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Site Inspection Report
Denver & Rio Grande Western Railroad South Roper Yard
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Prepared by Jim Salmon
Utah Bureau of Solid and Hazardous Waste

Draft
September 4, 1986

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I. Site Inspection Summary

Site Description

The current area of study is the south Roper Yards operated by Denver & Rio Grande Western Railroad (D & RG). The site is located in the city of South Salt Lake in Salt Lake County (see Figure 1). This site is temporarily bounded on the north by Mill Creek, the south by 3300 South Street, the west by the Vitro Uranium Mill Tailings site, and the east by 500 West near Interstate I-15 (See map, Figure 2). These are only temporary boundaries, established to distinguish the south site from the north site of the Roper Yards. Salt Lake City/County Health Department and Denver & Rio Grande Western Railroad are evaluating the north site. The north site has a preliminary assessment on file with EPA Region VIII. The area of concern (as outlined by the Preliminary Assessment, February 13, 1986) for this sampling was a triangle-shaped piece of land located immediately east of the Vitro UMTRA radioactive mill tailings removal project. The area become a concern when unidentified organic material was found there, raising questions of organic contamination of ground and surface water.

The work completed for the preliminary assessment in June 1985 showed some soils at the western boundary of the South Roper Yard to be organic (oily) in nature. All organic oily soils found in this investigation exhibited high levels of radiation, causing them to be destined for cleanup. Also, the concern was raised that oily soils were contaminating the groundwater and surface water at this site. This concern lead the BSHW to schedule a site inspection at this site. It is interesting to note that the characterization of the oily sludges completed for the preliminary assessment

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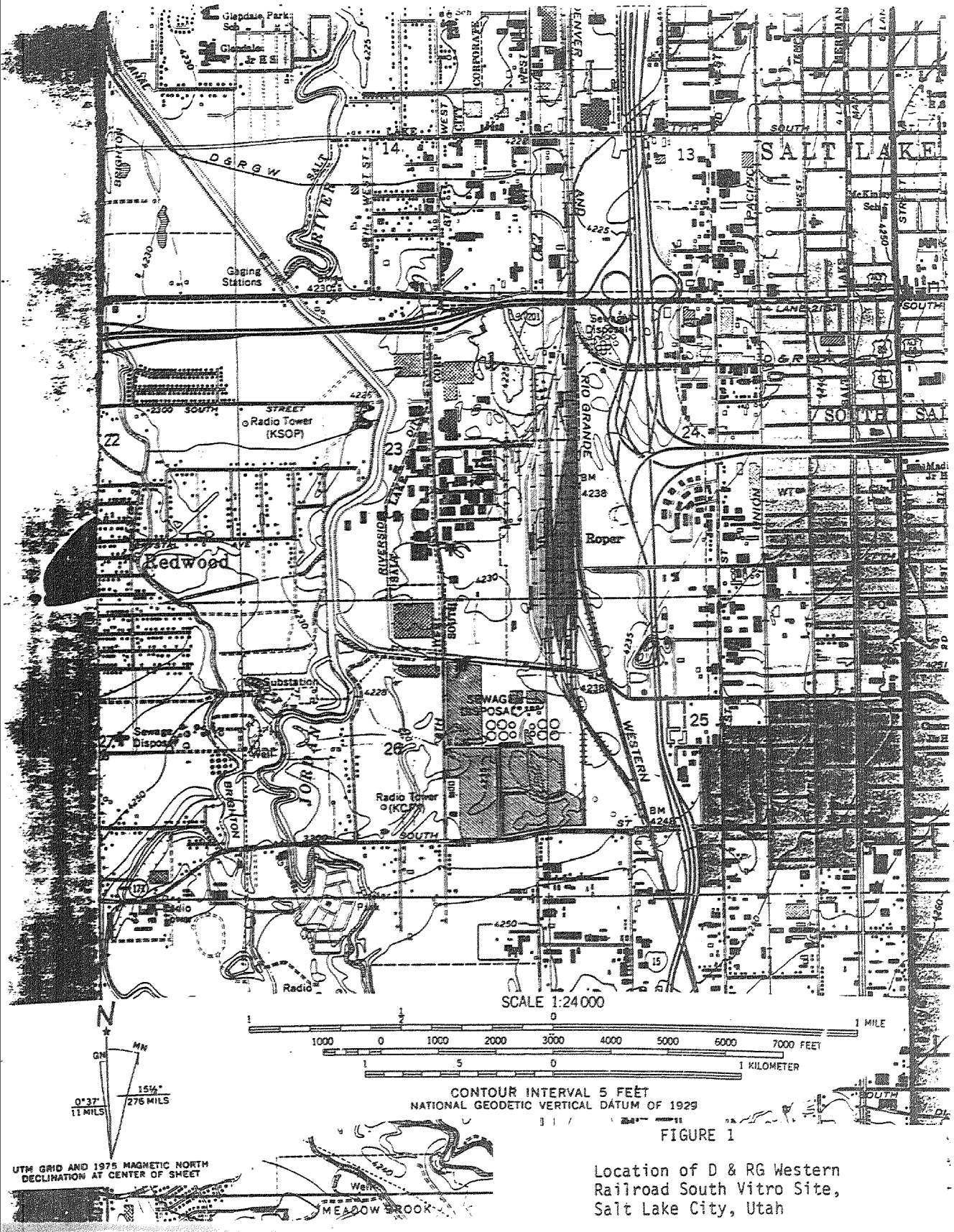

FIGURE 1

Location of D & RG Western Railroad South Vitro Site, Salt Lake City, Utah

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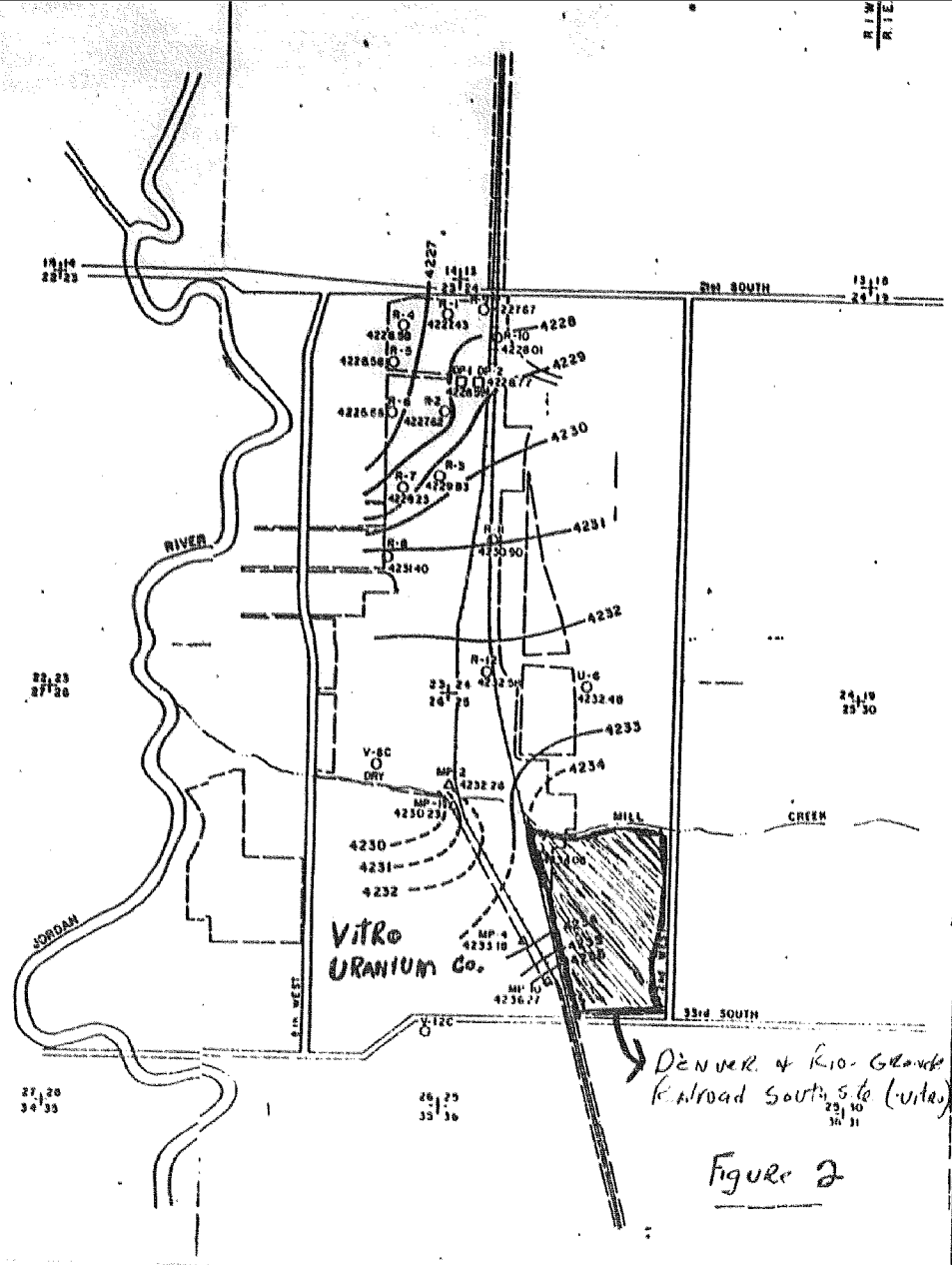

Figure 2

LEGEND

R-No	DENVER RIO-GRANDE WELLS INSTALLED 12/84
U-No	USGS MONITORING WELLS WATER LEVELS + LIMITED QUALITY DATA AVAILABLE (NUMBERING CONVENTION IN APPENDIX A - DRAFT REPORT ON LITERATURE REVIEW)
V-No	VITRO WELLS
O	MONITORING WELL DESIGNATION
4227.88	STATIC WATER LEVEL ELEVATION
DP-1 □	LOCATION OF DRIVE-POINT MONITOR WELL
MP-1 △	LOCATION OF SMALL DIAMETER PVC PIEZOMETER
— — —	WATER LEVEL CONTOURS INFERRED WHERE DASHED

NOTE WATER LEVELS MEASURED FEBRUARY 20, 1986

SCALE IN FEET
1000 0 1000 2000 3000

DENVER RIO-GRANDE RAILROAD
ROPER YARD
SALT LAKE CITY, UTAH

WATER TABLE MAP

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showed napthalene at 143 ppm, methylnaphthalene at 404 ppm, and Di-n-butyl phthalate at 51 ppm and 61 ppb. All other organic constituents of the oily soils were not identified by using EPA methods #608, 624, and 625 for identifying priority pollutants and hazardous constituents.

When the BSHW conducted the site inspection and monitored the ground and surface water for contamination in Spring 1986, it was learned that no organic materials from the from the oily soils at the site were entering the surface or groundwaters (see Tables 1-4). The conclusion is that the organic oily soils in or about this site are possibly naturally occurring from decay of natural organic matters. Also, the constituents identified are not characterisitc of diesel fuels or spillage, as is the case in the North site.

Background

Activities at the D & RG Roper Yard in South Salt Lake, Utah were initiated in the early 1900's with the construction of the yard facilities. The yard was used initially as a repair facility and a stockyard unit. In the early 1950's, the yard was converted into a diesel servicing facility, and this is still the principle use for the facility. Several fuel and waste spills have been documented by D & RG at the facility, mostly after 1975.

A variety of waste disposal and cleanup operations have taken place at the site, primarily at the north site on the north side of Mill Creek. No documentation exists describing pre-1955 disposal methods and/or the clean up activities which occurred any where at the Roper Yard. After 1955, an oil separator was part of the design of the diesel house, which separated light hydrocarbons from the waste water, again at the north site. The water fraction was piped to the City of South Salt Lake Sewer; the oil and fuel were

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recycled. Modifications have been made to the separator in subsequent years to improve its efficiency in recovering oils and fuels.

Many landfill operations occurred throughout the time the Roper yard was developed. The fill material essentially included excavation waste and construction debris. Prior to 1978, uranium tailings from a nearby uranium processing facility may have been used as fill material.

Since 1975, a number of improvements in equipment and procedures have occurred at the Roper Yard which may have helped in the abatement of contamination from D & RG's water management. Although these measures have helped, they have not eliminated accidental spills, and several instances of accidental spills have been documented during the last 10 years.

Groundwater/Surface Water

Ground and surface water quality data generated by this site inspection indicate the South D & RG site has not impacted surface or ground water quality. The Denver & Rio Grande Western Railroad initiated an ongoing sampling program in 1984 and 1985 to assess the ground and surface water quality at the North site (see Figures 2 and 3).This study is proceeding with lead oversight by the Salt Lake City/County Health Department. The State is also monitoring work at the site.

Considerable data have also been collected over the area by the Vitro Uranium Mill Tailings project for the assessment of potential radioisotope contamination. Other water quality data have been collected by the U.S. Geological Survey. These data indicate the groundwater generally moves in a north-northwest direction toward the Jordan River (see Figures 2 and 3). Seasonal groundwater fluctuations may modify the local groundwater flow

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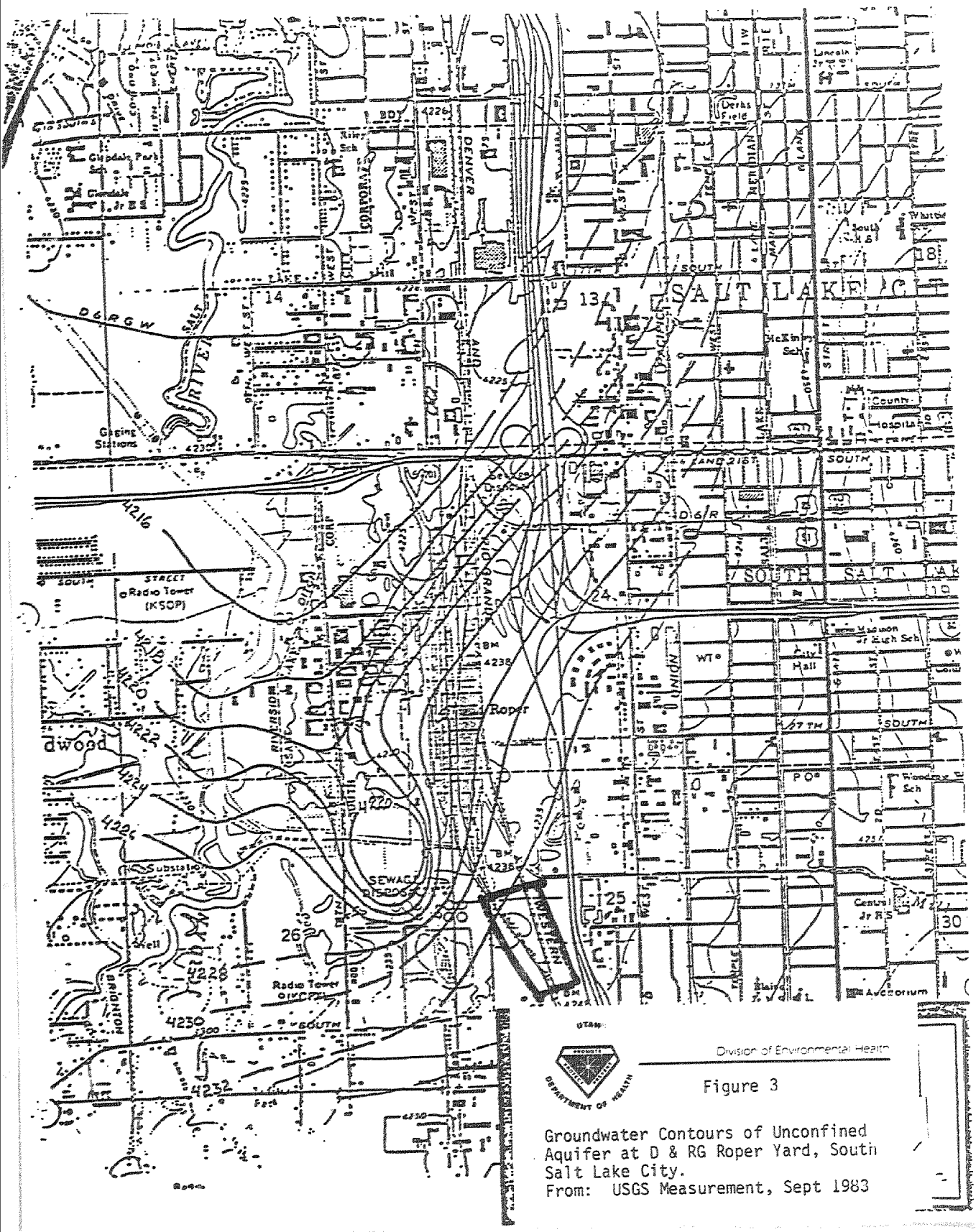

Figure 3

Groundwater Contours of Unconfined Aquifer at D & RG Roper Yard, South Salt Lake City.
From: USGS Measurement, Sept 1983

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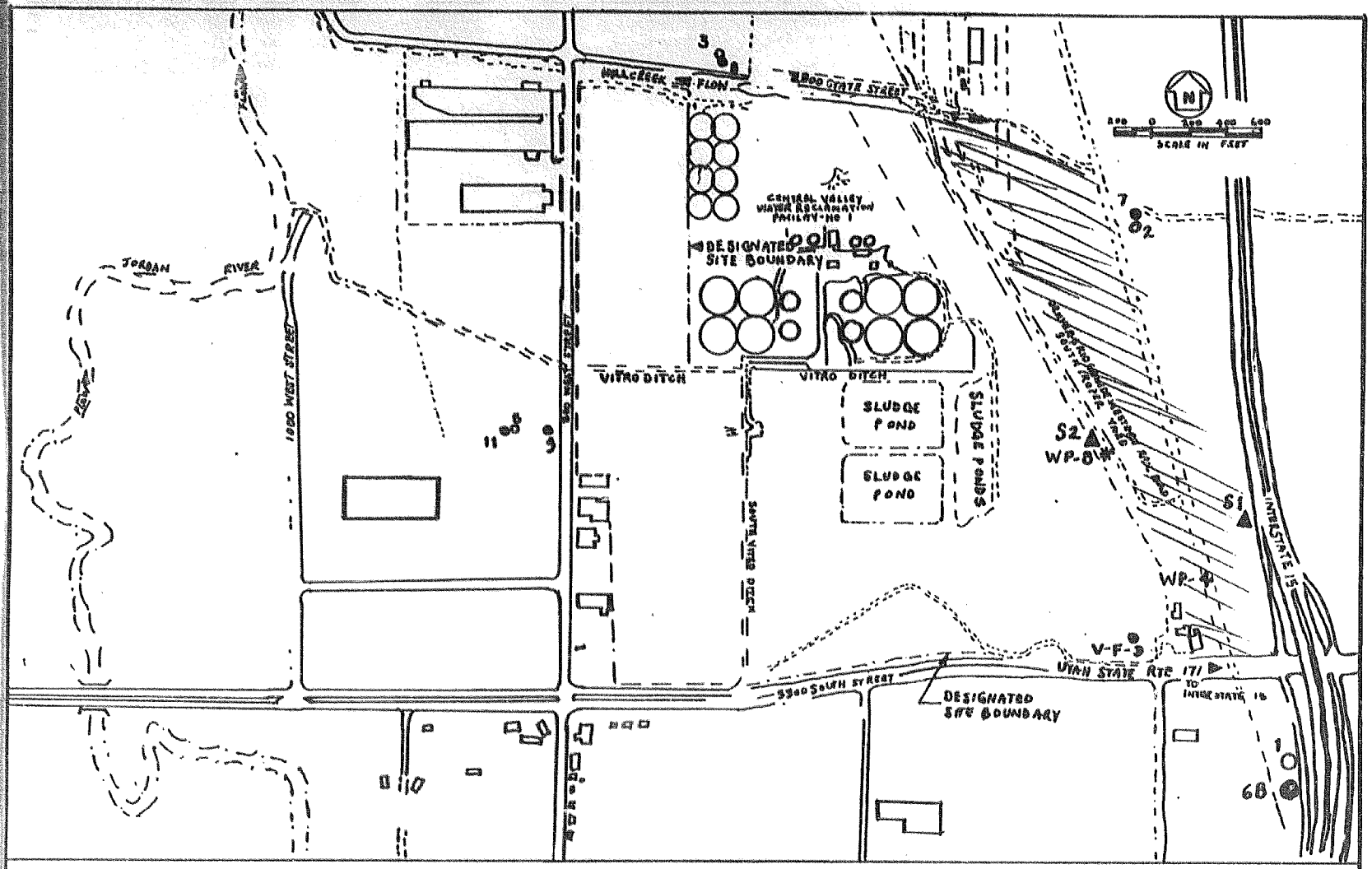

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- ✱ WELL POINTS USED FOR SHALLOW GROUND WATER SAMPLING, GRAB
- ○ DEEP WELL
- ▲ S - SURFACE WATER SAMPLES
- ● SHALLOW WELLS

Figure 4

LOCATION MAP OF SAMPLING POINTS ON OR NEAR D & RG WESTERN RD. SOUTH ROPER YARD.

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system, resulting in changes in the flow direction. The water quality of the shallow aquifer does not meet drinking water standards because of high concentrations of common alkaline ions and TDS. The groundwater system beneath the Roper Yard appears to be in a zone of mixing between high chloride waters associated with the Jordan River flood plain and the eastern fluvial deposits (see Attachment II, Vitro EIS, July 1984).

Surface waters at the Roper Yard are confined to a drainage ditch which flows to the north, and Mill Creek which flows westward along the southern portion of the property. As a result of the shallow nature of the groundwater, it appears there is a seasonal interaction between the surface water and groundwater. No contamination was observed during this site inspection of surface waters that could be attributed to the D & RG South site.

Investigation/Clean Up Activities

Currently the Department of Energy (DOE) has responsibility for clean-up of Vitro-related soils and materials contaminated with radioactive materials in excess of applicable standards. The authority is defined under Public Law #95-604. DOE is in the process of removing the contaminated materials surrounding the Vitro Uranium site in Salt Lake County, which includes the north and south areas of the Denver & Rio Grande Railroad Roper Yards. DOE has retained Morrison-Knudsen Engineers as contractors for the off-site clean up. DOE plans to dispose of all wastes that contain radioactive contamination in excess of applicable standards, even those that may also contain other hazardous constituents at the approved Vitro disposal facility in Clive, Utah.

Site Inspection Activities

On March 5 and 6, 1986, and again on May 12, 1986, a field team composed of the Utah Department of Health and Salt Lake City/County Health Department staff members sampled ground and surface waters at the South area of the Denver & Rio Grande Roper Yard (D & RG South site). Existing monitoring wells were selected for sampling based upon placement (upgradient and downgradient), accessibility, and condition. Surface water samples were collected from upgradient off-site and downgradient locations. This area has been the subject of fairly in-depth study for some time due to the neighboring Vitro UMTRA radioactive contamination site.

Results of the sampling excursions are summarized in the attached Table 1. No hazardous constituents were found in the samples that could be attributed to sources on the site. This data indicated that suspected contamination at the site at the time of sampling was non-existent and did not confirm fears of organic contamination from an on-site source.

According to these analytical results, upgradient shallow ground waters contained more contaminants than did downgradient waters. For example, upgradient shallow well 6B contained small amounts of 2,4-D and 2,4,5-T (parts per billion). Downgradient shallow wells contained no 2,4-D or 2,4,5-T. Analyses of deep well waters produced no results which could be interpreted to indicate any deep aquifer contamination.

Surface water analytical results indicated no significant contamination attributable to the site. Other constituents also showed increases in concentrations. During the sampling, what appeared to be motor oil was found floating on the surface of the stream. Organic contaminants consistent with motor oil origin were found in both upgradient and downgradient samples. The

source of the motor oil appears to be located east of the freeway (I-15), resulting from run-off from the streets.

Attached to this summary are copies of the laboratory analytical sheets and pertinent well logs. No attempt is being made here to interpret the well logs or the analytical data in terms of hydrogeologic influences. The local hydrogeology is already well defined. This report assumes that the hydrogeology of this site is similar to that found at other Jordan River Valley locations. As indicated on pages 82-85 of the final environmental impact statement for Vitro, aquifer interconnection has been demonstrated for this site (see Appendix II). Therefore, the aquifers at D & RG/Vitro may be assumed to function as a single hydrologic unit.

All samples collected at D & RG/Vitro were collected and delivered to the Utah Department of Health according to Bureau Quality Assurance/Quality Control requirements and under appropriate chain of custody. No deviations from the approved Bureau of Solid and Hazardous Waste (BSHW) QAPP, May 1983, were noted.

At this time no further action is being planned by the BSHW. As a result of this Site Inspection, there appears to be no measurable contamination found at this site to warrant further investigation. Any and all oily wastes at this site appear to be destined for removal by the Department of Energy (DOE) Vitro Off-site Cleanup contract.

II. Background and Environmental Setting

The Denver & Rio Grande Western Railroad Yard (D & RGW) is located in South Salt Lake City in Salt Lake County. The D & RGW/Vitro site is the

southern portion of the Roper Yard. This site is bounded by Mill Creek on the north, on the south by 3300 South, on the west by the Vitro Uranium Mill Tailing site, and the east by 500 West near Interstate I-15 (see map, Figures 2 and 3). The Roper Yard lies in the Great Salt Lake Valley, bounded by the Wasatch Mountains on the east and the Oquirrh Mountains to the west. The Great Salt Lake is located northwest of the site, the Jordan River lies west of the Roper Yard with a tributary, Mill Creek, bisecting the yard.

Climate

The Salt Lake Valley is in a semi-arid climate located in the Basin and Range province of the continent. The August 1985 Morrison-Knudsen literature review reports the following information: mean monthly temperatures range from a little under freezing (28°F) in January, to 77°F in July. The average rainfall is about 15 inches per year, reaching a normal monthly high of 2.12 inches in April and monthly low of 0.7 inches in July. The Salt Lake vicinity receives an average of 58.5 inches of snowfall with extremes ranging from 20 to 117 inches. The prevailing wind at the D & RG Roper Yard is from the southeast and south-southeast with a mean speed of 8.7 miles an hour.

Geology

The regional stratigraphy of the Jordan River has been investigated by several government and private firms. In general, all report the following about the geology in and about the D & RG Roper Yard.

There is several hundred feet of unconsolidated to poorly consolidated alluvial and lacustrine deposits of interbedded and highly lenticular sands,

silty sands, silts and clays (thickness estimated to be 2-400 feet). These fine-grained deposits were laid down by the prehistoric Lake Bonneville. Coarser-grained sediments were deposited along the margins of the lake as the level fluctuated (Reconnaissance of the Shallow, Unconfined Aquifer in the Salt Lake Valley, Utah Seiler & Waddell, 1984, Attachment VII).

Field investigations conducted by the Vitro Uranium study and the D & RG study by the D & RG contractors in 1985 (Reidel International) have shown that the upper 50-70 feet of interbedded sediments (fine sand, silty sand, clay, and silt) form an unconfined aquifer system. This unconfined aquifer has a very high water table, often reaching ground surface in early May or June. The unconfined aquifer generally overlies interbedded layers of lower permeability clays and silts. The strata below a depth of approximately 85 feet also consists of interbedded silts, clays, and sands.

Water yields in the shallow aquifer vary due to strata permeabilities. Yields vary from less than one gallon per minutes (gpm) to greater than 10 gpm for fine sands and silty sands. (Morrison-Knudsen, August 1985) The underlying artesian or confined aquifer has sustained yields as high as 300 gpm (USGS well 24 CDC-1 northeast of the Roper/Vitro site).

Monitoring of piezometers at various depths and locations (in both aquifer systems) during a long term pump test conducted at the nearby Vitro site indicated that the sand layers of both aquifers are hydraulically connected. See July 1984, U.S. Dept of Energy Report, "Remedial Actions at the Former Vitro Chemical Company Site" (Attachment II). Figure 2 presents a contour plot of groundwater evaluations and water flow direction devised by Morrison-Knudsen, Engineers for the Roper Yard (August 1985).

Regional Groundwater Quality

The 1984 Vitro report has reported that the background water quality of the two aquifer systems is substantially different. The Bureau of Solid and Hazardous Waste (BSHW) sampling of the two aquifers in early 1986 has also confirmed that both aquifers are different chemically (see Tables 1 and 2 for chemical quality). Groundwater of the shallow unconfined aquifer is characterized by a brackish quality of being highly mineralized. In general, high total dissolved solids of 2000 mg/l or greater are found. Also, high hardness values and associated ion concentration (calcium, potassium, and magnesium) are found along the Jordan River and in the northern and northwest quadrants of the Salt Lake Valley (Steve Jensen and others, Salt Lake County Flood Control Report, 1985). Lowest concentrations of dissolved solids in the shallow aquifer are found in the recharge areas to the east of the D & RG Vitro site, with the greatest concentrations being found in the discharge areas in the northwest part of the valley and along the Jordan River (Seiler & Waddell, Reconnaissance of the Shallow-Unconfined Aquifer in the Salt Lake Valley, Utah, 1984; Attachment VII). Water quality of the shallow unconfined aquifer generally improves with depth.

The deeper, unconsolidated aquifer contains groundwater of drinking quality with concentrations of total dissolved solids around 300 mg/l. The confined aquifer is the principal supply of domestic agricultural and industrial water in the Jordan River Valley. The quality of the lower aquifer is maintained by the higher hydraulic head or upward vertical hydraulic gradient (artesian) between the two aquifers which should not present downward migration of water (contaminants) from the uncontinuous aquifer. Past and current utilization of the confined system in the D & RG area was not

significantly affected by the artesian conditions or upward flow of the aquifer over approximately 80 years of well records and well usage (Morrison-Knudsen, August 1985).

Knowledge of the geologic and hydrologic characteristics of the upper confined aquifer and the lower confined aquifer in the immediate vicinity of the Roper Yard has been greatly expanded by studies done on the Vitro Chemical Company site which lies immediately south of the Roper Yard. In a recent report (July 1984) published by the Department of Energy entitled, "Remedial Actions at the Former Vitro Chemical Company Site South Salt Lake, Salt Lake County, Utah" (Attachment II), well logs and results of numerous pump tests are presented. Average characteristics of the shallow aquifer are:

Upper Aquifer Transmissivity = 7,059 sq. ft./day

Storativity = 0.026

Hydraulic Conductivity = $1.06\ 10^{-1}$ ft./day

Specific Yield = 0.20

Although the values for tests varied around the Vitro site due to changes in geologic configuration of the aquifer, it would be expected that the average value calculated from tests run in the Vitro site would also be valid for the aquifer immediately east and north in the Roper Yard. Similarly, pump tests were made in the deeper confined aquifer on the Vitro site to obtain aquifer characteristics in this lower aquifer and to obtain data about the movement of water between the lower and upper aquifers. Averaged results of the tests were as follows:

Lower Aquifer Transmissivity = 2,676 sq. ft./day

Lower Aquifer Storativity = 8.4×10^{-5}

Vertical Hydraulic Conductivity between Upper and Lower

Aquifer = 3.1×10^{-3} ft./day

Again, the results in the Vitro site could be extrapolated to the Roper Yard with small risk of experiencing any major change in values.

From this data the two aquifer systems beneath the Roper Yard can be viewed as having a flow from the lower aquifer through the confining layer towards the upper aquifer. This would greatly reduce the likelihood that contaminants entering the groundwater system from the surface might migrate down through the confining layer into the lower aquifer system.

In summary, the geologic and hydrologic conditions beneath the adjacent Vitro site have been intensively studied. Due to the proximity of this study and the expected continuity of the geohydrology, physical characteristics of the aquifers beneath the Roper Yard could be assumed to be the same which would eliminate the need for further pump tests in this beginning stage of investigation.

Regional Surface Water Hydrology

The D & RG Roper Yard lies within the Great Basin drainage, a closed basin having no surface water outlet. The Jordan River and its tributaries (Mill Creek) constitute the main surface water drainage for the valley, discharging into the Great Salt Lake. Surface drainage at the D & RG Roper Yard are generally poor and controlled by man-made ditches and Mill Creek. These dug ditches serve as discharge zones for lowing the groundwater surface to enable commercial and railroad development, as well as providing drainage for surface run-on and run-off. The northeast and southeast portions of the Roper Yard is an area of lowlands which exhibit swampy conditions in the spring due to poor

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or non-existent drainage of surface water. This is also an area of groundwater discharge during seasonally high water table conditions.

Mill Creek has a mean average flow of about 10 cubic feet per second (CFS) discharging into the Jordan River west of the Roper Yard (U.S. Department of Energy Report, "Processing Site Characterization Report for the Uranium Mill Tailings Site at Salt Lake City," 1984). Water quality data collection for background studies of the Vitro Uranium site indicates that several primary and secondary drinking water standards are exceeded by the chemical quality of Mill Creek. Some constituents that exceed the standards are lead, cadmium, chromium, silver, iron, manganese, and chloride. Mill Creek is classified by the State of Utah as a 3A stream and the Jordan River is classified as 3C within the area of the D & RG Roper Yard.

Drainage at the Roper Yard is provided by a system of open drainage ditches flowing northward before collecting into certain locations. Because the groundwater table is shallow, less than 8 feet, interaction will occur between surface water and groundwater. The nature of this interaction is seasonally dependent (due to the rise of groundwater in the spring) and thus causes interaction of two water chemistries, surface and groundwater from April to July each year. The D & RG Vitro site is bordered on the north by Mill Creek, flowing west to the Jordan River, and on the east by an intermittent ditch. Two additional drainage ditches are located in the central area of the Roper Yards, but they are north of Mill Creek and not considered in the scope of this report. These two ditches combine together and flow north to the property boundary.

Ownership and History

The land on which the D & RG Roper Yard was constructed is a low-lying area that is seasonally swampy. Very early recollections indicated that the property was previously a part of a farm owned by the Church of Jesus Christ of Latter-Day Saints. This information came from the 1985 Morrison-Knudsen Literature Review of the Roper Yard. The report further states that the main rail lines were installed between 1884-1904. A large parcel of land was purchased by the D & RG Railroad in 1906 and subsequent major parcels in the area were purchased from 1930-1935 by the Denver & Rio Grande Western Railroad. The Roper Yard was constructed around the original single track from 1925 through the late 1940's.

Construction activities at the Roper Yard by D & RG were begun in the early 1930's. The yard was initially used as a repair unit and a stockyard unit. In the 1950's the yard was converted into a diesel servicing facility that has continued to present time.

During this time a variety of waste disposal concepts and cleaning operations have been initiated. This area is detailed in the 1985 Morrison-Knudsen report on the past practices of the D & RG Roper Yard. The detail is not included in the scope of this report as all of the listed activities occurred in the north Roper Yard, north of Mill Creek, and not in the south Roper Yard in the Vitro area.

Landfilling operations occurred throughout D & RG's occupation of the Roper Yard. This was done to raise ground level and to keep all operations and tracks from the soft, swampy ground with high groundwater. The imported fill materials essentially included excavation wastes and construction debris, but it is also believed that unauthorized wastes were deposited at various

times because of unrestricted access to the property. This information is taken from the Reidel International, Inc. report, "Review of Present Information and Recommended Plan of Action for the Roper Yard Project," 1984, and from the 1985 Morrison-Knudsen report. The use of uranium tailings from the nearby Vitro Uranium processing facility were extensively used as fill material. This practice continued between 1950 and 1978.

Since 1975, a number of improvements have been made at the Roper Yard which have helped abate contamination from spills and discharges. These actions all are in the north Roper Yard and not within the scope of this study.

Singed waste disposal practices prior to 1955 are not documented. The following information is based on the recollections of retired D & RG employees and interviews with Morrison-Knudsen and Reidel contractors. The ground between and adjacent to the railroad tracks was swept by hand and sweepings were dumped into low areas of land. Materials in the track sweepings included diesel fuel, oil, sand, axle grease, and materials dropped from railroad cars. During this time, any spilled diesel fuel from engine fueling infiltrated directly onto and into the ground (loose fill material). No division collection devices were in place to capture and/or treat this spilled material. Derailments have occurred throughout the operation of the Roper Yards and on the south area resulting in the loss of varying amounts of fuel and oily materials onto the ground. In the early 1980's all captured waste oil began to be sold to a local recycler. Diesel engine washing was discontinued after 1976. The types of detergents and solvents used in this operation are not known but the activity was north of Mill Creek in the north yard site.

Uranium processing operations at the Vitro chemical company site stopped in 1970. In addition to having reproductive windblown dust and materials from Vitro and its operation, considerable data has been collected over the area the Vitro Uranium Company occupied in an assessment of the possible extent of radioactive contamination. Other water quality data has been collected by the U.S. Geological Survey. All the data suggests that the groundwater generally moves in a north-northwest direction towards the Jordan River.

The Vitro study also showed higher concentrations of various heavy metals in and about the Vitro site when compared to local surrounding USGS wells. This may indicate contamination may be a result of past activities at the site, or these may be characteristic of the shallow alluvial aquifer in the Jordan River Valley.

QA/QA Procedures

The purpose of a quality control plan is to assure activities from gathering and evaluating historical data, through site characterization, sample acquisition, processing, analyzing, data review, and reporting are conducted in a planned and systemic manner to provide adequate confidence that the resulting data are valid and have integrity and are retrievable.

Samples at the D & RG Vitro site were collected and handled by persons trained, qualified, and experienced in the collection of hazardous waste samples using field techniques described by EPA and the approved BSHW QAPP, May 1983. Safety, cleanliness, and attention to methods were stressed in the field. Sampling Plans and Health and Safety Plans were prepared and reviewed in advance of the field activities. All methodology and controls utilized will assure the validity, integrity, and protection of the generated data.

This process includes, but is not limited to, the following areas of concern: surface water sampling, groundwater sampling, monitoring well construction and evaluation, and sediment collection and analyses.

All field activities have been accomplished in accordance with the approved BSHW QAPP and as outlined in the approved QA/QC (Quality Assurance/Quality Control) plans, as well as current EPA guidelines.

The CERCLA staff have developed a draft field QAPP as a supplement to the approved QAPP (May 1983) for the PA/SI program. This plan is attached (see Attachment VI). This plan will support the groundwater and surface water sampling at the D & RG Roper Yard for the collection of radiation samples. All sampling techniques, devices, and containers have been extracted from EPA's protocol and referenced protocol in the BSHW approved QAPP. The sampling plan outlining the field activities at the D & RG site is also attached (see Attachment VIII).

All quality control data generated at the laboratory will be subjected to the approved data validation plan of the State Health Laboratory as well as outlined quality control checks as mandated by the laboratory's approved QAPP plan (February 1983). This data will include spike-sample recoveries, duplicate runs, referencing with standard values, and blank analysis. This data will be reviewed by the laboratory supervisor, Bureau director, and the laboratory QA/QC person in the Laboratory Improvement Section before submitting the data to the program manager.

Field QA/QC will be obtained by submitting blanks, methods blanks, duplicate samples, and replicate samples.

III. Field Activities

Field activities followed the guidelines proposed in the sampling plan for the Vitro UMTRA Project/D&RGW lower Roper Yard submitted in February 1985. Changes in the sampling plan brought about by field conditions (and observations) are discussed in the subsections dealing with sample collection and field observations.

Pre-site Inspection Field Checks of Existing Wells

Field inspections of existing wells were conducted in December 1985 and February 1986 to determine the exact locations and conditions of the wells. Wells to be utilized in this investigation were constructed by the U.S. Department of Energy in Spring 1983 for the Vitro UMTRA Project Environmental Impact Statement, 1984. Well log information for most of the wells is provided in Attachment III. Shallow and deep wells (10' to 135') were used. Seventeen of the wells were found to be suitable for sampling based on condition and location. Four well points which also exist along the lower Roper Yard and Vitro site boundary were selected for near-surface water grab sampling. Eight surface water sampling points were also preliminarily identified.

Sample Collection

Ten ground water samples from the wells were collected with one Utah State Health Lab split. Two ground water grab samples from shallow well points and two surface water samples with a sediment sample at each of the two surface water sampling points were collected. One blank was submitted to the

Utah State Health Lab for anlaysis that was kept throughout the well and surface water sampling and under the same conditions. Fewer samples than proposed were actually taken because the lab was overbooked with sampling for EPA on the Wasatch Chemical site removal action. Sampling points were selected to try to ensure that data represented current conditions. All locations are shown in Figure 4.

Groundwater samples were collected on March 5, 6, 7, and 10, and May 12, 1986. Surface water and accompanying sediment samples were collected on March 6, 1986. Weather conditions on March 5 - 7 and May 12 were sunny and mild. March 10 was mostly cloudy, windy and cold.

All samples collected were at a low hazard; Level D protection was used.

Field data for temperature of most of the wells was recorded at the time of sample collection. The total current depth of each well and the depth from ground surface to the static water level in each of the wells was also recorded at this time. The field measurement data for the wells is provided in Attachments III and V.

Sample bottles were prepared by the Utah State Health Laboratory (SHL). Nitric acid was used as a preservative in bottles to be analyzed for radiologics and total metals. No preservative was used in bottles to be analyzed for organics or for total chemistry which included dissolved metals.

1. Groundwater Samples

A total of 12 groundwater samples were collected. The background ground water samples were taken from Wells #1 and 6B (116' and 17.8' respectively) located approximately 800' southwest of the site. After purging the wells two casing volumes, the samples were collected. Sampling methodology for the wells consisted of measuring well and

static water level depths (some water temperatures), purging the wells two calculated casing volumes, allowing the wells to recharge, and then collecting the sample. Purging and sampling were done with a one quart stainless steel bailer attached to a dedicated nylon rope.

The blank and nine groundwater samples, two from the well points and seven from wells including a split of well #1, were analyzed using a priority pollutant scan. The two surface water samples were also priority pollutant scanned (organic method #624 and #625). All 16 samples were analyzed for total metals, total chemistry, radiologics (including Gross alpha and Radium +226 in pCi/l), and for specific conductance. The results are given in Tables 1, 2, and 3.

2. Surface Water Samples

One upstream background surface water sample and one downstream surface water sample were collected from the ditch system running through D&RGW's lower Roper Yard. Their locations are shown on the map in Figure 4.

Both surface water samples were collected directly into SHL prepared sampling bottles and analyzed for priority pollutant scan, total metals, total chemistry, specific conductance and radiologics. The background surface water sample location S1 had standing oil and water observed in the culvert just west and downstream of the sampling point. Although sampling was upstream from observed standing oil, "floaters" were observed in the flow at the sampling point. At the second sampling point, S2, evidence of oil (visual, sheen, etc.) were also observed in the surface water. Results of the sampling are shown in Table 3.

3. Surface Sediments

Sediment samples were collected at both of the surface water sampling locations. Material at both locations evidenced an oily smell and globules of oily material prevalent throughout the surface sediments. Samples were collected directly into one quart, wide-mouth Mason jars previously cleaned and DI rinsed and properly lidded before and after sampling.

Field Observations

The condition of the existing wells was generally good. Wells #1, 7A, 2, 8A, 3, 5, 9B, and 11A all had 6" metal protective casings w/locked lids in generally good shape with a 3" PVC well inside, most of which were capped. Well completion data, including screened interval, is given in Attachment IV. Well 6B had an overturned well casing and the 3" PVC pipe was bent to almost ground level. We had to break the PVC at ground level to insert the bailer. A collar was wrapped around the pipe before purging and sampling to avoid dirt from falling in. All wells were bailed two casing volumes or bailed dry. Well #6B showed slightly yellowed water at first, but clean water was bailed. At Well #1, a sulphur (H_2S) smell was found to be coming from the well. Wells #2, #3, and #5 were wells flowing by artesian pressure after uncapping. Once opened, well #2 showed continually the presence of an oily film or oily globules. Well #5 was not able to be sounded due to the strong artesian pressure. Organic matter was observed coming from well #3. The Dames and Moore Well V-FD had a 6" protective metal casing with a 2" PVC pipe and a cap fitted with a valve for ease of evacuation and sampling. This well was not sounded due to cap. Rust colored water was drawn from well #9B, turning

almost to orange as the well recharged. Well #11A was only slightly discolored with a yellowish tint.

Observations of surface water and sediments are described in Section B. 2 and 3.

Well points #3 (DP3) and 8 (Dp-8) were 2" stainless steel pipes with caps. A PVC bailer was used for purging and sampling the two well points. The water being evacuated looked dirty and turbid. The well point is located in a ditch by the fence line and was in about 5" of standing water. As the bailer was lowered, bubbles came up from the bottom contact of the pipe with ground surface, indicating a bad seal and possible influence of surface water on sample. Both well points are located in the same area that a Morrison-Knudsen study shows to have material in the North area of Roper Yard that have radiation count at 1066 pCi/gm.

Quality Control

1. Background Samples

The groundwater samples of Wells #6B and #1 and the surface water sample at S1 were collected to establish off-site concentrations of parameters of interest to this investigation.

2. Duplicates and Blank Samples

A duplicate groundwater sample was collected from well #1. A blank sample was taken using deionized water in all the types of containers used for this sampling, and the blank was kept in a locked cooler used daily for other samples during the sampling period March 5-7, 1986.

3. Sample Containers and Preservation

The sample bottles used in this investigation were supplied by the Utah State Health Laboratory. Per sample, there were two 1,600 ml plastic

radiologic containers, with nitric acid as preservative; one 40 ml plastic specific conductivity bottle, no preservative, and one 1,600 ml plastic total chemistry bottle with no preservative used per sample. Also, 250 ml plastic total metals bottles with nitric acid as preservative were used. One amber glass VOA bottle and one 1-gallon amber glass container for organics were also used for ten of the samples.

4. Equipment Decontamination

Sample collection equipment was decontaminated prior to and after each use by the following procedure: Alconox and tap water wash, tap water rinse, final triple rinse with deionized water. Latex gloves were used, a new pair for each sample. New nylon rope was attached to the bailer for withdrawing each sample as well.

Sample Documentation

A bound field log with photos was kept of the entire sampling procedure. Collected samples were handled in strict accordance with chain-of-custody protocol prescribed.

IV. Data Interpretation and Analysis

The inorganic analytical summary and interpretation of chemical results obtained from the Denver & Rio Grande Western Railroad (D & RGW) South site inspection are listed in Tables 1, 2, and 3. Duplicate samples (quality assurance) are also listed. D & RGW Railroad's duplicate results from split sampling in May are shown in Table 4.

When background (upgradient) concentrations are compared to site samples (downgradient), no significant release to either surface water or to ground water can be documented. The background (upgradient) replicate samples of the shallow well 6B are of the sample chemical nature and concentration. Even though two samples were collected on different dates (3/5/86 and 5/12/86), thee duplicate samples of the background (upgradient) deeps wells showed good reproductability even though the duplicate sample was a "blind" submittal to the State Health Laboratory.

All data listed in Tables 1, 2, and 3 were reviewed and validated by the State Heath Laboratory, Laboratory Improvement Section (QA/QC), as well as the Bureau of Solid and Hazardous Waste QA Officer. All samples were taken and analyzed in accordance with methods and protocols outlined in the currently approved QA/QC document generated by the Bureau of Solid and Hazardous Waste QAPP dated May 1986.

Subsequent analysis of the organic constituents as listed in EPA methods #608, 624, 625, and the gas chromatograph methods outlined in Section 8 of EPA document SW 842, 2nd Edition, July 1982, for regulated organic solvents and pesticides/herbicides revealed no organic contamination problem that attributed directly to the D & RGW South Roper yards. The results of the above organic analysis covers all of the organic constituents of concern as determined by EPA's "Priority Pollutants."

All organic constituents of concern that was found were also found in the "blank analysis", indication that the laboratory handling (extraction and glassware) may be a source of low concentrations (ppb) of benzene, methylene chloride, hexane, and tricholorethane. Other identified organic constituents are below the established minimum detection limits for that given parameter.

All other organic compounds identified and quantified were not priority pollutants, or, if a contaminant of concern was found, these concentrations are so low that an estimation of concentration had to be made by the laboratory. These are very suspect and not reliable, as it is very difficult to identify and quantify a contaminant below those limits (minimum detection limits) established for approved quality work as quality defined.

Based upon sampling results, it appears that the D & RGW South site (Vitro) has not contributed any significant contamination to the surface water currently on-site, nor to two locations (upper and lower) within the aquifer of concern. The purpose of this site inspection was to evaluate both the surface water on-site and the aquifer of concern to ascertain if contamination was present on the site that could significantly impacted either body of water. A careful review of both inorganic and organic parameters measured during this site inspection revealed that no contamination was found that can be attributed to the site. It is interesting to note that "total suspended solids" had no effect on the metals identity and concentration, as both totals and dissolved metals were analyzed. The dissolved metals were filtered and then preserved, while the total metals were immediately preserved and then digested and analyzed. Repeat samples taken in May 1986 showed virtually no change when compared to the March 1986 samples. All duplicate and replicate samples were within approved acceptable variance as outlined by the State Health Laboratory's approved QAPP, March 1986.

It is recommended that no further action be taken at D & RGW South Roper yard (Vitro), as no contamination could be documented or identified. All waste (organic and inorganic) at the site appears to be a "non-priority pollutant" and appears to be destined for removal any way in the Department of

Energy (DOE) off-site cleanup of the Vitro Uranium Company. All organic oily soils found during this investigation are contaminated far above the existing standards for low-level radiation and are scheduled to be removed from this site.

The radiation cleanup scheduled for this site will be handled by DOE and its contractors in the off-site remedial action cleanup. DOE and D & RGW have already initiated action for cleanup. This cleanup by DOE should include contaminant sources at the D & RG South area. Therefore, it is recommended that no future action be taken at this site at this time, pending a review of the cleanup efforts.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 1 - SITE LOCATION AND INSPECTION INFORMATION

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. SITE NAME AND LOCATION

01 SITE NAME (Legal, common or descriptive name of site)
Denver & Rio Grande Western Railroad -- South Roper Yard (Vitro)

02 STREET, ROUTE NO. OR SPECIFIC LOCATION IDENTIFIER: 2300 South 600 West
03 CITY: Salt Lake City

04 STATE	05 ZIP CODE	06 COUNTY	07 COUNTY CODE	08 CONG DIST.
Utah	84119	Salt Lake	035	02

09 COORDINATES
LATITUDE: 40 43 30.0
LONGITUDE: 111 54 25.0

10 TYPE OF OWNERSHIP (Check one)
X A. PRIVATE B. FEDERAL: ____ C. STATE
D. COUNTY E. MUNICIPAL F. OTHER: ____
G. UNKNOWN

III. INSPECTION INFORMATION

01 DATE OF INSPECTION: 03/12/86

02 SITE STATUS
X A. ACTIVE
B. INACTIVE

03 YEARS OF OPERATION
1906 (1) — BEGINNING YEAR
current — ENDING YEAR
____ UNKNOWN

01 AGENCY PERFORMING INSPECTION (Check all that apply)
A. EPA B. EPA CONTRACTOR ____ (Name of Firm)
C. MUNICIPAL D. MUNICIPAL CONTRACTOR ____ (Name of Firm)
E. X STATE F. STATE CONTRACTOR ____ (Name of Firm)
G. OTHER: Salt Lake City/Co Health (Specify)

05 CHIEF INSPECTOR	06 TITLE	07 ORGANIZATION	08 TELEPHONE NO.
Jim Salmon	Environ Health Scientist	BSHW	801-538-6170

09 OTHER INSPECTORS	10 TITLE	11 ORGANIZATION	12 TELEPHONE NO.
Joel Hebdon	Engineering Geologist	BSHW	801-538-6170
Michelle Doyon	Radiation Tech	Radiation Cntrl	801-535-7500
Melvin Muir	Soil Scientist	SLC/Co Health	801-530-7500
Ted Diamant	Environ. Scientist	SLC/Co Health	801-530-7500

13 SITE REPRESENTATIVES INTERVIEWED	14 TITLE	15 ADDRESS	16 TELEPHONE NO.
LeWay Fjeldahl		1515 Arapahoe 1 Park Central Suite 1087 P.O. Box 5488 Denver, CO 80217	303-895-2444

17 ACCESS GAINED BY (Check one)	18 TIME OF INSPECTION	19 WEATHER CONDITIONS
X PERMISSION WARRANT	0800	Clear, warm

IV INFORMATION AVAILABLE FROM

01 CONTACT	02 OF (Agency/Organization)	03 TELEPHONE NUMBER
Jim Salmon	Health/Bur Solid & Haz Waste	801-538-6170

04 PERSON RESPONSIBLE FOR SITE INSPECTION FORM	05 AGENCY	06 ORGANIZATION
Jim Salmon	BSHW	Health

07 TELEPHONE NO.	08 DATE
801-538-6170	June 12, 1986

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 2 - WASTE INFORMATION

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. WASTE STATES, QUANTITIES, AND CHARACTERISTICS

01 PHYSICAL STATES (Check all that apply)

- A. SOLID
- X B. POWDER, FINES
- C. SLUDGE
- E. SLURRY
- F. LIQUID
- G. GAS
- X D. OTHER mine tailings from vitro uranium co. (Specify)

02 WASTE QUANTITY AT SITE
(Measures of waste quantities must be independent)
TONS
CUBIC YARDS none found
NO. OF DRUMS

Mine tailings were landfilled at the Roper Yard; also the Roper Yard was subject to wind-blown material. (1)

03 WASTE CHARACTERISTICS (Check all that apply)

- A. TOXIC
- B. CORROSIVE
- X C. RADIOACTIVE
- D. PERSISTENT
- E. SOLUBLE
- F. INFECTIOUS
- G. FLAMMABLE
- H. IGNITABLE
- I. HIGHLY VOLATILE
- J. EXPLOSIVE
- K. REACTIVE
- L. INCOMPATIBLE
- M. NOT APPLICABLE

III. WASTE TYPE

CATEGORY	SUBSTANCE NAME	01 GROSS AMOUNT	02 UNIT OF MEASURE	03 COMMENTS
SLU	X SLUDGE	unknown		
OLW	X OILY WASTE	unknown		
SOL	SOLVENTS			
PSD	PESTICIDES			
OCC	OTHER ORGANIC CHEMICALS			
IOC	INORGANIC CHEMICALS			
ACD	ACIDS			
BAS	BASES			
MES	HEAVY METALS	None found.		

IV. HAZARDOUS SUBSTANCES (See Appendix formost frequently cited CAS Numbers)

01 CATEGORY	02 SUBSTANCE NAME	03 CAS NUMBER	04 STORAGE/DISPOSAL METHOD	05 CONCENTRATION	06 MEASURE OF CONCENTRATION
None found. (2)					

V. FEEDSTOCKS (See Appendix for CAS Numbers)

CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER	CATEGORY	01 FEEDSTOCK NAME	02 CAS NUMBER
FDS	Uranium ore (Vitro Uranium Company)		FDS		
FDS			FDS		
FDS			FDS		
FDS					

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

(1) Morrison-Knudsen Engineers, Literature Review for D & RG Railroad Roper Yard, August 1985.
(2) Chemical Data Sheets, BSHW Files, March 1986.

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EPA POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. HAZARDOUS CONDITIONS AND INCIDENTS

01 X A. GROUNDWATER CONTAMINATION 02 OBSERVED (DATE:_____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: 82,980 04 NARRATIVE DESCRIPTION
Samples were collected. Persons living withint a three-mile radius (82,980) using aquifer as drinking water source. However, sampling from Spring 1986 showed that no indication of contamination has been found.

01 B. SURFACE WATER CONTAMINATION 02 OBSERVED (DATE:_____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED:_____ 04 NARRATIVE DESCRIPTION

No recorded history for the south site. Samples were collected.

01 C. CONTAMINATION OF AIR 02 OBSERVED (DATE:_____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED: _____ 04 NARRATIVE DESCRIPTION

No recorded history--unknown and not sampled.

01 D. FIRE/EXPLOSIVE CONDITIONS 02 OBSERVED (DATE:_____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED:_____
04 NARRATIVE DESCRIPTION

No recorded history or potential found.

01 E. DIRECT CONTACT 02 OBSERVED (DATE:_____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED:_____ 04 NARRATIVE DESCRIPTION

No recorded history or potential found.

01 X F. CONTAMINATION OF SOIL 02 OBSERVED (DATE:_____) X POTENTIAL ALLEGED
03 AREA POTENTIALLY AFFECTED: 100 acres 04 NARRATIVE DESCRIPTION
Disposal of radioactive tailings from Vitro Uranium Co. (3) However, these tailings are destined for off-site removal from the Roper Yards as a result of DOE's off-site cleanup of the Vitro Uranium Company.

01 G. DRINKING WATER CONTAMINATION 02 OBSERVED (DATE:_____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED:_____
04 NARRATIVE DESCRIPTION
No recorded history; however, the potential exists as both aquifers are connected. Again, sampling has shown that no contamination exists from the BSHW sampling in Spring 1986.

01 H. WORKER EXPOSURE/INJURY 02 OBSERVED (DATE:_____) POTENTIAL ALLEGED
03 WORKERS POTENTIALLY AFFECTED:_____ 04 NARRATIVE DESCRIPTION

No recorded history.

01 I. POPULATION EXPOSURE/INJURY 02 OBSERVED (DATE:_____) POTENTIAL ALLEGED
03 POPULATION POTENTIALLY AFFECTED:_____ 04 NARRATIVE DESCRIPTION

No recorded history.

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EPA POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 3 - SITE INFORMATION AND ASSESSMENT

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. HAZARDOUS CONDITIONS AND INCIDENTS (Continued)

01 J. DAMAGE TO FLORA 02 OBSERVED (Date:_____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

No recorded history at the south site.

01 K. DAMAGE TO FAUNA 02 OBSERVED (DATE:_____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

No recorded history. No observations of fauna on-site.

01 L. CONTAMINATION OF FOOD CHAIN 02 OBSERVED (DATE:_____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

No recorded history of food chain crops on-site.

01 X M. UNSTABLE CONTAINMENT OF WASTES 02 OBSERVED (Date:_____) POTENTIAL X ALLEGED
(Soils/runoff/standing liquids/leaking drums)
03 POPULATION POTENTIALLY AFFECTED:_____
04 NARRATIVE DESCRIPTION
Radioactive tailings used as landfilling for Roper Yard.

01 N. DAMAGE TO OFFSITE PROPERTY 02 OBSERVED (DATE:_____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION

No recorded history by D & RG Western Railroad.

01 O. CONTAMINATION OF SEWERS, STORM DRAINS, WWTPs 02 OBSERVED (DATE:_____) POTENTIAL ALLEGED
04 NARRATIVE DESCRIPTION
No recorded history.
A storm drain runs from east to west across site and potential exists.

01 X P. ILLEGAL/UNAUTHORIZED DUMPING 02 OBSERVED (DATE:_____) POTENTIAL X ALLEGED
04 NARRATIVE DESCRIPTION
Spillage from rail cars from 1900-1986. (3) This has only been documented at the North site.

05 DESCRIPTION OF ANY OTHER KNOWN, POTENTIAL OR ALLEGED HAZARDS
Unknown at this time.

III. TOTAL POPULATION POTENTIALLY AFFECTED: 82,980 population within 3-mile radius

IV COMMENTS

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

(1) Seiler, R. L. & Waddell, K. M.; 1984 Reconnaissance of the Shallow-Unconfined Aquifer in the Salt Lake Valley, Utah; U.S.G.S. #83-4272.
(2) 1984 Census Tract Data for Area Within Three-Mile Radius of D & RG/Vitro Site.
(3) Morrison-Knudsen Engineers, Literature Review for D & RG Western Railroad Roper Yard, August 1985.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION
PART 4 - PERMIT AND DESCRIPTIVE INFORMATION

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. PERMIT INFORMATION

01 TYPE OF PERMIT ISSUED	02 PERMIT NO.	03 DATE ISSUED	04 EXPIRATION DATE	05 COMMENTS
A. NPDES	(1)(2) None issued.			
B. UIC	(1)(2) None.			
C. AIR	(1)(2) None.			
D. RCRA	(1)(2) Haz Waste Generator Only			
E. RCRA INTERIM STATUS	(1) None			
F. SPCC PLAN		(1)(2) 12/75	Ongoing	LeNay Fjeldhal 6/86
G. STATE (Specify)				
H. LOCAL (Specify)	(1)(3) Pretreatment Permit from So. Salt Lake Waste Water Rec Plnt			
I. OTHER (Specify)				
J. NONE				

III. SITE DESCRIPTIONS

01 STORAGE/DISPOSAL (Check all that apply)	02 AMOUNT	03 UNIT OF MEASURE	04 TREATMENT (Check all that apply)
A. SURFACE IMPOUNDMENT			A. INCINERATION
B. PILES			B. UNDERGROUND INJECTION
C. DRUMS, ABOVE GROUND			C. CHEMICAL/PHYSICAL
D. TANK, ABOVE GROUND			D. BIOLOGICAL
E. TANK, BELOW GROUND			E. WASTE OIL PROCESSING
X F. LANDFILL (Tailings)	unknown	unknown cu yd	F. SOLVENT RECOVERY
G. LANDFARM			G. OTHER RECYCLING/RECOVERY
H. OPEN DUMP			H. OTHER (Specify)
I. OTHER (Specify)			

05 OTHER
A. BUILDINGS ON SITE
None

06 AREA OF SITE
80 (Acres)

07 COMMENTS
Landfilling of radioactive tailings occurred from 1950-1970. (3)

IV. CONTAINMENT

01 CONTAINMENT OF WASTES (Check one)
A ADEQUATE, SECURE B MODERATE C INADEQUATE, POOR D INSECURE, UNSOUND, DANGEROUS
No waste present or found.

02 DESCRIPTION OF DRUMS, DIKING, LINERS, BARRIERS, ETC.

No drums, diking, liners, or barriers on this site.

V. ACCESSIBILITY

01 WASTE EASILY ACCESSIBLE: YES X NO

02 COMMENTS
No waste found at this site.

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

(1) Review of Present Information and Plan of Action for the Roper Yard, D & RG, September 1984.
(2) "Literature Review for the D & RG Western Railroad," Morrison-Knudsen Engineers, August 1985.
(3) Soil and Groundwater Investigations, D & RG Western Railroad, June 1986.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. DRINKING WATER SUPPLY

01 TYPE OF DRINKING SUPPLY (Check as applicable)

	SURFACE	WELL
COMMUNITY	A.	B. X
NON-COMMUNITY	C.	D.

02 STATUS

ENDANGERED	AFFECTED	MONITORED
A.	B.	C. X
D.	E.	F.

03 DISTANCE TO SITE
A. _____ (mi)
B. less 1.0 (mi)
Bolinder Well

III. GROUNDWATER

01 GROUNDWATER USE IN VICINITY (Check one)
A. ONLY SOURCE FOR DRINKING
C. COMMERCIAL, INDUSTRIAL, IRRIGATION
D. NOT USED, UNUSEABLE
X B. DRINKING (Other sources available) COMMERCIAL, INDUSTRIAL, IRRIGATION (No other water sources available)

Bolinder Well

02 POPULATION SERVED BY GROUNDWATER 82,980
Population within 3-mile radius of site served by public wells from Salt Lake County Water Conservancey District.

03 DISTANCE TO NEAREST DRINKING WATER WELL less than 1.0 (mi)
Bolinder Well

04 DEPTH TO GROUNDWATER less than 5.0 (ft)
05 DIRECTION OF GROUNDWATER FLOW North-northwest
06 DEPTH TO AQUIFER OF CONCERN 5.0 (ft)
Literature Review for D & RG Western Railroad Roper Yard, August 1985.

07 POTENTIAL YIELD OF AQUIFER unknown (gpd)
(No known aquifer tests.)

08 SOLE SOURCE AQUIFER
X YES
NO
Transmissivity ranges between 7,000 and 20,000 sq ft/day. UT Div Water Rights, Identification & Characterization of Aquifers in Utah, July 1981.

09 DESCRIPTION OF WELLS (Including useage, depth, and location relative to population and buildings)
Public drinking water well, 1000 feet deep yielding 450 gallons/minute.

10 RECHARGE AREA
YES
NO
COMMENTS

11 DISCHARGE AREA
X YES
NO
COMMENTS

U.S.G.S. Tech Report #32, Ground Water Discharges to Jordan River.

IV. SURFACE WATER

01 SURFACE WATER USE (Check one)
A. RESERVOIR, RECREATION DRINKING WATER SOURCE
B. IRRIGATION, ECONOMICALLY IMPORTANT RESOURCES
X C. COMMERICAL, INDUSTRIAL
D. NOT CURRENTLY USED

Jordan River classified 3-A by State of UT. All surface water onsite is a tributary of the Jordan River.

02 AFFECTED/POTENTIALLY AFFECTED BODIES OF WATER

NAME:	AFFECTED	DISTANCE TO SITE
Jordan River	No	1.0 (mi)
		(mi)
		(mi)

(1) State of Utah, Dept Nat Resources, Division of Water Rights, "Water Use Data for Public Water Suppliers," 1981.
(2) D.N.R., "Water Resources of Salt Lake County, Utah," Tech. Pub. #31, 1971.
(3) Identification & Characterization of Aquifers in Utah, Utah Division of Water Rights, July 1981.

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EPA POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 5 - WATER, DEMOGRAPHIC, AND ENVIRONMENTAL DATA

I. IDENTIFICATION
01 STATE 02 SITE NO.

V. DEMOGRAPHIC AND PROPERTY INFORMATION

01 TOTAL POPULATION WITHIN

ONE (1) MI. OF SITE	TWO (2) MI. OF SITE	THREE (3) MI. OF SITE
A. 4,517	B. 30,727	C. 82,980
No. of persons	No. of persons	No. of persons

See census data attached.

02 DISTANCE TO NEAREST POPULATION
220 yards (mi)

03 NUMBER OF BUILDINGS WITHIN TWO (2) MILES OF SITE
less than 7500

Residents living on the south site of 3300 South and west of I-15.

04 DISTANCE TO NEAREST OFF-SITE BUILDING
220 yards (mi)

Utah Uranium Company and structures for Utah Bureau of Radiation Control.

05 POPULATION WITHIN VICINITY OF SITE (Provide narrative description of nature of population within vicintiy of site, e.g., rural, village densely populated urban area)
The area surrounding the Roper/Vitro site is composed of light industrial, commerical, and residences. The vicinity is heavily populated by commercial and industrial operations from workers.

VI. ENVIRONMENTAL INFORMATION

01 PERMEABILITY OF UNSATURATED ZONE (Check one)
A. 10^{-6} - 10^{-8} cm/sec B. 10^{-4} - 10^{-6} cm/sec X C. 10^{-4} - 10^{-3} cm/sec
D. GREATER THAN 10^{-3} cm/sec

See Morrison-Knudsen August 1985 report.

02 PERMEABILITY OF BEDROCK (Check one)
A. IMPERMEABLE (Less than 10^{-6} cm/sec) B. RELATIVELY IMPERMEABLE (10^{-4} - 10^{-6} cm/sec) C. RELATIVELY PERMEABLE (10^{-2} - 10^{-4} cm/sec)
D. VERY PERMEABLE (Greater than 10^{-2} cm/sec)

No bedrock--unconsolidated silts and sands (Ut Division of Water Rights).

03 DEPTH TO BEDROCK	04 DEPTH OF CONTAMINATED SOIL ZONE	05 SOIL pH	06 NET PRECIPITATION
unknown (ft)	unknown (ft)	8.0-9.0	17 (in)

07 ONE YEAR 24 HOUR RAINFALL	08 SLOPE SITE SLOPE	DIRECTION OF SITE SLOPE	TERRAIN AVERAGE SLOPE
2.21 (in)	1 %	westerly	1 %

09 FLOOD POTENTIAL
SITE IS IN N/A YEAR FLOODPLAIN

10 SITE IS ON BARRIER ISLAND, COASTAL HIGH HAZARD AREA, RIVERINE FLOODWAY

11 DISTANCE TO WETLANDS (5 acre minimum)
ESTUARINE A. None (mi) OTHER B. None (mi)

12 DISTANCE TO CRITICAL HABITAT (of endangered species) None (mi)
ENDANGERED SPECIES: None

13 LAND USE IN VICINITY

DISTANCE TO: COMMERCIAL/INDUSTRIAL	RESIDENTIAL AREAS: NATIONAL/STATE PARKS, FORESTS, OR WILDLIFE RESERVES	AGRICULTURAL LANDS PRIME AG LAND	AG LAND
A. .05 (mi)	B. 75 (mi)	C. 1 (mi)	D. 1/2 (mi)

14 DESCRIPTION OF SITE IN RELATION TO SURROUNDING TOPGRAPHY
Low-lying valley floor caused by Lake Bonneville sediments collection and flat valley between two mountain ranges (Oquirrh and Wasatch).

VII. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

(1) Soil Survey of Utah, Salt Lake Area, USUA SCS, April 1974.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 6 - SAMPLE AND FIELD INFORMATION

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. SAMPLES TAKEN

SAMPLE TYPE	01 NUMBER OF SAMPLES TAKEN	02 SAMPLES SENT TO	03 ESTIMATED DATE RESULTS AVAILABLE
GROUNDWATER	10	State Health Lab	7/86
SURFACE WATER	2	State Health Lab	7/86
WASTE	0		
AIR	0		
RUNOFF	2	(see surface water samples)	7/86
SPILL	0		
SOIL	0		
VEGETATION	0		
OTHER	14	Ground & Surface Water Radiologics	7/86

III. FIELD MEASUREMENTS TAKEN

01 TYPE 02COMMENTS

Depth to ground water measurements, air temp, well sounding. (2)

IV. PHOTOGRAPHS AND MAPS

01 TYPE GROUND X AERIAL X

02 IN CUSTODY OF UT Bureau Solid & Haz Waste Files
(Name of organization or individual)

03 MAPS
X YES
NO

04 LOCATION OF MAPS
Utah Bureau of Solid and Hazardous Waste Site Files

V. OTHER FIELD DATA COLLECTED (Provide narrative description)

Field observations noted in fieldbook (see attachments).

VI. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

(1) Morrison-Knudsen, Literature Review for D & RG Roper Yards, August 1985.
(2) BSHW Field Logs, March 1986.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 7 - OWNER INFORMATION

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. CURRENT OWNER(S)			PARENT COMPANY (If applicable)		
01 NAME Denver & Rio Grande Western Railroad	02 D+B NUMBER		08 NAME Same	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD#, etc.) 2300 South 600 West	04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD#, etc.) Same	11 SIC CODE	
05 CITY Salt Lake City	06 STATE Utah	07 ZIP CODE 84119	12 CITY Same	13 STATE	14 ZIP CODE
01 NAME	02 D+B NUMBER		08 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD#, etc.)	11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
01 NAME	02 D+B NUMBER		08 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD#, etc.)	11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE
01 NAME	02 D+B NUMBER		08 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE		10 STREET ADDRESS (P.O. Box, RFD#, etc.)	11 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	12 CITY	13 STATE	14 ZIP CODE

III. PREVIOUS OWNER(S) (List most recent first)			IV. REALTY OWNER(S) (If applicable, list most recent first)		
01 NAME Same as above.	02 D+B NUMBER		01 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE
01 NAME	02 D+B NUMBER		01 NAME	02 D+B NUMBER	
03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE		03 STREET ADDRESS (P.O. Box, RFD#, etc.)	04 SIC CODE	
05 CITY	06 STATE	07 ZIP CODE	05 CITY	06 STATE	07 ZIP CODE

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

(1) Utah Bureau Solid & Haz Waste Management Files.
(2) Morrison-Knudsen August Literature Review.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 8 - OPERATOR INFORMATION

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. CURRENT OPERATOR (Provide if different from owner)

01 NAME: Denver & Rio Grande Western Railroad
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD#, etc.): 2300 South 600 West
04 SIC CODE: 4011
05 CITY: Salt Lake City
06 STATE: Utah
07 ZIP CODE: 84119
08 YEARS OF OPERATION: 80 years
09 NAME OF OWNER:

OPERATOR'S PARENT COMPANY (If applicable)

10 NAME: Same
11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD#, etc.): Same
13 SIC CODE:
14 CITY: Same
15 STATE:
16 ZIP CODE:

III. PREVIOUS OPERATOR(S) (List most recent first; provide only if different from owner)

01 NAME: N/A
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD#, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:
08 YEARS OF OPERATION:
09 NAME OF OWNER DURING THIS PERIOD:

PREVIOUS OPERATOR'S PARENT COMPANIES (If applicable)

10 NAME:
11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD#, etc.):
13 SIC CODE:
14 CITY:
15 STATE:
16 ZIP CODE:

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD#, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:
08 YEARS OF OPERATION:
09 NAME OF OWNER DURING THIS PERIOD:

10 NAME:
11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD#, etc.):
13 SIC CODE:
14 CITY:
15 STATE:
16 ZIP CODE:

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD#, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:
08 YEARS OF OPERATION:
09 NAME OF OWNER DURING THIS PERIOD:

10 NAME:
11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD#, etc.):
13 SIC CODE:
14 CITY:
15 STATE:
16 ZIP CODE:

IV. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

(1) Bureau of Solid & Hazardous Waste Management Files.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 9 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. ON-SITE GENERATOR

01 NAME: Denver & Rio Grande Western Railroad
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD#, etc.): 2300 South 600 West
04 SIC CODE: 4011
05 CITY: Salt Lake City
06 STATE: Utah
07 ZIP CODE: 84119

III. OFF-SITE GENERATOR(S)

01 NAME: Vitro Uranium Company
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD#, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

10 NAME:
11 D+B NUMBER:
12 STREET ADDRESS (P.O. Box, RFD#, etc.):
13 SIC CODE:
14 CITY:
15 STATE:
16 ZIP CODE:

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD#, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD#, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

IV. TRANSPORTER(S)

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD#, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD#, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD#, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

01 NAME:
02 D+B NUMBER:
03 STREET ADDRESS (P.O. Box, RFD#, etc.):
04 SIC CODE:
05 CITY:
06 STATE:
07 ZIP CODE:

V. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - GENERATOR/TRANSPORTER INFORMATION

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. PAST RESPONSE ACTIVITIES

01 A. WATER SUPPLY CLOSED 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 B. TEMPORARY WATER SUPPLY PROVIDED 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 C. PERMANENT WATER SUPPLY PROVIDED 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 D. SPILLED MATERIAL REMOVED 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 XE. CONTAMINATED SOIL REMOVED 02 DATE 1987 03 AGENCY Dept of Energy
04 DESCRIPTION
No recorded history. The cleanup of offsite radiological contamination by DOE at the D & BG Roper Yards.

01 F. WASTE REPACKAGED 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 G. WASTE DISPOSED ELSEWHERE 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 H. ON SITE BURIAL 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 I. IN SITU CHEMCIAL TREATMENT 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 J. IN SITU BIOLOGICAL TREATMENT 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 K. IN SITU PHYSICAL TREATMENT 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 L. ENCAPSULATION 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 M. EMERGENCY WASTE TREATMENT 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. PAST RESPONSE ACTIVITIES (Continued)

01 N. CUTOFF WALLS 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 O. EMERGENCY DIKING/SURFACE WATER DIVERSION 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 P. CUTOFF TRENCHES/SUMP 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 Q. SUBSURFACE CUTOFF WALL 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 R. BARRIER WALLS CONSTRUCTED 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 S. CAPPING/COVERING 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 T. BULK TANKAGE REPAIRED 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 U. GROUT CURTAIN CONSTRUCTED 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 V. BOTTOM SEALED 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 W. GAS CONTROL 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 X. FIRE CONTROL 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 Y. LEACHATE TREAMENT 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 Z. AREA EVACUATED 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 10 - PAST RESPONSE ACTIVITIES

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. PAST RESPONSE ACTIVITIES (Continued)

01 1. ACCESS TO SITE RESTRICTED 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 2. POPULATION RELOCATED 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

01 3. OTHER REMEDIAL ACTIVITIES 02 DATE 03 AGENCY
04 DESCRIPTION
No recorded history.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

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POTENTIAL HAZARDOUS WASTE SITE
SITE INSPECTION REPORT
PART 11 - ENFORCEMENT INFORMATION

I. IDENTIFICATION
01 STATE 02 SITE NO.

II. ENFORCEMENT INFORMATION

01 PAST REGULATORY/ENFORCEMENT ACTION YES X NO (at this site)

02 DESCRIPTION OF FEDERAL, STATE, LOCAL REGULATORY/ENFORCEMENT ACTION
Salt Lake City/County Health Department has initiated no enforcement action against D & RG Western Railroad, at the North Roper Yards in May 1984. This action has lead the State of Utah to investigate the South Roper Yard near Vitro. Based upon published information, no enforcement actions could be located for the South Roper/Vitro site.

III. SOURCES OF INFORMATION (Cite specific references, e.g., state files, sample analysis, reports)

*Morrison-Knudsen Engineers, Literature Review for D & RG Roper Yards, August 1985.

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	DP-3 (16)	DP-8 (15)	FB	LB1	LB2
Methylene Chloride	trace 1	11.	12.	trace	trace
Acetone	trace 1	10.	22.	trace	trace
* 2-Butanone	trace 1	4/1	—	—	—
Toluene	—	—	toluene	—	

ug/l

Analyzed only for organics — no inorganic analysis.

Priority pollutants + 8 compounds — not priority pollutants (tgts subs)

trace indicates 1–5 ppb

FB = field blank
LB = lab blank

Lab report dated July 23, 1986 from split sampling with State of UT during May, 1986
L. N. Tjeldahl

Hand clean
by L. Tjeldahl
8/26/86

Table 4

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References

1. Jensen & others, 1985, "Assessment of the Shallow Aquifer in Salt Lake Valley, Salt Lake County, Division of Flood Control.

2. Reidel International, Inc., 1984, Preliminary Evaluation and Plan of Action for the Investigation and Correction of Contamination Sources in the Roper Yard; Salt Lake City, Utah; Denver & Rio Grande Western Railroad.

3. Reidel International, Inc., 1984, Review of Present Information and Recommended Plan of Action for the Roper Yards; Salt Lake City, Utah.

4. Seiler, R. L. Waddell, K. M., 1984, Reconnaissance of the Shallow-Uncontained Aquifer in the Salt Lake Valley, Utah; U.S.G.S. #83-4272.

5. U.S. Department of Energy, 1984, Final Environmental Impact Statement; Remedial Actions at the Former Vitro Chemical Company Site, South Salt Lake, Utah, Volume I Text, Volume II Appendices.

6. U.S. Department of Energy, 1984, Processing Site Characterization Report for the Uranium Mill Tailings Site at Salt Lake City, Utah.

7. U.S. Geological Survey, 1984, Map Showing Water-Level Contours for the Shallow-Uncontained Aquifer, December 1982, Salt Lake Valley, Utah, Water Resources Report, #83-4272 Plate 1.

8. U.S. Geological Survey, 1984, Map Showing Depth to Water in the Shallow-Uncontained Aquifer in the Salt Lake Valley, Utah, 1982-83, Water Resources Report #83-4272. Plate 2.

9. Denver & Rio Grande Western Railroad Company, 1941, Station Map Roper Yard, Salt Lake County, Utah.

10. Vitro Tailings Site Map with Railroad Spur Survey, June 1985, Bureau of Radiation Control.

TABLE 1

D. & R. G. Vitro Site - Deep Wells

	(upgradient)		(downgradient)		
(Well Number)	1	1B	2	3	5
(Sample Number)	CW85022	CW85003	CW85034	CW85007	CW86011
(Sample Date)	05Mar85	05Mar85	05Mar85	06Mar85	06Mar85
GENERAL CHARACTERISTICS					
pH	8.2	8.3	8	8.2	7.9
TDS @ 180°C	238	286	268	252	578
Total Hardness ($CaCO_3$)	230	232	180	214	375
Alkilinity as $CaCO_3$	277	277	270	231	208
Ammonia as N	3800	3600	5300	4200	8900
* Chloride (ppm)	11	10	9	12	99
Flourice	200	240	320	250	230
Nitrate as N	(10	(10	50	20	10
Nitrite as N	(10	(10	(10	(10	(10
Phosphorous, Ortho as P	340	350	440	350	340
* Potassium (ppm)	7	7	16	4	14
* Sodium (ppm)	22	24	42	21	32
* Sulfate	(5	(5	(5	30	173
DISSOLVED METALS					
As	(0.5	(0.5	(0.5	(0.5	(0.5
Ba	90	70	80	100	100
Cd	(1	(1	(1	(1	(1
* Ca (ppm)	56	56	39	50	84
Cr (Hex)	(5	(5	(5	(5	(5
Cu	(20	(20	(20	(20	(20
Fe	(30	(30	80	(30	(30
Pb	(5	(5	(5	(5	ND
* Mg (ppm)	22	22	20	22	60
Mn	53	53	78	50	330
Se	(0.5	(0.5	(0.5	(0.5	(0.5
Ag	(2	(2	(2	(2	(2
Zn	10	(10	10	(10	(10
TOTAL METALS					
As	1.5	1.5	5	(0.5	(0.5
Ba	100	100	100	90	50
Cd	(1	(1	(1	(1	(1
Cr	(5	(5	(5	(5	(5
Cu	(20	(20	(20	(20	(20
Fe	900	100	800	190	690
Pb	5	(5	20	(5	(5
Mn	109	111	93	63	350
Hg	(0.1	(0.1	(0.1	(0.1	(0.1
Se	(0.5	(0.5	(0.5	(0.5	(0.5
Ag	(2	(2	(2	(2	(2
Zn	15	10	40	10	10

note: all measurements are in ppb unless indicated.

ND = not detected.

TABLE 2

D. & R. G. Vitro Site - Shallow Wells

	(upgradient)		(downgradient)						
(Well Number)	6B	Bk. 6B	7A	8A	VFD	9B	11A	DP-8	DP-3
(Sample Number)	CW86001	CW86127	CW86005	CW86006	CW86010	CW86013	CW86014	CW86125	CW86126
(Sample Date)	05Mar86	12May86	05Mar86	06Mar86	06Mar86	07Mar86	07Mar86	12May86	12May86
GENERAL CHARACTERISTICS									
pH	7.3	7.4	8.3	7.5	8.1	7.2	7.5	7.2	7.5
TDS @ 180°C	14694	14702	642	4488	318	16000	15680	3162	3584
Total Hardness ($CaCO_3$)	4000	4400	200	1880	250	6000	4000	1700	1310
Alkilinity as $CaCO_3$	690	618	488	603	234	984	911	372	651
Amonia as N	1300	ND	6800	19000	4300	2500	2900	ND	ND
* Chloride (ppm)	4150	4444	56	970	14	3813	3438	164	526
Flouride	250	470	850	410	230	900	1350	1200	2100
Nitrate as N	40	850	510	90	(10	20	100	1200	2100
Nitrite as N	(10	80	70	90	(10	40	40	60	20
Phosphorous, Ortho as P	90	20	290	170	300	(5	6	(5	50
* Potassium (ppm)	119	92	28	66	5	224	153	34	38
* Sodium (ppm)	3800	4015	141	699	15	3400	3800	292	681
* Sulfate	4190	4500	43	1435	51	6900	5960	1688	1430
DISSOLVED METALS									
As	10	7	35	10	(0.5	3	3	6	17
Ba	(50	ND	(50	200	100	(50	(50	ND	ND
Cd	(1	(1	1	(1	(1	ND	ND	(1	(1
* Ca (ppm)	560	600	20	254	60	400	200	376	357
Cr (Hex)	(5	16	(5	(5	(5	(5	(5	11	14
Cu	44	20	(20	(20	(20	ND	ND	(20	(20
Fe	60	420	(30	(30	(30	ND	ND	(30	(30
Pb	(5	(5	ND	(5	ND	ND	ND	(5	(5
* Mg (ppm)	630	700	36	302	24	1200	870	188	101
Mn	464	770	(10	286	54	ND	ND	825	700
Se	(0.5	(0.5	(0.5	(0.5	(0.5	(0.5	(0.5	1	3
Ag	(2	(2	(2	(2	(2	ND	ND	(1	(2
Zn	(10	(10	(10	20	10	ND	ND	310	70
TOTAL METALS									
As	38	17	82	21	(0.5	23.5	8	127.5	160
Ba	1000	200	200	90	80	(50	(50	(50	(50
Cd	(1	(1	1	(1	(1	(1	(1	23	5
Cr	(5	75	5	7	(5	(5	(5	198	39
Cu	165	265	160	(20	(20	35	30	730	155
Fe	19530	33660	22440	4130	140	38590	7340	43600	22040
Pb	45	45	125	(5	(5	(5	(5	198	39
Mn	2321	2300	1221	301	56	2611	610	2210	700
Hg	(0.1	(0.1	0.1	(0.1	(0.1	0.1	(0.1	4.8	0.7
Se	(0.5	(0.5	0.5	(0.5	(0.5	0.5	1	3	2.5
Ag	(2	(2	(2	(2	(2	(2	(2	(2	(2
Zn	150	375	505	65	20	20	10	3400	515

note: all measurements are in ppb unless indicated.

ND = not detected.

TABLE 3

D. & R. G. Vitro Site - Surface Water

	(up)	(down)	(blanks)	
(Well Number)	S1	S2		
(Sample Number)	CW85008	CW86009	CW85012	CW86128
(Sample Date)	06Mar86	06Mar86	06Mar86	12May86
GENERAL CHARACTERISTICS				
pH	7.4	7.9	6	6.2
TDS @ 180°C	848	2166	20	20
Total Hardness ($CaCO_3$)	370	850	ND	ND
Alkilinity as $CaCO_3$	341	380	< 1	1
Ammonia as N	100	3400	100	ND
* Chloride (ppm)	158	448	< 1	< 1
Flouride	640	740	80	40
Nitrate as N	1890	1290	20	< 10
Nitrite as N	130	70	< 10	< 10
Phosphorous, Ortho as P	280	510	10	< 5
* Potassium (ppm)	28	44	ND	ND
* Sodium (ppm)	125	374	ND	4
* Sulfate	165	641	< 5	10
DISSOLVED METALS				
As	< 0.5	ND	< 0.5	ND
Ba	60	90	< 50	ND
Cd	1	1	ND	ND
* Ca (ppm)	66	112	< 1	< 1
Cr (Hex)	5	8	< 5	< 5
Cu	37	46	ND	ND
Fe	< 30	< 30	ND	ND
Pb	ND	ND	ND	ND
* Mg (ppm)	48	138	< 1	< 1
Mn	< 10	16	ND	ND
Se	< 0.5	< 0.5	< 0.5	ND
Ag	< 2	< 2	ND	ND
Zn	45	105	ND	ND
TOTAL METALS				
As	6	15	< 0.5	< 0.5
Ba	50	50	< 50	< 50
Cd	< 1	1	< 1	< 1
Cr	< 5	5	< 5	< 5
Cu	60	60	< 20	< 20
Fe	80	310	< 30	< 30
Pb	25	50	< 5	< 5
Mn	43	125	< 10	< 10
Hg	< 0.1	< 0.1	< 0.1	< 0.1
Se	< 0.5	< 0.5	< 0.5	< 0.5
Ag	< 2	< 2	< 2	< 2
Zn	75	140	10	< 10

note: all measurements are in ppb unless indicated.

ND = not detected.

Denver & Rio Grande Western Railroad/Vitro
1-Mile Radius

Tract No.	Area of Tract	X	Population	=	Total
1114	0.03	X	4831	=	145
1115	0.65	X	3093	=	2010
1116	0.60	X	3595	=	2157
1117	0.03	X	3226	=	97
1133.01	0.02	X	5416	=	108
			TOTAL		4517

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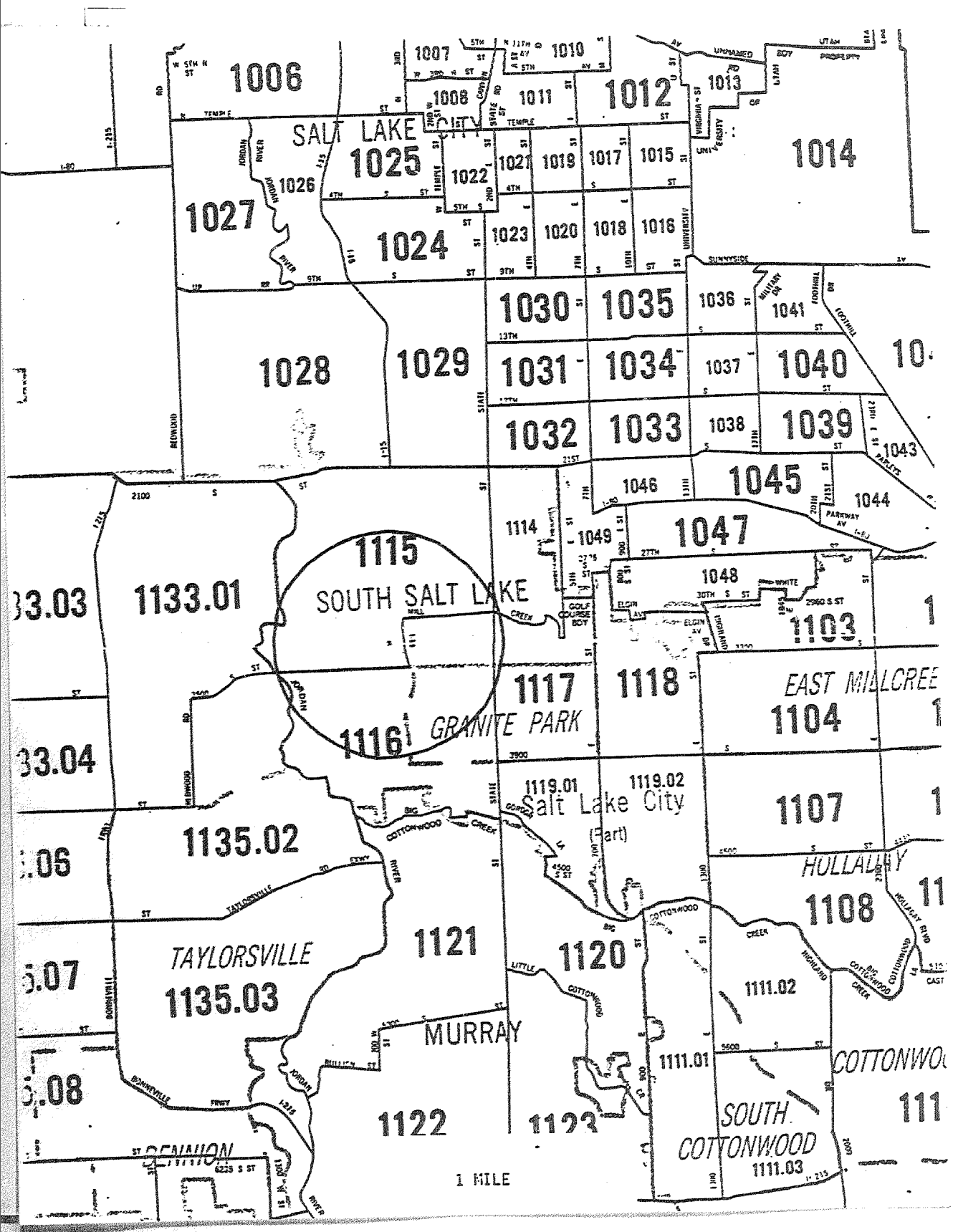

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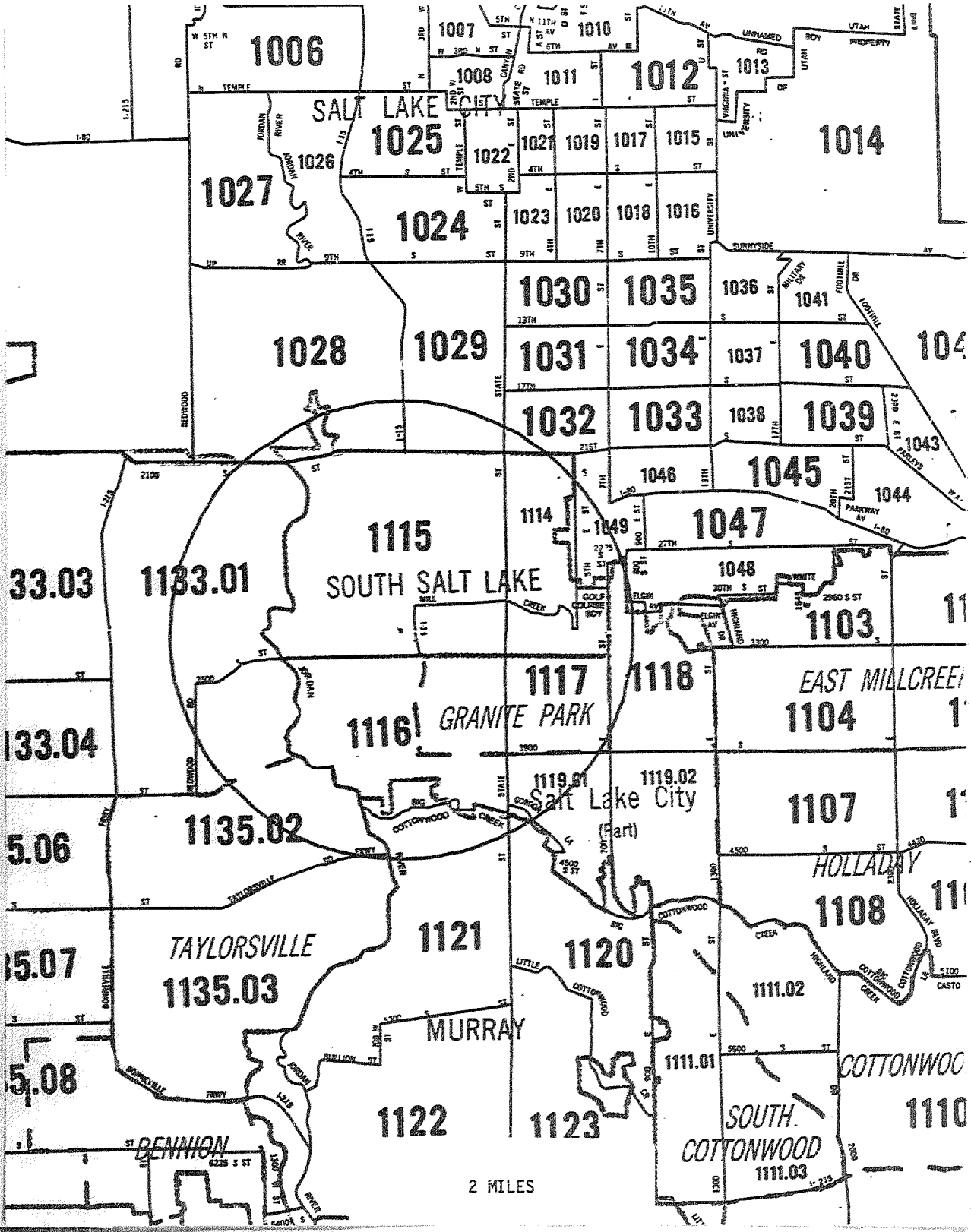
Denver & Rio Grande Western Railroad/Vitro
2-Mile Radius

Tract No.	Area of Tract	X	Population	=	Total
1049	.50	X	2863	=	1413
1114	.95	X	4831	=	4589
1115	1.00	X	3093	=	3093
1116	.95	X	3595	=	3415
1117	.98	X	3226	=	3161
1118	.20	X	2904	=	580
1119.01	.33	X	5102	=	1684
1133.01	.50	X	5416	=	2708
1135.02	.70	X	10052	=	7036
1121	.16	X	1287	=	206
1120	.05	X	2838	=	142
1028	.17	X	7178	=	1220
1029	.20	X	3306	=	661
1032	.17	X	4711	=	801
			TOTAL		30727

7578U/64



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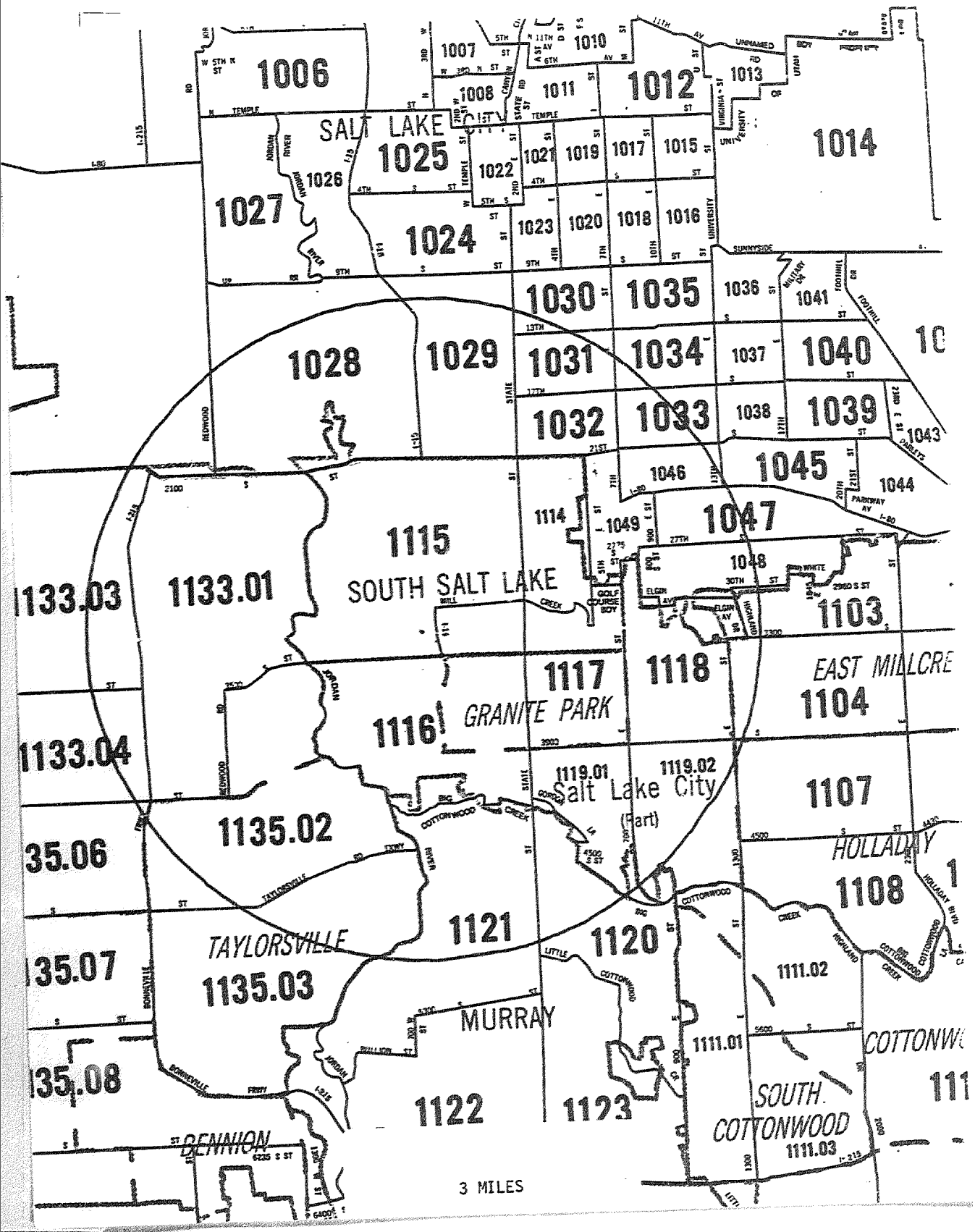
SITE/SITE ASSESSMENT

SAS039

Denver & Rio Grande Western Railroad/Vitro
3-Mile Radius

Tract No.	Area of Tract	X	Population	=	Total
1028	.80	X	7178	=	5742
1029	.85	X	3306	=	2810
1030	.10	X	3010	=	301
1031	.95	X	4167	=	3959
1032	1.00	X	4711	=	4711
1033	.60	X	3691	=	2215
1045	.05	X	1430	=	72
1046	.95	X	1157	=	1099
1047	.60	X	4758	=	2854
1048	.67	X	4953	=	4804
1049	1.00	X	2863	=	2863
1103	.16	X	5373	=	860
1104	.15	X	6383	=	957
1114	1.00	X	4831	=	4831
1115	1.00	X	3093	=	3093
1116	1.00	X	3595	=	3595
1117	1.00	X	3226	=	3226
1118	1.00	X	2904	=	2904
1119.01	1.00	X	5102	=	5102
1119.02	.67	X	5485	=	3675
1120	.45	X	2838	=	1277
1121	.70	X	1287	=	901
1133.01	1.00	X	5416	=	5416
1133.03	.25	X	7933	=	1983
1133.04	.20	X	7665	=	1533
1135.02	.85	X	10052	=	8544
1135.03	.33	X	9542	=	3149
1135.06	.05	X	10083	=	504
			TOTAL		82980

7578U/65



Notice: It is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

Attachment I

Laboratory Data Sheets
and
D & RG Results from Split Sampling
May 1986

CW86127 upgradient TC+TM

Rev. 3/82

Field No.

☑ TC ☐ TM ☐ Nut
☐ PC ☐ PM ☐ BOD

☐ Pest. ☐ Rad. ☐ Bact. ☐ Spec.

Date Recd.:
Received By:

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

MAY 12 86 863228

Sample No. 701

Storet No.

Water Syst. No. Source No.

Date Collected 860527 (yr. mo. dy.)

Time Collected 1515 (24-hour clock)

Water Rights No. 707

Exact Description of sampling Point: Dry G. Valve Background well 673

Supply Owned by: Vitro

Sample Collected by: Steve Sa[illegible]

SEND REPORT TO: Phone
Jim Sorenson
Solid + Hazardous Waste
zip code

Sample Source: 14 — 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County: 18 — 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use ☐ 708
Proposed use ☐ 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 770

1 FIELD TESTS

RECEIVED
JUN 18 1986
Utah State Div. Of Environmental Health

Temperature (°C) 793 — Depth, m 609
D.O., mg/l — Resid., mg/l 753
Sp. Cond. µmhos — Flow, MGD 652
pH — Flow, GPM 604
Sp. Gravity
Transparency, m 659

2 Temperature (°C) 650 pH 782 WASTEWATER ANALYSIS BACT. LAB. No.

	mg/l			mg/l		
B.O.D.$_5$		794	T.O.C.		871
Tot. Sus. Solids	3400	787	C.O.D.		777
NO_2+NO_3,N		602	Cyanide		775
T.K.N.		778	Phenolics		783
Oil & Grease		780	Sulfide		672

M.P.N. Total Coliforms/100ml	658
M.P.N. Fecal Coliforms/100ml	657
Fecal Strep. C/100ml.	656
M.F. Total Coliforms/100ml.	654
M.F. Fecal Coliforms/100ml.	655
Plate Count-Org./ml.	599

3 Filtered Unfiltered

meq/l	CATIONS	mg/l	ug/l (ppb)	
	Ammonia as N			722
	Arsenic		7	723
	Barium			724
	Boron			725
	Cadmium		<1	727
30.	Calcium	600		728
	Chromium		<5	729
	Chromium, Hex. as Cr		16	730
	Copper		20	732
	Iron, dissolved		420	733
	Lead		<5	734
57.	Magnesium	700		737
	Manganese		770	738
	Nickel			740
2.35	Potassium	92		742
	Selenium		<5	743
	Silver		<2	744
1746	Sodium	40151		745
	Zinc		<110	748
264.	TOTAL CATIONS 5400			

4 CHEMICAL ANALYSIS pH, units 7.4

meq/l	ANIONS	mg/l	
	Bicarbonate	132	754
	Carbon Dioxide	48	759
	Carbonate	0	760
1240	Chloride	4444	763
1236	CO_3 Solids	372	
	Fluoride	0.47	765
	Hydroxide	00	767
	Nitrate as N	85	605
	Nitrite as N	.08	606
	Phosphate, Ortho as P	.02	607
	Silica, dissolved as SiO_2	34	750
93.7	Sulfate	4500	772
930.			
	TOTAL ANIONS	9380	
	GRAND TOTAL	14,100	

Tot. Phosphorus		785
Total Alk. as $CaCO_3$	618	752
T. Hdns. as $CaCO_3$	4400	754
Surfactant as MBAS		773
Turbidity, as NTU	11000	757
Sp. Gravity		608

Sp. Cond. µmhos/cm.	18850 762
TDS @ 180°C	14700 785

TOTAL METALS ANALYSIS

5 CATIONS mg/l ug/l (ppb)

Aluminum		800
Arsenic	17	660
X Barium	210	661
Beryllium		801
Cadmium	<1	662
Chromium	75	663
Cobalt		664
Copper	265	664
Gold		700
Iron	3366	755
Lead	60	665
Manganese	2300	666
X Mercury	<.1	739
Molybdenum		802
Nickel		667
Selenium	<5	668
Silver	<2	669
Uranium		601
Vanadium		603
Zinc	3775	670

6 RADIOLOGICS

	pCi/l			pCi/l	
Alpha, gross		621	^{89}Sr		633
Beta, gross		623	^{131}I		635
Tritium, ^3H		625	^{134}Cs		637
^{226}Radium		627	^{137}Cs		639
^{228}Radium		629			
^{90}Sr		631			

Analyses Approved By: REO Date: 860616

INTERPRETATION OF ANALYSES:
Remarks:

By ENVIRONMENTAL HEALTH

Based on State Standards, this sample was:

	Satisfactory	Questionable	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

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SITE/SITE ASSESSMENT SAS039

FILE

Upgradient Total Chemistry / Total Metals

Rev. 3/82 Field No. CW86001 [1] TC [1] PC [1] TM [1] PM [5] Nut [1] BOD [ ] Pest. [ ] Rad. [ ] Sect. [ ] Spec.

+Sol Metals

Date Rec'd.: _____ Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

MAR 6 85 860795

Sample No. 701

Storet No. 702 | Water Syst. No. Source No. 703 704 | Water Rights No. 707

Date Collected 860305 (yr. mo. dy.) | Time Collected 0945 (24-hour clock)

Exact Description of sampling Point: Vitro well 65

Supply Owned by 712 | Sample Type 710

Sample Collected by: Ted Jensen / Bryan

SEND REPORT TO: Phone
Jim Salmon 715
Sol Hoz waste 717
zip code

Sample Source 719: 02 — 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708 | Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 770

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond., µmhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 | pH 782 | BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	671	M.P.N. Total Coliforms/100ml	658
Tot. Sus. Solids	3680 787	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3-N	602	Cyanide	775	Fecal Strep C/100ml	656
T.K.N.	778	Phenolics	783	M.F. Total Coliforms/100ml	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml	655
				Plate Count-Org./ml	599

3 Filtered | Unfiltered

mg/l	CATIONS	mg/l	ug/l (ppb)	
X	Ammonium-N	1.13		722
	Arsenic		10	723
X	Barium		< 50.0	724
	Boron			725
	Cadmium		< 1.0	726
X	Calcium	560		728
	Chromium		< 50	729
X	Chromium, Hex. as Cr		< 5	730
	Copper		44	732
X	Iron, dissolved		60	733
	Lead		< 5	734
52.	Magnesium	630		737
X	Manganese		464	738
	Mercury			740
	Nickel			742
3.0	Potassium	117		743
X	Selenium		< 5	743
X	Silver		< 2	744
165.	Sodium	3800		745
X	Zinc		< 40	746
248	TOTAL CATIONS	5104		

4 CHEMICAL ANALYSIS

mg/l	ANIONS	mg/l	
	Bicarbonate	842	758
	Carbon Dioxide	67	759
	Carbonate	0	760
1170	Chloride	4150	763
138	CO_3 Sulfide	414	
	Fluoride	3.5	765
	Hydroxide	0.0	767
	Nitrate as N	0.04	605
	Nitrite as N	< 0.01	606
	Phosphate, Ortho as P	0.09	607
	Silica, dissolved as SiO_2	35	750
87.3	Sulfate	4190	772
218.			
	TOTAL ANIONS	8890	
	GRAND TOTAL	14,000	

Tot. Phosphorus		785
Total Alk. as $CaCO_3$	590	752
T. Hdns. as $CaCO_3$	4000	754
Surfactant as MBAS		773
Turbidity, as NTU	410	757
Sp. Gravity		608

Sp. Cond. µmhos/cm. 22100 762
TDS @ 180°C 14694 786

5 TOTAL METALS ANALYSIS

pH, units 7.3

CATIONS	mg/l	ug/l (ppb)	
Aluminum			800
Arsenic		38	660
Barium	1.10		661
Beryllium			801
Cadmium		< 1	662
Chromium		< 5	663
Cobalt			804
Copper		165	664
Gold			700
Iron	19.53		755
Lead		46	665
Magnesium		23.21	666
Mercury		< .1	739
Molybdenum			802
Nickel			667
Potassium		< 5	668
Silver		< 20	669
Sodium			601
Vanadium			803
Zinc		150	670

6 RADIOLOGICS

	pCi/l			pCi/l	
Alpha, gross		621	^{89}Sr		633
Beta, gross		623	^{131}I		635
Tritium, ^3H		626	^{134}Cs		637
^{226}Radium		627	^{137}Cs		639
^{228}Radium		629			
^{90}Sr		631			

Analysis Approved By: R-90 Date: 860331

INTERPRETATION OF ANALYSES:
Remarks:

RECEIVED
APR 7 1986
Utah State Div. Of Environmental Health
By: _____

Based on State Standards, this sample was:

	Satisfactory	Questionable	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform			
M.P.N. Fecal Coliform			

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SITE/SITE ASSESSMENT SAS039

1 of 1

Total Chemistry / Total Metals

Rev. 3/82 CW
Field No. 86002

☐ TC ☐ TM ☑ Nut ☐ Fecf. ☐ Rac.
☐ PC ☐ PM ☐ BOD ☐ Bact. ☐ Spec.

Date Recd.: +Sol. Metals
Received By:

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Mar 6 86 860796
Sample No. 701

Storet No. 702
Water Syst. No. Source No. 703 704
Date Collected 860305 (yr. mo. dy.) 714
Time Collected 1058 (24-hour clock) 610
Water Rights No. 707
Exact Description of sampling Point: Vitro WRM 1 646

Supply Owned by 712
Sample Type 710
Sample Collected by: Gil Hedman / M. Doyon 713

SEND REPORT TO: Phone
Jim Salmon 715
Sol Haz Waste 648
zip code 717

Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian-well, 19 Swimming pool

County 612: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use: 4 708
Proposed use: 709
1. Culinary
2. Agriculture
3. Industrial
4. Other
Cost Code 770

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond., µmhos	653	Cl. Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 pH 782 BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	671	M.P.N. Total Coliforms/100ml	658
Tot. Sus. Solids	787	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3-N	603	Cyanides	778	Fecal Strep. C/100ml.	656
T.K.N.	779	Phenolics	783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 Filtered / Unfiltered

4 CHEMICAL ANALYSIS

pH, units 8.2

mg/l	CATIONS	mg/l	ug/l (ppb)		ANIONS	mg/l	
	Ammonia as N	3.9		725	Bicarbonate	332	758
	Arsenic		<4	732	Carbon Dioxide	3	759
	Barium		900	734	Carbonate	0	760
	Boron			735	Chloride	11	753
	Cadmium		<1	727	CO_3 Sulfate	166	
7.8	Calcium	56		728	Fluoride	0.2	765
	Chromium		<5	729	Hydroxide	0.0	767
	Chromium, Hex. as Cr		<5	730	Nitrate as N	<0.01	605
	Copper		<20	732	Nitrite as N	<0.01	606
	Iron, dissolved		<30	733	Phosphorus, Ortho as P	.34	607
	Lead		<5	734	Silica, dissolved as SiO_2	23	750
1.8	Magnesium	22		737	Sulfate	<5	772
	Manganese		53	738			
	Mercury			740			
1.8	Potassium	7		742			
	Selenium		<3	743			
	Silver		<2	744			
.95	Sodium	22		745			
	Zinc		10	746			
5.8	TOTAL CATIONS	107			TOTAL ANIONS	300	
					GRAND TOTAL	307	

Tot. Phosphorus		785
Total Alk. as $CaCO_3$	277	752
T. Hdns. as $CaCO_3$	230	754
Surfactant as MBAS		773
Turbidity, as NTU	22	757
Sp. Gravity		608

Sp. Cond. µmhos/cm. 760 762
☑ TDS @ 180°C 298 786

5 TOTAL METALS ANALYSIS

CATIONS	mg/l	ug/l (ppb)	
Aluminum			800
Arsenic		15	880
Barium	1.0		801
Beryllium			802
Cadmium		<1	882
Chromium		<5	803
Cobalt			804
Copper		<20	806
Gold			700
Iron	.90		755
Lead		<5	805
Magnesium	109		806
Mercury		<.1	739
Molybdenum			807
Nickel			807
Palladium		<5	808
Silver		<2	809
Tin			810
Vanadium			803
Zinc		15	370

6 RADIOLOGICS

	mg/l			mg/l	
Alpha, gross		621	^{89}Sr		633
Beta, gross		623	^{131}I		635
Tritium, ^3H		625	^{134}Cs		637
^{226}Radium		627	^{137}Cs		639
^{228}Radium		629			
^{90}Sr		631			

Analyses Approved By: RSG Date: 860331

INTERPRETATION OF ANALYSES:
Remarks:

RECEIVED
APR 7 1986
State Div. Of Health

By
ENVIRONMENTAL HEALTH

Based on State Standards, this sample was:

	Acceptable	Questionable	Unacceptable
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform			
M.P.N. Fecal Coliform			

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SITE/SITE ASSESSMENT SAS039

Total Chemstry / Total Metals ✓

+ Sol. Metals

Rev. 3/82 CW

Field No. 86003

☒ TC ☒ TM ☐ Nut ☐ Pest. ☐ Rad.

☐ PC ☐ PM ☐ BOD ☐ Bact. ☐ Spec.

Date Recd.: _____

Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

MAR 6 86 860797
Sample No. 701

Stored No. 702

Water Syst. No. Source No. 703 704

Date Collected 9 6 03 05 (yr. mo. dy.) 714

Time Collected 11 59 (24-hour clock) 716

Water Rights No. 707

Exact Description of sampling Point: Ultra well 1-R 648

Supply Owned by 712

Sample Type 710

Sample Collected by: G. Kuhnen / M Dwyer 713

SEND REPORT TO: Phone

Tim Salmon 715

Sol Haz Waste 648 717

zip code

Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708

Proposed use 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 770

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond., µmhos	652	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 pH 782 BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	14	671	M.P.N. Total Coliforms/100ml 658
Tot. Sus. Solids	70	787	C.O.D.	777	M.P.N. Fecal Coliforms/100ml 657
NO_2+NO_3 N	602	Cyanide	775		Fecal Strep C/100ml 656
T.K.N.	778	Phenolics	783		M.F. Total Coliforms/100ml 654
Oil & Grease	780	Sulfide	672		M.F. Fecal Coliforms/100ml 655
					Plate Count-Org./ml 599

3 CHEMICAL ANALYSIS

☐ Filtered ☐ Unfiltered

pH, units 8.3

meq/l	CATIONS	mg/l	ug/l (ppb)
	☒ Ammonia-N	3.6	722
	☒ Arsenic	< .5	722
	☒ Barium	700	723
	Beryl		725
	☒ Cadmium	< .1	727
2.8	☒ Calcium	56	730
	☒ Chromium	< .5	728
	Chromium Hex as Cr	< .5	732
	☒ Copper	< 20	732
	☒ Iron, dissolved	< 30	733
	☒ Lead	< .5	734
1.8	☒ Magnesium	22	737
	☒ Manganese	53	739
	Mercury		740
.18	☒ Potassium	7	742
	☒ Selenium	< .5	743
	☒ Silver	< 2	744
6.04	☒ Sodium	24	745
	☒ Zinc	< 10	746
5.9	TOTAL CATIONS 109		

meq/l	ANIONS	mg/l	
	Bicarbonate	332	758
	Carbon Dioxide	2	759
	Carbonate	0	760
29	Chloride	10	763
5.5	CO_3 Solids	166	
	Fluoride	0.2	765
	Hydroxide	0.0	767
	Nitrate as N	< 0.01	605
	Nitrite as N	< 0.01	606
	Phosphorus, Ortho as P	.35	607
	Silica, dissolved as SiO_2	24	750
6.10	Sulfate	< 5	772
5.8			
	TOTAL ANIONS	300	
	GRAND TOTAL	309	

Tot. Phosphorus		785
Total Alk. as $CaCO_3$	277	752
T. Hdns. as $CaCO_3$	232	754
Surfactant as MBAS		773
Turbidity, as NTU	23	757
Sp. Gravity		608

☒ Sp. Cond. µmhos/cm	561	762
☒ TDS @ 180°C	286	786

5 TOTAL METALS ANALYSIS

CATIONS	mg/l	ug/l (ppb)
Aluminum		800
Antimony	< .15	660
Arsenic		661
Barium	.110	801
Beryllium		662
Cadmium	< .1	663
Chromium	< .5	804
Cobalt		664
☒ Copper	< .20	700
Gold		755
Iron	.100	665
Lead	< .5	666
Manganese	.111	739
Mercury	< .1	802
Molybdenum		667
Nickel		668
Palladium	< .5	669
Platinum	< .2	601
Rhodium		803
Vanadium		670
☒ Zinc	.10	

6 RADIOLOGICS

	pCi/l		pCi/l	
Alpha, gross	631	^{89}Sr		633
Beta, gross	623	^{131}I		635
Tritium, ^3H	635	^{134}Cs		637
^{226}Radium	627	^{137}Cs		639
^{228}Radium	629			
^{90}Sr	631			

Analysis Approved By: RSL Date: 860331

INTERPRETATION OF ANALYSES:
Remarks:

RECEIVED
APR 7 1986
State Div. Of Health

By _____
ENVIRONMENTAL HEALTH

Based on State Standards, this sample was:

	Satisfactory	Questionable	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform			
M.P.N. Fecal Coliform			

notice, it is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

FEB 1

Total Chemistry and Total Metals

Rev. 3/82 Field No. CW86004 + Sol Metals

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

MAR 686860798

Sample No. 701

TC / PC / TM / PM / Nut / BOD / Pest. / Rad. / Bact. / Spec.

Date Recd.: ____ Received By: ____

Storet No. 702 | Water Syst. No. Source No. 703 704 | Water Rights No. 707

Date Collected 716 (yr. mo. dy.) | Time Collected 618 (24-hour clock)

Exact Description of sampling point: Vitro Well 2 (646)

Supply Owned by 712 | Sample Type 719

Sample Collected by: V. Robson / M. Doxon (713)

SEND REPORT TO: Phone ____ (716) Sid Vinton (648) Div. of Sol. Waste (717) Zip code

Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 05 Dist. syst., 06 Effluent, 07 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708 / Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 770

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µmhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	628	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 | pH 782 | BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	671	M.P.N. Total Coliforms/100ml	658
Tot. Sus. Solids	787 3	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	802	Cyanide	778	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics	783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 Filtered / Unfiltered

mg/l	CATIONS	mg/l	ug/l (ppb)	
	Ammonia as N	513		722
	Arsenic		< 5	723
	Barium		800	724
	Boron			725
	Cadmium		< 1	727
1.9	Calcium	39		728
	Chromium		< 5	729
	Chromium, Hex. as Cr		< 5	730
	Copper		< 20	732
	Iron, dissolved		100	733
	Lead		< 5	734
1.7	Magnesium	20		737
	Manganese		76	739
	Mercury			740
4.4	Potassium	16		742
	Selenium		< 5	743
	Silver		< 2	744
18	Sodium	42		745
	Zinc		10	746
58	TOTAL CATIONS	117		

Sp. Cond. µmhos/cm. 560 (762)
TDS @ 180°C 268 (786)

4 CHEMICAL ANALYSIS

pH, units 8.0

mg/l	ANIONS	mg/l	
	Bicarbonate	320	758
	Carbon Dioxide	5	759
	Carbonate	0	760
1.25	Chloride	9	763
5.41	SO_4 Sulfate	162	
	Fluoride	0.32	765
	Hydroxide	0.0	767
	Nitrate as N	0.05	805
	Nitrite as N	< 0.01	806
	Phosphate Ortho. as P	0.44	807
	Silica, dissolved as SiO_2	29	730
6.16	Sulfide	< 5	772
5.7			
	TOTAL ANIONS	300	
	GRAND TOTAL	317	

Tot. Phosphorus		785
Total Alk. as $CaCO_3$	270	752
T. Hard. as $CaCO_3$	180	754
Surfactant as MBAS		773
Turbidity, as NTU	2.4	757
Sp. Gravity		608

5 TOTAL METALS ANALYSIS

CATIONS	mg/l	ug/l (ppb)	
Aluminum			800
Arsenic		50	660
Barium	110		661
Beryllium			801
Cadmium		< 1	662
Chromium		< 5	663
Cobalt			804
Copper		< 20	664
Gold			700
Iron	8.8		756
Lead		26	665
Lithium		93	666
Magnesium			739
Mercury		< 1	805
Molybdenum			667
Nickel			668
Selenium		< 5	669
Silver		< 2	671
Strontium			601
Vanadium			803
Zinc		40	670

6 RADIOLOGICS

	pc/l		pc/l
Alpha, gross	621	^{89}Sr	633
Beta, gross	623	^{131}I	635
Tritium, ^3H	625	^{134}Cs	637
^{226}Radium	627	^{137}Cs	639
^{228}Radium	629		
^{90}Sr	631		

Analyses Approved By: KSU Date: 860331

INTERPRETATION OF ANALYSES:
Remarks:

RECEIVED
APR 7 1986
Utah State Div. Of Environmental Health

By ____ ENVIRONMENTAL HEALTH

Based on State Standards, this sample was:

	Satisfactory	Questionable	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform			
M.P.N. Fecal Coliform			

notice, it is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

Total Chemistry & Total Metals

Rev. 3/82
Field No. 8W86005

☑ TC ☑ TM ☐ Nut
☐ PC ☐ PM ☐ BOD

☐ Per. ☐ Rad. ☐ Bact. ☐ Spec.

+ sol metals

Date Recd.:
Received By:

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

MAR 66 860799
Sample No. 701

Storet No. 702
Water Syst. No. Source No. 793 794
Date Collected 715 (yr. mo. dy.) 860305
Time Collected 716 (24-hour clock) 1430
Water Rights No. 707

Exact Description of sampling Point 646
Ultra well 7A

Supply Owned by 712
Sample Type 710

Sample Collected by 713
Mike Stevens

SEND REPORT TO: Phone
Tim Sullivan 716
648
717
zip code

Sample Source 719
01 Spring 14 Other
02 Well 15 Tunnel
03 Stream 16 Artesian well
04 Lake
06 Dist. syst. 19 Swimming pool
07 Effluent
08 Storm sewer

County 612
01 Beaver 16 Piute
02 Box Elder 17 Rich
03 Cache 18 Salt Lake
04 Carbon 19 San Juan
05 Daggett 20 Sanpete
06 Davis 21 Sevier
07 Duchesne 22 Summit
08 Emery 23 Tooele
09 Garfield 24 Uintah
10 Grand 25 Utah
11 Iron 26 Wasatch
12 Juab 27 Washington
13 Kane 28 Wayne
14 Millard 29 Weber
15 Morgan

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 770

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µmhos	653	Cl. Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 pH 782 BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	☑ T.O.C.	52 671	M.P.N. Total Coliforms/100ml	658
Tot. Sus. Solids	2580 787	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3-N	602	Cyanide	778	Fecal Strep C/100ml.	656
T.K.N.	779	Phenolics	783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 Filtered / Unfiltered

4 CHEMICAL ANALYSIS

pH, units 8.3

mg/l	CATIONS	mg/l	ug/l (ppb)		ANIONS	mg/l	
	☒ Ammonia as N	68		722	Bicarbonate	596	758
	☒ Arsenic		35	723	Carbon Dioxide	4	759
	☒ Barium		<50	726	Carbonate	0	760
	Boron		<1	725	Chloride	56	763
	☒ Cadmium			727	CO_2 Solids	293	
1.0	☒ Calcium	240		730	Fluoride	389	765
	☒ Chromium		<50	728	Hydroxide	00	767
	Chromium, Hex as Cr		<5	729	Nitrate as N	0.51	605
	☒ Copper		<30	732	Nitrite as N	0.07	606
	☒ Iron, dissolved		<30	733	Phosphorus, Ortho as P	29	607
	☒ Lead			734	Silica, dissolved as SiO_2	21	750
3.0	☒ Magnesium	36		737	Sulfate	43	772
	☒ Manganese		<10	738			
	Nickel			740			
.7	☒ Potassium	28		742	TOTAL ANIONS	413	
	☒ Selenium		<5	743	GRAND TOTAL	638	
	☒ Silver		<2	744			
64	☒ Sodium	1471		745	Tot. Phosphorus		765
	☒ Zinc		<10	746	Total Alk. as $CaCO_3$	488	752
11.	TOTAL CATIONS 225				T. Hdns. as $CaCO_3$	200	754
					Surfactant as MBAS		773
	☒ Sp. Cond. µmhos/cm.	1045		762	Turbidity, as NTU	>1000	757
	☒ TDS @ 180°C	642		756	Sp. Gravity		608

1.56
9.77
12.

5 TOTAL METALS ANALYSIS

CATIONS	mg/l	ug/l (ppb)	
Aluminum			800
☑ Arsenic		82	660
☑ Barium	1.210		661
Beryllium			801
☑ Cadmium		1	662
☑ Chromium		5	663
Cobalt			804
Copper		100	664
Gold			700
☑ Iron	22.44		755
☑ Lead		125	665
☑ Manganese		1321	666
☑ Mercury		.1	739
☑ Molybdenum			802
Nickel			667
☑ Selenium		<5	668
☑ Silver		<2	669
☑ Uranium			601
Vanadium			803
Zinc		505	670

6 RADIOLOGICS

	pCi/l		pCi/l	
Alpha, gross	621	^{89}Sr	633	
Beta, gross	623	^{131}I	635	
Tritium, ^3H	625	^{134}Cs	637	
^{226}Radium	627	^{137}Cs	639	
^{228}Radium	629			
^{90}Sr	631			

Analyst Approved By: RSO. Date: 860331

INTERPRETATION OF ANALYSES:
Remarks:

RECEIVED
APR 7 1986
By Utah State Div. Of Environmental Health
ENVIRONMENTAL HEALTH

Based on State Standards, this sample was:

	Safe Sanitary	Questionable	Unsanitary
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

is less clear than this notice. it is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

1 of 1

Total Chemistry & Total Metals + dis Metals + TOC

Rev. 3/82

Field No. CW86006

1 TC | 1 TM | 5 Nut
PC | PM | BOD

Pest. | Rad. | Bact. | Spec.

Date Recd.:
Received By:

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

MAR 786860814
Sample No. 701

Storet No. 702

Water Syst. No. Source No. 703 704

Date Collected 860306 (yr. mo. dy.) 716

Time Collected 1015 (24-hour clock) 718

Water Rights No. 707

Exact Description of sampling Point: VITRO WELL 8A 646

Supply Owned by 712

Sample Type 710

Sample Collected by: DOVON 713

SEND REPORT TO: Phone 715
JIM SALMON
BUR. S. & HAZ. WASTE 648
717 zip code

Sample Source 719: 02
01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm, --- sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 18
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 770

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µmhos	655	Cl. Resid., mg/l	752
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 | pH 782 | BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	X T.O.C.	671	M.P.N. Total Coliforms/100ml	658
Tot. Sus. Solids	787 240	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3-N	602	Cyanide	775	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics	783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 Filtered / Unfiltered

mg/l	CATIONS	mg/l	µg/l (ppb)	
	X Ammonia as N	1910		722
	X Arsenic		10	723
	X Barium		2000	726
	Beryl			725
	X Cadmium		< 1	727
126	X Calcium	2541		730
	X Chromium		7	729
	X Chromium, Hex. as Cr		< 5	730
	X Copper		< 20	732
	X Iron, dissolved		< 30	733
	X Lead		< 5	734
45	X Magnesium	3102		737
	X Manganese		286	738
	Mercury			740
16	X Potassium	66		742
	X Selenium		< 5	743
	X Silver		< 2	744
305	X Sodium	6991		745
	X Zinc		20	747
70	TOTAL CATIONS	1350		

Sp. Cond. µmhos/cm. 762: 6030
TDS @ 180°C 756: 4488

4 CHEMICAL ANALYSIS

pH, units: 7.51

mg/l	ANIONS	mg/l	
	Bicarbonate	736	758
	Carbon Dioxide	37	759
	Carbonate	0	760
273	Chloride	970	762
2.07	CO_2 Solids	262	
	Fluoride	0.41	765
	Hydroxide	00	767
	Nitrate as N	0.09	605
	Nitrite as N	0.09	606
	Phosphate, Ortho as P	.17	607
	Silica, dissolved as SiO_2	34	750
299	Sulfate 1435	237	772
70	TOTAL ANIONS	2702	
	GRAND TOTAL	4022	

Tot. Phosphorus		785
Total Alk. as $CaCO_3$	603	752
T. Hard. as $CaCO_3$	1880	754
Surfactant as MBAS		773
Turbidity, as NTU	87	757
Sp. Gravity		608

5 TOTAL METALS ANALYSIS

CATIONS	mg/l	µg/l (ppb)	
Aluminum			800
X Arsenic		21	660
X Barium	09		661
Beryllium			601
X Cadmium		< 1	662
X Chromium		7	663
Cobalt			604
X Copper		< 20	664
Gold			700
X Iron	14.13		755
X Lead		< 5	665
X Manganese		301	666
X Mercury		< 1	739
X Molybdenum			602
Nickel			667
X Selenium		< 5	668
X Silver		< 2	669
X Uranium			601
Vanadium			603
X Zinc		65	670

6 RADIOLOGICS

	pCi/l		pCi/l
Alpha, gross	621	^{89}Sr	633
Beta, gross	623	^{131}I	635
Tritium, ^3H	625	^{134}Cs	637
^{226}Radium	627	^{137}Cs	639
^{228}Radium	629		
^{90}Sr	631		

Analyses Approved By: REL Date: 860331

INTERPRETATION OF ANALYSES
Remarks:

RECEIVED
APR 7 1986
Utah State Div. Of Environmental Health

By

Based on State Standards, this sample was:

	Satisfactory	Questionable	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

notice, it is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

Total Chemistry and Total Metals + sol. Metals + TOC

Rev. 3/82
Field No. CW86007

[1] TC [1] TM [5] Nut
[ ] PC [ ] PM [ ] BOD
[ ] Pest. [ ] Rad. [ ] Bact. [ ] Spec.

Date Recd.:
Received By:

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

HAR 786860815

Sample No. 701

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other
Cost Code 770

Sample Source 719: 02
01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm, 09 Sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 18
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Storet No. 702
Water Syst. No. Source No. 701 704
Water Rights No. 707
Date Collected 860305 (yr. mo. dy.) 714
Time Collected 610 (24-hour clock)
Exact Description of sampling Point 646: VITRO WELL 3
Supply Owned by 712: VITRO
Sample Type 710
Sample Collected by 713: HEADON
SEND REPORT TO: Phone 715
JIM SALMON 648
BUR S & HAZ WASTE 717
zip code

FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond., µmhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

WASTEWATER ANALYSIS — BACT. LAB. No.

Temperature (°C) 650 pH 782

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	1.0	M.P.N. Total Coliforms/100ml	658
Tot. Sus. Solids	3 787	C.O.D.	671	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3-N	803	Cyanide	777	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics	775	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	783	M.F. Fecal Coliforms/100ml.	655
			672	Plate Count-Org./ml.	599

3 Filtered: Unfiltered

mg/l	CATIONS	mg/l	ug/l (ppb)	
	Ammonia as N	4.2		722
	Aluminum		<5	732
	Barium		1000	734
	Boron		<1	736
	Cadmium			738
7.5	Calcium	51		
	Chromium		<5	739
	Cobalt		<5	730
	Chromium, Hex. as Cr		<20	733
	Copper		<30	732
	Iron, dissolved		<5	734
	Lead			737
1.8	Magnesium	22		
	Manganese		50	739
	Mercury			740
	Nickel			
1.10	Potassium	4		742
	Selenium		<5	743
	Silver		<2	744
	Sodium			745
.91	Vanadium	21		
	Zinc		<10	746
5.3	TOTAL CATIONS	97		

mg/l	ANIONS	mg/l	
	Bicarbonate	182	758
	Carbon Dioxide	2	759
	Carbonate	0	760
132	Chloride	12	763
46	CO_3 Sulfate	130	
	Fluoride	0.25	765
	Hydroxide	0.00	767
	Nitrate as N	0.02	805
	Nitrite as N	<0.01	806
	Phosphorus, Ortho as P	35	607
	Silica, dissolved as SiO_2	22	750
162	Sulfate	30	772
5.6	TOTAL ANIONS	202	
	GRAND TOTAL	299	

Tot. Phosphorus		785
Total Alk. as $CaCO_3$	231	752
T. Hard. as $CaCO_3$	214	754
Surfactant as MBAS		773
Turbidity, as NTU	20	757
Sp. Gravity		608

pH, units 8.2

TOTAL METALS ANALYSIS

CATIONS	mg/l	ug/l (ppb)	
Aluminum		<5	800
Antimony			801
Barium	1.019		802
Beryllium			803
Cadmium		<1	804
Chromium		<5	805
Cobalt			806
Copper		<20	807
Gold			808
Iron	1.19		809
Lead		<5	810
Magnesium		63	811
Mercury		<1	812
Molybdenum			813
Nickel			814
Selenium		<5	815
Silver		<2	816
Uranium			817
Vanadium			818
Zinc		<10	819

Sp. Cond. µmhos/cm: 560
TDS @ 180°C: 252

RADIOLOGICS

	pCi/l		pCi/l
Alpha, gross	821	^{89}Sr	833
Beta, gross	823	^{131}I	835
Tritium, ^3H	825	^{134}Cs	837
$^{226}Radium$	827	^{137}Cs	839
$^{228}Radium$	829		
^{90}Sr	831		

Analysis Approved By: RSO Date: 860331

INTERPRETATION OF ANALYSES
Remarks:

RECEIVED
APR 7 1986
State Div. Of Environmental Health
By: ENVIRONMENTAL HEALTH

Based on State Standards, this sample was:

	Satisfactory	Questionable	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

notice, it is due to the quality of the document being filmed

SITE/SITE ASSESSMENT
SAS039

FILE

Total Chemistry and Total Metals + sol. Metals + TOC

Rev. 3/82
Field No. CW86008
[1] TC [1] TM [5] Nut
[ ] PC [ ] PM [ ] BOD
[ ] Pest. [ ] Rad. [ ] Bact. [ ] Spec.

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Date Recd.:
Received By:

MAR 786860816
Sample No. 701

Storet No.
Water Syst. No. Source No.
Date Collected 860308
Time Collected 1117 (24-hour clock)
Water Rights No.
Exact Description of sampling Point: SURFACE SI
Supply Owned by
Sample Type
Sample Collected by: HEBDON
SEND REPORT TO: Phone
JIM SALMON
HWR SOLID HAZ WASTE
zip code

Sample Source: 018 (01 Spring, 02 Well, 03 Stream, 04 Lake, 05 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool)
County: 18 (01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber)

Current use
Proposed use
1. Culinary
2. Agriculture
3. Industrial
4. Other
Cost Code

1 FIELD TESTS

Temperature (°C)
D.O., mg/l
Sp. Cond. µmhos
pH
Sp. Gravity
Transparency, m
CO_2, mg/l
Depth, m
Cl. Resid., mg/l
Flow, MGD
Flow, GPM
Flow, cfs

2 WASTEWATER ANALYSIS

Temperature (°C) | pH | BACT. LAB. No.

	mg/l		mg/l
B.O.D.$_5$		T.O.C.	84
Tot. Sus. Solids	77	C.O.D.	
NO_2+NO_3,N		Cyanide	
T.K.N.		Phenolics	
Oil & Grease		Sulfides	

M.P.N. Total Coliforms/100ml
M.P.N. Fecal Coliforms/100ml
Fecal Strep C/100ml.
M.F. Total Coliforms/100ml.
M.F. Fecal Coliforms/100ml.
Plate Count-Org./ml.

3 Filtered / Unfiltered

mg/l	CATIONS	mg/l	ug/l (ppb)
	Ammonia as N	61	
	Arsenic		<5
	Barium		600
	Boron		
	Cadmium		<1
3.3	Calcium	66	
	Chromium		<5
	Chromium, Hex as Cr		5
	Copper		37
	Iron, dissolved		<30
	Lead		
4.0	Magnesium	48	
	Manganese		<10
	Nickel		
.6	Potassium	20	
	Selenium		<5
	Silver		<2
6.4	Sodium	1255	
	Zinc		45
13.3	TOTAL CATIONS	261	

Sp. Cond. µmhos/cm. 1420
TDS @ 180°C 848

4 CHEMICAL ANALYSIS

pH, units 7.4

mg/l	ANIONS	mg/l
	Bicarbonate	416
	Carbon Dioxide	26
	Carbonate	0
44.4	Chloride	158
6.8	CO_2 Sulfate	204
	Fluoride	56
	Hydroxide	00
.18	Nitrate as N	1.89
	Nitrite as N	0.15
	Phosphorus, Ortho as P	.28
	Silica, dissolved as SiO_2	20
34.4	Sulfate	165
149		
	TOTAL ANIONS	556
	GRAND TOTAL	823

Tot. Phosphorus
Total Alk. as $CaCO_3$ 341
T. Hdns. as $CaCO_3$ 370
Surfactant as MBAS
Turbidity, as NTU 16
Sp. Gravity

TOTAL METALS ANALYSIS

5 CATIONS mg/l ug/l (ppb)

Aluminum		
Arsenic	6	
Barium	.05	
Beryllium		
Cadmium		<1
Chromium		<5
Cobalt		
Copper		00
Gold		
Iron	108	
Lead		25
Manganese		43
Mercury		<.1
Molybdenum		
Nickel		
Selenium		<5
Silver		<2
Thallium		
Vanadium		
Zinc		75

6 RADIOLOGICS

	pc/l		pc/l
Alpha, gross		^{89}Sr	
Beta, gross		^{131}I	
Tritium, ^3H		^{134}Cs	
^{226}Radium		^{137}Cs	
^{228}Radium			
^{90}Sr			

Analyses Approved By: RSD Date: 860331

INTERPRETATION OF ANALYSES
Remarks:

RECEIVED APR 7 1986 State Div. Of Environmental Health

By ENVIRONMENTAL HEALTH

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

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SITE/SITE ASSESSMENT
SAS039
FILE

Total Chemistry & Total Metals + sol Metals + TOC

Rev. 3/82
Field No. CW 86009

[1] TC [1] TM [5] Nut
[ ] PC [ ] PM [ ] BOD

[ ] Pest. [ ] Rad. [ ] Bact. [ ] Spec.

Date Recd.
Received By:

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

MSR 786860817
Sample No. 701

Storet No. 703
Water Syst. No. Source No. 702 704
Water Rights No. 707
Date Collected 8 6 0 3 0 6 (yr. mo. dy.) 714
Time Collected 1 3 3 8 (24-hour clock) 810
Exact Description of sampling Point: SURFACE SR 646
Supply Owned by 712
Sample Type 710
Sample Collected by: DOYON 713
SEND REPORT TO: Phone
JIM SALMON 716
BUR S&HAZ WASTE 648
zip code 717

Sample Source 719: 08
01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 811: 18
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other
Cost Code 770

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µmhos	653	Cl. Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	650

2 Temperature (°C) 650 pH 782 WASTEWATER ANALYSIS BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	[X] T.O.C.	13	671	M.P.N. Total Coliforms/100ml 658
Tot. Sus. Solids	43 787	C.O.D.		777	M.P.N. Fecal Coliforms/100ml 657
NO_2+NO_3,N	602	Cyanide		775	Fecal Strep. C/100ml. 656
T.K.N.	778	Phenolics		783	M.F. Total Coliforms/100ml. 654
Oil & Grease	780	Sulfide		672	M.F. Fecal Coliforms/100ml. 655
					Plate Count-Org./ml. 599

3 Filtered Unfiltered

mg/l	CATIONS	mg/l	ug/l (ppb)
	Ammonia as N	34	722
	Arsenic		723
	Barium	900	724
	Beryl		725
	Cadmium	1	727
	Calcium	102	728
56	Chloride		
	Chromium	5	729
	Chromium, Hex. as Cr	3	730
	Copper	46	732
	Iron, dissolved	30	733
	Lead		734
11.4	Magnesium	138	737
	Manganese	16	739
	Mercury		740
1.1	Potassium	44	742
	Selenium	5	743
	Silver	2	744
163	Sodium	3714	749
	Zinc	105	746
34.4	TOTAL CATIONS 668		

Sp. Cond. µmhos/cm.	3200 762
TDS @ 180°C	2166 786

4 CHEMICAL ANALYSIS pH, units 7.9

mg/l	ANIONS	mg/l	
	Bicarbonate	462	755
	Carbon Dioxide	9	759
	Carbonate	0	760
123	Chloride	448	763
260	CO_2 Solids	258	
	Fluoride	0.74	765
	Hydroxide	0.0	767
	Nitrate as N	1.29	605
	Nitrite as N	0.07	606
	Phosphate, Ortho as P	.51	607
	Silica dissolved as SiO_2	26	750
133	Sulfate	641	772
33.7	TOTAL ANIONS 1343		
	GRAND TOTAL 2011		
	Tot. Phosphorus		765
	Total Alk. as $CaCO_3$	380	752
	T. Hdnss as $CaCO_3$	850	754
	Surfactants as MBAS		773
	Turbidity, as NTU	20	757
	Sp. Gravity		608

5 TOTAL METALS ANALYSIS

CATIONS	mg/l	ug/l (ppb)
Aluminum		800
Arsenic		15 660
Barium	015	661
Beryllium		801
Cadmium		1 662
Chromium		5 663
Cobalt		804
Copper		60 664
Gold		700
Iron	37	755
Lead		50 665
Manganese		126 666
Mercury		<1 739
Molybdenum		802
Nickel		667
Selenium		<5 668
Silver		<2 669
Uranium		601
Vanadium		803
Zinc		140 670

6 RADIOLOGICS

	pCi/l		pCi/l		
Alpha, gross		621	^{89}Sr		633
Beta, gross		623	^{131}I		635
Tritium, ^3H		625	^{134}Cs		637
^{226}Radium		627	^{137}Cs		639
^{228}Radium		629			
^{90}Sr		631			

INTERPRETATION OF ANALYSES
Remarks:

Based on State Standards, this sample was:
Satisfactory [ ] Conditional [ ] Unsatisfactory [ ]
B.O.D.$_5$
Tot. Sus. Solids
M.P.N. Total Coliform.
M.P.N. Fecal Coliform.

RECEIVED
APR 7 1986
Utah State Div. Of Environmental Health

By
ENVIRONMENTAL HEALTH

Analyses Approved By: RGD Date: 860331

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SITE/SITE ASSESSMENT
SAS039

Total Chemistry and Total Metals
+ TOC

Rev. 3/82
Field No. CW86010

[1] TC [1] TM [5] Nut
[ ] PC [ ] PM [ ] BOD

[ ] Pest. [ ] Rad. [ ] Bact. [ ] Spec.

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Date Recd.:
Received By:

MAR 7 86 860818
Sample No. 701

Storet No. 702
Water Syst. No. Source No. 703 704
Date Collected 714 (yr. mo. dy.) 860306
Time Collected 715 (24-hour clock) 1420
Water Rights No. 707

Exact Description of sampling Point 646
VITRO DSM MED

Supply Owned by 712
Sample Type 710

Sample Collected by 713
HELDON

SEND REPORT TO: Phone 715
JIM SALMON 648
BUR SHAZ WASTE 717
zip code

Sample Source 719: 02
01 Spring 14 Other
02 Well 15 Tunnel
03 Stream 18 Artesian well
04 Lake
06 Dist. syst. 19 Swimming pool
07 Effluent
08 Storm sewer

County 612: 18
01 Beaver 16 Piute
02 Box Elder 17 Rich
03 Cache 18 Salt Lake
04 Carbon 19 San Juan
05 Daggett 20 Sanpete
06 Davis 21 Sevier
07 Duchesne 22 Summit
08 Emery 23 Tooele
09 Garfield 24 Uintah
10 Grand 25 Utah
11 Iron 26 Wasatch
12 Juab 27 Washington
13 Kane 28 Wayne
14 Millard 29 Weber
15 Morgan

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 770

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µmhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 Temperature (°C) 650 pH 782 WASTEWATER ANALYSIS BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	[X] T.O.C.	1.3 671	M.P.N. Total Coliforms/100ml	658
Tot. Sus. Solids	787	C.O.D.	772	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3-N	602	Cyanide	775	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics	783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 [ ] Filtered [ ] Unfiltered

4 CHEMICAL ANALYSIS pH, units 8.1

meq/l	CATIONS	mg/l	ug/l (ppb)	ANIONS	mg/l	
	[X] Ammonia as N	4.3	722	Hydroxide	2.66	768
	[X] Arsenic	<	5	Carbon Dioxide	3	759
	[X] Barium		1000	Carbonate	0	760
	Boron		738	Chloride	14	783
	[X] Cadmium	<	1	CO_2 Solids	140	
3.0	[X] Calcium	60	728	Fluoride	0.23	765
	[X] Chromium	<	5	Hydroxide	0.0	767
	[X] Chromium, Hexa. as Cr	<	5	Nitrate as N	0.01	605
	[X] Copper	<	20	Nitrite as N	0.01	606
	[X] Iron, dissolved	<	30	Phosphorus, Ortho. as P	.30	607
	[X] Lead			Silica dissolved as SiO_2	23	750
2.0	[X] Magnesium	24	737	Sulfate	51	772
	[X] Manganese		54			
	[X] Nickel		740			
.13	[X] Potassium	5	742	TOTAL ANIONS	228	
	[X] Selenium	<	5	GRAND TOTAL	332	
	[X] Silver	<	2			
.65	[X] Sodium	15	745	Tot. Phosphorus		785
	[X] Zinc		10	Total Alk. as $CaCO_3$	234	752
5.8	TOTAL CATIONS 104			T. Hdns. as $CaCO_3$	250	754
				Surfactant as MBAS		773
	Sp. Cond. µmhos/cm.	530	762	Turbidity, as NTU	28	757
	TDS @ 180°C	318	786	Sp. Gravity		608

6 RADIOLOGICS

	pCi/l		pCi/l
Alpha, gross	621	^{89}Sr	633
Beta, gross	623	^{131}I	635
Tritium, ^3H	625	^{134}Cs	637
^{226}Radium	627	^{137}Cs	639
^{228}Radium	629		
^{90}Sr	631		

Analyses Approved By: RED Date: 860331

INTERPRETATION OF ANALYSIS
Remarks:

RECEIVED
APR 7 1986
Utah State Div. Of Environmental Health

By: ENVIRONMENTAL HEALTH

Based on State Standards, this sample was:

	Satisfactory	Questionable	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform			
M.P.N. Fecal Coliform			

SITE/SITE ASSESSMENT
SAS039

Total Chemistry and Total Metals + sol. Metals + TOC

Rev. 3/82
Field No. CW86011

[1] TC [1] TM [5] Nut
[ ] PC [ ] PM [ ] BOD
[ ] Pest. [ ] Rad. [ ] Bact. [ ] Spec.

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Date Recd.:
Received By:

Mr 786860819
Sample No. 701

Storet No. 702
Water Syst. No. Source No. 703 704
Date Collected 86 03 06 (yr. mo. dy.) 714
Time Collected 1520 (24-hour clock) 610
Water Rights No. 707
Exact Description of sampling Point 646
VITRO WELL 5

Supply Owned by 712
Sample Type 710
Sample Collected by 713
HEGDON
SEND REPORT TO: Phone 715
JIM SALMON 648
DIV. OF SOLID WASTE 717
zip code

02 Sample Source 719
01 Spring 14 Other
02 Well 15 Tunnel
03 Stream 18 Artesian well
04 Lake
06 Dist. syst. 19 Swimming pool
07 Effluent
08 Storm sewer

19 County 611
01 Beaver 16 Piute
02 Box Elder 17 Rich
03 Cache 18 Salt Lake
04 Carbon 19 San Juan
05 Daggett 20 Sanpete
06 Davis 21 Sevier
07 Duchesne 22 Summit
08 Emery 23 Tooele
09 Garfield 24 Uintah
10 Grand 25 Utah
11 Iron 26 Wasatch
12 Juab 27 Washington
13 Kane 28 Wayne
14 Millard 29 Weber
15 Morgan

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other
Cost Code 770

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µmhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 Temperature (°C) 650 pH 782 WASTEWATER ANALYSIS BACT. LAB. No.

	mg/l			mg/l		
B.O.D.$_5$	794	T.O.C.	12	671	M.P.N. Total Coliforms/100ml	658
Tot. Sus. Solids	787	C.O.D.		777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3-N	602	Cyanide		775	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics		783	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide		673	M.F. Fecal Coliforms/100ml.	655
					Plate Count-Org./ml.	599

3 Filtered Unfiltered

meq/l	CATIONS	mg/l	ug/l (ppb)	
	Ammonia as N	5.9		722
	Arsenic		<5	723
	Barium		1000	724
	Boron			725
	Cadmium		<1	727
4.2	Calcium	84		728
	Chromium		<5	729
	Chromium Hex. as Cr		<5	730
	Copper		<20	731
	Iron, dissolved		<30	733
	Lead			734
3.3	Magnesium	40		737
	Manganese		390	738
	Nickel			740
0.35	Potassium	14		742
	Selenium		<5	743
	Silver		<2	744
1.39	Sodium	32		745
	Zinc		<10	746
9.3	TOTAL CATIONS	170		

Sp. Cond. µmhos/cm.	960	762
TDS @ 180°C	578	786

4 CHEMICAL ANALYSIS pH, units 7.9

meq/l	ANIONS	mg/l	
	Bicarbonate	232	758
	Carbon Dioxide	5	759
	Carbonate	0	760
2.78	Chloride	99	763
+.13	CO_2 Solids	122	
	Fluoride	0.23	765
	Hydroxide	0.0	767
	Nitrate as N	0.01	605
	Nitrite as N	<0.01	606
	Phosphorus, Ortho as P	.34	607
	Silica, dissolved as SiO_2	36	750
3.59	Sulfate	173	772
10.5	TOTAL ANIONS	431	
	GRAND TOTAL	601	

Tot. Phosphorus		765
Total Alk. as $CaCO_3$	205	752
T. Hardness as $CaCO_3$	375	754
Surfactant as MBAS		773
Turbidity, as NTU	4.8	757
Sp. Gravity		608

5 TOTAL METALS ANALYSIS

CATIONS	mg/l	ug/l (ppb)	
Aluminum			800
Arsenic		<5	660
Barium	0.15		661
Beryllium			801
Cadmium		<1	662
Chromium		<5	663
Cobalt			804
Copper		<20	664
Gold			700
Iron	0.19		755
Lead		<5	665
Manganese		392	666
Mercury		<1	739
Molybdenum			803
Nickel			667
Selenium		<5	668
Silver		<2	669
Uranium			601
Vanadium			803
Zinc		<10	670

6 RADIOLOGICS

	pCi/l			pCi/l	
Alpha, gross		621	^{89}Sr		633
Beta, gross		623	^{131}I		635
Tritium, ^3H		625	^{134}Cs		637
^{226}Radium		627	^{137}Cs		639
^{228}Radium		629			
^{90}Sr		631			

Analyses Approved By: REL Date: 860331

INTERPRETATION OF ANALYSES:
Remarks:

RECEIVED
APR 7 1986
Div. Of Health

By ENVIRONMENTAL HEALTH

Based on State Standards, this sample was

	Satisfactory	Questionable	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

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SITE/SITE ASSESSMENT SAS039

Total Chemistry and Total Metals + sol. Metals + TOC

Rev. 3/82
Field No. CW86012

1 TC | 1 TM | 5 Nut
PC | PM | BOD

Past. / Rad. / Bact. / Spec.

Date Recd.: _____
Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Lab. 786860820
Sample No. 701

Storet No. 702
Water Syst. No. Source No. 703 704
Date Collected 860306 (yr. mo. dy.) 716
Time Collected (24-hour clock) 710
Water Rights No. 707
Exact Description of sampling Point: BC-MK 646
Supply Owned by 712
Sample Type 710
Sample Collected by: HEGDOM 713
SEND REPORT TO: Phone
TIM SALMON 715
BUR SE HAZ. WASTE 648
717 zip code

Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other
Cost Code 770

1 FIELD TESTS

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	509
Sp. Cond. µmhos	653	Cl Resid., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity	608	Flow, GPM	604
Transparency, m	649	Flow, cfs	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 | pH 782 | BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	<2 671	M.P.N. Total Coliforms/100ml	658
Tot. Sus. Solids	<3 787	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3-N	602	Cyanide	775	Fecal Strep C/100ml.	656
T.K.N.	778	Phenolics	782	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfides	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 Filtered / Unfiltered

mg/l	CATIONS	mg/l	ug/l (ppb)
	Ammonia as N		722
	Arsenic	<.5	732
	Barium	500	736
	Boron		735
	Cadmium		737
	Calcium	11	738
	Chloride		739
	Chromium	<5	730
	Chromium, Hex. as Cr		732
	Copper		733
	Iron, dissolved		734
	Lead		737
	Magnesium	11	738
	Manganese		740
	Mercury		742
	Potassium	.01	743
	Selenium	<.5	744
	Silver		745
	Sodium	.01	746
	Zinc		748

<.1 TOTAL CATIONS <2

Sp. Cond. µmhos/cm.	2	762
TDS @ 180°C	<20	766

4 CHEMICAL ANALYSIS

mg/l	ANIONS	mg/l	
	Bicarbonate	2	758
	Carbon Dioxide	3	759
	Carbonate	0	760
.00	Chloride	1	753
.115	CO_2 Solids	0	
.03	Fluoride	.03	765
	Hydroxide	.00	767
	Nitrate as N	.002	605
	Nitrite as N	<.001	606
	Phosphate, Ortho. as P	.01	607
	Silica, dissolved as SiO_2	1	750
.040	Sulfate	<5	772
<.1	TOTAL ANIONS		
	GRAND TOTAL	<10	

Tot. Phosphorus		785
Total Alk. as $CaCO_3$	<1	752
T. Hdns. as $CaCO_3$		754
Surfactant as MBAS		773
Turbidity, as NTU	.2	757
Sp. Gravity		608

TOTAL METALS ANALYSIS

pH, units 7.9/8.0

5

CATIONS	mg/l	ug/l (ppb)
Aluminum		800
Arsenic	<.2	660
Barium	.05	661
Beryllium		801
Cadmium	<.1	662
Chromium	<.5	663
Cobalt		804
Copper	<.20	664
Gold		760
Iron	.03	755
Lead	<.5	665
Manganese	<.10	666
Mercury	<.1	739
Molybdenum		802
Nickel		667
Potassium	<.5	668
Silver	<.2	669
Uranium		601
Vanadium		803
Zinc	<.10	670

6 RADIOLOGICS

	pCi/l		pCi/l	
Alpha, gross		621	^{89}Sr	633
Beta, gross		623	^{131}I	635
Tritium, ^3H		625	^{134}Cs	637
^{226}Radium		627	^{137}Cs	639
^{228}Radium		629		
^{90}Sr		631		

Analyses Approved By: RSL Date: 860326

INTERPRETATION OF ANALYSES
Remarks:

RECEIVED
APR 7 1986
Div. Of Health

By: ENVIRONMENTAL HEALTH

Based on State Standards, this sample was:

	Satisfactory	Questionable	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

notice, it is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

Rev. 3/82
Field No. CW36013

TC / PC / TM / PM / Nut / BOD / Pest. / Rad. / Bact. / Spec.

+TOC

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Date Recd.:
Received By:

HR 1086880852

Sample No. 701

Storet No. 702
Water Syst. No. Source No. 703 704
Water Rights No. 707
Date Collected 706 (yr. mo. dy.)
Time Collected 1200 (24-hour clock) 708
Exact Description of sampling Point 646
VITRO WELL 9E
Supply Owned by 712 VITRO
Sample Type 710
Sample Collected by 713 COMON
SEND REPORT TO: Phone 941-45
715 JIM SALMON
648 BUR. SOLID & HAZ WASTE
717 zip code

Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 342 770

RECEIVED
MAY 28 1986
Utah State Div. of Environmental Health

Temperature (°C) 792
D.O., mg/l
Sp. Cond. µmhos 653
pH
Sp. Gravity
Transparency, m
CO_2, mg/l 572
Cl Resid., mg/l 753
Flow, MGD 652
Flow, GPM 604
659

2 Temperature (°C) 650 pH 782 WASTEWATER ANALYSIS BACT. LAB. No.

	mg/l		mg/l
B.O.D.$_5$	794	T.O.C.	671 (122)
Tot. Sus. Solids	787 (280)	C.O.D.	777
NO_2+NO_3,N	603	Cyanide	778
T.K.N.	778	Phenolics	783
Oil & Grease	780	Sulfide	672

M.P.N. Total Coliforms/100ml 658
M.P.N. Fecal Coliforms/100ml 657
Fecal Strep C/100ml. 656
M.F. Total Coliforms/100ml. 654
M.F. Fecal Coliforms/100ml. 655
Plate Count-Org./ml. 599

3 Filtered Unfiltered

mg/l	CATIONS	mg/l	ug/l (ppb)
	Ammonia as N	12.5	722
	Arsenic		310 722
X	Barium		<50 730
	Beryllium		728
	Cadmium		727
20	Calcium	452	729
	Chromium		730
	Chromium, Hex. as Cr		<5 732
	Copper		733
	Iron, dissolved		734
	Lead		736
100	Magnesium	1200	738
	Manganese		740
	Mercury		742
5	Potassium	4.4	743
	Selenium		<5 744
	Silver		746
148	Sodium	3400	748
	Zinc		749
213	TOTAL CATIONS	5,060	

Sp. Cond. µmhos/cm. 752 15,210
TDS @ 180°C 786 10,000

4 CHEMICAL ANALYSIS

mg/l	ANIONS	mg/l
	Bicarbonate	1200 754
	Carbon Dioxide	122 759
	Carbonate	0 760
84.2	Chloride	3012 763
17.2	CO_3 Sulfate	590
	Fluoride	0.90 765
	Hydroxide	0.0 767
	Nitrate as N .62	0.02 605
	Nitrite as N .04	0.04 606
	Phosphate, Ortho	0.05 607
	Silica, Dissolved SiO_2	40 750
144	Sulfate	6900 772
219	TOTAL ANIONS	10,540
	GRAND TOTAL	15,600

Tot. Phosphorus 786
Total Alk. as $CaCO_3$ 752 984
T. Hdns. as $CaCO_3$ 754 6000
Surfactants as MBAS 773
Turbidity, as NTU 757 210
Sp. Gravity 608

TOTAL METALS ANALYSIS

5	CATIONS	mg/l	ug/l (ppb)
	Aluminum		800
X	Arsenic		235 660
X	Barium	<.05	661
	Beryllium		801
X	Cadmium		<1 662
X	Chromium		<5 663
	Cobalt		804
X	Copper		35 664
	Gold		700
X	Iron	3.50	755
X	Lead		<5 665
X	Magnesium	26.11	666
X	Mercury		<.1 739
	Molybdenum		802
	Nickel		667
X	Potassium		5 668
	Selenium		2 669
	Silver		601
X	Uranium		803
	Vanadium		670
X	Zinc		30

pH, units 7.2

6 RADIOLOGICS

	pCi/l		pCi/l
Alpha, gross	631	^{89}Sr	633
Beta, gross	632	^{131}I	635
Tritium ^3H	636	^{134}Cs	637
^{226}Radium	627	^{137}Cs	639
^{228}Radium	629		
^{90}Sr	631		

Analyses Approved By: REJ Date: 860402

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was:

	Satisfactory	Questionable	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform			
M.P.N. Fecal Coliform			

By ENVIRONMENTAL HEALTH

notice, it is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

Rev. 3/82
Field No. CW86014

1 TC | 1 TM | 4 Nut
PC | PM | BOD

Pest. | Rad. | Bact. | Spec.

+TOC

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

Date Recd.:
Received By:

Mar 1 0 8 6 8 6 0 8 5 3
Sample No. 701

Storet No. 702
Water Syst. No. Source No. 703 704
Date Collected 705 (yr. mo. dy.) 3 1 8 7
Time Collected 706 (24-hour clock) 1 3 0 0
Water Rights No. 707

Exact Description of sampling Point 646
WELL 11A VITCO

Supply Owned by 712
Sample Type 710

Sample Collected by 713
DOVOM

SEND REPORT TO: Phone 16734
JIM SHIMO 715
DLR SOLID WASTE 648
717
zip code

Sample Source 719
01 Spring 14 Other
02 Well 15 Tunnel
03 Stream 18 Artesian well
04 Lake
06 Dist. syst. 19 Swimming pool
07 Effluent
08 Storm sewer

County 611
01 Beaver 18 Piute
02 Box Elder 17 Rich
03 Cache 16 Salt Lake
04 Carbon 19 San Juan
05 Daggett 20 Sanpete
06 Davis 21 Sevier
07 Duchesne 22 Summit
08 Emery 23 Tooele
09 Garfield 24 Uintah
10 Grand 25 Utah
11 Iron 26 Wasatch
12 Juab 27 Washington
13 Kane 28 Wayne
14 Millard 29 Weber
15 Morgan

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 3 1 4 2 770

1 FIELD TESTS

RECEIVED
MAY 28 1986
Utah State Div. of Environmental Health

Temperature (°C) 792
D.O., mg/l 739
Sp. Cond., µmhos 651
pH
Sp. Gravity
Transparency, m
CO_2, mg/l 572
Depth, m 609
Cl Resid., mg/l 753
Flow, MGD 652
Flow, GPM 604
Flow, cfs 659

2 Temperature (°C) 650 pH 782 WASTEWATER ANALYSIS BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	X T.O.C.	671	M.P.N. Total Coliforms/100ml	658
Tot. Sus. Solids	787 46	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2-NO_3-N	602	Cyanide	775	Fecal Strep C/100ml	656
T.K.N.	778	Phenolics	783	M.F. Total Coliforms/100ml	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml	655
				Plate Count-Org./ml	599

3 Filtered Unfiltered

4 CHEMICAL ANALYSIS pH, units 7.5

mg/l	CATIONS	mg/l	ug/l (ppb)		ANIONS	mg/l	
	Ammonia as N	29		722	Bicarbonate	1112	758
	Aluminum		30	722	Carbon Dioxide	96	763
X	Barium		< 500	730	Carbonate	0	760
	Boron			732	Chloride	3438	783
	Cadmium			727	CO_2 Solids	9472	
10.	Calcium	240		718	Fluoride	135	765
	Chromium			722	Hydroxide	00	767
	Chromium, Hex. as Cr		< 5	730	Nitrogen-N	0.10	605
	Copper			732	Nitrite as N	0.04	606
	Iron, dissolved			733	Phosphorus, Ortho, as P	0.06	607
	Lead			734	Silica, dissolved as SiO_2	35	750
70.	Magnesium	870		737	Sulfate	5960	772
	Manganese			739			
	Mercury			740			
4.	Nickel	1.6		742			
	Potassium		< 5	743			
	Selenium			744			
	Silver			746			
165.	Sodium	3800		748			
	Zinc			749			
249.	TOTAL CATIONS	5000			TOTAL ANIONS	9920	
					GRAND TOTAL	15000	
	Sp. Cond., µmhos/cm	15750		761	Tot. Phosphorus		785
	TDS @ 180°C	15610		786	Total Alk. as $CaCO_3$	911	752
					T. Hardness as $CaCO_3$	4000	754
					Surfactants as MBAS		773
					Turbidity, as NTU	100	757
					Sp. Gravity		608

5 TOTAL METALS ANALYSIS

	CATIONS	mg/l	ug/l (ppb)	
	Aluminum			800
X	Arsenic		80	860
X	Barium	< 1.0		861
	Beryllium			801
X	Cadmium		< 1	862
X	Chromium		< 5	863
	Cobalt			804
X	Copper		30	864
	Gold			700
X	Iron	1.34		755
X	Lead		< 5	865
X	Magnesium		0.18	866
X	Mercury		< .1	739
X	Molybdenum			802
	Nickel			867
X	Potassium	4	1.6	868
X	Silver		< 3	869
X	Uranium			601
	Vanadium			803
X	Zinc		10	870

6 RADIOLOGICS

	pCi/l		pCi/l		
Alpha, gross		621	^{89}Sr		633
Beta, gross		623	^{131}I		635
Tritium, ^3H		625	^{134}Cs		637
$^{226}Radium$		627	^{137}Cs		639
$^{228}Radium$		629			
^{90}Sr		631			

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was:

	Satisfactory	Questionable	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

Analyses Approved By: RED Date: 82 6 4 02

By: ENVIRONMENTAL HEALTH

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SITE/SITE ASSESSMENT SAS039

CW86125

TC & TM

Rev. 3/82

Field No.

☑ TC ☑ TM ☐ Nut ☐ Pest. ☐ Rad. ☐ Bact. ☐ Spec.
☐ PC ☐ PM ☐ BOD

Date Recd.:

Received By:

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

MAY 12 86 863224
Sample No. 701

Storet No.

Water Syst. No. Source No.

Date Collected 860512 (yr. mo. dy.)

Time Collected 1330 (24-hour clock)

Water Rights No.

Exact Description of sampling Point: DARG Hzo well point DP-8

Supply Owned by: DARG R.R.

Sample Type

Sample Collected by: P. Salmon / R. Raymond

SEND REPORT TO: Phone
Jim Salmon
Solid and Haz Waste

zip code

Sample Source: 11 — 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County: 11 — 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use

Proposed use

1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code

1 FIELD TESTS

Temperature (°C) | O_2

D.O., mg/l | Depth, m

Sp. Cond. µmhos | Turbid., mg/l

pH | Flow, MGD

Sp. Gravity | Flow, GPM

Transparency, m

RECEIVED
JUN 18 1986
Utah State Div. Of
Environmental Health

2 WASTEWATER ANALYSIS

Temperature (°C) | pH | BACT. LAB. No.

	mg/l		mg/l
B.O.D.$_5$	794	T.O.C.	671
Tot. Sus. Solids	787	C.O.D.	777
NO_2+NO_3-N	602	Cyanide	775
T.K.N.	778	Phenolics	783
Oil & Grease	780	Sulfide	672

M.P.N. Total Coliforms/100ml
M.P.N. Fecal Coliforms/100ml
Fecal Strep C/100ml.
M.F. Total Coliforms/100ml.
M.F. Fecal Coliforms/100ml.
Plate Count Org./ml.

3 Filtered | Unfiltered

4 CHEMICAL ANALYSIS

pH, units: 7.2

mg/l	CATIONS	mg/l	ug/l (ppb)
	Ammonia as N		
	Arsenic		36
	Barium		
	Boron		
	Cadmium	<	1
18	Calcium	37.6	
	Chromium	<	5
	Chromium Hex. as Cr		110
	Copper	<	20
	Iron, dissolved	<	30
	Lead	<	5
155	Magnesium	188	
	Manganese		823
	Nickel		
.86	Potassium	3.4	
	Selenium		1
	Silver	<	10
126	Sodium	29.2	
	Zinc		310

47 TOTAL CATIONS 890

mg/l	ANIONS	mg/l
	Bicarbonate	453
	Carbonate Alkalinity	45
	Carbonate	0
162	Chloride	164
244	CO_2 Solids	223
	Fluoride	1.26
	Hydroxide	0.0
	Nitrate as N	1.80
	Nitrite as N	.06
	Phosphate, Ortho. as P	.03
	Silica, dissolved as SiO_2	20
35.16	Sulfate	168.8
47		

TOTAL ANIONS 2110
GRAND TOTAL 3000

	Tot. Phosphorus	
	Total Alk. as $CaCO_3$	372
	T. Hard. as $CaCO_3$	1700
	Surfactant as MBAS	
	Turbidity, as NTU	11000
	Sp. Gravity	

5 TOTAL METALS ANALYSIS

CATIONS	mg/l	ug/l (ppb)
Aluminum		
Arsenic		12.75
X Barium	0.15	
Beryllium		
Cadmium		23
Chromium		198
Cobalt		
Copper		730
Gold		
Iron	43.60	
Lead		460
Manganese		2210
X Mercury		.68
Molybdenum		
Nickel		
Palladium		3
Silver	<	2
Uranium		
Vanadium		
Zinc		3400

6 RADIOLOGICS

	pCi/l		pCi/l
Alpha, gross		^{89}Sr	
Beta, gross		^{131}I	
Tritium, ^3H		^{134}Cs	
^{226}Radium		^{137}Cs	
^{228}Radium			
^{90}Sr			

Sp. Cond. µmhos/cm 3820
TDS @ 180°C 3162

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was:

	Bacteriologically Contaminated	Chemically Contaminated	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

By

Analyst: Approved By: 0211 Date: 8/20/81

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SITE/SITE ASSESSMENT

SAS039

CW86126

TC & TM

Rev. 3/82

Field No.

☐ TC ☐ TM ☐ Nut
☐ PC ☐ PM ☐ BOD

☐ Pest. ☐ Rad. ☐ Bact. ☐ Spec.

Date Recd.:

Received By:

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

MAY 12 86 863225

Sample No. 701

Storet No.

Water Syst. No. Source No.

Date Collected 702 (yr. mo. dy.) 8 6 05 12

Time Collected 714 1990 (24-hour clock)

Water Rights No. 707

Exact Description of sampling Point 646
DMG Water
well point DDS

Supply Owned by 712
Odell Bl

Sample Type 710

Sample Collected by 713
JSolmon

SEND REPORT TO: Phone
Jim Solmon 715
Solid & Hazardous Waste 717
zip code

Sample Source 719 11
01 Spring 14 Other
02 Well 15 Tunnel
03 Stream 18 Artesian well
04 Lake
06 Dist. syst. 19 Swimming pool
07 Effluent
08 Storm sewer

County 611 16
01 Beaver 16 Piute
02 Box Elder 17 Rich
03 Cache 18 Salt Lake
04 Carbon 19 San Juan
05 Daggett 20 Sanpete
06 Davis 21 Sevier
07 Duchesne 22 Summit
08 Emery 23 Tooele
09 Garfield 24 Uintah
10 Grand 25 Utah
11 Iron 26 Wasatch
12 Juab 27 Washington
13 Kane 28 Wayne
14 Millard 29 Weber
15 Morgan

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 770

1 FIELD TESTS

RECEIVED
JUN 16 1986
Utah State Div. Of Environmental Health

Temperature (°C) 752
D.O., mg/l 753
Sp. Cond. µmhos 651
pH
Sp. Gravity
Transparency, m

CO_2, mg/l 572
Depth, m 609
Resid., mg/l 753
Flow, MGD 652
Flow, GPM 604
Flow, cfs 659

2 Temperature (°C) 650 pH 782 WASTEWATER ANALYSIS BACT. LAB. No.

	mg/l			mg/l		
B.O.D.$_5$		794	T.O.C.		671
Tot. Sus. Solids	1730	787	C.O.D.		777
NO_2+NO_3-N		602	Cyanide		775
T.K.N.		778	Phenolics		783
Oil & Grease		780	Sulfide		672

M.P.N. Total Coliforms/100ml	658
M.P.N. Fecal Coliforms/100ml	657
Fecal Strep. C/100ml.	656
M.F. Total Coliforms/100ml.	654
M.F. Fecal Coliforms/100ml.	655
Plate Count-Org./ml.	599

3 Filtered Unfiltered

mg/l	CATIONS	mg/l	ug/l (ppb)	
	Ammonia as N			722
	Arsenic		17	723
	Barium			724
	Boron			725
	Cadmium		<1	727
179	Calcium	35		728
	Chromium		<5	729
	Chromium, Hex. as Cr		190	730
	Copper		<20	732
	Iron, dissolved		<30	733
	Lead		<5	734
83	Magnesium	101		737
	Manganese		700	738
	Nickel			740
.98	Potassium	3.8		742
	Selenium		<3	743
	Silver		<20	744
29.6	Sodium	68		745
	Zinc		70	749
51	TOTAL CATIONS	179		

4 CHEMICAL ANALYSIS pH, units 7.5

mg/l	ANIONS	mg/l	
	Bicarbonate	295	755
	Carbon Dioxide	46	759
	Carbonate	0	760
1490	Chloride	522	783
8302	CO_2 Sulfide	390	
	Fluoride	2.6	765
	Hydroxide	0.0	787
	Nitrate as N	2.56	605
	Nitrite as N	0.02	606
	Phosphorus, Ortho. as P	0.5	607
	Silica, dissolved as SiO_2	31	750
29.5	Sulfate	1430	773
51.6	TOTAL ANIONS	2380	
	GRAND TOTAL	3558	

Tot. Phosphorus		785
Total Alk. as $CaCO_3$	631	753
T. Hdns. as $CaCO_3$	1310	754
Surfactant as MBAS		773
Turbidity, as NTU	>1000	757
Sp. Gravity		608

Sp. Cond. µmhos/cm.	4770 762
TDS @ 180°C.	3584 786

5 TOTAL METALS ANALYSIS

CATIONS	mg/l	ug/l (ppb)	
Aluminum			800
Arsenic		160	560
Barium	0.5		801
Beryllium			802
Cadmium		5	662
Chromium		39	663
Cobalt			804
Copper		155	664
Gold			700
Iron	2.04		756
Lead		190	665
Manganese		700	666
Mercury		1	739
Molybdenum			802
Nickel			667
Palladium		35	668
Silver		<2	669
Uranium			601
Vanadium			803
Zinc		5.15	670

6 RADIOLOGICS

	mg/l			mg/l	
Alpha, gross		621	^{89}Sr		633
Beta, gross		623	^{131}I		635
Tritium, ^3H		625	^{134}Cs		637
^{226}Radium		627	^{137}Cs		639
^{228}Radium		629			
^{90}Sr		631			

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

Analyses Approved By: RSU Date: 86.06.11

By

notice. it is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

CW 86128 TC + TM

Rev. 3/82

Field No.

TC / PM / Nut
PC / PM / BOD
Pest. / Rad. / Bact. / Spec.

Date Recd.

Received By:

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
WATER ANALYSES

May 12 1986 863227

Sample No. 701

Stor.t No.

Water Syst. No. Source No. 702 704

Date Collected 702 — 8 6 0 5 1 2 (yr. mo. dy.)

Time Collected 714 — 24-hour clock

Water Rights No. 707

Exact Description of sampling Point 646 — Dump Valve Block

Supply Owned by 712

Sample Type 710

Sample Collected by 713 — Sellman

SEND REPORT TO: Phone

715 — Jim Sellman
648 — Solid & Haz Waste
717 — zip code

Sample Source 719
01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

Cost Code 770

1 FIELD TESTS

RECEIVED
JUN 18 1986
Utah State Div. Of Environmental Health

Temperature (°C)	792	CO_2, mg/l	572
D.O., mg/l	793	Depth, m	609
Sp. Cond. µmhos		Res'd., mg/l	753
pH	651	Flow, MGD	652
Sp. Gravity		Time	604
Transparency, m		Date	659

2 WASTEWATER ANALYSIS

Temperature (°C) 650 pH 782 BACT. LAB. No.

	mg/l		mg/l		
B.O.D.$_5$	794	T.O.C.	671	M.P.N. Total Coliforms/100ml	658
Tot. Sus. Solids	3 787	C.O.D.	777	M.P.N. Fecal Coliforms/100ml	657
NO_2+NO_3,N	602	Cyanides	775	Fecal Strep C/100ml.	656
T.N.Hx	778	Phenolics	733	M.F. Total Coliforms/100ml.	654
Oil & Grease	780	Sulfide	672	M.F. Fecal Coliforms/100ml.	655
				Plate Count-Org./ml.	599

3 Filtered / Unfiltered

mg/l	CATIONS	mg/l	ug/l (ppb)
	Ammonia-N		722
	Arsenic		723
	Barium		724
	Boron		725
	Cadmium		727
	Calcium	1	728
	Chromium		729
	Chromium, Hex. as Cr		730
	Copper		732
	Iron, dissolved		733
	Lead		734
	Magnesium	1	737
	Manganese		738
	Nickel		740
.00	Potassium	0	742
	Selenium		743
	Silver		744
.04	Sodium	4	745
	Zinc		748
	TOTAL CATIONS		

Sp. Cond. µmhos/cm.	5 762
TDS @ 180°C	20 756

4 CHEMICAL ANALYSIS

pH, units 6.2

mg/l	ANIONS	mg/l	
	Bicarbonate	2	758
	Carbon Dioxide	2	759
	Carbonate	0	760
.00	Chloride	1	733
.03	CO_2 Solids	0	
	Fluoride	.04	765
	Hydroxide	.00	767
	Nitrate-as N	.01	605
	Nitrite-as N	.01	606
	Phosphorus, Ortho-as P	.005	607
	Silica, dissolved as SiO_2	1	750
0.11	Sulfate	10	772
	TOTAL ANIONS		
	GRAND TOTAL		

Tot. Phosphorus		795
Total Alk. as $CaCO_3$	1	752
T. Hdns. as $CaCO_3$		754
Surfactant as MBAS		773
Turbidity, as NTU	.04	757
Sp. Gravity		608

5 TOTAL METALS ANALYSIS

CATIONS	mg/l	ug/l (ppb)
Aluminum		800
Arsenic	< 5	660
X Barium	< .015	661
Beryllium		801
Cadmium	< 1	662
Chromium	< 5	663
Cobalt		804
Copper	< 20	664
Gold		700
Iron	< .05	755
Lead	< 5	665
Manganese	< 10	666
X Mercury	< 1	739
Molybdenum		805
Nickel		667
Selenium	< 5	668
Silver	< 2	669
Uranium		601
Vanadium		803
Zinc	< 10	670

6 RADIOLOGICS

	pCi/l		pCi/l
Alpha, gross	621	^{89}Sr	633
Beta, gross	623	^{131}I	635
Tritium, ^3H	625	^{134}Cs	637
^{226}Radium	627	^{137}Cs	639
^{228}Radium	629		
^{90}Sr	631		

Analyses Approved By: RSL Date: 860611

INTERPRETATION OF ANALYSES:
Remarks:

By: ENVIRONMENTAL HEALTH

Based on State Standards, this sample was:

	Satisfactory	Conditional	Unsatisfactory
B.O.D.$_5$			
Tot. Sus. Solids			
M.P.N. Total Coliform.			
M.P.N. Fecal Coliform.			

SITE/SITE ASSESSMENT SAS039

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3618

Map 7 86860820

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
ORGANIC RESIDUE ANALYSES

Rev. 7/80 Date Recd.: _____

Field No. CW86012 Received By: _____

Sample No. 701

Storet No. 702

Water Syst. No. Source No. 792 794

Date Collected 860306 (yr. mo. dy.) 714 Time Collected (24-hour clock) 415

Water Rights No. 707

Exact Description of sampling Point 646
BLANK

Supply Owned by 712

Sample Type 710

Sample Collected by 713
HEBDON

SEND REPORT TO: Phone
JIM SALMON 715
BUR. SHAZ WASTE 648
717 zip code

Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was: Satisfactory / Questionable / Unsatisfactory

By ENVIRONMENTAL HEALTH

8 CHLORINATED HYDROCARBONS ug/l(ppb)

			ug/l(ppb)	
	Dichloropropane			574
	Dichloropropene			575
	Chlordane			516
X	Toxaphene	<	01	618
	Endosulfan			576
X	Lindane	<	002	616
	Dicofol			577
X	Methoxychlor	<	02	617
	Dieldrin			643
	Heptachlor			536
	Heptachlor epoxide			615
	Beta, BHC			520
	Perchlorobenzene, HCB			735
	Aldrin			699
X	Endrin	<	006	613
	p.p. DDT			518
	p.p. DDE	<	006	511
	p.p. DDD			513
	Mirex			580

9 ORGANOPHOSPHATES None ug/l(ppb)

			ug/l(ppb)	
	Ethyl Parathion			510
	Malathion			578
	Ethyl Azinphos			512
	Methyl Azinphos			534
	Diazinon			514
	Disulfoton			535
	Methyl Parathion			517
	Fonofos			518
	Phosalone			519
	Phosmet			520
	Coumaphos			521
	Fenthion			522
	Phorate			523
	Demeton			524
	Fensulfothion			525
	Dichlorvos			526
	Trichlorfon			527
	Methyl Oxydemeton			528
	Ronnel			529
	Crufomate			530
	Ethion			

10 HERBICIDES - GRP1 ug/l(ppb)

			ug/l(ppb)	
X	2,4-D	<	02	619
	Atrazine			582
	Sulfur			532
	Sodium Polysulfide			583
	Bromacil			584
	Simazine			585
	Pronamide			586
	DCPA			587
	EPTC			588
	Dinocap			589
	Dicamba			590
	Diuron			591
	Monuron			592
	Dinoseb			593
	Alachlor			594
	Cycloate			595
	Cyanazine			596
	Nitrofen			597
	Copper Sulfate			533
	Trifluralin			598
	2,4-DB			675
	Terbutryn			678
	Maleic Hydrazide			678
	Dacthal			679

11 HERBICIDES - GRP2 ug/l(ppb)

			ug/l(ppb)	
	2, 4, 5- T	<	01	681
	Pyrazon			682
	Prometon			683
	Metaborate			684
	Dalapon			685
X	2,4,5-TP	<	05	620
	Chlorate-Borate			686
	Aminozide			687
	Captan			688
	Glyphosate			689
	Picloram			690
	Methyl Bromide			691
	Methyl Chloride			692
	Amm. Methanarsonate			736
	Terbacil			741
	Paraquat			746
	Acrolein			747
	Diquat			751

11 HERBICIDES - GRP2 Cont. ug/l(ppb)

			ug/l(ppb)	
	Prometryn			761
	Propazine			764

12 CARBAMATES None ug/l(ppb)

			ug/l(ppb)	
	Carbofuran			768
	Carbaryl			769
	Maneb			771
	Mexacarbate			776
	Aldicarb			779
	Propoxur			781
	Bendiocarb			784
	Benomyl			788

13 ORGANOHALOCARBONS ug/l(ppb)

			ug/l(ppb)	
	Chloroform			790
	Bromoform			791
	Bromodichloromethane			795
	Dibromochloromethane			796
	Bromomethane			797
	Carbon Tetrachloride			798
	Chloroethane			799
	Chloromethane			500
	Dichlorobenzene			501
	Dichloroethane			502
	Methylene Chloride			503
	Vinyl Chloride			504

14 OTHER None ug/l(ppb)

			ug/l(ppb)	
	PCB 1254			674
	PCB 1260	<	01	581

Analyses Approved By: W. Garrick

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SITE/SITE ASSESSMENT SAS039

FILE

Set # 3614-20
Lab # 860820
FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW8612 Date/Time Collected 3-6-86 Sample Matrix Water
Collected By Hebdon Sampling Site Field Blank
Exact Description of Sampling Point —

Analyst [illegible] Date Rec'd 3-7-86 Date Analyzed 3-7-86
Amt. Purged 5 (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.1 B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 1.4 B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon 11)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	2.U
	Total Xylenes	1.U

ug/L or ug/Kg

Tentatively Identified Compounds

Name	Scan#	Results
Hexane	319	5 J

U - Analyzed for but detected.

J - An estimated valu for a tentatively identified compou OR a value less t the detection lim but greater than zero.

B - Found in the blan

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SITE/SITE ASSESSMENT SAS039

Set # 3614-20
Lab # 860820
FOR LAB USE ONLY

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW 86012 Date/Time Collected 3-6-86 Sample Matrix Water
Collected By Holden Sampling Site EB Utah
Exact Description of Sampling Point

Analyst RM Date Rec'd 3-7-86 Date Analyzed 3-20-86
Aliquot Sample Extracted 1000 ml Final Extract Volume 2 ml

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	in ug/L MDL/Results
	Acenaphthene	1.U
	Acenaphthylene	2.U
	Anthracene	3.U
	Aniline	4.U
	Benzidene	82.U
	Benzo(a)anthracene	7.U
	Benzo(b)fluoranthene	7.U
	Benzo(k)fluoranthene	4.U
	Benzo(a)pyrene	11.U
	Benzo(ghi)perylene	13.U
	Benzylbutylphthalate	7.U
	Benzyl alcohol	17.U
	Benzoic acid	32.U
	Bis(2-chloroethyl)ether	3.U
	Bis(2-chloroethoxy)methane	3.U
	Bis(2-chloroisopropyl)ether	3.U
	Bis(2-ethylhexyl)phthalate	10.U
	4-Bromophenyl phenyl ether	6.U
	4-Chloroaniline	9.U
	2-Chloronaphthalene	2.U
	4-Chloro-3-methyl phenol	6.U
	2-Chlorophenol	2.U
	4-Chlorophenyl phenyl ether	4.U
	Chrysene	3.U
	Dibenz(a,h)anthracene	19.U
	Dibenzofuran	2.U
	Di-n-butyl phthalate	5.U
	1,3-Dichlorobenzene (meta)	2.U
	1,2-Dichlorobenzene (ortho)	5.U
	1,4-Dichlorobenzene (para)	1.U
	3,3-Dichlorobenzidene	24.U
	2,4-Dichlorophenol	4.U
	2,4-Dimethylphenol	6.U
	Diethyl phthalate	4.U
	2,4-Dinitrophenol	31.U
	Dimethyl phthalate	3.U
	2,4-Dinitrotoluene	14.U
	2,6-Dinitrotoluene	10.U
	4,6-Dinitro-2-methyl Phenol	24.U
	Di-n-octyl phthalate	8.U
	Fluoranthene	5.U
	Hexachlorobenzene	6.U
	Hexachlorobutadiene	4.U
	Hexachloroethane	2.U
	Hexachlorocyclopentadiene	21.U
	Indeno(1,2,3-c,d)pyrene	16.U
	Isophorone	3.U
	2-Methyl-4,6-dinitrophenol	24.U
	2-Methyl naphthalene	3.U
	2-Methyl phenol (o-cresol)	3.U
	3-Methyl phenol (m-cresol)	10.U
	4-Methyl phenol (p-cresol)	4.U

X	Name	in ug/L MDL/Results
	Naphthalene	1.U
	2-Nitroaniline	16.U
	4-Nitroaniline	31.U
	Nitrobenzene	3.U
	2-Nitrophenol	4.U
	4-Nitrophenol	18.U
	n-Nitrosodimethylamine	8.U
	n-Nitrosodiphenylamine	4.U
	Pentachlorophenol	29.U
	Phenanthrene	1.U
	Phenol	3.U
	Pyrene	4.U
	1,2,4-Trichlorobenzene	2.U
	2,4,6-Trichlorophenol	4.U

Tentatively Identified Compound

Name	Scan #
None Detected	

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U - Analyzed for but not detected.
J - An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.
B - Found in the blank

Preparation and Analysis By: _____ Date _____

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SITE/SITE ASSESSMENT SAS039

Set # 3608-12
Lab # Method Blank 1
3-6-86
FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # - Date/Time Collected - Sample Matrix Water
Collected By - Sampling Site -
Exact Description of Sampling Point -

Analyst M Miller Date Rec'd 3-6-86 Date Analyzed 3-6-86
Amt. Purged 5 ml (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 8
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 8
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon II)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	2.U
	Total Xylenes	1.U

ug/L or ug/Kg

Tentatively Identified Compounds Name	Scan#
None	

U - Analyzed for but n detected.

J - An estimated valu for a tentatively identified compou OR a value less t the detection lim but greater than zero.

B - Found in the blan

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SITE/SITE ASSESSMENT SAS039

Set # 3608-12
Lab # Method Blank 2
3-6-86
FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # - Date/Time Collected - Sample Matrix Water
Collected By - Sampling Site -
Exact Description of Sampling Point -

Analyst [illegible] Date Rec'd 3-6-86 Date Analyzed 3-6-86
Amt. Purged 5 ml (MDL based on 5ml purge vol.) Dilution 1

ug/l or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.1 B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 1.4 B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	2.U
	Trichlorofluoromethane (Freon II)	4.U
	Vinyl Acetate	2.U
	Vinyl Chloride	1.U
	Total Xylenes	

ug/l or ug/Kg

Tentatively Identified Compounds

Name	Scan#
None	

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B - Found in the blank

Reviewed by: [illegible] Date: 3-12-86

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SITE/SITE ASSESSMENT SAS039

Set # 3614-20
Lab # Method Blank 3-7-86
FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # - Date/Time Collected 3-7-86 Sample Matrix Water
Collected By - Sampling Site -
Exact Description of Sampling Point

Analyst Kevin Date Rec'd 3-7-86 Date Analyzed 3-7-86
Amt. Purged 5mls (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.1B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 1.7B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon II)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	2.U
	Total Xylenes	1.U

ug/L or ug/Kg

Tentatively Identified Compounds

Name	Scan#
None	

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Utah State Div. Of Environmental Health

U - Analyzed for but n detected.

J - An estimated value for a tentatively identified compoun OR a value less th the detection limi but greater than zero.

B - Found in the blank

Analyst: [illegible] Date: 3-17-86

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SITE/SITE ASSESSMENT
SAS039

Set # [illegible]
Lab #
Method Blank 2
3-7-86
FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # - Date/Time Collected 3-7-86 Sample Matrix Water
Collected By - Sampling Site -
Exact Description of Sampling Point -

Analyst [illegible] Date Rec'd 3-7-86 Date Analyzed 3-7-86
Amt. Purged 5 mls. (MDL based on 5ml purge vol.) Dilution

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.2 B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 1.4 B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon II)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	2.U
	Total Xylenes	1.U

ug/L or ug/Kg
Tentatively Identified Compounds

Name	Scan#
None	

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APR 7 1986
Utah State Div. of Environmental Health

U - Analyzed for but not detected.

J - An estimated value for a tentatively identified compound OR a value less than the detection limit but greater than zero.

B - Found in the blank

Analyzed By: [illegible] Date: 3-17-86

quality of the document being filmed
SITE/SITE ASSESSMENT
SAS039

Set # 36 14-20
Lab # Method Blk 3-19-86
FOR LAB USE ONLY

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

Send Report To:

Bureau of Solid and Hazardous Waste
PO Box 45500
Salt Lake City, UT 84145 (801)533-4145

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # _____ Date/Time Collected 3-7-86 Sample Matrix Water
Collected By _____ Sampling Site _____
Exact Description of Sampling Point _____

Analyst RM Date Rec'd 3-7-86 Date Analyzed 3-19-86
Aliquot Sample Extracted 1000 ml Final Extract Volume 2 ml

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	MDL/Results
	Acenaphthene	1.U
	Acenaphthylene	2.U
	Anthracene	3.U
	Aniline	4.U
	Benzidene	82.U
	Benzo(a)anthracene	7.U
	Benzo(b)fluoranthene	7.U
	Benzo(k)fluoranthene	4.U
	Benzo(a)pyrene	11.U
	Benzo(ghi)perylene	13.U
	Benzylbutylphthalate	7.U
	Benzyl alcohol	17.U
	Benzoic acid	32.U
	Bis(2-chloroethyl)ether	3.U
	Bis(2-chloroethoxy)methane	3.U
	Bis(2-chloroisopropyl)ether	3.U
	Bis(2-ethylhexyl)phthalate	10.U
	4-Bromophenyl phenyl ether	6.U
	4-Chloraniline	9.U
	2-Chloronaphthalene	2.U
	4-Chloro-3-methyl phenol	6.U
	2-Chlorophenol	2.U
	4-Chlorophenyl phenyl ether	4.U
	Chrysene	3.U
	Dibenz(a,h)anthracene	19.U
	Dibenzofuran	2.U
	Di-n-butyl phthalate	5.U
	1,3-Dichlorobenzene (meta)	2.U
	1,2-Dichlorobenzene (ortho)	5.U
	1,4-Dichlorobenzene (para)	1.U
	3,3-Dichlorobenzidene	24.U
	2,4-Dichlorophenol	4.U
	2,4-Dimethylphenol	6.U
	Diethyl phthalate	4.U
	2,4-Dinitrophenol	31.U
	Dimethyl phthalate	3.U
	2,4-Dinitrotoluene	14.U
	2,6-Dinitrotoluene	10.U
	4,6-Dinitro-2-methyl Phenol	24.U
	Di-n-octyl phthalate	8.U
	Fluoranthene	5.U
	Hexachlorobenzene	6.U
	Hexachlorobutadiene	4.U
	Hexachloroethane	2.U
	Hexachlorocyclopentadiene	21.U
	Indeno(1,2,3-c,d)pyrene	16.U
	Isophorone	3.U
	2-Methyl-4,6-dinitrophenol	24.U
	2-Methyl naphthalene	3.U
	2-Methyl phenol (o-cresol)	3.U
	3-Methyl phenol (m-cresol)	10.U
	4-Methyl phenol (p-cresol)	4.U

X	Name	MDL/Results
	Naphthalene	1.U
	2-Nitroaniline	16.U
	4-Nitroaniline	31.U
	Nitrobenzene	3.U
	2-Nitrophenol	4.U
	4-Nitrophenol	18.U
	n-Nitrosodimethylamine	8.U
	n-Nitrosodiphenylamine	4.U
	Pentachlorophenol	29.U
	Phenanthrene	1.U
	Phenol	3.U
	Pyrene	4.U
	1,2,4-Trichlorobenzene	2.U
	2,4,6-Trichlorophenol	4.U

Tentatively Identified Compound

Name	Scan #
None Detected	

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Utah State Div. Of Environmental Health

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B - Found in the blank

Preparation and Analysis By: RC / RM Date: 4-3-86

notice, it is due to the quality of the document being filmed
SITE/SITE ASSESSMENT
SAS039

Set # 364-20
Lab # _____
Method 8/K2
3-20-86
FOR LAB USE ONLY

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

Send Report To:

Bureau of Solid and Hazardous Waste
PO Box 45500
Salt Lake City, UT 84145 (801)533-4145

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # _____ Date/Time Collected _____ Sample Matrix _____
Collected By _____ Sampling Site _____
Exact Description of Sampling Point _____

Analyst RM Date Rec'd 3-7-86 Date Analyzed 3-20-86
Aliquot Sample Extracted 1000 ml Final Extract Volume 2 ml

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	MDL/Results
	Acenaphthene	1.U
	Acenaphthylene	2.U
	Anthracene	3.U
	Aniline	4.U
	Benzidene	82.U
	Benzo(a)anthracene	7.U
	Benzo(b)fluoranthene	7.U
	Benzo(k)fluoranthene	4.U
	Benzo(a)pyrene	11.U
	Benzo(ghi)perylene	13.U
	Benzylbutylphthalate	7.U
	Benzyl alcohol	17.U
	Benzoic acid	32.U
	Bis(2-chloroethyl)ether	3.U
	Bis(2-chloroethoxy)methane	3.U
	Bis(2-chloroisopropyl)ether	3.U
	Bis(2-ethylhexyl)phthalate	~~10.U~~ 2.1
	4-Bromophenyl phenyl ether	6.U
	4-Chloraniline	9.U
	2-Chloronaphthalene	2.U
	4-Chloro-3-methyl phenol	6.U
	2-Chlorophenol	2.U
	4-Chlorophenyl phenyl ether	4.U
	Chrysene	3.U
	Dibenz(a,h)anthracene	19.U
	Dibenzofuran	2.U
	Di-n-butyl phthalate	5.U
	1,3-Dichlorobenzene (meta)	2.U
	1,2-Dichlorobenzene (ortho)	5.U
	1,4-Dichlorobenzene (para)	1.U
	3,3-Dichlorobenzidene	24.U
	2,4-Dichlorophenol	4.U
	2,4-Dimethylphenol	6.U
	Diethyl phthalate	4.U
	2,4-Dinitrophenol	31.U
	Dimethyl phthalate	3.U
	2,4-Dinitrotoluene	14.U
	2,6-Dinitrotoluene	10.U
	4,6-Dinitro-2-Methyl Phenol	24.U
	Di-n-octyl phthalate	8.U
	Fluoranthene	5.U
	Hexachlorobenzene	6.U
	Hexachlorobutadiene	4.U
	Hexachloroethane	2.U
	Hexachlorocyclopentadiene	21.U
	Ideno(1,2,3-c,d)pyrene	16.U
	Isophorone	3.U
	2-Methyl-4,6-dinitrophenol	24.U
	2-Methyl naphthalene	3.U
	2-Methyl phenol (o-cresol)	3.U
	3-Methyl phenol (m-cresol)	10.U
	4-Methyl phenol (p-cresol)	4.U

X	Name	MDL/Results
	Naphthalene	1.U
	2-Nitroaniline	16.U
	4-Nitroaniline	31.U
	Nitrobenzene	3.U
	2-Nitrophenol	4.U
	4-Nitrophenol	18.U
	N-Nitrosodimethylamine	8.U
	N-Nitrosodiphenylamine	4.U
	Pentachlorophenol	29.U
	Phenanthrene	1.U
	Phenol	3.U
	Pyrene	4.U
	1,2,4-Trichlorobenzene	2.U
	2,4,6-Trichlorophenol	4.U

Tentatively Identified Compound

Name	Scan #
None Detected	

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B - Found in the blank

Preparation and Analysis By: BC/RM Date: 4-3-86

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SITE/SITE ASSESSMENT
SAS039

Set # 365-12
Lab #
method blk
3-4-86
FOR LAB USE ONLY

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

Send Report To:

Bureau of Solid and Hazardous Waste
PO Box 45500
Salt Lake City, UT 84145 (801)533-4145

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # _____ Date/Time Collected _____ Sample Matrix _____
Collected By _____ Sampling Site _____
Exact Description of Sampling Point _____

Analyst Rm Date Rec'd 3-7-86 Date Analyzed 3-21-86
Aliquot Sample Extracted 1000 Final Extract Volume 2-2

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	MDL/Results
	Acenaphthene	1.U
	Acenaphthylene	2.U
	Anthracene	3.U
	Aniline	4.U
	Benzidene	82.U
	Benzo(a)anthracene	7.U
	Benzo(b)fluoranthene	7.U
	Benzo(k)fluoranthene	4.U
	Benzo(a)pyrene	11.U
	Benzo(ghi)perylene	13.U
	Benzylbutylphthalate	7.U
	Benzyl alcohol	17.U
	Benzoic acid	32.U
	Bis(2-chloroethyl)ether	3.U
	Bis(2-chloroethoxy)methane	3.U
	Bis(2-chloroisopropyl)ether	3.U
	Bis(2-ethylhexyl)phthalate	10.U
	4-Bromophenyl phenyl ether	6.U
	4-Chloraniline	9.U
	2-Chloronaphthalene	2.U
	4-Chloro-3-methyl phenol	6.U
	2-Chlorophenol	2.U
	4-Chlorophenyl phenyl ether	4.U
	Chyrsene	3.U
	Dibenz(a,h)anthracene	19.U
	Dibenzofuran	2.U
	Di-n-butyl phthalate	5.U
	1,3-Dichlorobenzene (meta)	2.U
	1,2-Dichlorobenzene (ortho)	5.U
	1,4-Dichlorobenzene (para)	1.U
	3,3-Dichlorobenzidene	24.U
	2,4-Dichlorophenol	4.U
	2,4-Dimethylphenol	6.U
	Diethyl phthalate	4.U
	2,4-Dinitrophenol	31.U
	Dimethyl phthalate	3.U
	2,4-Dinitrotoluene	14.U
	2,6-Dinitrotoluene	10.U
	4,6-Dinitro-2-Methyl Phenol	24.U
	Di-n-octyl phthalate	8.U
	Fluoranthene	5.U
	Hexachlorobenzene	6.U
	Hexachlorobutadiene	4.U
	Hexachloroethane	2.U
	Hexachlorocyclopentadiene	21.U
	Ideno(1,2,3-c,d)pyrene	16.U
	Isophorone	3.U
	2-Methyl-4,6-dinitrophenol	24.U
	2-Methyl naphthalene	3.U
	2-Methyl phenol (o-cresol)	3.U
	3-Methyl phenol (m-cresol)	10.U
	4-Methyl phenol (p-cresol)	4.U

X	Name	MDL/Results
	Naphthalene	1.U
	2-Nitroaniline	16.U
	4-Nitroaniline	31.U
	Nitrobenzene	3.U
	2-Nitrophenol	4.U
	4-Nitrophenol	18.U
	n-Nitrosodimethylamine	8.U
	n-Nitrosodiphenylamine	4.U
	Pentachlorophenol	29.U
	Phenanthrene	1.U
	Phenol	3.U
	Pyrene	4.U
	1,2,4-Trichlorobenzene	2.U
	2,4,6-Trichlorophenol	4.U

Tentatively Identified Compound

Name	Scan #
None Detected	

RECEIVED
APR 7 1986
Utah State Dept of Environmental Health

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J - An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.
B - Found in the blank

Preparation and Analysis By: BC Rm Date: 6-23-86

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SITE/SITE ASSESSMENT
SAS039

Rev. 7/80

Field No. CW 6002

Date Recd.:

Received By:

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APR 7 1986
UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
DIV. OF Environmental Health

3609

MAR 6 86 860796

ORGANIC RESIDUE ANALYSES

Sample No. 701

Street No.

Water Syst. No. Source No.

Date Collected 8 6 0305 (yr. mo. dy.) 702

Time Collected 1095 (24-hour clock) 416

Water Rights No. 707

Exact Description of sampling Point: Vifro Well #2 648

Supply Owned by 712

Sample Type 710

Sample Collected by: G Hudson / M Boyd 713

SEND REPORT TO: Phone

Jim Salmon 715

648

Box Elder Waste 717

zip code

Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 05 Dist. syst., 06 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 721: 78

01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708

Proposed use 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

INTERPRETATION OF ANALYSES:

Remarks:

Based on State Standards, this sample was: Satisfactory / Questionable / Unsatisfactory

By ENVIRONMENTAL HEALTH

8 CHLORINATED HYDROCARBONS ug/l(ppb)

	Dichloropropene	<	574
	Dichloropropene		575
	Chlordane		576
X	Toxaphene	< .01	618
	Endosulfan		576
X	Lindane	< .002	616
	Dicofol		577
X	Methoxychlor	< .02	617
	Dieldrin		643
	Heptachlor		536
	Heptachlor epoxide		615
	Beta, BHC		520
	Perchlorobenzene, HCB		735
	Aldrin		699
X	Endrin	< .006	613
	p.p. DDT		515
	p.p. DDE	< .006	511
	p.p. DDD		513
	Mirex		580

9 ORGANOPHOSPHATES None ug/l(ppb)

	Ethyl Parathion	510
	Malathion	578
	Ethyl Azinphos	512
	Methyl Azinphos	534
	Diazinon	514
	Disulfoton	535
	Methyl Parathion	517
	Fonofos	518
	Phosalone	519
	Phosmet	520
	Coumephos	521
	Penthion	522
	Phorate	523
	Demeton	524
	Fensulfothion	525
	Dichlorvos	526
	Trichlorfon	527
	Methyl Oxydemeton	528
	Ronnel	529
	Crufomate	530

10 HERBICIDES - GRP1 ug/l(ppb)

X	2,4-D	< .02	619
	Atrazine		582
	Sulfur		532
	Sodium Polysulfide		583
	Bromacil		584
	Simazine		585
	Pronamide		586
	DCPA		587
	EPTC		588
	Dinocap		589
	Dicamba		590
	Diuron		591
	Monuron		592
	Dinoseb		593
	Alachlor		594
	Cycloate		595
	Cyanazine		596
	Nitrofen		597
	Copper Sulfate		533
	Trifluralin		598
	2,4-DB		675
	Terbutryn		676
	Maleic Hydrazide		678
	Dacthal		679

11 HERBICIDES - GRP2 ug/l(ppb)

	2, 4, 5- T	< .01	681
	Pyrazon		682
	Prometon		683
	Metaborate		684
	Dalapon		685
X	2,4,5-TP	< .05	620
	Chlorate-Borate		686
	Aminozide		687
	Captan		688
	Glyphosate		689
	Picloram		690
	Methyl Bromide		691
	Methyl Chloride		692
	Amm. Methanarsonate		736
	Terbacil		741
	Paraquat		746
	Acrolein		747
	Diquat		751

11 HERBCIDES - GRP2 Cont. ug/l(ppb)

	Prometryn	761
	Propazine	764

12 CARBAMATES None ug/l(ppb)

	Carbofuran	768
	Carbaryl	769
	Maneb	771
	Metalkamate	776
	Aldicarb	779
	Propoxur	781
	Bendiocarb	784
	Benomyl	788

13 ORGANOHALOCARBONS ug/l(ppb)

	Chloroform	790
	Bromoform	791
	Bromodichloromethane	795
	Dibromochloromethane	796
	Bromomethane	797
	Carbon Tetrachloride	798
	Chloroethane	799
	Chloromethane	500
	Dichlorobenzene	501
	Dichloroethane	502
	Methylene Chloride	503
	Vinyl Chloride	504

14 OTHER None ug/l(ppb)

	PCB 1254		674
	PCB 1260	< .01	581

Analyses Approved By: Warnick

notice. It is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS036

Set # 3608-12
Lab # 860796
FOR LAB USE ONLY

EPA METHOD 625 (GCMS)

Base Neutral/Acid Extractables

RECEIVED APR 7 1986 Utah State Dept of Health Environmental

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # 038002 Date/Time Collected 3-3-86 12:58 Sample Matrix Water
Collected By Helen Power Sampling Site Vitro
Exact Description of Sampling Point Well #3

Analyst RM Date Rec'd 3-5-86 Date Analyzed 3-19-86
Aliquot Sample Extracted 1000ml Final Extract Volume 2ml

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	in ug/L MDL/Results
	Acenaphthene	1.U
	Acenaphthylene	2.U
	Anthracene	3.U
	Aniline	4.U
	Benzidene	82.U
	Benzo(a)anthracene	7.U
	Benzo(b)fluoranthene	7.U
	Benzo(k)fluoranthene	4.U
	Benzo(a)pyrene	11.U
	Benzo(ghi)perylene	13.U
	Benzylbutylphthalate	7.U
	Benzyl alcohol	17.U
	Benzoic acid	32.U
	Bis(2-chloroethyl)ether	3.U
	Bis(2-chloroethoxy)methane	3.U
	Bis(2-chloroisopropyl)ether	3.U
	Bis(2-ethylhexyl)phthalate	10.U
	4-Bromophenyl phenyl ether	6.U
	4-Chloraniline	9.U
	2-Chloronaphthalene	2.U
	4-Chloro-3-methyl phenol	6.U
	2-Chlorophenol	2.U
	4-Chlorophenyl phenyl ether	4.U
	Chyrsene	3.U
	Dibenz(a,h)anthracene	19.U
	Dibenzofuran	2.U
	Di-n-butyl phthalate	5.U
	1,3-Dichlorobenzene (meta)	2.U
	1,2-Dichlorobenzene (ortho)	5.U
	1,4-Dichlorobenzene (para)	1.U
	3,3-Dichlorobenzidene	24.U
	2,4-Dichlorophenol	4.U
	2,4-Dimethylphenol	6.U
	Diethyl phthalate	4.U
	2,4-Dinitrophenol	31.U
	Dimethyl phthalate	3.U
	2,4-Dinitrotoluene	14.U
	2,6-Dinitrotoluene	10.U
	4,6-Dinitro-2-methyl Phenol	24.U
	Di-n-octyl phthalate	8.U
	Fluoranthene	5.U
	Hexachlorobenzene	6.U
	Hexachlorobutadiene	4.U
	Hexachloroethane	2.U
	Hexachlorocyclopentadiene	21.U
	Ideno(1,2,3-c,d)pyrene	16.U
	Isophorone	3.U
	2-Methyl-4,6-dinitrophenol	24.U
	2-Methyl naphthalene	3.U
	2-Methyl phenol (o-cresol)	3.U
	3-Methyl phenol (m-cresol)	10.U
	4-Methyl phenol (p-cresol)	4.U

X	Name	in ug/L MDL/Results
	Naphthalene	1.U
	2-Nitroaniline	16.U
	4-Nitroaniline	31.U
	Nitrobenzene	3.U
	2-Nitrophenol	4.U
	4-Nitrophenol	18.U
	n-Nitrosodimethylamine	8.U
	n-Nitrosodiphenylamine	4.U
	Pentachlorophenol	29.U
	Phenanthrene	1.U
	Phenol	3.U
	Pyrene	4.U
	1,2,4-Trichlorobenzene	2.U
	2,4,6-Trichlorophenol	4.U

Tentatively Identified Compound

Name	Scan #
None Detected	

U - Analyzed for but not detected.
J - An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.
B - Found in the blank

RC / RM Date 4-3-86

notice. It is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

Set # 3608-12
Lab # 860796
FOR LAB USE ONLY

EPA METHOD 624 (OCT 1984)
Purgeables

RECEIVED
APR 7 1986
Utah State Div. of Environmental Health

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW86002 Date/Time Collected Feb 86 11:53 Sample Matrix Water
Collected By J Hebden M Bown Sampling Site Vitro
Exact Description of Sampling Point Well #1

Analyst Z Greenhow Date Rec'd 3-5-86 Date Analyzed 3-7-86
Amt. Purged 5 ml (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.3 B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 4.6 B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon II)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	1.U
	Total Xylenes	1.U

ug/L or ug/Kg
Tentatively Identified Compounds

Name	Scan#
None	

U - Analyzed for but n detected.

J - An estimated value for a tentatively identified compoun OR a value less th the detection limi but greater than zero.

B - Found in the blank

is less clear than this notice. It is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

1 3 7 4 8

3611

MAR 5 86 860798

Rev. 7/80

Date Recd.: _____

Field No. 1U56CC4

Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
ORGANIC RESIDUE ANALYSES

Sample No. 701

Storet No. _____

Water Syst. No. Source No. _____ 703 704

Date Collected _____ 708 (yr. mo. dy.)

Time Collected _____ 709 (24-hour clock)

Water Rights No. _____ 707

Exact Description of sampling Point: Little Mill Fork 646

Supply Owned by _____ 712

Sample Type _____ 710

Sample Collected by: J. Hansen / M. Dixon 713

SEND REPORT TO: Phone _____

Tim Sweeney 715

648

Box 16 Price, Ut 84501 717

zip code

Sample Source 718: 01 Spring, 02 Well, 03 Stream, 04 Lake, 05 Dist. syst., 06 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 16 Artesian well, 19 Swimming pool

County 611: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708

Proposed use 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

INTERPRETATION OF ANALYSES

Remarks:

RECEIVED APR 7 1986 Utah State Div. Of Environmental Health

Based on State Standards, this sample was: Satisfactory / Questionable / Unsatisfactory

By _____ ENVIRONMENTAL HEALTH

8 CHLORINATED HYDROCARBONS ug/l(ppb)

	Dichloropropane		574
	Dichloropropene		575
	Chlordane		516
X	Toxaphene	< 01	618
	Endosulfan		576
X	Lindane	< 003	616
	Dicofol		577
X	Methoxychlor	< 02	617
	Dieldrin		643
	Heptachlor		536
	Heptachlor epoxide		615
	Beta. BHC		520
	Perchlorobenzene, HCB		735
	Aldrin		699
X	Endrin	< 006	612
	p.p. DDT		515
	p.p. DDE	< 006	511
	p.p. DDD		513
	Mirex		580

9 ORGANOPHOSPHATES None ug/l(ppb)

	Ethyl Parathion		510
	Malathion		578
	Ethyl Azinphos		512
	Methyl Azinphos		524
	Diazinon		514
	Disulfoton		535
	Methyl Parathion		517
	Fonofos		518
	Phosalone		519
	Phosmet		520
	Coumaphos		521
	Fenthion		522
	Phorate		523
	Demeton		524
	Fensulfothion		525
	Dichlorvos		526
	Trichlorfon		527
	Methyl Oxydemeton		528
	Ronnel		529
	Crufomate		530
	Ethion		531

10 HERBICIDES - GRP1 ug/l(ppb)

X	2,4-D		619
	Atrazine		582
	Sulfur		533
	Sodium Polysulfide		583
	Bromacil		584
	Simazine		585
	Pronamide		586
	DCPA		587
	EPTC		588
	Dinocap		589
	Dicamba		590
	Diuron		591
	Monuron		592
	Dinoseb		593
	Alachlor		594
	Cycloate		595
	Cyanazine		596
	Nitrofen		597
	Copper Sulfate		533
	Trifluralin		598
	2,4-DB		675
	Terbutryn		676
	Maleic Hydrazide		678
	Dacthal		679

11 HERBICIDES - GRP2 ug/l(ppb)

	2, 4, 5-T		681
	Pyrazon		682
	Prometon		683
	Metaborate		684
	Delapon		685
X	2,4,5-TP		620
	Chlorate-Borate		686
	Aminozide		687
	Captan		688
	Glyphosate		689
	Picloram		690
	Methyl Bromide		691
	Methyl Chloride		692
	Amm. Methanearsonate		736
	Terbacil		741
	Paraquat		746
	Acrolein		747
	Diquat		751
	Amitrole		756

11 HERBICIDES - GRP2 Cont. ug/l(ppb)

	Prometryn		761
	Propazine		764

12 CARBAMATES None ug/l(ppb)

	Carbofuran		768
	Carbaryl		769
	Maneb		771
	Metalkamate		776
	Aldicarb		779
	Propoxur		781
	Bendiocarb		784
	Benomyl		788

13 ORGANOHALOCARBONS ug/l(ppb)

	Chloroform		790
	Bromoform		791
	Bromodichloromethane		795
	Dibromochloromethane		796
	Bromomethane		797
	Carbon Tetrachloride		798
	Chloroethane		799
	Chloromethane		500
	Dichlorobenzene		501
	Dichloroethane		502
	Methylene Chloride		503
	Vinyl Chloride		504

14 OTHER None ug/l(ppb)

	PCB 1254		674
	PCB 1260	< 01	581

Analyses Approved By: W. Wamick

Date: 3-6-86

Set # 3608-12
Lab # 860798
FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

RECEIVED
APR 7 1986
Utah State Dept of Health
Environmental Health

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW86004 Date/Time Collected 3-5-86 1030 Sample Matrix Water
Collected By J Heldon / M Dove Sampling Site Vitro
Exact Description of Sampling Point Well #2

Analyst [illegible] Date Rec'd 3-5-86 Date Analyzed 3-6-86
Amt. Purged 5 mls (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.18
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 1.2 B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon II)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	2.U
	Total Xylenes	1.U

ug/L or ug/Kg

Tentatively Identified Compounds

Name	Scan#
None	

U - Analyzed for but not detected.

J - An estimated value for a tentatively identified compound OR a value less than the detection limit but greater than zero.

B - Found in the blank.

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SITE/SITE ASSESSMENT SAS039

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Utah State Div. Of
Environmental Health

Set # 3605-12
Lab # 860798
FOR LAB USE ONLY

EPA METHOD 625 /GC/MS-86
Base Neutral/Acid Extractables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW86004 Date/Time Collected 3-5-86 14:30 Sample Matrix Water
Collected By Gordon Burns Sampling Site Vitro
Exact Description of Sampling Point Well #2

Analyst RM Date Rec'd 3-5-86 Date Analyzed 3-18-86
Aliquot Sample Extracted 1000 ml Final Extract Volume 2 ml

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	in ug/L MDL/Results
	Acenaphthene	1.U
	Acenaphthylene	2.U
	Anthracene	3.U
	Aniline	4.U
	Benzidene	82.U
	Benzo(a)anthracene	7.U
	Benzo(b)fluoranthene	7.U
	Benzo(K)fluoranthene	4.U
	Benzo(a)pyrene	11.U
	Benzo(ghi)perylene	13.U
	Benzylbutylphthalate	7.U
	Benzyl alcohol	17.U
	Benzoic acid	32.U
	Bis(2-chloroethyl)ether	3.U
	Bis(2-chloroethoxy)methane	3.U
	Bis(2-chloroisopropyl)ether	3.U
	Bis(2-ethylhexyl)phthalate	10.U
	4-Bromophenyl phenyl ether	5.U
	4-Chloraniline	9.U
	2-Chloronaphthalene	2.U
	4-Chloro-3-Methyl phenol	6.U
	2-Chlorophenol	2.U
	4-Chlorophenyl phenyl ether	4.U
	Chrysene	3.U
	Dibenz(a,h)anthracene	19.U
	Dibenzofuran	2.U
	Di-n-butyl phthalate	5.U
	1,3-Dichlorobenzene (meta)	2.U
	1,2-Dichlorobenzene (ortho)	5.U
	1,4-Dichlorobenzene (para)	1.U
	3,3-Dichlorobenzidene	24.U
	2,4-Dichlorophenol	4.U
	2,4-Dimethylphenol	6.U
	Diethyl phthalate	4.U
	2,4-Dinitrophenol	31.U
	Dimethyl phthalate	3.U
	2,4-Dinitrotoluene	14.U
	2,6-Dinitrotoluene	10.U
	4,6-Dinitro-2-Methyl Phenol	24.U
	Di-n-octyl phthalate	5.U
	Fluoranthene	5.U
	Hexachlorobenzene	6.U
	Hexachlorobutadiene	4.U
	Hexachloroethane	2.U
	Hexachlorocyclopentadiene	21.U
	Indeno(1,2,3-c,d)pyrene	16.U
	Isophorone	3.U
	2-Methyl-4,6-dinitrophenol	24.U
	2-Methyl Naphthalene	3.U
	2-Methyl phenol (o-cresol)	1.U
	3-Methyl phenol (m-cresol)	10.U
	4-Methyl phenol (p-cresol)	4.U

X	Name	in ug/L MDL/Results
	Naphthalene	1.U
	2-Nitroaniline	16.U
	4-Nitroaniline	31.U
	Nitrobenzene	3.U
	2-Nitrophenol	4.U
	4-Nitrophenol	18.U
	n-Nitrosodimethylamine	8.U
	n-Nitrosodiphenylamine	4.U
	Pentachlorophenol	29.U
	Phenanthrene	1.U
	Phenol	3.U
	Pyrene	4.U
	1,2,4-Trichlorobenzene	2.U
	2,4,6-Trichlorophenol	4.U

Tentatively Identified Compound

Name	Scan #
None Detected	

U - Analyzed for but not detected.
J - An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.
B - Found in the blank

Date 4-2-86

Notice: it is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

3615

Rev. 7/80 Date Recd.: _____

Field No. CW86007 Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
ORGANIC RESIDUE ANALYSES

MAR 7 86 860815
Sample No. 701

Storet No. _____ Water Syst. No. Source No. _____ 703 704

Date Collected 860306 (yr. mo. dy.) 714 Time Collected 1005 (24-hour clock) 716 Water Rights No. _____ 707

Exact Description of sampling Point: UITRO WELL 3 646

Supply Owned by _____ 712 Sample Type _____ 710

Sample Collected by HEBLADY 713

SEND REPORT TO: Phone _____
JIM SALMON 715
BUR SE HAZ WASTE 648
717 zip code

02 Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

18 County 811: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was: Satisfactory / Conditional / Unsatisfactory

RECEIVED
APR 7 1986
By _____ Utah State Div. Of ENVIRONMENTAL HEALTH

8 CHLORINATED HYDROCARBONS	ug/l(ppb)		10 HERBICIDES - GRP1	ug/l(ppb)		10 HERBICIDES - GRP2 Cont.	ug/l(ppb)	
Dichloropropane		574	X 2,4-D	< 01	619	Prometryn		761
Dichloropropene		575	Atrazine		582	Propazine		764
Chlordane		516	Sulfur		532			
X Toxaphene	< 01	618	Sodium Polysulfide		583			
Endosulfan		576	Bromacil		584			
X Lindane	< 002	616	Simazine		585			
Dicofol		577	Pronamide		586			
X Methoxychlor	< 02	617	DCPA		587			
Dieldrin		643	EPTC		588			
Heptachlor		536	Dinocap		589			
Heptachlor epoxide		615	Dicamba		590			
Beta, BHC		520	Diuron		591			
Perchlorobenzene, HCB		735	Monuron		592			
Aldrin		699	Dinoseb		593			
X Endrin	< 006	613	Alachlor		594			
p.p. DDT		515	Cycloate		595			
p.p. DDE	< 006	511	Cyanazine		596			
p.p. DDD		513	Nitrofen		597			
Mirex		580	Copper Sulfate		533			
			Trifluralin		598			
			2,4-DB		675			
			Terbutryn		676			
			Maleic Hydrazide		678			
			Dacthal		679			

9 ORGANOPHOSPHATES None	ug/l(ppb)		11 HERBICIDES - GRP2	ug/l(ppb)		12 CARBAMATES None	ug/l(ppb)	
Ethyl Parathion		510	2, 4, 5- T	< 01	681	Carbofuran		768
Malathion		578	Pyrazon		682	Carbaryl		769
Ethyl Azinphos		512	Prometon		683	Maneb		771
Methyl Azinphos		534	Metaborate		684	Metalkamate		776
Diazinon		514	Dalapon		685	Aldicarb		779
Disulfoton		535	X 2,4,5-TP	< 005	620	Propoxur		781
Methyl Parathion		517	Chlorate-Borate		686	Bendiocarb		784
Fonofos		518	Aminozide		687	Benomyl		788
Phosalone		519	Captan		688			
Phosmet		520	Glyphosate		689			
Coumaphos		521	Picloram		690			
Fenthion		522	Methyl Bromide		691			
Phorate		523	Methyl Chloride		692			
Demeton		524	Amm. Methanarsonate		736			
Fensulfothion		525	Terbacil		741			
Dichlorvos		526	Paraquat		746			
Trichlorfon		527	Acrolein					
Methyl Oxydemeton		532						
Ronnel		529						
Cruformate		530						
Ethion			Diquat		754			

13 ORGANOHALOCARBONS	ug/l(ppb)	
Chloroform		790
Bromoform		791
Bromodichloromethane		795
Dibromochloromethane		796
Bromomethane		797
Carbon Tetrachloride		798
Chloroethane		799
Chloromethane		500
Dichlorobenzene		501
Dichloroethane		502
Methylene Chloride		503
Vinyl Chloride		504

14 OTHER None	ug/l(ppb)	
PCB 1254		674
PCB 1260	< 01	581

Analyses Approved By: [illegible]

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SITE/SITE ASSESSMENT SAS039

Set # 3614-20
Lab # 860815
FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW86007 Date/Time Collected 3-6-86 10:05 Sample Matrix Water
Collected By Hebden Sampling Site Vitro
Exact Description of Sampling Point Well 3

Analyst [illegible] Date Rec'd 3-6-86 Date Analyzed 3-7-86
Amt. Purged 5ml (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 1.2 B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon 11)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	2.U
	Total Xylenes	1.U

ug/L or ug/Kg

Tentatively Identified Compounds Name	Scan#
None	

U - Analyzed for but r detected.

J - An estimated value for a tentatively identified compour OR a value less th the detection lim but greater than zero.

B - Found in the blank

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Utah State Div. Of Environmental Hea

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SITE/SITE ASSESSMENT SAS039

Set # 3614-20
Lab # 860815

FOR LAB USE ONLY

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

RECEIVED
APR 7 1986
Utah State Div. of Environmental Health

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW 86007 Date/Time Collected 3-6-86 1:05 Sample Matrix Water
Collected By Hepden Sampling Site Vitro
Exact Description of Sampling Point Well #3

Analyst RM Date Rec'd 3-6-86 Date Analyzed 3-20-86
Aliquot Sample Extracted 1000 ml Final Extract Volume 2 ml

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	in ug/L MDL/Results
	Acenaphthene	1.U
	Acenaphthylene	2.U
	Anthracene	3.U
	Aniline	4.U
	Benzidene	82.U
	Benzo(a)anthracene	7.U
	Benzo(b)fluoranthene	7.U
	Benzo(k)fluoranthene	4.U
	Benzo(a)pyrene	11.U
	Benzo(ghi)perylene	13.U
	Benzylbutylphthalate	7.U
	Benzyl alcohol	17.U
	Benzoic acid	32.U
	Bis(2-chloroethyl)ether	3.U
	Bis(2-chloroethoxy)methane	3.U
	Bis(2-chloroisopropyl)ether	3.U
	Bis(2-ethylhexyl)phthalate	10.U
	4-Bromophenyl phenyl ether	6.U
	4-Chloraniline	9.U
	2-Chloronaphthalene	2.U
	4-Chloro-3-methyl phenol	6.U
	2-Chlorophenol	2.U
	4-Chlorophenyl phenyl ether	4.U
	Chrysene	3.U
	Dibenz(a,h)anthracene	19.U
	Dibenzofuran	2.U
	Di-n-butyl phthalate	5.U
	1,3-Dichlorobenzene (meta)	2.U
	1,2-Dichlorobenzene (ortho)	5.U
	1,4-Dichlorobenzene (para)	1.U
	3,3-Dichlorobenzidene	24.U
	2,4-Dichlorophenol	4.U
	2,4-Dimethylphenol	6.U
	Diethyl phthalate	4.U
	2,4-Dinitrophenol	31.U
	Dimethyl phthalate	3.U
	2,4-Dinitrotoluene	14.U
	2,6-Dinitrotoluene	10.U
	4,6-Dinitro-2-Methyl Phenol	24.U
	Di-n-octyl phthalate	6.U
	Fluoranthene	3.U
	Hexachlorobenzene	6.U
	Hexachlorobutadiene	4.U
	Hexachloroethane	2.U
	Hexachlorocyclopentadiene	21.U
	Indeno(1,2,3-c,d)pyrene	19.U
	Isophorone	3.U
	2-Methyl-4,6-dinitrophenol	24.U
	2-Methyl Naphthalene	3.U
	2-Methyl phenol (o-cresol)	3.U
	3-Methyl phenol (m-cresol)	10.U
	4-Methyl phenol (p-cresol)	4.U

X	Name	in ug/L MDL/Results
	Naphthalene	1.U
	2-Nitroaniline	16.U
	4-Nitroaniline	31.U
	Nitrobenzene	3.U
	2-Nitrophenol	4.U
	4-Nitrophenol	18.U
	N-Nitrosodimethylamine	8.U
	N-Nitrosodiphenylamine	4.U
	Pentachlorophenol	29.U
	Phenanthrene	1.U
	Phenol	3.U
	Pyrene	4.U
	1,2,4-Trichlorobenzene	2.U
	2,4,6-Trichlorophenol	4.U

Tentatively Identified Compound

Name	Scan #
None Detected	

U - Analyzed for but not detected.
J - An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.
B - Found in the blank

Preparation and Analysis By: BC / RM Date 4-2-86

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SAS039

Joel H

3608

MAR 66860795

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UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
ORGANIC RESIDUE ANALYSES

Rev. 7/80 Date Rcvd.: _____

Field No. CW86001 Received By: _____

Sample No. 701

Storet No. 702

Water Syst. No. Source No. 703 704

Date Collected 860305 (Yr. Mo. Dy.) 714 Time Collected 0943 (24-hour Clock) 716

Water Rights No. 707

Exact Description of sampling Point 646
Vito well 6B

Supply Owned by 712

Sample Type 710

Sample Collected by 713
J. Hedden / M Dayton

SEND REPORT TO: Phone# 715
Jim Salmon 648
Sol Haz Waste 717
Zip code

012 Sample Source 719
01 Spring 14 Other
02 Well 15 Tunnel
03 Stream 16 Artesian well
04 Lake
06 Dist. syst. 19 Swimming pool
07 Effluent
08 Storm sewer

County
01 Beaver 18 Piute
02 Box Elder 17 Rich
03 Cache 18 Salt Lake
04 Carbon 19 San Juan
05 Daggett 20 Sanpete
06 Davis 21 Sevier
07 Duchesne 22 Summit
08 Emery 23 Tooele
09 Garfield 24 Uintah
10 Grand 25 Utah
11 Iron 26 Wasatch
12 Juab 27 Washington
13 Kane 28 Wayne
14 Millard 29 Weber
15 Morgan

Current use — 4 798
Proposed use — 799

1. Culinary
2. Agriculture
3. Industrial
4. Other

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was: Satisfactory / Conditional / Unsatisfactory

By ENVIRONMENTAL HEALTH

8 CHLORINATED HYDROCARBONS	ug/l(ppb)		10 HERBICIDES - GRP1	ug/l(ppb)		11 HERBICIDES - GRP2 Conc.	ug/l(ppb)	
Dichloropropane		574	X 2,4-D	14	619	Prometryn		761
Dichloropropene		575	Atrazine		582	Propazine		764
Chlordane		516	Sulfur		532			
X Toxaphene	< 01	618	Sodium Polysulfide		583			
Endosulfan		576	Bromacil		584			
X Lindane	< 002	615	Simazine		585	**12 CARBAMATES** None	ug/l(ppb)	
Dicofol		577	Pronamide		586	Carbofuran		768
X Methoxychlor	< 02	617	DCPA		587	Carbaryl		769
Dieldrin		643	EPTC		588	Maneb		771
Heptachlor		536	Dinoseb		589	Metalkamate		776
Heptachlor epoxide		615	Dicamba		590	Aldicarb		779
Beta, BHC		520	Diuron		591	Propoxur		781
Perchlorobenzene, HCB		735	Monuron		592	Bendiocarb		784
Aldrin		699	Dinoset		593	Benomyl		788
X Endrin	< 006	612	Alachlor		594			
p.p. DDT		515	Cycloate		595			
p.p. DDE	< 006	511	Cyanazine		596	**13 ORGANOHALOCARBONS**	ug/l(ppb)	
p.p. DDD		513	Nitrofen		597	Chloroform		790
Mirex		580	Copper Sulfate		533	Bromoform		791
			Trifluralin		598	Bromodichloromethane		795
			2,4-DB		575	Dibromochloromethane		796
9 ORGANOPHOSPHATES None	ug/l(ppb)		Terbutryn		676	Bromomethane		797
Ethyl Parathion		510	Maleic Hydrazide		678	Carbon Tetrachloride		798
Malathion		578	Dacthal		672	Chloroethane		799
Ethyl Azinphos.		513	**11 HERBICIDES - GRP2**	ug/l(ppb)		Chloromethane		500
Methyl Azinphos.		524	2, 4, 5-T	06	681	Dichlorobenzene		501
Diazinon		514	Pyrason		682	Dichloroethane		502
Disulfoton		525	Prometon		683	Methylene Chloride		503
Methyl Parathion		517	Metabenzate		684	Vinyl Chloride		504
Fonofos		518	Dalapon		685			
Phosdrin		519	X 2,4,5-TP	04	620			
Phosmet		520	Chlorate-Borate		686			
Coumaphos		521	Aminozide		687	**14 OTHER** None	ug/l(ppb)	
Fenthion		522	Captan		688	PCB 1254		674
Phorate		523	Glyphosate		689	PCB 1260	< 01	581
Demeton		524	Picloram		690			
Fensulfothion		525	Methyl Bromide		691			
Dichlorvos		526	Methyl Chloride		692			
Trichlorfon		527	Amm. Methanersonate		736			
Methyl Oxydemeton		528	Terbacil		741			
Ronnel		529	Paraquat		746			
Crufomate		530	Acrolein		747			
Ethion		531	Xylene		748			
			Diquat		749			

Analyses Approved By: [illegible]

Notice: It is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

FILE

Set # 3608-12
Lab # 86-0795

FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

RECEIVED
APR 7 1986

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW86001 Date/Time Collected 3-5-86 9:43 Sample Matrix Water
Collected By J Hebdon/M Cofon Sampling Site Vitro
Exact Description of Sampling Point Well 68

Analyst [illegible] Date Rec'd 3-5-86 Date Analyzed 3-6-86
Amt. Purged 5 ml (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.2 B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 2.6 B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon 11)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	2.U
	Total Xylenes	1.U

ug/L or ug/Kg

Tentatively Identified Compounds

Name	Scan#
None	

U - Analyzed for but not detected.

J - An estimated value for a tentatively identified compound OR a value less than the detection limit but greater than zero.

B - Found in the blank

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Set # 3608-12
Lab # 86-0995
FOR LAB USE ONLY

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

Send Report To:

RECEIVED
APR 7 1986
Utah State Dept of Health
Environ. Div. Of Health
Utah State Dept of Health
544 Medical Drive
Salt Lake City, UT 84113

Field # CW 86001 Date/Time Collected 3-5-86 9:43 Sample Matrix Water
Collected By Thelma Dunn Sampling Site Tribe
Exact Description of Sampling Point Well 6B

Analyst RM Date Rec'd 3-5-86 Date Analyzed 3-19-86
Aliquot Sample Extracted 1000 ml Final Extract Volume 2 ml

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	in ug/L MDL/Results
	Acenaphthene	1.U
	Acenaphthylene	2.U
	Anthracene	3.U
	Aniline	4.U
	Benzidene	82.U
	Benzo(a)anthracene	7.U
	Benzo(b)fluoranthene	7.U
	Benzo(k)fluoranthene	6.U
	Benzo(a)pyrene	11.U
	Benzo(ghi)perylene	13.U
	Benzylbutylphthalate	7.U
	Benzyl alcohol	17.U
	Benzoic acid	32.U
	Bis(2-chloroethyl)ether	1.U
	Bis(2-chloroethoxy)methane	1.U
	Bis(2-chloroisopropyl)ether	1.U
	Bis(2-ethylhexyl)phthalate	10.U
	4-Bromophenyl phenyl ether	6.U
	4-Chloraniline	5.U
	2-Chloronaphthalene	2.U
	4-Chloro-3-methyl phenol	6.U
	2-Chlorophenol	2.U
	4-Chlorophenyl phenyl ether	6.U
	Chrysene	3.U
	Dibenz(a,h)anthracene	19.U
	Dibenzofuran	2.U
	Di-n-butyl phthalate	5.U
	1,3-Dichlorobenzene (meta)	2.U
	1,2-Dichlorobenzene (ortho)	5.U
	1,4-Dichlorobenzene (para)	1.U
	3,3-Dichlorobenzidene	24.U
	2,4-Dichlorophenol	6.U
	2,4-Dimethylphenol	6.U
	Diethyl phthalate	6.U
	2,4-Dinitrophenol	31.U
	Dimethyl phthalate	3.U
	2,4-Dinitrotoluene	14.U
	2,6-Dinitrotoluene	10.U
	4,6-Dinitro-2-methyl Phenol	28.U
	Di-n-octyl phthalate	6.U
	Fluoranthene	5.U
	Hexachlorobenzene	6.U
	Hexachlorobutadiene	5.U
	Hexachloroethane	2.U
	Hexachlorocyclopentadiene	21.U
	Indeno(1,2,3-c,d)Pyrene	10.U
	Isophorone	3.U
	2-Methyl-4,6-dinitrophenol	24.U
	2-Methyl Naphthalene	3.U
	4-Methyl phenol (m-cresol)	3.U
	4-Methyl phenol (p-cresol)	10.U
	4-Methyl phenol (o-cresol)	6.U

X	Name	in ug/L MDL/Results
	Naphthalene	1.U
	2-Nitroaniline	16.U
	4-Nitroaniline	31.U
	Nitrobenzene	3.U
	2-Nitrophenol	4.U
	4-Nitrophenol	18.U
	n-Nitrosodimethylamine	8.U
	n-Nitrosodiphenylamine	4.U
	Pentachlorophenol	29.U
	Phenanthrene	1.U
	Phenol	3.U
	Pyrene	4.U
	1,2,4-Trichlorobenzene	2.U
	2,4,6-Trichlorophenol	4.U

Tentatively Identified Compound Name	Scan #
None detected	

U - Analyzed for but not detected.
J - An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.
B - Found in the blank

Date 4-3-86

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UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
ORGANIC RESIDUE ANALYSES

Rev. 7/80 CW

Date Recd.:

Received By:

Field No. 86603

3610

MAR 53860797

Sample No. 701

Storet No. 702

Water Syst. No. Source No. 703 704

Date Collected 86 03 05 705 (yr. mo. dy.)

Time Collected 1059 706 (24-hour clock)

Water Rights No. 707

Exact Description of sampling Point 708
Wilro well 1.5

Supply Owned by 712

Sample Type 710

Sample Collected by 713
G. Hudson / M. Dayton

SEND REPORT TO: Phone
T. Salmon 715
SOV HAZ Waste 648
717 Zip code

Sample Source 709: 02 (01 Spring, 02 Well, 03 Stream, 04 Lake, 05 Dist. syst., 06 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool)

County 711: 18 (01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber)

Current use 704 [4]
Proposed use 709 [ ]
1. Culinary
2. Agriculture
3. Industrial
4. Other

INTERPRETATION OF ANALYSES:
Remarks:
Based on State Standards, this sample was: Satisfactory / Conditional / Unsatisfactory
By ENVIRONMENTAL HEALTH

8 CHLORINATED HYDROCARBONS	ug/l(ppb)	
Dichloropropane		574
Dichloropropene		575
Chlordane		516
X Toxaphene	< 01	618
Endosulfan		576
X Lindane	< 002	616
Dicofol		577
X Methoxychlor	< 03	617
Dieldrin		643
Heptachlor		536
Heptachlor epoxide		615
Beta, BHC		520
Perchlorobenzene, HCB		735
Aldrin		699
X Endrin	< 006	613
p.p. DDT		515
p.p. DDE	< 006	511
p.p. DDD		513
Mirex		580

9 ORGANOPHOSPHATES	None ug/l(ppb)	
Ethyl Parathion		510
Malathion		578
Ethyl Azinphos		512
Methyl Azinphos		534
Diazinon		514
Disulfoton		535
Methyl Parathion		517
Famphos		518
Phosalone		619
Phosmet		620
Coumaphos		521
Fenthion		522
Phorate		523
Demeton		524
Fensulfothion		525
Dichlorvos		526
Trichloron		527
Methyl Oxydemeton		528
Ronnel		529
Cruformate		530
Dicrotophos		

10 HERBICIDES - GRP1	ug/l(ppb)	
X 2,4-D	< 07	619
Atrazine		582
Sulfur		532
Sodium Polysulfide		583
Bromacil		584
Simazine		585
Pronamide		586
DCPA		587
EPTC		588
Dinocap		589
Dicamba		590
Diuron		591
Monuron		592
Dinoseb		593
Alachlor		594
Cycloate		595
Cyanazine		596
Nitrofen		597
Copper Sulfate		533
Trifluralin		598
2,4-DB		675
Terbutryn		676
Maleic Hydrazide		678
Dacthal		679

11 HERBICIDES - GRP2	ug/l(ppb)	
2, 4, 5- T	< 01	681
Pyrazon		682
Prometon		683
Metasorate		684
Dalapon		685
X 2,4,5-TP	< 05	620
Chlorate-Borate		686
Aminozide		687
Casoran		688
Glyphosate		689
Picloram		690
Methyl Bromide		691
Methyl Chloride		692
Amm. Methanarsonate		736
Terbacil		741
Paraquat		746
Acrolein		747
Dicuat		751
Amitrole		752

11 HERBICIDES - GRP2 Cont.	ug/l(ppb)	
Prometryn		761
Propazine		764

12 CARBAMATES	None ug/l(ppb)	
Carbofuran		768
Carbaryl		769
Maneb		771
Metalkamate		776
Aldicarb		779
Propoxur		781
Bendiocarb		784
Benomyl		788

13 ORGANOHALOCARBONS	ug/l(ppb)	
Chloroform		790
Bromoform		791
Bromodichloromethane		795
Dibromochloromethane		796
Bromomethane		797
Carbon Tetrachloride		798
Chloroethane		799
Chloromethane		500
Dichlorobenzene		501
Dichloroethane		502
Methylene Chloride		503
Vinyl Chloride		504

14 OTHER	None ug/l(ppb)	
PCB 1254		674
PCB 1260	< 01	581

Analyses Approved By: [illegible]
Date: 7-1-86

SITE/SITE ASSESSMENT SAS039
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Lab # 860797

FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

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Environmental Health
Utah State Dept of Health

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW860003 Date/Time Collected 3-5-86 10:00 Sample Matrix Water
Collected By J Hebden / M Doran Sampling Site Environ Vitro
Exact Description of Sampling Point Well 1B

Analyst Z Fowler Date Rec'd 3-5-86 Date Analyzed 3-6-86
Amt. Purged 5ml (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.3 B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 1.4 B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	2.U
	Trichlorofluoromethane (Freon II)	4.U
	Vinyl Acetate	2.U
	Vinyl Chloride	1.U
	Total Xylenes	1.U

ug/L or ug/Kg

Tentatively Identified Compounds

Name	Scan#
None	

U - Analyzed for but n detected.

J - An estimated value for a tentatively identified compour OR a value less th the detection lim but greater than zero.

B - Found in the blank

Preparation and Analysis By: Ralph Fowler Date: 3-13-86

notice, it is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

Set # 3608-12
Lab # 860797
FOR LAB USE ONLY

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

RECEIVED
APR 7
Utah State Div of Health
Environmental Health

Field # CW86003 Date/Time Collected 3-5-86 12:50 Sample Matrix Water
Collected By Hebden Owen Sampling Site
Exact Description of Sampling Point WS-1B

Analyst RM Date Rec'd 3-5-86 Date Analyzed 3-15-86
Aliquot Sample Extracted 1000 ml Final Extract Volume 2 ml

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	in ug/L MDL/Results
	Acenaphthene	1.U
	Acenaphthylene	2.U
	Anthracene	3.U
	Aniline	4.U
	Benzidene	82.U
	Benzo(a)anthracene	7.U
	Benzo(b)fluoranthene	7.U
	Benzo(k)fluoranthene	4.U
	Benzo(a)pyrene	11.U
	Benzo(ghi)perylene	13.U
	Benzylbutylphthalate	7.U
	Benzyl alcohol	17.U
	Benzoic acid	32.U
	Bis(2-chloroethyl)ether	3.U
	Bis(2-chloroethoxy)methane	3.U
	Bis(2-chloroisopropyl)ether	3.U
	Bis(2-ethylhexyl)phthalate	10.U
	4-Bromophenyl phenyl ether	6.U
	4-Chloraniline	9.U
	2-Chloronaphthalene	2.U
	4-Chloro-3-methyl phenol	6.U
	2-Chlorophenol	2.U
	4-Chlorophenyl phenyl ether	4.U
	Chrysene	3.U
	Dibenz(a,h)anthracene	19.U
	Dibenzofuran	2.U
	Di-n-butyl phthalate	5.U
	1,3-Dichlorobenzene (meta)	2.U
	1,2-Dichlorobenzene (ortho)	5.U
	1,4-Dichlorobenzene (para)	1.U
	3,3-Dichlorobenzidene	22.U
	2,4-Dichlorophenol	4.U
	2,4-Dimethylphenol	6.U
	Diethyl phthalate	4.U
	2,4-Dinitrophenol	31.U
	Dimethyl phthalate	3.U
	2,4-Dinitrotoluene	14.U
	2,6-Dinitrotoluene	10.U
	4,6-Dinitro-2-Methyl Phenol	24.U
	Di-n-octyl phthalate	8.U
	Fluoranthene	5.U
	Hexachlorobenzene	6.U
	Hexachlorobutadiene	4.U
	Hexachloroethane	2.U
	Hexachlorocyclopentadiene	21.U
	Indeno(1,2,3-c,d)pyrene	16.U
	Isophorone	3.U
	2-Methyl-4,6-dinitrophenol	24.U
	2-Methyl naphthalene	3.U
	2-Methyl phenol (o-cresol)	3.U
	4-Methyl phenol (p-cresol)	10.U
	3-Methyl phenol (m-cresol)	4.U

X	Name	in ug/L MDL/Results
	Naphthalene	1.U
	2-Nitroaniline	16.U
	4-Nitroaniline	31.U
	Nitrobenzene	3.U
	2-Nitrophenol	4.U
	4-Nitrophenol	18.U
	n-Nitrosodimethylamine	8.U
	n-Nitrosodiphenylamine	4.U
	Pentachlorophenol	29.U
	Phenanthrene	1.U
	Phenol	3.U
	Pyrene	4.U
	1,2,4-Trichlorobenzene	2.U
	2,4,6-Trichlorophenol	4.U

Tentatively Identified Compound

Name	Scan #
None Detected	

U - Analyzed for but not detected.
J - An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.
B - Found in the blank

Date 4-2-86

SITE/SITE ASSESSMENT SAS039

Notice: If the material is less clear than this notice, it is due to the quality of the document being filmed

Rev. 7/80 Date Recd.: _____

Field No. [illegible] Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH

ORGANIC RESIDUE ANALYSES

RECEIVED APR 7 1986 Utah State Div. of Environmental Health

3612

58860799

Sample No. 701

Start No. _____ Water Syst. No. Source No. _____

Date Collected 702 (yr. mo. dy.) Time Collected 714 (24-hour clock) Water Rights No. 715 706 707

Exact Description of sampling Point: [illegible] 648

Supply Owned by 712 Sample Type 710

Sample Collected by [illegible] 713

SEND REPORT TO: Phone _____

[illegible] 715

[illegible] 648

[illegible] 717 zip code

Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 05 Dist. syst., 06 Effluent, 07 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708 Proposed use 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

INTERPRETATION OF ANALYSES:

Remarks:

Based on State Standards, this sample was: Satisfactory / Questionable / Unsatisfactory

By _____ ENVIRONMENTAL HEALTH

8 CHLORINATED HYDROCARBONS	ug/l(ppb)	
Dichloropropane		574
Dichloropropene		575
Chlordane		576
X Toxaphene	< 01	618
Endosulfan		578
X Lindane	< 002	616
Dicofol		577
X Methoxychlor	< 02	617
Dieldrin		643
Heptachlor		536
Heptachlor epoxide		615
Beta, BHC		520
Perchlorobenzene, HCB		735
Aldrin		699
X Endrin	< 006	613
p.p. DDT		516
p.p. DDE	< 006	511
p.p. DDD		513
Mirex		580

9 ORGANOPHOSPHATES None	ug/l(ppb)	
Ethyl Parathion		510
Malathion		578
Ethyl Azinphos		512
Methyl Azinphos		534
Diazinon		514
Disulfoton		535
Methyl Parathion		517
Fonofos		518
Phosalone		519
Phosmet		520
Coumaphos		521
Ethion		522
Phorate		523
Demeton		524
Fensulfothion		525
Dichlorvos		526
Trichloriou		527
Methyl Oxydemeton		528
Ronnel		529
Cruformate		530
Ethion		531

10 HERBICIDES - GRP1	ug/l(ppb)	
X 2,4-D	< 02	619
Atrazine		582
Sulfur		532
Sodium Polysulfide		583
Bromacil		584
Simazine		585
Procamide		586
DCPA		587
EPTC		588
Dinocap		589
Dicamba		590
Diuron		591
Monuron		592
Dinoseb		593
Alachlor		594
Cycloate		595
Cyanazine		596
Nitrofen		597
Copper Sulfate		533
Trifluralin		598
2,4-DB		675
Terbutryn		676
Maleic Hydrazide		678
Dacthal		679

11 HERBICIDES - GRP2	ug/l(ppb)	
2, 4, 5- T	< 01	681
Pyrazon		682
Prometon		683
Metaborate		684
Osiapon		685
X 2,4,5-TP	< 05	620
Chlorate-Borate		686
Aminozide		687
Captan		688
Glyphosate		689
Picloram		690
Methyl Bromide		691
Methyl Chloride		692
Amm. Methanarsonate		736
Terbacil		741
Paraquat		746
Acrolein		747
Diquat		751
Amitrole		756

11 HERBICIDES - GRP2 Cont.	ug/l(ppb)	
Prometryn		761
Propazine		764

12 CARBAMATES None	ug/l(ppb)	
Carbofuran		768
Carbaryl		769
Maneb		771
Metalkamate		776
Aldicarb		779
Propoxur		781
Bendiocarb		784
Benomyl		788

13 ORGANOHALOCARBONS	ug/l(ppb)	
Chloroform		790
Bromoform		791
Bromodichloromethane		795
Dibromochloromethane		796
Bromomethane		797
Carbon Tetrachloride		798
Chloroethane		799
Chloromethane		500
Dichlorobenzene		501
Dichloroethane		502
Methylene Chloride		503
Vinyl Chloride		504

14 OTHER None	ug/l(ppb)	
PCB 1254		674
PCB 1260	< 01	581

Analyses Approved By: [illegible]

Date: 3-6-86

is less clear than this notice. It is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

1 4 1

RECEIVED
APR 7 1986
Utah State Div. Of Environmental Health

Log #	3608-12
Lab #	860799.
FOR LAB USE ONLY	

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW 8005 Date/Time Collected 3-5-86/4:50 Sample Matrix Water
Collected By Helder / Dunn Sampling Site Ditto
Exact Description of Sampling Point Well 7A

Analyst RM Date Rec'd 3-6-86 Date Analyzed 3-15-86
Aliquot Sample Extracted 1000ml Final Extract Volume 2ml

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	in ug/L MDL/Results
	Acenaphthene	1.U
	Acenaphthylene	2.U
	Anthracene	3.U
	Aniline	4.U
	Benzidene	82.U
	Benzo(a)anthracene	7.U
	Benzo(b)fluoranthene	7.U
	Benzo(k)fluoranthene	4.U
	Benzo(a)pyrene	11.U
	Benzo(ghi)perylene	13.U
	Benzylbutylphthalate	7.U
	Benzyl alcohol	17.U
	Benzoic acid	32.U
	Bis(2-chloroethyl)ether	3.U
	Bis(2-chloroethoxy)methane	3.U
	Bis(2-chloroisopropyl)ether	3.U
	Bis(2-ethylhexyl)phthalate	~~10.U~~ 2.0 JB
	4-Bromophenyl phenyl ether	6.U
	4-Chloraniline	9.U
	2-Chloronaphthalene	2.U
	4-Chloro-3-methyl phenol	6.U
	2-Chlorophenol	2.U
	4-Chlorophenyl phenyl ether	4.U
	Chyrsene	3.U
	Dibenz(a,h)anthracene	19.U
	Dibenzofuran	2.U
	Di-n-butyl phthalate	5.U
	1,3-Dichlorobenzene (meta)	2.U
	1,2-Dichlorobenzene (ortho)	5.U
	1,4-Dichlorobenzene (para)	1.U
	3,3-Dichlorobenzidene	24.U
	2,4-Dichlorophenol	4.U
	2,4-Dimethylphenol	6.U
	Diethyl phthalate	4.U
	2,4-Dinitrophenol	31.U
	Dimethyl phthalate	3.U
	2,4-Dinitrotoluene	14.U
	2,6-Dinitrotoluene	10.U
	4,6-Dinitro-2-Methyl Phenol	24.U
	Di-n-octyl phthalate	8.U
	Fluoranthene	5.U
	Hexachlorobenzene	6.U
	Hexachlorobutadiene	4.U
	Hexachloroethane	2.U
	Hexachlorocyclopentadiene	21.U
	Indeno(1,2,3-c,d)pyrene	16.U
	Isophorone	3.U
	2-Methyl-4,6-dinitrophenol	24.U
	2-Methyl naphthalene	3.U
	2-Methyl phenol (o-cresol)	3.U
	3-Methyl phenol (m-cresol)	10.U
	4-Methyl phenol (p-cresol)	4.U

X	Name	in ug/L MDL/Results
	Naphthalene	1.U
	2-Nitroaniline	16.U
	4-Nitroaniline	31.U
	Nitrobenzene	3.U
	2-Nitrophenol	4.U
	4-Nitrophenol	18.U
	n-Nitrosodimethylamine	8.U
	n-Nitrosodiphenylamine	4.U
	Pentachlorophenol	29.U
	Phenanthrene	1.U
	Phenol	3.U
	Pyrene	4.U
	1,2,4-Trichlorobenzene	2.U
	2,4,6-Trichlorophenol	4.U

Tentatively Identified Compound

Name	Scan #
None Detected	

U - Analyzed for but not detected.
J - An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.
B - Found in the blank

Extraction and Analysis By: AC / RM Date 4-2-86

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SITE/SITE ASSESSMENT SAS039

FILE

EPA METHOD 624 (GC/MS)
Purgeables

RECEIVED
APR 7 1986
Utah State Dept of Health
Environmental Health

Set # 3605-12
Lab # 860799
FOR LAB USE ONLY

Send Report To:

Utah State Dept of Health
Medical Drive
Salt Lake City, UT 84113

Field # CW86005 Date/Time Collected 3-5-86 1350 Sample Matrix Water
Collected By [illegible] Sampling Site Vitro
Exact Description of Sampling Point Well 7A

Analyst [illegible] Date Rec'd 3-5-86 Date Analyzed 3-6-86
Amt. Purged 5 mls (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.48
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 2.08
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon II)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	2.U
	Total Xylenes	1.U

ug/L or ug/Kg

Tentatively Identified Compounds		
Name	Scan#	Results
Tetrahydrofuran	187	47. J

U - Analyzed for but n detected.

J - An estimated value for a tentatively identified compoun OR a value less th the detection limi but greater than zero.

B - Found in the blank

SITE/SITE ASSESSMENT SAS039

3614

RECEIVED
APR 1 1986
Utah State Department of Health
Environmental Health

Rev. 7/80 Date Recd.: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
ORGANIC RESIDUE ANALYSES

MAR 7 0 8 6 0 8 1 4

Field No. CW86006 Received By: _____

Sample No. 701

Storet No. _____ 702

Water Syst. No. Source No. _____ 703 704

Date Collected 860306 705 (Yr. Mo. Dy.) Time Collected 1015 706 (24-hour clock)

Water Rights No. _____ 707

Exact Description of sampling Point: UTRO WELL 8A 646

Supply Owned by _____ 712

Sample Type _____ 710

Sample Collected by DOKON 713

SEND REPORT TO: Phone _____
JIM SALMON 715
BUR S. & HAZ WASTE 648
zip code 717

Sample Source 719: 02
01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 10 Other, 18 Artesian well, 19 Swimming pool
County: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use _____ 708
Proposed use _____ 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was: Satisfactory / Conditional / Unsatisfactory

By ENVIRONMENTAL HEALTH

8 CHLORINATED HYDROCARBONS	ug/l(ppb)	
Dichloropropane		574
Dichloropropene		575
Chlordane		516
X Toxaphene	< 01	618
Endosulfan		576
X Lindane	< 002	616
Dicofol		577
X Methoxychlor	< 02	617
Dieldrin		643
Heptachlor		536
Heptachlor epoxide		515
Beta, BHC		520
Perchlorobenzene, HCB		735
Aldrin		599
X Endrin	< 006	613
p.p. DDT		515
p.p. DDE	< 006	511
p.p. DDD		513
Mirex		580

9 ORGANOPHOSPHATES None	ug/l(ppb)	
Ethyl Parathion		510
Malathion		578
Ethyl Azinphos		512
Methyl Azinphos		534
Diazinon		514
Disulfoton		535
Methyl Parathion		517
Fonofos		518
Phosalone		519
Phosmet		520
Coumaphos		521
Fenthion		522
Phorate		523
Demeton		524
Fensulfothion		525
Dichlorvos		526
Trichlorfon		527
Methyl Oxydemeton		528
Ronnel		529
Crufomate		530
Ethion		

10 HERBICIDES - GRP1	ug/l(ppb)	
X 2,4-D	< 02	619
Atrazine		582
Sulfur		532
Sodium Polysulfide		583
Bromacil		584
Simazine		585
Pronamide		586
DCPA		587
EPTC		588
Dinocap		589
Dicamba		590
Diuron		591
Monuron		592
Dinoseb		593
Alachlor		594
Cycloate		595
Cyanazine		596
Nitrofen		597
Copper Sulfate		533
Trifluralin		598
2,4-DB		675
Terbutryn		676
Maleic Hydrazide		678
Dacthal		679

11 HERBICIDES - GRP2	ug/l(ppb)	
2, 4, 5- T	< 01	681
Pyrazon		682
Prometon		683
Metaborate		684
Dalapon		685
X 2,4,5-TP	< 05	620
Chlorate-Borate		686
Aminozide		687
Captan		688
Glyphosate		689
Picloram		690
Methyl Bromide		691
Methyl Chloride		692
Amm. Methanarsonate		736
Terbacil		741
Paraquat		746
Acrolein		747
Diquat		751
Amitrole		

11 HERBICIDES - GRP2 Cont.	ug/l(ppb)	
Prometryn		761
Propazine		764

12 CARBAMATES None	ug/l(ppb)	
Carbofuran		768
Carbaryl		769
Maneb		771
Metalkamate		776
Aldicarb		779
Propoxur		781
Bendiocarb		784
Benomyl		788

13 ORGANOHALOCARBONS	ug/l(ppb)	
Chloroform		790
Bromoform		791
Bromodichloromethane		795
Dibromochloromethane		796
Bromomethane		797
Carbon Tetrachloride		798
Chloroethane		799
Chloromethane		500
Dichlorobenzene		501
Dichloroethane		502
Methylene Chloride		503
Vinyl Chloride		504

14 OTHER None	ug/l(ppb)	
PCB 1254		674
PCB 1260	< 01	581

Analyses Approved By: [illegible]
Date: 3-3-86

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SITE/SITE ASSESSMENT SAS039

Set # 3614-20
Lab # 860814
FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW86006 Date/Time Collected 3-6-86 10-15 Sample Matrix Water
Collected By Dave Sampling Site Vitro
Exact Description of Sampling Point Well 8A

Analyst [illegible] Date Rec'd 3-6-86 Date Analyzed 3-7-86
Amt. Purged 5 mls (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.1 B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 6.5 B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon II)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	1.U
	Total Xylenes	1.U

ug/L or ug/Kg
Tentatively Identified Compounds

Name	Scan#	Results
2,2'-oxybis propane	312	5. J

RECEIVED
APR 7 1986
Utah State Div. Of Environmental Hea

U - Analyzed for but n detected.

J - An estimated value for a tentatively identified compoun OR a value less th the detection limi but greater than zero.

B - Found in the blank

SITE/SITE ASSESSMENT
SAS039
1 E 4 E

Set # 3614-20
Lab # 86-0814
FOR LAB USE ONLY

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

Send Report To:

RECEIVED
APR 7 1986

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # (W)8606 Date/Time Collected 3-6-86 0:15 Sample Matrix Water
Collected By Dawn Sampling Site Utah
Exact Description of Sampling Environmental Health well 84

Analyst WM Date Rec'd 3-6-86 Date Analyzed 3-20-86
Aliquot Sample Extracted 1000ml Final Extract Volume 1ml

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	in ug/L MDL/Results
	Acenaphthene	1.U
	Acenaphthylene	2.U
	Anthracene	3.U
	Aniline	4.U
	Benzidene	82.U
	Benzo(a)anthracene	7.U
	Benzo(b)fluoranthene	7.U
	Benzo(k)fluoranthene	4.U
	Benzo(a)pyrene	4.U
	Benzo(ghi)perylene	11.U
	Benzylbutylphthalate	13.U
	Benzyl alcohol	7.U
	Benzoic acid	17.U
	Bis(2-chloroethyl)ether	32.U
	Bis(2-chloroethoxy)methane	3.U
	Bis(2-chloroisopropyl)ether	3.U
	Bis(2-ethylhexyl)phthalate	3.U
	4-Bromophenyl phenyl ether	10.U
	4-Chloraniline	6.U
	2-Chloronaphthalene	9.U
	4-Chloro-3-methyl phenol	2.U
	2-Chlorophenol	6.U
	4-Chlorophenyl phenyl ether	2.U
	Chrysene	4.U
	Dibenz(a,h)anthracene	3.U
	Dibenzofuran	19.U
	Di-n-butyl phthalate	2.U
	1,3-Dichlorobenzene (meta)	5.U
	1,2-Dichlorobenzene (ortho)	2.U
	1,4-Dichlorobenzene (para)	5.U
	3,3-Dichlorobenzidene	1.U
	2,4-Dichlorophenol	24.U
	2,4-Dimethylphenol	4.U
	Diethyl phthalate	6.U
	2,4-Dinitrophenol	4.U
	Dimethyl phthalate	31.U
	2,4-Dinitrotoluene	3.U
	2,6-Dinitrotoluene	14.U
	4,6-Dinitro-2-methyl phenol	10.U
	Di-n-octyl phthalate	24.U
	Fluoranthene	8.U
	Hexachlorobenzene	5.U
	Hexachlorobutadiene	6.U
	Hexachloroethane	4.U
	Hexachlorocyclopentadiene	2.U
	Ideno(1,2,3-c,d)pyrene	21.U
	Isophorone	16.U
	2-Methyl-4,6-dinitrophenol	3.U
	2-Methyl naphthalene	24.U
	2-Methyl phenol (o-cresol)	3.U
	3-Methyl phenol (m-cresol)	3.U
	4-Methyl phenol (p-cresol)	10.U

X	Name	in ug/L MDL/Results
	Naphthalene	1.U
	2-Nitroaniline	16.U
	4-Nitroaniline	31.U
	Nitrobenzene	3.U
	2-Nitrophenol	4.U
	4-Nitrophenol	18.U
	n-Nitrosodimethylamine	8.U
	n-Nitrosodiphenylamine	4.U
	Pentachlorophenol	29.U
	Phenanthrene	1.U
	Phenol	3.U
	Pyrene	4.U
	1,2,4-Trichlorobenzene	2.U
	2,4,6-Trichlorophenol	4.U

Tentatively Identified Compound

Name	Scan #
None Detected	

U - Analyzed for but not detected.
J - An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.
B - Found in the blank

Preparation and Analysis By: BC / RM / Date 4-2-86

notice, it is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

1 3 4 6

3616

Rev. 7/80

Date Recd.: _____

Field No. CW86008 Received By: _____

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
ORGANIC RESIDUE ANALYSES

MAR 7 86 8 6 0 8 1 6
Sample No. 701

Street No. 702

Water Syst. No. Source No. 793 794

Date Collected 860306 (yr. mo. dy.) 716 Time Collected 1117 (24-hour clock) 410

Water Rights No. 707

Exact Description of sampling Point 646
SURFACE SI

Supply Owned by 712

Sample Type 710

Sample Collected by 713
HERBOW

SEND REPORT TO: Phone
TIM SALMON 715
BUR SE HAZ WASTE 648
717 zip code

Sample Source 719: 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

INTERPRETATION OF ANALYSES:
Remarks

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APR 7 1986
Utah State Div. Of Environmental Health

Based on State Standards, this sample was: Satisfactory / Conditional / Unsatisfactory

By _____ ENVIRONMENTAL HEALTH

5 CHLORINATED HYDROCARBONS	ug/l(ppb)	
Dichloropropene		574
Dichloropropane		575
Chlordane		516
X Toxaphene	< 01	618
Endosulfan		576
X Lindane	01	616
Dicofol		577
X Methoxychlor	< 02	617
Dieldrin		643
Heptachlor		536
Heptachlor epoxide		615
Beta, BHC		520
Perchlorobenzene, HCB		735
Aldrin		699
X Endrin	< 006	613
p.p. DDT		515
p.p. DDE	< 006	511
p.p. DDD		513
Mirex		580

9 ORGANOPHOSPHATES None	ug/l(ppb)	
Ethyl Parathion		510
Malathion		578
Ethyl Azinphos		512
Methyl Azinphos		534
Diazinon		514
Disulfoton		535
Methyl Parathion		517
Fonofos		518
Phosalone		519
Phosmet		520
Coumaphos		521
Fenthion		522
Phorate		523
Demeton		524
Fensulfothion		525
Dichlorvos		526
Trichlorfon		527
Methyl Oxydemeton		528
Ronnel		529
Chlorpyrifos		530
Ethion		531

10 HERBICIDES - GRP1	ug/l(ppb)	
X 2,4-D	< 02	619
Atrazine		582
Sulfur		532
Sodium Polysulfide		583
Bromacil		584
Simazine		585
Pronamide		586
DCPA		587
EPTC		588
Dinocap		589
Dicamba		590
Diuron		591
Monuron		592
Dinoseb		593
Alachlor		594
Cycloate		595
Cyanazine		596
Nitrofen		597
Copper Sulfate		533
Trifluralin		598
2,4-DB		675
Terbutryn		676
Maleic Hydrazide		678
Dacthal		679

11 HERBICIDES - GRP2	ug/l(ppb)	
2, 4, 5- T	< 01	681
Pyrazon		682
Prometon		683
Metaborate		684
Dalapon		685
X 2,4,5-TP	< 05	620
Chlorate-Borate		686
Aminozide		687
Captan		688
Glyphosate		689
Picloram		690
Methyl Bromide		691
Methyl Chloride		692
Amm. Methanarsonate		736
Terbacil		741
Paraquat		746
Acrolein		
Xylene		
Diquat		751

11 HERBICIDES - GRP2 Cont.	ug/l(ppb)	
Prometryn		761
Propazine		764

12 CARBAMATES None	ug/l(ppb)	
Carbofuran		768
Carbaryl		769
Maneb		771
Metalkamate		776
Aldicarb		779
Propoxur		781
Bendiocarb		784
Benomyl		788

13 ORGANOHALOCARBONS	ug/l(ppb)	
Chloroform		790
Bromoform		791
Bromodichloromethane		795
Dibromochloromethane		796
Bromomethane		797
Carbon Tetrachloride		798
Chloroethane		799
Chloromethane		500
Dichlorobenzene		501
Dichloroethane		502
Methylene Chloride		503
Vinyl Chloride		504

14 OTHER None	ug/l(ppb)	
PCB 1254		674
PCB 1260	< 01	581

Analyses Approved By: Warnick

notice. it is due to the quality of the document being filmed

SITE/SITE ASSESSMENT SAS039

Set # 3614-20
Lab # 860816
FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

RECEIVED
APR 7 1986
State Div. Of Social Health

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW 86008 Date/Time Collected 3-6-86 11:17 Sample Matrix Water
Collected By Hebdon Sampling Site Vitro
Exact Description of Sampling Point

Analyst Z. Meilz Date Rec'd 3-7-86 Date Analyzed 3-7-86
Amt. Purged 5ml (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.1 B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	~~2.U~~ 2 J
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 1.1 B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon 11)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	3.U
	Total Xylenes	1.U

ug/L or ug/Kg
Tentatively Identified Compounds

Name	Scan#
None	

U - Analyzed for but n detected.

J - An estimated value for a tentatively identified compoun OR a value less th the detection limi but greater than zero.

B - Found in the blank

quality of the document being filmed
SITE/SITE ASSESSMENT
SAS039

Set # 3614-20
Lab # 860816
FOR LAB USE ONLY

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

RECEIVED APR 7 1986 Utah State Div. Of Environmental Health

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW 86008 Date/Time Collected 3-26 11:17 Sample Matrix Water
Collected By Sampling Site Vitro
Exact Description of Sampling Point

Analyst RM Date Rec'd 3-7-86 Date Analyzed 3-21-86
Aliquot Sample Extracted 1000ml Final Extract Volume 2ml

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	in ug/L MDL/Results
	Acenaphthene	1.U
	Acenaphthylene	2.U
	Anthracene	~~3.U~~ 9.8
	Aniline	4.U
	Benzidene	82.U
	Benzo(a)anthracene	7.U
	Benzo(b)fluoranthene	7.U
	Benzo(k)fluoranthene	4.U
	Benzo(a)pyrene	11.U
	Benzo(ghi)perylene	13.U
	Benzylbutylphthalate	7.U
	Benzyl alcohol	17.U
	Benzoic acid	32.U
	Bis(2-chloroethyl)ether	3.U
	Bis(2-chloroethoxy)methane	3.U
	Bis(2-chloroisopropyl)ether	3.U
	Bis(2-ethylhexyl)phthalate	~~10.U~~ 28.
	4-Bromophenyl phenyl ether	6.U
	4-Chloraniline	9.U
	2-Chloronaphthalene	2.U
	4-Chloro-3-methyl phenol	6.U
	2-Chlorophenol	2.U
	4-Chlorophenyl phenyl ether	4.U
	Chrysene	3.U
	Dibenz(a,h)anthracene	19.U
	Dibenzofuran	2.U
	Di-n-butyl phthalate	5.U
	1,3-Dichlorobenzene (meta)	2.U
	1,2-Dichlorobenzene (ortho)	5.U
	1,4-Dichlorobenzene (para)	1.U
	3,3-Dichlorobenzidene	24.U
	2,4-Dichlorophenol	4.U
	2,4-Dimethylphenol	6.U
	Diethyl phthalate	4.U
	2,4-Dinitrophenol	31.U
	Dimethyl phthalate	3.U
	2,4-Dinitrotoluene	14.U
	2,6-Dinitrotoluene	10.U
	4,6-Dinitro-2-methyl Phenol	24.U
	Di-n-octyl phthalate	8.U
	Fluoranthene	5.U
	Hexachlorobenzene	6.U
	Hexachlorobutadiene	4.U
	Hexachloroethane	2.U
	Hexachlorocyclopentadiene	21.U
	Indeno(1,2,3-c,d)pyrene	16.U
	Isophorone	3.U
	2-Methyl-4,6-dinitrophenol	24.U
	2-Methyl naphthalene	~~3.U~~ 80.
	2-Methyl phenol (o-cresol)	3.U
	3-Methyl phenol (m-cresol)	10.U
	4-Methyl phenol (p-cresol)	4.U
	Fluorene	~~2.U~~ 2.3

X	Name	in ug/L MDL/Results
	Naphthalene	~~1.U~~ 4.4
	2-Nitroaniline	16.U
	4-Nitroaniline	31.U
	Nitrobenzene	3.U
	2-Nitrophenol	4.U
	4-Nitrophenol	18.U
	n-Nitrosodimethylamine	8.U
	n-Nitrosodiphenylamine	4.U
	Pentachlorophenol	29.U
	Phenanthrene	1.U
	Phenol	3.U
	Pyrene	4.U
	1,2,4-Trichlorobenzene	2.U
	2,4,6-Trichlorophenol	4.U

Tentatively Identified Compound

Name	Scan #	Results
Dimethyl naphthalenes	1040-1080	140. J
Aliphatic hydrocarbons (C_7 to C_{30})	800-2000	30,000 J

U - Analyzed for but not detected.
J - An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.
B - Found in the blank

Preparation and Analysis By: BC / RM Date 4-2-86

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SAS039

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Utah State Div. of Environmental Health

3619

MAR 12 86 860895

Rev. 7/80

Date Recd.: 3/6/86

Field No. CW86008

Received By: T. Lamoreaux

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
ORGANIC RESIDUE ANALYSES

Sample No. 701

Store No.

Water Syst. No. Source No. 702 700

Date Collected 03/06/86 (yr. mo. dy.) 702

Time Collected 1117 (24-hour clock) 716

Water Rights No. 707

Exact Description of sampling point: VITTAO STH 8 SIL SWR Area Water ORG. SEDIMENT 648

Supply Owned by 712

Sample Type 710

Sample Collected by HERDON 713

SEND REPORT TO: Phone 715 648 717 zip code

Sample Source 719
01 Spring, 02 Well, 03 Stream, 04 Lake, 05 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Swimming pool, 16 Artesian well
01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

INTERPRETATION OF ANALYSES:
Remarks: One unidentified peak at < 1.0 ppm

Based on State Standards, this sample was: Satisfactory / Conditional / Unsatisfactory

By ENVIRONMENTAL HEALTH

8 CHLORINATED HYDROCARBONS	ug/l(ppb)	
Dichloropropane		574
Dichloropropene		575
Chlordane		576
X Toxaphene	< 25	618
Endosulfan		576
Lindane	< 4	616
X Dicofol		577
X Methoxychlor	< 5	617
Dieldrin		643
Heptachlor		536
Heptachlor epoxide		615
Beta, BHC		520
Perchlorobenzene, HCB		735
Aldrin		699
X Endrin	< 1/2	613
p.p. DDT		515
p.p. DDE	3	511
p.p. DDD		513
Mirex		580

9 ORGANOPHOSPHATES None	ug/l(ppb)	
Ethyl Parathion		510
Malathion		570
Ethyl Azinphos		512
Methyl Azinphos		534
Diazinon		514
Dioulfoton		535
Methyl Parathion		517
Fonofos		518
Phosalone		519
Phosmet		520
Coumaphos		521
Fenthion		522
Phorate		523
Demeton		524
Fenamiphothion		525
Dichlorvos		526
Trichlorfon		527
Methyl Oxydemeton		528
Ronnel		529
Crufomate		530
Ethion		531

10 HERBICIDES - GRP1	ug/l(ppb)	
X 2,4-D	< 70	619
Atrazine		582
Sulfur		532
Sodium Polysulfide		583
Bromacil		584
Simazine		585
Pronamide		586
DCPA		587
EPTC		588
Dinocap		589
Dicamba		590
Diuron		591
Monuron		592
Dinoseb		593
Alachlor		594
Cycloate		595
Cyanazine		596
Nitrofen		597
Copper Sulfate		533
Trifluralin		598
2,4-DB		675
Terbutryn		676
Maleic Hydrazide		677
Dacthal		678

11 HERBICIDES - GRP2	ug/l(ppb)	
2, 4, 5- T	< 2	681
Pyrazon		682
Prometon		683
Metaborate		684
Delapon		685
X 2,4,5-TP	< 2	620
Chlorate-Borate		686
Aminozide		687
Captan		688
Glyphosate		689
Picloram		690
Methyl Bromide		691
Methyl Chloride		692
Amm. Methanarsonate		736
Terbacil		741
Paraquat		746
Acrolein		747
Xylene		748
Diquat		751

11 HERBICIDES - GRP2 Cont.	ug/l(ppb)	
Prometryn		761
Propazine		764

12 CARBAMATES None	ug/l(ppb)	
Carbofuran		768
Carbaryl		769
Maneb		771
Metalkamate		776
Aldicarb		779
Propoxur		781
Bendiocarb		784
Benomyl		788

13 ORGANOHALOCARBONS	ug/l(ppb)	
Chloroform		790
Bromoform		791
Bromodichloromethane		795
Dibromochloromethane		796
Bromomethane		797
Carbon Tetrachloride		798
Chloroethane		799
Chloromethane		500
Dichlorobenzene		501
Dichloroethane		502
Methylene Chloride		503
Vinyl Chloride		504

14 OTHER None	ug/l(ppb)	
PCB 1254	< 28	674
PCB 1260		581

Analyses Approved By: [illegible]

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SITE/SITE ASSESSMENT

SAS039

Set # 3614-2C
Lab # 860895
FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeable

RECEIVED
APR 7 1986
Utah State Div. of Environmental Health

Send Report To:

Utah State Dept of Health
644 Medical Drive
Salt Lake City, UT 84113

Field # CW86008 Date/Time Collected 3-6-86 11:17 Sample Matrix Sludge
Collected By Hebdon Sampling Site [illegible]
Exact Description of Sampling Point S1 - surface

Analyst R Mailon Date Rec'd 3-12-86 Date Analyzed 3-12-86
Amt. Purged 5gm (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.7 B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	~~1.U~~ 18
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	~~1.U~~ 1200.
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	~~1.U~~ 7.
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	1.U
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	~~1.U~~ 5.3
	1,1,1-Trichloroethane (Methyl Chloroform)	~~1.U~~ 84. B
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon II)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	1.U
	Total Xylenes	~~1.U~~ 92.

ug/L or ug/Kg

Tentatively Identified Compounds

Name	Scan#	Results
Alkylate hydrocarbon	400-680	2100. J
1,3,5-Trimethylbenzene	649	1100. J
isopropylbenzene	576	440. J

U - Analyzed for but [illegible] detected.

J - An estimated valu[illegible] for a tentatively identified compou[illegible] OR a value less t[illegible] the detection lim[illegible] but greater than zero.

B - Found in the blan[illegible]

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Set #
Lab # 3614-25
860895
FOR LAB USE ONLY

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

RECEIVED
APR 7 1986
Utah State Div. Of Environmental Health

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW 86008 Date/Time Collected 3-6-86 11:0 Sample Matrix Sludge
Collected By Heller Sampling Site Dirco
Exact Description of Sampling Point SI Sludge

Analyst RM Date Rec'd 3-12-86 Date Analyzed 3-21-86
Aliquot Sample Extracted 1g Final Extract Volume 1 ml

(MDL based on 30 g extracted, 1 ml final volume)

X	Name	in ug/Kg MDL/Results
	Acenaphthene	33.U
	Acenaphthylene	66.U
	Anthracene	99.U
	Aniline	130.U
	Benzidene	2700.U
	Benzo(a)anthracene	230.U
	Benzo(b)fluoranthene	230.U
	Benzo(k)fluoranthene	130.U
	Benzo(a)pyrene	360.U
	Benzo(ghi)perylene	430.U
	Benzylbutylphthalate	230.U
	Benzyl alcohol	560.U
	Benzoic acid	1000.U
	Bis(2-chloroethyl)ether	99.U
	Bis(2-chloroethoxy)methane	99.U
	Bis(2-chloroisopropyl)ether	99.U
	Bis(2-ethylhexyl)phthalate	~~230.U~~ 805 B
	4-Bromophenyl phenyl ether	200.U
	4-Chloroaniline	300.U
	2-Chloronaphthalene	66.U
	4-Chloro-3-methyl phenol	200.U
	2-Chlorophenol	66.U
	4-Chlorophenyl phenyl ether	130.U
	Chrysene	99.U
	Dibenz(a,h)anthracene	630.U
	Dibenzofuran	66.U
	Di-n-butyl phthalate	~~170.B~~ 240
	1,3-Dichlorobenzene (meta)	66.U
	1,2-Dichlorobenzene (ortho)	170.U
	1,4-Dichlorobenzene (para)	33.U
	3,3-Dichlorobenzidene	790.U
	2,4-Dichlorophenol	130.U
	2,4-Dimethylphenol	200.U
	Diethyl phthalate	130.U
	2,4-Dinitrophenol	1000.U
	Dimethyl phthalate	99.U
	2,4-Dinitrotoluene	460.U
	2,6-Dinitrotoluene	330.U
	4,6-Dinitro-2-methyl Phenol	790.U
	Di-n-octyl phthalate	260.U
	Fluoranthene	~~130.U~~ 147
	Hexachlorobenzene	200.U
	Hexachlorobutadiene	130.U
	Hexachloroethane	66.U
	Hexachlorocyclopentadiene	690.U
	Indeno(1,2,3-c,d)pyrene	530.U
	Isophorone	99.U
	4-Methyl-4,6-dinitrophenol	790.U
	2-Methyl naphthalene	99.U
	2-Methyl phenol (o-cresol)	99.U
	3-Methyl phenol (m-cresol)	330.U
	4-Methyl phenol (p-cresol)	130.U

X	Name	in ug/Kg MDL/Results
	Naphthalene	~~33.U~~ 144
	2-Nitroaniline	530.U
	4-Nitroaniline	1000.U
	Nitrobenzene	99.U
	2-Nitrophenol	130.U
	4-Nitrophenol	590.U
	n-Nitrosodimethylamine	260.U
	n-Nitrosodiphenylamine	~~130.U~~ 556
	Pentachlorophenol	960.U
	Phenanthrene	33.U
	Phenol	99.U
	Pyrene	~~130.U~~ 140
	1,2,4-Trichlorobenzene	66.U
	2,4,6-Trichlorophenol	130.U

Tentatively Identified Compound

Name	Scan #	Results
C_{10} Aliphatic hydrocarbon (545)	3000.	J

U- Analyzed for but not detected.

J- An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.

B- Found in the blank.

Preparation and Analysis By: _____ Date _____

Reviewed By: _____ Date _____

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SAS039

3617

Rev. 7/80

Date Recd.:

Field No. CW 86009

Received By:

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH
ORGANIC RESIDUE ANALYSES

Hsp Tnr. 7 058608 17

Sample No. 701

Storet No.

Water Syst. No. Source No.

Date Collected 702: 860306 (Yr. Mo. Dy.)

Time Collected 704: 1338 (24-hour clock)

Water Rights No. 707

Exact Description of sampling Point 646: SURFACE S2

Supply Owned by 712

Sample Type 713

Sampled Collected by 714: DOVIN

SEND REPORT TO: Phone

715: JIM SACMAN

648: AIR SERHAZ WASTE

717: zip code

Sample Source 719: 03 — 01 Spring, 02 Well, 03 Stream, 04 Lake, 06 Dist. syst., 07 Effluent, 08 Storm sewer, 14 Other, 15 Tunnel, 18 Artesian well, 19 Swimming pool

County 611: 13 — 01 Beaver, 02 Box Elder, 03 Cache, 04 Carbon, 05 Daggett, 06 Davis, 07 Duchesne, 08 Emery, 09 Garfield, 10 Grand, 11 Iron, 12 Juab, 13 Kane, 14 Millard, 15 Morgan, 16 Piute, 17 Rich, 18 Salt Lake, 19 San Juan, 20 Sanpete, 21 Sevier, 22 Summit, 23 Tooele, 24 Uintah, 25 Utah, 26 Wasatch, 27 Washington, 28 Wayne, 29 Weber

Current use 708

Proposed use 709

1. Culinary
2. Agriculture
3. Industrial
4. Other

INTERPRETATION OF ANALYSES:

Remarks:

RECEIVED APR 7 1986 Utah State Div. Of Environmental Health

By ENVIRONMENTAL HEALTH

Based on State Standards, this sample was: Satisfactory / Conditional / Unsatisfactory

8 CHLORINATED HYDROCARBONS ug/l(ppb)

	Dichloropropane		574
	Dichloropropene		575
	Chlordane		576
X	Toxaphene	< 01	618
	Endosulfan		576
X	Lindane	03	616
	Dicofol		577
X	Methoxychlor	< 02	617
	Dieldrin		643
	Heptachlor		536
	Heptachlor epoxide		615
	Beta, BHC		520
	Perchlorobenzene, HCB		735
	Aldrin		699
X	Endrin	< 006	613
	p.p. DDT		516
	p.p. DDE	03	511
	p.p. DDD		513
	Mirex		580

9 ORGANOPHOSPHATES None ug/l(ppb)

	Ethyl Parathion		510
	Malathion		576
	Ethyl Azinphos		512
	Methyl Azinphos		534
	Diazinon		514
	Disulfoton		535
	Methyl Parathion		517
	Fonofos		518
	Phosalone		519
	Phosmet		520
	Coumaphos		521
	Fenthion		522
	Phorate		523
	Demeton		524
	Formothion		525
	Dichlorvos		526
	Trichlorfon		527
	Methyl Oxydemeton		528
	Ronnel		529
	Chlorfenvinphos		530
	Other		531

10 HERBICIDES - GRP1 ug/l(ppb)

X	2,4-D	< 02	619
	Atrazine		582
	Sulfur		532
	Sodium Polysulfide		583
	Bromacil		584
	Simazine		585
	Pronamide		586
	DCPA		587
	EPTC		588
	Dinocap		589
	Dicamba		590
	Diuron		591
	Monuron		592
	Dinoseb		593
	Alachlor		594
	Cycloate		595
	Cyanazine		596
	Nitrofen		597
	Copper Sulfate		533
	Trifluralin		598
	2,4-DB		675
	Terbutryn		676
	Maleic Hydrazide		678
	Dacthal		679

11 HERBICIDES - GRP2 ug/l(ppb)

	2, 4, 5- T	< 01	681
	Pyrazon		682
	Prometon		683
	Metaborate		684
	Dalapon		685
X	2,4,5-TP	< 005	630
	Chlorate-Borate		686
	Aminozide		687
	Captan		688
	Glyphosate		689
	Picloram		690
	Methyl Bromide		691
	Methyl Chloride		692
	Amm. Methanarsonate		736
	Terbacil		741
	Paraquat		746
	Acrolein		[illegible]
	Acrylamide		[illegible]
	Diquat		751

11 HERBICIDES - GRP2 Cont. ug/l(ppb)

	Prometryn		761
	Propazine		764

12 CARBAMATES None ug/l(ppb)

	Carbofuran		768
	Carbaryl		769
	Maneb		771
	Metalkamate		776
	Aldicarb		779
	Propoxur		781
	Bendiocarb		784
	Benomyl		788

13 ORGANOHALOCARBONS ug/l(ppb)

	Chloroform		790
	Bromoform		791
	Bromodichloromethane		795
	Dibromochloromethane		796
	Bromomethane		797
	Carbon Tetrachloride		798
	Chloroethane		799
	Chloromethane		500
	Dichlorobenzene		501
	Dichloroethane		502
	Methylene Chloride		503
	Vinyl Chloride		504

14 OTHER None ug/l(ppb)

	PCB 1254		674
	PCB 1260	< 01	581

Analyses Approved By: Wurmer

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SITE/SITE ASSESSMENT SAS039 FILE

Set # 3614-20
Lab # 860317
FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW86009 Date/Time Collected 3-6-86 13:18 Sample Matrix Water
Collected By Dayon Sampling Site Utah
Exact Description of Sampling Point Surface SZ

Analyst K Malon Date Rec'd 3-7-86 Date Analyzed 3-7-86
Amt. Purged 5ml (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 1.3B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	1.U
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	1.U
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	1.U
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	1.U 4.1B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	1.U
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	1.U
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon 11)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	[illegible]
	Total Xylenes	1.U

ug/L or ug/Kg

Tentatively Identified Compounds Name	Scan#
None	

U - Analyzed for but [illegible] detected.

J - An estimated valu[illegible] for a tentatively identified compou[illegible] OR a value less t[illegible] the detection lim[illegible] but greater than zero.

B - Found in the blan[illegible]

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1754
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Set # 3614-20
Lab # 860817
FOR LAB USE ONLY

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW86 009 Date/Time Collected 3-6-86 13:18 Sample Matrix Water
Collected By Poyson Sampling Site Vitro
Exact Description of Sampling Point Effluent SZ

Analyst RM Date Rec'd 3-7-86 Date Analyzed 3-21-86
Aliquot Sample Extracted 1000 ml Final Extract Volume 2.0

(MDL based on 1 L. extracted, 1 ml final volume)

X	Name	in ug/L MDL/Results		X	Name	in ug/L MDL/Results	
	Acenaphthene	1.U			Naphthalene	~~1.0~~	0.96J
	Acenaphthylene	2.U			2-Nitroaniline	16.U	
	Anthracene	3.U			4-Nitroaniline	31.U	
	Aniline	4.U			Nitrobenzene	3.U	
	Benzidene	82.U			2-Nitrophenol	4.U	
	Benzo(a)anthracene	7.U			4-Nitrophenol	18.U	
	Benzo(b)fluoranthene	7.U			n-Nitrozodimethylamine	8.U	
	Benzo(k)fluoranthene	4.U			n-Nitrosodiphenylamine	~~4.U~~	2.85
	Benzo(a)pyrene	11.U			Pentachlorophenol	29.U	
	Benzo(ghi)perylene	13.U			Phenanthrene	1.U	
	Benzylbutylphthalate	7.U			Phenol	3.U	
	Benzyl alcohol	17.U			Pyrene	4.U	
	Benzoic acid	32.U			1,2,4-Trichlorobenzene	2.U	
	Bis(2-chloroethyl)ether	3.U			2,4,6-Trichlorophenol	4.U	
	Bis(2-chloroethoxy)methane	3.U					
	Bis(2-chloroisopropyl)ether	3.U					
	Bis(2-ethylhexyl)phthalate	~~10.0~~	0.82 JB				
	4-Bromophenyl phenyl ether	6.U					
	4-Chloraniline	9.U					
	2-Chloronaphthalene	2.U					
	4-Chloro-3-methyl phenol	6.U					
	2-Chlorophenol	2.U					
	4-Chlorophenyl phenyl ether	4.U					
	Chyrsene	3.U					
	Dibenz(a,h)anthracene	19.U					
	Dibenzofuran	2.U					
	Di-n-butyl phthalate	~~1.0~~	0.82 J				
	1,3-Dichlorobenzene (meta)	2.U					
	1,2-Dichlorobenzene (ortho)	~~3.U~~	4.8 J				
	1,4-Dichlorobenzene (para)	1.U					
	3,3-Dichlorobenzidene	24.U					
	2,4-Dichlorophenol	4.U					
	2,4-Dimethylphenol	6.U					
	Diethyl phthalate	4.U					
	2,4-Dinitrophenol	31.U					
	Dimethyl phthalate	3.U					
	2,4-Dinitrotoluene	14.U					
	2,6-Dinitrotoluene	10.U					
	4,6-Dinitro-2-methyl Phenol	24.U					
	Di-n-octyl phthalate	8.U					
	Fluoranthene	5.U					
	Hexachlorobenzene	6.U					
	Hexachlorobutadiene	4.U					
	Hexachloroethane	2.U					
	Hexachlorocyclopentadiene	21.U					
	Indeno(1,2,3-c,d)pyrene	16.U					
	Isophorone	3.U					
	2-Methyl-4,6-dinitrophenol	24.U					
	2-Methyl naphthalene	3.U					
	2-Methyl phenol (o-cresol)	3.U					
	3-Methyl phenol (m-cresol)	10.U					
	4-Methyl phenol (p-cresol)	4.U					

Tentatively Identified Compound

Name	Scan #
Heptane	400 ug
Aliphatic hydrocarbon C4	30 ug

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J - An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.
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Date 11-2-86

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3620

MAR 1 2 86 860896

Rev. 7/80

Field No. CW86009

Date Recd.:

Received By:

UTAH STATE DEPARTMENT OF HEALTH
ENVIRONMENTAL HEALTH

ORGANIC RESIDUE ANALYSES

Sample No. 701

Stsnt No. 702

Water Syst. No. Source No. 704 705

Date Collected 03 06 86 (Yr. Mo. Dy.) 706

Time Collected 1338 (24-hour Clock) 708

Water Rights No. 707

Exact Description of sampling Point 646
VITAO
STA #9 92
ORG SEDIMENT

Supply Owned by 712

Sample Type 710

Sample Collected by 713

SEND REPORT TO: Phone
715
648
717
zip code

Sample Source 718
01 Spring 14 Other
02 Well 15 Tunnel
03 Stream 16 Artesian well
04 Lake
05 Dist. syst. 19 Swimming pool
07 Effluent
08 Storm sewer

County 611
01 Beaver 16 Piute
02 Box Elder 17 Rich
03 Cache 18 Salt Lake
04 Carbon 19 San Juan
05 Daggett 20 Sanpete
06 Davis 21 Sevier
07 Duchesne 22 Summit
08 Emery 23 Tooele
09 Garfield 24 Uintah
10 Grand 25 Utah
11 Iron 26 Wasatch
12 Juab 27 Washington
13 Kane 28 Wayne
14 Millard 29 Weber
15 Morgan

Current use 708
Proposed use 709
1. Culinary
2. Agriculture
3. Industrial
4. Other

INTERPRETATION OF ANALYSES:
Remarks:

Based on State Standards, this sample was: Satisfactory / Questionable / Unsatisfactory

By ENVIRONMENTAL HEALTH

8 CHLORINATED HYDROCARBONS ug/l(ppb)

	Dichloropropane		574
	Dichloropropene		575
	Chlordane		616
X	Toxaphene	<25	618
	Endosulfan		570
X	Lindane	<.04	616
	Dicofol		577
X	Methoxychlor	<.5	617
	Dieldrin		643
	Heptachlor		536
	Heptachlor epoxide		615
	Beta BHC		520
	Perchlorobenzene, HCB		735
	Aldrin		599
X	Endrin	<.12	613
	p.p. DDT		515
	p.p. DDE	.3	511
	p.p. DDD		512
	Mirex		580

9 ORGANOPHOSPHATES None ug/l(ppb)

	Ethyl Parathion		510
	Malathion		578
	Ethyl Azinphos		512
	Methyl Azinphos		534
	Diazinon		514
	Disulfoton		535
	Methyl Parathion		517
	Fonofos		518
	Phosalone		519
	Phosmet		520
	Coumephos		521
	Fenthion		522
	Phorate		523
	Demeton		524
	Fensulfothion		525
	Dichlorvos		526
	Trichloron		527
	Methyl Oxydemeton		528
	Ronnel		529
	Crufomate		530
	Ethion		531

10 HERBICIDES - GRP1 ug/l(ppb)

X	2,4-D	<.10	619
	Atrazine		582
	Sulfur		532
	Sodium Polysulfide		583
	Bromacil		584
	Simazine		585
	Pronamide		586
	DCPA		587
	EPTC		588
	Dinoseb		589
	Dicamba		590
	Diuron		591
	Monuron		592
	Dinosab		593
	Alachlor		594
	Cycloate		595
	Cysuramine		596
	Nitrofen		597
	Copper Sulfate		533
	Trifluralin		598
	2,4-DB		675
	Terbutryn		676
	Maleic Hydrazide		678
	Dacthal		679

11 HERBICIDES - GRP2 ug/l(ppb)

	2,4,5-T	<.2	681
	Pyrazon		682
	Prometon		683
	Metribuzin		684
	Dalapon		685
X	2,4,5-TP	<.2	620
	Chlorate/Borate		686
	Aminozides		687
	Captan		688
	Glyphosate		689
	Picloram		690
	Methyl Bromide		691
	Methyl Chloride		692
	Amm. Methanarsonate		736
	Terbacil		741
	Paraquat		746
	Acrolein		747
	Xylene		748

11 HERBICIDES - GRP2 Cont. ug/l(ppb)

	Prometryn		761
	Propazine		764

12 CARBAMATES None ug/l(ppb)

	Carbofuran		768
	Carbaryl		769
	Maneb		771
	Metalkamate		776
	Aldicarb		779
	Propoxur		781
	Bendiocarb		784
	Benomyl		786

13 ORGANOHALOCARBONS ug/l(ppb)

	Chloroform		790
	Bromoform		794
	Bromodichloromethane		795
	Dibromochloromethane		796
	Bromomethane		797
	Carbon Tetrachloride		799
	Chloroethane		798
	Chloromethane		700
	Dichlorobenzene		501
	Dichloroethane		502
	Methylene Chloride		503
	Vinyl Chloride		504

14 OTHER None ug/l(ppb)

	PCB 1254		674
	PCB 1260	<.28	581

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SITE/SITE ASSESSMENT SAS039

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Set # 3614-20
Lab # 860896
FOR LAB USE ONLY

EPA METHOD 624 (GC/MS)
Purgeables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW86009 Date/Time Collected 3-6-86 13:38 Sample Matrix Sludge
Collected By _____ Sampling Site Vitro
Exact Description of Sampling Point Sta #9 S2

Analyst Z Miller Date Rec'd 3-12-86 Date Analyzed 3-12-86
Amt. Purged 5 gm (MDL based on 5ml purge vol.) Dilution 1

ug/L or ug/Kg

X	Name	MDL/RESULTS
	Acetone	7.U
	Acrolein	10.U
	Acrylonitrile	10.U
	Benzene	~~1.U~~ 3.0 B
	Bromodichloromethane	1.U
	Bromoform	1.U
	Bromomethane	2.U
	2-Butanone (MEK)	4.U
	Carbon Disulfide	2.U
	Carbon Tetrachloride	1.U
	Chlorobenzene	~~1.U~~ 4.0
	Chloroethane	2.U
	2-Chloroethylvinylether	5.U
	Chloroform	2.U
	Chloromethane	5.U
	Cyclohexane	2.U
	Dibromochloromethane	1.U
	1,2-Dichlorobenzene (ortho)	~~1.U~~ 1300.
	1,3-Dichlorobenzene (meta)	1.U
	1,4-Dichlorobenzene (para)	1.U
	1,1-Dichloroethane	1.U
	1,2-Dichloroethane	1.U
	1,1-Dichloroethene	1.U
	trans-1,2-Dichloroethene	3.U
	1,2-Dichloropropane	1.U
	cis-1,3-Dichloropropene	1.U
	trans-1,3-Dichloropropene	1.U
	Ethyl Benzene	~~1.U~~ 4.4
	2-Hexanone (Methyl n-butyl ketone)	3.U
	Isobutanol	5.U
	Methylene Chloride (Dichloromethane)	~~1.U~~ 3.2 B
	4-Methyl-2-Pentanone (MIBK)	2.U
	Styrene	~~1.U~~ 11.
	1,1,2,2-Tetrachloroethane	1.U
	Tetrachloroethene (PCE)	1.U
	Toluene	~~1.U~~ 2.9
	1,1,1-Trichloroethane (Methyl Chloroform)	1.U
	1,1,2-Trichloroethane	1.U
	Trichloroethene (TCE)	1.U
	Trichlorofluoromethane (Freon II)	2.U
	Vinyl Acetate	4.U
	Vinyl Chloride	2.U
	[illegible]	~~1.U~~ [illegible]

ug/L or ug/Kg

Tentatively Identified Compounds

Name	Scan#	Result
Aliphatic hydrocarbon	300-650	5000. J
Terpenal [illegible]	645	1600. J
C4 Aromatic	534	590. J
Isopropyl benzene	579	120. J

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U - Analyzed for but n[illegible]tected.

J - An estimated value for a tentatively identified compou[illegible] OR a value less t[illegible] the detection limi[illegible] but greater than zero.

B - Found in the blank

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SITE/SITE ASSESSMENT SAS039

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Lab # 3614-20
860896
FOR LAB USE ONLY

EPA METHOD 625 (GC/MS)

Base Neutral/Acid Extractables

Send Report To:

Utah State Dept of Health
44 Medical Drive
Salt Lake City, UT 84113

Field # CW86009 Date/Time Collected 3-6-86 13:35 Sample Matrix Sludge
Collected By Sampling Site Ditro
Exact Description of Sampling Point Sta #9 S2

Analyst RM Date Rec'd 3-12-86 Date Analyzed 3-21-86
Aliquot Sample Extracted 1g Final Extract Volume 1ml

(MDL based on 30 g extracted, 1 ml final volume)

X	Name	in ug/Kg MDL/Results
	Acenaphthene	33.U
	Acenaphthylene	66.U
	Anthracene	99.U
	Aniline	130.U
	Benzidene	2700.U
	Benzo(a)anthracene	230.U
	Benzo(b)fluoranthene	230.U
	Benzo(k)fluoranthene	130.U
	Benzo(a)pyrene	360.U
	Benzo(ghi)perylene	430.U
	Benzyl butyl phthalate	230.U
	Benzyl alcohol	560.U
	Benzoic acid	1000.U
	Bis(2-chloroethyl)ether	99.U
	Bis(2-chloroethoxy)methane	99.U
	Bis(2-chloroisopropyl)ether	99.U
	Bis(2-ethylhexyl)phthalate	330.U 523 B
	4-Bromophenyl phenyl ether	200.U
	4-Chloroaniline	300.U
	2-Chloronaphthalene	66.U
	4-Chloro-3-methyl phenol	200.U
	2-Chlorophenol	66.U
	4-Chlorophenyl phenyl ether	130.U
	Chrysene	99.U
	Dibenz(a,h)anthracene	630.U
	Dibenzofuran	66.U
	Di-n-butyl phthalate	170.U 248
	1,3-Dichlorobenzene (meta)	66.U
	1,2-Dichlorobenzene (ortho)	170.U
	1,4-Dichlorobenzene (para)	33.U
	3,3-Dichlorobenzidene	790.U
	2,4-Dichlorophenol	130.U
	2,4-Dimethylphenol	200.U
	Diethyl phthalate	130.U
	2,4-Dinitrophenol	1000.U
	Dimethyl phthalate	99.U
	2,4-Dinitrotoluene	460.U
	2,6-Dinitrotoluene	330.U
	4,6-Dinitro-2-Methyl Phenol	790.U
	Di-n-octyl phthalate	260.U
	Fluoranthene	170.U
	Hexachlorobenzene	200.U
	Hexachlorobutadiene	130.U
	Hexachloroethane	66.U
	Hexachlorocyclopentadiene	690.U
	Ideno(1,2,3-c,d)pyrene	530.U
	Isophorone	99.U
	2-Methyl-4,6-dinitrophenol	790.U
	2-Methyl naphthalene	99.U
	2-Methyl phenol (o-cresol)	99.U
	3-Methyl phenol (m-cresol)	330.U
	4-Methyl phenol (p-cresol)	130.U
	Fluorene	130.U 93

X	Name	in ug/Kg MDL/Results
	Naphthalene	33.U 113
	2-Nitroaniline	530.U
	4-Nitroaniline	1000.U
	Nitrobenzene	99.U
	2-Nitrophenol	130.U
	4-Nitrophenol	590.U
	n-Nitrosodimethylamine	260.U
	n-Nitrosodiphenylamine	130.U
	Pentachlorophenol	960.U
	Phenanthrene	33.U
	Phenol	99.U
	Pyrene	130.U
	1,2,4-Trichlorobenzene	66.U
	2,4,6-Trichlorophenol	130.U

Tentatively Identified Compound

Name	Scan #	Rmth
Aliphatic hydrocarbons (C10-C22)	50,000	J

U- Analyzed for but not detected.

J- An estimated value for a tentatively identified cmpd OR a value less than the detection limit but greater than zero.

B- Found in the blank.

Preparation and Analysis By: BC/RM Date 4-2-86

SITE/SITE ASSESSMENT
SAS039
1 E E 8

STATE HEALTH LABORATORY
44 MEDICAL DR. SALT LAKE CITY UTAH 84113 PHONE 533-6131
RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 2 JUN 1986 10:14:06 AM

SAMPLE NO: 860852.
ACESSION NO: 860117.
STORET/SYSTEM NO: 0.
SAMPLE TYPE: OTHER

DATE COLLECTED: 30786.
TIME COLLECTED: 1200.
DATE RECEIVED: 31086.
SUBMITTED BY: BWPC

SAMPLING LOCATION: VITRO WELL 9B

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	77.	21.	******
RA-226	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
URANIUM	134.	3.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
BUREAU OF PUBLIC WATER SUPPLY. PHONE 801-533-4207

STATE HEALTH LABORATORY
44 MEDICAL DR. SALT LAKE CITY UTAH 84113 PHONE 533-6131
RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 14 APR 1986 4:34:22 PM

SAMPLE NO: 860797.
ACESSION NO: 860105.
STORET/SYSTEM NO: 0.
SAMPLE TYPE: . OTHER

DATE COLLECTED: 30586.
TIME COLLECTED: 1058.
DATE RECEIVED: 30686.
SUBMITTED BY: BWPC

SAMPLING LOCATION: VITRO WELL #1

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
RA-226	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
URANIUM	1.	0.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
BUREAU OF PUBLIC WATER SUPPLY. PHONE 801-533-4207

STATE HEALTH LABORATORY
44 MEDICAL DR. SALT LAKE CITY UTAH 84113 PHONE 533-6131
RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 14 APR 1986 4:34:50 PM

SAMPLE NO:	860799.	DATE COLLECTED:	30586.
ACESSION NO:	860107.	TIME COLLECTED:	1450.
STORET/SYSTEM NO:	0.	DATE RECEIVED:	30686.
SAMPLE TYPE:	OTHER	SUBMITTED BY:	BWPC

SAMPLING LOCATION: VITRO WELL 7A

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	3.	1.	******
RA-226	4.	0.	******
URANIUM	12.	1.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
BUREAU OF PUBLIC WATER SUPPLY. PHONE 801-533-4207

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RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 14 APR 1986 4:34:59 PM

SAMPLE NO: 860814.
ACESSION NO: 860108.
STORET/SYSTEM NO: 0.
SAMPLE TYPE: OTHER

DATE COLLECTED: 30686.
TIME COLLECTED: 1015.
DATE RECEIVED: 30786.
SUBMITTED BY: RWPC

SAMPLING LOCATION: VITRO WELL 8A

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	3.	7.	******
RA-226	1.	0.	******
URANIUM	6.	1.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
BUREAU OF PUBLIC WATER SUPPLY. PHONE 801-533-4207

STATE HEALTH LABORATORY
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RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 25 APR 1986 1:54:02 PM

SAMPLE NO: 860815.
ACESSION NO: 860109.
STORET/SYSTEM NO: 0.
SAMPLE TYPE: OTHER

DATE COLLECTED: 300686.
TIME COLLECTED: 1005.
DATE RECEIVED: 30786.
SUBMITTED BY: RWPC

SAMPLING LOCATION: VITRO WELL 3

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
RA-226	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
URANIUM	0.	0.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
BUREAU OF PUBLIC WATER SUPPLY. PHONE 801-533-4207

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RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 25 APR 1986 1:54:11 PM

SAMPLE NO: 860816.
ACESSION NO: 860110.
STORET/SYSTEM NO: 0.
SAMPLE TYPE: OTHER

DATE COLLECTED: 306786.
TIME COLLECTED: 1117.
DATE RECEIVED: 30786.
SUBMITTED BY: RWPC

SAMPLING LOCATION: SURFACE S1

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	7.	2.	******
RA-226	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
URANIUM	9.	1.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
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RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 25 APR 1986 1:54:25 PM

SAMPLE NO: 860817.
ACESSION NO: 860111.
STORET/SYSTEM NO: 0.
SAMPLE TYPE: OTHER

DATE COLLECTED: 30686.
TIME COLLECTED: 1338.
DATE RECEIVED: 30786.
SUBMITTED BY: BWPC

SAMPLING LOCATION: SURFACE S2

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	9.	3.	******
RA-226	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
URANIUM	13.	2.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
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STATE HEALTH LABORATORY
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RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 22 MAY 1986 5:28:42 PM

SAMPLE NO: 860818.
ACESSION NO: 860112.
STORET/SYSTEM NO: 0.
SAMPLE TYPE: OTHER

DATE COLLECTED: 30686.
TIME COLLECTED: 1420.
DATE RECEIVED: 30786.
SUBMITTED BY: BWPC

SAMPLING LOCATION: VITRO D&M VFD

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
RA-226	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
URANIUM	0.	0.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
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RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 22 MAY 1986 5:28:51 PM

SAMPLE NO: 860819.
ACESSION NO: 860113.
STORET/SYSTEM NO: 0.
SAMPLE TYPE: OTHER

DATE COLLECTED: 306866.
TIME COLLECTED: 1520.
DATE RECEIVED: 30786.
SUBMITTED BY: BWPC

SAMPLING LOCATION: VITRO WELL 5

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
RA-226	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
URANIUM	0.	0.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
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44 MEDICAL DR. SALT LAKE CITY UTAH 84113 PHONE 533-6131

RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 2 JUN 1986 10:13:56 AM

SAMPLE NO:	860820.	DATE COLLECTED:	30686.
ACESSION NO:	860114.	TIME COLLECTED:	0.
STORET/SYSTEM NO:	0.	DATE RECEIVED:	30786.
SAMPLE TYPE:	OTHER	SUBMITTED BY:	BWPC

SAMPLING LOCATION: BLANK

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
RA-226	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
URANIUM	0.	0.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
BUREAU OF PUBLIC WATER SUPPLY. PHONE 801-533-4207

STATE HEALTH LABORATORY
44 MEDICAL DR. SALT LAKE CITY UTAH 84113 PHONE 533-6131
RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 1 JUL 1986 3:13:35 PM

SAMPLE NO: 860853.
ACCESSION NO: 860118.
STORET/SYSTEM NO: 0.
SAMPLE TYPE: OTHER

DATE COLLECTED: 30786.
TIME COLLECTED: 1300.
DATE RECEIVED: 31086.
SUBMITTED BY: BWPC

SAMPLING LOCATION: VITRO WELL 11A

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	91.	18.	******
RA-226	LESS THAN MINIMUM DETECTABLE CONCENTRATION		
URANIUM	55.	3.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
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RECEIVED
JUL 03 1986
Bureau of Radiation Cont.

STATE HEALTH LABORATORY
44 MEDICAL DR. SALT LAKE CITY UTAH 84113 PHONE 533-6131
RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 27 JUN 1986 10:42:53 AM

SAMPLE NO:	86334.	DATE COLLECTED:	51286.
ACESSION NO:	860310.	TIME COLLECTED:	1330.
STORET/SYSTEM NO:	0.	DATE RECEIVED:	51586.
SAMPLE TYPE:	OTHER	SUBMITTED BY:	RWPC

SAMPLING LOCATION: VITRO WELL POINT DP-8

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	4537.	71.	******
RA-226	202.	2.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
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RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 14 APR 1986 4:33:59 PM

SAMPLE NO:	860795.	DATE COLLECTED:	30586.
ACESSION NO:	860103.	TIME COLLECTED:	943.
STORET/SYSTEM NO:	0.	DATE RECEIVED:	30686.
SAMPLE TYPE:	OTHER	SUBMITTED BY:	BWPC

SAMPLING LOCATION: VITRO WELL 6B

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	54.	13.	******
RA-226	1.	0.	******
URANIUM	27.	2.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
BUREAU OF PUBLIC WATER SUPPLY. PHONE 801-533-4207

STATE HEALTH LABORATORY
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RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 18 AUG 1986 9:18:34 AM

SAMPLE NO: 863535.
ACESSION NO: 860311.
STORET/SYSTEM NO: 0.
SAMPLE TYPE: OTHER

DATE COLLECTED: 51286.
TIME COLLECTED: 1410.
DATE RECEIVED: 51586.
SUBMITTED BY: RWPC

SAMPLING LOCATION: VITRO WELL POINT DP-3

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	12940.	126.	******
RA-226	17.	1.	******
URANIUM	7292.	28.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
BUREAU OF PUBLIC WATER SUPPLY. PHONE 801-533-4207

RECEIVED
AUG 22 1986
POLLUTION CONTROL

STATE HEALTH LABORATORY
44 MEDICAL DR. SALT LAKE CITY UTAH 84113 PHONE 533-6131
RADIOCHEMICAL ANALYSIS REPORT

DATE AND TIME REPORTED 27 JUN 1986 10:42:53 AM

SAMPLE NO: 86334.
ACESSION NO: 860310.
STORET/SYSTEM NO: 0.
SAMPLE TYPE: OTHER

DATE COLLECTED: 51286.
TIME COLLECTED: 1330.
DATE RECEIVED: 51586.
SUBMITTED BY: BWPC

SAMPLING LOCATION: VITRO WELL POINT DP-8

ANALYSIS	PCI/L	SAMPLE ERROR	ACTION LEVEL
GR ALPHA	4537.	71.	******
RA-226	202.	2.	******

ESTIMATED MINIMUM DETECTABLE CONCENTRATION (MDC).
500 ML SAMPLE
GROSS ALPHA.....2.0 PCI/L
GROSS BETA.....10.0
TRITIUM.....500.0
RA-226.....0.5
RA-228.....1.0

FOR CONSULTATION OR ASSISTANCE PLEASE CALL ENVIRONMENTAL HEALTH SERVICES,
BUREAU OF PUBLIC WATER SUPPLY, PHONE 801-533-4207

Attachment II

Final Environmental Impact Statement
Vitro Chemical Company
Pages 80-85

Joel Hebdon

[illegible]

PRELIMINARY ASSESSMENT AT THE FORMER VITRO CHEMICAL CORP. MV SITE SOUTH SALT LAKE, SALT LAKE COUNTY UTAH

VOLUME I - TEXT

July, 1984

U.S. DEPARTMENT OF ENERGY

Vitro site. The Vitro site is located within the Jordan River Valley in South Salt Lake, Utah. The ground-water regime of this valley is generally characterized by two aquifer systems, a near-surface unconfined system and a deeper confined system. The unconfined system is principally recharged by upward flow from the confined aquifer and surface infiltration (Figure 4-6). The confined system is recharged by infiltration into porous materials on the flanks of the Wasatch Mountains to the east and the Oquirrh Mountains to the west. Near the site, both aquifers flow toward the west-northwest (Figures 4-6 and 4-7). The unconfined aquifer discharges into surface-water courses such as Mill Creek and the Jordan River.

The general stratigraphy of the Jordan River Valley in the vicinity of the site consists of several hundred feet of unconsolidated to poorly consolidated alluvial and lacustrine deposits of interbedded and highly lenticular sands, silty sands, silts, and clays. The fine-grained deposits were laid down in the lake environment of the prehistoric Lake Bonneville. The coarser-grained soils were deposited as alluvium, probably along the margins of this prehistoric lake as the levels fluctuated and lowered to its present condition, the Great Salt Lake.

The field investigations in the vicinity of the Vitro site indicate that approximately the upper 85 feet of subsoil consist of interbedded fine sand, silty sand, clay, and silt. These beds are often laterally discontinuous and vary in thickness from a few inches to several feet. Generally, the upper 50 to 70 feet of this complex profile form the unconfined aquifer system. The unconfined aquifer generally overlies strata of interbedded layers of low-permeability clays and silts. Because the materials of the unconfined aquifer are very similar to the underlying aquitard, the thickness of the unconfined aquifer varies and can only be estimated. Potentiometers installed between 10 and 60 feet below the ground surface revealed water levels at slightly below or slightly above the ground surface. Potentiometers installed below 70 feet revealed water levels 7.5 to 15 feet above the ground surface. Thus, in the vicinity of the tailings pile, the unconfined aquifer appears to be about 60 feet thick. The interbedded strata of this aquifer system produce water at variable rates. Results of a pump test and pumping for water-sample collection indicate that water yield can be much less than 1 gpm for the silts and clays and greater than 1 gpm, probably approaching 10 gpm, for the fine sands and silty sands. Detailed well logs of the recent investigation by the Technical Assistance Contractor (TAC) (1983) for the shallow wells are available for inspection at the DOE Uranium Mill Tailings Remedial Action Project office in Albuquerque, New Mexico.

The stratigraphy below a depth of about 85 feet also consists of interbedded silts, clays, and sands. The sand layers are generally coarser-grained than the overlying beds described above. In some instances the sand layers contain considerable gravel.

Recent work by Dames and Moore (1982) and the TAC (1983) included monitoring and pump wells to a maximum depth of about 130 feet below the ground surface. The wells that penetrated to a depth of about 70 feet or greater, below the ground surface, encountered ground water under artesian pressure. The hydraulic head levels ranged from about 7.5 feet above land

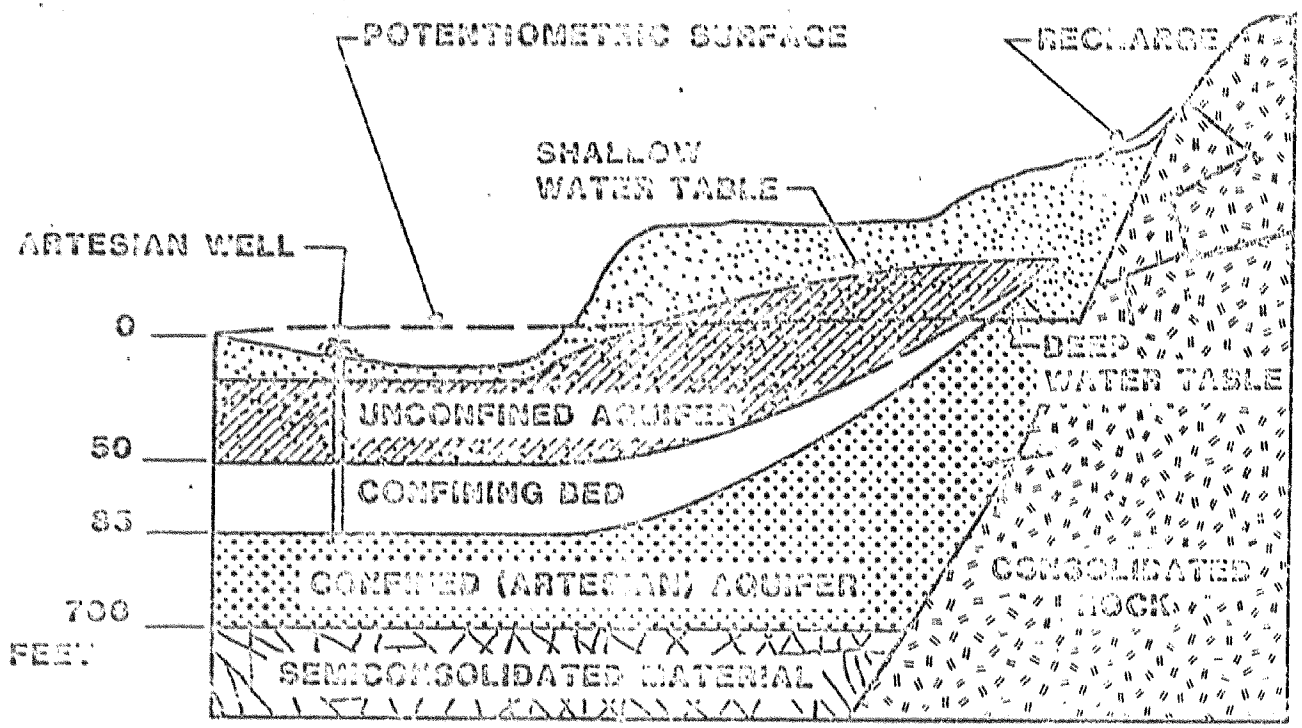
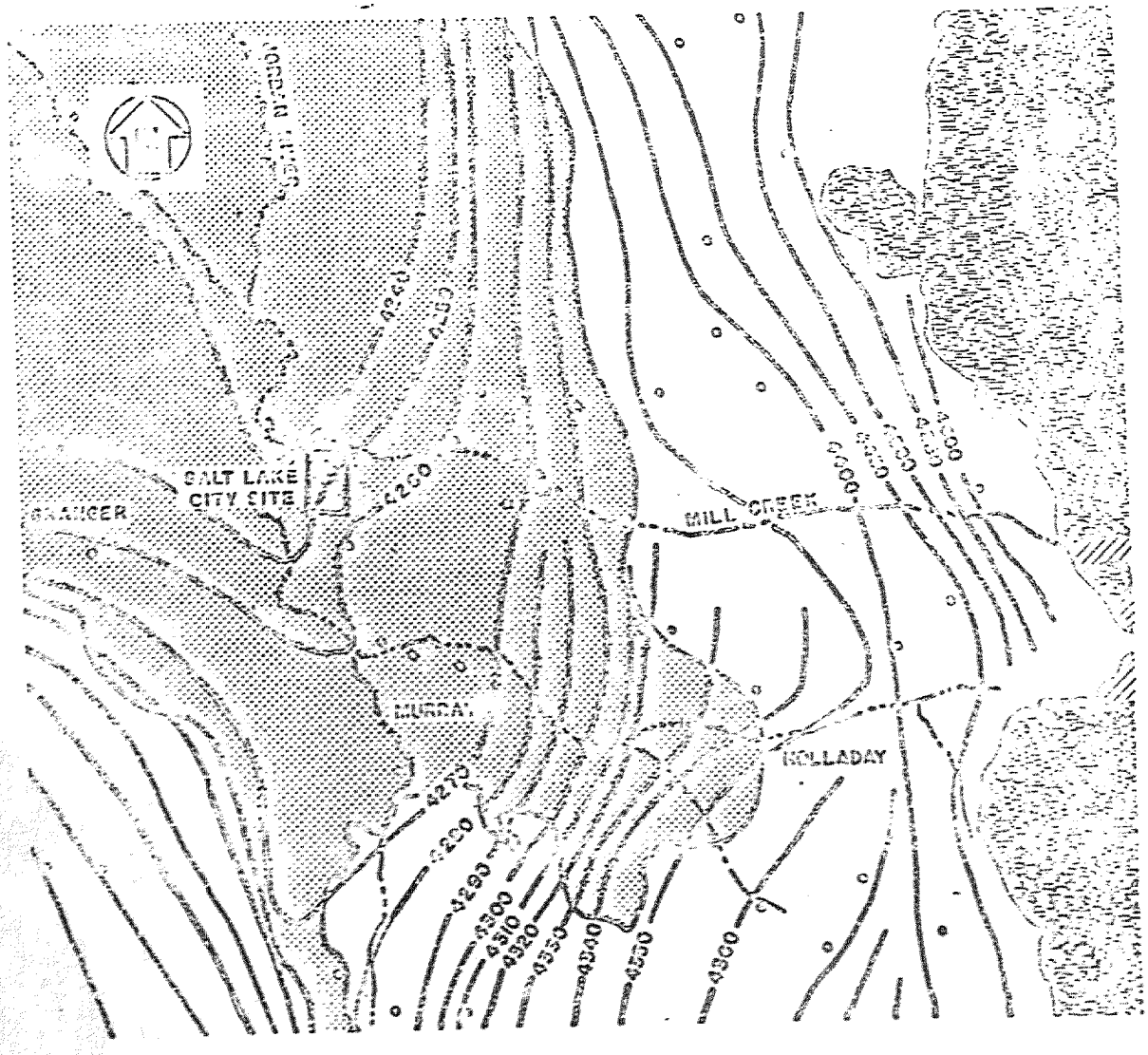


FIGURE 4-3
GENERALIZED CROSS-SECTIONAL HYDROGEOLOGY
FOR THE SOUTHERN SALT LAKE CITY AREA



VALLEY FILL PERMEABILITY VARIABLE

ROCKS OF MODERATELY HIGH AND HIGHEST PERMEABILITY

ROCKS OF MODERATELY LOW AND LOWEST PERMEABILITY

AREA OF ARTESIAN FLOW - FEBRUARY, 1969

4200 WATER-LEVEL CONTOUR

NOTE

ADAPTED FROM HELY, MOWER, AND HARR, 1971.

FIGURE 4-7
POTENTIOMETRIC SURFACE MAP OF THE CONFINED (ARTESIAN) AQUIFER FOR THE SOUTHERN SALT LAKE AREA

surface for the well at 70 feet to a maximum of 15 feet above land surface for the wells at depths of about 130 feet. It is reported that this artesian aquifer system extends to depths of 500 to 800 feet below the ground surface (Hely et al., 1971).

Flow rates from 2-inch open potentiometers in the artesian aquifer ranged from a few gpm to several tens of gpm (TAC, 1983). Pump testing of an 8-inch well produced a sustained yield of about 300 gpm. Even though the producing sand layers of the confined aquifer are separated by clay and silt layers, monitoring of potentiometers at various depths in the aquifer during a long-term pump test indicates the sand layers are hydraulically connected. Detailed well logs of the recent investigation by the TAC (1983) for the deeper wells are also available for inspection at the DOE UMTRA office in Albuquerque, New Mexico.

hydraulic connection

Based on the well logs, a simplified subsurface cross-section, Figure 4-6, was constructed to illustrate the conditions described above. Again it should be noted that the subsurface strata consist of numerous laterally discontinuous layers of silt, clay, and sand of variable thickness.

The relationship of the two aquifers with regard to recharge, discharge, and movement of ground water, as determined by a recent pump test by the TAC (1983) and a previous study by Hely et al., (1971) are described in detail in Appendix D of this document.

The background water quality or chemistry of the two aquifer systems is substantially different. The upper unconfined aquifer water is characterized by a brackish quality with high total dissolved solids, generally 2000 ppm or greater. The unconfined water quality generally improves with depth and approaches the quality of the confined ground water. This water has limited use for domestic or agricultural purposes due to marginal quality and low yields. The confined aquifer water generally has dissolved solids values of about 300 ppm. The confined aquifer is a principal supply of domestic, agricultural, and industrial water in the Jordan River Valley.

Levels of sodium, sulfate, chloride, iron, total dissolved solids, and uranium in the unconfined ground water downgradient (west-northwest) and beneath the tailings pile are greater than those in the upgradient unconfined ground water. No elevated levels of molybdenum (Mo), arsenic (As), selenium (Se), radium (Ra-226 and Ra-228), vanadium (V), thorium (Th-230), and lead 210 (Pb-210), attributable to the tailings pile, have been found downgradient of the pile boundary.

Elevated levels of iron, sulfate, and chloride were found in the confined aquifer water beneath and downgradient of the pile boundary. None of the radionuclides and metals listed above, which would be associated with the tailings pile, were found in levels above background in the confined aquifer water. These constituents are less mobile than the sulfates and chlorides and probably were adsorbed or precipitated in the low permeability clay and silt layers in the unconfined aquifer or aquitard.

The relatively good water quality of the artesian aquifer in the Salt Lake area is maintained by the upward vertical hydraulic gradient between the

two aquifers which prevents downward migration of the naturally occurring brackish unconfined aquifer. Current utilization (pumping) of the confined aquifer in the Salt Lake City area has not significantly reduced the areal extent of the flowing artesian conditions which are present in the valley or the head levels of the aquifer as compared to levels measured in the early 1900's (Hintze and Miller, 1975), and as such, this upward gradient has been and is currently maintained in the Salt Lake area. Much heavier utilization of the artesian aquifer would reduce the head levels and possibly reverse the upward vertical hydraulic gradient. This condition would then cause downward flow of the brackish unconfined aquifer waters. The presence of the several feet of confining clay and silt layers would retard flow to low velocities if the vertical hydraulic gradient were reversed; however, the downward driving force would be present.

The migration of the unconfined aquifer waters to the confined aquifer would increase the dissolved solids levels even in areas well away from any possible influence from the tailings pile. This condition would degrade the artesian water and it could eventually make it non-potable. Thus, this scenario will restrict the long-term, heavy utilization of the confined aquifer, irrespective of the contamination noted in the unconfined aquifer system associated with the tailings pile.

The evidence of elevated iron, chloride, and sulfate in the confined aquifer beneath and downgradient of the pile probably reflects the condition involving localized heavy utilization of the confined aquifer. Heavy pumping during operation of the Vitro plant may have lowered the head levels of the artesian system and reversed the direction of the vertical flow.

reverse gradient

The analytical analyses of the background wells in the unconfined aquifer (presented in Appendix D) generally show that concentrations of chloride, sulfate, and total dissolved solids are in excess of the EPA secondary drinking water standards. In addition, some of the background samples contained iron and arsenic in excess of the EPA secondary and primary drinking water standards, respectively.

The background water quality of the confined aquifer is generally in compliance with the primary EPA drinking water standards except for total dissolved solids which are around 300 ppm. This value is, however, less than the upper limit for the EPA's secondary drinking water standard.

South Clive site

The South Clive site is located within the Great Salt Lake Desert. The two major ground-water systems in the area are the valley fill and the alluvial fans bordering the Desert. Recharge to the alluvial fans occurs in the mountains bordering the Desert; in the vicinity of the site this would be the Cedar Mountains east of the site. It is believed that ground water in the alluvial fans recharges the valley fill. Direct infiltration of incident precipitation is not believed to be a significant component of the total ground-water regimen at the South Clive site.

Ground-water levels measured in monitoring wells installed at the South Clive site vary from about 20 to 30 feet below the ground surface. The

principal direction of ground-water flow within the South Clive region is to the west. Locally, however, the direction of ground-water flow is modified by both the surface topography and by the stratigraphy at depth. Within the South Clive site, the direction of ground-water movement appears to be mainly to the northeast. The hydraulic gradient in this direction is small, approximately 3 feet per mile.

The permeabilities of valley-fill materials beneath the South Clive site range from about 0.28 to 2.8 feet per day, which are consistent with the interbedded very fine- to fine-grained sands and clays. The calculated transmissivities from the results of pumping tests conducted on the site ranged from 0.8 to 166 ft^2 per day with a mean value of approximately 40 ft^2 per day.

Permeabilities

Ground-water samples from each of the five monitoring wells installed at the South Clive site were obtained and analyzed for major cations and anions, metals, and radiochemistry. The analytical results for samples from each of the five wells were compared with the EPA primary and secondary drinking water standards. Sulfate, chloride, and total dissolved solids (TDS) concentrations in all wells exceeded the EPA secondary drinking water standards. Total hardness was high, indicating that the ground water is hard to very hard. This is supported by the reported high concentrations of calcium, bicarbonate, sodium, and magnesium. Based on reported total dissolved solids levels, the ground water at the South Clive site is classified as "briny" (Hem, 1970). In two or more wells, arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver exceeded EPA primary drinking water standards; iron and manganese exceeded EPA secondary drinking water standards. Analytical results for the radionuclide parameters indicate that gross alpha, gross beta, and uranium oxide (U_3O_8) exceeded EPA's drinking water standards in two or more of the wells.

Other than the five monitoring wells installed for this program, there are no existing ground-water wells on or near the South Clive site. The closest known wells to the South Clive site are approximately 3 miles northwest and 3.4 miles east. The well west of the site has been destroyed; one of the two wells east of the site is in current use to water livestock--the second well was destroyed (see Table D-32, Appendix D). The high salinity of the ground water in the South Clive area may limit its use without treatment to industrial uses. In the Bonneville Salt Flats to the west, high salinity ground waters are used for mineral extraction.

4.7 ECOSYSTEMS

The existing ecosystem of the Vitro site and that for the South Clive site are described below in terms of soils, vegetation, wildlife, and endangered species. These descriptions are based both on literature and on field surveys.

Attachment III

1986 Field Check of Existing Wells
From 1983 Vitro Investigation

Field Check of Vicinity Wells drilled for the 1984 Vitro EIS 1983 Sargent, Beckwith, & Hauskins drilled

12/17/85 Conducted by Michelle Dayon & D. Lee Padgitt
Snow covering ground 2" - 12".

Well #

1 (deep) 6" metal casing looks pretty good, but has a rusted lid. Key works, inside casing is a 2" PVC pipe with a PVC cover. Between the PVC pipe and the inside of the casing is filled with frozen water

2 (deep) 6" metal casing, rusted lid opens with key 2" PVC pipe with cover inside, between PVC & inside of casing is filled with garbage (bugs & dirt) - metal casing not rusting except @ welds for lock.

3 (deep) 6" metal casing looks O.K., rusted lid & opening at top between lid & top of casing. Key will not work due to cold or rust in lock, so could not look inside.

4 (deep) 6" Metal casing is all rusted, with water flowing out of it from under the rusted lid. This is a deep well, but lock was so rusted key would not work, so couldn't look inside.

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1 1 1 1

Well #

5 (deep) 6" rusting metal casing, rusted lid, no water flowing out, lock rusted & cold, key will not work.

6 A
B
C
unable to locate. Found well #1, but site #6 which was supposed to be just south of #1 does not appear to exist, looked all around.

7 A
B
C
6" metal casings are not rusted except where welded to hold lock. Lids are all rusted, key does open locks. 3" PVC pipe inside with no cover, could look ~~down PVC & observe water in all 3.~~

Also a 1" metal pipe with no cover in ground here.

8 A
B
6" metal casings slightly rusted outside fine inside, rusted lids, keys will open, ~~3" PVC pipe inside without covers.~~ These 3 seem to have a collar or somethin that the others don't, 4" 3" PVC, but no covers on the PVC.

9 A
B
C
6" metal casings o.k. w/ rusted lids. ~~Recently re all 3 3" straight PVC PVC inside with rags - sheeting stuffed down each PVC pipe inside of metal casing~~ around side of PVC, not over top of PVC.

10 A
B
C
Cannot locate. Utah Recycling Plant parking lot now where 10 was according to map.

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1 3 8 4

Well #		
11	A B C	6" metal casing, rusted lids but casing looks o.k., key will open, 3" straight PVC pipe inside uncovered.
12	A B C	Are out in field, but due to traffic, snow, & accessability today did not walk up to inspect, all 3 are visible however.
13	A B C	Can't locate as there is now a Price Savers store & parking lot where wells are located according to map.
14		Not locked, no where for pad lock. No metal, 6" Plastic pipe w/a screw on type lid, but due to cold & who knows what would not unscrew for a look inside. Clean.
15		Key opens lock on a 12 3/4" dia. metal casing's rusted lid. Very little rust on outside of casing. 6" PVC pipe inside [illegible] metal cap.
16		No Metal, 6" plastic pipe with screw on lid which would not screw off. Clean.
17		6" Metal casing with rusted lid. Key opens lock to show an uncovered 4" PVC pipe inside.

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Attachment IV

Groundwater Monitoring Well Logs
As Drilled in Spring 1983

PROJECT Ground Water Study, Vitro Site, SLC

JOB NO. E83-2002 DATE 4-13-83

LOG OF TEST BORING NO. 1

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4244.96

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0								CL	moist	SANDY CLAY, fine grained sand, low plasticity, dark brown.
								SC	moist	CLAYEY SAND, predominately, fine grained, low plasticity, brown to dark brown.
5				S	20			ML	saturated firm	SANDY SILT, some clay, fine grained sand, laminated, nonplastic to low plasticity, light grey-brown.
								CL-ML		
10				S	9				saturated moderately firm	CLAYEY SILT, low plasticity, light grey-brown, mottled red-brown.
								ML		
15				S	5				saturated soft	CLAYEY SILT, nonplastic, light grey-brown grading to brown.
20				S	9				saturated loose to medium dense	SILTY SAND, fine grained, trace fine gravel, poorly graded, nonplastic, grey-brown to grey.
								SM		
25				S	9					
30				S	11	(No recovery)				
35				S	4					
40				S	7					
45				S	25	(No recovery)				
									saturated soft	CLAYEY SILT, nonplastic to low plasticity, grey-brown, mottled black
50								ML		

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

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SITE/SITE ASSESSMENT

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1 E E 7

PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. F83-2002 DATE 4-13-83

LOG OF TEST BORING NO. 1 p.2

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4244.96

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
50				S	6			ML	weight of drill rods for 1st foot of 50' sample	See previous page for classification.
55				S	31				saturated medium dense to dense	SILTY SAND, fine grained, nonplastic, grey. (occassional thin seams of clayey sand and sandy silt)
60				S	27			SM		
65				S	19					
70				S	11					
75				S	26-50/5½"				18" of plug in auger at 75' sample	
80				S	16			SP	saturated medium dense	SAND, fine to medium grained, moderately stratified, non-plastic, grey.
85				S	42			ML	saturated soft to moderately firm	CLAYEY SILT, trace sand, non-plastic to low plasticity, grey-brown.
								SM	saturated dense	SILTY SAND, fine grained, nonplastic, grey-brown.
90				S	36-50/5"			SP to SW	saturated very dense	SAND, trace silt, fine to coarse grained, some fine gravel, subrounded to sub-angular, nonplastic, light grey.
95				S	50/5½" seat					
100										

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

U – 3" O.D. 2.42" I.D. tube sample.

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1 E E E

PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 4-13-83

LOG OF TEST BORING NO. 1

p.3

RIG TYPE CME - 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4244.96

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot (40 lb. 30" free-fall drop hammer)	Dry Density (Lbs. per cu. ft.)	Moisture Content (Per Cent of Dry Wt.)	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
100									5' of plug in auger at 100' sample- did not sample	See previous page for classification.
								SP to SW	4' of plug in auger at 105' sample-did not sample	
105										
110								CL	saturated	SILTY CLAY, trace sand, low plasticity, grey (material on lead auger).
115										Stopped auger at 110' Note: Boring advanced to depth of 115' by jetting thru drilling rods. Note: No samples obtained below 96½' due to uncontrolable blow-in in the augers. Note: Installed observation well in boring. See Completion Record for details. Note: 5"dia. casing temporarily placed to a depth of ± 110' to aid in installing observation well.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study, Vitro Site, SLC

JOB NO. E83-2002 DATE 3-24-83 Thru 3-26-83

LOG OF TEST BORING NO. -

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4238.07

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0									saturated soft	CLAYEY SAND, with thin seams of sandy clay, fine grained, non-plastic to low plasticity, dark grey to grey-brown.
								SC		
5			X	S	5					
									saturated medium dense	SILTY SAND, fine grained, nonplastic, grey-brown.
10			X	S	11			SM		
									saturated very soft to moderately firm	SANDY SILT, fine grained sand, nonplastic, grey-brown.
15			X	S	4			ML		
20			X	S	7					
25			X	S	7					
30			X	S	8					
35			X	S	10					
									saturated medium dense	SILTY SAND, fine grained, non-plastic, grey-brown.
40			X	S	12			SM		
45			X	S	6			CL	saturated medium stiff.	SANDY CLAY, fine grained sand, low plasticity, grey-brown.
50								SM		see next page

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

U – 3" O.D. 2.42" I.D. tube sample.

T – 3" O.D. thin-walled Shelby tube.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-24-83 Thru 3-26-83

LOG OF TEST BORING NO. 2

p.2

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4238.07

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
50			S		28			SM	saturated medium dense	SILTY SAND, fine grained, nonplastic, grey-brown.
55			S		22				(No recovery)	
60			S		7			ML	saturated soft	CLAYEY SILT, nonplastic to low plasticity, dark grey-brown to dark grey.
65			S		14			ML	saturated moderately firm	SANDY SILT, some clay, fine grained sand, nonplastic, grey-brown.
70			S		19			ML	saturated firm	CLAYEY SILT, nonplastic to low plasticity, dark grey-brown.
75			S		19					
80			S		44-50/4"				saturated very dense	SILTY SAND, fine grained, nonplastic, light grey-brown. (occassional thin seams of medium grained sands and clayey silts)
85			S		50/5½" seat			SM to SP		
90			S		50/5½" seat					
95			S		50/5½" seat					
100								ML		see next page

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study, Vitro Site, SLC

JOB NO. E83-2002 DATE 3-24-83 Thru 3-26-83

LOG OF TEST BORING NO. 2

p.3

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4238.07

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
100			X	S	41			ML	saturated firm to very firm	CLAYEY SILT, nonplastic, very dark grey-brown.
105			X	S	26					
110			X	S	17					
115			X	S	24					
120			X	S	50/5" seat			SM	saturated very dense	SANDY SILT, fine grained sand, nonplastic, grey-brown.
125			X	S	32-50/3"			ML	saturated hard	SANDY SILT, fine grained sand, nonplastic, brown.
130			X	S	49					
135										Stopped auger at 130' Stopped sampler at 131½' Note: Boring advanced to depth of 135' by jetting thru drilling rods. Note: Installed observation well in boring. See Well Completion Record for details.

Note: 5" dia. casing temporarily installed to a depth of ± 130' to aid in installing observation well.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-28-83 Thru 3-29-83

LOG OF TEST BORING NO. 1

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4234.13

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0								CL	moist soft	SILTY CLAY, low plasticity, grey-brown to dark grey.
5				S	6					
10				S	22			SM	moist medium dense to dense.	SILTY SAND, fine grained, nonplastic, grey-brown.
15				S	29					
20				S	38					(occassional thin seams of clayey silt)
25				S	51					
30				S	8	(No recovery)			moist soft to moderately firm	CLAYEY SILT, nonplastic to low plasticity, grey-brown.
35				S	9			ML		
40				S	17	(No recovery)		ML	saturated firm	SANDY SILT, some clay, fine grained sand, nonplastic, grey-brown.
45				S	23			SM	saturated medium dense	SILTY SAND, fine grained, nonplastic, grey-brown.
50										

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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LOG OF TEST BORING NO. 3

P.2

PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-28-83 Thru 3-29-83

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4234.13

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
50				S	20			SM	saturated medium dense to very dense	See previous page for classification. (occassional seams of clayey silt)
55				S	33					
60				S	51					
65				S	11			ML	saturated moderately firm	CLAYEY SILT, nonplastic to low plasticity, dark grey-brown.
70				S	38			SM	saturated dense	SILTY SAND, fine grained, nonplastic, grey brown.
75				S	45-50/5"			SM-SP	saturated medium dense to dense	SILTY SAND, predominantly fine grained with increasing amounts of medium to coarse sand and fine gravel with depth, subrounded to sub-angular, nonplastic, grey-brown.
80				S	(No sample taken due to plug in auger.)					
85				S	(No sample taken due to plug in auger.)					
90				S	16				saturated firm	CLAYEY SILT, trace fine sand, nonplastic to low plasticity, grey.
95				S	27			ML	2' plug in auger at 95' sample	
100										

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample
S – 2" O.D. 1.38" I.D. tube sample.
U – 3" O.D. 2.42" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-28-83 Thru 3-29-83

LOG OF TEST BORING NO. 3

p. 3

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4234.13

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
100			X	S	17	(No recovery)				See previous page for classification.
								ML		
105			X	S	34-50/5"					
									saturated very dense	SAND, fine to coarse grained, nonplastic, light grey.
								SW		
110									1½' plug in auger at 105' sample	
									4' plug in auger at 110' sample	
115										
120										
125										Stopped auger at 125' Note: No samples obtained below 106½' due to uncontrolable blow-in in the augers. Note: Installed observation well in boring. See Well Completion Record for details. Note: 5" dia. casing temporarily installed to a depth of ± 115' to aid in installing observation well.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

U - 3" O.D. 2.42" I.D. tube sample.

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LOG OF TEST BORING NO. 4

PROJECT Ground Water Study-Vitro Site, SLC
JOB NO. F83-2002 DATE 4-9-83

RIG TYPE CME- 55
BORING TYPE 6¼" Hollow Stem Auger
SURFACE ELEV. 4234.37
DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0									moist	TOPSOIL, black
								SC	moist soft	CLAYEY SAND, fine to medium grained, nonplastic, grey-brown.
5				S	7			SP	saturated loose	SAND, fine to medium grained, poorly graded, moderately stratified, nonplastic, grey-brown.
								ML	saturated soft	CLAYEY SILT, nonplastic, grey, mottled brown.
10				S	7			ML	saturated soft	CLAYEY SILT, trace fine sand, nonplastic, dark grey.
15				S	15			SM-SP to SM-SW	saturated medium dense	SILTY SAND, fine to coarse grained, poorly to well graded, subrounded to subangular, nonplastic, grey.
20				S	28					
25				S	3			ML	saturated very soft	CLAYEY SILT, nonplastic, black, mottled grey.
30				S	10			ML	saturated moderately firm	CLAYEY SILT, occassional thin fine sand laminations, nonplastic, grey.
35				S	13			ML	saturated moderately firm	SANDY SILT, some clay, fine grained sand, nonplastic, grey.
40				S	12	(No recovery)		ML	saturated moderately. firm to very firm	CLAYEY SILT, trace sand, nonplastic, grey.
45				S	20					
50										

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE
A – Auger cuttings. B – Block sample
S – 2" O.D. 1.38" I.D. tube sample.

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LOG OF TEST BORING NO. 4

p.2

PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 4-9-83

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4234.37

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
50				S	38			ML		See previous page for classification.
55				S	30	(No recovery)				
60				S	26			ML	saturated firm	SANDY SILT, laminated, nonplastic, grey.
65				S	35			SM	saturated dense	SILTY SAND, fine grained, occasional coarse sand seams, nonplastic, grey.
70				S	13				saturated moderately firm to firm	CLAYEY SILT, trace sand, fine sand seams, nonplastic, grey. (occassional thin sand seams and traces of wood and shells)
75				S	17		29	ML		
80				S	45-50/3"				saturated very dense	SILTY SAND, medium to fine grained, poorly graded, subrounded to subangular, nonplastic, grey-brown.
85				S	74			SP-SM		
90				S	40-50/5"					
95				S	50/4" seat					
100										

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 4-9-83

LOG OF TEST BORING NO. 4

p.3

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4234.37

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
100			X	S	50/5½" seat			SP-SM		See previous page for classification.
105			X	S	50/5½" seat					
110										
115			X	S	25			ML	saturated firm	CLAYEY SILT, nonplastic, grey-brown.
120			X	S	27	(No recovery)				
125			X	S	31			CL	saturated hard	SILTY CLAY, low plasticity, grey-brown to grey.
130										
135			X	U		(No recovery)				
140										Stopped auger at 135' Stopped sampler at 137' Note: Installed observation well in boring. See Well Completion Record for details. Note: 5" dia. casing temporarily installed to depth of ± 130' to aid in installing observation well.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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LOG OF TEST BORING NO. 5

PROJECT Ground Water Study-Vitro Site, SLC
JOB NO. 83-2002 DATE 3-14-83 to 3-15-83

RIG TYPE CME-55
BORING TYPE 6½" Hollow Stem Auger
SURFACE ELEV. 4234.92
DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0									moist	TOPSOIL, dark brown
5			X	S	4			SM	moist very loose	SILTY SAND, fine to medium grained, nonplastic, grey-brown, mottled brown.
10			X	S	8	(No recovery)			saturated loose to medium dense	SILTY SAND, fine to coarse grained, poorly to well graded, subrounded to subangular, moderately stratified, nonplastic, grey.
								SM-SW to SM-SP		
15			X	S	13				Water on drilling rods at 15'.	
20			X	S	16					
25			X	S	3			ML	saturated very soft	CLAYEY SILT, nonplastic, grey, mottled black.
30			X	S	9			ML	saturated moderately firm	CLAYEY SILT, some sand, nonplastic, grey.
35			X	S	24			ML	saturated firm to hard	SANDY SILT, some clay, fine grained sand, non-plastic, grey, mottled dark grey.
40			X	S	14					
45			X	S	58			SM-SP	saturated very dense	SILTY SAND, fine to medium grained, nonplastic, grey.
50										

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE
A – Auger cuttings. B – Block sample
S – 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. 83-2002 DATE 3-14-83 to 3-15-83

LOG OF TEST BORING NO. 5

p.2

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4234.92

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
50			X	S	82			SM-SP		See previous page for classification.
55			X	S	21		34	ML	saturated firm	CLAYEY SILT, some sand, nonplastic, grey, mottled black grey.
60			X	S	43		25	ML	saturated very firm	SANDY SILT, fine sand, nonplastic, grey, mottled dark grey.
65			X	S	89			SM	saturated very dense	SILTY SAND, fine grained, nonplastic, grey-brown.
70			X	S	17			ML	saturated firm to hard	CLAYEY SILT, trace sand, nonplastic, grey-brown, mottled grey.
75			X	S	32	(No recovery)				
80			X	S	57		21			
85			X	S	40-50/5"			SM-SP	saturated very dense	SILTY SAND, fine to medium grained, poorly graded, non plastic, grey-brown.
90			X	S	40-50/4"					
95			X	S	54	(No recovery)			saturated hard	CLAYEY SILT, trace sand, nonplastic, grey.
								MT		
100										

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

U – 3" O.D. 2.42" I.D. tube sample.

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SITE/SITE ASSESSMENT

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. FR3-2002 DATE 3-14-83to3-15-83

LOG OF TEST BORING NO. 5

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4234.92

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
100			X	S	24-50/5"			ML	See previous page for classification.	
									saturated very dense	SILTY SAND, fine to coarse grained sand, subrounded to subangular, nonplastic, grey.
105			X	S	20-50/5"			SM		
110			X	S	50/5" SEAT					
									saturated firm	CLAYEY SILT, fine sand laminations, nonplastic, grey, mottled dark grey.
115			X	S	24			ML		
120			X	S	50/3" SEAT			SM-SP to SM-SW	saturated very dense	SILTY SAND, fine to coarse grained, poorly to well graded, subrounded to subangular, nonplastic, grey to dark grey.
125			X	S	38			ML	saturated very firm	SANDY SILT, some clay, fine grained sand, nonplastic, dark grey.
130			X	T	39			ML	saturated very firm	CLAYEY SILT, trace sand, nonplastic, grey-brown, mottled grey.
										Stopped auger at 130' Stopped sampler at 132' Note: Installed observation well in boring. See Well Completion Record for details. Note: 5" dia. casing temporarily placed in boring to aid in installing observation well.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

U – 3" O.D. 2.42" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-12-83

LOG OF TEST BORING NO. 6A

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4244.71

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			X	S	5				moist	0-2" TOPSOIL, brown
								SM	moist loose	SILTY SAND, fine to medium grained, nonplastic, brown.
5			X	S	18			ML	moist firm	SANDY SILT, some clay, fine grained sand, nonplastic to low plasticity, grey-brown, mottled brown.
10			X	S	8			CL-ML	saturated soft	CLAYEY SILT, trace fine sand, low plasticity, grey-brown, mottled brown.
15			X	S	7				saturated soft	CLAYEY SILT, fine sand laminations, nonplastic, grey, mottled dark grey.
								ML		
20			X	S	8					
25			X	S	4			ML	saturated very soft	CLAYEY SILT, trace fine sand, nonplastic, grey-brown, mottled brown.
								SM	saturated medium dense	SILTY SAND, fine grained, nonplastic, dark grey.
30			X	S	22					
										Stopped auger at 30' Stopped sampler at 31½' Note: Installed observation well in boring. See Well Completion Record for details.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

U – 3" O.D. 2.42" I.D. tube sample

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-12-83

LOG OF TEST BORING NO. 6B

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4244.68

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot (140 lb. 30" free-fall drop hammer)	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										No sampling performed in boring-installed observation well. See Well Completion Record for details.
5										
10										
15										
20										Stopped Auger at 20'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

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LOG OF TEST BORING NO. 6C

PROJECT Ground Water Study-Vitro Site, SLC
JOB NO. E83-2002 DATE 3-12-83

RIG TYPE CME - 55
BORING TYPE 6¼" Hollow Stem Auger
SURFACE ELEV. 4244.71
DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										No sampling performed in boring-installed observation well. See Well Completion Record for details.
5										
10										Stopped Auger at 10'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE
A – Auger cuttings. B – Block sample
S – 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-11-83

LOG OF TEST BORING NO. 7A

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4237.97

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										No sampling performed in boring-installed observation well. See Well Completion Record for details.
5										
10										
15										
20										
25										
30										
35										Stopped Auger at 35'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-11-83

LOG OF TEST BORING NO. 7B

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4238.02

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										
5										No sampling performed in boring-installed observation well. See Well Completion Record for details.
10										
15										
20										
25										Stopped Auger at 25'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

U - 3" O.D. 2.42" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-11-83

LOG OF TEST BORING NO. 7C

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4237.98

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										No sampling performed in boring-installed observation well. See Well Completion Record for Details
5										
10										
15										Stopped Auger at 15'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-10-83

LOG OF TEST BORING NO. 8A

RIG TYPE CME - 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4233.13

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			X	S	13				moist	TOPSOIL, black
								SC	moist moderately firm	CLAYEY SAND, fine to medium grained, low plasticity, grey.
5			X	S	17	(No recovery)		SP	moist medium dense	SAND, fine to medium grained, nonplastic, grey.
10			X	S	12			SM	moist medium dense	SILTY SAND, fine grained, nonplastic, grey.
15			X	S	35			SP	moist to saturated dense to very dense	SAND, medium to coarse grained, grades to a fine to coarse grain with depth, subrounded to subangular, nonplastic, grey.
20			X	S	46					
25			X	S	82				4' of plug in auger at 25' sample	
30			X	S	14				saturated moderately firm	CLAYEY SILT, trace sand, nonplastic to low plasticity, grey, mottled dark grey.
35								ML		
40										Stopped auger at 40' Stopped sampler at 31½' Note: Boring extended to a depth of 40' to aid in installing observation well. See Well Completion Record for details.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

U – 3" O.D. 2.47" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-10-83

LOG OF TEST BORING NO. 8B

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4233.13

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										
5										No sampling performed in boring-installed observation well. See Well Completion Record for details.
10										
15										
20										
25										
30										
35										Stopped Auger at 35'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-10-83

LOG OF TEST BORING NO. 8C

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4233.13

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										No sampling performed in boring-installed observation well. See Well Completion Record for details.
5										
10										Stopped Auger at 10'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample S - 2" O.D. 1 3/8" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. P83-2002 DATE 3-2-83

LOG OF TEST BORING NO. 9A

RIG TYPE CME - 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4233.02

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density L.bs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0				S	7			SC	moist soft	CLAYEY SAND, fine to medium grained, non-plastic, brown.
5				S	12			ML	moist moderately firm	CLAYEY SILT, trace sand, nonplastic, brown, mottled grey.
10				S	19				saturated medium dense to very dense Water on drilling rods at 10' sample.	SILTY SAND, fine to coarse grained, poorly to well graded, subrounded to subangular, moderately stratified, nonplastic, grey-brown. (occassional thin grey fine sand seams)
15				S	39			SM-SW to SM-SP		
20				S	52					
25				S	78				5' of plug in auger at 25' sample.	
30				S	20				5' of plug in auger at 30' sample.	
35										Stopped auger at 35' Stopped sampler at 31½' Note: Boring extended to a depth of 35' to aid in installing observation well. See Well Completion Record for details.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. F83-2002 DATE 3-10-83

LOG OF TEST BORING NO. 9B

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4232.97

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										No sampling performed in boring-installed observation well. See Well Completion Record for details.
5										
10										
15										
20										
25										Stopped Auger at 25'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

U – 3" O.D. 2.42" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-10-83

LOG OF TEST BORING NO. 9C

RIG TYPE CME - 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4233.02

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										No sampling performed in boring-installed observation well. See Well Completion Record for details.
5										
10										
15										Stopped Auger at 15'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample S – 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-2-83

LOG OF TEST BORING NO. 10 A

RIG TYPE CME - 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4234.55

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0				S	12				moist	TOPSOIL, dark brown
5				S	3			SC	moist very soft	CLAYEY SAND, fine to medium grained, nonplastic, greenish grey to light brown. (occassional thin sand seams)
10				S	6			SM-SW to SM-SP	saturated loose to dense	SILTY SAND, fine to coarse grained, poorly to well graded, subrounded to subangular, moderately stratified, nonplastic, grey-brown to grey.
15				S	26					
20				S	46					
25				S	8	(No recovery)			3½' plug in auger at 25' sample	
30				S	10	(No recovery)			4' plug in auger at 30' sample	
35				S	28			ML	saturated firm 3' plug in auger	SANDY SILT, some clay, fine grained sand, nonplastic, grey.
									at 35' sample	Stopped auger at 35' Stopped sampler at 36½' Note: Installed observation well in boring. See Well Completion Record for details.

GROUND WATER

DEPTH	HOUR	DATE
5'2"	12:00	3-10-83

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-2-83

LOG OF TEST BORING NO. 10B

RIG TYPE CME - 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4234.65

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										No sampling performed in boring-installed observation well. See Well Completion Record for details.
5										
10										
15										
20										Stopped Auger at 20'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample S – 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-2-83

LOG OF TEST BORING NO. 10C

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4234.55

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										No sampling performed in boring-installed observation well. See Well Completion Record for details.
5										
10										Stopped Auger at 10'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample S - 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-17-83

LOG OF TEST BORING NO. 11 A

RIG TYPE CME - 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4234.82

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0									moist	TOPSOIL, black
								SM	moist very loose	SILTY SAND, fine grained, nonplastic, dark grey.
5				S	10				saturated medium dense	SILTY SAND, fine to coarse grained, poorly to well graded, subrounded to sub-angular, moderately stratified, nonplastic, grey.
10				S	21			SM-SW to SM-SP		
15				S	26					
20				S	18					
25				S	3			ML	saturated very soft to soft	CLAYEY SILT, nonplastic, grey-brown, mottled black.
30				S	8	(No recovery)				
										Stopped auger at 30' Stopped sampler at 31½' Note: Installed observation well in boring. See Well Completion Record for details.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

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SAS039

LOG OF TEST BORING NO. 113

PROJECT Ground Water Study-Vitro Site, SLC
JOB NO. E83-2002 DATE 3-17-83

RIG TYPE CME - 55
BORING TYPE 6¼" Hollow Stem Auger
SURFACE ELEV. 4234.62
DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										No sampling performed in boring-installed observation well. See Well Completion Record for details.
5										
10										
15										
20										Stopped Auger at 20'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE
A - Auger cuttings. B - Block sample S - 2" O.D. I.D. split spoon

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JOB NO. E83-2002 DATE 3-17-83

LOG OF TEST BORING NO. 11C

RIG TYPE CME - 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4234.82

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										
5										No sampling performed in boring-installed observation well. See Well Completion Record for details.
10										
15										Stopped Auger at 15'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

SERGENT, HAUSKINS & BECKWITH

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SITE/SITE ASSESSMENT SAS039

PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-11-83

LOG OF TEST BORING NO. 12A

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4235.90

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			X	S	4				moist	TOPSOIL, brown
5			X	S	11			ML	moist soft to moderately firm	CLAYEY SILT, trace fine sand, nonplastic to low plasticity, light brown, mottled grey.
10			X	S	6					
15			X	S	5			ML	moist soft	CLAYEY SILT, trace fine sand, low plasticity, blue-grey.
20			X	S	4			ML	moist soft	CLAYEY SILT, trace fine sand, low plasticity, grey.
								ML	moist soft	CLAYEY SILT, some fine sand, low plasticity, dark grey to black.
25			X	S	6			SM	saturated loose to medium dense	SILTY SAND, fine to medium grained, nonplastic, blue-grey.
30			X	S	17					
										Stopped auger at 30' Stopped sampler at 31½' Note: Installed observation well in boring. See Well Completion Record for details.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample S – 3" O.D. Split Barrel sampler

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-11-83

LOG OF TEST BORING NO. 12B

RIG TYPE CME - 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4236.06

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										No sampling performed in boring-installed observation well. See Well Completion Record for details.
5										
10										
15										
20										Stopped Auger at 20'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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SITE/SITE ASSESSMENT

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-11-83

LOG OF TEST BORING NO. 12C

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4235.95

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										
5										No sampling performed in boring-installed observation well. See Well Completion Record for details.
10										Stopped Auger at 10'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample

S - 2" O.D. 1.38" I.D. tube sample.

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CONS. ENG. GEOTECH. CAL. ENG. GEOPS

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. F83-2002 DATE 2-28-83

LOG OF TEST BORING NO. 13A

RIG TYPE CME - 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4235.72

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0			X	S	15				moist	TOPSOIL, dark brown
									saturated medium dense	SILTY SAND, fine to medium grained, nonplastic, grey, mottled brown.
5			X	S	12			SM		
10			X	S	8			OL	saturated	SILT, organic, some sand, low plasticity, dark brown.
15			X	S	8			ML	saturated very soft to soft water on drilling rods at 15' sample	CLAYEY SILT, some fine sand, nonplastic, bluish grey changing to dark grey to black with depth.
20			X	S	3					
25			X	S	11			SM	saturated medium dense	SILTY SAND, fine grained, nonplastic, dark grey to black
30			X	S	25			SP	saturated medium dense	SAND, fine to medium grained, poorly graded, nonplastic, grey.
										Stopped auger at 30' Stopped sampler at 31½' Note: Installed observation well in boring. See Well Completion Record for details.

GROUND WATER

DEPTH	HOUR	DATE
3'	9:00	3-1-83

SAMPLE TYPE

A - Auger cuttings. B - Block sample S - 2" O.D. 1.38" I.D. tube sample.

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SITE/SITE ASSESSMENT SAS039

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-2-83

LOG OF TEST BORING NO. 13F

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4235.75

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0										No sampling performed in boring-installed observation well. See Well Completion Record for details.
5										
10										
15										
20										Stopped Auger at 20'

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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SITE/SITE ASSESSMENT SAS039

LOG OF TEST BORING NO. 14

PROJECT Ground Water Study, Vitro Site, SLC
JOB NO. E83-2002 DATE 3-12-83

RIG TYPE CME - 55
BORING TYPE 6½" - 12" Hollow Stem Auger
SURFACE ELEV. 4233.27
DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
									moist	TOPSOIL, dark brown
0								SM	moist loose	SILTY SAND, fine grained, nonplastic, grey-brown to grey.
5				S	8					
10				S	6			ML	moist soft	CLAYEY SILT, some sand, nonplastic, grey, mottled dark grey.
15				S	22			SM	moist medium dense	SILTY SAND, fine grained, nonplastic, dark grey.
20				S	52				saturated dense to very dense water on drilling rods at 20' sample	SILTY SAND, grading to poorly graded sand, fine to medium grained, non-plastic, grey.
25				S	52			SM to SP	3' plug in auger at 25'-26½' sample	
30				S	37					
35				S	11			ML	saturated moderately firm	CLAYEY SILT, some fine to coarse sand, trace gravel, nonplastic grey.
40				S	15					Stopped auger at 40' Stopped sampler at 41½' Note: Well driller installed well screen for pump testing. See Well Completion Record for details.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE
A – Auger cuttings. B – Block sample
S – 2" O.D. 1.38" I.D. tube sample.

SERGENT, HAUSKINS & BECKWITH

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SITE/SITE ASSESSMENT
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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-13, 3-18, 3-19-83

LOG OF TEST BORING NO. 15

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4233.73

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0									moist	TOPSOIL, dark brown
									moist soft	SANDY SILT, some clay, fine to medium grained sand, nonplastic, brown, mottled grey.
5				S	6			ML		
									saturated very loose	SILTY SAND, fine to medium grained, poorly graded, nonplastic, grey.
10				S	1			SM-SP		
									saturated medium dense to very dense	SILTY SAND, fine to coarse grained, poorly to well graded, subrounded to sub-angular, moderately stratified, nonplastic, grey.
15				S	19					
								SM-SW to SM-SP		
20				S	25				5' of plug in auger at 20' sample	
25				S	22					
30				S	59				1' of plug in auger at 30' sample	
35				S	43					(Trace gravel in 35' sample)
									saturated firm	SANDY SILT, some clay, fine grained sand, non-plastic, grey.
40				S	23			ML		
									saturated very dense	SILTY SAND, fine to medium grained, nonplastic, grey to dark grey.
45				S	58			SM		
50										

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1 3/8" I.D. tube sample.

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SITE/SITE ASSESSMENT SAS039

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-13, 3-18, 3-19-83

LOG OF TEST BORING NO. 15

RIG TYPE CME- 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4233.73

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot (140 lb. 30" free-fall drop hammer)	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
50			X	S	78					See previous page for classification.
								SM		
55			X	S	43					
									saturated very firm to hard 13" of plug in auger at 60' sample	SANDY SILT, some clay, fine grained sand, laminated, nonplastic, grey to dark grey.
60			X	S	56			ML		
65			X	S	35				12' of plug in auger at 65' sample	
									saturated firm	CLAYEY SILT, trace sand, laminated, nonplastic, grey, mottled dark grey.
70			X	S	16		25	ML		
75			X	S	19	(No recovery)				
								SM-SP	saturated medium dense	SILTY SAND, fine grained, nonplastic, grey.
80			X	S	33				saturated hard	SANDY SILT, some clay, fine grained sand, nonplastic, grey.
85			X	S	57		25	ML		
90			X	S	23				saturated firm to very firm	CLAYEY SILT, trace sand, nonplastic, grey-brown.
95			X	S	30			ML		
100										

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. E83-2002 DATE 3-13, 3-18, 3-19-83

LOG OF TEST BORING NO. 15

p. 3

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4233.73

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
100				S	50/5	3/4"		ML	See previous page for classification.	
								SM	saturated very dense	SILTY SAND, fine to coarse grained, subrounded to subangular, nonplastic, grey.
				D						
105										
				D						
110										
				D						
115										
				D						
120										
				D						
125										
				D						
130										
135										Stopped auger at 105'. Stopped sampler at 101½'. Note: No samples obtained below 101½' due to uncontrolable blow-in in auger. Note: Well driller completed boring from depth of 105' to 133' and installed well screen for pump testing. See Well Completion Record for details.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A - Auger cuttings. B - Block sample S

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SITE/SITE ASSESSMENT SAS039

PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. 83-2002 A DATE 4-23-83

LOG OF TEST BORING NO. 16

RIG TYPE CME - 55

BORING TYPE 6½" Hollow Stem Auger

SURFACE ELEV. 4234.47

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot (140 lb. 30" free-fall drop hammer)	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
0									moist	TOPSOIL, dark brown
			X	S	5			SM	moist loose	SILTY SAND, fine grained, nonplastic grey, mottled yellow-brown.
5										
			X	S	10			SM-SP	saturated loose	SILTY SAND, fine to medium grained, poorly graded, nonplastic, grey and brown mottled.
10										
			X	S	14				saturated medium dense to dense	SILTY SAND, fine to coarse grained, poorly to well graded, subrounded to sub-angular, moderately stratified, nonplastic, grey.
15										
			X	S	32			SM-SW to SM-SP		
20										
			X	S	27					
25										
			X	S	39					
30										
			X	S	17	(No recovery)				
35										
			X	S	9	(No recovery)			saturated moderately firm to firm	SANDY SILT, some clay, fine grained sand, nonplastic, grey.
40										
			X	S	18		15	ML		
45									saturated medium dense to very dense	SILTY SAND, fine to medium grained, nonplastic, grey.
			X	S	88		18	SM		
50										

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

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SITE/SITE ASSESSMENT SAS039

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PROJECT Ground Water Study-Vitro Site

JOB NO. E83-2002A DATE 4-23-83

LOG OF TEST BORING NO. 16

p. 2

RIG TYPE CME - 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4234.47

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
50										(occassional 1" to 2" clayey silt seams)
			X	S	19			SM		See previous page for classification.
55										
			X	S	54		29	ML	saturated hard	CLAYEY SILT, some sand, laminated, nonplastic, grey to dark grey.
60										
			X	S	56					
65										
			X	S	46		25	ML	saturated very firm 10' of slub in auger at 67½'-69' sample	SANDY SILT, some clay, fine grained sand, nonplastic, grey.
70			X	T		(No recovery)				
										Stopped auger at 70'. Stopped sampler at 71'. Note: Installed observation well in boring. See Well Completion Record for details.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample

S – 2" O.D. 1.38" I.D. tube sample.

SERGENT, HAUSKINS & BECKWITH

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SITE/SITE ASSESSMENT SAS039

PROJECT Ground Water Study-Vitro Site, SLC

JOB NO. F83-2002A DATE 4-24-83

LOG OF TEST BORING NO. 17

RIG TYPE CME - 55

BORING TYPE 6¼" Hollow Stem Auger

SURFACE ELEV. 4233.4*

DATUM USGS

Depth in Feet	Continuous Penetration Resistance	Graphical Log	Sample	Sample Type	Blows per foot 140 lb. 30" free-fall drop hammer	Dry Density Lbs. per cu. ft.	Moisture Content Per Cent of Dry Wt.	Unified Soil Classification	REMARKS	VISUAL CLASSIFICATION
10										No sampling performed in boring-installed observation well. See Well Completion Record for details.
20										
30										
40										
50										
60										Stopped Auger at 60'. * Elevation obtained by hand leveling techniques.

GROUND WATER

DEPTH	HOUR	DATE

SAMPLE TYPE

A – Auger cuttings. B – Block sample S – 2" O.D. 1.38" I.D. tube sample

SERGENT, HAUSKINS & BECKWITH

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SITE/SITE ASSESSMENT

SAS039

1411

Attachment V

Field Logs

BEST
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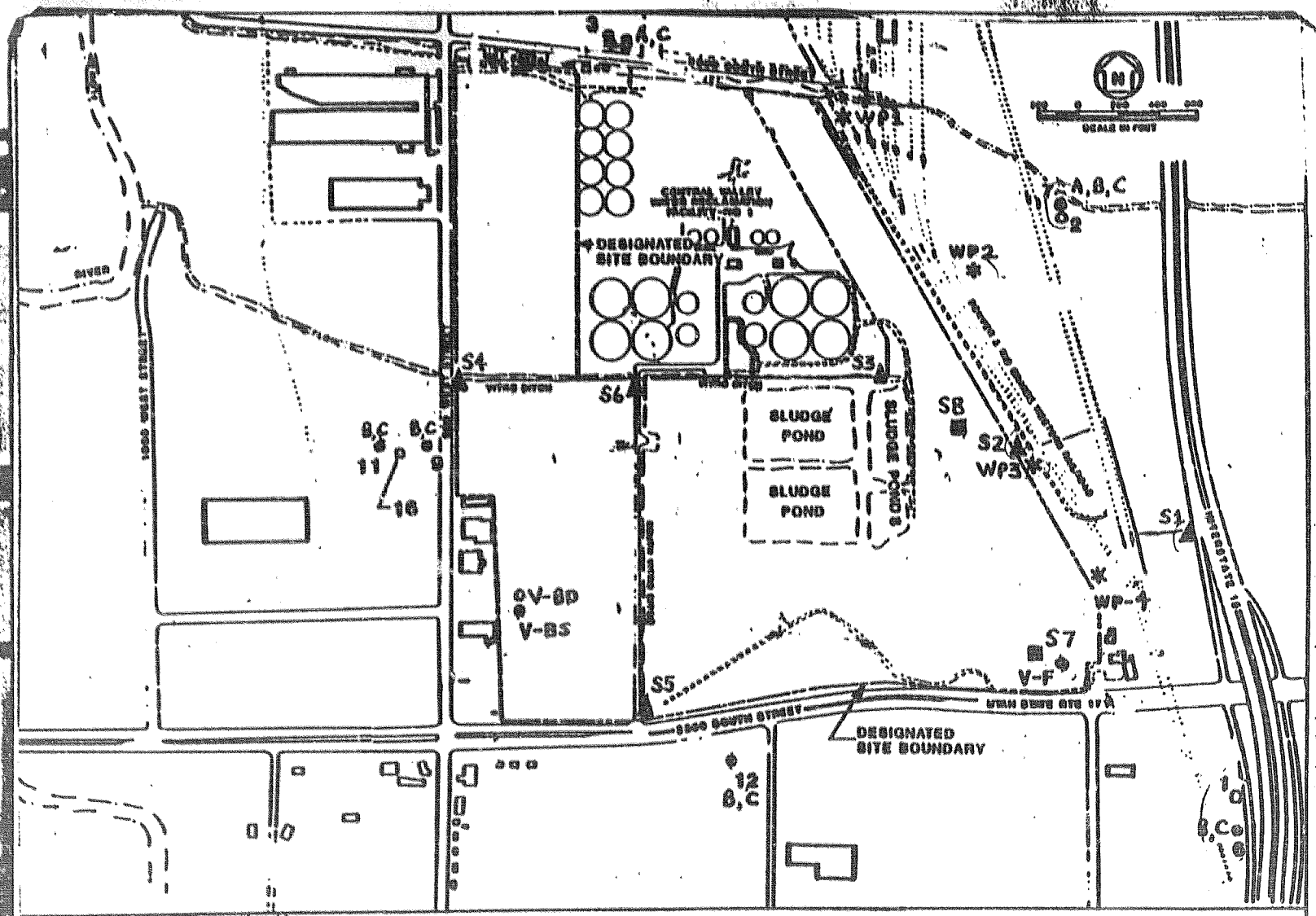

Deep Well
Shallow Well
WELL POINT, USED FOR SHALLOW GROUNDWATER SAMPLING, GRAB
S - surface water samples

VITRO UMTRA

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SITE/SITE ASSESSMENT SASO36

Vitro UMTRA Groundwater Monitoring Project.

3/5/86 Purpose: To monitor for contamination of groundwater in and around the Vitro Project.

Joel Hebdon - Head sampler
Michelle Doyon - sampler
Ted Diamant - sampler

Sunny ~ 60's° F
In the shade - 12.6° C

Sample 1 Well 6B 9:43 A 3" PVC Pipe
Sounded @ 17' 8" from ground surface. 2' 1" from ground surface to top of PVC casing. Casing (inner) is 3" dia. Metal casings are 6" dia.
Condition of Well 6B - Top of PVC pipe has been broken to ground level - Needed to break PVC pipe in order to insert bailer. wrapped paper around pipe to avoid dust from falling in. Water bailed is slightly yellowed but clean.
Well is producing sediment - occurred after first dozen bailers removed
Approx. 44.3 gals in per bail which = 1 bail. - Removed 36 Bailer volumes / 2 casings
Well has 1533.6 casing volume.
note for information: 12 bailers per bucket.
Temp of water in bail 9.9°C

Samples Taken:
- 2 - 1000 ml radiologic container with preservative
- 1 - 1000 ml total chem. bottle with no preservative.
- 1 - SC Bottle
- 1 - VOA Bottle (glass)
- 1 - 1 gal glass container for organics.

2' 1" from ground level to standing water

Michelle Doyon - QA

Ted Diamant

Sample 2 & 3 Well #1 10:58 A.M.
note: needed to use Bailer on well - decontaminated with DI, triple rinse.
casing vol. = 4,333.2 cubic in. - removing 2 casing volumes
Sounded 116'5" from top of casing
116'5" ← 115'0" ← 115'0" from ground surface
4.4" from top of casing to static water. 2" PVC Pipe
Detected Sulfur Smell from well (H_2S smell)
condition of Well-1 - Good repair/water clear but slightly discolored / well is charging as quick as it is evacuated
note on samples from Well 1 - Sample number 3 is a duplicate of sample 2.
Samples taken from Well 1
4 - 1600 ml radiologic containers with preservatives
2 - 1600 ml total chem. with no preservatives
2 - SC Bottles
2 - VOA Bottles
2 - Gallon Glass containers for organics.
note - casing on well was locked.
Temp. of water at top of well water = 11.4 °C

Sample 4 Well 2 2:37 p.m.
Well flowing at a constant rate over casing. Presence of oil film on flowing water. 2" PVC Pipe with cap.
Sounded 135' 4" to top of PVC
11" from ground to top of PVC
condition of well casing - locked no

Michael Dugan - QM

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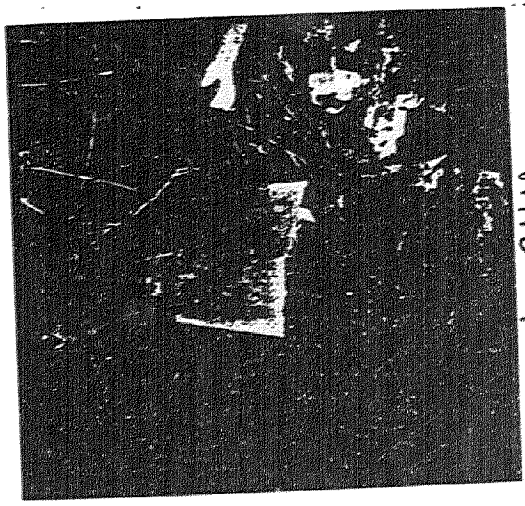
tampering or damage to protective casing (?) well, well was capped and removed by Sampler (head).
Temp. of well 11 g°C.
Samples taken from Well 2

plastic 2 - 1,600 ml radiologic with preservatives
plastic 1 - 1,600 ml total chem with no preservative
plastic 1 - SC Bottle
amber glass 1 - VOA Bottle
amber glass 1 - 1 gal. glass container for organics
oil in organic sample came through tubing in a gray-black ball approx. 1/8" in diameter.

2" PVC pipe had cap, is inside the metal protective casing, which was on securely. Before sampling, which was taken through t/gon tubing inserted 3' down the PVC well casing, the water around the PVC, between the PVC pipe & metal protective casing, had been drawn down below the level of the PVC top. & Well evacuated by flow, for about 1hr. (?)

Michelle Dayon-QA

Presence in water of oily substance that comes up in globules. Visual inspection sample in mason jar has dispersion of oily substance throughout water in tiny balls when shaken, & foaming action on water sample surface.



Vitro #4 CW8-004

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Sample 5 Well 7A 1:30 p.m.
well condition - locked, good condition of casing, no tampering.
well located down-gradient from Millcreek approx. 20 yards away.
Sounded 32' 5" to top of PVC
4'0" from top of PVC to static water
1'0" from ground surface to top of PVC
Water in bucket appears slightly dis-colored but can easily see bottom of bucket.
Bailed well dry after 41 bails. - Water very dirty with sediment towards last 5 bails. bailed dry at 14:16 p.m.
sampling time began at 14:50
Noted PVC ~~[illegible]~~ pieces in ~~[illegible]~~ sample. VOA sample was collected with clear recharged water.
Radiologic sample was dirty - ~~[illegible]~~ allowed well to re-charge till 15:15 pm - obtain Chem sample! dirty. well dry after Chem sample allowing time for re-charge.
note: before work began at well it was decontaminated with DI, triple rinse 3" PVC - not capped
~~Up to~~ Let well recharge, sampled for radiologic and organics @ 1715.

Michelle Dryer - QA

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Vitro #5 CW56005

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SITE/SITE ASSESSMENT SAS039

1300 hrs. - additional sampling of wells #6B and #1. Bailer Alconox washed w/ high pressure hose @ Vitro, washmack then triple DI'd before use. Needed an extra gal. for organics according to Bonnie @ the SHL.

Michelle Dwyer - QA

3/6/86 - Told by Dr. Warnick, SHL, that we do not need 2 gal. for organic scan.

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SITE/SITE ASSESSMENT SAS039

Joel, Ted, Michelle

3/6/86 ~~Sunny, 60's F~~ windy, Partly cloudy, 61°F

Sample 6 Well 8A 954: A.M.

well condition 6" locked metal protective casing, 3" uncapped PVC pipe well casing inside.

Sounded 33' 8" to top of PVC well casing
13' 5¼" to static water level from top of PVC pipe.
~~from ground to top of PVC~~
1' 5"
~~28.68.4 well~~

well casing 2868.4 cubic inches being removed.
Bailer has been de-contaminated with pressure hose, DI, Alconox wash in conjunction w/high pressure hose. Water appears clear while being bailed.
After 2 buckets water became slightly discolored. After ~~1½ casing volumes or~~ 2½ buckets well started producing sediment
28 bails
bailed well dry after 1 casing volume or 32 bailers.
Temp of well water. 10.4 °C
well re-charging slowly - sample water full of sediment ~~—~~ just enough water to produce samples only 1050 A - with 2 more sample bottles to fill, have to let well recharge a little more, so off to get surface water samples from either side of DEPGW yard without going on their property.

Joel [illegible]

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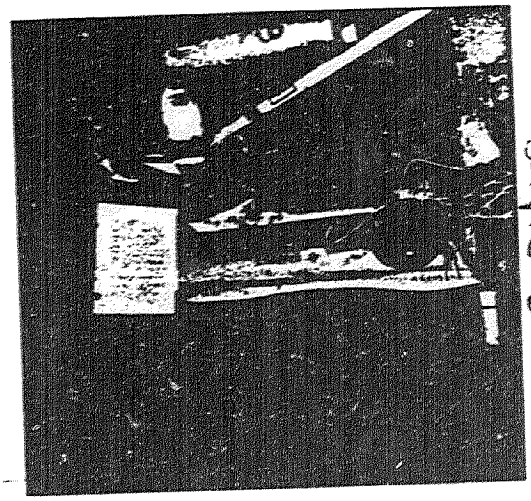
SITE/SITE ASSESSMENT SAS039

Samples taken from Well 8A

plastic 2-1600 ml radiologic w/preservative
plastic 1-1600 ml chem w/no preservative
plastic 1-SC sample bottle
amber glass 1-VOA sample bottle
amber glass 1-gal. container for organic, priority pollutant scan

1 radiologic, 1 gal. for organics taken from recharge @ 1300 hrs. Re-did Chem Analysis bottle as well due to amount of sediment in 1st sample. Well recharging very slowly, but water is less full of sediment than before, sample water looks pretty clean, except for silica sand (construction material) in evidence.

Michelle Dawson



Sample #6

Sample 7 Well 3 Time 10:05 am
condition of well - metal protective casing locked, 2" PVC
well casing was capped. well flowing extremely well.
- evacuated well for approx 20 min. before
sampling began.
note on well condition - well was found
leaking from PVC cap when casing
opened.
- organic matter observed coming from
well.
Temp. 12.3° C
Sounded
119.8" to ~~ground surface~~ top of casing from bottom of well
113" ~~3"~~ from top of casing to
ground surface
Samples taken from Well 3
plastic 2 - 1,600 ml radiologic with preservatives
plastic 1 - 1,600 ml chem with no preservatives
plastic 1 - SC sample bottle
amber glass 1 - VOA sample bottle
amber glass 1 - gal glass container for organics

Michelle Dwyer - QA

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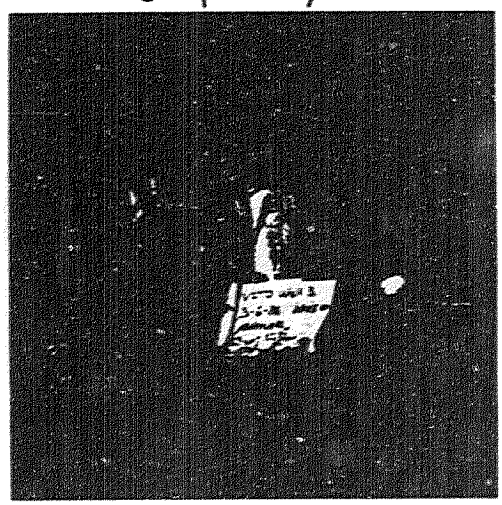
Well 8C metal protective casing condition of well → locked, no lid or PVC. oily scum on top of stater water. well not sampled because of well 8A bailed dry ~~and not re-charging~~ ~~adequately~~ → well 8A re-charging just enough to produce sample but not clean sediment.

Michelle Dogan - QA

Sample #7



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SITE/SITE ASSESSMENT SAS039

Surface sample at location S1 on the map. (inside cover of note book)

1117 - Sample #8. Observed standing oil in culvert opening just under access road. Layers & globules of oil in & on flowing water from culvert opening under the freeway. Joel is sampling upstream from the standing oil to best get representative sample. Note marker on freeway: There is an orange painted double-lamp post up on the freeway, the only one right around here. Good landmark for locating the culvert opening on either side of the freeway. Samples taken:

2 - radiologic 1600 ml. w/ preservative (plastic bott)
1 - 1600 ml. chem. bottle (plastic) w/no preserv.
1 - SC sample bottle plastic no preserv.
1 - VOA sample bottle (glass, amber) no preserv.
2 - 1/2 gal. organic sample bottles (glass) w/no preservative
1 - 1 qt. glass Mason jar sed. sample

Temp of Water: 11.4°C

Michelle Dwyn - QA

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sample #8, culvert w. of

culvert opening w. of sampling point, leading to D&RGW lower paper yard.

Sample #8

Michelle Dwyer
QA

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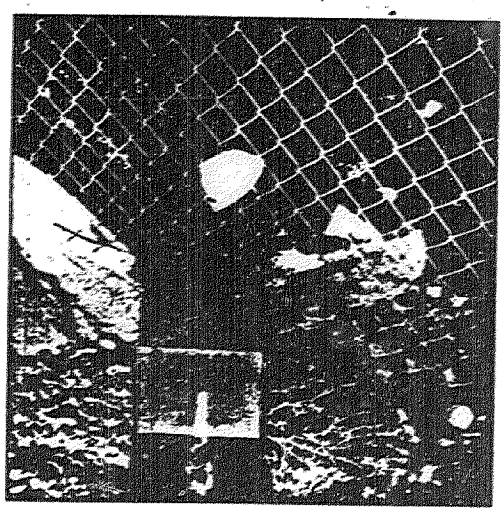
1338 hrs.

Sample #9 - Surface water (see location S2 on map) from culvert opening that collects water drained from D&ROW yard, & sents it to the head of the Vitro Ditch. Evidence of oil (smell, globules, etc.), especially in material @ water level on banks.

Samples taken:

2 - radiologic 1600 ml plastic w/preserv.
1 - 1600 ml. plastic chem bottle, no preserv.
1 - SC sample bottle, plastic
1 - VOA glass amber sample bottle
2 - 1/2 gal. organic sample glass bottles w/no preserv.



9

Michelle Logan-QA

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Sample #10 D&M well V-FD 1420 hrs.

Cannot sound well as it is capped. Valve set in capping allows water to flow by artesian pressure. Flow is strong, & valve is opened for 1 hr. to evacuate @ least 2 well casings worth. From EIS, depth of well should be 9.5'.

Samples taken from WellV-FD -

radiologic → 2 - 1,600 ml plastic containers with preservative

chemistry → 1 - 1,600 ml plastic container without preservative

1 - SC sample Bottle (plastic)

Michelle Dougherty - QA

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Sample #11 1450 hrs. Vitro Well #16

Plastic 6" PVC protective casing w/screw on lid, not locked. 2" PVC well casing w/metal cap rusted on. Well designed for pump sampling. Would have to break off top of well to gain access to bail.

* Go to Well #5 1520 hrs. - Sample #11

Able to open, very strong flow, not able to easily sound. 132" deep according to E/S. Let flow for 1/2 hr. to evacuate 2 well casings (@ least).
Samples taken -
2 - 1,600 ml plastic containers with preservatives for radiologic test
1 - 1,600 ml plastic container without preservatives for chemistry
1 - SC sample bottle container

photo next page →

Michelle Morgan - QA
[illegible]

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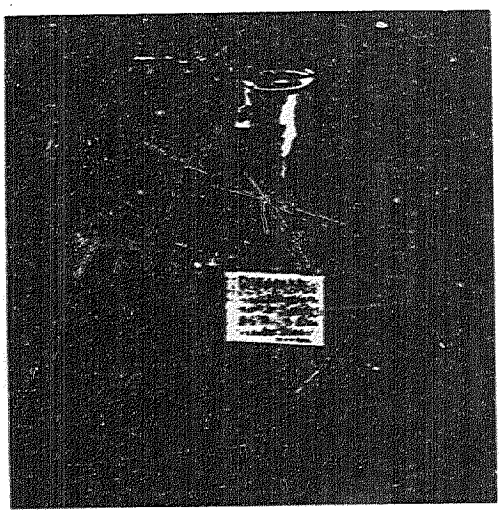
Sample #12 - Blank



Michelle Dorgan - QA

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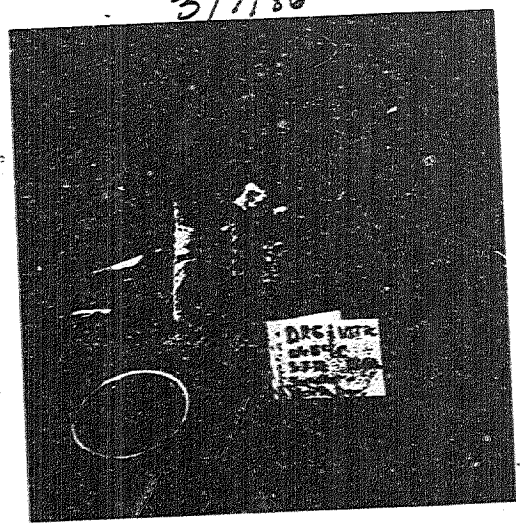
Cloudy, windy 50° F

· Michelle, Ted

3/7/86 Sample #13 Well 9B 11:45 a.m.

Metal protective casing is locked, opens with key.
3" PVC well casing inside, uncapped.
Sounded w/tape @ 21' 1 1/2" to bottom from top of PVC. Static water level is 5' 6.25"
Tape (fiberglass) shows rusty color in water. Metal casing cap is somewhat rusted on inside, but cap has been closed & locked, so.... @ $d \times \pi r^2 = V$,
1 casing vol. = 1796.3 in³ Bailer has been alconox washed, high-pressure rinsed, hot tap water rinsed, & triple DI'd. Water bailed orange.
After 2 buckets bailed water turned bright orange with rusty looking sediment and "silica sand construction material" clinging to the outside of bailer.
After 3 buckets (almost 1 casing vol.), Well is bailed dry.
Amount of rust in water was continuous & could not have come from metal casing cap. After 15 min.,
Michelle Well is recharging rapidly after being
Dwyer bailed dry. Water in bailer still coming
up opaque (orange). Bailed 16 more bailers till
well again is almost dry. 1 more bailer to dry.
After 10 min. recharge the samples collected.
Water still orange with less sediment.
Samples taken
2-1,600 ml radiologic in plastic containers with preservatives
1-1,600 ml chem plastic container without preservatives
1-SC sample bottle container.

3/7/86



Sample 13

Well 9B (not C) Michelle Dayon - QA
C is the well to the right of B in this photo.
B is the well being sampled.

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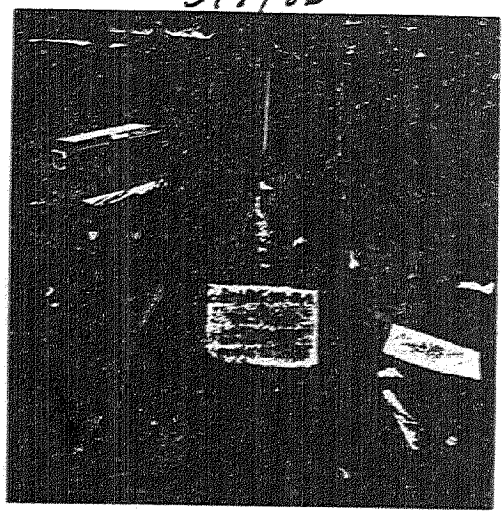
Sample 14 Well 11 A 1:00 p.m.
condition of well - metal protective casing locked, lid on casing slightly rusted, 3" pvc, uncapped, clean around PVC opening.
Sounded 29' 1¼" to bottom of well to the top of PVC. 7' ¼" to static water level from top of PVC. ~~2' 6~~ 1'9" from ground surface to top of PVC
Bailer Alconoxed 3 DI's (triple DI)
Water from bailer appears clear only silghtly discolored (yellowish tint)
9 buckets at 12 bails per bucket to evacuate 2 casing volumes.
Well seems to be recharging as quickly as its being bailed.
After bailing 2 casing volumes water was still clear and slightly yellowish. Static water remained the same during sampling.

Samples collected from Well 11 A.
2- 1,600 ml radiologic plastic containers with preservative
1- 1,600 ml chem plastic container without preservative
1- 5c sample bottle

Michelle Dugan - QA

3/7/86



Sample 14

3/7/86 Well 11A Michelle Dwyer - QA

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SASOJS

Sample 15 Well 12 B 10:45 a.m.
Mostly Cloudy Day - Very Windy
Samplers M. Dayon T. Diamant
Condition of well - metal protective casing locked - 3" PVC uncapped.

2'8½" from static water to top of PVC - 1'6" from ground surface to top of PVC. 21' 3" from bottom of well to top of PVC.
Water coming up from tube appears dirty.
Bailer has been Alconox washed, high pressure hosed, ~~was~~ washed with hot water and DI's.

1704 ~~[illegible]~~ per 1 casing volume
6½ buckets to evacuate ~~[illegible]~~ 2 casing volumes.
Water from bailer appears discolored & slightly yellowish. After 2 buckets bailed was was grayish & with sediment.
after 27 buckets well was bailed dry.
Sediment is gray clay. Let recharge for 1 hr. Only got enough water for
1 1600 ml. radiological w/ preservative
1 S.C. bottle
1/3 of 1600 ml. radiological.

-QA

Did not take any metal or total chemistry samples.
Well is not recharging with any speed & it is going to snow.

Michelle Dayon - QA

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Attachment VI

Site QA/QC Supplement to
Bureau of Solid and Hazardous Waste
QA/QC Plan (Approved 5/83)
For Bureau of Radiation Sampling
Of Groundwater for Radiologies

Work/QA Plan Short Form

Title Page

Denver & Rio Grande Western Railroad
South River (Project Name) Site (UT8).
For Bureau of Radiation Control Survey for
Radionuclides (Document Control Number)

Utah Bureaus of Radiation Control and
Solid and Hazardous Waste
(Responsible Agency)

Dept. of Health Bldg.,
Salt Lake City, UT
(Address)

(Project Officer's Signature) _____

(Project Officer's Name) Jim Salmon

(Supervisor's Name) _____

(Supervisor's Signature) _____

(Quality Assurance Officer's Signature) _____

(Quality Assurance Officer's Name) JIM SALMON

C. Data Usage: Data will be used to record any changes changes in contamination levels around the Vitro site since the EIS of 1984. Data will also be used to determine if any other groundwater contamination exists in lower Roper Yard, to try and evaluate the extent and degree of groundwater contamination and to initiate appropriate action if necessary.

D. Monitoring Network Design and Rationale: Wells will be utilized that were constructed by the U.S. Dept. of Energy on and surrounding the Vitro UMTRA site and lower U/Roper Yard vicinity prior to the project's approval to provide data for site groundwater characterization.

3. Data Quality Requirements and Assessments (Data Quality Objectives):

A. Precision and Accuracy Protocols and Limits

# Sample	Sample Matrix	Collection Frequency	Analytical Parameter	Type of Sample Container	Sample Preservation	Sample Holding Time	Analy. Detection Limit	Data Quality Needed
13	water samples	wells / quarterly /			sampled for total metals and radiologics, samples held for <24 hrs. analyzed by Ut. State Health Lab, utilizing their prepared containers.			
8	water	surface water points / quarterly						
8	sediment	@ surface water points / quarterly)						

Priority pollutant scan for organics to be done on a one time basis unless results indicate further investigation.

QA Sample Parameter Table

	Parameter	Number of Samples	Sample Matrix	Analytical Method Reference*	Sample Preservation	Holding Time	Container
Trip Blank	TC/TM/Rad/Org	1 each	wells and surface points	—	lab bottles and preservatives	<24 hrs.	plastic and glass jars w/ preservatives
Field Split	TC/TM/Rad/Org	1 each	wells and surface points	—	" "	<24 hrs.	plastic and glass jars w/ preservatives where appropriate
~~Duplicate~~							

*If other than EPA, must be attached

B. Data Representativeness: Sampling points should ensure that data is representative of valcrent conditions existing on and in the immediate vicinity of the Vitro UMTRA site and lower Roper Yard.

C. Data Comparability: Data will be compared (except for that of priority pollutant scan for organics) to findings listed in the Vitro UMTRA Project Final Environmental Impact Statement of 1984.

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8. Documentation, Data Reduction, and Reporting

A. Documentation: Field notebook for recording procedure and measurements in the field will be used. Photos of procedure will be taken. After lab analysis and results reported by State Health Lab, sent to BRC and S&H waste.

B. Data Reduction, Validation and Reporting: done by Utah State Health Lab. - [illegible]

9. Data Assessment: Assessment will be carried out by the Bureaus of Solid and Hazardous Waste and the Bureau of Radiation Control

10. Performance and Systems Audits: [illegible]

Attachment VII

Reconnaissance of the Shallow,
Unconfined Aquifer in the
Salt Lake Valley, Utah

being filmed
UNIVERSITY MICROFILMS

RECONNAISSANCE OF THE SHALLOW-UNCONFINED AQUIFER IN SALT LAKE VALLEY, UTAH

by R. L. Seiler and K. M. Waddell

U.S. GEOLOGICAL SURVEY

Water-Resources Investigations Report 83-4272

Prepared in cooperation with the
SALT LAKE COUNTY WATER CONSERVANCY DISTRICT; and the
SALT LAKE COUNTY DIVISION OF FLOOD CONTROL
AND WATER QUALITY

Salt Lake City, Utah
1984

RECONNAISSANCE OF THE SHALLOW-UNCONFINED AQUIFER IN SALT LAKE VALLEY, UTAH

By R. L. Seiler and K. M. Waddell

ABSTRACT

The shallow-unconfined aquifer in the Salt Lake Valley, Utah, seldom is used as a source of water for domestic or industrial purposes because it yields water slowly and is readily contaminated, thus generally yielding water of poor quality. The water in the aquifer, however, can flood basements and is a potential source of contamination to other water supplies.

In about one-half of the valley, water in the shallow-unconfined aquifer is less than 10 feet below the land surface. The general direction of flow in the aquifer is toward the Jordan River, except in the extreme northwest part where it moves directly toward Great Salt Lake. Water levels in the north part of the valley and along the Jordan River are highest in March or April, but in the south part of the valley water levels are highest in late summer.

The smallest concentrations of dissolved solids are in water from wells along the east side of the valley, and the greatest concentrations are in the northwest part of the valley near the Great Salt Lake. Large dissolved-solids concentrations were in water from wells near some landfills and tailings areas.

Nitrate-nitrogen concentrations ranged from less than 0.1 to 86 milligrams per liter and nitrite-nitrogen concentrations from less than 0.01 to 0.85 milligram per liter. Some of the largest nitrate-nitrogen concentrations were in water from wells near animal pens.

The greatest concentrations of trace elements generally were in water from wells near landfills or tailings areas. The greatest measured concentration of cadmium was 200 micrograms per liter, of mercury 0.1 microgram per liter, of iron 37,000 micrograms per liter, and of arsenic 360 micrograms per liter. All these concentrations, except for mercury, exceed the quality criteria of the U.S. Environmental Protection Agency (1977 and 1980) for domestic water supply.

Organic chemicals were in water from several wells, with the greatest concentrations in water from wells near landfills or tailings areas. The greatest measured concentration of benzene was 400 micrograms per liter, of phenol 660 micrograms per liter, of 1,1 dichloroethane 20 micrograms per liter, of trichloroethylene 8 micrograms per liter, and of chloroethylene 11 micrograms per liter. All these concentrations exceed the recommended limit by the U.S. Environmental Protection Agency (1980) of zero for carcinogens.

INTRODUCTION

The shallow-unconfined (water-table) aquifer in Salt Lake Valley (f 1), is the source of water for small-scale irrigation; but it seldom is u to supply water for domestic or industrial purposes because it yields wa slowly and it is readily contaminated, thus generally yielding water of p quality. The aquifer is of major interest, however, because of potenti flooding of basements if water levels rise. It also is a potential source contaminated water for streams and the underlying confined (artesian) aquif which is a source of water suitable for public supply and industrial use the valley.

An example of the problems caused by contamination of the shallo unconfined aquifer is the explosive gas that moved from the aquifer into se lines, causing the evacuation of more than 700 people from homes a businesses in West Valley City (Salt Lake Tribune, May 27, 1981, p. B-1). source of the gas was leaking gasoline tanks. Contamination also can res from leakage from drains and sewers, chemical spills, and infiltration water through landfills and tailings areas. Contaminants can be transpor for long distances in the shallow-unconfined aquifer before discharging i surface waters or moving down into the underlying confined aquifer.

In July 1981, the U.S. Geological Survey, in cooperation with the S Lake County Water Conservancy District, began a 4-year study of the grou water resources of Salt Lake Valley. Part of this study involves describ the chemical and hydraulic characteristics of the shallow-unconfined aqui to define areas where downward leakage might contaminate the underly confined aquifer. The Salt Lake County Division of Flood Control and Wa Quality provided additional funding to enhance this phase of the study, results of which are presented in this report.

Purpose and Scope

The principal objectives of this part of the study, which was done f July 1982 to April 1983, were to define the altitude of the water table in shallow-unconfined aquifer, to determine the direction of movement of water, and to describe the chemical quality of the water, especially n abandoned landfills. Existing wells in the shallow-unconfined aquifer w located and 55 new wells were drilled to extend coverage. Samples of wa were collected from selected wells and analyzed for chemical quality. authors are grateful to the land owners who gave permission to dr observation wells on their property and to the Salt Lake City Water Departm for providing water-level measurements for their wells.

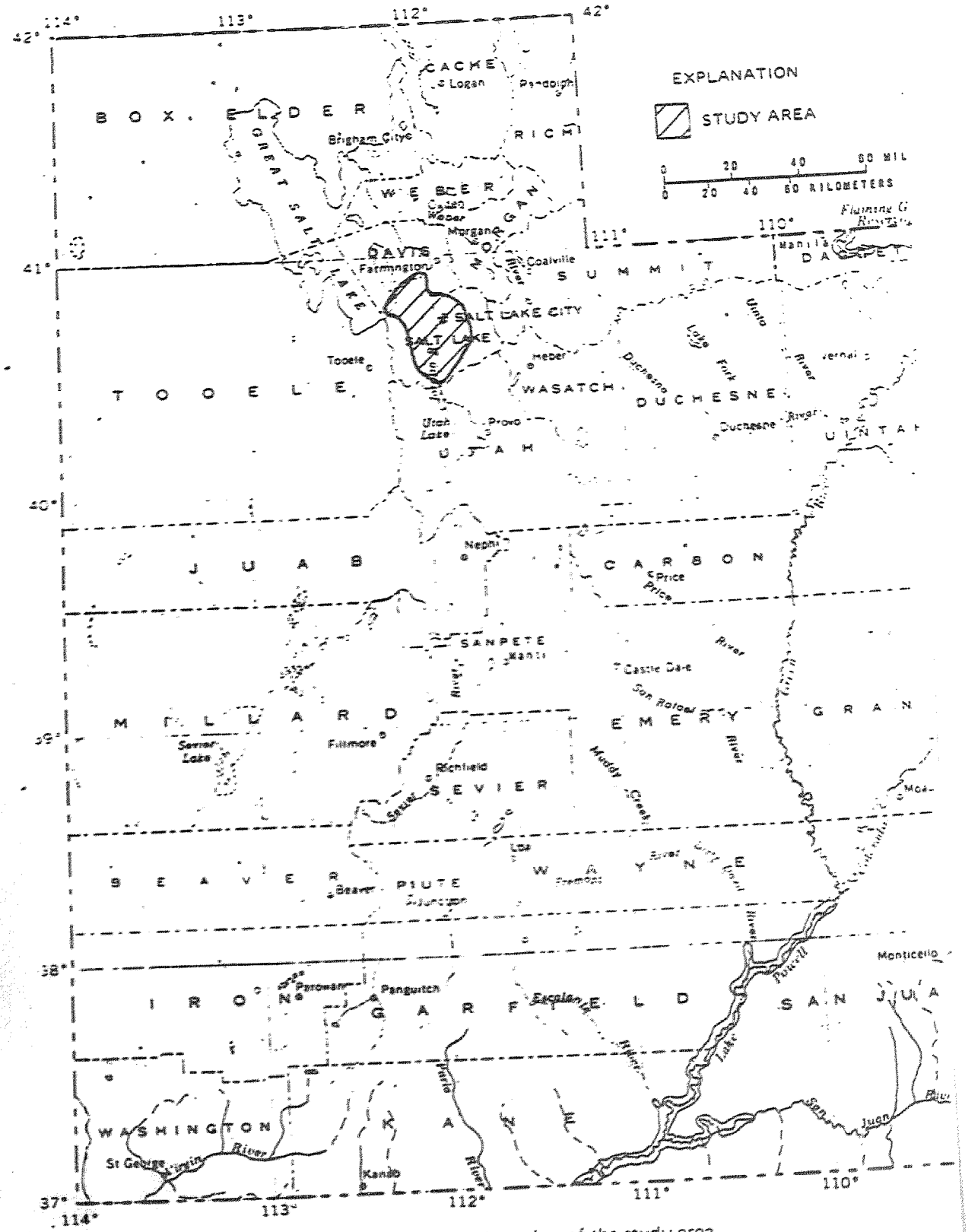


Figure 1.—Location of the study area.

Previous Investigations

Hely and others (1971) described the general ground-water system in Lake Valley, including the relation between the confined aquifer and shallow-unconfined aquifer. A relatively large proportion of the materia the shallow-unconfined aquifer is sand, silt, and clay according to dril logs (Marine and Price, 1963; Iorns and others, 1966a, b; and Hely and ot 1967, 68, 69). Near the city of Murray, the saturated thickness of aquifer exceeds 25 feet, and the deposits contain coarse sand and some gr (Hely and others, 1971, p. 116). They estimate the maximum thickness of shallow aquifer to be about 50 feet.

Mower and Van Horn (1973) mapped the depth to water in the shal unconfined aquifer in the east-central part of the Salt Lake Valley. reported that the highest water levels are between April and Augus response to recharge from snowmelt and applied irrigation water. Water le in this area can fluctuate as much as 10 feet during the year.

Lund (1981) described the reasons for basement flooding in subdivis built over the shallow-unconfined aquifer in the city of Sandy. subdivisions were constructed during a drought, and basement flooding when water levels rose during later periods of normal and greater than no precipitation.

Methods of Investigation

The U.S. Geological Survey drilled 55 observation wells in the shal unconfined aquifer in Salt Lake Valley during the summer and fall of These wells usually were 20 feet, or less, deep and were cased with poly chloride (PVC) casing, 2 inches in diameter, perforated in the lower 12 Land-surface altitudes were established by instrument level for most of wells drilled by the Geological Survey, and a brass cap was set in conc near each well. In addition, 34 wells belonging to other agencies an private individuals were used as observation wells. The altitudes for wells were determined from U.S. Geological Survey topographic maps, s 1:24,000. Data from wells drilled to depths greater than 50 feet, estimated maximum depth of the shallow-unconfined aquifer, were not used.

Samples of water were collected from most of the wells. These sa were analyzed for specific conductance and nitrate-nitrogen concentration that information was used as a basis for selection of wells for samplin more complete analysis. Samples for analysis of inorganic constituents collected by using a small peristaltic pump and a tygon tube lowered int well. Before samples were collected, the well was pumped to evacuate at twice the volume of water stored in the casing, and the sample was collected until the specific conductance stabilized.

Water to be analyzed for volatile organics was collected in a milliliter volumetric pipette connected to the bottom of the tygon tubing water was never exposed to the air or to the plastic tubing. The well pumped to evacuate at least twice the volume of water stored in the ca therefore, the sample was not in contact with the casing for long.

Well-Numbering System

The system of numbering wells in Utah is based on the cadastral land-survey system of the U.S. Government. The number, in addition to designating the well, describes its position in the land net. By the land-survey system, the State is divided into four quadrants by the Salt Lake base line and meridian, and these quadrants are designated by the uppercase letters A, B, C, and D, indicating the northeast, northwest, southwest, and southeast quadrants. Numbers designating the township and range (in that order) follow the quadrant letter, and all three are enclosed in parentheses. The number after the parentheses indicates the section and is followed by three letters indicating the quarter section, the quarter-quarter section, and the quarter-quarter-quarter section--generally 10 acres.[1] The letters a, b, c, and d indicate the northeast, northwest, southwest, and southeast quarters of each subdivision. The number after the letters is the serial number of the well within the 10-acre tract. Thus, (D-1-1)18dad-1 designates the first well constructed or visited in the SE1/4NE1/4SE1/4 sec. 18, T. 1 S., R. 1 E. The numbering system is illustrated in figure 2.

GROUND WATER

Ground water in Salt Lake Valley (Hely and others, 1971, p. 107) occurs (1) in a confined aquifer, (2) in a deep-unconfined aquifer between the confined aquifer and the mountains, (3) in a shallow-unconfined aquifer overlying the confined aquifer, and (4) locally in perched aquifers (fig. 3). The confined aquifer in Salt Lake Valley usually is called the principal aquifer. The shallow-unconfined aquifer is recharged by leakage upward from the confined aquifer through confining layers as well as by downward infiltration from precipitation, canals, irrigated lands, and streams. The maximum thickness of the shallow-unconfined aquifer is about 50 feet.

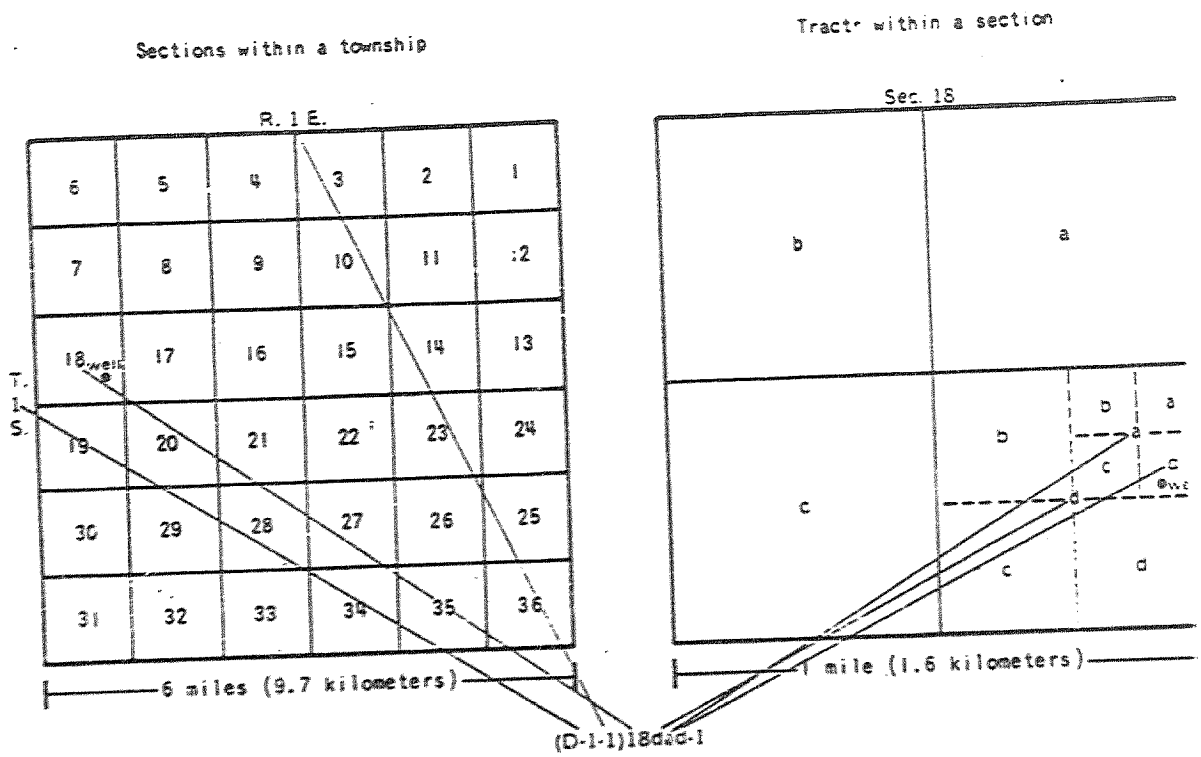
Water Levels

Water-level, chemical-quality, and construction data for the wells used in this investigation are given in table 1 (at the end of report). Water-level measurements for selected wells for which more than two measurements are available are given in table 2 (at the end of report).

The altitude of the water table in the shallow-unconfined aquifer, the direction of flow, and the location of the observation wells are shown on plate 1. Water in the shallow-unconfined aquifer moves toward the Jordan River in most parts of the valley, however, in the extreme northwest part of the valley, water moves directly toward the Great Salt Lake.

---

[1] Although the basic land unit, the section, is theoretically 1 square mile, many sections are irregular. Such sections are subdivided into 10-acre tracts, generally beginning at the southeast corner, and the surplus or shortage is added to or subtracted from the tracts along the north and west sides of the section.



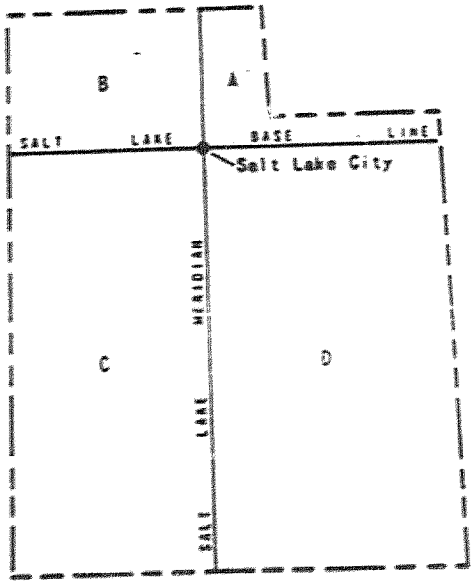


Figure 2.—Well - numbering system used in Utah.

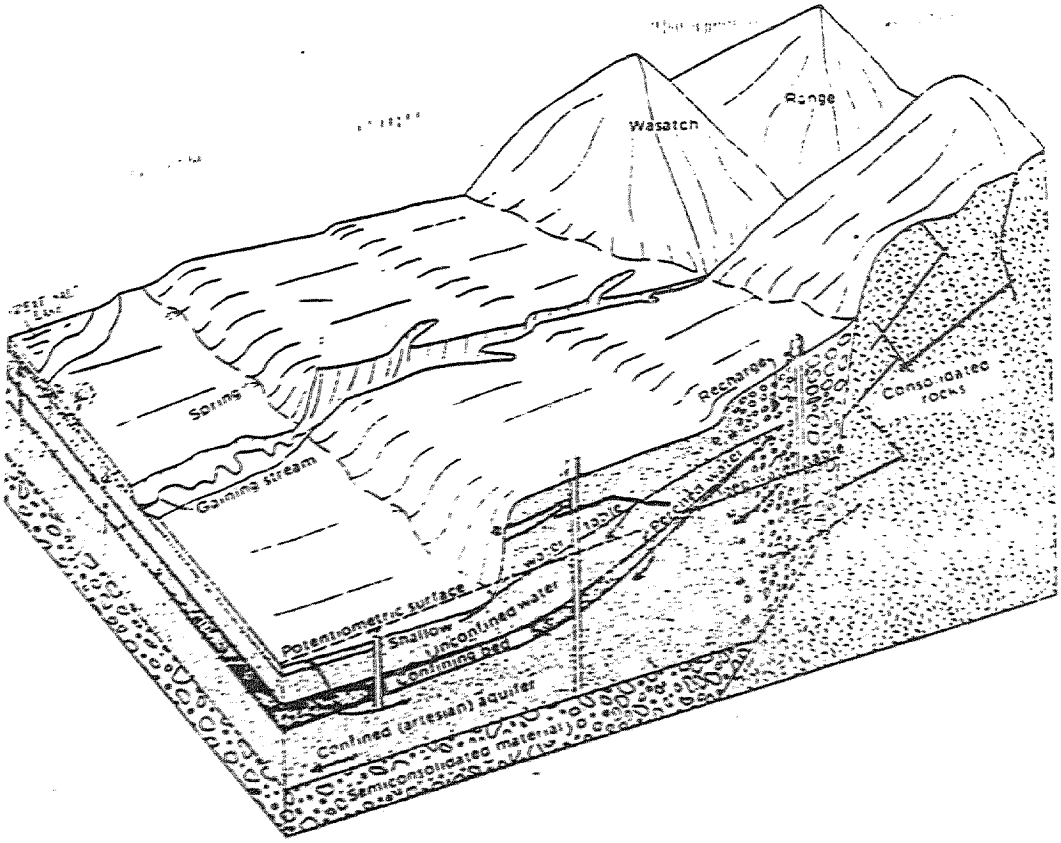


Figure 3.—Ground water under unconfined, perched, and confined conditions in the study area. Modified from Hely and others (1971, fig. 57.)

The depth to water in the shallow-unconfined aquifer is shown on plate 2. This map is based on the highest water level measured during the investigation. In approximately one-half of the valley, water is less than 10 feet below land surface; and in much of West Valley City, South Salt Lake, and in west Salt Lake City, and along the Jordan River, the depth to water is less than 5 feet below land surface. Although no wells were completed as part of this investigation in the west-central part of the valley, examination of well drillers' logs indicates depth to water in the shallow-unconfined aquifer is greater than 40 feet in this area.

Hydrographs of water levels in two wells completed in the shallow-unconfined aquifer are shown in figure 4. Well (C-1-1)28cab-1, in West Valley City, is typical of wells in the north part of the valley and along the Jordan River. The highest annual water levels are in March or April and the lowest water levels are in mid-to-late summer. This seasonal pattern is caused

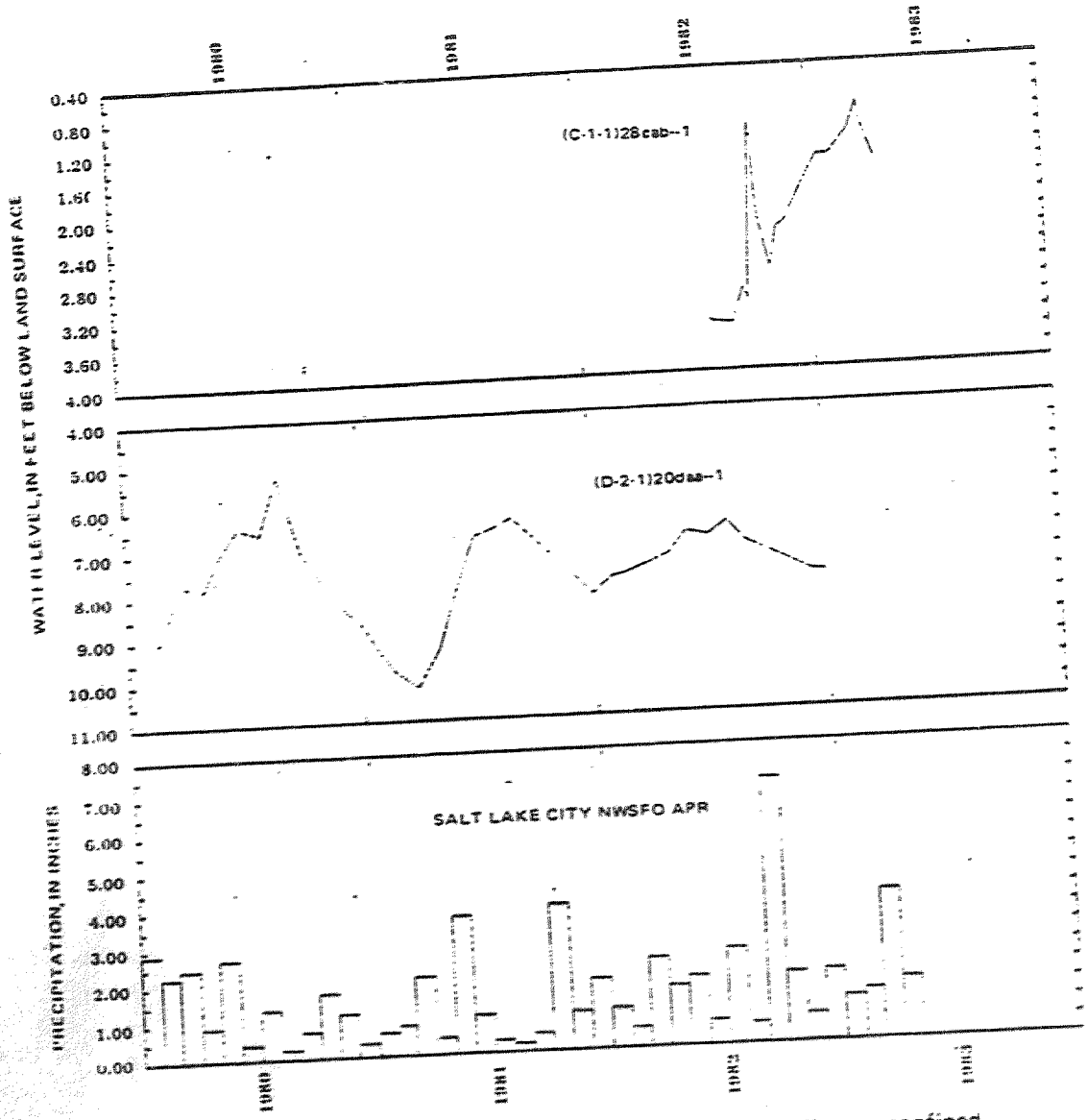


Figure 4.--Hydrographs of two wells completed in the shallow-unconfined aquifer and monthly precipitation at Salt Lake City NWSFO APR (International Airport).

primarily by recharge from the confined aquifer, which in the north part of the valley also reaches its seasonal high in March or April and its low in mid-to-late summer (Hely and others, 1971, p. 144). The high water levels in September and October 1982 were caused by recharge from unusually large quantities of precipitation (fig. 4). Recharge from precipitation can cause rapid rises in the water level; however, as the aquifer drains, water levels also decline rapidly.

Well (D-2-1)20daa-1 is typical of many wells completed in the shallow-unconfined aquifer in the south part of the valley where water levels are lowest in April and highest in late summer. The water levels in the confined aquifer in this part of the valley have a similar pattern of seasonal highs and lows (Hely and others, 1971, p. 144). In the south part of the valley, water levels in the shallow-unconfined aquifer as well as the confined aquifer are affected by recharge from irrigation. Seasonal high levels occur in most wells near the end of the irrigation season.

Water Quality

The results of the chemical analyses for inorganic constituents are given in table 3 (at the end of report) and for organic constituents are given in table 4 (at the end of report). The location of selected landfills and tailings areas and the dissolved-solids and nitrate-nitrogen concentrations of water from the shallow-unconfined aquifer are shown on plate 3. The location of the landfills were obtained from the U.S. Soil Conservation Service (1974).

Dissolved-solids concentration was measured in water from 24 wells for which specific conductance also was available. A regression equation between the specific conductance and the dissolved solids was used to estimate the dissolved-solids concentration of water from wells for which only the specific conductance was available.

The smallest concentrations of dissolved solids (pl. 3) are in water from wells on the east side of the valley, and the greatest concentrations are in the northwest part of the valley near the Great Salt Lake. Dissolved-solids concentrations along the center of the valley ranged from 490 milligrams per liter in water from well (D-3-1)32aaa-1 east of Draper, to about 29,000 milligrams per liter in water from well (B-1-2)31aaa-1 west of Salt Lake City. Dissolved-solids concentrations are large near some landfills and tailings areas.

Water types vary considerably throughout the valley. The predominant cations and anions in water from well (D-3-1)32aaa-1 are calcium and bicarbonate, but nearby well (D-3-1)31cda-1 yields a sodium chloride water. This variability may be due to localized differences in evaporation and transpiration, application of fertilizers or road salt, and differences in source and quantity of recharge water. Water near the Great Salt Lake probably is of the sodium chloride type.

Nitrate and nitrite concentrations were measured in water from 31 wells. Nitrate-nitrogen concentrations varied from less than 0.1 to 86 milligrams per liter (pl. 3), and nitrite-nitrogen concentrations varied from less than 0.02 to 0.85 milligram per liter. Several of the largest nitrogen concentrations were found in water from wells near animal pens.

Water from 16 wells was analyzed for trace elements. Maximum concentrations of all the trace elements discussed below, except mercury, exceeded criteria for domestic water supplies recommended by the U.S. Environmental Protection Agency (1977). The criteria are given in table 3. Concentrations of cadmium varied from less than 1 to 200 micrograms per liter; iron from less than 3 to 37,000 micrograms per liter; and mercury from less than 0.1 to 0.1 microgram per liter. Manganese, which was measured in water from 24 wells, had concentrations ranging from 1 to 1,800 micrograms per liter.

Water from wells near landfills or tailings areas generally had the greatest concentrations of trace elements. Water from well (C-2-1)35baa-1 in West Jordan, within 50 feet of the Jordan River and downgradient from a tailings area, contained 200 micrograms per liter of cadmium, 1,900 micrograms per liter of iron, 46 micrograms per liter of lead, 1,800 micrograms per liter of manganese, and 0.1 microgram per liter of mercury. These concentrations were much greater than those in nearby well (C-2-1)35bab-1, on the other side of the Jordan River. Well (C-2-1)14bdb-1, near Murray, between a tailings area and the Jordan River, contained 37,000 micrograms per liter of iron. The water in this well was red and was acidic, with a pH of 6.3. Well (B-1-1)26bad-1, near a landfill in northwest Salt Lake City, contained 0.1 microgram per liter of mercury.

Water from 15 wells was analyzed for phenol, and the concentrations ranged from 3 to 660 micrograms per liter. For the protection of public health, the recommended limit is 3.5 milligrams per liter (U.S. Environmental Protection Agency, 1980, p. 79338), and to control odor and undesirable taste the recommended limit is 0.3 milligram per liter. The small concentrations of phenol in water from many of the wells may be from decomposing plant litter, which can contribute phenolic compounds to the aquatic environment (McConnell, 1968, p. 343). The greatest concentration of phenol, 660 micrograms per liter, was in water from well (C-2-1)14bdb-1 near a tailings area near Murray. The next largest concentration, 190 micrograms per liter, was in water from well (C-1-1)4ddb-1 near a landfill west of Salt Lake City.

The policy of the Environmental Protection Agency (1980, p. 79323) is that there is no scientific basis for estimating "safe" levels for carcinogens; therefore, their recommended concentration for the maximum protection of human health for arsenic and the organic compounds discussed below is zero. The U.S. Environmental Protection Agency (1980) also presents a range of concentrations corresponding to incremental cancer risks of 1 additional case of cancer in populations ranging from 100,000 to 10 million.

Arsenic concentration was measured in water from 23 wells and was found to be present in small concentrations in most of the wells. Arsenic compounds occur naturally in some waters of the western United States (McKee and Wolf, 1963, p. 140). The smallest concentrations (less than 1 microgram per liter) generally were on the east side of the valley. The two largest concentrations of arsenic (360 and 130 micrograms per liter) were in water from wells (B-1-1)32ccd-1 and (C-1-1)4ddb-1 near landfills near Salt Lake City. However, the next largest values of 110 and 99 micrograms per liter were in water from wells (C-1-1)30aca-1, in West Valley City, and (C-3-1)3acc-1, in South Jordan, neither of which is near a landfill.

Synthetic organic compounds were found in water from 6 of the 16 wells sampled for volatile organic compounds. Water from well (C-3-1)1bbc-1 near Sandy and well (C-1-1)24cdc-1 in South Salt Lake, both near landfills, had the greatest concentrations of organic contaminants. The water from the well near Sandy contained 400 micrograms per liter of benzene and 11 micrograms per liter of 1,2 dichloroethane. Water from the well in South Salt Lake contained 11 micrograms per liter of chloroethylene, 8 micrograms per liter of trichloroethylene, 3 micrograms per liter of tetrachloroethylene, and 20 micrograms per liter of 1,1 dichloroethane.

RELATIONSHIP TO CONFINED AQUIFER

It isn't presently (1983) known how much, if any, contamination of the confined aquifer in Salt Lake Valley is caused by downward movement of contaminated water from the shallow-unconfined aquifer. The difference in hydraulic head between the two aquifers presently results in the upward movement of water from the confined aquifer into the shallow-unconfined aquifer. The potential for contamination of the confined aquifer exists, however, if hydraulic head in the confined aquifer declines so that the direction of flow between the two aquifers reverses. It is conceivable that localized percolation of water from the shallow-unconfined aquifer into the confined aquifer could occur now in the area of the cone of depression caused by large-scale pumping from wells developed in the confined aquifer.

NEED FOR ADDITIONAL STUDIES

Additional monitoring of the chemical quality of the water in the shallow-unconfined aquifer is needed to define the extent and sources of contamination. Hydraulic tests also are needed to determine the effectiveness of the confining layer between the shallow-unconfined and confined aquifers as a barrier to the possible downward migration of contaminated water.

SUMMARY

The shallow-unconfined aquifer in the Salt Lake Valley, Utah, seldom is used for domestic or industrial purposes because it yields water slowly and is readily contaminated, thus generally yielding water of poor quality. In about one-half of the valley, water in the shallow-unconfined aquifer is less than 10 feet below land surface. The general direction of flow in the shallow aquifer is toward the Jordan River, except in the extreme northwest part where it moves directly toward the Great Salt Lake.

The smallest concentrations of dissolved solids are in water from wells along the east side of the valley, and the greatest concentrations are in the northwest part of the valley near the Great Salt Lake. Large dissolved-solids concentrations were in water from wells near some landfills and tailings areas.

Nitrate-nitrogen concentrations ranged from less than 0.1 to 8 milligrams per liter and nitrite-nitrogen concentrations from less than 0.0 to 0.85 milligram per liter. Some of the largest nitrate-nitrogen concentrations were found in water from wells near animal pens.

The greatest concentrations of trace elements generally were in water from wells near landfills and tailings areas. The greatest measured concentration of cadmium was 200 micrograms per liter, of mercury 0. microgram per liter, of lead 46 micrograms per liter, of iron 37,00 micrograms per liter, and of arsenic 360 micrograms per liter.

Synthetic organic chemicals were found in water from several wells. Th greatest measured concentration of benzene was 400 micrograms per liter, c phenol 660 micrograms per liter, of 1,1 dichloroethane 20 micrograms pe liter, of trichloroethylene 8 micrograms per liter, and of chloroethylene 1 micrograms per liter. The greatest concentrations were in water from well near landfills.

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Location: See text for explanation of well-numbering system.
Owner or user: Refers to latest known owner or user.
Depth: Finished depth; drilled depth may be greater.
Casing: Finish--O, open end; P, perforated; S, screened; W, walle
uncased; upper and lower limits of perforations or screen given in
below land surface, if known.
Abbreviations: IN., inches; FT, feet, °C, degrees Celsius; and UMHOS/
25°C, micromhos per centimeter at 25° Celsius.

LOCATION	OWNER OR USER	DATE COMPLETED	CASING DIAMETER (IN.)	CASING DEPTH (FT)	CASING FIN
(B-1-1) 9ADC-1	R. GUALAZZI	08-25-82	2	19.5	P7.5
22DCA-1	SLC WATER DEPARTMENT	01- -82	1.25	15	P
25CDD-1	SALT LAKE PATTERN CO.	08-31-82	2	19.0	P7-1
25DCB-1	SLC WATER DEPARTMENT	01- -82	1.25	15	P
26BAD-1	P. ATKINSON	08-31-82	2	18.5	P6.5
26CDA-1	J. NELSON	08-19-82	2	19.5	P7.5
27CAA-1	D. LARKIN	09-23-82	2	18.5	P6.5
27DDC-1	SLC WATER DEPARTMENT	01- -82	1.25	15	P
28DCA-1	DO	01- -82	1.25	15	P
32CCD-1	UTAH DEPT. OF TRANS.	10-05-82	2	19.1	P7.1
32DCA-1	SLC WATER DEPARTMENT	01- -82	1.25	15	P
35CBA-1	DO	01- -82	1.25	15	P
35DCB-1	R. MARTINEZ	08-25-82	2	19.5	P7.5
(B-1-2) 31AAA-1	SALT LAKE COUNTY	09-28-82	2	19.0	P7-1
34AAB-1	SALT LAKE COUNTY	09-23-82	2	18.7	P6.7
36ABC-1	SLC WATER DEPARTMENT	01- -82	1.25	15	P
(C-1-1) 1BDD-1	DO	01- -82	1.25	15	P
2DCA-2	D. HANSEN	07-21-82	2	19.6	P7.6
3DAB-1	SLC WATER DEPARTMENT	01- -82	1.25	15	P
4DDB-1	MINERAL SERVICES INC.	08-12-82	2	19.7	P7.7
5DAB-1	SLC WATER DEPARTMENT	01- -82	1.25	15	P
11BAC-1	M. RUSSILL	07-26-82	2	19.7	P7.7
11DBC-1	SLC WATER DEPARTMENT	01- -82	1.25	15	P
13ABD-1	DO	01- -82	1.25	15	P
14CBA-1	SLC WATER DEPARTMENT	01- -82	1.25	15	P

SELECTED WELLS

Altitude of land surface: Surveyed altitudes given in feet and decimal fractions; altitudes interpolated from U.S. Geological Survey topographic maps given in full feet.
Water level: Measured distances to water are given in feet and decimal fractions.
Water-quality parameters: Measured in the field on indicated date except for those noted with an L, which were measured in the laboratory within a few days of sample collection. Samples collected by pumping except for those noted with an H, which were obtained by hand.
Other data available: C, additional water-quality data in tables 3 or 4; W, water levels in table 2.

ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL BELOW LAND SURFACE (FT)	DATE	WATER-QUALITY PROPERTIES: WATER TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS/CM AT 25°C)	DATE	OTHER DATA AVAILABLE
4210	6.51	08-25-82	7.0	6590	02-01-83	C,W
4215	7.9	05-25-82	—	—	—	W
4228.78	3.08	08-31-82	—	1650	11-19-82	W
4260	5.4	05-25-82	—	—	—	W
4216.39	7.67	08-31-82	9.0	2530	02-07-83	C,W
4217.69	10.30	08-19-82	11.5	1200	01-17-83	C,W
4213.34	3.64	09-23-82	—	2060L	12-06-82	W
4215	6.2	05-25-82	—	—	—	W
4215	3.4	05-25-82	—	—	—	W
4220	1.03	10-05-82	8.0	8590	02-01-83	C,W
4220	5.4	05-25-82	—	—	—	W
4220	9.3	05-25-82	—	—	—	W
4221.40	8.00	08-25-82	11.0	3660	02-02-83	C,W
4215	2.40	10-01-82	—	36200L	11-16-82	W
4219	2.99	09-23-82	10.0	14400	02-01-83	C,W
4220	7.6	05-25-82	—	—	—	W
4237	7.8	05-25-82	—	—	—	W
4222.18	8.33	07-21-82	12.5	2320	01-07-83	C,W
4225	4.0	05-25-82	—	—	—	W
4221.23	2.26	08-12-82	7.5	4370	02-02-83	C,W
4227	4.6	05-25-82	—	—	—	W
4232.00	7.82	07-26-82	10.5	10900	01-07-83	C,W
4220	4.4	05-25-82	—	—	—	W
4230	9.7	05-25-82	—	—	—	W
4230	5.3	05-25-82	—	—	—	W

TABLE 1.--RECORD

LOCATION	OWNER OR USER	DATE COMPLETED	CASING DIAMETER (IN.)	CASING DEPTH (FT)	CASING FINIS
(C-1-1)15CAA-1	US GEOLOGICAL SURVEY	06-04-82	2	15	P8-15
24CDC-1	UTAH DEPT. OF TRANS.	10-06-82	2	18.7	P6.7-
26ACA-1	US DEPT. OF ENERGY	03-02-83	3	10.0	P6.0-
26DCA-1	J. PAGNANELLI	08-26-82	2	19.7	P7.7-
28CAB-1	C. APPEL	07-08-82	2	19.7	P7.7-
(C-1-1)30ACA-1	K. PERKINS	08-12-82	2	19.7	P7.7-
31ABB-1	J. MCDONALD	09-02-82	2	14.3	P2.3-
33DBC-2	OSBORNE	—	8	18	P
*36DCB-1	V. FENNING	09-16-82	2	7.8	P0-7.
(C-1-2) 1CDC-1	P. COOK	08-26-82	2	17.9	P5.9-
16DCC-1	L. PETRIE	09-02-82	2	19.0	P7.0-
22CBB-2	F. FOWLER	07-30-82	2	19.7	P7.7-
23DDD-1	D. BISHOP	08-19-82	2	19.7	P7.7-
29ACA-1	M. ENRIGHT	07-21-82	2	16.5	P4.5-
(C-2-1) 3DBA-1	L. HIGGINSON	06- -75	6	22	P16-
9BBB-1	J. MULLERN	10-12-82	2	20	X
12BDA-1	UTAH DEPT. OF TRANS.	09-28-82	2	18.7	P6.7-
13DAD-1	A. LLOYD	1970	6	34	O
14AAC-1	—	—	1.50	20	P
14BDB-1	K. NILSSON	09-03-82	2	11.0	S7.0-
15ABC-1	L. BROWN	09-16-82	2	19.6	P7.6
26ABB-1	MIDVALE SEWAGE PLANT	09-20-82	2	12.8	P0.8
33AAA-1	—	10-15-82	1	39.0	P29.
34DDA-3	D. GARDNER	09-01-82	2	18.9	P6.
(C-2-1)35BAA-1	UTAH DEPT. OF TRANS.	09-21-82	2	12.5	P0.
35BAB-1	J. ORTEGA	08-27-82	2	19.7	P7.7
35DCC-1	FUR BREEDERS AGRI. COOP	09-21-82	2	12.3	P0.3
36AAD-1	D. GILBERT	08-04-82	2	16.8	P4.8
36BAC-1	D. PRICE	07-19-82	2	20.0	P8.0
(C-2-2) 1BCD-1	G. RUSHTON	1930	36	30	W
(C-3-1) 1BBC-1	SANDY CITY PUBLIC WORKS	07-22-82	2	16.2	P4.
3ACC-1	L. JONES	08-03-82	2	15.0	P3.0
12CCB-2	A. HARRISON	08-27-82	2	10.8	P0-
14ACC-1	T. BUTCHER	08-17-82	2	19.7	P7.7
25CAC-1	L. WEBB	08-04-82	2	19.0	P7.0

SELECTED WELLS—CONTINUED

ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL BELOW LAND SURFACE (FT)	WATER LEVEL BELOW LAND SURFACE DATE	WATER-QUALITY PROPERTIES: WATER TEMPERATURE (°C)	WATER-QUALITY PROPERTIES: SPECIFIC CONDUCTANCE (UMHOS/CM AT 25°C)	WATER-QUALITY PROPERTIES: DATE	OTHER DATA AVAILABLE
4231.05	4.40	06-04-82	—	3410	10-26-82	C,W
4235	2.60	10-06-82	7.0	3220	02-04-83	C,W
4234.50	4.06	04-06-83	11.0	10400	03-29-83	—
4239.75	5.85	08-26-82	8.0	4230	02-02-83	C,W
4244.77	2.33	07-08-82	13.0	1030	02-02-83	C,W
4249.19	4.94	08-12-82	9.5	4640	02-07-83	C,W
4275.43	7.18	09-02-82	10.5	1990	02-07-83	C,W
4262.60	5.81	10-23-81	—	—	—	W
4253.30	4.60	09-16-82	—	2060L	11-29-82	W
4236.8	7.17	08-26-82	—	8000L	11-16-82	W
4226.1	2.88	09-02-82	—	3250L	11-16-82	W
4233.3	3.05	07-30-82	—	2170L	11-16-82	W
4249.24	7.14	08-19-82	—	1740L	11-19-82	W
4300.75	DRY	07-21-82	—	—	—	—
4270	7.0	06- -75	—	2390L	11-19-82	W
4375	DRY	10-12-82	—	—	—	—
4260	10.03	09-28-82	11.0	2310	02-03-83	C,W
4332.38	19.0	07-30-75	—	—	—	W
4310	9.20	07-27-82	17.5	760	07-27-82	—
4263.85	5.82	09-03-82	9.0	2310	02-03-83	C,W
4331.36	5.94	09-16-82	10.5	2240	02-07-83	C,W
4278	6.35	09-20-82	7.0	8960	02-03-83	C,W
4410	30.30	10-15-82	—	—	—	—
4347.1	4.45	09-01-82	10.0	3450	01-17-83	C,W
4288.98	6.73	09-21-82	9.5	3160	02-03-83	C,W
4304.41	14.89	08-27-82	12.5	2500	01-17-83	C,W
4293.94	6.35	09-21-82	—	2640L	11-18-82	W
4393.23	DRY	08-04-82	—	—	—	—
4360	11.10	07-20-82	20.0	2000H	07-20-82	—
4510	9.63	11-12-81	—	—	—	W
4298.03	9.22	07-22-82	10.5	2340	02-04-83	C,W
4391.28	7.76	08-03-82	13.0	2910	01-14-83	C,W
4324.55	6.55	08-27-82	—	2600L	11-18-82	W
4389.16	7.07	08-17-82	15.5	—	08-17-82	W
4409.0	5.52	08-04-82	—	2750L	11-30-82	W

TABLE 1.--RECORDS

LOCATION	OWNER OR USER	DATE COMPLETED	CASING DIAMETER (IN.)	CASING DEPTH (FT)	CASING FINISH
(C-3-1)34AAA-1	R. LAW	08-05-82	2	19.4	P7.4-19
(C-4-1)10ACD-1	L. CRUMP	10-13-82	1	6.0	P0-6.0
12CBB-1	—	—	36	14.0	W
(D-1-1) 7AAA-1	W. DURMAN-LIGH	08-20-82	2	19.5	P7.5-19
9ACB-1	SLC WATER DEPARTMENT	01- -82	1.25	15	P
17BBB-1	DO	01- -82	1.25	15	P
18DAD-1	P. BLANCHARD	08-20-82	2	19.5	P7.5-19
20AAB-1	CARBO-CHEMICAL CO.	09-20-74	12	32	P20-32
20AAB-2	HYGEIA ICE CO.	—	—	30	—
30AAA-1	SLC WATER DEPARTMENT	01- -82	1.25	15	P
30BBB-1	K. BRYAN	07-29-82	2	19.7	P7.7-19
31DBA-1	F. GODNICK	08-10-82	2	19.7	P7.7-19
(D-2-1) 8BBA-1	H. SCHMIDT	08-06-82	2	11.3	P0-11.3
17CAA-1	G. ANDERSON	08-10-82	2	19.7	P7.7-19
19DAD-1	UTAH DEPT. OF TRANS	1979	6	36.5	O
20CAC-2	DO	01- -80	2	36.5	O
20DAA-1	DO	—	2	15	O
21ADD-1	DO	1980	—	34.5	O
22ACB-1	R. FULMER	—	36	12.0	O
22ADA-1	UTAH DEPT. OF TRANS.	—	—	26.5	O
22BDA-1	DO	—	2	27.0	O
29CDD-1	R. ROBINSON	08-13-82	2	16.6	P4.6-16
(D-3-1) 5CDB-1(1)	—	07-21-80	1	14	—
6BCD-1	C. MARGETTS	08-05-82	2	19.5	P7.5-19
7CCB-1	DESERET MORTUARY	07-12-82	2	19.7	P7.7-19
19ABB-1	J. OAKESON	09-01-82	2	19.0	P7.0-19
31CDA-1	V. MCEWEN	07-26-82	2	19.7	P7.7-19
32AAA-1	A. CHRISTENSEN	08-18-82	2	19.7	P7.7-19
32CDA-1	D. BALLARD	1982	36	13.0	W

(1) Referred to in Lund (1981) as well SW-3.

SELECTED WELLS—CONTINUED

ALTITUDE OF LAND SURFACE (FT)	WATER LEVEL BELOW LAND SURFACE (FT)	DATE	WATER-QUALITY PROPERTIES: WATER TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS/CM AT 25°C)	DATE	OTHER DATA AVAILABLE
4410.76	8.45	08-05-82	12.5	3470	01-17-83	C,W
4382.32	0.80	10-13-82	—	—	—	W
4470	2.05	09-09-82	—	2520L,H	11-30-82	W
4279.5	11.16	08-20-82	—	1380L	11-12-82	W
4665	DRY	05-25-82	—	—	—	W
4275	4.3	05-25-82	—	—	—	W
4288.1	7.58	08-20-82	12.0	1460	01-07-83	C,W
4400	12.0	09-20-74	—	—	—	W
4400	17.39	02-04-83	—	930L	11-19-82	—
	17.45	04-20-83				
4275	2.9	05-25-82	—	—	—	W
4248.67	5.07	07-29-82	—	1810L	11-12-82	W
4277.26	4.79	08-10-82	12.0	2040	01-12-83	C,W
4285.04	4.92	08-06-82	11.5	2120	01-12-83	C,W
4361.89	10.95	08-10-82	—	1580	11-29-82	W
4400	29.51	07-28-80	—	—	—	W
4405	5.73	07-28-80	—	1360L	12-06-82	W
4410	7.41	10-30-79	—	—	—	W
4464	34.23	05-13-82	—	—	—	—
4520.62	2.84	01-29-79	—	—	—	W
4595	15.54	10-30-79	—	—	—	W
4515	5.07	05-29-81	—	—	—	W
4496.85	10.00	08-13-82	19.5	—	08-13-82	—
4560	5.63	07-15-82	7.0	395	02-04-83	C,W
4426.91	14.11	08-05-82	14.5	1560	01-12-83	C,W
4399.76	14.41	07-15-82	—	580L	12-02-82	W
4485.07	DRY	09-01-82	—	—	—	—
4437.9	3.91	07-26-82	10.5	2830	01-12-83	C,W
4510.33	10.66	08-18-82	11.0	760	01-12-83	C,W
4487	7.16	12-06-82	—	1040L,H	12-06-82	W

Table 2.--Water levels in selected wells

[Water levels are in feet below land surface. See text for explanation of well-numbering system. Water-level measurements to hundredths of a foot were made by the U.S. Geological Survey, and measurements to tenths of a foot were made by the Salt Lake City Water Department unless indicated otherwise.]

Altitude (Alt.) of land surface: Surveyed altitudes given in feet and decimal fractions; altitudes interpolated from U.S. Geological Survey topographic maps given in full feet.

(B-1-1) 9ADC-1. Alt. 4210

AUG 25, 1982	6.51	NOV 16, 1982	4.65	JAN 14, 1983	4.24	MAR 07,1983	3.65
SEP 10	6.35	DEC 06	4.30	FEB 01	3.45	APR 12	3.70
OCT 01	3.41	22	2.78				

(B-1-1)22DCA-1. Alt. 4215

FEB 02, 1982	9.4	JUN 15, 1982	8.2	SEP 29, 1982	4.6	FEB 4, 1983	4.6
MAR 02	9.0	JUL 13	8.3	OCT 14	7.0	25	4.1
APR 09	7.0	AUG 09	9.2	NOV 16	7.3	MAR 10	4.2
30	7.7	25	9.8	DEC 27	5.2	29	2.1
MAY 25	7.9	SEP 16	8.0	JAN 21, 1983	5.8	APR 13	3.6

(B-1-1)25CDD-1. Alt. 4228.78

AUG 31, 1982	3.08	NOV 16, 1982	3.94	JAN 14, 1983	3.82	MAR 07, 1983	3.57
SEP 14	3.84	19	3.81	FEB 02	3.29	APR 12	3.40
OCT 01	2.44	DEC 22	3.27				

(B-1-1)25DCB-1. Alt. 4260

FEB 02, 1982	DRY	JUN 15, 1982	5.0	SEP 29, 1982	5.8	FEB 25, 1983	DRY
MAR 02	DRY	JUL 13	5.5	OCT 14	DRY	MAR 11	DRY
APR 09	5.1	AUG 09	5.4	JAN 21, 1983	DRY	29	DRY
30	4.9	25	5.4	FEB 04	DRY	APR 14	DRY
MAY 25	5.4	SEP 16	5.5				

(B-1-1)26BAD-1. Alt. 4216.39

AUG 31, 1982	7.67	NOV 16, 1982	7.11	JAN 14, 1983	6.95	MAR 28, 1983	3.62
SEP 14	6.73	23	7.19	FEB 07	6.50	APR 12	5.15
OCT 01	4.34	DEC 22	6.50	MAR 07	6.21		

(B-1-1)26CDA-1. Alt. 4217.69

AUG 19, 1982	10.30	NOV 16, 1982	9.03	JAN 14, 1983	8.50	MAR 07, 1983	7.41
SEP 14	9.87	23	9.20	17	8.58	28	4.35
OCT 01	6.21	DEC 22	8.29	FEB 02	7.54	APR 12	6.55

Table 2.—Water levels in selected wells—Continued

(B-1-1)27CAA-1. Alt. 4213.34

SEP 23, 1982	3.64	NOV 16, 1982	4.04	DEC 22, 1982	4.77	FEB 02, 1983	4.47
OCT 21	4.61	DEC 06	5.31	JAN 14, 1983	4.84	MAR 07	3.96

(B-1-1)27DDC-1. Alt. 4215

FEB 02, 1982	7.5	JUN 15, 1982	6.2	SEP 29, 1982	3.0	FEB 04, 1983	4.8
MAR 02	7.0	JUL 13	7.0	OCT 14	4.3	25	4.9
APR 09	5.2	AUG 09	7.0	NOV 16	5.8	MAR 10	4.6
30	5.6	25	7.3	DEC 27	4.8	29	2.9
MAY 25	6.2	SEP 16	5.0	JAN 21, 1983	5.5	APR 13	3.2

(B-1-1)28DCA-1. Alt. 4215

FEB 02, 1982	4.5	JUL 13, 1982	4.2	SEP 29, 1982	2.2	FEB 04, 1983	2.7
MAR 02	4.4	28	4.75	OCT 14	3.0	25	2.9
APR 09	2.5	AUG 09	4.3	NOV 16	4.6	MAR 10	2.7
30	3.5	25	4.7	DEC 27	2.6	29	1.8
MAY 25	3.4	SEP 16	4.1	JAN 21, 1983	3.2	APR 13	2.5
JUN 15	3.9						

(B-1-1)32CCD-1. Alt. 4220

OCT 05, 1982	1.03	NOV 16, 1982	4.47	FEB 01, 1983	3.70	MAR 28, 1983	2.93
21	4.53	DEC 22	3.67	MAR 07	3.93	APR 12	3.77
27	4.07	JAN 14, 1983	4.27				

(B-1-1)32DCA-1. Alt. 4220

FEB 02, 1982	6.3	APR 30, 1982	5.2	JUL 13, 1982	5.6	SEP 14, 1982	6.68
MAR 02	6.2	MAY 25	5.4	AUG 09	5.8	16	6.3
APR 09	5.0	JUN 15	5.4	25	6.2		

(B-1-1)35CBA-1. Alt. 4220

FEB 02, 1982	10.3	JUL 13, 1982	9.9	OCT 14, 1982	8.1	FEB 25, 1983	9.0
MAR 02	10.0	AUG 09	9.6	NOV 16	9.1	MAR 10	9.0
APR 09	8.9	25	9.9	DEC 27	9.3	29	7.2
30	9.1	SEP 16	8.5	JAN 21, 1983	9.3	APR 13	7.9
MAY 25	9.3	29	4.9	FEB 04	8.9		

(B-1-1)35DCB-1. Alt. 4221.40

AUG 25, 1982	8.00	OCT 21, 1982	6.44	DEC 22, 1982	6.20	MAR 07, 1983	5.52
SEP 14	7.92	NOV 16	6.69	JAN 14, 1983	6.42	28	3.73
OCT 01	5.83	23	6.85	FEB 02	6.04	APR 12	4.49

Table 2.—Water levels in selected wells—Continued

(B-1-2)31AAA-1. Alt. 4215

OCT 01, 1982	2.40	DEC 22, 1982	0.00	FEB 02, 1983	0.16	APR 12, 1983	0.00
NOV 16	2.08	JAN 14, 1983	1.24	MAR 07	0.00		

(B-1-2)34AAB-1. Alt. 4219

SEP 23, 1982	2.99	NOV 08, 1982	0.88	FEB 01, 1983	0.16	MAR 28, 1983	0.00
OCT 01	0.00	DEC 22	0.01	MAR 07	0.30	APR 12	0.00
21	1.28	JAN 14, 1983	1.15				

(B-1-2)36ABC-1. Alt. 4220

FEB 02, 1982	8.5	AUG 09, 1982	7.6	OCT 14, 1982	7.1	FEB 25, 1983	6.5
MAR 02	8.3	25	7.3	NOV 16	8.1	MAR 07	6.44
APR 09	7.2	SEP 09	7.42	DEC 06	7.28	10	6.2
30	7.5	16	7.1	27	7.0	28	5.10
MAY 25	7.6	29	6.0	JAN 21, 1983	7.1	29	5.2
JUN 15	7.3	OCT 04	6.52	FEB 04	6.1	APR 13	6.0
JUL 13	7.6						

(C-1-1) 1BDD-1. Alt. 4237

FEB 02, 1982	8.0	APR 30, 1982	7.1	JUL 13, 1982	7.9	SEP 16, 1982	7.4
MAR 02	8.0	MAY 25	7.8	AUG 09	7.7	29	6.8
APR 09	7.1	JUN 15	7.5	25	7.4	OCT 14	7.6

(C-1-1) 2DCA-2. Alt. 4222.18

JUL 21, 1982	8.33	NOV 18, 1982	8.23	FEB 02, 1983	8.18	MAR 28, 1983	7.22
SEP 14	7.79	DEC 22	8.21	MAR 07	7.98	APR 12	7.28
OCT 01	7.52	JAN 07, 1983	8.23				

(C-1-1) 3DAB-1. Alt. 4225

FEB 02, 1982	3.5	MAY 25, 1982	4.0	NOV 16, 1982	4.0	FEB 25, 1983	3.2
MAR 02	4.0	JUN 15	4.0	DEC 27	2.7	MAR 11	3.4
APR 09	2.2	JUL 13	3.9	JAN 21, 1983	3.8	29	1.3
30	3.7	OCT 14	2.9	FEB 04	2.9	APR 13	3.2

(C-1-1) 4DDB-1. Alt. 4221.23

AUG 12, 1982	2.26	OCT 21, 1982	0.61	JAN 14, 1983	0.30	MAR 28, 1983	0.00
SEP 14	1.67	NOV 23	0.46	FEB 02	0.14	APR 12	0.10
OCT 01	0.33	DEC 23	0.13	MAR 07	0.02		

Table 2.--Water levels in selected wells--Continued

(C-1-1) 5DAB-1. Alt. 4227

FEB 02, 1982	3.1	JUN 15, 1982	DRY	SEP 29, 1982	2.9	FEB 25, 1983	[illegible]
MAR 03	3.2	JUL 13	4.9	NOV 16	3.7	MAR 10	[illegible]
APR 09	2.6	AUG 09	DRY	DEC 27	2.9	29	[illegible]
30	4.1	25	DRY	JAN 21, 1983	2.6	APR 13	[illegible]
MAY 25	4.6	SEP 16	5.2	FEB 04	2.8		

(C-1-1)11BAC-1. Alt. 4232.00

JUL 26, 1982	7.82	NOV 23, 1982	9.57	FEB 02, 1983	7.55	MAR 28, 1983	[illegible]
SEP 14	9.11	DEC 22	7.77	MAR 07	6.91	APR 12	[illegible]
OCT 01	8.47	JAN 07, 1983	7.71				

(C-1-1)11DBC-1. Alt. 4220

FEB 02, 1982	4.6	JUN 15, 1982	4.1	SEP 29, 1982	2.2	FEB 04, 1983	[illegible]
MAR 02	7.4	JUL 13	4.9	OCT 14	5.0	25	[illegible]
APR 09	3.6	AUG 09	4.8	NOV 16	4.6	MAR 11	[illegible]
30	4.1	25	5.0	DEC 29	4.0		
MAY 25	4.4	SEP 16	4.6	JAN 21, 1983	4.2		

(C-1-1)13ABD-1. Alt. 4230

FEB 02, 1982	8.5	APR 09, 1982	9.1	MAY 25, 1982	9.7	JUL 13, 1982	10
MAR 03	9.9	30	9.3	JUN 15	9.8		

(C-1-1)14CBA-1. Alt. 4230

FEB 02, 1982	5.5	JUN 15, 1982	5.2	SEP 29, 1982	3.1	FEB 04, 1983	4
MAR 03	5.3	JUL 13	5.1	OCT 14	4.4	25	4.
APR 09	4.3	AUG 09	5.0	NOV 16	5.4	MAR 10	4.
30	5.2	25	5.2	DEC 27	4.9	29	3.
MAY 25	5.3	SEP 16	5.0	JAN 21, 1983	5.0	APR 13	4.

(C-1-1)15CAA-1. Alt. 4231.05

JUN 04, 1982	4.40	NOV 01, 1982	3.74	MAR 04, 1983	4.17	MAR 28, 1983	3.
JUL 15	5.03	DEC 23	4.31	07	4.25	APR 05	2.
OCT 05	3.09	JAN 20, 1983	4.85	21	4.02	14	3.
26	4.26	FEB 02	4.19	24	4.01		

(C-1-1)24CDC-1. Alt. 4235

OCT 06, 1982	2.60	NOV 19, 1982	2.86	FEB 09, 1983	2.97	APR 06, 1983	2.
21	3.25	DEC 23	2.65	MAR 07	2.79	APR 14	2.
NOV 09	3.09						

Table 2.--Water levels in selected wells--Continued

(C-1-1)26DCA-1. Alt. 4239.75

AUG 26, 1982	5.85	OCT 21, 1982	6.10	FEB 02, 1983	4.96	MAR 30, 1983	4.17
SEP 09	8.45	NOV 07	5.69	MAR 07	4.91	APR 14	4.48
30	5.16	DEC 21	5.28				

(C-1-1)28CAB-1. Alt. 4244.77

JUL 08, 1982	2.33	SEP 12, 1982	3.04	OCT 25 1982	2.80	MAR 07, 1983	1.16
10	3.19	19	3.17	NOV 06	2.34	21	0.88
11	3.22	29	1.09	19	2.27	24	1.10
20	3.40	30	1.15	DEC 30	1.69	APR 14	1.54
25	3.42	OCT 02	1.25	JAN 14 1983	1.50		
AUG 24	3.45	05	1.90	FEB 02	1.49		
31	3.29	09	2.24	MAR 06	1.20		

(C-1-1)30ACA-1. Alt. 4249.19

AUG 12, 1982	4.94	OCT 21, 1982	4.21	DEC 22, 1982	4.15	MAR 07, 1983	4.29
SEP 30	1.78	NOV 19	4.85	FEB 07, 1983	4.17	APR 14	3.70

(C-1-1)31ABB-1. Alt. 4275.43

SEP 02, 1982	7.18	OCT 21, 1982	7.61	DEC 22, 1982	7.68	MAR 07, 1983	8.37
30	5.83	NOV 29	8.09	FEB 07, 1983	8.20	APR 14	8.29

(C-1-1)33DBC-2. Alt. 4262.60

OCT 23, 1981	5.81	OCT 04, 1982	3.25	DEC 29, 1982	5.65	MAR 07, 1983	6.48
FEB 10, 1982	6.05	NOV 10	5.55	FEB 02, 1983	5.96	APR 14	5.63
SEP 13	5.09						

(C-1-1)36DCB-1. Alt. 4253.30

SEP 16, 1982	4.60	NOV 29, 1982	4.19	FEB 04, 1983	3.35	APR 14, 1983	2.68
30	0.98	DEC 21	4.00	MAR 07	2.95		

(C-1-2) 1CDC-1. Alt. 4236.8

AUG 26, 1982	7.17	OCT 21, 1982	6.38	DEC 22, 1982	6.22	MAR 07, 1983	5.68
SEP 14	7.52	NOV 08	6.30	JAN 14, 1983	6.11	30	4.04
OCT 01	6.37	16	6.37	FEB 02	5.93	APR 12	3.88

(C-1-2)16DCC-1. Alt. 4226.1

SEP 02, 1982	2.88	OCT 21, 1982	1.28	DEC 22, 1982	0.00	MAR 07, 1983	0.00
14	3.75	NOV 08	0.12	JAN 14, 1983	0.35	APR 14	0.15
OCT 01	0.00	16	0.77	FEB 02	0.00		

Table 2.—Water levels in selected wells—Continued

(C-1-2)22CBB-2. Alt. 4233.3

JUL 30, 1982	3.05	OCT 21, 1982	3.49	DEC 22, 1982	2.79	MAR 07, 1983	3.
SEP 14	4.32	NOV 08	2.29	JAN 14, 1983	3.50	APR 14	3.
OCT 01	2.00	16	2.27	FEB 02	2.92		

(C-1-2)23DDD-1. Alt. 4249.24

AUG 19, 1982	7.14	OCT 21, 1982	2.54	DEC 22, 1982	2.81	MAR 07, 1983	5.
SEP 14	5.82	NOV 16	2.35	FEB 02, 1983	4.81	APR 14	4.
OCT 01	3.09						

(C-2-1) 3DBA-1. Alt. 4270

JUN , 1975	7.0(1)	NOV 10, 1982	6.39	FEB 02, 1983	6.60	APR 14, 1983	6.
OCT 26, 1981	6.90						

(C-2-1)12BDA-1. Alt. 4260

SEP 28, 1982	10.03	NOV 09, 1982	9.70	FEB 03, 1983	9.84	MAR 24, 1983	9.
SEP 30	9.35	DEC 23	9.87	MAR 07	8.64	APR 14	8.

(C-2-1)13DAD-1. Alt. 4332.38

JUL 30, 1975	19.0(1)	FEB 19, 1982	15.55	JUL 29, 1982	15.63	DEC 29, 1982	14
OCT 27, 1981	15.36	MAR 29	15.57	AUG 27	15.61	JAN 31, 1983	14
NOV 25	15.40	APR 29	15.32	SEP 29	14.81	FEB 09	14
DEC 30	15.48	MAY 27	15.23	OCT 28	13.55	MAR 30	14
JAN 28, 1982	15.55	JUN 30	15.57	NOV 29	13.90		

(C-2-1)14BDB-1. Alt. 4263.85

SEP 03, 1982	5.82	DEC 03, 1982	3.59	FEB 03, 1983	3.49	APR 14, 1983	3
30	4.35	DEC 21	3.55	MAR 07	3.40		

(C-2-1)15ABC-1. Alt. 4331.36

SEP 16, 1982	5.94	NOV 10, 1982	5.99	DEC 21, 1982	6.48	MAR 07, 1983	7
30	4.77	19	5.91	FEB 07, 1983	6.93	APR 14	6

(C-2-1)26ABB-1. Alt. 4278

SEP 20, 1982	6.35	NOV 18, 1982	3.22	FEB 03, 1983	2.97	APR 14, 1983	2
SEP 30	4.30	DEC 21	3.04	MAR 07	2.95		

(C-2-1)34DDA-3. Alt. 4347.1

SEP 01, 1982	4.45	NOV 29, 1982	5.52	JAN 17, 1983	5.66	MAR 07, 1983	5
30	2.66	DEC 21	5.54	FEB 02	5.60	APR 14	5

Table 2.--Water levels in selected wells--Continued

(C-2-1)35BAA-1. Alt. 4288.98

SEP 21, 1982	6.73	NOV 18, 1982	3.88	FEB 03, 1983	3.43	MAR 24, 1983	2.92
30	5.82	DEC 21	3.58	MAR 07	3.28	APR 14	3.13
NOV 15	4.02						

(C-2-1)35BAB-1. Alt. 4304.41

AUG 27, 1982	14.89	NOV 17, 1982	15.94	JAN 17, 1983	16.13	MAR 07, 1983	15.83
SEP 09	16.39	DEC 21	16.03	FEB 02	16.00	APR 14	15.77
30	15.62						

(C-2-1)35DCC-1. Alt. 4293.94

SEP 21, 1982	6.35	SEP 30, 1982	4.91	NOV 18, 1982	3.31	DEC 21, 1982	2.87

(C-2-2) 1BCD-1. Alt. 4510

NOV 12, 1981	9.63	OCT 01, 1982	9.26	FEB 02, 1983	6.72	APR 14, 1983	5.90
FEB 09, 1982	7.47	DEC 29	6.98				

(C-3-1) 1BBC-1. Alt. 4298.03

JUL 22, 1982	9.22	SEP 30, 1982	6.05	DEC 21, 1982	3.65	MAR 24, 1983	4.45
AUG 03	8.44	NOV 15	4.14	FEB 04, 1983	3.53	APR 14	3.33
SEP 09	8.79	NOV 30	3.81	MAR 07	3.49		

(C-3-1) 3ACC-1. Alt. 4391.28

AUG 03, 1982	7.76	OCT 07, 1982	7.48	DEC 21, 1982	9.50	MAR 07, 1983	10.90
SEP 14	7.73	NOV 15	8.85	JAN 14, 1983	10.07	MAR 24	10.70
30	7.16	29	9.17	FEB 02	10.32	APR 14	10.70

(C-3-1)12CCB-2. Alt. 4324.55

AUG 27, 1982	6.55	SEP 30, 1982	2.54	NOV 18, 1982	3.20	MAR 07, 1983	2.46
SEP 14	5.72	OCT 04	3.12	DEC 21	1.61	APR 14	2.82

(C-3-1)14ACC-1. Alt. 4389.16

AUG 17, 1982	7.07	SEP 14, 1982	8.53	SEP 30, 1982	9.83	OCT 07, 1982	10.25

(C-3-1)25CAC-1. Alt. 4409.0

AUG 04, 1982	5.52	OCT 07, 1982	6.26	DEC 21, 1982	8.48	MAR 07, 1983	8.19
SEP 14	7.08	NOV 15	7.63	FEB 04, 1983	7.81	APR 14	8.71
30	5.32	30	8.25				

Table 2.--Water levels in selected wells--Continued

(C-3-1)34AAA-1. Alt. 4410.76

AUG 05, 1982	8.45	OCT 07, 1982	7.87	DEC 21, 1982	8.36	MAR 07, 1983	8.34
SEP 14	8.26	NOV 15	8.26	JAN 17, 1983	8.47	APR 14	8.35
30	5.90	30	8.25	FEB 04	8.37		

(C-4-1)10ACD-1. Alt. 4382.32

OCT 13, 1982	0.80	DEC 21, 1982	0.10	MAR 07, 1983	0.32	APR 14, 1983	0.33
NOV 15	0.40	FEB 04, 1983	0.22				

(C-4-1)12CBB-1. Alt. 4470

SEP 09, 1982	2.05	NOV 15, 1982	2.17	DEC 21, 1982	2.62	MAR 07, 1983	3.59
30	1.05	30	1.93	FEB 04, 1983	3.78	APR 14	2.67

(D-1-1) 7AAA-1. Alt. 4279.5

AUG 20, 1982	11.16	NOV 12, 1982	10.85	FEB 04, 1983	9.65	APR 12, 1983	9.33
OCT 01	7.59	DEC 22	10.22	MAR 07	10.19		

(D-1-1) 9ACB-1. Alt. 4665

FEB 02, 1982	DRY	JUN 15, 1982	DRY	SEP 29, 1982	DRY	FEB 04, 1983	14.1
MAR 02	DRY	JUL 13	DRY	OCT 14	DRY	25	14.7
APR 09	DRY	AUG 09	DRY	NOV 16	DRY	MAR 21	14.1
30	DRY	25	DRY	DEC 27	14.7	29	14.1
MAY 25	DRY	SEP 16	14.0	JAN 21, 1983	14.1	APR 13	14.0

(D-1-1)17BBB-1. Alt. 4275

FEB 01, 1982	4.9	JUN 15, 1982	4.1	SEP 29, 1982	2.0	JAN 21, 1983	4.1
MAR 02	4.8	JUL 13	4.1	OCT 01	2.70	FEB 04	4.4
APR 09	3.9	AUG 09	4.5	14	2.8	25	3.9
30	4.2	25	4.0	NOV 16	4.3	MAR 29	3.0
MAY 25	4.3	SEP 16	3.7	DEC 27	4.3	APR 13	3.2

(D-1-1)18DAD-1. Alt. 4288.1

AUG 20, 1982	7.58	DEC 03, 1982	8.40	JAN 07, 1983	8.46	MAR 07, 1983	8.42
OCT 01	7.85	22	8.42	FEB 04	8.36	APR 12	8.15

(D-1-1)20AAB-1. Alt. 4400

SEP 20, 1974	12.0(1)	FEB 18, 1983	18.06	MAR 07, 1983	18.00	APR 12, 1983	17.60
DEC 29, 1982	18.25						

Table 2.—Water levels in selected wells—Continued

(D-1-1)30AAA-1. Alt. 4275

FEB 02, 1982	3.7	JUN 15, 1982	3.1	SEP 29, 1982	1.8	FEB 04, 1983	2.9
MAR 02	3.6	JUL 13	3.8	OCT 14	3.1	25	3.1
APR 09	2.1	AUG 09	3.8	NOV 16	3.7	MAR 21	2.2
30	3.1	AUG 25	3.9	DEC 27	3.1	29	2.0
MAY 25	2.9	SEP 16	3.5	JAN 21, 1983	3.0	APR 13	2.8

(D-1-1)30BBB-1. Alt. 4248.67

JUL 29, 1982	5.07	OCT 04, 1982	4.75	OCT 20, 1982	5.14	JAN 30, 1983	4.44
SEP 08	6.84	05	4.75	NOV 07	4.93	FEB 04	4.63
30	3.85	06	4.84	12	4.89	MAR 07	4.73
OCT 01	4.07	08	4.85	DEC 09	4.72	APR 06	4.38
02	4.50	12	5.01	JAN 10, 1983	4.90	12	4.63
03	4.65	17	5.13	22	4.90		

(D-1-1)31DBA-1. Alt. 4277.26

AUG 10, 1982	4.79	NOV 12, 1982	6.94	JAN 12, 1983	7.21	MAR 07, 1983	6.77
OCT 01	5.64	DEC 23	7.09	FEB 04	6.80	APR 12	6.26

(D-2-1) 8BBA-1. Alt. 4285.04

AUG 06, 1982	4.92	NOV 29, 1982	4.58	JAN 12, 1983	4.50	MAR 07, 1983	4.30
OCT 01	3.48	DEC 23	4.33	FEB 04	4.30	APR 12	4.15

(D-2-1)17CAA-1. Alt. 4361.89

AUG 10, 1982	10.95	NOV 29, 1982	9.87	FEB 04, 1983	9.08	APR 14, 1983	8.93
OCT 01	7.66	DEC 21	9.31	MAR 07	9.12		

(D-2-1)19DAD-1. Alt. 4400

JUL 28, 1980	29.51	MAR 26, 1981	DRY	OCT 27, 1981	34.70	APR 28, 1982	DRY
AUG 27	28.25	APR 30	DRY	NOV 25	DRY	MAY 27	DRY
SEP 29	29.82	MAY 29	36.50	DEC 30	DRY	JUN 30	DRY
OCT 28	31.82	JUN 30	DRY	JAN 28, 1982	DRY	JUL 29	34.53
DEC 30	DRY	JUL 31	34.14	FEB 19	DRY	AUG 27	33.86
JAN 29, 1981	DRY	AUG 28	33.45	MAR 29	DRY	NOV 29	35.14
FEB 19	DRY	SEP 29	33.09				

Table 2.—Water levels in selected wells—Continued

(D-2-1)20CAC-2. Alt. 4405

JUL 28, 1980	5.73	APR 30, 1981	8.66	JAN 28, 1982	7.69	OCT 28, 1982	6.69
AUG 27	5.94	MAY 29	7.59	FEB 19	8.20	NOV 29	7.60
SEP 29	6.76	JUN 30	6.82	MAR 29	8.17	DEC 06	7.52
OCT 28	7.35	JUL 31	6.98	APR 28	7.70	29	7.64
NOV 26	7.24	AUG 28	6.99	MAY 27	7.67	JAN 31, 1983	7.71
DEC 30	8.17	SEP 29	7.14	JUN 30	7.17	FEB 09	8.05
JAN 29, 1981	8.54	OCT 27	7.43	JUL 29	8.10	MAR 30	7.43
FEB 19	8.74	NOV 25	7.53	AUG 27	7.35		
MAR 26	8.92	DEC 30	7.54				

(D-2-1)20DAA-1. Alt. 4410

OCT 30, 1979	7.41	SEP 29, 1980	7.01	JUN 30, 1981	6.80	MAR 29, 1982	7.56
JAN 31, 1980	9.08	OCT 28	7.66	JUL 31	6.63	APR 28,	7.38
FEB 19	9.00	NOV 26	8.25	AUG 28	6.42	MAY 27	6.88
MAR 26	7.72	DEC 30	8.74	SEP 29	6.86	JUN 30	6.98
APR 29	7.85	JAN 29, 1981	9.46	OCT 27	7.26	JUL 29	6.68
MAY 27	7.04	FEB 19	9.85	NOV 25	7.68	AUG 27	7.14
JUN 24	6.43	MAR 26	10.22	DEC 30	8.23	DEC 06	7.87
JUL 28	6.59	APR 30	9.36	JAN 28, 1982	7.86	29	7.90
AUG 27	5.28	MAY 29	8.07	FEB 19	7.78		

(D-2-1)22ACB-1. Alt. 4520.62

JAN 29, 1979	2.84	DEC 27, 1979	2.88	NOV 26, 1980	2.44	FEB 19, 1982	2.60
FEB 22	2.46	JAN 31, 1980	2.96	JAN 29, 1981	2.83	APR 28	2.60
MAR 28	2.82	FEB 19	1.92	APR 30	3.04	MAY 27	2.78
APR 27	3.01	MAR 26	2.24	MAY 29	2.58	JUN 30	3.08
MAY 30	2.77	APR 29	2.94	JUN 30	3.18	JUL 29	2.58
JUN 29	2.98	MAY 27	3.00	JUL 31	3.15	AUG 27	3.26
JUL 30	3.28	JUN 24	3.34	AUG 28	3.13	OCT 28	2.00
AUG 30	3.36	JUL 28	3.22	SEP 29	3.28	JAN 31, 1983	2.15
SEP 28	3.30	AUG 27	2.88	OCT 27	2.92	FEB 16	2.29
OCT 30	2.89	SEP 29	2.96	DEC 30	2.80	MAR 30	1.61
NOV 28	2.99	OCT 28	2.57	JAN 28, 1982	2.29		

(D-2-1)22ADA-1. Alt. 4595

OCT 30, 1979	15.54	AUG 27, 1980	15.02	APR 30, 1981	20.47	DEC 30, 1981	DRY
JAN 31, 1980	17.68	SEP 29	13.40	MAY 29	24.66	JAN 28, 1982	DRY
FEB 19	11.48	OCT 28	13.53	JUN 30	DRY	FEB 19	DRY
MAR 26	12.33	NOV 26	13.17	JUL 31	DRY	MAR 29	DRY
APR 29	16.68	DEC 30	13.42	AUG 28	DRY	APR 28	DRY
MAY 27	15.54	JAN 29, 1981	24.19	SEP 29	DRY	JUL 29	DRY
JUN 24	16.48	FEB 19	23.56	OCT 27	DRY	AUG 27	DRY
JUL 28	16.77	MAR 26	DRY	NOV 25	DRY		

Table 2.—Water levels in selected wells—Continued

(D-2-1)22BDA-1. Alt. 4515

MAY 29, 1981	5.07	OCT 27, 1981	4.60	JUN 30,1982	4.79	NOV 29, 1982	5.44
JUN 30	5.78	NOV 25	4.35	JUL 29	4.54	DEC 29	4.98
JUL 31	5.92	DEC 30	4.21	AUG 27	5.00	JAN 31, 1983	4.89
AUG 28	5.62	JAN 28, 1982	4.46	OCT 28	4.45	FEB 09	5.30
SEP 29	5.01	APR 28	4.65				

(D-3-1) 5CDB-1. Alt. 4560

JUL 15, 1982	5.63	SEP 30, 1982	4.53	FEB 03, 1983	7.13	APR 14, 1983	7.02
SEP 14	5.55	DEC 02	6.18	MAR 08	7.39		

(D-3-1) 6BCD-1. Alt. 4426.91

AUG 05, 1982	14.11	OCT 04, 1982	12.37	JAN 12, 1983	15.63	MAR 24, 1983	16.92
SEP 14	13.30	NOV 29	14.47	FEB 04	16.16	APR 14	16.76
30	12.50	DEC 21	15.05	MAR 07	16.71		

(D-3-1) 7CCB-1. Alt. 4399.76

JUL 15, 1982	14.41	SEP 30, 1982	6.00	NOV 01, 1982	12.02	DEC 02, 1982	11.03
SEP 09	15.05	OCT 07	10.81				

(D-3-1)31CDA-1. Alt. 4437.9

JUL 26, 1982	3.91	NOV 15, 1982	5.81	JAN 12, 1983	5.89	MAR 07, 1983	5.43
SEP 08	5.01	30	5.83	FEB 04	5.61	APR 14	5.00
30	2.09	DEC 21	5.49				

(D-3-1)32AAA-1. Alt. 4510.33

AUG 18, 1982	10.66	DEC 06, 1982	10.12	JAN 12, 1983	10.24	MAR 07, 1983	10.27
SEP 30	9.90	21	10.21	FEB 04	10.30	APR 14	10.15
OCT 07	10.04						

(D-3-1)32CDA-1. Alt. 4487

DEC 06, 1982	7.16	FEB 04, 1983	8.36	MAR 07, 1983	8.45	APR 14, 1983	8.51
21	7.78						

1 Water-level measurement made by well driller.

TABLE 3.—CHEMICAL ANALYSES OF INORGANIC
[°C, degrees Celsius; UMHOS/CM AT 25°C,
MG/L, milligrams per liter; UG/L,

LOCATION	DATE OF SAMPLE	WATER TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (UMHOS/CM AT 25°C)	PH (UNITS)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY LAB (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)
(B-1-1) 9ADC-1	83-02-01	7.0	6590	8.0	20	28	1500	54	1250	240	1300	5.3
26BAD-1	83-02-07	9.0	2530	7.0	390	80	110	77	424	980	110	5.3
26CAA-1	83-01-17	11.5	1200	7.5	42	110	50	7.8	428	150	72	1.1
32CCD-1	83-02-01	8.0	8590	7.6	—	—	—	—	—	—	—	—
35DCB-1	83-02-02	11.0	3660	7.6	26	320	440	42	1290	600	160	1.1
(B-1-2) 34AAB-1	83-02-01	10.0	14400	7.8	—	—	—	—	—	—	—	—
(C-1-1) 2DCA-1	83-01-07	12.5	2320	6.9	470	50	60	8.1	373	990	67	.7
4DDB-1	83-02-02	7.5	4370	7.7	—	—	—	—	—	—	—	—
11BAC-1	83-01-07	10.5	10900	7.1	310	660	1600	200	948	3900	1700	.6
15CAA-1	82-10-26	—	3410	7.2	—	—	—	—	—	—	—	—
24CDC-1	83-02-04	7.0	3220	7.1	—	—	—	—	—	—	—	—
26DCA-1	83-02-02	8.0	4230	7.4	170	250	430	81	439	950	650	1.1
28CAB-1	83-02-02	12.0	1030	8.0	40	34	120	20	185	95	170	.7
31ACD-1	83-02-07	9.5	4640	7.6	51	120	920	44	1050	670	940	1.6
31ADD-1	83-02-07	10.5	1990	7.4	90	66	230	37	416	100	260	.7
(C-1-1) 12BDA-1	83-02-03	11.0	2310	7.3	—	—	—	—	—	—	—	—
14BDB-1	83-02-03	9.0	2310	6.3	180	110	180	15	103	910	210	3.1
15ABC-1	83-02-07	10.5	2240	7.1	190	80	180	25	325	480	290	.9
26ABB-1	83-02-03	7.0	8960	7.3	—	—	—	—	—	—	—	—
34DDA-3	83-01-17	10.0	3450	7.1	260	140	340	17	426	510	520	.5
35BAA-1	83-02-03	9.5	3160	6.9	390	140	190	17	282	1200	300	2.9
35BAB-1	83-01-17	11.5	2500	7.2	170	87	150	12	332	450	370	.4
(C-1-1) 1BBC-1	83-02-04	10.5	2340	6.7	200	110	200	32	392	100	30	.9
2ACC-1	83-01-14	15.0	2910	7.2	230	72	140	26	455	690	110	.4
24AAA-1	83-01-17	12.5	3470	7.1	420	98	260	33	316	1300	140	.7
(C-1-1) 18CAD-1	83-01-07	12.0	1460	7.0	160	41	100	4.5	313	220	107	.1
21DBA-1	83-11-12	12.0	2040	7.1	160	73	180	13	443	170	350	.6
(C-2-1) 8BBA-1	83-01-12	11.5	2120	7.0	210	96	140	9.9	405	550	210	.4
(C-3-1) 5CCB-1	83-02-04	7.0	395	7.6	—	—	—	—	—	—	—	—
6BCB-1	83-01-12	14.5	1560	7.3	95	63	150	14	322	180	230	.8
31CDA-1	83-01-12	10.5	2830	7.3	140	130	270	25	266	530	420	1.3
32AAA-1	83-01-12	11.0	760	6.8	62	22	66	3.4	180	100	63	<.1
Recommended maximum concentration for domestic water supply (U.S. Environmental Protection Agency, 1977, 1980)		—	—	5.0-9.0	—	—	—	—	—	—	—	—

CONSTITUENTS IN WATER FROM SELECTED WELLS
microhms per centimeter at 25° Celsius;
micrograms per liter]

NITROGEN, NITRATE DISSOLVED (MG/L AS N)	NITROGEN, NITRITE DISSOLVED (MG/L AS N)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, RESIDUE AT 180 DEG. C DISSOLVED (MG/L)	HARDNESS (MG/L AS CACO3)	ARSENIC DISSOLVED (UG/L AS AS)	CADMIUM DISSOLVED (UG/L AS CD)	CHROMIUM, DISSOLVED (UG/L AS CR)	COPPER, DISSOLVED (UG/L AS CU)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)
18.0	.850	14	4240	170	—	—	—	—	540	—	90	—
0.70	<.020	50	2150	1300	60	<1	<10	9	540	1	60	<.1
2.7	<.020	24	724	560	—	—	—	—	<3	—	1	—
5.0	<.020	—	—	—	360	—	—	—	—	—	—	—
86.0	.020	30	2670	1400	—	—	—	—	10	—	10	—
<0.10	<.020	—	—	—	3	—	—	—	—	—	—	—
13.0	.030	19	1880	1400	<1	<1	10	2	30	2	510	<.1
0.10	<.020	—	—	—	130	—	—	—	—	—	—	—
<0.10	<.020	31	8920	3300	—	—	—	—	190	—	560	—
—	—	—	—	—	—	—	—	—	—	—	—	—
6.00	.020	—	—	—	4	—	—	—	—	—	—	—
51	<.020	31	3040	1500	44	<1	10	9	30	<1	30	<.1
0.10	<.020	24	566	240	40	<1	<10	<1	130	<1	100	<.1
5.80	.020	31	3150	510	110	<1	<10	10	20	<1	100	<.1
5.50	.020	39	1330	580	16	<1	10	3	30	1	10	<.1
5.5	<.020	—	—	—	2	—	—	—	—	—	—	—
0.45	<.020	27	1750	900	50	<1	<10	<1	37000	<1	460	<.1
5.6	<.020	32	1520	800	8	<1	10	2	30	<1	<10	<.1
8.6	<.020	—	—	—	60	—	—	—	—	—	—	—
14	<.020	33	2480	1200	6	<1	10	5	40	<1	30	<.1
0.10	<.020	17	2550	1600	10	200	10	8	1900	46	1800	<.1
1.70	.020	43	1660	780	17	<1	10	9	20	<1	30	<.1
[illegible]	<.020	39	1510	950	31	<1	<10	<1	1100	1	310	<.1
25.0	.540	30	1690	870	99	<1	10	2	4100	<1	670	<.1
4.0	<.020	37	2210	1500	—	—	—	—	31	—	10	—
7.9	<.020	14	778	570	<1	<1	<10	2	<3	1	3	<.1
0.22	<.020	22	1270	700	—	—	—	—	30	—	180	—
0.19	<.020	21	1510	920	4	<1	<10	1	850	<1	530	<.1
2.9	<.020	—	—	—	5	—	—	—	—	—	—	—
4.3	<.020	27	966	500	14	<1	<10	4	18	14	4	<.1
21	<.020	49	1960	880	—	—	—	—	40	—	10	—
4.5	<.020	13	490	250	—	—	—	—	17	—	3	—
10	10	—	—	—	50	10	50	1000	300	50	50	0.2

TABLE 4.—CHEMICAL ANALYSES OF ORGANIC CONSTITUENTS IN WATER FROM SELECTED WELLS
[UG/L, micrograms per liter]

LOCATION	DATE OF SAMPLE	CHLOROETHYLENE TOTAL (UG/L)	BENZENE TOTAL (UG/L)	BROMOFORM TOTAL (UG/L)	CARBON-TETRACHLORIDE TOTAL (UG/L)	CHLOROBENZENE TOTAL (UG/L)	CHLORODIBROMOMETHANE TOTAL (UG/L)	CHLOROETHANE TOTAL (UG/L)	CHLOROFORM TOTAL (UG/L)	DICHLOROBROMOMETHANE TOTAL (UG/L)	DICHLORODIFLUOROMETHANE TOTAL (UG/L)
(B-1-1)26BAD-1	83-02-07	<1.0	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
32CCD-1	83-02-01	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0
(B-1-2)34AAB-1	83-02-01	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
(C-1-1) 4DDB-1	83-02-02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
24CDC-1	83-02-04	11	<2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
26DCA-1	83-02-02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
28CAB-1	83-02-02	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0
30ACA-1	83-02-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
31ABB-1	83-02-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
(C-2-1)12BDA-1	83-02-03	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
14BDB-1	83-02-03	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8.0	<1.0	<1.0
15ABC-1	83-02-07	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
26ABB-1	83-02-03	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.0	<1.0	<1.0
35BAA-1	83-02-03	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
(C-3-1) 1BBC-1	83-02-04	<1.0	400	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
(D-3-1) 5CDB-1	83-02-04	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

LOCATION	1,1-DICHLOROETHANE TOTAL (UG/L)	1,2-DICHLOROETHANE TOTAL (UG/L)	1,1-DICHLOROETHYLENE TOTAL (UG/L)	TETRACHLOROETHYLENE TOTAL (UG/L)	TOLUENE TOTAL (UG/L)	TRICHLOROTRIFLUOROETHANE TOTAL (UG/L)	TRICHLOROFLUOROMETHANE TOTAL (UG/L)	VINYL CHLORIDE TOTAL (UG/L)	1,1,1-TRICHLOROETHANE TOTAL (UG/L)	1,1,2-TRICHLOROETHANE TOTAL (UG/L)	1,1,2-TRICHLOROTRIFLUOROETHANE TOTAL (UG/L)
(B-1-1)26BAD-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
32CCD-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
(B-1-2)34AAB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
(C-1-1) 4DDB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
24CDC-1	<1.0	<1.0	<1.0	3.0	<1.0	8.0	1.0	<1.0	<1.0	<1.0	<1.0
26DCA-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
28CAB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
30ACA-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
31ABB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
(C-2-1)12BDA-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
14BDB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
15ABC-1	<1.0	<1.0	<1.0	4.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
26ABB-1	<1.0	<1.0	<1.0	<1.0	<1.0	1.0	<1.0	<1.0	<1.0	<1.0	<1.0
35BAA-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
(C-1-1) 1BBC-1	<1.0	<1.0	<1.0	<1.0	8.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
(D-3-1) 5CDB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

LOCATION	1,1,2,2-TETRACHLOROETHANE TOTAL (UG/L)	1,1,2,2-TETRACHLOROETHANE TOTAL (UG/L)	1,2-DICHLOROETHANE TOTAL (UG/L)	1,2-DICHLOROBROMOETHANE TOTAL (UG/L)	1,2-DICHLOROPROPANE TOTAL (UG/L)	1-METHYL-2-PYRROLIDINONE TOTAL (UG/L)	PHENOLS (UG/L)
(B-1-1)26BAD-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8
32CCD-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	3
(B-1-2)34AAB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	35
(C-1-1) 4DDB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	190
24CDC-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	33
26DCA-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	32
28CAB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6
30ACA-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	6
31ABB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	5
(C-2-1)12BDA-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4
14BDB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	660
15ABC-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	7
26ABB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	10
35BAA-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	4
(C-3-1) 1BBC-1	<1.0	<1.0	11	<1.0	<1.0	<1.0	44
(D-3-1) 5CDB-1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	—

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Attachment VIII

Sampling Plan

STATE OF UTAH
SAMPLING PLAN

SAMPLING PLAN NO. 86-01
PREPARED FOR THIS SITE

GENERAL INFORMATION

NAME OF SITE: Vitro UMTRA Project / lower D&RGW's Roper Yard DATE PLAN PREPARED: 2/25/86

LOCATION: 500 W. 3300 S., SLC, Utah PREPARED BY (Signature/Title): Jim Salmon / Jay Hebly / Michelle Dayon / Radiation Cons.

APPROVED BY: Jim Salmon Date:

WORK OBJECTIVES: monitoring groundwater on-site & in the vicinity of the Vitro UMTRA project and D&RGW's lower Roper Yard to determine what, if any, contamination levels ex.

SCOPE OF WORK (TYPE OF SAMPLING PROPOSED): sampling of existing wells and well points, surface water sampling (grab type), and sediment samples to be taken at surface water sampling points.

DATE OF PROPOSED WORK: 3/5,6,7/86 INFORMATION REVIEW: Complete ____ Preliminary ✓

SUMMARY OF OTHER DOCUMENTATION/GUIDANCE

SITE HEALTH/SAFETY PLAN PREPARED BY: Michelle Dayon Date: 2/25/86 Copy Attached: ✓

PERSONAL PROTECTION: Level of Protection: A ____ B ____ C ____ D ✓

QAPP TITLE: Vitro UMTRA / D&RGW lower Roper Yard Date: 2/25/86 Copy Attached: NO

~~WORKPLAN TITLE:~~ Ground Water Monitoring Date: 5/5/86 Copy Attached: NO

~~OTHER PLANS/GUIDANCE:~~ Date: Copy Attached:

Date: Copy Attached:

Date: Copy Attached:

COORDINATION WITH LOCAL HEALTH OFFICIALS

LOCAL HEALTH OFFICIAL CONTACTED (Name/Title): Ted Diamant / Salt Lake County Bur. S&H Waste DATE: 2/25/86

PHONE NO: 530 7500 CONTACTED BY (Name/Title): Jim Salmon / Project Officer

LOCAL HEALTH REP. WILL ACCOMPANY SAMPLING EXPEDITION: Yes ✓ No ____

SPECIAL CONSIDERATIONS (Describe):

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SITE/SITE ASSESSMENT
SAS036

SITE/WASTE CHARACTERISTICS

WASTE TYPE(S): Liquid ✓ Solid ✓ Sludge ✓ Gas ____

CHARACTERISTIC(S): Corrosive ____ Ignitable ____ Radioactive ____ Volatile ____ Toxic ____

Reactive ____ Unknown ✓ Other (describe): ____

SITE PERIMETER ESTABLISHED: Yes ✓ No ____ ZONE(S) OF CONTAMINATION IDENTIFIED: Yes ____ No ✓

MAP OR SKETCH OF SITE ATTACHED: ✓ SAMPLING LOCATIONS SHOWN ON MAP: ✓

SAMPLING TEAM ORGANIZATION AND RESPONSIBILITIES

Team Member (Name/Discipline)	Responsibility
Jim Salmon	Project Officer
Gerald Ripley	Supervisor
Joel Hebdon	Hydrologist / sampling operations
Michelle Doyon	QA Officer / sampler and recorder
Ted Diamant	observer and recorder
[illegible]	Sampler + [illegible]

Others Present (Name/Title)	Representing
Rick Rinaldi / [illegible]	[illegible]

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SITE/SITE ASSESSMENT

SAS039

SAMPLING PLAN (Continued)

Surface Water Samples

SAMPLING OBJECTIVES/RATIONALE (Describe): monitoring groundwater onsite & in the vicinity of D&RGW's Lower Roper Yard and the Vitro UMTRA Project to det. contamination levels

LOCATION OF SAMPLES (Show on Map; Describe): Shown on map.

SAMPLE COLLECTION METHOD (Describe): biased sampling of worst case based upon visual inspection.

SPECIAL PROCEDURES/HANDLING (Preservation, Temperatures, Filtering, etc.): No filtering. All samples preserved and shipped @ 4°C in locked ice chests.

PROCEDURES FOR DECONTAMINATION BETWEEN SAMPLES: All sampling equipment decontaminated by alconox wash & DI rinse between samples as described in BSHW SOP.

STANDARD OPERATING PROCEDURE(S):

Title: Basic Sol & Haz. Waste QAPP Date/Doc. No.: 1463

Title: Date/Doc. No.:

Title: Date/Doc. No.:

NUMBER OF SAMPLES:

Surface Water Samples	= 8	X (Splits) ___	= 8	Includes Samples for Radioactivity.
Blind Duplicates	= 1	X (Splits) ___	= 1	
Field Blanks	= 1	X (Splits) ___	= 1	
Field Spikes	= ___	X (Splits) ___	= ___	
		TOTAL	___	

NS use

CATEGORIES OF PARAMETERS/ANALYSES (Check Those That Apply):

(1) Total Metals ✓
(2) General Chemistry ✓
- Dissolved Metals ___
- TDS ___
- Specific Conductance ✓
- Nutrients ___
- Anions ___
- Oil and Grease ✓
- Coliform/Wastewater ___
- DO/BOD/COD ___

(3) Organics ✓
- Organics (Pesticides) ___
- Organics (Solvents) ___
- Organics (Unknown) ✓

(4) Radioactivity ✓
(5) EP Toxicity ___
(6) In Situ Physical Characteristics ✓
- Temperature ✓
- pH ___
- Specific Conductance ✓

Other (Describe): Two surface water samples ___

REMARKS: From flowing water (flood or drain overflow). Other surface water samples will be within the 6 standing water or pools that may be present - see map for "sludge pond"

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SITE/SITE ASSESSMENT SAS039

SAMPLING PLAN (Continued)

Sediment Samples

SAMPLING OBJECTIVES/RATIONALE (Describe): sediment samples will be collected with each surface water sample.

LOCATION OF SAMPLES (Show on Map; Describe): shown on map

SAMPLE COLLECTION METHOD (Describe): Sample put in glass mason jar directly, with proper lidding

SPECIAL PROCEDURES/HANDLING (Preservation, Temperatures, Filtering, etc.): Samples collected in SHK prepared bottles and kept @ 4°C in locked ice chest with water samples.

PROCEDURES FOR DECONTAMINATION BETWEEN SAMPLES: AL(CNO) X, tap water (initial) Rinse w 3 De-ionized Rinses, (DS before).

STANDARD OPERATING PROCEDURE(S):

Title: Box Sampling with Dipper Date/Doc. No.: [illegible]

Title: Date/Doc. No.:

Title: Date/Doc. No.:

NUMBER OF SAMPLES:

Sediment Samples	= 8	X (Splits) ___	= 8	
Blind Duplicates	= 1	X (Splits) ___	= 1	
Field Blanks	= 1	X (Splits) ___	= 1	
Field Spikes	= ___	X (Splits) ___	= ___	
		TOTAL	___	

CATEGORIES OF PARAMETERS/ANALYSES (Check Those That Apply):

(1) Total Metals ✓
(2) General Chemistry ✓
- Dissolved Metals ___
- TDS ___
- Specific Conductance ___
- Nutrients ___
- Anions ___
- Oil and Grease ✓
- Californ/Wastewater ___
- DO/BOD/COD ___

(3) Organics ✓
- Organics (Pesticides) ___
- Organics (Solvents) ___
- Organics (Unknown) ✓

(4) Radioactivity ✓
(5) EP Toxicity ___
(6) In Situ Physical Characteristics ___
- Temperature ___
- pH ___
- Specific Conductance ___

Other (Describe): When surface water sample is taken, a sediment is taken also.

REMARKS: Same as surface water comments.

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SITE/SITE ASSESSMENT SAS039

SAMPLING PLAN (Continued)

Groundwater Samples

SAMPLING OBJECTIVES/RATIONALE (Describe): using existing wells, to monitor groundwater on-site and in the vicinity of Vitro UMTRA project / D&R W's Lower Roper Yard for contamination.

LOCATION OF SAMPLES (Show on Map; Describe): Shown on map

SAMPLE COLLECTION METHOD (Describe): Wells evacuated 2 casing volumes with stainless steel bailer, then bailer used to collect sample. Samples collected in SHL prepared bottles

SPECIAL PROCEDURES/HANDLING (Preservation, Temperatures, Filtering, etc.): All samples kept @ 4°C in locked ice chest. Filtering to be done by laboratory on total chemistry & total metal sample

PROCEDURES FOR DECONTAMINATION BETWEEN SAMPLES: Bailer Alconox washed and triple DI rinsed between samples.

STANDARD OPERATING PROCEDURE(S):

Title: Rev. Solid & Haz Waste Qual Date/Doc. No.: 1983

Title: Date/Doc. No.:

Title: Date/Doc. No.:

NUMBER OF SAMPLES:

Groundwater Samples	=	14	X (Splits) ___	=	14
Blind Duplicates	=	1	X (Splits) ___	=	1
Field Blanks	=	1	X (Splits) ___	=	1
Field Spikes	=	___	X (Splits) ___	=	___
TOTAL					___

Included w/ above

CATEGORIES OF PARAMETERS/ANALYSES (Check Those That Apply):

(1) Total Metals ✓
(2) General Chemistry ✓
- Dissolved Metals ___
- TDS ✓
- Specific Conductance ✓
- Nutrients ___
- Anions ✓
- Oil and Grease ✓
- Coliform/Wastewater ___
- DO/BOD/COD ___

(3) Organics ✓
- Organics (Pesticides) ___
- Organics (Solvents) ___
- Organics (Unknown) ✓

(4) Radioactivity ✓
(5) EP Toxicity ___
(6) In Situ Physical Characteristics ✓
- Temperature ✓
- pH ___
- Specific Conductance ___

Other (Describe): ___

REMARKS Groundwater Samples will only be taken from wells that have passed field inspection for construction, accessability, etc. It is highly that Eunoia wells will be still [illegible] no more than 14

SITE/SITE ASSESSMENT SAS039

SAMPLING PLAN (Continued)

N/A

Air Samples

SAMPLING OBJECTIVES/RATIONALE (Describe): _____

LOCATION OF SAMPLES (Show on Map; Describe): _____

SAMPLE COLLECTION METHOD (Describe): _____

SPECIAL PROCEDURES/HANDLING (Preservation, Temperatures, Filtering, etc.): _____

PROCEDURES FOR DECONTAMINATION BETWEEN SAMPLES: _____

STANDARD OPERATING PROCEDURE(S):

Title: _____ Date/Doc. No.: _____

Title: _____ Date/Doc. No.: _____

Title: _____ Date/Doc. No.: _____

NUMBER OF SAMPLES:

Samples	=	_____	X (Splits)	____	= _____
Blind Duplicates	=	_____	X (Splits)	____	= _____
Field Blanks	=	_____	X (Splits)	____	= _____
Field Spikes	=	_____	X (Splits)	____	= _____
		TOTAL			_____

CATEGORIES OF PARAMETERS/ANALYSES (Check Those That Apply):

(1) Total Metals ____

(2) General Chemistry ____

(3) Organics ____

(4) Radioactivity ____

(5) Ambient (Background) ____

(6) Meteorological Characteristics ____

(4) Other (Describe): _____

REMARKS: _____

SAMPLING PLAN (Continued)

Biota Samples N/A

SAMPLING OBJECTIVES/RATIONALE (Describe):

LOCATION OF SAMPLES (Show on Map; Describe):

SAMPLE COLLECTION METHOD (Describe):

SPECIAL PROCEDURES/HANDLING (Preservation, Preparation, Temperature, etc.):

PROCEDURES FOR DECONTAMINATION BETWEEN SAMPLES:

STANDARD OPERATING PROCEDURE(S):

Title: Date/Doc. No.:

Title: Date/Doc. No.:

Title: Date/Doc. No.:

NUMBER OF SAMPLES FOR LABORATORY ANALYSIS:

Biota Samples = ____ X (Splits) ____ = ____

Blind Duplicates = ____ X (Splits) ____ = ____

TOTAL ____

CATEGORIES OF PARAMETERS/ANALYSES (Check Those That Apply):

Metals (Specify):

Organics (Unknown) ____ Organics (Specify):

Nutrients ____ Radioactivity ____ Uptake Rates ____

Other (Describe):

REMARKS:

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SAMPLING PLAN (Continued)

Other Samples N/A

DESCRIBE TYPES OF SAMPLES: _____

SAMPLING OBJECTIVES/RATIONALE (Describe): _____

LOCATION OF SAMPLES (Show on Map; Describe): _____

SAMPLE COLLECTION METHOD (Describe): _____

SPECIAL PROCEDURES/HANDLING (Preservation, Temperatures, Filtering, etc.): _____

PROCEDURES FOR DECONTAMINATION BETWEEN SAMPLES: _____

STANDARD OPERATING PROCEDURE(S):

Title: _____ Date/Doc. No.: _____

Title: _____ Date/Doc. No.: _____

NUMBER OF SAMPLES:

Other Samples	=	____	X (Splits)	____	= ____
Blind Duplicates	=	____	X (Splits)	____	= ____
Field Blanks	=	____	X (Splits)	____	= ____
Field Spikes	=	____	X (Splits)	____	= ____
		TOTAL			____

CATEGORIES OF PARAMETERS/ANALYSES (Check Those That Apply):

(1) Total Metals ____

(2) General Chemistry ____

Dissolved Metals ____

TDS ____

Specific Conductance ____

Nutrients ____

Anions ____

Oil and Grease ____

Coliform/Wastewater ____

DO/BOD/COD ____

(3) Organics ____

Organics (Pesticides) ____

Organics (Solvents) ____

Organics (Unknown) ____

(4) Radioactivity ____

(5) EP Toxicity ____

(6) In Situ Physical Characteristics ____

Temperature ____

pH ____

Specific Conductance ____

Other (Describe): _____

REMARKS: _____

SAMPLING PLAN (Continued)

Sampling Summary

Not to exceed.

Total Source Characterization Samples	= [redacted] N/A	
Surface Water Samples	= 8	Include 8 Blanks (Field + Lab), + QA/QC duplicates & Replicates + Radiolog Samples.
Sediment Samples	= 8	
Soil Samples	= —	
Groundwater Samples	= 14	
Air Samples	= —	
Biota Samples	= —	
Other Samples	= —	
TOTAL SAMPLES	= 30	

LABORATORY COORDINATION

LABORATORY CONTACTED BY (Name): Michelle Doyon & Jim Salmon Date: 3/3/86

NAME/TITLE OF LABORATORY STAFF MEMBER CONTACTED: Wayne Pierce

DISCUSSED (Describe and Check Those That Apply):

Number of Samples: ✓ 30 ✓

Laboratory Procedures Level: A ✓ B ___ ✓

Type of Samples (Water, Soil, etc.): groundwater, surface water, and sediment samples ✓

Types of Analyses Needed (Parameters and Methods): total metals, radiologics, total chemistry, and priority pollutant scan ✓

Projected Date Samples Will Arrive at Laboratory: 3/5,6,7/86 ✓

Projected Turnaround Time at Lab (Date that Results Will be Available): 4/7/86 ✓

Other Topics (Describe): Wayne Pierce, Charles Walker at State Health lab will coordinate with J. Salmon for performance audits, any questions or problems that occur.

REMARKS:

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SITE ASSESSMENT SASOB3

CHAIN-OF-CUSTODY CHECKLIST

CHAIN-OF-CUSTODY PROCEDURES LEVEL (Check Applicable Level): A ✓ B ____

RATIONALE: Samples are for site characterization and detection of release for CERCLA site inspection.

Chain-of-Custody Documents Checklist

Check	Chain-of-Custody Document	Estimated Number Needed
✓	Bound Field Logs	1
✓	Sample Bottle/Container Labels	1 /sample container
✓	Chain-of-Custody Tags	1 per sample container
✓	Sample Seals	"
✓	Chain of Custody Record Forms	3
✓	Sample Receipt Forms	3
✓	Lab Analysis Form organics	1 per sample
✓	Lab Analysis Form chemistry/metals	1 per sample
✓	Lab Analysis Form radiologics	1 per sample

8022U

PRESAMPLING ORIENTATION MEETING

DATE: 3/4/86 TIME: morning LOCATION: Utah State Office Bldg.

CONDUCTED BY (Print Name): Jim Salmon Signature:

Attendees

Name (Print)	Have Reviewed Plan	Signature
Jim Salmon	✓	
Joel Herbdon	✓	
Michelle Dayon	✓	
Ted Diamant	✓	
[illegible]		

TOPICS PRESENTED

Level of Protection: A____ B____ C____ D ✓ Other____

Sampling Plan/Sample Locations: ✓

Source Characterization Samples: N/A

Water Samples (Surface Water, Groundwater): ✓

Soil and Sediment Samples: ✓

Air Monitoring/Samples: N/A

Biota and Other Samples: N/A

Use of Special Equipment: N/A

Use of Special Decontamination Procedures: ✓

Review of QA/QC Field Procedures: ✓

Review of Chain-of-Custody Procedures: ✓

Other:

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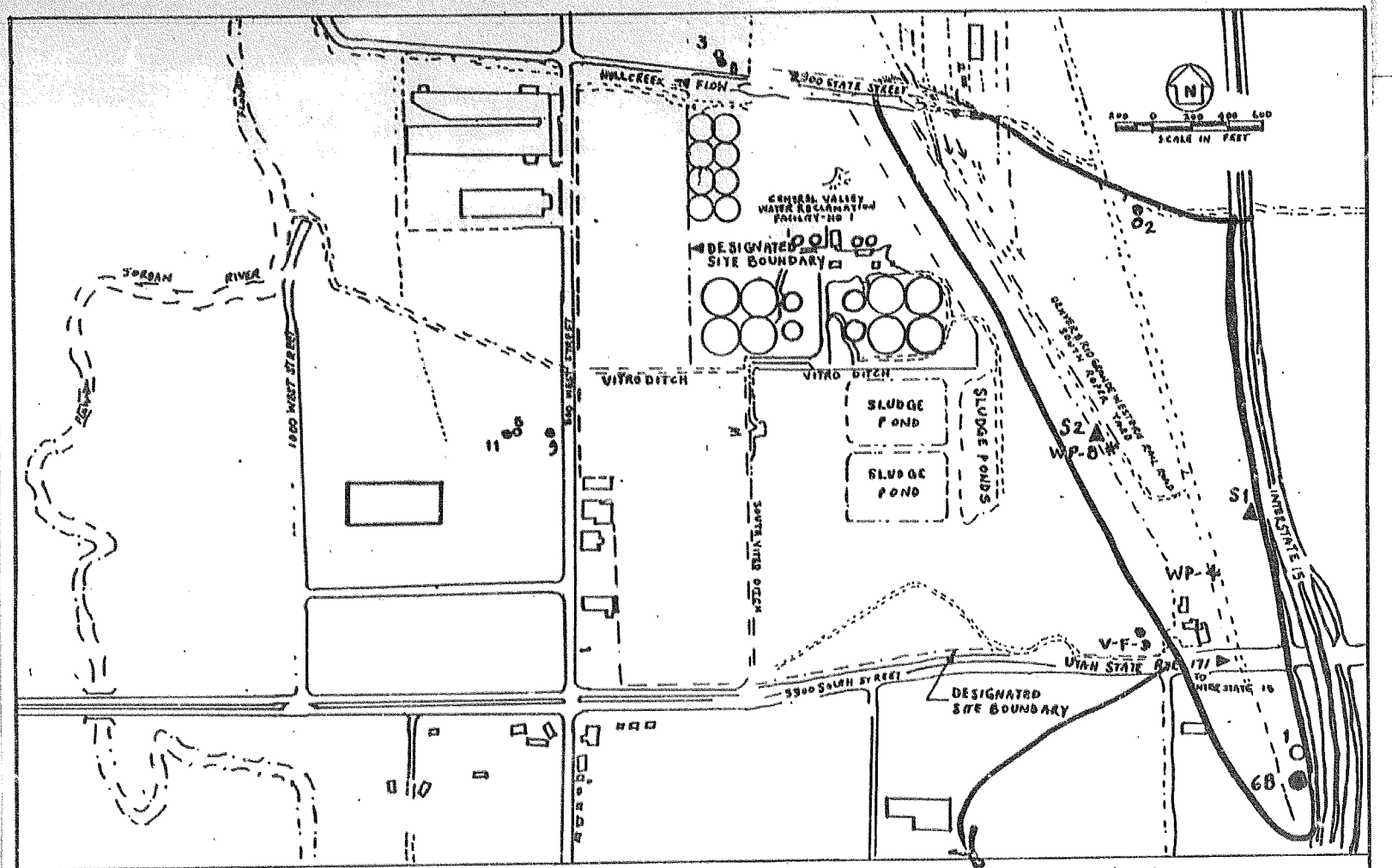

LEGEND

- O DEEP WELL
- ● SHALLOW WELLS
- ✱ WELL POINTS USED FOR SHALLOW GROUND WATER SAMPLING, GRAB
- ▲ S - SURFACE WATER SAMPLES

Current Area of Investigation

AND

LOCATION MAP OF SAMPLING POINTS ON OR NEAR D & RG WESTERN RD. SOUTH ROPER YARD.

REMI A. ROON
SOLID & HAZARDOUS

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SITE/SITE ASSESSMENT SA5039

1508

SAMPLING EQUIPMENT CHECKLIST

SAMPLING FIELDWORK FOR (Site): Vitro UMTRA Project / D&RGW ~~Repair~~ lower Yard Date: 2/25/86

ONSITE MANAGER (Name): _____ Title: _____

EQUIPMENT LIST COMPILED BY (Name): Michelle Boyon / Joel Hebdon Date: 2/25/86

Equipment/Supplies List

Check	Item	Pkg. Quantity/Unit	Amount/Number Required
✓	40 ml. VOA Bottles	1 each	16
✓	1/2 gal. Amber Bottles	1 each	16
	1 liter Amber Bottles	1 each	
✓	8 oz. Glass Jars wide mouth mason jars for sediment samples	1 each	8
	1 liter Plastic Bottles	1 each	
	.5 mm x 300 mm Glass Tubes	1 each	
	1 mml x 300 mm Glass Tubes	1 each	
	2" x 10" PVC Tubes	1 each	
	4" x 10" PVC Tubes	1 each	
	Plastic Sample Bags, size _____	1 box	
	Paint Cans	1 gal.	
	Paint Cans	1/2 gal.	
	Acetone	1 gal.	
	Trichloroethane	1 gal.	
	Methylene-chloride	1 gal.	
	Hexane	1 gal.	
	Gasoline	1 gal.	
	Nitric Acid, 5 ml.	1 box	
	Nitric Acid	1 gal.	
	Acetic Acid, 5 ml.	1 box	
	Acetic Acid	1 gal.	
	Sodium Hydroxide	1 liter	
	Tap Water	1 gal.	
	Distilled Water	1 gal.	
✓	Deionized Water	1 gal.	3
	Motor Oil	1 quart	
✓	Alanox	1 gal.	1
	Baking Soda	1 box	
	Packing Materials	1 pkg.	
	Packing/Shipping Boxes	1 each	
	Packing/Shipping Barrels	1 barrel	
	Styrofoam Shipping Ice Chests	1 each	
✓	Reusable Ice Chests	1 each	1
	Ice/Cold Packs	1 each	

all sample bottles for water obtained with preservatives from State Health Lab.

Check	Item	Pkg. Quantity/Unit	Amount/Number Required
	Strapping Tape	1 roll	
	Masking Tape	1 roll	
	Transparent Tape	1 roll	
	Electrical Tape	1 roll	
	Survey/Flagging Tape	1 roll	
✓	Scissors	1 each	1
	Graph Paper	1 pad	
✓	Bound Field Logs	1 book	1
	Eversharp Pencils	1 each	
	Eversharp Pencil Leads, type _____	1 box	
✓	Ball Point Pens	1 each	3
	Felt Tip Pens	1 each	
	Grease Pencils	1 each	
✓	Indelible Markers	1 each	2
	Aluminum Foil	1 roll	
	Plastic Wrap	1 roll	
	Trash Bags	1 box	
	Kimwipes	1 box	
✓	Paper Towels	1 roll	many
✓	Nylon rope ~300'	1 roll	~300'
	Manila rope	1 roll	
	35 mm. color print film, ____ exposures	1 roll	
✓	35 mm. color slide film, ____ exposures	1 roll	1 shot/sample
	35 mm. black & white film, ____ exposures	1 roll	
✓	Polaroid color film, 12 exposures	1 pack	1 shot per sample
	Instamatic color print film, ____ exposures	1 pack	
	Disk color print film, ____ exposures	1 pack	
✓	35 mm. SLR camera	1 each	
✓	Polaroid camera	1 each	
	Instamatic camera	1 each	
	Disk camera	1 each	
	Tripod	1 each	
	Flash unit	1 each	
	Dry cell batteries, _____ size	1 each	
	Flashlight	1 each	
	Camera bag	1 each	
	Binoculars	1 pair	
	Radiation Meter	1 each	
	Film Badges	1 each	
	Film Badge Inserts	1 pkg.	
	Flow Meter	1 each	
	Conductivity Meter	1 each	
	pH Meter	1 each	
	Litmus paper	1 pkg.	
	Resistivity meter	1 each	
	HNU Photoionization Detector	1 each	

Check	Item	Pkg. Quantity/Unit	Amount/Number Required
	Draeger tubes, type _____	1 box	
	Draeger tube hand pump	1 each	
	Draeger tube indicator chart	1 each	
	Explosimeter/Oxygen Indicator	1 each	
	H_2S Indicator	1 each	
	Organic Vapor Analyzer (OVA)	1 each	
	OVA Chart Recorder	1 each	
	Hand Level	1 each	
	Transit w/case	1 each	
	Transit tripod	1 each	
	Level w/case	1 each	
	Level tripod	1 each	
	Surveyor's rod	1 each	
	Surveying compass	1 each	
	Chaining pins	1 ring	
	Surveyor's stakes	1 bundle	
✓	100 ft. engineer's tape (ft/tenths)	1 each	1
	100 ft. measuring tape (ft/in)	1 each	
	Surveyor's bound fieldbook	1 each	
	Protractor	1 each	
	Engineer's scale, 6-inch	1 each	
✓	Clipboard	1 each	2
	Metal benchmark sets	1 each	
	Benchmark dies	1 set	
	Benchmark setting grout	1 pkg.	
	Grout mixing pail	1 each	
	Sledge (10-pound)	1 each	
	Hammer	1 each	
	Trenching tool	1 each	
	Shovel	1 each	
	Rake	1 each	
	Axe	1 each	
	Post hole digger	1 each	
	Machete	1 each	
✓	Hacksaw	1 each	1
	Bung wrench, type _____	1 each	
	Hydrant wrench	1 each	
	Valve keys, type _____	1 each	
✓	Well keys, type master lock	1 each	1 per well
	Screw driver, flat blade	1 each	
	Screw driver, phillips	1 each	
	Pliers, conventional	1 each	
	Pliers, electricians'	1 each	
	Wire cutters	1 each	
✓	Bolt cutters	1 each	✓
✓	Adjustable crescent wrench	1 each	✓
	Sandpaper	1 pkg.	
	Channel locks	1 each	

Check	Item	Pkg. Quantity/Unit	Amount/Number Required
	Submersible pump	1 each	
	Air-lift pump	1 each	
	Compressor	1 each	
	Extension cord (heavy-duty), 100 ft.	1 each	
	Gasoline-powered generator	1 each	
	Gas cans, 2 gal.	1 each	
	Pump discharge hose, type _____	1 each	
	Pump inlet hose, type _____	1 each	
✓	Stainless steel bailer	1 each	1
	Teflon bailer	1 each	
✓	Bottom-filling bailer	1 each	
	Bailer/pump lift tripod	1 each	
	Stainless steel spoons, large	1 each	
	Stainless steel spoons, small	1 each	
	Scoops	1 each	
	Spatulas	1 each	
	Trowels	1 each	
	Tongue depressors	1 box	
	Plastic spoons	1 box	
	Split-spoon sampler	1 each	
	Bucket auger	1 each	
	Hand auger	1 each	
✓	Dredge Eckman, for sediment	1 each	1
	Plastic pails	1 each	
✓	Stainless steel pails	1 each	2
	Brooms	1 each	
	Dustpans	1 each	
	Mops	1 each	
	Power sprayer	1 each	
	Hand sprayer	1 each	
	Whiskbrooms	1 each	
	5-gal. water cans	1 box	
	Scouring pads	1 pkg.	
	Steel wool	1 each	
	50-ft. garden hose	1 each	
	Dishpans	1 each	
	Galvanized pails	1 each	
	Plastic dropcloths	1 each	Many
✓	Cloth towels	1 each	1
✓	Scrub brushes	1 each	1
✓	Bottle brushes	1 each	
	Wire brushes	1 pkg.	
	Sponges	1 pkg.	
	Clothes pins	1 each	
	Plastic 30-gal. garbage cans		
✓	Hard hats	1 each	3
	Safety goggles	1 pair	
	Safety glasses	1 pair	
	Earplugs	1 set	
	Dust masks (disposable)	1 each	

Check	Item	Pkg. Quantity/Unit	Amount/Number Required
	Sunscreen	1 bottle	
	Insect repellent	1 can	
	Oral thermometer	1 each	
	Space blanket	1 each	
✓	Drinking water cooler	1 each	1
	Half-face respirators	1 each	
	Full-face respirators	1 each	
	Repirator cartridges, type_____	1 set	
	SCBAs, type_____	1 each	
	SCBA tanks, type_____	1 set	
	Umbilical breathing air lines	1 each	
	Umbilical breathing air system	1 each	
	Class "D" breathing air cylinders	1 set	
	Safety vests (orange)	1 each	
	Life vests	1 each	
	Rain suits	1 each	
	Rain ponchos	1 each	
	Butyl rubber boots, sizes _____	1 pair	
	Hip boots, sizes _____	1 pair	
	Latex boot covers	1 pair	
	Tyvek boot covers	1 pair	
	Neoprene gloves	1 pair	
	PVC surgical gloves	1 box	
	Butyl rubber gloves	1 pair	
✓	Latex gloves	1 pair	30
	Cotton work gloves	1 pair	
	Leather work gloves	1 pair	
	Metal mesh protective gloves	1 pair	
	Tyvek coveralls, sizes _____	1 each	
	Saranex coveralls, sizes _____	1 each	
	Butyl rubber aprons	1 each	
	Encapsulation suits, sizes _____	1 each	
	Fire extinguisher, type _____	1 each	
	O_2 resuscitator	1 each	
	Stretcher	1 each	
	First Aid Kit	1 each	
	Eyewash	1 each	
	U.S.G.S. Maps (list quads):		
	_____	1 each	
	_____	1 each	
	_____	1 each	
	_____	1 each	
	_____	1 each	

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Check	Item	Pkg. Quantity/Unit	Amount/Number Required
	Other Maps (list):		
___	_____	1 each	___
___	_____	1 each	___
___	_____	1 each	___
___	_____	1 each	___
___	_____	1 each	___
	Other Items (describe):		
___	_____		___
___	_____		___
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Attachment IX

Health/Safety Plan

SITE ASSESSMENT SASOB
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STATE OF UTAH

SITE HEALTH/SAFETY PLAN

HEALTH/SAFETY PLAN NO. 86-01

PREPARED FOR THIS SITE

GENERAL INFORMATION

NAME OF SITE: Vitro UMTRA Project / D&RGW lower Roper Yard DATE PLAN PREPARED: 2/25/86

LOCATION: 500W. 3300S. SLC, Utah PREPARED BY (Signature/Title): Jim Salmon, Joe Hebert, Michelle Dayan / Bob Kodish

APPROVED BY: Jim Salmon Date:

WORK OBJECTIVES: Monitoring ground water onsite & in the vicinity of above named sites to determine possible contamination levels in the ground water/surface water.

DATE OF PROPOSED WORK: 3/5,6,7/86 INFORMATION REVIEW: Complete___ Preliminary ✓

PRELIMINARY WORKER HAZARD ASSESSMENT: Serious___ Moderate___ Low ✓ Unknown___

SITE/WASTE CHARACTERISTICS

WASTE TYPE(S): Liquid ✓ Solid ✓ Sludge ✓ Gas___

CHARACTERISTIC(S): Corrosive___ Ignitable___ Slightly Radioactive ✓ Volatile___ Toxic___

Reactive___ Unknown ✓ Other (describe):

FACILITY DESCRIPTION: Vitro - old uranium processing mill, removal action currently in progress, D&RGW lower Roper Yard with tracks currently in use.

Principal Disposal Method (type and location): unknown - off site removal of Tailings via Railroad to Clive Utah.

Unusual Features (terrain, embankments, water bodies, power lines, etc.): Roper Yard's is located in Jordan River valley and are filled with imported material (slag) for railroad track support.

Site Status: Active___ Inactive ✓ Unknown___

Site History (complaints, response actions, etc.):

HAZARD EVALUATION FOR SITE

DESCRIBE MATERIALS LIKELY TO BE ENCOUNTERED ONSITE: Water contaminated by organics and/or uranium mill tailings.

DESCRIBE HAZARDS ASSOCIATED WITH THE MATERIALS: external - low-level gamma dose remote possibility of contaminated material taken internally by inhalation or ingestion.

DESCRIBE PRIMARY EXPOSURE HAZARDS (Inhalation, ingestion, dermal, etc.): Inhalation or ingestion primarily. Gamma dose too low to worry about exposure due to brief period around pile. Michelle Dayon wearing TLD badge enough to monitor dose.

SITE SAFETY PLAN

SITE PERIMETER ESTABLISHED: Yes ✓ No ____ ZONE(S) OF CONTAMINATION IDENTIFIED: Yes ____ No ✓

MAP OR SKETCH OF SITE ATTACHED: ✓

PERSONAL PROTECTION: Level of Protection: A ____ B ____ C ____ D ✓

Modifications: none

Surveillance/Monitoring Equipment: none. TLD dosimeter badge worn by Michelle Dayon, BRC.

Decontamination Procedures: water wash upon job completion daily of vehicles and footwear. Soap and water wash of hands. Alconox wash and DI rinses of equipment.

Special Equipment, Facilities, or Procedures: none

SITE ACCESS PROCEDURES

Jim Salmon - contacted D&RGW

LANDOWNER/LESSEE/REPRESENTATIVE CONTACTED BY: Michelle Doyon - Vitro DATE: 3/3/86

DESCRIBE CONTACT: State already on Vitro Site, D&RGW contacted by phone

COUNTY/LOCAL HEALTH OFFICIALS CONTACTED BY: Jim Salmon DATE: 3/3/86

DESCRIBE CONTACT: in person and by phone

DESCRIBE ANY OTHER ACCESS CONSIDERATIONS:

TEAM ORGANIZATION AND RESPONSIBILITIES

Team Member (Name/Discipline)	Responsibility
Jim Salmon	Project Officer
Gerald Ripley	Supervisor
Joel Hebdon	Hydrologist / Sampling Operations
Michelle Doyon	QA officer / sampler and recorder
SL County - Ted Diamant	observer and recorder

WORK LIMITATIONS

DESCRIBE (Time of day, climatic considerations, etc.): works to be performed during daylight hours, finished in time to bring samples collected that day up to State Health Lab

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INVESTIGATION-DERIVED MATERIAL DISPOSAL N/A

DESCRIBE:

OTHER SITE-SPECIFIC HAZARDS/SAFETY CONSIDERATIONS N/A

DESCRIBE:

EMERGENCY INFORMATION

(NOTE: ALL EMERGENCY TELEPHONE NUMBERS MUST BE REVERIFIED IMMEDIATELY PRIOR TO FIELDWORK)

Local Resources

Ambulance: 911 (Emergency) Telephone: 911

Emergency Room: Name of Hospital: University Hospital Telephone: 581-3991

Location of Hospital: University Med. Center

Poison Control Center: University Med. Center Telephone: 355-7591

Police/Highway Patrol/Sheriff: S. Salt Lake Police Telephone: 911

Fire Department: Emergency Telephone: 911

Airport: S.L. International Telephone: 539-2400

Department of Health Contact: R.S. Hulm. Telephone: 538-6170

Utilities Locators ("Blue Stakes"): N/A Telephone: —

Other Emergency Contacts: Vitro UMTRA Project trailer Telephone: 974-5872

Division of Environmental Health Telephone: 538-6121

Telephone:

Telephone:

Telephone:

NUMBERS VERIFIED BY (Print Name): Jim Salmon Date: 3/3/86

Signature and Title: Jim Salmon

Site Resources

Water Supply: City water at Vitro UMTRA Project Staging area

Power Supply: electricity supplied to staging area

Nearest Telephone/Radio: hand-held DOH radio carried by Michelle Doyon of BRC at all times during sampling, includes highway patrol channel and emergency channel.

~~Other (Describe):~~

EMERGENCY ROUTES

(NOTE: EMERGENCY ROUTES MUST BE DRIVEN BY SITE SAFETY OFFICER PRIOR TO FIELDWORK)

TO HOSPITAL/CLINIC (Nearest): University of Utah Medical Center 40 Medical Drive, Salt Lake City Utah

TO SPECIALIZED EMERGENCY SERVICES (Burn unit, etc.): University of Utah Medical Center

OTHER: None.

From Davis Reclamation Site to 3300 South Then East to I-15, Then North to I-80, Then East on I-80 to 1300 East Exit Then North to 500 South Then East to University of Utah Campus, Follow Marked Road to Medical Drive.

ROUTES DRIVEN BY (Print Name): Jim Salmon Date: Fourth

Note Any Problems Encountered or Adjustments Needed: None

Signature and Title: [signature] Project Officer

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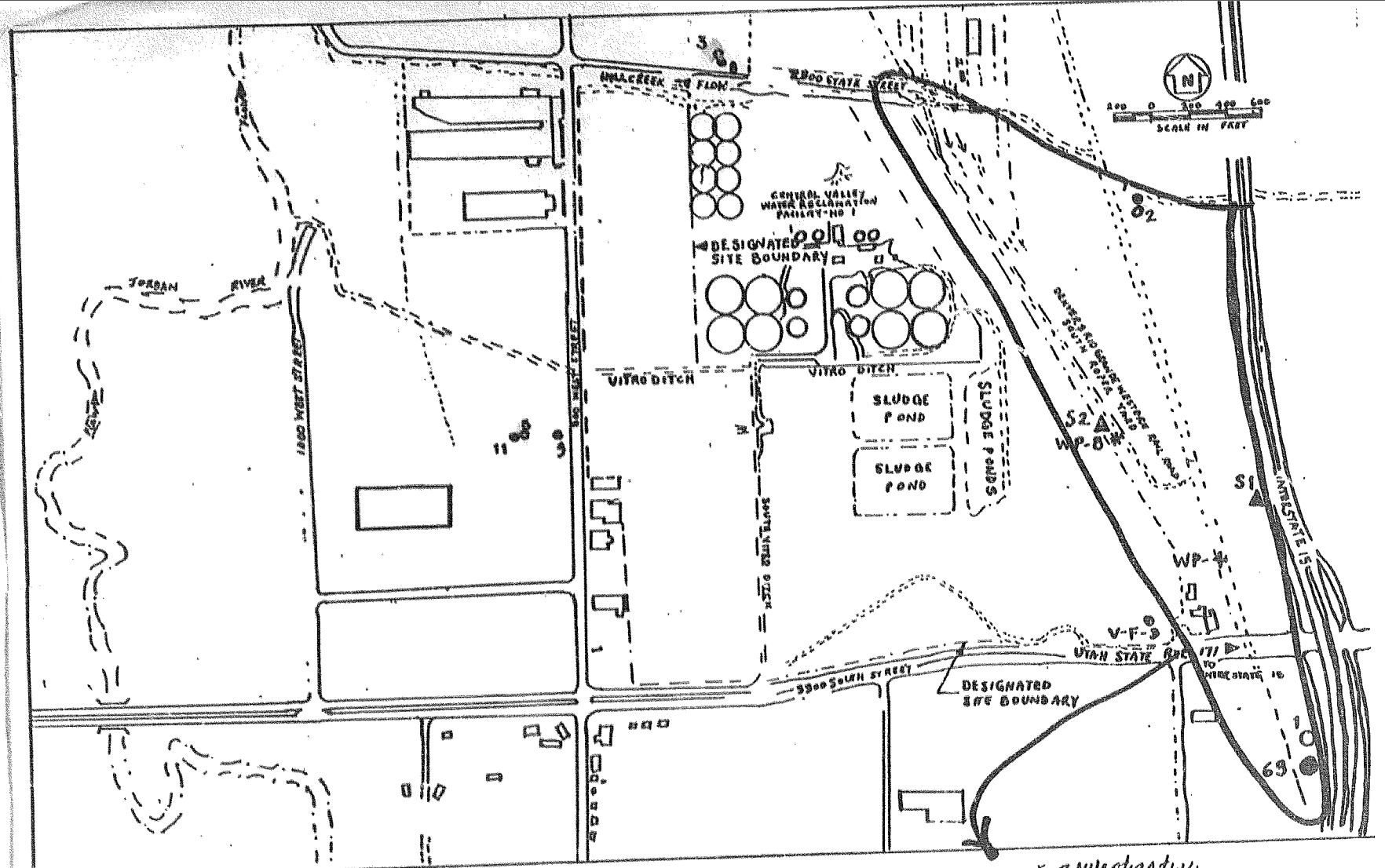

Current Area of Investigation

AND

LEGEND

- ○ DEEP WELL
- ● SHALLOW WELLS
- ✱ WELL POINTS USED FOR SHALLOW GROUND WATER SAMPLING, GRAB
- ▲ S - SURFACE WATER SAMPLES

LOCATION MAP OF SAMPLING POINTS ON OR NEAR D & RG WESTERN RD. SOUTH ROPER YARD.

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SOLID & HAZARDOUS

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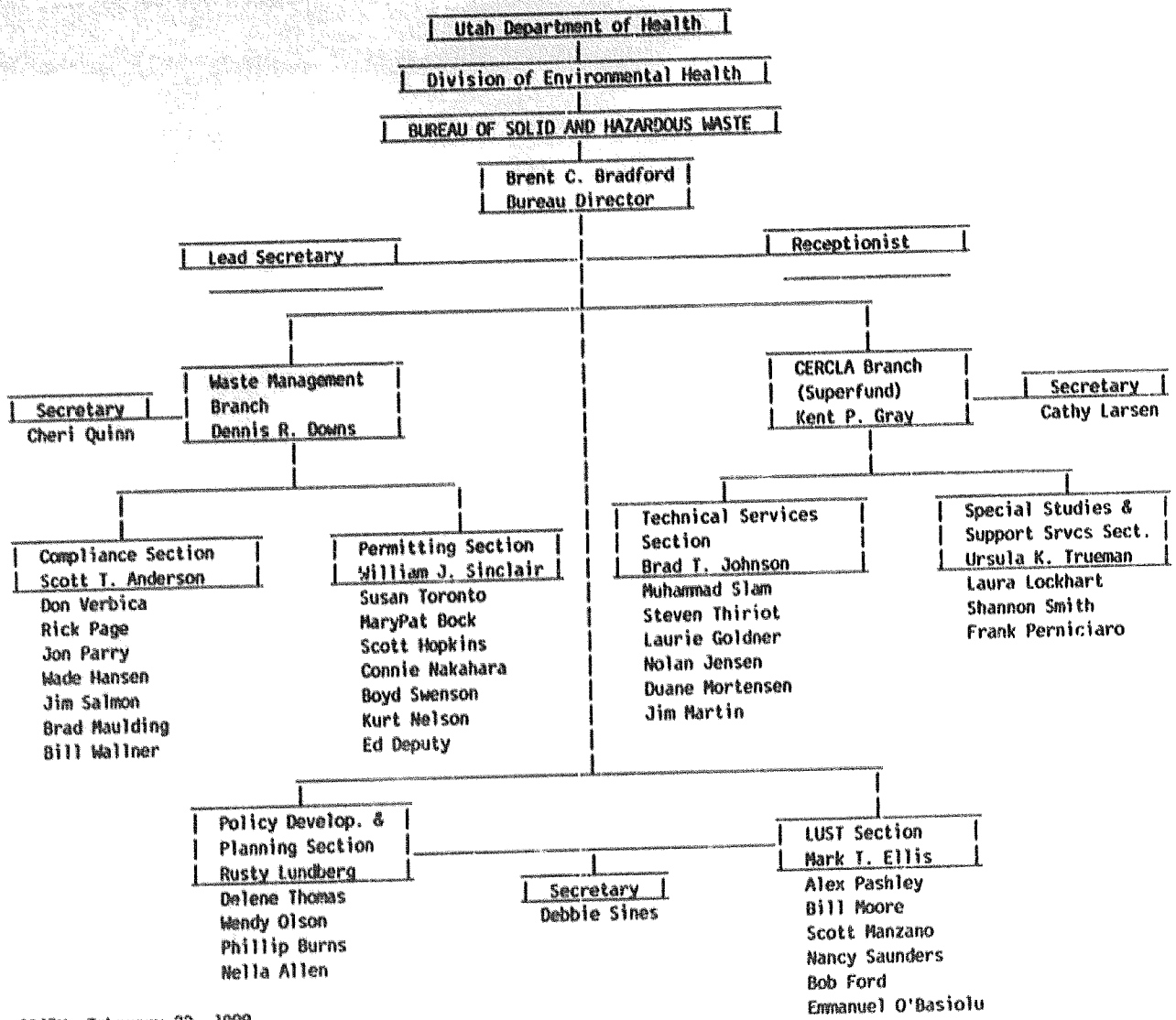
SITE/SITE ASSESSMENT
SA3039



3915U--February 23, 1988