFORMATION

Owner: N/A	Operator:
Street Address:	Street Address:
City:	City:
State: / Zip Code:	State: / Zip Code:

Type of Ownership:

- ☒ Private
- ☐ Municipal
- ☐ County
- ☐ Federal Agency _____
- ☒ Other Residential
- ☐ State
- ☐ Indian
- ☐ Not Specified

How Initially Identified:

- ☒ Citizen Complaint
- ☐ PA Petition
- ☒ State/Local Program
- ☐ Federal Program
- ☐ Other _____
- ☐ RCRA/CERCLA Notification
- ☐ Not Specified
- ☐ Incidental

3. SITE EVALUATOR INFORMATION

Name of Evaluator: Craig Barnitz | Agency/Organization: Utah DEQ/DERR | Date: 5/4/11

Street Address: 195 N. 1950 W. | City: Salt Lake City | State: UT

Name of EPA or State Agency Contact: Margaret Williams | Telephone: (303)312-6512

Address: 1595 Wynkoop Street | City: Denver | State: CO

4. SITE DISPOSITION (for EPA use only)

Emergency Response/Removal Assessment Recommendation:

___ Yes ___ No

Date: __/__/____

CERCLIS Recommendation:

___ Higher Priority SI

___ Lower Priority SI

___ NFRAP

___ RCRA

___ Other:_____

Signature:

Name (typed):

_____

Position:

_____

POTENTIAL HAZARDOUS WASTE SITE
PRELIMINARY ASSESSMENT FORM - PAGE 2 OF 2

CERCLIS NUMBER
UTN000802825

5. GENERAL SITE CHARACTERISTICS

Predominant Land Uses Within 1 Mile of Site:
- ☐ Industrial
- ☐ Commercial
- ☒ Residential
- ☐ Forest/Fields
- ☐ Agriculture
- ☐ Mining
- ☐ DOD
- ☐ Other Federal Agency _____
- ☐ Other _____
- ☐ DOE
- ☐ DOI

Site Setting:
- ☐ Urban
- ☒ Suburban
- ☐ Rural

Years of Operation:
Beginning Year: _____
Ending Year: _____
Unknown: ☒

Type of Operations (check all that apply):
- ☐ Manufacturing
  - ☐ Lumber and Wood Products
  - ☐ Inorganic Chemicals
  - ☐ Plastic and/or Rubber Products
  - ☐ Paints, Varnishes
  - ☐ Industrial Organic Chemicals
  - ☐ Agricultural Chemicals (e.g. Pesticides, fertilizers)
  - ☐ Miscellaneous Chemical Products
  - ☐ Primary Metals
  - ☐ Metal Forging, Stamping
  - ☐ Fabricated Struct. Metal Products
  - ☐ Electronic Equipment
  - ☐ Other Manufacturing
- ☐ Mining
  - ☐ Metals
  - ☐ Coal
  - ☐ Oil and Gas
  - ☐ Non-Metallic Metals
- ☐ Not Specified
- ☒ Other: Groundwater Plume
- ☐ Retail
- ☐ Recycling
- ☐ Junk/Salvage Yard
- ☐ Municipal Landfill
- ☐ Other Landfill
- ☐ DOD
- ☐ DOE
- ☐ DOI
- ☐ Other Federal Facility
  - ☐ RCRA or Disposal Facility
    - ☐ Large Quantity Gen.
    - ☐ Small Quantity Gen.
    - ☐ Subtitle D
      - ☐ Municipal
      - ☐ Industrial
    - ☐ "Converter"
    - ☐ "Protective Filer"
    - ☐ "Non or Late Filer"

Waste Generated:
- ☐ Onsite
- ☐ Offsite
- ☐ Onsite and Offsite
- ☒ Unknown

Waste Deposition Authorized By:
- ☐ Present Owner
- ☐ Former Owner
- ☐ Present and Former Owner
- ☐ Unauthorized
- ☒ Unknown

Waste Accessible to the Public:
- ☒ Yes
- ☐ No

Distance to Nearest Dwelling, School, or Workplace:
_____ Feet

6. WASTE CHARACTERISTICS INFORMATION

SOURCE TYPE: (Check all that apply)	SOURCE WASTE: QUANTITY (include units)	TIER
☐ Landfill	_____	_____
☐ Surface Impoundment	_____	_____
☐ Drums	_____	_____
☐ Tanks and Non-Drum Containers	_____	_____
☐ Chemical Waste Pile	_____	_____
☐ Scrap Metal or Junk Pile	_____	_____
☐ Tailings Pile	_____	_____
☐ Trash Pile (Open Dump)	_____	_____
☐ Land Treatment	_____	_____
☒ Contaminated Ground-Water Plume (Unidentified Source)	_____	_____
☐ Contaminated Surface-Water Plume (Unidentified Source)	_____	_____
☐ Contaminated Soil	_____	_____
☐ Other _____	_____	_____
☐ No Source	_____	_____

* C = Constituent, W = Wastestream, V = Volume, A = Area

General Types of Waste (Check all that Apply):
- ☐ Metals
- ☒ Organics
- ☐ Inorganics
- ☒ Solvents
- ☐ Paints/Pigments
- ☐ Laboratory/Hospital Waste
- ☐ Radioactive Waste
- ☐ Oily Waste
- ☐ Pesticides/Herbicides
- ☐ Acids/Bases
- ☐ Construction/Demolition Waste
- ☐ Municipal Waste
- ☐ Mining Waste
- ☐ Explosives
- ☐ Other:

Physical State of Waste as Deposited (Check all that Apply):
- ☐ Solid
- ☐ Gas
- ☒ Liquid
- ☐ Powder
- ☐ Sludge

APPENDIX D

Site Visit Report

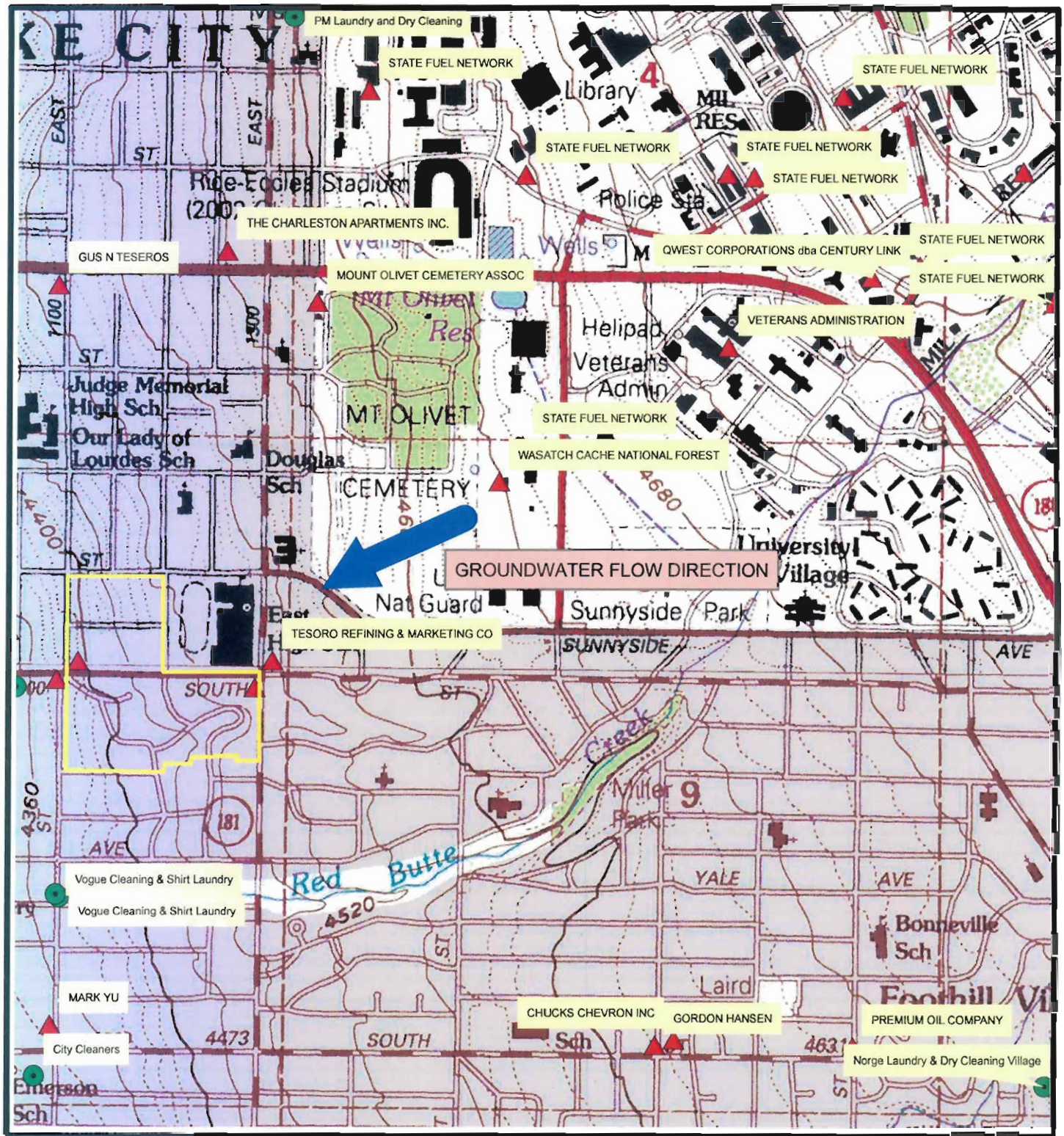
SITE VISIT REPORT

1.0 INTRODUCTION: The areas of concern for the East Side Springs site are springs in residential yards that are not readily accessible or observable without entering onto the property. In lieu of a windshield site visit, site information was collected from area maps, regional ArcGIS shapefiles, conversations with Salt Lake City Public Utilities, and the project manager for the adjacent 1600 East 700 South Plume site.

2.0 SITE DESCRIPTION: The East Side Springs site is located on the east bench area of Salt Lake City, Utah between the East Central and Yalecrest neighborhoods. The site boundaries are defined as between 800 South and Michigan Avenue and 1100 East and 1300 East. The site is largely residential with several schools in the immediate area including East High School, Rowland Hall, Carmen B. Pingree School, and the University of Utah. The site also potentially includes recreational areas within Sunnyside Park. Red Butte Creek is located approximately 1500 feet southeast of the site. Current hydrogeologic data indicates the suspected source of the contamination is the PCE plume identified at the 1600 East 700 South Plume site. A search of the area dry-cleaners did not identify another upgradient source. According to files from the DERR Underground Storage Tank (UST) program, there are five UST facilities located near the site. Two of these facilities are commercial gas stations. The first gas station, located at 877 South 1300 East, is currently vacant and does not have a service station. The second gas station, located at 904 South 1300 East, does have an automobile service station. The other UST facilities include facilities at State Fuel Service, Interagency Fire, and the Veteran's Administration. In the summer of 2010, Salt Lake City Public Utilities has identified and collected samples from 11 springs, 1 storm drain, and 2 artesian wells in the area representative of the potential site boundaries.

4.0 PHOTOGRAPHS: See attached map.

5.0 SITE SKETCH: See Figure 2 of this report.



Legend

- Dry Cleaners
- UST Facility
- Site Boundaries

Map: USGS 7.7 Topo, 1975

0 0.050.1 0.2 0.3 0.4

Miles

N

W E

S

Utah Department of Environmental Quality
Division of Environmental Response and Remediation

APPENDIX D

Area Dry Cleaner and UST Facilities

East Side Springs
Salt Lake County, Utah

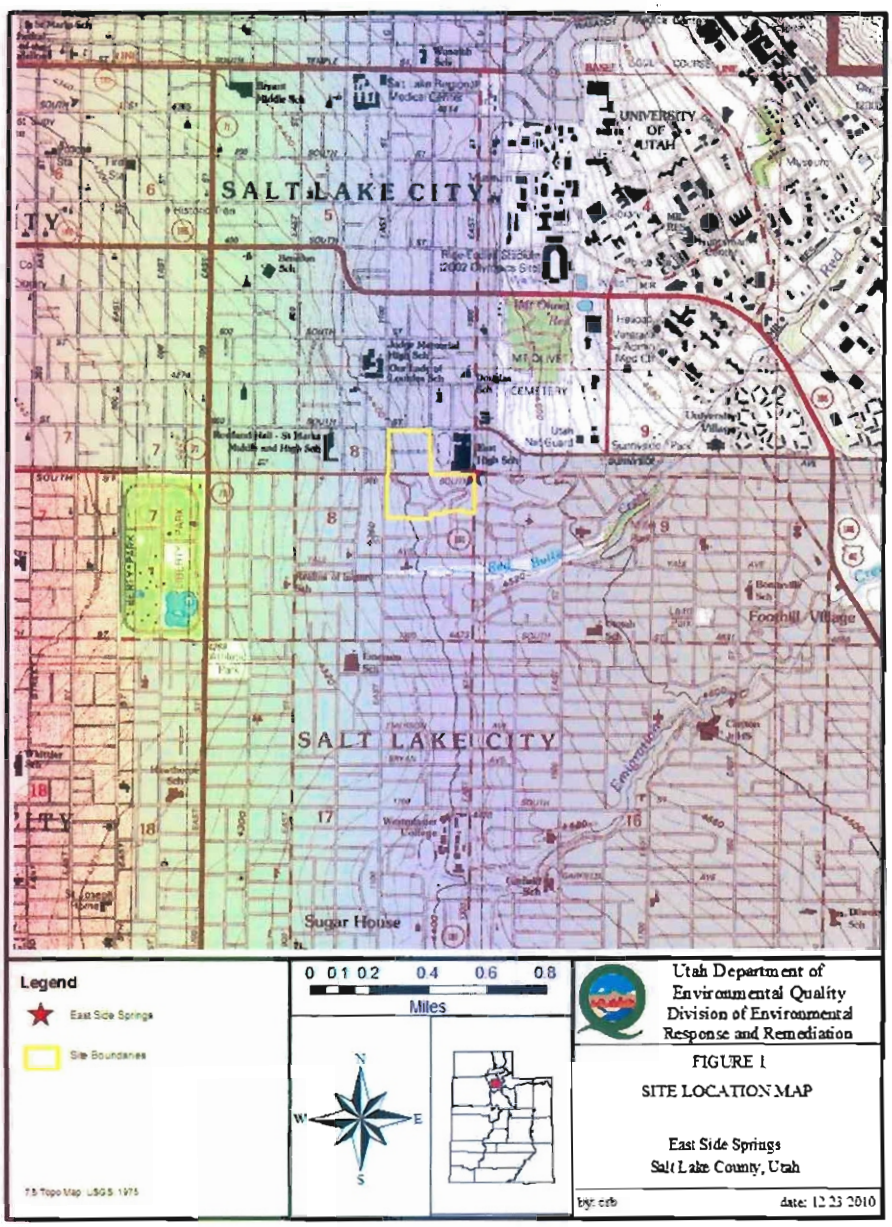
by: crb

date: 2/28/2010

APPENDIX E

Latitude/Longitude Document Record Form

LATITUDE/LONGITUDE DOCUMENT RECORD FORM



Site Name: East Side Springs CERCLIS ID: UTN000802825

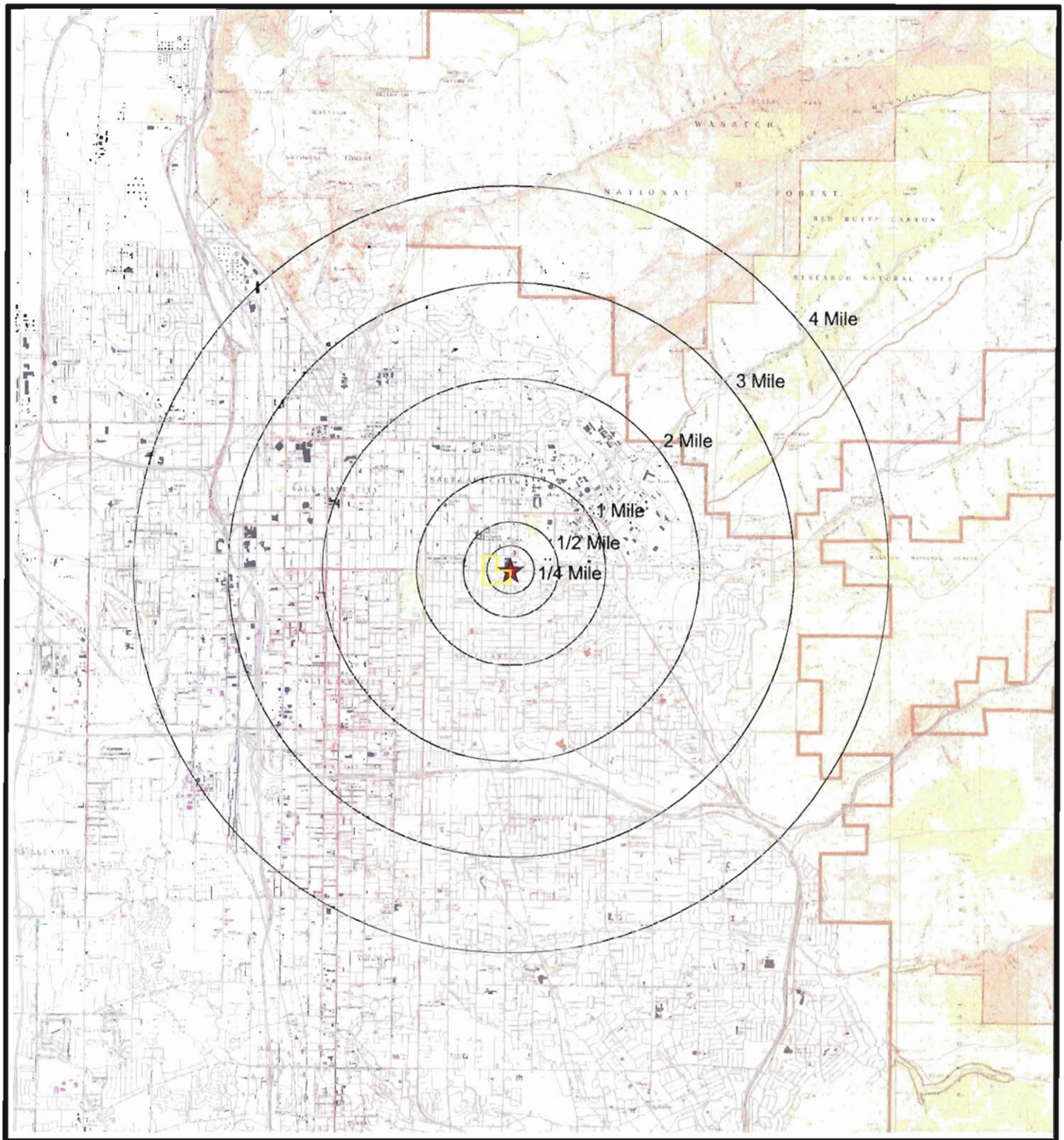
Latitude: 40°45'7" Longitude: 111°51'14"

Projected Coordinate System: UTM NAD1983 Zone 12 N

Prepared by: Craig Barnitz Date: 3/3/2011

APPENDIX F

Census Data Report



Legend

East Side Springs

SGID93.DEMOGRAPHIC.CensusBlocks2010

4-Mile Bands

N

W E

S

Utah Department of Environmental Quality
Division of Environmental Response and Remediation

APPENDIX F

CENSUS DATA REPORT

East Side Springs
Salt Lake County, Utah

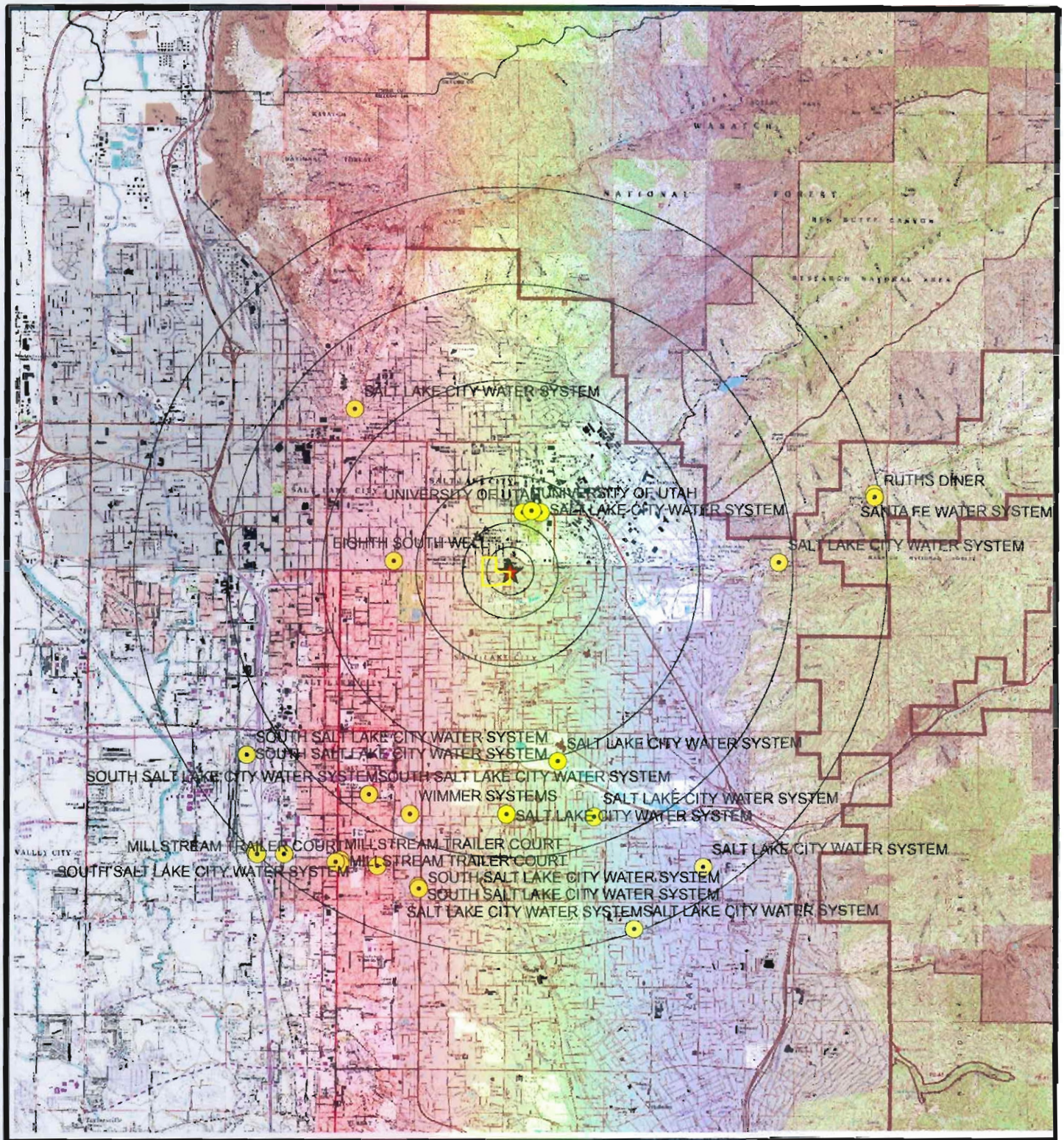
by: crb

date: 12/23/2010

Appendix F: Census Data Report East Side Springs

Distance	Population within Distance	Cumulative Population
3-4 Miles	48731.82	175542.29
2-3 Miles	50835.10	126810.47
1-2 Miles	54189.58	75975.37
0.5-1 Miles	17603.56	21785.79
0.25-0.5 Miles	3344.27	4182.23
0-0.25 Miles	837.96	837.96
On-Site	0.00	0.00

Data from U.S. Census Data 2000



Legend

- Ground water sources selection
- East Side Springs Site
- 4-Mile Bands

Aerial Photo: High Resolution Orthophotography (HRO), 2006
Utah GIS Portal

N
W
E
S

Utah Department of Environmental Quality
Division of Environmental Response and Remediation

APPENDIX G

4 Mile Drinking Water Wells

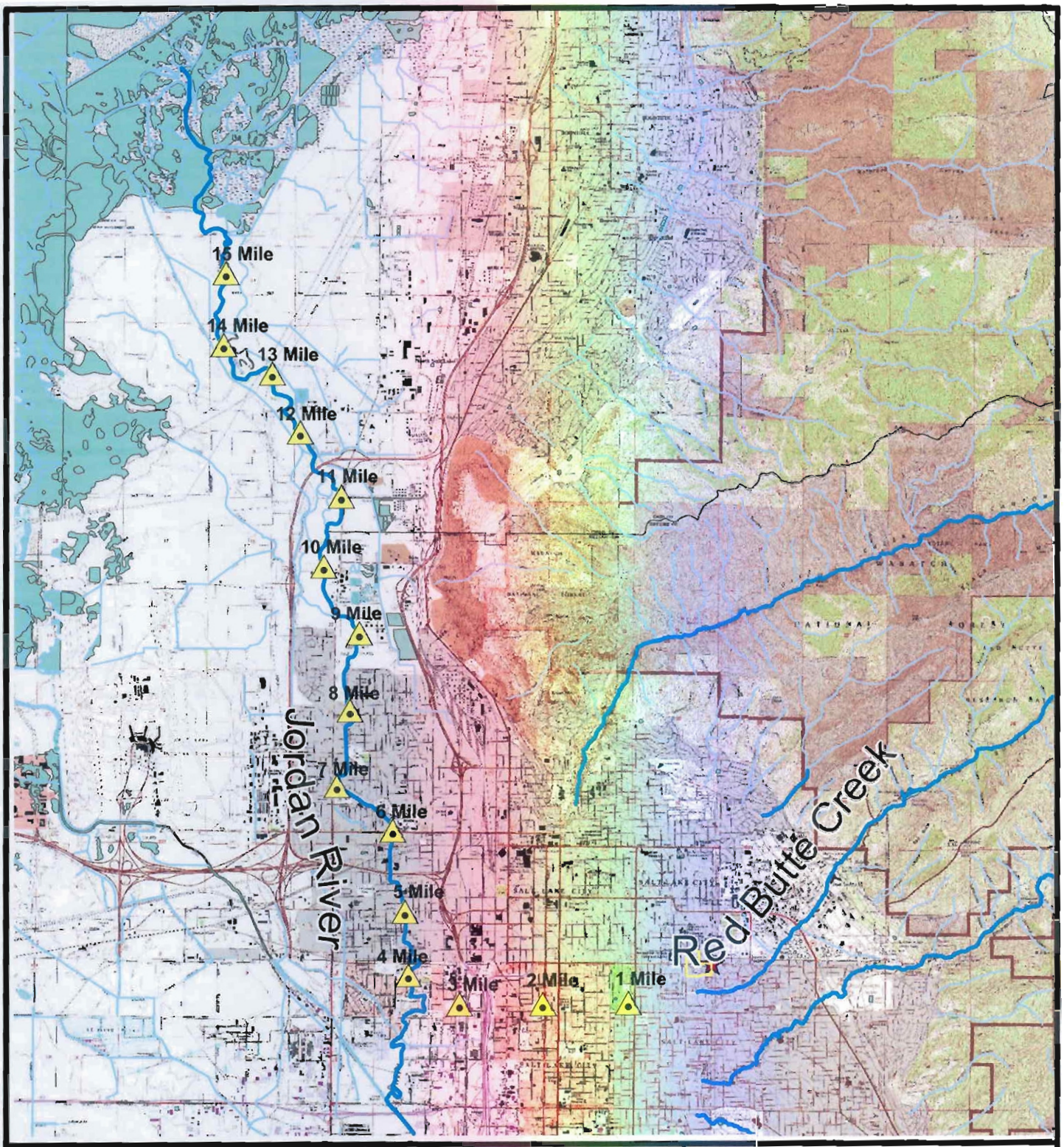
East Side Springs
Salt Lake County, Utah

by: crb

date: 08/16/2010

APPENDIX H

15-Mile Downstream Influence Report


15 Mile
14 Mile
13 Mile
12 Mile
11 Mile
10 Mile
9 Mile
8 Mile
7 Mile
6 Mile
5 Mile
4 Mile
3 Mile
2 Mile
1 Mile
Jordan River
Red Butte Creek
Legend
East Side Springs
Mile Marker
Rivers and creeks
Streams
Lakes
7.5 Topo: USGS, 1975
N
W
E
S
Utah Department of Environmental Quality
Division of Environmental Response and Remediation
APPENDIX H
15-Mile Downstream Influence
East Side Springs
Salt Lake County, Utah
by: crb
date: 12/23/2010