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SITE OBSERVATIONAL WORK PLAN FOR THE UMTRA PROJECT SITE AT SPOOK, WYOMING

May 1995

Prepared by the
U.S. Department of Energy
Albuquerque, New Mexico

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May 1995

**Prepared for
U.S. Department of Energy
UMTRA Project Office
Albuquerque, New Mexico**

**Prepared by
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EXECUTIVE SUMMARY

The requirements for ground water compliance for UMTRA Project sites, including the Spook, Wyoming, processing site, are found in the *Uranium Mill Tailings Radiation Control Act* (UMTRCA) of 1978 (42 USC §7901 *et seq.*) and Subparts B and Subpart C of U.S. Environmental Protection Agency's (EPA) "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings" codified in 40 CFR Part 192 (1994), and the final rule published in 60 FR 2854 (1995).

Ground water in the uppermost aquifer beneath and downgradient from the Spook site was contaminated by uranium processing activities that occurred from 1962 until 1966. Contamination from the tailings pile and the acid pond (including uranium, selenium, nitrate, and radium-226 and -228) leached into the subsurface by infiltration and migrated into ground water, forming a plume extending approximately 2500 feet (760 meters) downgradient from the site.

Under Subpart A of 40 CFR Part 192, the surface remedial action at the Spook site consisted of stabilizing the uranium mill tailings and other residual radioactive materials in a disposal cell at the bottom of the Spook open-pit mine and covering the cell with overburden material. The ground water protection strategy was supplemental standards based on limited use ground water in the uppermost aquifer because of widespread ambient contamination.

To comply with Subpart B of 40 CFR Part 192, the proposed ground water compliance strategy at the Spook site is to perform no remediation. This strategy is based on ground water in the uppermost aquifer (also the zone of contamination) being classified as limited use, which allows the application of supplemental standards. Limited use ground water in the uppermost aquifer beneath the Spook site is neither a current nor a potential source of drinking water because of widespread, ambient contamination that cannot be cleaned up using treatment methods reasonably employed in public water supply systems (40 CFR §192.11(e)). Ground water at the Spook site contains widespread, ambient uranium and selenium contamination resulting from naturally-occurring conditions (natural uranium mineralization associated with an alteration front) and from the effects of broadscale human activity not related to uranium-milling operations (uranium exploration and mining activities). There is no apparent risk to human health and the environment because there are no known exposure pathways for ground water from the uppermost aquifer. No one is using or is projected to use the ground water from this aquifer for any purpose; there is no discharge of ground water from the uppermost aquifer to deeper aquifers used for domestic and agricultural purposes or to the surface or to surface water.

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LIST OF ACRONYMS

<u>Acronym</u>	<u>Definition</u>
ACL	alternate concentration limit
BAT	best available treatment
DOE	U.S. Department of Energy
DQO	data quality objective
EPA	U.S. Environmental Protection Agency
MCL	maximum concentration limit
NEPA	National Environmental Policy Act
NRC	U.S. Nuclear Regulatory Commission
PEIS	programmatic environmental impact statement
RAP	remedial action plan
RME	Rocky Mountain Energy
RRM	residual radioactive material
SAFER	Streamlined Approach for Environmental Restoration
SOWP	site observational work plan
TAGR	Technical Approach to Groundwater Restoration
UMTRA	Uranium Mill Tailing Remedial Action
UMTRCA	Uranium Mill Tailings Radiation Control Act

1.0 INTRODUCTION

The Spook, Wyoming, site observational work plan (SOWP) proposes site-specific activities to achieve compliance with Subpart B of 40 CFR Part 192 (1994) of the final U. S. Environmental Protection Agency (EPA) ground water protection standards 60 FR 2854 (1995) at this Uranium Mill Tailing Remedial Action (UMTRA) Project site.

1.1 PURPOSE AND CONTENT

This SOWP provides a plan for selecting ground water remediation and compliance strategies for UMTRA Project processing sites under Subparts B and C of 40 CFR Part 192, based on the U.S. Department of Energy (DOE) Streamlined Approach for Environmental Restoration (SAFER) concept. SAFER is a methodology tailored to the challenges of conducting environmental restoration efforts under conditions of significant uncertainty. SAFER is designed to achieve progress toward a remedial compliance goal, mutually agreed upon by stakeholders, while managing uncertainties in site knowledge, remedial technology performance, and regulatory requirements. SAFER combines elements of the data quality objective (DQO) process and the observational approach to help plan and conduct efficient and effective remediation. The DQO process establishes the problem and action requiring attention and defines the type and quality of data needed for problem resolution. The observational approach provides an operational framework for managing uncertainty and planning decision making. The SAFER framework consists of the planning, assessment and selection, and implementation phases. The first two phases are included in this document; the third phase will be addressed in the Spook remedial action plan (RAP).

This draft SOWP (Revision 0) presents a comprehensive summary of existing site characterization data, a conceptual site model of the nature and extent of ground water contamination, exposure pathways, and potential impact to human health and the environment. Section 2.0 describes the requirements for meeting ground water standards at UMTRA Project sites. Section 3.0 defines past and current conditions, describes potential environmental and human health risks, and provides site-specific data that supports the selection of a proposed ground water compliance strategy. Section 4.0 provides the justification for selecting the proposed ground water compliance strategy based on the framework defined in the ground water programmatic environmental impact statement (PEIS).

1.2 GROUND WATER COMPLIANCE STRATEGY

Ground water in the uppermost aquifer beneath and downgradient from the Spook site was contaminated by uranium processing activities that occurred from 1962 until 1966. Contamination from the tailings pile and the acid pond (including uranium, selenium, nitrate, and radium-226 and -228) was released into the subsurface by infiltration and migrated into ground water, forming a

plume extending approximately 2500 feet (ft) (760 meters [m]) downgradient from the site.

The ground water compliance strategy proposed in this SOWP, in accordance with Subpart B of 40 CFR Part 192 (1994), is to perform no remediation at the Spook site. This strategy is based on ground water in the uppermost aquifer (also the zone of contamination) being classified as limited use, which would allow the application of supplemental standards. Limited use ground water in the uppermost aquifer beneath the Spook site is not a current or potential source of drinking water because of widespread, ambient contamination that cannot be cleaned up using treatment methods reasonably employed in public water supply systems (40 CFR §192.11(e)). Ground water in the uppermost aquifer contains widespread, ambient uranium and selenium contamination resulting from naturally occurring conditions (natural uranium mineralization associated with an alteration front) and from the effects of broadscale human activity not related to uranium milling operations (uranium exploration and mining activities). The potential for impacts to human health and the environment related to ground water contamination associated with the Spook site is minimal for the following reasons: ground water in the area has been affected by naturally occurring uranium mineralization and human activities related to regional uranium exploration and mining; ground water in the uppermost aquifer is not locally used for any purposes; the area is remote and has a low population density; adequate ground water resources are available from deeper sandstone units, some under artesian conditions; and there is no evidence of discharge of contaminated ground water from the uppermost aquifer to deeper aquifers used for domestic and agricultural purposes, or to the surface or to surface water.

1.3 RELATIONSHIP TO OTHER GROUND WATER DOCUMENTS

Programmatic documents that provide guidance for the SOWP include the DOE *UMTRA Groundwater Program Plan* (DOE, 1992a), the *Programmatic Environmental Impact Statement for the Uranium Mill Tailings Remedial Action Ground Water Project* (DOE, 1994) and the *Technical Approach to Groundwater Restoration* (TAGR) (DOE, 1993a). The *UMTRA Groundwater Program Plan* states the objectives for the UMTRA Ground Water Project and provides an overall technical plan and management approach for conducting the program. The PEIS fulfills the following functions: it provides a programmatic decision-making framework for conducting the UMTRA Ground Water Project; assesses the potential programmatic impacts of conducting the Project; provides a method for determining the site-specific ground water compliance strategies; and provides data and information that can be used to prepare site-specific *National Environmental Policy Act* (NEPA) (42 USC §4321 *et seq.*) documentation more efficiently. The TAGR provides general technical guidance concerning how the Ground Water Project will be conducted.

The environmental impacts from the proposed compliance strategy presented in this SOWP will be assessed in appropriate site-specific NEPA documentation.

The UMTRA Surface Project *Remedial Action Plan and Site Conceptual Design for Stabilization of the Inactive Uranium Mill Tailings Site at Spook, Wyoming* (DOE, 1990) will be modified and submitted to the U.S. Nuclear Regulatory Commission (NRC) for concurrence on the UMTRA Project proposed Subpart B compliance strategy.

2.0 REGULATORY FRAMEWORK

The requirements for selecting a ground water compliance strategy for the Spook, Wyoming, processing site are described in this section. These requirements are found in the *Uranium Mill Tailings Radiation Control Act* (UMTRCA) of 1978 (42 USC §7901 *et seq.*) and Subpart B and of EPA's "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings" (40 CFR Part 192 (1994)).

2.1 URANIUM MILL TAILINGS RADIATION CONTROL ACT

The U.S. Congress passed UMTRCA in 1978 in response to public concerns about the potential health hazards from exposure to uranium mill tailings over long periods of time. UMTRCA authorized the DOE to stabilize, dispose of, and control uranium mill tailings and other residual radioactive materials (RRM) at uranium mill processing sites. UMTRCA designates 24 inactive processing sites to undergo remediation; directs the EPA to promulgate standards; mandates the DOE to perform remedial action in accordance with standards prescribed by the EPA; directs the NRC to concur in the remedial actions; directs the NRC to license the disposal sites for long-term care; and directs the DOE to enter into cooperative agreements with the affected states and Indian tribes.

In 1988, Congress amended UMTRCA and authorized the DOE to extend without limitation the time needed to complete ground water compliance restoration activities at the processing sites. Section 108 of the UMTRCA requires that the DOE comply with the proposed EPA standards (40 CFR Part 192 (1994)) and the final standards (60 FR 2854 (1995)).

2.1.1 EPA ground water standards

UMTRCA requires the EPA to promulgate standards for protecting public health, safety, and the environment from radiological hazards and nonradiological hazards associated with processing of uranium and the resulting RRM. The *Federal Register* gives the following definition for RRM:

(1) Waste (which the Secretary determines to be radioactive) in the form of tailings resulting from the processing of ores for the extraction of uranium and other valuable constituents of the ores; and (2) Other wastes (which the Secretary determines to be radioactive) at a processing site which relate to such processing, including any residual stock of unprocessed ores or low-grade materials (40 CFR §192.01(a); 60 FR 2854 (1995)).

On 5 January 1983, the EPA published standards (40 CFR Part 192) for the disposal and cleanup of RRM. The EPA published proposed changes to the ground water standards in the *Federal Register* on 24 September 1987 (52 FR

36000). The final ground water standards were published in the *Federal Register* on 11 January 1995 (60 FR 2854).

The standards address two ground water contamination scenarios: Subpart A addresses future ground water contamination that may occur from RRM disposal, and Subpart B addresses the cleanup of contamination of ground water that occurred at the processing sites before disposal of the RRM. Protection of the ground water from future contamination at the disposal sites is required by Subpart A and has been addressed in the UMTRA Surface Project. The UMTRA Ground Water Project addresses the ground water contamination that occurred at the processing sites and is regulated by Subparts B and C of the EPA standards.

Subpart B

Subpart B, "Standards for Cleanup of Land and Buildings Contaminated with Residual Radioactive Materials from Inactive Uranium Processing Sites," requires that remedial action at processing sites be conducted to ensure that the amounts of RRM in ground water meet any one of three ground water standards:

- Background levels: concentrations of constituents in nearby ground water that were not affected by processing activities (60 FR 2854; 40 CFR §192.12(c)).
- Maximum concentration limits (MCL): the EPA's maximum limits for concentrations of certain hazardous constituents in ground water, as proposed for the UMTRA Project. The MCLs for inorganic constituents that apply to UMTRA Project sites are provided in Table 2.1 (60 FR 2854; 40 CFR §192.12(c)).
- Alternate concentration limits (ACL): alternate limits for hazardous constituents that do not pose a substantial present or potential hazard to human health or the environment as long as the limits are not exceeded (60 FR 2854; 40 CFR §192.12(c)(2)).

Subpart B also provides for active ground water remediation or for selecting natural flushing as a means to meet the proposed standards. Active ground water remediation would require the application of engineered ground water remediation methods such as gradient manipulation, ground water extraction and treatment, and *in situ* ground water treatment to achieve compliance with the proposed standards. Natural flushing means allowing natural ground water processes to reduce the contamination in ground water; these processes must allow the standards to be met within 100 years. Institutional controls that protect human health (measures that restrict access to contaminated ground water and satisfy beneficial uses of ground water) and an adequate monitoring program must be established and maintained during the period of natural flushing. Ground water also must not currently be, or be projected to become, a

**Table 2.1 MCLs for inorganic constituents for ground water protection
for UMTRA Project sites^a**

Constituent	Maximum concentration ^b
Arsenic	0.05
Barium	1.0
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Molybdenum	0.1
Nitrate (as N)	10.0 ^c
Selenium	0.01
Silver	0.05
Combined radium-226 and radium-228	5 pCi/L
Combined uranium-234 and uranium-238	30 pCi/L ^d
Gross alpha-particle activity (excluding radon and uranium)	15 pCi/L

^a60 FR 2854 (1995).

^bMilligrams per liter unless otherwise noted.

^cEquivalent to 44 milligrams per liter (mg/L) nitrate expressed as NO₃.

^dEquivalent to 0.044 mg/L.

source of drinking water during the period of natural flushing (60 FR 2854; 40 CFR §192.12(c)(2)(i)).

Subpart C

Subpart C, "Implementation," includes guidance for implementing methods and procedures to provide reasonable assurance that the provisions of Subpart B are satisfied. Subpart C requires that the conditions of Subpart B be met on a site-specific basis, using information gathered from site characterization and monitoring. A remedial action plan must be presented, stating the schedule and steps necessary to complete the cleanup of ground water at the sites to meet the conditions of Subpart B (60 FR 2854; 40 CFR §192.20(b)(4)).

Subpart C provides guidance for implementing methods and procedures to provide reasonable assurance that the provisions of Subpart B are satisfied (60 FR 2854; 40 CFR §192.21(g)).

2.1.2 Cooperative agreements and state requirements

The UMTRCA requires that remedial action be accomplished with the full participation and concurrence of the affected states and Indian tribes on whose lands the uranium mill tailings are located or disposed. The UMTRCA also directed the DOE to enter into cooperative agreements with these states and Indian tribes. No Indian tribes are affected by the activities at the Spook site. A cooperative agreement for the UMTRA Surface Project with the state of Wyoming was executed 16 February 1984.

The Wyoming state regulations for ground water are in Chapter VIII of the state of Wyoming water quality standards (State of Wyoming, 1993) and are presented as points of reference that support the limited use EPA ground water definition. Ground water found closely associated with commercial deposits of minerals, as found at the Spook site, may be considered Class V ground water and is not suitable for domestic, agricultural, and livestock uses, fish and aquatic life, or industrial purposes (Section 4(d)(8)(b)). In addition, Class VI ground water may be unusable or unsuitable for use because it is so contaminated that it would be economically or technologically impractical to make the water usable (Section 4(d)(9)(b)). In classifying ground water, the state takes into account the technical practicality and economic reasonableness of treating ambient water quality to meet suitability standards for use (Section 5(a)). The state's water quality MCLs for domestic use (Section 4(d)(1)) are similar to those proposed by EPA MCLs with the exception of uranium. The state established a MCL of 5.0 milligrams per liter (mg/L); the EPA established a MCL for uranium of 30 picocuries per liter (pCi/L), equivalent to 0.044 mg/L.

2.2 NATIONAL ENVIRONMENTAL POLICY ACT

Implementation of the UMTRCA represents a major federal action subject to the requirements of NEPA. The Council on Environmental Quality's regulations that

implement the NEPA are codified in 40 CFR Parts 1500-1508 (1994) and require that each federal agency develop its own implementing procedures (40 CFR §1507.3). The DOE NEPA regulations are contained in "National Environmental Policy Act; Implementing Procedures" (10 CFR Part 1021 (1994)). DOE guidance is provided in *Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements* (DOE, 1993b).

Pursuant to the NEPA, the DOE drafted a PEIS in 1994 that analyzed potential impacts of implementing programmatic alternatives for conducting the Ground Water Project. The preferred alternative for conducting the Ground Water Project will be selected by the DOE and published in a record of decision. All subsequent actions on the UMTRA Ground Water Project, including preparation of site-specific NEPA documentation, must comply with the record of decision.

3.0 SUMMARY OF SITE CONDITIONS

This section describes the location and history of the Spook site, including local geography, past uranium mining and milling activities at and in the vicinity of the site, and the surface remedial action and associated ground water protection strategy. Site characterization data and the conceptual site model are also presented.

3.1 SITE DESCRIPTION

3.1.1 Location

The Spook processing and disposal site is in northern Converse County, Wyoming, approximately 48 miles (mi) (77 kilometers [km]) northeast of Casper (Figure 3.1). The area is sparsely populated, with the nearest town, Glenrock, 31 mi (50 km) south of the site. The climate is semiarid and cool with moderate humidity. The average annual precipitation (measured in the Casper area) is 11 inches (28 centimeters [cm]) with 60 percent of the precipitation falling during the spring and summer months (DOE, 1989). The ground is covered principally with short-grass prairie vegetation.

The Spook site is situated in the southern end of the Powder River Basin, a deep structural basin that lies along the east flank of the Middle Rocky Mountains. Sedimentary rocks in the area generally dip less than 2 degrees to the northeast. The gently rolling topography in the vicinity of the site has an elevation of approximately 5100 ft (1555 m). Drainage in the area is to the east and southeast toward the Dry Fork of the Cheyenne River, an intermittent stream approximately 1 mi (1.6 km) south of the site. Surface drainage is controlled to the north by the Cheyenne River Divide.

The southern part of the Powder River Basin contains significant uranium and coal deposits. The site is underlain by uranium mineralization associated with an alteration front in sandstone of the Tertiary Wasatch Formation. Uranium has been mined from open-pit mines (including the Spook pit) along the alteration front in the area. The Bear Creek uranium mill site (an UMTRCA Title II site) is approximately 2 mi (3 km) north of the Spook site.

3.1.2 History of operations and surface remediation

Through the 1960s, much of the uranium ore mined in the United States was processed by private companies under contract to the federal government for use in national defense research and weapons development. The Spook site was formerly mined for this purpose by the Wyoming Mining and Milling Company and by Western Nuclear, Inc.

The Spook open-pit mine was first excavated in 1962 and operated as a producing mine until 1966. A total of 42,600 tons (38,647 tonnes) of uranium ore were extracted. Initially uranium ore from the Spook mine was processed at

LEGEND

- INTERSTATE HIGHWAY
- U.S. HIGHWAY
- STATE HIGHWAY

FIGURE 3.1
LOCATION OF THE SPOOK, WYOMING, SITE

the uranium mill at Jeffrey City, Wyoming, 165 mi (265 km) west of the site. As lower-grade ore was mined, it became more economical to process the ore on the site, so a uranium upgrading plant was established at the Spook site.

The uranium milling process at the Spook upgrader consisted of an acid-curing process used in conjunction with percolation heap leaching. In this process, crushed sandstone containing the uranium was agglomerated into small pellets containing ore, water, and sulfuric acid. These pellets were loaded into large vats and allowed to cure (giving time for the interstitial sulfuric acid to react with the ore pellets). After curing, an acidified solution was circulated through the pellet bed within the vats and then drained. This pregnant, uranium-bearing solution was processed by ion exchange. The pelletized ore was then washed, and this wash solution was used to leach uranium from the next batch of pellets. The barren, washed pellets were disposed of in the open-pit mine. The uranium-bearing solution was passed through ion exchange columns containing an ammonium-bearing exchange resin. Uranyl sulfate complexes in the acid uranium-bearing solution were exchanged for ammonium, separating the uranium from other metals in the pregnant solution. The uranium was then removed from the exchanger (eluted) by passing another solution through the exchange column that released the uranium from exchange sites. There were several possible elutants, including sulfuric acid solution or acidified solutions of ammonium chloride or sodium nitrate. The latter elutant was probably used at the Spook upgrader, since this would explain the elevated concentrations of nitrate in ground water. After elution, the resins were regenerated using a solution of nitric acid followed by solutions of sodium and ammonium hydroxide. The eluted uranium was precipitated from solution as an oxide by neutralization with anhydrous ammonia. Some liquid was removed from this precipitate, leaving a thick slurry that was trucked to the uranium mill at Jeffrey City. The residue sands (tailings) were placed on the surface at the mill site and into the open-pit mine. The solutions used in the process were disposed of on the tailings pile and in the acid pond 1500 ft (460 m) south of the mill site (Merritt, 1971; Mashbir, 1964).

As a result of this operation, process reagents and derivatives in the contaminated ground water at the site include sulfate, ammonium, sodium, nitrate, and possibly chloride. In addition, leaching the ore would have solubilized several metals and non-metals, including aluminum, iron, calcium, magnesium, potassium, manganese, selenium, molybdenum, chrome, nickel, zinc, and the thorium progeny of uranium decay, including thorium-230, radium-226, and lead-210.

Water used for ore processing came from two wells near the mill site completed at depths of 350 and 700 ft (107 and 213 m), respectively. The volume of water used in the processing activities is not known, but the wells were capable of yielding 60 and 150 gallons per minute (gpm) (4 to 9.5 liters per second [L/s]) respectively, based on well permit information from the Wyoming State Engineer's Office.

Surface remediation at the Spook processing site under Subpart A of 40 CFR Part 192 (1994) consisted of stabilizing the RRM in a disposal cell at the bottom of the Spook open-pit mine. Surface remedial action was completed in November 1989. An estimated 269,600 cubic yards (yd^3) (206,200 cubic meters [m^3]) of uranium mill tailings and other RRM were consolidated and stabilized in the disposal cell. The disposal cell includes a basal clay layer and is covered with a fine-grained infiltration and radon barrier. These features were designed to minimize infiltration, seepage, and migration of leachate from the bottom of the cell. The state of Wyoming then backfilled the Spook open-pit mine with overburden material. The surface was restored and revegetated. The top of the UMTRA disposal cell is now buried approximately 35 ft (11 m) below the existing land surface.

The surface remedial action ground water protection strategy at the Spook site, under Subpart A of 40 CFR Part 192, is based on the application of supplemental standards to limited use ground water in the uppermost aquifer. The limited use designation is based on ground water in the uppermost aquifer not being currently or potentially a source of drinking water because it contains widespread, ambient uranium and selenium contamination resulting from naturally occurring conditions (natural uranium mineralization associated with an alteration front), and from the effects of broadscale human activity not related to uranium milling operations (uranium exploration and mining activities) such that it cannot be effectively cleaned up for drinking or other beneficial purposes using treatment methods reasonably employed in public water supply systems (52 FR 36007).

The state of Wyoming, as agent for the United States of America, acquired title to a 13.5-acre (ac) (5.5-hectare [ha]) surface area over the disposal cell. The NRC developed regulations for issuing a general license for the long-term care of Title I disposal sites (10 CFR part 40 (1994)). Under these regulations, the general license becomes effective when the NRC concurs with the DOE's certification that the surface remedial action at the site is complete. In September 1993, the general license for Subpart A was issued for the Spook site.

3.1.3 Land and water use

The land surrounding the site is used predominantly for sheep and cattle ranching. Some irrigated hay production takes place along the Dry Fork of the Cheyenne River. Prior to 1982, uranium mines were also in production throughout the area.

Good quality ground water from confined aquifers in the Tertiary Wasatch and Fort Union Formations is used for domestic and stock watering purposes in the area. Ground water from the unconfined mineralized sandstone (uppermost aquifer) beneath the Spook site is not used because it is of marginal quality

(because of mineralization and related mining and milling activities) and the sustained yield of ground water from the aquifer is less than yields from underlying confined aquifers.

3.1.4 Sources of existing data

Development and evaluation of the conceptual site model for the Spook site are based on a review of DOE site characterization data generated for the surface remediation phase of the UMTRA Project and reported in the RAP (DOE, 1990). Site characterization data include reconnaissance information, U.S. Geological Survey topographic maps, aerial photography, core and corehole logs, lithologic logs and well completion records from drilling and monitor well installation, data from water quality sampling, and aquifer testing data. Monitor well and water quality data are available in the UMTRA Project Software Program for Environmental Analysis and Reporting database (DOE, 1992b).

DOE installed 35 monitor wells (SPK01-0910 through -0944) in hydrogeologic units beneath the Spook site between December 1986 and August 1988 (Figure 3.2 and Table 3.1). Several monitor wells were decommissioned to facilitate remedial activities (SPK01-0910, -0911, -0928, -0929 and -0940) or because of well construction problems (SPK01-0926). Monitor wells were sampled for ground water quality from February 1987 through December 1988 (Table 3.2). The number of sampling rounds per well varies from two to six, depending on when the monitor wells were installed. Water levels were measured in the monitor wells during these sampling rounds, as well as during July 1994. Three domestic wells (SPK01-0800, -0803, and -0903) completed in deeper aquifers in the vicinity were also sampled for ground water quality. Details of well construction are not known. Water levels were not taken from these three wells, because two flowed at the surface and one had a windmill to provide water.

Water quality data through August 1988 were included in the RAP (DOE, 1990). A water sampling round was completed in December 1988 to verify data from the August 1988 sampling round, particularly for the new monitor wells installed during August 1988. These data fulfilled the requirements for site characterization in the RAP and allowed development of a ground water compliance strategy and concurrence from the NRC on the surface remedial action at the Spook site. With supplemental standards, based on Class III (limited use) ground water, as the compliance strategy, the NRC, DOE, and state agreed that it would not be necessary to continue ground water monitoring for compliance purposes. Therefore ground water sampling was discontinued after December 1988 (DOE, 1993c).

Relevant site characterization data are attached as Appendices A through E to this report. These data are monitor well lithologic logs (Appendix A); monitor well completion records (Appendix B); ground water elevations (Appendix C); ground water quality data by parameter (Appendix D); and a calculation set for aquifer pumping tests (Appendix E). Industry and government reports and

FIGURE 3.2
MONITOR WELL LOCATION
SPOOK, WYOMING, SITE

TABLE 3.1 MONITOR WELL INFORMATION AT THE SPOOK, WYOMING SITE
SITE: SPK01 SPOOK
REPORT DATE: 04/26/95

LOCATION ID	NORTH COORDINATE (FT)	EAST COORDINATE (FT)	GROUND ELEVATION (FT MSL)	BOREHOLE DEPTH (FT)	BOREHOLE DIAMETER (INCHES)	CASING ELEVATION (FT MSL)	CASING LENGTH (FT)	CASING DIAMETER (INCHES)	SCREEN BEGINNING DEPTH (FT)	SCREEN LENGTH (FT)	FLOW CODE	FORMATION OF COMPLETION
0910	56710.5	59662.9	5095.20	174.50	8.000	5097.10	176.50	4.000	164.50	10.0	N	WL
0911	56684.5	59695.9	5093.00	113.50	8.000	5094.80	115.50	4.000	98.50	15.0	N	WU
0912	57376.4	60319.0	5109.70	114.00	8.000	5111.10	116.25	4.000	99.25	15.0	N	WU
0913	58150.1	60546.0	5096.80	120.00	8.000	5098.60	122.00	4.000	105.00	15.0	N	WU
0914	58134.9	60512.1	5097.50	185.00	8.000	5099.50	187.00	4.000	170.00	15.0	N	WL
0915	58719.8	61452.6	5057.90	130.00	8.000	5059.60	132.00	4.000	115.00	15.0	N	WM
0916	59373.3	61439.6	5070.00	110.00	8.000	5071.60	112.00	4.000	95.00	15.0	N	WU
0917	58853.6	62234.5	5047.80	75.00	8.000	5049.60	77.00	4.000	65.00	10.0	N	WU
0918	57588.1	61629.1	5101.30	135.00	8.000	5103.10	137.00	4.000	120.00	15.0	N	WU
0919	56014.4	59867.6	5105.20	188.00	8.000	5107.00	190.00	4.000	178.00	10.0	N	WL
0920	56021.6	59923.7	5099.00	99.00	8.750	5101.10	98.00	4.000	85.75	10.0	N	WU
0921	58118.3	59198.9	5124.50	190.00	8.750	5127.00	190.00	4.000	177.75	10.0	N	WL
0922	58163.6	59210.6	5122.40	140.00	8.750	5124.80	139.75	4.000	127.50	10.0	N	WU
0923	59654.0	59828.6	5112.80	242.00	8.750	5115.00	234.30	4.000	222.05	10.0	N	WL
0924	59855.8	61191.0	5079.10	130.00	8.000	5081.20	129.90	4.000	117.65	10.0	N	WU
0925	59815.3	62832.1	5039.90	77.00	8.000	5042.10	79.00	4.000	66.75	10.0	N	WU
0926	-	-	-	62.00	8.000	-	64.25	4.000	52.00	10.0	N	WU
0927	59161.8	60115.4	5094.7	123.00	8.000	5096.7	125.00	4.000	112.75	10.0	N	WU
0928	57963.3	59497.0	5025.60	50.00	8.750	5028.50	42.50	4.000	30.25	10.0	N	WU
0929	56502.8	59663.1	5083.00	107.00	8.000	5085.00	109.00	4.000	96.75	10.0	N	WU
0930	56033.6	59898.5	5101.70	107.00	8.000	5104.10	109.00	4.000	97.00	10.0	N	WU
0931	59847.5	63505.7	5062.60	98.00	6.000	5064.8	100.00	2.000	87.50	10.0	N	WU
0932	59855.8	60115.7	5104.50	140.00	6.000	5106.9	142.00	2.000	129.50	10.0	N	WU
0933	60310.2	64205.1	5077.40	135.00	8.000	5079.70	127.50	4.000	115.00	10.0	N	WU
0934	60178.9	62032.2	5070.10	130.00	8.000	5072.30	117.50	4.000	105.00	10.0	N	WU
0935	57050.2	59205.8	5125.90	130.00	8.000	5128.10	122.50	4.000	100.00	10.0	N	WU
0936	56745.9	61019.6	5083.40	119.50	8.000	5086.10	102.50	4.000	90.10	10.0	N	WU
0937	55665.7	60303.9	5049.50	100.00	8.000	5052.80	97.50	4.000	85.00	10.0	N	WU
0938	58231.6	62849.7	5033.70	250.00	8.000	5036.00	242.50	4.000	230.00	10.0	N	WL
0939	56195.2	59518.6	5104.70	90.00	8.000	5106.70	92.40	4.000	80.00	10.0	N	WU
0940	58599.8	60040.7	5015.70	50.00	8.000	5016.70	37.50	4.000	25.00	10.0	N	WU
0941	58222.4	62882.6	5033.90	80.00	8.000	5036.10	82.50	4.000	70.00	10.0	N	WU
0942	56061.2	61105.4	5047.70	85.00	8.000	5049.10	87.50	4.000	75.00	10.0	N	WU
0943	59282.9	64523.6	5027.20	75.00	8.000	5028.40	62.50	4.000	50.00	10.0	N	WU
0944	60946.7	66463.1	4993.90	125.00	8.000	4995.90	122.50	4.000	110.00	10.0	N	WU

FORMATION OF COMPLETION CODE:
WL - WASATCH - LOWER SANDSTONE
WU - WASATCH - UPPER SANDSTONE
WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

DATA FILE: \DART\SPK01\MWI10001.DAT

FIELDS DISPLAYED WITH A DASH INDICATE THE DATA IS UNAVAILABLE

TABLE 3.2 GROUND WATER QUALITY SAMPLING HISTORY
AT THE SPOOK, WYOMING SITE
SITE: SPK01 SPOOK
LOG DATES: 11/18/85 TO 12/10/88
REPORT DATE: 09/23/94
PAGE 1a

LOCATION		SAMPLING PERIOD																	
ID	TYPE	02/87	09/87	01/88	02/88	04/88	08/88	12/88											
0910	WL	0910	0910	0910	.	0910	0910	0910											
0911	WL	0911	0911	0911	.	0911	0911	0911											
0912	WL	0912	.	.	0912	0912	0912	0912											
0913	WL	0913	0913	.	0913	0913	0913	0913											
0914	WL	0914	0914	.	0914	0914	0914	0914											
0915	WL	0915	0915	.	0915	0915	0915	0915											
0916	WL	0916	0916	.	0916	0916	0916	0916											
0917	WL	0917	0917	0917	.	0917	0917	0917											
0918	WL	0918	0918	.	0918	0918	0918	0918											
0919	WL	0919	0919	0919	.	0919	0919	0919											
0920	WL	.	0920	0920	.	0920	0920	0920											
0921	WL	.	0921	.	0921	0921	0921	0921											
0922	WL	.	0922	.	0922	0922	0922	0922											
0923	WL	.	0923	0923	.	0923	0923	0923											
0924	WL	.	0924	.	0924	0924	0924	0924											
0925	WL	.	0925	.	0925	0925	0925	0925											
0927	WL	.	0927	.	0927	0927	0927	0927											
0928	WL	.	0928	.	0928	0928	0928	0928											
0929	WL	.	0929	.	0929	0929	0929	.											
0930	WL	.	0930	0930	.	0930	0930	.											
0931	WL	.	.	0931	.	0931	0931	0931											
0932	WL	.	.	0932	.	0932	0932	0932											
0933	WL	.	.	.	.	.	0933	0933											
0934	WL	.	.	.	.	.	0934	0934											
0935	WL	.	.	.	.	.	0935	0935											
0936	WL	.	.	.	.	.	0936	0936											
0937	WL	.	.	.	.	.	0937	0937											
0938	WL	.	.	.	.	.	0938	0938											
0939	WL	.	.	.	.	.	0939	0939											
0940	WL	.	.	.	.	.	0940	0940											
0941	WL	.	.	.	.	.	0941	0941											
0942	WL	.	.	.	.	.	0942	0942											
0943	WL	.	.	.	.	.	0943	0943											
0944	WL	.	.	.	.	.	0944	0944											

DATA FILE NAME: M:\DART\SPK01\LOT10001.DAT

SITE OBSERVATIONAL WORK PLAN FOR THE
UMTRA PROJECT SITE AT SPOOK, WYOMING

SUMMARY OF SITE CONDITIONS

information from the literature were also used in the investigation and are listed in the reference section.

3.2 SITE CHARACTERIZATION

3.2.1 Hydrogeology

Continental fluvial sediments of the Tertiary Wasatch Formation more than 300 ft (90 m) thick underlie the Spook site and dip less than 2 degrees to the northeast. The Wasatch Formation consists of lenticular fine-grained to conglomeratic arkosic sandstone, siltstone, claystone, carbonaceous shale, and coal. The Wasatch Formation is divided into three distinct hydrogeologic units: the upper sandstone unit, the middle shale unit, and the lower sandstone unit. The upper sandstone unit is considered the uppermost aquifer for demonstrating compliance with Subpart B of the final EPA ground water protection standards (60 FR 2854 (1995)).

The upper sandstone unit consists of moderately cemented, fine- to coarse-grained sandstone containing silty shale lenses. It ranges in thickness from 70 to 140 ft (21 to 43 m). The middle shale unit is composed of well-consolidated silty shale. It ranges in thickness from 40 ft (12 m) in the vicinity of the site to greater than 180 ft (55 m) east of the site. The lower sandstone unit consists of moderately cemented, fine- to coarse-grained sandstone, with the top of the unit in excess of 160 ft (49 m) below the surface near the site (Figures 3.2, 3.3, and 3.4).

Ground water beneath the Spook site occurs in the upper and lower sandstone units of the Wasatch Formation under unconfined and confined conditions, respectively. Depths to the water table in the upper sandstone unit range from 40 to 120 ft (12 to 37 m) below the ground surface. The observed saturated thickness of the upper sandstone unit is approximately 20 ft (6 m) in the vicinity of the site. The upper and lower sandstone units are separated by an aquitard consisting of a thick, laterally extensive silty-shale unit (middle shale unit) with no apparent hydraulic interconnection between the two units.

Ground water in the upper sandstone unit in the vicinity of the site is recharged by infiltration of precipitation and seepage from intermittent streams. Recharge also resulted from processing solutions used in milling during the 1960s. There is no evidence of discharge of ground water from the upper sandstone unit to the land surface or surface water in the vicinity of the site (based on field observations and conversations with local ranchers). Seasonal fluctuations of the potentiometric surfaces of the upper and lower sandstone units are generally less than 1 ft (0.3 m), based on water level measurements taken during 1987 and 1988. Comparison of ground water elevations measured during 1987-1988 to elevations measured during July 1994 indicates relatively stable ground water conditions in the upper and lower sandstone units in the vicinity of the Spook site.

FIGURE 3.3
CROSS SECTION A-A'
SPOOK, WYOMING, SITE

FIGURE 3.4
CROSS SECTION B-B'
SPOOK, WYOMING, SITE

The predominant ground water flow direction in the upper sandstone unit is to the northeast, under an average horizontal hydraulic gradient of 0.005 (Figure 3.5). The gradient becomes steeper northeast and southeast of the site. The configuration of the ground water table in the upper sandstone unit is controlled by the elevation of the top of the middle shale unit as well as land surface topography and recharge. The ground water flow direction in the lower sandstone unit is generally to the southeast under a hydraulic gradient averaging 0.01 (Figure 3.6).

Aquifer pumping tests were conducted in monitor wells SPK01-0913 and -0928 to measure hydraulic parameters of the upper sandstone unit. The tests were run for 13.1 and 16.8 hours with an average discharge rate of 3.3 and 4.2 gpm (0.2 L/s and 0.26 L/s), respectively. Although the average discharge rate (yield) of ground water from the uppermost aquifer was sustained at approximately 4 gpm (0.25 L/s) during the aquifer pumping tests, steady-state conditions were not reached. Drawdown of approximately 4 to 5 ft (1 to 2 m) was observed in the pumping wells from an average saturated thickness of 14.5 ft (4.4 m). The two tests indicated an average transmissivity of 225 ft²/day (2.42 cm²/s) in the upper sandstone unit. The average hydraulic conductivity of the upper sandstone unit, determined by dividing the transmissivity by the average saturated thickness (14.5 ft [4.4 m]), was 15 ft/day (5.3×10^{-3} cm/s). The average linear ground water velocity in the upper sandstone unit was 0.38 ft/day (1.34×10^{-4} cm/s), based on the above hydraulic conductivity, an average hydraulic gradient of 0.005, and an estimated effective porosity of 0.20. The aquifer pumping test calculations are presented in Appendix E.

Based on the average linear ground water velocity in the upper sandstone unit, it is estimated that conservative species of contaminants in ground water could have migrated approximately 2500 ft (760 m) downgradient from the site since the period of uranium processing operations during the 1960s. This estimate is based on limited data and could change, depending on the following conditions: spatial variability of aquifer parameters, temporal variation in recharge to the system during and after uranium-processing activities, and retardation of contaminants. The maximum influx of fluids (and contaminants) through the unsaturated zone into the ground water system would have occurred while uranium-processing activities were in progress. Fluid from the tailings (which were deposited adjacent to and into the Spook open-pit mine) would infiltrate from the bottom of the pit into ground water at a depth of approximately 20 ft (6 m) below the surface. After milling operations ceased, the principal driving force for contaminant migration decreased and steady-state conditions were approached in the aquifer over time. After completion of remedial action at the Spook site, the open-pit mine was filled in with overburden materials, causing the vertical distance to the water table to increase from 20 ft (6 m) to approximately 100 ft (30 m) reducing the ability of fluids to migrate into the ground water system.

3-14

3.2.2 Geochemical conditions and regional ground water quality

The Spook uranium mill site is underlain by uranium mineralization associated with an alteration front in the upper sandstone unit. Uranium ore deposits characteristically occur at irregular intervals along the alteration front, as evidenced by the Bear Creek open-pit mine north of the Spook site and Kerr McGee open-pit mines south of the site. The primary regional mineralization episode probably occurred during the Oligocene through early Miocene Ages as oxidizing ground water moved from the south through sandstone aquifers in the Wasatch Formation and through overlying formations, dissolving disseminated minerals that contained trace amounts of uranium, molybdenum, and selenium (Galloway, 1979). The metal-bearing ground water migrated toward the west, north, and east, until changes in physical and geochemical conditions caused precipitation of uranium, selenium, and molybdenum along the edges of the alteration front. Figure 3.7 shows the resulting pattern of mineralization, with the alteration front separating the unaltered sandstones (west, north, and east of the front) from the altered sandstones in the interior of the front. The Spook site lies on that front, at the boundary between altered and unaltered sandstones.

There is generally a geochemical gradient within uranium-mineralizing alteration fronts, with vanadium and selenium precipitates being concentrated on the altered (interior) side of the front, uranium concentrated in the middle, and molybdenum concentrated on the unaltered (exterior) side. In the Powder River basin, selenium precipitates have been identified as being ferroselite in the interior of the front, with some elemental selenium occurring on the reduced side (Granger and Warren, 1974).

At present, the ground water flow direction in the upper sandstone unit beneath the Spook site is from the southwest to northeast, moving from the unaltered sandstones, which contain no uranium mineralization, through the uranium-bearing alteration front and into the oxidized, altered sandstones. As the ground water encounters uranium- and selenium-bearing minerals, it dissolves those minerals. Thus, as naturally-occurring ground water moves from the unaltered zones into the area of altered sandstones, ground water quality can be expected to degrade as naturally-occurring uranium and selenium are dissolved into the ground water. Evidence that this natural degradation of ground water quality has occurred in the vicinity of the alteration front is provided in Figure 3.7, which shows that uranium and selenium concentrations in natural ground waters are higher within the area of altered sandstones.

Ground water beneath the Spook site is within the altered, oxidized interior of the alteration front. Ground water from the west side of this front (farther upgradient) would encounter conditions in unaltered, reduced sandstones, which are not representative of conditions beneath and downgradient from the Spook site.

Because of the influence of the alteration front geochemical gradient on ground water chemistry at the site, background ground water quality must be assessed using available information on regional background conditions and information from downgradient monitor wells that have not been impacted by uranium processing operations. Background ground water quality is the quality of ground water expected in the vicinity of the Spook site if contamination had not occurred as a result of uranium-processing activities.

Regional background ground water quality data from sandstones in the Wasatch Formation were collected by Rocky Mountain Energy (RME) from 22 domestic wells and monitor wells during the period between 1974 and 1977 (RME, 1983). The wells were completed in both the altered and unaltered portions of the Wasatch Formation, as determined by their location relative to the alteration front (Figure 3.7). The data were collected as part of a mining permit application for the RME Bear Creek Project, and ground water was sampled prior to mining and milling activities. Thus, the data represent natural, ambient ground water quality. These data are available from the state of Wyoming (RME, 1983). The average concentration of selected constituents and the depth for each well are summarized in Table 3.3, and the complete set of data are provided in Appendix D.

Regionally, in unaltered sandstones, uranium concentrations are generally less than 0.005 mg/L and selenium concentrations are generally less than 0.01 mg/L, reflecting the absence of mineralization within the unaltered sandstones (Table 3.3). Other metals associated with mineralization (molybdenum and chrome) are also not present at levels above detection. Nitrate concentrations range up to 8.8 mg/L; ammonium is generally less than 0.3 mg/L; and the pH is slightly alkaline.

In contrast, regional data for the altered sandstones demonstrate that most ground water within the altered sandstones has elevated concentrations of uranium and selenium compared to ground water in the unaltered sandstones. Of the eight wells located within the altered sandstone, six have selenium concentrations in excess of the UMTRA Project MCLs for selenium (0.01 mg/L). Uranium exceeds the MCL for uranium (0.044 mg/L) in one well. Molybdenum and chromium occur at levels that are close to or below detection levels. Ammonium is generally below detection; nitrate ranges from less than 0.2 to 38 mg/L (averaging 7.7 mg/L); and pH is slightly alkaline (Table 3.3).

The regional data demonstrate that ground water from the altered sandstones has uranium and selenium concentrations generally greater than those in the unaltered sandstones and that the altered sandstones contain ground water with ambient uranium and selenium concentrations in excess of the MCLs for UMTRA Project sites. Some spatial variability occurs in uranium and selenium concentrations in ground water because of physical and geochemical conditions in the sandstones and the ground water flow patterns.

Table 3.3 Summary of regional ground water quality in altered and unaltered sandstone of the Wasatch Formation, Converse County, Wyoming

Well Id	Depth (ft)	Se (mg/L)	U (mg/L)	Cr (mg/L)	Mo (mg/L)	NO ₃ as NO ₃ (mg/L)	SO ₄ (mg/L)	NH ₄ as N (mg/L)	pH
UNALTERED SANDSTONES^a									
Site 1	360	<0.010	<0.004	<0.006	<0.020	3.3	423	<0.5	7.4
Site 2	325	<0.010	<0.013	<0.004	<0.009	1.7	369	0.4	7.3
Site 3	270	<0.010	<0.003	<0.006	<0.010	3.9	167	0.5	7.6
Site 4	260	<0.010	<0.006	<0.006	<0.030	4.2	171	0.5	7.5
Site 5	80	<0.010	<0.004	<0.008	<0.006	6.8	770	<0.1	7.3
Site 8	515	<0.010	<0.002	<0.007	<0.020	2.5	26	<0.2	8.0
Site 9	410	<0.010	<0.002	<0.006	<0.009	2.8	78	0.3	7.6
Site 10	430	<0.010	<0.003	<0.009	<0.008	2.8	90	<0.2	8.2
Site 15	126	<0.012	<0.009	<0.006	<0.009	3.9	1392	<0.1	7.1
Site 16	240	0.010	<0.007	0.004	0.004	8.8	384	1.0	8.3
MW-1 ^b	200	<0.005	<0.003	<0.004	<0.010	0.6	577	<0.1	7.5
MW-2 ^b	273	<0.008	0.006	<0.006	<0.020	5.8	352	<0.1	7.2
MW-3 ^b	290	<0.008	<0.003	0.003	<0.005	5.6	562	<0.2	7.3
MW-21 ^b	203	na	na	na	na	0.4	274	<0.1	7.1
AVERAGE	284	<0.009	<0.005	<0.005	<0.011	3.8	403	0.31	7.5
ALTERED SANDSTONES									
Site 6	265	<0.015	0.017	<0.004	<0.006	38.0	128	<0.1	7.2
Site 7	322	<0.016	0.032	<0.006	<0.010	3.6	551	<0.1	7.5
MW-20 ^b	197	1.400	1.800	<0.02	<0.050	17.6	955	<0.1	7.8
MW-18 ^b	271	0.065	0.036	<0.02	<0.050	1.0	445	<0.1	7.6
MW-19 ^b	237	0.040	na	0.05	0.050	<0.2	221	<0.1	7.4
MW-17 ^b	176	0.031	0.023	<0.02	<0.050	0.4	888	<0.1	7.7
PW-2 ^b	222	0.056	<0.008	0.02	0.050	0.6	435	0.3	7.7
MW-16 ^b	240	0.037	0.007	0.05	0.100	0.3	766	<0.1	7.7
AVERAGE	241	0.208	0.240	<0.024	<0.046	7.7	549	<0.13	7.6

^aData listed are the average of one to seven sampling rounds per well. Averages as "less than" are the average of detection limits and detected values.

^bData are for one sampling round only.

Background ground water quality at the Spook processing site

Six monitor wells (SPK01-0918, -0925, -0931, -0933, -0943, and -0944) are located downgradient but beyond the area of contamination as defined above (Figure 3.8 and Table 3.4). That is, these samples had no ammonium, a neutral to slightly alkaline pH, and nitrate concentrations less than 13 mg/L. Data from these wells were also checked against other positive indicators of contamination, such as chloride, sodium, and sulfate. One monitor well at the edge of the identified area of ground water contamination, monitor well SPK01-0918, had a chloride concentration of 26 mg/L that may indicate contamination. However, the other five samples all had low chloride (less than 1 to 5.3 mg/L) and low sulfate (61 to 393 mg/L). The plume extends approximately 2500 ft (760 m) downgradient from the former tailings pile and acid pond. One well (SPK01-0925) lies close to the edge of the plume (within about 200 ft [61 m]) and was discounted as background because of its proximity to the plume. The four remaining monitor wells in the upper sandstone unit (SPK01-0931, -0933, -0943, and -0944) display no trends in nitrate, chloride, sulfate, or sodium as a function of distance from the core of contamination, and pH and major element chemistry are within the range of the regional background. These four wells are located 2900 to 6700 ft (880 to 2000 m) downgradient from the Spook site and 700 to 4200 ft (213 to 1300 m) beyond the edge of the plume. Data from these four monitor wells determined to be beyond the influence of contamination were used to determine the quality of background ground water in the altered upper sandstone unit at the Spook site.

As with the regional background information, data from these background monitor wells on the site demonstrate the natural occurrence of uranium and selenium, in excess of MCLs for UMTRA Project sites, in ground water within the altered sandstones of the Wasatch Formation. Selenium concentrations (up to 1.1 mg/L) are within the observed range of regional background for altered sandstones (up to 1.4 mg/L), but uranium concentrations (0.89 to 2.9 mg/L) are slightly greater than the observed regional range (up to 1.8 mg/L). Overall, the comparison to regional background ground water quality data demonstrates that background ground water from altered sandstones near the site is typical of regional background. Together, both sets of data demonstrate that the concentrations of selenium and uranium in background ground water locally exceeds the MCLs for UMTRA Project sites. In addition, chromium exceeds the MCL in background ground water within the upper sandstone unit at the Spook site (Table 3.4).

3.3 CONCEPTUAL SITE MODEL

A conceptual model of the Spook site has been developed to provide a basis for assessing the interaction of site-related contaminants with the environmental setting, contaminant release mechanisms, contaminant fate and transport, and potential risks to human health and the environment. The conceptual model is used to identify additional data needs (if any) and is the foundation upon which an appropriate ground water compliance strategy will be determined. Figure 3.9

FIGURE 3.8
EXTENT OF CONTAMINATION IN THE UPPER SANDSTONE UNIT BASED ON DISTRIBUTION OF
AMMONIUM, ACID pH, AND NITRATE
AT THE SPOOK, WYOMING, SITE

Table 3.4 Summary of ground water quality in the upper sandstone unit at the Spook, Wyoming, site

Parameter	MCL	Containment ^a core			Outer plume ^b wells			Background ^c		
		Min	Median ^d	Max	Min	Median ^d	Max	Min	Median ^d	Max
Ammonium	No MCL	69	98	300	<0.1	<0.1	22	<0.1	<0.1	<0.1
Antimony	No MCL	0.001	0.020	0.036	<0.003	0.004	0.014	<0.003	<0.003	0.004
Arsenic	0.05	0.004	0.012	0.05	<0.001	<0.01	0.02	<0.001	<0.01	<0.01
Barium	1.0	<0.01	<0.06	<0.10	<0.01	<0.10	0.36	0.03	<0.10	<0.10
Cadmium	0.01	<0.001	<0.005	0.021	<0.001	<0.001	0.011	<0.001	<0.001	<0.003
Chromium	0.05	<0.01	0.15	0.17	<0.01	0.06	0.23	0.04	0.06	0.08
Lead	0.05	<0.01	<0.01	0.03	<0.001	<0.01	0.02	<0.01	<0.01	<0.01
Manganese	No MCL	5.0	15	28	<0.01	0.06	0.40	<0.01	0.02	0.05
Mercury	0.002	<0.0002	<0.0002	0.0004	<0.0002	<0.0002	0.0005	<0.0002	<0.0002	0.0004
Molybdenum	0.10	0.02	0.07	0.18	<0.01	0.02	0.20	<0.01	0.01	0.02
Nitrate (as NO ₃)	44	160	350	690	<0.1	41	490	2.2	4.0	9.1
pH	No MCL	5.59	6.38	7.13	6.39	7.01	8.50	6.99	7.20	7.50
Radium 226 + 228 (pCi/L)	5.0	3.4	44	94	0.9	8.5	194	1.3	2.2	3.4
Selenium	0.01	0.045	0.96	6.6	<0.001	1.15	21	0.036	0.39	1.1
Silver	0.05	<0.01	0.03	0.04	<0.01	0.01	0.08	<0.01	0.01	0.02
Sulfate	No MCL 1530	2940	3760	58	330	1300	146	159	393	
Total dissolved solids	No MCL 3670	4970	5490	55	870	2720	440	500	860	
Uranium	0.044	0.043	0.80	3.9	0.017	2.0	25	0.89	2.0	2.9

^aContaminant core wells are characterized by high ammonium and low pH. Wells used are DOE monitor wells SPK01-0920, -0930, -0935, and -0940.

^bOuter plume wells lie outside the contaminant core but within the nitrate plume (Figure 3.7). Wells used are DOE monitor wells SPK01-0911, -0912, -0913, -0916, -0917, -0922, -0924, -0927, -0928, -0929, -0932, -0934, -0936, -0937, -0939, -0941, and -0942.

^cBackground wells are at least 500 ft (___m) beyond the nitrate plume, downgradient of the processing site. Wells used are DOE monitor wells Spk01-0918, -0925, -0931, -0933, -0943, and -0944.

^dThe median represents the 50th percentile of the pooled data from the wells in each category.

All data expressed as milligrams per liter unless noted as picocuries per liter.

FIGURE 3.9
CONCEPTUAL MODEL FOR THE
SPOOK, WYOMING, SITE

depicts the conceptual site model for the Spook site. Under the observational approach, the model is also used to identify appropriate contingencies.

3.3.1 Contaminant sources

Ground water in the uppermost aquifer (upper sandstone unit of the Tertiary Wasatch Formation) beneath and downgradient of the site has been contaminated by uranium processing activities that occurred from 1962 until 1966. Site-related contaminants in ground water have been detected approximately 2500 ft (760 m) downgradient and include uranium, selenium, chromium, molybdenum, and radium-226 and -228. The sources of site-related contamination in ground water in the upper sandstone unit include chemical and radiological constituents derived from tailings and ore piles, the acid pond, and windblown tailings subjected to leaching during precipitation infiltration. The volume of all contaminated material is estimated to be 243,000 yd³ (DOE, 1990). The original site-related sources of shallow ground water contamination in the upper sandstone unit are no longer active, having been stabilized within the Spook open-pit mine.

Naturally occurring alteration front mineralization within the saturated zone also constitutes a source of contamination for ground water in the upper sandstone unit.

3.3.2 Extent and magnitude of contamination

Process reagents and derivatives that could reasonably be anticipated in the contaminated ground water at the site include sulfate, ammonium, sodium, nitrate, and possibly chloride. Comparison of the regional background ground water quality (Table 3.3) with samples from DOE monitor wells in the upper sandstone unit (Table 3.4) indicates that all of these anticipated process reagent contaminants are present at levels significantly greater than background levels. Of these, nitrate is the most useful for identifying the extent of contamination. Ammonium and pH are buffered by reactions with the solid rock matrix and only serve to identify the area most intensely affected by contaminants. In contrast, nitrate is a chemically conservative constituent (generally not affected by reactions with aquifer matrix) and delineates areas that have received lesser amounts of contaminated solutions because of dilution and chemical reactions. Nitrate is used in respiration by bacteria (denitrification); however, denitrification will not occur in the presence of dissolved oxygen (Rowell, 1981). Dissolved oxygen is present in ground water in the region (RME, 1978) and on the site (DOE, 1990) in measurable amounts (averaging about 1.6 mg/L in the upper sandstone unit on the site). Thus, nitrate is probably not appreciably affected by denitrification in the upper sandstone unit beneath the site.

Together, ammonium and pH define a core of contamination in the upper sandstone unit centered on the sources of contamination, including the tailings pile, acid pond, and areas in between (Table 3.4 and Figure 3.8). In this core area, ammonium generally is present at levels above those found in the regional

background (less than 0.1 mg/L) and/or the pH is less than 7.0, lower than that observed in regional background (pH greater than 7.0). In addition, nitrate and sulfate are present in the contaminated ground water at relatively high concentrations in the core of contamination (up to 690 mg/L nitrate and 3760 mg/L sulfate) (Table 3.4).

Nitrate concentration in regional background ground water ranges from less than 0.2 to 38 mg/L, with an average of 5.2 mg/L and a standard deviation of 8.3 mg/L. Nitrate values at the site in excess of the regional mean-plus-one standard deviation (13 mg/L) delineate the contaminated area that includes the core of contamination and an outer zone of contamination with elevated nitrate, but little or no ammonium and generally neutral to slightly alkaline pH (Table 3.4 and Figure 3.8). The nitrate delineates two plumes: one extends northeast of the tailings pile, and the second extends east of the acid pond. The trends of these plumes are consistent with the hydrologic gradient, and the extent of the plumes is consistent with the ground water flow velocity computed from hydrologic tests. Not enough data exist to determine long-term time-dependent trends in the concentrations within the core and outer portions of the plumes.

The depth of contamination is restricted vertically to the upper sandstone unit, which is underlain by a persistent shale aquitard. Ground water in the lower sandstone unit is not contaminated as a result of milling operations at the Spook site, and concentrations of all constituents are below MCLs for UMTRA Project sites (Table 3.5; Appendix D). Elevated concentrations of nitrate and uranium detected in monitor well SPK01-0910 during the initial round of sampling in February 1987 (a few weeks after completion of the well) were possibly the result of contamination introduced into the ground water during drilling and installation of the well. Five sampling rounds from September 1987 to December 1988 displayed a significant decrease in nitrate (from 60 to less than 10 mg/L) and uranium (from 0.08 to 0.01 mg/L), demonstrating that mixing and dilution with natural ground water are returning the ground water near this well to its natural state.

Data from the DOE background monitor wells in the upper sandstone unit were compared to the water quality data from wells located within the core and outer portions of the contaminant plume associated with the tailings pile and acid pond. The comparison of background to plume data indicate that, within the upper sandstone unit, several constituents in the plume are at concentrations above MCLs for UMTRA Project sites, including chromium, molybdenum, nitrate, selenium, uranium, and combined radium-226 and -228. In addition, a few samples within the plume exceeded the MCL for cadmium; however, most contaminated ground water contained less than 0.001 mg/L cadmium.

About half of the contaminants in the plume that exceed UMTRA Project MCLs are present at levels 10 times or less that of background. These include chromium (about 2 times background), molybdenum (about 10 times background), and uranium (about the same as background). Selenium is also generally present at concentrations near that of background (within 3 times that

Table 3.5 Ground water quality in the lower sandstone unit at the Spook, Wyoming, site

Parameter	MW-910	MW-914	MW-919	MW-921	MW-923	MW-938
Alkalinity ^a	135	111	165	214	145	213
Ammonium	0.5	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Calcium	50	34	57	104	50	10
Chloride	<1.0	<1.0	<1.0	2.1	<1.0	<1.0
Chromium	0.05	0.01	0.02	0.04	0.02	<0.01
Gross alpha (pCi/L)	12	11	5	0	4	2
Gross beta (pCi/L)	7	4	7	17	6	4
Iron	0.04	<0.03	0.05	0.68	0.07	<0.03
Lead	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Magnesium	9	5	10	22	9	2
Manganese	0.04	0.02	0.03	0.07	0.04	<0.01
Nitrate ^b	8	7	1	5	6	6
pH	8.0	8.2	7.6	7.3	7.7	8.6
Potassium	5	4	5	7	6	4
Radium-226 (pCi/L)	0.7	0.3	1.3	0.6	0.8	0.3
Radium-228 (pCi/L)	0.9	0.8	1.7	1.8	0.6	0.0
Selenium	0.006	0.005	0.006	<0.005	<0.005	<0.005
Silver	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Sodium	77	56	58	36	98	80
Sulfate	200	110	160	210	210	2
Total dissolved solids	470	340	60	560	510	260
Uranium	0.0101	0.0012	0.0015	0.0006	0.0011	0.0004
Vanadium	<0.01	<0.01	<0.01	0.02	<0.01	<0.01

^aAlkalinity as mg/L CaCO₃.

^bNitrate expressed as NO₃.

Data are for filtered samples collected December 10, 1988. All data expressed as milligrams per liter unless otherwise noted.

of background), though locally (in monitor well SPK01-0916), selenium exceeds background by a factor of about 20. Nitrate in the area of the plume is considerably above background levels (up to about 90 times background) but decreases steadily in the outer portions of the plume to near background levels. Combined radium-226 and radium-228 is present locally at concentrations up to 60 times background.

3.3.3 Potential release mechanisms

Based on available information regarding the uranium milling process, characterization of tailings solutions, and the distribution of contaminants in ground water, a reasonable model of the potential contaminant release mechanisms has been developed.

Acid solutions used in the uranium milling process at the Spook site were disposed of on the tailings pile and in the acid pond. Consequently, these solutions percolated into the vadose zone, where they were neutralized by reactions with carbonate minerals. However, several constituents remained in neutralized solutions, including uranium, selenium, and nitrate. Process solutions from the tailings appear to have effectively drained over time, such that prior to surface remediation, the tailings were no longer saturated (DOE, 1990). Seepage from the acid pond resulted in the complete drainage of acid solutions from the pond prior to surface remediation. Thus the primary release of contaminants is thought to have been seepage of process solutions into the vadose zone prior to surface remediation. Potential secondary release mechanisms would include leaching of contaminants from tailings and subsoils immediately beneath the tailings and acid pond by infiltration of precipitation. Typically, leaching mechanisms include dissolution, desorption, and cation exchange.

Surface remediation at the site has resulted in stabilization of site wastes in a disposal cell which incorporates features designed to provide long term hydrologic isolation. As a result, the primary and secondary release mechanisms as discussed above have been mitigated. Transient drainage is not expected to be a problem beneath the disposal cell because of the design and construction features of the disposal system, the limited amount of water used during the construction process, and the natural hydrogeologic conditions in the vicinity of the Spook site.

3.3.4 Contaminant fate and transport mechanisms

A geochemical reaction effective in decreasing or removing contaminants from the process solutions was neutralization of acid process solutions by carbonate minerals within soils immediately beneath the tailings pile and acid pond. This neutralization occurred within 12 ft (3.7 m) of the contact between the tailings and the Wasatch Formation (Shepard and Brown, 1983); thus, the pH of the contaminant plume beneath the site is neutral to slightly acid (Table 3.2). Geochemical modeling of contaminated ground water within the plume area was

performed using the computer code PHREEQE (Parkhurst et al., 1980). This modeling indicates that most of the ground water is now equilibrated with calcite (a calcium carbonate mineral responsible for neutralizing the acid process solutions). Neutralization is generally effective in decreasing total dissolved solids, sulfate, aluminum, iron, radium, and cation trace metal concentrations in contaminant solutions produced by uranium processing.

Another effective process for decreasing contaminant concentrations in the ground water is dispersion. The decrease in contaminant concentrations in the outer portions of the plume, relative to the core of contamination, demonstrates that dispersion has occurred at the Spook site (Table 3.2). This dispersion is caused by the movement of ground water from southwest to northeast across the site. Mixing of the contaminated water with natural water downgradient of the site has resulted in fivefold or greater decreases in total dissolved solids, sulfate, and nitrate. Further dispersion will occur in conjunction with contaminated ground water movement toward the northeast.

Dispersion of the plume has little or no effect on the concentrations of uranium, molybdenum, selenium, or chromium because these constituents are present in background ground water at concentrations that are similar to, or even greater than, those in the plume. For example, most uranium concentrations in background ground water are the same as or greater than those in the core of the plume (Table 3.2), reflecting the fact that the principal source of uranium in both plume and background ground water is dissolution of uranium ores within the Wasatch Formation.

As with uranium and selenium, radium concentrations in the plume may also result from dissolution of the uranium ore deposit in the alteration front. The extent of radium-226 and radium-228 migration into the Wasatch Formation beneath the tailings pile was generally less than 3 ft (1 m), due to coprecipitation with sulfates formed in response to neutralization reactions (FBDU, 1981). Considering the general effectiveness of this process, it is likely that locally high concentrations of radium in the plume (up to 194 pCi/L combined radium-226 and -228 in monitoring well SPK01-0924) are related to local dissolution of ore in the alteration front. Radium is adsorbed onto clay minerals, iron oxyhydroxides, and manganese oxyhydroxides (Ames et al., 1983). These solids are present within the altered upper sandstone unit on the site (DOE, 1989) and thus adsorption may limit the transport of radium from local sources.

3.3.5 Background risk evaluation

A baseline risk assessment of site-related contamination was not performed for the Spook site because of the lack of exposure pathways for the uppermost aquifer and because of the naturally contaminated nature of background ground water from that aquifer.

The geochemical study presented above has demonstrated that widespread, ambient contamination exists in background ground water. To demonstrate the contaminated nature of the ambient background ground water from the uppermost aquifer, a screening level risk analysis was performed using data from the four background wells within the alteration front, but beyond the farthest extent of tailings-related contamination (SPK01-0931, -0933, -0943, and -0944). The risk analysis is provided in Appendix F. The risk analysis determined that site conditions support the proposed compliance strategy of performing no remediation.

Potential exposure pathways

There are no known current exposure pathways for ground water from the uppermost aquifer (upper sandstone unit) in the vicinity of the Spook site because the ground water is not used as a source of drinking water or for any other beneficial uses. Alternative supplies of good quality ground water are readily available from the confined lower sandstone unit and from deeper confined aquifers in the lower Wasatch and underlying Fort Union Formations. Several water supply wells in the Spook site vicinity derive ground water from these deeper aquifers for domestic purposes and stock watering.

The Spook site is in a remote area of Wyoming, well removed from any large population centers. The nearest residence is 1.4 mi (2.3 km) southwest of the Spook site. An estimated 10 residents live within a 3-mi (5-km) radius of the site. Conversations with the Converse County Planning Commissioner and the local ranchers indicated that the large ranches in the vicinity of the Spook site have been owned and operated by successive generations of the families currently in residence, and it appears that this trend likely will continue into the future (DOE, 1990). Thus, the current population density is very low and is likely to remain very low in the foreseeable future.

Conditions in the site area support the conclusion that there currently are no complete exposure pathways to ground water from the uppermost aquifer. Because there are no current or foreseeable future exposure pathways to ground water in the uppermost aquifer, this ground water does not present a risk to human health or the environment.

3.3.6 Treatability issues

The two site-related constituents in ground water that could affect human health and the environment are selenium and uranium. The final EPA UMTRA Project site ground water cleanup standard for selenium is 0.01 mg/L (60 FR 2854 (1995)). Chapter VIII (4, (d)) of the Wyoming regulation states the ground water MCLs for domestic, agricultural, and livestock uses are 0.01, 0.02, and 0.05 mg/L, respectively (State of Wyoming, 1993). Background ground water selenium concentrations at the Spook site are well above both the state ground water MCLs and EPA ground water cleanup standard. The maximum background selenium concentration observed was 1.1 mg/L (Table 3.4). In

addition, the background ground water concentrations of uranium exceed both the state and EPA limits described above (Table 3.4).

Selenium may be removed by several treatment methods. Treatment methods that are considered as best available treatment (BAT) methods by the EPA are electrodialysis, lime softening, activated alumina fluoride (alumina), and ion exchange. Although not listed as a BAT, reverse osmosis and distillation will also remove selenium along with other dissolved metals and salts. Since the water must also be treated for uranium removal, the process design for water treatment becomes more complicated.

The elevated levels of selenium (1.1 mg/L maximum), uranium (2.9 mg/L maximum), calcium (179 mg/L maximum) and sulfate (393 mg/L maximum) make treatment of this water more akin to an industrial waste water treatment process than a public water supply treatment process. The need to achieve at least a 99 percent removal of selenium and uranium (to meet MCLs of 0.01 mg/L for selenium and 30 pCi/L, or 0.044 mg/L for uranium) emphasizes the difficulty.

A treatment system to meet the EPA drinking water MCLs for these two elements could consist of a pretreatment system such as lime softening and filtration to remove calcium (which can cause scale formation), followed by either reverse osmosis or electrodialysis to remove selenium and uranium as well as all other metals and salts. Because of the need to achieve 99 percent reduction of uranium and selenium, the treated water would be very low in total dissolved solids, which would require the addition of some salts to prevent the water from being excessively corrosive in water system distribution lines.

Alternately, pretreatment with a lime-softening unit could be used, followed by neutralization, filtration, and polishing with specific ion exchange resin units for selenium and uranium removal. The lime-softening pretreatment could remove 30 to 50 percent of the selenium and up to 90 percent of the uranium. Before polishing the water with the ion exchange units, ozone or chlorine would probably need to be added, as the selenium in the ground water is probably present as selenite (SeO_3^{-2}). Selenium removal with ion exchange resins is preferential to the removal of selenate (SeO_4^{-4}), as opposed to selenite. The same requirement for conversion of selenite to selenate exists with the use of alumina for the removal of selenium (Montgomery, 1985).

In addition to the complexity of the treatment system, the treatment processes used to remove the selenium and uranium may generate wastes in the sludges and brines generated during treatment. If these wastes meet hazardous waste criteria, proper disposal of these residues will be very costly. Consistently achieving 99-percent-plus removal rates for selenium and uranium would be technically difficult. In addition to the high capital and operating costs for these systems, well-trained operating, maintenance, and laboratory personnel will be required at such a facility. None of these treatment processes are used on a

widespread basis within Wyoming or EPA Region VIII for public water supply treatment (Jones, 1994).

The extensive contamination of the aquifer caused by natural mineralization and the inability to employ reasonable treatment methods qualify ground water in the upper sandstone unit as limited use. The concentrations of selenium and uranium found in background ground water cannot be cleaned up using treatment methods reasonably employed in public water supply systems.

3.4 UNCERTAINTIES AND SUPPLEMENTAL DATA NEEDS

Combining elements of the DQO process and the observational approach, the SAFER concept is a method of conducting environmental remediation activities under conditions of inherent uncertainty. These uncertainties include site conditions, remedial technology performance, and regulatory requirements. The DQO process defines the type and quality of data needed for characterization activities. The observational approach provides an operational framework for managing uncertainty and planning decision making. The observational approach also establishes a remedial design based on most-probable site conditions, evaluation of data sufficiency, identification of reasonable deviations, and preparation and implementation of contingency plans.

No data deficiencies have been identified at the Spook site based on the evaluation of existing data and the conceptual site model. Therefore, no additional site characterization data are required to support the selection of the compliance strategy for Subpart B of 40 CFR Part 192.

The lack of recent ground water quality data is not considered a significant data deficiency. Since completion of surface remediation activities in November 1989, the source of ground water contamination has been minimized and the amount of infiltration through the contaminated materials has been significantly reduced. Existing site-related contamination in ground water would be diluted over time by ground water flow beneath the site. The extent of the contaminated area may increase with time, but concentrations of potentially hazardous constituents should decrease because of dispersion. Based on existing characterization data and regional ground water quality (as previously discussed), any changes in ground water conditions beneath and downgradient from the Spook site are not expected to have any significant impact on human health and the environment.

4.0 GROUND WATER COMPLIANCE STRATEGY SELECTION

This section describes how requirements for meeting standards at UMTRA Project sites presented in Section 2.0 are fulfilled through the ground water compliance strategy selection framework (Figure 4.1). The site-specific data presented in Section 3.0 are used to answer the questions posed in the framework. This framework is presented in the UMTRA Ground Water Project PEIS (DOE, 1994). The three compliance strategies that could result from the use of the framework are as follows:

- **No remediation:** The strategy of no remediation means that compliance with the proposed standards would be met without altering the ground water or cleaning it up in any way. This could be applied at sites that have no contamination above MCLs or background levels or at sites that have contamination above MCLs or background levels but qualify for supplemental standards or ACLs.
- **Natural flushing:** This strategy allows the natural ground water movement and geochemical processes to reduce the constituent concentrations to levels within regulatory limits in a given time period. This could be applied at sites where ground water compliance would be achieved with the application of natural flushing within 100 years, where effective monitoring and institutional controls could be maintained, and where the ground water is not currently, and is not projected to be, a drinking water source.
- **Active ground water remediation:** This strategy would require the application of engineered ground water remediation methods such as gradient manipulation, ground water extraction and treatment, or *in situ* ground water treatment to achieve compliance with the proposed standards.

4.1 DECISION FRAMEWORK PROCESS

Figure 4.1 shows the ground water compliance strategy selection framework used to determine the strategy for the Spook site.

- **Assessment of existing data:** The first step in selecting an appropriate compliance strategy for the Spook site was to assess whether the existing data adequately characterized the hydrogeologic and ground water contamination conditions, or whether the collection of additional data was necessary. Section 3.0 provides a conceptual site model that includes the hydrogeologic setting, nature and extent of contamination, and contaminant fate and transport. Evaluation of the conceptual site model indicates that an adequate hydrogeological and ground water contamination characterization program has been completed. Ground water in the uppermost aquifer beneath and downgradient from the Spook site has been contaminated as a result of uranium processing activities that occurred from 1962 until 1966. Site-related contaminants in ground water have been detected approximately 2500 ft (760 m) downgradient, and include uranium, selenium, and nitrate.

REF: DOE, 1994.

FIGURE 4.1
GROUND WATER COMPLIANCE STRATEGY SELECTION FRAMEWORK
SPOOK, WYOMING, SITE

- **Comparison with MCLs or background concentrations:** The second step was to determine whether ground water contamination exceeds MCLs or background ground water quality. Section 3.0 summarizes the results of analytical data that show that site-related ground water contamination is present in excess of the MCLs for chromium, molybdenum, nitrate, selenium, uranium, and combined radium-226 and -228.
- **Applicability of supplemental standards:** The third step was to determine whether the contaminated ground water qualified for supplemental standards because of the classification of ground water as limited use. The conceptual site model describes the regional background ground water quality and the ground water quality of the uranium mineralization belt in the area of the Spook site. Section 3.2.2 shows that widespread, ambient contamination by uranium and selenium occurs in background ground water in the vicinity of the site. The widespread, ambient contamination and technical impracticability of treating the ground water meet the requirements for the ES&H supplemental standards under Subparts B and C, limited use designation, under the surface remedial action ground water protection strategy. Section 3.3.6 discusses the treatability issues.
- **Risk acceptability:** The fourth step was to determine whether human health and environmental risks that result from applying supplemental standards were acceptable. The risk evaluation for the Spook site provided in Section 3.3.5 determines that ground water from the upper sandstone unit in the vicinity of the Spook site is not used as a source of drinking water or for any other beneficial purpose because of poor water quality resulting from naturally-occurring contamination and marginal sustained yield. The risk evaluation concludes that the ground water is not a present or future risk to human health or the environment because 1) the poor quality of the natural water from the upper aquifer is well-known; 2) good quality water is available from the lower confined aquifers, and 3) there are no current or foreseeable future exposure pathways to ground water in the uppermost aquifer.
- **Compliance strategy:** The fifth and final step in the framework leads to an appropriate compliance strategy, which is to perform no remediation. This is based on ground water in the uppermost aquifer (also the zone of contamination) being classified as limited use, which allows the application of supplemental standards. Limited use ground water is neither a current nor a potential source of drinking water because of widespread, ambient contamination that cannot be cleaned up using treatment methods reasonably employed in public water supply systems (60 FR 2854) (40 CFR §192.11(e)).

4.2 CONCLUSION

Based on the decision framework process, it has been determined that ground water in the uppermost aquifer was contaminated by uranium processing activities at the Spook UMTRA Project site. Contaminants from site source areas were released into the environment by infiltration and migrated into the ground water system in the uppermost aquifer, forming a plume measuring approximately 2500 ft (762 m) downgradient from the site. It has also been determined that widespread ambient contamination exists in ground water in the uppermost aquifer because of naturally-occurring conditions (natural uranium mineralization associated with an alteration front) and from the effects of broadscale human activity not related to uranium milling operations (uranium exploration and mining activities). Ground water from the uppermost aquifer is not used as a source of drinking water and cannot be effectively cleaned up. Therefore, ground water contamination resulting from uranium processing activities at the Spook site is in an aquifer already contaminated and not usable as a drinking water source. There is no apparent risk to human health and the environment because there are no known exposure pathways for contaminated ground water from the uppermost aquifer to lower aquifers or the surface. No one is using the ground water from this aquifer for any purpose and there is no discharge of ground water from the uppermost aquifer to the surface or to surface water.

The recommended compliance strategy for the Spook site is to perform no remediation based on the justification that ground water in the uppermost aquifer is limited use based on the application of and supplemental standards.

The next step in documenting compliance with Subpart B at the Spook site will include preparation of an site-specific environmental assessment (EA). Then, Section E.4 of the RAP (DOE, 1990) will be modified to include the information in the SOWP and provide justification for the selection. The RAP will be modified and submitted to the NRC for concurrence of the proposed compliance strategy for Subpart B of 40 CFR Part 192 (1994).

5.0 LIST OF CONTRIBUTORS

The following individuals contributed to the preparation of this report.

Name	Contribution
R. Heydenburg, J. Carman	Hydrogeology
T. Jackson	Geochemistry
K. Smith	Statistics
P. Briggs, R. Bowen	Senior Review
A. Holm, J. Gibb, M. B. Leaf, K. Smith, R. Saar	Peer review
M. Gawthrop Cooper	Document coordination
L. Keith, L. Sanchez	Text processing
B. Harvey	Graphic design
V. Beck, J. Torline, R. Woodward	Technical editing

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FEDERAL REGISTER

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60 FR 2854, "Groundwater Standards for Remedial Actions at Inactive Uranium Processing Sites, Final Rule," 11 January 1995.

UNITED STATES CODE

42 USC §4321 *et seq.*, *National Environmental Policy Act*, 1 January 1970.

42 USC §7901 *et seq.*, *Uranium Mill Tailings Radiation Control Act*, 8 November 1978.

APPENDIX A
MONITOR WELL LITHOLOGIC LOGS

BOREHOLE LOG (ROCK)

Page 1 of 4

LOCATION MAP:

SITE ID: SPK-01 LOCATION ID: 900 910
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5089
DRILLING METHOD: Rotary - Air
DRILLING CONTR.: Bayles Bros.
DATE STARTED: 11-24-86
DATE COMPLETED: 11-26-86
FIELD REP.: L. Phyle

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
11-24-86	5:00	80.0'
11-25-86		

LOCATION DESCRIPTION
SITE CONDITION

Just inside tailings area south of overburden pile
Fairly flat. Salt brush, grasses and sage

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
											Top Soil - clayey sand (SC) moist
10											Sandstone, predominantly med to coarse, grades fine to fine clean. H. tan to orange brn. dry. ~ Silt stringer - brown, slightly damp
20											
30											
40											

COMMENTS:

FD 175'

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 4

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 900 910
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5089
DRILLING METHOD: Rotary - Air
DRILLING CONTR.: Bayles Bros.
DATE STARTED: 11-24-86
DATE COMPLETED: 11-26-86
FIELD REP.: L. Phyle

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
50'											
60											
70											
80											becoming moist - color change to orange brn.
90											Shale, sandy, fissk, some coal stringers, ch grey to black
100'											Sandstone, fine to med. gr., grey damp

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 3 of 4

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 900 910
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5089
DRILLING METHOD: Rotary - Air
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 11-24-86
DATE COMPLETED: 11-26-86
FIELD REP.: L. Phyle

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

ROCK TYPE & REMARKS

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY
100'										
110										
120										
130										
140										
150'										

*Shale, sandy, some silt, damp,
lt. gray.*

*Siltstone, trace fine sand, damp
lt. gray*

*Shale, some fine sand, fissile,
high plastic clays, interbedded
coal, lt. gray*

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER.
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 4 of 4

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 900 910
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5089
DRILLING METHOD: Rotary - Air/Hist
DRILLING CONTR.: Bayless Bros
DATE STARTED: 11-24-86
DATE COMPLETED: 11-26-86
FIELD REP.: L. Phylte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (ROD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
150'											
											~ becoming sandier
160											
											Sandstone, medium to coarse, subrounded, grayish blue.
170											
											~ T.D. 175'
180											
190											
200'											

COMMENTS: _____

BORING OPERATION

H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 3

SITE ID: SPK-01 LOCATION ID: 901 911
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5090
DRILLING METHOD: Rotary - Air
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 11-23-86
DATE COMPLETED: 11-24-86
FIELD REP.: L. Phyle

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
<u>11-23-86</u>	<u>3:30</u>	<u>≈ 93'</u>

LOCATION DESCRIPTION
SITE CONDITION

Just inside tailings area south of ob. pile
Fairly flat, sage brush and grasses

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (ROD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY
0										
10										
20										
30										
40										
50										

ROCK TYPE & REMARKS

Top Soil - sandy clay, some silt.
moist

Sandstone, predominantly
med. to coarse, locally grades
fine to v. fine, occasional organic
material (wood), lt. gray to buff
weathers orange brn.
fine to v. fine

COMMENTS:

T.D. = 113.5'

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 3

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 901 911
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5090
DRILLING METHOD: Rotary - Air
DRILLING CONTR.: Boyle Bros.
DATE STARTED: 11-23-86
DATE COMPLETED: 11-24-86
FIELD REP.: L. Phyle

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
50'											
60											
70											
80											color change to orange brn.
90											Shale, sandy, fissile, lt. grey to black, dry occasional coal stringers
100'											Sandstone, fine to med. grained, greyish blue, damp to wet

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 3 of 3

LOCATION MAP:

See pg. 1

SITE ID: SPK-41 LOCATION ID: 901 911
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5090
DRILLING METHOD: Rotary - Air
DRILLING CONTR.: Bayles Bros
DATE STARTED: 11-23-86
DATE COMPLETED: 11-24-86
FIELD REP.: L. Phyle

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

ROCK TYPE & REMARKS

Shale, sandy, dry, grayish blue, coal stringers

T.D. 113.5'

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 3

LOCATION MAP:

SITE ID: SPK-01 LOCATION ID: 902 912
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5100
DRILLING METHOD: Rotary
DRILLING CONTR.: Boyles Bros. Drilling
DATE STARTED: 11-15-86
DATE COMPLETED: 11-23-86
FIELD REP.: L. Phyle

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
11-22-86	1:30 PM	110.0

LOCATION DESCRIPTION
SITE CONDITION

Just East of Spack pit between spoil piles
Flat, salt brush and grasses

ROCK TYPE & REMARKS

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY
0										
10										
20										
30										
40										
50										

Sandstone, some silt and clay interbeds, medium to coarse grained, well sorted and weakly cemented, lt. Tan to lt. olive brown. Damp.

Silt and Shale - sandy
lt. gray to brown. Damp

Sandstone, fine to v. fine grained, well sorted, friable, buff.

COMMENTS:

T.D. = 115.0'

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 3

LOCATION MAP:

See pg 1

SITE ID: SPK-61 LOCATION ID: 902 912
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5100
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Engle Bros.
DATE STARTED: 11-15-86
DATE COMPLETED: 11-23-86
FIELD REP.: L. Phute

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

COMMENTS:

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 3 of 3

LOCATION MAP:

See pg 1.

SITE ID: SPK-01 LOCATION ID: 402 912
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5100
DRILLING METHOD: Rotary - Air / Mud
DRILLING CONTR.: Boyle Bros.
DATE STARTED: 11-15-86
DATE COMPLETED: 11-23-86
FIELD REP.: L. Phylte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
<u>11-22-86</u>	<u>1:30</u>	<u>110'</u>

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
110											Sandstone, med to coarse, some shale, moist. coal stringers
120											
130											Shale, fissile, some coal, gray to black, wet
140											
150											T.D. 115'
160											
170											
180											
190											
200											
210											
220											
230											
240											
250											
260											
270											
280											
290											
300											
310											
320											
330											
340											
350											
360											
370											
380											
390											
400											
410											
420											
430											
440											
450											
460											
470											
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830											
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850											
860											
870											
880											
890											
900											
910											
920											
930											
940											
950											
960											
970											
980											
990											
1000											

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 3

LOCATION MAP:

SITE ID: SPK-81 LOCATION ID: 903 913

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): 5090DRILLING METHOD: Rotary - Air / MistDRILLING CONTR.: Byles Bros.DATE STARTED: 12-13-86DATE COMPLETED: 12-14-86FIELD REP.: L. Phyle

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
12-13-86	5:00	100'

LOCATION DESCRIPTION
SITE CONDITION

In center of mill area, ~ 60' from spook pit
fairly flat, sparsely vegetated, snowy & wind blown.

ROCK TYPE & REMARKS

Sandstone, fine to med. grained,
moderately cemented. Lt. tan.

Silt and Clay, med. plastic, dk. brn.
moist.

Sandstone, some silt, fine to
medium grained, lt. tan to
orange brown. damp

~ grades coarser

} Clay & coal seams

COMMENTS:

T.P. @ 120.0'

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 3

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 903 913
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5090
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 12-13-86
DATE COMPLETED: 12-14-86
FIELD REP.: L. Phayte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
50'											
60											<i>Silt and Clay, moderately plastic, dk. brown.</i>
70											
80											
90											<i>Sandstone, some clay (HPI), fine to medium gr., occasional coal seams - lt. tan to orange brn.</i>
100'											

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NO WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 3 of 3

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 903 913
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5090
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyle Bros.
DATE STARTED: 12-13-86
DATE COMPLETED: 12-14-86
FIELD REP.: L. Phylte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
<u>12-13-86</u>	<u>5:00</u>	<u>100'</u>

LOCATION DESCRIPTION _____
SITE CONDITION _____

ROCK TYPE & REMARKS

*Shale, sandy, fissile, with
interbedded coal, lt. grey to black*

T.D. @ 120.0'

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 4

LOCATION MAP:

SITE ID: SPK-01 LOCATION ID: 904 914
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5090
DRILLING METHOD: Rotary - Air Mist
DRILLING CONTR.: Boyles Bros
DATE STARTED: 12-14-86
DATE COMPLETED: 12-15-86
FIELD REP.: L. Phyte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
12-14-86	3:30	114'

LOCATION DESCRIPTION SITE CONDITION

In center of mill area east of foundation walls.
fairly flat, wind blown & snowy, sparsely vegetated

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
10											Sandstone, some silt, fine to med. gr., occasional coal seam, lt. tan to orange brn. Clay seam ≈ 4' thick - gray (HPI)
20											
30											
40											Clay, sandy, with 15' coal seams, high plastic, lt. gray to black

COMMENTS:

T.D. @ 188.0' (Set casing to 185.0' - 3' core in)

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NO WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 4

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 904 914
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5090
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 12-14-86
DATE COMPLETED: 12-15-86
FIELD REP.: L. Phyte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	% PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
50											Sandstone, some silt, med. to coarse gr., orange brown.
60											
70											Silty Clay, some coarse sand, med. plastic, brown.
80											
90											Sandstone, med. to coarse gr., some silt, brown
100											

COMMENTS: _____

BORING OPERATION

H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

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LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 904 917
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5090
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 12-14-86
DATE COMPLETED: 12-15-86
FIELD REP.: L. Phyle

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
<u>12-14-86</u>	<u>3:30</u>	<u>114'</u>

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
100'											
110											
120											<i>Shale and Coal, clayey, (HPI) lt. gray to black.</i>
130											<i>Siltstone, sandy, indurated. lt. grayish blue.</i>
140											
150'											

COMMENTS: _____

BORING OPERATION

H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

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ANN

SITE ID: SPK-01 LOCATION ID: 904 914
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5090
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Bogles Bros.
DATE STARTED: 12-14-86
DATE COMPLETED: 12-15-86
FIELD REP.: L. Phute

See pg. 1

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

SITE CONDITION

[illegible]

COMMENTS:

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 3

SITE ID: SPK-01 LOCATION ID: 905 915
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5074
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyle Bros.
DATE STARTED: 12-6-86
DATE COMPLETED: 12-10-86
FIELD REP.: L. M. Phyllis

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
12-9-86	1:23 PM	124.0

LOCATION DESCRIPTION
SITE CONDITION

At NE end of site, approx 75' west of ob. pile
Flat, sage brush and grass

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
0											
10											Sandstone, fine to med. gr., lt. brn.
20											Silt and Clay, interbedded, loose to blocky, lt. brn. dry
30											Sandstone, predominantly fine to med. gr., very loose, dry, lt. brn. to lt. tan
40											grader coarse
50											

COMMENTS:

T.D. @ 130'

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

Page 2 of 3

AN

SITE ID: SPK-41 LOCATION ID: 905 915
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5074
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 12-6-86
DATE COMPLETED: 12-10-86
FIELD REP.: L. Phylfe

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION
SITE CONDITION _____

[illegible]

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 3 of 3

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 905 915
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5074
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 12-6-86
DATE COMPLETED: 12-10-86
FIELD REP.: L. Flyte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

COMMENTS:

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 3

SITE ID: SPK-01 LOCATION ID: 906 916
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5075
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 12-5-86
DATE COMPLETED: 12-6-86
FIELD REP.: L. Phyle

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
12-5-86	2:35	100'

LOCATION DESCRIPTION At NE end of site approximately 50' west of Spills Pile
SITE CONDITION Flat, sage brush and grasses

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
10											<i>Sandstone, some silty lenses, predominantly medium grained, poorly consolidated, dry, lt. brown to lt. tan.</i>
20											
30											
40											
											<i>occasional clay lenses</i>

COMMENTS:

T.P. @ 110.0'

BORING OPERATION

H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
QB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 3

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 906 916
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5075
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyles Bros
DATE STARTED: 12-5-86
DATE COMPLETED: 12-6-86
FIELD REP.: L. H. Phylte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
50											
60											
70											
80											
90											
100											
110											
120											
130											
140											
150											
160											
170											
180											
190											
200											
210											
220											
230											
240											
250											
260											
270											
280											
290											
300											
310											
320											
330											
340											
350											
360											
370											
380											
390											
400											
410											
420											
430											
440											
450											
460											
470											
480											
490											
500											

↑
Sandstone, med. to coarse,
↓
lt. tan to orange brn.

~ reddish clay seams

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 3 of 3

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 906 916
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5075
DRILLING METHOD: Rotary - Air / Mst
DRILLING CONTR.: Boyle Bros.
DATE STARTED: 12-5-86
DATE COMPLETED: 12-6-86
FIELD REP.: L. Plutic

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
12-5-86	2:35	100'

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

COMMENTS:

BORING OPERATION

H - 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 2

LOCATION MAP:

SITE ID: SPK 01 LOCATION ID: 907 917
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5075
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 12-11-86
DATE COMPLETED: 12-11-86
FIELD REP.: L. Phyte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
12-11-86	10:30	20.0

LOCATION DESCRIPTION
SITE CONDITION

At NE end of site approx 75' from overburden pile
Flat small sage brush, grasses; snow and windblown

ROCK TYPE & REMARKS

Sandstone, some silt, med.
to coarse gr., occasional clay
seams and organics (wood).
lt. tan to orange brown.

occasional coal seams

COMMENTS:

BORING OPERATION

H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 2

LOCATION MAP:

See pg 1

SITE ID: SPK-01 LOCATION ID: 907 917
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5075
DRILLING METHOD: Rotary - Air/Hist
DRILLING CONTR.: Boules Bros.
DATE STARTED: 12-11-86
DATE COMPLETED: 12-11-86
FIELD REP.: L. Phyte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

ROCK TYPE & REMARKS

color change to orange brown

Shale, clayey, fissile, lt. gray

TIP. @ 75.0'

COMMENTS: _____

BORING OPERATION

H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 3

SITE ID: SPK-01 LOCATION ID: 908 918
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5100
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 12-11-86
DATE COMPLETED: 12-13-86
FIELD REP.: L. Phylte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
12-12-86	10:30	125.0'

LOCATION DESCRIPTION
SITE CONDITION

Approximately 350' east of material storage area.
Sloping ground, snowy & wind blown, sparsely vegetated.

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (ROD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY
0										
10										
20										
30										
40										
50										
60										
70										
80										
90										
100										
110										
120										
130										
140										
150										
160										
170										
180										
190										
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800										
810										
820										
830										
840										
850										
860										
870										
880										
890										
900										
910										
920										
930										
940										
950										
960										
970										
980										
990										
1000										

ROCK TYPE & REMARKS

Sandstone, silty, fine to med. grained,
loose, lt. tan, dry

Siltstone, sandy, blocky, lt. gray,
dry

Sandstone, fine to v. fine, loose
lt. tan, damp

COMMENTS:

T.D. @ 135.0'

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 3

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 908 918
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5100
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Bayless Bros.
DATE STARTED: 12-11-86
DATE COMPLETED: 12-13-86
FIELD REP.: L. Phyllis

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

ROCK TYPE & REMARKS

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY
50'										
60										
70										
80										
90										
100'										

~ grades med. to coarse

~ color change to reddish brn, damp.

COMMENTS: _____

BORING OPERATION

H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 3 of 3

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 908 918
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5100
DRILLING METHOD: Rotary - Air / H₂O
DRILLING CONTR.: Baults Bros.
DATE STARTED: 12-11-86
DATE COMPLETED: 12-13-86
FIELD REP.: L. Phyle

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
<u>12-12-86</u>	<u>10:30</u>	<u>125.0'</u>

LOCATION DESCRIPTION _____
SITE CONDITION _____

ROCK TYPE & REMARKS

*Shale and Coal, fissile and indurated,
some fine sand, lt. gray to black*

T.D. @ 135.0'

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

Page 1 of 4

SITE ID: SPK-01 LOCATION ID: 909 919
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5100
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boules Bros.
DATE STARTED: 12-2-86
DATE COMPLETED: 12-5-86
FIELD REP.: L. Huete

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
12-3-80	10:30	170.0'

LOCATION DESCRIPTION Near south of site just off Hornbuckle ranch road.
SITE CONDITION Recently disturbed (graded), sparsely vegetated.

[illegible]

COMMENTS: T.D. C 188.0'

BORING OPERATION

H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
QB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 4

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 909 919
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5100
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 12-2-80
DATE COMPLETED: 12-5-80
FIELD REP.: L. Phyle

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (ROD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
50'											
60											~ Shale lense ± 2.0', clayey, lt. gray
70											
80											
90											~ color change to orange brn.
											Shale, sandy, fissile, lt. gray
100'											

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 3 of 4

LOCATION MAP:

See pg. 1

SITE ID: SPK-61 LOCATION ID: 909 919
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5100
DRILLING METHOD: Rotary - Air Mist
DRILLING CONTR.: Bayles Bros.
DATE STARTED: 12-2-86
DATE COMPLETED: 12-5-86
FIELD REP.: L. Phyte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
100'											~ occasional coal seams
110											Siltstone, trace fine sand, some shaly interbeds. lt. gray.
120											Sandstone, shaly, fine to v. fine, lt. gray to black, moist
130											Shale, some silt, fissile, lt. gray to black. dry
140											Siltstone, some shale, lt. gray to black, moist.
150'											

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NO WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 4 of 4

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: 909 919
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5100
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Bayless Bros.
DATE STARTED: 12-2-86
DATE COMPLETED: 12-5-86
FIELD REP.: L. Platte

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
<u>12-3-86</u>	<u>10:30</u>	<u>170.0'</u>

LOCATION DESCRIPTION _____
SITE CONDITION _____

ROCK TYPE & REMARKS

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY
150										
160										
170										
180										
190										
200										

~ coal seam ≈ 1.0' thick, dry

~ becoming moist

Sandstone, fine to med. grained, clean, lt. gray, wet.

T.D. 188.0'

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NO WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 2

LOCATION MAP:

919
65' → 920*

SITE ID: SPK-01 LOCATION ID: 920
APPROX. SITE COORDINATES (ft.):
N OK E OK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: ROTARY AIR/M.S.
DRILLER: SUNBELT ENTERPRISES
DATE STARTED: 8/10/87
DATE COMPLETED: 8/11/87
FIELD REP.: A. HOLMQUIST

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
8/10	10 PM	8.417
8/10	7 PM	8.5
8/12	2 PM	8.42

LOCATION DESCRIPTION Approx 65' SE of SPK-01 - 919
SITE CONDITION Slopes to E, plain grass

DEPTH (FT)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	DISCONTINUITIES							CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS	
						SPACING					ORIENTATION						
						WIDE —		CLOSE			HORIZ. —						VERT.
						1	2	3	4	5	H	50°					V
																Sm, silty sand, m-fine, calc. & silty, NP, brown	
																Sm, silty sand, m-fine, calc. & silty, NP, brown. Note: weakly consolidated	
																Sandstone, m-fine, rel. soft, brown	

COMMENTS: Samples taken @ 5' intervals, beginning @ 5' - only chip cuttings available for logging.

BORING OPERATION
M - 6 1/2 HOLLOW STEM ANGER
C - 4 1/2 CONTINUOUS FLIGHT ANGER
GB - GEAR BIT
MX - MX ROCK CORING
NQ - NO WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 4 of 3

LOCATION MAP:

SITE ID: SPK-01 LOCATION ID: 921
APPROX. SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Rotary / water
DRILLER: SKN RISE FASTER PASSES
DATE STARTED: 8/14/87
DATE COMPLETED: 8/15/87
FIELD REP.: C. Hainous

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION W side of spook pit btwn fences
SITE CONDITION relatively flat, grass cover

[illegible]

COMMENTS: Samples taken @ 5' intervals

BORING OPERATION
 M - 6 1/2 HOLLOW STEM ANGR
 C - 4 1/2 CONTINUOUS FLIGHT ANGL
 GB - GEAR BIT
 NX - NX ROCK CORING
 NO - NO WIRELINE ROCK CORING

Page 3 of 3

ANN

SFF PL 1 of 3

FIELD REP.: D. Hammerst

DEPTH (ft.)

SITE CONDITION

Sandstone, m. fine,
shale, rel. soft, grey
Siltstone, med.
mod. brown, nat. hard

Stopped @ 140°

COMMENTS: Stopped @ 161' 8/14/87
Resum. @ 161'-140' 5/15/87

BORING OPERATION
 M - 8 1/2 HOLLOW STEM ANGR
 C - 4 1/2 CONTINUOUS FLIGHT ANGLR
 GB - GEAR BIT
 NX - NX ROCK CORING
 NO - NO WIRELINE ROCK CORING

BOREHOLE LOG (SOIL)

Page 1 of 1

LOCATION MAP:

SITE ID: SPK-01 LOCATION ID: 922
SITE COORDINATES (ft.):
N OK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: ROTARY / WASTER
DRILLING CONTR.: SUNRISE ENTERPRISES
DATE STARTED: 8/16/87
DATE COMPLETED: 8/17/87
FIELD REP.: D. HOLMQUIST

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
0									CLAYEY SAND, fine, LP-MB, brn
5									SANDSTONE, med grained, brown, relatively soft
50						54'			Shale w/interbedded siltstone, blue-grey, soft
75									Sandstone, predominantly fine grained, brown
100									
125									U. hard siltstone @ 134'
									Shale, blue-grey, soft
150									Stopped drilling @ 140' LIS

COMMENTS: 100 SAMPLES SAVED - SEE SAMPLES SPK-01-921

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (ROCK)

Page 1 of 3

LOCATION MAP:

SITE ID: SPK-01 LOCATION ID: 923
 APPROX. SITE COORDINATES (ft.):
 N DK E DK
 GROUND ELEVATION (ft. MSL): DK
 DRILLING METHOD: ROTARY/WATER
 DRILLER: SUNRISE ENTERPRISES
 DATE STARTED: 8/16/87
 DATE COMPLETED: _____
 FIELD REP.: D. Holman 4153

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION ABANDONED AIRSTRIP
 SITE CONDITION Fair, green

DEPTH (FT)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	DISCONTINUITIES							CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS	
						SPACING					ORIENTATION						
						WIDE		CLOSE			HORIZ.						VERT.
						1	2	3	4	5	H	50°					V
																Silty shales, fine fine sand, avg. pel. 30 Ft	

COMMENTS: grab samples taken @ 5' intervals

BORING OPERATION
 H - 6 1/2" HOLLOW STEM ANGER
 C - 6 1/2" CONTINUOUS FLIGHT ANGER
 GB - GEAR BIT
 NX - NX ROCK CORING
 NO - NO WIRELINE ROCK CORING

Page 3 of 4

AN

APPROX. SITE COORDINATES (ft.):

N E

GROUND ELEVATION (ft. MSL):

DRILLING METHOD: Rotary Driller

DRILLER: SUNRISE ENTERPRISES

DATE STARTED: 8/19/87

DATE COMPLETED: 12/1/80

FIELD REP.: B. Hermanist

DATE _____

TIME

DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

COMMENTS:

BORING OPERATION
 M - 6 1/2 HOLLOW STEM ANGLR
 C - 4 1/2 CONTINUOUS FLIGHT ANGLR
 GB - GEAR BIT
 MX - MX ROCK CORING
 NO - NO WIRELINE ROCK CORING

BOREHOLE LOG (SOIL)

Page 1 of 1

LOCATION MAP:

SITE ID: SPK-01 LOCATION ID: 924
SITE COORDINATES (ft.):
N OK E OK
GROUND ELEVATION (ft. MSL): 5080 (estimated)
DRILLING METHOD: Rotary/Water
DRILLING CONTR.: SUNRISE ENTERPRISES
DATE STARTED: 8/29/87
DATE COMPLETED: 8/30/87
FIELD REP.: C. Holmgren

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION S.E. corner of ore pile area
SITE CONDITION flat, grassy

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									clayey sand, LP-mb, brown
									Sand/med. sandstone, m-fine, brown
									Sandy shale, const. silt, brown
									Siltstone/shales, brown
									Sandstone, fine to med, grey-brown
									Sandstone, med to fine, grey-brown
									NOTE: Tr. brown shale @ 105
									NOTE: FRACTURE / Tr. siltstone @ 123
					127				Shale, blue-brown
									Stopped @ 130

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (ROCK)

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LOCATION MAP:

925

SITE ID: SPK-01 LOCATION ID: 925
APPROX. SITE COORDINATES (ft.):
N NK E NK

GROUND ELEVATION (ft. MSL): 126
DRILLING METHOD: ROTARY/LOADER
DRILLER: SUNRISE ENTERPRISES
DATE STARTED: 8/24/87
DATE COMPLETED: _____
FIELD REP.: D. HORNIST

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION W/in Prunage Nbr of side
SITE CONDITION same as Plot

[illegible]

COMMENTS: Stopped Drilling @ TD=79'
1552160, no 1552160 well @ 77'

BORING OPERATION
 M - 6 1/2 HOLLOW STEM ANGR
 C - 4 1/2 CONTINUOUS FLIGHT ANGR
 GB - GEAR BIT
 NI - NI ROCK CORING
 NO - NO WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 1

LOCATION MAP:

* 93

SITE ID: SPK-2 LOCATION ID: 926
APPROX. SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: ROTARY / WATER
DRILLER: E. TRUJILLO
DATE STARTED: 8/27/87
DATE COMPLETED: 8/27/87
FIELD REP.: CH. HARRIS

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION East of road pit & overburden piles
SITE CONDITION Flats grassy

[illegible]

COMMENTS: .

BORING OPERATION
 M - 6 1/2 HOLLOW STEM ANGR
 C - 4 1/2 CONTINUOUS FLIGHT ANGL
 GB - GEAR BIT
 NX - NX ROCK CORING
 NO - NO WIRELINE ROCK CORING

BOREHOLE LOG (SOIL)

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LOCATION MAP:

SITE ID: SPK-01 LOCATION ID: 927
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: ROTARY / WATER
DRILLING CONTR.: INDRISSE ENTERPRISES
DATE STARTED: 8/27/07
DATE COMPLETED: _____
FIELD REP.: D. HARMANIST

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
0									Sand, to 10' some silt; tan clay, LP, brn
									Sand silty, m. fin, br
25									Sandstone, fine, yellow-brown, hard
									Shale, sandy, rel. soft, brown
50									INTERBEDDED SHALES / SANDY SILTSTONES
									Sandstone, M-Fine, brown, rel. soft
75									75-80' sandstone lenses
									into bedded sandstones / sandstones, fine, hard, brown / grey-brown
100									Sandstone, M to Fine, grey-brown, soft (fr. core 93')
									Tr. shale @ 116'
125									Shale, grey-brown
									Stopped @ 125' b/s

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (ROCK)

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LOCATION MAP:

SITE ID: SPK01 LOCATION ID: 928
APPROX. SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Rotary/Water
DRILLER: SINERIS ENTERPRISES
DATE STARTED: 6/30/87
DATE COMPLETED: 6/31/87
FIELD REP.: C. Hamblen

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION S.W. corner of Spok pit
SITE CONDITION rel. flat, sandy

DEPTH (FT)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	DISCONTINUITIES									CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS	
						SPACING					ORIENTATION								
						WIDE — CLOSE					HORIZ. — VERT.								
						1	2	3	4	5	H	50°	V						
0		0	0												Rh	Hw	SS	Sandstone Medium grained partly cemented rel. soft brown	
		90	30	90+															6" shat @ 15'
		95	50	90+															6" shat @ 16 1/2'
10		10	0	90+															
		95	75	80+															
20															Sm	Mw	Sh	Shale, grey-blue, soft	
		85	40	80+											Rh	Mw	SS	Sandstone, fine-grained, partly cemented, brown	
															Sm	Mw	Sh	Shale, grey-brown, soft	
																			Sandstone, medium grained, partly cemented, brown
30																			

COMMENTS: NK core to 30'
8 1/2" rotary to 40'

BOHRING OPERATION
H - 6 1/2" HOLLOW STEM ANGER
C - 4 1/2" CONTINUOUS FLIGHT ANGER
GB - GEAR BIT
NK - NK ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 2

LOCATION MAP:

5th of 1

SITE ID: SPK-01 LOCATION ID: 928
APPROX. SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: ROTARY / WATER
DRILLER: SUNBEL FINDERWORKS
DATE STARTED: 8/31/87
DATE COMPLETED: 8/31/87
FIELD REP.: D. HARMONIST

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH (FT)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	DISCONTINUITIES							CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
						SPACING					ORIENTATION					
						WIDE — CLOSE					HORIZ. — VERT.					
						1	2	3	4	5	H	50°				
30													Rh Mw ss		Sandstone, fine grained, grey-brown	
			73 30	82									ss		Sandstone, med. grained, locally cemented, brn	
															Shale, grey-brn, soft trace calc	
40															Sandy shale, grey-brown, soft	
			70 60	82												
50															Stoppage 50'	

COMMENTS: _____

BORING OPERATION
M - 6 1/2 HOLLOW STEM ANGER
C - 4 1/2 CONTINUOUS FLIGHT ANGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 2

LOCATION MAP:

SITE ID: SPK-01 LOCATION ID: 929
APPROX. SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: AIR/WATER / Rotary / Percussion
DRILLER: ETRIAL'S SUNRISE ENTERPRISES
DATE STARTED: 9/1/87
DATE COMPLETED: 9/4/87
FIELD REP.: HUMBERT

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
9/3/87	11:40	79 1/2

LOCATION DESCRIPTION within depleted and pond

SITE CONDITION rel. flat, muddy, no surface

DEPTH (FT)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	DISCONTINUITIES							CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS	
						SPACING					ORIENTATION						
						WIDE		CLOSE			HORIZ.						VERT.
						1	2	3	4	5	H	50°					V
0	N4	0	0	90%												S. lithology, med to fine, brown note: 10' clay , HP clay, HP, and Q 3 in core	
1																	
2																	
3																	
4																	
5																	
6																	
7																	
8																	
9																	
10																Shale, soft, gray brown	
11																	
12																	
13																	
14																	
15																	
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17																	
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19																	
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100																	

COMMENTS:

BOHRING OPERATION
H - 6 1/2 HOLLOW STEM ANGER
C - 4 1/2 CONTINUOUS FLIGHT ANGER
GB - GEAR BIT
RX - RX ROCK CORING
NQ - NO WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 2

LOCATION MAP:

See pg 1 of 2

SITE ID: SPK-02 LOCATION ID: 929
APPROX. SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: NK core / rotary a. c. w. / h. / more
DRILLER: E. T. / 11/16 / Eugene E. / 1952
DATE STARTED: 9/1/67
DATE COMPLETED: 9/4/67
FIELD REP.: D. H. / 1952

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]**COMMENTS:**

BORING OPERATION
 M - 6 1/2 HOLLOW STEM ANGLR
 C - 4 1/2 CONTINUOUS FLIGHT ANGLR
 GB - GEAR BIT
 NX - NX ROCK CORING
 NO - NO WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 1

LOCATION MAP:

SITE ID: SPR-01 LOCATION ID: 930
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Troxel Rotary
DRILLING CONTR.: Sumner Enterprises
DATE STARTED: 9/18/87
DATE COMPLETED: 9/10/87
FIELD REP.: D. Holmquist

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION 35' NE of 920
SITE CONDITION Sumner 920

ROCK TYPE & REMARKS

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOG	ROCK TYPE & REMARKS
0	GB									SM	Silty sand, pred. medium to fine, gray-brown
25										SS	Sandstone, med to coarse, weakly cemented, brown
50										SS	Siltstones, gray-brown, considerable interbedding w/ fine sandstones, brown
75										SS	Sandstone, medium grained, weakly cemented, gray-brown
100											Shale, brown, soft
											Sandstone, med to fine grained, weakly cemented, gray-brown
											Shale, soft, blue-gray
											5' trapped @ 100'

COMMENTS: Cuttings samples grabbed @ 5' intervals

BORING OPERATION

H - 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 2

LOCATION MAP:

SITE ID: Spt #1 LOCATION ID: 931
SITE COORDINATES (ft.):
N N/K E N/K
GROUND ELEVATION (ft. MSL): N/K
DRILLING METHOD: HSA
DRILLING CONTR.: Boyes / Moore
DATE STARTED: 12/12/87
DATE COMPLETED: 12/13/87
FIELD REP.: J. Frith

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION East of 925, 150' S of fence line
gently sloping south, grass

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
0											Sample ID
5	X										001 silty clay, tr sand, lt. brn, dry
10	X										002
15	X										003 Sandstone, Fine, med hard, lt. gray
20	X										Sandstone, Fine to med, soft, red brn.
25	X										004
30	X										005 claystone, - soft, gray
35	X										
40	X										006 Sandstone, Fine to med, soft, red-brn. color change to lt. brn.
45	X										
50	X										
55	X										
60	X										
65	X										
70	X										
75	X										
80	X										
85	X										
90	X										
95	X										
100	X										

COMMENTS: Installed 100' well (2' stickup)

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NO - NO WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 2

LOCATION MAP:

SITE ID: Spk 61 LOCATION ID: 931
SITE COORDINATES (ft.):
N N/k E N/k
GROUND ELEVATION (ft. MSL): N/k
DRILLING METHOD: dry air
DRILLING CONTR.: Boyles Bros / S Moore
DATE STARTED: 12/12/92
DATE COMPLETED: 12/13/92
FIELD REP.: T Fitts

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]

COMMENTS:

COMMENTS: moist at 76'
makes lots of water BS - 98'

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 1 of 3

LOCATION MAP:

SITE ID: Spk 91 LOCATION ID: 932
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: rotary air
DRILLING CONTR.: Bayless Bros / J Moore
DATE STARTED: 12/13/97
DATE COMPLETED: _____
FIELD REP.: J Frith

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
<u>12/14/97</u>	<u>11:45</u>	<u>123'</u>

LOCATION DESCRIPTION N of airstrip 300' NE of 923, 135' S of EW Fence line
SITE CONDITION gently sloping SE, grasses

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (ROQ)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
0											sample ID 001 silty clay, some sand, brn, dry soft
10											
20											
30											002 siltstone, soft, brn, dry. increasing sand
40											
50											
60											003 sandstone, fine, yellow-brn.
70											
80											
90											
100											
110											
120											
130											
140											
150											
160											
170											
180											
190											
200											

COMMENTS: _____

BORING OPERATION

H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

Page 2 of 3

LOCATION MAP:

SITE ID: Spk6 LOCATION ID: 982
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: rotary air
DRILLING CONTR.: Borles / S Andre
DATE STARTED: 12/13/87
DATE COMPLETED: _____
FIELD REP.: J. F. H.

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (ROD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
0	X										Sample IP
10	X										004
20	X										005
30											silty shale, lt. brn. med hard. some fine sand
40	X										006
50	X										fine sandstone, fine, lt. brn. soft.
60											007
70											sandstone, fine to med, yellow brn, med
80											- rust-colored - 1' vein ss
90											- tan colored (same lith)
100											hard drillky 84-87'
110	X										008
120											1' shale seen, gray.

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NO WIRELINE ROCK CORING

BOREHOLE LOG (ROCK)

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LOCATION MAP:

SITE ID: Spk #1 LOCATION ID: 932
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
100											Sample ID
110											
116	X										6" yellow-brn ss
120											blue gray, med. hard shale, minor coal.
130											sandstone, fine to med. lt. b-n. soft moist
140	X										010 H- coal
146											011 coal
150											Stop drilling at 143

COMMENTS: _____

BORING OPERATION

H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

BOREHOLE LOG (SOIL)

Page 1 of 5

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 933
SITE COORDINATES (ft.):
N E
GROUND ELEVATION (ft. MSL):
DRILLING METHOD: ROTARY AIR
DRILLING CONTR.: BARNHART
DATE STARTED: 7-28-88
DATE COMPLETED:
FIELD REP.: D. METZGER

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION ON HARDY LAND, 75' west of shell pile
SITE CONDITION MOD. FLAT, some soil sparse grass cover.

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									topsoil
5					01			CL	dry to slight moist hd. to firm brown silty clay some organic contact ^{topsoil} c/s/shale
10					02			SM	yellow dry silty mod. sorted fine sand
15					03			CH	firm, moist massive clay, grey brown minor laminations, some iron stain on bedding.
20					04			CL/CH	firm, moist silty clay to fat clay
25					05				blue silty clay / clayey silt low to mod. plasticity
30					06				slight moist, Blue clayey silt to clayey fine sand

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 3" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 2 of 5

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 933
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
35					07			cl	greyish blue silty clay to lean clay massive, firm, slightly moist.
40					08			cl	moist, firm grey-blue siltstone / claystone
45					09			cl/ sc	slightly moist firm blue fine sandy lean clay
50					10			cl	blue firm, moist lean clay minor silt / fine sand contact
55					11			sm	fine poorly graded, well sorted, red iron ox. sandstone, clayballs abundant
60					12			sm	tan-yellow dry med. sorted silty fine sand

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. ther-waxed Shelby tube

BOREHOLE LOG (SOIL)

Page 3 of 5

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 933
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
65					13			SM	same
70					14			SM	dry, yellow-rose, fine sand
75					15			SM	mostly dry Lt. red medium grain qtz rounded, med to well sorted sandstone
80					16			SM	red, med grain, iron rich sandstone
85					17				med to coarse well rounded, speckled iron stained qtz. s.s.
90					18				med grain SAND w/ minor SILTS

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 4 of 5

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 933
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
95					17			SM	brown silty fine to med. sandstone little clasts.
100					20			✓	brown silty fine sandstone
105					21			✓	hbl med grain well rounded s.s. cemented? (hard drilling)
110					22			✓	same
115					23			✓	brown silty fine sandstone
120					24			✓	reddish br. silty fine sandstone

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

LOCATION MAP:

AN

SITE ID: SPK-15 LOCATION ID: 933
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: 7-28-88
FIELD REP.: D. METCALF

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	D	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									no sample: pour return
125					25				same
130					25			sm	wet sample br. fine sandstone,
135					26				Drilling becomes hcl. extremely hcl. dense blue-grey Dark claystone. T.D. 135' 4 ³⁰ PM

COMMENTS:

1.3 / min : drilling time

SAMPLE TYPE

A - Auger cuttings
S - 3" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 1 of 5

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 934
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: ROTARY AIR
DRILLING CONTR.: BARNHART
DATE STARTED: 7-27-88
DATE COMPLETED:
FIELD REP.: D. Mettler

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION: MOD. FLAT incised drainages, in close prov.
SITE CONDITION: slightly sloping, sparse sagebrush and short grasses.

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									7-27-88 TOPSOIL
5	✓				01			SC	br. DRY SILTY-CLAY sand w/ roots
10	✓				02			SC	reddish-brown clayey sand slightly moist
									? contact topsoil s.s. ?
15	✓				03			SM/SC	yellow tan, moist clayey fine well sorted lithic sandstone, "wedge"
									insected water
20	✓				04			CL/ML	wet. br. fine sand to silty lean clay.
									7-28-88
25	✓				05			CH/CH	lt. br. Sat. lean to fat silty clay
30					06			CH/CH	soft to hard lt. br. lean to fat silty clay / claystone.

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 2 of 5

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 934
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: ROTARY AIR
DRILLING CONTR.:
DATE STARTED:
DATE COMPLETED:
FIELD REP.:

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	Z VALUE	USCS	VISUAL CLASSIFICATION
35	X				07			CL/CH	Loose to firm massive variable brown plastic claystone Contact
40	X				08			OH	wet, DK. chocolate brown organic rich - peat-? - lignite clays.
45	X				09			olt	DK Br. fat clay, organic rich laterat w/ coal Contact
50	X				10			CH	wet, grey-blue claystone shale organic clay blue shale
55	X				11			CH	same
60	X				12			CH/CH	Contact earthy red soft muddy shale blue shale red shale iron rich

COMMENTS:

58' - 60' iron rich soft clay: thin horizon

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. ther-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 3 of 5

LOCATION MAP:

A
N

SITE ID: LDK-15 LOCATION ID: 937
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
65	K				13			SM	wet, tan brown, silty sand
70	K				14			SM	Lt. brownish-tan silty fine sand, lithic
									hard drilling - - - - - ?
75	K				15			SM	same
80	K				16			SM	Lt brown to tan, lithic fine sands
85	K				17				tan-red well cemented fine to coarse rounded otz, iron or stained s.s.
90	K				18			SW	red-brown iron rich, poorly sorted otz. s.s.

COMMENTS: Net samples, water injected

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 4 of 5

LOCATION MAP:

SITE ID: SDK-15 LOCATION ID: 934
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
95									NO SAMPLE
									SAME
100	X				19			SM	well cement. reddish br med. grain aty s.s.
105	X				20			SM	wet, grey brown moderately sorted little sandstone "wacke"
110	X				21			SM	same moderately sorted aty grains
115	X				22			SM	same
117	X				23			OK	DK. chocolate br. coaly sandy shale
120	X				24			CL	Blue-gray claystone

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

LOCATION MAP:

AN

SITE ID: 50K-12 LOCATION ID: 934
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
125	X				25			CL	Blue gray claystone: sample contains much coal or sand from boring wall contamination.
130	C				26			CH	Blue gray firm, moist massive now laminated claystone some shale? T.D. 130' 9 ¹⁰ AM

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 1 of 5

LOCATION MAP:

SITE ID: _____ LOCATION ID: 935
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION SPARSE GRASS AND SAGEBRUSH

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	Z VALUE	USCS	VISUAL CLASSIFICATION
									TOP SOIL
0	X			G	01			SC	Br. slightly moist, mod. blocky clayey SILTY sand w/ minor rootlets
0	X				02			SC	moist Brown clayey sand, clay-balls, some rootlets, slightly plastic, mostly granular. <u>contact top soil</u>
5					03			SM	<u>S.S. / ALLUVIUM ?</u> yellowish-tan fine grain, mod. sorted lithic s.s., mostly Qtz. grained
10					04			SM	tan fine grain s.s. minor opaque minerals
15					05			SM	tan fine to med. grained. Qtz s.s. poorly sorted
30					06			SM	tan, mod. dry fine grain lithic s.s.

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 2 of 5

LOCATION MAP:

SITE ID: _____ LOCATION ID: 935
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
35	X				07.			SM	DK tan, slightly moist poorly sorted fine lithic s.s. some FeOx
40	X				08			SM	Yellowish dr tan, slightly moist poorly sorted lithic s.s.
45	X				09			SM	tanish-yellow poorly sorted fine to medium grained Qtz. s.s. contact ss. shale
50	X				10			CH/ SM	Reddish-yellow mod sorted, rounded Qtz. FeOx coated s.s. w/ shale chips in cuttings stringer
55	X				11			CH	Grey-OLIVE Fat clay stone, sample wet, highly plastic contact claystone ss
60	X				12			SM	lithic s.s. wet granular

injected water

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 3 of 5

LOCATION MAP:

SITE ID: _____ LOCATION ID: 935
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
65	X				13			SM	wet, olive silty s.s.
70	X				14			SM	wet, med sorted, rounded lithic s.s. w/ small Fe ₂ O ₃ concretions loosely cemented.
75	X				15				tanish-gray poorly to med sorted med grained at ₃ s.s. with occasional very-red clay/ gougey laminated thin stringers. at ₃ grains angular to sub round.
80	X				16				reddish-rose silty s.s.
85	X				17				very hard, well cemented, blue lithic well rounded at ₃ , med grained s.s.
90	X				18				SAME becomes soft ↓

COMMENTS: _____

SAMPLE TYPE
A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 4 of 5

LOCATION MAP:

SITE ID: _____ LOCATION ID: 935
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
95					19			SM	tan silty sand, soft poorly cemented
100					20				yellowish-tan silty s.s. wet sample.
105					21				same
110	X				22			SM	SAME
115	X				23			SM	SAME
120	X				24			SP	olive yellow well rounded, coarse grain s.s.

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

LOCATION MAPS

SITE ID: SPK-15 LOCATION ID: 935
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: ROTARY
DRILLING CONTR.: BARNHART
DATE STARTED: 7-19-88
DATE COMPLETED: 7-19-88
FIELD REP.: D. METZGER

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
7-19-88	11 ⁰⁰ am	DRY

LOCATION DESCRIPTION 50' WEST OF WESTERN SIDE OF SPOCK STOCKPILE
SITE CONDITION 250' SOUTH OF PIT. 50' EAST OF HERNBUCKLE RD. SPARSE
GRASS AND SAGE BRUSH

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID.	BLOWS PER 6 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
									contact : <u>S.S.</u> blue chystare
125	X				25			CL CH	Firm dense massive blue grey claystone, laminated thin sub liqwitz coal seam.
130	X				26			CH	bluish-gray dense firm massive claystone. T.D.

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 1 of 4

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 936
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: 5.0" AIR ROTARY
DRILLING CONTR.: BARNHART, WY
DATE STARTED: 7-15-88
DATE COMPLETED: 7-16-88
FIELD REP.: D. MGTZLER

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
7-16-88	7:30 am	NO WATER

LOCATION DESCRIPTION APPROX. 100' EAST/SOUTH EAST OF STROOK
SITE CONDITION OVERBURDEN STOCK PILE: 17% SLOPE TO THE SW, GRASSY, SAGE.

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
1				G					TOP SOIL: Dry, thin grassy cover.
2									
3									
4									
5	X				01			SC	Brown, sandy silty clay minor organics, MOD. DRY
10	X				02			SC/CL	ALLUVIUM Brown DENSE sandy clay chips of clay stone / SILTSTONE
15	X				03			SC/CL	DK. to MED. Brown SILTY fine SANDSTONE, laminated MOD. DENSE.
20	X				04			SW	Brownish yellow, fine to medium grained MOD. well sorted Sandstone, mostly qtz grains w/ little fragments. grains sub-rounded to rounded. some FeOx stain loose, weak to absent cementation
23	X				05				tan to Lt Br. MOD. sorted medium grain s.s. SOME FINES
25									Predominately qtz grains, minor FeOx stain
30	X				06				poorly sorted silty sand, moist

COMMENTS: G = Grab sample

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

LOCATION MAP:

SITE ID: _____ LOCATION ID: 936
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE REMOVED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
35	X				07			SM	Moist tan poorly sorted sandstone
40	X				08			SM	MOD. DRT Lt BR, predominantly qtz gr angular to sub round loose silty sandstone
									CONTACT
45	X				09				Hd. dense reddish + grey cemented lithic sandstone.
50	X				10				fine G.S. wet
55	X				11				red grain, rounded, qtz in a red cemented matrix.
60	X				12				mod. well sorted, rounded qtz grains

COMMENTS: Injected H₂O at 42' after drill
string became stuck.

SAMPLE TYPE

A - Auger cuttings
S - 3" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 2 of 4

LOCATION MAP:

SITE ID: _____ LOCATION ID: 936
SITE COORDINATES (ft.):
N _____ E _____

GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION
SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	D	BLOWS PER 6 in.	Z VALUE	USCS	VISUAL CLASSIFICATION
65	X			A	13				lt. tan bell rounded, predominantly at3 grained sandstone, ARENITE TYPE S.S.
70	X			A	14				med to coarse at3 grained S.S. with some little grains rounded to well rounded,
75	X				15				med. to med. coarse S.S.
80	X				16				Med size grains rounded med. at3. ARENITE S.S.
85	X				17				same
90	X				18				med. sorted, rounded, mostly at3 grains

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. therm-washed Shelby tube

BOREHOLE LOG (SOIL)

Page 414

LOCATION MAP:

SITE ID: _____ LOCATION ID: 936
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: 7-15-88 4:30 PM
FIELD REP.: MOTL G/R

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	D	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
95	X			h	19			CH	mostly qtz s.s. with dk hd, shale. ? stringers in the s.s.
100	↓				20			CL	STIFF / hard dk grey / blue claystone w/ s.s. present.
105									NOTE: the s.s. could be contaminant from higher interval ? claystone is massive, shale is highly laminated, T.D.
110									NOTE: most probable odor change noticed at 95' D
115									EXTENDED BORING 7-16-88 GREYISH-BLUE SILTSTONE / SILTCLAY
120								CH	hd laminated blue clay stone high plasticity
								CH	Blueish dk gray massive claystone high plasticity
									FINAL T.D. 120' D

COMMENTS: T.D. @ 100' 4:30 PM 7-15-88

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 1 of 2

SITE ID: CPK-15 LOCATION ID: 937
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: AIR - WET ROTARY
DRILLING CONTR.: BARNHART
DATE STARTED: 7-17-88
DATE COMPLETED: _____
FIELD REP.: D. METZLER

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION
SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
0									<u>TOP SOIL</u> <u>ALLUVIUM</u>
5	X			G	01				<u>MOD. DRY BROWN SILTY SAND</u>
10					02			SM	<u>TAN BR SILTY SAND</u>
15					03			SM	<u>Brownish tan - silty fine sand</u>
20					04			SM	<u>SAME</u>
25					05			SM	<u>Fairly sorted br. tan. fine silty sand.</u>
30					06				<u>SAME</u>

COMMENTS: _____

SAMPLE TYPE
A - Auger cuttings
S - 3" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 2 of 4

LOCATION MAP:

SITE ID: _____ LOCATION ID: 937
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
35					07			SM	TAN SILTY SAND <u>INJECTED CLEAR WATER</u>
40					08			SM	TAN-BR. SILTY SAND 10-20% 2mm rounded <u>at 3</u> grains. <u>BED ROCK</u>
45					09			SM	SILTY TAN <u>at 3</u> S.S.
50					10				tannish SILTY med. grain rounded S.S.
55					11				Same very fast drilling
60					12				

COMMENTS: net samples 40 +

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 3 of 4

LOCATION MAP:

SITE ID: _____ LOCATION ID: 937
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
65	X			G	13			SM	wet, Br. yellow silty s.s.
70	X			G	14			SM	wet, silty s.s.
75									Very wet conditions no sample until 85-90'
80									
85									
90	X				18				
90	X								Wet, Br. yellow silty sand

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 4 of 4

LOCATION MAP:

SITE ID: _____ LOCATION ID: 937
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
92									BECOMES HARDER ?
94									CONTACT S.S. ?
95	X				19			CL	SILTY S.S. CONTAMINATED w/ the shale Blue shale, possible coal stringer shale / claystone <u>wet</u>
100	X				20				wet, Blue shale / claystone
									T.D. 100'
									cleaned hole w/ injected water.
									NOTE: wet samples Are not field identified extensively!
									DM.

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 1 of 9

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 938
SITE COORDINATES (ft.):
N E
GROUND ELEVATION (ft. MSL):
DRILLING METHOD: ROTARY :
DRILLING CONTR.: BARNHART
DATE STARTED: 7-14-88
DATE COMPLETED:
FIELD REP.: D. METZGER

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
7-20-88	10:00 AM	? 10.0

LOCATION DESCRIPTION EAST OF SPOCK PILE ~ 600'
SITE CONDITION Gently slope, sparse grass & sagebrush

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									TOP SOIL
5	X				01				DRY SILTY SAND
									Contact TOPSOIL
									S.S.
10	X				02				TOPSOIL: clayey sand and poorly sorted SILTY lithic S.S.
15	X				03				slightly moist, Lt. tan poorly sorted, angular to round, fine to coarse. qtz. grain S.S.
20	X				04				Contact tan coarse S.S. red fine S.S.
									mod. sorted, iron stained, reddish fine, lithic sandstone.
25	X				05				poorly sorted S.S.
									Blow by - contamination
30	X				06				Poorly sorted, slightly moist, reddish tan lithic qtz. dm. S.S.

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 2 of 9

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 938
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: ROTARY
DRILLING CONTR.: BARNHART
DATE STARTED: 7-19-88
DATE COMPLETED: _____
FIELD REP.: D. METZGER

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
7-20-88	800 am	c 60'

LOCATION DESCRIPTION 600' East of Spook Pit, 35' S. of Dry Creek.
SITE CONDITION Gently sloping sparse grass & sage-brush

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
35	X				07				SLIGHTLY moist- Reddish-brown, poorly sorted, atz. ss.
40	X				08				same
45	X				09				Reddish-brown poorly sorted coarse sand (wet sample)
50	X				10				same
55	X				11				contact s.s. Blue shale
									Grey moist silty claystone very fine rounded atz grains in a clay matrix.
60	X				12				Grey blue moist massive atz. siltstone

COMMENTS: _____

SAMPLE TYPE
A - Auger cuttings
S - 3" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. ther-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 3 of 9

LOCATION MAP:

SITE ID: _____ LOCATION ID: 938
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
65	X			G	13			CL	wet sample, blue grey siltstone / claystone
70	X				14				wet sample same
75	X				15				same
80	X				16				same
85	X				17				dense massive grey claystone
90	X				18				oil residue floating on mud claystone

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 4 of 9

LOCATION MAP:

SITE ID: _____ LOCATION ID: 138
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
95					19				chase claystone
100					20				dense blue-gray claystone, sub lignite coal stringers. Tar coating on claystone fracture surface.
105					21				
110					22				
115					23				shale w/ hard black bituminous coal, conchoidal fractures in coal
120					24				blue claystone with hard black coal chips

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 5 of 9

LOCATION MAP:

SITE ID: _____ LOCATION ID: 938
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE REMOVED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
125	X			G	25			CL	blue / gray shale / claystone
130	X				26			CL	same
135	X				27				mostly blue claystone w/ DK earthy brown laminated fissile sub lignite shale
140	X				28				blue / gray claystones w/ occasionally chips of hard coal, abundant soft clay.
145	X				29				mostly blue / gray claystone
150					30				claystones, stringers of hard coal amber crystals in coal

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 6 of 9

LOCATION MAP:

SITE ID: _____ LOCATION ID: 938
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
150	X								very hard stringer
155	X				31				blue claystone / shale
160	X				32				massive blue gray claystone, no sample coal stringers
165	X				33				hard dense blue/gray shale
170	X				34				blue - gray claystones shales minor coal fragments.
175	X				35				blue and grey shales claystone soft drilling.
180	X				36				blue claystone

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

COMMENTS: _____

BOREHOLE LOG (SOIL)

Page 7 of 9

LOCATION MAP:

A
27

SITE ID: _____ LOCATION ID: 938
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
185					37			cl	blue shale
190					38				blue shale
195					39				blue claystone w/ laminated (thinly) dk grey variable siltstone
200					40				oil residue floating on cuttings - mud. same as above: chocolate mud color
205					41				mostly blue shale
210					42				shale w/ thick hd. black bitum. coal

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 8 of 9

LOCATION MAP:

A
N

SITE ID: _____ LOCATION ID: 938
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
215	x			G	43				Mostly h.d. Black coal, gray shale laminated soft
220	x			G	44				Lots of water coming up hole. same
225	x				45				Lots of water: Blue-gray shales coal minor fine sand?
230	x				46				same
235					47				contact claystone Sandstone Lots of water. Predominantly fine Sandstone atz rich.
240					48				angular to rounded medium grained mostly atz. Sandstone

COMMENTS: making H₂O at 220'
High Volume H₂O at 230'

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

LOCATION MAP:

SITE ID: _____ **LOCATION ID:** 438

SITE COORDINATES (ft.):

N _____ E _____

GROUND ELEVATION (ft. MSL): _____

DRILLING METHOD: _____

DRILLING CONTR.: _____

DATE STARTED: _____

DATE COMPLETED: _____

FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	D	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									distinct "oil" smell emanating from hole.
245	K				49				med to coarse sands, large chunks of hd black conoidal fractured bitu. coal. <u>some shales of claystone.</u> <u>contact</u>
250					50				water becomes earthy brown to black <u>bituminous coal, minor sand</u> T.D.

COMMENTS: close to 50 g / min

SAMPLE TYPE

SAMPLE TYPE
A - Auger cuttings
B - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 1 of 3

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 939
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: 5" AIR ROTARY
DRILLING CONTR.: BARNHART
DATE STARTED: 7-16-98
DATE COMPLETED: _____
FIELD REP.: D. METZGER

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION MODERATELY FLAT, SMALL RISE
SITE CONDITION SPARSE GRASS & SAGE BRUSH

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									TOP SOIL
									MOD. DRY, IMMATURE, TRACE ORGANICS
									MED. B.S. SILTY SAND
5	X				01				Poorly sorted yellowish br
									SILTY SAND
									NOTE: v. hard drilling
10					02				Yellowish tan silty fine sand
									well cemented.
15					03				Poorly sorted silty sand
									well cemented wackestone
									lithic frags.
20					04				Lt. tan poorly sorted, angular
									atz. grained moist arenite
									minor lithic frags.
									drilling easier,
25					05				moist tan-br poorly sorted
									silty sand atz grains sub rounded
									grain size .5-20 mm
30									less fines, more rounded atz grains
									more sorted atz. arenite

COMMENTS:

SAMPLE TYPE
A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	B	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
35	X								Sorted into 2 distinct qtz grain dia's sub rounded, minor dark minerals, slightly moist. Lt tan arenitic type s.s.
40	X								Moist reddish tan, poorly sorted minor lithic, mod. rounded s.s. trace FeOx stain
45	X								poorly sorted, reddish tan s.s. hd. stringer = 1-2' thick rose colored, well cemented
50	X								poorly sorted, s.s.
55	X								poorly sorted, wavy shung some shale frags. Mol. br
60	X								Moist, Lt. tan poorly sorted angular to sub rounded, mostly qtz grains

[illegible]

SITE ID: _____
 LOCATION ID: 939 _____
 SITE COORDINATES (N.): _____
 N _____
 GROUND ELEVATION (ft. MSL): _____
 DRILLING METHOD: _____
 DRILLING CONTR.: _____
 DATE STARTED: _____
 DATE COMPLETED: _____
 FIELD REP.: _____

LOCATION MAP:

BOREHOLE LOG (\$TIO)

Page 4 of 3

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

Page 3 of 3

LOCATION MAP:

SITE ID: _____ LOCATION ID: 939
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
65	X				13				mod. sorted, clean - rounded atz grains with some clay balls.
70	X				14				mod sorted, Fine sand w/ clay balls
75	X				15				Moist, DK tan, poorly sorted medium grain S.S. large % lithics
80	X				16				Moist, tan, well sorted, Fine Sandstone
85	X				17				Dr. Red Fe cemented S.S w/ odiferous layer of sub Lignite
90									Moist DK Gray sandy shale w/ Coal stringers, soft laminated shales.

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 1 of 2

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 940
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: AIR ROTARY
DRILLING CONTR.: BARNHART
DATE STARTED: 7-27-88
DATE COMPLETED: 7-27-88
FIELD REP.: D METZGER

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
7-27-88	12 ⁰⁰ PM	18-19'

LOCATION DESCRIPTION: EAST ARM OF SPK PIT towards the "East-Gate"
SITE CONDITION: Loose sands, few weeds, dry surface.

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
5					01			SM	loose, moist, lt. tan poorly sorted sands. hard s.s.
10					02			SM	hd. slightly moist lt. tan poorly sorted s.s.
15					03			SM	Moist, yellowish-tan poorly sorted s.s. w/ lithic frags. Qtz. fine to coarse.
20					04			SM	WATER TABLE: OBSERVED SATURATED Moist - wet reddish tan poorly sorted s.s.
25					05			SM	saturated tan br. sandstone, lithic
30					06			OH PI	Contact _____ s.s. Sandstone / coal _____ coal

COMMENTS: base sands caving near surface

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 2 of 2

LOCATION MAP:

SITE ID: SPL-15 LOCATION ID: 940
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									contact
									Coal
									claystone
35					E7			SM/cl	gray claystone w/ lithic sandy
40					08			CH	blueish gray soft fat claystone
45					09				claystone: high % sand contamination
50					10				claystone: high % sand contamination
									T.D. 50
									12 70 pm

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 1 of 3

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 941
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: ROTARY AIR
DRILLING CONTR.: BARNHART
DATE STARTED: 7-26-88
DATE COMPLETED: 7-26-88
FIELD REP.: D. METZGER

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)
7-27-88	7:45 am	45.0'

LOCATION DESCRIPTION Gently rolling top on a mod. sloping surface S. of drainage
SITE CONDITION Scattered sagebrush and short grasses. thin topsoil

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									TOPSOIL
									Brown clayey silty sand, trace rootlets, slightly moist
	X				01			cl	contact topsoil s.s.
	X				02			SH	Brownish tan, moist poorly sorted sandstone, mostly qtz grains, angular to round.
5	X				03				Moist, qtz sandstone, mostly fine grain with minor coarse rounded clear qtz. grains.
19	X				03.5				small rounded dark-black mineral clasts.?, in a hard well cemented dense sandstone lensa.
20					04			SM	Moist tan poorly sorted fine s.s.
5	X				05				coarser poorly sorted lithic rose-s.s. - orangeish-tan fine silty sand
30					06				slightly moist orangeish-tan mod sorted fine lithic s.s. with minor rounded qtz. coarse grains.

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. ther-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 2 of 3

LOCATION MAP:

N

SITE ID: SPV-16 LOCATION ID: 941
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION Moderately sloping, 70' south of intermittent drainage
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
35	X				07			SM	Moist orangish-tan fine s.s. w/ some coarse clasts.
40	X				08			SM	Burnt orangish tan poorly sorted s.s.
									contact _____ s.s. claystone
45	X				09			SM/CL	s.s. and DK grey/deep brown firm massive claystone
50	X				10			CL/CH	fine grain massive claystone both DK grey and DK. Brown, plus s.s. contact from boring wall grey clayst. blue shale
55	X				11			CL	Blue-greenish grey silty shale easily broken, med. firm.
60	X				12			CL	Soft to firm blue shale w/ sandy grey shales and DK grey fissile shales.

COMMENTS: 36' started drilling w/ water

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 941
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: 7-26-86
FIELD REP.: D. Matzler

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION
SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	D	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									NOTE: OIL LIKE RESIDUE FLOATING ON CUTTINGS
65	X				13			SM/CL	Blue/gray shales w/ rounded atz grains and abundant red oxide clasts.
70	X				14			CL/CH	Blue-green shales/claystone w/ Large frags of D Brown to Black petroliferous shale or Lignite?
75	X				15			CL/CH	same as above
80	X				16				soft to firm Blue/gray claystones shales. T.D. @ 80'

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 3" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. therm-welded Shelby tube

BOREHOLE LOG (SOIL)

Page 1 of 4

SITE ID: SPK-15 LOCATION ID: 942
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: AIR ROTARY
DRILLING CONTR.: BARNHART
DATE STARTED: 7-18-88
DATE COMPLETED:
FIELD REP.: J. NETZLER

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION SPARSE GRASS & SAGEBRUSH, MODERATE SLOPE
SITE CONDITION HOT, DRY, EROSIONAL SLOPING ALLUVIUM

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									TOPSOIL
5	X			G	01			SM	BROWN SILTY SAND, ORGANIC ROOTLETS Blocky, / clayey sand
10	X			G	02			SM	BROWN, SLIGHTLY MOIST Blocky SILTY fine sand
15	X				03			SM	BROWN SILTY fine sand non plastic
20	X				04			SM	Br. SILTY fine sand
25	X				05			SM	Br. SILTY sand w/ Blocky Laminated siltstone - shale chips.
30	X				06			SM	SLIGHTLY moist SILTY fine sand mod. sorted

COMMENTS:

SAMPLE TYPE
A - Auger cuttings
S - 3" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 2 of 4

LOCATION MAP:

SITE ID: _____ LOCATION ID: 942
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									ALLUVIUM
									? <u>CONTACT</u> _____ ? High Fe ₂ O ₃ S.S.
35	X				07			SP	SLIGHTLY MOIST REDDISH tan SILTY fine sand, mod. sorted, mostly atz. grains, some lithic grains.
40	X				08			SP	SLIGHTLY moist, REDDISH tan, fine to mod atz rich atz sandstone, Fe ₂ O ₃ present coating atz grains
45	X				09			SP	PINKISH-Red fine sand, moderately sorted
50	X				10				Pinkish-red, well sorted fine atz S.S. w/ Abundant Fe ₂ O ₃
55	X				11				Same as above, d = .25mm slightly moist
60	X				12				Red, mod. sorted, lithic S.S. w/ some clay balls, moist

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 3 of 4

LOCATION MAP:

SITE ID: _____ **LOCATION ID:** 942
SITE COORDINATES (ft.):
N _____ **E** _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	D	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									<div style="text-align: right;">S.S.</div> <div style="text-align: center;">____ CONTACT ____</div> <div style="text-align: center;">OLIVE CLAYSTONE</div>
65	X				13			CL	MOIST, hard, OLIVE claystone
67									NOTE: injected H ₂ O - - -
70	f				14			ch	OLIVE claystone
		"							
75	X				15			CL	<div style="text-align: right;">CONTACT: OLIVE claystone</div> <div style="text-align: center;">wet sample. Olive shale</div> <div style="text-align: center;">Bluish-green claystone/shale</div>
80	X				16			CL	wet sample: GREY shaley SILTstone / claystone
85	X				17			ch	hard Dr. Grey massive claystone some minor SILTstone T.B. 85

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

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ANN

SITE ID: _____ LOCATION ID: 942

SITE COORDINATES (ft.):

N _____ **E** _____

GROUND ELEVATION (ft. MSL):

DRILLING METHOD: _____

DRILLING CONTR.: _____

DATE STARTED: _____

DATE COMPLETED: _____

FIELD REP.: _____

GROUNDWATER LEVELS

DATE

TIME

DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

[illegible]**COMMENTS:**

SAMPLE TYPE

SAMPLE TYPE
 A - Auger cuttings
 S - 2" O.D. 1.38" I.D. drive sample
 U - 3" O.D. 2.42" I.D. tube sample
 T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 1 of 3

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 943
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION 300' south of the W. Boundary of Hornsue/ Hardy Prop
SITE CONDITION Flat sage covered open land.

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 IN.	N VALUE	USCS	VISUAL CLASSIFICATION
									Topsoil
5	X				01			sc/cl	br. to rose silty clayey sand
10	X				02			sm	very lt reddish tan, dry med. to coarse grain, rounded, well sorted aty. S.S., (leached zone)
15	X				03			sm	rose-red, dry fine to med iron stained aty S.S. angular to sub rounded grains.
20	X				04			sm	same
25	X				05				slightly moist rose-red fine grain iron stained lithic S.S., poorly to med. sorted, mostly sub angular grains cemented bel. S.S. lense
30	X				06				slightly moist, red fine S.S. some silt

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 2 of 3

LOCATION MAP:

HARDY

SITE ID: SDV-15 LOCATION ID: 943
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 IN.	Z VALUE	USCS	VISUAL CLASSIFICATION
35	X				07			SM	slight moist, red iron matrix angular fine s.s. lithic clasts same size particles
40	X				08			SM	Dry well cemented (? CaCO ₃) rounded fine to med. grain Qtz. s.s. Lt. tan, lacking the iron matrix
45	X				09			SM	slightly moist, tan-lt red poorly sorted angular to sub rounded Qtz. s.s. silty to fine sand
50	X				10			SM	slightly moist med sorted med. grain lithic, most Qtz. orange s.s.
55	X				11			SM	orangish-tan sorted, mostly rounded med. grain Qtz. s.s. injected water
60									red, wet, medium Qtz. s.s. / hd. shale stringer

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thermal-walled Shelby tube

BOREHOLE LOG (ROCK)

Page 3 of 3

LOCATION MAP:

ran out of soil boring
logs

SITE ID: SP-12 LOCATION ID: 943
APPROX. SITE COORDINATES (ft.): _____

N _____ E _____

GROUND ELEVATION (ft. MSL): _____

DRILLING METHOD: _____

DRILLER: _____

DATE STARTED: _____

DATE COMPLETED: _____

FIELD REP.: _____

GROUNDWATER LEVELS

DATE _____

TIME

DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH (FT)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	DISCONTINUITIES							CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS	
						SPACING					ORIENTATION						
						WIDE		CLOSE			HORIZ.						VERT.
						1	2	3	4	5	H	50°					V
62														SS	s.s	contact - coal stringer - gray shale / claystone	
65 R														sh	gray Plastic shale		
70															firm blue gray claystone / shale		
75															bluish gray claystone		

COMMENTS:

T.D. 75 11³⁰ am

BORING OPERATION
 M - 6 1/2 HOLLOW STEM ANGR
 C - 4 1/2 CONTINUOUS FLIGHT ANGLR
 GS - GEAR BIT
 NX - NX ROCK CORING
 NO - NO WIRELINE ROCK CORING

BOREHOLE LOG (SOIL)

Page 1 of 5

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 944
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: ROTARY AIR
DRILLING CONTR.: BARNHART
DATE STARTED: 7-29-88
DATE COMPLETED: _____
FIELD REP.: D. METZGER

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION 400' South of Hardy's Windmill

SITE CONDITION MODERATELY FLAT SPARSE GRASS & SHORT GRASS

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
									TOPSOIL ? weathered zone of enrichment
5	X				01			CL	Brown dry hd. sandy clay minor rootlets
10	X				02			CL	Lt. Br. DRY sandy clay to clayey sand
15	X				03			SM	Lt. Br. MOD. DRY SILTY fine sand, many black lithic clasts
20	X				04			SC	slightly moist br. sandy clay, fine sand fractions
25	X				05			SC	moist to dry, Lt. br. clayey fine sand
30	X				06			SC	Lt. br. clayey fine sand

COMMENTS: _____

SAMPLE TYPE
A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. ther-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 2 of 5

LOCATION MAP:

SITE ID: SPIC-15 LOCATION ID: 944
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	R VALUE	USCS	VISUAL CLASSIFICATION
35	X				07			SC	moist br. clayey fine sand insectal water
40	X				08			CL	Br. sandy lean clay
45	V				09			CL	Br. lean clay
50	T				10			CL	Br. silty lean clay
55	X				11			SC	gradational change: Brown-tan, clayey sand.
60	X				12			CL	Brown-tan silty clay

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 3" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 3 of 5

LOCATION MAP:

SITE ID: 294-15 LOCATION ID: 944
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
65	X				13				SM/SC wet, br. silty fine sand, some clay?
70	X				14				SMTC
77	X				15				same
									? contact
80	X				16				fine SECT 1/3.3 red s.s. ?
									SM red- wet, fine lithic silty sand
85	X				17				lt. br. silty fine sand, clay?
90					18				lt. br. silty sand

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 4 of 5

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 944
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: _____
DRILLING CONTR.: _____
DATE STARTED: _____
DATE COMPLETED: _____
FIELD REP.: _____

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION _____

SITE CONDITION _____

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
95	X				19			M	wet, br. med grain well sorted well rounded, s.s.
100					20				reddish br. iron ox stained, well sorted, rounded Qtz. s.s.
105					21				red/br. well sorted, rounded, med grain s.s.
110					22				same
115					23				tan-brown, well rounded, med sorted lithic Qtz s.s.
120					24				WATER BEARING Coarse s.s. / conl

COMMENTS: _____

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

BOREHOLE LOG (SOIL)

Page 5 of 5

LOCATION MAP:

SITE ID: SPK-15 LOCATION ID: 944

SITE COORDINATES (ft.):

N _____ **E** _____

GROUND ELEVATION (ft. MSL): _____

DRILLING METHOD: _____

DRILLING CONTR.: _____

DATE STARTED: _____

DATE COMPLETED: _____

FIELD REP.: _____

GROUNDWATER LEVELS

DATE _____

TIME

DEPTH (ft.)

LOCATION DESCRIPTION

SITE CONDITION

DEPTH	SAMPLE INTERVAL	SAMPLE RECOVERY	SAMPLE RETAINED	TYPE	D	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
125	X				25				NOTE 25 sample contaminated w/ blow-by. Blue claystone
									T D. 1235 PM

COMMENTS:

SAMPLE TYPE

A - Auger cuttings
S - 2" O.D. 1.38' I.D. drive sample
U - 3" O.D. 2.42' I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

APPENDIX B
MONITOR WELL COMPLETION RECORDS

WELL COMPLETION RECORD

SITE ID: 3PK LOCATION ID: 900 910 DATE INSTALLED: 11-26-86

APPROX. SITE COORDINATES: (FT.) N _____ E _____

OPEN AREA PER LINEAL FT. (IN²/FT.) _____

FORMATION OF COMPLETION: Wasatch (Sandstone)

FIELD REP.: L. Phyllis DRILLER: Boyles Bros.

COMMENTS: _____

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK LOCATION ID: 900 910 FIELD REP: L. Phylle

APPROX. SITE COORDINATES (FT.): N _____ E _____

GROUND ELEVATION (FT. MSL): 5089 COMPLETION DATE: 11-26-86

BOREHOLE SUMMARY

DRILLER: Boyles Bros.

RIG TYPE: Failing 1500

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE
<u>Blade bit</u>	<u>8.0</u>	<u>174.5</u>	<u>Air / Mist</u>

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
<u>* P</u>	<u>Protective Steel</u>	<u>8 3/8</u>	<u>5.5</u>
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>162.5</u>
<u>S</u>	<u>Sch. 40 PVC (.06)</u>	<u>4.0</u>	<u>172.5</u>
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>174.5</u>
	<u>* Set as permanent surface casing</u>		

* P-Protective B-Screen S-Blank O-Open N-None

† Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
<u>B</u>	<u>Cement-Bentonite Grout</u>	<u>149.0</u>
<u>S</u>	<u>Bentonite Pellets (1/4")</u>	<u>152.0</u>
<u>F</u>	<u>Silica Sand (8-12)</u>	<u>174.5</u>

* B - Backfill S - Seal F - Filter Pack

† Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING	<u>11-24-86</u>	<u>3:10</u>	<u>5:04</u>
	<u>11-25-86</u>	<u>8:30</u>	<u>2:20</u>
CASING	<u>11-26-86</u>	<u>10:15</u>	<u>11:30</u>
FILTER PACK	<u>11-26-86</u>	<u>11:45</u>	<u>1:15</u>
SEAL	<u>11-26-86</u>	<u>1:15</u>	<u>4:00</u>
BACKFILL	<u>11-26-86</u>	<u>4:00</u>	<u>5:00</u>
	<u>12-2-86</u>	<u>8:15</u>	<u>12:30</u>
DEVELOPMENT	<u>12-20-86</u>	<u>11:30</u>	<u>12:35</u>
OTHER			

WELL DEVELOPMENT

<u>12-20-86</u>	<u>Ph</u>	<u>Ec (uHoles)</u>	<u>Temp °</u>
<u>11:45</u>	<u>8-9</u>	<u>75</u>	<u>9</u>
<u>12:00</u>	<u>6-7</u>	<u>80</u>	<u>10</u>
<u>12:15</u>	<u>6-7</u>	<u>120</u>	<u>12</u>
<u>12:30</u>	<u>6-7</u>	<u>140</u>	<u>11</u>
<u>stop</u>			

COMMENTS: EC Meter ID # 12764

Developed with air until water
was clear & sed. free - Ph 6.7
EC 140 (uHoles)

JACOBS ENGINEERING GROUP INC.

ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORDSITE ID: SPK-01 LOCATION ID: 90+911 DATE INSTALLED: 11-24-86

APPROX. SITE COORDINATES: (FT.) N _____ E _____

OPEN AREA PER LINEAL FT. (IN²/FT.) _____FORMATION OF COMPLETION: Wasatch (Sandstone)FIELD REP.: L. Phyte DRILLER: Boyles Bros.

COMMENTS: _____

JE JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-d1 LOCATION ID: 901 911 FIELD REP: L. Phylfe

APPROX. SITE COORDINATES (FT.): N _____ E _____

GROUND ELEVATION (FT. MSL): 5090 COMPLETION DATE: 11-24-86

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>Byles Bros.</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>Fairing 1500</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	11-23-86	2:04	3:45
<u>Blade bit</u>	<u>8</u>	<u>113.5</u>	<u>Air</u>	CASING	11-24-86	10:00	10:57
CASING SUMMARY				FILTER PACK	11-24-86	11:00	12:30
CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)	SEAL	11-24-86	12:30	2:20
<u>*P</u>	<u>Protective Steel</u>	<u>8 3/8</u>	<u>5.0</u>	BACKFILL	11-24-86	2:40	4:50
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4</u>	<u>96.5</u>	DEVELOPMENT	12-20-86	9:30	11:00
<u>S</u>	<u>Sch. 40 PVC (.06")</u>	<u>4</u>	<u>111.5</u>	OTHER			
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4</u>	<u>113.5</u>				
<u>*Set as Permanent Surface Casing</u>							
* P-Protective S-Screen B-Blank O-Open N-None							
+ Depth from Top of Casing							
WELL CONSTRUCTION				WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)		12-20-86	<u>Ph</u>	<u>Ec (Atk)</u>	<u>Temp (C°)</u>
<u>B</u>	<u>Cement-Bentonite Grout</u>	<u>81.0</u>		9:45	6-7	20	9
<u>S</u>	<u>Bentonite Pellets (1/2")</u>	<u>86.0</u>		10:15	6-7	50	9
<u>F</u>	<u>Silica Sand (8-12)</u>	<u>113.5</u>		10:35	6-7	50	10
				10:50	6-7	55	11
				COMMENTS: <u>Ec Meter # 12764</u>			
				<u>Developed with air until water was clear & sand free. Used 1.5 hours to check Ph.</u>			
* B - Backfill S - Seal F - Filter Pack							
+ Depth from Ground Surface							

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 402 912 DATE INSTALLED: 11-23-86

APPROX. SITE COORDINATES: (FT.) N _____ E _____

OPEN AREA PER LINEAL FT. (IN²/FT.) _____

FORMATION OF COMPLETION: Wasatch

FIELD REP.: L. Flute DRILLER: Boyles Bros.

COMMENTS: _____

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 942 912 FIELD REP: L. Phyllis

APPROX. SITE COORDINATES (FT.): N _____ E _____

GROUND ELEVATION (FT. MSL): 5100 COMPLETION DATE: 11-23-86

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>Boyles Bros.</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>Fu.ing 1500</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (In.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	<u>11-21-86</u>	<u>3:40</u>	<u>4:30</u>
<u>Tricone</u>	<u>12</u>	<u>5.5</u>	<u>Air</u>		<u>11-22-86</u>	<u>11:15</u>	<u>1:00</u>
<u>Tricone</u>	<u>8</u>	<u>114.0</u>	<u>Air/Hist</u>				
				CASING	<u>11-22-86</u>	<u>1:30</u>	<u>2:50</u>
CASING SUMMARY				FILTER PACK	<u>11-22-86</u>	<u>2:50</u>	<u>3:40</u>
CASING TYPE*	DESCRIPTION	DIA. (In.)	END DEPTH (ft.)	SEAL	<u>11-22-86</u>	<u>3:40</u>	<u>4:15</u>
<u>*P</u>	<u>Protective Steel</u>	<u>8 7/8</u>	<u>5.5</u>	BACKFILL	<u>11-23-86</u>	<u>11:00</u>	<u>12:30</u>
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4</u>	<u>97.0</u>	DEVELOPMENT	<u>12-17-86</u>	<u>9:00</u>	<u>12:00</u>
<u>S</u>	<u>Sch. 40 PVC slotted</u>	<u>4</u>	<u>112.0</u>				
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4</u>	<u>114.0</u>	OTHER			
	<u>*Set as permanent surface casing</u>						
* P-Protective S-Screen B-Blank O-Open N-None † Depth from Top of Casing							
WELL CONSTRUCTION				WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)		<u>12-17-86</u>	<u>Pk</u>	<u>EC (Hole)</u>	<u>Developed</u>
<u>B</u>	<u>Cement-Bentonite Grout</u>	<u>76.5</u>		<u>9:10</u>	<u>7-8</u>	<u>250</u>	<u>units Water was</u>
<u>S</u>	<u>Bentonite Pellets</u>	<u>87.0</u>		<u>10:00</u>	<u>7-8</u>	<u>275</u>	<u>clear and</u>
<u>F</u>	<u>Silica Sand (8-12)</u>	<u>114.0</u>		<u>10:30</u>	<u>7-8</u>	<u>275</u>	<u>sediment</u>
				<u>11:15</u>	<u>7-8</u>	<u>275</u>	<u>free.</u>
				COMMENTS: _____			

* B - Backfill S - Seal F - Filter Pack † Depth from Ground Surface							

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 903 913 DATE INSTALLED: 12-14-86

APPROX. SITE COORDINATES: (FT.) N _____ E _____

OPEN AREA PER LINEAL FT. (IN²/FT.) _____

FORMATION OF COMPLETION: Wasatch (SS/Sk)

FIELD REP.: Le Phuyte DRILLER: Boykes Bros.

COMMENTS: _____

JACOBS ENGINEERING GROUP INC.

ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 903913 FIELD REP: L. Phyle

APPROX. SITE COORDINATES (FT.): N _____ E _____

GROUND ELEVATION (FT. MSL): 5090 COMPLETION DATE: 12-14-86

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>Boyles Bros.</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>Failing 1500</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (In.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	12-13-86	3:10	5:15
<u>Tritone</u>	<u>8.0"</u>	<u>120.0'</u>	<u>Air/Mist</u>				
				CASING	12-14-86	9:45	10:06
				FILTER PACK	12-14-86	10:10	11:15
				SEAL	12-14-86	11:15	12:15
				BACKFILL	12-14-86	12:30	1:30
				DEVELOPMENT	12-16-86	9:30	11:30
					12-20-86	2:30	3:30
				OTHER			

CASING SUMMARY			
CASING TYPE*	DESCRIPTION	DIA. (In.)	END DEPTH (ft.)
<u>*P</u>	<u>Protective Steel</u>	<u>8 3/8</u>	<u>5.5</u>
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>103.0</u>
<u>S</u>	<u>Sch 40 PVC (.06")</u>	<u>4.0</u>	<u>112.0</u>
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>120.0</u>
	<u>*Set as permanent surface casing</u>		

* P-Protective S-Screen B-Blank O-Open N-None
 † Depth from Top of Casing

WELL CONSTRUCTION			WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)	DATE	Ph	E (uMhos)	Temp C°
			12-20-86			
			2:30	7-8	360	10
<u>B</u>	<u>Cement-Bentonite Grout</u>	<u>84.0</u>	2:45	5-6	370	12
<u>S</u>	<u>Bentonite Pellets (1/4")</u>	<u>93.0</u>	2:55	5-6	370	13
<u>F</u>	<u>Colo. Silica Sand (8-12)</u>	<u>120.0</u>	3:15	5-6	375	13
			3:40			

* B - Backfill S - Seal F - Filter Pack
 † Depth from Ground Surface

COMMENTS: Ec meter I.D. #12764
Surged with air until water was free of sand and sediment.

FIELD REP.: L. Phyle DRILLER: Boyles Bros.

**WELL CASING
TYPE**

HT. ABOVE
GROUND (ft)

Cement-Bentonite
Grout

**SLOT
OPENING
(in)**
-06

28.0

187.0 CASING LENGTH (11)

**OPEN OR
SLOTTED
LENGTH
(ft)**

2.0	BLANK LENGTH (ft)
-----	-------------------

COMMENTS: _____

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 904 914 FIELD REP: L. Phylfe

APPROX. SITE COORDINATES (FT.): N _____ E _____

GROUND ELEVATION (FT. MSL): 5090 COMPLETION DATE: 12-15-86

BOREHOLE SUMMARY

DRILLER: Boyles Bros.

RIG TYPE: Failing 1500

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE
<u>Tricone</u>	<u>8.0</u>	<u>185.0</u>	<u>Air / Mist</u>

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
<u>* P</u>	<u>Protective Steel</u>	<u>8 7/8</u>	<u>5.5</u>
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>168.0</u>
<u>S</u>	<u>Sch. 40 PVC (106")</u>	<u>4.0</u>	<u>183.0</u>
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>185.0</u>

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING	12-14-86	1:45	5:00
CASING	12-15-86	1:50	2:40
FILTER PACK	12-15-86	2:45	3:26
SEAL	12-15-86	3:26	4:00
BACKFILL	12-16-86	11:30	2:00
DEVELOPMENT	12-20-86	4:00	5:15
OTHER			

* Set as permanent surface casing

* P-Protective B-Screen S-Blank O-Open N-None

* Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
<u>B</u>	<u>Cement-Bentonite Grout</u>	<u>147.0</u>
<u>S</u>	<u>Bentonite Pellets (14")</u>	<u>157.0</u>
<u>F</u>	<u>Colo. Silica Sand (8-12)</u>	<u>185.0</u>

WELL DEVELOPMENT

12-20-86	Ph	Fe (Cathos)	Temp C°
4:00	5-6	400	10
4:20	5-6	400	10
4:40	6-7	330	11
4:55	6-7	340	11
Stop			

COMMENTS: Fe meter I.D. # 12764
Developed with air until water was
clear & sediment from Litmus Paper
used for Ph check

JACOBS ENGINEERING GROUP INC.

ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 905 915 DATE INSTALLED: 12-10-80

APPROX. SITE COORDINATES: (FT.) N _____ E _____

OPEN AREA PER LINEAL FT. (IN²/FT.) _____

FORMATION OF COMPLETION: _____

FIELD REP.: L. Phife DRILLER: Drylee Bros.

COMMENTS: _____

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-61 LOCATION ID: 905 915 FIELD REP: L. Flyte
APPROX. SITE COORDINATES (FT.): N E
GROUND ELEVATION (FT. MSL): COMPLETION DATE: 12-10-86

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>Boyles Bros.</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>Failing 1500</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	12-6-86	11:30	1:30
<u>Tricone</u>	<u>8.0</u>	<u>130.0</u>	<u>Air/Mist</u>		<u>12-9-86</u>	<u>11:50</u>	<u>1:45</u>
				CASING	<u>12-9-86</u>	<u>3:59</u>	<u>5:00</u>
CASING SUMMARY				FILTER PACK	<u>12-9-86</u>	<u>5:00</u>	<u>5:25</u>
CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)	SEAL	<u>12-9-86</u>	<u>5:25</u>	<u>6:00</u>
<u>*P</u>	<u>Protective Steel</u>	<u>8 3/8</u>	<u>5.5</u>	BACKFILL	<u>12-10-86</u>	<u>10:30</u>	<u>3:15</u>
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>113.0</u>	DEVELOPMENT	<u>12-19-86</u>	<u>12:20</u>	<u>3:50</u>
<u>S</u>	<u>Schedule 40 PVC (60')</u>	<u>4.0</u>	<u>128.0</u>	OTHER			
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>130.0</u>				
	<u>*Set as permanent surface casing</u>						
* P-Protective B-Screen S-Blank O-Open N-None							
† Depth from Top of Casing							
WELL CONSTRUCTION				WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)		<u>12-19-86</u>	<u>Ph</u>	<u>Ec (aMoka)</u>	<u>Temp C°</u>
<u>B</u>	<u>Cement-Bentonite Grout</u>	<u>93.0</u>		<u>12:40</u>	<u>7-8</u>	<u>20</u>	<u>10</u>
<u>S</u>	<u>Bentonite Pellets (14")</u>	<u>100.0</u>		<u>1:15</u>	<u>7-8</u>	<u>20</u>	<u>10</u>
<u>F</u>	<u>Color Silica Sand (8-12)</u>	<u>130.0</u>		<u>1:48</u>	<u>6-7</u>	<u>15</u>	<u>12</u>
				<u>12-25-86</u>			
				<u>8:00</u>	<u>6-7</u>	<u>12</u>	<u>11</u>
				COMMENTS: <u>Ec meter I.D. # 12764</u>			
				<u>12-20-86 Water chert & sediment</u>			
				<u>Lithium paper used to check pH</u>			
				<u>pH meter not working (# 350222)</u>			
* B - Backfill S - Seal F - Filter Pack							
† Depth from Ground Surface

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 906 916 DATE INSTALLED: 12-6-86

APPROX. SITE COORDINATES: (FT.) N _____ E _____

OPEN AREA PER LINEAL FT. (IN²/FT.) _____

FORMATION OF COMPLETION: Washita (SS/SH)

FIELD REP.: L. Phylle DRILLER: Boyles Bros.

COMMENTS: _____

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 906 916 FIELD REP: L. Phyte
APPROX. SITE COORDINATES (FT.): N _____ E _____
GROUND ELEVATION (FT. MSL): 5075 COMPLETION DATE: 12-6-86

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>Boyles Bros.</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>Failing 1500</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	12-5-86	12:35	2:37
<u>Tricone</u>	<u>8.0</u>	<u>110.0</u>	<u>Air/Water</u>	CASING	12-5-86	3:30	4:00
CASING SUMMARY				FILTER PACK	12-5-86	4:00	4:35
CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)	SEAL	12-5-86	4:35	5:00
<u>*P</u>	<u>Protective Steel</u>	<u>8 3/8</u>	<u>5.5</u>	BACKFILL	12-6-86	8:40	10:30
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>93.0</u>	DEVELOPMENT	12-12-86	2:05	3:50
<u>S</u>	<u>Sch. 40 PVC (.06")</u>	<u>4.0</u>	<u>108.0</u>	OTHER			
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>110.0</u>				
	<u>*Set as permanent surface casing</u>						
* P-Protective S-Screen B-Blank O-Open N-None							
* Depth from Top of Casing							
WELL CONSTRUCTION				WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)		12-12-86	Ph	EC (uMhos)	Temp C°
<u>B</u>	<u>Cement-Bentonite Grout</u>	<u>75.0</u>		2:20	6-7	20	10
<u>S</u>	<u>Bentonite Pellets (1/4")</u>	<u>84.0</u>		2:35	6-7	50	10
<u>F</u>	<u>Coarse Silica Sand (2-12)</u>	<u>110.0</u>		2:50	6-7	60	8.5
				<u>Water clear & sediment free</u>			
				COMMENTS: <u>EC Meter I.D.# 12764</u>			
				<u>Lithium paper used to check Ph -</u>			
				<u>Ph meter I.D.# 350222 not working.</u>			
* B - Backfill S - Seal F - Filter Pack							
* Depth from Ground Surface

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 907 917 DATE INSTALLED: 12-11-86

APPROX. SITE COORDINATES: (FT.) N _____ E _____

OPEN AREA PER LINEAL FT. (IN²/FT.) _____

FORMATION OF COMPLETION: Wasatch (SS/Sk)

FIELD REP.: L. Phyte DRILLER: _____

COMMENTS: _____

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 907 917 FIELD REP: L. Phyle

APPROX. SITE COORDINATES (FT.): N _____ E _____

GROUND ELEVATION (FT. MSL): 5075 COMPLETION DATE: 12-11-86

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>Byrkes Bros.</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>Fairing 1500</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (In.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	12-11-86	9:10	10:30
<u>Tricone</u>	<u>8.0</u>	<u>75.0</u>	<u>Air Mist</u>				
				CASING	12-11-86	12:10	12:38
				FILTER PACK	12-11-86	12:38	1:15
				SEAL	12-11-86	1:15	1:45
				BACKFILL	12-11-86	1:45	2:40
				DEVELOPMENT	12-18-86	1:00	1:50
				OTHER			
CASING SUMMARY							
CASING TYPE*	DESCRIPTION	DIA. (In.)	END DEPTH (ft.)				
<u>*P</u>	<u>Protective Steel</u>	<u>8 3/8</u>	<u>5.5</u>				
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>63.0</u>				
<u>S</u>	<u>Sch 40 PVC (.06")</u>	<u>4.0</u>	<u>73.0</u>				
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>75.0</u>				
	<u>* Set as permanent surface casing</u>						
* P-Protective B-Screen S-Blank O-Open N-None							
* Depth from Top of Casing							
WELL CONSTRUCTION				WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)		12-18-86	Ph	EC (uMho)	Temp C°
<u>B</u>	<u>Cement-Bentonite Grout</u>	<u>43.0</u>		1:15	6-7	10	10
<u>S</u>	<u>Bentonite Pellets (1/4")</u>	<u>54.0</u>		1:30	6-7	35	5
<u>F</u>	<u>Colo. Silica Sand (8-12)</u>	<u>75.0</u>		1:45	7-8	45	6
				<u>Water clear & sed free</u>			
				COMMENTS: <u>EC Meter ID # 12764</u>			
* B - Backfill S - Seal F - Filter Pack							
* Depth from Ground Surface							

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 908 918 DATE INSTALLED: 12-13-86

APPROX. SITE COORDINATES: (FT.) N _____ E _____

OPEN AREA PER LINEAL FT. (IN²/FT.) _____

FORMATION OF COMPLETION: _____

FIELD REP.: L. Phyle DRILLER: Boyles Bros.

COMMENTS: _____

JACOBS ENGINEERING GROUP INC.

ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 908918 FIELD REP: L. Phyle

APPROX. SITE COORDINATES (FT.): N _____ E _____

GROUND ELEVATION (FT. MSL): 5100 COMPLETION DATE: 12-13-86

BOREHOLE SUMMARY

DRILLER: Boyles Bros.RIG TYPE: Failing 1500

BIT TYPE	HOLE DIA. (In.)	END DEPTH (ft.)	FLUID TYPE
<u>Tricone</u>	<u>8.0</u>	<u>135.0</u>	<u>Air/Mist</u>

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (In.)	END DEPTH (ft.)
<u>*P</u>	<u>Protective Steel</u>	<u>8 3/8</u>	<u>5-5</u>
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>118.0</u>
<u>S</u>	<u>Sch. 40 PVC (.06")</u>	<u>4.0</u>	<u>133.0</u>
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>135.0</u>
	<u>* Set as permanent surface casing</u>		

* P-Protective S-Screen B-Blank O-Open N-None

* Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
<u>B</u>	<u>Cement-Bentonite Grout</u>	<u>100.0</u>
<u>S</u>	<u>Bentonite Pellets</u>	<u>110.0</u>
<u>F</u>	<u>Colo. Silica Sand (8-12)</u>	<u>135.0</u>

* B - Backfill S - Seal F - Filter Pack

* Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING	<u>12-11-86</u>	<u>4:00</u>	<u>4:30</u>
	<u>12-12-86</u>	<u>7:45</u>	<u>11:00</u>
CASING	<u>12-13-86</u>	<u>10:15</u>	<u>10:45</u>
FILTER PACK	<u>12-13-86</u>	<u>10:45</u>	<u>11:40</u>
SEAL	<u>12-13-86</u>	<u>11:40</u>	<u>12:20</u>
BACKFILL	<u>12-13-86</u>	<u>12:45</u>	<u>2:00</u>
DEVELOPMENT	<u>12-20-86</u>	<u>12:45</u>	<u>2:00</u>
OTHER			

WELL DEVELOPMENT

<u>12-20-86</u>	<u>Pk</u>	<u>Ee (uMols)</u>	<u>Temp °</u>
<u>12:59</u>	<u>6-7</u>	<u>190</u>	<u>10</u>
<u>1:20</u>	<u>6-7</u>	<u>175</u>	<u>10</u>
<u>1:40</u>	<u>6-7</u>	<u>240</u>	<u>11</u>
<u>2:00</u>	<u>6-7</u>	<u>260</u>	<u>11</u>
<u>Stop</u>			

COMMENTS: Ee meter I.D. # 12764
Developed with air until water was
clear & sediment free.

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

SITE ID: SPK LOCATION ID: 909 919 DATE INSTALLED: 12-5-86

APPROX. SITE COORDINATES: (FT.) N _____ E _____

OPEN AREA PER LINEAL FT. (IN²/FT.) _____

FORMATION OF COMPLETION: Wasatch (Sandstone)

FIELD REP.: L. Phyle DRILLER: Byles Bros.

COMMENTS: _____

JE JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK LOCATION ID: 989 919 FIELD REP: L. Phyle

APPROX. SITE COORDINATES (FT.): N _____ E _____

GROUND ELEVATION (FT. MSL): 5100 COMPLETION DATE: 12-5-86

BOREHOLE SUMMARY

DRILLER: Boyles Bros.

RIG TYPE: Tailing 1500

BIT TYPE	HOLE DIA. (In.)	END DEPTH (ft.)	FLUID TYPE
<u>Blade bit</u>	<u>8.0</u>	<u>188.0</u>	<u>Air/Mist</u>

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (In.)	END DEPTH (ft.)
<u>*P</u>	<u>Protective Steel</u>	<u>8 3/8</u>	<u>5.5</u>
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>176.0</u>
<u>S</u>	<u>Sch. 40 PVC slotted</u>	<u>4.0</u>	<u>186.0</u>
<u>B</u>	<u>Schedule 40 PVC</u>	<u>4.0</u>	<u>188.0</u>

*Set as permanent surface casing

* P-Protective S-Screen B-Blank O-Open N-None

† Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
<u>B</u>	<u>Cement-Bentonite Grout</u>	<u>154.0</u>
<u>S</u>	<u>Bentonite Pellets (1/4")</u>	<u>163.0</u>
<u>F</u>	<u>Colo. Silica Sand (1/4")</u>	<u>188.0</u>

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING	<u>12-2-86</u>	<u>3:10</u>	<u>4:30</u>
	<u>12-3-86</u>	<u>8:30</u>	<u>10:30</u>
CASING	<u>12-4-86</u>	<u>2:30</u>	<u>3:19</u>
FILTER PACK	<u>12-4-86</u>	<u>3:20</u>	<u>4:15</u>
SEAL	<u>12-4-86</u>	<u>4:15</u>	<u>5:20</u>
BACKFILL	<u>12-5-86</u>	<u>8:30</u>	<u>11:15</u>
DEVELOPMENT	<u>12-17-86</u>	<u>12:00</u>	<u>1:45</u>
OTHER			

WELL DEVELOPMENT

<u>12-17-86</u>	<u>Ph</u>	<u>FE (4 Hrs)</u>	<u>Temp °C</u>
<u>12:55</u>	<u>7-8</u>	<u>125</u>	<u>11</u>
<u>1:19</u>	<u>6-7</u>	<u>600</u>	<u>10</u>
<u>1:30</u>	<u>6-7</u>	<u>675</u>	<u>10</u>
<u>Water clear & sed. free.</u>			

COMMENTS: FE meter I.D.# 12764
67mm paper used to check Ph -
Ph meter # 350222 not working -

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 920 DATE INSTALLED: 8/11/87

APPROX. SITE COORDINATES: (FT.) N 56,021.6 E 59,923.7

OPEN AREA PER LINEAL FT. (IN²/FT.) .05 slt

FORMATION OF COMPLETION: WASATCH Fm - Upper Sandstone

FIELD REP.: O. Holmquist DRILLER: SUNRISE ENTERPRISES / E. T. ENTILLO

COMMENTS: _____

APPROX. SITE COORDINATES (FT.): N nk E nk

GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 8/11/87

JEG-AL-ENG-1 (3/84)

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 921 DATE INSTALLED: 8-15-87

~~APPROX.~~ SITE COORDINATES: (FT.) N 58,118.3 E 59,198.9

OPEN AREA PER LINEAL FT. (IN²/FT.) 0.05 Slot -

FORMATION OF COMPLETION: WASATCH Fm - Lower Sandstone

FIELD REP.: D. HOLMQUIST DRILLER: E. TRUJILLO / SUNRISE ENTERPRISES

COMMENTS: _____

JE JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 921 FIELD REP: D. Hornquist
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 8/15/87

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>SUNRISE ENTERPRISES</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>PORTADRILL #524</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	8-14-87	3 ⁴⁵ PM	6 ⁴⁵ PM
8 3/4" H&W	8 3/4"	190	WATER		8-15-87	8 ¹⁵ PM	10 AM
				CASING	8-15-87	-	-
				FILTER PACK	8-15-87	-	-
				SEAL	8-15-87	-	2 ³⁰ PM
				BACKFILL	8-15-87	5 PM	7 ⁴⁵ PM
				DEVELOPMENT	9/12/87	8 ¹⁵ PM	12 ³⁵ PM
				OTHER			

CASING SUMMARY			
CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
P	8" Prod. casing	8"	712
B	Sch 40 PVC	4"	178
S	Sch 40 PVC - 0.5 slot	4"	188
B	Sch 40 PVC	4"	198

* P-Protective B-Screen B-Blank O-Open N-None
+ Depth from Top of Casing

WELL CONSTRUCTION			WELL DEVELOPMENT	
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)		
B	#10 7.5 gal/back PC Grout	160	- Water muddy / cleaned quickly - Flow ~ 25 gpm Water level @ 118.75 BTDC Cleaned up nicely (clean, stable S.C.T @ T=19°C Water level 9/14 = 122.9' BTDC S=0.5% C=750 workers pH=6.0	
S	Bestonite Pellets	164		
F	8-12 silica sand	188		
			COMMENTS:	

* B - Backfill S - Seal F - Filter Pack
+ Depth from Ground Surface

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 922 DATE INSTALLED: 8/17/87
APPROX. SITE COORDINATES: (FT.) N 58,163.6 E 59,210.6
OPEN AREA PER LINEAL FT. (IN²/FT.) .05 slot
FORMATION OF COMPLETION: WASATCH Fm - Upper Sandstone
FIELD REP.: D. Holmanist DRILLER: SUNRISE ENTERPRISES / E. TARDUS

COMMENTS: _____

JE JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS
BOREHOLE/WELL 'CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 922 FIELD REP: O. Holmanist
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 8/17/87

BOREHOLE SUMMARY

DRILLER: SUNRISE ENTERPRISES / E. TRUSILLO

RIG TYPE: PORTABLE 524

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE
TRICONE GEARBIT	8 3/4	140	WATER

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
P	Sch 40 STEEL CASING	8	5(±)
B	Sch 40 PVL BLANK	4	127 1/2
S	Sch 40 PVL .05 slot	4	137 1/2
B	Sch 40 PVL SUMP	4	139 3/4

* P-Protective S-Screen B-Blank O-Open N-None

+ Depth from Top of Casing

WELL CONSTRUCTION

[illegible]

• B - Backfill S - Seal F - Filter Pack

● **Depth from Ground Surface**

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING	8/16/87	12 ⁴⁵	3 ^{PM}
	8/17/87	7 ³⁰ AM	8 ¹⁰ AM
CASING	8/17/87	8 ¹⁰ AM	9 ^{AM}
FILTER PACK	8/17/87	9 ^{AM}	9 ³⁰
SEAL	8/17/87	9 ⁴⁰	1 ³⁰
BACKFILL	8/17/87	2 ^{PM}	5 ^{PM}
DEVELOPMENT	9/11/87	9 ^{AM}	5 ^{PM}
	9/12/87	8 ^{AM}	11 ^{AM}
OTHER			

WELL DEVELOPMENT

START WATER LEVEL 9/11/87 = 118.4 bTDC
END WATER LEVEL 9/13/87 = 118.75 bTDC
WATER RECOVERED BEGAN AS A VERY THICK,
GELATINOUS MASS - (JELLY). AFTER 10 HRS
OF ALTERNATING BLOW/REST & ATTEMPTS TO
INJECT WATER TO CLEAN, WATER STILL CLOUDY & WE
GAVE UP. S-L-T-PH STOPPED TO THE FOLLOWING:
S = 0.25%, L = 500 um/hour, T = 14.15°C, pH = 6.0

COMMENTS:

SITE ID: SPK-01 LOCATION ID: 923 FIELD REP: O. HOLMQUIST
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 8/18/87

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>SUNRISE ENTERPRISES/E. TRUGLIO</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>PORTADRILL 524</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	8/18/87	7 ³⁰ AM	1 ³⁰ PM
<u>TRICONE/GARRET</u>	<u>8 3/4</u>	<u>242</u>	<u>WATER</u>				
CASING SUMMARY				CASING	8/19/87	10 ³⁰ AM	11 ³⁰
CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)				
<u>P</u>	<u>Sch 40 STEEL</u>	<u>8</u>	<u>50</u>				
<u>B</u>	<u>Sch 40 PVC BRANK</u>	<u>4</u>	<u>222</u>				
<u>S</u>	<u>Sch 40 PVC, .05 slot</u>	<u>4</u>	<u>232</u>				
<u>B</u>	<u>Sch 40 PVC, Sump</u>	<u>4</u>	<u>234.3</u>	FILTER PACK	8/19/87	11 ³⁰	12 ³⁰ PM
				SEAL	8/19/87	12 ³⁰ PM	1 ¹⁰ PM
				BACKFILL	8/19/87	3 ¹⁰ PM	6 ²⁵ PM
				DEVELOPMENT	9/13/87	1 ³⁰ PM	5 ³⁰ PM
				OTHER			
* P-Protective S-Screen B-Blank O-Open N-None † Depth from Top of Casing							
WELL CONSTRUCTION				WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)	WL Before development = 119.75 BTCL 9/13/87 WL After development = 119.9 BTCL 9/17/87 Water began very dirty @ 10-15 gpm Water ended clean @ 10-15 gpm Finals: S: 0.5% C: 600 umphs T: 15°C PH: 6.0				
<u>B</u>	<u>BENTONITE-CEMENT GROUT</u>	<u>201</u>					
<u>S</u>	<u>BENTONITE PERMEATS</u>	<u>205</u>					
<u>F</u>	<u>8-12 SILICA SAND</u>	<u>232.3</u>					
				COMMENTS:			
* B - Backfill S - Seal F - Filter Pack † Depth from Ground Surface							

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 924 FIELD REP: D. Holman
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 8/30/87

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG				
DRILLER: <u>SUNRISE EARTH PRISES</u>				ACTIVITY	START		END TIME	
RIG TYPE: <u>PORTABLE #524</u>					DATE	TIME		
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	8/29/87	7 ⁴⁰ AM	9 ¹⁵ AM	
<u>TRICONE</u>	<u>8 3/4</u>	<u>19</u>	<u>WATER</u>	CASING	8/30/87	9 ¹⁵ AM	9 ³⁰ AM	
<u>11</u>	<u>8</u>	<u>130</u>	<u>WATER</u>					
CASING SUMMARY				FILTER PACK	8/30	9 ⁴⁵ AM	10 ⁰⁰ AM	
CASING TYPE*	DESCRIPTION		DIA. (in.)	END DEPTH (ft.)	SEAL	8/30	10 ⁰⁵	10 ²⁰
<u>P</u>	<u>Steel prot. casing</u>		<u>8</u>	<u>7 1/2</u>	BACKFILL	8/30/87	11 ³⁰ AM	12 ¹⁵ PM
<u>B</u>	<u>Sch 40 PVC Blank</u>		<u>4</u>	<u>117.7</u>				
<u>S</u>	<u>Sch 40 PVC, .05 slot</u>		<u>4</u>	<u>127.7</u>				
<u>B</u>	<u>Sch 40 PVC, blank</u>		<u>4</u>	<u>129.9</u>	DEVELOPMENT	9/14/87	8 ⁴⁵ AM	12 ⁴⁵ AM
				OTHER				
* P-Protective B-Screen S-Blank O-Open N-None † Depth from Top of Casing				WELL DEVELOPMENT				
WELL CONSTRUCTION				Begin WL = <u>89.25</u> BTOC 9/14/87 END WL = <u>89.25</u> BTOC 9/14/87 WATER BEGAN VERY DRY - FRODO U. CLAY 2-3 GPM FIRM READINGS: S = 0.75% C = 1000 p.p.h. T = 16°C PH = 6.0				
TYPE CODE*	DESCRIPTION		END DEPTH (ft.)					
<u>B</u>	<u>3% PORTLAND CEMENT GROUT</u>		<u>98.0</u>					
<u>S</u>	<u>BARITE PELLETS</u>		<u>103.5</u>					
<u>F</u>	<u>8-12 SILICA SAND</u>		<u>127.9</u>					
				COMMENTS:				
* B - Backfill S - Seal F - Filter Pack † Depth from Ground Surface

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 924 DATE INSTALLED: 8/30/87

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) 055/67

FORMATION OF COMPLETION: WATCH

FIELD REP.: D. HOLMQUIST DRILLER: SUNRISE ENTERPRISES/E. TRUJANO

COMMENTS: _____

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 925 DATE INSTALLED: 8/24/87

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) .05 slot

FORMATION OF COMPLETION: WASATCH

FIELD REP.: D. Holmanist DRILLER: SUNRISE ENTERPRISES / R. TINSLEY

COMMENTS: _____

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SK-01 LOCATION ID: 925 FIELD REP: A. HILMQUIST
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 8/24/87

BOREHOLE SUMMARY

CONSTRUCTION TIME LOG

DRILLER: SUNRISE ENTERPRISES / F. J. J. J. J.

RIG TYPE: PORTABLE DRILL 4524

ACTIVITY

START

END TIME

DATE

TIME

BIT TYPE

HOLE DIA. (in.)

END DEPTH (ft.)

FLUID TYPE

DRILLING

8/24/87

9:45 AM

10:45 AM

TRICONE

8 3/4

19

WATER

TRICONE

8"

79

WATER

CASING

8/24

10:45

-

CASING SUMMARY

FILTER PACK

8/24

-

-

CASING TYPE*

DESCRIPTION

DIA. (in.)

END DEPTH (ft.)

SEAL

8/24

-

1:00 PM

P

8" steel prot. casing

8"

5'2" B.S.

B

Sch 40 PVC

4"

5'6" B.S.

S

Sch 40 PVC, .05 slot

4"

77

B

Sch 40 PVC, Sump

4"

79

BACKFILL

8/24

3:10 PM

3:45 PM

DEVELOPMENT

9/14/87

1:20 PM

5:20 PM

(A.R.V.P.)

OTHER

* P-Protective S-Screen B-Blank O-Open N-None

* Depth from Top of Casing

WELL CONSTRUCTION

WELL DEVELOPMENT

TYPE CODE*

DESCRIPTION

END DEPTH (ft.)

Begin WLC 55.5 BTCL 9/14/87

End WLC 55.6 BTCL 9/14/87

B

3% bentonite, Port. cement grout

52

S

Bentonite pellet seal

56

F

8-12 silica sand

77

Water began v. dirty - end v. clean
1-25 PM

FINAL READINGS:

S - 0.25% S

C - 550 MDD

T - 15°C

PH - 6.0

COMMENTS:

* B - Backfill S - Seal F - Filter Pack

* Depth from Ground Surface

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 926 DATE INSTALLED: 8/27/87

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) 055/ft

FORMATION OF COMPLETION: WASATCH

FIELD REP.: D. Holmquist DRILLER: SUNRISE ENTERPRISES / E. TRINDAD

COMMENTS: _____

JE JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS
BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 926 FIELD REP: D. Holmquist
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 8/22/87

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: SUNRISE ENTERPRISES / E. TREVINO				ACTIVITY	START		END TIME
RIG TYPE: PORTADOL 524					DATE	TIME	
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	8/27/87	9 AM	10 ¹⁵ AM
GEARBIT	8 3/4	19	WATER				
GEARBIT	8	65	WATER	CASING	8/27/87	10 ³⁰	11 AM
				FILTER PACK	8/27/87	11 ⁰⁵	11 ²⁵
CASING SUMMARY				SEAL	8/27/87	11 ²⁵	11 ⁴⁵
CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)	BACKFILL	8/27/87	1 ¹⁵	1 ⁴⁵
P	Sch 40 STEEL	8	5 ±	DEVELOPMENT	9/15/87	12 ⁰⁵ PM	1 ³⁰ PM
B	Sch 40 PVC BLANK	4	52	OTHER			
S	Sch 40 PVC, .05 slot	4	62				
B	Sch 40 PVC, sump	4	64.25				
* P-Protective S-Screen B-Blank O-Open N=None							
+ Depth from Top of Casing							
WELL CONSTRUCTION				WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)	Bore WL -				
B	BENTONITE-CEMENT GROUT	30	Well making very dirty water &				
S	BENTONITE PLUGS	38.75	& large amount of sand (filter pack)				
F	8-12 SILICA SAND	62	after getting development pipe to bottom				
			once could not get back again.				
			COMMENTS: Broken screen / or				
			casing - not developed				
● B - Backfill S - Seal F - Filter Pack							
● Depth from Ground Surface

JACOBS ENGINEERING GROUP INC.

ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 927 DATE INSTALLED: 8/28/87

APPROX. SITE COORDINATES: (FT.) N N/K E N/K

OPEN AREA PER LINEAL FT. (IN²/FT.) 0.05 slot

FORMATION OF COMPLETION: WASATCH

FIELD REP.: D. Holmquist DRILLER: SHIRAZ ENTERPRISES / E. TEJAS

COMMENTS: _____

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 927 FIELD REP: O. Holmanist
APPROX. SITE COORDINATES (FT.): N N/K E N/K
GROUND ELEVATION (FT. MSL): N/K COMPLETION DATE: 8/28/87

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>SUNRISE ENTERPRISES (ETERNAL)</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>POSTADRILL #524</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	8/29/87	3 ⁴⁵ PM	5 ¹⁵ PM
TRIMMING RIG	8 3/4	20	WATER				
1" 11"	8	125	WATER				
CASING SUMMARY				CASING	8/28/87	9 ²⁵ AM	10 ²⁶ AM
CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)				
P	Steel Prod. casing	8	7 1/2				
B	Sh 40 PVC BLANK	4	113				
S	Sh 40 PVC, D.D. SLOT	4	113	FILTER PACK	8/28	10 ³⁰	11 AM
B	Sh 40 PVC, 5/8" x 1/2"	4	125				
				SEAL	8/28	11 ⁰⁰	11 ¹⁵ AM
				BACKFILL	8/28	1 ³⁰ PM	2 ³⁰ PM
				DEVELOPMENT	9/15/87 9/16/87	3 ³⁰ PM 6 ⁵⁰ PM	5 ³⁵ PM 9 AM
				OTHER			
* P-Protective S-Screen B-Blank O-Open N-None							
* Depth from Top of Casing							
WELL CONSTRUCTION				WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)	Borehole WL: 97.9 BTOC End WL 297.9 BTOC 9/18/87				
B	3% bentonite / Portland Cement grout	95	S = 1.25% T = 1750 psi pH = 12.50 60				
S	Bentonite Pellet seal	98	water very clean @ end of development				
F	8-12 Silica Sand	123					
			COMMENTS:				

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 928 DATE INSTALLED: 8/31/87

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) 0.0536+

FORMATION OF COMPLETION: WASATCH

FIELD REP.: O. Holmquist DRILLER: SURPRISE ENTERPRISES

COMMENTS: Bentonite pellet seal in 40-50 interval to 511
corehole overshot

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 928 FIELD REP: O. ALMQUIST
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 8/31/87

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>SUNRISE ENTERPRISES/E. TERWILL</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>PORTADRILL 524</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	8/30/87	3 ³⁰ PM	5 ⁴⁵ PM
NX CORE	4	50	BENTONITE / GULCH GR. MUD		8/31/87	8 ³⁰ AM	12 ⁵⁰ PM
DRAG	5 7/8	30	BENTONITE / GULCH GR. MUD				
GEARBIT	8 3/4	40	WATER	CASING	8/31/87	1 PM	1 ¹⁰ PM
CASING SUMMARY				FILTER PACK	8/31/87	1 ¹⁰ PM	1 ²⁵ PM
CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)	SEAL	8/31/87	1 ³⁰ PM	1 ³⁵ PM
P	Sch 40 STEEL	8	5 ±				
B	Sch 40 PVC BLANK	4	30.25	BACKFILL	8/31/87	2 ¹⁵ PM	3 ¹⁵ PM
S	Sch 40 PVC, .05 slot	4	40.25				
B	Sch 40 PVC, SUMP	4	42.5	DEVELOPMENT	9/16/87	3 ⁴⁵ PM	4 ⁴⁵ PM
					9/17/87	6 ⁴⁰ PM	9 ⁴⁰ PM
				OTHER			
* P-Protective S-Screen B-Blank O-Open N-None							
* Depth from Top of Casing							
WELL CONSTRUCTION				WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)		Begin well - 23' BTDC 9/16/87			
B	BENTONITE-CEMENT GROUT	16		End well - 23' BTDC 9/18/87			
F	BENTONITE PELLET SEAL	21		Water began dirty / no mud			
F	8-12 SILICA SAND	40		work ended very close			
S	BENTONITE PELLET SEAL	50		T=10% S=1% L=130 minutes pH=5.54±0			
				COMMENTS: 8/30/87, Core (NX) 40' 30',			
				8/30/87 Returned w/ 5 7/8 to 30, core (NX) to			
				50', 8/31 Returned to 8 3/4 to 40'			
* B - Backfill S - Seal F - Filter Pack							
* Depth from Ground Surface

JACOBS ENGINEERING GROUP INC.

ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 929 DATE INSTALLED: 9/4/82

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) 0.0528

FORMATION OF COMPLETION: WASATCH

FIELD REP.: D. Holmquist DRILLER: SURPRISE ENTERPRISES / E. TRUTIC

COMMENTS: _____

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 929 FIELD REP: OTI...
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 9/4/87

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>E. Trujillo</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>Portadill 524</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	9/1/87	-	-
<u>NX core</u>	<u>4</u>	<u>100</u>	<u>Air/water</u>		9/3/87	-	-
<u>Rotary core</u>	<u>8</u>	<u>110</u>	<u>Air/water</u>		9/4/87	-	-
				CASING	9/4/87	9 ^{AM}	9 ³⁰ AM
CASING SUMMARY				FILTER PACK	9/4/87	9 ⁴⁵	10 ²⁰
CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)	SEAL	9/4/87	10 ²⁰	10 ²⁴
<u>P</u>	<u>Steel prot. casing</u>	<u>8</u>	<u>7'12"</u>	BACKFILL	9/4/87	1 ³⁰	2 ^{PM}
<u>B</u>	<u>Sch 40 PVC Blank</u>	<u>4</u>	<u>94.75</u>	DEVELOPMENT	9/18/87	8 ⁴⁵ AM	11 ³⁰ AM
<u>S</u>	<u>Sch 40 .05 slot PVC</u>	<u>4</u>	<u>104.75</u>	OTHER			
<u>B</u>	<u>Sch 40 PVC Screen</u>	<u>4</u>	<u>107.1</u>				
* P-Protective S-Screen B-Blank O-Open N-None							
* Depth from Top of Casing							
WELL CONSTRUCTION				WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)		Bgm well = 79.5 BTOC			
<u>B</u>	<u>Bedonite/grout seal</u>	<u>82.75</u>	<u>16.5</u>	Much trouble with this well - casing broken - drilled thru -			
<u>S</u>	<u>BEDONITE PELLETS</u>	<u>82.75</u>		developed 2 3/4 hrs - pH ~ 8.5 to 9.0			
<u>F</u>	<u>B-12 SILICA SAND</u>	<u>107</u>		Very little or no water recovery			
				COMMENTS:			
* B - Backfill S - Seal F - Filter Pack							
Depth from Ground Surface							

WELL COMPLETION RECORD

SITE ID: SPK-01 LOCATION ID: 930 DATE INSTALLED: 9/10/87

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) .05 slot

FORMATION OF COMPLETION: WASATCH

FIELD REP.: D. HOLMQUIST DRILLER: SUNRISE ENTERPRISES / E. TRINIS

COMMENTS: _____

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 930 FIELD REP: A. Holman, ST

APPROX. BITE COORDINATES (FT.): N NK E NK

GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 9/10/87

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>E. Tami / Sunrise Enterprises</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>Pardoll 524</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	9/10/87	8:15 AM	9:30 AM
<u>8 3/4"</u>							
<u>Poller/Truone</u>	<u>8 3/4"</u>	<u>19</u>	<u>Water</u>				
<u>Poller/Truone</u>	<u>8</u>	<u>107</u>	<u>Water</u>				
CASING SUMMARY				CASING	9/10/87	10:45 AM	11 AM
CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)				
<u>P</u>	<u>8" sch 40 steel</u>	<u>8"</u>	<u>5</u>				
<u>B</u>	<u>Sch 40 PVC blank</u>	<u>4</u>	<u>95</u>				
<u>S</u>	<u>Sch 40 PVC .05 slit</u>	<u>4</u>	<u>105</u>	FILTER PACK	9/10/87	11:25 AM	11:45 AM
<u>B</u>	<u>Sch 40 PVC sump</u>	<u>4</u>	<u>107</u>				
				SEAL	9/10/87	1:45 PM	1:50 PM
				BACKFILL	9/10/87	12:50 PM	1:45 PM
				DEVELOPMENT	9/11/87	8:45 AM	2 PM
				OTHER	9/16/87	10:30 AM	
* P-Protective S-Screen B-Blank O-Open N-None † Depth from Top of Casing							
WELL CONSTRUCTION				WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)	Water level - 9/14/87 7:30 PM = 89 BTK 9/18/87 = 89 BTK Water began very dirty men. recovery to test S.C.T. - pH $\approx$ 6.0				
<u>B</u>	<u>Bentonite/Concrete grout</u>	<u>71</u>					
<u>S</u>	<u>8-12 silica sand</u>	<u>78</u>					
<u>P</u>	<u>8-12 silica sand</u>	<u>105</u>					
				COMMENTS:			
* B - Backfill S - Seal F - Filter Pack † Depth from Ground Surface

JACOBS ENGINEERING GROUP INC.

ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

SITE ID: Spk 41 LOCATION ID: 931 DATE INSTALLED: 12/13/82

APPROX. SITE COORDINATES: (FT.) N N/K E N/K

OPEN AREA PER LINEAL FT. (IN²/FT.) N/K

FORMATION OF COMPLETION: Wasatch

FIELD REP.: J Fritts DRILLER: Boyles Bros / S Moore

COMMENTS: _____

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: Sph41 LOCATION ID: 931 FIELD REP: J Fritts
APPROX. SITE COORDINATES (FT.): N N/A E N/A
GROUND ELEVATION (FT. MSL): N/A COMPLETION DATE: 12/13/97

BOREHOLE SUMMARY

DRILLER: Boyle Bros / Moore
RIG TYPE: Mobile Drill R-57

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE
Auger	6 5/8	5'	none
Tricone		98'	air

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
P	Steel casing, 3' stickup	6"	5'
B	Sch 40 PVC	2"	87.5'
S	Sch 40 PVC, 0.50 sbt	2"	97.5'
B	Sch 40 PVC (2 1/2' samp)	2"	100.0'

* P-Protective B-Screen S-Blank O-Open N-None
† Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
B	Cement-bentonite grout	73'
S	bentonite pellets	80'
F	8-12 Silica sand	98'

* B - Backfill S - Seal F - Filter Pack
• Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING	12/12/97	9:05	12:05
CASING	12/12	2:00	2:10
FILTER PACK	12/12	2:10	2:20
SEAL	12/12	2:25	2:40
BACKFILL	12/13	8:15	9:45
DEVELOPMENT	12/17	12:35	1:50
OTHER			

WELL DEVELOPMENT

Initial: static 79' pH 7.5 Fe 1080
Final pH 7, Fe 25, 10°C
Static 80.5

COMMENTS: _____

WELL COMPLETION RECORD

SITE ID: Spk 01 LOCATION ID: 932 DATE INSTALLED: 12/16/02
APPROX. SITE COORDINATES: (FT.) N N/K E N/K
OPEN AREA PER LINEAL FT. (IN²/FT.) N/K
FORMATION OF COMPLETION: Wesatch
FIELD REP.: J Fritts DRILLER: Boyle Bros / S Moore

COMMENTS: drilled to 143' - 3' cave-in

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: Sph 01 LOCATION ID: 932 FIELD REP: J Fritts
APPROX. SITE COORDINATES (FT.): N N/k E N/k
GROUND ELEVATION (FT. MSL): N/k COMPLETION DATE: 12/16/87

BOREHOLE SUMMARY

DRILLER: Boxley Bros / S Moore

RIG TYPE: Mobile Drill B-57

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE
HSA	6 5/8	5'	none
tricone		143' 1/2	none
K cased 3'			

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
P	Steel casing, 3' sticky	6"	5'
B	Sch 40 PUC	2"	129.5
S	Sch 40 PUC, .050 slot	2"	139.5
B	Sch 40 PUC (2 1/2' sand)	2"	142.0

* P-Protective S-Screen B-Blank O-Open N-None

† Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
B	Cement-bentonite grout	111'
S	bentonite pellets	121'
F	8-12 silica sand	140'

* B - Backfill S - Seal F - Filter Pack

† Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING	12/13/87	12:45	4:15
	12/14	9:45	12:10
CASING	12/16	9:25	9:40
FILTER PACK	12/16	9:40	10:00
SEAL	12/16	10:00	10:10
BACKFILL	12/16	12:00	1:20
DEVELOPMENT	12/18	7:45	9:05
OTHER			

WELL DEVELOPMENT

Initial: 112' static pH 6.8,
Ec 10, 2 1/2 °C
Final: 'static pH 6.5
Ec 25, 5 °C

COMMENTS: _____

WELL COMPLETION RECORD

SITE ID: SPK-15 LOCATION ID: 933 DATE INSTALLED: 7-28-88
APPROX. SITE COORDINATES: (FT.) N NK E NK
OPEN AREA PER LINEAL FT. (IN²/FT.) (7 7/8 - 4")²
FORMATION OF COMPLETION: Wasatch fm.
FIELD REP.: D. Metzler DRILLER: Barnhart

COMMENTS: _____

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 933 FIELD REP: D. METZGER

APPROX. SITE COORDINATES (FT.): N NK E NK

GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 7-28-88

BOREHOLE SUMMARY

DRILLER: BARWART

RIG TYPE: _____

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE
TRICONG POOTH	9 7/8"	20'	AIR
TRICONG POOTH	7 7/8"	135'	AIR + WATER

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
O	FILTRM NO CASING	-	135'
B	PVC SCH 40 SUMP CAP	4.0	127.5
S	" " " screen	"	125.0
B	" " " casing	"	115.0
P	6' long 3 7/8" STEEL	3 7/8"	6.0

* P-Protective S-Screen B-Blank O-Open N-None

* Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
F	8-12 SILICA	135.0
S	bentonite seal 1/4" Pcl.	99.0
B	bentonite-cement grout	87.5

* B - Backfill S - Seal F - Filter Pack

* Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING	7-28-88	2:45 pm	4:30
stanced	"	4:30	5:00
CASING	7-28-88	5:00	5:20
FILTER PACK	7-28-88	5:30	5:45
SEAL	7-28-88	5:45	5:50
BACKFILL	7-29-88	9:30 am	10:30 am
DEVELOPMENT			
OTHER			

COMMENTS: _____

WELL COMPLETION RECORD

SITE ID: SPK-15 LOCATION ID: 934 DATE INSTALLED: 7-28-88

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) (7 7/8" - 4.0")²

FORMATION OF COMPLETION: WASATCH SM.

FIELD REP.: D. METZLER DRILLER: BARNHART

COMMENTS: _____

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 934 FIELD REP: D. METZLER
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 7-28-88

BOREHOLE SUMMARY

DRILLER: BARNHART
RIG TYPE: 5.D 1500 ROTARY

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE
TRI CONE TOOTH	9 7/8"	20'	AIR
TRI CONE TOOTH	7 7/8"	130'	WATER
			1/2 AIR

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
N	SILICA SAND	4	130.0
B	TVC SCH 40 SUMP + CAP	4.0	117.5
S	" " " screen	"	115.0
B	" " "	"	105.0
P	8" I.D 6' long steel	8 5/8	6.0

* P-Protective S-Screen B-Blank O-Open N-None

* Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
F	8-12 SILICA SAND	130.0 117.5
S	1/4" bentonite sat. Pellets	94.5
B	bentonite-cement grout	83.0

* B - Backfill S - Seal F - Filter Pack

* Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING 7-27-88 sterneal	7-27-88	500	6 ³⁰ PM
	7-28-88	7 ⁴⁰ AM	9 ³⁰ AM
	"	9 ³⁰ AM	10 ⁰⁰ AM
CASING	7-28-88	10 ⁰⁰ AM	10 ²⁰ AM
FILTER PACK	7-28-88	10 ²⁰ AM	10 ³⁵ AM
SEAL	7-28-88	10 ³⁵ AM	10 ⁴⁵ AM
BACKFILL	7-28-88	12 ⁴⁵ PM	1 ⁰⁰ PM
DEVELOPMENT			
OTHER			

WELL DEVELOPMENT

COMMENTS: _____

WELL COMPLETION RECORD

SITE ID: SPK-15 LOCATION ID: 935 DATE INSTALLED: 7-19-88

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) (7 7/8" - 4 0")² / ft

FORMATION OF COMPLETION: WASATCH FM.

FIELD REP.: D. METZGER DRILLER: BARNHART

COMMENTS: OPEN HOLE UNDER SUMP = 10.0' FILLED W/
8-12 SILICA

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 935 FIELD REP: D. METZLER

APPROX. SITE COORDINATES (FT.): N NK E NK

GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 7-19-88

BOREHOLE SUMMARY

DRILLER: BARNHART

RIG TYPE: G.D. 15 WD ROTARY

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE
TRI CONE	7 7/8"	130.0	AIR + WATER

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
B	PVC SCH 40	4.0	122.5
S	" " " SCREEN	"	120.0
B	" " "	"	110.0

* P-Protective S-Screen B-Blank O-Open N-None

† Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
F	8 SACKS / 8-12 SILICA SAND	130.0
S	3 SACKS / bentonite 1/4"	96.0
B	bentonite-cement grout	87.5

* B - Backfill S - Seal F - Filter Pack

† Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING	7-19-88	7:30 am	9:30 am
relocate from 942 to 935	"	7:00 am	9:30 am
Tripped out	"	9:30 am	10:00 am
steamed	"	10:00 am	10:45 am
CASING	"	10:45 am	11:00 am
FILTER PACK	7-19-88	11:30 am	11:50 am
SEAL	7-19-88	11:55 am	12:15 pm
BACKFILL	7-19-88	1:40 pm	2:00 pm
DEVELOPMENT			
OTHER			

WELL DEVELOPMENT

COMMENTS: _____

WELL COMPLETION RECORD

SITE ID: SPK-15 LOCATION ID: 936 DATE INSTALLED: 7-16-88
APPROX. SITE COORDINATES: (FT.) N NK E NK
OPEN AREA PER LINEAL FT. (IN²/FT.) $\sqrt{8\frac{3}{4} - 4.0}^2$ for 20' $\sqrt{7\frac{7}{8} - 4.0}^2$ to T.O.
FORMATION OF COMPLETION: WASATCH FM.
FIELD REP.: D. METZLER DRILLER: BARNHART

COMMENTS: 119.5' depth to 102.5' depth: a silica sand filler.
102.5' depth to 99.5' depth: a bentonite plug.

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 936 FIELD REP: D. METZLER
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 7-16-88

BOREHOLE SUMMARY

DRILLER: BARNHART

RIG TYPE: G.D. 15 WD

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE
WING BIT	8 3/4	20.0	AIR
TRI-CONE	7 7/8	40.0	AIR
" "	"	119.5	CLEAR WATER

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
B	PVC SCH 40	4"	102.5
S	" " "	4"	99.0
B	" " "	4"	89.0

* P-Protective S-Screen B-Blank O-Open N-None

• Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
B	8-12 silicon sand	119.5
S	Bentonite Pellets	103.0
F	8-12 silica sand	99.5
S	Bentonite 1/4" Pellets	73.0
B	bentonite-cement grout	63.0

* B - Backfill S - Seal F - Filter Pack

• Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING	7-15	12:40 PM	4:25 PM
	7-16	9:30 AM	10:00 AM
CASING	7-16	10:15 AM	10:45 AM
FILTER PACK	"	10:45 AM	11:05 AM
SEAL	"	11:10 AM	11:20 AM
BACKFILL	"	11:30 AM	2:30 PM
DEVELOPMENT	7-20-88	12:30 PM	
OTHER			

WELL DEVELOPMENT

Began developing well at 12:30 pm with pipe 2' off bottom of casing. Making water. Blew air for 2 10-15 min. Now wait for casing to fill up.

COMMENTS: grout settled 2 15'

WELL COMPLETION RECORD

SITE ID: SPK-15 LOCATION ID: 937 DATE INSTALLED: 7-18-88

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) (8" - 4")² / ft

FORMATION OF COMPLETION: WABATCH fm. top of Blue shale

FIELD REP.: D. METZLER DRILLER: _____

COMMENTS: From 100' depth to 94.0' depth: silt in hole.

WELL COMPLETION RECORD

SITE ID: SPK-15 LOCATION ID: 938 DATE INSTALLED: 7-20-88

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) (7 7/8" - 4.0")²

FORMATION OF COMPLETION: WATSATCH FM: LOWER CONFINED AQUIFER

FIELD REP.: D. METZLER DRILLER: BARNHART

COMMENTS: _____

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 938 FIELD REP: D METZLER
APPROX. SITE COORDINATES (FT.): N UK E UK
GROUND ELEVATION (FT. MSL): UK COMPLETION DATE: 7-20-88

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>BARNHART</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>G.D. ROTARY ISWD</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING			
TRI-CONC	7 7/8"	250.0	AIR	relocate	7-19-88	3 ³⁰ pm	4 ⁰⁰ pm
			+ WATER		7-19-88	4 ⁰⁰ pm	6 ³⁰ pm
					7-20-88	8 ⁰⁰ am	11 ³⁰ am
				CASING	7-20-88	3 ³⁰ pm	4 ³⁰ pm
				FILTER PACK	7-20-88	4 ³⁰ pm	5 ⁰⁰ pm
				12 SACKS			
				SEAL	7-20-88	5 ⁰⁰ pm	5 ¹⁵ pm
				BACKFILL	7-21-88	8 ⁴⁵ am	1 ¹⁵ pm
				DEVELOPMENT			
				OTHER			

CASING SUMMARY				WELL DEVELOPMENT			
CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)				
B	PVC SCH 40	4.0	242.5				
S	PVC SCH 40 SCREEN	"	240.0				
B	PVC SCH 40	"	230.0				

WELL CONSTRUCTION			COMMENTS:	
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)		
F	12 SACKS / 8-12 SILICA SAND	250.0		
S	4 SACKS / bentonite 1/4"	202.0		
B	bentonite-cement grout	191.0		

● P-Protective B-Screen S-Blank O-Open N-None
* Depth from Top of Casing

● B - Backfill S - Seal F - Filter Pack
● Depth from Ground Surface

COMMENTS: 7-20-88 left seal open
to cure over night

WELL COMPLETION RECORD

SITE ID: SPK-15 LOCATION ID: 939 DATE INSTALLED: 7-17-88

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) 7 7/8 - 4.0 = 3 7/8²/ft.

FORMATION OF COMPLETION: WASATCH FM:

FIELD REP.: D. METZLER DRILLER: BARNHART

COMMENTS: observations and time recorded. Tagged w/
100' tape.

WELL COMPLETION RECORD

SITE ID: SPK-15 LOCATION ID: 940 DATE INSTALLED: 7-27-88

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) (7 7/8" - 4.0")

FORMATION OF COMPLETION: BOTTOM OF PIPE WASATCH FM.

FIELD REP.: D. MUELLER DRILLER: BARNHART

COMMENTS: from 50' to 19' interval is filter pack

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 940 FIELD REP: D. METZGER
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 7-27-88

BOREHOLE SUMMARY				CONSTRUCTION TIME LOG			
DRILLER: <u>BARNHART</u>				ACTIVITY	START		END TIME
RIG TYPE: <u>G.D. 1500 WD RETARY</u>					DATE	TIME	
BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE	DRILLING	7-27-88	11:15 am	12:15 pm
TRI CONE TOOTH BIT	7 7/8	50.0	AIR	steamed / tripped out	7-27-88	12:30 pm	1:00 pm
					"	1:00 pm	1:20 pm
				CASING	7-27-88	1:15	1:35 pm
CASING SUMMARY				FILTER PACK	7-27-88	1:45	2:05 pm
CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)	SEAL	7-27-88	2:05	2:10 pm
B	PVC 5'11" 40 SUMP	4.0	37.5				
S	" " " screen	4.0	35.0	BACKFILL	7-27-88	2:55	3:25 pm
B	" " " casing	4.0	25.0			3:10 pm	
P	6' long steel casing 8 5/8	8 5/8"	6.0	DEVELOPMENT			
				OTHER			
* P-Protective S-Screen B-Blank O-Open N-None							
* Depth from Top of Casing							
WELL CONSTRUCTION				WELL DEVELOPMENT			
TYPE CODE*	DESCRIPTION	END DEPTH (ft.)					
F	8-12 silica sand	50.0					
S	bentonite 1/4" pellets	19.0					
B	bentonite-cement grout	14.0					
* B - Backfill S - Seal F - Filter Pack				COMMENTS: <u>water level at 19'</u>			
* Depth from Ground Surface							

WELL COMPLETION RECORD

SITE ID: SPK-15 LOCATION ID: 941 DATE INSTALLED: 7-26-88

APPROX. SITE COORDINATES:(FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) $(7\frac{7}{8}'' - 4.0'')^2$

FORMATION OF COMPLETION: shalely upper zone of Wataatch fm.

FIELD REP.: D. METZGER DRILLER: BARWART

COMMENTS: Water level 7-27-88 7³⁰ am at 45.0'
bentonite seal cured all night

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 ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS
BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 941 FIELD REP: D. METZGER
 APPROX. SITE COORDINATES (FT.): N NK E NK
 GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 7-26-88

BOREHOLE SUMMARY

DRILLER: BARNHART
 RIG TYPE: G.D. 1500 WD ROTARY

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE
TRI CONE	9 7/8"	20'	AIR
"TOOTH BIT"	7 7/8"	80'	AIR +
			WATER

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
B	SCH 40 PVC	4.0	80.0
S	" " " screen	"	67.5
B	" " "	"	57.5
P	6' long 8" I.D. steel	8.0	6.0

* P-Protective S-Screen B-Blank O-Open N-None

* Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
F	SILICA 8-12 sand	80.0
S	bentonite grout 1/4" P.	41.5
B	bentonite-cement grout	34.5

* B - Backfill S - Seal F - Filter Pack

* Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING	7-26-88	1:15 PM	3:50 PM
7-26-88	"	3:50 PM	4:05 PM
TRIPPED OUT	"	4:05 PM	5:15 PM
steamed	7-26-88	5:20 PM	5:45 PM
CASING	7-26-88	5:50 PM	6:00 PM
FILTER PACK	7-26-88	6:00 PM	6:10 PM
SEAL	7-27-88	8:45 AM	10:00 AM
BACKFILL	7-27-88		
DEVELOPMENT			
OTHER			

WELL DEVELOPMENT

COMMENTS: water level 7-27-88

45'

Coarse sand loose at 60'-65'

WELL COMPLETION RECORD

SITE ID: SPK-15 LOCATION ID: 942 DATE INSTALLED: 9-18-80

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) (7'18" - 4")² / ft

FORMATION OF COMPLETION: WASATCH SM.

FIELD REP.: B. METZGER DRILLER: BARNHART

COMMENTS: 5.5' shale contact at 62.0' depth

WELL COMPLETION RECORD

SITE ID: SPK-15 LOCATION ID: 943 DATE INSTALLED: 7-30-88

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) (7 7/8 - 40)²

FORMATION OF COMPLETION: WASATCH PM

FIELD REP.: D. METZLER DRILLER: BARNHART

COMMENTS: * 1 1/2' of bentonite seal at 64 - 62 1/2 : Plug

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 943 FIELD REP: D. METZLER
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 7-30-88

BOREHOLE SUMMARY

DRILLER: BARNHART

RIG TYPE: G.D. 1500 WD ROTARY

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE
TRI-CORNER TOOTH	7 7/8"	75.0	AIR +
			WATER

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
N	8-12 SILICA SAND	8.0	75.0
N	bentonite seal	8.0	64.0
B	PVC SCH 40 SUMPTCAP	4.0	61.0
S	" " " screen	"	58.5
B	" " " "	"	48.5
P	6' long steel casing	8 5/8	6.0

* P-Protective B-Screen S-Blank O-Open N-None

† Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
F	8-12 SILICA BOTTOM PLUG	75.0
S	bentonite plug seal	64.0
F	8-12 SILICA FILTER	62.5
S	bentonite 1/4" Rel	43.5
B	bentonite-cement grout	35.0

* B - Backfill S - Seal F - Filter Pack

† Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START		END TIME
	DATE	TIME	
DRILLING	7-30-88	10:00 am	11:30 am
	"	11:30 am	12:00 pm
CASING	7-30-88	12:00	12:15 pm
	"		
FILTER PACK	7-30-88	12:15 pm	12:30
SEAL	7-30-88	12:30	12:35 pm
BACKFILL	7-30-88	2:00 pm	3:00 pm
DEVELOPMENT			
OTHER			

WELL DEVELOPMENT

COMMENTS: DICK ON SITE FOR
observation &

WELL COMPLETION RECORD

SITE ID: SPK-15 LOCATION ID: 944 DATE INSTALLED: 7-29-88

APPROX. SITE COORDINATES: (FT.) N NK E NK

OPEN AREA PER LINEAL FT. (IN²/FT.) (7 7/8" - 4.0")²

FORMATION OF COMPLETION: WATSATCH SM.

FIELD REP.: D. METZGER DRILLER: BARNHART

COMMENTS: 8 sacks of silica: most probably some fines are in
among the 8-12 silica

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 944 FIELD REP: D. METZLER
APPROX. SITE COORDINATES (FT.): N NK E NK
GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 7-30-88

BOREHOLE SUMMARY

CONSTRUCTION TIME LOG

DRILLER: BARNHART

RIG TYPE: G.D. ROTARY AIR

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.)	FLUID TYPE
TRI CONE TOOTH	7 7/8"	125.0	AIR +
			WATER +
			bentonite

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.)
N	SLUFF		125.0
B	PVC SCH. 40 SUMP	4.0	120.0
S	" " " screen	"	117.5
B	" " "	"	107.5
P	8 5/8" OD 6' long steel	8 5/8	6

* P-Protective B-Screen S-Blank O-Open N-None
* Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.)
F	8-12 SILICA B sucks + sluff	125.0
S	bentonite 1/4" Pel.	63.0
B	bentonite-cement grout	56.0

* B - Backfill S - Seal F - Filter Pack
* Depth from Ground Surface

ACTIVITY

START

DATE

TIME

END TIME

DRILLING	7-29-88	11:00 am	12:35 pm
steamed	"	1:00 pm	2:00 pm
CASING hung up	7-29-88	2:30 pm	4:45 pm
FILTER PACK Developed w/ AIR	7-29-88	5:00 pm	5:45 pm
SEAL	7-29-88	6:00 pm	6:45 pm
BACKFILL	7-29-88	6:45 pm	7:00 pm
DEVELOPMENT	7-30-88	7:00 pm	8:30 am
OTHER			

WELL DEVELOPMENT

bentonite slurry was pumped into well to prevent caving. Well was developed with air for 2 hr after sand was installed.

COMMENTS: caving at 70' down
fine silts and clays.

APPENDIX C
GROUND WATER ELEVATIONS

STATIC GROUNDWATER LEVELS
SITE: SPK01 SPOOK
REPORT DATE: 08/03/94

LOCATION ID	NORTH COORDINATE (FT)	EAST COORDINATE (FT)	FORMATION OF COMPLETION	FLOW CODE	CASING ELEVATION (FT MSL)	GROUND ELEVATION (FT MSL)	LOG DATE	LOG TIME	DEPTH FROM TOP OF CASING (FT)	DEPTH FROM GROUND (FT)	GROUNDWATER ELEVATION (FT MSL)
0910	56710.5	59662.9	WL	N	5097.10	5095.20	12/20/86	15:30	112.27	110.37	4984.83
							02/17/87	09:35	112.48	110.58	4984.62
							01/29/88	09:30	102.45	100.55	4994.65
							04/19/88	10:10	111.81	109.91	4985.29
							08/11/88	10:30	112.00	110.10	4985.10
							12/09/88	14:41	113.70	111.80	4983.40
0911	56684.5	59695.9	WU	N	5094.80	5093.00	12/20/86	15:30	85.90	84.10	5008.90
							02/17/87	09:40	87.10	85.30	5007.70
							01/28/88	09:45	86.76	84.96	5008.04
							04/16/88	12:25	86.21	84.41	5008.59
							08/11/88	09:10	86.71	84.91	5008.09
							12/07/88	14:00	87.43	85.63	5007.37
0912	57376.4	60319.0	WU	N	5111.10	5109.70	12/20/86	15:30	107.80	106.40	5003.30
							02/18/87	09:00	108.00	106.60	5003.10
							01/30/88	09:30	108.42	107.02	5002.68
							04/21/88	13:00	108.42	107.02	5002.68
							08/26/88	18:00	108.85	107.45	5002.25
							11/30/88	13:00	109.16	107.76	5001.94
0913	58150.1	60546.0	WU	N	5098.60	5096.80	07/29/94	15:47	108.62	107.22	5002.48
							12/20/86	15:30	99.85	98.05	4998.75
							02/18/87	09:10	100.28	98.48	4998.32
							01/30/88	13:35	100.12	98.32	4998.48
							04/22/88	09:10	100.15	98.35	4998.45
							08/04/88	13:00	100.15	98.35	4998.45
0914	58134.9	60512.1	WL	N	5099.50	5097.50	12/08/88	12:50	100.55	98.75	4998.05
							07/29/94	14:10	101.62	99.82	4996.98
							12/20/86	15:30	104.15	102.15	4995.35
							02/18/87	01:18	105.10	103.10	4994.40
							01/30/88	15:26	105.00	103.00	4994.50
							04/19/88	15:10	105.01	103.01	4994.49
0915	58719.8	61452.6	WM	N	5059.60	5057.90	08/07/88	09:40	105.00	103.00	4994.50
							12/09/88	12:50	105.67	103.67	4993.83
							07/29/94	14:15	107.05	105.05	4992.45
0915	58719.8	61452.6	WM	N	5059.60	5057.90	12/20/86	15:30	68.20	66.50	4991.40
							02/19/87	01:30	65.98	64.28	4993.62
							02/01/88	14:00	66.69	64.99	4992.91

FORMATION OF COMPLETION CODE:
WL - WASATCH - LOWER SANDSTONE
WU - WASATCH - UPPER SANDSTONE
WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

STATIC GROUNDWATER LEVELS
 SITE: SPK01 SPOOK
 REPORT DATE: 08/03/94

LOCATION ID	NORTH COORDINATE (FT)	EAST COORDINATE (FT)	FORMATION OF COMPLETION	FLOW CODE	CASING ELEVATION (FT MSL)	GROUND ELEVATION (FT MSL)	LOG DATE	LOG TIME	DEPTH FROM TOP OF CASING (FT)	DEPTH FROM GROUND (FT)	GROUNDWATER ELEVATION (FT MSL)
0915	58719.8	61452.6	WM	N	5059.60	5057.90	04/20/88	12:15	66.13	64.43	4993.47
							08/09/88	12:45	66.04	64.34	4993.56
							12/08/88	09:30	66.15	64.45	4993.45
							07/29/94	13:24	67.85	66.15	4991.75
0916	59373.3	61439.6	WU	N	5071.60	5070.00	12/20/86	15:30	78.68	77.08	4992.92
							02/20/87	02:30	80.22	78.62	4991.38
							02/02/88	10:15	79.89	78.29	4991.71
							04/20/88	10:00	79.86	78.26	4991.74
							08/04/88	10:00	79.94	78.34	4991.66
							12/05/88	13:50	80.00	78.40	4991.60
							07/29/94	13:17	81.02	79.42	4990.58
0917	58853.6	62234.5	WU	N	5049.60	5047.80	12/20/86	15:30	60.17	58.37	4989.43
							02/19/87	11:50	60.48	58.68	4989.12
							01/28/88	14:10	60.46	58.66	4989.14
							04/21/88	09:19	60.43	58.63	4989.17
							08/26/88	17:02	60.80	59.00	4988.80
							12/06/88	09:30	60.73	58.93	4988.87
							07/29/94	13:30	61.43	59.63	4988.17
0918	57588.1	61629.1	WU	N	5103.10	5101.30	12/20/86	15:30	108.90	107.10	4994.20
							02/20/87	10:35	108.70	106.90	4994.40
							01/31/88	09:30	109.05	107.25	4994.05
							04/21/88	10:35	108.86	107.06	4994.24
							08/25/88	15:15	108.92	107.12	4994.18
							12/03/88	10:45	109.41	107.61	4993.69
							07/29/94	14:00	110.18	108.38	4992.92
0919	56014.4	59867.6	WL	N	5107.00	5105.20	12/20/86	15:30	126.00	124.20	4981.00
							02/17/87	03:00	126.26	124.46	4980.74
							01/27/88	15:50	126.61	124.81	4980.39
							04/23/88	09:48	125.57	123.77	4981.43
							08/26/88	10:15	126.10	124.30	4980.90
							12/09/88	09:15	127.00	125.20	4980.00
							07/29/94	15:05	126.25	124.45	4980.75
0920	56021.6	59923.7	WU	N	5101.10	5099.00	01/27/88	10:30	86.72	84.62	5014.38
							04/23/88	11:50	85.38	83.28	5015.72
							08/26/88	13:00	86.82	84.72	5014.28
							12/07/88	11:30	87.27	85.17	5013.83

FORMATION OF COMPLETION CODE:
 WM - WASATCH - MIDDLE SHALE
 WU - WASATCH - UPPER SANDSTONE
 WL - WASATCH - LOWER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

STATIC GROUNDWATER LEVELS
SITE: SPK01 SPOOK
REPORT DATE: 08/03/94

LOCATION ID	NORTH COORDINATE (FT)	EAST COORDINATE (FT)	FORMATION OF COMPLETION	FLOW CODE	CASING ELEVATION (FT MSL)	GROUND ELEVATION (FT MSL)	LOG DATE	LOG TIME	DEPTH FROM TOP OF CASING (FT)	DEPTH FROM GROUND (FT)	GROUNDWATER ELEVATION (FT MSL)
0920	56021.6	59923.7	WU	N	5101.10	5099.00	07/29/94	14:59	88.83	86.73	5012.27
0921	58118.3	59198.9	WL	N	5127.00	5124.50	02/03/88 04/24/88 08/09/88 12/07/88 07/29/94	10:00 09:15 10:40 14:50 11:35	123.25 122.26 123.55 124.38 125.76	120.75 119.76 121.05 121.88 123.26	5003.75 5004.74 5003.45 5002.62 5001.24
0922	58163.6	59210.6	WU	N	5124.80	5122.40	02/02/88 04/24/88 08/07/88 12/07/88 07/29/94	13:30 11:20 10:45 16:02 11:30	119.58 119.68 119.63 120.46 121.80	117.18 117.28 117.23 118.06 119.40	5005.22 5005.12 5005.17 5004.34 5003.00
0923	59654.0	59828.6	WL	N	5115.00	5112.80	01/29/88 04/25/88 08/08/88 12/09/88 07/29/94	12:45 09:35 14:20 10:00 11:47	119.96 119.86 119.84 120.73 121.32	117.76 117.66 117.64 118.53 119.12	4995.04 4995.14 4995.16 4994.27 4993.68
0924	59855.8	61191.0	WU	N	5081.20	5079.10	01/03/88 04/25/88 08/25/88 12/06/88 07/29/94	14:00 12:35 13:15 12:00 12:22	89.46 89.50 89.65 88.29 90.45	87.36 87.40 87.55 86.19 88.35	4991.74 4991.70 4991.55 4992.91 4990.75
0925	59815.3	62832.1	WU	N	5042.10	5039.90	02/02/88 04/25/88 08/25/88 12/04/88 07/29/94	13:45 13:57 10:08 10:45 12:42	55.98 55.86 56.17 56.05 56.31	53.78 53.66 53.97 53.85 54.11	4986.12 4986.24 4985.93 4986.05 4985.79
0927	59161.8	60115.4	WU	N	5096.7	5094.7	01/03/88 04/24/88 08/24/88 12/03/88 07/29/94	12:30 14:10 15:15 14:20 12:10	98.57 98.67 99.10 99.10 96.77	96.57 96.67 97.10 97.10 94.77	4998.13 4998.03 4997.60 4997.60 4999.93
0928	57963.3	59497.0	WU	N	5028.50	5025.60	01/31/88 04/22/88 08/03/88 12/02/88	11:00 11:28 13:15 09:00	23.65 23.76 24.08 24.39	20.75 20.86 21.18 21.49	5004.85 5004.74 5004.42 5004.11

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE
WL - WASATCH - LOWER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

STATIC GROUNDWATER LEVELS
SITE: SPK01 SPOOK
REPORT DATE: 08/03/94

LOCATION ID	NORTH COORDINATE (FT)	EAST COORDINATE (FT)	FORMATION OF COMPLETION	FLOW CODE	CASING ELEVATION (FT MSL)	GROUND ELEVATION (FT MSL)	LOG DATE	LOG TIME	DEPTH FROM TOP OF CASING (FT)	DEPTH FROM GROUND (FT)	GROUNDWATER ELEVATION (FT MSL)
0929	56502.8	59663.1	WU	N	5085.00	5083.00	01/30/88	13:15	81.33	79.33	5003.67
							04/26/88	15:10	81.25	79.25	5003.75
							08/11/88	11:10	81.12	79.12	5003.88
0930	56033.6	59898.5	WU	N	5104.10	5101.70	01/27/88	14:30	89.86	87.46	5014.24
							04/23/88	13:20	89.51	87.11	5014.59
							08/26/88	14:44	89.86	87.46	5014.24
							07/29/94	15:02	91.75	89.35	5012.35
0931	59847.5	63505.7	WU	N	5064.8	5062.60	01/26/88	13:56	80.65	78.45	4984.15
							04/27/88	13:30	80.49	78.29	4984.31
							08/09/88	10:10	80.19	77.99	4984.61
							12/04/88	10:30	80.62	78.42	4984.18
							07/29/94	12:50	80.80	78.60	4984.00
0932	59855.8	60115.7	WU	N	5106.9	5104.50	01/29/88	11:10	112.70	110.30	4994.20
							04/26/88	11:00	112.50	110.10	4994.40
							08/08/88	14:35	112.26	109.86	4994.64
							12/05/88	09:15	112.75	110.35	4994.15
							07/29/94	12:00	113.51	111.11	4993.39
0933	60310.2	64205.1	WU	N	5079.70	5077.40	08/09/88	12:50	98.22	95.92	4981.48
							12/05/88	12:45	98.38	96.08	4981.32
							07/29/94	13:00	98.57	96.27	4981.13
0934	60178.9	62032.2	WU	N	5072.30	5070.10	08/10/88	14:31	83.64	81.44	4988.66
							12/05/88	11:00	84.01	81.81	4988.29
							07/29/94	12:33	84.37	82.17	4987.93
0935	57050.2	59205.8	WU	N	5128.10	5125.90	08/07/88	12:15	115.60	113.40	5012.50
							11/30/88	11:20	116.32	114.12	5011.78
							07/29/94	14:42	117.15	114.95	5010.95
0936	56745.9	61019.6	WU	N	5086.10	5083.40	08/06/88	09:40	88.50	85.80	4997.60
							12/02/88	12:00	88.89	86.19	4997.21
							07/29/94	15:56	88.53	85.83	4997.57
0937	55665.7	60303.9	WU	N	5052.80	5049.50	08/06/88	09:45	76.84	73.54	4975.96
							12/01/88	09:00	75.29	71.99	4977.51
							07/29/94	15:25	73.98	70.68	4978.82
0938	58231.6	62849.7	WL	N	5036.00	5033.70	08/07/88	14:10	56.15	53.85	4979.85

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE
WL - WASATCH - LOWER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

STATIC GROUNDWATER LEVELS
 SITE: SPK01 SPOOK
 REPORT DATE: 08/03/94

LOCATION ID	NORTH COORDINATE (FT)	EAST COORDINATE (FT)	FORMATION OF COMPLETION	FLOW CODE	CASING ELEVATION (FT MSL)	GROUND ELEVATION (FT MSL)	LOG DATE	LOG TIME	DEPTH FROM TOP OF CASING (FT)	DEPTH FROM GROUND (FT)	GROUNDWATER ELEVATION (FT MSL)
0938	58231.6	62849.7	WL	N	5036.00	5033.70	12/06/88 07/29/94	12:10 13:42	55.78 54.73	53.48 52.43	4980.22 4981.27
0939	56195.2	59518.6	WU	N	5106.70	5104.70	08/05/88 11/30/88 07/29/94	13:35 14:50 14:49	88.20 88.00 88.49	86.20 86.00 86.49	5018.50 5018.70 5018.21
0940	58599.8	60040.7	WU	N	5016.70	5015.70	08/06/88 12/01/88	11:15 13:20	16.11 16.48	15.11 15.48	5000.59 5000.22
0941	58222.4	62882.6	WU	N	5036.10	5033.90	08/06/88 12/07/88 07/29/94	14:40 13:00 13:39	47.72 48.19 48.39	45.52 45.99 46.19	4988.38 4987.91 4987.71
0942	56061.2	61105.4	WU	N	5049.10	5047.70	08/06/88 12/01/88 07/29/94	13:00 11:20 15:15	62.10 62.52 61.96	60.70 61.12 60.56	4987.00 4986.58 4987.14
0943	59282.9	64523.6	WU	N	5028.40	5027.20	08/08/88 12/06/88 07/29/94	12:00 10:45 16:48	49.84 50.00 50.30	48.64 48.80 49.10	4978.56 4978.40 4978.10
0944	60946.7	66463.1	WU	N	4995.90	4993.90	08/10/88 12/05/88 07/29/94	10:00 14:15 17:03	56.01 56.35 55.03	54.01 54.35 53.03	4939.89 4939.55 4940.87

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

DATA FILE: M:\DART\SPK01\GWL10004.DAT

APPENDIX D

GROUND WATER QUALITY DATA BY PARAMETER

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ALKALINITY	0911	02/17/87	0001	WU	N	MG/L CaCO3	210.		-	-
	0911	09/18/87	0001	WU	N		236.		-	-
	0911	01/30/88	0001	WU	N		236.		-	-
	0911	04/22/88	0001	WU	N		233.		-	-
	0911	08/11/88	0001	WU	N		228.0		-	-
	0911	12/10/88	0001	WU	N		226.		-	-
	0912	02/18/87	0001	WU	N		192.		-	-
	0912	02/03/88	0001	WU	N		187.		-	-
	0912	04/22/88	0001	WU	N		129.		-	-
	0912	08/27/88	0001	WU	N		182.0		-	-
	0912	12/04/88	0001	WU	N		178.		-	-
	0913	02/18/87	0001	WU	N		274.		-	-
	0913	09/18/87	0001	WU	N		196.		-	-
	0913	02/03/88	0001	WU	N		222.		-	-
	0913	04/22/88	0001	WU	N		207.		-	-
	0913	08/04/88	0001	WU	N		204.0		-	-
	0913	12/10/88	0001	WU	N		205.		-	-
	0916	02/20/87	0001	WU	N		297.		-	-
	0916	09/20/87	0001	WU	N		303.		-	-
	0916	02/03/88	0001	WU	N		311.		-	-
	0916	04/22/88	0001	WU	N		310.		-	-
	0916	08/04/88	0001	WU	N		321.0		-	-
	0916	12/07/88	0001	WU	N		320.		-	-
	0917	02/19/87	0001	WU	N		340.		-	-
	0917	09/20/87	0001	WU	N		313.		-	-
	0917	01/30/88	0001	WU	N		320.		-	-
	0917	04/22/88	0001	WU	N		335.		-	-
	0917	08/27/88	0001	WU	N		321.0		-	-
	0917	12/07/88	0001	WU	N		348.		-	-
	0918	02/20/87	0001	WU	N		217.		-	-
	0918	09/20/87	0001	WU	N		200.		-	-
	0918	02/03/88	0001	WU	N		191.		-	-
	0918	04/22/88	0001	WU	N		195.		-	-
	0918	08/26/88	0001	WU	N		195.0		-	-
	0918	12/04/88	0001	WU	N		204.		-	-
	0920	09/20/87	0001	WU	N		278.		-	-
	0920	01/30/88	0001	WU	N		308.		-	-
	0920	04/26/88	0001	WU	N		247.		-	-
	0920	08/27/88	0001	WU	N		247.0		-	-
	0920	12/10/88	0001	WU	N		260.		-	-
	0922	09/20/87	0001	WU	N		192.		-	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ALKALINITY	0922	02/03/88	0001	WU	N	185.		-	-
	0922	04/26/88	0001	WU	N	162.		-	-
	0922	08/08/88	0001	WU	N	160.0		-	-
	0922	12/10/88	0001	WU	N	168.		-	-
	0924	09/20/87	0001	WU	N	161.		-	-
	0924	02/04/88	0001	WU	N	172.		-	-
	0924	04/26/88	0001	WU	N	161.		-	-
	0924	08/26/88	0001	WU	N	151.0		-	-
	0924	12/07/88	0001	WU	N	166.		-	-
	0925	09/20/87	0001	WU	N	221.		-	-
	0925	02/03/88	0001	WU	N	233.		-	-
	0925	04/26/88	0001	WU	N	224.		-	-
	0925	08/26/88	0001	WU	N	212.		-	-
	0925	12/07/88	0001	WU	N	228.		-	-
	0927	09/20/87	0001	WU	N	138.		-	-
	0927	02/04/88	0001	WU	N	180.		-	-
	0927	04/26/88	0001	WU	N	166.		-	-
	0927	08/26/88	0001	WU	N	161.0		-	-
	0927	12/04/88	0001	WU	N	162.		-	-
	0928	09/20/87	0001	WU	N	39.		-	-
	0928	02/03/88	0001	WU	N	52.		-	-
	0928	04/22/88	0001	WU	N	47.		-	-
	0928	08/04/88	0001	WU	N	53.0		-	-
	0928	12/04/88	0001	WU	N	51.		-	-
	0929	09/20/87	0001	WU	N	77.		-	-
	0929	02/03/88	0001	WU	N	228.	J	-	-
	0929	04/28/88	0001	WU	N	400.		-	-
	0929	08/11/88	0001	WU	N	242.0		-	-
	0930	09/20/87	0001	WU	N	138.		-	-
	0930	01/30/88	0001	WU	N	156.		-	-
	0930	04/26/88	0001	WU	N	142.		-	-
	0930	08/27/88	0001	WU	N	215.0		-	-
	0931	01/30/88	0001	WU	N	255.		-	-
	0931	04/28/88	0001	WU	N	228.		-	-
	0931	08/10/88	0001	WU	N	223.0		-	-
	0931	12/04/88	0001	WU	N	223.		-	-
	0932	01/30/88	0001	WU	N	240.		-	-
	0932	04/28/88	0001	WU	N	251.		-	-
	0932	08/09/88	0001	WU	N	248.0		-	-
	0932	12/07/88	0001	WU	N	241.		-	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (<.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ALKALINITY	0933	08/10/88	0001	WU	N	MG/L CACO3		235.0		-	-
	0933	12/07/88	0001	WU	N			241.		-	-
	0934	08/11/88	0001	WU	N			237.0		-	-
	0934	12/07/88	0001	WU	N			243.		-	-
	0935	08/09/88	0001	WU	N			148.0		-	-
	0935	12/04/88	0001	WU	N			71.		-	-
	0936	08/08/88	0001	WU	N			303.0		-	-
	0936	12/04/88	0001	WU	N			322.		-	-
	0937	08/08/88	0001	WU	N			194.0		-	-
	0937	12/04/88	0001	WU	N			204.		-	-
	0939	08/08/88	0001	WU	N			110.0		-	-
	0939	12/04/88	0001	WU	N			147.		-	-
	0940	08/08/88	0001	WU	N			185.0		-	-
	0940	12/04/88	0001	WU	N			195.		-	-
	0941	08/08/88	0001	WU	N			145.0		-	-
	0941	12/10/88	0001	WU	N			159.		-	-
	0942	08/08/88	0001	WU	N			214.0		-	-
	0942	12/04/88	0001	WU	N			212.		-	-
	0943	08/09/88	0001	WU	N			213.0		-	-
	0943	12/07/88	0001	WU	N			226.		-	-
	0944	08/11/88	0001	WU	N			265.0		-	-
	0944	12/07/88	0001	WU	N			282.		-	-
ALUMINUM	0911	02/17/87	0001	WU	N	MG/L	<	0.1		0.1	-
	0911	09/18/87	0001	WU	N			0.18		0.1	-
	0911	01/30/88	0001	WU	N			0.06	J	0.1	-
	0911	04/22/88	0001	WU	N			0.11		0.1	-
	0911	08/11/88	0001	WU	N		<	0.1		0.1	-
	0912	02/18/87	0001	WU	N		<	0.1		0.1	-
	0912	02/03/88	0001	WU	N			0.01	J	0.1	-
	0912	04/22/88	0001	WU	N			0.04	J	0.1	-
	0912	08/27/88	0001	WU	N		<	0.1		0.1	-
	0913	02/18/87	0001	WU	N		<	0.1		0.1	-
	0913	09/18/87	0001	WU	N			0.44		0.1	-
	0913	02/03/88	0001	WU	N			0.29		0.1	-
	0913	04/22/88	0001	WU	N			0.26		0.1	-
	0913	08/04/88	0001	WU	N			0.3		0.1	-
	0916	02/20/87	0001	WU	N		<	0.1		0.1	-
	0916	09/20/87	0001	WU	N			0.86		0.1	-
	0916	02/03/88	0001	WU	N			0.70		0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ALUMINUM	0916	04/22/88	0001	WU	N	MG/L		0.55		0.1	-
	0916	08/04/88	0001	WU	N			0.7		0.1	-
	0917	02/19/87	0001	WU	N		<	0.1		0.1	-
	0917	09/20/87	0001	WU	N			0.33		0.1	-
	0917	01/30/88	0001	WU	N			0.23		0.1	-
	0917	04/22/88	0001	WU	N			0.18		0.1	-
	0917	08/27/88	0001	WU	N			0.2		0.1	-
	0918	02/20/87	0001	WU	N		<	0.1		0.1	-
	0918	09/20/87	0001	WU	N			0.18		0.1	-
	0918	02/03/88	0001	WU	N			0.13		0.1	-
	0918	04/22/88	0001	WU	N			0.10		0.1	-
	0918	08/26/88	0001	WU	N			0.1		0.1	-
	0920	09/20/87	0001	WU	N			0.29		0.1	-
	0920	01/30/88	0001	WU	N			0.35		0.1	-
	0920	04/26/88	0001	WU	N			0.38		0.1	-
	0920	08/27/88	0001	WU	N			0.3		0.1	-
	0922	09/20/87	0001	WU	N			0.12		0.1	-
	0922	02/03/88	0001	WU	N			0.15		0.1	-
	0922	04/26/88	0001	WU	N			0.06	J	0.1	-
	0922	08/08/88	0001	WU	N		<	0.1		0.1	-
	0924	09/20/87	0001	WU	N			0.20		0.1	-
	0924	02/04/88	0001	WU	N			0.24		0.1	-
	0924	04/26/88	0001	WU	N			0.09	J	0.1	-
	0924	08/26/88	0001	WU	N			0.2		0.1	-
	0925	09/20/87	0001	WU	N			0.11		0.1	-
	0925	02/03/88	0001	WU	N			0.15		0.1	-
	0925	04/26/88	0001	WU	N			0.03	J	0.1	-
	0925	08/26/88	0001	WU	N			0.1		0.1	-
	0927	09/20/87	0001	WU	N			0.27		0.1	-
	0927	02/04/88	0001	WU	N			0.34		0.1	-
	0927	04/26/88	0001	WU	N			0.15		0.1	-
	0927	08/26/88	0001	WU	N			0.2		0.1	-
	0928	02/03/88	0001	WU	N			0.23		0.1	-
	0928	04/22/88	0001	WU	N			0.34		0.1	-
	0928	08/04/88	0001	WU	N			0.13		0.1	-
	0929	09/20/87	0001	WU	N			0.12		0.1	-
	0929	02/03/88	0001	WU	N			0.096	J	0.1	-
	0929	04/28/88	0001	WU	N			0.05		0.1	-
	0929	08/11/88	0001	WU	N		<	0.1		0.1	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

FLOW RELATIONSHIP CODE:
N - UNKNOWN

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ALUMINUM	0930	09/20/87	0001	WU	N	MG/L	0.29		0.1	-
	0930	01/30/88	0001	WU	N		0.289		0.1	-
	0930	04/26/88	0001	WU	N		0.37		0.1	-
	0930	08/27/88	0001	WU	N		0.2		0.1	-
	0931	01/30/88	0001	WU	N		0.112		0.1	-
	0931	04/28/88	0001	WU	N		0.05	J	0.1	-
	0931	08/10/88	0001	WU	N		0.2		0.1	-
	0932	01/30/88	0001	WU	N		0.108	J	0.1	-
	0932	04/28/88	0001	WU	N		0.06		0.1	-
	0932	08/09/88	0001	WU	N		0.15		0.1	-
	0933	08/10/88	0001	WU	N		11.		0.1	-
	0934	08/11/88	0001	WU	N		<		0.1	-
	0935	08/09/88	0001	WU	N		0.7		0.1	-
	0936	08/08/88	0001	WU	N		0.2		0.1	-
	0937	08/08/88	0001	WU	N		0.3		0.1	-
	0939	08/08/88	0001	WU	N		0.2		0.1	-
	0940	08/08/88	0001	WU	N		0.4		0.1	-
	0941	08/08/88	0001	WU	N		<		0.1	-
	0942	08/08/88	0001	WU	N		0.2		0.1	-
	0943	08/09/88	0001	WU	N		0.12		0.1	-
	0944	08/11/88	0001	WU	N		0.10		0.1	-
AMMONIUM	0911	02/17/87	0001	WU	N	MG/L	<		0.1	-
	0911	09/18/87	0001	WU	N		0.1		0.1	-
	0911	01/30/88	0001	WU	N		21.5		0.1	-
	0911	04/22/88	0001	WU	N		14.6		0.1	-
	0911	08/11/88	0001	WU	N		11.		0.1	-
	0911	12/10/88	0001	WU	N		9.8		0.1	-
	0912	02/18/87	0001	WU	N		6.7		0.1	-
	0912	02/03/88	0001	WU	N		<		0.1	-
	0912	04/22/88	0001	WU	N		<		0.1	-
	0912	08/27/88	0001	WU	N		<		0.1	-
	0912	12/04/88	0001	WU	N		<		0.1	-
	0913	02/18/87	0001	WU	N		0.2		0.1	-
	0913	09/18/87	0001	WU	N		<		0.1	-
	0913	02/03/88	0001	WU	N		<		0.1	-
	0913	04/22/88	0001	WU	N		<		0.1	-
	0913	08/04/88	0001	WU	N		<		0.1	-
	0913	12/10/88	0001	WU	N		<		0.1	-
	0916	02/20/87	0001	WU	N		<		0.1	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (<.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
AMMONIUM	0916	09/20/87	0001	WU	N	MG/L	<	0.1		0.1	-
	0916	02/03/88	0001	WU	N		<	0.1		0.1	-
	0916	04/22/88	0001	WU	N		<	0.1		0.1	-
	0916	08/04/88	0001	WU	N		<	0.1		0.1	-
	0916	12/07/88	0001	WU	N		<	0.1		0.1	-
	0917	02/19/87	0001	WU	N		<	0.1		0.1	-
	0917	09/20/87	0001	WU	N		<	0.1		0.1	-
	0917	01/30/88	0001	WU	N		<	0.1		0.1	-
	0917	04/22/88	0001	WU	N		<	0.1		0.1	-
	0917	08/27/88	0001	WU	N		<	0.1		0.1	-
	0917	12/07/88	0001	WU	N		<	0.1		0.1	-
	0918	02/20/87	0001	WU	N		<	0.1		0.1	-
	0918	09/20/87	0001	WU	N		<	0.1		0.1	-
	0918	02/03/88	0001	WU	N		<	0.1		0.1	-
	0918	04/22/88	0001	WU	N		<	0.1		0.1	-
	0918	08/26/88	0001	WU	N		<	0.1		0.1	-
	0918	12/04/88	0001	WU	N		<	0.1		0.1	-
	0920	09/20/87	0001	WU	N		<	87.6		0.1	-
	0920	01/30/88	0001	WU	N			84.8		0.1	-
	0920	04/26/88	0001	WU	N			93.		0.1	-
	0920	08/27/88	0001	WU	N			98.		0.1	-
	0920	12/10/88	0001	WU	N			101.		0.1	-
	0922	09/20/87	0001	WU	N		<	0.1		0.1	-
	0922	02/03/88	0001	WU	N		<	0.1		0.1	-
	0922	04/26/88	0001	WU	N		<	0.1		0.1	-
	0922	08/08/88	0001	WU	N		<	0.1		0.1	-
	0922	12/10/88	0001	WU	N		<	0.1		0.1	-
	0924	09/20/87	0001	WU	N		<	0.1		0.1	-
	0924	02/04/88	0001	WU	N		<	0.1		0.1	-
	0924	04/26/88	0001	WU	N		<	0.1		0.1	-
	0924	08/26/88	0001	WU	N		<	0.1		0.1	-
	0924	12/07/88	0001	WU	N		<	0.1		0.1	-
	0925	09/20/87	0001	WU	N		<	0.1		0.1	-
	0925	02/03/88	0001	WU	N		<	0.1		0.1	-
	0925	04/26/88	0001	WU	N		<	0.1		0.1	-
	0925	08/26/88	0001	WU	N		<	0.1		0.1	-
	0925	12/07/88	0001	WU	N		<	0.1		0.1	-
	0927	09/20/87	0001	WU	N		<	0.1		0.1	-
	0927	02/04/88	0001	WU	N		<	0.1		0.1	-
	0927	04/26/88	0001	WU	N		<	0.1		0.1	-
	0927	08/26/88	0001	WU	N		<	0.1		0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
AMMONIUM	0927	12/04/88	0001	WU	N	MG/L	<	0.1		0.1	-
	0928	09/20/87	0001	WU	N		<	0.1		0.1	-
	0928	02/03/88	0001	WU	N		<	0.1		0.1	-
	0928	04/22/88	0001	WU	N		<	0.1		0.1	-
	0928	08/04/88	0001	WU	N		<	0.1		0.1	-
	0928	12/04/88	0001	WU	N		<	0.1		0.1	-
	0929	09/20/87	0001	WU	N		<	4.6		0.1	-
	0929	02/03/88	0001	WU	N		<	0.5		0.1	-
	0929	04/28/88	0001	WU	N		<	1.2	J	0.1	-
	0929	08/11/88	0001	WU	N		<	0.1		0.1	-
	0930	09/20/87	0001	WU	N			114.		0.1	-
	0930	01/30/88	0001	WU	N			197.		0.1	-
	0930	04/26/88	0001	WU	N			180.		0.1	-
	0930	08/27/88	0001	WU	N			98.		0.1	-
	0931	01/30/88	0001	WU	N		<	0.1		0.1	-
	0931	04/28/88	0001	WU	N		<	0.1		0.1	-
	0931	08/10/88	0001	WU	N		<	0.1		0.1	-
	0931	12/04/88	0001	WU	N		<	0.1		0.1	-
	0932	01/30/88	0001	WU	N		<	0.1		0.1	-
	0932	04/28/88	0001	WU	N		<	0.1		0.1	-
	0932	08/09/88	0001	WU	N		<	0.1		0.1	-
	0932	12/07/88	0001	WU	N		<	0.1		0.1	-
	0933	08/10/88	0001	WU	N		<	0.1		0.1	-
	0933	12/07/88	0001	WU	N		<	0.1		0.1	-
	0934	08/11/88	0001	WU	N		<	0.1		0.1	-
	0934	12/07/88	0001	WU	N		<	0.1		0.1	-
	0935	08/09/88	0001	WU	N			260.		0.1	-
	0935	12/04/88	0001	WU	N			300.		0.1	-
	0936	08/08/88	0001	WU	N		<	0.1		0.1	-
	0936	12/04/88	0001	WU	N		<	0.1		0.1	-
	0937	08/08/88	0001	WU	N		<	0.1		0.1	-
	0937	12/04/88	0001	WU	N		<	0.1		0.1	-
	0939	08/08/88	0001	WU	N		<	0.1		0.1	-
	0939	12/04/88	0001	WU	N		<	0.1		0.1	-
	0940	08/08/88	0001	WU	N			69.		0.1	-
	0940	12/04/88	0001	WU	N		<	72.		0.1	-
	0941	08/08/88	0001	WU	N		<	0.1		0.1	-
	0941	12/10/88	0001	WU	N		<	0.1		0.1	-
	0942	08/08/88	0001	WU	N		<	0.1		0.1	-
	0942	12/04/88	0001	WU	N		<	0.1		0.1	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
AMMONIUM	0943	08/09/88	0001	WU	MG/L	<	0.1		0.1	-
	0943	12/07/88	0001	WU		<	0.1		0.1	-
	0944	08/11/88	0001	WU		<	0.1		0.1	-
	0944	12/07/88	0001	WU		<	0.1		0.1	-
ANTIMONY	0911	02/17/87	0001	WU	MG/L	<	0.003		0.003	-
	0911	09/18/87	0001	WU		<	0.003		0.003	-
	0911	01/30/88	0001	WU		<	0.003		0.003	-
	0911	04/22/88	0001	WU			0.003		0.003	-
	0911	08/11/88	0001	WU		<	0.004		0.003	-
	0912	02/18/87	0001	WU		<	0.003		0.003	-
	0912	02/03/88	0001	WU		<	0.003		0.003	-
	0912	04/22/88	0001	WU		<	0.014		0.003	-
	0912	08/27/88	0001	WU		<	0.003	J	0.003	-
	0913	02/18/87	0001	WU		<	0.007		0.003	-
	0913	09/18/87	0001	WU		<	0.003		0.003	-
	0913	02/03/88	0001	WU		<	0.003		0.003	-
	0913	04/22/88	0001	WU			0.007		0.003	-
	0913	08/04/88	0001	WU		<	0.004		0.003	-
	0916	02/20/87	0001	WU		<	0.003		0.003	-
	0916	09/20/87	0001	WU		<	0.003		0.003	-
	0916	02/03/88	0001	WU		<	0.003		0.003	-
	0916	04/22/88	0001	WU			0.010		0.003	-
	0916	08/04/88	0001	WU			0.008		0.003	-
	0917	02/19/87	0001	WU			0.004		0.003	-
	0917	09/20/87	0001	WU		<	0.003		0.003	-
	0917	01/30/88	0001	WU			0.004		0.003	-
	0917	04/22/88	0001	WU			0.004		0.003	-
	0917	08/27/88	0001	WU			0.004	J	0.003	-
	0918	02/20/87	0001	WU		<	0.003		0.003	-
	0918	09/20/87	0001	WU		<	0.003		0.003	-
	0918	02/03/88	0001	WU		<	0.003		0.003	-
	0918	04/22/88	0001	WU			0.003		0.003	-
	0918	08/26/88	0001	WU		<	0.003	J	0.003	-
	0920	09/20/87	0001	WU		<	0.003		0.003	-
	0920	01/30/88	0001	WU			0.019		0.003	-
	0920	04/26/88	0001	WU			0.020		0.003	-
	0920	08/27/88	0001	WU			0.036	J	0.003	-
	0922	09/20/87	0001	WU		<	0.003		0.003	-
	0922	02/03/88	0001	WU			0.004		0.003	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ANTIMONY	0922	04/26/88	0001	WU	N	MG/L	<	0.003		0.003	-
	0922	08/08/88	0001	WU	N		<	0.003		0.003	-
	0924	09/20/87	0001	WU	N		<	0.003		0.003	-
	0924	02/04/88	0001	WU	N			0.008		0.003	-
	0924	04/26/88	0001	WU	N			0.007		0.003	-
	0924	08/26/88	0001	WU	N			0.012	J	0.003	-
	0925	09/20/87	0001	WU	N		<	0.003		0.003	-
	0925	02/03/88	0001	WU	N			0.003		0.003	-
	0925	04/26/88	0001	WU	N		<	0.003		0.003	-
	0925	08/26/88	0001	WU	N			0.005	J	0.003	-
	0927	09/20/87	0001	WU	N			0.005		0.003	-
	0927	02/04/88	0001	WU	N			0.012		0.003	-
	0927	04/26/88	0001	WU	N			0.010		0.003	-
	0927	08/26/88	0001	WU	N			0.013	J	0.003	-
	0928	09/20/87	0001	WU	N		<	0.003		0.003	-
	0928	02/03/88	0001	WU	N			0.012		0.003	-
	0928	04/22/88	0001	WU	N			0.010		0.003	-
	0928	08/04/88	0001	WU	N			0.007		0.003	-
	0929	09/20/87	0001	WU	N		<	0.003		0.003	-
	0929	02/03/88	0001	WU	N			0.004		0.003	-
	0929	04/28/88	0001	WU	N			0.004	J	0.003	-
	0929	08/11/88	0001	WU	N			0.008		0.003	-
	0930	09/20/87	0001	WU	N			0.015		0.003	-
	0930	01/30/88	0001	WU	N			0.019		0.003	-
	0930	04/26/88	0001	WU	N			0.028		0.003	-
	0930	08/27/88	0001	WU	N			0.024	J	0.003	-
	0931	01/30/88	0001	WU	N			0.004		0.003	-
	0931	04/28/88	0001	WU	N			0.003		0.003	-
	0931	08/10/88	0001	WU	N		<	0.003		0.003	-
	0932	01/30/88	0001	WU	N			0.006		0.003	-
	0932	04/28/88	0001	WU	N			0.005		0.003	-
	0932	08/09/88	0001	WU	N		<	0.003		0.003	-
	0933	08/10/88	0001	WU	N		<	0.003		0.003	-
	0934	08/11/88	0001	WU	N			0.003		0.003	-
	0935	08/09/88	0001	WU	N			0.016		0.003	-
	0936	08/08/88	0001	WU	N			0.003		0.003	-
	0937	08/08/88	0001	WU	N			0.003		0.003	-
	0939	08/08/88	0001	WU	N			0.009		0.003	-
	0940	08/08/88	0001	WU	N			0.011		0.003	-
	0941	08/08/88	0001	WU	N		<	0.003		0.003	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER

UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ANTIMONY	0942	08/08/88	0001	WU	N	<	0.003		0.003	-
	0943	08/09/88	0001	WU	N	<	0.003		0.003	-
	0944	08/11/88	0001	WU	N		0.003		0.003	-
ARSENIC	0911	02/17/87	0001	WU	N	<	0.001	J	0.01	-
	0911	09/18/87	0001	WU	N	<	0.001	J	0.01	-
	0911	01/30/88	0001	WU	N	<	0.001	J	0.01	-
	0911	04/22/88	0001	WU	N	<	0.001	J	0.01	-
	0911	08/11/88	0001	WU	N	<	0.01		0.01	-
	0911	12/10/88	0001	WU	N	<	0.01		0.01	-
	0912	02/18/87	0001	WU	N		0.001	J	0.01	-
	0912	02/03/88	0001	WU	N		0.003	J	0.01	-
	0912	04/22/88	0001	WU	N	<	0.001	J	0.01	-
	0912	08/27/88	0001	WU	N	<	0.01		0.01	-
	0912	12/04/88	0001	WU	N	<	0.01		0.01	-
	0913	02/18/87	0001	WU	N	<	0.001	J	0.01	-
	0913	09/18/87	0001	WU	N		0.004	J	0.01	-
	0913	02/03/88	0001	WU	N		0.002	J	0.01	-
	0913	04/22/88	0001	WU	N		0.004	J	0.01	-
	0913	08/04/88	0001	WU	N	<	0.01		0.01	-
	0913	12/10/88	0001	WU	N	<	0.01		0.01	-
	0916	02/20/87	0001	WU	N	<	0.001	J	0.01	-
	0916	09/20/87	0001	WU	N		0.003	J	0.01	-
	0916	02/03/88	0001	WU	N		0.003	J	0.01	-
	0916	04/22/88	0001	WU	N		0.006	J	0.01	-
	0916	08/04/88	0001	WU	N	<	0.01		0.01	-
	0916	12/07/88	0001	WU	N	<	0.01		0.01	-
	0917	02/19/87	0001	WU	N	<	0.001	J	0.01	-
	0917	09/20/87	0001	WU	N		0.002	J	0.01	-
	0917	01/30/88	0001	WU	N		0.006	J	0.01	-
	0917	04/22/88	0001	WU	N		0.002	J	0.01	-
	0917	08/27/88	0001	WU	N	<	0.01		0.01	-
	0917	12/07/88	0001	WU	N	<	0.01		0.01	-
	0918	02/20/87	0001	WU	N	<	0.001	J	0.01	-
	0918	09/20/87	0001	WU	N		0.003	J	0.01	-
	0918	02/03/88	0001	WU	N		0.003	J	0.01	-
	0918	04/22/88	0001	WU	N	<	0.001	J	0.01	-
	0918	08/26/88	0001	WU	N	<	0.01		0.01	-
	0918	12/04/88	0001	WU	N	<	0.01		0.01	-
	0920	09/20/87	0001	WU	N		0.015		0.01	-

FORMATION OF COMPLETION CODE:

WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:

N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (<.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:

J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER

UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION	ID	LOG DATE	SAMPLE ID	FORM	FLOW	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ARSENIC	0920	01/30/88	0001	WU	N		MG/L	0.012	J	0.01	-
	0920	04/26/88	0001	WU	N			0.004		0.01	-
	0920	08/27/88	0001	WU	N			0.05		0.01	-
	0920	12/10/88	0001	WU	N			0.01		0.01	-
	0922	09/20/87	0001	WU	N			0.002	J	0.01	-
	0922	02/03/88	0001	WU	N			0.01		0.01	-
	0922	04/26/88	0001	WU	N			0.001	J	0.01	-
	0922	08/08/88	0001	WU	N			0.01		0.01	-
	0922	12/10/88	0001	WU	N			0.01		0.01	-
	0924	09/20/87	0001	WU	N			0.004	J	0.01	-
	0924	02/04/88	0001	WU	N			0.01		0.01	-
	0924	04/26/88	0001	WU	N			0.001	J	0.01	-
	0924	08/26/88	0001	WU	N			0.02		0.01	-
	0924	12/07/88	0001	WU	N			0.01		0.01	-
	0925	09/20/87	0001	WU	N			0.001	J	0.01	-
	0925	02/03/88	0001	WU	N			0.01		0.01	-
	0925	04/26/88	0001	WU	N			0.001	J	0.01	-
	0925	08/26/88	0001	WU	N			0.01		0.01	-
	0925	12/07/88	0001	WU	N			0.01		0.01	-
	0927	09/20/87	0001	WU	N			0.010		0.01	-
	0927	02/04/88	0001	WU	N			0.01		0.01	-
	0927	04/26/88	0001	WU	N			0.001	J	0.01	-
	0927	08/26/88	0001	WU	N			0.01		0.01	-
	0927	12/04/88	0001	WU	N			0.01		0.01	-
	0928	09/20/87	0001	WU	N			0.009	J	0.01	-
	0928	02/03/88	0001	WU	N			0.01		0.01	-
	0928	04/22/88	0001	WU	N			0.001	J	0.01	-
	0928	08/04/88	0001	WU	N			0.01		0.01	-
	0928	12/04/88	0001	WU	N			0.01		0.01	-
	0929	09/20/87	0001	WU	N			0.006	J	0.01	-
	0929	02/03/88	0001	WU	N			0.003	J	0.01	-
	0929	04/28/88	0001	WU	N			0.001	J	0.01	-
	0929	08/11/88	0001	WU	N			0.01		0.01	-
	0930	09/20/87	0001	WU	N			0.012		0.01	-
	0930	01/30/88	0001	WU	N			0.013		0.01	-
	0930	04/26/88	0001	WU	N			0.015		0.01	-
	0930	08/27/88	0001	WU	N			0.03		0.01	-
	0931	01/30/88	0001	WU	N			0.001	J	0.01	-
	0931	04/28/88	0001	WU	N			0.001	J	0.01	-
	0931	08/10/88	0001	WU	N			0.01		0.01	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

N - UNKNOWN

FLOW RELATIONSHIP CODE:

PARAMETER VALUE INDICATOR (PVI): > - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ARSENIC	0931	12/04/88	0001	WU	N	<	0.01	0.01	-
	0932	01/30/88	0001	WU	N	<	0.002	0.01	-
	0932	04/28/88	0001	WU	N	<	0.001	0.01	-
	0932	08/09/88	0001	WU	N	<	0.01	0.01	-
	0932	12/07/88	0001	WU	N	<	0.01	0.01	-
	0933	08/10/88	0001	WU	N	<	0.01	0.01	-
	0933	12/07/88	0001	WU	N	<	0.01	0.01	-
	0934	08/11/88	0001	WU	N	<	0.01	0.01	-
	0934	12/07/88	0001	WU	N	<	0.01	0.01	-
	0935	08/09/88	0001	WU	N	<	0.01	0.01	-
	0935	12/04/88	0001	WU	N	<	0.01	0.01	-
	0936	08/08/88	0001	WU	N	<	0.01	0.01	-
	0936	12/04/88	0001	WU	N	<	0.01	0.01	-
	0937	08/08/88	0001	WU	N	<	0.01	0.01	-
	0937	12/04/88	0001	WU	N	<	0.01	0.01	-
	0939	08/08/88	0001	WU	N	<	0.01	0.01	-
	0939	12/04/88	0001	WU	N	<	0.01	0.01	-
	0940	08/08/88	0001	WU	N	<	0.01	0.01	-
	0940	12/04/88	0001	WU	N	<	0.01	0.01	-
	0941	08/08/88	0001	WU	N	<	0.01	0.01	-
	0941	12/10/88	0001	WU	N	<	0.01	0.01	-
	0942	08/08/88	0001	WU	N	<	0.01	0.01	-
	0942	12/04/88	0001	WU	N	<	0.01	0.01	-
	0943	08/09/88	0001	WU	N	<	0.01	0.01	-
	0943	12/07/88	0001	WU	N	<	0.01	0.01	-
	0944	08/11/88	0001	WU	N	<	0.01	0.01	-
	0944	12/07/88	0001	WU	N	<	0.01	0.01	-
BARIUM	0911	02/17/87	0001	WU	N	<	0.1	0.1	-
	0911	09/18/87	0001	WU	N	<	0.03	0.1	-
	0911	01/30/88	0001	WU	N	<	0.1	0.1	-
	0911	04/22/88	0001	WU	N	<	0.04	0.1	-
	0911	08/11/88	0001	WU	N	<	0.1	0.1	-
	0912	02/18/87	0001	WU	N	<	0.1	0.1	-
	0912	02/03/88	0001	WU	N	<	0.1	0.1	-
	0912	04/22/88	0001	WU	N	<	0.02	0.1	-
	0912	08/27/88	0001	WU	N	<	0.1	0.1	-
	0913	02/18/87	0001	WU	N	<	0.1	0.1	-
	0913	09/18/87	0001	WU	N	<	0.04	0.1	-
	0913	02/03/88	0001	WU	N	<	0.1	0.1	-
	0913								

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE
 PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT
 OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE
 FLOW RELATIONSHIP CODE:
 N - UNKNOWN
 SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PV1 VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
BARIUM	0913	04/22/88	0001	WU	N	0.03	J	0.1	-
	0913	08/04/88	0001	WU	N	0.1		0.1	-
	0916	02/20/87	0001	WU	N	0.1		0.1	-
	0916	09/20/87	0001	WU	N	0.05	J	0.1	-
	0916	02/03/88	0001	WU	N	0.1		0.1	-
	0916	04/22/88	0001	WU	N	0.04	J	0.1	-
	0916	08/04/88	0001	WU	N	0.1		0.1	-
	0917	02/19/87	0001	WU	N	0.1		0.1	-
	0917	09/20/87	0001	WU	N	0.06	J	0.1	-
	0917	01/30/88	0001	WU	N	0.1		0.1	-
	0917	04/22/88	0001	WU	N	0.06	J	0.1	-
	0917	08/27/88	0001	WU	N	0.1		0.1	-
	0918	02/20/87	0001	WU	N	0.06	J	0.1	-
	0918	09/20/87	0001	WU	N	0.1		0.1	-
	0918	02/03/88	0001	WU	N	0.1		0.1	-
	0918	04/22/88	0001	WU	N	0.05	J	0.1	-
	0918	08/26/88	0001	WU	N	0.1		0.1	-
	0920	09/20/87	0001	WU	N	0.04	J	0.1	-
	0920	01/30/88	0001	WU	N	0.01	J	0.1	-
	0920	04/26/88	0001	WU	N	0.02	J	0.1	-
	0920	08/27/88	0001	WU	N	0.1		0.1	-
	0922	09/20/87	0001	WU	N	0.02	J	0.1	-
	0922	02/03/88	0001	WU	N	0.01	J	0.1	-
	0922	04/26/88	0001	WU	N	0.02	J	0.1	-
	0922	08/08/88	0001	WU	N	0.1		0.1	-
	0924	09/20/87	0001	WU	N	0.03	J	0.1	-
	0924	02/04/88	0001	WU	N	0.01	J	0.1	-
	0924	04/26/88	0001	WU	N	0.03	J	0.1	-
	0924	08/26/88	0001	WU	N	0.1		0.1	-
	0925	09/20/87	0001	WU	N	0.02	J	0.1	-
	0925	02/03/88	0001	WU	N	0.01	J	0.1	-
	0925	04/26/88	0001	WU	N	0.03	J	0.1	-
	0925	08/26/88	0001	WU	N	0.1		0.1	-
	0927	09/20/87	0001	WU	N	0.04	J	0.1	-
	0927	02/04/88	0001	WU	N	0.018	J	0.1	-
	0927	04/26/88	0001	WU	N	0.04	J	0.1	-
	0927	08/26/88	0001	WU	N	0.1		0.1	-
	0928	09/20/87	0001	WU	N	0.03	J	0.1	-
	0928	02/03/88	0001	WU	N	0.018	J	0.1	-
	0928	04/22/88	0001	WU	N	0.02	J	0.1	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PV1): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
BARIUM	0928	08/04/88	0001	WU	MG/L	<	0.1		0.1	-
	0929	09/20/87	0001	WU	N	<	0.04	J	0.1	-
	0929	02/03/88	0001	WU	N	<	0.01	J	0.1	-
	0929	04/28/88	0001	WU	N	<	0.02	J	0.1	-
	0929	08/11/88	0001	WU	N	<	0.1		0.1	-
	0930	09/20/87	0001	WU	N	<	0.08	J	0.1	-
	0930	01/30/88	0001	WU	N	<	0.01	J	0.1	-
	0930	04/26/88	0001	WU	N	<	0.03	J	0.1	-
	0930	08/27/88	0001	WU	N	<	0.1		0.1	-
	0931	01/30/88	0001	WU	N	<	0.032	J	0.1	-
	0931	04/28/88	0001	WU	N	<	0.05	J	0.1	-
	0931	08/10/88	0001	WU	N	<	0.1		0.1	-
	0932	01/30/88	0001	WU	N	<	0.016	J	0.1	-
	0932	04/28/88	0001	WU	N	<	0.02	J	0.1	-
	0932	08/09/88	0001	WU	N	<	0.1		0.1	-
	0933	08/10/88	0001	WU	N	<	0.1		0.1	-
	0934	08/11/88	0001	WU	N	<	0.1		0.1	-
	0935	08/09/88	0001	WU	N	<	0.1		0.1	-
	0936	08/08/88	0001	WU	N	<	0.1		0.1	-
	0937	08/08/88	0001	WU	N	<	0.1		0.1	-
	0939	08/08/88	0001	WU	N	<	0.1		0.1	-
	0940	08/08/88	0001	WU	N	<	0.1		0.1	-
	0941	08/08/88	0001	WU	N	<	0.36		0.1	-
	0942	08/08/88	0001	WU	N	<	0.1		0.1	-
	0943	08/09/88	0001	WU	N	<	0.1		0.1	-
	0944	08/11/88	0001	WU	N	<	0.1		0.1	-
BORON	0911	09/18/87	0001	WU	MG/L		0.03	J	0.1	-
	0911	01/30/88	0001	WU	N		0.11		0.1	-
	0911	04/22/88	0001	WU	N		0.04	J	0.1	-
	0911	08/11/88	0001	WU	N	<	0.1		0.1	-
	0912	02/03/88	0001	WU	N		0.19		0.1	-
	0912	04/22/88	0001	WU	N	<	0.07	J	0.1	-
	0912	08/27/88	0001	WU	N		0.1		0.1	-
	0913	09/18/87	0001	WU	N		0.06	J	0.1	-
	0913	02/03/88	0001	WU	N		0.17		0.1	-
	0913	04/22/88	0001	WU	N		0.06	J	0.1	-
	0913	08/04/88	0001	WU	N	<	0.1		0.1	-
	0916	09/20/87	0001	WU	N		0.11		0.1	-
	0916	02/03/88	0001	WU	N		0.15		0.1	-
FLOW RELATIONSHIP CODE: N - UNKNOWN										
FORMATION OF COMPLETION CODE: WU - WASATCH - UPPER SANDSTONE										
PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT										
SAMPLE ID CODES: 0001 - FILTERED SAMPLE (.45 MICRONS)										

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:

0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
BORON	0916	04/22/88	0001	WU	MG/L		0.10		0.1	-
	0916	08/04/88	0001	WU			0.1		0.1	-
	0917	09/20/87	0001	WU			0.05	J	0.1	-
	0917	01/30/88	0001	WU			0.13		0.1	-
	0917	04/22/88	0001	WU			0.05	J	0.1	-
	0917	08/27/88	0001	WU			0.1		0.1	-
	0918	09/20/87	0001	WU			0.03	J	0.1	-
	0918	02/03/88	0001	WU			0.11		0.1	-
	0918	04/22/88	0001	WU			0.04	J	0.1	-
	0918	08/26/88	0001	WU			0.1		0.1	-
	0920	09/20/87	0001	WU			0.15		0.1	-
	0920	01/30/88	0001	WU			0.23		0.1	-
	0920	04/26/88	0001	WU			0.16		0.1	-
	0920	08/27/88	0001	WU			0.2		0.1	-
	0922	09/20/87	0001	WU			0.06	J	0.1	-
	0922	02/03/88	0001	WU			0.12		0.1	-
	0922	04/26/88	0001	WU			0.05	J	0.1	-
	0922	08/08/88	0001	WU			0.1		0.1	-
	0924	09/20/87	0001	WU			0.05	J	0.1	-
	0924	02/04/88	0001	WU			0.14		0.1	-
	0924	04/26/88	0001	WU			0.05	J	0.1	-
	0924	08/26/88	0001	WU			0.1		0.1	-
	0925	09/20/87	0001	WU			0.05	J	0.1	-
	0925	02/03/88	0001	WU			0.14		0.1	-
	0925	04/26/88	0001	WU			0.05	J	0.1	-
	0925	08/26/88	0001	WU			0.1		0.1	-
	0927	09/20/87	0001	WU			0.07	J	0.1	-
	0927	02/04/88	0001	WU			0.16		0.1	-
	0927	04/26/88	0001	WU			0.07	J	0.1	-
	0927	08/26/88	0001	WU			0.1		0.1	-
	0928	09/20/87	0001	WU			0.11		0.1	-
	0928	02/03/88	0001	WU			0.16		0.1	-
	0928	04/22/88	0001	WU			0.09	J	0.1	-
	0928	08/04/88	0001	WU			0.1		0.1	-
	0929	09/20/87	0001	WU			0.12		0.1	-
	0929	02/03/88	0001	WU			0.142		0.1	-
	0929	04/28/88	0001	WU			0.07	J	0.1	-
	0929	08/11/88	0001	WU			0.1		0.1	-
	0930	09/20/87	0001	WU			0.14		0.1	-
	0930	01/30/88	0001	WU			0.199		0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
BORON	0930	04/26/88	0001	WU	MG/L	0.14		0.1	-
	0930	08/27/88	0001	WU		0.1		0.1	-
	0931	01/30/88	0001	WU		0.142		0.1	-
	0931	04/28/88	0001	WU		0.05	J	0.1	-
	0931	08/10/88	0001	WU		0.1		0.1	-
	0932	01/30/88	0001	WU		0.143		0.1	-
	0932	04/28/88	0001	WU		0.04	J	0.1	-
	0932	08/09/88	0001	WU		0.1		0.1	-
	0933	08/10/88	0001	WU		0.1		0.1	-
	0934	08/11/88	0001	WU		0.1		0.1	-
	0935	08/09/88	0001	WU		0.2		0.1	-
	0936	08/08/88	0001	WU		0.1		0.1	-
	0937	08/08/88	0001	WU		0.1		0.1	-
	0939	08/08/88	0001	WU		0.1		0.1	-
	0940	08/08/88	0001	WU		0.1		0.1	-
	0941	08/08/88	0001	WU		0.1		0.1	-
	0942	08/08/88	0001	WU		0.1		0.1	-
	0943	08/09/88	0001	WU		0.1		0.1	-
	0944	08/11/88	0001	WU		0.1		0.1	-
BROMIDE	0913	08/04/88	0001	WU	MG/L	0.1		0.1	-
	0916	08/04/88	0001	WU		0.1		0.1	-
	0922	08/08/88	0001	WU		0.1		0.1	-
	0928	08/04/88	0001	WU		0.1		0.1	-
	0940	08/08/88	0001	WU		0.1		0.1	-
CADMIUM	0911	02/17/87	0001	WU	MG/L	0.001		0.001	-
	0911	09/18/87	0001	WU		0.005		0.005	-
	0911	01/30/88	0001	WU		0.001		0.001	-
	0911	04/22/88	0001	WU		0.001		0.001	-
	0911	08/11/88	0001	WU		0.001		0.001	-
	0911	12/10/88	0001	WU		0.001		0.001	-
	0912	02/18/87	0001	WU		0.001		0.001	-
	0912	02/03/88	0001	WU		0.001		0.001	-
	0912	04/22/88	0001	WU		0.002		0.001	-
	0912	08/27/88	0001	WU		0.001		0.001	-
	0912	12/04/88	0001	WU		0.001		0.001	-
	0913	02/18/87	0001	WU		0.001		0.001	-
	0913	09/18/87	0001	WU		0.005		0.005	-
	0913	02/03/88	0001	WU		0.002		0.001	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CADMIUM	0913	04/22/88	0001	WU	N	MG/L	<	0.002		0.001	-
	0913	08/04/88	0001	WU	N		<	0.001		0.001	-
	0913	12/10/88	0001	WU	N		<	0.001		0.001	-
	0916	02/20/87	0001	WU	N		<	0.005		0.001	-
	0916	09/20/87	0001	WU	N		<	0.005		0.005	-
	0916	02/03/88	0001	WU	N		<	0.002		0.001	-
	0916	04/22/88	0001	WU	N		<	0.011		0.001	-
	0916	08/04/88	0001	WU	N		<	0.001		0.001	-
	0916	12/07/88	0001	WU	N		<	0.001		0.001	-
	0917	02/19/87	0001	WU	N		<	0.001		0.001	-
	0917	09/20/87	0001	WU	N		<	0.005		0.001	-
	0917	01/30/88	0001	WU	N		<	0.001		0.005	-
	0917	04/22/88	0001	WU	N		<	0.003		0.001	-
	0917	08/27/88	0001	WU	N		<	0.001		0.001	-
	0917	12/07/88	0001	WU	N		<	0.001		0.001	-
	0918	02/20/87	0001	WU	N		<	0.001		0.001	-
	0918	09/20/87	0001	WU	N		<	0.001		0.001	-
	0918	02/03/88	0001	WU	N		<	0.005		0.005	-
	0918	04/22/88	0001	WU	N		<	0.001		0.001	-
	0918	08/26/88	0001	WU	N		<	0.001		0.001	-
	0918	12/04/88	0001	WU	N		<	0.001		0.001	-
	0920	09/20/87	0001	WU	N		<	0.001		0.001	-
	0920	01/30/88	0001	WU	N		<	0.005		0.005	-
	0920	04/26/88	0001	WU	N		<	0.003		0.001	-
	0920	08/27/88	0001	WU	N		<	0.003		0.001	-
	0920	12/10/88	0001	WU	N		<	0.005		0.001	-
	0922	09/20/87	0001	WU	N		<	0.005		0.001	-
	0922	02/03/88	0001	WU	N		<	0.001		0.001	-
	0922	04/26/88	0001	WU	N		<	0.001		0.001	-
	0922	08/08/88	0001	WU	N		<	0.001		0.001	-
	0922	12/10/88	0001	WU	N		<	0.001		0.001	-
	0924	09/20/87	0001	WU	N		<	0.005		0.005	-
	0924	02/04/88	0001	WU	N		<	0.001		0.001	-
	0924	04/26/88	0001	WU	N		<	0.001		0.001	-
	0924	08/26/88	0001	WU	N		<	0.001		0.001	-
	0924	12/07/88	0001	WU	N		<	0.001		0.001	-
	0925	09/20/87	0001	WU	N		<	0.005		0.005	-
	0925	02/03/88	0001	WU	N		<	0.001		0.001	-
	0925	04/26/88	0001	WU	N		<	0.002		0.001	-
	0925	08/26/88	0001	WU	N		<	0.001		0.001	-
	0925	12/07/88	0001	WU	N		<	0.001		0.001	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM FLOW COMP REL.	UNITS OF MEASURE	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CADMIUM	0927	09/20/87	0001	WU	N	<	0.005	0.005	-
	0927	02/04/88	0001	WU	N	<	0.001	0.001	-
	0927	04/26/88	0001	WU	N	<	0.009	0.001	-
	0927	08/26/88	0001	WU	N	<	0.001	0.001	-
	0927	12/04/88	0001	WU	N	<	0.001	0.001	-
	0928	09/20/87	0001	WU	N	<	0.005	0.005	-
	0928	02/03/88	0001	WU	N	<	0.001	0.001	-
	0928	04/22/88	0001	WU	N	<	0.005	0.001	-
	0928	08/04/88	0001	WU	N	<	0.001	0.001	-
	0928	12/04/88	0001	WU	N	<	0.001	0.001	-
	0929	09/20/87	0001	WU	N	<	0.005	0.005	-
	0929	02/03/88	0001	WU	N	<	0.001	0.001	-
	0929	04/28/88	0001	WU	N	<	0.003	0.001	-
	0929	08/11/88	0001	WU	N	<	0.001	0.001	-
	0930	09/20/87	0001	WU	N	<	0.005	0.005	-
	0930	01/30/88	0001	WU	N	<	0.004	0.001	-
	0930	04/26/88	0001	WU	N	<	0.021	0.001	-
	0930	08/27/88	0001	WU	N	<	0.003	0.001	-
	0931	01/30/88	0001	WU	N	<	0.001	0.001	-
	0931	04/28/88	0001	WU	N	<	0.003	0.001	-
	0931	08/10/88	0001	WU	N	<	0.001	0.001	-
	0931	12/04/88	0001	WU	N	<	0.001	0.001	-
	0932	01/30/88	0001	WU	N	<	0.001	0.001	-
	0932	04/28/88	0001	WU	N	<	0.005	0.001	-
	0932	08/09/88	0001	WU	N	<	0.005	0.001	-
	0932	12/07/88	0001	WU	N	<	0.001	0.001	-
	0933	08/10/88	0001	WU	N	<	0.001	0.001	-
	0933	12/07/88	0001	WU	N	<	0.001	0.001	-
	0934	08/11/88	0001	WU	N	<	0.001	0.001	-
	0934	12/07/88	0001	WU	N	<	0.001	0.001	-
	0935	08/09/88	0001	WU	N	<	0.012	0.001	-
	0935	12/04/88	0001	WU	N	<	0.020	0.001	-
	0936	08/08/88	0001	WU	N	<	0.002	0.001	-
	0936	12/04/88	0001	WU	N	<	0.001	0.001	-
	0937	08/08/88	0001	WU	N	<	0.004	0.001	-
	0937	12/04/88	0001	WU	N	<	0.001	0.001	-
	0939	08/08/88	0001	WU	N	<	0.001	0.001	-
	0939	12/04/88	0001	WU	N	<	0.001	0.001	-
	0940	08/08/88	0001	WU	N	<	0.001	0.001	-
	0940	12/04/88	0001	WU	N	<	0.003	0.001	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CADMIUM	0941	08/08/88	0001	WU	N	<	0.001		0.001	-
	0941	12/10/88	0001	WU	N	<	0.001		0.001	-
	0942	08/08/88	0001	WU	N	<	0.002		0.001	-
	0942	12/04/88	0001	WU	N	<	0.001		0.001	-
	0943	08/09/88	0001	WU	N	<	0.001		0.001	-
	0943	12/07/88	0001	WU	N	<	0.001		0.001	-
	0944	08/11/88	0001	WU	N	<	0.001		0.001	-
	0944	12/07/88	0001	WU	N	<	0.001		0.001	-
	0911	02/17/87	0001	WU	N		204.		0.01	-
	0911	09/18/87	0001	WU	N		86.8		0.01	-
CALCIUM	0911	01/30/88	0001	WU	N		98.3		0.01	-
	0911	04/22/88	0001	WU	N		103.		0.01	-
	0911	08/11/88	0001	WU	N		112.		0.01	-
	0911	12/10/88	0001	WU	N		105.		0.01	-
	0912	02/18/87	0001	WU	N		40.		0.01	-
	0912	02/03/88	0001	WU	N		53.4		0.01	-
	0912	04/22/88	0001	WU	N		53.9		0.01	-
	0912	08/27/88	0001	WU	N		53.1		0.01	-
	0912	12/04/88	0001	WU	N		52.5		0.01	-
	0913	02/18/87	0001	WU	N		198.		0.01	-
	0913	09/18/87	0001	WU	N		212.		0.01	-
	0913	02/03/88	0001	WU	N		238.		0.01	-
	0913	04/22/88	0001	WU	N		239.		0.01	-
	0913	08/04/88	0001	WU	N		248.		0.01	-
	0913	12/10/88	0001	WU	N		240.		0.01	-
	0916	02/20/87	0001	WU	N		286.		0.01	-
	0916	09/20/87	0001	WU	N		399.		0.01	-
	0916	02/03/88	0001	WU	N		439.		0.01	-
	0916	04/22/88	0001	WU	N		449.		0.01	-
	0916	08/04/88	0001	WU	N		481.		0.01	-
	0916	12/07/88	0001	WU	N		450.		0.01	-
	0917	02/19/87	0001	WU	N		136.		0.01	-
	0917	09/20/87	0001	WU	N		164.		0.01	-
	0917	01/30/88	0001	WU	N		161.		0.01	-
	0917	04/22/88	0001	WU	N		168.		0.01	-
	0917	08/27/88	0001	WU	N		180.		0.01	-
	0917	12/07/88	0001	WU	N		177.		0.01	-
	0918	02/20/87	0001	WU	N		139.		0.01	-
	0918	09/20/87	0001	WU	N		134.		0.01	-
	0918	02/03/88	0001	WU	N		131.		0.01	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PV1	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CALCIUM	0918	04/22/88	0001	WU	N		139.		0.01	-
	0918	08/26/88	0001	WU	N		144.		0.01	-
	0918	12/04/88	0001	WU	N		138.		0.01	-
	0920	09/20/87	0001	WU	N		564.		0.01	-
	0920	01/30/88	0001	WU	N		491.		0.01	-
	0920	04/26/88	0001	WU	N		534.		0.01	-
	0920	08/27/88	0001	WU	N		535.		0.01	-
	0920	12/10/88	0001	WU	N		503.		0.01	-
	0922	02/03/88	0001	WU	N		152.		0.01	-
	0922	04/26/88	0001	WU	N		111.		0.01	-
	0922	08/08/88	0001	WU	N		119.		0.01	-
	0922	12/10/88	0001	WU	N		120.		0.01	-
	0924	09/20/87	0001	WU	N		118.		0.01	-
	0924	02/04/88	0001	WU	N		246.		0.01	-
	0924	04/26/88	0001	WU	N		234.		0.01	-
	0924	08/26/88	0001	WU	N		244.		0.01	-
	0924	12/07/88	0001	WU	N		249.		0.01	-
	0925	09/20/87	0001	WU	N		245.		0.01	-
	0925	02/03/88	0001	WU	N		105.		0.01	-
	0925	04/26/88	0001	WU	N		106.		0.01	-
	0925	08/26/88	0001	WU	N		107.		0.01	-
	0925	12/07/88	0001	WU	N		107.		0.01	-
	0927	09/20/87	0001	WU	N		448.		0.01	-
	0927	02/04/88	0001	WU	N		424.		0.01	-
	0927	04/26/88	0001	WU	N		459.		0.01	-
	0927	08/26/88	0001	WU	N		466.		0.01	-
	0927	12/04/88	0001	WU	N		443.		0.01	-
	0928	09/20/87	0001	WU	N		351.		0.01	-
	0928	02/03/88	0001	WU	N		311.		0.01	-
	0928	04/22/88	0001	WU	N		341.		0.01	-
	0928	08/04/88	0001	WU	N		340.		0.01	-
	0928	12/04/88	0001	WU	N		320.		0.01	-
	0929	09/20/87	0001	WU	N		184.		0.01	-
	0929	02/03/88	0001	WU	N		71.7		0.01	-
	0929	04/28/88	0001	WU	N		82.7	J	0.01	-
	0929	08/11/88	0001	WU	N		86.7		0.01	-
	0930	09/20/87	0001	WU	N		565.		0.01	-
	0930	01/30/88	0001	WU	N		458.		0.01	-
	0930	04/26/88	0001	WU	N		498.		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

PARAMETER VALUE INDICATOR (PV1): < - LESS THAN DETECTION LIMIT
 SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CALCIUM	0930	08/27/88	0001	WU	N	MG/L		526.		0.01	-
	0931	01/30/88	0001	WU	N			100.		0.01	-
	0931	04/28/88	0001	WU	N			111.		0.01	-
	0931	08/10/88	0001	WU	N			113.		0.01	-
	0931	12/04/88	0001	WU	N			102.		0.01	-
	0932	01/30/88	0001	WU	N			141.		0.01	-
	0932	04/28/88	0001	WU	N			157.		0.01	-
	0932	08/09/88	0001	WU	N			153.		0.01	-
	0932	12/07/88	0001	WU	N			153.		0.01	-
	0933	08/10/88	0001	WU	N			113.		0.01	-
	0933	12/07/88	0001	WU	N			115.		0.01	-
	0934	08/11/88	0001	WU	N			106.		0.01	-
	0934	12/07/88	0001	WU	N			110.		0.01	-
	0935	08/09/88	0001	WU	N			480.		0.01	-
	0935	12/04/88	0001	WU	N			488.		0.01	-
	0936	08/08/88	0001	WU	N			249.		0.01	-
	0936	12/04/88	0001	WU	N			266.		0.01	-
	0937	08/08/88	0001	WU	N			157.		0.01	-
	0937	12/04/88	0001	WU	N			115.		0.01	-
	0939	08/08/88	0001	WU	N			225.		0.01	-
	0939	12/04/88	0001	WU	N			313.		0.01	-
	0940	08/08/88	0001	WU	N			678.		0.01	-
	0940	12/04/88	0001	WU	N			681.		0.01	-
	0941	08/08/88	0001	WU	N			60.0		0.01	-
	0941	12/10/88	0001	WU	N			60.5		0.01	-
	0942	08/08/88	0001	WU	N			101.		0.01	-
	0942	12/04/88	0001	WU	N			90.6		0.01	-
	0943	08/09/88	0001	WU	N			99.5		0.01	-
	0943	12/07/88	0001	WU	N			100.		0.01	-
	0944	08/11/88	0001	WU	N			179.		0.01	-
	0944	12/07/88	0001	WU	N			179.		0.01	-
CHLORIDE	0911	02/17/87	0001	WU	N	MG/L		2.3		1.	-
	0911	09/18/87	0001	WU	N			3.3		1.	-
	0911	01/30/88	0001	WU	N			3.8		1.	-
	0911	04/22/88	0001	WU	N			1.7		1.	-
	0911	08/11/88	0001	WU	N		<	1.0		1.	-
	0911	12/10/88	0001	WU	N		<	1.0		1.	-
	0912	02/18/87	0001	WU	N			1.7		1.	-
	0912	02/03/88	0001	WU	N			3.8		1.	-
	0912	04/22/88	0001	WU	N			4.3		1.	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CHLORIDE	0912	08/27/88	0001	WU	N	MG/L		2.1		1.	-
	0912	12/04/88	0001	WU	N			3.4		1.	-
	0913	02/18/87	0001	WU	N			22.		1.	-
	0913	09/18/87	0001	WU	N			24.3		1.	-
	0913	02/03/88	0001	WU	N			26.		1.	-
	0913	04/22/88	0001	WU	N			24.		1.	-
	0913	08/04/88	0001	WU	N			23.		1.	-
	0913	12/10/88	0001	WU	N			22.		1.	-
	0916	02/20/87	0001	WU	N			55.		1.	-
	0916	09/20/87	0001	WU	N			59.7		1.	-
	0916	02/03/88	0001	WU	N			74.		1.	-
	0916	04/22/88	0001	WU	N			74.		1.	-
	0916	08/04/88	0001	WU	N			73.		1.	-
	0916	12/07/88	0001	WU	N			69.		1.	-
	0917	02/19/87	0001	WU	N			21.		1.	-
	0917	09/20/87	0001	WU	N			19.2		1.	-
	0917	01/30/88	0001	WU	N			26.		1.	-
	0917	04/22/88	0001	WU	N			24.		1.	-
	0917	08/27/88	0001	WU	N			23.		1.	-
	0917	12/07/88	0001	WU	N			27.		1.	-
	0918	02/20/87	0001	WU	N			26.		1.	-
	0918	09/20/87	0001	WU	N			26.7		1.	-
	0918	02/03/88	0001	WU	N			32.		1.	-
	0918	04/22/88	0001	WU	N			30.		1.	-
	0918	08/26/88	0001	WU	N			31.		1.	-
	0918	12/04/88	0001	WU	N			31.		1.	-
	0920	09/20/87	0001	WU	N			36.2		1.	-
	0920	01/30/88	0001	WU	N			20.		1.	-
	0920	04/26/88	0001	WU	N			50.		1.	-
	0920	08/27/88	0001	WU	N			52.		1.	-
	0920	12/10/88	0001	WU	N			55.		1.	-
	0922	09/20/87	0001	WU	N			5.3		1.	-
	0922	02/03/88	0001	WU	N			2.5		1.	-
	0922	04/26/88	0001	WU	N			1.8		1.	-
	0922	08/08/88	0001	WU	N			1.5		1.	-
	0922	12/10/88	0001	WU	N		<	1.0		1.	-
	0924	09/20/87	0001	WU	N			22.8		1.	-
	0924	02/04/88	0001	WU	N			23.		1.	-
	0924	04/26/88	0001	WU	N			23.		1.	-
	0924	08/26/88	0001	WU	N			26.		1.	-
	0924	12/07/88	0001	WU	N			23.		1.	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CHLORIDE	0925	09/20/87	0001	WU	N	MG/L		3.2		1.	-
	0925	02/03/88	0001	WU	N			1.3		1.	-
	0925	04/26/88	0001	WU	N			0.5		1.	-
	0925	08/26/88	0001	WU	N			2.1	J	1.	-
	0925	12/07/88	0001	WU	N			2.1		1.	-
	0927	09/20/87	0001	WU	N			6.8		1.	-
	0927	02/04/88	0001	WU	N			2.5		1.	-
	0927	04/26/88	0001	WU	N			3.1		1.	-
	0927	08/26/88	0001	WU	N			6.0		1.	-
	0927	12/04/88	0001	WU	N			6.1		1.	-
	0928	09/20/87	0001	WU	N			2.7		1.	-
	0928	02/03/88	0001	WU	N		<	0.1	J	1.	-
	0928	04/22/88	0001	WU	N		<	0.5	J	1.	-
	0928	08/04/88	0001	WU	N		<	1.0		1.	-
	0928	12/04/88	0001	WU	N			1.0		1.	-
	0929	09/20/87	0001	WU	N			8.8		1.	-
	0929	02/03/88	0001	WU	N			2.5		1.	-
	0929	04/28/88	0001	WU	N			2.4	J	1.	-
	0929	08/11/88	0001	WU	N		<	1.0		1.	-
	0930	09/20/87	0001	WU	N			18.1		1.	-
	0930	01/30/88	0001	WU	N			48.		1.	-
	0930	04/26/88	0001	WU	N			25.		1.	-
	0930	08/27/88	0001	WU	N			33.		1.	-
	0931	01/30/88	0001	WU	N			3.8		1.	-
	0931	04/28/88	0001	WU	N		<	1.0		1.	-
	0931	08/10/88	0001	WU	N		<	1.0		1.	-
	0931	12/04/88	0001	WU	N		<	1.0		1.	-
	0932	01/30/88	0001	WU	N			6.3		1.	-
	0932	04/28/88	0001	WU	N			5.0		1.	-
	0932	08/09/88	0001	WU	N			4.0		1.	-
	0932	12/07/88	0001	WU	N			4.7		1.	-
	0933	08/10/88	0001	WU	N		<	1.0		1.	-
	0933	12/07/88	0001	WU	N		<	1.0		1.	-
	0934	08/11/88	0001	WU	N		<	1.0		1.	-
	0935	08/09/88	0001	WU	N			14.		1.	-
	0935	12/04/88	0001	WU	N			18.		1.	-
	0936	08/08/88	0001	WU	N			59.		1.	-
	0936	12/04/88	0001	WU	N			63.	J	1.	-
	0937	08/08/88	0001	WU	N			4.0		1.	-
	0937	12/04/88	0001	WU	N			2.1		1.	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
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OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CHLORIDE	0939	08/08/88	0001	WU	N	MG/L		16.		1.	-
	0939	12/04/88	0001	WU	N			11.		1.	-
	0940	08/08/88	0001	WU	N			700.		1.	-
	0940	12/04/88	0001	WU	N			730.		1.	-
	0941	08/08/88	0001	WU	N			5.3		1.	-
	0941	12/10/88	0001	WU	N			4.7		1.	-
	0942	08/08/88	0001	WU	N			5.3		1.	-
	0942	12/04/88	0001	WU	N			4.7		1.	-
	0943	08/09/88	0001	WU	N			1.5		1.	-
	0943	12/07/88	0001	WU	N		<	1.0		1.	-
	0944	08/11/88	0001	WU	N			1.5		1.	-
	0944	12/07/88	0001	WU	N			2.1		1.	-
CHROMIUM	0911	09/18/87	0001	WU	N	MG/L	<	0.01		0.01	-
	0911	01/30/88	0001	WU	N			0.02		0.01	-
	0911	04/22/88	0001	WU	N			0.06		0.01	-
	0911	08/11/88	0001	WU	N			0.04		0.01	-
	0911	12/10/88	0001	WU	N			0.05		0.01	-
	0912	02/03/88	0001	WU	N		<	0.01		0.01	-
	0912	04/22/88	0001	WU	N			0.03		0.01	-
	0912	08/27/88	0001	WU	N			0.03		0.01	-
	0912	12/04/88	0001	WU	N			0.03		0.01	-
	0913	09/18/87	0001	WU	N		<	0.01		0.01	-
	0913	02/03/88	0001	WU	N			0.08		0.01	-
	0913	04/22/88	0001	WU	N			0.13		0.01	-
	0913	08/04/88	0001	WU	N			0.10		0.01	-
	0913	12/10/88	0001	WU	N			0.12		0.01	-
	0916	09/20/87	0001	WU	N			0.01		0.01	-
	0916	02/03/88	0001	WU	N			0.17		0.01	-
	0916	04/22/88	0001	WU	N			0.23		0.01	-
	0916	08/04/88	0001	WU	N			0.19		0.01	-
	0916	12/07/88	0001	WU	N			0.23		0.01	-
	0917	09/20/87	0001	WU	N		<	0.01		0.01	-
	0917	01/30/88	0001	WU	N			0.06		0.01	-
	0917	04/22/88	0001	WU	N			0.09		0.01	-
	0917	08/27/88	0001	WU	N			0.09		0.01	-
	0917	12/07/88	0001	WU	N			0.10		0.01	-
	0918	09/20/87	0001	WU	N		<	0.01		0.01	-
	0918	02/03/88	0001	WU	N			0.04		0.01	-
	0918	04/22/88	0001	WU	N			0.08		0.01	-
	0918	08/26/88	0001	WU	N			0.06		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CHROMIUM	0918	12/04/88	0001	WU	N	MG/L	<	0.06		0.01	-
	0920	09/20/87	0001	WU	N			0.01		0.01	-
	0920	01/30/88	0001	WU	N			0.15		0.01	-
	0920	04/26/88	0001	WU	N			0.17		0.01	-
	0920	08/27/88	0001	WU	N			0.16		0.01	-
	0920	12/10/88	0001	WU	N			0.16		0.01	-
	0922	09/20/87	0001	WU	N		<	0.01		0.01	-
	0922	02/03/88	0001	WU	N			0.05		0.01	-
	0922	04/26/88	0001	WU	N			0.05		0.01	-
	0922	08/08/88	0001	WU	N			0.03		0.01	-
	0922	12/10/88	0001	WU	N			0.05		0.01	-
	0924	09/20/87	0001	WU	N		<	0.01		0.01	-
	0924	02/04/88	0001	WU	N			0.08		0.01	-
	0924	04/26/88	0001	WU	N			0.11		0.01	-
	0924	08/26/88	0001	WU	N			0.10		0.01	-
	0924	12/07/88	0001	WU	N			0.10		0.01	-
	0925	09/20/87	0001	WU	N		<	0.01		0.01	-
	0925	02/03/88	0001	WU	N			0.04		0.01	-
	0925	04/26/88	0001	WU	N			0.06		0.01	-
	0925	08/26/88	0001	WU	N			0.06		0.01	-
	0925	12/07/88	0001	WU	N			0.06		0.01	-
	0927	09/20/87	0001	WU	N		<	0.01		0.01	-
	0927	02/04/88	0001	WU	N			0.12		0.01	-
	0927	04/26/88	0001	WU	N			0.15		0.01	-
	0927	08/26/88	0001	WU	N			0.14		0.01	-
	0927	12/04/88	0001	WU	N		<	0.14		0.01	-
	0928	09/20/87	0001	WU	N			0.01		0.01	-
	0928	02/03/88	0001	WU	N			0.12		0.01	-
	0928	04/22/88	0001	WU	N			0.12		0.01	-
	0928	08/04/88	0001	WU	N			0.09		0.01	-
	0928	12/04/88	0001	WU	N			0.12		0.01	-
	0929	09/20/87	0001	WU	N		<	0.01		0.01	-
	0929	02/03/88	0001	WU	N			0.030		0.01	-
	0929	04/28/88	0001	WU	N			0.04	J	0.01	-
	0929	08/11/88	0001	WU	N			0.03		0.01	-
	0930	09/20/87	0001	WU	N		<	0.01		0.01	-
	0930	01/30/88	0001	WU	N			0.122		0.01	-
	0930	04/26/88	0001	WU	N			0.17		0.01	-
	0930	08/27/88	0001	WU	N			0.15		0.01	-
	0931	01/30/88	0001	WU	N			0.037		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PV1	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CHROMIUM	0931	04/28/88	0001	WU	MG/L		0.06		0.01	-
	0931	08/10/88	0001	WU	N		0.04		0.01	-
	0931	12/04/88	0001	WU	N		0.06		0.01	-
	0932	01/30/88	0001	WU	N		0.042		0.01	-
	0932	04/28/88	0001	WU	N		0.06		0.01	-
	0932	08/09/88	0001	WU	N		0.04		0.01	-
	0932	12/07/88	0001	WU	N		0.06		0.01	-
	0933	08/10/88	0001	WU	N		0.04		0.01	-
	0933	12/07/88	0001	WU	N		0.06		0.01	-
	0934	08/11/88	0001	WU	N		0.03		0.01	-
	0934	12/07/88	0001	WU	N		0.06		0.01	-
	0935	08/09/88	0001	WU	N		0.13		0.01	-
	0935	12/04/88	0001	WU	N		0.17		0.01	-
	0936	08/08/88	0001	WU	N		0.07		0.01	-
	0936	12/04/88	0001	WU	N		0.10		0.01	-
	0937	08/08/88	0001	WU	N		0.08		0.01	-
	0937	12/04/88	0001	WU	N		0.07		0.01	-
	0939	08/08/88	0001	WU	N		0.05		0.01	-
	0939	12/04/88	0001	WU	N		0.09		0.01	-
	0940	08/08/88	0001	WU	N		0.14		0.01	-
	0940	12/04/88	0001	WU	N		0.17		0.01	-
	0941	08/08/88	0001	WU	N		0.02		0.01	-
	0941	12/10/88	0001	WU	N		0.03		0.01	-
	0942	08/08/88	0001	WU	N		0.03		0.01	-
	0942	12/04/88	0001	WU	N		0.05		0.01	-
	0943	08/09/88	0001	WU	N		0.04		0.01	-
	0943	12/07/88	0001	WU	N		0.06		0.01	-
	0944	08/11/88	0001	WU	N		0.05		0.01	-
	0944	12/07/88	0001	WU	N		0.08		0.01	-
COBALT	0913	08/04/88	0001	WU	MG/L	<	0.05		0.05	-
	0916	08/04/88	0001	WU	N	<	0.05		0.05	-
	0928	08/04/88	0001	WU	N	<	0.05		0.05	-
	0935	08/09/88	0001	WU	N		0.70		0.05	-
COPPER	0911	02/17/87	0001	WU	MG/L	<	0.01	J	0.02	-
	0911	09/18/87	0001	WU	N		0.02		0.02	-
	0911	01/30/88	0001	WU	N		0.04		0.02	-
	0911	04/22/88	0001	WU	N		0.03		0.02	-
	0911	08/11/88	0001	WU	N	<	0.02		0.02	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
COPPER	0912	02/18/87	0001	WU	MG/L	<	0.01	J	0.02	-
	0912	02/03/88	0001	WU			0.01	J	0.02	-
	0912	04/22/88	0001	WU		<	0.01	J	0.02	-
	0912	08/27/88	0001	WU		<	0.02		0.02	-
	0913	02/18/87	0001	WU			0.02		0.02	-
	0913	09/18/87	0001	WU			0.02		0.02	-
	0913	02/03/88	0001	WU			0.02		0.02	-
	0913	04/22/88	0001	WU			0.02		0.02	-
	0913	08/04/88	0001	WU			0.03		0.02	-
	0916	02/20/87	0001	WU		<	0.01	J	0.02	-
	0916	09/20/87	0001	WU			0.06		0.02	-
	0916	02/03/88	0001	WU			0.05		0.02	-
	0916	04/22/88	0001	WU			0.05		0.02	-
	0916	08/04/88	0001	WU			0.06		0.02	-
	0917	02/19/87	0001	WU		<	0.01	J	0.02	-
	0917	09/20/87	0001	WU			0.02		0.02	-
	0917	01/30/88	0001	WU			0.02		0.02	-
	0917	04/22/88	0001	WU			0.02		0.02	-
	0917	08/27/88	0001	WU		<	0.02		0.02	-
	0918	02/20/87	0001	WU		<	0.01	J	0.02	-
	0918	09/20/87	0001	WU		<	0.01	J	0.02	-
	0918	02/03/88	0001	WU			0.02		0.02	-
	0918	04/22/88	0001	WU			0.02		0.02	-
	0918	08/26/88	0001	WU			0.02		0.02	-
	0920	09/20/87	0001	WU			0.05		0.02	-
	0920	01/30/88	0001	WU			0.03		0.02	-
	0920	04/26/88	0001	WU			0.03		0.02	-
	0920	08/27/88	0001	WU		<	0.02		0.02	-
	0922	09/20/87	0001	WU			0.02		0.02	-
	0922	02/03/88	0001	WU			0.01	J	0.02	-
	0922	04/26/88	0001	WU			0.01	J	0.02	-
	0922	08/08/88	0001	WU		<	0.02		0.02	-
	0924	09/20/87	0001	WU			0.03		0.02	-
	0924	02/04/88	0001	WU			0.02		0.02	-
	0924	04/26/88	0001	WU			0.02		0.02	-
	0924	08/26/88	0001	WU		<	0.02		0.02	-
	0925	09/20/87	0001	WU			0.02		0.02	-
	0925	02/03/88	0001	WU			0.01	J	0.02	-
	0925	04/26/88	0001	WU			0.01	J	0.02	-
	0925	08/26/88	0001	WU		<	0.02		0.02	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (<.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
COPPER	0927	09/20/87	0001	WU	MG/L		0.03		0.02	-
	0927	02/04/88	0001	WU	N		0.03		0.02	-
	0927	04/26/88	0001	WU	N		0.02		0.02	-
	0927	08/26/88	0001	WU	N	<	0.02		0.02	-
	0928	09/20/87	0001	WU	N	<	0.01	J	0.02	-
	0928	02/03/88	0001	WU	N		0.03		0.02	-
	0928	04/22/88	0001	WU	N		0.02		0.02	-
	0928	08/04/88	0001	WU	N		0.03		0.02	-
	0929	09/20/87	0001	WU	N	<	0.01	J	0.02	-
	0929	02/03/88	0001	WU	N	<	0.01	J	0.02	-
	0929	04/28/88	0001	WU	N		0.03	J	0.02	-
	0929	08/11/88	0001	WU	N		0.02		0.02	-
	0930	09/20/87	0001	WU	N	<	0.01	J	0.02	-
	0930	01/30/88	0001	WU	N		0.027		0.02	-
	0930	04/26/88	0001	WU	N		0.11		0.02	-
	0930	08/27/88	0001	WU	N		0.03		0.02	-
	0931	01/30/88	0001	WU	N	<	0.01	J	0.02	-
	0931	04/28/88	0001	WU	N		0.01	J	0.02	-
	0931	08/10/88	0001	WU	N	<	0.02		0.02	-
	0932	01/30/88	0001	WU	N	<	0.01	J	0.02	-
	0932	04/28/88	0001	WU	N		0.02		0.02	-
	0932	08/09/88	0001	WU	N	<	0.02		0.02	-
	0933	08/10/88	0001	WU	N	<	0.02		0.02	-
	0934	08/11/88	0001	WU	N		0.02		0.02	-
	0935	08/09/88	0001	WU	N		0.03		0.02	-
	0936	08/08/88	0001	WU	N		0.03		0.02	-
	0937	08/08/88	0001	WU	N		0.03		0.02	-
	0939	08/08/88	0001	WU	N		0.02		0.02	-
	0940	08/08/88	0001	WU	N		0.02		0.02	-
	0941	08/08/88	0001	WU	N	<	0.02		0.02	-
	0942	08/08/88	0001	WU	N	<	0.02		0.02	-
	0943	08/09/88	0001	WU	N	<	0.02		0.02	-
	0944	08/11/88	0001	WU	N	<	0.02		0.02	-
FLUORIDE	0911	02/17/87	0001	WU	MG/L		0.3		0.1	-
	0911	09/18/87	0001	WU	N		0.18		0.1	-
	0911	01/30/88	0001	WU	N		0.15		0.1	-
	0911	04/22/88	0001	WU	N		0.22		0.1	-
	0911	08/11/88	0001	WU	N		0.2		0.1	-
	0912	02/18/87	0001	WU	N		0.3		0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI VALUE	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
FLUORIDE	0912	02/03/88	0001	WU	N	MG/L		0.18		0.1	-
	0912	04/22/88	0001	WU	N			0.22		0.1	-
	0912	08/27/88	0001	WU	N			0.2		0.1	-
	0913	02/18/87	0001	WU	N			0.3		0.1	-
	0913	09/18/87	0001	WU	N			0.30		0.1	-
	0913	02/03/88	0001	WU	N			0.27		0.1	-
	0913	04/22/88	0001	WU	N			0.30		0.1	-
	0913	08/04/88	0001	WU	N			0.3		0.1	-
	0916	02/20/87	0001	WU	N			0.3		0.1	-
	0916	09/20/87	0001	WU	N			0.37		0.1	-
	0916	02/03/88	0001	WU	N			0.28		0.1	-
	0916	04/22/88	0001	WU	N			0.37		0.1	-
	0916	08/04/88	0001	WU	N			0.3		0.1	-
	0917	02/19/87	0001	WU	N			0.3		0.1	-
	0917	09/20/87	0001	WU	N			0.25		0.1	-
	0917	01/30/88	0001	WU	N			0.24		0.1	-
	0917	04/22/88	0001	WU	N			0.27		0.1	-
	0917	08/27/88	0001	WU	N			0.2		0.1	-
	0918	02/20/87	0001	WU	N			0.2		0.1	-
	0918	09/20/87	0001	WU	N			0.28		0.1	-
	0918	02/03/88	0001	WU	N			0.27		0.1	-
	0918	04/22/88	0001	WU	N			0.30		0.1	-
	0918	08/26/88	0001	WU	N			0.3		0.1	-
	0920	09/20/87	0001	WU	N			0.17		0.1	-
	0920	01/30/88	0001	WU	N			0.13		0.1	-
	0920	04/26/88	0001	WU	N			0.14		0.1	-
	0920	08/27/88	0001	WU	N			0.1		0.1	-
	0922	09/20/87	0001	WU	N			0.65		0.1	-
	0922	02/03/88	0001	WU	N			0.55		0.1	-
	0922	04/26/88	0001	WU	N			0.48		0.1	-
	0922	08/08/88	0001	WU	N			0.5		0.1	-
	0924	09/20/87	0001	WU	N			0.60		0.1	-
	0924	02/04/88	0001	WU	N			0.61		0.1	-
	0924	04/26/88	0001	WU	N			0.64		0.1	-
	0924	08/26/88	0001	WU	N			0.6		0.1	-
	0925	09/20/87	0001	WU	N			0.26		0.1	-
	0925	02/03/88	0001	WU	N			0.26		0.1	-
	0925	04/26/88	0001	WU	N			0.25		0.1	-
	0925	08/26/88	0001	WU	N			0.3		0.1	-
	0927	09/20/87	0001	WU	N			0.42		0.1	-
	0927	02/04/88	0001	WU	N			0.40		0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
FLUORIDE	0927	04/26/88	0001	WU	N	MG/L		0.42		0.1	-
	0927	08/26/88	0001	WU	N			0.4		0.1	-
	0928	09/20/87	0001	WU	N			0.37		0.1	-
	0928	02/03/88	0001	WU	N			0.40		0.1	-
	0928	04/22/88	0001	WU	N			0.30		0.1	-
	0928	08/04/88	0001	WU	N			0.3		0.1	-
	0929	09/20/87	0001	WU	N			0.29		0.1	-
	0929	02/03/88	0001	WU	N			0.18	J	0.1	-
	0929	04/28/88	0001	WU	N			0.24		0.1	-
	0930	08/11/88	0001	WU	N			0.2		0.1	-
	0930	09/20/87	0001	WU	N			0.40		0.1	-
	0930	01/30/88	0001	WU	N			0.13		0.1	-
	0930	04/26/88	0001	WU	N			0.30		0.1	-
	0931	08/27/88	0001	WU	N			0.2		0.1	-
	0931	01/30/88	0001	WU	N			0.22		0.1	-
	0931	04/28/88	0001	WU	N			0.23		0.1	-
GROSS ALPHA	0932	08/10/88	0001	WU	N			0.2		0.1	-
	0932	01/30/88	0001	WU	N			0.46		0.1	-
	0932	04/28/88	0001	WU	N			0.45		0.1	-
	0932	08/09/88	0001	WU	N			0.5		0.1	-
	0933	08/10/88	0001	WU	N			1.5		0.1	-
	0933	08/11/88	0001	WU	N			0.5		0.1	-
	0934	08/09/88	0001	WU	N			1.5		0.1	-
	0935	08/09/88	0001	WU	N			0.2		0.1	-
	0936	08/08/88	0001	WU	N			0.3		0.1	-
	0937	08/08/88	0001	WU	N			0.3		0.1	-
	0939	08/08/88	0001	WU	N			0.2		0.1	-
	0940	08/08/88	0001	WU	N			0.1		0.1	-
	0941	08/08/88	0001	WU	N			0.3		0.1	-
	0942	08/08/88	0001	WU	N			0.2		0.1	-
	0943	08/09/88	0001	WU	N			0.2		0.1	-
	0944	08/11/88	0001	WU	N			0.2		0.1	-
GROSS ALPHA	0911	09/18/87	0001	WU	N	PCI/L		980.		0.2	30.
	0911	01/30/88	0001	WU	N			970.		0.2	30.
	0911	04/22/88	0001	WU	N			1310.		0.2	40.
	0911	08/11/88	0001	WU	N			1060.		0.2	30.
	0911	12/10/88	0001	WU	N			1190.		0.2	30.
	0912	02/03/88	0001	WU	N			380.		0.2	20.
GROSS ALPHA	0912	04/22/88	0001	WU	N			480.		0.2	20.
	0912	08/27/88	0001	WU	N			280.		0.2	10.

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
GROSS ALPHA	0912	12/04/88	0001	WU	N	PCI/L		410.		0.2	20.
	0913	09/18/87	0001	WU	N			6000.		0.2	100.
	0913	02/03/88	0001	WU	N			4800.		0.2	100.
	0913	04/22/88	0001	WU	N			6000.		0.2	100.
	0913	08/04/88	0001	WU	N			9100.		0.2	100.
	0913	12/10/88	0001	WU	N			7200.		0.2	100.
	0916	09/20/87	0001	WU	N			12700.		0.2	100.
	0916	02/03/88	0001	WU	N			11800.		0.2	300.
	0916	04/22/88	0001	WU	N			14200.		0.2	200.
	0916	08/04/88	0001	WU	N			17700.		0.2	300.
	0916	12/07/88	0001	WU	N			11700.		0.2	200.
	0917	09/20/87	0001	WU	N			3400.		0.2	100.
	0917	01/30/88	0001	WU	N			3400.		0.2	100.
	0917	04/22/88	0001	WU	N			4300.		0.2	100.
	0917	08/27/88	0001	WU	N			2400.		0.2	100.
	0917	12/07/88	0001	WU	N			3100.		0.2	100.
	0918	09/20/87	0001	WU	N			1070.		0.2	40.
	0918	02/03/88	0001	WU	N			1000.		0.2	40.
	0918	04/22/88	0001	WU	N			1410.		0.2	40.
	0918	08/26/88	0001	WU	N			970.		0.2	30.
	0918	12/04/88	0001	WU	N			990.		0.2	30.
	0920	09/20/87	0001	WU	N			870.		0.2	70.
	0920	01/30/88	0001	WU	N			840.		0.2	90.
	0920	04/26/88	0001	WU	N			1300.		0.2	100.
	0920	08/27/88	0001	WU	N			890.		0.2	120.
	0920	12/10/88	0001	WU	N			750.		0.2	70.
	0922	09/20/87	0001	WU	N			150.		0.2	20.
	0922	02/03/88	0001	WU	N			100.		0.2	10.
	0922	04/26/88	0001	WU	N			66.		0.2	9.0
	0922	08/08/88	0001	WU	N			72.		0.2	9.0
	0922	12/10/88	0001	WU	N			78.		0.2	9.0
	0924	09/20/87	0001	WU	N			2300.		0.2	100.
	0924	02/04/88	0001	WU	N			2000.		0.2	100.
	0924	04/26/88	0001	WU	N			2400.		0.2	100.
	0924	08/26/88	0001	WU	N			2200.		0.2	100.
	0924	12/07/88	0001	WU	N			2800.		0.2	100.
	0925	09/20/87	0001	WU	N			1220.		0.2	30.
	0925	02/03/88	0001	WU	N			1320.		0.2	30.
	0925	04/26/88	0001	WU	N			1560.		0.2	40.
	0925	08/26/88	0001	WU	N			1350.		0.2	30.
	0925	12/07/88	0001	WU	N			1190.		0.2	30.

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
GROSS ALPHA	0927	09/20/87	0001	WU	N	PC1/L		1380.		0.2	80.
	0927	02/04/88	0001	WU	N			3200.		0.2	100.
	0927	04/26/88	0001	WU	N			3300.		0.2	100.
	0927	08/26/88	0001	WU	N			2500.		0.2	100.
	0927	12/04/88	0001	WU	N			3600.		0.2	100.
	0928	09/20/87	0001	WU	N			1100.		0.2	100.
	0928	02/03/88	0001	WU	N			1200.		0.2	100.
	0928	04/22/88	0001	WU	N			1400.		0.2	100.
	0928	08/04/88	0001	WU	N			1240.		0.2	50.
	0928	12/04/88	0001	WU	N			1440.		0.2	50.
	0929	09/20/87	0001	WU	N			77.		0.2	11.
	0929	02/03/88	0001	WU	N			17.		0.2	6.
	0929	04/28/88	0001	WU	N			12.	J	0.2	6.
	0929	08/11/88	0001	WU	N			16.		0.2	4.
	0930	09/20/87	0001	WU	N			230.		0.2	40.
	0930	01/30/88	0001	WU	N			73.		0.2	41.
	0930	04/26/88	0001	WU	N			70.		0.2	44.
	0930	08/27/88	0001	WU	N			340.		0.2	50.
	0931	01/30/88	0001	WU	N			1100.		0.2	40.
	0931	04/28/88	0001	WU	N			1880.		0.2	50.
	0931	08/10/88	0001	WU	N			1140.		0.2	30.
	0931	12/04/88	0001	WU	N			1200.		0.2	30.
	0932	01/30/88	0001	WU	N			270.		0.2	20.
	0932	04/28/88	0001	WU	N			300.		0.2	20.
	0932	08/09/88	0001	WU	N			280.		0.2	20.
	0933	08/10/88	0001	WU	N			900.		0.2	30.
	0933	12/07/88	0001	WU	N			920.		0.2	30.
	0934	08/11/88	0001	WU	N			560.		0.2	20.
	0934	12/07/88	0001	WU	N			590.		0.2	20.
	0935	08/09/88	0001	WU	N			540.		0.2	70.
	0935	12/04/88	0001	WU	N			1100.		0.2	100.
	0936	08/08/88	0001	WU	N			2000.		0.2	100.
	0936	12/04/88	0001	WU	N			1700.		0.2	100.
	0937	08/08/88	0001	WU	N			5000.		0.2	100.
	0937	12/04/88	0001	WU	N			3500.		0.2	100.
	0939	08/08/88	0001	WU	N			140.		0.2	20.
	0939	12/04/88	0001	WU	N			120.		0.2	20.
	0940	08/08/88	0001	WU	N			3300.		0.2	200.
	0940	12/04/88	0001	WU	N			2100.		0.2	100.
	0941	08/08/88	0001	WU	N			150.		0.2	10.

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
GROSS ALPHA	0941	12/10/88	0001	WU	N	PCI/L	160.		0.2	10.
	0942	08/08/88	0001	WU	N		550.		0.2	20.
	0942	12/04/88	0001	WU	N		370.		0.2	20.
	0943	08/09/88	0001	WU	N		1640.		0.2	40.
	0943	12/07/88	0001	WU	N		1720.		0.2	30.
	0944	08/11/88	0001	WU	N		590.		0.2	30.
	0944	12/07/88	0001	WU	N		560.		0.2	30.
GROSS BETA	0911	09/18/87	0001	WU	N	PCI/L	560.		1.	10.
	0911	01/30/88	0001	WU	N		470.		1.	10.
	0911	04/22/88	0001	WU	N		340.		1.	10.
	0911	08/11/88	0001	WU	N		300.		1.	10.
	0911	12/10/88	0001	WU	N		210.		1.	10.
	0912	02/03/88	0001	WU	N		210.		1.	10.
	0912	04/22/88	0001	WU	N		138.		1.	4.
	0912	08/27/88	0001	WU	N		110.		1.	4.
	0912	12/04/88	0001	WU	N		156.		1.	4.
	0913	09/18/87	0001	WU	N		3600.		1.	100.
	0913	02/03/88	0001	WU	N		2380.		1.	30.
	0913	04/22/88	0001	WU	N		2250.		1.	30.
	0913	08/04/88	0001	WU	N		2570.		1.	30.
	0913	12/10/88	0001	WU	N		1120.		1.	20.
	0916	09/20/87	0001	WU	N		8100.		1.	100.
	0916	02/03/88	0001	WU	N		5600.		1.	100.
	0916	04/22/88	0001	WU	N		5900.		1.	100.
	0916	08/04/88	0001	WU	N		6000.		1.	100.
	0916	12/07/88	0001	WU	N		3600.		1.	100.
	0917	09/20/87	0001	WU	N		2300.		1.	10.
	0917	01/30/88	0001	WU	N		1730.		1.	30.
	0917	04/22/88	0001	WU	N		1440.		1.	20.
	0917	08/27/88	0001	WU	N		1010.		1.	20.
	0917	12/07/88	0001	WU	N		950.		1.	20.
	0918	09/20/87	0001	WU	N		650.		1.	10.
	0918	02/03/88	0001	WU	N		380.		1.	10.
	0918	04/22/88	0001	WU	N		450.		1.	10.
	0918	08/26/88	0001	WU	N		360.		1.	10.
	0918	12/04/88	0001	WU	N		280.		1.	10.
	0920	09/20/87	0001	WU	N		600.		1.	30.
	0920	01/30/88	0001	WU	N		460.		1.	40.
	0920	04/26/88	0001	WU	N		450.		1.	30.
	0920	08/27/88	0001	WU	N		370.		1.	50.

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
GROSS BETA	0920	12/10/88	0001	WU	N		250.		1.	20.
	0922	09/20/87	0001	WU	N		100.		1.	10.
	0922	02/03/88	0001	WU	N		50.		1.	5.
	0922	04/26/88	0001	WU	N		39.		1.	3.
	0922	08/08/88	0001	WU	N		33.		1.	3.
	0922	12/10/88	0001	WU	N		24.		1.	3.
	0924	09/20/87	0001	WU	N		1210.		1.	20.
	0924	02/04/88	0001	WU	N		850.		1.	20.
	0924	04/26/88	0001	WU	N		900.		1.	20.
	0924	08/26/88	0001	WU	N		920.		1.	20.
	0924	12/07/88	0001	WU	N		750.		1.	20.
	0925	09/20/87	0001	WU	N		900.		1.	20.
	0925	02/03/88	0001	WU	N		575.		1.	10.
	0925	04/26/88	0001	WU	N		520.		1.	10.
	0925	08/26/88	0001	WU	N		460.		1.	10.
	0925	12/07/88	0001	WU	N		390.		1.	10.
	0927	09/20/87	0001	WU	N		2250.		1.	40.
	0927	02/04/88	0001	WU	N		1200.		1.	30.
	0927	04/26/88	0001	WU	N		1120.		1.	30.
	0927	08/26/88	0001	WU	N		980.		1.	30.
	0927	12/04/88	0001	WU	N		790.		1.	20.
	0928	09/20/87	0001	WU	N		600.		1.	30.
	0928	02/03/88	0001	WU	N		510.		1.	20.
	0928	04/22/88	0001	WU	N		510.		1.	20.
	0928	08/04/88	0001	WU	N		520.		1.	20.
	0929	12/04/88	0001	WU	N		450.		1.	10.
	0929	09/20/87	0001	WU	N		58.		1.	6.
	0929	02/03/88	0001	WU	N		30.		1.	3.
	0929	04/28/88	0001	WU	N		18.	J	1.	3.
	0929	08/11/88	0001	WU	N		20.		1.	2.
	0930	09/20/87	0001	WU	N		190.		1.	20.
	0930	01/30/88	0001	WU	N		93.		1.	23.
	0930	04/26/88	0001	WU	N		82.		1.	16.
	0930	08/27/88	0001	WU	N		160.		1.	20.
	0931	01/30/88	0001	WU	N		610.		1.	10.
	0931	04/28/88	0001	WU	N		680.		1.	10.
	0931	08/10/88	0001	WU	N		530.		1.	10.
	0931	12/04/88	0001	WU	N		370.		1.	10.
	0932	01/30/88	0001	WU	N		150.		1.	10.
	0932	04/28/88	0001	WU	N		140.		1.	10.

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
GROSS BETA	0932	08/09/88	0001	WU	N	PCI/L		140.		1.	10.
	0932	12/07/88	0001	WU	N			110.		1.	10.
	0933	08/10/88	0001	WU	N			350.		1.	10.
	0933	12/07/88	0001	WU	N			320.		1.	10.
	0934	08/11/88	0001	WU	N			210.		1.	10.
	0934	12/07/88	0001	WU	N			200.		1.	10.
	0935	08/09/88	0001	WU	N			290.		1.	20.
	0935	12/04/88	0001	WU	N			330.		1.	20.
	0936	08/08/88	0001	WU	N			700.		1.	20.
	0936	12/04/88	0001	WU	N			510.		1.	10.
	0937	08/08/88	0001	WU	N			1720.		1.	20.
	0937	12/04/88	0001	WU	N			860.		1.	10.
	0939	08/08/88	0001	WU	N			71.		1.	6.
	0939	12/04/88	0001	WU	N			49.		1.	6.
	0940	08/08/88	0001	WU	N			1400.		1.	100.
	0940	12/04/88	0001	WU	N			860.		1.	40.
	0941	08/08/88	0001	WU	N			57.		1.	3.
	0941	12/10/88	0001	WU	N			9.3		1.	2.4
	0942	08/08/88	0001	WU	N			190.		1.	10.
	0942	12/04/88	0001	WU	N			110.		1.	4.
	0943	08/09/88	0001	WU	N			640.		1.	10.
	0943	12/07/88	0001	WU	N			510.		1.	10.
	0944	08/11/88	0001	WU	N			220.		1.	10.
	0944	12/07/88	0001	WU	N			180.		1.	10.
IRON	0911	02/17/87	0001	WU	N	MG/L		< 0.03		0.03	-
	0911	09/18/87	0001	WU	N			< 0.01	J	0.03	-
	0911	01/30/88	0001	WU	N			0.49		0.03	-
	0911	04/22/88	0001	WU	N			0.04		0.03	-
	0911	08/11/88	0001	WU	N			< 0.03		0.03	-
	0911	12/10/88	0001	WU	N			0.03		0.03	-
	0912	02/18/87	0001	WU	N			< 0.03		0.03	-
	0912	02/03/88	0001	WU	N			0.16		0.03	-
	0912	04/22/88	0001	WU	N			0.02	J	0.03	-
	0912	08/27/88	0001	WU	N			0.06		0.03	-
	0912	12/04/88	0001	WU	N			< 0.03		0.03	-
	0913	02/18/87	0001	WU	N			< 0.03		0.03	-
	0913	09/18/87	0001	WU	N			< 0.01	J	0.03	-
	0913	02/03/88	0001	WU	N			1.77		0.03	-
	0913	04/22/88	0001	WU	N			0.08		0.03	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
IRON	0913	08/04/88	0001	WU	N	MG/L		0.11		0.03	-
	0913	12/10/88	0001	WU	N			0.07		0.03	-
	0916	02/20/87	0001	WU	N		<	0.03		0.03	-
	0916	09/20/87	0001	WU	N		<	0.01	J	0.03	-
	0916	02/03/88	0001	WU	N			3.74		0.03	-
	0916	04/22/88	0001	WU	N			0.13		0.03	-
	0916	08/04/88	0001	WU	N			0.19		0.03	-
	0916	12/07/88	0001	WU	N			0.12		0.03	-
	0917	02/19/87	0001	WU	N		<	0.03		0.03	-
	0917	09/20/87	0001	WU	N		<	0.01	J	0.03	-
	0917	01/30/88	0001	WU	N			1.30		0.03	-
	0917	04/22/88	0001	WU	N			0.06		0.03	-
	0917	08/27/88	0001	WU	N			0.07		0.03	-
	0917	12/07/88	0001	WU	N			0.05		0.03	-
	0918	02/20/87	0001	WU	N		<	0.03		0.03	-
	0918	09/20/87	0001	WU	N		<	0.01	J	0.03	-
	0918	02/03/88	0001	WU	N			0.81		0.03	-
	0918	04/22/88	0001	WU	N			0.04		0.03	-
	0918	08/26/88	0001	WU	N			0.05		0.03	-
	0918	12/04/88	0001	WU	N			0.04		0.03	-
	0920	09/20/87	0001	WU	N		<	0.01	J	0.03	-
	0920	01/30/88	0001	WU	N			0.16		0.03	-
	0920	04/26/88	0001	WU	N			0.23		0.03	-
	0920	08/27/88	0001	WU	N			0.27		0.03	-
	0920	12/10/88	0001	WU	N			0.15		0.03	-
	0922	09/20/87	0001	WU	N		<	0.01	J	0.03	-
	0922	02/03/88	0001	WU	N			0.06		0.03	-
	0922	04/26/88	0001	WU	N			0.10		0.03	-
	0922	08/08/88	0001	WU	N		<	0.03		0.03	-
	0922	12/10/88	0001	WU	N			0.08		0.03	-
	0924	09/20/87	0001	WU	N			0.05		0.03	-
	0924	02/04/88	0001	WU	N			0.14		0.03	-
	0924	04/26/88	0001	WU	N			0.16		0.03	-
	0924	08/26/88	0001	WU	N			0.15		0.03	-
	0924	12/07/88	0001	WU	N			0.13		0.03	-
	0925	09/20/87	0001	WU	N		<	0.01	J	0.03	-
	0925	02/03/88	0001	WU	N			0.03		0.03	-
	0925	04/26/88	0001	WU	N			0.05		0.03	-
	0925	08/26/88	0001	WU	N			0.05		0.03	-
	0925	12/07/88	0001	WU	N			0.05		0.03	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	FLOW	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
IRON	0927	09/20/87	0001	WU	N	MG/L		0.03		0.03	-
	0927	02/04/88	0001	WU	N			0.11		0.03	-
	0927	04/26/88	0001	WU	N			0.13		0.03	-
	0927	08/26/88	0001	WU	N			0.11		0.03	-
	0927	12/04/88	0001	WU	N			0.08		0.03	-
	0928	09/20/87	0001	WU	N			0.02	J	0.03	-
	0928	02/03/88	0001	WU	N			0.11		0.03	-
	0928	04/22/88	0001	WU	N			0.09		0.03	-
	0928	08/04/88	0001	WU	N			0.12		0.03	-
	0928	12/04/88	0001	WU	N			0.07		0.03	-
	0929	09/20/87	0001	WU	N		<	0.01	J	0.03	-
	0929	02/03/88	0001	WU	N			0.022	J	0.03	-
	0929	04/28/88	0001	WU	N			0.03	J	0.03	-
	0929	08/11/88	0001	WU	N		<	0.03		0.03	-
	0930	09/20/87	0001	WU	N		<	0.01	J	0.03	-
	0930	01/30/88	0001	WU	N			0.158		0.03	-
	0930	04/26/88	0001	WU	N			0.71		0.03	-
	0930	08/27/88	0001	WU	N			0.27		0.03	-
	0931	01/30/88	0001	WU	N			0.024	J	0.03	-
	0931	04/28/88	0001	WU	N			0.04		0.03	-
	0931	08/10/88	0001	WU	N			0.10		0.03	-
	0931	12/04/88	0001	WU	N			0.03		0.03	-
	0932	01/30/88	0001	WU	N			0.043		0.03	-
	0932	04/28/88	0001	WU	N			0.05		0.03	-
	0932	08/09/88	0001	WU	N			0.14		0.03	-
	0932	12/07/88	0001	WU	N			0.12		0.03	-
	0933	08/10/88	0001	WU	N		<	0.03		0.03	-
	0933	12/07/88	0001	WU	N			0.06		0.03	-
	0934	08/11/88	0001	WU	N		<	0.03		0.03	-
	0934	12/07/88	0001	WU	N			0.06		0.03	-
	0935	08/09/88	0001	WU	N			0.63		0.03	-
	0935	12/04/88	0001	WU	N			0.20		0.03	-
	0936	08/08/88	0001	WU	N			0.06		0.03	-
	0936	12/04/88	0001	WU	N			0.06		0.03	-
	0937	08/08/88	0001	WU	N			0.06		0.03	-
	0937	12/04/88	0001	WU	N			0.04		0.03	-
	0939	08/08/88	0001	WU	N			0.06		0.03	-
	0939	12/04/88	0001	WU	N			0.68		0.03	-
	0940	08/08/88	0001	WU	N			0.19		0.03	-
	0940	12/04/88	0001	WU	N			0.12		0.03	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (<.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
IRON	0941	08/08/88	0001	WU	N	MG/L	<	0.03		0.03	-
	0941	12/10/88	0001	WU	N			0.03		0.03	-
	0942	08/08/88	0001	WU	N			0.04		0.03	-
	0942	12/04/88	0001	WU	N		<	0.03		0.03	-
	0943	08/09/88	0001	WU	N		<	0.03		0.03	-
	0943	12/07/88	0001	WU	N			0.06		0.03	-
	0944	08/11/88	0001	WU	N		<	0.03		0.03	-
	0944	12/07/88	0001	WU	N			0.07		0.03	-
LEAD	0911	02/17/87	0001	WU	N	MG/L	<	0.001	J	0.01	-
	0911	09/18/87	0001	WU	N		<	0.02		0.02	-
	0911	01/30/88	0001	WU	N		<	0.01		0.01	-
	0911	04/22/88	0001	WU	N		<	0.01		0.01	-
	0911	08/11/88	0001	WU	N		<	0.01		0.01	-
	0911	12/10/88	0001	WU	N		<	0.01		0.01	-
	0912	02/18/87	0001	WU	N		<	0.001	J	0.01	-
	0912	02/03/88	0001	WU	N		<	0.01		0.01	-
	0912	04/22/88	0001	WU	N		<	0.01		0.01	-
	0912	08/27/88	0001	WU	N		<	0.01		0.01	-
	0912	12/04/88	0001	WU	N		<	0.01		0.01	-
	0913	02/18/87	0001	WU	N			0.001	J	0.01	-
	0913	09/18/87	0001	WU	N		<	0.02		0.02	-
	0913	02/03/88	0001	WU	N		<	0.01		0.01	-
	0913	04/22/88	0001	WU	N		<	0.01		0.01	-
	0913	08/04/88	0001	WU	N		<	0.01		0.01	-
	0913	12/10/88	0001	WU	N		<	0.01		0.01	-
	0916	02/20/87	0001	WU	N			0.001	J	0.01	-
	0916	09/20/87	0001	WU	N		<	0.02		0.02	-
	0916	02/03/88	0001	WU	N		<	0.01		0.01	-
	0916	04/22/88	0001	WU	N			0.01		0.01	-
	0916	08/04/88	0001	WU	N		<	0.01		0.01	-
	0916	12/07/88	0001	WU	N		<	0.01		0.01	-
	0917	02/19/87	0001	WU	N		<	0.001	J	0.01	-
	0917	09/20/87	0001	WU	N		<	0.02		0.02	-
	0917	01/30/88	0001	WU	N		<	0.01		0.01	-
	0917	04/22/88	0001	WU	N		<	0.01		0.01	-
	0917	08/27/88	0001	WU	N		<	0.01		0.01	-
	0917	12/07/88	0001	WU	N		<	0.01		0.01	-
	0918	02/20/87	0001	WU	N			0.013		0.01	-
	0918	09/20/87	0001	WU	N		<	0.02		0.02	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
LEAD	0918	02/03/88	0001	WU	N	MG/L	<	0.01		0.01	-
	0918	04/22/88	0001	WU	N		<	0.01		0.01	-
	0918	08/26/88	0001	WU	N		<	0.01		0.01	-
	0918	12/04/88	0001	WU	N		<	0.01		0.01	-
	0920	09/20/87	0001	WU	N			0.03		0.01	-
	0920	01/30/88	0001	WU	N			0.01		0.01	-
	0920	04/26/88	0001	WU	N		<	0.01		0.01	-
	0920	08/27/88	0001	WU	N			0.01		0.01	-
	0920	12/10/88	0001	WU	N		<	0.01		0.01	-
	0922	09/20/87	0001	WU	N		<	0.01		0.01	-
	0922	02/03/88	0001	WU	N		<	0.01		0.01	-
	0922	04/26/88	0001	WU	N		<	0.01		0.01	-
	0922	08/08/88	0001	WU	N		<	0.01		0.01	-
	0922	12/10/88	0001	WU	N		<	0.01		0.01	-
	0924	09/20/87	0001	WU	N		<	0.01		0.01	-
	0924	02/04/88	0001	WU	N		<	0.01		0.01	-
	0924	04/26/88	0001	WU	N		<	0.01		0.01	-
	0924	08/26/88	0001	WU	N		<	0.01		0.01	-
	0924	12/07/88	0001	WU	N		<	0.01		0.01	-
	0925	09/20/87	0001	WU	N		<	0.01		0.01	-
	0925	02/03/88	0001	WU	N		<	0.01		0.01	-
	0925	04/26/88	0001	WU	N		<	0.01		0.01	-
	0925	08/26/88	0001	WU	N		<	0.01		0.01	-
	0925	12/07/88	0001	WU	N		<	0.01		0.01	-
	0927	09/20/87	0001	WU	N		<	0.01		0.01	-
	0927	02/04/88	0001	WU	N		<	0.01		0.01	-
	0927	04/26/88	0001	WU	N			0.02		0.01	-
	0927	08/26/88	0001	WU	N		<	0.01		0.01	-
	0927	12/04/88	0001	WU	N		<	0.01		0.01	-
	0928	09/20/87	0001	WU	N		<	0.02		0.02	-
	0928	02/03/88	0001	WU	N		<	0.01		0.01	-
	0928	04/22/88	0001	WU	N		<	0.01		0.01	-
	0928	08/04/88	0001	WU	N		<	0.01		0.01	-
	0928	12/04/88	0001	WU	N		<	0.01		0.01	-
	0929	09/20/87	0001	WU	N		<	0.02		0.02	-
	0929	02/03/88	0001	WU	N		<	0.01		0.01	-
	0929	04/28/88	0001	WU	N		<	0.01	J	0.01	-
	0929	08/11/88	0001	WU	N		<	0.01		0.01	-
	0930	09/20/87	0001	WU	N		<	0.02		0.02	-
	0930	01/30/88	0001	WU	N			0.01		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
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OTHER PARAMETER VALUE FLAGS:
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GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
LEAD	0930	04/26/88	0001	WU	MG/L	<	0.01	0.01	-
	0930	08/27/88	0001	WU	MG/L	<	0.01	0.01	-
	0931	01/30/88	0001	WU	MG/L	<	0.01	0.01	-
	0931	04/28/88	0001	WU	MG/L	<	0.01	0.01	-
	0931	08/10/88	0001	WU	MG/L	<	0.01	0.01	-
	0931	12/04/88	0001	WU	MG/L	<	0.01	0.01	-
	0932	01/30/88	0001	WU	MG/L	<	0.01	0.01	-
	0932	04/28/88	0001	WU	MG/L	<	0.01	0.01	-
	0932	08/09/88	0001	WU	MG/L	<	0.01	0.01	-
	0932	12/07/88	0001	WU	MG/L	<	0.01	0.01	-
	0933	08/10/88	0001	WU	MG/L	<	0.01	0.01	-
	0933	12/07/88	0001	WU	MG/L	<	0.01	0.01	-
	0934	08/11/88	0001	WU	MG/L	<	0.02	0.01	-
	0934	12/07/88	0001	WU	MG/L	<	0.01	0.01	-
	0935	08/09/88	0001	WU	MG/L	<	0.01	0.01	-
	0935	12/04/88	0001	WU	MG/L	<	0.01	0.01	-
	0936	08/08/88	0001	WU	MG/L	<	0.01	0.01	-
	0936	12/04/88	0001	WU	MG/L	<	0.01	0.01	-
	0937	08/08/88	0001	WU	MG/L	<	0.01	0.01	-
	0937	12/04/88	0001	WU	MG/L	<	0.01	0.01	-
	0939	08/08/88	0001	WU	MG/L	<	0.01	0.01	-
	0939	12/04/88	0001	WU	MG/L	<	0.01	0.01	-
	0940	08/08/88	0001	WU	MG/L	<	0.01	0.01	-
	0940	12/04/88	0001	WU	MG/L	<	0.01	0.01	-
	0941	08/08/88	0001	WU	MG/L	<	0.01	0.01	-
	0941	12/10/88	0001	WU	MG/L	<	0.01	0.01	-
	0942	08/08/88	0001	WU	MG/L	<	0.01	0.01	-
	0942	12/04/88	0001	WU	MG/L	<	0.01	0.01	-
	0943	08/09/88	0001	WU	MG/L	<	0.01	0.01	-
	0943	12/07/88	0001	WU	MG/L	<	0.01	0.01	-
	0944	08/11/88	0001	WU	MG/L	<	0.01	0.01	-
	0944	12/07/88	0001	WU	MG/L	<	0.01	0.01	-
LEAD-210	0911	09/18/87	0001	WU	PCI/L	3.3		1.5	1.1
	0911	01/30/88	0001	WU	PCI/L	1.0		1.5	1.1
	0911	04/22/88	0001	WU	PCI/L	1.7		1.5	1.1
	0911	08/11/88	0001	WU	PCI/L	1.0		1.5	1.0
	0912	02/03/88	0001	WU	PCI/L	46.		1.5	2.
	0912	04/22/88	0001	WU	PCI/L	77.		1.5	3.
	0912	08/27/88	0001	WU	PCI/L	9.5		1.5	1.1
	0913	09/18/87	0001	WU	PCI/L	140.		1.5	10.

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
LEAD-210	0913	02/03/88	0001	WU	N	PCI/L		100.		1.5	3.
	0913	04/22/88	0001	WU	N			22.		1.5	2.
	0913	08/04/88	0001	WU	N			94.		1.5	4.
	0916	09/20/87	0001	WU	N			19.		1.5	2.
	0916	02/03/88	0001	WU	N			20.		1.5	2.
	0916	04/22/88	0001	WU	N			5.0		1.5	1.2
	0916	08/04/88	0001	WU	N			8.1		1.5	1.2
	0917	09/20/87	0001	WU	N			2.9		1.5	1.1
	0917	01/30/88	0001	WU	N			0.0		1.5	0.9
	0917	04/22/88	0001	WU	N			1.2		1.5	1.0
	0917	08/27/88	0001	WU	N			2.1		1.5	0.8
	0918	09/20/87	0001	WU	N			4.1		1.5	1.1
	0918	02/03/88	0001	WU	N			0.6		1.5	1.0
	0918	04/22/88	0001	WU	N			0.3		1.5	0.8
	0918	08/26/88	0001	WU	N			0.9		1.5	0.8
	0920	09/20/87	0001	WU	N			9.5		1.5	1.4
	0920	01/30/88	0001	WU	N			15.		1.5	1.
	0920	04/26/88	0001	WU	N			11.		1.5	1.
	0920	08/27/88	0001	WU	N			14.		1.5	1.
	0922	09/20/87	0001	WU	N			0.9		1.5	1.0
	0922	02/03/88	0001	WU	N			1.1		1.5	0.8
	0922	04/26/88	0001	WU	N			0.0		1.5	0.9
	0922	08/08/88	0001	WU	N			1.8		1.5	1.1
	0924	09/20/87	0001	WU	N			21.		1.5	2.
	0924	02/04/88	0001	WU	N			18.		1.5	1.
	0924	04/26/88	0001	WU	N			9.9		1.5	1.1
	0924	08/26/88	0001	WU	N			15.		1.5	1.
	0925	09/20/87	0001	WU	N			1.8		1.5	1.2
	0925	02/03/88	0001	WU	N			1.3		1.5	0.8
	0925	04/26/88	0001	WU	N			0.0		1.5	0.8
	0925	08/26/88	0001	WU	N			0.4		1.5	0.8
	0927	09/20/87	0001	WU	N			5.7		1.5	1.5
	0927	02/04/88	0001	WU	N			5.5		1.5	1.0
	0927	04/26/88	0001	WU	N			3.3		1.5	1.0
	0927	08/26/88	0001	WU	N			5.5		1.5	1.1
	0928	09/20/87	0001	WU	N			8.8		1.5	1.3
	0928	02/03/88	0001	WU	N			8.6		1.5	1.1
	0928	04/22/88	0001	WU	N			7.3		1.5	1.1
	0928	08/04/88	0001	WU	N			1.3		1.5	1.1
	0929	09/20/87	0001	WU	N			0.4		1.5	1.0
	0929	02/03/88	0001	WU	N			0.0		1.5	0.8

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
LEAD-210	0929	04/28/88	0001	WU	N	PC1/L		0.7	J	1.5	1.2
	0929	08/11/88	0001	WU	N			0.5		1.5	0.8
	0930	09/20/87	0001	WU	N			0.9		1.5	1.1
	0930	01/30/88	0001	WU	N			1.4		1.5	1.0
	0930	04/26/88	0001	WU	N			2.1		1.5	1.4
	0930	08/27/88	0001	WU	N			1.6		1.5	0.9
	0931	01/30/88	0001	WU	N			0.9		1.5	0.8
	0931	04/28/88	0001	WU	N			0.7		1.5	1.1
	0931	08/10/88	0001	WU	N			13.		1.5	1.
	0932	01/30/88	0001	WU	N			24.		1.5	1.
	0932	04/28/88	0001	WU	N			21.		1.5	2.
	0932	08/09/88	0001	WU	N			29.		1.5	2.
	0933	08/10/88	0001	WU	N			2.9		1.5	1.6
	0934	08/11/88	0001	WU	N			2.4		1.5	1.3
	0935	08/09/88	0001	WU	N			7.2		1.5	1.5
	0936	08/08/88	0001	WU	N			3.4		1.5	1.2
	0937	08/08/88	0001	WU	N			5.2		1.5	1.2
	0939	08/08/88	0001	WU	N			1.8		1.5	1.2
	0940	08/08/88	0001	WU	N			20.		1.5	2.
	0941	08/08/88	0001	WU	N			0.8		1.5	1.0
	0942	08/08/88	0001	WU	N			2.2		1.5	1.2
	0943	08/09/88	0001	WU	N			1.9		1.5	1.2
	0944	08/11/88	0001	WU	N			1.0		1.5	0.7
MAGNESIUM	0911	02/17/87	0001	WU	N	MG/L		48.3		0.001	-
	0911	09/18/87	0001	WU	N			21.3		0.001	-
	0911	01/30/88	0001	WU	N			23.4		0.001	-
	0911	04/22/88	0001	WU	N			22.8		0.001	-
	0911	08/11/88	0001	WU	N			22.7		0.001	-
	0911	12/10/88	0001	WU	N			23.4		0.001	-
	0912	02/18/87	0001	WU	N			5.25		0.001	-
	0912	02/03/88	0001	WU	N			11.3		0.001	-
	0912	04/22/88	0001	WU	N			10.3		0.001	-
	0912	08/27/88	0001	WU	N			10.7		0.001	-
	0912	12/04/88	0001	WU	N			10.7		0.001	-
	0913	02/18/87	0001	WU	N			39.4		0.001	-
	0913	09/18/87	0001	WU	N			44.8		0.001	-
	0913	02/03/88	0001	WU	N			49.6		0.001	-
	0913	04/22/88	0001	WU	N			46.3		0.001	-
	0913	08/04/88	0001	WU	N			48.7		0.001	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MAGNESIUM	0913	12/10/88	0001	WU	N	MG/L		47.8		0.001	-
	0916	02/20/87	0001	WU	N			70.9		0.001	-
	0916	09/20/87	0001	WU	N			76.5		0.001	-
	0916	02/03/88	0001	WU	N			90.6		0.001	-
	0916	04/22/88	0001	WU	N			84.7		0.001	-
	0916	08/04/88	0001	WU	N			91.9		0.001	-
	0916	12/07/88	0001	WU	N			83.8		0.001	-
	0917	02/19/87	0001	WU	N			28.6		0.001	-
	0917	09/20/87	0001	WU	N			33.3		0.001	-
	0917	01/30/88	0001	WU	N			32.2		0.001	-
	0917	04/22/88	0001	WU	N			32.0		0.001	-
	0917	08/27/88	0001	WU	N			34.6		0.001	-
	0917	12/07/88	0001	WU	N			32.9		0.001	-
	0918	02/20/87	0001	WU	N			22.9		0.001	-
	0918	09/20/87	0001	WU	N			25.5		0.001	-
	0918	02/03/88	0001	WU	N			24.1		0.001	-
	0918	04/22/88	0001	WU	N			25.0		0.001	-
	0918	08/26/88	0001	WU	N			25.5		0.001	-
	0920	12/04/88	0001	WU	N			23.9		0.001	-
	0920	09/20/87	0001	WU	N			278.		0.001	-
	0920	01/30/88	0001	WU	N			265.		0.001	-
	0920	04/26/88	0001	WU	N			289.		0.001	-
	0920	08/27/88	0001	WU	N			283.		0.001	-
	0920	12/10/88	0001	WU	N			269.		0.001	-
	0922	09/20/87	0001	WU	N			31.6		0.001	-
	0922	02/03/88	0001	WU	N			26.3		0.001	-
	0922	04/26/88	0001	WU	N			29.7		0.001	-
	0922	08/08/88	0001	WU	N			32.9		0.001	-
	0922	12/10/88	0001	WU	N			29.4		0.001	-
	0924	09/20/87	0001	WU	N			41.6		0.001	-
	0924	02/04/88	0001	WU	N			47.4		0.001	-
	0924	04/26/88	0001	WU	N			45.6		0.001	-
	0924	08/26/88	0001	WU	N			48.8		0.001	-
	0925	12/07/88	0001	WU	N			47.3		0.001	-
	0925	09/20/87	0001	WU	N			18.8		0.001	-
	0925	02/03/88	0001	WU	N			20.3		0.001	-
	0925	04/26/88	0001	WU	N			19.6		0.001	-
	0925	08/26/88	0001	WU	N			20.4		0.001	-
	0925	12/07/88	0001	WU	N			20.0		0.001	-
	0927	09/20/87	0001	WU	N			80.7		0.001	-
	0927	02/04/88	0001	WU	N			85.3		0.001	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MAGNESIUM	0927	04/26/88	0001	WU	N	MG/L		85.4		0.001	-
	0927	08/26/88	0001	WU	N			91.6		0.001	-
	0927	12/04/88	0001	WU	N			85.0		0.001	-
	0928	09/20/87	0001	WU	N			86.6		0.001	-
	0928	02/03/88	0001	WU	N			82.2		0.001	-
	0928	04/22/88	0001	WU	N			83.9		0.001	-
	0928	08/04/88	0001	WU	N			89.6		0.001	-
	0928	12/04/88	0001	WU	N			83.2		0.001	-
	0929	09/20/87	0001	WU	N			36.7		0.001	-
	0929	02/03/88	0001	WU	N			17.3		0.001	-
	0929	04/28/88	0001	WU	N			19.0	J	0.001	-
	0929	08/11/88	0001	WU	N			19.4		0.001	-
	0930	09/20/87	0001	WU	N			195.		0.001	-
	0930	01/30/88	0001	WU	N			238.		0.001	-
	0930	04/26/88	0001	WU	N			231.		0.001	-
	0930	08/27/88	0001	WU	N			219.		0.001	-
	0931	01/30/88	0001	WU	N			19.3		0.001	-
	0931	04/28/88	0001	WU	N			20.1		0.001	-
	0931	08/10/88	0001	WU	N			20.2		0.001	-
	0931	12/04/88	0001	WU	N			18.6		0.001	-
	0932	01/30/88	0001	WU	N			30.0		0.001	-
	0932	04/28/88	0001	WU	N			31.7		0.001	-
	0932	08/09/88	0001	WU	N			31.3		0.001	-
	0932	12/07/88	0001	WU	N			30.6		0.001	-
	0933	08/10/88	0001	WU	N			21.0		0.001	-
	0933	12/07/88	0001	WU	N			20.4		0.001	-
	0934	08/11/88	0001	WU	N			21.7		0.001	-
	0934	12/07/88	0001	WU	N			21.2		0.001	-
	0935	08/09/88	0001	WU	N			291.		0.001	-
	0935	12/04/88	0001	WU	N			324.		0.001	-
	0936	08/08/88	0001	WU	N			42.0		0.001	-
	0936	12/04/88	0001	WU	N			44.5		0.001	-
	0937	08/08/88	0001	WU	N			29.5		0.001	-
	0937	12/04/88	0001	WU	N			21.0		0.001	-
	0939	08/08/88	0001	WU	N			45.3		0.001	-
	0939	12/04/88	0001	WU	N			62.3		0.001	-
	0940	08/08/88	0001	WU	N			143.		0.001	-
	0940	12/04/88	0001	WU	N			140.		0.001	-
	0941	08/08/88	0001	WU	N			10.3		0.001	-
	0941	12/10/88	0001	WU	N			10.4		0.001	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MAGNESIUM	0942	08/08/88	0001	WU	MG/L		23.3		0.001	-
	0942	12/04/88	0001	WU	N		20.5		0.001	-
	0943	08/09/88	0001	WU	N		15.7		0.001	-
	0943	12/07/88	0001	WU	N		15.3		0.001	-
	0944	08/11/88	0001	WU	N		36.3		0.001	-
	0944	12/07/88	0001	WU	N		35.0		0.001	-
MANGANESE	0911	02/17/87	0001	WU	MG/L		0.40		0.01	-
	0911	09/18/87	0001	WU	N		0.10		0.01	-
	0911	01/30/88	0001	WU	N		0.10		0.01	-
	0911	04/22/88	0001	WU	N		0.09		0.01	-
	0911	08/11/88	0001	WU	N		0.10		0.01	-
	0911	12/10/88	0001	WU	N		0.09		0.01	-
	0912	02/18/87	0001	WU	N		0.02		0.01	-
	0912	02/03/88	0001	WU	N		0.01		0.01	-
	0912	04/22/88	0001	WU	N		0.02		0.01	-
	0912	08/27/88	0001	WU	N		0.08		0.01	-
	0912	12/04/88	0001	WU	N		0.06		0.01	-
	0913	02/18/87	0001	WU	N		0.03		0.01	-
	0913	09/18/87	0001	WU	N		0.03		0.01	-
	0913	02/03/88	0001	WU	N		0.02		0.01	-
	0913	04/22/88	0001	WU	N		0.02		0.01	-
	0913	08/04/88	0001	WU	N		0.03		0.01	-
	0913	12/10/88	0001	WU	N		0.02		0.01	-
	0916	02/20/87	0001	WU	N		0.03		0.01	-
	0916	09/20/87	0001	WU	N		0.04		0.01	-
	0916	02/03/88	0001	WU	N		0.02		0.01	-
	0916	04/22/88	0001	WU	N		0.03		0.01	-
	0916	08/04/88	0001	WU	N		0.03		0.01	-
	0916	12/07/88	0001	WU	N		0.03		0.01	-
	0917	02/19/87	0001	WU	N		0.01		0.01	-
	0917	09/20/87	0001	WU	N		0.01		0.01	-
	0917	01/30/88	0001	WU	N		0.01		0.01	-
	0917	04/22/88	0001	WU	N		0.01		0.01	-
	0917	08/27/88	0001	WU	N		0.01		0.01	-
	0917	12/07/88	0001	WU	N		0.01		0.01	-
	0918	02/20/87	0001	WU	N		0.04		0.01	-
	0918	09/20/87	0001	WU	N		0.01		0.01	-
	0918	02/03/88	0001	WU	N		0.01		0.01	-
	0918	04/22/88	0001	WU	N		0.01		0.01	-
	0918	08/26/88	0001	WU	N		0.01		0.01	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (<.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MANGANESE	0918	12/04/88	0001	WU	MG/L	<	0.01		0.01	-
	0920	09/20/87	0001	WU			15.0		0.01	-
	0920	01/30/88	0001	WU			14.2		0.01	-
	0920	04/26/88	0001	WU			15.1		0.01	-
	0920	08/27/88	0001	WU			15.6		0.01	-
	0920	12/10/88	0001	WU			14.7		0.01	-
	0922	09/20/87	0001	WU			0.39		0.01	-
	0922	02/03/88	0001	WU			0.25		0.01	-
	0922	04/26/88	0001	WU			0.26		0.01	-
	0922	08/08/88	0001	WU			0.18		0.01	-
	0922	12/10/88	0001	WU			0.22		0.01	-
	0924	09/20/87	0001	WU			0.13		0.01	-
	0924	02/04/88	0001	WU			0.14		0.01	-
	0924	04/26/88	0001	WU			0.14		0.01	-
	0924	08/26/88	0001	WU			0.13		0.01	-
	0924	12/07/88	0001	WU			0.12		0.01	-
	0925	09/20/87	0001	WU			0.04		0.01	-
	0925	02/03/88	0001	WU			0.02		0.01	-
	0925	04/26/88	0001	WU			0.01		0.01	-
	0925	08/26/88	0001	WU			0.01		0.01	-
	0925	12/07/88	0001	WU		<	0.01		0.01	-
	0927	09/20/87	0001	WU			0.16		0.01	-
	0927	02/04/88	0001	WU			0.15		0.01	-
	0927	04/26/88	0001	WU			0.15		0.01	-
	0927	08/26/88	0001	WU			0.14		0.01	-
	0927	12/04/88	0001	WU			0.15		0.01	-
	0928	09/20/87	0001	WU			0.02		0.01	-
	0928	02/03/88	0001	WU			0.15		0.01	-
	0928	04/22/88	0001	WU			0.02		0.01	-
	0928	08/04/88	0001	WU			0.02		0.01	-
	0928	12/04/88	0001	WU			0.02		0.01	-
	0929	09/20/87	0001	WU			0.04		0.01	-
	0929	02/03/88	0001	WU			0.044		0.01	-
	0929	04/28/88	0001	WU			0.05	J	0.01	-
	0929	08/11/88	0001	WU			0.07		0.01	-
	0930	09/20/87	0001	WU			9.82		0.01	-
	0930	01/30/88	0001	WU			19.0		0.01	-
	0930	04/26/88	0001	WU			17.5		0.01	-
	0930	08/27/88	0001	WU			12.7		0.01	-
	0931	01/30/88	0001	WU			0.023		0.01	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MANGANESE	0931	04/28/88	0001	WU	N	MG/L	<	0.01		0.01	-
	0931	08/10/88	0001	WU	N		<	0.01		0.01	-
	0931	12/04/88	0001	WU	N		<	0.01		0.01	-
	0932	01/30/88	0001	WU	N			0.140		0.01	-
	0932	04/28/88	0001	WU	N			0.11		0.01	-
	0932	08/09/88	0001	WU	N			0.10		0.01	-
	0932	12/07/88	0001	WU	N			0.10		0.01	-
	0933	08/10/88	0001	WU	N			0.05		0.01	-
	0933	12/07/88	0001	WU	N		<	0.01		0.01	-
	0934	08/11/88	0001	WU	N			0.06		0.01	-
	0934	12/07/88	0001	WU	N			0.03		0.01	-
	0935	08/09/88	0001	WU	N			26.7		0.01	-
	0935	12/04/88	0001	WU	N			27.7		0.01	-
	0936	08/08/88	0001	WU	N			0.08		0.01	-
	0936	12/04/88	0001	WU	N			0.06		0.01	-
	0937	08/08/88	0001	WU	N			0.14		0.01	-
	0937	12/04/88	0001	WU	N			0.08		0.01	-
	0939	08/08/88	0001	WU	N			0.17		0.01	-
	0939	12/04/88	0001	WU	N			0.39		0.01	-
	0940	08/08/88	0001	WU	N			5.02		0.01	-
	0940	12/04/88	0001	WU	N			5.35		0.01	-
	0941	08/08/88	0001	WU	N		<	0.01		0.01	-
	0941	12/10/88	0001	WU	N			0.01		0.01	-
	0942	08/08/88	0001	WU	N			0.09		0.01	-
	0942	12/04/88	0001	WU	N			0.03		0.01	-
	0943	08/09/88	0001	WU	N			0.03		0.01	-
	0943	12/07/88	0001	WU	N			0.01		0.01	-
	0944	08/11/88	0001	WU	N			0.02		0.01	-
	0944	12/07/88	0001	WU	N			0.03		0.01	-
MERCURY	0911	02/17/87	0001	WU	N	MG/L	<	0.0002		0.0002	-
	0911	09/18/87	0001	WU	N		<	0.0002		0.0002	-
	0911	01/30/88	0001	WU	N		<	0.0004		0.0002	-
	0911	04/22/88	0001	WU	N		<	0.0002		0.0002	-
	0911	08/11/88	0001	WU	N		<	0.0002		0.0002	-
	0912	02/18/87	0001	WU	N		<	0.0002		0.0002	-
	0912	02/03/88	0001	WU	N		<	0.0003		0.0002	-
	0912	04/22/88	0001	WU	N		<	0.0002		0.0002	-
	0912	08/27/88	0001	WU	N		<	0.0002		0.0002	-
	0913	02/18/87	0001	WU	N		<	0.0002		0.0002	-
	0913	09/18/87	0001	WU	N		<	0.0002		0.0002	-
	0913										

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MERCURY	0913	02/03/88	0001	HU	N	MG/L		0.0004		0.0002	-
	0913	04/22/88	0001	HU	N			0.0002		0.0002	-
	0913	08/04/88	0001	HU	N			0.0002		0.0002	-
	0916	02/20/87	0001	HU	N			0.0002		0.0002	-
	0916	09/20/87	0001	HU	N			0.0002		0.0002	-
	0916	02/03/88	0001	HU	N			0.0005		0.0002	-
	0916	04/22/88	0001	HU	N			0.0002		0.0002	-
	0916	08/04/88	0001	HU	N			0.0002		0.0002	-
	0917	02/19/87	0001	HU	N			0.0002		0.0002	-
	0917	09/20/87	0001	HU	N			0.0002		0.0002	-
	0917	01/30/88	0001	HU	N			0.0004		0.0002	-
	0917	04/22/88	0001	HU	N			0.0002		0.0002	-
	0917	08/27/88	0001	HU	N			0.0002		0.0002	-
	0918	02/20/87	0001	HU	N			0.0002		0.0002	-
	0918	09/20/87	0001	HU	N			0.0002		0.0002	-
	0918	02/03/88	0001	HU	N			0.0004		0.0002	-
	0918	04/22/88	0001	HU	N			0.0002		0.0002	-
	0918	08/26/88	0001	HU	N			0.0002		0.0002	-
	0920	09/20/87	0001	HU	N			0.0002		0.0002	-
	0920	01/30/88	0001	HU	N			0.0003		0.0002	-
	0920	04/26/88	0001	HU	N			0.0004		0.0002	-
	0920	08/27/88	0001	HU	N			0.0002		0.0002	-
	0922	09/20/87	0001	HU	N			0.0002		0.0002	-
	0922	02/03/88	0001	HU	N			0.0003		0.0002	-
	0922	04/26/88	0001	HU	N			0.0005		0.0002	-
	0922	08/08/88	0001	HU	N			0.0002		0.0002	-
	0924	09/20/87	0001	HU	N			0.0002		0.0002	-
	0924	02/04/88	0001	HU	N			0.0003		0.0002	-
	0924	04/26/88	0001	HU	N			0.0005		0.0002	-
	0924	08/26/88	0001	HU	N			0.0002		0.0002	-
	0925	09/20/87	0001	HU	N			0.0002		0.0002	-
	0925	02/03/88	0001	HU	N			0.0005		0.0002	-
	0925	04/26/88	0001	HU	N			0.0002		0.0002	-
	0925	08/26/88	0001	HU	N			0.0002		0.0002	-
	0927	09/20/87	0001	HU	N			0.0002		0.0002	-
	0927	02/04/88	0001	HU	N			0.0002		0.0002	-
	0927	04/26/88	0001	HU	N			0.0004		0.0002	-
	0927	08/26/88	0001	HU	N			0.0002		0.0002	-
	0928	09/20/87	0001	HU	N			0.0002		0.0002	-
	0928	02/03/88	0001	HU	N			0.0002		0.0002	-
	0928	04/22/88	0001	HU	N			0.0005		0.0002	-

FORMATION OF COMPLETION CODE:
 HU - WASATCH - UPPER SANDSTONE
 PARAMETER VALUE INDICATOR (PVI):

< - LESS THAN DETECTION LIMIT

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MERCURY	0928	08/04/88	0001	WU	N	MG/L	<	0.0002		0.0002	-
	0929	09/20/87	0001	WU	N		<	0.0002		0.0002	-
	0929	02/03/88	0001	WU	N		<	0.0002		0.0002	-
	0929	04/28/88	0001	WU	N		<	0.0002	J	0.0002	-
	0929	08/11/88	0001	WU	N		<	0.0002		0.0002	-
	0930	09/20/87	0001	WU	N		<	0.0002		0.0002	-
	0930	01/30/88	0001	WU	N		<	0.0002		0.0002	-
	0930	04/26/88	0001	WU	N		<	0.0004		0.0002	-
	0930	08/27/88	0001	WU	N		<	0.0002		0.0002	-
	0931	01/30/88	0001	WU	N		<	0.0002		0.0002	-
	0931	04/28/88	0001	WU	N		<	0.0004		0.0002	-
	0931	08/10/88	0001	WU	N		<	0.0002		0.0002	-
	0932	01/30/88	0001	WU	N		<	0.0002		0.0002	-
	0932	04/28/88	0001	WU	N		<	0.0002		0.0002	-
	0932	08/09/88	0001	WU	N		<	0.0002		0.0002	-
	0933	08/10/88	0001	WU	N		<	0.0002		0.0002	-
	0934	08/11/88	0001	WU	N		<	0.0002		0.0002	-
	0935	08/09/88	0001	WU	N		<	0.0002		0.0002	-
	0936	08/08/88	0001	WU	N		<	0.0002		0.0002	-
	0937	08/08/88	0001	WU	N		<	0.0002		0.0002	-
	0939	08/08/88	0001	WU	N		<	0.0002		0.0002	-
	0940	08/08/88	0001	WU	N		<	0.0002		0.0002	-
	0941	08/08/88	0001	WU	N		<	0.0002		0.0002	-
	0942	08/08/88	0001	WU	N		<	0.0002		0.0002	-
	0943	08/09/88	0001	WU	N		<	0.0002		0.0002	-
	0944	08/11/88	0001	WU	N		<	0.0002		0.0002	-
MOLYBDENUM	0911	02/17/87	0001	WU	N	MG/L	<	0.1		0.1	-
	0911	09/18/87	0001	WU	N			0.05		0.01	-
	0911	01/30/88	0001	WU	N			0.02		0.01	-
	0911	04/22/88	0001	WU	N			0.03		0.01	-
	0911	08/11/88	0001	WU	N			0.02		0.01	-
	0911	12/10/88	0001	WU	N			0.03		0.01	-
	0912	02/18/87	0001	WU	N		<	0.1		0.1	-
	0912	02/03/88	0001	WU	N		<	0.01		0.01	-
	0912	04/22/88	0001	WU	N		<	0.01		0.01	-
	0912	08/27/88	0001	WU	N		<	0.01		0.01	-
	0912	12/04/88	0001	WU	N		<	0.01		0.01	-
	0913	02/18/87	0001	WU	N		<	0.1		0.1	-
	0913	09/18/87	0001	WU	N		<	0.01		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MOLYBDENUM	0913	02/03/88	0001	WU	N	MG/L		0.03		0.01	-
	0913	04/22/88	0001	WU	N			0.02		0.01	-
	0913	08/04/88	0001	WU	N			0.01		0.01	-
	0913	12/10/88	0001	WU	N			0.02		0.01	-
	0916	02/20/87	0001	WU	N			0.2		0.01	-
	0916	09/20/87	0001	WU	N		<	0.01		0.01	-
	0916	02/03/88	0001	WU	N			0.06		0.01	-
	0916	04/22/88	0001	WU	N			0.04		0.01	-
	0916	08/04/88	0001	WU	N			0.02		0.01	-
	0916	12/07/88	0001	WU	N			0.05		0.01	-
	0917	02/19/87	0001	WU	N			0.1		0.01	-
	0917	09/20/87	0001	WU	N		<	0.01		0.01	-
	0917	01/30/88	0001	WU	N			0.02		0.01	-
	0917	04/22/88	0001	WU	N			0.02		0.01	-
	0917	08/27/88	0001	WU	N			0.02		0.01	-
	0917	12/07/88	0001	WU	N			0.02		0.01	-
	0918	02/20/87	0001	WU	N		<	0.1		0.1	-
	0918	09/20/87	0001	WU	N		<	0.01		0.01	-
	0918	02/03/88	0001	WU	N			0.01		0.01	-
	0918	04/22/88	0001	WU	N			0.01		0.01	-
	0918	08/26/88	0001	WU	N		<	0.01		0.01	-
	0918	12/04/88	0001	WU	N			0.01		0.01	-
	0920	09/20/87	0001	WU	N			0.02		0.01	-
	0920	01/30/88	0001	WU	N			0.18		0.01	-
	0920	04/26/88	0001	WU	N			0.09		0.01	-
	0920	08/27/88	0001	WU	N			0.08		0.01	-
	0920	12/10/88	0001	WU	N			0.09		0.01	-
	0922	09/20/87	0001	WU	N		<	0.01		0.01	-
	0922	02/03/88	0001	WU	N			0.04		0.01	-
	0922	04/26/88	0001	WU	N			0.02		0.01	-
	0922	08/08/88	0001	WU	N		<	0.01		0.01	-
	0922	12/10/88	0001	WU	N			0.01		0.01	-
	0924	09/20/87	0001	WU	N		<	0.01		0.01	-
	0924	02/04/88	0001	WU	N			0.05		0.01	-
	0924	04/26/88	0001	WU	N			0.03		0.01	-
	0924	08/26/88	0001	WU	N			0.02		0.01	-
	0924	12/07/88	0001	WU	N			0.03		0.01	-
	0925	09/20/87	0001	WU	N		<	0.01		0.01	-
	0925	02/03/88	0001	WU	N			0.03		0.01	-
	0925	04/26/88	0001	WU	N			0.02		0.01	-
	0925	08/26/88	0001	WU	N			0.02		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MOLYBDENUM	0925	12/07/88	0001	WU	N		0.02		0.01	-
	0927	09/20/87	0001	WU	N	<	0.01		0.01	-
	0927	02/04/88	0001	WU	N		0.07		0.01	-
	0927	04/26/88	0001	WU	N		0.04		0.01	-
	0927	08/26/88	0001	WU	N		0.03		0.01	-
	0927	12/04/88	0001	WU	N		0.04		0.01	-
	0928	09/20/87	0001	WU	N	<	0.01		0.01	-
	0928	02/03/88	0001	WU	N		0.07		0.01	-
	0928	04/22/88	0001	WU	N		0.03		0.01	-
	0928	08/04/88	0001	WU	N		0.02		0.01	-
	0928	12/04/88	0001	WU	N		0.04		0.01	-
	0929	09/20/87	0001	WU	N		0.03		0.01	-
	0929	02/03/88	0001	WU	N		0.01	J	0.01	-
	0929	04/28/88	0001	WU	N		0.02		0.01	-
	0929	08/11/88	0001	WU	N		0.01		0.01	-
	0930	09/20/87	0001	WU	N		0.01		0.01	-
	0930	01/30/88	0001	WU	N		0.12		0.01	-
	0930	04/26/88	0001	WU	N		0.07		0.01	-
	0930	08/27/88	0001	WU	N		0.06		0.01	-
	0931	01/30/88	0001	WU	N		0.01		0.01	-
	0931	04/28/88	0001	WU	N		0.02		0.01	-
	0931	08/10/88	0001	WU	N		0.01		0.01	-
	0931	12/04/88	0001	WU	N		0.01		0.01	-
	0932	01/30/88	0001	WU	N		0.02		0.01	-
	0932	04/28/88	0001	WU	N		0.02		0.01	-
	0932	08/09/88	0001	WU	N		0.01		0.01	-
	0932	12/07/88	0001	WU	N	<	0.02		0.01	-
	0933	08/10/88	0001	WU	N	<	0.01		0.01	-
	0933	12/07/88	0001	WU	N		0.02		0.01	-
	0934	08/11/88	0001	WU	N	<	0.01		0.01	-
	0934	12/07/88	0001	WU	N		0.02		0.01	-
	0935	08/09/88	0001	WU	N		0.05		0.01	-
	0935	12/04/88	0001	WU	N		0.10		0.01	-
	0936	08/08/88	0001	WU	N		0.02		0.01	-
	0936	12/04/88	0001	WU	N		0.02		0.01	-
	0937	08/08/88	0001	WU	N		0.03		0.01	-
	0937	12/04/88	0001	WU	N		0.02		0.01	-
	0939	08/08/88	0001	WU	N		0.07		0.01	-
	0939	12/04/88	0001	WU	N		0.07		0.01	-
	0940	08/08/88	0001	WU	N		0.03		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MOLYBDENUM	0940	12/04/88	0001	WU	N	MG/L	0.06		0.01	-
	0941	08/08/88	0001	WU	N		< 0.01		0.01	-
	0941	12/10/88	0001	WU	N		< 0.01		0.01	-
	0942	08/08/88	0001	WU	N		0.02		0.01	-
	0942	12/04/88	0001	WU	N		0.02		0.01	-
	0943	08/09/88	0001	WU	N		< 0.01		0.01	-
	0943	12/07/88	0001	WU	N		0.02		0.01	-
	0944	08/11/88	0001	WU	N		< 0.01		0.01	-
	0944	12/07/88	0001	WU	N		0.02		0.01	-
NET GROSS ALPHA *	0911	09/18/87	0001	WU	N	PCI/L	-254.80		-	-
	0911	01/30/88	0001	WU	N		-203.06		-	-
	0911	04/22/88	0001	WU	N		6.60		-	-
	0911	08/11/88	0001	WU	N		106.46		-	-
	0911	12/10/88	0001	WU	N		44.38		-	-
	0912	02/03/88	0001	WU	N		-36.40		-	-
	0912	04/22/88	0001	WU	N		119.16		-	-
	0912	08/27/88	0001	WU	N		-106.22		-	-
	0912	12/04/88	0001	WU	N		38.19		-	-
	0913	09/18/87	0001	WU	N		-64.24		-	-
	0913	02/03/88	0001	WU	N		-1099.60		-	-
	0913	04/22/88	0001	WU	N		-290.62		-	-
	0913	08/04/88	0001	WU	N		3515.96		-	-
	0913	12/10/88	0001	WU	N		1327.84		-	-
	0916	09/20/87	0001	WU	N		-677.00		-	-
	0916	02/03/88	0001	WU	N		-2400.20		-	-
	0916	04/22/88	0001	WU	N		-2675.60		-	-
	0916	08/04/88	0001	WU	N		4597.40		-	-
	0916	12/07/88	0001	WU	N		-3392.00		-	-
	0917	09/20/87	0001	WU	N		-91.74		-	-
	0917	01/30/88	0001	WU	N		-174.06		-	-
	0917	04/22/88	0001	WU	N		184.00		-	-
	0917	08/27/88	0001	WU	N		-1160.34		-	-
	0917	12/07/88	0001	WU	N		-741.60		-	-
	0918	09/20/87	0001	WU	N		-34.46		-	-
	0918	02/03/88	0001	WU	N		-63.30		-	-
	0918	04/22/88	0001	WU	N		31.14		-	-
	0918	08/26/88	0001	WU	N		-189.34		-	-
	0918	12/04/88	0001	WU	N		-320.26		-	-

* NET GROSS ALPHA (GROSS ALPHA - URANIUM) WITH 1 MG URANIUM = 686 PCI

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
NET GROSS ALPHA *	0920	09/20/87	0001	WU	N	PCI/L	286.21		-	-
	0920	01/30/88	0001	WU	N		294.63		-	-
	0920	04/26/88	0001	WU	N		469.94		-	-
	0920	08/27/88	0001	WU	N		176.56		-	-
	0920	12/10/88	0001	WU	N		138.09		-	-
	0922	09/20/87	0001	WU	N		6.63		-	-
	0922	02/03/88	0001	WU	N		-12.50		-	-
	0922	04/26/88	0001	WU	N		-18.38		-	-
	0922	08/08/88	0001	WU	N		-0.72		-	-
	0922	12/10/88	0001	WU	N		-9.81		-	-
	0924	09/20/87	0001	WU	N		523.26		-	-
	0924	02/04/88	0001	WU	N		127.22		-	-
	0924	04/26/88	0001	WU	N		170.50		-	-
	0924	08/26/88	0001	WU	N		-159.84		-	-
	0924	12/07/88	0001	WU	N		296.10		-	-
	0925	09/20/87	0001	WU	N		-268.62		-	-
	0925	02/03/88	0001	WU	N		-113.74		-	-
	0925	04/26/88	0001	WU	N		-72.68		-	-
	0925	08/26/88	0001	WU	N		-207.22		-	-
	0925	12/07/88	0001	WU	N		-408.38		-	-
	0927	09/20/87	0001	WU	N		-1761.88		-	-
	0927	02/04/88	0001	WU	N		140.44		-	-
	0927	04/26/88	0001	WU	N		-260.34		-	-
	0927	08/26/88	0001	WU	N		-518.40		-	-
	0927	12/04/88	0001	WU	N		430.68		-	-
	0928	09/20/87	0001	WU	N		208.20		-	-
	0928	02/03/88	0001	WU	N		-137.70		-	-
	0928	04/22/88	0001	WU	N		34.86		-	-
	0928	08/04/88	0001	WU	N		-132.00		-	-
	0928	12/04/88	0001	WU	N		-254.42		-	-
	0929	09/20/87	0001	WU	N		23.49		-	-
	0929	02/03/88	0001	WU	N		3.76		-	-
	0929	04/28/88	0001	WU	N		-3.85		-	-
	0929	08/11/88	0001	WU	N		4.27		-	-
	0930	09/20/87	0001	WU	N		-53.32		-	-
	0930	01/30/88	0001	WU	N		37.74		-	-
	0930	04/26/88	0001	WU	N		40.02		-	-
	0930	08/27/88	0001	WU	N		213.09		-	-
	0931	01/30/88	0001	WU	N		-361.18		-	-

* NET GROSS ALPHA (GROSS ALPHA - URANIUM) WITH 1 MG URANIUM = 686 PCI

FORMATION OF COMPLETION CODE:
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SAMPLE ID CODES:
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GROUNDWATER QUALITY DATA BY PARAMETER
UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
NET GROSS ALPHA *	0931	04/28/88	0001	WU	N	PCI/L		480.56		-	-
	0931	08/10/88	0001	WU	N			-232.00		-	-
	0931	12/04/88	0001	WU	N			-274.90		-	-
	0932	01/30/88	0001	WU	N			45.68		-	-
	0932	04/28/88	0001	WU	N			43.44		-	-
	0932	08/09/88	0001	WU	N			0.11		-	-
	0933	08/10/88	0001	WU	N			-444.56		-	-
	0933	12/07/88	0001	WU	N			-458.86		-	-
	0934	08/11/88	0001	WU	N			-139.72		-	-
	0934	12/07/88	0001	WU	N			-185.18		-	-
	0935	08/09/88	0001	WU	N			225.13		-	-
	0935	12/04/88	0001	WU	N			866.07		-	-
	0936	08/08/88	0001	WU	N			99.78		-	-
	0936	12/04/88	0001	WU	N			-316.84		-	-
	0937	08/08/88	0001	WU	N			760.52		-	-
	0937	12/04/88	0001	WU	N			275.80		-	-
	0939	08/08/88	0001	WU	N			61.80		-	-
	0939	12/04/88	0001	WU	N			39.74		-	-
	0940	08/08/88	0001	WU	N			1118.52		-	-
	0940	12/04/88	0001	WU	N			-582.26		-	-
	0941	08/08/88	0001	WU	N			-6.41		-	-
	0941	12/10/88	0001	WU	N			4.28		-	-
	0942	08/08/88	0001	WU	N			1.89		-	-
	0942	12/04/88	0001	WU	N			2.30		-	-
	0943	08/09/88	0001	WU	N			-349.40		-	-
	0943	12/07/88	0001	WU	N			-255.68		-	-
	0944	08/11/88	0001	WU	N			-71.99		-	-
	0944	12/07/88	0001	WU	N			-50.54		-	-
NICKEL	0911	09/18/87	0001	WU	N	MG/L	<	0.01	J	0.04	-
	0911	01/30/88	0001	WU	N		<	0.01	J	0.04	-
	0911	04/22/88	0001	WU	N			0.02	J	0.04	-
	0911	08/11/88	0001	WU	N		<	0.04		0.04	-
	0912	02/03/88	0001	WU	N		<	0.01	J	0.04	-
	0912	04/22/88	0001	WU	N		<	0.01	J	0.04	-
	0912	08/27/88	0001	WU	N		<	0.04		0.04	-
	0913	09/18/87	0001	WU	N		<	0.01	J	0.04	-
	0913	02/03/88	0001	WU	N		<	0.01	J	0.04	-

* NET GROSS ALPHA (GROSS ALPHA - URANIUM) WITH 1 MG URANIUM = 686 PCI

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
NICKEL	0913	04/22/88	0001	WU	MG/L	<	0.03	J	0.04	-
	0913	08/04/88	0001	WU	N	<	0.04		0.04	-
	0916	09/20/87	0001	WU	N	<	0.01	J	0.04	-
	0916	02/03/88	0001	WU	N		0.03	J	0.04	-
	0916	04/22/88	0001	WU	N		0.04		0.04	-
	0916	08/04/88	0001	WU	N		0.04		0.04	-
	0917	09/20/87	0001	WU	N	<	0.01	J	0.04	-
	0917	01/30/88	0001	WU	N		0.01	J	0.04	-
	0917	04/22/88	0001	WU	N		0.02	J	0.04	-
	0917	08/27/88	0001	WU	N		0.04	J	0.04	-
	0918	09/20/87	0001	WU	N	<	0.01	J	0.04	-
	0918	02/03/88	0001	WU	N	<	0.01	J	0.04	-
	0918	04/22/88	0001	WU	N		0.01	J	0.04	-
	0918	08/26/88	0001	WU	N		0.04	J	0.04	-
	0920	09/20/87	0001	WU	N	<	0.06		0.04	-
	0920	01/30/88	0001	WU	N		0.14		0.04	-
	0920	04/26/88	0001	WU	N		0.14		0.04	-
	0920	08/27/88	0001	WU	N		0.14		0.04	-
	0922	09/20/87	0001	WU	N	<	0.01	J	0.04	-
	0922	02/03/88	0001	WU	N		0.02	J	0.04	-
	0922	04/26/88	0001	WU	N		0.02	J	0.04	-
	0922	08/08/88	0001	WU	N	<	0.04	J	0.04	-
	0924	09/20/87	0001	WU	N	<	0.01	J	0.04	-
	0924	02/04/88	0001	WU	N		0.02	J	0.04	-
	0924	04/26/88	0001	WU	N		0.03	J	0.04	-
	0924	08/26/88	0001	WU	N		0.04		0.04	-
	0925	09/20/87	0001	WU	N	<	0.01	J	0.04	-
	0925	02/03/88	0001	WU	N	<	0.01	J	0.04	-
	0925	04/26/88	0001	WU	N		0.01	J	0.04	-
	0925	08/26/88	0001	WU	N	<	0.04		0.04	-
	0927	09/20/87	0001	WU	N	<	0.01	J	0.04	-
	0927	02/04/88	0001	WU	N		0.04		0.04	-
	0927	04/26/88	0001	WU	N		0.04		0.04	-
	0927	08/26/88	0001	WU	N		0.04		0.04	-
	0928	09/20/87	0001	WU	N		0.01	J	0.04	-
	0928	02/03/88	0001	WU	N		0.04		0.04	-
	0928	04/22/88	0001	WU	N		0.05		0.04	-
	0928	08/04/88	0001	WU	N	<	0.04		0.04	-
	0929	09/20/87	0001	WU	N	<	0.01	J	0.04	-
	0929	02/03/88	0001	WU	N	<	0.01	J	0.04	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

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SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
NICKEL	0929	04/28/88	0001	WU	MG/L	<	0.02	J	0.04	-
	0929	08/11/88	0001	WU			0.04		0.04	-
	0930	09/20/87	0001	WU			0.23		0.04	-
	0930	01/30/88	0001	WU			0.762		0.04	-
	0930	04/26/88	0001	WU			0.76		0.04	-
	0930	08/27/88	0001	WU			0.39		0.04	-
	0931	01/30/88	0001	WU		<	0.01	J	0.04	-
	0931	04/28/88	0001	WU		<	0.01	J	0.04	-
	0931	08/10/88	0001	WU		<	0.04		0.04	-
	0932	01/30/88	0001	WU			0.018	J	0.04	-
	0932	04/28/88	0001	WU			0.02	J	0.04	-
	0932	08/09/88	0001	WU		<	0.04		0.04	-
	0933	08/10/88	0001	WU		<	0.04		0.04	-
	0934	08/11/88	0001	WU		<	0.04		0.04	-
	0935	08/09/88	0001	WU		<	1.16		0.04	-
	0936	08/08/88	0001	WU		<	0.04		0.04	-
	0937	08/08/88	0001	WU		<	0.04		0.04	-
	0939	08/08/88	0001	WU		<	0.04		0.04	-
	0940	08/08/88	0001	WU		<	0.09		0.04	-
	0941	08/08/88	0001	WU		<	0.04		0.04	-
	0942	08/08/88	0001	WU		<	0.04		0.04	-
	0943	08/09/88	0001	WU		<	0.04		0.04	-
	0944	08/11/88	0001	WU		<	0.04		0.04	-
NITRATE	0911	02/17/87	0001	WU	MG/L		230.		1.	-
	0911	09/18/87	0001	WU			18.6		1.	-
	0911	01/30/88	0001	WU			7.1		1.	-
	0911	04/22/88	0001	WU			5.0		1.	-
	0911	08/11/88	0001	WU			4.7		1.	-
	0911	12/10/88	0001	WU			7.4		1.	-
	0912	02/18/87	0001	WU			3.1		1.	-
	0912	02/03/88	0001	WU			0.8	J	1.	-
	0912	04/22/88	0001	WU			2.7		1.	-
	0912	08/27/88	0001	WU			2.9		1.	-
	0912	12/04/88	0001	WU			2.5		1.	-
	0913	02/18/87	0001	WU			84.		1.	-
	0913	09/18/87	0001	WU			94.8		1.	-
	0913	02/03/88	0001	WU			130.		1.	-
	0913	04/22/88	0001	WU			140.		1.	-
	0913	08/04/88	0001	WU			155.		1.	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

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GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
NITRATE	0913	12/10/88	0001	WU	N	MG/L		210.		1.	-
	0916	02/20/87	0001	WU	N			100.		1.	-
	0916	09/20/87	0001	WU	N			425.		1.	-
	0916	02/03/88	0001	WU	N			450.		1.	-
	0916	04/22/88	0001	WU	N			490.		1.	-
	0916	08/04/88	0001	WU	N			460.		1.	-
	0916	12/07/88	0001	WU	N			490.		1.	-
	0917	02/19/87	0001	WU	N			10.		1.	-
	0917	09/20/87	0001	WU	N			110.		1.	-
	0917	01/30/88	0001	WU	N			120.		1.	-
	0917	04/22/88	0001	WU	N			133.		1.	-
	0917	08/27/88	0001	WU	N			130.		1.	-
	0917	12/07/88	0001	WU	N			150.		1.	-
	0918	02/20/87	0001	WU	N			1.6		1.	-
	0918	09/20/87	0001	WU	N			8.0		1.	-
	0918	02/03/88	0001	WU	N			7.1		1.	-
	0918	04/22/88	0001	WU	N			11.		1.	-
	0918	08/26/88	0001	WU	N			8.9		1.	-
	0918	12/04/88	0001	WU	N			7.8		1.	-
	0920	09/20/87	0001	WU	N			350.		1.	-
	0920	01/30/88	0001	WU	N			340.		1.	-
	0920	04/26/88	0001	WU	N			420.		1.	-
	0920	08/27/88	0001	WU	N			470.		1.	-
	0920	12/10/88	0001	WU	N			520.		1.	-
	0922	09/20/87	0001	WU	N			0.9	J	1.	-
	0922	02/03/88	0001	WU	N			1.1		1.	-
	0922	04/26/88	0001	WU	N			2.3		1.	-
	0922	08/08/88	0001	WU	N			4.5		1.	-
	0922	12/10/88	0001	WU	N			8.5		1.	-
	0924	09/20/87	0001	WU	N			76.6		1.	-
	0924	02/04/88	0001	WU	N			63.		1.	-
	0924	04/26/88	0001	WU	N			72.		1.	-
	0924	08/26/88	0001	WU	N			72.		1.	-
	0925	12/07/88	0001	WU	N			70.		1.	-
	0925	09/20/87	0001	WU	N			4.0		1.	-
	0925	02/03/88	0001	WU	N			4.0		1.	-
	0925	04/26/88	0001	WU	N			5.6		1.	-
	0925	08/26/88	0001	WU	N			5.3		1.	-
	0925	12/07/88	0001	WU	N			7.2		1.	-
	0927	09/20/87	0001	WU	N			120.		1.	-

FORMATION OF COMPLETION CODE:
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GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
NITRATE	0927	02/04/88	0001	WU	N	MG/L		110.		1.	-
	0927	04/26/88	0001	WU	N			120.		1.	-
	0927	08/26/88	0001	WU	N			120.		1.	-
	0927	12/04/88	0001	WU	N			120.		1.	-
	0928	09/20/87	0001	WU	N			34.		1.	-
	0928	02/03/88	0001	WU	N			41.		1.	-
	0928	04/22/88	0001	WU	N			45.		1.	-
	0928	08/04/88	0001	WU	N			50.		1.	-
	0928	12/04/88	0001	WU	N			66.		1.	-
	0929	09/20/87	0001	WU	N			2.2		1.	-
	0929	02/03/88	0001	WU	N		<	0.1	J	1.	-
	0929	04/28/88	0001	WU	N			3.2	J	1.	-
	0929	08/11/88	0001	WU	N			3.6		1.	-
	0930	09/20/87	0001	WU	N			213.		1.	-
	0930	01/30/88	0001	WU	N			340.		1.	-
	0930	04/26/88	0001	WU	N			330.		1.	-
	0930	08/27/88	0001	WU	N			390.		1.	-
	0931	01/30/88	0001	WU	N			2.2		1.	-
	0931	04/28/88	0001	WU	N			3.7		1.	-
	0931	08/10/88	0001	WU	N			3.1		1.	-
	0931	12/04/88	0001	WU	N			4.2		1.	-
	0932	01/30/88	0001	WU	N			4.4		1.	-
	0932	04/28/88	0001	WU	N			8.0		1.	-
	0932	08/09/88	0001	WU	N			4.2		1.	-
	0932	12/07/88	0001	WU	N			4.7		1.	-
	0933	08/10/88	0001	WU	N			2.6		1.	-
	0933	12/07/88	0001	WU	N			9.1		1.	-
	0934	08/11/88	0001	WU	N			3.6		1.	-
	0934	12/07/88	0001	WU	N			13.		1.	-
	0935	08/09/88	0001	WU	N			600.		1.	-
	0935	12/04/88	0001	WU	N			690.		1.	-
	0936	08/08/88	0001	WU	N			94.		1.	-
	0936	12/04/88	0001	WU	N			110.		1.	-
	0937	08/08/88	0001	WU	N			32.		1.	-
	0937	12/04/88	0001	WU	N			27.		1.	-
	0939	08/08/88	0001	WU	N		<	1.0		1.	-
	0939	12/04/88	0001	WU	N		<	1.0		1.	-
	0940	08/08/88	0001	WU	N			160.		1.	-
	0940	12/04/88	0001	WU	N			170.		1.	-
	0941	08/08/88	0001	WU	N			11.		1.	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
NITRATE	0941	12/10/88	0001	WU	N	MG/L		15.		1.	-
	0942	08/08/88	0001	WU	N			40.		1.	-
	0942	12/04/88	0001	WU	N			47.		1.	-
	0943	08/09/88	0001	WU	N			5.3		1.	-
	0943	12/07/88	0001	WU	N			8.9		1.	-
	0944	08/11/88	0001	WU	N			3.2		1.	-
	0944	12/07/88	0001	WU	N			5.8		1.	-
PH	0911	02/17/87	0001	WU	N	SU		7.19		-	-
	0911	09/18/87	0001	WU	N			7.43		-	-
	0911	01/30/88	0001	WU	N			7.61		-	-
	0911	04/22/88	0001	WU	N			7.36		-	-
	0911	08/11/88	0001	WU	N			7.17		-	-
	0911	12/10/88	0001	WU	N			7.74		-	-
	0912	02/18/87	0001	WU	N			7.31		-	-
	0912	02/03/88	0001	WU	N			7.68		-	-
	0912	04/22/88	0001	WU	N			7.61		-	-
	0912	08/27/88	0001	WU	N			7.29		-	-
	0912	12/04/88	0001	WU	N			7.35		-	-
	0913	02/18/87	0001	WU	N			6.98		-	-
	0913	09/18/87	0001	WU	N			6.84		-	-
	0913	02/03/88	0001	WU	N			6.93		-	-
	0913	04/22/88	0001	WU	N			6.74		-	-
	0913	08/04/88	0001	WU	N			6.67		-	-
	0913	12/10/88	0001	WU	N			6.78		-	-
	0916	02/20/87	0001	WU	N			6.97		-	-
	0916	09/20/87	0001	WU	N			6.89		-	-
	0916	02/03/88	0001	WU	N			6.79		-	-
	0916	04/22/88	0001	WU	N			6.82		-	-
	0916	08/04/88	0001	WU	N			6.68		-	-
	0916	12/07/88	0001	WU	N			6.69		-	-
	0917	02/19/87	0001	WU	N			7.34		-	-
	0917	09/20/87	0001	WU	N			7.12		-	-
	0917	01/30/88	0001	WU	N			7.01		-	-
	0917	04/22/88	0001	WU	N			7.14		-	-
	0917	08/27/88	0001	WU	N			7.01		-	-
	0917	12/07/88	0001	WU	N			7.44		-	-
	0918	02/20/87	0001	WU	N			7.28		-	-
	0918	09/20/87	0001	WU	N			7.12		-	-
	0918	02/03/88	0001	WU	N			7.47		-	-
	0918	04/22/88	0001	WU	N			7.31		-	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
PH	0918	08/26/88	0001	WU	N	SU	7.12		-	-
	0918	12/04/88	0001	WU	N		7.38		-	-
	0920	09/20/87	0001	WU	N		6.59		-	-
	0920	01/30/88	0001	WU	N		6.29		-	-
	0920	04/26/88	0001	WU	N		6.38		-	-
	0920	08/27/88	0001	WU	N		6.37		-	-
	0920	12/10/88	0001	WU	N		6.70		-	-
	0922	09/20/87	0001	WU	N		7.06		-	-
	0922	02/03/88	0001	WU	N		6.39		-	-
	0922	04/26/88	0001	WU	N		6.87		-	-
	0922	08/08/88	0001	WU	N		7.11		-	-
	0922	12/10/88	0001	WU	N		6.97		-	-
	0924	09/20/87	0001	WU	N		7.10		-	-
	0924	02/04/88	0001	WU	N		6.95		-	-
	0924	04/26/88	0001	WU	N		6.96		-	-
	0924	08/26/88	0001	WU	N		6.94		-	-
	0924	12/07/88	0001	WU	N		7.00		-	-
	0925	09/20/87	0001	WU	N		7.09		-	-
	0925	02/03/88	0001	WU	N		7.23		-	-
	0925	04/26/88	0001	WU	N		7.06		-	-
	0925	08/26/88	0001	WU	N		7.00		-	-
	0925	12/07/88	0001	WU	N		7.01		-	-
	0927	09/20/87	0001	WU	N		6.95		-	-
	0927	02/04/88	0001	WU	N		6.87		-	-
	0927	04/26/88	0001	WU	N		6.91		-	-
	0927	08/26/88	0001	WU	N		6.93		-	-
	0927	12/04/88	0001	WU	N		6.88		-	-
	0928	09/20/87	0001	WU	N		6.52		-	-
	0928	02/03/88	0001	WU	N		6.43		-	-
	0928	04/22/88	0001	WU	N		6.54		-	-
	0928	08/04/88	0001	WU	N		6.43		-	-
	0928	12/04/88	0001	WU	N		6.42		-	-
	0929	09/20/87	0001	WU	N		8.50		-	-
	0929	02/03/88	0001	WU	N		7.78		-	-
	0929	04/28/88	0001	WU	N		7.47		-	-
	0929	08/11/88	0001	WU	N		7.28		-	-
	0930	09/20/87	0001	WU	N		7.13		-	-
	0930	01/30/88	0001	WU	N		6.09		-	-
	0930	04/26/88	0001	WU	N		6.24		-	-
	0930	08/27/88	0001	WU	N		6.51		-	-
	0931	01/30/88	0001	WU	N		6.99		-	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
PH	0931	04/28/88	0001	WU	N	SU		7.18		-	-
	0931	08/10/88	0001	WU	N			7.21		-	-
	0931	12/04/88	0001	WU	N			7.14		-	-
	0932	01/30/88	0001	WU	N			6.87		-	-
	0932	04/28/88	0001	WU	N			6.79		-	-
	0932	08/09/88	0001	WU	N			6.75		-	-
	0932	12/07/88	0001	WU	N			7.08		-	-
	0933	08/10/88	0001	WU	N			7.27		-	-
	0933	12/07/88	0001	WU	N			7.23		-	-
	0934	08/11/88	0001	WU	N			7.12		-	-
	0934	12/07/88	0001	WU	N			7.09		-	-
	0935	08/09/88	0001	WU	N			6.06		-	-
	0935	12/04/88	0001	WU	N			5.59		-	-
	0936	08/08/88	0001	WU	N			7.46		-	-
	0936	12/04/88	0001	WU	N			7.23		-	-
	0937	08/08/88	0001	WU	N			7.30		-	-
	0937	12/04/88	0001	WU	N			7.51		-	-
	0939	08/08/88	0001	WU	N			7.02		-	-
	0939	12/04/88	0001	WU	N			6.82		-	-
	0940	08/08/88	0001	WU	N			6.48		-	-
	0940	12/04/88	0001	WU	N			6.50		-	-
	0941	08/08/88	0001	WU	N			7.40		-	-
	0941	12/10/88	0001	WU	N			7.68		-	-
	0942	08/08/88	0001	WU	N			7.39		-	-
	0942	12/04/88	0001	WU	N			6.95		-	-
	0943	08/09/88	0001	WU	N			7.27		-	-
	0943	12/07/88	0001	WU	N			7.50		-	-
	0944	08/11/88	0001	WU	N			6.99		-	-
	0944	12/07/88	0001	WU	N			7.14		-	-
PHOSPHATE	0911	02/17/87	0001	WU	N	MG/L	<	0.1		0.1	-
	0911	09/18/87	0001	WU	N			0.2		0.1	-
	0911	01/30/88	0001	WU	N		<	0.1		0.1	-
	0911	04/22/88	0001	WU	N			0.3		0.1	-
	0911	08/11/88	0001	WU	N		<	0.1		0.1	-
	0912	02/18/87	0001	WU	N		<	0.1		0.1	-
	0912	02/03/88	0001	WU	N		<	0.1		0.1	-
	0912	04/22/88	0001	WU	N			0.3		0.1	-
	0912	08/27/88	0001	WU	N		<	0.1		0.1	-
	0913	02/18/87	0001	WU	N		<	0.1		0.1	-
	0913	09/18/87	0001	WU	N			0.1		0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
PHOSPHATE	0913	02/03/88	0001	WU	N	MG/L	<	0.1		0.1	-
	0913	04/22/88	0001	WU	N		<	0.1		0.1	-
	0913	08/04/88	0001	WU	N		<	0.1		0.1	-
	0916	02/20/87	0001	WU	N		<	0.1		0.1	-
	0916	09/20/87	0001	WU	N		<	0.4		0.1	-
	0916	02/03/88	0001	WU	N		<	0.1		0.1	-
	0916	04/22/88	0001	WU	N		<	0.1		0.1	-
	0916	08/04/88	0001	WU	N		<	0.1		0.1	-
	0917	02/19/87	0001	WU	N		<	0.1		0.1	-
	0917	09/20/87	0001	WU	N		<	0.1		0.1	-
	0917	01/30/88	0001	WU	N		<	0.1		0.1	-
	0917	04/22/88	0001	WU	N		<	0.1		0.1	-
	0917	08/27/88	0001	WU	N		<	0.1		0.1	-
	0918	02/20/87	0001	WU	N		<	0.1		0.1	-
	0918	02/03/88	0001	WU	N		<	0.1		0.1	-
	0918	04/22/88	0001	WU	N		<	0.1		0.1	-
	0918	08/26/88	0001	WU	N		<	0.1		0.1	-
	0920	09/20/87	0001	WU	N		<	0.8		0.1	-
	0920	01/30/88	0001	WU	N		<	0.1		0.1	-
	0920	04/26/88	0001	WU	N		<	0.1		0.1	-
	0920	08/27/88	0001	WU	N		<	0.1		0.1	-
	0922	09/20/87	0001	WU	N		<	0.1		0.1	-
	0922	02/03/88	0001	WU	N		<	0.1		0.1	-
	0922	04/26/88	0001	WU	N		<	0.1		0.1	-
	0922	08/08/88	0001	WU	N		<	0.1		0.1	-
	0924	09/20/87	0001	WU	N		<	0.1		0.1	-
	0924	02/04/88	0001	WU	N		<	0.1		0.1	-
	0924	04/26/88	0001	WU	N		<	0.1		0.1	-
	0924	08/26/88	0001	WU	N		<	0.1		0.1	-
	0925	09/20/87	0001	WU	N		<	0.1		0.1	-
	0925	02/03/88	0001	WU	N		<	0.1		0.1	-
	0925	04/26/88	0001	WU	N		<	0.1		0.1	-
	0925	08/26/88	0001	WU	N		<	0.1		0.1	-
	0927	09/20/87	0001	WU	N		<	0.1		0.1	-
	0927	02/04/88	0001	WU	N		<	0.1		0.1	-
	0927	04/26/88	0001	WU	N		<	0.1		0.1	-
	0927	08/26/88	0001	WU	N		<	0.1		0.1	-
	0928	09/20/87	0001	WU	N		<	0.2		0.1	-
	0928	02/03/88	0001	WU	N		<	0.1		0.1	-
	0928	04/22/88	0001	WU	N		<	0.1		0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (<.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
PHOSPHATE	0928	08/04/88	0001	WU	N	MG/L	<	0.1		0.1	-
	0929	09/20/87	0001	WU	N			0.4		0.1	-
	0929	02/03/88	0001	WU	N		<	0.1		0.1	-
	0929	04/28/88	0001	WU	N		<	0.1	J	0.1	-
	0929	08/11/88	0001	WU	N		<	0.1		0.1	-
	0930	09/20/87	0001	WU	N			0.4		0.1	-
	0930	01/30/88	0001	WU	N		<	0.1		0.1	-
	0930	04/26/88	0001	WU	N		<	0.1		0.1	-
	0930	08/27/88	0001	WU	N		<	0.1		0.1	-
	0931	01/30/88	0001	WU	N		<	0.1		0.1	-
	0931	04/28/88	0001	WU	N		<	0.1		0.1	-
	0931	08/10/88	0001	WU	N		<	0.1		0.1	-
	0932	01/30/88	0001	WU	N		<	0.1		0.1	-
	0932	04/28/88	0001	WU	N		<	0.1		0.1	-
	0932	08/09/88	0001	WU	N		<	0.1		0.1	-
	0933	08/10/88	0001	WU	N		<	0.1		0.1	-
	0934	08/11/88	0001	WU	N		<	0.1		0.1	-
	0935	08/09/88	0001	WU	N		<	0.1		0.1	-
	0936	08/08/88	0001	WU	N		<	0.1		0.1	-
	0937	08/08/88	0001	WU	N		<	0.1		0.1	-
	0939	08/08/88	0001	WU	N			0.1		0.1	-
	0940	08/08/88	0001	WU	N		<	0.1		0.1	-
	0941	08/08/88	0001	WU	N		<	0.1		0.1	-
	0942	08/08/88	0001	WU	N		<	0.1		0.1	-
	0943	08/09/88	0001	WU	N		<	0.1		0.1	-
	0944	08/11/88	0001	WU	N		<	0.1		0.1	-
POLONIUM-210	0911	09/18/87	0001	WU	N	PCI/L		5.6		1.	1.4
	0911	01/30/88	0001	WU	N			2.3		1.	0.7
	0911	04/22/88	0001	WU	N			4.1		1.	0.8
	0911	08/11/88	0001	WU	N			1.4		1.	0.7
	0912	02/03/88	0001	WU	N			4.6		1.	0.9
	0912	04/22/88	0001	WU	N			2.7		1.	0.8
	0912	08/27/88	0001	WU	N			4.4		1.	0.8
	0913	09/18/87	0001	WU	N			37.		1.	3.
	0913	02/03/88	0001	WU	N			8.4		1.	1.2
	0913	04/22/88	0001	WU	N			9.9		1.	1.2
	0913	08/04/88	0001	WU	N			11.		1.	1.
	0916	09/20/87	0001	WU	N			0.7		1.	0.9
	0916	02/03/88	0001	WU	N			4.2		1.	0.9

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
POLONIUM-210	0916	04/22/88	0001	WU	N	PCI/L		4.1		1.	0.8
	0916	08/04/88	0001	WU	N			5.0		1.	0.9
	0917	09/20/87	0001	WU	N			0.5		1.	0.9
	0917	01/30/88	0001	WU	N			3.6		1.	0.8
	0917	04/22/88	0001	WU	N			1.4		1.	0.6
	0917	08/27/88	0001	WU	N			0.8		1.	0.4
	0918	09/20/87	0001	WU	N			0.0		1.	0.8
	0918	02/03/88	0001	WU	N			0.7		1.	0.5
	0918	04/22/88	0001	WU	N			0.3		1.	0.4
	0918	08/26/88	0001	WU	N			0.2		1.	0.3
	0920	09/20/87	0001	WU	N			5.1		1.	1.4
	0920	01/30/88	0001	WU	N			3.9		1.	1.0
	0920	04/26/88	0001	WU	N			1.7		1.	0.6
	0920	08/27/88	0001	WU	N			0.8		1.	0.4
	0922	09/20/87	0001	WU	N			0.6		1.	0.9
	0922	02/03/88	0001	WU	N			0.0		1.	0.5
	0922	04/26/88	0001	WU	N			0.2		1.	0.4
	0924	08/08/88	0001	WU	N			0.0		1.	0.4
	0924	09/20/87	0001	WU	N			6.1		1.	1.5
	0924	02/04/88	0001	WU	N			3.7		1.	1.0
	0924	04/26/88	0001	WU	N			2.2		1.	0.7
	0924	08/26/88	0001	WU	N			3.2		1.	0.7
	0925	09/20/87	0001	WU	N			0.7		1.	0.9
	0925	02/03/88	0001	WU	N			0.6		1.	0.7
	0925	04/26/88	0001	WU	N			0.4		1.	0.4
	0925	08/26/88	0001	WU	N			0.5		1.	0.7
	0927	09/20/87	0001	WU	N			1.9		1.	1.1
	0927	02/04/88	0001	WU	N			4.9		1.	1.1
	0927	04/26/88	0001	WU	N			1.1		1.	0.5
	0927	08/26/88	0001	WU	N			0.9		1.	0.5
	0928	09/20/87	0001	WU	N			3.6		1.	1.1
	0928	02/03/88	0001	WU	N			1.6		1.	0.8
	0928	04/22/88	0001	WU	N			0.9		1.	0.5
	0928	08/04/88	0001	WU	N			1.5		1.	0.6
	0929	09/20/87	0001	WU	N			0.2		1.	0.5
	0929	02/03/88	0001	WU	N			0.5		1.	0.6
	0929	04/28/88	0001	WU	N			0.1	J	1.	0.4
	0929	08/11/88	0001	WU	N			0.0		1.	0.4
	0930	09/20/87	0001	WU	N			0.4		1.	0.6
	0930	01/30/88	0001	WU	N			0.6		1.	0.6

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (<.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
POLONIUM-210	0930	04/26/88	0001	WU	N	PCI/L	0.2		1.	0.4
	0930	08/27/88	0001	WU	N		1.2		1.	0.5
	0931	01/30/88	0001	WU	N		0.8		1.	0.6
	0931	04/28/88	0001	WU	N		0.3		1.	0.4
	0931	08/10/88	0001	WU	N		0.7		1.	0.5
	0932	01/30/88	0001	WU	N		3.5		1.	1.0
	0932	04/28/88	0001	WU	N		1.8		1.	0.6
	0932	08/09/88	0001	WU	N		2.5		1.	0.7
	0933	08/10/88	0001	WU	N		0.0		1.	0.4
	0934	08/11/88	0001	WU	N		0.7		1.	0.5
	0935	08/09/88	0001	WU	N		0.2		1.	0.5
	0936	08/08/88	0001	WU	N		1.0		1.	0.6
	0937	08/08/88	0001	WU	N		4.5		1.	0.9
	0940	08/08/88	0001	WU	N		2.5		1.	0.7
	0941	08/08/88	0001	WU	N		0.1		1.	0.5
	0942	08/08/88	0001	WU	N		1.2		1.	0.6
	0943	08/09/88	0001	WU	N		0.0		1.	0.4
	0944	08/11/88	0001	WU	N		0.0		1.	0.5
POTASSIUM	0911	02/17/87	0001	WU	N	MG/L	15.5		0.01	-
	0911	09/18/87	0001	WU	N		8.67		0.01	-
	0911	01/30/88	0001	WU	N		9.38		0.01	-
	0911	04/22/88	0001	WU	N		8.66		0.01	-
	0911	08/11/88	0001	WU	N		8.3		0.01	-
	0911	12/10/88	0001	WU	N		8.5		0.01	-
	0912	02/18/87	0001	WU	N		4.00		0.01	-
	0912	02/03/88	0001	WU	N		6.25		0.01	-
	0912	04/22/88	0001	WU	N		9.02		0.01	-
	0912	08/27/88	0001	WU	N		5.7		0.01	-
	0912	12/04/88	0001	WU	N		5.9		0.01	-
	0913	02/18/87	0001	WU	N		9.42		0.01	-
	0913	09/18/87	0001	WU	N		8.71		0.01	-
	0913	02/03/88	0001	WU	N		9.72		0.01	-
	0913	04/22/88	0001	WU	N		9.08		0.01	-
	0913	08/04/88	0001	WU	N		9.5		0.01	-
	0913	12/10/88	0001	WU	N		8.9		0.01	-
	0916	02/20/87	0001	WU	N		10.5		0.01	-
	0916	09/20/87	0001	WU	N		9.60		0.01	-
	0916	02/03/88	0001	WU	N		11.6		0.01	-
	0916	04/22/88	0001	WU	N		10.7		0.01	-
	0916	08/04/88	0001	WU	N		11.8		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (<.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
POTASSIUM	0916	12/07/88	0001	WU	N	MG/L		10.5		0.01	-
	0917	02/19/87	0001	WU	N			8.38		0.01	-
	0917	09/20/87	0001	WU	N			7.57		0.01	-
	0917	01/30/88	0001	WU	N			7.75		0.01	-
	0917	04/22/88	0001	WU	N			7.60		0.01	-
	0917	08/27/88	0001	WU	N			8.2		0.01	-
	0917	12/07/88	0001	WU	N			7.6		0.01	-
	0918	02/20/87	0001	WU	N			8.96		0.01	-
	0918	09/20/87	0001	WU	N			7.74		0.01	-
	0918	02/03/88	0001	WU	N			7.72		0.01	-
	0918	04/22/88	0001	WU	N			7.57		0.01	-
	0918	08/26/88	0001	WU	N			7.7		0.01	-
	0918	12/04/88	0001	WU	N			9.1		0.01	-
	0920	09/20/87	0001	WU	N			30.9		0.01	-
	0920	01/30/88	0001	WU	N			19.8		0.01	-
	0920	04/26/88	0001	WU	N			28.7		0.01	-
	0920	08/27/88	0001	WU	N			31.0		0.01	-
	0920	12/10/88	0001	WU	N			28.7		0.01	-
	0922	09/20/87	0001	WU	N			8.07		0.01	-
	0922	02/03/88	0001	WU	N			4.22		0.01	-
	0922	04/26/88	0001	WU	N			6.19		0.01	-
	0922	08/08/88	0001	WU	N			6.6		0.01	-
	0922	12/10/88	0001	WU	N			5.8		0.01	-
	0924	09/20/87	0001	WU	N			8.76		0.01	-
	0924	02/04/88	0001	WU	N			4.74		0.01	-
	0924	04/26/88	0001	WU	N			6.71		0.01	-
	0924	08/26/88	0001	WU	N			7.3		0.01	-
	0924	12/07/88	0001	WU	N			6.9		0.01	-
	0925	09/20/87	0001	WU	N			7.14		0.01	-
	0925	02/03/88	0001	WU	N			4.39		0.01	-
	0925	04/26/88	0001	WU	N			6.69		0.01	-
	0925	08/26/88	0001	WU	N			6.6		0.01	-
	0925	12/07/88	0001	WU	N			6.6		0.01	-
	0927	09/20/87	0001	WU	N			9.59		0.01	-
	0927	02/04/88	0001	WU	N			5.71		0.01	-
	0927	04/26/88	0001	WU	N			8.33		0.01	-
	0927	08/26/88	0001	WU	N			8.9		0.01	-
	0927	12/04/88	0001	WU	N			8.4		0.01	-
	0928	09/20/87	0001	WU	N			8.19		0.01	-
	0928	02/03/88	0001	WU	N			6.22		0.01	-
	0928	04/22/88	0001	WU	N			8.39		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
POTASSIUM	0928	08/04/88	0001	WU	N	MG/L		9.7		0.01	-
	0928	12/04/88	0001	WU	N			8.6		0.01	-
	0928	09/20/87	0001	WU	N			18.9		0.01	-
	0929	02/03/88	0001	WU	N			19.4		0.01	-
	0929	04/28/88	0001	WU	N			13.3	J	0.01	-
	0929	08/11/88	0001	WU	N			13.9		0.01	-
	0930	09/20/87	0001	WU	N			34.6		0.01	-
	0930	01/30/88	0001	WU	N			30.5		0.01	-
	0930	04/26/88	0001	WU	N			26.4		0.01	-
	0930	08/27/88	0001	WU	N			30.6		0.01	-
	0931	01/30/88	0001	WU	N			8.10		0.01	-
	0931	04/28/88	0001	WU	N			7.18		0.01	-
	0931	08/10/88	0001	WU	N			6.5		0.01	-
	0931	12/04/88	0001	WU	N			6.0		0.01	-
	0932	01/30/88	0001	WU	N			6.27		0.01	-
	0932	04/28/88	0001	WU	N			8.93		0.01	-
	0932	08/09/88	0001	WU	N			6.1		0.01	-
	0932	12/07/88	0001	WU	N			5.9		0.01	-
	0933	08/10/88	0001	WU	N			8.5		0.01	-
	0933	12/07/88	0001	WU	N			7.3		0.01	-
	0934	08/11/88	0001	WU	N			10.1		0.01	-
	0934	12/07/88	0001	WU	N			6.1		0.01	-
	0935	08/09/88	0001	WU	N			41.9		0.01	-
	0935	12/04/88	0001	WU	N			39.3		0.01	-
	0936	08/08/88	0001	WU	N			9.5		0.01	-
	0936	12/04/88	0001	WU	N			8.4		0.01	-
	0937	08/08/88	0001	WU	N			7.8		0.01	-
	0937	12/04/88	0001	WU	N			11.1		0.01	-
	0939	08/08/88	0001	WU	N			14.6		0.01	-
	0939	12/04/88	0001	WU	N			13.3		0.01	-
	0940	08/08/88	0001	WU	N			15.6		0.01	-
	0940	12/04/88	0001	WU	N			15.5		0.01	-
	0941	08/08/88	0001	WU	N			3.7		0.01	-
	0941	12/10/88	0001	WU	N			4.0		0.01	-
	0942	08/08/88	0001	WU	N			11.5		0.01	-
	0942	12/04/88	0001	WU	N			6.8		0.01	-
	0943	08/09/88	0001	WU	N			6.7		0.01	-
	0943	12/07/88	0001	WU	N			6.6		0.01	-
	0944	08/11/88	0001	WU	N			8.4		0.01	-
	0944	12/07/88	0001	WU	N			8.1		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-226	0911	09/18/87	0001	WU	N	PCI/L		3.1		1.	0.6
	0911	01/30/88	0001	WU	N			1.3		1.	0.4
	0911	04/22/88	0001	WU	N			1.7		1.	0.5
	0911	08/11/88	0001	WU	N			1.4		1.	0.5
	0911	12/10/88	0001	WU	N			1.2		1.	0.4
	0912	02/03/88	0001	WU	N			31.		1.	2.
	0912	04/22/88	0001	WU	N			15.		1.	1.
	0912	08/27/88	0001	WU	N			29.		1.	2.
	0912	12/04/88	0001	WU	N			46.		1.	2.
	0913	09/18/87	0001	WU	N			120.		1.	10.
	0913	02/03/88	0001	WU	N			75.		1.	3.
	0913	04/22/88	0001	WU	N			88.		1.	3.
	0913	08/04/88	0001	WU	N			69.		1.	3.
	0913	12/10/88	0001	WU	N			43.		1.	2.
	0916	09/20/87	0001	WU	N			18.		1.	1.
	0916	02/03/88	0001	WU	N			16.		1.	1.
	0916	04/22/88	0001	WU	N			16.		1.	1.
	0916	08/04/88	0001	WU	N			9.7		1.	1.0
	0916	12/07/88	0001	WU	N			19.		1.	2.
	0917	09/20/87	0001	WU	N			3.0		1.	1.1
	0917	01/30/88	0001	WU	N			2.0		1.	0.5
	0917	04/22/88	0001	WU	N			1.9		1.	0.5
	0917	08/27/88	0001	WU	N			1.6		1.	0.4
	0917	12/07/88	0001	WU	N			1.5		1.	0.4
	0918	09/20/87	0001	WU	N			5.2		1.	1.0
	0918	02/03/88	0001	WU	N			3.3		1.	0.6
	0918	04/22/88	0001	WU	N			5.0		1.	0.7
	0918	08/26/88	0001	WU	N			6.4		1.	0.8
	0918	12/04/88	0001	WU	N			5.7		1.	0.8
	0920	09/20/87	0001	WU	N			2.5		1.	2.
	0920	01/30/88	0001	WU	N			37.		1.	1.
	0920	04/26/88	0001	WU	N			49.		1.	2.
	0920	08/27/88	0001	WU	N			40.		1.	2.
	0920	12/10/88	0001	WU	N			29.		1.	2.
	0922	09/20/87	0001	WU	N			1.9		1.	0.5
	0922	02/03/88	0001	WU	N			0.9		1.	0.2
	0922	04/26/88	0001	WU	N			1.2		1.	0.4
	0922	08/08/88	0001	WU	N			0.9		1.	0.3
	0922	12/10/88	0001	WU	N			1.3		1.	0.4
	0924	09/20/87	0001	WU	N			140.		1.	10.
	0924	02/04/88	0001	WU	N			140.		1.	10.

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (<.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-226	0924	04/26/88	0001	WU	N	123.		1.	4.
	0924	08/26/88	0001	WU	N	135.		1.	4.
	0924	12/07/88	0001	WU	N	190.		1.	10.
	0925	09/20/87	0001	WU	N	2.5		1.	0.6
	0925	02/03/88	0001	WU	N	0.6		1.	0.2
	0925	04/26/88	0001	WU	N	0.2		1.	0.5
	0925	08/26/88	0001	WU	N	0.9		1.	0.3
	0925	12/07/88	0001	WU	N	0.7		1.	0.3
	0927	09/20/87	0001	WU	N	13.		1.	1.
	0927	02/04/88	0001	WU	N	11.		1.	1.
	0927	04/26/88	0001	WU	N	9.6		1.	1.0
	0927	08/26/88	0001	WU	N	13.		1.	1.
	0927	12/04/88	0001	WU	N	10.		1.	1.
	0928	09/20/87	0001	WU	N	6.8		1.	0.9
	0928	02/03/88	0001	WU	N	8.3		1.	0.9
	0928	04/22/88	0001	WU	N	7.3		1.	0.9
	0928	08/04/88	0001	WU	N	4.6		1.	0.7
	0928	12/04/88	0001	WU	N	7.6		1.	1.0
	0929	09/20/87	0001	WU	N	1.2		1.	0.4
	0929	02/03/88	0001	WU	N	1.9		1.	0.5
	0929	04/28/88	0001	WU	N	0.4	J	1.	0.5
	0929	08/11/88	0001	WU	N	1.7		1.	0.5
	0930	09/20/87	0001	WU	N	3.3		1.	0.6
	0930	01/30/88	0001	WU	N	2.1		1.	0.5
	0930	04/26/88	0001	WU	N	2.7		1.	0.5
	0930	08/27/88	0001	WU	N	13.		1.	1.
	0931	01/30/88	0001	WU	N	0.7		1.	0.3
	0931	04/28/88	0001	WU	N	0.5		1.	0.3
	0931	08/10/88	0001	WU	N	1.0		1.	0.4
	0931	12/04/88	0001	WU	N	0.8		1.	0.3
	0932	01/30/88	0001	WU	N	14.		1.	1.
	0932	04/28/88	0001	WU	N	13.		1.	1.
	0932	08/09/88	0001	WU	N	47.		1.	2.
	0932	12/07/88	0001	WU	N	46.		1.	2.
	0933	08/10/88	0001	WU	N	0.7		1.	0.3
	0933	12/07/88	0001	WU	N	1.0		1.	0.4
	0934	08/11/88	0001	WU	N	3.8		1.	0.7
	0934	12/07/88	0001	WU	N	1.9		1.	0.5
	0935	08/09/88	0001	WU	N	46.		1.	2.
	0935	12/04/88	0001	WU	N	74.		1.	3.

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-226	0936	08/08/88	0001	WU	N	PCI/L		5.4		1.	0.8
	0936	12/04/88	0001	WU	N			4.2		1.	0.7
	0937	08/08/88	0001	WU	N			3.3		1.	0.6
	0937	12/04/88	0001	WU	N			4.2		1.	0.7
	0939	08/08/88	0001	WU	N			3.7		1.	0.8
	0939	12/04/88	0001	WU	N			3.7		1.	0.7
	0940	08/08/88	0001	WU	N			61.		1.	3.
	0940	12/04/88	0001	WU	N			83.		1.	3.
	0941	08/08/88	0001	WU	N			0.9		1.	0.3
	0941	12/10/88	0001	WU	N			1.3		1.	0.4
	0942	08/08/88	0001	WU	N			1.3		1.	0.4
	0942	12/04/88	0001	WU	N			0.9		1.	0.3
	0943	08/09/88	0001	WU	N			0.7		1.	0.3
	0943	12/07/88	0001	WU	N			0.6		1.	0.3
	0944	08/11/88	0001	WU	N			0.5		1.	0.2
	0944	12/07/88	0001	WU	N			0.9		1.	0.3
RADIUM-226 + RADIUM-228	0911	09/18/87	0001	WU	N	PCI/L		4.00		-	-
	0911	01/30/88	0001	WU	N			1.40		-	-
	0911	04/22/88	0001	WU	N			2.50		-	-
	0911	08/11/88	0001	WU	N			2.60		-	-
	0911	12/10/88	0001	WU	N			2.10		-	-
	0912	02/03/88	0001	WU	N			31.30		-	-
	0912	04/22/88	0001	WU	N			15.60		-	-
	0912	08/27/88	0001	WU	N			30.20		-	-
	0912	12/04/88	0001	WU	N			47.10		-	-
	0913	09/18/87	0001	WU	N			122.70		-	-
	0913	02/03/88	0001	WU	N			77.80		-	-
	0913	04/22/88	0001	WU	N			90.10		-	-
	0913	08/04/88	0001	WU	N			71.30		-	-
	0913	12/10/88	0001	WU	N			45.30		-	-
	0916	09/20/87	0001	WU	N			22.10		-	-
	0916	02/03/88	0001	WU	N			21.10		-	-
	0916	04/22/88	0001	WU	N			21.80		-	-
	0916	08/04/88	0001	WU	N			15.10		-	-
	0916	12/07/88	0001	WU	N			24.60		-	-
	0917	09/20/87	0001	WU	N			5.50		-	-
	0917	01/30/88	0001	WU	N			4.60		-	-
	0917	04/22/88	0001	WU	N			6.00		-	-
	0917	08/27/88	0001	WU	N			5.00		-	-
	0917	12/07/88	0001	WU	N			5.90		-	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-226 + RADIUM-228	0918	09/20/87	0001	WU	N	PCI/L	5.30		-	-
	0918	02/03/88	0001	WU	N		4.60		-	-
	0918	04/22/88	0001	WU	N		6.70		-	-
	0918	08/26/88	0001	WU	N		7.60		-	-
	0918	12/04/88	0001	WU	N		7.20		-	-
	0920	09/20/87	0001	WU	N		7.50		-	-
	0920	01/30/88	0001	WU	N		44.40		-	-
	0920	04/26/88	0001	WU	N		55.60		-	-
	0920	08/27/88	0001	WU	N		46.60		-	-
	0920	12/10/88	0001	WU	N		35.00		-	-
	0922	09/20/87	0001	WU	N		2.30		-	-
	0922	02/03/88	0001	WU	N		1.10		-	-
	0922	04/26/88	0001	WU	N		1.90		-	-
	0922	08/08/88	0001	WU	N		1.60		-	-
	0922	12/10/88	0001	WU	N		2.40		-	-
	0924	09/20/87	0001	WU	N		141.90		-	-
	0924	02/04/88	0001	WU	N		142.40		-	-
	0924	04/26/88	0001	WU	N		127.20		-	-
	0924	08/26/88	0001	WU	N		138.50		-	-
	0924	12/07/88	0001	WU	N		193.60		-	-
	0925	09/20/87	0001	WU	N		4.80		-	-
	0925	02/03/88	0001	WU	N		2.20		-	-
	0925	04/26/88	0001	WU	N		1.80		-	-
	0925	08/26/88	0001	WU	N		3.00		-	-
	0925	12/07/88	0001	WU	N		3.30		-	-
	0927	09/20/87	0001	WU	N		13.90		-	-
	0927	02/04/88	0001	WU	N		13.00		-	-
	0927	04/26/88	0001	WU	N		13.20		-	-
	0927	08/26/88	0001	WU	N		16.90		-	-
	0927	12/04/88	0001	WU	N		13.80		-	-
	0928	09/20/87	0001	WU	N		9.80		-	-
	0928	02/03/88	0001	WU	N		10.50		-	-
	0928	04/22/88	0001	WU	N		10.20		-	-
	0928	08/04/88	0001	WU	N		6.60		-	-
	0928	12/04/88	0001	WU	N		10.50		-	-
	0929	09/20/87	0001	WU	N		2.70		-	-
	0929	02/03/88	0001	WU	N		2.50		-	-
	0929	04/28/88	0001	WU	N		0.90		-	-
	0929	08/11/88	0001	WU	N		2.80		-	-
	0930	09/20/87	0001	WU	N		5.90		-	-
	0930	01/30/88	0001	WU	N		3.40		-	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-226 + RADIUM-228	0930	04/26/88	0001	WU	N	PCI/L		4.90		-	-
	0930	08/27/88	0001	WU	N			16.80		-	-
	0931	01/30/88	0001	WU	N			1.60		-	-
	0931	04/28/88	0001	WU	N			2.20		-	-
	0931	08/10/88	0001	WU	N			2.80		-	-
	0931	12/04/88	0001	WU	N			2.60		-	-
	0932	01/30/88	0001	WU	N			15.40		-	-
	0932	04/28/88	0001	WU	N			14.00		-	-
	0932	08/09/88	0001	WU	N			48.40		-	-
	0932	12/07/88	0001	WU	N			47.80		-	-
	0933	08/10/88	0001	WU	N			2.10		-	-
	0933	12/07/88	0001	WU	N			2.90		-	-
	0934	08/11/88	0001	WU	N			5.10		-	-
	0934	12/07/88	0001	WU	N			3.50		-	-
	0935	08/09/88	0001	WU	N			54.80		-	-
	0935	12/04/88	0001	WU	N			89.00		-	-
	0936	08/08/88	0001	WU	N			7.10		-	-
	0936	12/04/88	0001	WU	N			6.40		-	-
	0937	08/08/88	0001	WU	N			4.10		-	-
	0937	12/04/88	0001	WU	N			5.80		-	-
	0939	08/08/88	0001	WU	N			4.20		-	-
	0939	12/04/88	0001	WU	N			4.80		-	-
	0940	08/08/88	0001	WU	N			68.70		-	-
	0940	12/04/88	0001	WU	N			94.00		-	-
	0941	08/08/88	0001	WU	N			2.30		-	-
	0941	12/10/88	0001	WU	N			3.20		-	-
	0942	08/08/88	0001	WU	N			1.30		-	-
	0942	12/04/88	0001	WU	N			1.00		-	-
	0943	08/09/88	0001	WU	N			1.30		-	-
	0943	12/07/88	0001	WU	N			1.80		-	-
	0944	08/11/88	0001	WU	N			1.90		-	-
	0944	12/07/88	0001	WU	N			3.40		-	-
RADIUM-228	0911	09/18/87	0001	WU	N	PCI/L		0.9		1.	1.2
	0911	01/30/88	0001	WU	N			0.1		1.	1.0
	0911	04/22/88	0001	WU	N			0.8		1.	0.7
	0911	08/11/88	0001	WU	N			1.2		1.	0.7
	0911	12/10/88	0001	WU	N			0.9		1.	0.9
	0912	02/03/88	0001	WU	N			0.3		1.	0.9
	0912	04/22/88	0001	WU	N			0.6		1.	0.8
	0912	08/27/88	0001	WU	N			1.2		1.	0.9

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-228	0912	12/04/88	0001	WU	N	PCI/L	1.1		1.	0.8
	0913	09/18/87	0001	WU	N		2.7		1.	1.7
	0913	02/03/88	0001	WU	N		2.8		1.	1.0
	0913	04/22/88	0001	WU	N		2.1		1.	0.9
	0913	08/04/88	0001	WU	N		2.3		1.	0.9
	0913	12/10/88	0001	WU	N		2.3		1.	1.0
	0916	09/20/87	0001	WU	N		4.1		1.	2.0
	0916	02/03/88	0001	WU	N		5.1		1.	1.0
	0916	04/22/88	0001	WU	N		5.8		1.	1.0
	0916	08/04/88	0001	WU	N		5.4		1.	1.0
	0916	12/07/88	0001	WU	N		5.6		1.	1.1
	0917	09/20/87	0001	WU	N		2.5		1.	1.4
	0917	01/30/88	0001	WU	N		2.6		1.	0.9
	0917	04/22/88	0001	WU	N		4.1		1.	1.0
	0917	08/27/88	0001	WU	N		3.4		1.	0.9
	0917	12/07/88	0001	WU	N		4.4		1.	1.1
	0918	09/20/87	0001	WU	N		0.1		1.	1.4
	0918	02/03/88	0001	WU	N		1.3		1.	0.9
	0918	04/22/88	0001	WU	N		1.7		1.	0.8
	0918	08/26/88	0001	WU	N		1.2		1.	0.8
	0918	12/04/88	0001	WU	N		1.5		1.	0.9
	0920	09/20/87	0001	WU	N		5.0		1.	1.4
	0920	01/30/88	0001	WU	N		7.4		1.	1.7
	0920	04/26/88	0001	WU	N		6.6		1.	1.0
	0920	08/27/88	0001	WU	N		6.6		1.	1.0
	0920	12/10/88	0001	WU	N		6.0		1.	1.1
	0922	09/20/87	0001	WU	N		0.4		1.	1.1
	0922	02/03/88	0001	WU	N		0.2		1.	0.9
	0922	04/26/88	0001	WU	N		0.7		1.	0.8
	0922	08/08/88	0001	WU	N		0.7		1.	0.8
	0922	12/10/88	0001	WU	N		1.1		1.	0.9
	0924	09/20/87	0001	WU	N		1.9		1.	1.1
	0924	02/04/88	0001	WU	N		2.4		1.	1.0
	0924	04/26/88	0001	WU	N		4.2		1.	1.0
	0924	08/26/88	0001	WU	N		3.5		1.	1.0
	0924	12/07/88	0001	WU	N		3.6		1.	1.0
	0925	09/20/87	0001	WU	N		2.3		1.	1.2
	0925	02/03/88	0001	WU	N		1.6		1.	1.1
	0925	04/26/88	0001	WU	N		1.6		1.	0.8
	0925	08/26/88	0001	WU	N		2.1		1.	0.9
	0925	12/07/88	0001	WU	N		2.6		1.	0.9

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER

UPPER SANDSTONE UNIT

SITE: SPK01 SPOOK

02/17/87 TO 12/10/88

REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-228	0927	09/20/87	0001	WU	N		0.9		1.	1.0
	0927	02/04/88	0001	WU	N		2.0		1.	1.1
	0927	04/26/88	0001	WU	N		3.6		1.	0.9
	0927	08/26/88	0001	WU	N		3.9		1.	1.0
	0927	12/04/88	0001	WU	N		3.8		1.	1.1
	0928	09/20/87	0001	WU	N		3.0		1.	1.1
	0928	02/03/88	0001	WU	N		2.2		1.	1.1
	0928	04/22/88	0001	WU	N		2.9		1.	0.9
	0928	08/04/88	0001	WU	N		2.0		1.	1.0
	0928	12/04/88	0001	WU	N		2.9		1.	1.0
	0929	09/20/87	0001	WU	N		1.5		1.	1.1
	0929	02/03/88	0001	WU	N		0.6		1.	0.8
	0929	04/28/88	0001	WU	N		0.5	J	1.	0.8
	0929	08/11/88	0001	WU	N		1.1		1.	0.9
	0930	09/20/87	0001	WU	N		2.6		1.	1.3
	0930	01/30/88	0001	WU	N		1.3		1.	1.4
	0930	04/26/88	0001	WU	N		2.2		1.	0.8
	0930	08/27/88	0001	WU	N		3.8		1.	1.0
	0931	01/30/88	0001	WU	N		0.9		1.	0.8
	0931	04/28/88	0001	WU	N		1.7		1.	0.8
	0931	08/10/88	0001	WU	N		1.8		1.	0.9
	0931	12/04/88	0001	WU	N		1.4		1.	1.0
	0932	01/30/88	0001	WU	N		1.0		1.	0.8
	0932	04/28/88	0001	WU	N		1.4		1.	0.8
	0932	08/09/88	0001	WU	N		1.8		1.	0.9
	0932	12/07/88	0001	WU	N		1.4		1.	0.9
	0933	08/10/88	0001	WU	N		1.9		1.	0.9
	0933	12/07/88	0001	WU	N		1.3		1.	0.9
	0934	08/11/88	0001	WU	N		1.6		1.	0.9
	0934	12/07/88	0001	WU	N		8.8		1.	1.3
	0935	08/09/88	0001	WU	N		15.		1.	2.
	0935	12/04/88	0001	WU	N		1.7		1.	0.9
	0936	08/08/88	0001	WU	N		2.2		1.	1.0
	0937	08/08/88	0001	WU	N		0.8		1.	0.7
	0937	12/04/88	0001	WU	N		1.6		1.	0.9
	0939	08/08/88	0001	WU	N		0.5		1.	1.0
	0939	12/04/88	0001	WU	N		1.1		1.	1.0
	0940	08/08/88	0001	WU	N		7.7		1.	1.1
	0940	12/04/88	0001	WU	N		11.		1.	2.

FORMATION OF COMPLETION CODE:

WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:

N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI):

< - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:

0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:

J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-228	0941	08/08/88	0001	WU	N	PCI/L	1.4		1.	0.9
	0941	12/10/88	0001	WU	N		1.9		1.	0.9
	0942	08/08/88	0001	WU	N		0.0		1.	0.7
	0942	12/04/88	0001	WU	N		0.1		1.	1.0
	0943	08/09/88	0001	WU	N		0.6		1.	0.9
	0943	12/07/88	0001	WU	N		1.2		1.	0.9
	0944	08/11/88	0001	WU	N		1.4		1.	0.8
	0944	12/07/88	0001	WU	N		2.5		1.	1.0
SELENIUM	0911	02/17/87	0001	WU	N	MG/L	0.004	J	0.005	-
	0911	09/18/87	0001	WU	N		0.006		0.005	-
	0911	01/30/88	0001	WU	N		< 0.005		0.005	-
	0911	04/22/88	0001	WU	N		0.003	J	0.005	-
	0911	08/11/88	0001	WU	N		0.002	J	0.005	-
	0911	12/10/88	0001	WU	N		0.008		0.005	-
	0912	02/18/87	0001	WU	N		< 0.001	J	0.005	-
	0912	02/03/88	0001	WU	N		< 0.005		0.005	-
	0912	04/22/88	0001	WU	N		0.003	J	0.005	-
	0912	08/27/88	0001	WU	N		< 0.005		0.005	-
	0912	12/04/88	0001	WU	N		0.006		0.005	-
	0913	02/18/87	0001	WU	N		3.80		0.005	-
	0913	09/18/87	0001	WU	N		3.27		0.005	-
	0913	02/03/88	0001	WU	N		3.19		0.005	-
	0913	04/22/88	0001	WU	N		3.24		0.005	-
	0913	08/04/88	0001	WU	N		3.80		0.005	-
	0913	12/10/88	0001	WU	N		4.04		0.005	-
	0916	02/20/87	0001	WU	N		1.15		0.005	-
	0916	09/20/87	0001	WU	N		21.0		0.005	-
	0916	02/03/88	0001	WU	N		12.3		0.005	-
	0916	04/22/88	0001	WU	N		11.6		0.005	-
	0916	08/04/88	0001	WU	N		12.8		0.005	-
	0916	12/07/88	0001	WU	N		13.9		0.005	-
	0917	02/19/87	0001	WU	N		2.71		0.005	-
	0917	09/20/87	0001	WU	N		3.49		0.005	-
	0917	01/30/88	0001	WU	N		2.77		0.005	-
	0917	04/22/88	0001	WU	N		2.88		0.005	-
	0917	08/27/88	0001	WU	N		5.44		0.005	-
	0917	12/07/88	0001	WU	N		3.53		0.005	-
	0918	02/20/87	0001	WU	N		1.40		0.005	-
	0918	09/20/87	0001	WU	N		1.84		0.005	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SELENIUM	0918	02/03/88	0001	WU	N	MG/L		1.49		0.005	-
	0918	04/22/88	0001	WU	N			1.38		0.005	-
	0918	08/26/88	0001	WU	N			2.66		0.005	-
	0918	12/04/88	0001	WU	N			0.939		0.005	-
	0920	09/20/87	0001	WU	N			1.41		0.005	-
	0920	01/30/88	0001	WU	N			1.12		0.005	-
	0920	04/26/88	0001	WU	N			0.953		0.005	-
	0920	08/27/88	0001	WU	N			2.09		0.005	-
	0920	12/10/88	0001	WU	N			0.865		0.005	-
	0922	09/20/87	0001	WU	N			0.043		0.005	-
	0922	02/03/88	0001	WU	N			0.153		0.005	-
	0922	04/26/88	0001	WU	N			0.105		0.005	-
	0922	08/08/88	0001	WU	N			0.177		0.005	-
	0922	12/10/88	0001	WU	N			0.152		0.005	-
	0924	09/20/87	0001	WU	N			2.14		0.005	-
	0924	02/04/88	0001	WU	N			1.83		0.005	-
	0924	04/26/88	0001	WU	N			1.80		0.005	-
	0924	08/26/88	0001	WU	N			2.74		0.005	-
	0924	12/07/88	0001	WU	N			1.85		0.005	-
	0925	09/20/87	0001	WU	N			1.51		0.005	-
	0925	02/03/88	0001	WU	N			1.43		0.005	-
	0925	04/26/88	0001	WU	N			1.37		0.005	-
	0925	08/26/88	0001	WU	N			2.17		0.005	-
	0925	12/07/88	0001	WU	N			1.79		0.005	-
	0927	09/20/87	0001	WU	N			8.95		0.005	-
	0927	02/04/88	0001	WU	N			6.60		0.005	-
	0927	04/26/88	0001	WU	N			7.05		0.005	-
	0927	08/26/88	0001	WU	N			10.9		0.005	-
	0927	12/04/88	0001	WU	N			5.04		0.005	-
	0928	09/20/87	0001	WU	N			3.15		0.005	-
	0928	02/03/88	0001	WU	N			3.76		0.005	-
	0928	04/22/88	0001	WU	N			4.14		0.005	-
	0928	08/04/88	0001	WU	N			3.87		0.005	-
	0928	12/04/88	0001	WU	N			2.63		0.005	-
	0929	09/20/87	0001	WU	N			0.020		0.005	-
	0929	02/03/88	0001	WU	N		<	0.005		0.005	-
	0929	04/28/88	0001	WU	N		<	0.005	J	0.005	-
	0929	08/11/88	0001	WU	N			0.006		0.005	-
	0930	09/20/87	0001	WU	N			0.442		0.005	-
	0930	01/30/88	0001	WU	N			0.045		0.005	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SELENIUM	0930	04/26/88	0001	WU	N	MG/L	0.749		0.005	-
	0930	08/27/88	0001	WU	N		0.959		0.005	-
	0931	01/30/88	0001	WU	N		0.909		0.005	-
	0931	04/28/88	0001	WU	N		0.730		0.005	-
	0931	08/10/88	0001	WU	N		0.826		0.005	-
	0931	12/04/88	0001	WU	N		1.08		0.005	-
	0932	01/30/88	0001	WU	N		0.072		0.005	-
	0932	04/28/88	0001	WU	N		0.065		0.005	-
	0932	08/09/88	0001	WU	N		0.043		0.005	-
	0932	12/07/88	0001	WU	N		0.063		0.005	-
	0933	08/10/88	0001	WU	N		0.275		0.005	-
	0933	12/07/88	0001	WU	N		0.302		0.005	-
	0934	08/11/88	0001	WU	N		0.277		0.005	-
	0934	12/07/88	0001	WU	N		0.352		0.005	-
	0935	08/09/88	0001	WU	N		0.262		0.005	-
	0935	12/04/88	0001	WU	N		1.05		0.005	-
	0936	08/08/88	0001	WU	N		5.25		0.005	-
	0936	12/04/88	0001	WU	N		5.08		0.005	-
	0937	08/08/88	0001	WU	N		0.305		0.005	-
	0937	12/04/88	0001	WU	N		0.166		0.005	-
	0939	08/08/88	0001	WU	N		0.025		0.005	-
	0939	12/04/88	0001	WU	N		0.014		0.005	-
	0940	08/08/88	0001	WU	N		3.83		0.005	-
	0940	12/04/88	0001	WU	N		6.59		0.005	-
	0941	08/08/88	0001	WU	N		0.101		0.005	-
	0941	12/10/88	0001	WU	N		0.074		0.005	-
	0942	08/08/88	0001	WU	N		0.272		0.005	-
	0942	12/04/88	0001	WU	N		0.148		0.005	-
	0943	08/09/88	0001	WU	N		0.351		0.005	-
	0943	12/07/88	0001	WU	N		0.424		0.005	-
	0944	08/11/88	0001	WU	N		0.052		0.005	-
	0944	12/07/88	0001	WU	N		0.036		0.005	-
SILICA - SIO2	0911	02/17/87	0001	WU	N	MG/L	14.		2.	-
	0911	09/18/87	0001	WU	N		8.00		2.	-
	0911	01/30/88	0001	WU	N		10.6		2.	-
	0911	04/22/88	0001	WU	N		9.60		2.	-
	0911	08/11/88	0001	WU	N		11.		2.	-
	0912	02/18/87	0001	WU	N		20.		2.	-
	0912	02/03/88	0001	WU	N		14.3		2.	-
	0912	04/22/88	0001	WU	N		13.4		2.	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SILICA - SiO2	0912	08/27/88	0001	WU	N	MG/L		14.2		2.	-
	0913	02/18/87	0001	WU	N			19.		2.	-
	0913	09/18/87	0001	WU	N			11.6		2.	-
	0913	02/03/88	0001	WU	N			14.0		2.	-
	0913	04/22/88	0001	WU	N			13.1		2.	-
	0913	08/04/88	0001	WU	N			14.		2.	-
	0916	02/20/87	0001	WU	N			19.		2.	-
	0916	09/20/87	0001	WU	N			13.7		2.	-
	0916	02/03/88	0001	WU	N			16.7		2.	-
	0916	04/22/88	0001	WU	N			15.6		2.	-
	0916	08/04/88	0001	WU	N			17.		2.	-
	0917	02/19/87	0001	WU	N			22.		2.	-
	0917	09/20/87	0001	WU	N			15.1		2.	-
	0917	01/30/88	0001	WU	N			15.6		2.	-
	0917	04/22/88	0001	WU	N			15.2		2.	-
	0917	08/27/88	0001	WU	N			16.8		2.	-
	0918	02/20/87	0001	WU	N			20.		2.	-
	0918	09/20/87	0001	WU	N			13.1		2.	-
	0918	02/03/88	0001	WU	N			13.7		2.	-
	0918	04/22/88	0001	WU	N			13.9		2.	-
	0918	08/26/88	0001	WU	N			14.8		2.	-
	0920	09/20/87	0001	WU	N			19.3		2.	-
	0920	01/30/88	0001	WU	N			25.0		2.	-
	0920	04/26/88	0001	WU	N			26.4		2.	-
	0920	08/27/88	0001	WU	N			26.4		2.	-
	0922	09/20/87	0001	WU	N			12.9		2.	-
	0922	02/03/88	0001	WU	N			14.9		2.	-
	0922	04/26/88	0001	WU	N			16.4		2.	-
	0922	08/08/88	0001	WU	N			15.		2.	-
	0924	09/20/87	0001	WU	N			12.6		2.	-
	0924	02/04/88	0001	WU	N			14.5		2.	-
	0924	04/26/88	0001	WU	N			14.6		2.	-
	0924	08/26/88	0001	WU	N			14.4		2.	-
	0925	09/20/87	0001	WU	N			13.5		2.	-
	0925	02/03/88	0001	WU	N			14.9		2.	-
	0925	04/26/88	0001	WU	N			15.2		2.	-
	0925	08/26/88	0001	WU	N			15.3		2.	-
	0927	09/20/87	0001	WU	N			15.2		2.	-
	0927	02/04/88	0001	WU	N			16.8		2.	-
	0927	04/26/88	0001	WU	N			17.7		2.	-
	0927	08/26/88	0001	WU	N			18.0		2.	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SILICA - S102	0928	09/20/87	0001	WU	N	MG/L		16.8		2.	-
	0928	02/03/88	0001	WU	N			16.8		2.	-
	0928	04/22/88	0001	WU	N			18.9		2.	-
	0928	08/04/88	0001	WU	N			18.		2.	-
	0929	09/20/87	0001	WU	N			4.75		2.	-
	0929	02/03/88	0001	WU	N			8.0		2.	-
	0929	04/28/88	0001	WU	N			7.60	J	2.	-
	0929	08/11/88	0001	WU	N			9.0		2.	-
	0930	09/20/87	0001	WU	N			15.0		2.	-
	0930	01/30/88	0001	WU	N			30.7		2.	-
	0930	04/26/88	0001	WU	N			28.9		2.	-
	0930	08/27/88	0001	WU	N			23.7		2.	-
	0931	01/30/88	0001	WU	N			15.7		2.	-
	0931	04/28/88	0001	WU	N			15.7		2.	-
	0931	08/10/88	0001	WU	N			16.		2.	-
	0932	01/30/88	0001	WU	N			16.4		2.	-
	0932	04/28/88	0001	WU	N			17.4		2.	-
	0932	08/09/88	0001	WU	N			17.		2.	-
	0933	08/10/88	0001	WU	N			15.		2.	-
	0934	08/11/88	0001	WU	N			15.		2.	-
	0935	08/09/88	0001	WU	N			39.		2.	-
	0936	08/08/88	0001	WU	N			14.		2.	-
	0937	08/08/88	0001	WU	N			9.0		2.	-
	0939	08/08/88	0001	WU	N			7.		2.	-
	0940	08/08/88	0001	WU	N			20.		2.	-
	0941	08/08/88	0001	WU	N			15.		2.	-
	0942	08/08/88	0001	WU	N			13.		2.	-
	0943	08/09/88	0001	WU	N			16.		2.	-
	0944	08/11/88	0001	WU	N			14.		2.	-
SILVER	0911	02/17/87	0001	WU	N	MG/L	<	0.01		0.01	-
	0911	09/18/87	0001	WU	N		<	0.01		0.01	-
	0911	01/30/88	0001	WU	N		<	0.01		0.01	-
	0911	04/22/88	0001	WU	N		<	0.01		0.01	-
	0911	08/11/88	0001	WU	N		<	0.01		0.01	-
	0911	12/10/88	0001	WU	N		<	0.01		0.01	-
	0912	02/18/87	0001	WU	N		<	0.01		0.01	-
	0912	02/03/88	0001	WU	N		<	0.01		0.01	-
	0912	04/22/88	0001	WU	N		<	0.01		0.01	-
	0912	08/27/88	0001	WU	N		<	0.01		0.01	-

FORMATION OF COMPLETION CODE:
 WU - HASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
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OTHER PARAMETER VALUE FLAGS:
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GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SILVER	0912	12/04/88	0001	WU	N	MG/L	<	0.01		0.01	-
	0913	02/18/87	0001	WU	N		<	0.01		0.01	-
	0913	09/18/87	0001	WU	N		<	0.01		0.01	-
	0913	02/03/88	0001	WU	N			0.02		0.01	-
	0913	04/22/88	0001	WU	N			0.04		0.01	-
	0913	08/04/88	0001	WU	N			0.02		0.01	-
	0913	12/10/88	0001	WU	N		<	0.03		0.01	-
	0916	02/20/87	0001	WU	N		<	0.01		0.01	-
	0916	09/20/87	0001	WU	N			0.01		0.01	-
	0916	02/03/88	0001	WU	N			0.06		0.01	-
	0916	04/22/88	0001	WU	N			0.08		0.01	-
	0916	08/04/88	0001	WU	N			0.05		0.01	-
	0916	12/07/88	0001	WU	N			0.08		0.01	-
	0917	02/19/87	0001	WU	N		<	0.01		0.01	-
	0917	09/20/87	0001	WU	N		<	0.01		0.01	-
	0917	01/30/88	0001	WU	N			0.02		0.01	-
	0917	04/22/88	0001	WU	N			0.02		0.01	-
	0917	08/27/88	0001	WU	N			0.01		0.01	-
	0917	12/07/88	0001	WU	N			0.03		0.01	-
	0918	02/20/87	0001	WU	N		<	0.01		0.01	-
	0918	09/20/87	0001	WU	N		<	0.01		0.01	-
	0918	02/03/88	0001	WU	N			0.01		0.01	-
	0918	04/22/88	0001	WU	N			0.01		0.01	-
	0918	08/26/88	0001	WU	N		<	0.01		0.01	-
	0918	12/04/88	0001	WU	N		<	0.01		0.01	-
	0920	09/20/87	0001	WU	N			0.01		0.01	-
	0920	01/30/88	0001	WU	N			0.03		0.01	-
	0920	04/26/88	0001	WU	N			0.03		0.01	-
	0920	08/27/88	0001	WU	N			0.02		0.01	-
	0920	12/10/88	0001	WU	N		<	0.03		0.01	-
	0922	09/20/87	0001	WU	N			0.01		0.01	-
	0922	02/03/88	0001	WU	N			0.02		0.01	-
	0922	04/26/88	0001	WU	N		<	0.01		0.01	-
	0922	08/08/88	0001	WU	N		<	0.01		0.01	-
	0922	12/10/88	0001	WU	N		<	0.01		0.01	-
	0924	09/20/87	0001	WU	N			0.01		0.01	-
	0924	02/04/88	0001	WU	N			0.02		0.01	-
	0924	04/26/88	0001	WU	N			0.03		0.01	-
	0924	08/26/88	0001	WU	N		<	0.01		0.01	-
	0924	12/07/88	0001	WU	N			0.03		0.01	-
	0925	09/20/87	0001	WU	N		<	0.01		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SILVER	0925	02/03/88	0001	WU	MG/L		0.01		0.01	-
	0925	04/26/88	0001	WU			0.02		0.01	-
	0925	08/26/88	0001	WU		<	0.01		0.01	-
	0925	12/07/88	0001	WU			0.01		0.01	-
	0927	09/20/87	0001	WU		<	0.01		0.01	-
	0927	02/04/88	0001	WU			0.03		0.01	-
	0927	04/26/88	0001	WU			0.02		0.01	-
	0927	08/26/88	0001	WU			0.03		0.01	-
	0927	12/04/88	0001	WU			0.01		0.01	-
	0928	09/20/87	0001	WU		<	0.03		0.01	-
	0928	02/03/88	0001	WU			0.03		0.01	-
	0928	04/22/88	0001	WU			0.01		0.01	-
	0928	08/04/88	0001	WU			0.03		0.01	-
	0928	12/04/88	0001	WU			0.01		0.01	-
	0929	09/20/87	0001	WU		<	0.01		0.01	-
	0929	02/03/88	0001	WU			0.01		0.01	-
	0929	04/28/88	0001	WU			0.01	J	0.01	-
	0929	08/11/88	0001	WU		<	0.01		0.01	-
	0930	09/20/87	0001	WU		<	0.01		0.01	-
	0930	01/30/88	0001	WU			0.018		0.01	-
	0930	04/26/88	0001	WU			0.04		0.01	-
	0930	08/27/88	0001	WU		<	0.02		0.01	-
	0931	01/30/88	0001	WU			0.01		0.01	-
	0931	04/28/88	0001	WU		<	0.02		0.01	-
	0931	08/10/88	0001	WU		<	0.01		0.01	-
	0931	12/04/88	0001	WU		<	0.01		0.01	-
	0932	01/30/88	0001	WU			0.01		0.01	-
	0932	04/28/88	0001	WU		<	0.01		0.01	-
	0932	08/09/88	0001	WU		<	0.01		0.01	-
	0932	12/07/88	0001	WU		<	0.01		0.01	-
	0933	08/10/88	0001	WU			0.01		0.01	-
	0933	12/07/88	0001	WU			0.01		0.01	-
	0934	08/11/88	0001	WU		<	0.01		0.01	-
	0934	12/07/88	0001	WU		<	0.01		0.01	-
	0935	08/09/88	0001	WU			0.01		0.01	-
	0935	12/04/88	0001	WU			0.03		0.01	-
	0936	08/08/88	0001	WU			0.01		0.01	-
	0936	12/04/88	0001	WU			0.03		0.01	-
	0937	08/08/88	0001	WU			0.03		0.01	-
	0937	12/04/88	0001	WU			0.02		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SILVER	0939	08/08/88	0001	WU	N	MG/L		0.01		0.01	-
	0939	12/04/88	0001	WU	N			0.02		0.01	-
	0940	08/08/88	0001	WU	N			0.03		0.01	-
	0940	12/04/88	0001	WU	N			0.04		0.01	-
	0941	08/08/88	0001	WU	N		<	0.01		0.01	-
	0941	12/10/88	0001	WU	N		<	0.01		0.01	-
	0942	08/08/88	0001	WU	N		<	0.01		0.01	-
	0942	12/04/88	0001	WU	N		<	0.01		0.01	-
	0943	08/09/88	0001	WU	N			0.01		0.01	-
	0943	12/07/88	0001	WU	N			0.01		0.01	-
	0944	08/11/88	0001	WU	N		<	0.01		0.01	-
	0944	12/07/88	0001	WU	N			0.01		0.01	-
SODIUM	0911	02/17/87	0001	WU	N	MG/L		208.		0.002	-
	0911	09/18/87	0001	WU	N			41.6		0.002	-
	0911	01/30/88	0001	WU	N			21.3		0.002	-
	0911	04/22/88	0001	WU	N			16.4		0.002	-
	0911	08/11/88	0001	WU	N			14.4		0.002	-
	0911	12/10/88	0001	WU	N			14.6		0.002	-
	0912	02/18/87	0001	WU	N			75.0		0.002	-
	0912	02/03/88	0001	WU	N			55.1		0.002	-
	0912	04/22/88	0001	WU	N			51.6		0.002	-
	0912	08/27/88	0001	WU	N			50.1		0.002	-
	0912	12/04/88	0001	WU	N			55.2		0.002	-
	0913	02/18/87	0001	WU	N			113.		0.002	-
	0913	09/18/87	0001	WU	N			76.3		0.002	-
	0913	02/03/88	0001	WU	N			27.1		0.002	-
	0913	04/22/88	0001	WU	N			24.9		0.002	-
	0913	08/04/88	0001	WU	N			23.1		0.002	-
	0913	12/10/88	0001	WU	N			26.1		0.002	-
	0916	02/20/87	0001	WU	N			27.2		0.002	-
	0916	09/20/87	0001	WU	N			136.		0.002	-
	0916	02/03/88	0001	WU	N			32.9		0.002	-
	0916	04/22/88	0001	WU	N			31.4		0.002	-
	0916	08/04/88	0001	WU	N			29.2		0.002	-
	0916	12/07/88	0001	WU	N			30.6		0.002	-
	0917	02/19/87	0001	WU	N			18.4		0.002	-
	0917	09/20/87	0001	WU	N			25.8		0.002	-
	0917	01/30/88	0001	WU	N			19.0		0.002	-
	0917	04/22/88	0001	WU	N			18.6		0.002	-
	0917	08/27/88	0001	WU	N			18.5		0.002	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SODIUM	0917	12/07/88	0001	WU	N	MG/L		19.1		0.002	-
	0918	02/20/87	0001	WU	N			18.6		0.002	-
	0918	09/20/87	0001	WU	N			42.6		0.002	-
	0918	02/03/88	0001	WU	N			19.6		0.002	-
	0918	04/22/88	0001	WU	N			20.1		0.002	-
	0918	08/26/88	0001	WU	N			19.0		0.002	-
	0918	12/04/88	0001	WU	N			22.6		0.002	-
	0920	09/20/87	0001	WU	N			421.		0.002	-
	0920	01/30/88	0001	WU	N			395.		0.002	-
	0920	04/26/88	0001	WU	N			411.		0.002	-
	0920	08/27/88	0001	WU	N			400.		0.002	-
	0920	12/10/88	0001	WU	N			432.		0.002	-
	0922	09/20/87	0001	WU	N			23.6		0.002	-
	0922	02/03/88	0001	WU	N			15.7		0.002	-
	0922	04/26/88	0001	WU	N			15.4		0.002	-
	0922	08/08/88	0001	WU	N			18.3		0.002	-
	0922	12/10/88	0001	WU	N			16.6		0.002	-
	0924	09/20/87	0001	WU	N			20.7		0.002	-
	0924	02/04/88	0001	WU	N			19.0		0.002	-
	0924	04/26/88	0001	WU	N			18.1		0.002	-
	0924	08/26/88	0001	WU	N			18.2		0.002	-
	0924	12/07/88	0001	WU	N			19.0		0.002	-
	0925	09/20/87	0001	WU	N			16.2		0.002	-
	0925	02/03/88	0001	WU	N			14.3		0.002	-
	0925	04/26/88	0001	WU	N			13.8		0.002	-
	0925	08/26/88	0001	WU	N			13.4		0.002	-
	0925	12/07/88	0001	WU	N			13.9		0.002	-
	0927	09/20/87	0001	WU	N			56.3		0.002	-
	0927	02/04/88	0001	WU	N			51.9		0.002	-
	0927	04/26/88	0001	WU	N			52.5		0.002	-
	0927	08/26/88	0001	WU	N			53.8		0.002	-
	0927	12/04/88	0001	WU	N			53.0		0.002	-
	0928	09/20/87	0001	WU	N			28.1		0.002	-
	0928	02/03/88	0001	WU	N			22.1		0.002	-
	0928	04/22/88	0001	WU	N			22.7		0.002	-
	0928	08/04/88	0001	WU	N			21.9		0.002	-
	0928	12/04/88	0001	WU	N			22.2		0.002	-
	0929	09/20/87	0001	WU	N			45.1		0.002	-
	0929	02/03/88	0001	WU	N			24.8		0.002	-
	0929	04/28/88	0001	WU	N			20.4	J	0.002	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SODIUM	0929	08/11/88	0001	WU	N	17.4		0.002	-
	0930	09/20/87	0001	WU	N	311.		0.002	-
	0930	01/30/88	0001	WU	N	375.		0.002	-
	0930	04/26/88	0001	WU	N	366.		0.002	-
	0930	08/27/88	0001	WU	N	325.		0.002	-
	0931	01/30/88	0001	WU	N	18.1		0.002	-
	0931	04/28/88	0001	WU	N	16.9		0.002	-
	0931	08/10/88	0001	WU	N	14.2		0.002	-
	0931	12/04/88	0001	WU	N	14.4		0.002	-
	0932	01/30/88	0001	WU	N	14.7		0.002	-
	0932	04/28/88	0001	WU	N	15.1		0.002	-
	0932	08/09/88	0001	WU	N	16.6		0.002	-
	0932	12/07/88	0001	WU	N	14.1		0.002	-
	0933	08/10/88	0001	WU	N	28.3		0.002	-
	0933	12/07/88	0001	WU	N	20.8		0.002	-
	0934	08/11/88	0001	WU	N	21.2		0.002	-
	0934	12/07/88	0001	WU	N	15.4		0.002	-
	0935	08/09/88	0001	WU	N	345.		0.002	-
	0935	12/04/88	0001	WU	N	408.		0.002	-
	0936	08/08/88	0001	WU	N	17.7		0.002	-
	0936	12/04/88	0001	WU	N	21.4		0.002	-
	0937	08/08/88	0001	WU	N	72.6		0.002	-
	0937	12/04/88	0001	WU	N	72.2		0.002	-
	0939	08/08/88	0001	WU	N	37.6		0.002	-
	0939	12/04/88	0001	WU	N	48.4		0.002	-
	0940	08/08/88	0001	WU	N	95.8		0.002	-
	0940	12/04/88	0001	WU	N	94.7		0.002	-
	0941	08/08/88	0001	WU	N	15.5		0.002	-
	0941	12/10/88	0001	WU	N	14.2		0.002	-
	0942	08/08/88	0001	WU	N	16.5		0.002	-
	0942	12/04/88	0001	WU	N	16.6		0.002	-
	0943	08/09/88	0001	WU	N	25.2		0.002	-
	0943	12/07/88	0001	WU	N	20.3		0.002	-
	0944	08/11/88	0001	WU	N	30.8		0.002	-
	0944	12/07/88	0001	WU	N	23.3		0.002	-
SPECIFIC CONDUCTANCE	0911	02/17/87	0001	WU	N	1350.		-	-
	0911	09/18/87	0001	WU	N	420.		-	-
	0911	01/30/88	0001	WU	N	390.		-	-
	0911	04/22/88	0001	WU	N	550.		-	-
	0911	08/11/88	0001	WU	N	550.0		-	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SPECIFIC CONDUCTANCE	0911	12/10/88	0001	WU	N	UMHO/CM		500.		-	-
	0912	02/18/87	0001	WU	N			375.		-	-
	0912	02/03/88	0001	WU	N			300.		-	-
	0912	04/22/88	0001	WU	N			400.		-	-
	0912	08/27/88	0001	WU	N			380.0		-	-
	0912	12/04/88	0001	WU	N			370.		-	-
	0913	02/18/87	0001	WU	N			700.		-	-
	0913	09/18/87	0001	WU	N			460.		-	-
	0913	02/03/88	0001	WU	N			485.		-	-
	0913	04/22/88	0001	WU	N			975.		-	-
	0913	08/04/88	0001	WU	N			1050.0		-	-
	0913	12/10/88	0001	WU	N			950.		-	-
	0916	02/20/87	0001	WU	N			1150.		-	-
	0916	09/20/87	0001	WU	N			950.		-	-
	0916	02/03/88	0001	WU	N			1100.		-	-
	0916	04/22/88	0001	WU	N			1750.		-	-
	0916	08/04/88	0001	WU	N			1750.0		-	-
	0916	12/07/88	0001	WU	N			1550.		-	-
	0917	02/19/87	0001	WU	N			700.		-	-
	0917	09/20/87	0001	WU	N			360.		-	-
	0917	01/30/88	0001	WU	N			460.		-	-
	0917	04/22/88	0001	WU	N			650.		-	-
	0917	08/27/88	0001	WU	N			770.0		-	-
	0917	12/07/88	0001	WU	N			700.		-	-
	0918	02/20/87	0001	WU	N			450.		-	-
	0918	09/20/87	0001	WU	N			280.		-	-
	0918	02/03/88	0001	WU	N			380.		-	-
	0918	04/22/88	0001	WU	N			625.		-	-
	0918	08/26/88	0001	WU	N			600.0		-	-
	0918	12/04/88	0001	WU	N			600.		-	-
	0920	09/20/87	0001	WU	N			2100.		-	-
	0920	01/30/88	0001	WU	N			1830.		-	-
	0920	04/26/88	0001	WU	N			3600.		-	-
	0920	08/27/88	0001	WU	N			3500.0		-	-
	0920	12/10/88	0001	WU	N			3200.		-	-
	0922	09/20/87	0001	WU	N			410.		-	-
	0922	02/03/88	0001	WU	N			430.		-	-
	0922	04/26/88	0001	WU	N			600.		-	-
	0922	08/08/88	0001	WU	N			650.0		-	-
	0922	12/10/88	0001	WU	N			600.		-	-
	0924	09/20/87	0001	WU	N			700.		-	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SPECIFIC CONDUCTANCE	0924	02/04/88	0001	WU	N	UMHO/CM	800.		-	-
	0924	04/26/88	0001	WU	N		950.		-	-
	0924	08/26/88	0001	WU	N		810.0		-	-
	0924	12/07/88	0001	WU	N		900.		-	-
	0925	09/20/87	0001	WU	N		305.		-	-
	0925	02/03/88	0001	WU	N		310.		-	-
	0925	04/26/88	0001	WU	N		450.		-	-
	0925	08/26/88	0001	WU	N		330.0		-	-
	0925	12/07/88	0001	WU	N		460.		-	-
	0927	09/20/87	0001	WU	N		1200.		-	-
	0927	02/04/88	0001	WU	N		1200.		-	-
	0927	04/26/88	0001	WU	N		1650.		-	-
	0927	08/26/88	0001	WU	N		1350.0		-	-
	0927	12/04/88	0001	WU	N		1500.		-	-
	0928	09/20/87	0001	WU	N		800.		-	-
	0928	02/03/88	0001	WU	N		480.		-	-
	0928	04/22/88	0001	WU	N		1300.		-	-
	0928	08/04/88	0001	WU	N		1300.0		-	-
	0928	12/04/88	0001	WU	N		1200.		-	-
	0929	09/20/87	0001	WU	N		700.		-	-
	0929	02/03/88	0001	WU	N		230.		-	-
	0929	04/28/88	0001	WU	N		425.		-	-
	0929	08/11/88	0001	WU	N		420.0		-	-
	0930	09/20/87	0001	WU	N		1800.		-	-
	0930	01/30/88	0001	WU	N		2190.		-	-
	0930	04/26/88	0001	WU	N		3850.		-	-
	0930	08/27/88	0001	WU	N		3400.0		-	-
	0931	01/30/88	0001	WU	N		195.		-	-
	0931	04/28/88	0001	WU	N		460.		-	-
	0931	08/10/88	0001	WU	N		500.		-	-
	0931	12/04/88	0001	WU	N		415.		-	-
	0932	01/30/88	0001	WU	N		380.		-	-
	0932	04/28/88	0001	WU	N		650.		-	-
	0932	08/09/88	0001	WU	N		700.0		-	-
	0932	12/07/88	0001	WU	N		600.		-	-
	0933	08/10/88	0001	WU	N		525.0		-	-
	0933	12/07/88	0001	WU	N		500.		-	-
	0934	08/11/88	0001	WU	N		525.0		-	-
	0934	12/07/88	0001	WU	N		480.		-	-
	0935	08/09/88	0001	WU	N		1400.0		-	-
	0935	12/04/88	0001	WU	N		3900.		-	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SPECIFIC CONDUCTANCE	0936	08/08/88	0001	WU	N	UMHO/CM		1300.0		-	-
	0936	12/04/88	0001	WU	N			1000.		-	-
	0937	08/08/88	0001	WU	N			800.0		-	-
	0937	12/04/88	0001	WU	N			600.		-	-
	0939	08/08/88	0001	WU	N			1100.0		-	-
	0939	12/04/88	0001	WU	N			1150.		-	-
	0940	08/08/88	0001	WU	N			3300.0		-	-
	0940	12/04/88	0001	WU	N			2900.		-	-
	0941	08/08/88	0001	WU	N			310.0		-	-
	0941	12/10/88	0001	WU	N			310.		-	-
	0942	08/08/88	0001	WU	N			700.0		-	-
	0942	12/04/88	0001	WU	N			400.		-	-
	0943	08/09/88	0001	WU	N			450.0		-	-
	0943	12/07/88	0001	WU	N			10.		-	-
	0944	08/11/88	0001	WU	N			800.0		-	-
	0944	12/07/88	0001	WU	N			800.		-	-
STRONTIUM	0911	09/18/87	0001	WU	N	MG/L		1.17		0.1	-
	0911	01/30/88	0001	WU	N			1.03		0.1	-
	0911	04/22/88	0001	WU	N			0.87		0.1	-
	0911	08/11/88	0001	WU	N			1.1		0.1	-
	0912	02/03/88	0001	WU	N			0.49		0.1	-
	0912	04/22/88	0001	WU	N			0.38		0.1	-
	0912	08/27/88	0001	WU	N			0.5		0.1	-
	0913	09/18/87	0001	WU	N			2.11		0.1	-
	0913	02/03/88	0001	WU	N			1.84		0.1	-
	0913	04/22/88	0001	WU	N			1.54		0.1	-
	0913	08/04/88	0001	WU	N			1.8		0.1	-
	0916	09/20/87	0001	WU	N			3.56		0.1	-
	0916	02/03/88	0001	WU	N			3.37		0.1	-
	0916	04/22/88	0001	WU	N			2.78		0.1	-
	0916	08/04/88	0001	WU	N			3.3		0.1	-
	0917	09/20/87	0001	WU	N			1.92		0.1	-
	0917	01/30/88	0001	WU	N			1.70		0.1	-
	0917	04/22/88	0001	WU	N			1.39		0.1	-
	0917	08/27/88	0001	WU	N			1.9		0.1	-
	0918	09/20/87	0001	WU	N			1.65		0.1	-
	0918	02/03/88	0001	WU	N			1.42		0.1	-
	0918	04/22/88	0001	WU	N			1.14		0.1	-
	0918	08/26/88	0001	WU	N			1.6		0.1	-
	0920	09/20/87	0001	WU	N			5.33		0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PARAMETER PV1 VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
STRONTIUM	0920	01/30/88	0001	WU	MG/L	5.95		0.1	-
	0920	04/26/88	0001	WU		4.98		0.1	-
	0920	08/27/88	0001	WU		6.5		0.1	-
	0922	09/20/87	0001	WU		1.04		0.1	-
	0922	02/03/88	0001	WU		0.81		0.1	-
	0922	04/26/88	0001	WU		0.58		0.1	-
	0922	08/08/88	0001	WU		0.9		0.1	-
	0924	09/20/87	0001	WU		1.53		0.1	-
	0924	02/04/88	0001	WU		1.51		0.1	-
	0924	04/26/88	0001	WU		1.20		0.1	-
	0924	08/26/88	0001	WU		1.6		0.1	-
	0925	09/20/87	0001	WU		1.12		0.1	-
	0925	02/03/88	0001	WU		1.01		0.1	-
	0925	04/26/88	0001	WU		0.80		0.1	-
	0925	08/26/88	0001	WU		1.1		0.1	-
	0927	09/20/87	0001	WU		2.19		0.1	-
	0927	02/04/88	0001	WU		2.33		0.1	-
	0927	04/26/88	0001	WU		1.85		0.1	-
	0927	08/26/88	0001	WU		2.3		0.1	-
	0928	09/20/87	0001	WU		2.18		0.1	-
	0928	02/03/88	0001	WU		2.33		0.1	-
	0928	04/22/88	0001	WU		1.81		0.1	-
	0928	08/04/88	0001	WU		2.0		0.1	-
	0929	09/20/87	0001	WU		2.07		0.1	-
	0929	02/03/88	0001	WU		0.94		0.1	-
	0929	04/28/88	0001	WU		0.91	J	0.1	-
	0929	08/11/88	0001	WU		1.0		0.1	-
	0930	09/20/87	0001	WU		4.72		0.1	-
	0930	01/30/88	0001	WU		5.50		0.1	-
	0930	04/26/88	0001	WU		5.28		0.1	-
	0930	08/27/88	0001	WU		6.0		0.1	-
	0931	01/30/88	0001	WU		1.20		0.1	-
	0931	04/28/88	0001	WU		1.12		0.1	-
	0931	08/10/88	0001	WU		1.0		0.1	-
	0932	01/30/88	0001	WU		0.98		0.1	-
	0932	04/28/88	0001	WU		0.93		0.1	-
	0932	08/09/88	0001	WU		1.0		0.1	-
	0933	08/10/88	0001	WU		1.4		0.1	-
	0934	08/11/88	0001	WU		1.0		0.1	-
	0935	08/09/88	0001	WU		5.5		0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PV1): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
STRONTIUM	0936	08/08/88	0001	WU	N	MG/L		1.9		0.1	-
	0937	08/08/88	0001	WU	N			1.0		0.1	-
	0939	08/08/88	0001	WU	N			1.6		0.1	-
	0940	08/08/88	0001	WU	N			2.8		0.1	-
	0941	08/08/88	0001	WU	N			0.8		0.1	-
	0942	08/08/88	0001	WU	N			0.8		0.1	-
	0943	08/09/88	0001	WU	N			1.3		0.1	-
	0944	08/11/88	0001	WU	N			2.2		0.1	-
SULFATE	0911	02/17/87	0001	WU	N	MG/L		688.		0.1	-
	0911	09/18/87	0001	WU	N			242.		0.1	-
	0911	01/30/88	0001	WU	N			177.		0.1	-
	0911	04/22/88	0001	WU	N			174.		0.1	-
	0911	08/11/88	0001	WU	N			205.		0.1	-
	0911	12/10/88	0001	WU	N			177.		0.1	-
	0912	02/18/87	0001	WU	N			114.		0.1	-
	0912	02/03/88	0001	WU	N			103.		0.1	-
	0912	04/22/88	0001	WU	N			130.		0.1	-
	0912	08/27/88	0001	WU	N			97.		0.1	-
	0912	12/04/88	0001	WU	N			121.		0.1	-
	0913	02/18/87	0001	WU	N			455.		0.1	-
	0913	09/18/87	0001	WU	N			548.		0.1	-
	0913	02/03/88	0001	WU	N			521.		0.1	-
	0913	04/22/88	0001	WU	N			524.		0.1	-
	0913	08/04/88	0001	WU	N			525.		0.1	-
	0913	12/10/88	0001	WU	N			514.		0.1	-
	0916	02/20/87	0001	WU	N			674.		0.1	-
	0916	09/20/87	0001	WU	N			834.		0.1	-
	0916	02/03/88	0001	WU	N			785.		0.1	-
	0916	04/22/88	0001	WU	N			846.		0.1	-
	0916	08/04/88	0001	WU	N			873.		0.1	-
	0916	12/07/88	0001	WU	N			789.		0.1	-
	0917	02/19/87	0001	WU	N			149.		0.1	-
	0917	09/20/87	0001	WU	N			161.		0.1	-
	0917	01/30/88	0001	WU	N			158.		0.1	-
	0917	04/22/88	0001	WU	N			162.		0.1	-
	0917	08/27/88	0001	WU	N			156.		0.1	-
	0917	12/07/88	0001	WU	N			159.		0.1	-
	0918	02/20/87	0001	WU	N			253.		0.1	-
	0918	09/20/87	0001	WU	N			274.		0.1	-
	0918	02/03/88	0001	WU	N			261.		0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SULFATE	0918	04/22/88	0001	WU	MG/L	264.		0.1	-
	0918	08/26/88	0001	WU		265.		0.1	-
	0918	12/04/88	0001	WU		263.		0.1	-
	0920	09/20/87	0001	WU		3030.		0.1	-
	0920	01/30/88	0001	WU		3240.		0.1	-
	0920	04/26/88	0001	WU		3240.		0.1	-
	0920	08/27/88	0001	WU		2870.		0.1	-
	0920	12/10/88	0001	WU		2760.		0.1	-
	0922	09/20/87	0001	WU		330.		0.1	-
	0922	02/03/88	0001	WU		274.		0.1	-
	0922	04/26/88	0001	WU		275.		0.1	-
	0922	08/08/88	0001	WU		304.		0.1	-
	0922	12/10/88	0001	WU		293.		0.1	-
	0924	09/20/87	0001	WU		556.		0.1	-
	0924	02/04/88	0001	WU		579.		0.1	-
	0924	04/26/88	0001	WU		606.		0.1	-
	0924	08/26/88	0001	WU		617.		0.1	-
	0924	12/07/88	0001	WU		634.		0.1	-
	0925	09/20/87	0001	WU		152.		0.1	-
	0925	02/03/88	0001	WU		151.		0.1	-
	0925	04/26/88	0001	WU		150.		0.1	-
	0925	08/26/88	0001	WU		156.		0.1	-
	0925	12/07/88	0001	WU		154.		0.1	-
	0927	09/20/87	0001	WU		1210.		0.1	-
	0927	02/04/88	0001	WU		1220.		0.1	-
	0927	04/26/88	0001	WU		1380.		0.1	-
	0927	08/26/88	0001	WU		1360.		0.1	-
	0927	12/04/88	0001	WU		1350.		0.1	-
	0928	09/20/87	0001	WU		1180.		0.1	-
	0928	02/03/88	0001	WU		1050.		0.1	-
	0928	04/22/88	0001	WU		1190.		0.1	-
	0928	08/04/88	0001	WU		1180.		0.1	-
	0928	12/04/88	0001	WU		1150.		0.1	-
	0929	09/20/87	0001	WU		576.		0.1	-
	0929	02/03/88	0001	WU		109.		0.1	-
	0929	04/28/88	0001	WU		100.	J	0.1	-
	0929	08/11/88	0001	WU		98.		0.1	-
	0930	09/20/87	0001	WU		2800.		0.1	-
	0930	01/30/88	0001	WU		2940.		0.1	-
	0930	04/26/88	0001	WU		3180.		0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SULFATE	0930	08/27/88	0001	WU	N	MG/L		2570.		0.1	-
	0931	01/30/88	0001	WU	N			162.		0.1	-
	0931	04/28/88	0001	WU	N			153.		0.1	-
	0931	08/10/88	0001	WU	N			156.		0.1	-
	0931	12/04/88	0001	WU	N			154.		0.1	-
	0932	01/30/88	0001	WU	N			262.		0.1	-
	0932	04/28/88	0001	WU	N			286.		0.1	-
	0932	08/09/88	0001	WU	N			296.		0.1	-
	0932	12/07/88	0001	WU	N			290.		0.1	-
	0933	08/10/88	0001	WU	N			197.		0.1	-
	0933	12/07/88	0001	WU	N			188.		0.1	-
	0934	08/11/88	0001	WU	N			170.		0.1	-
	0934	12/07/88	0001	WU	N			164.		0.1	-
	0935	08/09/88	0001	WU	N			3220.		0.1	-
	0935	12/04/88	0001	WU	N			3760.		0.1	-
	0936	08/08/88	0001	WU	N			442.		0.1	-
	0936	12/04/88	0001	WU	N			454.		0.1	-
	0937	08/08/88	0001	WU	N			437.		0.1	-
	0937	12/04/88	0001	WU	N			321.		0.1	-
	0939	08/08/88	0001	WU	N			749.		0.1	-
	0939	12/04/88	0001	WU	N			1040.		0.1	-
	0940	08/08/88	0001	WU	N			1533.		0.1	-
	0940	12/04/88	0001	WU	N			1540.		0.1	-
	0941	08/08/88	0001	WU	N			61.		0.1	-
	0941	12/10/88	0001	WU	N			58.		0.1	-
	0942	08/08/88	0001	WU	N			112.		0.1	-
	0942	12/04/88	0001	WU	N			123.		0.1	-
	0943	08/09/88	0001	WU	N			154.		0.1	-
	0943	12/07/88	0001	WU	N			146.		0.1	-
	0944	08/11/88	0001	WU	N			393.		0.1	-
	0944	12/07/88	0001	WU	N			391.		0.1	-
SULFIDE	0911	09/18/87	0001	WU	N	MG/L		< 0.1		0.1	-
	0911	01/30/88	0001	WU	N			< 0.1		0.1	-
	0911	04/22/88	0001	WU	N			< 0.1		0.1	-
	0911	08/11/88	0001	WU	N			< 0.1		0.1	-
	0912	02/03/88	0001	WU	N			< 0.1		0.1	-
	0912	04/22/88	0001	WU	N			< 0.1		0.1	-
	0912	08/27/88	0001	WU	N			< 0.1		0.1	-
	0913	09/18/87	0001	WU	N			< 0.1		0.1	-
	0913	02/03/88	0001	WU	N			< 0.1		0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SULFIDE	0913	04/22/88	0001	WU	N	MG/L	<	0.1		0.1	-
	0913	08/04/88	0001	WU	N		<	0.1		0.1	-
	0916	09/20/87	0001	WU	N		<	0.1		0.1	-
	0916	02/03/88	0001	WU	N		<	0.1		0.1	-
	0916	04/22/88	0001	WU	N		<	0.1		0.1	-
	0916	08/04/88	0001	WU	N		<	0.1		0.1	-
	0917	09/20/87	0001	WU	N		<	0.1		0.1	-
	0917	01/30/88	0001	WU	N		<	0.1		0.1	-
	0917	04/22/88	0001	WU	N		<	0.1		0.1	-
	0917	08/27/88	0001	WU	N		<	0.1		0.1	-
	0918	09/20/87	0001	WU	N		<	0.1		0.1	-
	0918	02/03/88	0001	WU	N		<	0.1		0.1	-
	0918	04/22/88	0001	WU	N		<	0.1		0.1	-
	0918	08/26/88	0001	WU	N		<	0.1		0.1	-
	0920	09/20/87	0001	WU	N		<	0.1		0.1	-
	0920	01/30/88	0001	WU	N		<	0.1		0.1	-
	0920	04/26/88	0001	WU	N		<	0.1		0.1	-
	0920	08/27/88	0001	WU	N		<	0.1		0.1	-
	0922	09/20/87	0001	WU	N		<	0.1		0.1	-
	0922	02/03/88	0001	WU	N		<	0.1		0.1	-
	0922	04/26/88	0001	WU	N		<	0.1		0.1	-
	0922	08/08/88	0001	WU	N		<	0.1		0.1	-
	0924	09/20/87	0001	WU	N		<	0.1		0.1	-
	0924	02/04/88	0001	WU	N		<	0.1		0.1	-
	0924	04/26/88	0001	WU	N		<	0.1		0.1	-
	0924	08/26/88	0001	WU	N		<	0.1		0.1	-
	0925	09/20/87	0001	WU	N		<	0.1		0.1	-
	0925	02/03/88	0001	WU	N		<	0.1		0.1	-
	0925	04/26/88	0001	WU	N		<	0.1		0.1	-
	0925	08/26/88	0001	WU	N		<	0.1		0.1	-
	0927	09/20/87	0001	WU	N		<	0.1		0.1	-
	0927	02/04/88	0001	WU	N		<	0.1		0.1	-
	0927	04/26/88	0001	WU	N		<	0.1		0.1	-
	0927	08/26/88	0001	WU	N		<	0.1		0.1	-
	0928	09/20/87	0001	WU	N		<	0.1		0.1	-
	0928	02/03/88	0001	WU	N		<	0.1		0.1	-
	0928	04/22/88	0001	WU	N		<	0.1		0.1	-
	0928	08/04/88	0001	WU	N		<	0.1		0.1	-
	0929	09/20/87	0001	WU	N		<	0.1		0.1	-
	0929	02/03/88	0001	WU	N		<	0.1		0.1	-
	0929	04/28/88	0001	WU	N			0.1	J	0.1	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SULFIDE	0929	08/11/88	0001	WU	N	MG/L	<	0.1		0.1	-
	0930	09/20/87	0001	WU	N		<	0.1		0.1	-
	0930	01/30/88	0001	WU	N		<	0.1		0.1	-
	0930	04/26/88	0001	WU	N		<	0.1		0.1	-
	0930	08/27/88	0001	WU	N		<	0.1		0.1	-
	0931	01/30/88	0001	WU	N		<	0.1		0.1	-
	0931	04/28/88	0001	WU	N		<	0.1		0.1	-
	0931	08/10/88	0001	WU	N		<	0.1		0.1	-
	0932	01/30/88	0001	WU	N		<	0.1		0.1	-
	0932	04/28/88	0001	WU	N		<	0.1		0.1	-
	0932	08/09/88	0001	WU	N		<	0.1		0.1	-
	0933	08/10/88	0001	WU	N		<	0.1		0.1	-
	0934	08/11/88	0001	WU	N		<	0.1		0.1	-
	0935	08/09/88	0001	WU	N		<	0.1		0.1	-
	0936	08/08/88	0001	WU	N		<	0.1		0.1	-
	0937	08/08/88	0001	WU	N		<	0.1		0.1	-
	0939	08/08/88	0001	WU	N		<	0.1		0.1	-
	0940	08/08/88	0001	WU	N		<	0.1		0.1	-
	0941	08/08/88	0001	WU	N		<	0.1		0.1	-
	0942	08/08/88	0001	WU	N		<	0.1		0.1	-
	0943	08/09/88	0001	WU	N		<	0.1		0.1	-
	0944	08/11/88	0001	WU	N		<	0.1		0.1	-
TEMPERATURE	0911	02/17/87	0001	WU	N	C - DEGREE		10.0		-	-
	0911	09/18/87	0001	WU	N			13.0		-	-
	0911	01/30/88	0001	WU	N			11.0		-	-
	0911	04/22/88	0001	WU	N			13.0		-	-
	0911	08/11/88	0001	WU	N			17.0		-	-
	0911	12/10/88	0001	WU	N			10.0		-	-
	0912	02/18/87	0001	WU	N			10.5		-	-
	0912	02/03/88	0001	WU	N			12.0		-	-
	0912	04/22/88	0001	WU	N			12.0		-	-
	0912	08/27/88	0001	WU	N			13.0		-	-
	0912	12/04/88	0001	WU	N			11.		-	-
	0913	02/18/87	0001	WU	N			12.0		-	-
	0913	09/18/87	0001	WU	N			12.0		-	-
	0913	02/03/88	0001	WU	N			11.0		-	-
	0913	04/22/88	0001	WU	N			11.0		-	-
	0913	08/04/88	0001	WU	N			14.0		-	-
	0913	12/10/88	0001	WU	N			9.0		-	-
	0916	02/20/87	0001	WU	N			11.5		-	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
TEMPERATURE	0916	09/20/87	0001	WU	N	C - DEGREE	12.5		-	-
	0916	02/03/88	0001	WU	N		11.5		-	-
	0916	04/22/88	0001	WU	N		12.5		-	-
	0916	08/04/88	0001	WU	N		14.0		-	-
	0916	12/07/88	0001	WU	N		11.0		-	-
	0917	02/19/87	0001	WU	N		10.5		-	-
	0917	09/20/87	0001	WU	N		13.0		-	-
	0917	01/30/88	0001	WU	N		10.1		-	-
	0917	04/22/88	0001	WU	N		11.5		-	-
	0917	08/27/88	0001	WU	N		13.0		-	-
	0917	12/07/88	0001	WU	N		10.5		-	-
	0918	02/20/87	0001	WU	N		10.		-	-
	0918	09/20/87	0001	WU	N		12.0		-	-
	0918	02/03/88	0001	WU	N		11.0		-	-
	0918	04/22/88	0001	WU	N		12.0		-	-
	0918	08/26/88	0001	WU	N		14.0		-	-
	0918	12/04/88	0001	WU	N		11.		-	-
	0920	09/20/87	0001	WU	N		13.0		-	-
	0920	01/30/88	0001	WU	N		10.5		-	-
	0920	04/26/88	0001	WU	N		11.0		-	-
	0920	08/27/88	0001	WU	N		13.0		-	-
	0920	12/10/88	0001	WU	N		9.0		-	-
	0922	09/20/87	0001	WU	N		14.0		-	-
	0922	02/03/88	0001	WU	N		11.5		-	-
	0922	04/26/88	0001	WU	N		13.0		-	-
	0922	08/08/88	0001	WU	N		14.0		-	-
	0922	12/10/88	0001	WU	N		11.0		-	-
	0924	09/20/87	0001	WU	N		13.0		-	-
	0924	02/04/88	0001	WU	N		12.0		-	-
	0924	04/26/88	0001	WU	N		12.0		-	-
	0924	08/26/88	0001	WU	N		13.0		-	-
	0924	12/07/88	0001	WU	N		11.0		-	-
	0925	09/20/87	0001	WU	N		12.0		-	-
	0925	02/03/88	0001	WU	N		10.0		-	-
	0925	04/26/88	0001	WU	N		11.0		-	-
	0925	08/26/88	0001	WU	N		12.0		-	-
	0925	12/07/88	0001	WU	N		11.0		-	-
	0927	09/20/87	0001	WU	N		14.0		-	-
	0927	02/04/88	0001	WU	N		11.0		-	-
	0927	04/26/88	0001	WU	N		12.5		-	-
	0927	08/26/88	0001	WU	N		14.0		-	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
TEMPERATURE	0927	12/04/88	0001	WU	N	C - DEGREE	10.5		-	-
	0928	09/20/87	0001	WU	N		12.0		-	-
	0928	02/03/88	0001	WU	N		9.0		-	-
	0928	04/22/88	0001	WU	N		10.5		-	-
	0928	08/04/88	0001	WU	N		12.0		-	-
	0928	12/04/88	0001	WU	N		10.0		-	-
	0929	09/20/87	0001	WU	N		13.0		-	-
	0929	02/03/88	0001	WU	N		10.5		-	-
	0929	04/28/88	0001	WU	N		11.0		-	-
	0929	08/11/88	0001	WU	N		12.0		-	-
	0929	09/20/87	0001	WU	N		11.5		-	-
	0930	01/30/88	0001	WU	N		11.0		-	-
	0930	04/26/88	0001	WU	N		13.0		-	-
	0930	08/27/88	0001	WU	N		14.0		-	-
	0931	01/30/88	0001	WU	N		10.5		-	-
	0931	04/28/88	0001	WU	N		11.5		-	-
	0931	08/10/88	0001	WU	N		15.5		-	-
	0931	12/04/88	0001	WU	N		11.		-	-
	0932	01/30/88	0001	WU	N		13.0		-	-
	0932	04/28/88	0001	WU	N		10.0		-	-
	0932	08/09/88	0001	WU	N		13.5		-	-
	0932	12/07/88	0001	WU	N		11.		-	-
	0933	08/10/88	0001	WU	N		16.0		-	-
	0933	12/07/88	0001	WU	N		11.5		-	-
	0934	08/11/88	0001	WU	N		13.0		-	-
	0934	12/07/88	0001	WU	N		11.5		-	-
	0935	08/09/88	0001	WU	N		12.0		-	-
	0935	12/04/88	0001	WU	N		10.5		-	-
	0936	08/08/88	0001	WU	N		23.0		-	-
	0936	12/04/88	0001	WU	N		10.5		-	-
	0937	08/08/88	0001	WU	N		12.0		-	-
	0937	12/04/88	0001	WU	N		10.5		-	-
	0939	08/08/88	0001	WU	N		16.0		-	-
	0939	12/04/88	0001	WU	N		9.5		-	-
	0940	08/08/88	0001	WU	N		14.5		-	-
	0940	12/04/88	0001	WU	N		11.0		-	-
	0941	08/08/88	0001	WU	N		13.5		-	-
	0941	12/10/88	0001	WU	N		11.0		-	-
	0942	08/08/88	0001	WU	N		19.0		-	-
	0942	12/04/88	0001	WU	N		10.		-	-
	0943	08/09/88	0001	WU	N		11.5		-	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
TEMPERATURE	0943	12/07/88	0001	WU	N	C - DEGREE		10.5		-	-
	0944	08/11/88	0001	WU	N			14.0		-	-
	0944	12/07/88	0001	WU	N			11.5		-	-
THORIUM-230	0911	09/18/87	0001	WU	N	PCI/L		0.4		1.	0.5
	0911	01/30/88	0001	WU	N			0.0		1.	0.4
	0911	04/22/88	0001	WU	N			0.3		1.	0.5
	0911	08/11/88	0001	WU	N			0.7		1.	0.7
	0912	02/03/88	0001	WU	N			0.0		1.	0.5
	0912	04/22/88	0001	WU	N			0.7		1.	0.8
	0912	08/27/88	0001	WU	N			0.5		1.	0.6
	0913	09/18/87	0001	WU	N			1.7		1.	0.8
	0913	02/03/88	0001	WU	N			0.8		1.	0.6
	0913	04/22/88	0001	WU	N			0.5		1.	0.5
	0913	08/04/88	0001	WU	N			0.5		1.	0.7
	0916	09/20/87	0001	WU	N			8.6		1.	1.7
	0916	02/03/88	0001	WU	N			1.5		1.	1.6
	0916	04/22/88	0001	WU	N			0.9		1.	0.6
	0916	08/04/88	0001	WU	N			0.5		1.	0.7
	0917	09/20/87	0001	WU	N			1.0		1.	0.7
	0917	01/30/88	0001	WU	N			0.1		1.	0.4
	0917	04/22/88	0001	WU	N			0.8		1.	0.6
	0917	08/27/88	0001	WU	N			0.0		1.	0.4
	0918	09/20/87	0001	WU	N			0.2		1.	0.6
	0918	02/03/88	0001	WU	N			1.9		1.	0.8
	0918	04/22/88	0001	WU	N			0.3		1.	0.4
	0918	08/26/88	0001	WU	N			0.0		1.	0.3
	0920	09/20/87	0001	WU	N			0.5		1.	1.0
	0920	01/30/88	0001	WU	N			1.0		1.	0.8
	0920	04/26/88	0001	WU	N			0.4		1.	0.5
	0920	08/27/88	0001	WU	N			0.0		1.	0.4
	0922	09/20/87	0001	WU	N			0.2		1.	0.6
	0922	02/03/88	0001	WU	N			0.1		1.	0.6
	0922	04/26/88	0001	WU	N			0.2		1.	0.4
	0922	08/08/88	0001	WU	N			0.0		1.	0.5
	0924	09/20/87	0001	WU	N			1.0		1.	0.8
	0924	02/04/88	0001	WU	N			7.8		1.	1.8
	0924	04/26/88	0001	WU	N			0.6		1.	0.6
	0924	08/26/88	0001	WU	N			0.1		1.	0.5
	0925	09/20/87	0001	WU	N			0.0		1.	0.5
	0925	02/03/88	0001	WU	N			7.0		1.	1.7

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
THORIUM-230	0925	04/26/88	0001	WU	N	PCI/L		0.0		1.	0.4
	0925	08/26/88	0001	WU	N			0.1		1.	0.5
	0927	09/20/87	0001	WU	N			1.1		1.	0.8
	0927	02/04/88	0001	WU	N			2.5		1.	1.1
	0927	04/26/88	0001	WU	N			0.2		1.	0.4
	0927	08/26/88	0001	WU	N			0.7		1.	0.6
	0928	09/20/87	0001	WU	N			0.3		1.	0.4
	0928	02/03/88	0001	WU	N			0.8		1.	0.8
	0928	04/22/88	0001	WU	N			3.8		1.	1.1
	0928	08/04/88	0001	WU	N			0.0		1.	0.5
	0929	09/20/87	0001	WU	N			0.0		1.	0.3
	0929	02/03/88	0001	WU	N			0.0		1.	0.4
	0929	04/28/88	0001	WU	N			0.8	J	1.	0.6
	0929	08/11/88	0001	WU	N			0.0		1.	0.4
	0930	09/20/87	0001	WU	N			0.5		1.	0.8
	0930	01/30/88	0001	WU	N			0.0		1.	0.4
	0930	04/26/88	0001	WU	N			0.3		1.	0.5
	0930	08/27/88	0001	WU	N			0.1		1.	0.5
	0931	01/30/88	0001	WU	N			8.1		1.	1.8
	0931	04/28/88	0001	WU	N			0.0		1.	0.3
	0931	08/10/88	0001	WU	N			0.0		1.	0.5
	0932	01/30/88	0001	WU	N			0.4		1.	0.6
	0932	04/28/88	0001	WU	N			0.3		1.	0.5
	0932	08/09/88	0001	WU	N			0.0		1.	0.5
	0933	08/10/88	0001	WU	N			0.1		1.	0.6
	0934	08/11/88	0001	WU	N			0.0		1.	0.4
	0935	08/09/88	0001	WU	N			0.0		1.	0.5
	0936	08/08/88	0001	WU	N			0.0		1.	0.5
	0937	08/08/88	0001	WU	N			0.0		1.	0.5
	0940	08/08/88	0001	WU	N			0.0		1.	0.5
	0941	08/08/88	0001	WU	N			0.0		1.	0.5
	0942	08/08/88	0001	WU	N			0.0		1.	0.4
	0943	08/09/88	0001	WU	N			0.0		1.	0.5
	0944	08/11/88	0001	WU	N			0.0		1.	0.5
TIN	0911	09/18/87	0001	WU	N	MG/L		0.018		0.005	-
	0911	01/30/88	0001	WU	N		<	0.005		0.005	-
	0911	04/22/88	0001	WU	N			0.009		0.005	-
	0911	08/11/88	0001	WU	N		<	0.005		0.005	-
	0912	02/03/88	0001	WU	N		<	0.005		0.005	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
TIN	0912	04/22/88	0001	WU	MG/L	<	0.017		0.005	-
	0912	08/27/88	0001	WU			0.005		0.005	-
	0913	09/18/87	0001	WU			0.029		0.005	-
	0913	02/03/88	0001	WU			0.008		0.005	-
	0913	04/22/88	0001	WU			0.013		0.005	-
	0913	08/04/88	0001	WU			0.009		0.005	-
	0916	09/20/87	0001	WU			0.044		0.005	-
	0916	02/03/88	0001	WU			0.013		0.005	-
	0916	04/22/88	0001	WU			0.025		0.005	-
	0916	08/04/88	0001	WU			0.020		0.005	-
	0917	09/20/87	0001	WU		<	0.024		0.005	-
	0917	01/30/88	0001	WU		<	0.005		0.005	-
	0917	04/22/88	0001	WU		<	0.014		0.005	-
	0917	08/27/88	0001	WU		<	0.005		0.005	-
	0918	09/20/87	0001	WU		<	0.020		0.005	-
	0918	02/03/88	0001	WU		<	0.005		0.005	-
	0918	04/22/88	0001	WU		<	0.012		0.005	-
	0918	08/26/88	0001	WU		<	0.005		0.005	-
	0920	09/20/87	0001	WU			0.157		0.005	-
	0920	01/30/88	0001	WU			0.042		0.005	-
	0920	04/26/88	0001	WU			0.020		0.005	-
	0920	08/27/88	0001	WU			0.024		0.005	-
	0922	09/20/87	0001	WU			0.019		0.005	-
	0922	02/03/88	0001	WU		<	0.005		0.005	-
	0922	04/26/88	0001	WU		<	0.007	J	0.005	-
	0922	08/08/88	0001	WU		<	0.003		0.005	-
	0924	09/20/87	0001	WU			0.026		0.005	-
	0924	02/04/88	0001	WU			0.005		0.005	-
	0924	04/26/88	0001	WU			0.012		0.005	-
	0924	08/26/88	0001	WU		<	0.005		0.005	-
	0925	09/20/87	0001	WU		<	0.012		0.005	-
	0925	02/03/88	0001	WU		<	0.005		0.005	-
	0925	04/26/88	0001	WU		<	0.005		0.005	-
	0925	08/26/88	0001	WU		<	0.005		0.005	-
	0927	09/20/87	0001	WU			0.051		0.005	-
	0927	02/04/88	0001	WU			0.011		0.005	-
	0927	04/26/88	0001	WU			0.022		0.005	-
	0927	08/26/88	0001	WU			0.005		0.005	-
	0928	09/20/87	0001	WU			0.036		0.005	-
	0928	02/03/88	0001	WU			0.011		0.005	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PV1 VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
TIN	0928	04/22/88	0001	WU	MG/L	0.021		0.005	-
	0928	08/04/88	0001	WU		0.016		0.005	-
	0929	09/20/87	0001	WU		0.026		0.005	-
	0929	02/03/88	0001	WU		0.005		0.005	-
	0929	04/28/88	0001	WU		0.004	J	0.005	-
	0929	08/11/88	0001	WU		0.005		0.005	-
	0930	09/20/87	0001	WU		0.133		0.005	-
	0930	01/30/88	0001	WU		0.041		0.005	-
	0930	04/26/88	0001	WU		0.026		0.005	-
	0930	08/27/88	0001	WU		0.017		0.005	-
	0931	01/30/88	0001	WU		0.005		0.005	-
	0931	04/28/88	0001	WU		0.003	J	0.005	-
	0931	08/10/88	0001	WU		0.12		0.005	-
	0932	01/30/88	0001	WU		0.005		0.005	-
	0932	04/28/88	0001	WU		0.010		0.005	-
	0932	08/09/88	0001	WU		0.003	J	0.005	-
	0933	08/10/88	0001	WU		0.003	J	0.005	-
	0934	08/11/88	0001	WU		0.003	J	0.005	-
	0935	08/09/88	0001	WU		0.125		0.005	-
	0936	08/08/88	0001	WU		0.017		0.005	-
	0937	08/08/88	0001	WU		0.005		0.005	-
	0939	08/08/88	0001	WU		0.015		0.005	-
	0940	08/08/88	0001	WU		0.088		0.005	-
	0941	08/08/88	0001	WU		0.003	J	0.005	-
	0942	08/08/88	0001	WU		0.005		0.005	-
	0943	08/09/88	0001	WU		0.003	J	0.005	-
	0944	08/11/88	0001	WU		0.003	J	0.005	-
TOTAL DISSOLVED SOLIDS	0911	02/17/87	0001	WU	MG/L	1370.		10.	-
	0911	09/18/87	0001	WU		609.		10.	-
	0911	01/30/88	0001	WU		477.		10.	-
	0911	04/22/88	0001	WU		467.		10.	-
	0911	08/11/88	0001	WU		514.		10.	-
	0911	12/10/88	0001	WU		510.		10.	-
	0912	02/18/87	0001	WU		348.		10.	-
	0912	02/03/88	0001	WU		363.		10.	-
	0912	04/22/88	0001	WU		364.		10.	-
	0912	08/27/88	0001	WU		355.		10.	-
	0912	12/04/88	0001	WU		55.2		10.	-
	0913	02/18/87	0001	WU		1020.		10.	-
	0913	02/18/87	0001	WU				10.	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

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GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
TOTAL DISSOLVED SOLIDS	0913	09/18/87	0001	WU	N	MG/L	1220.		10.	-
	0913	02/03/88	0001	WU	N		1170.		10.	-
	0913	04/22/88	0001	WU	N		1170.		10.	-
	0913	08/04/88	0001	WU	N		1510.		10.	-
	0913	12/10/88	0001	WU	N		1290.		10.	-
	0916	02/20/87	0001	WU	N		1920.		10.	-
	0916	09/20/87	0001	WU	N		2200.		10.	-
	0916	02/03/88	0001	WU	N		2220.		10.	-
	0916	04/22/88	0001	WU	N		2320.		10.	-
	0916	08/04/88	0001	WU	N		2720.		10.	-
	0916	12/07/88	0001	WU	N		2130.		10.	-
	0917	02/19/87	0001	WU	N		764.		10.	-
	0917	09/20/87	0001	WU	N		827.		10.	-
	0917	01/30/88	0001	WU	N		754.		10.	-
	0917	04/22/88	0001	WU	N		760.		10.	-
	0917	08/27/88	0001	WU	N		886.		10.	-
	0917	12/07/88	0001	WU	N		772.		10.	-
	0918	02/20/87	0001	WU	N		670.		10.	-
	0918	09/20/87	0001	WU	N		728.		10.	-
	0918	02/03/88	0001	WU	N		640.		10.	-
	0918	04/22/88	0001	WU	N		643.		10.	-
	0918	08/26/88	0001	WU	N		708.		10.	-
	0918	12/04/88	0001	WU	N		642.		10.	-
	0920	09/20/87	0001	WU	N		4970.		10.	-
	0920	01/30/88	0001	WU	N		4980.		10.	-
	0920	04/26/88	0001	WU	N		5440.		10.	-
	0920	08/27/88	0001	WU	N		5490.		10.	-
	0920	12/10/88	0001	WU	N		5090.		10.	-
	0922	09/20/87	0001	WU	N		720.		10.	-
	0922	02/03/88	0001	WU	N		614.		10.	-
	0922	04/26/88	0001	WU	N		600.		10.	-
	0922	08/08/88	0001	WU	N		604.		10.	-
	0922	12/10/88	0001	WU	N		630.		10.	-
	0924	09/20/87	0001	WU	N		1110.		10.	-
	0924	02/04/88	0001	WU	N		1140.		10.	-
	0924	04/26/88	0001	WU	N		1180.		10.	-
	0924	08/26/88	0001	WU	N		1290.		10.	-
	0924	12/07/88	0001	WU	N		1180.		10.	-
	0925	09/20/87	0001	WU	N		495.		10.	-
	0925	02/03/88	0001	WU	N		484.		10.	-
	0925	04/26/88	0001	WU	N		477.		10.	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

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SAMPLE ID CODES:
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GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
TOTAL DISSOLVED SOLIDS	0925	08/26/88	0001	WU	N	MG/L		474.		10.	-
	0925	12/07/88	0001	WU	N			477.		10.	-
	0927	09/20/87	0001	WU	N			2310.		10.	-
	0927	02/04/88	0001	WU	N			2230.		10.	-
	0927	04/26/88	0001	WU	N			2340.		10.	-
	0927	08/26/88	0001	WU	N			2360.		10.	-
	0927	12/04/88	0001	WU	N			2330.		10.	-
	0928	09/20/87	0001	WU	N			1900.		10.	-
	0928	02/03/88	0001	WU	N			1860.		10.	-
	0928	04/22/88	0001	WU	N			1860.		10.	-
	0928	08/04/88	0001	WU	N			1880.		10.	-
	0928	12/04/88	0001	WU	N			1790.		10.	-
	0929	09/20/87	0001	WU	N			1070.		10.	-
	0929	02/03/88	0001	WU	N			374.		10.	-
	0929	04/28/88	0001	WU	N			401.	J	10.	-
	0929	08/11/88	0001	WU	N			402.		10.	-
	0930	09/20/87	0001	WU	N			4360.		10.	-
	0930	01/30/88	0001	WU	N			4840.		10.	-
	0930	04/26/88	0001	WU	N			4670.		10.	-
	0930	08/27/88	0001	WU	N			4890.		10.	-
	0931	01/30/88	0001	WU	N			444.		10.	-
	0931	04/28/88	0001	WU	N			474.		10.	-
	0931	08/10/88	0001	WU	N			707.		10.	-
	0931	12/04/88	0001	WU	N			472.		10.	-
	0932	01/30/88	0001	WU	N			648.		10.	-
	0932	04/28/88	0001	WU	N			702.		10.	-
	0932	08/09/88	0001	WU	N			707.		10.	-
	0932	12/07/88	0001	WU	N			698.		10.	-
	0933	08/10/88	0001	WU	N			540.		10.	-
	0933	12/07/88	0001	WU	N			528.		10.	-
	0934	08/11/88	0001	WU	N			510.		10.	-
	0934	12/07/88	0001	WU	N			495.		10.	-
	0935	08/09/88	0001	WU	N			5450.		10.	-
	0935	12/04/88	0001	WU	N			5450.		10.	-
	0936	08/08/88	0001	WU	N			1200.		10.	-
	0936	12/04/88	0001	WU	N			1190.		10.	-
	0937	08/08/88	0001	WU	N			872.		10.	-
	0937	12/04/88	0001	WU	N			686.		10.	-
	0939	08/08/88	0001	WU	N			1250.		10.	-
	0939	12/04/88	0001	WU	N			1650.		10.	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

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SAMPLE ID CODES:
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OTHER PARAMETER VALUE FLAGS:
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GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
TOTAL DISSOLVED SOLIDS	0940	08/08/88	0001	WU	N	MG/L		4480.		10.	-
	0940	12/04/88	0001	WU	N			3670.		10.	-
	0941	08/08/88	0001	WU	N			292.		10.	-
	0941	12/10/88	0001	WU	N			304.		10.	-
	0942	08/08/88	0001	WU	N			433.		10.	-
	0942	12/04/88	0001	WU	N			449.		10.	-
	0943	08/09/88	0001	WU	N			475.		10.	-
	0943	12/07/88	0001	WU	N			464.		10.	-
	0944	08/11/88	0001	WU	N			859.		10.	-
	0944	12/07/88	0001	WU	N			823.		10.	-
URANIUM	0911	02/17/87	0001	WU	N	MG/L		1.77		0.003	-
	0911	09/18/87	0001	WU	N			1.80		0.003	-
	0911	01/30/88	0001	WU	N			1.71		0.003	-
	0911	04/22/88	0001	WU	N			1.90		0.003	-
	0911	08/11/88	0001	WU	N			1.39		0.003	-
	0911	12/10/88	0001	WU	N			1.67		0.003	-
	0912	02/18/87	0001	WU	N			0.632		0.003	-
	0912	02/03/88	0001	WU	N			0.607		0.003	-
	0912	04/22/88	0001	WU	N			0.526		0.003	-
	0912	08/27/88	0001	WU	N			0.563		0.003	-
	0912	12/04/88	0001	WU	N			0.542		0.003	-
	0913	02/18/87	0001	WU	N			8.23		0.003	-
	0913	09/18/87	0001	WU	N			8.84		0.003	-
	0913	02/03/88	0001	WU	N			8.60		0.003	-
	0913	04/22/88	0001	WU	N			9.17		0.003	-
	0913	08/04/88	0001	WU	N			8.14		0.003	-
	0913	12/10/88	0001	WU	N			8.56		0.003	-
	0916	02/20/87	0001	WU	N			15.4		0.003	-
	0916	09/20/87	0001	WU	N			19.5		0.003	-
	0916	02/03/88	0001	WU	N			20.7		0.003	-
	0916	04/22/88	0001	WU	N			24.6		0.003	-
	0916	08/04/88	0001	WU	N			19.1		0.003	-
	0916	12/07/88	0001	WU	N			22.0		0.003	-
	0917	02/19/87	0001	WU	N			5.43		0.003	-
	0917	09/20/87	0001	WU	N			5.09		0.003	-
	0917	01/30/88	0001	WU	N			5.21		0.003	-
	0917	04/22/88	0001	WU	N			6.00		0.003	-
	0917	08/27/88	0001	WU	N			5.19		0.003	-
	0917	12/07/88	0001	WU	N			5.60		0.003	-
	0918	02/20/87	0001	WU	N			1.60		0.003	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

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 N - UNKNOWN

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GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
URANIUM	0918	09/20/87	0001	WU	N	MG/L		1.61		0.003	-
	0918	02/03/88	0001	WU	N			1.55		0.003	-
	0918	04/22/88	0001	WU	N			2.01		0.003	-
	0918	08/26/88	0001	WU	N			1.69		0.003	-
	0918	12/04/88	0001	WU	N			1.91		0.003	-
	0920	09/20/87	0001	WU	N			0.851		0.003	-
	0920	01/30/88	0001	WU	N			0.795		0.003	-
	0920	04/26/88	0001	WU	N			1.21		0.003	-
	0920	08/27/88	0001	WU	N			1.04		0.003	-
	0920	12/10/88	0001	WU	N			0.892		0.003	-
	0922	09/20/87	0001	WU	N			0.209		0.003	-
	0922	02/03/88	0001	WU	N			0.164		0.003	-
	0922	04/26/88	0001	WU	N			0.123		0.003	-
	0922	08/08/88	0001	WU	N			0.106		0.003	-
	0922	12/10/88	0001	WU	N			0.128		0.003	-
	0924	09/20/87	0001	WU	N			2.59		0.003	-
	0924	02/04/88	0001	WU	N			2.73		0.003	-
	0924	04/26/88	0001	WU	N			3.25		0.003	-
	0924	08/26/88	0001	WU	N			3.44		0.003	-
	0924	12/07/88	0001	WU	N			3.65		0.003	-
	0925	09/20/87	0001	WU	N			2.17		0.003	-
	0925	02/03/88	0001	WU	N			2.09		0.003	-
	0925	04/26/88	0001	WU	N			2.38		0.003	-
	0925	08/26/88	0001	WU	N			2.27		0.003	-
	0925	12/07/88	0001	WU	N			2.33		0.003	-
	0927	09/20/87	0001	WU	N			4.58		0.003	-
	0927	02/04/88	0001	WU	N			4.46		0.003	-
	0927	04/26/88	0001	WU	N			5.19		0.003	-
	0927	08/26/88	0001	WU	N			4.40		0.003	-
	0927	12/04/88	0001	WU	N			4.62		0.003	-
	0928	09/20/87	0001	WU	N			1.30		0.003	-
	0928	02/03/88	0001	WU	N			1.95		0.003	-
	0928	04/22/88	0001	WU	N			1.99		0.003	-
	0928	08/04/88	0001	WU	N			2.00		0.003	-
	0928	12/04/88	0001	WU	N			2.47		0.003	-
	0929	09/20/87	0001	WU	N			0.0780		0.003	-
	0929	02/03/88	0001	WU	N			0.0193		0.003	-
	0929	04/28/88	0001	WU	N			0.0231	J	0.003	-
	0929	08/11/88	0001	WU	N			0.0171		0.003	-
	0930	09/20/87	0001	WU	N			0.413		0.003	-

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 SITE: SPK01 SPOOK
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PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
URANIUM	0930	01/30/88	0001	WU	N	0.0514		0.003	-
	0930	04/26/88	0001	WU	N	0.0437		0.003	-
	0930	08/27/88	0001	WU	N	0.185		0.003	-
	0931	01/30/88	0001	WU	N	2.13		0.003	-
	0931	04/28/88	0001	WU	N	2.04		0.003	-
	0931	08/10/88	0001	WU	N	2.00		0.003	-
	0931	12/04/88	0001	WU	N	2.15		0.003	-
	0932	01/30/88	0001	WU	N	0.327		0.003	-
	0932	04/28/88	0001	WU	N	0.374		0.003	-
	0932	08/09/88	0001	WU	N	0.408		0.003	-
	0932	12/07/88	0001	WU	N	0.280		0.003	-
	0933	08/10/88	0001	WU	N	1.96		0.003	-
	0933	12/07/88	0001	WU	N	2.01		0.003	-
	0934	08/11/88	0001	WU	N	1.02		0.003	-
	0934	12/07/88	0001	WU	N	1.13		0.003	-
	0935	08/09/88	0001	WU	N	0.459		0.003	-
	0935	12/04/88	0001	WU	N	0.341		0.003	-
	0936	08/08/88	0001	WU	N	2.77		0.003	-
	0936	12/04/88	0001	WU	N	2.94		0.003	-
	0937	08/08/88	0001	WU	N	6.18		0.003	-
	0937	12/04/88	0001	WU	N	4.70		0.003	-
	0939	08/08/88	0001	WU	N	0.114		0.003	-
	0939	12/04/88	0001	WU	N	0.117		0.003	-
	0940	08/08/88	0001	WU	N	3.18		0.003	-
	0940	12/04/88	0001	WU	N	3.91		0.003	-
	0941	08/08/88	0001	WU	N	0.228		0.003	-
	0941	12/10/88	0001	WU	N	0.227		0.003	-
	0942	08/08/88	0001	WU	N	0.799		0.003	-
	0942	12/04/88	0001	WU	N	0.536		0.003	-
	0943	08/09/88	0001	WU	N	2.90		0.003	-
	0943	12/07/88	0001	WU	N	2.88		0.003	-
	0944	08/11/88	0001	WU	N	0.965		0.003	-
	0944	12/07/88	0001	WU	N	0.890		0.003	-
VANADIUM	0911	09/18/87	0001	WU	N	0.05		0.01	-
	0911	01/30/88	0001	WU	N	0.01	<	0.01	-
	0911	04/22/88	0001	WU	N	0.02		0.01	-
	0911	08/11/88	0001	WU	N	0.01		0.01	-
	0911	12/10/88	0001	WU	N	0.02		0.01	-
	0912	02/03/88	0001	WU	N	0.01		0.01	-
	0912	04/22/88	0001	WU	N	0.03		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
VANADIUM	0912	08/27/88	0001	WU	N	MG/L		0.02		0.01	-
	0912	12/04/88	0001	WU	N			0.03		0.01	-
	0913	09/18/87	0001	WU	N			0.08		0.01	-
	0913	02/03/88	0001	WU	N			0.04		0.01	-
	0913	04/22/88	0001	WU	N			0.06		0.01	-
	0913	08/04/88	0001	WU	N			0.05		0.01	-
	0913	12/10/88	0001	WU	N			0.03		0.01	-
	0916	09/20/87	0001	WU	N			0.14		0.01	-
	0916	02/03/88	0001	WU	N			0.07		0.01	-
	0916	04/22/88	0001	WU	N			0.10		0.01	-
	0916	08/04/88	0001	WU	N			0.08		0.01	-
	0916	12/07/88	0001	WU	N			0.10		0.01	-
	0917	09/20/87	0001	WU	N			0.07		0.01	-
	0917	01/30/88	0001	WU	N			0.02		0.01	-
	0917	04/22/88	0001	WU	N			0.04		0.01	-
	0917	08/27/88	0001	WU	N			0.04		0.01	-
	0917	12/07/88	0001	WU	N			0.04		0.01	-
	0918	09/20/87	0001	WU	N			0.05		0.01	-
	0918	02/03/88	0001	WU	N			0.02		0.01	-
	0918	04/22/88	0001	WU	N			0.03		0.01	-
	0918	08/26/88	0001	WU	N			0.03		0.01	-
	0918	12/04/88	0001	WU	N			0.03		0.01	-
	0920	09/20/87	0001	WU	N			0.07		0.01	-
	0920	01/30/88	0001	WU	N			0.09		0.01	-
	0920	04/26/88	0001	WU	N			0.08		0.01	-
	0920	08/27/88	0001	WU	N			0.08		0.01	-
	0920	12/10/88	0001	WU	N			0.03		0.01	-
	0922	09/20/87	0001	WU	N			0.02		0.01	-
	0922	02/03/88	0001	WU	N			0.02		0.01	-
	0922	04/26/88	0001	WU	N			0.01		0.01	-
	0922	08/08/88	0001	WU	N			0.02		0.01	-
	0922	12/10/88	0001	WU	N			0.04		0.01	-
	0924	09/20/87	0001	WU	N			0.03		0.01	-
	0924	02/04/88	0001	WU	N			0.05		0.01	-
	0924	04/26/88	0001	WU	N			0.05		0.01	-
	0924	08/26/88	0001	WU	N			0.04		0.01	-
	0924	12/07/88	0001	WU	N			0.02		0.01	-
	0925	09/20/87	0001	WU	N			0.02		0.01	-
	0925	02/03/88	0001	WU	N			0.03		0.01	-
	0925	04/26/88	0001	WU	N			0.03		0.01	-
	0925	08/26/88	0001	WU	N			0.03		0.01	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
VANADIUM	0925	12/07/88	0001	UU	N	MG/L		0.03		0.01	-
	0927	09/20/87	0001	UU	N			0.05		0.01	-
	0927	02/04/88	0001	UU	N			0.05		0.01	-
	0927	04/26/88	0001	UU	N			0.06		0.01	-
	0927	08/26/88	0001	UU	N			0.05		0.01	-
	0927	12/04/88	0001	UU	N			0.06		0.01	-
	0928	09/20/87	0001	UU	N			0.05		0.01	-
	0928	02/03/88	0001	UU	N			0.05		0.01	-
	0928	04/22/88	0001	UU	N			0.05		0.01	-
	0928	08/04/88	0001	UU	N			0.04		0.01	-
	0928	12/04/88	0001	UU	N			0.05		0.01	-
	0929	09/20/87	0001	UU	N			0.04		0.01	-
	0929	02/03/88	0001	UU	N			0.015		0.01	-
	0929	04/28/88	0001	UU	N			0.02	J	0.01	-
	0929	08/11/88	0001	UU	N			0.01		0.01	-
	0930	09/20/87	0001	UU	N			0.08		0.01	-
	0930	01/30/88	0001	UU	N			0.059		0.01	-
	0930	04/26/88	0001	UU	N			0.08		0.01	-
	0930	08/27/88	0001	UU	N			0.07		0.01	-
	0931	01/30/88	0001	UU	N			0.016		0.01	-
	0931	04/28/88	0001	UU	N			0.03		0.01	-
	0931	08/10/88	0001	UU	N			0.02		0.01	-
	0931	12/04/88	0001	UU	N			0.03		0.01	-
	0932	01/30/88	0001	UU	N			0.021		0.01	-
	0932	04/28/88	0001	UU	N			0.03		0.01	-
	0932	08/09/88	0001	UU	N			0.02		0.01	-
	0932	12/07/88	0001	UU	N			0.03		0.01	-
	0933	08/10/88	0001	UU	N			0.02		0.01	-
	0933	12/07/88	0001	UU	N			0.03		0.01	-
	0934	08/11/88	0001	UU	N			0.01		0.01	-
	0934	12/07/88	0001	UU	N			0.03		0.01	-
	0935	08/09/88	0001	UU	N			0.07		0.01	-
	0935	12/04/88	0001	UU	N			0.09		0.01	-
	0936	08/08/88	0001	UU	N			0.03		0.01	-
	0936	12/04/88	0001	UU	N			0.04		0.01	-
	0937	08/08/88	0001	UU	N			0.04		0.01	-
	0937	12/04/88	0001	UU	N			0.03		0.01	-
	0939	08/08/88	0001	UU	N			0.02		0.01	-
	0939	12/04/88	0001	UU	N			0.04		0.01	-
	0940	08/08/88	0001	UU	N			0.06		0.01	-

FORMATION OF COMPLETION CODE:
 UU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
UPPER SANDSTONE UNIT
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
VANADIUM	0940	12/04/88	0001	WU	N	MG/L	0.08		0.01	-
	0941	08/08/88	0001	WU	N		0.01		0.01	-
	0941	12/10/88	0001	WU	N		0.01		0.01	-
	0942	08/08/88	0001	WU	N		0.01		0.01	-
	0942	12/04/88	0001	WU	N		0.02		0.01	-
	0943	08/09/88	0001	WU	N		0.02		0.01	-
	0943	12/07/88	0001	WU	N		0.03		0.01	-
	0944	08/11/88	0001	WU	N		0.02		0.01	-
ZINC	0944	12/07/88	0001	WU	N		0.03		0.01	-
	0911	02/17/87	0001	WU	N	MG/L	0.030		0.005	-
	0911	09/18/87	0001	WU	N		0.005		0.005	-
	0911	01/30/88	0001	WU	N		0.005		0.005	-
	0911	04/22/88	0001	WU	N		0.012		0.005	-
	0911	08/11/88	0001	WU	N		0.005		0.005	-
	0912	02/18/87	0001	WU	N		0.008		0.005	-
	0912	02/03/88	0001	WU	N		0.005		0.005	-
	0912	04/22/88	0001	WU	N		0.005		0.005	-
	0912	08/27/88	0001	WU	N		0.009		0.005	-
	0913	02/18/87	0001	WU	N		0.076		0.005	-
	0913	09/18/87	0001	WU	N		0.007		0.005	-
	0913	02/03/88	0001	WU	N		0.005		0.005	-
	0913	04/22/88	0001	WU	N		0.007		0.005	-
	0913	08/04/88	0001	WU	N		0.005		0.005	-
	0916	02/20/87	0001	WU	N		0.018		0.005	-
	0916	09/20/87	0001	WU	N		0.012		0.005	-
	0916	02/03/88	0001	WU	N		0.005		0.005	-
	0916	04/22/88	0001	WU	N		0.006		0.005	-
	0916	08/04/88	0001	WU	N		0.005		0.005	-
	0917	02/19/87	0001	WU	N		0.025		0.005	-
	0917	09/20/87	0001	WU	N		0.005		0.005	-
	0917	01/30/88	0001	WU	N		0.005		0.005	-
	0917	04/22/88	0001	WU	N		0.005		0.005	-
	0917	08/27/88	0001	WU	N		0.013		0.005	-
	0918	02/20/87	0001	WU	N		0.027		0.005	-
	0918	09/20/87	0001	WU	N		0.005		0.005	-
	0918	02/03/88	0001	WU	N		0.005		0.005	-
	0918	04/22/88	0001	WU	N		0.005		0.005	-
	0918	08/26/88	0001	WU	N		0.009		0.005	-
	0920	09/20/87	0001	WU	N		0.036		0.005	-
	0920	01/30/88	0001	WU	N		0.019		0.005	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ZINC	0920	04/26/88	0001	WU	N	MG/L		0.021		0.005	-
	0920	08/27/88	0001	WU	N			0.017		0.005	-
	0922	09/20/87	0001	WU	N			0.014		0.005	-
	0922	02/03/88	0001	WU	N		<	0.005		0.005	-
	0922	04/26/88	0001	WU	N			0.008		0.005	-
	0922	08/08/88	0001	WU	N			0.018		0.005	-
	0924	09/20/87	0001	WU	N		<	0.005		0.005	-
	0924	02/04/88	0001	WU	N			0.008		0.005	-
	0924	04/26/88	0001	WU	N			0.005		0.005	-
	0924	08/26/88	0001	WU	N			0.010		0.005	-
	0925	09/20/87	0001	WU	N			0.009		0.005	-
	0925	02/03/88	0001	WU	N		<	0.005		0.005	-
	0925	04/26/88	0001	WU	N		<	0.005		0.005	-
	0925	08/26/88	0001	WU	N			0.009		0.005	-
	0927	09/20/87	0001	WU	N		<	0.005		0.005	-
	0927	02/04/88	0001	WU	N			0.010		0.005	-
	0927	04/26/88	0001	WU	N			0.011		0.005	-
	0927	08/26/88	0001	WU	N			0.009		0.005	-
	0928	09/20/87	0001	WU	N		<	0.005		0.005	-
	0928	02/03/88	0001	WU	N			0.010		0.005	-
	0928	04/22/88	0001	WU	N			0.016		0.005	-
	0928	08/04/88	0001	WU	N			0.010		0.005	-
	0929	09/20/87	0001	WU	N		<	0.005		0.005	-
	0929	02/03/88	0001	WU	N		<	0.005		0.005	-
	0929	04/28/88	0001	WU	N			0.009	J	0.005	-
	0929	08/11/88	0001	WU	N		<	0.005		0.005	-
	0930	09/20/87	0001	WU	N		<	0.005		0.005	-
	0930	01/30/88	0001	WU	N			0.021		0.005	-
	0930	04/26/88	0001	WU	N			0.135		0.005	-
	0930	08/27/88	0001	WU	N			0.062		0.005	-
	0931	01/30/88	0001	WU	N			0.010		0.005	-
	0931	04/28/88	0001	WU	N			0.014		0.005	-
	0931	08/10/88	0001	WU	N			0.011		0.005	-
	0932	01/30/88	0001	WU	N			0.013		0.005	-
	0932	04/28/88	0001	WU	N			0.021		0.005	-
	0932	08/09/88	0001	WU	N			0.036		0.005	-
	0933	08/10/88	0001	WU	N			0.004	J	0.005	-
	0934	08/11/88	0001	WU	N		<	0.008		0.005	-
	0935	08/09/88	0001	WU	N			0.158		0.005	-
	0936	08/08/88	0001	WU	N			0.040		0.005	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 UPPER SANDSTONE UNIT
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ZINC	0937	08/08/88	0001	WU	N	MG/L		0.007		0.005	-
	0939	08/08/88	0001	WU	N			0.012		0.005	-
	0940	08/08/88	0001	WU	N			0.006		0.005	-
	0941	08/08/88	0001	WU	N			0.009		0.005	-
	0942	08/08/88	0001	WU	N			0.005		0.005	-
	0943	08/09/88	0001	WU	N			0.005		0.005	-
	0944	08/11/88	0001	WU	N		<	0.005		0.005	-

FORMATION OF COMPLETION CODE:
 WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

DATA FILE NAME: M:\DART\SPK01\GWQ10001.DAT

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ALKALINITY	0910	02/17/87	0001	WL	N	MG/L CaCO3		114.		-	-
	0910	09/18/87	0001	WL	N			123.		-	-
	0910	01/30/88	0001	WL	N			126.		-	-
	0910	04/22/88	0001	WL	N			131.0		-	-
	0910	08/11/88	0001	WL	N			125.0		-	-
	0910	12/10/88	0001	WL	N			135.		-	-
	0914	02/18/87	0001	WL	N			190.		-	-
	0914	09/18/87	0001	WL	N			116.		-	-
	0914	02/03/88	0001	WL	N			115.		-	-
	0914	04/22/88	0001	WL	N			112.		-	-
	0914	08/08/88	0001	WL	N			114.0		-	-
	0914	12/10/88	0001	WL	N			111.		-	-
	0915	02/20/87	0001	WM	N			127.		-	-
	0915	09/20/87	0001	WM	N			134.	J	-	-
	0915	02/03/88	0001	WM	N			117.		-	-
	0915	04/22/88	0001	WM	N			121.		-	-
	0915	08/10/88	0001	WM	N			99.0		-	-
	0915	12/10/88	0001	WM	N			109.		-	-
	0919	02/19/87	0001	WL	N			150.		-	-
	0919	09/20/87	0001	WL	N			133.		-	-
	0919	01/30/88	0001	WL	N			143.		-	-
	0919	04/26/88	0001	WL	N			135.		-	-
	0919	08/27/88	0001	WL	N			139.0		-	-
	0919	12/10/88	0001	WL	N			165.		-	-
	0921	09/20/87	0001	WL	N			208.		-	-
	0921	02/04/88	0001	WL	N			260.		-	-
	0921	04/26/88	0001	WL	N			194.		-	-
	0921	08/10/88	0001	WL	N			215.0		-	-
	0921	12/10/88	0001	WL	N			214.		-	-
	0923	09/20/87	0001	WL	N			142.		-	-
	0923	01/30/88	0001	WL	N			144.		-	-
	0923	04/26/88	0001	WL	N			140.		-	-
	0923	08/09/88	0001	WL	N			130.0		-	-
	0923	12/10/88	0001	WL	N			145.		-	-
	0938	08/09/88	0001	WL	N			204.0	J	-	-
	0938	12/10/88	0001	WL	N			213.		-	-
ALUMINUM	0910	02/17/87	0001	WL	N	MG/L	<	0.1		0.1	-
	0910	09/18/87	0001	WL	N			0.13		0.1	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ALUMINUM	0910	01/30/88	0001	WL	N	<	0.01	0.1	-
	0910	04/22/88	0001	WL	N	<	0.03	0.1	-
	0910	08/11/88	0001	WL	N	<	0.1	0.1	-
	0914	02/18/87	0001	WL	N	<	0.1	0.1	-
	0914	09/18/87	0001	WL	N		0.14	0.1	-
	0914	02/03/88	0001	WL	N		0.02	0.1	-
	0914	04/22/88	0001	WL	N		0.03	0.1	-
	0914	08/08/88	0001	WL	N	<	0.1	0.1	-
	0915	02/20/87	0001	WM	N		0.1	0.1	-
	0915	09/20/87	0001	WM	N		0.17	0.1	-
	0915	02/03/88	0001	WM	N		0.02	0.1	-
	0915	04/22/88	0001	WM	N		0.05	0.1	-
	0915	08/10/88	0001	WM	N		0.1	0.1	-
	0919	02/19/87	0001	WL	N	<	0.1	0.1	-
	0919	09/20/87	0001	WL	N		0.05	0.1	-
	0919	01/30/88	0001	WL	N		0.08	0.1	-
	0919	04/26/88	0001	WL	N		0.03	0.1	-
	0919	08/27/88	0001	WL	N	<	0.1	0.1	-
	0921	09/20/87	0001	WL	N		0.12	0.1	-
	0921	02/04/88	0001	WL	N		0.14	0.1	-
	0921	04/26/88	0001	WL	N	<	0.06	0.1	-
	0921	08/10/88	0001	WL	N		0.1	0.1	-
	0923	09/20/87	0001	WL	N		0.07	0.1	-
	0923	01/30/88	0001	WL	N		0.09	0.1	-
	0923	04/26/88	0001	WL	N		0.02	0.1	-
	0923	08/09/88	0001	WL	N	<	0.1	0.1	-
	0938	08/09/88	0001	WL	N		0.1	0.1	-
AMMONIUM	0910	02/17/87	0001	WL	N	<	0.1	0.1	-
	0910	09/18/87	0001	WL	N		0.4	0.1	-
	0910	01/30/88	0001	WL	N		1.7	0.1	-
	0910	04/22/88	0001	WL	N		1.3	0.1	-
	0910	08/11/88	0001	WL	N		1.3	0.1	-
	0910	12/10/88	0001	WL	N		0.5	0.1	-
	0914	02/18/87	0001	WL	N	<	0.1	0.1	-
	0914	09/18/87	0001	WL	N		2.3	0.1	-
	0914	02/03/88	0001	WL	N	<	0.1	0.1	-
	0914	04/22/88	0001	WL	N	<	0.1	0.1	-
	0914	08/08/88	0001	WL	N	<	0.1	0.1	-
	0914	08/08/88	0001	WL	N	<	0.1	0.1	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
LOWER SANDSTONE AND MIDDLE SHALE UNITS
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	FLOW MEASURE	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
AMMONIUM	0914	12/10/88	0001	WL	N	MG/L	<	0.1		0.1	-
	0915	02/20/87	0001	WM	N		<	0.1		0.1	-
	0915	09/20/87	0001	WM	N		<	0.1	J	0.1	-
	0915	02/03/88	0001	WM	N		<	0.1		0.1	-
	0915	04/22/88	0001	WM	N		<	0.1		0.1	-
	0915	08/10/88	0001	WM	N		<	0.1		0.1	-
	0915	12/10/88	0001	WM	N		<	0.1		0.1	-
	0919	02/19/87	0001	WL	N		<	0.5		0.1	-
	0919	09/20/87	0001	WL	N		<	0.1		0.1	-
	0919	01/30/88	0001	WL	N		<	0.1		0.1	-
	0919	04/26/88	0001	WL	N		<	0.1		0.1	-
	0919	08/27/88	0001	WL	N		<	0.1		0.1	-
	0919	12/10/88	0001	WL	N		<	0.1		0.1	-
	0921	09/20/87	0001	WL	N		<	0.1		0.1	-
	0921	02/04/88	0001	WL	N		<	0.1		0.1	-
	0921	04/26/88	0001	WL	N		<	0.1		0.1	-
	0921	08/10/88	0001	WL	N		<	0.1		0.1	-
	0921	12/10/88	0001	WL	N		<	0.1		0.1	-
	0923	09/20/87	0001	WL	N		<	0.1		0.1	-
	0923	01/30/88	0001	WL	N		<	0.1		0.1	-
	0923	04/26/88	0001	WL	N		<	0.1		0.1	-
	0923	08/09/88	0001	WL	N		<	0.1		0.1	-
ANTIMONY	0938	12/10/88	0001	WL	N		<	0.1	J	0.1	-
	0910	02/17/87	0001	WL	N	MG/L	<	0.003		0.003	-
	0910	09/18/87	0001	WL	N		<	0.004		0.003	-
	0910	01/30/88	0001	WL	N		<	0.003		0.003	-
	0910	04/22/88	0001	WL	N			0.004		0.003	-
	0910	08/11/88	0001	WL	N		<	0.005		0.003	-
	0914	02/18/87	0001	WL	N		<	0.003		0.003	-
	0914	09/18/87	0001	WL	N		<	0.003		0.003	-
	0914	02/03/88	0001	WL	N		<	0.003		0.003	-
	0914	04/22/88	0001	WL	N		<	0.003		0.003	-
	0914	08/08/88	0001	WL	N		<	0.003		0.003	-
	0915	02/20/87	0001	WM	N		<	0.003		0.003	-
	0915	09/20/87	0001	WM	N		<	0.003	J	0.003	-
	0915	02/03/88	0001	WM	N		<	0.004		0.003	-

FORMATION OF COMPLETION CODE:
WL - WASATCH - LOWER SANDSTONE
WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI VALUE	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ANTIMONY	0915	04/22/88	0001	LM	N	MG/L	<	0.003		0.003	-
	0915	08/10/88	0001	LM	N		<	0.003		0.003	-
	0919	02/19/87	0001	WL	N		<	0.003		0.003	-
	0919	09/20/87	0001	WL	N		<	0.003		0.003	-
	0919	01/30/88	0001	WL	N		<	0.004		0.003	-
	0919	04/26/88	0001	WL	N		<	0.003		0.003	-
	0919	08/27/88	0001	WL	N		<	0.003	J	0.003	-
	0921	09/20/87	0001	WL	N		<	0.003		0.003	-
	0921	02/04/88	0001	WL	N		<	0.004		0.003	-
	0921	04/26/88	0001	WL	N		<	0.003		0.003	-
	0921	08/10/88	0001	WL	N		<	0.003		0.003	-
	0923	09/20/87	0001	WL	N		<	0.003		0.003	-
	0923	01/30/88	0001	WL	N		<	0.003		0.003	-
	0923	04/26/88	0001	WL	N		<	0.003		0.003	-
	0923	08/09/88	0001	WL	N		<	0.003		0.003	-
ARSENIC	0938	08/09/88	0001	WL	N		<	0.003	J	0.003	-
	0910	02/17/87	0001	WL	N	MG/L	<	0.001	J	0.01	-
	0910	09/18/87	0001	WL	N		<	0.002	J	0.01	-
	0910	01/30/88	0001	WL	N		<	0.001	J	0.01	-
	0910	04/22/88	0001	WL	N		<	0.001	J	0.01	-
	0910	08/11/88	0001	WL	N		<	0.01		0.01	-
	0910	12/10/88	0001	WL	N		<	0.01		0.01	-
	0914	02/18/87	0001	WL	N		<	0.001	J	0.01	-
	0914	09/18/87	0001	WL	N		<	0.001	J	0.01	-
	0914	02/03/88	0001	WL	N		<	0.001	J	0.01	-
	0914	04/22/88	0001	WL	N		<	0.001	J	0.01	-
	0914	08/08/88	0001	WL	N		<	0.01		0.01	-
	0914	12/10/88	0001	WL	N		<	0.01		0.01	-
	0915	02/20/87	0001	LM	N		<	0.001	J	0.01	-
	0915	09/20/87	0001	LM	N		<	0.001	J	0.01	-
FORMATION OF COMPLETION CODE: LM - WASATCH - MIDDLE SHALE WL - WASATCH - LOWER SANDSTONE	0915	02/03/88	0001	LM	N		<	0.001	J	0.01	-
	0915	04/22/88	0001	LM	N		<	0.001	J	0.01	-
	0915	08/10/88	0001	LM	N		<	0.01		0.01	-
	0915	12/10/88	0001	LM	N		<	0.01		0.01	-
	0919	02/19/87	0001	WL	N		<	0.001	J	0.01	-
	0919	09/20/87	0001	WL	N		<	0.001	J	0.01	-
	0919	01/30/88	0001	WL	N		<	0.01		0.01	-
	0919	04/26/88	0001	WL	N		<	0.001	J	0.01	-

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT
 SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ARSENIC	0919	08/27/88	0001	WL	MG/L	<	0.01	0.01	-
	0919	12/10/88	0001	WL	N	<	0.01	0.01	-
	0921	09/20/87	0001	WL	N	<	0.004	0.01	-
	0921	02/04/88	0001	WL	N	<	0.01	0.01	-
	0921	04/26/88	0001	WL	N	<	0.001	0.01	-
	0921	08/10/88	0001	WL	N	<	0.01	0.01	-
	0921	12/10/88	0001	WL	N	<	0.01	0.01	-
	0923	09/20/87	0001	WL	N	<	0.001	0.01	-
	0923	01/30/88	0001	WL	N	<	0.01	0.01	-
	0923	04/26/88	0001	WL	N	<	0.001	0.01	-
	0923	08/09/88	0001	WL	N	<	0.01	0.01	-
	0923	12/10/88	0001	WL	N	<	0.01	0.01	-
	0938	08/09/88	0001	WL	N	<	0.01	0.01	-
	0938	12/10/88	0001	WL	N	<	0.01	0.01	-
BARIUM	0910	02/17/87	0001	WL	MG/L	<	0.1	0.1	-
	0910	09/18/87	0001	WL	N	<	0.02	0.1	-
	0910	01/30/88	0001	WL	N	<	0.1	0.1	-
	0910	04/22/88	0001	WL	N	<	0.02	0.1	-
	0910	08/11/88	0001	WL	N	<	0.1	0.1	-
	0914	02/18/87	0001	WL	N	<	0.1	0.1	-
	0914	09/18/87	0001	WL	N	<	0.03	0.1	-
	0914	02/03/88	0001	WL	N	<	0.1	0.1	-
	0914	04/22/88	0001	WL	N	<	0.02	0.1	-
	0914	08/08/88	0001	WL	N	<	0.1	0.1	-
	0915	02/20/87	0001	WM	N	<	0.1	0.1	-
	0915	09/20/87	0001	WM	N	<	0.03	0.1	-
	0915	02/03/88	0001	WM	N	<	0.1	0.1	-
	0915	04/22/88	0001	WM	N	<	0.02	0.1	-
	0915	08/10/88	0001	WM	N	<	0.1	0.1	-
	0919	02/19/87	0001	WL	N	<	0.1	0.1	-
	0919	09/20/87	0001	WL	N	<	0.01	0.1	-
	0919	01/30/88	0001	WL	N	<	0.01	0.1	-
	0919	04/26/88	0001	WL	N	<	0.02	0.1	-
	0919	08/27/88	0001	WL	N	<	0.1	0.1	-
	0921	09/20/87	0001	WL	N	<	0.01	0.1	-
	0921	02/04/88	0001	WL	N	<	0.01	0.1	-
	0921	04/26/88	0001	WL	N	<	0.02	0.1	-
	0921	08/10/88	0001	WL	N	<	0.1	0.1	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (<.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
LOWER SANDSTONE AND MIDDLE SHALE UNITS
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI VALUE	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
BARIUM	0923	09/20/87	0001	HL	N	Mg/L	<	0.02	J	0.1	-
	0923	01/30/88	0001	HL	N		<	0.01	J	0.1	-
	0923	04/26/88	0001	HL	N		<	0.02	J	0.1	-
	0923	08/09/88	0001	HL	N		<	0.1	J	0.1	-
	0938	08/09/88	0001	HL	N			0.1	J	0.1	-
	0910	09/18/87	0001	HL	N			0.05	J	0.1	-
	0910	01/30/88	0001	HL	N			0.16	J	0.1	-
	0910	04/22/88	0001	HL	N			0.06	J	0.1	-
	0910	08/11/88	0001	HL	N		<	0.1		0.1	-
	0914	09/18/87	0001	HL	N			0.05	J	0.1	-
BORON	0914	02/03/88	0001	HL	N			0.29	J	0.1	-
	0914	04/22/88	0001	HL	N			0.06	J	0.1	-
	0914	08/08/88	0001	HL	N		<	0.1		0.1	-
	0915	09/20/87	0001	LM	N			0.07	J	0.1	-
	0915	02/03/88	0001	LM	N			0.14		0.1	-
	0915	04/22/88	0001	LM	N			0.06	J	0.1	-
	0915	08/10/88	0001	LM	N		<	0.1		0.1	-
	0919	09/20/87	0001	HL	N			0.06	J	0.1	-
	0919	01/30/88	0001	HL	N			0.12		0.1	-
	0919	04/26/88	0001	HL	N			0.05	J	0.1	-
	0919	08/27/88	0001	HL	N		<	0.1		0.1	-
	0921	09/20/87	0001	HL	N			0.07	J	0.1	-
	0921	02/04/88	0001	HL	N			0.12		0.1	-
	0921	04/26/88	0001	HL	N			0.07	J	0.1	-
	0921	08/10/88	0001	HL	N		<	0.1		0.1	-
	0923	09/20/87	0001	HL	N			0.06	J	0.1	-
	0923	01/30/88	0001	HL	N			0.17		0.1	-
	0923	04/26/88	0001	HL	N			0.06	J	0.1	-
	0923	08/09/88	0001	HL	N		<	0.1		0.1	-
	0938	08/09/88	0001	HL	N			0.1	J	0.1	-
CADMIUM	0910	02/17/87	0001	HL	N	Mg/L	<	0.001		0.001	-
	0910	09/18/87	0001	HL	N		<	0.005		0.005	-
	0910	01/30/88	0001	HL	N		<	0.001		0.001	-
	0910	04/22/88	0001	HL	N			0.003		0.001	-
	0910	08/11/88	0001	HL	N		<	0.001		0.001	-
	0910	12/10/88	0001	HL	N		<	0.001		0.001	-
	0910	02/18/87	0001	HL	N		<	0.001		0.001	-

FORMATION OF COMPLETION CODE:
HL - WASATCH - LOWER SANDSTONE
LM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CADMIUM	0914	09/18/87	0001	WL	N		0.005		0.005	-
	0914	02/03/88	0001	WL	N		0.001		0.001	-
	0914	04/22/88	0001	WL	N		0.002		0.001	-
	0914	08/08/88	0001	WL	N		0.002		0.001	-
	0914	12/10/88	0001	WL	N		0.001		0.001	-
	0915	02/20/87	0001	WM	N		0.001		0.001	-
	0915	09/20/87	0001	WM	N		0.005	J	0.005	-
	0915	02/03/88	0001	WM	N		0.001		0.001	-
	0915	04/22/88	0001	WM	N		0.001		0.001	-
	0915	08/10/88	0001	WM	N		0.005		0.001	-
	0915	12/10/88	0001	WM	N		0.001		0.001	-
	0919	02/19/87	0001	WL	N		0.002		0.001	-
	0919	09/20/87	0001	WL	N		0.005		0.005	-
	0919	01/30/88	0001	WL	N		0.001		0.001	-
	0919	04/26/88	0001	WL	N		0.001		0.001	-
	0919	08/27/88	0001	WL	N		0.001		0.001	-
	0919	12/10/88	0001	WL	N		0.001		0.001	-
	0921	09/20/87	0001	WL	N		0.005		0.005	-
	0921	02/04/88	0001	WL	N		0.001		0.001	-
	0921	04/26/88	0001	WL	N		0.001		0.001	-
	0921	08/10/88	0001	WL	N		0.001		0.001	-
	0921	12/10/88	0001	WL	N		0.001		0.001	-
	0923	09/20/87	0001	WL	N		0.001		0.001	-
	0923	01/30/88	0001	WL	N		0.005		0.005	-
	0923	04/26/88	0001	WL	N		0.001		0.001	-
	0923	08/09/88	0001	WL	N		0.001		0.001	-
	0923	12/10/88	0001	WL	N		0.001		0.001	-
	0938	08/09/88	0001	WL	N		0.001	J	0.001	-
	0938	12/10/88	0001	WL	N		0.001		0.001	-
CALCIUM	0910	02/17/87	0001	WL	N		55.9		0.01	-
	0910	09/18/87	0001	WL	N		48.2		0.01	-
	0910	01/30/88	0001	WL	N		51.2		0.01	-
	0910	04/22/88	0001	WL	N		51.7		0.01	-
	0910	08/11/88	0001	WL	N		51.4		0.01	-
	0910	12/10/88	0001	WL	N		49.7		0.01	-
	0914	02/18/87	0001	WL	N		41.1		0.01	-
	0914	09/18/87	0001	WL	N		33.3		0.01	-
	0914	02/03/88	0001	WL	N		36.1		0.01	-
	0914	02/03/88	0001	WL	N				0.01	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CALCIUM	0914	04/22/88	0001	WL	N	36.5		0.01	-
	0914	08/08/88	0001	WL	N	36.6		0.01	-
	0914	12/10/88	0001	WL	N	33.7		0.01	-
	0915	02/20/87	0001	WM	N	46.0	J	0.01	-
	0915	09/20/87	0001	WM	N	40.2		0.01	-
	0915	02/03/88	0001	WM	N	45.3		0.01	-
	0915	04/22/88	0001	WM	N	44.0		0.01	-
	0915	08/10/88	0001	WM	N	43.6		0.01	-
	0915	12/10/88	0001	WM	N	41.9		0.01	-
	0919	02/19/87	0001	WL	N	55.8		0.01	-
	0919	09/20/87	0001	WL	N	61.1		0.01	-
	0919	01/30/88	0001	WL	N	57.5		0.01	-
	0919	04/26/88	0001	WL	N	59.9		0.01	-
	0919	08/27/88	0001	WL	N	60.7		0.01	-
	0919	12/10/88	0001	WL	N	57.2		0.01	-
	0921	09/20/87	0001	WL	N	131.		0.01	-
	0921	02/04/88	0001	WL	N	101.		0.01	-
	0921	04/26/88	0001	WL	N	111.		0.01	-
	0921	08/10/88	0001	WL	N	108.		0.01	-
	0921	12/10/88	0001	WL	N	104.		0.01	-
	0923	09/20/87	0001	WL	N	58.1		0.01	-
	0923	01/30/88	0001	WL	N	51.1		0.01	-
	0923	04/26/88	0001	WL	N	53.9		0.01	-
	0923	08/09/88	0001	WL	N	55.0		0.01	-
	0923	12/10/88	0001	WL	N	49.5		0.01	-
	0938	08/09/88	0001	WL	N	14.3	J	0.01	-
	0938	12/10/88	0001	WL	N	9.50		0.01	-
CHLORIDE	0910	02/17/87	0001	WL	N	2.3		1.	-
	0910	09/18/87	0001	WL	N	2.9		1.	-
	0910	01/30/88	0001	WL	N	3.8		1.	-
	0910	04/22/88	0001	WL	N	1.7		1.	-
	0910	08/11/88	0001	WL	N	1.0		1.	-
	0910	12/10/88	0001	WL	N	1.0		1.	-
	0914	02/18/87	0001	WL	N	2.3		1.	-
	0914	09/18/87	0001	WL	N	3.4		1.	-
	0914	02/03/88	0001	WL	N	3.8		1.	-
	0914	04/22/88	0001	WL	N	3.0		1.	-
	0914	08/08/88	0001	WL	N	1.5		1.	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (<.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CHLORIDE	0914	12/10/88	0001	WL	N	MG/L	<	1.0		1.	-
	0915	02/20/87	0001	WM	N			3.5		1.	-
	0915	09/20/87	0001	WM	N			4.5	J	1.	-
	0915	02/03/88	0001	WM	N			5.1		1.	-
	0915	04/22/88	0001	WM	N			3.0		1.	-
	0915	08/10/88	0001	WM	N			1.5		1.	-
	0915	12/10/88	0001	WM	N			1.4		1.	-
	0919	02/19/87	0001	WL	N			2.3		1.	-
	0919	09/20/87	0001	WL	N			2.8		1.	-
	0919	01/30/88	0001	WL	N			0.7	J	1.	-
	0919	04/26/88	0001	WL	N			0.5	J	1.	-
	0919	08/27/88	0001	WL	N			2.1		1.	-
	0919	12/10/88	0001	WL	N		<	1.0		1.	-
	0921	09/20/87	0001	WL	N			3.9		1.	-
	0921	02/04/88	0001	WL	N			1.3		1.	-
	0921	04/26/88	0001	WL	N			1.8		1.	-
	0921	08/10/88	0001	WL	N			1.5		1.	-
	0921	12/10/88	0001	WL	N			2.1		1.	-
	0923	09/20/87	0001	WL	N			2.8		1.	-
	0923	01/30/88	0001	WL	N			2.5		1.	-
	0923	04/26/88	0001	WL	N			0.5	J	1.	-
	0923	08/09/88	0001	WL	N		<	1.0		1.	-
	0923	12/10/88	0001	WL	N		<	1.0		1.	-
	0938	08/09/88	0001	WL	N			1.5	J	1.	-
	0938	12/10/88	0001	WL	N		<	1.0		1.	-
CHROMIUM	0910	09/18/87	0001	WL	N	MG/L	<	0.01		0.01	-
	0910	01/30/88	0001	WL	N		<	0.01		0.01	-
	0910	04/22/88	0001	WL	N			0.03		0.01	-
	0910	08/11/88	0001	WL	N			0.02		0.01	-
	0910	12/10/88	0001	WL	N			0.05		0.01	-
	0914	09/18/87	0001	WL	N		<	0.01		0.01	-
	0914	02/03/88	0001	WL	N		<	0.01		0.01	-
	0914	04/22/88	0001	WL	N			0.02		0.01	-
	0914	08/08/88	0001	WL	N			0.02		0.01	-
	0914	12/10/88	0001	WL	N			0.01		0.01	-
	0915	09/20/87	0001	WM	N		<	0.01	J	0.01	-
	0915	02/03/88	0001	WM	N			0.01		0.01	-
	0915	04/22/88	0001	WM	N			0.02		0.01	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	FLOW	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CHROMIUM	0915	08/10/88	0001	WM	N	MG/L		0.02		0.01	-
	0915	12/10/88	0001	WM	N			0.01		0.01	-
	0919	09/20/87	0001	WL	N		<	0.01		0.01	-
	0919	01/30/88	0001	WL	N			0.02		0.01	-
	0919	04/26/88	0001	WL	N			0.04		0.01	-
	0919	08/27/88	0001	WL	N			0.02		0.01	-
	0919	12/10/88	0001	WL	N			0.02		0.01	-
	0921	09/20/87	0001	WL	N		<	0.01		0.01	-
	0921	02/04/88	0001	WL	N			0.04		0.01	-
	0921	04/26/88	0001	WL	N			0.05		0.01	-
	0921	08/10/88	0001	WL	N		<	0.03		0.03	-
	0921	12/10/88	0001	WL	N			0.04		0.01	-
	0923	09/20/87	0001	WL	N		<	0.01		0.01	-
	0923	01/30/88	0001	WL	N			0.03		0.01	-
	0923	04/26/88	0001	WL	N			0.04		0.01	-
	0923	08/09/88	0001	WL	N			0.02		0.01	-
	0923	12/10/88	0001	WL	N			0.02		0.01	-
	0938	08/09/88	0001	WL	N			0.02	J	0.01	-
	0938	12/10/88	0001	WL	N		<	0.01		0.01	-
COPPER	0910	02/17/87	0001	WL	N	MG/L		0.01	J	0.02	-
	0910	09/18/87	0001	WL	N		<	0.01	J	0.02	-
	0910	01/30/88	0001	WL	N		<	0.01	J	0.02	-
	0910	04/22/88	0001	WL	N			0.01	J	0.02	-
	0910	08/11/88	0001	WL	N		<	0.02		0.02	-
	0914	02/18/87	0001	WL	N		<	0.01	J	0.02	-
	0914	09/18/87	0001	WL	N		<	0.01	J	0.02	-
	0914	02/03/88	0001	WL	N		<	0.01	J	0.02	-
	0914	04/22/88	0001	WL	N			0.01	J	0.02	-
	0914	08/08/88	0001	WL	N		<	0.02		0.02	-
	0915	02/20/87	0001	WM	N		<	0.01	J	0.02	-
	0915	09/20/87	0001	WM	N			0.01	J	0.02	-
	0915	02/03/88	0001	WM	N		<	0.01	J	0.02	-
	0915	04/22/88	0001	WM	N			0.01	J	0.02	-
	0915	08/10/88	0001	WM	N		<	0.02		0.02	-
	0919	02/19/87	0001	WL	N		<	0.01	J	0.02	-
	0919	09/20/87	0001	WL	N		<	0.01	J	0.02	-
	0919	01/30/88	0001	WL	N		<	0.01	J	0.02	-
	0919	04/26/88	0001	WL	N			0.01	J	0.02	-

FORMATION OF COMPLETION CODE:
 WM - WASATCH - MIDDLE SHALE
 WL - WASATCH - LOWER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
COPPER	0919	08/27/88	0001	WL	N	MG/L	<		0.02	-
	0921	09/20/87	0001	WL	N		0.02		0.02	-
	0921	02/04/88	0001	WL	N		0.01	J	0.02	-
	0921	04/26/88	0001	WL	N		0.01	J	0.02	-
	0921	08/10/88	0001	WL	N		0.02		0.02	-
	0923	09/20/87	0001	WL	N		0.01	J	0.02	-
	0923	01/30/88	0001	WL	N		0.01	J	0.02	-
	0923	04/26/88	0001	WL	N		0.01	J	0.02	-
	0923	08/09/88	0001	WL	N		0.02		0.02	-
	0938	08/09/88	0001	WL	N		0.02	J	0.02	-
FLUORIDE	0910	02/17/87	0001	WL	N	MG/L	0.3		0.1	-
	0910	09/18/87	0001	WL	N		0.30		0.1	-
	0910	01/30/88	0001	WL	N		0.23		0.1	-
	0910	04/22/88	0001	WL	N		0.27		0.1	-
	0910	08/11/88	0001	WL	N		0.2		0.1	-
	0914	02/18/87	0001	WL	N		0.3		0.1	-
	0914	09/18/87	0001	WL	N		0.25		0.1	-
	0914	02/03/88	0001	WL	N		0.23		0.1	-
	0914	04/22/88	0001	WL	N		0.25		0.1	-
	0914	08/08/88	0001	WL	N		0.2		0.1	-
	0915	02/20/87	0001	WM	N		0.3		0.1	-
	0915	09/20/87	0001	WM	N		0.32	J	0.1	-
	0915	02/03/88	0001	WM	N		0.31		0.1	-
	0915	04/22/88	0001	WM	N		0.32		0.1	-
	0915	08/10/88	0001	WM	N		0.3		0.1	-
	0919	02/19/87	0001	WL	N		0.3		0.1	-
	0919	09/20/87	0001	WL	N		0.21		0.1	-
	0919	01/30/88	0001	WL	N		0.20		0.1	-
	0919	04/26/88	0001	WL	N		0.21		0.1	-
	0919	08/27/88	0001	WL	N		0.2		0.1	-
	0921	09/20/87	0001	WL	N		0.13		0.1	-
	0921	02/04/88	0001	WL	N		0.12		0.1	-
	0921	04/26/88	0001	WL	N		0.13		0.1	-
	0923	08/10/88	0001	WL	N		0.1		0.1	-
	0923	09/20/87	0001	WL	N		0.23		0.1	-
	0923	01/30/88	0001	WL	N		0.22		0.1	-
	0923	04/26/88	0001	WL	N		0.22		0.1	-
	0923	08/09/88	0001	WL	N		0.2		0.1	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

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SAMPLE ID CODES:
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GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
FLUORIDE	0938	08/09/88	0001	WL	N	MG/L		0.5	J	0.1	-
GROSS ALPHA	0910	09/18/87	0001	WL	N	PCI/L		14.		0.2	4.
	0910	01/30/88	0001	WL	N			27.		0.2	6.
	0910	04/22/88	0001	WL	N			17.		0.2	5.
	0910	08/11/88	0001	WL	N			13.		0.2	3.
	0910	12/10/88	0001	WL	N			12.		0.2	4.
	0914	09/18/87	0001	WL	N			5.3		0.2	2.6
	0914	02/03/88	0001	WL	N			4.6		0.2	2.7
	0914	04/22/88	0001	WL	N			4.1		0.2	2.8
	0914	08/08/88	0001	WL	N			1.8		0.2	2.2
	0914	12/10/88	0001	WL	N			11.		0.2	3.
	0915	09/20/87	0001	WM	N			27.	J	0.2	5.
	0915	02/03/88	0001	WM	N			13.		0.2	4.
	0915	04/22/88	0001	WM	N			13.		0.2	4.
	0915	08/10/88	0001	WM	N			5.9		0.2	2.7
	0915	12/10/88	0001	WM	N			8.4		0.2	2.8
	0919	09/20/87	0001	WL	N			7.5		0.2	3.2
	0919	01/30/88	0001	WL	N			12.		0.2	4.
	0919	04/26/88	0001	WL	N			6.9		0.2	3.5
	0919	08/27/88	0001	WL	N			6.4		0.2	3.0
	0919	12/10/88	0001	WL	N			4.9		0.2	3.0
	0921	09/20/87	0001	WL	N			6.9		0.2	4.0
	0921	02/04/88	0001	WL	N			11.		0.2	5.
	0921	04/26/88	0001	WL	N			9.7		0.2	5.4
	0921	08/10/88	0001	WL	N			3.0		0.2	3.8
	0921	12/10/88	0001	WL	N			0.0		0.2	3.7
	0923	09/20/87	0001	WL	N			8.9		0.2	3.2
	0923	01/30/88	0001	WL	N			6.2		0.2	4.0
	0923	04/26/88	0001	WL	N			6.1		0.2	4.0
	0923	08/09/88	0001	WL	N			2.5		0.2	2.9
	0923	12/10/88	0001	WL	N			4.1		0.2	3.3
	0938	08/09/88	0001	WL	N			0.	J	0.2	100.
	0938	12/10/88	0001	WL	N			1.5		0.2	2.2
GROSS BETA	0910	09/18/87	0001	WL	N	PCI/L		13.		1.	3.
	0910	01/30/88	0001	WL	N			14.		1.	3.
	0910	04/22/88	0001	WL	N			12.		1.	2.
	0910	08/11/88	0001	WL	N			9.6		1.	1.5

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
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OTHER PARAMETER VALUE FLAGS:
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GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
GROSS BETA	0910	12/10/88	0001	WL	N	PCI/L		7.4		1.	1.8
	0914	09/18/87	0001	WL	N			7.3		1.	2.2
	0914	02/03/88	0001	WL	N			6.4		1.	2.0
	0914	04/22/88	0001	WL	N			6.4		1.	1.6
	0914	08/08/88	0001	WL	N			6.1		1.	1.3
	0914	12/10/88	0001	WL	N			4.1		1.	1.4
	0915	09/20/87	0001	WM	N			19.	J	1.	2.
	0915	02/03/88	0001	WM	N			7.6		1.	2.2
	0915	04/22/88	0001	WM	N			12.		1.	2.
	0915	08/10/88	0001	WM	N			6.6		1.	1.3
	0915	12/10/88	0001	WM	N			5.7		1.	1.4
	0919	09/20/87	0001	WL	N			10.		1.	2.
	0919	01/30/88	0001	WL	N			10.		1.	2.
	0919	04/26/88	0001	WL	N			9.4		1.	1.7
	0919	08/27/88	0001	WL	N			8.6		1.	1.6
	0919	12/10/88	0001	WL	N			6.9		1.	1.7
	0921	09/20/87	0001	WL	N			15.		1.	3.
	0921	02/04/88	0001	WL	N			11.		1.	3.
	0921	04/26/88	0001	WL	N			11.		1.	3.
	0921	08/10/88	0001	WL	N			11.		1.	3.
	0921	12/10/88	0001	WL	N			17.		1.	3.
	0923	09/20/87	0001	WL	N			22.		1.	3.
	0923	01/30/88	0001	WL	N			7.7		1.	2.8
	0923	04/26/88	0001	WL	N			9.1		1.	2.0
	0923	08/09/88	0001	WL	N			7.1		1.	2.1
	0923	12/10/88	0001	WL	N			6.4		1.	3.9
	0938	08/09/88	0001	WL	N			93.	J	1.	51.
	0938	12/10/88	0001	WL	N			4.3		1.	1.4
IRON	0910	02/17/87	0001	WL	N	MG/L	<	0.03		0.03	-
	0910	09/18/87	0001	WL	N			0.02	J	0.03	-
	0910	01/30/88	0001	WL	N			0.11		0.03	-
	0910	04/22/88	0001	WL	N			0.04		0.03	-
	0910	08/11/88	0001	WL	N		<	0.03		0.03	-
	0910	12/10/88	0001	WL	N			0.04		0.03	-
	0914	02/18/87	0001	WL	N		<	0.03		0.03	-
	0914	09/18/87	0001	WL	N		<	0.01	J	0.03	-
	0914	02/03/88	0001	WL	N			0.12		0.03	-
	0914	04/22/88	0001	WL	N			0.02	J	0.03	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION	ID	LOG DATE	SAMPLE ID	FORM	FLOW	REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
IRON		0914	08/08/88	0001	WL	N		MG/L	0.08	<	0.03	-
		0914	12/10/88	0001	WL	N			0.03	<	0.03	-
		0915	02/20/87	0001	WL	N			0.07	<	0.03	-
		0915	02/20/87	0001	WL	N			0.11	<	0.03	-
		0915	02/03/88	0001	WL	N			0.17	<	0.03	-
		0915	04/22/88	0001	WL	N			0.04	<	0.03	-
		0915	08/10/88	0001	WL	N			0.07	<	0.03	-
		0915	12/10/88	0001	WL	N			0.03	<	0.03	-
		0919	02/19/87	0001	WL	N			0.07	<	0.03	-
		0919	09/20/87	0001	WL	N			0.10	<	0.03	-
		0919	08/27/88	0001	WL	N			0.10	<	0.03	-
		0919	12/10/88	0001	WL	N			0.05	<	0.03	-
		0921	09/20/87	0001	WL	N			0.61	<	0.03	-
		0921	02/04/88	0001	WL	N			0.63	<	0.03	-
		0921	04/26/88	0001	WL	N			0.70	<	0.03	-
		0921	08/10/88	0001	WL	N			0.67	<	0.03	-
		0921	12/10/88	0001	WL	N			0.68	<	0.03	-
		0923	09/20/87	0001	WL	N			0.06	<	0.03	-
		0923	01/30/88	0001	WL	N			0.07	<	0.03	-
		0923	04/26/88	0001	WL	N			0.08	<	0.03	-
LEAD		0914	08/08/88	0001	WL	N		MG/L	0.001	<	0.01	-
		0914	12/10/88	0001	WL	N			0.01	<	0.01	-
		0910	02/17/87	0001	WL	N			0.001	<	0.01	-
		0910	09/18/87	0001	WL	N			0.02	<	0.01	-
		0910	01/30/88	0001	WL	N			0.01	<	0.01	-
		0910	04/22/88	0001	WL	N			0.01	<	0.01	-
		0910	08/11/88	0001	WL	N			0.01	<	0.01	-
		0910	12/10/88	0001	WL	N			0.01	<	0.01	-
		0914	02/18/87	0001	WL	N			0.001	J	0.01	-
		0914	09/18/87	0001	WL	N			0.02	J	0.01	-
		0914	02/03/88	0001	WL	N			0.01	J	0.01	-
		0914	04/22/88	0001	WL	N			0.01	J	0.01	-
		0914	08/08/88	0001	WL	N			0.01	J	0.01	-
		0914	12/10/88	0001	WL	N			0.01	J	0.01	-
		0914	04/22/88	0001	WL	N			0.01	J	0.01	-
		0914	08/08/88	0001	WL	N			0.01	J	0.01	-
		0914	12/10/88	0001	WL	N			0.01	J	0.01	-
		0914	08/08/88	0001	WL	N			0.01	J	0.01	-
		0914	12/10/88	0001	WL	N			0.01	J	0.01	-
		0914	08/08/88	0001	WL	N			0.01	J	0.01	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 MM - WASATCH - MIDDLE SHALE

PARAMETER VALUE INDICATOR (PVI): > - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
LEAD	0915	02/20/87	0001	WM	MG/L	<	0.001	J	0.01	-
	0915	09/20/87	0001	WM		<	0.02	J	0.02	-
	0915	02/03/88	0001	WM		<	0.01		0.01	-
	0915	04/22/88	0001	WM		<	0.01		0.01	-
	0915	08/10/88	0001	WM		<	0.01		0.01	-
	0915	12/10/88	0001	WM		<	0.01		0.01	-
	0919	02/19/87	0001	WL		<	0.010		0.01	-
	0919	09/20/87	0001	WL		<	0.01		0.01	-
	0919	01/30/88	0001	WL		<	0.01		0.01	-
	0919	04/26/88	0001	WL		<	0.01		0.01	-
	0919	08/27/88	0001	WL		<	0.01		0.01	-
	0919	12/10/88	0001	WL		<	0.01		0.01	-
	0921	09/20/87	0001	WL		<	0.01		0.01	-
	0921	02/04/88	0001	WL		<	0.01		0.01	-
	0921	04/26/88	0001	WL		<	0.01		0.01	-
	0921	08/10/88	0001	WL		<	0.01		0.01	-
	0921	12/10/88	0001	WL		<	0.01		0.01	-
	0923	09/20/87	0001	WL		<	0.01		0.01	-
	0923	01/30/88	0001	WL		<	0.01		0.01	-
	0923	04/26/88	0001	WL		<	0.01		0.01	-
	0923	08/09/88	0001	WL		<	0.01		0.01	-
	0923	12/10/88	0001	WL		<	0.01		0.01	-
	0938	08/09/88	0001	WL		<	0.01	J	0.01	-
	0938	12/10/88	0001	WL		<	0.01		0.01	-
LEAD-210	0910	09/18/87	0001	WL	PCI/L		2.0		1.5	1.4
	0910	01/30/88	0001	WL			0.0		1.5	1.0
	0910	04/22/88	0001	WL			0.1		1.5	0.9
	0910	08/11/88	0001	WL			0.9		1.5	0.9
	0914	09/18/87	0001	WL			0.0		1.5	1.0
	0914	02/03/88	0001	WL			0.7		1.5	0.9
	0914	04/22/88	0001	WL			0.0		1.5	1.0
	0914	08/08/88	0001	WL			0.9		1.5	0.9
	0915	09/20/87	0001	WM			1.4	J	1.5	0.9
	0915	02/03/88	0001	WM			0.0		1.5	1.1
	0915	04/22/88	0001	WM			1.4		1.5	0.9
	0915	08/10/88	0001	WM			0.5		1.5	0.8
	0919	09/20/87	0001	WL			1.6		1.5	1.1
	0919	01/30/88	0001	WL			0.1		1.5	0.8

FORMATION OF COMPLETION CODE:
 WM - WASATCH - MIDDLE SHALE
 WL - WASATCH - LOWER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
LEAD-210	0919	04/26/88	0001	WL	N	0.0		1.5	0.8
	0919	08/27/88	0001	WL	N	0.1		1.5	0.7
	0921	09/20/87	0001	WL	N	1.6		1.5	1.0
	0921	02/04/88	0001	WL	N	0.0		1.5	0.8
	0921	04/26/88	0001	WL	N	0.0		1.5	0.6
	0921	08/10/88	0001	WL	N	0.6		1.5	1.2
	0923	09/20/87	0001	WL	N	0.6		1.5	0.9
	0923	01/30/88	0001	WL	N	0.1		1.5	0.8
	0923	04/26/88	0001	WL	N	0.0		1.5	0.8
	0923	08/09/88	0001	WL	N	0.6		1.5	1.2
	0938	08/09/88	0001	WL	N	0.9	J	1.5	1.0
MAGNESIUM	0910	02/17/87	0001	WL	N	12.6		0.001	-
	0910	09/18/87	0001	WL	N	9.36		0.001	-
	0910	01/30/88	0001	WL	N	9.70		0.001	-
	0910	04/22/88	0001	WL	N	9.18		0.001	-
	0910	08/11/88	0001	WL	N	9.37		0.001	-
	0910	12/10/88	0001	WL	N	8.93		0.001	-
	0914	02/18/87	0001	WL	N	5.44		0.001	-
	0914	09/18/87	0001	WL	N	5.29		0.001	-
	0914	02/03/88	0001	WL	N	5.58		0.001	-
	0914	04/22/88	0001	WL	N	5.36		0.001	-
	0914	08/08/88	0001	WL	N	5.54		0.001	-
	0914	12/10/88	0001	WL	N	5.19		0.001	-
	0915	02/20/87	0001	WM	N	7.37		0.001	-
	0915	09/20/87	0001	WM	N	6.29	J	0.001	-
	0915	02/03/88	0001	WM	N	6.88		0.001	-
	0915	04/22/88	0001	WM	N	6.57		0.001	-
	0915	08/10/88	0001	WM	N	6.27		0.001	-
	0915	12/10/88	0001	WM	N	6.35		0.001	-
	0919	02/19/87	0001	WL	N	10.4		0.001	-
	0919	09/20/87	0001	WL	N	10.1		0.001	-
	0919	01/30/88	0001	WL	N	10.3		0.001	-
	0919	04/26/88	0001	WL	N	10.2		0.001	-
	0919	08/27/88	0001	WL	N	10.7		0.001	-
	0919	12/10/88	0001	WL	N	10.2		0.001	-
	0921	09/20/87	0001	WL	N	20.9		0.001	-
	0921	02/04/88	0001	WL	N	21.3		0.001	-
	0921	04/26/88	0001	WL	N	22.2		0.001	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
LOWER SANDSTONE AND MIDDLE SHALE UNITS
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MAGNESIUM	0921	08/10/88	0001	WL	N	MG/L	22.6		0.001	-
	0921	12/10/88	0001	WL	N		21.8		0.001	-
	0923	09/20/87	0001	WL	N		8.68		0.001	-
	0923	01/30/88	0001	WL	N		9.27		0.001	-
	0923	04/26/88	0001	WL	N		9.22		0.001	-
	0923	08/09/88	0001	WL	N		8.31		0.001	-
	0923	12/10/88	0001	WL	N		8.88		0.001	-
	0938	08/09/88	0001	WL	N		2.72	J	0.001	-
	0938	12/10/88	0001	WL	N		1.72		0.001	-
MANGANESE	0910	02/17/87	0001	WL	N	MG/L	0.06		0.01	-
	0910	09/18/87	0001	WL	N		0.04		0.01	-
	0910	01/30/88	0001	WL	N		0.04		0.01	-
	0910	04/22/88	0001	WL	N		0.04		0.01	-
	0910	08/11/88	0001	WL	N		0.04		0.01	-
	0910	12/10/88	0001	WL	N		0.04		0.01	-
	0914	02/18/87	0001	WL	N		0.03		0.01	-
	0914	09/18/87	0001	WL	N		0.03		0.01	-
	0914	02/03/88	0001	WL	N		0.02		0.01	-
	0914	04/22/88	0001	WL	N		0.03		0.01	-
	0914	08/08/88	0001	WL	N		0.03		0.01	-
	0914	12/10/88	0001	WL	N		0.02		0.01	-
	0915	02/20/87	0001	WM	N		0.03		0.01	-
	0915	02/03/88	0001	WM	N		0.02		0.01	-
	0915	04/22/88	0001	WM	N		0.01		0.01	-
	0915	08/10/88	0001	WM	N		0.02		0.01	-
	0915	12/10/88	0001	WM	N		0.01		0.01	-
	0919	02/19/87	0001	WL	N		0.03		0.01	-
	0919	09/20/87	0001	WL	N		0.05		0.01	-
	0919	01/30/88	0001	WL	N		0.03		0.01	-
	0919	04/26/88	0001	WL	N		0.04		0.01	-
	0919	08/27/88	0001	WL	N		0.04		0.01	-
	0919	12/10/88	0001	WL	N		0.03		0.01	-
	0921	09/20/87	0001	WL	N		0.07		0.01	-
	0921	02/04/88	0001	WL	N		0.07		0.01	-
	0921	04/26/88	0001	WL	N		0.09		0.01	-
	0921	08/10/88	0001	WL	N		0.07		0.01	-
	0921	12/10/88	0001	WL	N		0.07		0.01	-
	0923	09/20/87	0001	WL	N		0.04		0.01	-

FORMATION OF COMPLETION CODE:
WL - WASATCH - LOWER SANDSTONE
WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MANGANESE	0923	01/30/88	0001	WL	N	MG/L		0.03		0.01	-
	0923	04/26/88	0001	WL	N			0.04		0.01	-
	0923	08/09/88	0001	WL	N			0.03		0.01	-
	0923	12/10/88	0001	WL	N			0.04		0.01	-
	0938	08/09/88	0001	WL	N			0.01	J	0.01	-
	0938	12/10/88	0001	WL	N		<	0.01		0.01	-
MERCURY	0910	02/17/87	0001	WL	N	MG/L	<	0.0002		0.0002	-
	0910	09/18/87	0001	WL	N		<	0.0002		0.0002	-
	0910	01/30/88	0001	WL	N			0.0004		0.0002	-
	0910	04/22/88	0001	WL	N		<	0.0002		0.0002	-
	0910	08/11/88	0001	WL	N		<	0.0002		0.0002	-
	0914	02/18/87	0001	WL	N		<	0.0002		0.0002	-
	0914	09/18/87	0001	WL	N		<	0.0002		0.0002	-
	0914	02/03/88	0001	WL	N			0.0004		0.0002	-
	0914	04/22/88	0001	WL	N			0.0002		0.0002	-
	0914	08/08/88	0001	WL	N		<	0.0002		0.0002	-
	0915	02/20/87	0001	WM	N		<	0.0002		0.0002	-
	0915	09/20/87	0001	WM	N		<	0.0002	J	0.0002	-
	0915	02/03/88	0001	WM	N			0.0004		0.0002	-
	0915	04/22/88	0001	WM	N			0.0002		0.0002	-
	0915	08/10/88	0001	WM	N		<	0.0002		0.0002	-
	0919	02/19/87	0001	WL	N			0.0003		0.0002	-
	0919	09/20/87	0001	WL	N		<	0.0002		0.0002	-
	0919	01/30/88	0001	WL	N			0.0003		0.0002	-
	0919	04/26/88	0001	WL	N			0.0004		0.0002	-
	0919	08/27/88	0001	WL	N		<	0.0002		0.0002	-
	0921	09/20/87	0001	WL	N		<	0.0002		0.0002	-
	0921	02/04/88	0001	WL	N			0.0002		0.0002	-
	0921	04/26/88	0001	WL	N			0.0005		0.0002	-
	0921	08/10/88	0001	WL	N		<	0.0002		0.0002	-
	0923	09/20/87	0001	WL	N		<	0.0002		0.0002	-
	0923	01/30/88	0001	WL	N			0.0002		0.0002	-
	0923	04/26/88	0001	WL	N			0.0007		0.0002	-
	0923	08/09/88	0001	WL	N		<	0.0002		0.0002	-
	0938	08/09/88	0001	WL	N		<	0.0002	J	0.0002	-
MOLYBDENUM	0910	02/17/87	0001	WL	N	MG/L	<	0.1		0.1	-
	0910	09/18/87	0001	WL	N		<	0.01		0.01	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MOLYBDENUM	0910	01/30/88	0001	WL	N	MG/L	<	0.01		0.01	-
	0910	04/22/88	0001	WL	N			0.01		0.01	-
	0910	08/11/88	0001	WL	N		<	0.01		0.01	-
	0910	12/10/88	0001	WL	N		<	0.01		0.01	-
	0914	02/18/87	0001	WL	N		<	0.1		0.1	-
	0914	09/18/87	0001	WL	N		<	0.01		0.01	-
	0914	02/03/88	0001	WL	N		<	0.01		0.01	-
	0914	04/22/88	0001	WL	N			0.01		0.01	-
	0914	08/08/88	0001	WL	N		<	0.01		0.01	-
	0914	12/10/88	0001	WL	N		<	0.01		0.01	-
	0915	02/20/87	0001	WM	N			0.2		0.01	-
	0915	09/20/87	0001	WM	N		<	0.01	J	0.01	-
	0915	02/03/88	0001	WM	N		<	0.01		0.01	-
	0915	04/22/88	0001	WM	N			0.01		0.01	-
	0915	08/10/88	0001	WM	N		<	0.01		0.01	-
	0915	12/10/88	0001	WM	N		<	0.01		0.01	-
	0919	02/19/87	0001	WL	N		<	0.1		0.1	-
	0919	09/20/87	0001	WL	N		<	0.01		0.01	-
	0919	01/30/88	0001	WL	N			0.02		0.01	-
	0919	04/26/88	0001	WL	N			0.01		0.01	-
	0919	08/27/88	0001	WL	N		<	0.01		0.01	-
	0919	12/10/88	0001	WL	N		<	0.01		0.01	-
	0921	09/20/87	0001	WL	N		<	0.01		0.01	-
	0921	02/04/88	0001	WL	N			0.03		0.01	-
	0921	08/10/88	0001	WL	N		<	0.01		0.01	-
	0921	12/10/88	0001	WL	N			0.01		0.01	-
	0923	09/20/87	0001	WL	N		<	0.01		0.01	-
	0923	01/30/88	0001	WL	N			0.02		0.01	-
	0923	04/26/88	0001	WL	N			0.01		0.01	-
	0923	08/09/88	0001	WL	N		<	0.01		0.01	-
	0923	12/10/88	0001	WL	N		<	0.01		0.01	-
	0938	08/09/88	0001	WL	N			0.01	J	0.01	-
	0938	12/10/88	0001	WL	N		<	0.01		0.01	-
NET GROSS ALPHA *	0910	09/18/87	0001	WL	N	PCI/L		4.46		-	-
	0910	01/30/88	0001	WL	N			14.38		-	-
	0910	04/22/88	0001	WL	N			4.79		-	-

* NET GROSS ALPHA (GROSS ALPHA - URANIUM) WITH 1 MG URANIUM = 686 PCI

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
NET GROSS ALPHA *	0910	08/11/88	0001	WL	N	PCI/L		4.97		-	-
	0910	12/10/88	0001	WL	N			5.07		-	-
	0914	09/18/87	0001	WL	N			0.84		-	-
	0914	02/03/88	0001	WL	N			3.09		-	-
	0914	04/22/88	0001	WL	N			2.45		-	-
	0914	08/08/88	0001	WL	N			0.63		-	-
	0914	12/10/88	0001	WL	N			10.18		-	-
	0915	09/20/87	0001	WM	N			9.92		-	-
	0915	02/03/88	0001	WM	N			4.49		-	-
	0915	04/22/88	0001	WM	N			-3.74		-	-
	0915	08/10/88	0001	WM	N			1.17		-	-
	0915	12/10/88	0001	WM	N			4.08		-	-
	0919	09/20/87	0001	WL	N			6.54		-	-
	0919	01/30/88	0001	WL	N			4.04		-	-
	0919	04/26/88	0001	WL	N			5.32		-	-
	0919	08/27/88	0001	WL	N			6.06		-	-
	0919	12/10/88	0001	WL	N			3.87		-	-
	0921	09/20/87	0001	WL	N			6.21		-	-
	0921	02/04/88	0001	WL	N			10.38		-	-
	0921	04/26/88	0001	WL	N			9.01		-	-
	0921	08/10/88	0001	WL	N			2.66		-	-
	0921	12/10/88	0001	WL	N			-0.41		-	-
	0923	09/20/87	0001	WL	N			7.46		-	-
	0923	01/30/88	0001	WL	N			5.03		-	-
	0923	04/26/88	0001	WL	N			5.07		-	-
	0923	08/09/88	0001	WL	N			1.47		-	-
	0923	12/10/88	0001	WL	N			3.35		-	-
	0938	08/09/88	0001	WL	N			-1.03		-	-
	0938	12/10/88	0001	WL	N			1.23		-	-
NICKEL	0910	09/18/87	0001	WL	N	MG/L	<	0.01	J	0.04	-
	0910	01/30/88	0001	WL	N		<	0.01	J	0.04	-
	0910	04/22/88	0001	WL	N			0.01	J	0.04	-
	0910	08/11/88	0001	WL	N		<	0.04		0.04	-
	0914	09/18/87	0001	WL	N		<	0.01	J	0.04	-
	0914	02/03/88	0001	WL	N		<	0.01	J	0.04	-
	0914	04/22/88	0001	WL	N		<	0.01	J	0.04	-

* NET GROSS ALPHA (GROSS ALPHA - URANIUM) WITH 1 MG URANIUM = 686 PCI

FORMATION OF COMPLETION CODE:
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GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
NICKEL	0914	08/08/88	0001	WL	MG/L	<	0.04		0.04	-
	0915	09/20/87	0001	WM		<	0.01	J	0.04	-
	0915	02/03/88	0001	WM		<	0.01	J	0.04	-
	0915	04/22/88	0001	WM		<	0.01	J	0.04	-
	0915	08/10/88	0001	WM		<	0.04		0.04	-
	0919	09/20/87	0001	WL		<	0.01	J	0.04	-
	0919	01/30/88	0001	WL			0.01	J	0.04	-
	0919	04/26/88	0001	WL		<	0.01	J	0.04	-
	0919	08/27/88	0001	WL		<	0.04		0.04	-
	0921	09/20/87	0001	WL		<	0.01	J	0.04	-
	0921	02/04/88	0001	WL			0.01	J	0.04	-
	0921	04/26/88	0001	WL			0.02	J	0.04	-
	0923	08/10/88	0001	WL		<	0.04		0.04	-
	0923	09/20/87	0001	WL		<	0.01	J	0.04	-
	0923	01/30/88	0001	WL		<	0.01	J	0.04	-
	0923	04/26/88	0001	WL		<	0.01	J	0.04	-
	0923	08/09/88	0001	WL		<	0.01	J	0.04	-
	0938	08/09/88	0001	WL		<	0.04	J	0.04	-
NITRATE	0910	02/17/87	0001	WL	MG/L		60.2		1.	-
	0910	09/18/87	0001	WL		<	2.7		1.	-
	0910	01/30/88	0001	WL			0.1	J	1.	-
	0910	04/22/88	0001	WL			2.2		1.	-
	0910	08/11/88	0001	WL		<	1.0		1.	-
	0910	12/10/88	0001	WL			7.6		1.	-
	0914	02/18/87	0001	WL			0.4	J	1.	-
	0914	09/18/87	0001	WL			1.8		1.	-
	0914	02/03/88	0001	WL		<	0.1	J	1.	-
	0914	04/22/88	0001	WL			3.8		1.	-
	0914	08/08/88	0001	WL			1.6		1.	-
	0914	12/10/88	0001	WL			7.0		1.	-
	0915	02/20/87	0001	WM			0.4	J	1.	-
	0915	09/20/87	0001	WM			0.9	J	1.	-
	0915	02/03/88	0001	WM			0.7	J	1.	-
	0915	04/22/88	0001	WM			3.9		1.	-
	0915	08/10/88	0001	WM			3.8		1.	-
	0915	12/10/88	0001	WM			1.0		1.	-
	0919	02/19/87	0001	WL			0.8	J	1.	-
	0919	09/20/87	0001	WL		<	0.1	J	1.	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

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GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
NITRATE	0919	01/30/88	0001	WL	N	MG/L	<	0.1	J	1.	-
	0919	04/26/88	0001	WL	N			2.3		1.	-
	0919	08/27/88	0001	WL	N			1.9		1.	-
	0919	12/10/88	0001	WL	N			1.0		1.	-
	0921	09/20/87	0001	WL	N		<	0.1	J	1.	-
	0921	02/04/88	0001	WL	N			1.8		1.	-
	0921	04/26/88	0001	WL	N			0.8	J	1.	-
	0921	08/10/88	0001	WL	N		<	1.0		1.	-
	0921	12/10/88	0001	WL	N			5.2		1.	-
	0923	09/20/87	0001	WL	N			0.4	J	1.	-
	0923	01/30/88	0001	WL	N			0.4	J	1.	-
	0923	04/26/88	0001	WL	N			1.6		1.	-
	0923	08/09/88	0001	WL	N		<	1.0		1.	-
	0923	12/10/88	0001	WL	N			5.5		1.	-
	0938	08/09/88	0001	WL	N		<	1.0	J	1.	-
	0938	12/10/88	0001	WL	N			5.9		1.	-
PH	0910	02/17/87	0001	WL	N	SU		8.54		-	-
	0910	09/18/87	0001	WL	N			7.77		-	-
	0910	01/30/88	0001	WL	N			8.00		-	-
	0910	04/22/88	0001	WL	N			7.81		-	-
	0910	08/11/88	0001	WL	N			7.67		-	-
	0910	12/10/88	0001	WL	N			7.96		-	-
	0914	02/18/87	0001	WL	N			8.18		-	-
	0914	09/18/87	0001	WL	N			8.09		-	-
	0914	02/03/88	0001	WL	N			8.12		-	-
	0914	04/22/88	0001	WL	N			8.03		-	-
	0914	08/08/88	0001	WL	N			7.85		-	-
	0914	12/10/88	0001	WL	N			8.15		-	-
	0915	02/20/87	0001	WM	N			7.68		-	-
	0915	09/20/87	0001	WM	N			7.70		-	-
	0915	02/03/88	0001	WM	N			7.43		-	-
	0915	04/22/88	0001	WM	N			7.78		-	-
	0915	08/10/88	0001	WM	N			7.62		-	-
	0915	12/10/88	0001	WM	N			7.67		-	-
	0919	02/19/87	0001	WL	N			7.87		-	-
	0919	09/20/87	0001	WL	N			7.44		-	-
	0919	01/30/88	0001	WL	N			7.75		-	-
	0919	04/26/88	0001	WL	N			7.47		-	-

FORMATION OF COMPLETION CODE:
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FLOW RELATIONSHIP CODE:
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GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
PH	0919	08/27/88	0001	WL	N	SU		7.43		-	-
	0919	12/10/88	0001	WL	N			7.55		-	-
	0921	09/20/87	0001	WL	N			7.25		-	-
	0921	02/04/88	0001	WL	N			7.13		-	-
	0921	04/26/88	0001	WL	N			7.15		-	-
	0921	08/10/88	0001	WL	N			7.13		-	-
	0921	12/10/88	0001	WL	N			7.28		-	-
	0923	09/20/87	0001	WL	N			7.57		-	-
	0923	01/30/88	0001	WL	N			7.85		-	-
	0923	04/26/88	0001	WL	N			7.53		-	-
	0923	08/09/88	0001	WL	N			7.48		-	-
	0923	12/10/88	0001	WL	N			7.71		-	-
	0938	08/09/88	0001	WL	N			7.94		-	-
	0938	12/10/88	0001	WL	N			8.55		-	-
PHOSPHATE	0910	02/17/87	0001	WL	N	Mg/L		0.1		0.1	-
	0910	09/18/87	0001	WL	N			0.2		0.1	-
	0910	01/30/88	0001	WL	N			0.1		0.1	-
	0910	04/22/88	0001	WL	N			0.3		0.1	-
	0910	08/11/88	0001	WL	N			0.1		0.1	-
	0914	02/18/87	0001	WL	N			0.1		0.1	-
	0914	09/18/87	0001	WL	N			0.1		0.1	-
	0914	02/03/88	0001	WL	N			0.1		0.1	-
	0914	04/22/88	0001	WL	N			0.1		0.1	-
	0914	08/08/88	0001	WL	N			0.1		0.1	-
	0915	02/20/87	0001	WM	N			0.1	J	0.1	-
	0915	09/20/87	0001	WM	N			0.1		0.1	-
	0915	02/03/88	0001	WM	N			0.1		0.1	-
	0915	04/22/88	0001	WM	N			0.1		0.1	-
	0919	02/19/87	0001	WL	N			0.1		0.1	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT
 SAMPLE ID CODES:
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OTHER PARAMETER VALUE FLAGS:
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GROUNDWATER QUALITY DATA BY PARAMETER
LOWER SANDSTONE AND MIDDLE SHALE UNITS
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
PHOSPHATE	0923	01/30/88	0001	WL	N	<		0.1	-
	0923	04/26/88	0001	WL	N	<		0.1	-
	0923	08/09/88	0001	WL	N	<		0.1	-
	0938	08/09/88	0001	WL	N	<	J	0.1	-
POLONIUM-210	0910	09/18/87	0001	WL	N	2.2		1.	1.1
	0910	01/30/88	0001	WL	N	0.0		1.	0.3
	0910	04/22/88	0001	WL	N	0.0		1.	0.3
	0910	08/11/88	0001	WL	N	0.0		1.	0.4
	0914	09/18/87	0001	WL	N	0.3		1.	0.9
	0914	02/03/88	0001	WL	N	0.2		1.	0.4
	0914	04/22/88	0001	WL	N	0.0		1.	0.3
	0914	08/08/88	0001	WL	N	0.8		1.	0.5
	0915	09/20/87	0001	WM	N	1.2	J	1.	1.0
	0915	02/03/88	0001	WM	N	0.1		1.	0.3
	0915	04/22/88	0001	WM	N	0.0		1.	0.4
	0915	08/10/88	0001	WM	N	2.5		1.	0.7
	0919	09/20/87	0001	WL	N	0.0		1.	0.8
	0919	01/30/88	0001	WL	N	0.3		1.	0.6
	0919	04/26/88	0001	WL	N	0.1		1.	0.4
	0919	08/27/88	0001	WL	N	0.0		1.	0.3
	0921	09/20/87	0001	WL	N	0.3		1.	0.9
	0921	02/04/88	0001	WL	N	0.0		1.	0.6
	0921	04/26/88	0001	WL	N	0.0		1.	0.4
	0921	08/10/88	0001	WL	N	0.0		1.	0.4
	0923	09/20/87	0001	WL	N	0.1		1.	0.8
	0923	01/30/88	0001	WL	N	0.0		1.	0.5
	0923	04/26/88	0001	WL	N	0.7		1.	0.5
	0923	08/09/88	0001	WL	N	0.0		1.	0.4
	0938	08/09/88	0001	WL	N	0.0	J	1.	0.4
POTASSIUM	0910	02/17/87	0001	WL	N	8.82		0.01	-
	0910	09/18/87	0001	WL	N	4.74		0.01	-
	0910	01/30/88	0001	WL	N	5.25		0.01	-
	0910	04/22/88	0001	WL	N	4.88		0.01	-
	0910	08/11/88	0001	WL	N	5.2		0.01	-
	0910	12/10/88	0001	WL	N	4.8		0.01	-
	0914	02/18/87	0001	WL	N	4.21		0.01	-
	0914	09/18/87	0001	WL	N	3.56		0.01	-

FORMATION OF COMPLETION CODE:
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FLOW RELATIONSHIP CODE:
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GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
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 02/17/87 TO 12/10/88
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PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
POTASSIUM	0914	02/03/88	0001	WL	N	4.16		0.01	-
	0914	04/22/88	0001	WL	N	3.66		0.01	-
	0914	08/08/88	0001	WL	N	3.9		0.01	-
	0914	12/10/88	0001	WL	N	3.8		0.01	-
	0915	02/20/87	0001	WM	N	5.49		0.01	-
	0915	09/20/87	0001	WM	N	4.07	J	0.01	-
	0915	02/03/88	0001	WM	N	4.81		0.01	-
	0915	04/22/88	0001	WM	N	4.74		0.01	-
	0915	08/10/88	0001	WM	N	4.6		0.01	-
	0915	12/10/88	0001	WM	N	4.7		0.01	-
	0919	02/19/87	0001	WL	N	7.51		0.01	-
	0919	09/20/87	0001	WL	N	5.24		0.01	-
	0919	01/30/88	0001	WL	N	3.10		0.01	-
	0919	04/26/88	0001	WL	N	4.92		0.01	-
	0919	08/27/88	0001	WL	N	5.0		0.01	-
	0919	12/10/88	0001	WL	N	5.1		0.01	-
	0921	09/20/87	0001	WL	N	7.64		0.01	-
	0921	02/04/88	0001	WL	N	4.58		0.01	-
	0921	04/26/88	0001	WL	N	6.98		0.01	-
	0921	08/10/88	0001	WL	N	7.7		0.01	-
	0921	12/10/88	0001	WL	N	7.2		0.01	-
	0923	09/20/87	0001	WL	N	5.07		0.01	-
	0923	01/30/88	0001	WL	N	3.20		0.01	-
	0923	04/26/88	0001	WL	N	5.09		0.01	-
	0923	08/09/88	0001	WL	N	4.4		0.01	-
	0923	12/10/88	0001	WL	N	5.7		0.01	-
	0938	08/09/88	0001	WL	N	2.7	J	0.01	-
	0938	12/10/88	0001	WL	N	4.4		0.01	-
RADIUM-226	0910	09/18/87	0001	WL	N	0.6		1.	0.3
	0910	01/30/88	0001	WL	N	0.3		1.	0.2
	0910	04/22/88	0001	WL	N	0.9		1.	0.3
	0910	08/11/88	0001	WL	N	0.6		1.	0.3
	0910	12/10/88	0001	WL	N	0.7		1.	0.3
	0914	09/18/87	0001	WL	N	0.8		1.	0.3
	0914	02/03/88	0001	WL	N	0.7		1.	0.3
	0914	04/22/88	0001	WL	N	0.2		1.	0.2
	0914	08/08/88	0001	WL	N	0.3		1.	0.2
	0914	12/10/88	0001	WL	N	0.3		1.	0.2

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
LOWER SANDSTONE AND MIDDLE SHALE UNITS
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-226	0915	09/20/87	0001	WM	N	PCI/L	2.1	J	1.	0.5
	0915	02/03/88	0001	WM	N		0.3		1.	0.2
	0915	04/22/88	0001	WM	N		0.8		1.	0.3
	0915	08/10/88	0001	WM	N		0.3		1.	0.2
	0915	12/10/88	0001	WM	N		0.5		1.	0.3
	0919	09/20/87	0001	WL	N		1.3		1.	0.4
	0919	01/30/88	0001	WL	N		1.2		1.	0.3
	0919	04/26/88	0001	WL	N		0.9		1.	0.3
	0919	08/27/88	0001	WL	N		1.1		1.	0.3
	0919	12/10/88	0001	WL	N		1.3		1.	0.4
	0921	09/20/87	0001	WL	N		0.5		1.	0.3
	0921	02/04/88	0001	WL	N		0.6		1.	0.2
	0921	04/26/88	0001	WL	N		0.4		1.	0.3
	0921	08/10/88	0001	WL	N		0.3		1.	0.2
	0921	12/10/88	0001	WL	N		0.6		1.	0.3
	0923	09/20/87	0001	WL	N		0.5		1.	0.3
	0923	01/30/88	0001	WL	N		0.8		1.	0.2
	0923	04/26/88	0001	WL	N		0.7		1.	0.3
	0923	08/09/88	0001	WL	N		0.3		1.	0.2
	0923	12/10/88	0001	WL	N		0.8	J	1.	0.3
	0938	08/09/88	0001	WL	N		0.3		1.	0.2
	0938	12/10/88	0001	WL	N		0.3		1.	0.2
RADIUM-226 + RADIUM-228	0910	09/18/87	0001	WL	N	PCI/L	1.00		-	-
	0910	01/30/88	0001	WL	N		0.90		-	-
	0910	04/22/88	0001	WL	N		1.20		-	-
	0910	08/11/88	0001	WL	N		1.10		-	-
	0910	12/10/88	0001	WL	N		1.60		-	-
	0914	09/18/87	0001	WL	N		0.80		-	-
	0914	02/03/88	0001	WL	N		0.70		-	-
	0914	04/22/88	0001	WL	N		0.50		-	-
	0914	08/08/88	0001	WL	N		0.50		-	-
	0914	12/10/88	0001	WL	N		1.10		-	-
	0915	09/20/87	0001	WM	N		2.10		-	-
	0915	02/03/88	0001	WM	N		0.30		-	-
	0915	04/22/88	0001	WM	N		1.70		-	-
	0915	08/10/88	0001	WM	N		0.70		-	-
	0915	12/10/88	0001	WM	N		0.90		-	-
	0919	09/20/87	0001	WL	N		3.30		-	-

FORMATION OF COMPLETION CODE:
WM - WASATCH - MIDDLE SHALE
WL - WASATCH - LOWER SANDSTONE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-226 + RADIUM-228	0919	01/30/88	0001	WL	N	PCI/L	2.00		-	-
	0919	04/26/88	0001	WL	N		2.10		-	-
	0919	08/27/88	0001	WL	N		2.10		-	-
	0919	12/10/88	0001	WL	N		3.00		-	-
	0921	09/20/87	0001	WL	N		1.40		-	-
	0921	02/04/88	0001	WL	N		1.10		-	-
	0921	04/26/88	0001	WL	N		2.00		-	-
	0921	08/10/88	0001	WL	N		1.50		-	-
	0921	12/10/88	0001	WL	N		2.40		-	-
	0923	09/20/87	0001	WL	N		0.60		-	-
	0923	01/30/88	0001	WL	N		0.80		-	-
	0923	04/26/88	0001	WL	N		1.90		-	-
	0923	08/09/88	0001	WL	N		0.90		-	-
	0923	12/10/88	0001	WL	N		1.40		-	-
	0938	08/09/88	0001	WL	N		0.30		-	-
	0938	12/10/88	0001	WL	N		0.30		-	-
RADIUM-228	0910	09/18/87	0001	WL	N	PCI/L	0.4		1.	1.4
	0910	01/30/88	0001	WL	N		0.6		1.	0.9
	0910	04/22/88	0001	WL	N		0.3		1.	0.7
	0910	08/11/88	0001	WL	N		0.5		1.	0.7
	0910	12/10/88	0001	WL	N		0.9		1.	0.9
	0914	09/18/87	0001	WL	N		0.0		1.	1.2
	0914	02/03/88	0001	WL	N		0.0		1.	0.7
	0914	04/22/88	0001	WL	N		0.3		1.	0.8
	0914	08/08/88	0001	WL	N		0.2		1.	0.7
	0914	12/10/88	0001	WL	N		0.8		1.	0.8
	0915	09/20/87	0001	WM	N		0.0	J	1.	1.5
	0915	02/03/88	0001	WM	N		0.0		1.	0.7
	0915	04/22/88	0001	WM	N		0.9		1.	0.8
	0915	08/10/88	0001	WM	N		0.4		1.	0.7
	0915	12/10/88	0001	WM	N		0.4		1.	0.8
	0919	09/20/87	0001	WL	N		2.0		1.	1.0
	0919	01/30/88	0001	WL	N		0.8		1.	0.9
	0919	04/26/88	0001	WL	N		1.2		1.	0.8
	0919	08/27/88	0001	WL	N		1.0		1.	0.7
	0919	12/10/88	0001	WL	N		1.7		1.	0.8
	0921	09/20/87	0001	WL	N		0.9		1.	1.1
	0921	02/04/88	0001	WL	N		0.5		1.	0.9

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-228	0921	04/26/88	0001	WL	N	PCI/L	1.6		1.	0.8
	0921	08/10/88	0001	WL	N		1.2		1.	0.8
	0921	12/10/88	0001	WL	N		1.8		1.	0.9
	0923	09/20/87	0001	WL	N		0.1		1.	1.1
	0923	01/30/88	0001	WL	N		0.0		1.	0.9
	0923	04/26/88	0001	WL	N		1.2		1.	0.8
	0923	08/09/88	0001	WL	N		0.6		1.	0.8
	0923	12/10/88	0001	WL	N		0.6		1.	0.9
	0938	08/09/88	0001	WL	N		0.0	J	1.	0.7
	0938	12/10/88	0001	WL	N		0.0		1.	0.9
SELENIUM	0910	02/17/87	0001	WL	N	MG/L	0.002	J	0.005	-
	0910	09/18/87	0001	WL	N		0.004	J	0.005	-
	0910	01/30/88	0001	WL	N		0.005		0.005	-
	0910	04/22/88	0001	WL	N		0.003	J	0.005	-
	0910	08/11/88	0001	WL	N		0.004	J	0.005	-
	0910	12/10/88	0001	WL	N		0.006		0.005	-
	0914	02/18/87	0001	WL	N		0.001	J	0.005	-
	0914	09/18/87	0001	WL	N		0.007		0.005	-
	0914	02/03/88	0001	WL	N		0.005		0.005	-
	0914	04/22/88	0001	WL	N		0.003	J	0.005	-
	0914	08/08/88	0001	WL	N		0.005		0.005	-
	0914	12/10/88	0001	WL	N		0.005		0.005	-
	0915	02/20/87	0001	WM	N		0.022		0.005	-
	0915	09/20/87	0001	WM	N		0.003	J	0.005	-
	0915	02/03/88	0001	WM	N		0.005		0.005	-
	0915	04/22/88	0001	WM	N		0.003	J	0.005	-
	0915	08/10/88	0001	WM	N		0.005		0.005	-
	0915	12/10/88	0001	WL	N		0.014		0.005	-
	0919	02/19/87	0001	WL	N		0.009		0.005	-
	0919	09/20/87	0001	WL	N		0.005		0.005	-
	0919	01/30/88	0001	WL	N		0.005		0.005	-
	0919	04/26/88	0001	WL	N		0.005		0.005	-
	0919	08/27/88	0001	WL	N		0.005		0.005	-
	0919	12/10/88	0001	WL	N		0.006		0.005	-
	0921	09/20/87	0001	WL	N		0.008		0.005	-
	0921	02/04/88	0001	WL	N		0.006		0.005	-
	0921	08/10/88	0001	WL	N		0.007		0.005	-
	0921	12/10/88	0001	WL	N		0.005		0.005	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (<.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SELENIUM	0923	09/20/87	0001	WL	N	MG/L		0.007		0.005	-
	0923	01/30/88	0001	WL	N		<	0.005		0.005	-
	0923	04/26/88	0001	WL	N			0.005		0.005	-
	0923	08/09/88	0001	WL	N			0.006		0.005	-
	0923	12/10/88	0001	WL	N		<	0.005		0.005	-
	0938	08/09/88	0001	WL	N		<	0.005	J	0.005	-
	0938	12/10/88	0001	WL	N		<	0.005		0.005	-
SILICA - SIO2	0910	02/17/87	0001	WL	N	MG/L		13.		2.	-
	0910	09/18/87	0001	WL	N			9.84		2.	-
	0910	01/30/88	0001	WL	N			11.5		2.	-
	0910	04/22/88	0001	WL	N			11.4		2.	-
	0910	08/11/88	0001	WL	N			12.		2.	-
	0914	02/18/87	0001	WL	N			14.		2.	-
	0914	09/18/87	0001	WL	N			9.16		2.	-
	0914	02/03/88	0001	WL	N			10.6		2.	-
	0914	04/22/88	0001	WL	N			10.0		2.	-
	0914	08/08/88	0001	WL	N			10.		2.	-
	0915	02/20/87	0001	WM	N			16.		2.	-
	0915	09/20/87	0001	WM	N			10.2	J	2.	-
	0915	02/03/88	0001	WM	N			11.1		2.	-
	0915	04/22/88	0001	WM	N			10.3		2.	-
	0915	08/10/88	0001	WM	N			11.		2.	-
	0919	02/19/87	0001	WL	N			20.		2.	-
	0919	09/20/87	0001	WL	N			13.8		2.	-
	0919	01/30/88	0001	WL	N			14.2		2.	-
	0919	04/26/88	0001	WL	N			14.8		2.	-
	0919	08/27/88	0001	WL	N			15.0		2.	-
	0921	09/20/87	0001	WL	N			14.8		2.	-
	0921	02/04/88	0001	WL	N			15.7		2.	-
	0921	04/26/88	0001	WL	N			17.3		2.	-
	0921	08/10/88	0001	WL	N			17.		2.	-
	0923	09/20/87	0001	WL	N			11.8		2.	-
	0923	01/30/88	0001	WL	N			12.5		2.	-
	0923	04/26/88	0001	WL	N			13.4		2.	-
	0923	08/09/88	0001	WL	N			12.		2.	-
	0938	08/09/88	0001	WL	N			10.	J	2.	-
SILVER	0910	02/17/87	0001	WL	N	MG/L	<	0.01		0.01	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SILVER	0910	09/18/87	0001	WL	N	<		0.01	-
	0910	01/30/88	0001	WL	N	<		0.01	-
	0910	04/22/88	0001	WL	N	<		0.01	-
	0910	08/11/88	0001	WL	N	<		0.01	-
	0910	12/10/88	0001	WL	N	<		0.01	-
	0914	02/18/87	0001	WL	N	<		0.01	-
	0914	09/18/87	0001	WL	N	<		0.01	-
	0914	02/03/88	0001	WL	N	<		0.01	-
	0914	04/22/88	0001	WL	N	<		0.01	-
	0914	08/08/88	0001	WL	N	<		0.01	-
	0914	12/10/88	0001	WL	N	<		0.01	-
	0915	02/20/87	0001	WM	N	<		0.01	-
	0915	09/20/87	0001	WM	N	<	J	0.01	-
	0915	02/03/88	0001	WM	N	<		0.01	-
	0915	04/22/88	0001	WM	N	<		0.01	-
	0915	08/10/88	0001	WM	N	<		0.01	-
	0915	12/10/88	0001	WM	N	<		0.01	-
	0919	02/19/87	0001	WL	N	<		0.01	-
	0919	09/20/87	0001	WL	N	<		0.01	-
	0919	01/30/88	0001	WL	N	<		0.01	-
	0919	04/26/88	0001	WL	N	<		0.01	-
	0919	08/27/88	0001	WL	N	<		0.01	-
	0919	12/10/88	0001	WL	N	<		0.01	-
	0921	09/20/87	0001	WL	N	<		0.01	-
	0921	02/04/88	0001	WL	N	<		0.01	-
	0921	04/26/88	0001	WL	N	<		0.01	-
	0921	08/10/88	0001	WL	N	<		0.01	-
	0923	09/20/87	0001	WL	N	<		0.01	-
	0923	01/30/88	0001	WL	N	<		0.01	-
	0923	04/26/88	0001	WL	N	<		0.01	-
	0923	08/09/88	0001	WL	N	<		0.01	-
	0923	12/10/88	0001	WL	N	<		0.01	-
	0938	08/09/88	0001	WL	N	<	J	0.01	-
	0938	12/10/88	0001	WL	N	<		0.01	-
SODIUM	0910	02/17/87	0001	WL	N			0.002	-
	0910	09/18/87	0001	WL	N			0.002	-
	0910	01/30/88	0001	WL	N			0.002	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SODIUM	0910	04/22/88	0001	WL	N	MG/L	79.1		0.002	-
	0910	08/11/88	0001	WL	N		75.0		0.002	-
	0910	12/10/88	0001	WL	N		77.2		0.002	-
	0914	02/18/87	0001	WL	N		84.8		0.002	-
	0914	09/18/87	0001	WL	N		61.3		0.002	-
	0914	02/03/88	0001	WL	N		59.8		0.002	-
	0914	04/22/88	0001	WL	N		56.7		0.002	-
	0914	08/08/88	0001	WL	N		51.5		0.002	-
	0914	12/10/88	0001	WL	N		56.4		0.002	-
	0915	02/20/87	0001	WL	N		39.3		0.002	-
	0915	09/20/87	0001	WM	N		44.0		0.002	-
	0915	02/03/88	0001	WM	N		51.9	J	0.002	-
	0915	04/22/88	0001	WM	N		70.5		0.002	-
	0915	08/10/88	0001	WM	N		37.3		0.002	-
	0915	12/10/88	0001	WM	N		43.6		0.002	-
	0919	02/19/87	0001	WL	N		55.1		0.002	-
	0919	09/20/87	0001	WL	N		54.2		0.002	-
	0919	01/30/88	0001	WL	N		54.5		0.002	-
	0919	04/26/88	0001	WL	N		55.6		0.002	-
	0919	08/27/88	0001	WL	N		54.7		0.002	-
	0919	12/10/88	0001	WL	N		57.6		0.002	-
	0921	09/20/87	0001	WL	N		41.7		0.002	-
	0921	02/04/88	0001	WL	N		32.9		0.002	-
	0921	04/26/88	0001	WL	N		35.3		0.002	-
	0921	08/10/88	0001	WL	N		39.3		0.002	-
	0921	12/10/88	0001	WL	N		36.0		0.002	-
	0923	09/20/87	0001	WL	N		101.		0.002	-
	0923	01/30/88	0001	WL	N		86.3		0.002	-
	0923	04/26/88	0001	WL	N		92.5		0.002	-
	0923	08/09/88	0001	WL	N		103.		0.002	-
	0923	12/10/88	0001	WL	N		97.6		0.002	-
	0938	12/10/88	0001	WL	N		80.3		0.002	-
SPECIFIC CONDUCTANCE	0910	02/17/87	0001	WL	N	UMHO/CM	525.		-	-
	0910	09/18/87	0001	WL	N		275.		-	-
	0910	01/30/88	0001	WL	N		330.		-	-
	0910	04/22/88	0001	WL	N		470.		-	-
	0910	08/11/88	0001	WL	N		460.0		-	-
	0910	12/10/88	0001	WL	N		475.		-	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SPECIFIC CONDUCTANCE	0914	02/18/87	0001	WL	N	UMHO/CM		280.		-	-
	0914	09/18/87	0001	WL	N			150.		-	-
	0914	02/03/88	0001	WL	N			260.		-	-
	0914	04/22/88	0001	WL	N			350.		-	-
	0914	08/08/88	0001	WL	N			380.0		-	-
	0914	12/10/88	0001	WL	N			335.		-	-
	0915	02/20/87	0001	WM	N			320.		-	-
	0915	09/20/87	0001	WM	N			165.		-	-
	0915	02/03/88	0001	WM	N			205.		-	-
	0915	04/22/88	0001	WM	N			390.		-	-
	0915	08/10/88	0001	WM	N			315.0		-	-
	0915	12/10/88	0001	WM	N			270.		-	-
	0919	02/19/87	0001	WL	N			340.		-	-
	0919	09/20/87	0001	WL	N			280.		-	-
	0919	01/30/88	0001	WL	N			310.		-	-
	0919	04/26/88	0001	WL	N			425.		-	-
	0919	08/27/88	0001	WL	N			270.0		-	-
	0919	12/10/88	0001	WL	N			370.		-	-
	0921	09/20/87	0001	WL	N			380.		-	-
	0921	02/04/88	0001	WL	N			380.		-	-
	0921	04/26/88	0001	WL	N			575.		-	-
	0921	08/10/88	0001	WL	N			500.0		-	-
	0921	12/10/88	0001	WL	N			550.		-	-
	0923	09/20/87	0001	WL	N			370.		-	-
	0923	01/30/88	0001	WL	N			365.		-	-
	0923	04/26/88	0001	WL	N			525.		-	-
	0923	08/09/88	0001	WL	N			525.0		-	-
	0923	12/10/88	0001	WL	N			500.		-	-
	0938	08/09/88	0001	WL	N			275.0		-	-
	0938	12/10/88	0001	WL	N			270.		-	-
STRONTIUM	0910	09/18/87	0001	WL	N	MG/L		0.715		0.1	-
	0910	01/30/88	0001	WL	N			0.63		0.1	-
	0910	04/22/88	0001	WL	N			0.49		0.1	-
	0910	08/11/88	0001	WL	N			0.6		0.1	-
	0914	09/18/87	0001	WL	N			0.470		0.1	-
	0914	02/03/88	0001	WL	N			0.46		0.1	-
	0914	04/22/88	0001	WL	N			0.35		0.1	-
	0914	08/08/88	0001	WL	N			0.3		0.1	-
	0915	09/20/87	0001	WM	N			0.560	J	0.1	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
STRONTIUM	0915	02/03/88	0001	WM	N	MG/L		0.53		0.1	-
	0915	04/22/88	0001	WM	N			0.43		0.1	-
	0915	08/10/88	0001	WM	N			0.3		0.1	-
	0919	09/20/87	0001	WL	N			0.744		0.1	-
	0919	01/30/88	0001	WL	N			0.67		0.1	-
	0919	04/26/88	0001	WL	N			0.52		0.1	-
	0919	08/27/88	0001	WL	N			0.8		0.1	-
	0921	09/20/87	0001	WL	N			1.35		0.1	-
	0921	02/04/88	0001	WL	N			1.23		0.1	-
	0921	04/26/88	0001	WL	N			0.98		0.1	-
	0921	08/10/88	0001	WL	N			1.4		0.1	-
	0923	09/20/87	0001	WL	N			0.655		0.1	-
	0923	01/30/88	0001	WL	N			0.62		0.1	-
	0923	04/26/88	0001	WL	N			0.47		0.1	-
	0923	08/09/88	0001	WL	N			0.8		0.1	-
	0938	08/09/88	0001	WL	N		<	0.1	J	0.1	-
SULFATE	0910	02/17/87	0001	WL	N	MG/L		290.		0.1	-
	0910	09/18/87	0001	WL	N			217.		0.1	-
	0910	01/30/88	0001	WL	N			212.		0.1	-
	0910	04/22/88	0001	WL	N			214.		0.1	-
	0910	08/11/88	0001	WL	N			216.		0.1	-
	0910	12/10/88	0001	WL	N			198.		0.1	-
	0914	02/18/87	0001	WL	N			124.		0.1	-
	0914	09/18/87	0001	WL	N			124.		0.1	-
	0914	02/03/88	0001	WL	N			119.		0.1	-
	0914	04/22/88	0001	WL	N			126.		0.1	-
	0914	08/08/88	0001	WL	N			133.		0.1	-
	0914	12/10/88	0001	WL	N			110.		0.1	-
	0915	02/20/87	0001	WM	N			116.		0.1	-
	0915	09/20/87	0001	WM	N			125.	J	0.1	-
	0915	02/03/88	0001	WM	N			135.		0.1	-
	0915	04/22/88	0001	WM	N			135.		0.1	-
	0915	08/10/88	0001	WM	N			114.		0.1	-
	0915	12/10/88	0001	WM	N			96.		0.1	-
	0919	02/19/87	0001	WL	N			171.		0.1	-
	0919	09/20/87	0001	WL	N			174.		0.1	-
	0919	01/30/88	0001	WL	N			155.		0.1	-
	0919	04/26/88	0001	WL	N			173.		0.1	-

FORMATION OF COMPLETION CODE:
 WM - WASATCH - MIDDLE SHALE
 WL - WASATCH - LOWER SANDSTONE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPX01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVT	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SULFATE	0919	08/27/88	0001	WL	N	MG/L		153.		0.1	-
	0919	12/10/88	0001	WL	N			164.		0.1	-
	0921	09/20/87	0001	WL	N			281.		0.1	-
	0921	02/04/88	0001	WL	N			196.		0.1	-
	0921	04/26/88	0001	WL	N			230.		0.1	-
	0921	08/10/88	0001	WL	N			233.		0.1	-
	0921	12/10/88	0001	WL	N			212.		0.1	-
	0923	09/20/87	0001	WL	N			244.		0.1	-
	0923	01/30/88	0001	WL	N			206.		0.1	-
	0923	04/26/88	0001	WL	N			241.		0.1	-
	0923	08/09/88	0001	WL	N			236.		0.1	-
	0938	12/10/88	0001	WL	N			214.		0.1	-
	0938	08/09/88	0001	WL	N			2.	J	0.1	-
	0938	12/10/88	0001	WL	N			2.		0.1	-
SULFIDE	0910	09/18/87	0001	WL	N	MG/L		0.1		0.1	-
	0910	01/30/88	0001	WL	N			0.1		0.1	-
	0910	04/22/88	0001	WL	N			0.1		0.1	-
	0910	08/11/88	0001	WL	N			0.1		0.1	-
	0914	09/18/87	0001	WL	N			0.1		0.1	-
	0914	02/03/88	0001	WL	N			0.1		0.1	-
	0914	04/22/88	0001	WL	N			0.1		0.1	-
	0914	08/08/88	0001	WL	N			0.1		0.1	-
	0915	09/20/87	0001	WM	N			0.1	J	0.1	-
	0915	02/03/88	0001	WM	N			0.1		0.1	-
	0915	04/22/88	0001	WM	N			0.1		0.1	-
	0915	08/10/88	0001	WM	N			0.1		0.1	-
	0919	09/20/87	0001	WL	N			0.1		0.1	-
	0919	01/30/88	0001	WL	N			0.1		0.1	-
	0919	04/26/88	0001	WL	N			0.1		0.1	-
	0919	08/27/88	0001	WL	N			0.1		0.1	-
	0921	09/20/87	0001	WL	N			0.1		0.1	-
	0921	02/04/88	0001	WL	N			0.1		0.1	-
	0921	04/26/88	0001	WL	N			0.1		0.1	-
	0921	08/10/88	0001	WL	N			0.1		0.1	-
	0923	09/20/87	0001	WL	N			0.1		0.1	-
	0923	01/30/88	0001	WL	N			0.1		0.1	-
	0923	04/26/88	0001	WL	N			0.1		0.1	-
	0923	08/09/88	0001	WL	N			0.1		0.1	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVT): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PV1	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SULFIDE	0938	08/09/88	0001	WL	N	MG/L		0.1	J	0.1	-
TEMPERATURE	0910	02/17/87	0001	WL	N	C - DEGREE		12.0		-	-
	0910	09/18/87	0001	WL	N			13.0		-	-
	0910	01/30/88	0001	WL	N			12.0		-	-
	0910	04/22/88	0001	WL	N			13.0		-	-
	0910	08/11/88	0001	WL	N			14.0		-	-
	0910	12/10/88	0001	WL	N			11.5		-	-
	0914	02/18/87	0001	WL	N			11.0		-	-
	0914	09/18/87	0001	WL	N			12.5		-	-
	0914	02/03/88	0001	WL	N			12.0		-	-
	0914	04/22/88	0001	WL	N			13.0		-	-
	0914	08/08/88	0001	WL	N			18.5		-	-
	0914	12/10/88	0001	WL	N			11.5		-	-
	0915	02/20/87	0001	WM	N			10.		-	-
	0915	09/20/87	0001	WM	N			12.0		-	-
	0915	02/03/88	0001	WM	N			11.5		-	-
	0915	04/22/88	0001	WM	N			14.5		-	-
	0915	08/10/88	0001	WM	N			14.0		-	-
	0915	12/10/88	0001	WM	N			10.5		-	-
	0919	02/19/87	0001	WL	N			11.		-	-
	0919	09/20/87	0001	WL	N			13.0		-	-
	0919	01/30/88	0001	WL	N			11.5		-	-
	0919	04/26/88	0001	WL	N			12.0		-	-
	0919	08/27/88	0001	WL	N			13.0		-	-
	0919	12/10/88	0001	WL	N			10.0		-	-
	0921	09/20/87	0001	WL	N			13.0		-	-
	0921	02/04/88	0001	WL	N			11.5		-	-
	0921	04/26/88	0001	WL	N			12.5		-	-
	0921	08/10/88	0001	WL	N			14.0		-	-
	0921	12/10/88	0001	WL	N			11.0		-	-
	0923	09/20/87	0001	WL	N			13.0		-	-
	0923	01/30/88	0001	WL	N			12.5		-	-
	0923	04/26/88	0001	WL	N			13.0		-	-
	0923	08/09/88	0001	WL	N			13.75		-	-
	0923	12/10/88	0001	WL	N			12.0		-	-
	0938	08/09/88	0001	WL	N			13.75		-	-
	0938	12/10/88	0001	WL	N			12.0		-	-
THORIUM-230	0910	09/18/87	0001	WL	N	PCI/L		0.0		1.	0.5

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PV1): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
LOWER SANDSTONE AND MIDDLE SHALE UNITS
SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
THORIUM-230	0910	01/30/88	0001	WL	N	PC1/L	0.0		1.	0.4
	0910	04/22/88	0001	WL	N		0.0		1.	0.3
	0910	08/11/88	0001	WL	N		0.1		1.	0.5
	0914	09/18/87	0001	WL	N		0.0		1.	0.5
	0914	02/03/88	0001	WL	N		0.1		1.	0.6
	0914	04/22/88	0001	WL	N		0.0		1.	0.4
	0914	08/08/88	0001	WL	N		0.1		1.	0.6
	0915	09/20/87	0001	LM	N		0.0	J	1.	0.4
	0915	02/03/88	0001	LM	N		0.0		1.	0.5
	0915	04/22/88	0001	LM	N		0.0		1.	0.4
	0915	08/10/88	0001	LM	N		0.0		1.	0.5
	0919	09/20/87	0001	WL	N		0.0		1.	0.5
	0919	01/30/88	0001	WL	N		0.0		1.	0.4
	0919	04/26/88	0001	WL	N		0.1		1.	0.4
	0919	08/27/88	0001	WL	N		0.2		1.	0.5
	0921	09/20/87	0001	WL	N		0.0		1.	0.4
	0921	02/04/88	0001	WL	N		0.4		1.	0.6
	0921	04/26/88	0001	WL	N		0.0		1.	0.2
	0921	08/10/88	0001	WL	N		0.1		1.	0.6
	0923	09/20/87	0001	WL	N		0.2		1.	0.6
	0923	01/30/88	0001	WL	N		0.2		1.	1.
	0923	04/26/88	0001	WL	N		0.0		1.	0.3
	0923	08/09/88	0001	WL	N		0.0		1.	0.5
	0938	08/09/88	0001	WL	N		0.2	J	1.	0.6
	0938	08/09/88	0001	WL	N		0.2		1.	0.6
TIN	0910	09/18/87	0001	WL	N	Mg/L	0.026		0.005	-
	0910	01/30/88	0001	WL	N		0.005		0.005	-
	0910	04/22/88	0001	WL	N		0.010		0.005	-
	0910	08/11/88	0001	WL	N		0.005		0.005	-
	0914	09/18/87	0001	WL	N		0.021		0.005	-
	0914	02/03/88	0001	WL	N		0.005		0.005	-
	0914	04/22/88	0001	WL	N		0.010		0.005	-
	0914	08/08/88	0001	WL	N		0.005		0.005	-
	0915	09/20/87	0001	LM	N		0.018	J	0.005	-
	0915	02/03/88	0001	LM	N		0.005		0.005	-
	0915	04/22/88	0001	LM	N		0.010		0.005	-
	0915	08/10/88	0001	LM	N		0.005		0.005	-
	0919	09/20/87	0001	WL	N		0.020		0.005	-
	0919	01/30/88	0001	WL	N		0.005		0.005	-
	0919	01/30/88	0001	WL	N		0.005		0.005	-
	0919	01/30/88	0001	WL	N		0.005		0.005	-
	0919	01/30/88	0001	WL	N		0.005		0.005	-
	0919	01/30/88	0001	WL	N		0.005		0.005	-
	0919	01/30/88	0001	WL	N		0.005		0.005	-
	0919	01/30/88	0001	WL	N		0.005		0.005	-

FORMATION OF COMPLETION CODE:
WL - WASATCH - LOWER SANDSTONE
LM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
TIN	0919	04/26/88	0001	WL	N		0.005		0.005	-
	0919	08/27/88	0001	WL	N	<	0.005		0.005	-
	0921	09/20/87	0001	WL	N		0.016		0.005	-
	0921	02/04/88	0001	WL	N	<	0.005		0.005	-
	0921	04/26/88	0001	WL	N		0.007		0.005	-
	0921	08/10/88	0001	WL	N	<	0.003	J	0.005	-
	0923	09/20/87	0001	WL	N		0.026		0.005	-
	0923	01/30/88	0001	WL	N	<	0.005		0.005	-
	0923	04/26/88	0001	WL	N		0.007		0.005	-
	0923	08/09/88	0001	WL	N	<	0.003	J	0.005	-
	0938	08/09/88	0001	WL	N	<	0.005	J	0.005	-
TOTAL DISSOLVED SOLIDS	0910	02/17/87	0001	WL	N		545.		10.	-
	0910	09/18/87	0001	WL	N		510.		10.	-
	0910	01/30/88	0001	WL	N		443.		10.	-
	0910	04/22/88	0001	WL	N		447.		10.	-
	0910	08/11/88	0001	WL	N		459.		10.	-
	0910	12/10/88	0001	WL	N		472.		10.	-
	0914	02/18/87	0001	WL	N		346.		10.	-
	0914	09/18/87	0001	WL	N		371.		10.	-
	0914	02/03/88	0001	WL	N		311.		10.	-
	0914	04/22/88	0001	WL	N		309.		10.	-
	0914	08/08/88	0001	WL	N		403.		10.	-
	0914	12/10/88	0001	WL	N		344.		10.	-
	0915	02/20/87	0001	WM	N		340.		10.	-
	0915	09/20/87	0001	WM	N		350.	J	10.	-
	0915	02/03/88	0001	WM	N		330.		10.	-
	0915	04/22/88	0001	WM	N		332.		10.	-
	0915	08/10/88	0001	WM	N		306.		10.	-
	0915	12/10/88	0001	WM	N		265.		10.	-
	0919	02/19/87	0001	WL	N		436.		10.	-
	0919	09/20/87	0001	WL	N		413.		10.	-
	0919	01/30/88	0001	WL	N		454.		10.	-
	0919	04/26/88	0001	WL	N		416.		10.	-
	0919	08/27/88	0001	WL	N		405.		10.	-
	0919	12/10/88	0001	WL	N		57.6		10.	-
	0921	09/20/87	0001	WL	N		600.		10.	-
	0921	02/04/88	0001	WL	N		611.		10.	-
	0921	04/26/88	0001	WL	N		585.		10.	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
 WM - WASATCH - MIDDLE SHALE

FLOW RELATIONSHIP CODE:
 N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
 0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
TOTAL DISSOLVED SOLIDS	0921	08/10/88	0001	WL	N	MG/L		564.		10.	-
	0921	12/10/88	0001	WL	N			555.		10.	-
	0923	09/20/87	0001	WL	N			523.		10.	-
	0923	01/30/88	0001	WL	N			549.		10.	-
	0923	04/26/88	0001	WL	N			509.		10.	-
	0923	08/09/88	0001	WL	N			503.		10.	-
	0923	12/10/88	0001	WL	N			510.		10.	-
	0938	08/09/88	0001	WL	N			265.	J	10.	-
	0938	12/10/88	0001	WL	N			264.		10.	-
URANIUM	0910	02/17/87	0001	WL	N	MG/L		0.0822		0.003	-
	0910	09/18/87	0001	WL	N			0.0139		0.003	-
	0910	01/30/88	0001	WL	N			0.0184		0.003	-
	0910	04/22/88	0001	WL	N			0.0178		0.003	-
	0910	08/11/88	0001	WL	N			0.0117		0.003	-
	0910	12/10/88	0001	WL	N			0.0101		0.003	-
	0914	02/18/87	0001	WL	N			0.0072		0.003	-
	0914	09/18/87	0001	WL	N			0.0065		0.003	-
	0914	02/03/88	0001	WL	N			0.0022	J	0.003	-
	0914	04/22/88	0001	WL	N			0.0024	J	0.003	-
	0914	08/08/88	0001	WL	N			0.0017	J	0.003	-
	0914	12/10/88	0001	WL	N			0.0012	J	0.003	-
	0915	02/20/87	0001	WM	N			0.0579		0.003	-
	0915	09/20/87	0001	WM	N			0.0249	J	0.003	-
	0915	02/03/88	0001	WM	N			0.0124		0.003	-
	0915	04/22/88	0001	WM	N			0.0244		0.003	-
	0915	08/10/88	0001	WM	N			0.0069		0.003	-
	0915	12/10/88	0001	WM	N			0.0063		0.003	-
	0919	02/19/87	0001	WL	N			0.0078		0.003	-
	0919	09/20/87	0001	WL	N			0.0014	J	0.003	-
	0919	01/30/88	0001	WL	N			0.0116		0.003	-
	0919	04/26/88	0001	WL	N			0.0023	J	0.003	-
	0919	08/27/88	0001	WL	N			0.0005	J	0.003	-
	0919	12/10/88	0001	WL	N			0.0015	J	0.003	-
	0921	09/20/87	0001	WL	N			0.0010	J	0.003	-
	0921	02/04/88	0001	WL	N			0.0009	J	0.003	-
	0921	04/26/88	0001	WL	N			0.0010	J	0.003	-
	0921	08/10/88	0001	WL	N			0.0005	J	0.003	-
	0921	12/10/88	0001	WL	N			0.0006	J	0.003	-

FORMATION OF COMPLETION CODE:
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FLOW RELATIONSHIP CODE:
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GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
URANIUM	0923	09/20/87	0001	WL	N	MG/L	0.0021	J	0.003	-
	0923	01/30/88	0001	WL	N		0.0017	J	0.003	-
	0923	04/26/88	0001	WL	N		0.0015	J	0.003	-
	0923	08/09/88	0001	WL	N		0.0003	J	0.003	-
	0923	12/10/88	0001	WL	N		0.0011	J	0.003	-
	0938	08/09/88	0001	WL	N		0.0003	J	0.003	-
VANADIUM	0938	12/10/88	0001	WL	N		0.0004	J	0.003	-
	0910	09/18/87	0001	WL	N	MG/L	0.05		0.01	-
	0910	01/30/88	0001	WL	N		0.01		0.01	-
	0910	04/22/88	0001	WL	N		0.01		0.01	-
	0910	08/11/88	0001	WL	N		0.01		0.01	-
	0910	12/10/88	0001	WL	N		0.01		0.01	-
	0914	09/18/87	0001	WL	N		0.05		0.01	-
	0914	02/03/88	0001	WL	N		0.01		0.01	-
	0914	04/22/88	0001	WL	N		0.01		0.01	-
	0914	08/08/88	0001	WL	N		0.01		0.01	-
	0914	12/10/88	0001	WL	N		0.01		0.01	-
	0915	09/20/87	0001	WM	N		0.01		0.01	-
	0915	02/03/88	0001	WM	N		0.06	J	0.01	-
	0915	04/22/88	0001	WM	N		0.01		0.01	-
	0915	08/10/88	0001	WM	N		0.01		0.01	-
	0915	12/10/88	0001	WM	N		0.01		0.01	-
	0919	09/20/87	0001	WL	N		0.01		0.01	-
	0919	01/30/88	0001	WL	N		0.01		0.01	-
	0919	04/26/88	0001	WL	N		0.01		0.01	-
	0919	08/27/88	0001	WL	N		0.01		0.01	-
	0919	12/10/88	0001	WL	N		0.01		0.01	-
	0921	09/20/87	0001	WL	N		0.01		0.01	-
	0921	02/04/88	0001	WL	N		0.03		0.01	-
	0921	04/26/88	0001	WL	N		0.02		0.01	-
	0921	08/10/88	0001	WL	N		0.01		0.01	-
	0921	12/10/88	0001	WL	N		0.01		0.01	-
	0923	09/20/87	0001	WL	N		0.02		0.01	-
	0923	01/30/88	0001	WL	N		0.02		0.01	-
	0923	04/26/88	0001	WL	N		0.01		0.01	-
	0923	08/09/88	0001	WL	N		0.01		0.01	-
	0923	12/10/88	0001	WL	N		0.01		0.01	-
	0938	08/09/88	0001	WL	N		0.01	J	0.01	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
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FLOW RELATIONSHIP CODE:
 N - UNKNOWN

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GROUNDWATER QUALITY DATA BY PARAMETER
 LOWER SANDSTONE AND MIDDLE SHALE UNITS
 SITE: SPK01 SPOOK
 02/17/87 TO 12/10/88
 REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
VANADIUM	0938	12/10/88	0001	WL	N		0.01		0.01	-
ZINC	0910	02/17/87	0001	WL	N		0.075		0.005	-
	0910	09/18/87	0001	WL	N		0.017		0.005	-
	0910	01/30/88	0001	WL	N		0.086		0.005	-
	0910	04/22/88	0001	WL	N		0.030		0.005	-
	0910	08/11/88	0001	WL	N		0.033		0.005	-
	0914	02/18/87	0001	WL	N		0.006		0.005	-
	0914	09/18/87	0001	WL	N		0.005		0.005	-
	0914	02/03/88	0001	WL	N		0.005		0.005	-
	0914	04/22/88	0001	WL	N		0.005		0.005	-
	0914	08/08/88	0001	WL	N		0.007		0.005	-
	0915	02/20/87	0001	WM	N		0.013	J	0.005	-
	0915	09/20/87	0001	WM	N		0.005		0.005	-
	0915	02/03/88	0001	WM	N		0.005		0.005	-
	0915	04/22/88	0001	WM	N		0.005		0.005	-
	0915	08/10/88	0001	WM	N		0.055		0.005	-
	0919	02/19/87	0001	WL	N		0.016		0.005	-
	0919	09/20/87	0001	WL	N		0.010		0.005	-
	0919	01/30/88	0001	WL	N		0.012		0.005	-
	0919	04/26/88	0001	WL	N		0.030		0.005	-
	0921	09/20/87	0001	WL	N		0.005		0.005	-
	0921	02/04/88	0001	WL	N		0.005		0.005	-
	0921	04/26/88	0001	WL	N		0.008		0.005	-
	0921	08/10/88	0001	WL	N		0.009		0.005	-
	0923	09/20/87	0001	WL	N		0.005		0.005	-
	0923	01/30/88	0001	WL	N		0.005		0.005	-
	0923	04/26/88	0001	WL	N		0.005		0.005	-
	0923	08/09/88	0001	WL	N		0.005		0.005	-
	0938	08/09/88	0001	WL	N		0.005	J	0.005	-

FORMATION OF COMPLETION CODE:
 WL - WASATCH - LOWER SANDSTONE
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FLOW RELATIONSHIP CODE:
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PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
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OTHER PARAMETER VALUE FLAGS:
 J - ESTIMATED VALUE

DATA FILE NAME: M:\DART\SPK01\GWQ10000.DAT

GROUNDWATER QUALITY DATA BY PARAMETER
Domestic wells
SITE: SPK01 SPOOK
11/18/85 TO 08/27/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ALKALINITY	0800	08/11/88	0001	NR	N	MG/L CaCO3		160.0		-	-
	0803	08/27/88	0001	NR	N			165.0		-	-
	0903	11/18/85	0001	NR	N			232.		-	-
	0903	02/19/87	0001	NR	N			214.		-	-
	0903	08/11/88	0001	NR	N			174.0		-	-
ALUMINUM	0800	08/11/88	0001	NR	N	MG/L		< 0.1		0.1	-
	0803	08/27/88	0001	NR	N			< 0.1		0.1	-
	0903	11/18/85	0001	NR	N			0.4		0.1	-
	0903	02/19/87	0001	NR	N			< 0.1		0.1	-
	0903	08/11/88	0001	NR	N			< 0.1		0.1	-
AMMONIUM	0800	08/11/88	0001	NR	N	MG/L		< 0.1		0.1	-
	0803	08/27/88	0001	NR	N			< 0.1		0.1	-
	0903	11/18/85	0001	NR	N			0.1		0.1	-
	0903	02/19/87	0001	NR	N			0.5		0.1	-
	0903	08/11/88	0001	NR	N			< 0.1		0.1	-
ANTIMONY	0800	08/11/88	0001	NR	N	MG/L		< 0.003		0.003	-
	0803	08/27/88	0001	NR	N			< 0.003	J	0.003	-
	0903	11/18/85	0001	NR	N			< 0.003		0.003	-
	0903	02/19/87	0001	NR	N			< 0.003		0.003	-
	0903	08/11/88	0001	NR	N			< 0.003		0.003	-
ARSENIC	0800	08/11/88	0001	NR	N	MG/L		< 0.01		0.01	-
	0803	08/27/88	0001	NR	N			< 0.01		0.01	-
	0903	11/18/85	0001	NR	N			< 0.01		0.01	-
	0903	02/19/87	0001	NR	N			< 0.001	J	0.01	-
	0903	08/11/88	0001	NR	N			< 0.01		0.01	-
BARIUM	0800	08/11/88	0001	NR	N	MG/L		< 0.1		0.1	-
	0803	08/27/88	0001	NR	N			< 0.1		0.1	-
	0903	11/18/85	0001	NR	N			0.2		0.1	-
	0903	02/19/87	0001	NR	N			0.2		0.1	-
	0903	08/11/88	0001	NR	N			< 0.1		0.1	-
BORON	0800	08/11/88	0001	NR	N	MG/L		< 0.1		0.1	-
	0803	08/27/88	0001	NR	N			< 0.1		0.1	-
	0903	11/18/85	0001	NR	N			0.3		0.1	-
	0903	08/11/88	0001	NR	N			< 0.1		0.1	-

FORMATION OF COMPLETION CODE:
NR - NO RECOVERY OF DATA FOR CLASSIFYING

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
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GROUNDWATER QUALITY DATA BY PARAMETER
Domestic wells
SITE: SPK01 SPOOK
11/18/85 TO 08/27/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CADMIUM	0800	08/11/88	0001	NR	N	MG/L	<	0.001		0.001	-
	0803	08/27/88	0001	NR	N		<	0.001		0.001	-
	0903	11/18/85	0001	NR	N		<	0.001		0.001	-
	0903	02/19/87	0001	NR	N		<	0.001		0.001	-
	0903	08/11/88	0001	NR	N		<	0.001		0.001	-
CALCIUM	0800	08/11/88	0001	NR	N	MG/L		13.7		0.01	-
	0803	08/27/88	0001	NR	N			10.8		0.01	-
	0903	11/18/85	0001	NR	N			18.5		0.01	-
	0903	02/19/87	0001	NR	N			24.1		0.01	-
	0903	08/11/88	0001	NR	N			41.0		0.01	-
CHLORIDE	0800	08/11/88	0001	NR	N	MG/L	<	1.0		1.	-
	0803	08/27/88	0001	NR	N			3.4		1.	-
	0903	11/18/85	0001	NR	N			7.		1.	-
	0903	02/19/87	0001	NR	N			4.7		1.	-
	0903	08/11/88	0001	NR	N		<	1.0		1.	-
CHROMIUM	0800	08/11/88	0001	NR	N	MG/L	<	0.01		0.01	-
	0803	08/27/88	0001	NR	N			0.01		0.01	-
	0903	11/18/85	0001	NR	N			0.01		0.01	-
	0903	08/11/88	0001	NR	N			0.02		0.01	-
COBALT	0903	11/18/85	0001	NR	N	MG/L	<	0.05		0.05	-
COPPER	0800	08/11/88	0001	NR	N	MG/L	<	0.02		0.02	-
	0803	08/27/88	0001	NR	N		<	0.02		0.02	-
	0903	11/18/85	0001	NR	N			0.04		0.02	-
	0903	02/19/87	0001	NR	N		<	0.01	J	0.02	-
	0903	08/11/88	0001	NR	N		<	0.02		0.02	-
CYANIDE	0903	11/18/85	0001	NR	N	MG/L	<	0.01		0.01	-
FLUORIDE	0800	08/11/88	0001	NR	N	MG/L		0.2		0.1	-
	0803	08/27/88	0001	NR	N			0.3		0.1	-
	0903	11/18/85	0001	NR	N			1.2		0.1	-
	0903	02/19/87	0001	NR	N			0.5		0.1	-
	0903	08/11/88	0001	NR	N			0.3		0.1	-
GROSS ALPHA	0800	08/11/88	0001	NR	N	PCI/L		1.7		0.2	2.0

FORMATION OF COMPLETION CODE:
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GROUNDWATER QUALITY DATA BY PARAMETER

Domestic wells

SITE: SPK01 SPOOK

11/18/85 TO 08/27/88

REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
GROSS ALPHA	0803	08/27/88	0001	NR	N	PCI/L		3.5		0.2	2.2
	0903	08/11/88	0001	NR	N			6.2		0.2	2.6
GROSS BETA	0800	08/11/88	0001	NR	N	PCI/L		4.5		1.	1.3
	0803	08/27/88	0001	NR	N			4.0		1.	1.3
	0903	08/11/88	0001	NR	N			8.9		1.	1.4
IRON	0800	08/11/88	0001	NR	N	MG/L		0.06		0.03	-
	0803	08/27/88	0001	NR	N		<	0.03		0.03	-
	0903	11/18/85	0001	NR	N			0.24		0.03	-
	0903	02/19/87	0001	NR	N		<	0.03		0.03	-
	0903	08/11/88	0001	NR	N		<	0.03		0.03	-
LEAD	0800	08/11/88	0001	NR	N	MG/L		0.04		0.01	-
	0803	08/27/88	0001	NR	N		<	0.01		0.01	-
	0903	11/18/85	0001	NR	N		<	0.01		0.01	-
	0903	02/19/87	0001	NR	N		<	0.001 J		0.01	-
	0903	08/11/88	0001	NR	N		<	0.01		0.01	-
LEAD-210	0903	11/18/85	0001	NR	N	PCI/L		0.8		1.5	0.7
MAGNESIUM	0800	08/11/88	0001	NR	N	MG/L		2.93		0.001	-
	0803	08/27/88	0001	NR	N			1.92		0.001	-
	0903	11/18/85	0001	NR	N			3.01		0.001	-
	0903	02/19/87	0001	NR	N			4.70		0.001	-
	0903	08/11/88	0001	NR	N			7.79		0.001	-
MANGANESE	0800	08/11/88	0001	NR	N	MG/L	<	0.01		0.01	-
	0803	08/27/88	0001	NR	N		<	0.01		0.01	-
	0903	11/18/85	0001	NR	N			0.04		0.01	-
	0903	02/19/87	0001	NR	N			0.021		0.01	-
	0903	08/11/88	0001	NR	N			0.02		0.01	-
MERCURY	0800	08/11/88	0001	NR	N	MG/L	<	0.0002		0.0002	-
	0803	08/27/88	0001	NR	N		<	0.0002		0.0002	-
	0903	11/18/85	0001	NR	N		<	0.0002		0.0002	-
	0903	02/19/87	0001	NR	N		<	0.0002		0.0002	-
	0903	08/11/88	0001	NR	N		<	0.0002		0.0002	-
MOLYBDENUM	0800	08/11/88	0001	NR	N	MG/L	<	0.01		0.01	-

FORMATION OF COMPLETION CODE:

NR - NO RECOVERY OF DATA FOR CLASSIFYING

FLOW RELATIONSHIP CODE:

N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:

0001 - FILTERED SAMPLE (.45 MICRONS)

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GROUNDWATER QUALITY DATA BY PARAMETER

Domestic wells

SITE: SPK01 SPOOK

11/18/85 TO 08/27/88

REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MOLYBDENUM	0803	08/27/88	0001	NR	N	MG/L	<	0.01		0.01	-
	0903	11/18/85	0001	NR	N			0.06		0.01	-
	0903	02/19/87	0001	NR	N		<	0.1		0.1	-
	0903	08/11/88	0001	NR	N		<	0.01		0.01	-
NET GROSS ALPHA *	0800	08/11/88	0001	NR	N	PCI/L		0.19		-	-
	0803	08/27/88	0001	NR	N			2.47		-	-
	0903	08/11/88	0001	NR	N			5.03		-	-
NICKEL	0800	08/11/88	0001	NR	N	MG/L	<	0.04		0.04	-
	0803	08/27/88	0001	NR	N		<	0.04		0.04	-
	0903	11/18/85	0001	NR	N			0.04		0.04	-
	0903	08/11/88	0001	NR	N		<	0.04		0.04	-
NITRATE	0800	08/11/88	0001	NR	N	MG/L	<	1.0		1.	-
	0803	08/27/88	0001	NR	N			3.7		1.	-
	0903	11/18/85	0001	NR	N		<	1.		1.	-
	0903	02/19/87	0001	NR	N			0.4	J	1.	-
	0903	08/11/88	0001	NR	N			1.3		1.	-
NITRITE	0903	11/18/85	0001	NR	N	MG/L	<	0.1		0.1	-
PH	0800	08/11/88	0001	NR	N	SU		8.10		-	-
	0803	08/27/88	0001	NR	N			8.39		-	-
	0903	11/18/85	0001	NR	N			7.85		-	-
	0903	02/19/87	0001	NR	N			7.80		-	-
	0903	08/11/88	0001	NR	N			7.58		-	-
PHOSPHATE	0800	08/11/88	0001	NR	N	MG/L	<	0.1		0.1	-
	0803	08/27/88	0001	NR	N		<	0.1		0.1	-
	0903	11/18/85	0001	NR	N			0.1		0.1	-
	0903	02/19/87	0001	NR	N		<	0.1		0.1	-
	0903	08/11/88	0001	NR	N		<	0.1		0.1	-
POLONIUM-210	0903	11/18/85	0001	NR	N	PCI/L		0.6		1.	0.6
POTASSIUM	0800	08/11/88	0001	NR	N	MG/L		2.0		0.01	-
	0803	08/27/88	0001	NR	N			1.6		0.01	-

* NET GROSS ALPHA (GROSS ALPHA - URANIUM) WITH 1 MG URANIUM = 686 PCI

FORMATION OF COMPLETION CODE:

NR - NO RECOVERY OF DATA FOR CLASSIFYING

FLOW RELATIONSHIP CODE:

N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:

0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:

J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
Domestic wells
SITE: SPK01 SPOOK
11/18/85 TO 08/27/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
POTASSIUM	0903	11/18/85	0001	NR	N	MG/L		3.78		0.01	-
	0903	02/19/87	0001	NR	N			3.34		0.01	-
	0903	08/11/88	0001	NR	N			4.4		0.01	-
RADIUM-226	0903	11/18/85	0001	NR	N	PCI/L		1.		1.	0.4
RADIUM-226 + RADIUM-228	0903	11/18/85	0001	NR	N	PCI/L		1.30		-	-
RADIUM-228	0903	11/18/85	0001	NR	N	PCI/L		0.3		1.	0.9
SELENIUM	0800	08/11/88	0001	NR	N	MG/L		0.004	J	0.005	-
	0803	08/27/88	0001	NR	N		<	0.005		0.005	-
	0903	11/18/85	0001	NR	N		<	0.005		0.005	-
	0903	02/19/87	0001	NR	N		<	0.001	J	0.005	-
	0903	08/11/88	0001	NR	N		<	0.001	J	0.005	-
SILICA - SiO2	0800	08/11/88	0001	NR	N	MG/L		15.		2.	-
	0803	08/27/88	0001	NR	N			12.2		2.	-
	0903	11/18/85	0001	NR	N			4.		2.	-
	0903	02/19/87	0001	NR	N			17.		2.	-
	0903	08/11/88	0001	NR	N			16.		2.	-
SILVER	0800	08/11/88	0001	NR	N	MG/L	<	0.01		0.01	-
	0803	08/27/88	0001	NR	N		<	0.01		0.01	-
	0903	11/18/85	0001	NR	N		<	0.01		0.01	-
	0903	02/19/87	0001	NR	N		<	0.01		0.01	-
	0903	08/11/88	0001	NR	N		<	0.01		0.01	-
SODIUM	0800	08/11/88	0001	NR	N	MG/L		86.3		0.002	-
	0803	08/27/88	0001	NR	N			99.6		0.002	-
	0903	11/18/85	0001	NR	N			72.8		0.002	-
	0903	02/19/87	0001	NR	N			76.6		0.002	-
	0903	08/11/88	0001	NR	N			56.6		0.002	-
SPECIFIC CONDUCTANCE	0800	08/11/88	0001	NR	N	UMHO/CM		370.0		-	-
	0803	08/27/88	0001	NR	N			335.0		-	-
	0903	11/18/85	0001	NR	N			220.		-	-
	0903	02/19/87	0001	NR	N			295.		-	-
	0903	08/11/88	0001	NR	N			295.0		-	-
STRONTIUM	0800	08/11/88	0001	NR	N	MG/L	<	0.1		0.1	-

FORMATION OF COMPLETION CODE:
NR - NO RECOVERY OF DATA FOR CLASSIFYING

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER

Domestic wells

SITE: SPK01 SPOOK

11/18/85 TO 08/27/88

REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
STRONTIUM	0803	08/27/88	0001	NR	N	MG/L	< 0.1		0.1	-
	0903	11/18/85	0001	NR	N		< 0.1		0.1	-
	0903	08/11/88	0001	NR	N		0.5		0.1	-
SULFATE	0800	08/11/88	0001	NR	N	MG/L	81.		0.1	-
	0803	08/27/88	0001	NR	N		80.		0.1	-
	0903	11/18/85	0001	NR	N		5.4		0.1	-
	0903	02/19/87	0001	NR	N		46.1		0.1	-
	0903	08/11/88	0001	NR	N		81.		0.1	-
SULFIDE	0800	08/11/88	0001	NR	N	MG/L	< 0.1		0.1	-
	0803	08/27/88	0001	NR	N		< 0.1		0.1	-
	0903	11/18/85	0001	NR	N		< 0.1		0.1	-
	0903	08/11/88	0001	NR	N		< 0.1		0.1	-
TEMPERATURE	0800	08/11/88	0001	NR	N	C - DEGREE	16.0		-	-
	0803	08/27/88	0001	NR	N		17.25		-	-
	0903	11/18/85	0001	NR	N		3.		-	-
	0903	02/19/87	0001	NR	N		8.0		-	-
	0903	08/11/88	0001	NR	N		12.0		-	-
THORIUM-230	0903	11/18/85	0001	NR	N	PCI/L	0.5		1.	0.4
TIN	0800	08/11/88	0001	NR	N	MG/L	< 0.005		0.005	-
	0803	08/27/88	0001	NR	N		< 0.005		0.005	-
	0903	11/18/85	0001	NR	N		< 0.005		0.005	-
	0903	08/11/88	0001	NR	N		< 0.005		0.005	-
TOTAL DISSOLVED SOLIDS	0800	08/11/88	0001	NR	N	MG/L	302.		10.	-
	0803	08/27/88	0001	NR	N		299.		10.	-
	0903	11/18/85	0001	NR	N		320.		10.	-
	0903	02/19/87	0001	NR	N		280.		10.	-
	0903	08/11/88	0001	NR	N		310.		10.	-
TOTAL ORGANIC CARBON	0903	11/18/85	0001	NR	N	MG/L	51.		1.	-
URANIUM	0800	08/11/88	0001	NR	N	MG/L	0.0022 J		0.003	-
	0803	08/27/88	0001	NR	N		< 0.0003 J		0.003	-
	0903	11/18/85	0001	NR	N		< 0.0003 J		0.003	-
	0903	02/19/87	0001	NR	N		< 0.0003 J		0.003	-

FORMATION OF COMPLETION CODE:

NR - NO RECOVERY OF DATA FOR CLASSIFYING

FLOW RELATIONSHIP CODE:

N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:

0001 - FILTERED SAMPLE (<.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:

J - ESTIMATED VALUE

GROUNDWATER QUALITY DATA BY PARAMETER
Domestic wells
SITE: SPK01 SPOOK
11/18/85 TO 08/27/88
REPORT DATE: 07/29/94

PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
URANIUM	0903	08/11/88	0001	NR	N	MG/L		0.0017	J	0.003	-
VANADIUM	0800	08/11/88	0001	NR	N	MG/L	<	0.01		0.01	-
	0803	08/27/88	0001	NR	N		<	0.01		0.01	-
	0903	11/18/85	0001	NR	N			0.19		0.01	-
	0903	08/11/88	0001	NR	N		<	0.01		0.01	-
ZINC	0800	08/11/88	0001	NR	N	MG/L	<	0.005		0.005	-
	0803	08/27/88	0001	NR	N			0.011		0.005	-
	0903	11/18/85	0001	NR	N			0.082		0.005	-
	0903	02/19/87	0001	NR	N		<	0.005		0.005	-
	0903	08/11/88	0001	NR	N		<	0.005		0.005	-

FORMATION OF COMPLETION CODE:
NR - NO RECOVERY OF DATA FOR CLASSIFYING

FLOW RELATIONSHIP CODE:
N - UNKNOWN

PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

SAMPLE ID CODES:
0001 - FILTERED SAMPLE (.45 MICRONS)

OTHER PARAMETER VALUE FLAGS:
J - ESTIMATED VALUE

DATA FILE NAME: M:\DART\SPK01\GWQ10010.DAT

1
2
3

APPENDIX E

AQUIFER PUMPING TEST CALCULATION SET

CALCULATION COVER SHEET

CALC NO. 07-756-01-00 DISCIPLINE Hydrology

NO. OF SHEETS 28 ~~24~~

PROJECT: Site Characterization

SITE: Spook, Wyoming

FEATURE: Hydraulic Conductivity

SOURCES OF DATA:

Aquifer pumping tests
MW 913 & 928

SOURCES OF FORMULAE & REFERENCES:

Kruseman, G. P. and De Ridder, N. A., 1970. Analysis and Evaluation of Pumping Test Data, International Institute for Land Reclamation and Improvement/ILRI, Wageningen, The Netherlands.

Lohman, S. W., 1972, Groundwater Hydraulics, USGS Professional Paper 70B.

Department of Interior, Bureau of Reclamation, 1977. Ground Water Manual, A Water Resources Technical Publication.

PRELIMINARY CALC. ☐ FINAL CALC. ☒ SUPERSEDES CALC. NO. _____

REV. NO.	REVISION	CALCULATION BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

R. H. Anderson 08/08/74 *Atkins* 07/94

1

SPOOK UMTRA PROJECT SITE, WYOMING

AQUIFER PUMPING TESTS

=====

A. Purpose of calculation:

To calculate transmissivity (T), storativity (S), and hydraulic conductivity (K) in sediments of the upper sandstone unit (uppermost aquifer) of the Tertiary Wasatch Formation beneath the Spook processing site.

B. Methods and procedures:

Aquifer pumping tests were performed in two monitor wells (SPK01-0913 and -0928) at the Spook processing site during August 1988 (see attached figure for location). The monitor wells were pumped at a relatively constant rate for various periods of time. Water from the pumped wells was discharged into the Spook open pit mine. Water level measurements were recorded using an electric sounder during pumping and recovery phases of the tests.

C. Assumptions:

- Aquifer has seemingly infinite areal extent.
- Aquifer homogeneous, isotropic, and of uniform thickness over area influenced by pumping test.
- Potentiometric surface nearly horizontal.
- Aquifer pumped at a constant discharge rate.
- Pumped well penetrates entire aquifer and thus received water from entire thickness by horizontal flow.

D. Material properties:

The upper sandstone unit of the Tertiary Wasatch Formation beneath the Spook site consists of moderately cemented, fine- to coarse-grained sandstone containing silty shale lenses. It ranges in thickness from 70 to 140 feet. Ground water occurs under unconfined conditions at depths ranging from 20 to 120 feet below ground surface. The observed saturated thickness of the upper sandstone unit is approximately 20 feet in the vicinity of the site. This unit is underlain by an aquitard consisting of well consolidated silty shale.

E. Data sources:

Aquifer pumping test data were collected at the Spook

processing site during August 1988 (see attached sheets).

F. Calculations and analyses:

Drawdown and recovery versus time graphs, equations, and calculations for T, K, and S are shown on the attached sheets for each monitor well tested.

G. Results:

Results of the calculations are summarized at the end of each monitor well section and on the attached table.

FIGURE D.6.5
 POTENTIOMETRIC SURFACE OF THE UPPER SANDSTONE UNIT
 AT THE SPOOK SITE - CONVERSE COUNTY, WYOMING

DATE _____

SUBJECT _____

SHEET NO. _____

BY _____ CHKD. _____

JOB NO. _____

Table B.2.3 (EA)
D. G. 4 (RAP)
Hydraulic Conductivities from Aquifer
Pumping Tests - Upper Sandstone Unit
Spook Site - Converse County, Wyoming

Monitor Well No	Date of Test	Length of Test (hr)	Average Discharge (Q) (gpm)	Saturated Thickness (b) (ft)	Transmissivity (T) (ft ² /day)	Hydraulic Conductivity (K) (ft/day)
913	08-15-88	13.1	3.33	15	211.65 (2.29 cm ² /s) (5.0 x 10 ⁻³ cm/s)	14.11
928	08-13-88	16.8	4.20	14	225.96 (2.43 cm ² /s) (5.7 x 10 ⁻³ cm/s)	16.14

(See Groundwater Calculation Number 07-756-01-00)

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DELAYED-YIF

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DATE

SUBJECT

SHEET NO.

BY R/L

CHKD.

AQUIFER PUMPING TEST

JOB NO.

SITE: SPOOK, WYLOCATION: MW-913

PUMP-TEST WELL

DISCHARGE MEASURED BY: Calibrated bucketDROWDOWN MEASURED BY: Electrical sounderREFERENCE POINT: TOP OF PVC casing

Date	Time	Time (min)	Depth to Water, ft	Drowdown, ft	Discharge, gpm	Remarks
15 Aug 88	0815	0	100.25			Pump started
		0.5	101.70	1.45	3.33	
	0816	1.0	102.04	1.79		
		1.5	102.38	2.13		
	0817	2.0	102.50	2.25		
		2.5	102.63	2.38		
		3.25	102.91	2.66		
	0819	4.0	102.99	2.74		
	0820	5.0	103.12	2.87		
		6.5	103.25	3.00		
		8.0	103.38	3.13		
	0825	10.0	103.47	3.22		
		15	103.53	3.28		
	0835	20	103.72	3.47		
		25	103.84	3.59		
	0845	30	103.99	3.74		
		40	104.27	4.02		
	0905	50	104.33	4.08		
		65	104.33	4.08		
	0935	80	104.43	4.18		
	0955	100	104.53	4.28		
	1135	200	104.98	4.73		
	1315	300	105.03	4.78		
	1455	400	105.47	5.22		
	1635	500	105.60	5.35		
	1815	600	—	—		
	1955	700	105.83	5.58		
	2123	788	—	—		
	2135	800	—	—		
		900				
		1000				

→ Generator stopped @ 2123 (= 788 min) → Pump off ...

DATE _____

SUBJECT _____

SHEET NO. _____

BY RJL CHKD. _____

AQUIFER PUMPING TEST

JOB NO. _____

SITE: SPOOK, WY

LOCATION: MW-913

RECOVERY-TEST WELL

Date	Time	t min	t' min	t/t'	Depth to water, ft	Recovery Drawdown, ft	Remarks
15 Aug 88	2123	788	0	0.0		≈ 5.70	Recovery Pump off
	2126	791	3	263.7	102.40	2.15	3.55
	2127	792	4	198.0	102.17	1.92	3.79
	2128	793	5	158.6	102.00	1.75	3.95
	2129	794	6	132.3	101.88	1.63	4.07
	2130	795	7	113.6	101.80	1.55	4.15
	2131	796	8	99.5	101.75	1.50	4.20
	2133	798	10	79.8	101.68	1.43	4.27
	2138	803	15	53.5	101.60	1.35	4.35
	2143	808	20	40.4	101.53	1.28	4.42
	2148	813	25	32.5	101.47	1.22	4.49
	2153	818	30	27.3	101.43	1.18	4.52
	2203	828	40	20.7	101.37	1.12	4.55
	2213	838	50	16.8	101.32	1.07	4.63
	2228	853	65	13.1	101.24	0.99	4.71
	2243	868	80	10.9	101.18	0.93	4.77
	2303	888	100	8.9	101.13	0.88	4.82
	2330	915	127	7.2	101.08	0.83	4.89

DATE

BY

2/4

CHKD.

SUBJECT

ARTIFER PUMPING TEST

SHEET NO.

JOB NO.

SITE: SPOOK, WY

REFERENCE POINT: TOP of VIC
E27225

LOCATION: OW-913-1

PUMP MW-913 - OBSERVATION WELL 1

R=18.15' S39W

Date	Time	Time min	Depth to water, ft	Drawdown, ft	Remarks
15 AUG 88	0815	0	100.81		→ pump started
		0.5			
	0816	1.0	100.81	0	
		1.5	100.82	0.01	
	0817	2.0	100.82	0.01	
		2.5	100.84	0.03	
		3.25	100.85	0.04	
	0819	4.0	100.86	0.05	
	0820	5.0	100.90	0.09	
		6.5	100.93	0.12	
		8.0	100.96	0.15	
	0825	10.0	100.99	0.18	
		15	101.05	0.24	
	0835	20	101.10	0.29	
		25	101.15	0.34	
	0845	30	101.20	0.39	
		40	101.26	0.45	
	0905	50	101.32	0.51	
		65	101.38	0.57	
	0935	80	101.42	0.61	
	0955	100	101.53	0.72	
	1135	200	101.65	0.84	
	1315	300	101.73	0.92	
	1455	400	101.83	1.02	
	1635	500	101.93	1.12	
	1815	600			
	1955	700	102.09	1.28	
	2123	800	102.12	1.31	→ pump off - generator stopped
		900			
		1000

DATE _____

SUBJECT _____

SHEET NO. _____

BY RJH CHKD. _____

AQUIFER PUMPING TEST

JOB NO. _____

SITE: SPOOK, WY

LOCATION: OW-913-1

RECOVERY - OBSERVATION WELL

DATE	Time	t min	t' min	t/ t'	Depth to water, ft	Residual Drawdown, ft	Remarks
15 AUG 88	2123	788	0	0.0	102.12	1.31	Pump off
	2124	789	1	789.0	102.10	1.29 0.02	
		790.5	2.5	316.2	102.70	1.29 0.02	
	2128	793	5	158.6	102.03	1.22 0.09	
		794.5	6.5	122.2	102.00	1.19 0.12	
	2131	796	8	99.5	101.96	1.15 0.16	
	2133	798	10	79.8	101.93	1.12 0.19	
	2138	803	15	53.5	101.88	1.07 0.24	
	2143	808	20	40.4	101.83	1.02 0.29	
	2148	813	25	32.5	101.79	0.98 0.33	
	2153	818	30	27.3	101.76	0.95 0.36	
	2203	828	40	20.7	101.70	0.89 0.42	
	2213	838	50	16.8	101.67	0.86 0.45	
	2228	853	65	13.1	101.63	0.82 0.49	
	2243	868	80	10.9	101.59	0.78 0.53	
	2303	888	100	8.9	101.56	0.75 0.56	
	2330	915	127	7.2	101.49	0.68 0.63	

t (min)

t (min)

time after pumping started

5200K, WY
MW-913
Pumping

x
(R)

$\frac{1}{2}$ (mils)

time after pumping stopped

Spoke, w4
NW-913
Recovery

Ratio t/t_1

300K, 100

DATE Sun 25 Sep 08

SUBJECT

SHEET NO. _____

BY RJH CHKD. _____

AQUIFER PUMPING TESTS

JOB NO. _____

MW-913

$$Q = 3.33 \text{ gpm} \times 1440 \text{ min/d} = 4795 \text{ gpd} \times 1.337 \times 10^{-1} = 641 \text{ ft}^3/\text{d}$$

$$r_1 = 18.2 \text{ ft}, \quad r_1^2 = 331 \text{ ft}^2$$

$$b = 15 \text{ ft}$$

Aquifer unconfined

(Note: 1:100 ft/sec)

1) MW-913 Pumping (Theis)

$$T = \frac{Q}{4 \cdot \pi \cdot r} \cdot W(u) \quad K = \frac{T}{b}$$

$$A. \square \quad T(\text{early}) = \frac{641}{4 \cdot \pi \cdot 2.0} \cdot 1 = 25.50 \text{ ft}^2/\text{d}$$

$$K = \frac{25.50}{15} = 1.70 \text{ ft/d}$$

$$A. \square \quad T(130) = \frac{641}{4 \cdot \pi \cdot 2.4} \cdot 1 = 21.25 \text{ ft}^2/\text{d}$$

$$K = \frac{21.25}{15} = 1.42 \text{ ft/d}$$

Note: These K values are not reliable due to well inefficiency and partial penetration effects.

2) MW-913 Recovery (Theis)

$$A. \square \quad T = \frac{641}{4 \cdot \pi \cdot 0.44} \cdot 1 = 115.93 \text{ ft}^2/\text{d}$$

$$K = \frac{115.93 \text{ ft}^2/\text{d}}{15 \text{ ft}} = 7.73 \text{ ft/d}$$

DATE Sun 25 Sep 88

SUBJECT

SHEET NO. _____

BY RJ4 CHKD. _____

AQUIFER PUMPING TESTS

JOB NO. _____

3) MW-9/3 Recovery (straight line)

$$K = \underline{10.18 \text{ ft/d}} \text{ (see calculations on graph...)}$$

4) OW-9/3-1 Pumping (Theis)

$$B \square \quad T = \frac{641}{4 \cdot \pi \cdot 0.24} \cdot 1 = 212.54 \text{ ft}^2/\text{d}$$

$$K = \frac{212.54}{15} = \underline{14.17 \text{ ft/d}}$$

5) OW-9/3-1

$$S' = \frac{4Ttu}{r^2}$$

$$S' = \frac{4 \cdot 212.54 \cdot 0.025 \cdot 0.1}{331} = 6.4 \times 10^{-3} \text{ (early)}$$

(no indication of delayed yield phenomenon for S_y (pt)).

6) OW-9/3-1 Recovery (Theis)

$$T = \frac{641}{4 \cdot \pi \cdot 0.10} \cdot 1 = 203.38 \text{ ft}^2/\text{d}$$

$$K = \frac{203.38}{15} = \underline{13.56 \text{ ft/d}}$$

7) OW-9/3-1 Recovery (straight line)

$$K = \underline{19.59 \text{ ft/d}} \text{ (see calculations on graph...)}$$

DATE

Sun 25 Sep 88

SUBJECT

SHEET NO.

BY

RWH

CHKD.

AQUIFER PUMPING TESTS

JOB NO.

MW-213 (Cont)

SUMMARY — K

MW-213	Recovery (Theis) *	7.73	ft/d
"	Recovery (Steline)	10.18	"
OW-213-1	Pumping (Theis)	14.17	"
"	Recovery (Theis) *	18.89	"
"	Recovery (Steline)	19.59	"

K average → 14.11 ~~10.18~~ ft/d

(range ≈ 8-20 ft/d)

DATE

SUBJECT

SHEET NO.

BY

RUL

CHKD.

AQUIFER PUMPING TEST

JOB NO.

SITE: SPOOK, WY

LOCATION: MW-928

PUMP-TEST WELL

DISCHARGE MEASURED BY: Calibrate bucket

DRAWDOWN MEASURED BY: Electrical sounder

REFERENCE POINT: Top of PVC casing

DATE	Time	Time min	Depth to water, ft	Drawdown, ft	Discharge, gpm	Remarks
13 Aug 88	1521	0	24.30			→ Pump started
		0.5	26.90	2.60	4.2	
		1.0	27.00	2.70		
		1.5				
		2.0	27.30	3.00		
		2.5	27.50	3.20		
		3.25	27.60	3.30		
		4.0	27.70	3.40		
	1526	5.0	27.80	3.50		
		6.5	27.90	3.60		
		8.0	27.95	3.65		
	1531	10.0	28.10	3.80		
		15	28.25	3.95		
	1541	20	28.30	4.00		
	1546	25	28.35	4.05		
	1551	30	28.40	4.10		
	1601	40	28.40	4.10		
		50	28.50	4.20		
		65	28.55	4.25		
	1641	80	28.60	4.30		
	1701	100	28.65	4.35		
	1841	200	28.72	4.42		
	2021	300	28.73	4.43		
	2201	400	28.76	4.46		
	2341	500	28.81	4.51		
14 Aug 88	0121	600	28.82	4.52		
	0301	700	28.86	4.56		
	0441	800	28.87	4.57		
	0621	900	28.96	4.66		
	0801	1000	29.04	4.74		→ Pump off @ 0810 = 1009 min

DATE

SUBJECT

SHEET NO.

BY

CHKD.

AQUIFER PUMPING TEST

JOB NO.

SITE: SPOOK, WY

LOCATION: MW-928

RECOVERY-TEST WELL

Date	Time	t min	t' min	$\frac{t}{t'}$	Depth to water, ft	Residual Drawdown, ft	Remarks
14 Aug 08	0800	1009	0	0.0	29.04	4.74	calc recovery pump off
	0811	1010	1.0	1010.0	25.84	1.54	3.20
		1010.5	1.5	673.7	25.52	1.22	3.52
		1011	2.0	505.5	25.40	1.10	3.64
		1011.5	2.5	404.6	25.34	1.04	3.70
		1012.25	3.25	311.5	25.28	0.98	3.76
		1013	4.0	253.3	25.24	0.94	3.80
	0815	1014	5.0	202.8	25.19	0.89	3.85
		1015.5	6.5	156.2	25.08	0.78	3.96
		1017	8.0	127.1	25.00	0.70	4.04
	0820	1019	10.0	101.9	24.92	0.62	4.12
		1024	15	68.3	24.83	0.53	4.21
	0830	1029	20	51.5	24.77	0.47	4.27
		1034	25	41.4	24.73	0.43	4.31
	0840	1039	30	34.6	24.71	0.41	4.33
	0850	1044	40	26.2	24.69	0.39	4.35
	0900	1059	50	21.2	24.67	0.37	4.37
		1089	65	16.5	24.66	0.36	4.38
	0930	1089	80	13.6	24.64	0.34	4.40
	0950	1109	100	11.1	24.61	0.31	4.43
	1130	1209	200	6.0	24.58	0.28	4.46

DATE _____

SUBJECT _____

SHEET NO. _____

BY RJH CHKD. _____

ARTIFER PUMPING TEST

JOB NO. _____

SITE: SPOOK, NY

REFERENCE POINT: TOP OF PVC
Casing

LOCATION: OW-928-1

PUMP MW-928 — OBSERVATION WELL 1 $r = 20.0'$ S30W

Date	Time	Time, min	Depth to water, ft	Drawdown, ft	Remarks
13 Aug 88	1521	0	25.00		→ Pump started
		0.5	—	—	
		1.0	25.40	0.40	
		1.5	—	—	
		2.0	25.50	0.50	
		2.5	—	—	
		3.25	25.60	0.60	
		4.0	25.62	0.62	
	1526	5.0	25.67	0.67	
		6.5	25.68	0.68	
		8.0	25.70	0.70	
	1531	10.0	25.80	0.80	
		15	25.88	0.88	
	1541	20	25.90	0.90	
	1546	25	25.93	0.93	
	1551	30	26.00	1.00	
	1601	40	26.05	1.05	
		50	26.05	1.05	
		65	26.06	1.06	
	1641	80	26.08	1.08	
	1701	100	26.12	1.12	
	1841	200	26.20	1.20	
	2021	300	26.25	1.25	
	2201	400	26.28	1.28	
	2341	500	26.28	1.28	
14 Aug 88	0121	600	26.30	1.30	
	0301	700	26.33	1.33	
	0441	800	26.35	1.35	
	0621	900	26.40	1.40	
	0801	1000	26.45	1.45	Pump off @ 0810 = 1009 min

DATE

SUBJECT

SHEET NO.

BY

RJH

CHKD.

AQUIFER PUMPING TEST

JOB NO.

SITE: SPOOK, WY

LOCATION: OW-928-1

RECOVERY - OBSERVATION WELL 1

DATE	TIME	t, min	t', min	t/ t'	DEPTH TO WATER, FT	PERCENT DRAWDOWN, %	REMARKS
14 AUG 08	0810	1009	0	0.0	26.45	1.45	
	0811	1010	1.0	1010.0	—	—	
		1010.5	1.5	673.7	—	—	
		1011	2.0	505.5	25.93	0.93	0.52
		1011.5	2.5	404.6	—	—	
		1012.25	3.25	311.5	25.81	0.81	0.64
		1013	4.0	253.3	25.73	0.73	0.72
	0815	1014	5.0	202.8	25.63	0.63	0.82
		1015.5	6.5	156.2	25.61	0.61	0.94
		1017	8.0	127.1	25.56	0.56	0.89
	0820	1019	10.0	101.9	25.50	0.50	0.96
		1024	15	68.3	25.46	0.46	0.99
	0830	1029	20	51.5	25.40	0.40	1.05
		1034	25	41.4	25.36	0.36	1.09
	0840	1039	30	34.6	25.34	0.34	1.11
	0850	1049	40	26.2	25.32	0.32	1.13
	0900	1059	50	21.2	25.30	0.30	1.15
		1074	65	16.5	25.27	0.27	1.18
	0930	1089	80	13.6	25.26	0.26	1.19
	0950	1109	100	11.1	25.23	0.23	1.22
	1130	1209	200	6.0	25.18	0.18	1.27

DATE

SUBJECT

SHEET NO.

BY

CHKD.

JOB NO.

RJH

AQUIFER PUMPING TEST

SITE: SPOOK, WY

REFERENCE POINT: TOP OF PVC casing

LOCATION: OW-928-2

PUMP MW-928 - OBSERVATION WELL 2 r = 81.0' NQOW

Date	Time	Time, min	Depth to water, ft	Drawdown, ft	Remarks
BAUGER	1521	0	25.00		→ Pump started.
		0.5	—	—	
		1.0	—	—	
		1.5	25.00	0.00	
		2.0	—	—	
		2.5	25.00	0.00	
		3.25	—	—	
		4.0	—	—	
	1526	5.0	—	—	
		6.5	—	—	
		8.0	25.20	0.20	
	1531	10.0	—	—	
		15	25.20	0.20	
	1541	20	25.25	0.25	
	1546	25	25.25	0.25	
	1551	30	25.30	0.30	
	1601	40	25.30	0.30	
		50	—	—	
		65	—	—	
	1641	80	25.35	0.35	
	1701	100	25.38	0.38	
	1841	200	25.45	0.45	
	2021	300	25.47	0.47	
	2201	400	25.50	0.50	
	2341	500	25.52	0.52	
	0121	600	25.57	0.57	
	0301	700	25.55	0.55	
	0441	800	25.55	0.55	
	0621	900	25.58	0.58	
	0801	1000	25.60	0.60

DATE

SUBJECT

SHEET NO.

BY RUL CHKD.

ARTISER PUMPING TEST

JOB NO.

SITE: SPOOK, NY

LOCATION: OW-928-2

RECOVERY - OBSERVATION WELL 2

Date	Time	t, min	t', min	t/ t'	Depth to water, ft	Static Discharge	Remarks
142588	0810	1009	0	0.0	25.60	0.60	
	0811	1010	1.0	1010.0	25.57	0.57	0.03
		1010.5	1.5	673.7	—	—	
		1011	2.0	505.5	—	—	
		1011.5	2.5	409.6	—	—	
		1012.25	3.25	311.5	—	—	
		1013	4.0	253.3	25.50	0.50	0.10
	0815	1014	5.0	202.8	—	—	
		1015.5	6.5	156.2	—	—	
		1017	8.0	127.1	25.45	0.45	0.15
	0820	1019	10.0	101.9	25.40	0.40	0.20
		1024	15	68.3	25.36	0.36	0.24
	0830	1029	20	51.5	25.33	0.33	0.27
		1034	25	41.4	25.31	0.31	0.29
	0840	1039	30	34.6	25.30	0.30	0.30
	0850	1049	40	26.2	25.29	0.29	0.31
	0900	1059	50	21.2	25.27	0.27	0.33
		1074	65	16.5	25.25	0.25	0.35
	0930	1089	80	13.6	25.24	0.24	0.36
	0950	1109	100	11.1	25.22	0.22	0.38
	1130	1209	200	6.0	25.19	0.19	0.41

$$t(m_i)$$

$$f(v_i, v_j)$$

time after pumping started.

SPACK, WY
NW-928
P. 11/12/19

$t' \text{ (min)}$

$t' \text{ (min)}$

time after pumping stopped

SP00K, WY
NW-928
Dietzgen

Ratio t/t'

5000 Hz

DATE

Sun 25 Sep 88

SUBJECT

SHEET NO.

BY

RJH

CHKD.

AQUIFER PUMPING TESTS

JOB NO.

MW-928

$$Q = 4.2 \text{ gpm} \times 1440 \text{ min/d} = 6048 \text{ gpd} \times 1.337 \times 10^{-1} = 808.6 \text{ ft}^3/\text{d}$$

$$r_1 = 20 \text{ ft}; r_1^2 = 400 \text{ ft}^2; r_2 = 81 \text{ ft}; r_2^2 = 6561 \text{ ft}^2$$

$$b = 14 \text{ ft}$$

Aquifer = unconfined

1) MW-928 Pumping (Theis)

$$T = \frac{Q}{4\pi s} \cdot W(u \dots)$$

$$K = T/b$$

$$A \square T(\text{early}) = \frac{808.6 \text{ ft}^3/\text{d}}{4 \cdot \pi \cdot 1.8 \text{ ft}} \cdot 1 = 35.75 \text{ ft}^2/\text{d}$$

$$K = \frac{35.75}{14} = 2.55 \text{ ft/d}$$

$$A \square T(\text{late}) = \text{same as above} = 2.55 \text{ ft/d} = K$$

Note: these K values not reliable due to well inefficiency & partial penetration effects...

2) MW-928 Recovery (Theis)

$$A \square T = \frac{808.6}{4 \cdot \pi \cdot 3.8} \cdot 10 = 169.33 \text{ ft}^2/\text{d}$$

$$K = \frac{169.33}{14} = 12.10 \text{ ft/d}$$

3) MW-928 Recovery (Straight line)

$$K = 15.13 \text{ ft/d} \text{ (see calculations on graph...)}$$

DATE Jun 25 Sep 08

SUBJECT

SHEET NO. _____

BY RJH CHKD. _____

AQUIFER PUMPING TESTS

JOB NO. _____

MW-228 (cont)

4) OW-228-1 Pumping (Theis)

$$B \square T(\text{early}) = \frac{808.6}{4 \cdot \pi \cdot 0.25} \cdot 1 = 257.39 \text{ ft}^2/\text{d}$$

$$K = \frac{257.39}{14} = \underline{18.38 \text{ ft/d}}$$

$$B, \square T(\text{late}) = \frac{808.6}{4 \cdot \pi \cdot 0.33} \cdot 1 = 194.99 \text{ ft}^2/\text{d}$$

$$K = \frac{194.99}{14} = \underline{13.92 \text{ ft/d}}$$

5) OW-228-1

$$S = \frac{4Ttu}{r^2}$$

$$B \square S(\text{early}) = \frac{4 \cdot 257.39 \cdot 0.01 \cdot 0.01}{400} = \underline{2.57 \times 10^{-4}}$$

$$B, \square S_y(\text{late}) = \frac{4 \cdot 194.99 \cdot 0.052 \cdot 0.1}{400} = \underline{0.01}$$

$$\eta = \frac{S + S_y}{S} > 6.5 = \frac{2.57 \times 10^{-4} \cdot 0.01}{2.57 \times 10^{-4}} = 39.9$$

6) OW-228-1 Recovery (Straight line)

$$K = \underline{21.18 \text{ ft/d}} \text{ (see calculations on graph...)}$$

DATE Sun 25 Sep 88

SUBJECT

SHEET NO. _____

BY RLH CHKD. _____

AQUIFER PUMPING TESTS

JOB NO. _____

MW-928 (cont)7) OW-928-2 Pumping (Theis)

$$C \square T(early) = \frac{808.6}{4 \cdot \pi \cdot 0.28} \cdot 1 = 229.81 \text{ ft}^2/\text{d}$$

$$K = \frac{229.81}{14} = \underline{16.41 \text{ ft/d}}$$

$$C_1 \square T(10t) = \frac{808.6}{4 \cdot \pi \cdot 0.22} \cdot 1 = 292.48 \text{ ft}^2/\text{d}$$

$$K = \frac{292.48}{14} = \underline{20.89 \text{ ft/d}}$$

8) OW-928-2

$$C \square S(early) = \frac{4 \cdot 229.81 \cdot 0.044 \cdot 0.1}{6561} = 6.16 \times 10^{-4}$$

$$C_1 \square S_y(10t) = \frac{4 \cdot 292.48 \cdot 0.20 \cdot 0.1}{6561} = 0.004$$

$$\eta = \frac{S + S_y}{S} > 6.5 = 7.49$$

SUMMARY — K

MW-928	Recovery (Theis)	12.10	ft/d
"	Recovery (St. Line)	15.13	"
OW-928-1	Pumping (Theis)	16.15	"
"	Recovery (St. Line)	<u>21.18</u>	"

K average: 16.14 ft/d

(range = 12-21 ft/d)

CALCULATION COVER SHEET

CALC NO. 07-756-01-00 DISCIPLINE Hydrology NO. OF SHEETS 24

PROJECT: Site Characterization

SITE: Spook, Wyoming

FEATURE: Hydraulic Conductivity

SOURCES OF DATA:
Aquifer pumping tests

SOURCES OF FORMULAE & REFERENCES:
Krusseman, G. P., and De Ridder, N. A., 1970. Analysis and Evaluation of Pumping Test Data, International Institute for Land Reclamation and Improvement/ILRI, Wageningen, The Netherlands.
Lohman, S. W., 1972, Groundwater Hydraulics, USGS Professional Paper 708.
Department of Interior, Bureau of Reclamation, 1977. Ground Water Manual, A Water Resources Technical Publication.

PRELIMINARY CALC. ☐ FINAL CALC. ☒ SUPERSEDES CALC. NO. _____

REV. NO.	REVISION	CALCULATION BY	DATE	CHECKED BY	DATE	APPROVED BY	DATE

SPK - AQUIFER PUMPING TESTS

A summary sheet will be inserted stating:

- A. Purpose of calculation:
- B. Methods & procedures:
- C. Assumptions:
- D. Material properties:
- E. Data source:
- F. Calculations & analysis:
- G. Results:

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

DELAYED-YIE

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ton(1963, fig. 1)

DATE _____

SUBJECT _____

SHEET NO _____

BY DLH CHKD. _____

ARTISER PUMPING TEST

JOB NO _____

SITE: SPOOK, WY

REFERENCE POINT: TOP of PVC casing

LOCATION: OW-913-1

PUMP MW-913 - OBSERVATION WELL 1 R=18.15' S39W

Date	Time	Time min	Depth to water, ft	Drawdown, ft	Remarks
15 AUG 88	0815	0	100.81	—————→	Pump started
		0.5	—————	—————	
	0816	1.0	100.81	0	
		1.5	100.82	0.01 ✓	
	0817	2.0	100.82	0.01 ✓	
		2.5	100.84	0.03 ✓	
		3.25	100.85	0.04 ✓	
	0819	4.0	100.86	0.05 ✓	
	0820	5.0	100.90	0.09 ✓	
		6.5	100.93	0.12 ✓	
		8.0	100.96	0.15 ✓	
	0825	10.0	100.99	0.18 ✓	
		15	101.05	0.24 ✓	
	0835	20	101.10	0.29 ✓	
		25	101.15	0.34 ✓	
	0845	30	101.20	0.39 ✓	
		40	101.26	0.45 ✓	
	0905	50	101.32	0.51 ✓	
		65	101.38	0.57 ✓	
	0935	80	101.42	0.61 ✓	
	0955	100	101.53	0.72 ✓	
	1135	200	101.65	0.84 ✓	
	1315	300	101.73	0.92 ✓	
	1455	400	101.83	1.02 ✓	
	1635	500	101.93	1.12 ✓	
	1815	600	—————	—————	
	1955	700	102.09	1.28	
	2123	800 788	102.12	1.31 →	Pump off - generator stopped...
		900			
		1000

DATE

SUBJECT

SHEET NO.

BY

BWH

CHKD.

AQUIFER PUMPING TEST

JOB NO.

SITE: SPOOK, WY

LOCATION: MW-913

PUMP-TEST WELL

DISCHARGE MEASURED BY: calibrated bucket

DRAWDOWN MEASURED BY: electrical sounder

REFERENCE POINT: TOP OF PVC casing

Date	Time	Time, min	Depth to water, ft	Drawdown, ft	Discharge, gpm	Remarks
15 Aug 88	0815	0	100.25			Pump started
		0.5	101.70	1.45	3.33	
	0816	1.0	102.04	1.79		
		1.5	102.38	2.13		
	0817	2.0	102.50	2.25		
		2.5	102.63	2.38		
		3.25	102.91	2.66		
	0819	4.0	102.99	2.74		
	0820	5.0	103.12	2.87		
		6.5	103.25	3.00		
		8.0	103.38	3.13		
	0825	10.0	103.47	3.22		
		15	103.53	3.28		
	0835	20	103.72	3.47		
		25	103.84	3.59		
	0845	30	103.99	3.74		
		40	104.27	4.02		
	0855	50	104.33	4.08		
		65	104.33	4.08		
	0935	80	104.43	4.18		
	0955	100	104.53	4.28		
	1135	200	104.98	4.73		
	1315	300	105.03	4.78		
	1455	400	105.47	5.22		
	1635	500	105.60	5.35		
	1815	600	—	—		
	1955	700	105.83	5.58		
	2123	788	—	—		
	2135	800	—	—		
		900	—	—		
		1000	—	—		

N.S.O. = ESTIM
 Generator stopped @ 2123 (= 788 min)
 → Pump off ...

DATE _____

SUBJECT _____

SHEET NO. _____

BY RJL CHKD. _____

AQUIFER PUMPING TEST

JOB NO. _____

SITE: SPOOK, WY

LOCATION: MW-913

RECOVERY - TEST WELL

Date	Time	t min	t' min	t/t'	Depth to water, ft	Residual Drawdown, ft	Remarks
15 Aug 88	2123	788	0	0.0		≈ 5.70	Recovery Pump off
	2126	791	3	263.7 ✓	102.40	2.15 3.55	
	2127	792	4	198.0 ✓	102.17	1.92 3.79	
	2128	793	5	158.6 ✓	102.00	1.75 3.55	
	2129	794	6	132.3 ✓	101.88	1.63 4.07	
	2130	795	7	113.6 ✓	101.80	1.55 4.16	
	2131	796	8	89.5 ✓	101.75	1.50 4.20	
	2133	798	10	79.8 ✓	101.68	1.43 4.27	
	2138	803	15	53.5 ✓	101.60	1.35 4.35	
	2143	808	20	40.4 ✓	101.53	1.28 4.42	
	2148	813	25	32.5 ✓	101.47	1.22 4.43	
	2153	818	30	27.3 ✓	101.43	1.18 4.52	
	2203	828	40	20.7 ✓	101.37	1.12 4.55	
	2213	838	50	16.8 ✓	101.32	1.07 4.63	
	2228	853	65	13.1 ✓	101.24	0.99 4.71	
	2243	868	80	10.9 ✓	101.18	0.93 4.77	
	2303	888	100	8.9 ✓	101.13	0.88 4.82	
	2330	915	127	7.2 ✓	101.08	0.83 4.91

DATE _____

SUBJECT _____

SHEET NO. _____

BY R/L CHKD. _____

AQUIFER PUMPING TEST

JOB NO. _____

SITE: SPOOK, WY

LOCATION: OW-913-1

RECOVERY - OBSERVATION WELL

DATE	Time	t min	t' min	t/ t'	Depth to water, ft	Residual Drawdown, ft	Remarks
15 AUG 88	2123	788	0	0.0	102.12	1.31	Pump off
	2124	789	1	789.0	102.10	1.29 0.02	
		790.5	2.5	316.2	102.70	1.29 0.02	
	2128	793	5	158.6	102.03	1.22 0.09	
		794.5	6.5	122.2	102.00	1.19 0.12	
	2131	796	8	99.5	101.96	1.15 0.16	
	2133	798	10	79.8	101.93	1.12 0.19	
	2138	803	15	53.5	101.88	1.07 0.24	
	2143	808	20	40.4	101.83	1.02 0.29	
	2148	813	25	32.5	101.79	0.98 0.33	
	2153	818	30	27.3	101.76	0.95 0.36	
	2203	828	40	20.7	101.70	0.89 0.42	
	2213	838	50	16.8	101.67	0.86 0.45	
	2228	853	65	13.1	101.63	0.82 0.49	
	2243	868	80	10.9	101.59	0.78 0.53	
	2303	888	100	8.9	101.56	0.75 0.56	
	2330	915	127	7.2	101.49	0.68 0.63

DATE

Sun 25 Sep 88

SUBJECT

SHEET NO.

BY

RJL

CHKD.

AQUIFER PUMPING TESTS

JOB NO.

3) MW-913 Recovery (Straight line)

$$K = 10.18 \text{ ft/d (see calculations on graph...)}$$

4) OW-913-1 Pumping (Theis)

$$B \square \quad T = \frac{641}{4 \cdot \pi \cdot 0.24} \cdot 1 = 212.54 \text{ ft}^2/\text{d}$$

$$K = \frac{212.54}{15} = 14.17 \text{ ft/d}$$

5) OW-913-1

$$S = \frac{4Ttu}{r^2}$$

$$S = \frac{4 \cdot 212.54 \cdot 0.025 \cdot 0.1}{331} = 6.4 \times 10^{-3} \text{ (early)}$$

(no indication of delayed yield phenomenon for S_y (late)).

6) OW-913-1 Recovery (Theis)

$$T = \frac{641}{4 \cdot \pi \cdot 0.18} \cdot 1 = 283.38 \text{ ft}^2/\text{d}$$

$$K = \frac{283.38}{15} = 18.89 \text{ ft/d}$$

7) OW-913-1 Recovery (Straight line)

$$K = 19.59 \text{ ft/d (see calculations on graph...)}$$

8640-2

t (min)

500K, WY
NW-913
Pumping

t (min)
time after pumping started

(ft)

t (min)

t (min)

time after pumping stopped

Spot, wt
MW-913
Mowen

913-6

DATE Jun 25 1988
BY RJH CHKD. _____

SUBJECT

AQUIFER PUMPING TESTS

SHEET NO. _____

JOB NO. _____

MW-913

$$Q = 3.33 \text{ gpm} \times 1440 \text{ min/d} = 4795 \text{ gpd} \times 1.337 \times 10^{-1} = 641 \text{ ft}^3/\text{d}$$

$$r_1 = 18.2 \text{ ft}; \quad r_2 = 331 \text{ ft}$$

$$b = 15 \text{ ft}$$

Aquifer unconfined

1) MW-913 Pumping (Theis)

$$T = \frac{Q}{4 \cdot \pi \cdot s} \cdot W(u) \quad K = \frac{T}{b}$$

$$A \square \quad T(\text{early}) = \frac{641}{4 \cdot \pi \cdot 2.0} \cdot 1 = 25.50 \text{ ft}^2/\text{d}$$

$$K = \frac{25.50}{15} = 1.70 \text{ ft/d}$$

$$A \square \quad T(120) = \frac{641}{4 \cdot \pi \cdot 2.4} \cdot 1 = 21.25 \text{ ft}^2/\text{d}$$

$$K = \frac{21.25}{15} = 1.42 \text{ ft/d}$$

Note: These K values not reliable due to well inefficiency and partial penetration effects.

5.5-6

2) MW-913 Recovery (Theis)

$$A \square \quad T = \frac{641}{4 \cdot \pi \cdot 0.44} \cdot 1 = 115.93 \text{ ft}^2/\text{d}$$

$$K = \frac{115.93 \text{ ft}^2/\text{d}}{15 \text{ ft}} = 7.73 \text{ ft/d}$$

DATE Thu 25 Sep 88

SUBJECT

SHEET NO. _____

BY RWH CHKD. _____

AQUIFER PUMPING TESTS

JOB NO. _____

MW-913 (cont)SUMMARY - K

MW-913	Recovery (Theis) *	7.73	ft/d
"	Recovery (St. Line)	10.18	"
OW-913-1	Pumping (Theis)	14.17	"
"	Recovery (Theis) *	18.89	"
"	Recovery (St. Line)	<u>19.59</u>	

K Average $\rightarrow$ 14.11 ~~14.11~~ ft/d(Range $\approx$ 8-20 ft/d)

NO. 340-L35 DIETZGEN GRAPH PAPER
LOGARITHMIC
3 CYCLES X 5 CYCLES

DIETZGEN CORPORATION
MADE IN U.S.A.

t (min)

SPOK, WY
MW-928
Pumping

t (min)
time after pumping started

ν (B)

Ratio 1/4

LM-1000-15

$t' (min)$

$t' (min)$

time after pumping stopped

500K, WY
MW-928
Do not use

DATE

SUBJECT

SHEET NO.

BY

RJH

CHKD.

JOB NO.

ARTISER PUMPING TEST

SITE: SPROCK, WY

LOCATION: MW-928

PUMP-TEST WELL

DISCHARGE MEASURED BY: Calibrate bucket

DRAWDOWN MEASURED BY: Electrical sounder

REFERENCE POINT: TOP OF PVC COUPLING

DATE	Time	Time, min	Depth to water, ft	Drawdown, ft	Discharge, gpm	Remarks
13 Aug 88	1521	0	24.30			→ Pump started
		0.5	26.90	2.60	4.2	
		1.0	27.00	2.70		
		1.5	—	—		
		2.0	27.30	3.00		
		2.5	27.50	3.20		
		3.25	27.60	3.30		
		4.0	27.70	3.40		
	1526	5.0	27.80	3.50		
		6.5	27.90	3.60		
		8.0	27.95	3.65		
	1531	10.0	28.10	3.80		
		15	28.25	3.95		
	1541	20	28.30	4.00		
	1546	25	28.35	4.05		
	1551	30	28.40	4.10		
	1601	40	28.40	4.10		
		50	28.50	4.20		
		65	28.55	4.25		
	1641	80	28.60	4.30		
	1701	100	28.65	4.35		
	1841	200	28.72	4.42		
	2021	300	28.73	4.43		
	2201	400	28.76	4.46		
	2341	500	28.81	4.51		
14 Aug 88	0121	600	28.82	4.52		→ Pump off @ 0810 = 1009 min
	0301	700	28.86	4.56		
	0441	800	28.87	4.57		
	0621	900	28.96	4.66		
	0801	1000	29.04	4.74		

✓

DATE _____

SUBJECT _____

SHEET NO. _____

BY RLL CHKD. _____

AQUIFER PUMPING TEST

JOB NO. _____

SITE: SPROCK, WY

LOCATION: MW-928
RECOVERY-TEST WELL

Date	Time	t min min	t' min	t/t'	Depth to water, ft	Residual drawdown, ft	Remarks
14 Aug 88	0800	1009	0	0.0	29.04	4.74	Calc. s_{w1} no pump off
	0811	1010	1.0	1010.0	25.84	1.54	3.20
		1010.5	1.5	673.7	25.52	1.22	3.52
		1011	2.0	505.5	25.40	1.10	3.64
		1011.5	2.5	404.6	25.34	1.04	3.70
		1012.25	3.25	311.5	25.28	0.98	3.76
		1013	4.0	253.3	25.24	0.94	3.80
	0815	1014	5.0	202.8	25.19	0.89	3.85
		1015.5	6.5	156.2	25.08	0.78	3.96
		1017	8.0	127.1	25.00	0.70	4.04
	0820	1019	10.0	101.9	24.92	0.62	4.12
		1024	15	68.3	24.83	0.53	4.21
	0830	1029	20	51.5	24.77	0.47	4.27
		1034	25	41.4	24.73	0.43	4.31
	0840	1039	30	34.6	24.71	0.41	4.33
	0850	1049	40	26.2	24.69	0.39	4.35
	0900	1059	50	21.2	24.67	0.37	4.37
		1084	65	16.5	24.66	0.36	4.38
	0930	1089	80	13.6	24.64	0.34	4.40
	0950	1109	100	11.1	24.61	0.31	4.43
	1130	1209	200	6.0	24.58	0.28	4.46
				✓		✓	✓

DATE _____

SUBJECT _____

SHEET NO. _____

BY RJH CHKD. _____

ARTIFER PUMPING TEST

JOB NO. _____

SITE: SPOOK, WY

REFERENCE POINT: TOP OF PVC
Casing

LOCATION: ON-928-1

PUMP MW-928 — OBSERVATION WELL 1 R=20.0' S30W

Date	Time	Time, min	Depth to water, ft	Drawdown, ft	Remarks
13 Aug 88	1521	0	25.00	—	→ Pump started
		0.5	—	—	
		1.0	25.40	0.40	
		1.5	—	—	
		2.0	25.50	0.50	
		2.5	—	—	
		3.25	25.60	0.60	
		4.0	25.62	0.62	
	1526	5.0	25.67	0.67	
		6.5	25.68	0.68	
		8.0	25.70	0.70	
	1531	10.0	25.80	0.80	
		15	25.88	0.88	
	1541	20	25.90	0.90	
	1546	25	25.93	0.93	
	1551	30	26.00	1.00	
	1601	40	26.05	1.05	
		50	26.05	1.05	
		65	26.06	1.06	
	1641	80	26.08	1.08	
	1701	100	26.12	1.12	
	1841	200	26.20	1.20	
	2021	300	26.25	1.25	
	2201	400	26.28	1.28	
	2341	500	26.28	1.28	
14 Aug 88	0121	600	26.30	1.30	
	0301	700	26.33	1.33	
	0441	800	26.35	1.35	
	0621	900	26.40	1.40	
	0801	1000	26.45	1.45	Pump off @ 0810 = 1009 min

DATE

SUBJECT

SHEET NO.

BY

RJH

CHKD.

AQUIFER PUMPING TEST

JOB NO.

SITE: SPOOK, WY

LOCATION: OW-928-1

RECOVERY - OBSERVATION WELL 1

Date	Time	t, min	t', min	t/ t'	Depth to water, ft	Residual Drawdown, ft	Remarks
14 Aug 08	0810	1009	0	0.0	26.45	1.45	
	0811	1010	1.0	1010.0	—	—	—
		1010.5	1.5	673.7	—	—	—
		1011	2.0	505.5	25.93	0.93	0.92
		1011.5	2.5	404.6	—	—	—
		1012.25	3.25	311.5	25.81	0.81	0.64
		1013	4.0	253.3	25.73	0.73	0.72
	0815	1014	5.0	202.8	25.63	0.63	0.82
		1015.5	6.5	156.2	25.61	0.61	0.34
		1017	8.0	127.1	25.56	0.56	0.39
	0820	1019	10.0	101.9	25.50	0.50	0.96
		1024	15	68.3	25.46	0.46	0.99
	0830	1029	20	51.5	25.40	0.40	1.05
		1034	25	41.4	25.36	0.36	1.09
	0840	1039	30	34.6	25.34	0.34	1.11
	0850	1049	40	26.2	25.32	0.32	1.13
	0900	1059	50	21.2	25.30	0.30	1.15
		1074	65	16.5	25.27	0.27	1.18
	0930	1089	80	13.6	25.26	0.26	1.19
	0950	1109	100	11.1	25.23	0.23	1.22
	1130	1209	200	6.0	25.18	0.18	1.27
				✓		✓	✓

DATE

SUBJECT

SHEET NO.

BY

PWT

CHKD.

AQUIFER PUMPING TEST

JOB NO.

SITE: SPOOK, WY

REFERENCE POINT: TOP OF PVC
CAPPING

LOCATION: OW-928-2

PUMP MW-928 - OBSERVATION WELL 2 r = 81.0' NQOW

Date	Time	Time, min	Depth to water, ft	Drawdown, ft	Remarks
------	------	--------------	-----------------------	-----------------	---------

BAUGER	1521	0	25.00		→ Pump started.
		0.5	—	—	
		1.0	—	—	
		1.5	25.00	0.00	
		2.0	—	—	
		2.5	25.00	0.00	
		3.25	—	—	
		4.0	—	—	
	1526	5.0	—	—	
		6.5	—	—	
		8.0	25.20	0.20	
	1531	10.0	—	—	
		15	25.20	0.20	
	1541	20	25.25	0.25	
	1546	25	25.25	0.25	
	1551	30	25.30	0.30	
	1601	40	25.30	0.30	
		50	—	—	
		65	—	—	
	1641	80	25.35	0.35	
	1701	100	25.38	0.38	
	1841	200	25.45	0.45	
	2021	300	25.47	0.47	
	2201	400	25.50	0.50	
	2341	500	25.52	0.52	
	0121	600	25.57	0.57	
	0301	700	25.55	0.55	
	0441	800	25.55	0.55	
	0621	900	25.58	0.58	
	0801	1000	25.60	0.60

DATE

SUBJECT

SHEET NO.

BY

CHKD.

JOB NO.

ARVIFER PUMPING TEST

SITE: SPROCK, WY

LOCATION: OW-928-2

RECOVERY - OBSERVATION WELL 2

Date	Time	t, min	t', min	t/ t'	Depth to water, ft	Porosity Diameter, ft	Remarks
1420588	0810	1009	0	0.0	25.60	0.60	
	0811	1010	1.0	1010.0	25.57	0.57	0.03
		1010.5	1.5	673.7	—	—	
		1011	2.0	505.5	—	—	
		1011.5	2.5	409.6	—	—	
		1012.25	3.25	311.5	—	—	
		1013	4.0	253.3	25.50	0.50	0.10
	0815	1014	5.0	202.8	—	—	
		1015.5	6.5	156.2	—	—	
		1017	8.0	127.1	25.45	0.45	0.15
	0820	1019	10.0	101.9	25.40	0.40	0.20
		1024	15	68.3	25.36	0.36	0.24
	0830	1029	20	51.5	25.33	0.33	0.27
		1034	25	41.4	25.31	0.31	0.29
	0840	1039	30	34.6	25.30	0.30	0.30
	0850	1049	40	26.2	25.29	0.29	0.31
	0900	1059	50	21.2	25.27	0.27	0.33
		1074	65	16.5	25.25	0.25	0.35
	0930	1089	80	13.6	25.24	0.24	0.36
	0950	1109	100	11.1	25.22	0.22	0.38
	1130	1209	200	6.0	25.19	0.19	0.41

DATE Jan 25 Sep 88

SUBJECT

SHEET NO. _____

BY R/LH CHKD. _____

AQUIFER PUMPING TESTS

JOB NO. _____

MW-928

$$Q = 4.2 \text{ gpm} \times 1440 \frac{\text{m}^3}{\text{d}} = 6048 \text{ gpd} \times 1.337 \times 10^{-1} = 808.6 \frac{\text{ft}^3}{\text{d}}$$

$$r_1 = 20 \text{ ft}; r_1^2 = 400 \text{ ft}^2; r_2 = 81 \text{ ft}; r_2^2 = 6561 \text{ ft}^2$$

$$b = 14 \text{ ft}$$

Aquifer - unconfined

1) MW-928 pumping (Theis)

$$T = \frac{Q}{4\pi s} \cdot W(u \dots) \quad K = \frac{T}{b}$$

$$A \square T(\text{early}) = \frac{808.6 \frac{\text{ft}^3}{\text{d}}}{4 \cdot \pi \cdot 1.8 \text{ ft}} \cdot 1 = 35.75 \frac{\text{ft}^2}{\text{d}}$$

$$K = \frac{35.75}{14} = \underline{2.55 \text{ ft/d}}$$

$$A, \square T(\text{late}) = \text{same as above} = \underline{2.55 \text{ ft/d}} = K$$

Note: these K values not reliable due to well inefficiency & partial penetration effects...

2) MW-928 recovery (Theis)

$$A \square T = \frac{808.6}{4 \cdot \pi \cdot 3.8} \cdot 10 = 169.33 \frac{\text{ft}^2}{\text{d}}$$

$$K = \frac{169.33}{14} = \underline{12.10 \text{ ft/d}}$$

3) MW-928 recovery (straight line)

$$K = \underline{15.13 \text{ ft/d}} \quad (\text{see calculations on graph...})$$

DATE

Jan 25, 1988

SUBJECT

SHEET NO.

BY

RJW

CHKD.

AQUIFER PUMPING TESTS

JOB NO.

MW-928 (cont)

4) OW-928-1 Pumping (Theis)

$$B, \square T(\text{early}) = \frac{808.6}{4 \cdot \pi \cdot 0.25} \cdot 1 = 257.39 \text{ ft}^2/\text{d}$$

$$K = \frac{257.39}{14} = 18.38 \text{ ft/d}$$

$$B, \square T(\text{late}) = \frac{808.6}{4 \cdot \pi \cdot 0.33} \cdot 1 = 194.99 \text{ ft}^2/\text{d}$$

$$K = \frac{194.99}{14} = 13.92 \text{ ft/d}$$

5) OW-928-1

$$s' = \frac{47 \pm u}{r^2}$$

$$B, \square s'(\text{early}) = \frac{4 \cdot 257.39 \cdot 0.01 \cdot 0.01}{400} = 2.57 \times 10^{-4}$$

$$B, \square s'_y(\text{late}) = \frac{4 \cdot 194.99 \cdot 0.052 \cdot 0.1}{400} = 0.01$$

$$\eta = \frac{s + s_y}{s} > 6.5 = \frac{2.57 \times 10^{-4} \cdot 0.01}{2.57 \times 10^{-4}} = 39.9$$

6) OW-928-1 Recovery (Straight line)

$$K = 21.18 \text{ ft/d (see calculations on graph...)}$$

DATE Jan 25 1988

SUBJECT

SHEET NO. _____

BY RJM CHKD. _____

AQUIFER PUMPING TESTS

JOB NO. _____

MW-928 (cont)7) OW-928-2 Pumping (Theis)

$$C \square T(early) = \frac{808.6}{4 \cdot \pi \cdot 0.28} \cdot 1 = 229.81 \text{ ft}^2/\text{d}$$

$$K = \frac{229.81}{14} = \underline{16.41 \text{ ft/d}}$$

$$C \square T(10\%) = \frac{808.6}{4 \cdot \pi \cdot 0.22} \cdot 1 = 292.48 \text{ ft}^2/\text{d}$$

$$K = \frac{292.48}{14} = \underline{20.89 \text{ ft/d}}$$

8) OW-928-2

$$C \square S(early) = \frac{4 \cdot 229.81 \cdot 0.044 \cdot 0.1}{6561} = 6.16 \times 10^{-4}$$

$$C \square S_y(10\%) = \frac{4 \cdot 292.48 \cdot 0.20 \cdot 0.1}{6561} = 0.004$$

$$\eta = \frac{S + S_y}{S} > 6.5 = 7.49$$

SUMMARY - K

MW-928	Recovery (Theis)	12.10	ft/d
"	Recovery (St. Line)	15.13	"
OW-928-1	Pumping (Theis)	16.15	"
"	Recovery (St. Line)	<u>21.18</u>	"

K average: 16.14 ft/d

(Range = 12-21 ft/d)

DATE Jan 25 Sep 88

SUBJECT

SHEET NO. _____

BY RJL CHKD. _____

AQUIFER PUMPING TESTS

JOB NO. _____

MW-928 (cont)7) OW-928-2 Pumping (Theis)

$$C \square T(early) = \frac{808.6}{4 \cdot \pi \cdot 0.28} \cdot 1 = 229.81 \text{ ft}^2/\text{d}$$

$$K = \frac{229.81}{14} = \underline{16.41 \text{ ft/d}}$$

$$C \square T(late) = \frac{808.6}{4 \cdot \pi \cdot 0.22} \cdot 1 = 292.48 \text{ ft}^2/\text{d}$$

$$K = \frac{292.48}{14} = \underline{20.89 \text{ ft/d}}$$

8) OW-928-2

$$C \square S(early) = \frac{4 \cdot 229.81 \cdot 0.044 \cdot 0.1}{6561} = 6.16 \times 10^{-4}$$

$$C \square S_y(late) = \frac{4 \cdot 292.48 \cdot 0.20 \cdot 0.1}{6561} = 0.004$$

$$\eta = \frac{S + S_y}{S} > 6.5 = 7.49$$

SUMMARY - K

MW-928	Recovery (Theis)	12.10	ft/d
"	Recovery (St. Line)	15.13	"
OW-928-1	Pumping (Theis)	16.15	"
"	Recovery (St. Line)	<u>21.18</u>	"

K average: 16.14 ft/d

(range = 12-21 ft/d)

APPENDIX F
RISK ANALYSIS

RISK ANALYSIS

To demonstrate the naturally poor water quality and substantiate the lack of probable use, a risk analysis of background ground water quality from the uppermost aquifer was performed. Potential risks due to adult resident ingestion of background ground water from the uppermost aquifer were derived based on the average detected contaminant concentrations in the background monitor wells. The risk calculations were based on standard EPA risk assessment guidance (EPA, 1989), which assumes a 154-pound 70-kilogram) adult drinking a half-gallon (2 liters) of affected water per day, 350 days per year, for a period of 44 years (representing a farm residence). Potential risk for noncancer effects is evaluated by comparing the calculated intake of each constituent of concern (based on the presumed exposure scenario and intake parameters) with the EPA reference dose, which is the conservatively derived dose level considered by EPA to be protective of human health. Potential risk for cancer effects is given by the excess lifetime cancer risk. The National Contingency Plan (40 CFR Part 300 (1994)) states that exposures to noncarcinogenic chemicals should present no appreciable risk of significant adverse effects and that the cumulative excess lifetime cancer risk should not exceed 10^{-4} (40 CFR §300.430(e)(2)(i)(2)).

The doses based on the average background concentrations of selenium and soluble uranium salts (0.4 and 2 mg/L, respectively) exceeded the respective EPA reference doses for those chemicals (by 2.2 and 18 times the reference dose, respectively). The calculated excess lifetime cancer risk for the average detected uranium-234 and -238 concentration in the background ground water (1350 pCi/L) was 6.7×10^{-4} , which exceeds the 10^{-4} limit for acceptable cancer risk. Thus, the background concentrations of selenium and uranium are associated with unacceptable cancer and noncancer risks, which supports the conclusion that background ground water from the uppermost aquifer is not an acceptable source of drinking water for humans.

Potential risk to agricultural crops irrigated with background ground water from the uppermost aquifer was evaluated by comparing current monitoring data to maximum recommended safe concentrations for irrigation water (EPA, 1972). The results of that comparison are presented in Table F.1. The EPA comparison values reflect average rainfall conditions. Crops in arid regions, such as at the Spook site, are more susceptible to damage from elevated contaminant concentrations in irrigation water (relative to those in more humid regions) because of the increased requirement for irrigation water and the extended duration of the required irrigation period (i.e., crops in arid regions may require irrigation throughout the growing season rather than only during limited periods of the growing season) (EPA, 1972). Thus, it is possible that crop damage may occur at contaminant concentrations that are somewhat lower than those shown in Table F.1 because of the arid conditions at the site.

Two of the background contaminants (molybdenum and selenium) have maximum (0.03 and 2.17 mg/L, respectively) and average (0.018 and 0.4 mg/L, respectively) concentrations exceeding the maximum recommended safe concentrations in irrigation water (0.010 and 0.020 mg/L, respectively). These results indicate that naturally-occurring concentrations of contaminants in ground water from the uppermost aquifer are above the recommended concentrations for irrigation.

Table F.1 Background, agricultural irrigation water, and livestock drinking water contaminant concentration comparison at the Spook, Wyoming, site

Constituent	Background concentrations ^a		Comparison concentrations		Does background exceed safe concentration?
	Range of detects	Mean of detects ^b	Irrigation ^c	Livestock ^c	
Aluminum	0.03 - 0.2	2.8	5	5	N
Antimony	0.003 - 0.005	0.0025	---	---	---
Arsenic	0.001 - 0.001	0.004	0.1	0.2	N
Barium	0.02 - 0.05	0.048	---	---	---
Boron	0.05 - 0.14	0.062	0.75	---	N
Cadmium	0.002 - 0.003	0.0011	0.01	0.05	N
Calcium	99.5 - 179	120	---	---	---
Chloride	0.5 - 3.8	1.9	---	---	---
Chromium	0.037 - 0.08	0.054	0.1	1	N
Copper	0.01 - 0.02	0.01	0.2	1	N
Fluoride	0.2 - 0.3	0.53	1	2	N
Net gross alpha (pCi/L)	0 - 480	30	15 ^d	15 ^d	Y
Gross beta (pCi/L)	180 - 900	290	---	---	---
Iron	0.024 - 0.1	0.06	5	---	N
Lead-210 (pCi/L)	0 - 13	2.7	---	---	---
Magnesium	15.3 - 36.3	23	---	---	---
Manganese	0.01 - 0.04	0.03	0.2	---	N
Mercury	0.0002 - 0.0005	0.00015	---	0.01	N
Molybdenum	0.01 - 0.03	0.018	0.01	---	Y
Nickel	0.01 - 0.01	0.018	0.2	---	N
Nitrate	2.2 - 8.9	5.2	---	100	N

Table F.1 Background, agricultural irrigation water, and livestock drinking water contaminant concentration comparison at the Spook, Wyoming, site (concluded)

Constituent	Background concentrations ^a		Comparison concentrations		Does background exceed safe concentration?
	Range of detects	Mean of detects ^b	Irrigation ^c	Livestock ^c	
Polonium-210 (pCi/L)	0 - 0.8	0.15	---	---	---
Potassium	4.39 - 8.4	7.4	---	---	---
Radium-226 (pCi/L)	0.2 - 2.5	0.74	20	20	N
Radium-226/-228 (pCi/L)	1.3 - 4.8	2.3	5	5	N
Selenium	0.036 - 2.17	0.4	0.02	0.05	Y
Silica - SiO ₂	13.5 - 16	15	---	---	---
Silver	0.01 - 0.02	0.011	---	---	---
Sodium	13.4 - 30.8	23	---	---	---
Strontium	0.8 - 2.2	1.5	---	---	---
Sulfate	150 - 393	220	---	---	---
Thorium-230 (pCi/L)	0 - 8.1	0.7	---	---	---
Tin	0.003 - 0.12	0.017	---	---	---
Uranium	0.89 - 2.9	2	---	---	---
Uranium-234/238 (pCi/L)	610 - 1990	1350	30 ^d	30 ^d	Y
Vanadium	0.016 - 0.03	0.025	0.1	0.1	N
Zinc	0.005 - 0.014	0.0054	2	25	N

^aConcentrations are reported in milligrams per liter (mg/L) unless noted otherwise in first column.

^bMean of the average of detects for each background well. If a well had no detects, one-half the detection limit was used.

^cMaximum safe concentrations, EPA, 1972.

^dEPA (1972) states that the maximum recommended safe concentration for radionuclides in water for irrigation and livestock should be taken as the Federal Drinking Water Standard.

Livestock can be exposed to contaminants in ground water directly by drinking water or indirectly through ingestion of fodder irrigated with the affected ground water. Because ground water from the uppermost aquifer is not recommended for use as a source of irrigation water, the indirect exposure pathway is not relevant.

Potential risks related to direct exposure of livestock to background ground water concentrations were evaluated to demonstrate that naturally-occurring contaminant concentrations exceed recommended safe levels for ingestion of the water. Analysis of the potential toxicity of background ground water to livestock consisted of comparing background ground water concentrations to approximate drinking-water concentrations considered to be protective of livestock (EPA, 1972).

The average and maximum detected concentrations for selenium in the background ground water (0.4 and 2.17 mg/L, respectively) exceed the 0.05 mg/L level considered to be protective of livestock (EPA, 1972). These results indicate that the naturally elevated selenium concentration causes the ground water from the uppermost aquifer to be unusable for ingestion by livestock.

The indirect exposure pathways associated with ingestion of crops irrigated with background ground water or with ingestion of meat or milk from livestock that drink the ground water were not evaluated because the screening level risk analysis demonstrated that background ground water from the uppermost aquifer is not usable as a source of crop irrigation water or as a source of drinking water for cattle.

Conclusions of the risk analysis

The screening level risk analysis of background ground water from the uppermost aquifer demonstrates that use of naturally-occurring ground water from the uppermost aquifer (represented by monitor wells SPK-01-931, -933 -943, and -944) (Figure F.1) would constitute unacceptable risks to humans, livestock, and irrigated crops. The background risk analysis indicated that there is no beneficial use of the naturally-occurring ground water from the uppermost aquifer; therefore, a baseline risk assessment was not performed for the Spook site.

The results of this risk analysis support the DOE's proposed compliance strategy of no further remediation based on the application for supplemental standards. The affected ground water from the uppermost aquifer at the site poses no risk to human health and the environment because of the absence of relevant or realistic exposure pathways. The screening level risk analysis for background ground water from the uppermost aquifer demonstrates that naturally-occurring concentrations of uranium, selenium, and nitrate in that ground water cause unacceptable risks to humans, and the ground water is not recommended for use for livestock or irrigation.

FIGURE F.1
EXTENT OF CONTAMINATION IN THE UPPER SANDSTONE UNIT BASED ON DISTRIBUTION OF
AMMONIUM, ACID pH, AND NITRATE
AT THE SPOOK, WYOMING, SITE

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