

URS Consultants, Inc.
ARCS, EPA Regions VI, VII and VIII
Contract No. 68-W9-0053

Blackhawk Resin/SIP
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Date: 08/26/93
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SITE INSPECTION PRIORITIZATION

Blackhawk Resin and Chemical Company
Bauer, Utah

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SITE INSPECTION PRIORITIZATION

**Blackhawk Resin and Chemical Company
Bauer, Utah**

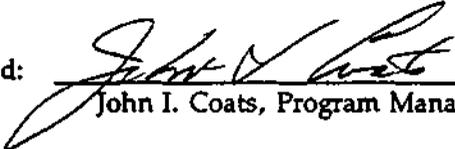
**U.S. EPA Contract No. 68-W9-0053
Work Assignment No. 21-8JZZ**

CERCLIS ID # UTD980960082

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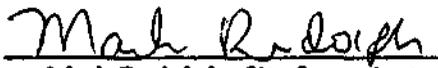
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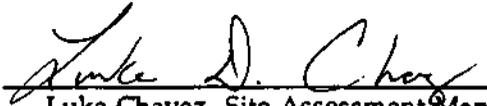
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1.0 INTRODUCTION

URS Consultants, Inc. (URS) has been tasked by the U.S. Environmental Protection Agency (EPA) under the Alternative Remedial Contracts Strategy (ARCS) Contract #68-W9-0053 to conduct a Site Inspection Prioritization (SIP) (Work Assignment #21-8JZZ) for the Blackhawk Resin and Chemical Co. (BHRCC) site, CERCLIS ID #UTD980960082. The Site Inspection (SI) was conducted by the EPA in May 1982 (EPA 1992). This SIP was assigned on August 5, 1992.

2.0 OBJECTIVES

The purpose of this SIP is to quantify data elements of the Hazard Ranking System (HRS) at the BHRCC site and to provide sufficient documentation for the EPA to determine the human health and environmental impacts posed by the BHRCC site, thus determining the appropriate future course of action. The results of the SIP will enable the EPA to determine if the site has the potential to qualify for eventual listing on the National Priorities List (NPL).

The specific objectives of the SIP are to:

- Identify, quantify (if possible) and characterize wastes attributable to this site;
- Identify waste availability to each migration pathway;
- Identify whether there is a potential for or actual impact on receptor targets; and
- Identify specific data gaps for each migration pathway.

3.0 BACKGROUND

3.1 SITE LOCATION

The BHRCC site is located in the abandoned town of Bauer in Tooele County, Utah (Figure 2). The BHRCC facility comprises an area of approximately 27 acres. The legal description of the site is the northwest quarter of Section 13, Township 4 S, Range 5 W. Geographic coordinates are 40° 28' 20" N latitude and 112° 21' 40" W longitude. The site is bounded on the north by the Tooele Army Depot, on the south by the town of Stockton, on the west by South Mountain and on the east by the Oquirrh Mountains (Figure 1) (U.S. Geologic Survey (USGS) 1979a; USGS 1979b).

3.2 SITE DESCRIPTION

The BHRCC facility is comprised of building foundations and tailings from resin production. The wastes cover approximately 12 acres and contain an unknown quantity of coal fines. The facility is located on property that is sparsely vegetated and slopes gently to the north. At present, the site and the town of Bauer are abandoned. The facility is inactive (State of Utah, Division of Environmental Health (UDEH) 1984b).

3.3 SITE HISTORY AND PREVIOUS WORK

Mining activity began in the Bauer area in the early 1860s as a pastime for soldiers stationed near the town of Stockton. Lead-silver carbonates comprised the mined ores. At the turn of the century, the Honerine Tunnel, which became the main shaft of the mining operation, was constructed in the town of Bauer. The Bullion Coalition Mines Company operated the Honerine Tunnel and consolidated the smaller independent mines that were privately operated by the soldiers. The original ore was of such a high grade that it was shipped directly to the smelter without any need for concentrating; however, a concentrating mill was eventually needed for subsequent lower grade ore. In 1920, the Combined Metals Reduction Company purchased the mine, equipment and buildings and built a concentrating mill. The mine and surrounding property have been identified as the Bauer Dump and Tailings site, which has an independent CERCLA ID number (#UTD980514186) and is being evaluated as a separate site using HRS criteria. The Bauer Dump and Tailings site is not addressed in this SIP.

The BHRCC site is comprised of approximately 27 acres in the town of Bauer and is fully encircled by the Bauer Dump and Tailings site (Figure 2). BHRCC, a subsidiary of Hercules, Inc., treated coal fines with benzene, hexane and toluene to make adhesives in the 1960s and 1970s. The coal fines residue (CFR) was dumped into diked sediment ponds on the west side of the facility (Figure 3). The town of Bauer was abandoned after the Combined Metals Reduction Company ceased operations. The BHRCC plant was destroyed by a fire in September 1980 (Hercules, Inc. 1988). The plant was not rebuilt. The sediment ponds containing the spent CFR dried out and in the spring of 1982 the CFR spontaneously ignited. The CFR continued to burn throughout the summer months of 1982. This spontaneous combustion occurred every

spring and summer for the next five years. Access to the BHRCC site was not restricted or otherwise prohibited and in May 1985, two boys were severely burned when they fell into the burning CFR while riding their bikes on the BHRCC site (Ecology and Environment 1988a).

In May 1987, the burning CFR was extinguished and the remaining unburned CFR was removed from the sediment ponds. A five-strand barbed wire security fence was installed encompassing the entire site. In the remediation report prepared by Hercules, Inc., no estimates of waste pond dimensions or waste quantity were specified (Hercules, Inc. 1988). The removed CFR was then deposited in excavated disposal areas on-site of unknown dimensions. The first CFR layer was deposited approximately seven feet below ground surface, followed by alternating one-foot layers of clean soil and CFR. A two-foot cap of clean soil was then placed on top of the CFR excavated disposal area. During the excavation and removal of the CFR from the sediment ponds, approximately 13,000 tons of clean unused coal were discovered. This coal, with the approval of representatives from the State of Utah, Division of Oil, Gas and Mining and the State of Utah, Bureau of Solid and Hazardous Waste, was given to the Kennecott Copper Company to be burned in their powerhouse as a fuel (Ecology and Environment 1988a; Hercules, Inc. 1988).

3.4 SITE GEOLOGY

The town of Bauer lies within the Stockton Mining District, which extends from Soldier Canyon to the south and along the Oquirrh Mountains to the north for three to four miles. The Stockton Mining District is characterized by numerous rounded ridges and outcrops that slope to the west (UDEH 1984b). The town of Bauer was established atop interfingered lake bed deposits of silt

and clay and alluvial deposits of sand and gravel from the Quaternary epoch of Lake Bonneville in the narrow valley between the Oquirrh Mountains and South Mountain. The alluvial fill is exposed at the surface of the BHRCC site and ranges in thickness from 100 to 1,000 feet (State of Utah, Division of Water Rights (UDWR) 1981).

3.5 SITE HYDROGEOLOGY

Groundwater near the site exists primarily in alluvial deposits and sediments of Lake Bonneville. Depth to groundwater is 100 feet below ground surface, with the primary aquifer of concern located approximately 250 feet below ground surface. This aquifer ranges in thickness from 3,000 to 7,000 feet. The regional groundwater flow direction is believed to be to the north toward the Great Salt Lake (UDEH 1984a). Hydraulic conductivity of materials underlying the site is greater than 3.9×10^{-2} cm/sec (UDWR 1981). Seven municipal and two domestic groundwater wells exist north of the site and are situated within the four-mile target distance limit (UDWR 1992).

3.6 SITE HYDROLOGY

Precipitation falling on-site infiltrates rapidly due to the high permeability of on-site soils (UDEH 1984b). Overland flow resulting from heavy precipitation is likely to follow the preferential gradient (<1% slope) to the north (USGS 1979a; USGS 1979b). Open range extends to the north for approximately two miles (Figure 1). Rush Lake is located approximately 1.5 miles upgradient and south of the BHRCC site. Soldier Creek, which flows from the south toward the town of Stockton, provides the primary drinking water supply for the residents of Stockton. After

drinking water diversions on Soldier Creek, surface water flow infiltrates into the highly permeable area soils, resulting in no stream flow at the valley floor upgradient and south of the site. Soldier Creek is upgradient from Rush Lake and the BHRCC site.

The State of Utah, Division of Environmental Response and Remediation (UDERR), conducted a site visit on March 15, 1993. It was reported by the UDERR that a wetlands area, approximately five acres in size, was evident south of and adjacent to the Bauer townsite. The source of the surface water for the wetlands area is believed to emanate from one of the abandoned mine tunnels south of the Bauer townsite. A ditch with riparian vegetation extended from the wetlands area to the northeast quarter of the Bauer townsite. Surface water flow in the ditch flowed into an underground pipe. The UDERR believes this pipe possibly supplies a stockwatering pond approximately one-half mile northeast of the Bauer townsite (State of Utah, Division of Environmental Response and Remediation (UDERR) 1993).

3.7 SITE METEOROLOGY

The BHRCC site is located in a semiarid climate zone. The mean annual precipitation as totaled from the University of Delaware (UD) database is 10.47 inches. The net annual precipitation as calculated from precipitation and evapotranspiration data obtained from the UD is 3.43 inches (University of Delaware (UD) 1986). The 2-year 24-hour rainfall event for this area is 1 inches (Dunne and Leopold 1978).

4.0 PRELIMINARY PATHWAY ANALYSIS

In order to assess the potential impacts on nearby ecosystems, populations and resources, URS has been tasked to perform a pathway-by-pathway assessment of the potential human health and environmental impacts posed by the BHRCC site. This assessment will consider potential site impacts on the air, groundwater, surface water and soil exposure pathways utilizing HRS guidelines.

4.1 SITE WASTE QUANTITY AND CHARACTERISTICS

For the purpose of this SIP, URS has identified the CFR as a potential contaminant source. The CFR is a fossilized resin (Utah Coal Resin) which was used in the development of construction adhesives. The resin has a high melting point and a molecular weight of approximately 1100. The resin is composed of mixed, naturally occurring polymers which are difficult to characterize chemically. This resin is not soluble in alcohols, water, organic acids or other acids. It is extremely ozone-, oxidation-, ultraviolet- and heat-resistant. The quantity of the CFR is unknown (EPA 1982).

A possibility exists that various polycyclic aromatic hydrocarbons (PAHs), dioxin and furan were created and released via smoke emissions during the five years that the CFR burned. Benzene, hexane and toluene, which were used in the production process of adhesives, are assumed to be the contaminants of concern.

4.2 AIR PATHWAY

4.2.1 Containment

The air pathway was evaluated based on potential to release. The CFR contaminants are not considered to have the potential to migrate to the air pathway because the CFR wastes are contained in an excavated disposal area under a cover of two feet of clean soil. However, during the five years that the CFR burned, PAH, dioxin and furan contaminants may have been released to the air pathway via smoke emissions.

4.2.2 Waste Quantity and Characteristics

Benzene, hexane and toluene, which were used in the production process of adhesives, are possible/potential the contaminants of concern in the waste source area. However, the presence of benzene, hexane and toluene in the CFR has not been documented. The specific nature and quantity of wastes in the CFR are unknown. No analytical data for site wastes have been collected. The estimated volume of the CFR is unknown. For further waste characteristics see Section 4.1, Site Waste Quantity and Characteristics.

4.2.3 Target Populations

During this evaluation, URS was able to identify approximately 1,000 people from the town of Tooele living within the three- to four-mile target distance limit of the BHRCC site. The town of Stockton has approximately 50 residents living within a one-mile radius of the BHRCC site. Approximately 375 residents of Stockton are believed to live within the one- to two-mile radius of the BHRCC site (Town of Stockton 1992).

The UDERR conducted a site visit on March 15, 1993. It was reported by the UDERR that a wetlands area, approximately five acres in size, was evident south of and adjacent to the Bauer townsite. The source of the surface water for the wetlands area is believed to emanate from one of the abandoned mine tunnels south of the Bauer townsite. A ditch with riparian vegetation extended from the wetlands area to the northeast quarter of the Bauer townsite. Surface water flow in the ditch flowed into an underground pipe. The UDERR believes this pipe possibly supplies a stockwatering pond approximately one-half mile northeast of the Bauer townsite (UDERR 1993).

4.2.4 Air Pathway Specific Data Gaps

URS has identified the following air pathway specific data gaps:

- ▶ Characterize if possible, resin material contained in the CFR;

- ▶ The presence of wastes potentially generated in the CFR during periodic burning episodes have not been characterized;
- ▶ The integrity of containment features for the CFR;
- ▶ The volume of on-site waste is unknown; and
- ▶ Characterization of receptor targets (sensitive environments and human population) within the specified four-mile target distance limit.

4.3 GROUNDWATER PATHWAY

4.3.1 Containment

The groundwater pathway was evaluated based on observed release via chemical analysis. The on-site waste source consists of the CFR which contains unknown chemical contaminants and quantities. These wastes are potentially susceptible to leaching and subsequent infiltration and migration through the local groundwater aquifer due to the high permeability of on-site soils. The underlying alluvial aquifer lies approximately 100 feet below ground surface. The depth of contaminant deposition below ground surface is approximately 7 feet (Hercules, Inc. 1988).

Geologic materials situated in the interval between the lowest point of known contamination below ground surface and the alluvial aquifer are characterized by sands

and gravels which are extremely permeable (UDWR 1981). Wastes from the CFR are available to migration via the groundwater pathway due to the lack of any type of run-on or runoff control/ management system, leachate collection or removal system, or engineered cover (UDEH 1984b).

4.3.2 Waste Quantity and Characteristics

The possibility exists that various PAHs, dioxins and furans were created and potentially released during the five years in which the CFR burned. Analyses for these contaminants were not performed during groundwater monitoring. Benzene, hexane and toluene, which were used in the production process of adhesives, are assumed to be the contaminants of concern. For further waste characterization, see Section 4.1, Site Waste Quantity and Characteristics.

Samples collected from the flooded basement of an abandoned building at the BHRCC site during the Site Inspection for Bauer Dump and Tailings were analyzed and exhibited levels of cadmium (0.01 ppm), chromium (0.1 ppm) and lead (0.22 ppm) which have a high acute toxicity and high groundwater mobility (Office of the Federal Register 1990). These samples may be representative of possible releases to the groundwater; however, the integrity of a flooded basement sample is suspect and is not of usable quality for HRS purposes.

Groundwater monitoring on site was conducted by Earthfax Engineering, Inc. under contract for Hercules, Inc. Constituents detected in the two sampling events in October,

1987 and in May 1988 are listed in Table 1 (Hercules, Inc. 1988). Groundwater samples collected from monitoring wells with unspecified locations and depths were found to contain the following concentrations: acetone (6.9 ppb), chloroform (ranging from 5.5 ppb to 18 ppb), chloromethane (230 ppb), arsenic (unknown concentration), cyanide (5 ppb), lead (10 ppb), selenium (52 ppb) and zinc (ranging from 70 ppb to 120 ppb). Attribution of inorganic constituents to the BHRCC site is difficult to substantiate because similar inorganic substances were also detected in high concentrations at the Bauer Dump and Tailings site. Inorganic contaminants were detected in samples collected in 1984 from the Bauer Mine Tailing Pond, which is upgradient from the BHRCC site (UDEH 1984b; Hercules, Inc. 1988).

TABLE 1
Contaminants Detected in Monitoring Wells at BHRCC

Constituents	Concentration	Well ID	Sampling Event
Acetone	6.9 ppb	C-1	May 1988
Chloroform	18 ppb	C-1	October 1987
	5.5 ppb	C-1	May 1988
Chloromethane	230 ppb	C-X	May 1988
Arsenic	unknown	C-1,3 & 6	October 1987
Cyanide	5 ppb	C-X	October 1987
Lead	10 ppb	C-2	May 1988
Selenium	52 ppb	C-2	October 1987
Zinc	120 ppb	C-2	October 1987
	70 ppb	C-3	October 1987

Hercules, Inc. 1988

4.3.3 Target Populations

Three groundwater wells (WW1, WW2 and WW3) supply drinking water for 96 persons living at the Tooele Army Depot. Well WW1 is located in the 2 to 3- mile radius, well WW3 is located in the 3 to 4- mile radius and well WW2 is located beyond the 4-mile radius. Since each well is supplying an equal quantity of water to the Tooele Army Depot, 32 persons are allotted to each well. A total of 64 individuals utilizing the alluvial aquifer are potentially impacted by contamination from the BD&T site.

4.3.3.1 Wellhead Protection Area

The BHRCC site and its associated waste sources do not lie within a specified wellhead protection area (UDWR 1992).

4.3.3.2 Resource Use

URS identified ten groundwater wells that are used for irrigation and stock watering purposes within the specified four-mile target distance limit (UDWR 1992).

4.3.4 Groundwater Pathway Specific Data Gaps

After performing an analysis of all potential site-related waste sources and associated receptor targets, URS was able to identify the following site-specific HRS data gaps:

- ▶ Characterize if possible, resin material contained in the CFR;
- ▶ The presence of wastes potentially generated in the CFR during periodic burning episodes have not been verified or characterized;
- ▶ Evaluation of analytical data packages for the groundwater sampling events which took place in October 1987 and in May 1988; and
- ▶ Characterization of background groundwater conditions.

4.4 SURFACE WATER PATHWAY

4.4.1 Containment

The on-site contaminant source consists of the CFR, which contains unknown chemical contaminants and quantities. The BHRCC site is situated in a natural drainage basin that may result in the accumulation of precipitation and storm runoff. Surface water in the form of precipitation and overland flow infiltrates readily due to the high permeability of on-site soils (UDEH 1984b). A two-foot cover of clean soil taken from the site area was established and revegetated to prevent the potential transport of site contaminants via overland flow (Hercules, Inc. 1988).

4.4.2 Waste Quantity and Characteristics

The specific characteristics and quantity of wastes in the CFR are unknown. Ecosystem toxicity, persistence and bioaccumulation properties of hazardous substances in the CFR are unknown. Potentially present in the CFR are furan, hexane and toluene which exhibit low values for ecosystem toxicity, persistence and bioaccumulation; benzene which exhibits high values for ecosystem toxicity, persistence and bioaccumulation; and dioxin which exhibits high values for persistence and bioaccumulation and low values for ecosystem toxicity. Certain PAHs exhibit high values for ecosystem toxicity, persistence and bioaccumulation and are also potentially present in the CFR (Superfund Chemical Database Matrix (SCDM) 1993). For further waste characterization, see Section 4.1, Site Waste Quantity and Characteristics.

4.4.3 Target Populations

4.4.3.1 Drinking Water Threat

There are no drinking water intakes downgradient from the BHRCC site.

4.4.3.2 Environmental and Human Food Chain Threat

Although Rush Lake is a surface water body and is considered a game fishing resource and a recreation area, it is not subject to site-related contamination via surface water migration. Rush Lake, which is located 1.5 miles upgradient from the BHRCC site, is a natural drainage basin that was formed by the collection of runoff waters during times of heavy precipitation (Town of Stockton 1992).

There are no known human food chain targets associated with areas downgradient to the BHRCC site (State of Utah, Department of Natural Resources, Division of Wildlife Resources 1992).

The UDERR conducted a site visit on March 15, 1993. It was reported by the UDERR that a wetlands area, approximately five acres in size, was evident south of and adjacent to the Bauer townsite. The source of the surface water for the wetlands area is believed to emanate from one of the abandoned mine tunnels south of the Bauer townsite. A ditch with riparian vegetation extended from the wetlands area to the northeast quarter of the Bauer townsite. Surface water flow in the ditch flowed into an underground pipe. The UDERR believes this pipe possibly supplies a stockwatering pond approximately one-half mile northeast of the Bauer townsite (UDERR 1993).

4.4.4 Surface Water Pathway Specific Data Gaps

After performing an analysis of all potential site-related waste sources and associated receptor targets, URS was able to identify the following site-specific HRS data gaps:

- ▶ Characterization and documentation of wetlands and ditch near the BHRCC site.

4.5 SOIL EXPOSURE PATHWAY

4.5.1 Containment

The soil exposure pathway was evaluated based upon the containment of the CFR waste. The CFR wastes have not been characterized. Burning CFR was extinguished in May 1987. The CFR was removed and deposited on-site in excavated pits with alternating 1-foot layers of clean soil and CFR and then covered with a 2-foot cap of clean soil. The cap was revegetated after construction was completed.

4.5.2 Waste Quantity and Characteristics

The possibility exists that various PAHs, dioxin and furan were created during the five years in which the CFR burned. Benzene, hexane and toluene, which were used in the production process of adhesives, are potential to be the contaminants of concern.

The specific characteristics and quantity of wastes in the CFR are unknown. No analytical data for site wastes have been collected. The estimated volume of the CFR is unknown.

4.5.3 Target Populations

4.5.3.1 Resident Populations

There is no resident population for the town of Bauer. The town of Bauer was abandoned in 1979 after the Combined Metals Reduction Company ceased

operations. The BHRCC plant was destroyed by a fire in September 1980 (Hercules, Inc. 1988). The possibility exists that during the five years in which the CFR burned, contaminant transport via particulate release to the air pathway, deposited contaminants and potentially impacted soils in the towns of Stockton and Tooele.

4.5.3.2 Nearby Populations

The town of Stockton lies approximately one mile south of the BHRCC site. Approximately 50 residents living in the northern limits of the town of Stockton reside within a one-mile radius of the BHRCC site (Town of Stockton 1992). Approximately 375 people from Stockton are believed to live within the one- to two-mile radius of influence of the BHRCC site (Town of Stockton 1992). Access to the BHRCC site is restricted by an encompassing five-strand barbed wire fence. The area around the BHRCC site is readily accessible via numerous unimproved trails and is used by the surrounding local population as a motorcycle recreation area (UDEH 1984b).

4.5.3.3 Resources

A sheep pasture is located on the land immediately south of the BHRCC site (UDEH 1984b).

4.5.4 Soil Exposure Pathway Specific Data Gaps

After evaluating all potential site sources, associated resident populations and nearby population targets, URS has identified the following data gaps that should be addressed prior to arriving at an accurate soil exposure pathway evaluation:

- ▶ Integrity of a 2-foot cover of clean soil over the CFR; and

- ▶ Nearby residential surface soils have not been evaluated to determine whether site-related contaminants were transported off site during the five-year period between 1982 and 1987 in which the CFR burned.

5.0 SUMMARY

The BHRCC site preliminary pathway analysis has identified several areas of environmental concern associated with this facility. The evaluation of air, surface water, groundwater and soil exposure pathways has identified the presence of potential releases of contaminants. Receptor targets potentially affected by this site include the town of Stockton, the town of Tooele, the Tooele Army Depot and possible wetland areas near the BD&T site. The following pathway specific data gaps were identified during this SIP:

- The presence and volume of wastes potentially generated in the CFR during periodic burning episodes have not been verified or characterized (Air, Surface Water, Groundwater and Soil Exposure Pathways);
- Evaluation of the integrity and adequacy of on-site containment features (Air, Surface Water, Ground Water and Soil Exposure Pathways).
- Characterization of receptor targets (sensitive environments and human population) within the specified four-mile target distance limit (Air, Surface Water, Groundwater and Soil Exposure Pathways);
- Evaluation of analytical data packages for the groundwater sampling events which took place in October 1987 and in May 1988 (Groundwater Pathway);
- Nearby residential surface soils have not been evaluated to determine whether site-related contaminants were transported off site during the five-year period between 1982 and 1987 in which the CFR periodically burned (Air and Soil Exposure Pathways).

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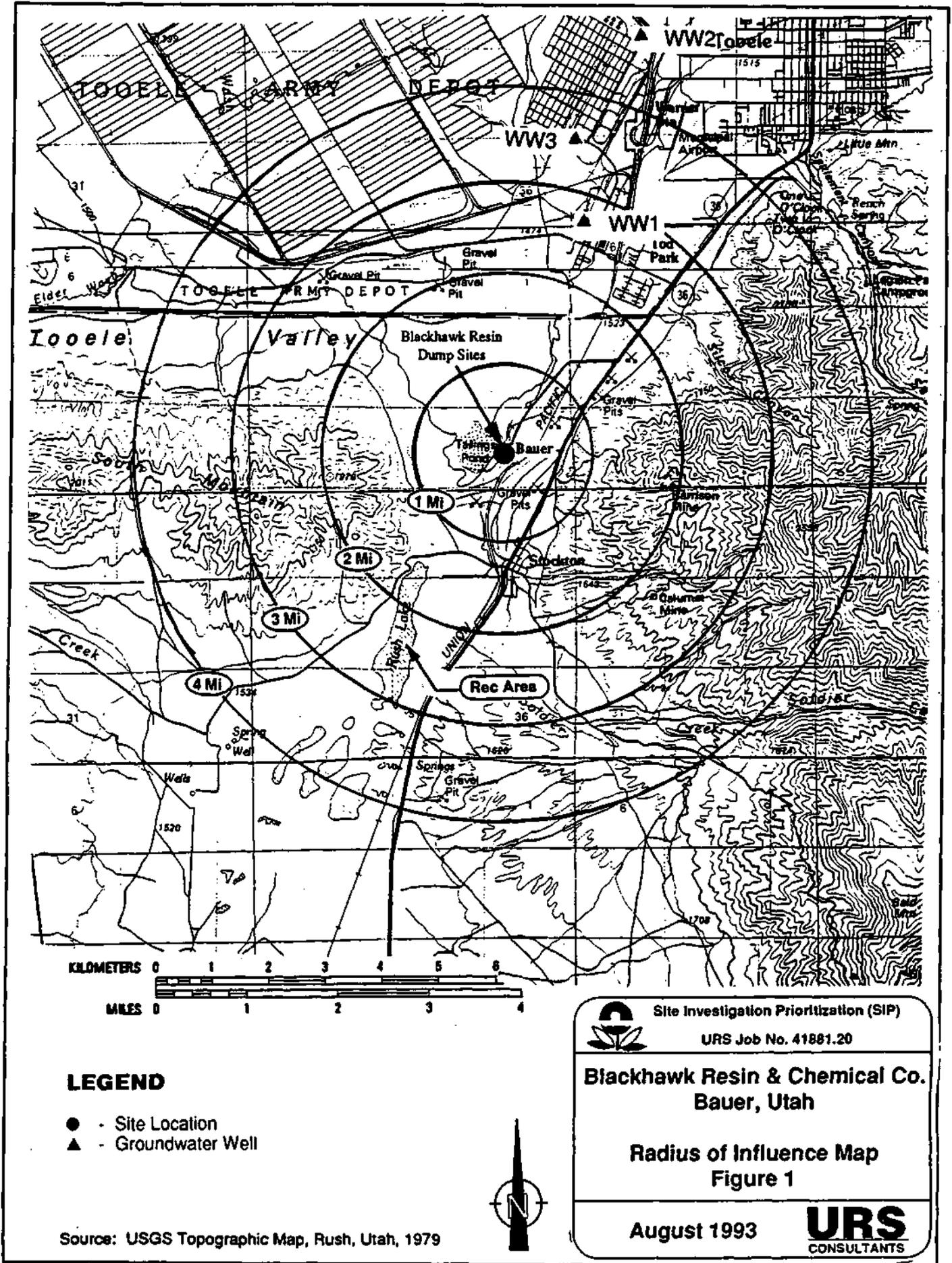
U.S. Geologic Survey (USGS). 1979a. 30' x 60' Topographic Quadrangle, Rush Valley, Utah.

U.S. Geologic Survey (USGS). 1979b. 30' x 60' Topographic Quadrangle, Tooele, Utah.

7.0 **FIGURES**

Figure 1 shows the Radius of Influence Map, Figure 2 shows the Site Area Map and Figure 3 shows the Site Map. The figures are shown on the following pages.

Radius of Influence Map



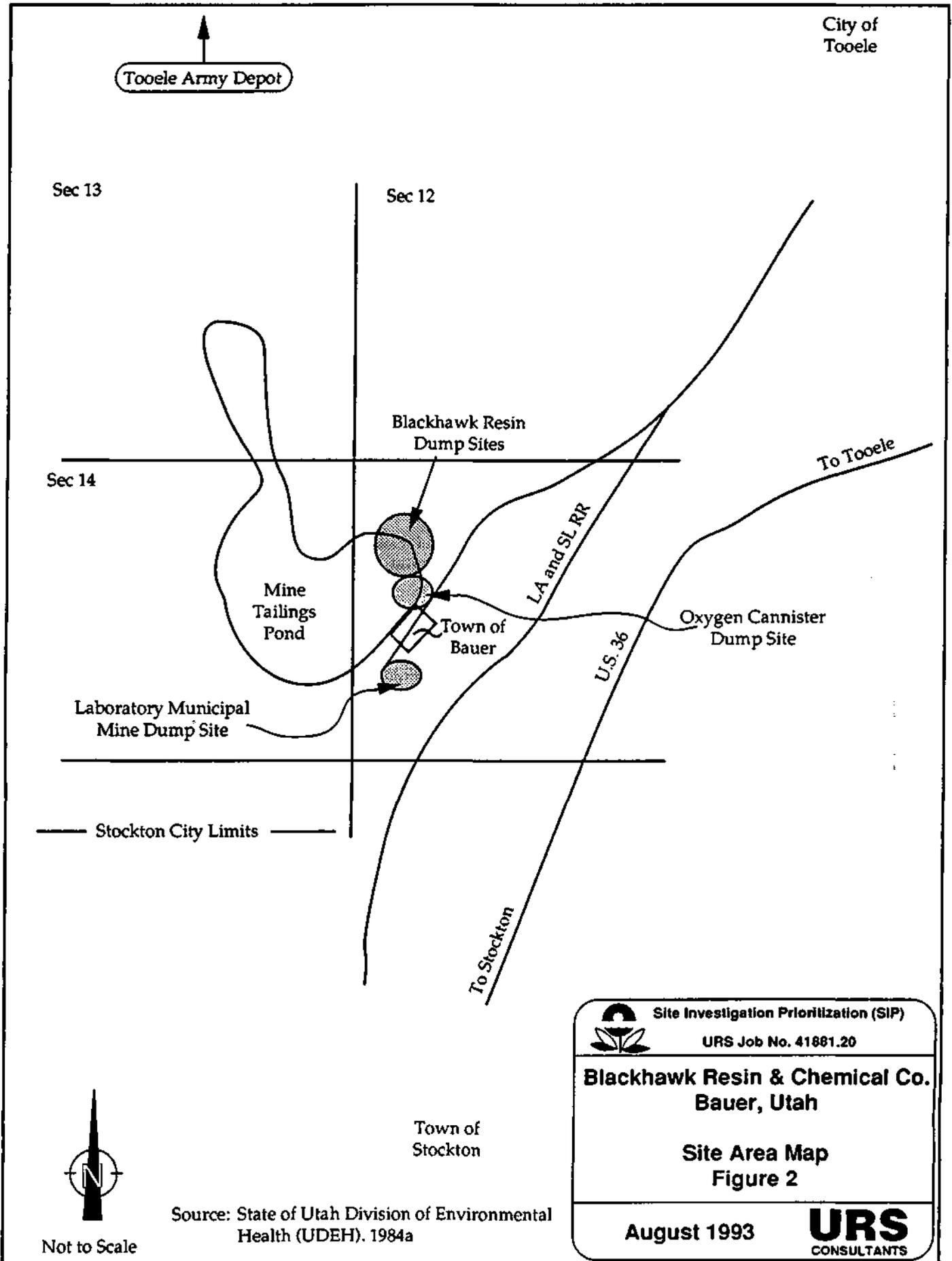
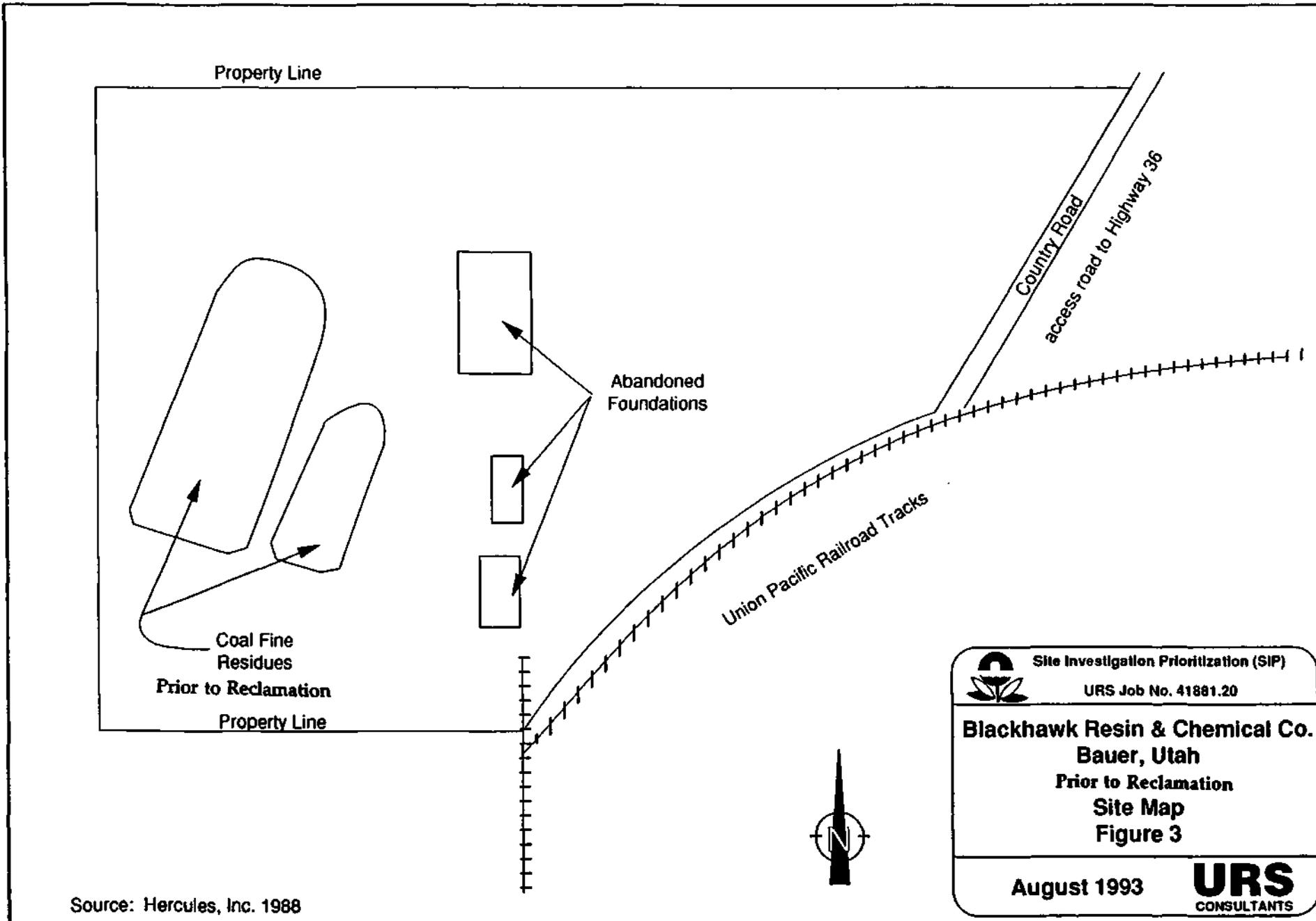


FIGURE 3
Site Map



Source: Hercules, Inc. 1988

APPENDIX A
EPA PA WORKSHEET

Name Mark Rudolph Location Bauer, Utah

Site Name Blackhawk Resin and Chemical Co. Date 8/26/93

PA WORKSHEET

MAJOR CONSIDERATIONS

- A) DOES ANY QUALITATIVE OR QUANTITATIVE INFORMATION EXIST THAT MAY INDICATE AN OBSERVED RELEASE TO GROUNDWATER, SURFACE WATER, SOIL OR AIR?

Describe: Yes. Samples taken in October 1987 and in May 1988 from groundwater sampling wells indicated the presence of acetone (6.9 ppb), chloroform (ranging from 5.5 ppb to 18 ppb), chloromethane (230 ppb), arsenic (unknown concentrations), cyanide (5 ppb), lead (10 ppb), selenium (52 ppb) and zinc (ranging from 70 ppb to 120 ppb) (see Table 1 of text). The coal fines residue (CFR) burned during the spring and summer for five years, during which time the releases of PAHs, dioxin and furan contaminants to the air pathway could have occurred. Benzene, hexane and toluene, which were used in the production process for adhesives, are also assumed to exist and be available for potential contaminant migration via all pathways.

- B) IF THE ANSWER TO A ABOVE IS YES, IS THERE EVIDENCE OF DRINKING WATER SUPPLY CONTAMINATION OR ANY OTHER TARGET CONTAMINATION (i.e., food chain, recreation areas, or sensitive environments)?

Describe: No evidence exists.

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

- Multiple sensitive environments? None reported.
- Federally designated sensitive environment(s)? Possible emergent wetlands south of site.
- Sensitive environment(s) downstream on a small or slow flowing surface water body?
Possible emergent wetlands south of site.

- D) IS THE SITE LOCATED IN AN AREA OF KARST TERRAIN?

Describe: No

- 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?

Describe: No

F) DOES ANY QUALITATIVE OR QUANTITATIVE INFORMATION EXIST THAT PEOPLE LIVE OR ATTEND SCHOOL ON-SITE CONTAMINATED PROPERTY?

Describe: No

SITE INFORMATION

1. SITE NAME: Blackhawk Resin and Chemical Company

ADDRESS: Approximately one mile north of the town of Stockton

CITY: Bauer COUNTY: Tooele STATE: Utah ZIP: 84071

EPA ID: UTD980960082

LATITUDE: 40° 28' 20" N LONGITUDE: 112° 21' 40" W

2. DIRECTIONS TO SITE (From nearest public road):

From Salt Lake City, take I-80 west to Highway 36. Go south on Highway 36 to the town of Bauer turnoff. Entrance gate is locked and site is approximately 2.7 km southwest from gate.

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

A. Name of current owner: Hercules, Inc.

Address: 910 Market Street

City: Wilmington County: N/A State: DE Zip: 19894

Dates: From 1960 To Present Phone: 302-594-5000

B. Name of previous owner: N/A

Address: _____

City: _____ County: _____ State: _____ Zip: _____

Dates: From _____ To _____ Phone: _____

Source of ownership data: City of Magna, Chamber of Commerce 1992

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

Private _____ State _____ Municipal
_____ Federal _____ County _____ Other (describe): _____

5. NAME OF SITE OPERATOR: Hercules, Inc.
ADDRESS: 910 Market Street
CITY: Wilmington COUNTY: N/A STATE: DE ZIP: 19894
PHONE: 302-594-5000

BACKGROUND/OPERATING HISTORY

6. DESCRIBE OPERATING HISTORY OF SITE: Blackhawk Resins and Chemical Company
(BHRCC), a subsidiary of Hercules, Inc., owned and operated a coal resin extraction plant
located at Bauer, Utah. The site covered an area of approximately 27 acres. Until the plant
was destroyed by a fire in September 1980, it extracted naturally occurring resins from coal
finer residue (CFR) obtained from mines in Carbon County, Utah. The extraction process
employed a co-solvent consisting of aliphatic hydrocarbons (typically hexane) and 3 to 5%
benzene or toluene. This co-solvent was extensively recycled in the process. After the plant
was destroyed, it was not rebuilt. The sediment ponds in which the spent CFR was placed
dried out and eventually ignited in Spring 1982 and burned every spring and summer until
the fire was extinguished in May 1987. The CFR was extinguished and removed to
excavated disposal areas and buried with alternating one-foot layers of CFR and clean soil.
The excavation was capped with a cover of 2 feet of clean soil and revegetated.
Source of information: Hercules, Inc. 1988

7. DESCRIBE SITE AND NATURE OF SITE OPERATIONS (property size, manufacturing, waste disposal, storage, etc.):
The site covers an area of approximately 27 acres. Wastes are coal resins treated with
hexane, benzene and toluene. Quantities of wastes are unknown.
Source of information: Hercules, Inc. 1988

8. DESCRIBE ANY EMERGENCY OR REMEDIAL ACTIONS THAT HAVE OCCURRED AT THE SITE:

In May 1987, the fire in the spent CFR was extinguished and the spent CFR were removed.
Approximately 13,000 tons of unburned coal were recovered during the removal action
and, with the approval of representatives from the State of Utah, Division of Oil, Gas and
Mining and the State of Utah, Bureau of Solid and Hazardous Waste, were given to the
Kennecott Mining Company to use as a fuel source at their power house in Utah. The
remaining CFR was layered with clean soil in alternating one-foot layers. A cap of two feet
of clean soil was established on the surface and revegetated. In May 1987, a five-strand
barbed wire fence was erected to encompass the entire site.

Source of information: Hercules, Inc. 1988

9. ARE THERE RECORDS OR KNOWLEDGE OF ACCIDENTS OR SPILLS INVOLVING SITE WASTES?

Describe: Access to the BHRCC site was not restricted or otherwise prohibited until 1987
and in May 1985, two boys were severely burned when they fell into the burning CFR while
riding their bikes on the site.

Source of information: Ecology and Environment 1988a

10. DISCUSS EXISTING SAMPLING DATA AND BRIEFLY SUMMARIZE DATA QUALITY (e.g., sample objective, age/comparability, analytical methods, detections limits and QA/QC):

Earthfax Engineering, Inc. collected two sets of groundwater samples under contract by
Hercules, Inc. The first set of groundwater samples was taken in October 1987, and the
second set was taken in May 1988. EPA methods 624 and 625 were used. Detection limits
were not specified in the summary received from Hercules, Inc. See #14 for a list of detected
contaminants.

Source of information: Hercules, Inc. 1988

WASTE CONTAINMENT/HAZARDOUS SUBSTANCE IDENTIFICATION

11. FOR EACH SOURCE AT THE SITE, SUMMARIZE ON TABLE 1 (page 13): 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; and 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.):

Waste quantity was not established or estimated.

Source of information: Ecology and Environment 1988; Hercules, Inc. 1988

13. DESCRIBE ANY RESTRICTIONS OR BARRIERS ON ACCESSIBILITY TO ON-SITE WASTE MATERIALS:

There is no evidence that indicates site access was prohibited or otherwise restricted by posting signs or fencing prior to 1987 when the five-strand barbed wire fence was erected encompassing the site. A locked gate bars access to the town of Bauer and the BHRCC site from Highway 36. However, there are numerous recreational vehicle trails throughout the area.

Source of information: Ecology and Environment 1988a

GROUNDWATER CHARACTERISTICS

14. ANY POSITIVE OR CIRCUMSTANTIAL EVIDENCE OF A RELEASE TO GROUNDWATER?

Arsenic (unknown concentrations), cyanide (5 ppb), lead (10 ppb), selenium (52 ppb) and zinc (ranging from 70 ppb to 120 ppb) were metals found in the two sampling events. Acetone (6.9 ppb), chloroform (ranging from 5.5 ppb to 18 ppb), and chloromethane (230 ppb) were also found during the two sampling events.

Source of information: Hercules, Inc. 1988

15. ON TABLE 2 (page 14), GIVE NAMES, DESCRIPTIONS, AND CHARACTERISTICS OF GEOLOGIC/HYDROGEOLOGIC UNITS UNDERLYING THE SITE.

16. NET PRECIPITATION: 3.43 inches (University of Delaware (UD) 1986).

SURFACE WATER CHARACTERISTICS

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

X Ditches X Lakes X Pond
X Creeks _____ Rivers _____ Other _____

18. DISCUSS THE PROBABLE SURFACE RUNOFF PATTERNS FROM THE SITE TO SURFACE WATERS:

Precipitation falling on-site infiltrates rapidly due to the high permeability of on-site soils. Overland flow resulting from heavy precipitation is likely to follow the preferential gradient (<1% slope) to the north. Open range extends to the north for approximately two miles (Figure 1). Rush Lake is located approximately 1.5 miles upgradient and south of the BHRCC site. Soldier Creek, which flows from the south toward the town of Stockton, provides the primary drinking water supply for the residents of Stockton. After drinking water diversions on Soldier Creek, surface water flow infiltrates into the highly permeable area soils, resulting in no stream flow at the valley floor upgradient and south of the site. Soldier Creek is upgradient from Rush Lake and the BHRCC site.

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

20. ANY POSITIVE OR CIRCUMSTANTIAL EVIDENCE OF SURFACE WATER CONTAMINATION?

Describe: None reported.

Source of information: EPA 1992

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

=2,931 acres

Source of information: USGS 1979a

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

Water body: None present. _____ cfs
Water body: _____ cfs
Water body: _____ cfs

Source of information: _____

23. IS THE SITE OR PORTIONS THEREOF LOCATED IN SURFACE WATER? None reported.

24. IS THE SITE LOCATED IN A FLOODPLAIN (indicate flood frequency)? N/A

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

None reported.

Source of information: Town of Stockton 1992

26. TWO-YEAR, 24-HOUR RAINFALL: 1 inch

TARGETS

27. DISCUSS GROUNDWATER USAGE WITHIN FOUR MILES OF THE SITE:

A total of 64 residents are served by three wells, two of which lie within the four-mile target distance limit. In addition to drinking water, groundwater is used for irrigation, stock watering, industrial and commercial uses.

Source of information: Tooele Army Depot 1992; UDWR 1992

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

<u>Distance (Miles)</u>	<u>Population</u>
>0 - 1/4	0
>1/4 - 1/2	0
>1/2 - 1	0
>1 - 2	0
>2 - 3	32
>3 - 4	32

Source of information: Montgomery 1986; UDEH 1984b; Tooele Army Depot 1992

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

There is no surface water use for human consumption downstream from the BHRCC site.

Source of information: Town of Stockton 1992

30. DESCRIBE AND LOCATE FISHERIES WITHIN 15 DOWNSTREAM MILES OF THE SITE (provide standing crop and production and acreage, etc.):

None reported

Source of information: Town of Stockton 1992

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

<u>Description</u>	<u>Distance (Miles)</u>
Commercial/Industrial Institutional	1 mile
Single Family Residential	1 mile
Multi-family Residential	1 mile
Park	1 miles
Agricultural	Sheep grazing pasture within less than 1 mile of site

Source of information: USGS 1979a; UDEH 1984b

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

<u>Distance</u> (Miles)	<u>Population</u>
On site	<u>0</u>
>0 - 1/4	<u>0</u>
>1/4 - 1/2	<u>0</u>
>1/2 - 1	<u>50</u>
>1 - 2	<u>375</u>
>2 - 3	<u>0</u>
>3 - 4	<u>1,000</u>

Source of information: USGS 1979a; UDEH 1984b; Town of Stockton 1992

33. DISCUSS ANY PERMITS:

County: None reported

State: None reported

Federal: None reported

Other: None reported

Source of information: EPA 1982

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.

See Figure 2, Site Area Map

N
↑

35. SURFACE WATER FEATURES

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

See Figure 1, Radius of Influence Map

N
↑

TABLE 1
WASTE CONTAINMENT AND HAZARDOUS SUBSTANCE IDENTIFICATION¹

SOURCE TYPE	SIZE (Volume/Area)	ESTIMATED WASTE QUANTITY	SPECIFIC COMPOUNDS	CONTAINMENT ²	SOURCES OF INFORMATION
Coal Fines Residue	≈ Unknown Volume and Area of Waste Deposited.	≈ 13,000 tons of clean coal was removed. Unknown amount of coal fines residue remain on site.	Unknown. Possibly dioxin, furan, PAH compounds, benzene, hexane and toluene.	A two-foot cap of clean dirt has been placed on top of all coal fines residue and has been revegetated. No liner has been installed.	Ecology and Environment 1988a Hercules, Inc. 1988

¹ Use additional sheets if necessary.

² Evaluate containment of each source from the perspective of each migration pathway (e.g., groundwater pathway - nonexistent, 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 INFORMATION¹

STRATA NAME/DESCRIPTION	THICKNESS (FT.)	HYDRAULIC CONDUCTIVITY (cm/sec)	TYPE OF DISCONTINUITY ²	SOURCES OF INFORMATION
Interfingered lake bed deposits of silt/clay and alluvial deposits of sand/gravel from the Quaternary epoch of Lake Bonneville	3,000 - 7,000 feet	3.9×10^{-2} cm/sec	East and west along base of mountains are aquifer recharge zones.	UDWR 1981

- ¹ Use additional sheets if necessary.
² Identify the type of discontinuity within four miles from the site (e.g., river, strata "pinches out", etc.)

ARCS

**Remedial Planning Activities
At Selected Uncontrolled
Hazardous Substance Disposal Sites
In The Zone of Regions VI, VII and VIII**



Environmental Protection Agency

Contract No. 68-W9-0053

SITE INSPECTION PRIORITIZATION

**BLACKHAWK RESIN AND CHEMICAL COMPANY
BAUER, UTAH**

Work Assignment No. 21-8JZZ

August 26, 1993

URS
CONSULTANTS, INC

**Brown and Caldwell
Harza Environmental Services, Inc.
Shannon & Wilson, Inc.
Western Research Institute**
