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REV. 0

UMTRA GROUND WATER PROJECT

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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Prepared for
U.S. Department of Energy
UMTRA Project Office
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Prepared by
Jacobs Engineering Group Inc.
Albuquerque, New Mexico

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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

Acronym	Definition
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

[a]60 FR 2854 (1995).
[b]Milligrams per liter unless otherwise noted.
[c]Equivalent to 44 milligrams per liter (mg/L) nitrate expressed as NO_3.
[d]Equivalent 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

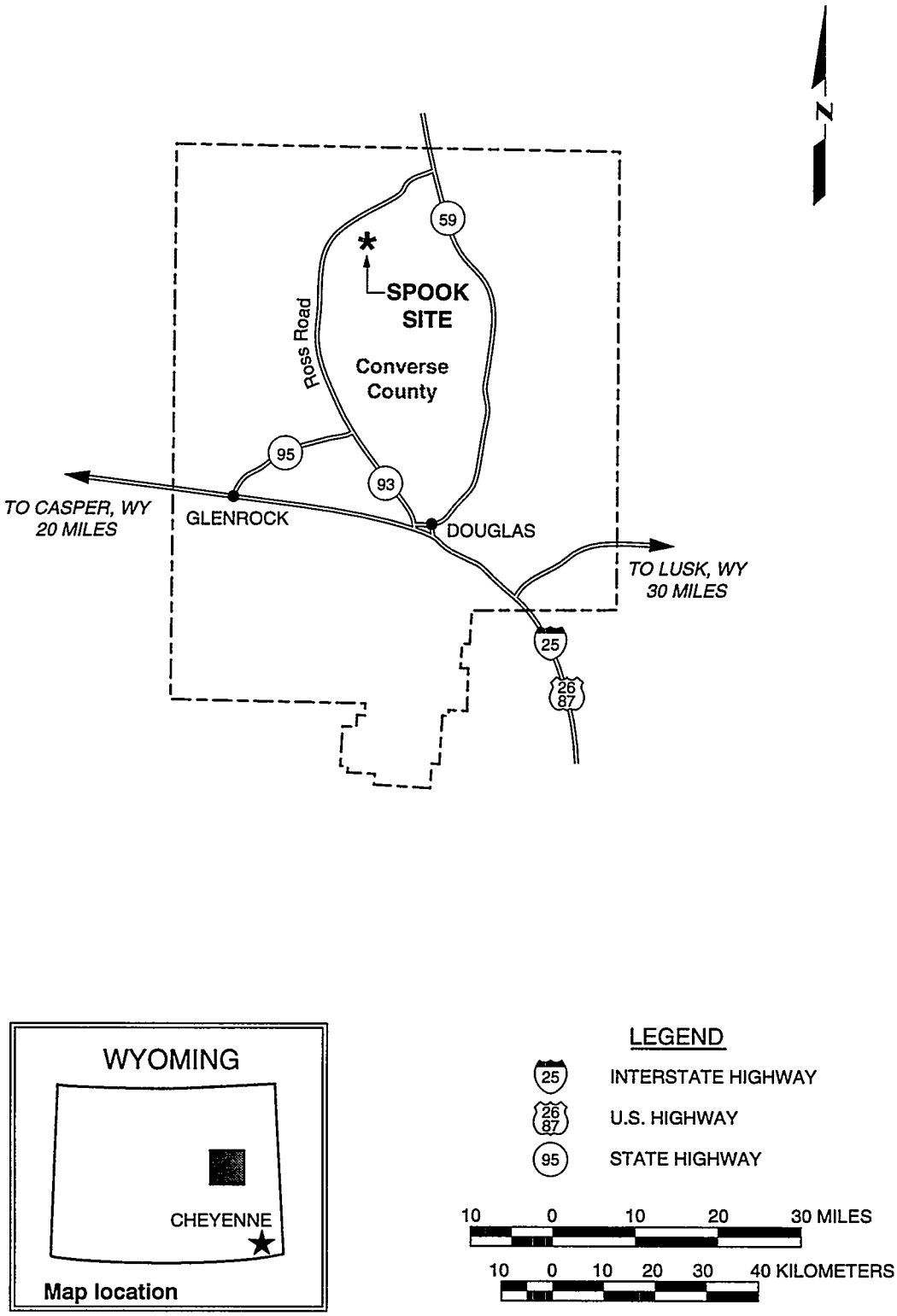


FIGURE 3.1
LOCATION OF THE SPOOK, WYOMING, SITE

MAC: SITE/SPK/SOWP/SITELOC

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

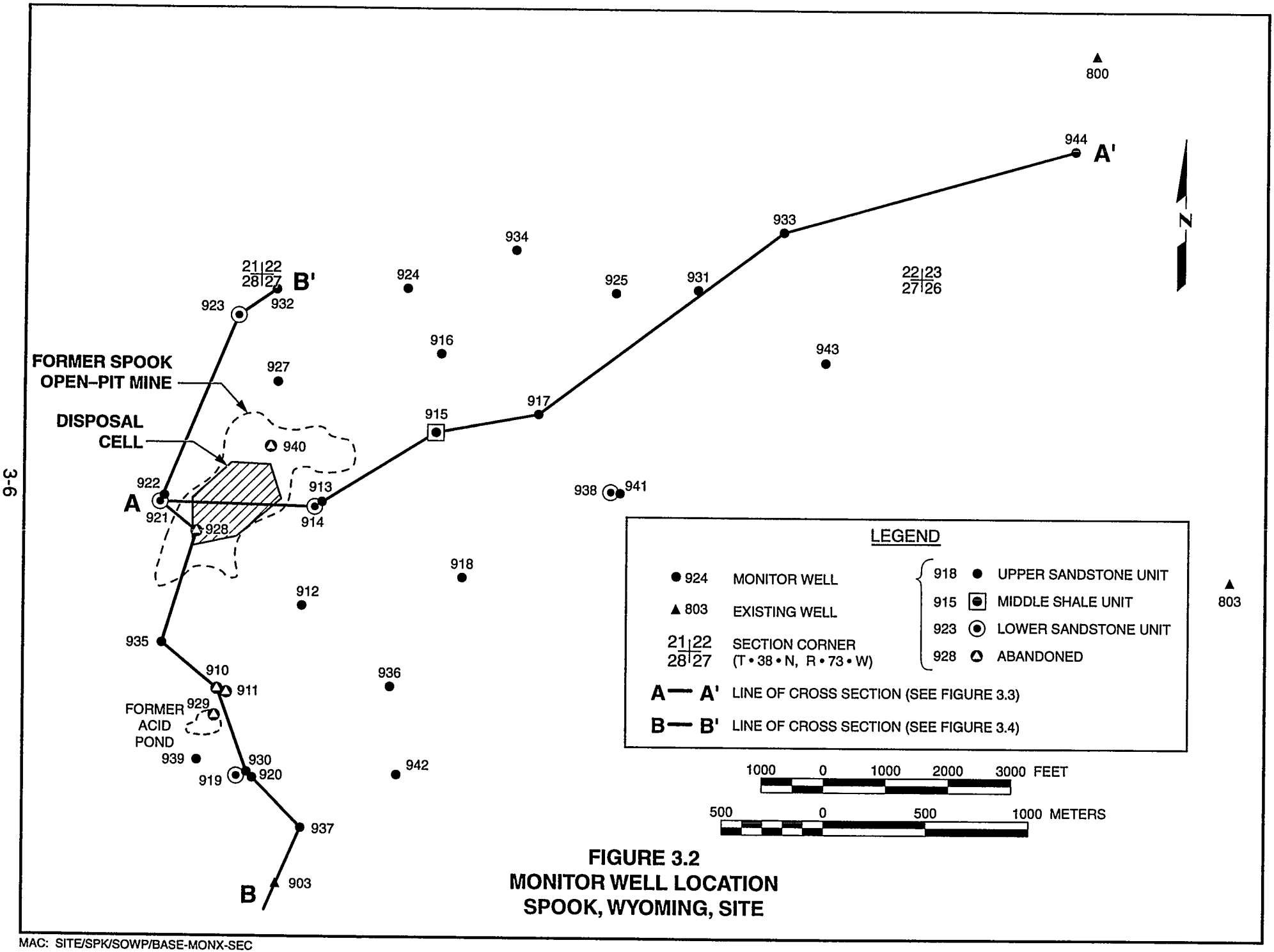


FIGURE 3.2
MONITOR WELL LOCATION
SPOOK, WYOMING, SITE

MAC: SITE/SPK/SOWP/BASE-MONX-SEC

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

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.

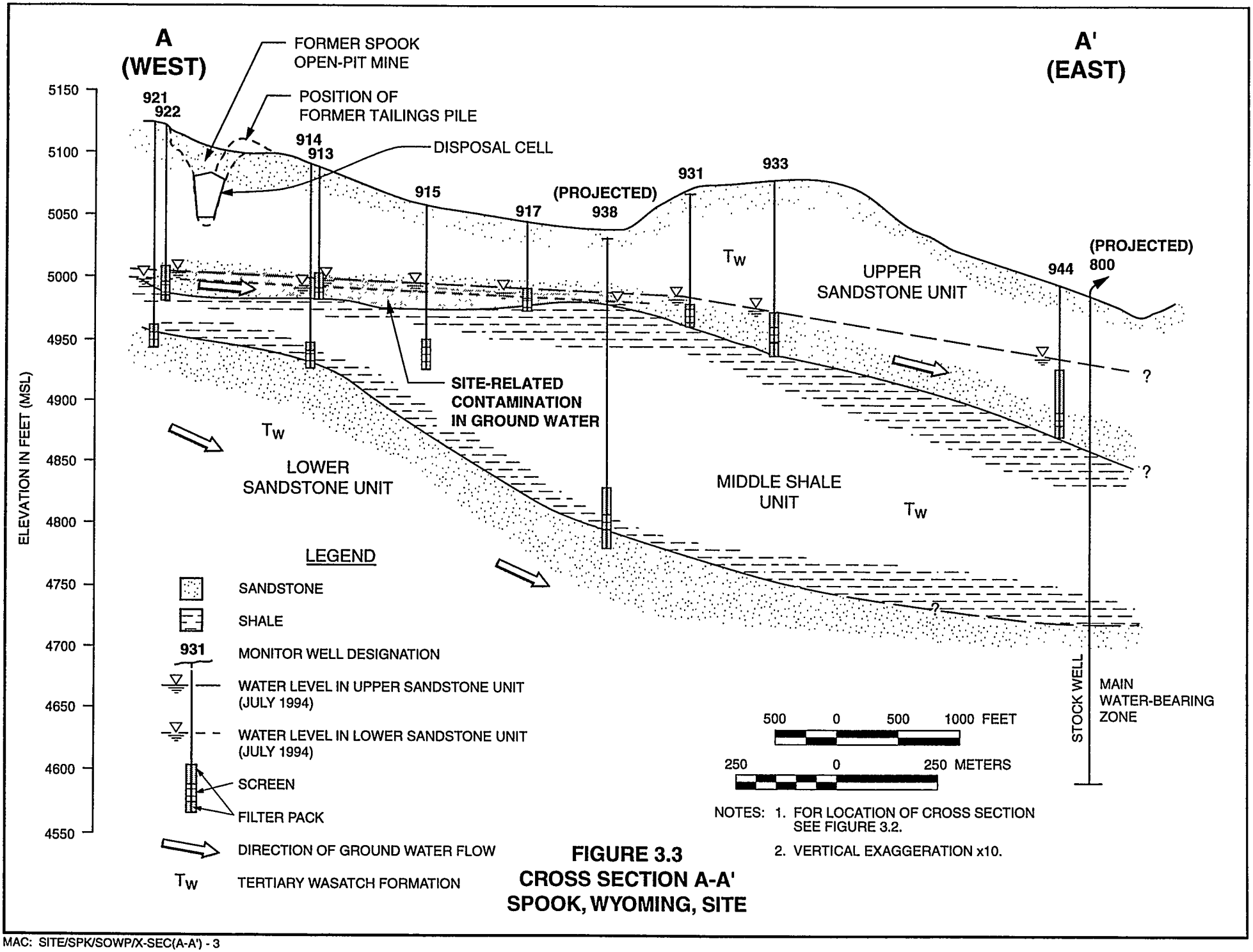
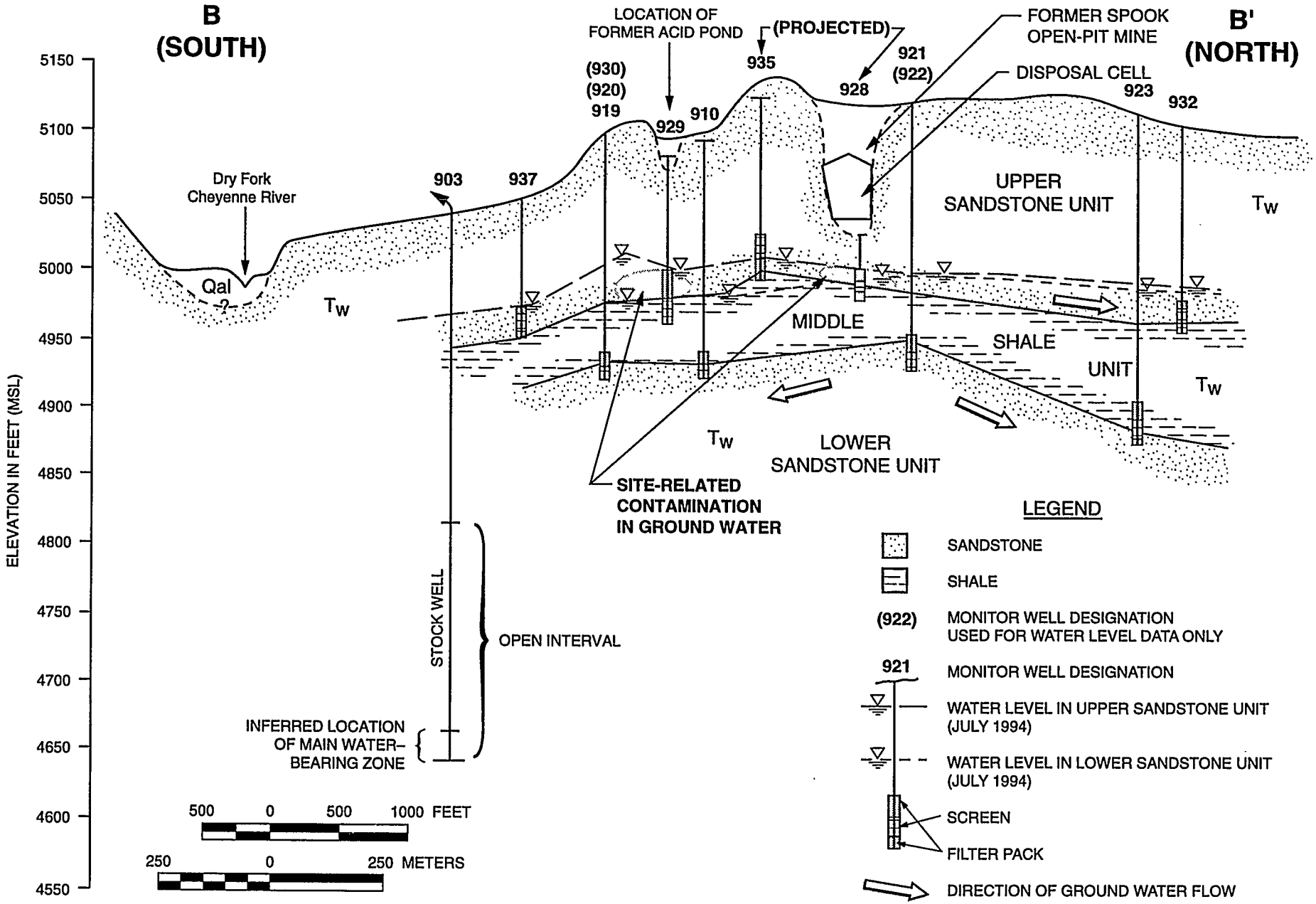


FIGURE 3.3
CROSS SECTION A-A'
SPOOK, WYOMING, SITE

MAC: SITE/SPK/SOWP/X-SEC(A-A') - 3



NOTES: 1. FOR LOCATION OF CROSS SECTION SEE FIGURE 3.2.

2. VERTICAL EXAGGERATION x10.

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

MAC: SITE/SPK/SOWP/X-SEC(B-B')

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 ft^2/day (2.42 cm^2/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.

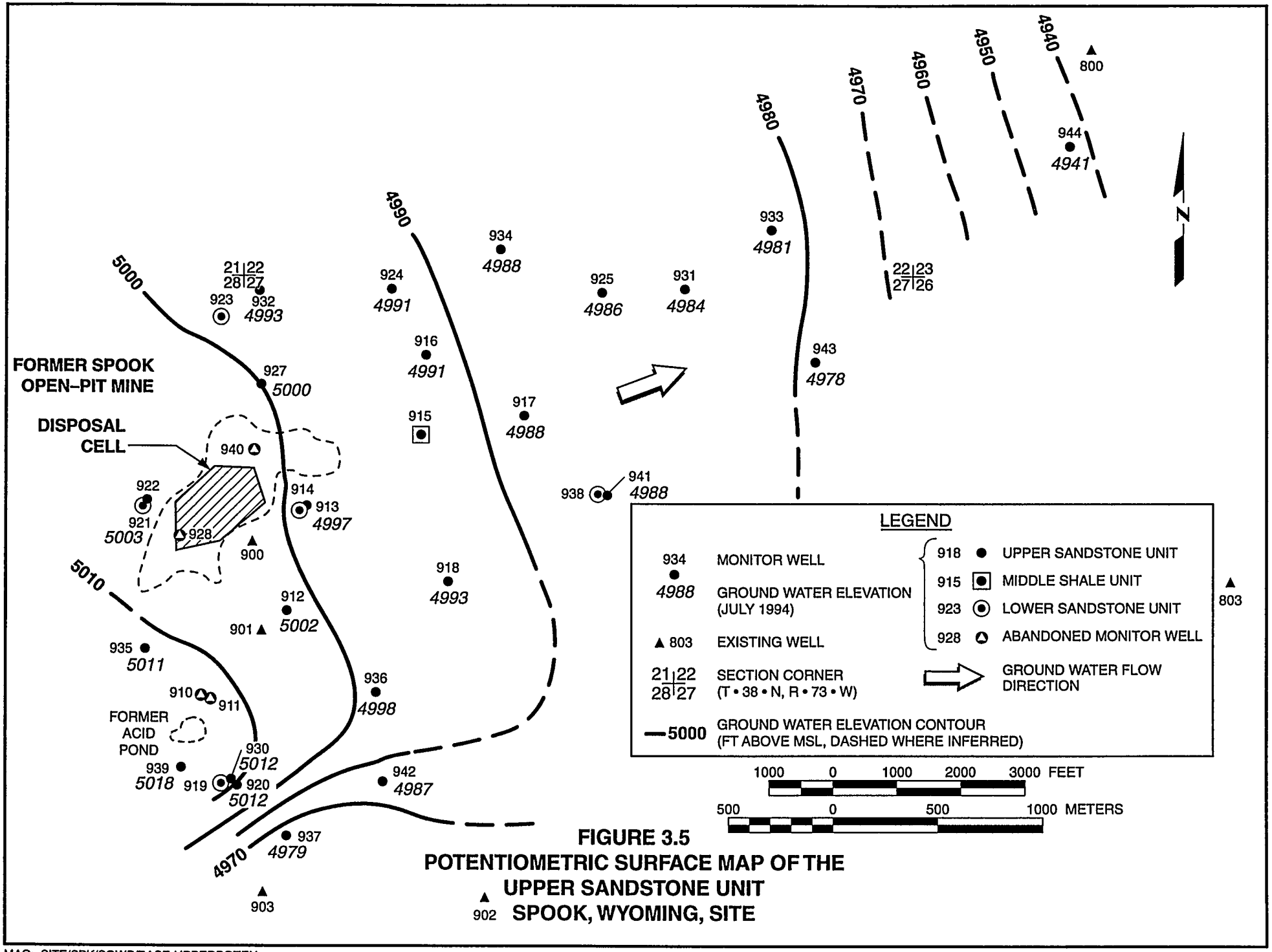


FIGURE 3.5
POTENTIOMETRIC SURFACE MAP OF THE UPPER SANDSTONE UNIT SPOOK, WYOMING, SITE

MAC: SITE/SPK/SOWP/BASE-UPPERPOTEN

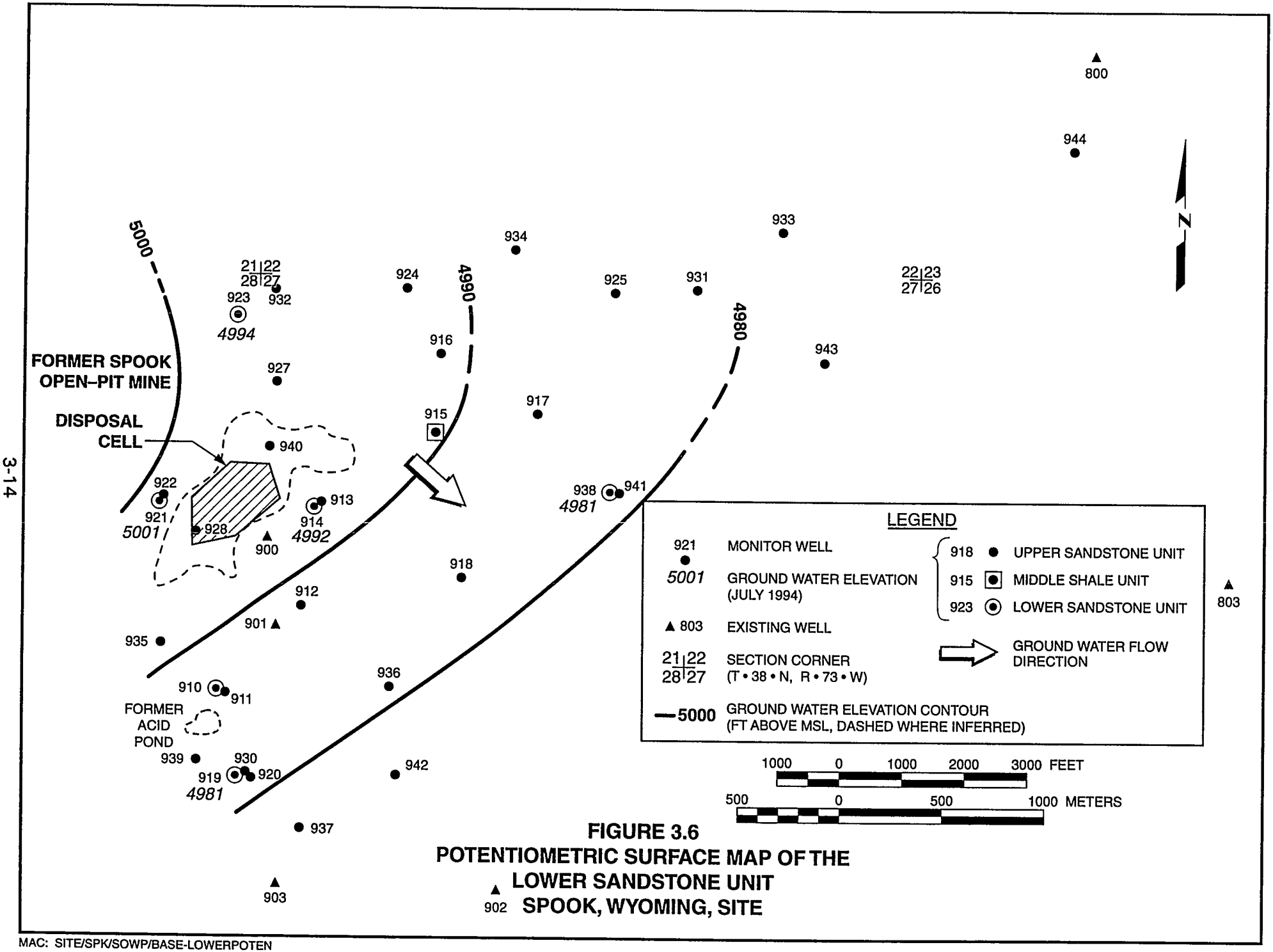


FIGURE 3.6
POTENTIOMETRIC SURFACE MAP OF THE LOWER SANDSTONE UNIT SPOOK, WYOMING, SITE

MAC: SITE/SPK/SOWP/BASE-LOWERPOTEN

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.

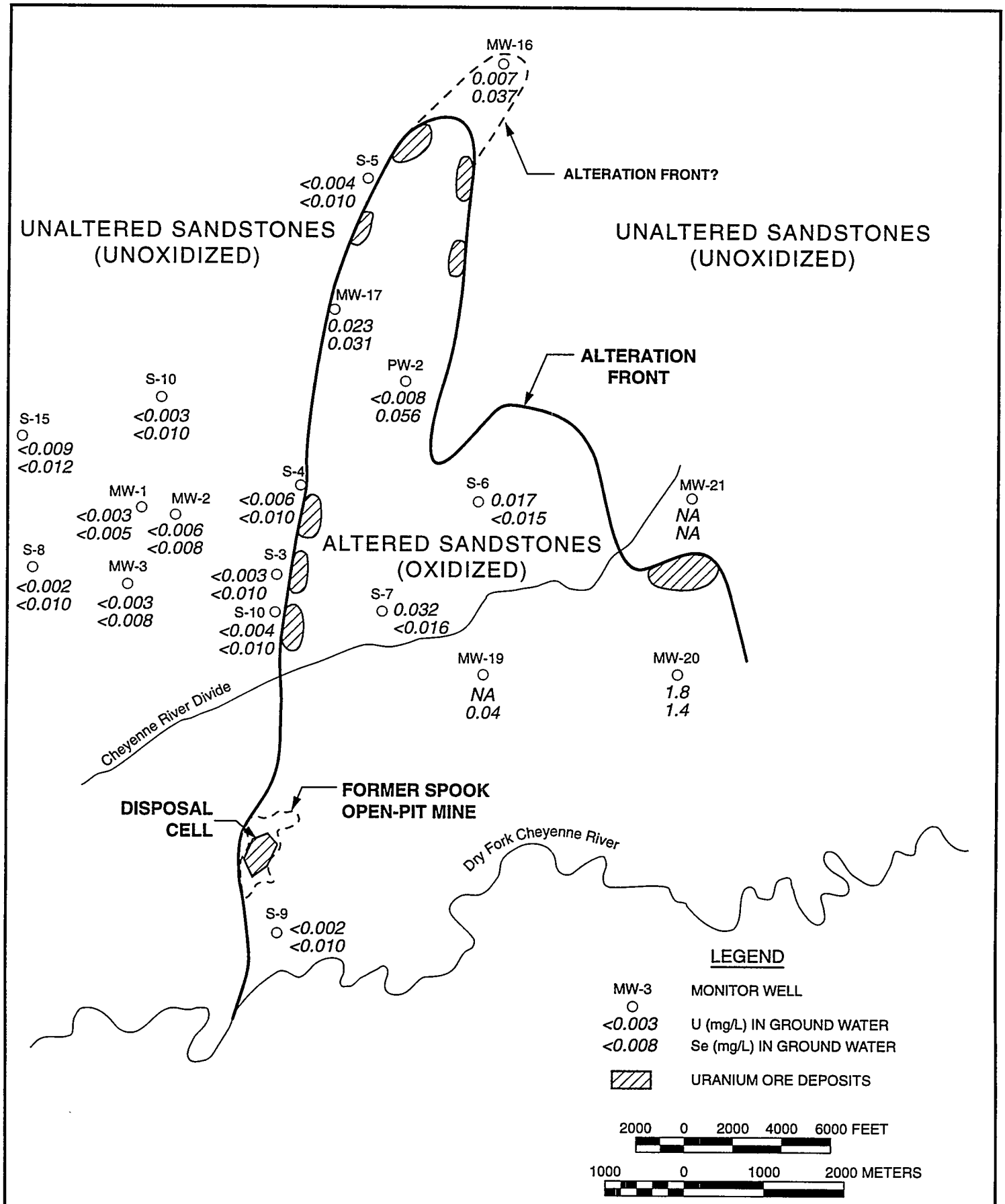


FIGURE 3.7
ALTERATION FRONT IN THE VICINITY OF THE SPOOK, WYOMING, SITE

MAC: SITE/SPK/SOWP/ALTERFRONT

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 NO3 (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

[a]Data 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.
[b]Data 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

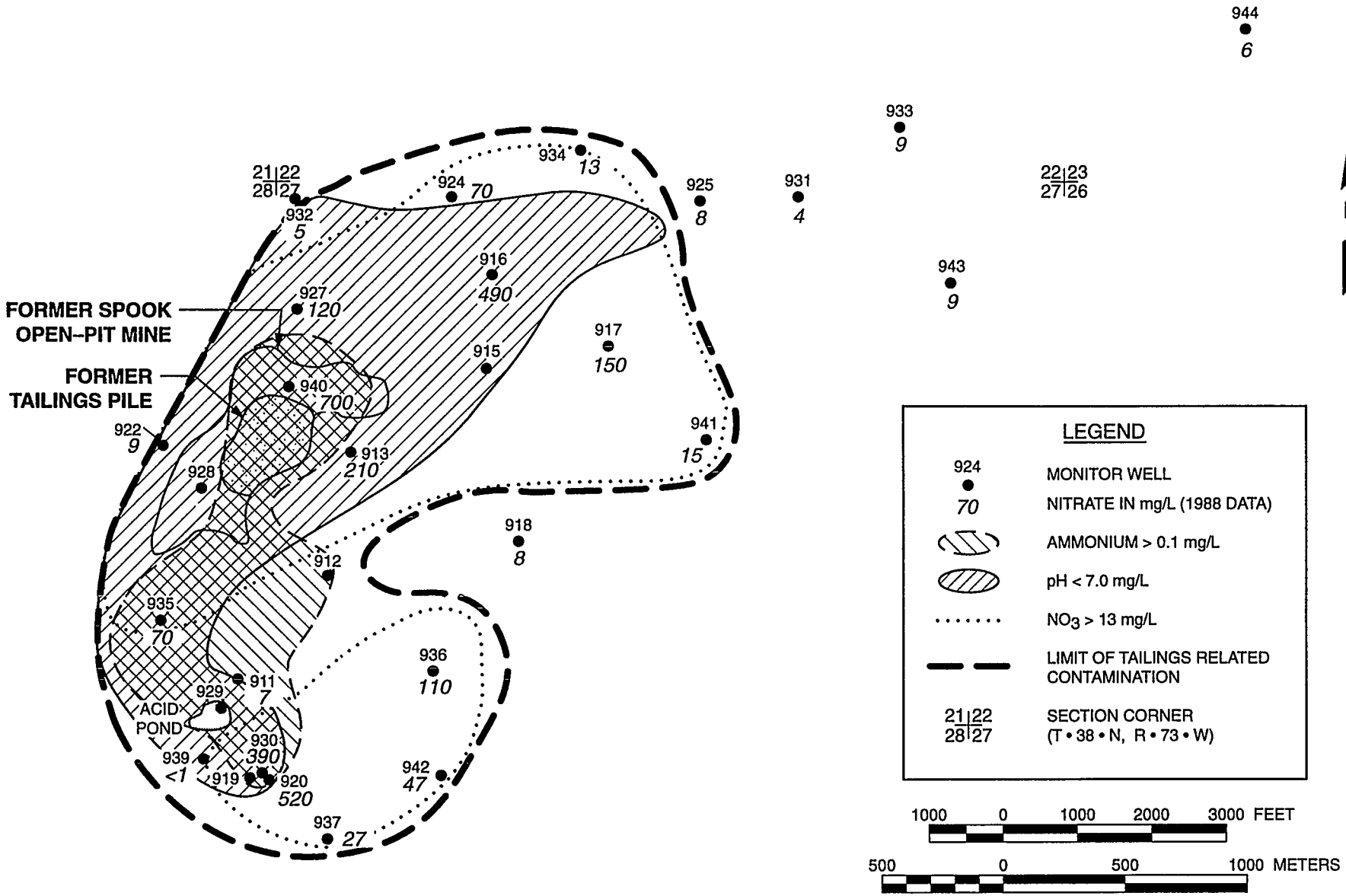


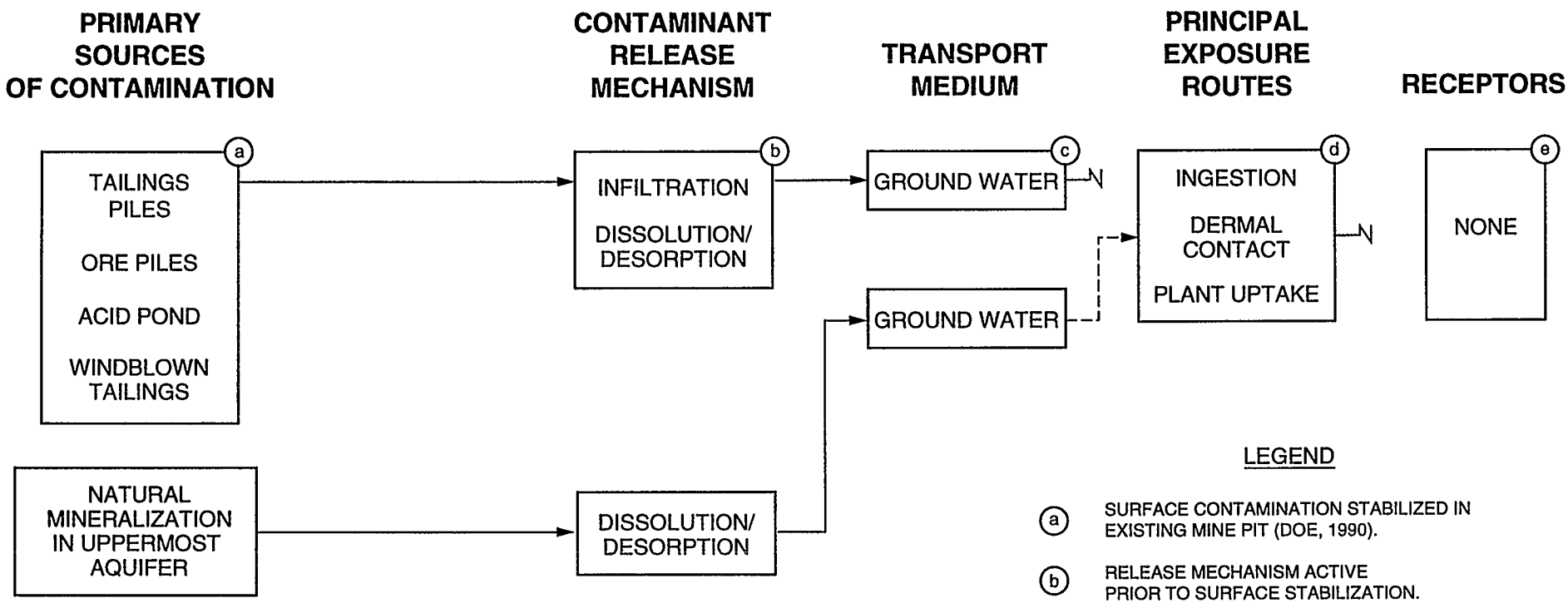
FIGURE 3.8
EXTENT OF CONTAMINATION IN THE UPPER SANDSTONE UNIT BASED ON DISTRIBUTION OF AMMONIUM, ACID pH, AND NITRATE AT THE SPOOK, WYOMING, SITE

MAC: SITE/SPK/SOWP/BASE1-EXTCONTAM

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

[a]Contaminant core wells are characterized by high ammonium and low pH. Wells used are DOE monitor wells SPK01-0920, -0930, -0935, and -0940.
[b]Outer 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.
[c]Background 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.
[d]The 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.



LEGEND

(a) SURFACE CONTAMINATION STABILIZED IN EXISTING MINE PIT (DOE, 1990).

(b) RELEASE MECHANISM ACTIVE PRIOR TO SURFACE STABILIZATION.

(c) INCOMPLETE PATHWAY.

(d) PRINCIPAL EXPOSURE ROUTES EVALUATED RELATIVE TO HYPOTHETICAL USE OF NATURALLY MINERALIZED GROUND WATER IN UPPERMOST AQUIFER.

(e) NO CURRENT RECEPTORS IDENTIFIED. GROUND WATER NOT USED FOR DOMESTIC OR STOCK PURPOSES.

NOTE: DASHED LINE INDICATES CONJECTURAL RELATIONSHIP.

FIGURE 3.9
CONCEPTUAL MODEL FOR THE SPOOK, WYOMING, SITE

MAC: SITE/SPK/SOWP/CONCEPTMODEL

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 yd^3 (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

[a]Alkalinity as mg/L $CaCO_3$.
[b]Nitrate expressed as NO_3.

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.

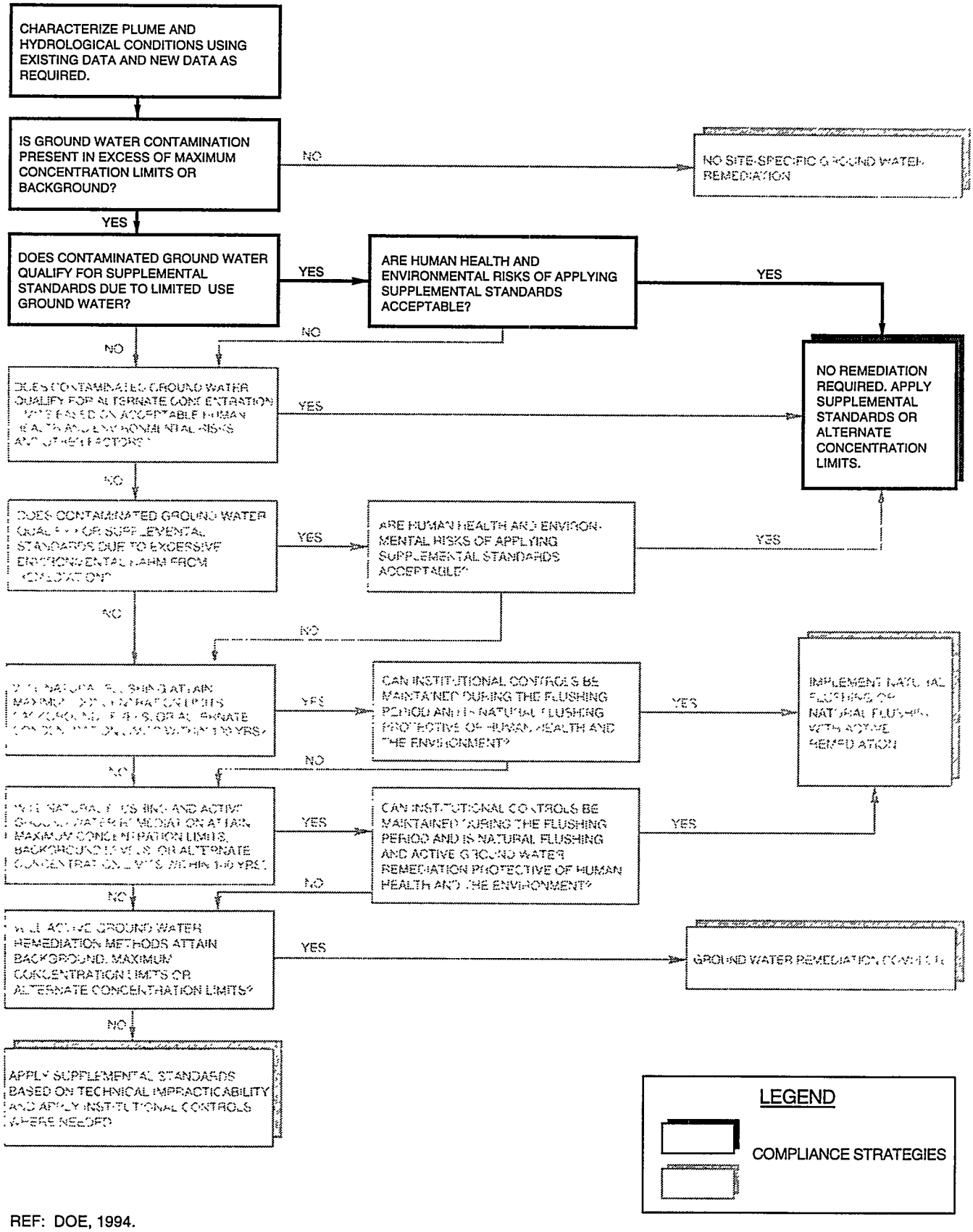
- Natural flushing: This strategy allows the natural ground water movement and geochemical processes to reduce the constituent concentrations to levels within regulatory limits in a given time period. This could be applied at sites where ground water compliance would be achieved with the application 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 apprropriate 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).

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B. Harvey	Graphic design
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6.0 REFERENCES

Ames et al. (L. L. Ames, J. E. McGarrah, B. A. Walker, and P. F. Salter), 1983. "Uranium and Radium Sorption on Amorphous Ferric Oxyhydroxide," in *Chemical Geology*, Vol. 40, pp. 135-148.

DOE (U.S. Department of Energy), 1994. *Programmatic Environmental Impact Statement for the Uranium Mill Tailings Remedial Action Ground Water Project*, draft, DOE/EIS-0198, Rev. 3, April 1994, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1993a. *Technical Approach to Groundwater Restoration*, DOE/AL/62350-26F, Rev 1, July 1993, U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1993b. *Recommendations for the Preparation of Environmental Assessments and Environmental Impact Statements*, Office of NEPA Oversight, U.S. Department of Energy, Washington, D.C.

DOE (U.S. Department of Energy), 1993c. *Long-Term Surveillance Plan for the Spook, Wyoming, Disposal Site*, final, UMTRA-DOE/AL-350215.0000, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1992a. *UMTRA Groundwater Program Plan*, May 1992, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1992b. Software Program for Environmental Analysis and Reporting (SPEAR) Program System, U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1990. *Remedial Action Plan and Site Conceptual Design for Stabilization of the Inactive Uranium Mill Tailings Site at Spook, Wyoming*, UMTRA-DOE/AL-050515.0000, April 1990, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

DOE (U.S. Department of Energy), 1989. *Environmental Assessment of Remedial Action at the Spook Uranium Mill Tailings Site, Spook, Wyoming*, DOE/EA-0345, April 1989, prepared by the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

FBDU (Ford, Bacon, & Davis Utah Inc.), 1981. *Engineering Assessment of Inactive Uranium Mill Tailings, Spook Site, Converse County, Wyoming,* DOE/UMT-0119, FBDU 360-15, UC-70, prepared by FBDU, Salt Lake City, Utah, for the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

Galloway, W. E., 1979. "Early Tertiary-Wyoming Intermontane Basins," in *Depositional and Ground-Water Flow Systems in the Exploration for Uranium,* Texas Bureau of Economic Geology Research Colloquium.

Granger, H. C., and C. G. Warren, 1974. "Zoning in the Altered Tongue Associated with Roll-Type Uranium Deposits," in *Formation of Uranium Ore Deposits,* International Atomic Energy Agency, Vienna, Austria.

Jones, B., 1994. USEPA Region 8, personal communication to George Hartman, Jacobs Engineering Group Inc., UPDCC File Location No. 15.1.11.1, Albuquerque, New Mexico.

Mashbir, D. S., 1964. "Heap Leaching of Low Grade Uranium Ore, " in *Mining Congress Journal,* December 1964.

Merritt, R. C., 1971. *The Extractive Metallurgy of Uranium,* Colorado School of Mines Research Institute, prepared under contract with U.S. Atomic Energy Commission, Johnson Publishing Company, Boulder, Colorado.

Montgomery (James M. Montgomery, Consulting Engineers, Inc.), 1985. *Water Treatment--Principles and Designs*, John Wiley & Sons, New York, New York.

Parkhurst et al. (D. L. Parkhurst, D. C. Thorstenson, and L. N. Plummer), 1980. *PHREEQE-A Computer Program for Geochemical Calculations*, U.S. Geological Survey, Water-Resources Investigations 80-96, 209 pages.

RME (Rocky Mountain Energy), 1983. Environmental Report for Bear Creek Project, Permit No. 399.

Rowell, D. L., 1981. "Oxidation and Reduction," in *The Chemistry of Soil Processes*, Greenland, D. J., and Hayes, H. B., eds., John Wiley & Sons, New York, pp. 401-462.

Shepard, T. A., and S. Brown, 1983. "Interpretation of Contaminant Migration Conditions at 12 UMTRA Project Inactive Uranium Tailings Sites," prepared for the U.S. Department of Energy, UMTRA Project Office, Albuquerque Operations Office, Albuquerque, New Mexico.

State of Wyoming, 1993. *Water Quality Standards*, Wyoming Department of Environmental Quality, Water Quality Division.

CODE OF FEDERAL REGULATIONS

10 CFR Part 1021, "National Environmental Policy Act; Implementing Procedures," U.S. Department of Energy (1994).

40 CFR Part 192, "Health and Environmental Protection Standards for Uranium and Thorium Mill Tailings," U.S. Environmental Protection Agency (1994).

40 CFR Part 1500, "Regulation for Implementing the Procedural Provision of the National Environmental Policy Act," Council on Environmental Quality (1994).

FEDERAL REGISTER

52 FR 36000, "Standards for Remedial Actions at Inactive Uranium Processing Sites, Proposed Rule," 24 September 1987.

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.

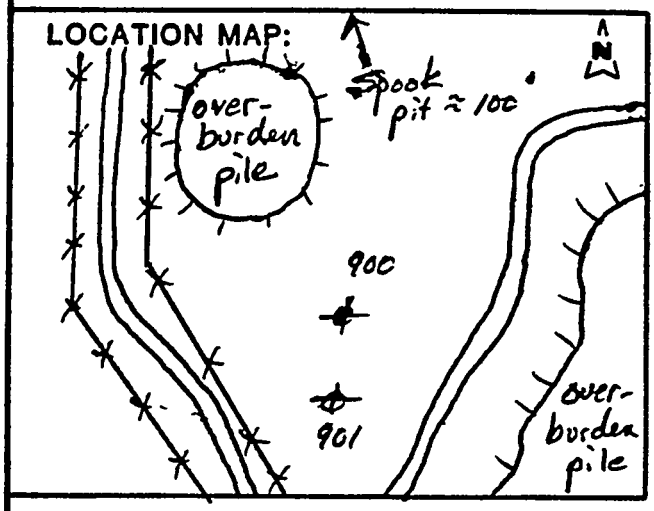
APPENDIX A

MONITOR WELL LITHOLOGIC LOGS

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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.: Boyles Bros.
DATE STARTED: 11-24-86
DATE COMPLETED: 11-26-86
FIELD REP.: L. Pryfe

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

LOCATION DESCRIPTION: Just inside tailings area south of overburden pile
SITE CONDITION: 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
0											Top Soil - clayey sand (SC) moist
10											Sandstone, predominantly med to coarse, grades fine to v fine clean, H. tan to orange brn, dry.
20											
30											
40											~ Silt stringer - brown, slightly damp
50											

COMMENTS: T.D. 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

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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. 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'											
60											
70											~ becoming moist - color change to orange brn.
80											Shale, sandy, fissle, some coal stringers, dk grey to black
90											
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

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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. Phyfe

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'											
110											
120											Shale, sandy, some silt, damp, lt. gray.
130											Siltstone, trace fine sand, damp lt. gray
140											Shale, some fine sand, fissle, high plastic clays, interbedded coal, lt gray
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 - NQ WIRELINE ROCK CORING

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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/Mist
DRILLING CONTR.: Boyles Bros
DATE STARTED: 11-24-86
DATE COMPLETED: 11-26-86
FIELD REP.: L. Phyfe

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
150'											~ becomming sandier
160											Sandstone, medium to coarse, subrounded, greyish blue.
170											
180											~ T.D. 175'
190											
200'											

COMMENTS: _____

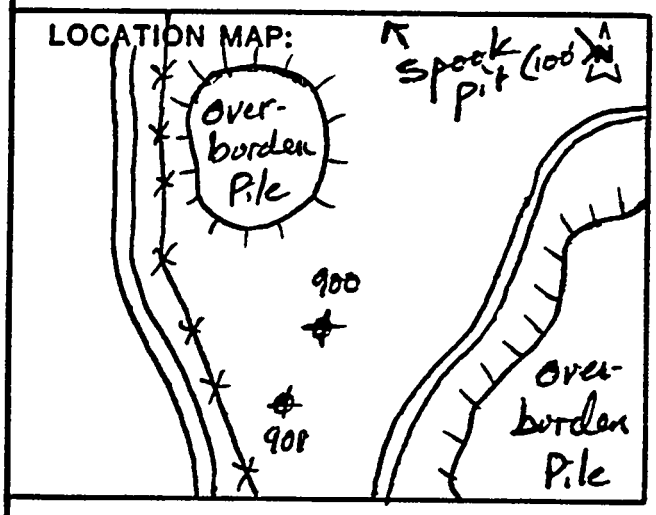
BORING OPERATION
H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:



SITE ID: SPK-01 LOCATION ID: ~~907~~ 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. Phyfe

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

LOCATION DESCRIPTION: Just inside tailings area south of ob. pile
SITE CONDITION: Fairly 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
0											Top Soil - sandy clay, some silt. moist
10											Sandstone, predominantly med. to coarse, locally grades fine to v. fine, occasional organic material (wood), lt. gray to buff weathers orange brn.
20											
30											fine to v. fine
40											
50'											

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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.: Boyles Bros.
DATE STARTED: 11-23-86
DATE COMPLETED: 11-24-86
FIELD REP.: L. Phyfe

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											~ color change to orange brn.
80											Shale, sandy, fissle, lt. grey to black, dry occasional coal stringers
90											Sandstone, fine to med. grained, greyish blue, damp to wet
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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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.: Bayles Bros
DATE STARTED: 11-23-86
DATE COMPLETED: 11-24-86
FIELD REP.: L. Phyfe

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'											
110											
											Shale, sandy, dry, greyish blue, coal stringers
120											
											T.D. 113.5'
130											
140											
150'											

COMMENTS: _____

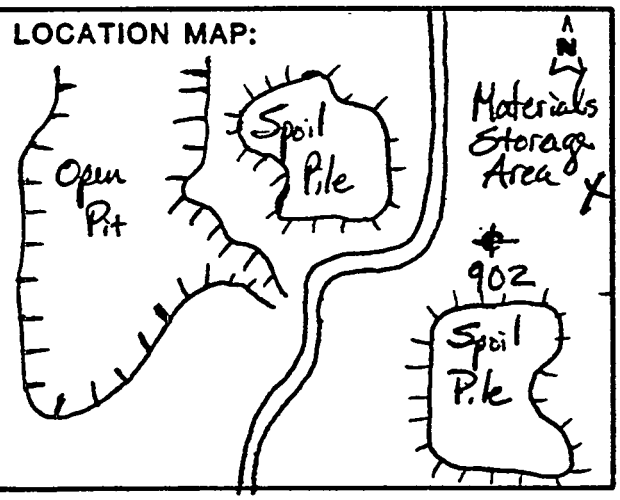
BORING OPERATION
H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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.: Bayles Bros. Drilling
DATE STARTED: 11-15-86
DATE COMPLETED: 11-23-86
FIELD REP.: L. Phyte

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

LOCATION DESCRIPTION: Just East of Spock pit between spoil piles
SITE CONDITION: Flat, salt 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
0											Sandstone, some silt and clay interbeds, medium to coarse grained, well sorted and weakly cemented, lt. Tan to lt. olive brown. Damp.
10											
20											
30											Silt and Shale, sandy lt. grey to brown, Damp
40											Sandstone, fine to v. fine grained, well sorted, friable, buff.
50'											

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

See pg 1

SITE ID: SPK-61 LOCATION ID: ~~402~~ 912
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5100
DRILLING METHOD: Rotary - Air/Mist
DRILLING CONTR.: Boyle Bros.
DATE STARTED: 11-15-86
DATE COMPLETED: 11-23-86
FIELD REP.: L. Phyfe

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											
											Sand become coarser - med. grained.
60											
											Shale lense, clayey, lt. grey ≈ 2'
70											
80											
90											
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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

See pg 1.

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

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
11-22-86	1:30	110'

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'											
											Sandstone, med to coarse, some shale, moist. ~ coal stringer
110											
											Shale, fissle, some coal, gray to black, wet
120											
130											T.D. 115'
140											
150'											

COMMENTS: _____

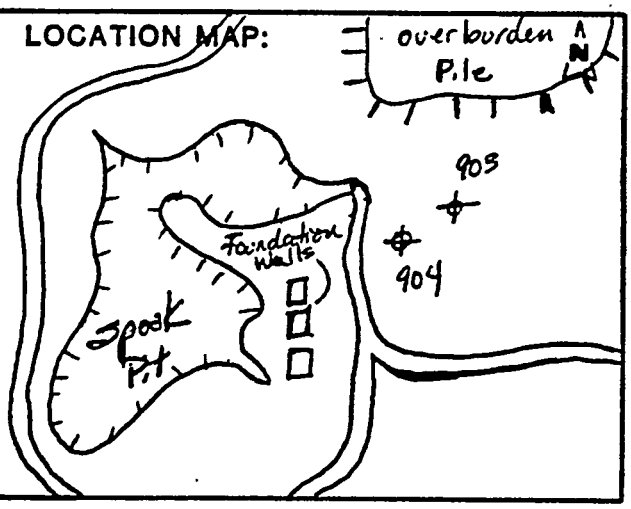
BORING OPERATION
H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:



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. Phyte

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

LOCATION DESCRIPTION In center of mill area, ≈ 60' from spook pit
SITE CONDITION fairly flat, sparsely vegitated, snowy & windblown.

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											Sandstone, fine to med. grained, moderately cemented. lt. tan.
10											Silt and Clay, med. plastic, dk. brn. moist.
20											Sandstone, some silt, fine to medium grained, lt. tan to orange brown. damp
30											~ grades coarser
40											} Clay & coal seams
50'											

COMMENTS: T.D. @ 120.0'

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

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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. Pluyte

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'											
											Silt and Clay, moderately plastic, dk. brown.
60											
70											
80											Sandstone, some clay (HPI), fine to medium gr., occasional coal seams - lt. tan to orange brn.
90											
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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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. Phyfe

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

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~~											Shale, sandy, fissle, with interbedded coal, lt. grey to black
~~130~~											T.D. @ 120.0'
~~140~~											
150'											

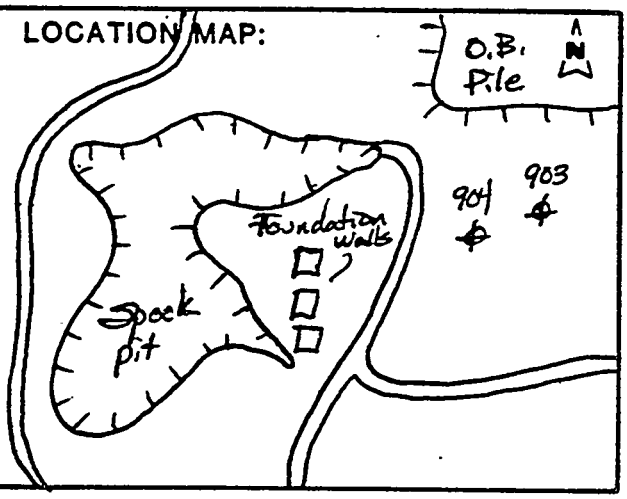
COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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. Phyfe

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

LOCATION DESCRIPTION In center of mill area east of foundation walls.
SITE CONDITION fairly flat, wind blown & snowy, sparsely vegitated

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											Sandstone, some silt, fine to med. gr., occasional coal seam, lt. tan to orange brn.
10											
											} Clay seam ≈ 4' thick - gray (HPI)
20											
30											
40											Clay, sandy, with .5' coal seams, high plastic, lt. gray to black
60											

COMMENTS:
T.D. @ 188.0' (Set casing to 185.0' - 3' cave 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 - NQ WIRELINE ROCK CORING

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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. Phyfe

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											Silty Clay, some coarse sand, med. plastic, brown.
70											
80											Sandstone, med. to coarse gr., some silt, brown
90											
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

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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. Phyfe

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

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~~											Shale and Coal, clayey, (HPI) lt. gray to black.
~~130~~											Siltstone, sandy, indurated. lt. greyish blue.
~~140~~											
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 - NQ WIRELINE ROCK CORING

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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'											
~~160~~											Shale and Coal, fissle, some clay, lt. grey to black.
~~170~~											Siltstone, some shale, lt. greyish blue
~~180~~											Sandstone, fine to med. gr., trace of silt, lt. greyish blue.
~~190~~											T.D. @ 188.0'
200'											

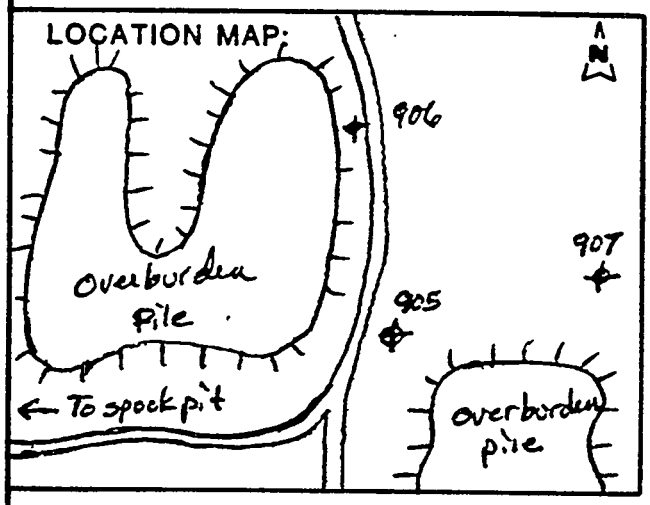
COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:



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.: Bolles Bros.
DATE STARTED: 12-6-86
DATE COMPLETED: 12-10-86
FIELD REP.: L. M. Pluft

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

LOCATION DESCRIPTION At NE end of site, approx 75' west of ob. 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
0											Sandstone, fine to med. gr., lt. brn.
10											Silt and Clay, interbedded, loose to blocky, lt. brn. Dry
20											Sandstone, predominantly fine-med, very loose, dry, lt. brn to lt. tan
30											
40											~ grades 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

See pg. 1

SITE ID: SPK-01 LOCATION ID: ~~905~~ 915
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): 5079
DRILLING METHOD: Rotary - Air / Mist
DRILLING CONTR.: Boyle's Bros.
DATE STARTED: 12-6-86
DATE COMPLETED: 12-10-86
FIELD REP.: L. Playfe

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											clayey seams
80											
											Shale and Coal, sandy, high plastic, fissile, lt. gray to black
90											
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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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. Phyfe

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'											
											~ coal seam ≈ 1.5' thick
110											
120											
130											T.D. @ 130'
140											
150'											

COMMENTS: _____

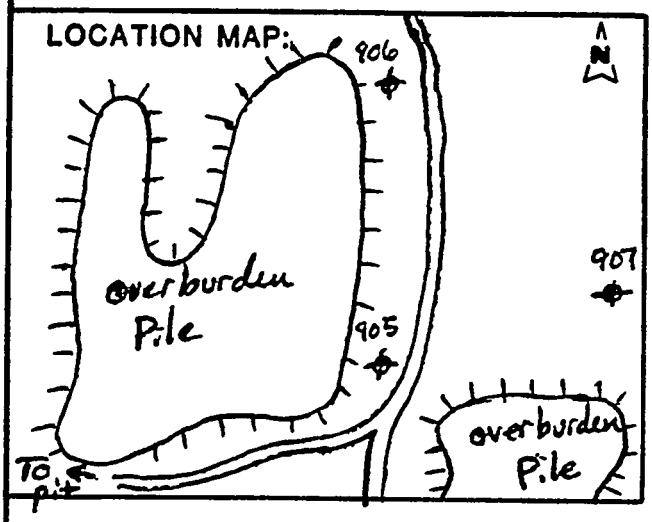
BORING OPERATION
H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:



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. Pluyte

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
12-5-86	8:35	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
0											Sandstone, some silty lenses, predominantly medium grained, poorly consolidated, dry, lt. brown to lt. tan.
10											
20											
30											occasional clay lense
40											
50											

COMMENTS: T.D. @ 110.0'

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

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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. M. Phyfe

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											Sandstone, med. to coarse, lt. tan to orange brn.
70											
80											~ reddish clay seams
90											
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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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. Plyte

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

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											
											Shale, silty, trace fine sand, fissle, lt. grey to black, wet.
105											
											} Coal seams
110											T.D. @ 110'

COMMENTS: _____

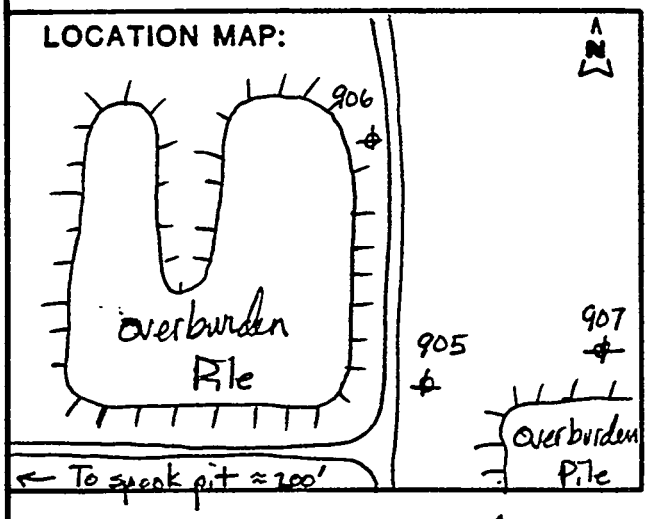
BORING OPERATION
H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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. Phyfe

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
12-11-86	10:30	70.0'

LOCATION DESCRIPTION At NE end of site approx 75' from overburden pile
SITE CONDITION Flat small sage brush, grasses; snowy and windblown

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											Sandstone, some silt, med. to coarse gr., occasional clay seams and organics (wood). lt. tan to orange brown.
10											
20											
30											~ occasional coal seams
40											
50'											

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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/Mist
DRILLING CONTR.: Boyles Bros.
DATE STARTED: 12-11-86
DATE COMPLETED: 12-11-86
FIELD REP.: L. Phyfe

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											
											~ color change to orange brown
70											Shale, clayey, fissle, lt. grey
											~ T.D. @ 75.0'
80											
90											
100'											

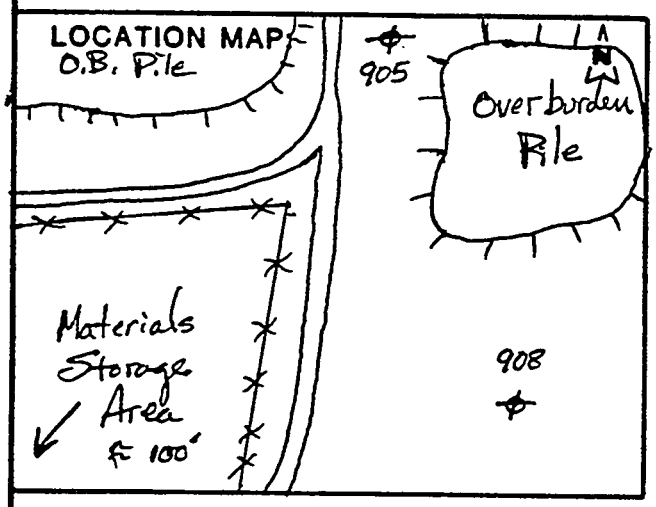
COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP



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. Phyfe

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

LOCATION DESCRIPTION Approximately 350' east of material storage area.
SITE CONDITION Sloping ground, snowy & windblown, sparsely vegitated

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											Sandstone, silty, fine to med. grained, loose, lt. tan, dry
10											Siltstone, sandy, blocky, lt. grey dry
20											
30											Sandstone, fine to v. fine, loose lt. tan, damp
40											
50'											

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

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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.: Boyles Bros.
DATE STARTED: 12-11-86
DATE COMPLETED: 12-13-86
FIELD REP.: L. Phyfe

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'											
											~ grades med. to coarse
60											
70											
80											
90											
											~ color change to reddish brn, damp.
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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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.: Bayles Bros.
DATE STARTED: 12-11-86
DATE COMPLETED: 12-13-86
FIELD REP.: L. Phyle

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

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~~											
~~130~~											
~~140~~											
150'											

Shale and Coal, fissle and indurated, some fine sand, lt. grey to black

~ T.D. @ 135.0'

COMMENTS: _____

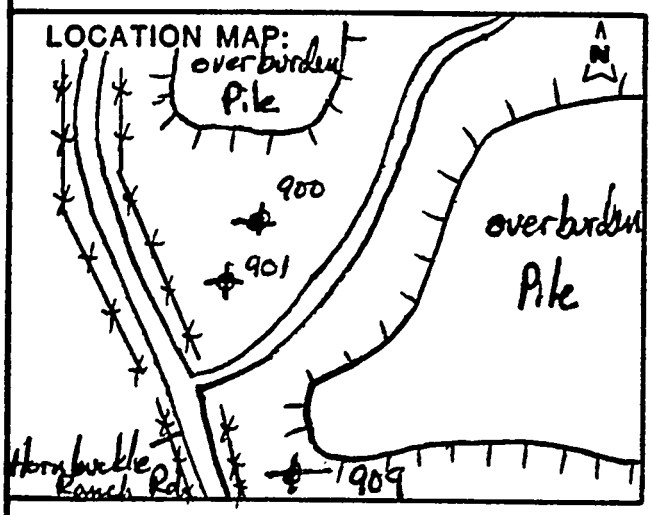
BORING OPERATION
H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:



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: 12-2-86
DATE COMPLETED: 12-5-86
FIELD REP.: L. Phyfe

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
12-3-86	10:30	170.0'

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

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											Top Soil - clayey sand (SC) moist
											Sandstone, some silt, mostly medium to coarse grained, locally grades fine to v. fine, lt. tan to orange brn.
10											
20											
30											
40											
50											

COMMENTS: T.D. @ 188.0'

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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: 12-2-86
DATE COMPLETED: 12-5-86
FIELD REP.: L. Phyfe

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											~ Shale lense ≈ 2.0', clayey, lt. grey
70											
80											
90											~ color change to orange brn.
100'											Shale, sandy, fissle, lt. grey

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

See pg. 1

SITE ID: SDK-61 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: 12-2-86
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 shaley interbeds, lt. grey.
120											Sandstone, shaley, fine to v. fine, lt. grey to black, moist
130											Shale, some silt, fissle, lt. grey to black. dry
140											Siltstone, some shale, lt. grey 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 - NQ WIRELINE ROCK CORING

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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: 12-2-86
DATE COMPLETED: 12-5-86
FIELD REP.: L. Pluyte

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
12-3-86	10:30	170.0'

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
150'											
											~ coal seam ≈ 1.0' thick, dry
160											
											~ becomming moist
170											
											Sandstone, fine to med. grained, clean, lt. grey, wet.
180											
190											T.D. 188.0'
200'											

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

SITE ID: SPK-01 LOCATION ID: 920
APPROX. SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Rotary Air/mist
DRILLER: Sunbelt Enterprises
DATE STARTED: 8/10/87
DATE COMPLETED: 8/12/87
FIELD REP.: O. Holmquist

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
8/10	10 Am	8.5'½
8/10	7 Pm	8.5
8/12	2 Pm	8.5

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: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
0											Sm, silty sand, m-fine, sm. clay, NP, brown
											Sm, silty sand, m-fine, sm gravel, NP, brown. Note: weakly consolidated
25											
											Sandstone, m. fine, rel. soft, brown
50											
75											

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

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

SEE PS 1 of 2

SITE ID: SPK-01 LOCATION ID: 920
APPROX. SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Air/mist rotary
DRILLER: Sunrise Enterprises
DATE STARTED: 8/10/87
DATE COMPLETED: 8/11/87
FIELD REP.: A. Heimgartner

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: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
75											
											Shale, brown, relatively soft
											Sandstone, medium brown
100											Shale, soft, blue-brown
											Stopped @ 98' bgs

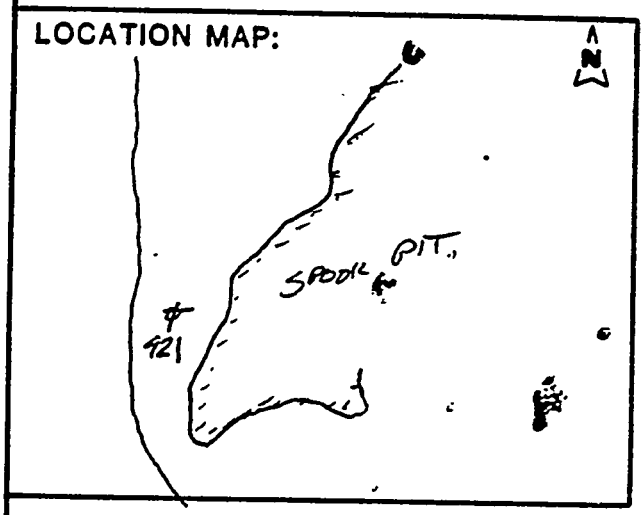
COMMENTS: Noticed hydr. oil on lubricating oil leaking into hole & on Air casing during installation.

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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: Skinner Enterprises
DATE STARTED: 8/14/87
DATE COMPLETED: 8/15/87
FIELD REP.: C. Hornbuck

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

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

DEPTH (FT)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	DISCONTINUITIES: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
0											Silty sand, stacking, LP-m brown
											Sandstone, stacking, m-fine, brown, rel. soft
25											
											Sandstone, m-fine, brown tr. shales v. hard 40-45
50											
											Interbed shales @60 v. hard @65
											Sandstone, fine to med, gray brown (v. hard)
75											

COMMENTS: Samples taken @ 5' intervals

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

SEE BO 1 of 3

SITE ID: SAK-01 LOCATION ID: 921
APPROX. SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: ROTARY / WATER
DRILLER: SUNRISE ENTERPRISES
DATE STARTED: 8/14/87
DATE COMPLETED: 8/15/87
FIELD REP.: O. Hormguist

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: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
75											
100											Sandstone, predmedium, well rounded, brown (TRACE coal @ 115')
125											
											Shale, grey, soft
											Sandstone, predm. Medium, well rounded, grey brown
150											Sandy shale, grey, tr. coal, calc. siltstone, dense

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

SEE PG 1 of 3

SITE ID: SPK-01 LOCATION ID: 921
APPROX. SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: ROTARY / WATER
DRILLER: SUPERIOR ENTERPRISES
DATE STARTED: 8/14/87
DATE COMPLETED: 8/15/87
FIELD REP.: D. Harman-st

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: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
150											
											Sandstone, m-fine, tan-brown
											Shale, rel. soft, grey
175											Sandstone, med. mod. brown, rel-hard
											Stopped @ 190'
200											
225											

COMMENTS: Stopped @ 161' 8/14/87
Reamed @ 161'-190' 8/15/87

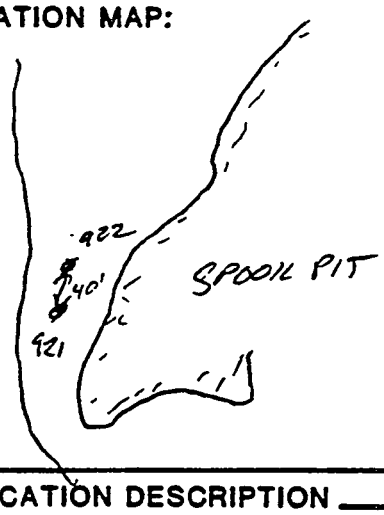
BORING OPERATION
H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

JEG-AL-ENG-2A (3/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG ~~(SOIL)~~ ROCK

LOCATION MAP:



SITE ID: SPK-01 LOCATION ID: 922
SITE COORDINATES (ft.):
N ok E ok
GROUND ELEVATION (ft. MSL): ok
DRILLING METHOD: ROTARY / AIR
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
									SANDSTONE, med grained, brown, relatively soft
50						54'			
									Shale w interbedded siltstone, blue-gray soft
75									Sandstone, predominately fine grained, brown
100									
125									V. hard siltstone @ 134'
									Shale, blue-gray soft
150									Stopped drilling @ 140' bls

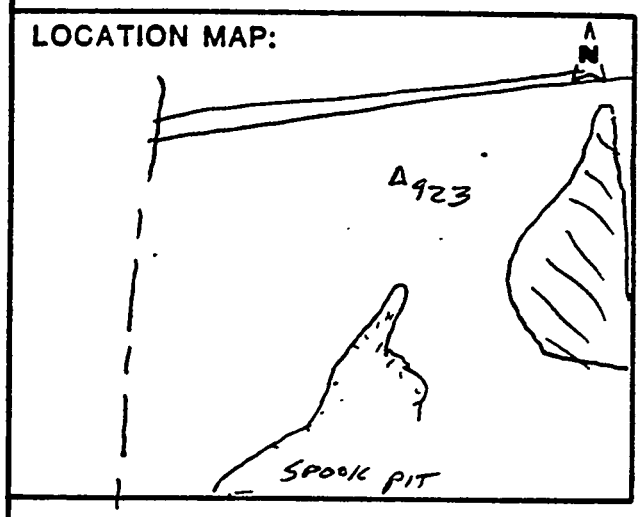
COMMENTS: NO SAMPLES SAVED - SEE SAMPLES SPK-01-921

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:



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

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION ABANDONED AIRSTRIP
SITE CONDITION Flat, grassy

DEPTH (FT)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	DISCONTINUITIES: SPACING (WIDE — CLOSE) 1	2	3	4	5	ORIENTATION (HORIZ. — VERT.) H		50°		V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
0																			Silty Shales, some fine sand, avg. brown, friable
25																			
50																			Sandstone, fine to med. grained, mod. hard, brown
75																			

COMMENTS: Grab samples taken @ 5' intervals

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

G-AL-ENG-2A (3/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

See pg 1 of 4

SITE ID: SPK-01 LOCATION ID: 923
APPROX. SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Rotary/Water
DRILLER: E. Trujillo
DATE STARTED: 8/18/87
DATE COMPLETED: _____
FIELD REP.: DC Hornquist

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: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
75											Silty shale, some sand, brown to gray, rel. soft
											Sandstone, prod. med-grained, and rock hard. brown
100											trace coal @95'
											occ. thin, hard siltstone layer @ 105+
125											
											NOTE: recovery shown @ 145
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

JEG-AL-ENG-2A (3/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

SEE PG 1 of 4

SITE ID: SPK-01 LOCATION ID: 923
APPROX. SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: Rotary/Coring
DRILLER: SUNRISE ENTERPRISES
DATE STARTED: 8/18/87
DATE COMPLETED: _____
FIELD REP.: D. Holmquist

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: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
225											NOTE: TR. coal in cuttings & mud pit
											Shale, sandy soft
250											Stopped drilling @ 242' bgs

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

SEE Pg 1 of 4

SITE ID: SPK-07 LOCATION ID: 923
APPROX. SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: ROTARY / WATER
DRILLER: SUNRISE ENTERPRISES
DATE STARTED: 8/18/87
DATE COMPLETED: _____
FIELD REP.: D. Hermanist

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: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
150											Shale, grey-brn, soft
											Sandstone, med. grained, brown.
											Shale, grey-brn, soft.
											Sandstone, m-fine, brown
175											Shale, grey-brown, soft
											Sandstone, medium, brown
											Shale, brn, soft
										192	Sandstone, fine, brn
											Shale, grey-brn, rel. soft
200											
										223	Sandstone, fine to med, brn
225											

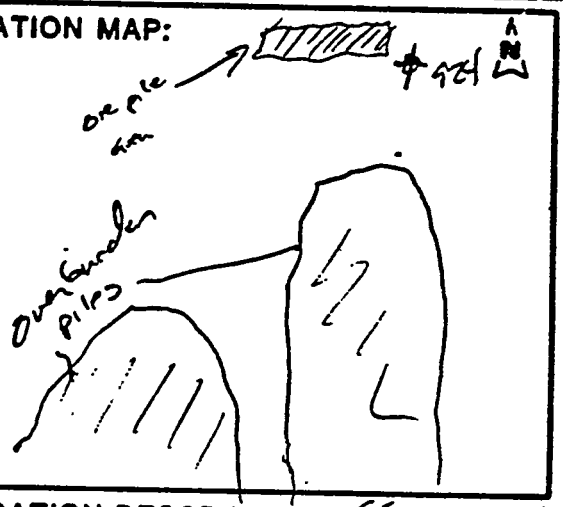
COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP:



SITE ID: SPK-01 LOCATION ID: 524
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): 5080 (estimated)
DRILLING METHOD: ROTARY/AUGER
DRILLING CONTR.: SUNRISE ENTERPRISES
DATE STARTED: 8/29/87
DATE COMPLETED: 8/30/87
FIELD REP.: D. Holmquist

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION SE 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
0									clayey sand, LP-mP, brn
									Sand/medm-sandstone, M-Fr, brown
25									Sandy shale, co-s.l. silt, brown
									Siltstones/Shales, brown
50									Sandstone, Fine to med, grey-brown
75									Sandstone, Med to Fine, grey-brown
100									NOTE: Tr. brown shale @105
									NOTE: FRACTURE & Tr. siltstone/123
125					(2)				Shale, blue-brown
									Stopped @ 130

COMMENTS:

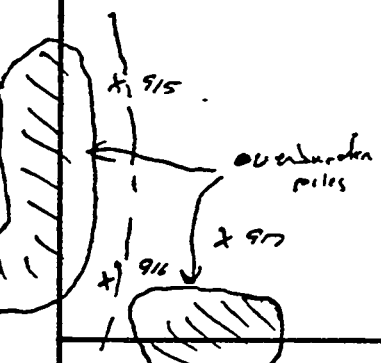
SAMPLE TYPE
A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

G-AL-ENG-2S (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:



SITE ID: SPK-01 LOCATION ID: 925
APPROX. SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: ROTARY / WATER
DRILLER: SUNRISE ENTERPRISES
DATE STARTED: 8/24/87
DATE COMPLETED:
FIELD REP.: O. Hommerist

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION W/in Drainage NE of site
SITE CONDITION grassy, rel. flat

DEPTH (FT)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	DISCONTINUITIES: SPACING (WIDE — CLOSE) 1	2	3	4	5	ORIENTATION (HORIZ. — VERT.) H		50°		V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
0																			Sandy silty clay, lt, brn
																			Sand, fine-med, soft, brn
																			Sandy shale, soft, brown, occ. sand lenses
25																			
																			Sandstone, m-fine, soft, brown
50																			Sandstone, fine to med, mod hard, red-brown
																			Sandstone, m-fine, rel. soft, brown
75																			Shale gray, soft 73.5-79'

COMMENTS: Stopped drilling @ TD = 79'
installed monitor well @ 77'

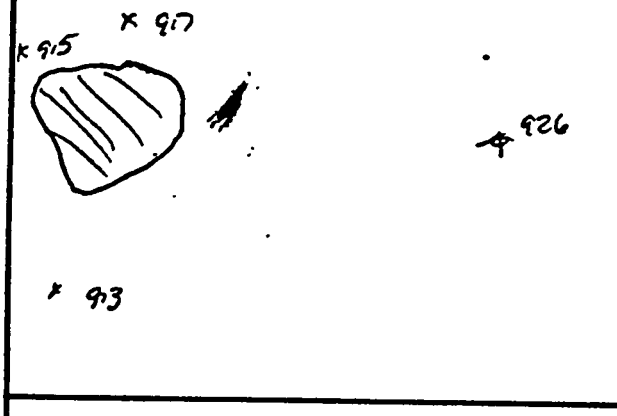
BORING OPERATION
H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
CB - CLEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

JEG-AL-ENG-2A (3/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:



SITE ID: SPK-01 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.: D. Holmquist

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION East of spoil pit & overburden piles
SITE CONDITION flat, grassy

DEPTH (FT)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	DISCONTINUITIES: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
10											clayey sand, fine, lt-me, brn
											Sandstone, prel-fine tonal brown soft
25											
											Shale, brown, soft
											Sandstone, prel-fine, brown, soft occ. tr. clays
50										51'	Shale, grey-blue, soft
											TD=65'
75											

COMMENTS:

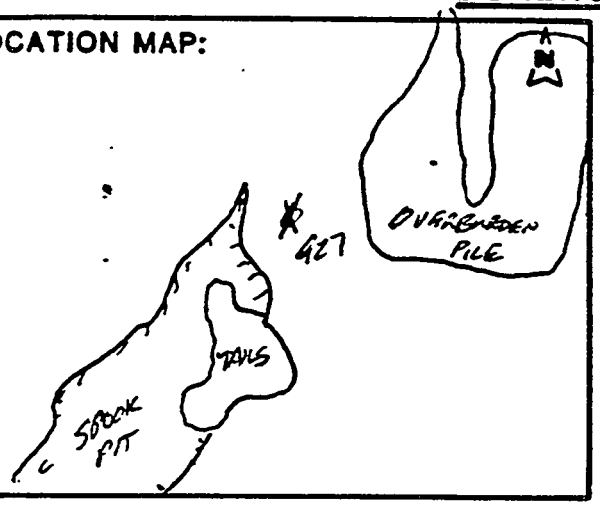
BORING OPERATION
H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NO - NO WIRELINE ROCK CORING

JEG-AL-ENG-2A (3/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP:



SITE ID: SPK-01 LOCATION ID: 927
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: ROTARY / WATER
DRILLING CONTR.: SUNRISE ENTERPRISES
DATE STARTED: 8/27/87
DATE COMPLETED: /
FIELD REP.: O Hammelist

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, tr. to some silt, tr. clay, LP, brn
									Sandstone, m. fine, brn
25									Sandstone, fine, yellow-brn, hard
									Shale, sandy, rel. soft, brown
50									INTERBEDDED SHALES/SANDY SILTSTONES
									Sandstone, M-Fine, brown, rel. soft
75									~~interbedded siltstone layers 80-end~~ 75-
									into bedded siltstones/sandstones, fine, hard, brown/grey-brown
100									Sandstone, M to Fine, grey-brn, soft (tr. coal @ 93')
125									Tr. shale @ 116'
									Shale, grey-brown
150									Stopped @ 125' b/s

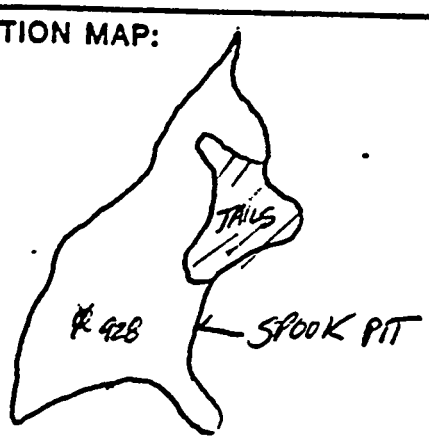
COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:



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: SUNRISE ENTERPRISES
DATE STARTED: 8/30/87
DATE COMPLETED: 8/31/87
FIELD REP.: O. Hamburg

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION SW corner of Spook pit
SITE CONDITION rel. flat, sandy

DEPTH (FT)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	DISCONTINUITIES: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
0		0	0					Rh	Hw	SS	Sandstone Medium grained poorly cemented rel. soft brown
		90	30	40+							
		95	50	90+							
10		98	0	90+							6" shale @ 15' 6" shale @ 16½'
		95	75	80+							
20								Smu	Mw	Sh	Shale, grey-blue, soft
		85	40	80+				Rh	Mw	SS	Sandstone, M-fine, grey-brown
								Smu	Mw	Sh	Shale, grey-brown, soft
30											Sandstone, medium grained, poorly cemented, brown

COMMENTS: NX core to 30'
BX rotary to 90'

BORING OPERATION
H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
CB - CEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

SPK 85 1 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: SUNRICE ENTERPRISES
DATE STARTED: 8/31/87
DATE COMPLETED: 8/31/87
FIELD REP.: D Hammonist

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: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
30								RR	MW	SS	Sandstone, Fine grained, grey-brown
		73	30	Good							Sandstone, Med grained, poorly cemented, brn
								Smo	MW	Sh	Shale, grey-brn, soft trace coal
40											Sandy shale, grey-brown, soft
		70	60	Good							
50											Standard 50'

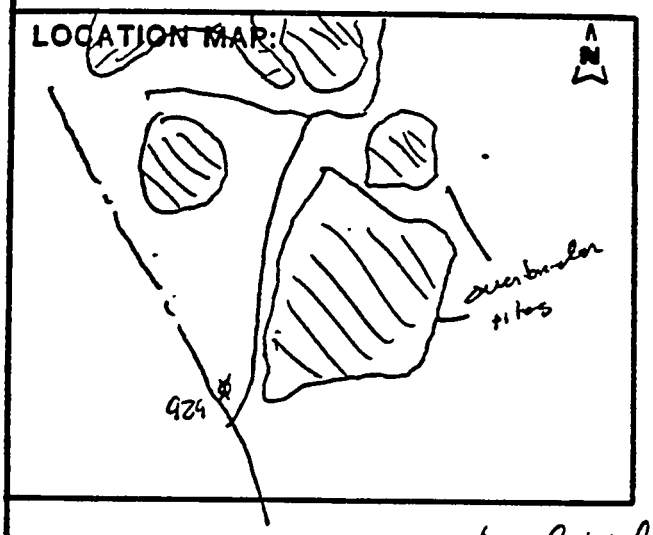
COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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/TRUCK
DRILLER: E Trujillo Sunrise Enterprises
DATE STARTED: 9/1/87
DATE COMPLETED: 9/4/87
FIELD REP.: Hummert

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
9/3/87	4:00	19" BGS

LOCATION DESCRIPTION within depleted sand pond
SITE CONDITION rel. flat, muddy, unsolid surface

DEPTH (FT)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	DISCONTINUITIES: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
0											
3	NA	0	0	50%							Silty sand, med to fine, brown
6											
9											note: 10' clay, HP, brn @ 3' surface
12											
22											
28											
31											
35											
50											
59											
64											
	NA										Shale, soft, gray brown
78											

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

JEG-AL-ENG-2A (3/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

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: NX core / rotary w. chisel / tricone
DRILLER: E. Triplito / Sunrise Enterprises
DATE STARTED: 9/1/87
DATE COMPLETED: 9/4/87
FIELD REP.: D. Holmquist

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: SPACING (WIDE — CLOSE) 1	2	3	4	5	ORIENTATION (HORIZ. — VERT.) H	50°	V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
25	NX	85	80	40							X						Sandstone
		90	80														Sandstone, med, grey-brown / med. bedded / jointed
		75	50														Shales / all thin bedded Sandstone, fine, grey
																	Stopped coring @ 100'

COMMENTS:

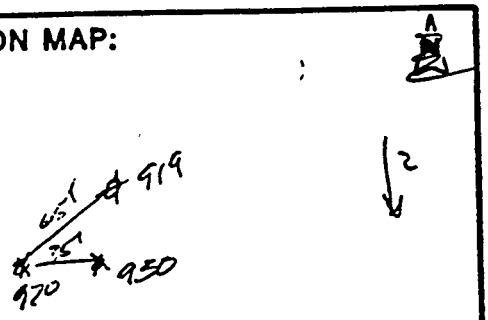
BORING OPERATION
H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NO - NO WIRELINE ROCK CORING

JEG-AL-ENG-2A (3/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:



SITE ID: SPK-01 LOCATION ID: 930
SITE COORDINATES (ft.):
N NK E NK
GROUND ELEVATION (ft. MSL): NK
DRILLING METHOD: Tricone Rotary Auger
DRILLING CONTR.: Sunrise Enterprises
DATE STARTED: 9/18/87
DATE COMPLETED: 9/10/87
FIELD REP.: R. Holmquist

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION 35' NE of 920
SITE CONDITION Same as 920

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	GB									SM	Silty sand, prod. medium to fine, gray-brown
25										SS	Sandstone, med to coarse, weakly cemented, brown
50										SLS	Siltstones, gray-brown, considerable interbedding w/fine sandstones, brown
										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 Stopped @ 100'

COMMENTS: Cuttings samples grabbed @ 5' intervals

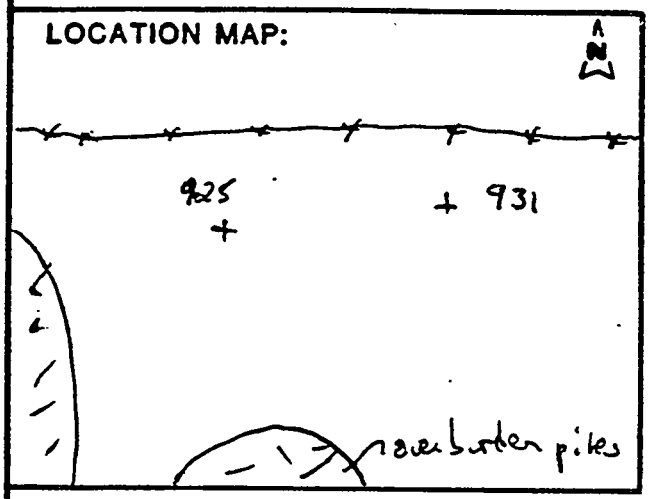
BORING OPERATION
H - 8 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:



SITE ID: Spt 01 LOCATION ID: 931
SITE COORDINATES (ft.):
N N/K E N/K
GROUND ELEVATION (ft. MSL): N/K
DRILLING METHOD: HSA
DRILLING CONTR.: Boyles / S Moore
DATE STARTED: 12/12/87
DATE COMPLETED: 12/13/87
FIELD REP.: J Frith

GROUNDWATER LEVELS

DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION East of 925, 150' S of fenceline
SITE CONDITION gently sloping south, grasses

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	Sample ID	ROCK TYPE & REMARKS
0											001	silty clay, tr sand, lt. brn, dry
10											002	
											003	Sandstone, Fine, med hard, lt. gray
20											004	Sandstone, Fine to med, soft; red brn.
30											005	claystone, - soft, gray
40											006	sandstone, fine to med, soft, red-brn. color change to lt. brn.
50												

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
NQ - NQ WIRELINE ROCK CORING

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

SITE ID: Sp k01 LOCATION ID: 931
SITE COORDINATES (ft.):
N N/K E N/K
GROUND ELEVATION (ft. MSL): N/K
DRILLING METHOD: rotary air
DRILLING CONTR.: Boyle's Bros / S Moore
DATE STARTED: 12/12/92
DATE COMPLETED: 12/13/92
FIELD REP.: T Frith

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	sample ID	ROCK TYPE & REMARKS
50											007	
												Sandstone, med, soft. lt. brn
60												Sandstone. Fine to med, soft, lt. brn
70											008	
80												
90												
											009	Shale, soft blue gray
100												Stop drilling at 98'

COMMENTS: moist at 76'
Makes lots of water 88 - 98'

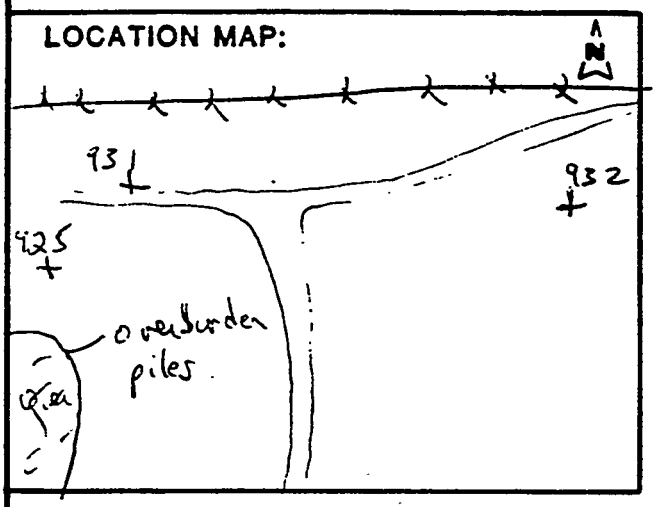
BORING OPERATION
H - 6 1/2 HOLLOW STEM AUGER
C - 4 1/2 CONTINUOUS FLIGHT AUGER
GB - GEAR BIT
NX - NX ROCK CORING
NQ - NQ WIRELINE ROCK CORING

JEG-AL-ENG-2A (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:



SITE ID: Spk91 LOCATION ID: 932
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: rotary air
DRILLING CONTR.: Baker Bros / S Moore
DATE STARTED: 12/3/87
DATE COMPLETED: _____
FIELD REP.: J Frith

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
12/14/87	11:45	123'

LOCATION DESCRIPTION N of airstrip 300' NE of 923, 135's of EW Fenceline
SITE CONDITION gently sloping SE, grasses

DEPTH (FT.)	BORING OPERATION	% CORE RECOVERY	% ROCK QUALITY DESIGNATION (RQD)	% DRILLING FLUID RECOVERY	PACKER TEST INTERVAL	SPACING	ORIENTATION	CONDITION	WEATHERING	LITHOLOGY	Sample ID	ROCK TYPE & REMARKS
0											001	silty clay, some sand, brn, dry soft
10											002	siltstone, soft, brn, dry. increasing sand
20												
30											003	~~Sandstone~~ sandstone, fine, yellow-brn.
40												
50												

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

SITE ID: Spb6 LOCATION ID: 982
SITE COORDINATES (ft.):
N _____ E _____
GROUND ELEVATION (ft. MSL): _____
DRILLING METHOD: rotary air
DRILLING CONTR.: Boyles / S Moore
DATE STARTED: 12/13/87
DATE COMPLETED: _____
FIELD REP.: J Fritts

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	Sample ID	ROCK TYPE & REMARKS
50											004	
											005	silty shale, lt. brn, med hard. some fine sand
60												
											006	~~Fn~~ sandstone, fine, lt. brn soft.
70											007	sandstone, f-m to med, yellow brn, med
												rust-colored — 1' vein SS
80												~~tan~~ colored (same lithe)
												hard drilling 84-87!
90											008	1' shale seam, gray.
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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

SITE ID: Spk 01 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	Sample ID	ROCK TYPE & REMARKS
100												
110												6" yellow-brn ss
											~~Shale~~ 009	, blue gray, med. hard shale, minor coal.
120												sandstone, fine to med. lt. brn. soft moist
130												
											010	tr coal
140											011	coal
												Stop drilling at 143
150												

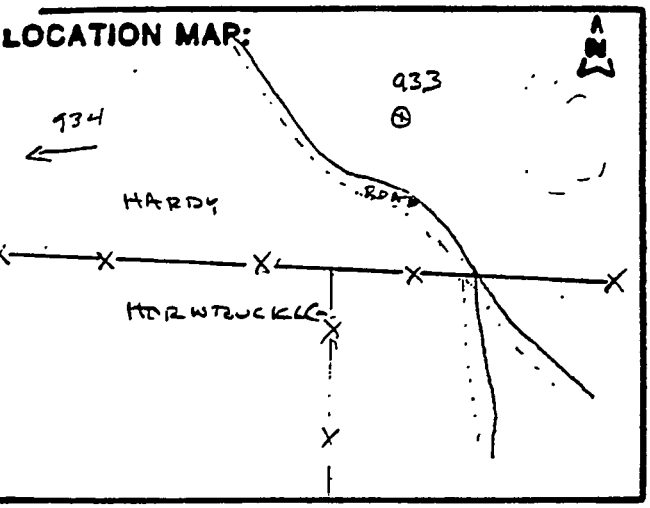
COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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. METZLER

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION ON HARDY LAND, 75' west of small rise
SITE CONDITION mod. flat, sand and coarse 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 organics topsoil contact 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 - 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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 shale/clay red s.s.
55					11			SM	fine poorly graded, well sorted red iron ox. sandstone, clayballs abundant
60					12			SM	tan-yellow dry mod. 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. thin-walled Shelby tube

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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, moo to well sorted sandstone
80					16			SM	red, med grain, iron rich sandstone
85					17				med to coarse well rounded, sperical 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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					19			SM	brown silty fine to med. sandstone Litric clasts.
100					20			✓	brown silty fine sandstone
105					21			✓	hd 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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: 7-28-88
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
									no sample: poor return
125					~~25~~				same
									wet sample
130					25			sm	br. fine sandstone,
									Drilling becomes hd.
135					26				extremely hd. dense blue-grey Dark claystone.
									T.D. 135'
									4:30 pm

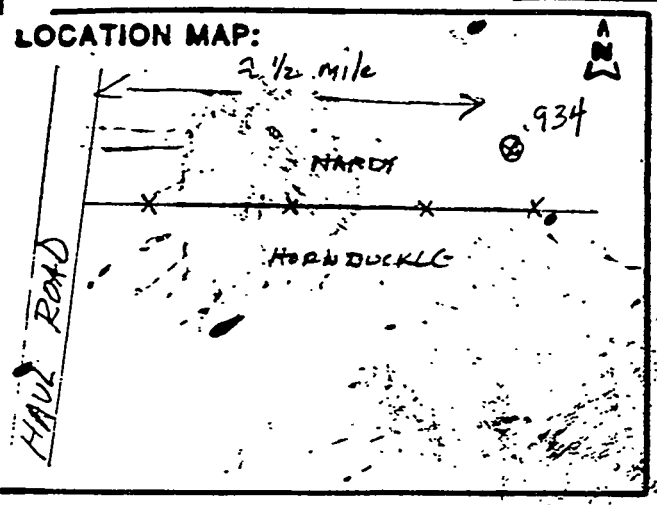
COMMENTS: 1.3'/min : drilling time

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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. Metzler

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION: Gen. mod. flat incised drainages, in close prox.
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	X				01			SC	Br. DRY SILTY-CLAY sand w/ Rootlets	
10	X				02			SC	reddish-brown clayey sand slightly moist	
									? contact topsoil s.s. ?	
15	X				03			SW/SC	Yellow tan, moist clayey fine well sorted lithic sandstone, "wacke"	
									injected water	
20	X				04			CL/ML	wet. br. fine sand to silty lean clay.	set surface casing
									7-28-88	
25	X				05			CL/CH	Lt. Br. Sat. lean to fat silty clay	
30					06			CL/CH	soft to hard Lt. Br. lean to fat silty clay / claystone.	

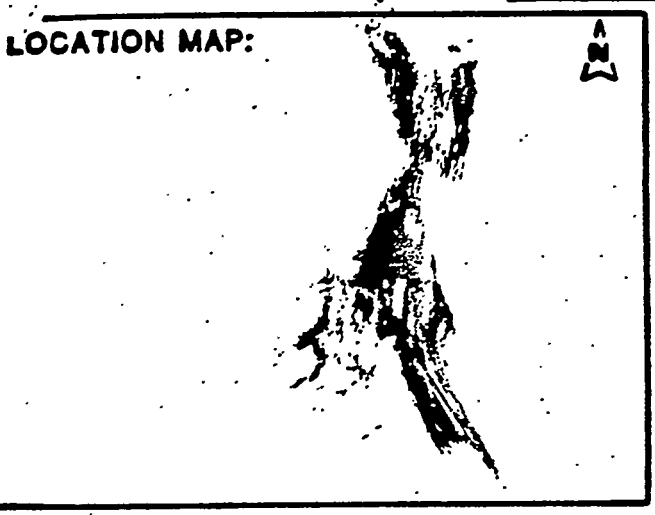
COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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.	N VALUE	USCS	VISUAL CLASSIFICATION
35	X				07			CL/CH	Loose to firm massive variable brown plastic claystone
									Contact claystone organic - clays
40	X				08			OH	wet, DK. chocolate brown organic rich - peat - ? - Lignite clays.
45	X				09			OH	DK Br. fat clay, organic rich Lateral w/ coal
									Contact organic clay Blue shale
50	X				10			CH	wet, Grey-blue claystone shale
55	X				11			CH	same
									Contact blue shale
60	X				12			CL/CH	earthy red soft muddy 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. thin-walled Shelby tube

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP:

SITE ID: SP16-15 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	X				13			SM	wet, tan brown, silty sand
70	X				14			SM	Lt. brownish-tan silty fine sand, lithic
									hard drilling - - - - - - - - - ?
75	X				15			SM	same
80	X				16			SM	Lt brown to tan, lithic fine sands
85	X				17				tan-red well cement fine to coarse
									rounded qtz., iron ox stained s.s.
90	X				18			SW	red-brown iron rich, poorly sorted qtz. s.s.

COMMENTS: Wet 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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 qtz s.s.
105	X				20			SM	wet, grey brown moderately sorted little sandstone "wacke"
110	X				21			SM	same moderately sorted qtz grains
115	X				22			SM	same
117	X				23			OH	Dk. chocolate br. coaly sandy shale
120	X				24			CL	Blue-gray claystone — note samples coming late!

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP: A N

SITE ID: SDV-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
125	X				25			CL	Blue gray claystone: sample contains much cut of sand from boring wall contamination.
130	X				26			CH/CL	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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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.	N VALUE	USCS	VISUAL CLASSIFICATION
									TOP SOIL
5	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.
									contact top soil — s.s / ALLUVIUM ?
5					03			SM	Yellowish-tan fine grain, mod. sorted lithic s.s., mostly qtz. grained
0					04			SM	tan fine grain s.s. minor opaque minerals
25					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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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, slighty moist poorly sorted fine Lithic s.s. some FeOx
40	X				08			SM	Yellowish Dr tan, slighty moist poorly sorted lithic s.s.
45	X				09			SM	tanish-Yellow poorly sorted fine to medium grained Qtz. s.s.
									contact ____ s.s. ____ ____ ____ 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 claystone, sample wet. highly plastic
									contact ____ claystone ____ s.s ____
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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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, mod sorted, rounded lithic s.s. w/ small FeOx concretions loosely cemented.
75	X				15				tanish-grey poorly to mod sorted med grained qtz s.s with occasional very-red clay/ gouey laminated thin stringers. qtz grains angular to sub round.
80	X				16				reddish-rose silty s.s.
85	X				17			?	very hard, well cemented blue lithic well rounded qtz, 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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, course grain s.s.

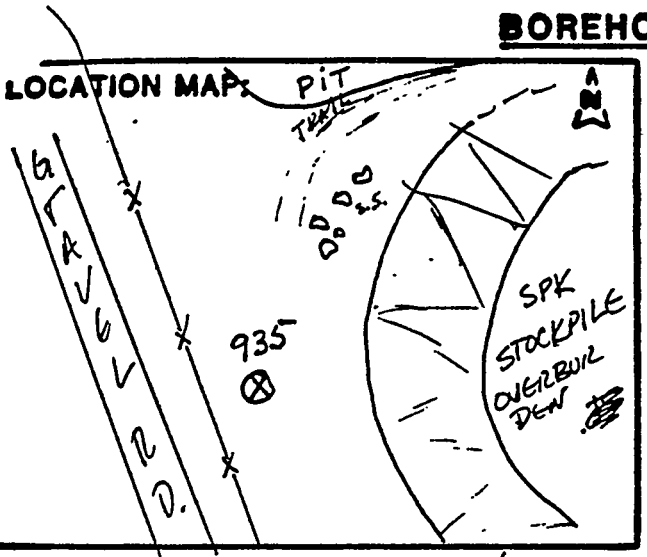
COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP:



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. METZLER

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 HORNBUCKLE RD. SPARSE GRASS AND SAGEBRUSH

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

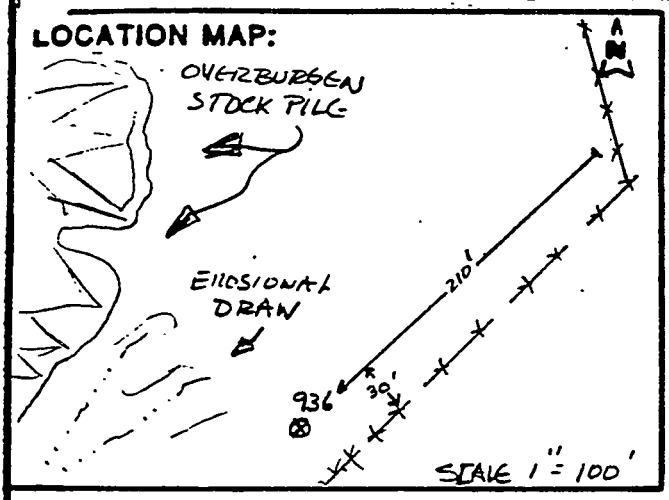
COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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. MOELLER

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, safe.

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
									ALLUVIUM
10	X				02			SC/CL	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/ Lithic 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 Predominately qtz grains, minor FeOx stain ~~Poorly~~ sorted SILTY sand, moist
25									
30	X				06				

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

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 RETAINED	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. PRT 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 s.s. wet
55	X				11				med grain, rounded, qtz in a red cemented matrix.
60	X				12				MOD. well sorted, rounded qtz grains

COMMENTS: Injected H_2O at 42' after drill string became stuck.

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

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 RETAINED	TYPE	ID	BLOWS PER 6 in.	N VALUE	USCS	VISUAL CLASSIFICATION
65	X			4	13				Lt. tan well rounded, predominantly qtz grained sandstone, ARENITE TYPE S.S.
70	X			6	14				Med. to course qtz grained S.S. with some lithic grains rounded to well rounded.
75	X				15				Med. to Med-course S.S.
80	X				16				Med size grains, rounded pred. qtz. ARENITE S.S.
85	X				17				same
90	X				18				mod. sorted. rounded, mostly qtz 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. thin-walled Shelby tube

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP: N

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.: MFTL GAR

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			b	19			CH	mostly qtz s.s. with DK hd. shale, ? STRINGERS IN the S.S.
									S.S shale / claystone
100	X				20			CL	STIFF / hard DK grey / Blue claystone w/ S.S. present. NOTE: the S.S. could be contaminant from higher interval ? claystone is massive, shale is highly Laminated, T.D.
105									NOTE: MOST probable color change noticed at 95'0
110									EXTENTED BORING 7-16-88 GREYISH - BLUE SILTSTONE / SHALE
									greyish blue claystone
115								CH	hd laminated blue clay stone high Plasticity
								CH	Bluish DK ~~Gray massive~~ claystone High Plasticity
120									FINAL T.D. 120'0

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

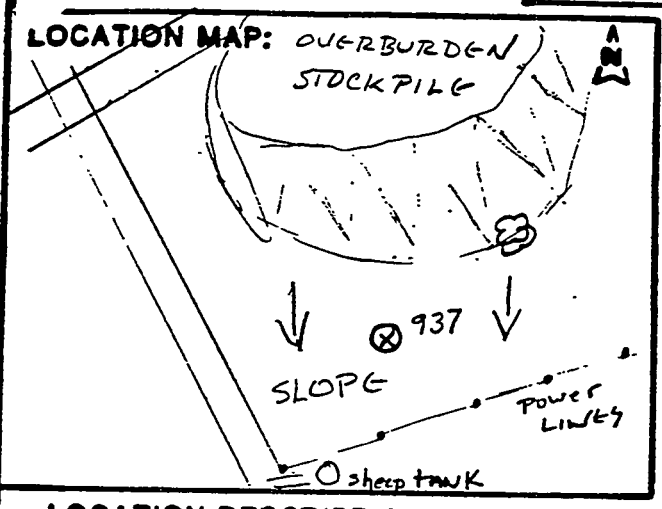
SAMPLE TYPE
A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

EG-AL-ENG-2S (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP:



SITE ID: SPK-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									TOPSOIL, ALLUVIUM
5	X			G	01				MOD. DRY BROWN SILTY SAND
10					02			SM	THIN BR SILTY SAND
15					03			SM	Brownish tan - silty fine sand
20					04			SM	SAME
25					05			SM	Poorly sorted Br. tan. fine silty sand,
30					06				SAME

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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
									INJECTED CLEAR WATER
40					08			SM	TAN-BR. SILTY SAND
									10-20% 2mm rounded qtz grains. BEDROCK
45					09			SM	SILTY TAN qtz. S.S.
50					10				tanish silty med. grain rounded s.s.
55					11				Same very fast drilling
60					12				

COMMENTS: not 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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
80									no sample intill 85-90'
85									
90	X				18				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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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
									BECOMES HARDER ?
92									
94									CONTACT . S.S . ? SHALE
95	X				19			CL	SILTY S.S. CONTAMINATED w/ The Blue shale, possible coal stringer
									shale / claystone wet
100	X				20				wet, Blue shale / claystone
									T.D. 100'
									cleaned hole w/ injected water.
									NOTE: wet samples Are not field identified extensively!
									DM.

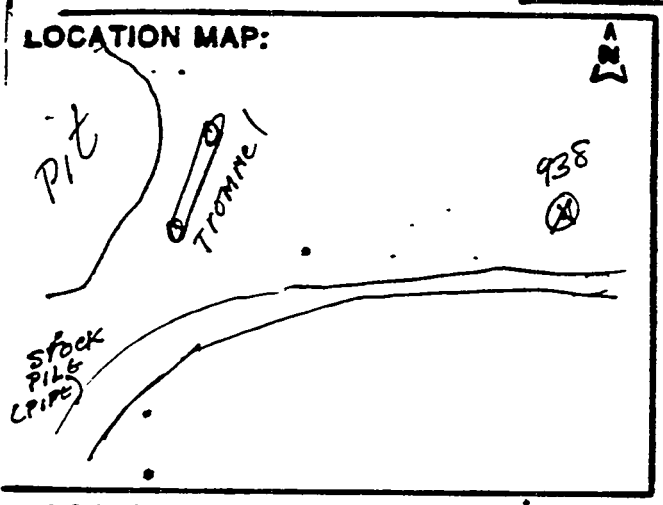
COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP:



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

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
7-20-88	10:00 AM	? 180.0

LOCATION DESCRIPTION East of Spock Pit ~ 600'
SITE CONDITION Gently slope, sparse bars of 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.
									Contact tan coarse S.S. / red fine. S.S.
20	X				04				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 dom. 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

EG-AL-ENG-28 (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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. METZLER

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)
7-20-88	800 am	≈ 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				SLIGHT moist Reddish-tan, loose, poorly sorted, qtz. s.s.
40	X				08				same
45	X				09				Reddish-tan poorly sorted coarse sand (wet sample)
50	X				10				same
									contact s.s. / Blue shale
55	X				11				Grey moist silty claystone
									very fine rounded qtz grains in a clay matrix.
60	X				12				Grey blue moist massive qtz. siltstone

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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				dense claystone
100					20				dense Blue-grey claystone, sub lignite coal stringers. Tar coating on claystone fracture surface.
105					21				
110					22				
115					23				shale w/ hard black bituminous coal, concoidal 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

G-AL-ENG-28 (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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
125	X			G	25			CL	blue / grey 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 / grey claystones w/ occasional chips of hard coal. abundant soft clay.
145	X				29				mostly blue / grey 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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 grey claystone, ~~no sample~~ coal stringers
165	X				33				hard dense blue/grey shale
170	X				34				blue - grey claystones shales minor coal fragments.
175	X				35				blue and grey shales claystone soft drilling.
180	X				36				blue 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP: 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
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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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
215	x			G	43				Mostly hd. Black coal, grey shale laminated soft
									Lots of water coming up hole.
220	x			G	44				same
225	x				45				Lots of water: Blue-grey shales coal minor fine sand?
230	x				46				same
									contact _____ claystone _____ sandstone
235					47				Lots of water Predominantly fine sandstone qtz rich.
240					48				angular to rounded medium grained mostly qtz. sandstone

COMMENTS: making H_2O at 220'
High Volume H_2O 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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
									distinct "oil" smell emanating from hole.
245	X				49				med to coarse sands, large chucks of hd black concoidal fractured bitu. coal. some shales of claystone. contact
250					50				water becomes earthy brown to black
									bituminous coal, minor sand
									T.D.

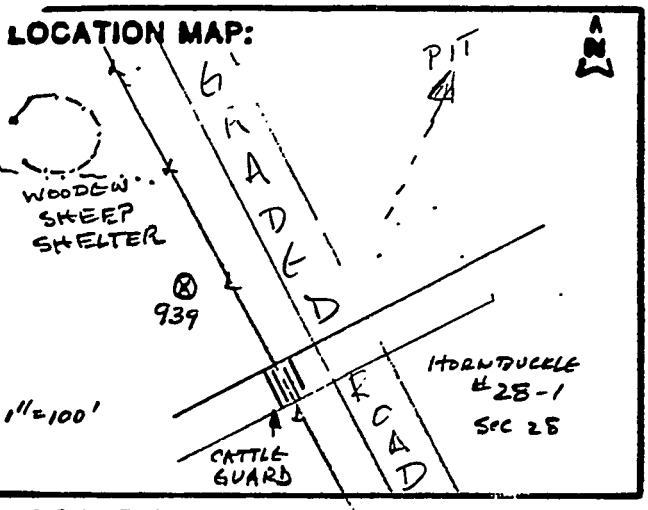
COMMENTS: close to 50 gal / min

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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: 7-16-88
DATE COMPLETED:
FIELD REP.: D. METZLER

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. BR. 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 qtz. grained moist arenite minor Lithic frags. drilling easier.
25					05				moist tan-br poorly sorted SILTY sand qtz grains sub rounded grain size .5-20 MM
30									less fines more rounded qtz grains more sorted qtz. 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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
									Probably sand dune (wind blown) deposition
35	X				07				Sorted into 2 distinct qtz grain dia.s sub rounded, minor dark minerals, slightly moist, Lt tan arenite type s.s.
40	X				08				Moist Reddish tan poorly sorted minor lithic, mod. rounded s.s. trace FeO_x strain
45	X				09				poorly sorted, reddish tan s.s. hd. stringer ≈ 1-2' thick rose colored, well cemented
50	X				10				poorly sorted, s.s.
55	X				11				poorly sorted, wacke stone some shale frags. Mod. br
60	X				12				Moist, Lt. tan poorly sorted angular to sub rounded, mostly qtz 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. thin-walled Shelby tube

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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 qtz grains with some clay balls.
70	X				14				mod sorted, Fine sand w/ clayballs
75	X				15				Moist, DK tan, poorly sorted medium grain s.s. large % lithics
									Contact
80	X				16				Moist, tan, well sorted, fine Sandstone
									CONTACT
85	X				17				Dr. Red Fe cemented S.S w/ odiferous Layer of sub Lignite
									Moist DK Gray sandy shale w/ Coal stringers, soft Laminated shales.
90									T.D.

COMMENTS: _____

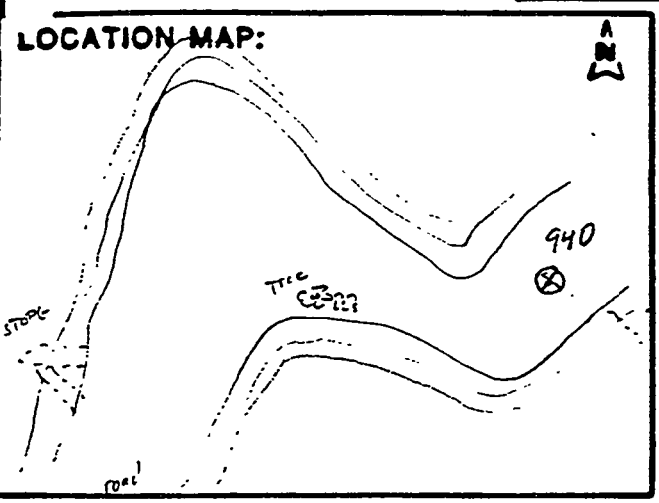
SAMPLE TYPE
A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D. 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

EG-AL-ENG-28 (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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 METZLER

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
									loose, moist, lt. tan poorly sorted sands.
5					01			SM	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.
									▽ WATER TABLE: OBSERVED SATURATED
20					04			SM	Moist - wet Reddish tan poorly sorted s.s.
25					05			SM	saturated tan br. sandstone, lithic
								OH	Contact s.s.
30					06			PI	Sandstone / Coal coal

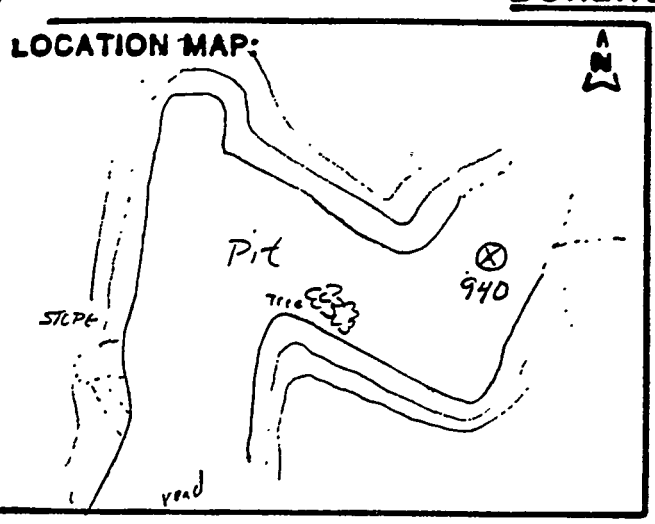
COMMENTS: loose sands caving near surface

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP:



SITE ID: SOV-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					07			SM/CL	Grey claystone w/ lithic sandy
40					08			CH	Bluish grey soft fat claystone
45					09				claystone: high % sand contamination
50					10				claystone: high % sand contamination
									T.D. 50
									12 30 pm

COMMENTS: _____

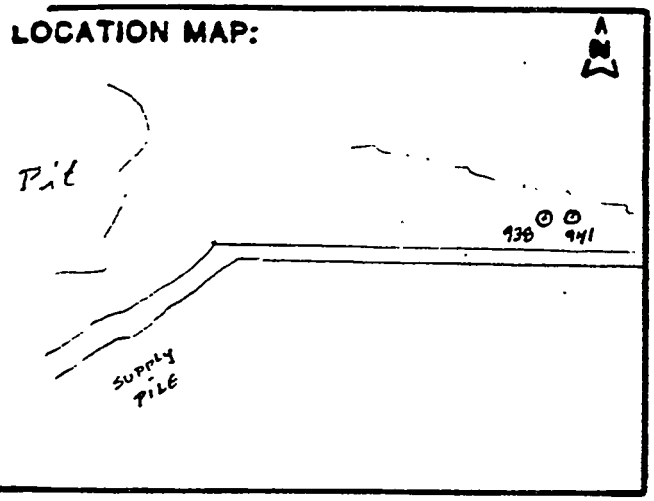
SAMPLE TYPE
A - Auger cuttings
S - 2" O.D 1.38" I.D. drive sample
U - 3" O.D 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

G-AL-ENG-2S (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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. METZLER

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

LOCATION DESCRIPTION Gently rolling topo. on a mod. sloping surface S. of drainage
SITE CONDITION Sparse 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
5	X				01			CL	Contact topsoil / S.S.
0	X				02			SM	Brownish tan, moist poorly sorted sand stone, 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-blacks mineral clasts.?, in a hard well cemented dense sandstone lense.
20					04			SM	Moist tan poorly sorted fine S.S.
5	X				05				coarser poorly sorted lithic rose-S.S. orangish-tan fine silty sand
30					06				slightly moist orangish-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. thin-walled Shelby tube

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP:

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								CL/CH	fine grain massive claystone both DK
	X				10				Grey and DK. Brown, plus s.s. contam from boring wall
									contact Grey clayst. / Blue shale
55	X				11			CL	Blue-Greenish Grey silty shale
									easily broken, mo. firm.
60	X				12			CL	soft to firm Blue shale w/ sandy grey shales and DK Grey fissle 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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: 7-26-88
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
									NOTE: OIL LIKE RESIDUE FLOATING ON CUTTINGS.
65	X				13			SM/CL	Blue/grey shales w/ rounded atz grains and abundant red oxide clasts.
70	X				14			CL/CH	Blue-green shales/claystone w/ large frags of Brown to Black petroliferous shale or Lignite ?
75	X				15			CL/CH	same as above
80	X				16				soft to firm Blue/grey claystones shales. T.D. @ 80'

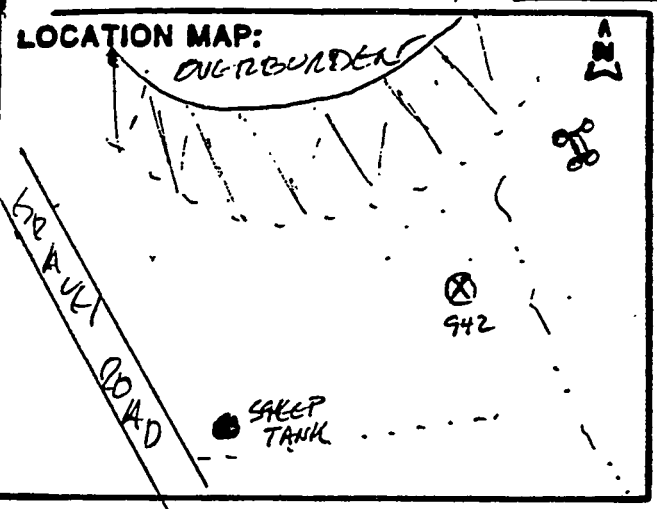
COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP:



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.: D METZLER

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 - 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

EG-AL-ENG-28 (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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
									? CONTACT ?
									High FeOx S.S.
35	X				07			SP	SLIGHTLY MOIST REDDISH tan SILTY fine sand, mod. sorted, mostly qtz. grains, some lithic grains.
40	X				08			SP	SLIGHTLY MOIST, REDDISH tan, fine to Med qtz rich qtz sandstone, FeOx present coating qtz grains
45	X				09			SP	Pinkish-Red fine sand, moderately sorted
50	X				10				Pinkish-red, well sorted fine qtz S.S. w/ Abundant FeOx
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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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
									S.S. CONTACT / olive claystone
65	X				13			cl	moist, hard, olive claystone
67									note: injected H_2O ...
70	X				14			ch	olive claystone
									CONTACT: olive claystone / blue shale
75	X				15			cl	wet sample. Bluish-green claystone / shale
80	X				16			cl	wet sample: grey shaley siltstone / claystone
85	X				17			ch	hard Dr. grey massive claystone some minor siltstone
									T.D. 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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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

COMMENTS: _____

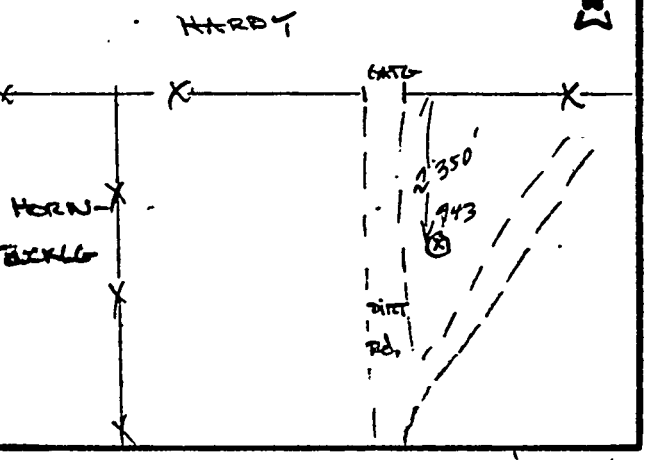
SAMPLE TYPE
A - Auger cuttings
S - 2" O.D. 1.38" I.D. drive sample
U - 3" O.D 2.42" I.D. tube sample
T - 3" O.D. thin-walled Shelby tube

G-AL-ENG-28 (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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 Horsbue/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 atz. s.s., (leached zone)
15	x				03			sm	rose-red, dry fine to med iron stained atz s.s. angular to sub rounded grains.
20	x				04			sm	same
25	x				05				slighty moist rose-red fine grain iron stained lithic s.s, poorly to mod. sorted, mostly sub angular grains cemented hd. s.s. lense
30	x				06				slighty moist, red fine s.s. some silt

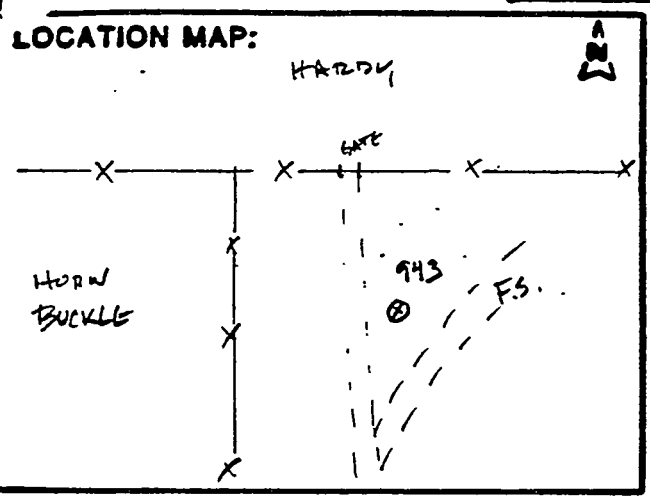
COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP:



SITE ID: SDV-13 **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.	N VALUE	USCS	VISUAL CLASSIFICATION
35	X				07			SM	slight moist, red, iron matrix angular fine s.s. lithic clasts some SILT size particles
40	X				05			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 mod 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. thin-walled Shelby tube

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (ROCK)

LOCATION MAP:

ran out of soil boring logs

SITE ID: SPL-15 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: SPACING (WIDE — CLOSE) 1 2 3 4 5	DISCONTINUITIES: ORIENTATION (HORIZ. — VERT.) H 50° V	CONDITION	WEATHERING	LITHOLOGY	ROCK TYPE & REMARKS
										SS	s.s
62											contact
											coal stringer
											grey shale/ claystone
65	R									sh	Grey Plastic shale
70											firm blue grey claystone/ shale
75											Blueish grey claystone

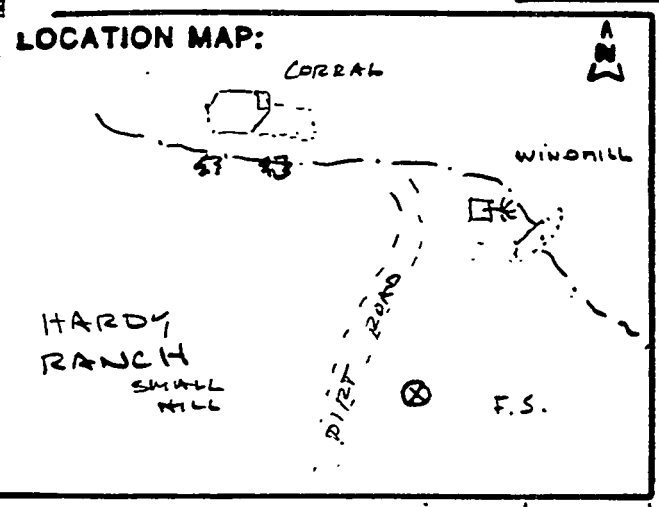
COMMENTS: T.D. 75' 11 30 am

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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. METZLER

GROUNDWATER LEVELS		
DATE	TIME	DEPTH (ft.)

LOCATION DESCRIPTION 400' South of HARDY'S WINDMILL
SITE CONDITION MODERATELY FLAT SPARSE SAGE & 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 fraction
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. thin-walled Shelby tube

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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
35	X				07			SC	Moist br. clayey fine sand
									intercept water
40	X				08			CL	Br. sandy lean clay
45	X				09			CL	Br. lean clay
50	X				10			CL	Br silty lean clay
									GRADATIONAL CHANGE:
55	X				11			SC	Brown-tan, clayey sand.
60	X				12			CL	Brown-tan silty clay

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

LOCATION MAP:

SITE ID: 60K-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				same
77	X				15				same
									? contact fine silt/s.s. red s.s. ?
80	X				16			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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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			SM	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, mod sorted lithic qtz s.s.
120					24				WATER BEARING coarse s.s. / 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

G-AL-ENG-2S (4/85)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE LOG (SOIL)

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
									NOTE 25 sample contaminated w/ blue-gy.
125	X				25				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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

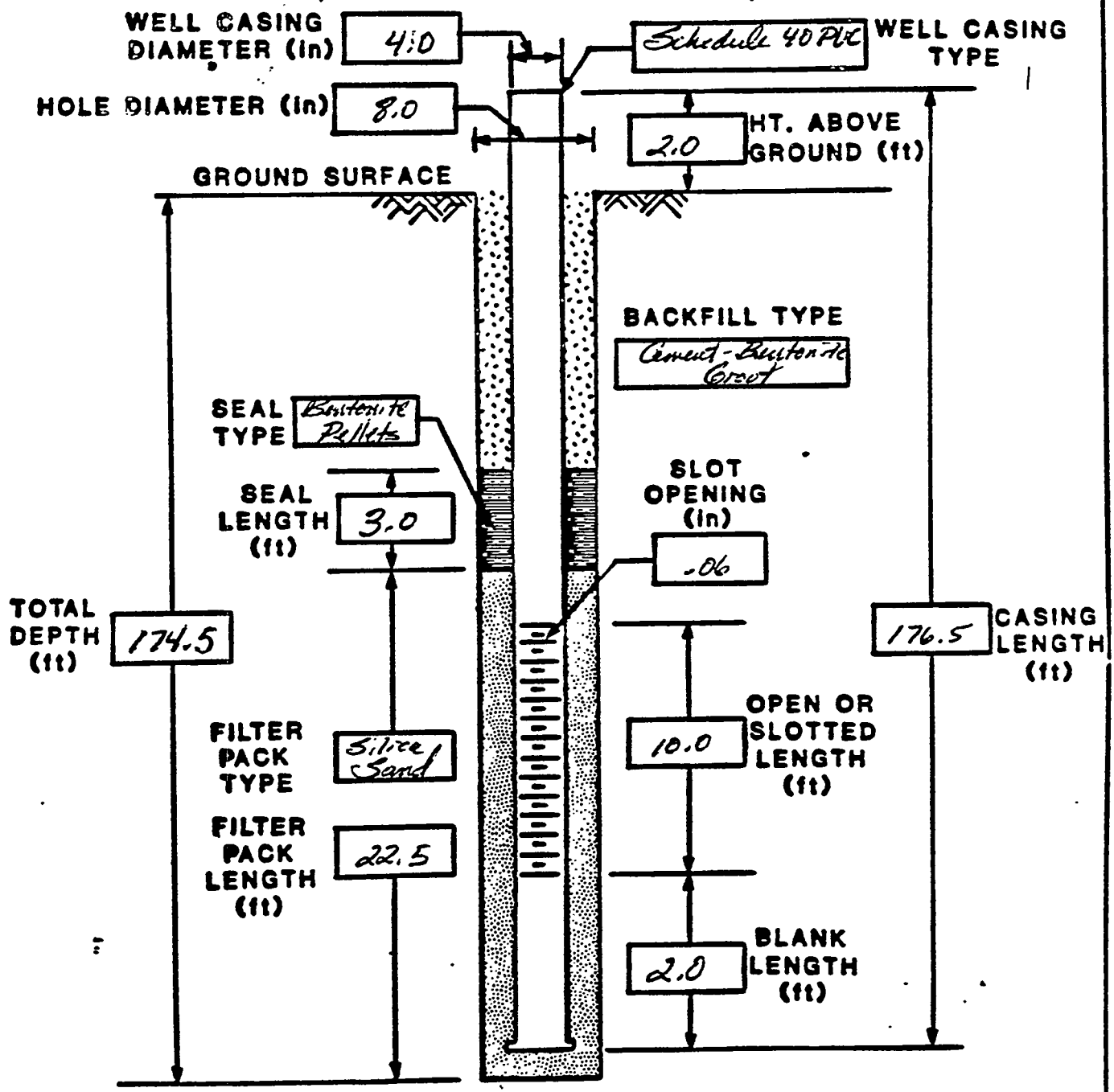
SITE ID: SPK LOCATION ID: 900 910 DATE INSTALLED: 11-26-86

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) _____

FORMATION OF COMPLETION: Wasatch (Sandstone)

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



COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK LOCATION ID: ~~900~~ 910 FIELD REP: L. Phyfe

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

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

BOREHOLE SUMMARY

DRILLER: Bayles Bros.

RIG TYPE: Failing 1500

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

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END✚ DEPTH (ft.)
*P	Protective Steel	8 3/8	5.5
B	Schedule 40 PVC	4.0	162.5
S	Sch. 40 PVC (.06)	4.0	172.5
B	Schedule 40 PVC	4.0	174.5
	* 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.)
B	Cement-Bentonite Grout	149.0
S	Bentonite Pellets (1/4")	152.0
F	Silica Sand (8-12)	174.5

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

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

WELL DEVELOPMENT

12-20-86	Ph	Ec (uMhos)	Temp C°
11:45	8-9	75	9
12:00	6-7	80	10
12:15	6-7	120	12
12:30	6-7	140	11
Stop			

COMMENTS: Ec Meter ID # 12764
Developed with air until water was clear & sed. free - Ph 6-7
Ec 140 (uMhos)

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

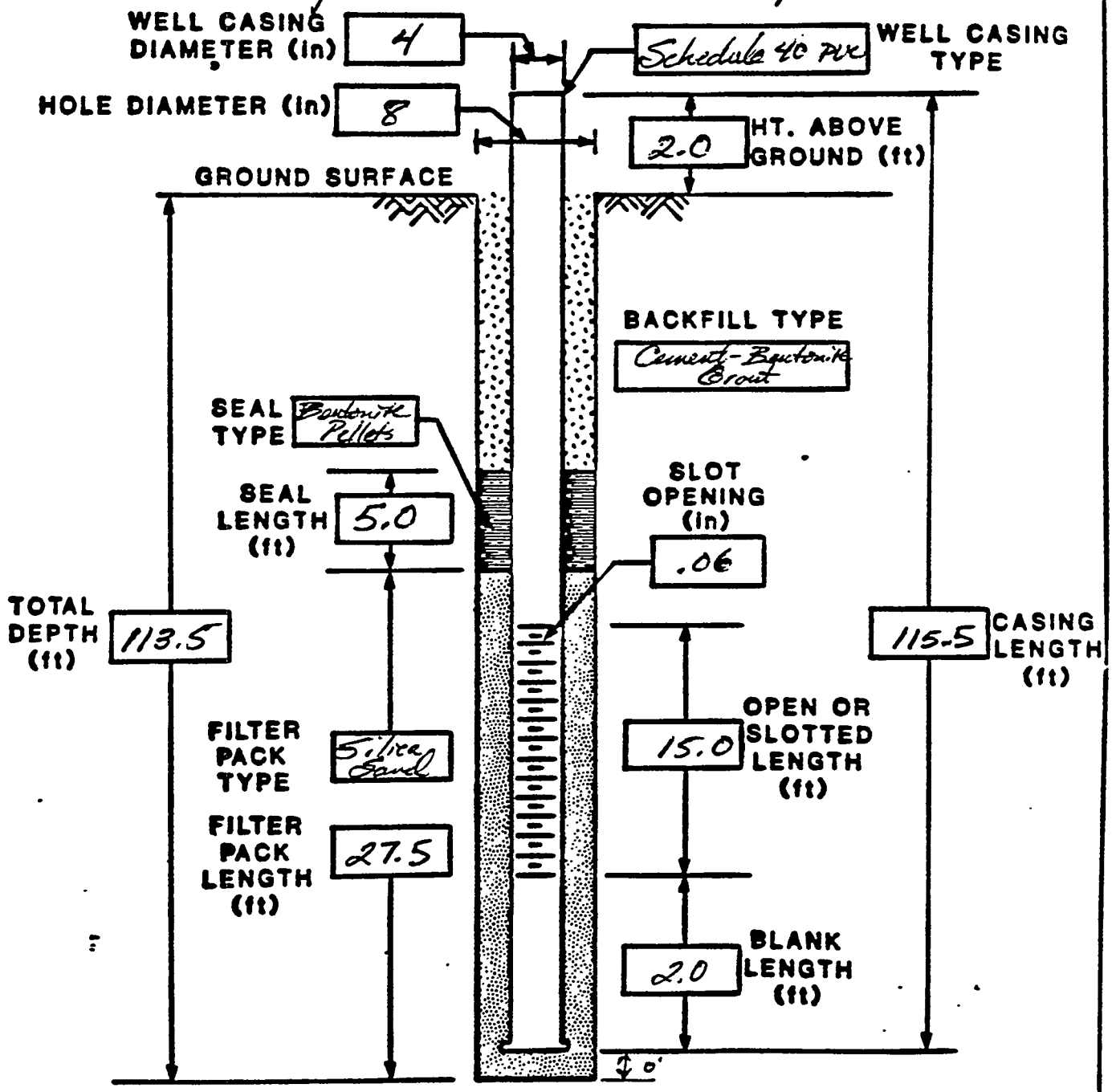
SITE ID: SPK-01 LOCATION ID: 901 911 DATE INSTALLED: 11-24-86

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) _____

FORMATION OF COMPLETION: Wasatch (Sandstone)

FIELD REP.: L. Pluyte DRILLER: Bayles Bros.



COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

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

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

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

BOREHOLE SUMMARY

DRILLER: Boyles Bros.

RIG TYPE: Failing 1500

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
Blade bit	8	113.5	Air

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END✚ DEPTH (ft.)
* P	Protective Steel	8 3/8	5.0
B	Schedule 40 PVC	4	96.5
S	Sch. 40 PVC (.06")	4	111.5
B	Schedule 40 PVC	4	113.5
	*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.)
B	Cement-Bentonite Grout	81.0
S	Bentonite Pellets (1/2")	86.0
F	Silica Sand (8-12)	113.5

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	11-23-86	2:04	3:45
CASING	11-24-86	10:00	10:57
FILTER PACK	11-24-86	11:00	12:30
SEAL	11-24-86	12:30	2:20
BACKFILL	11-24-86	2:40	4:50
DEVELOPMENT	12-20-86	9:30	11:00
OTHER			

WELL DEVELOPMENT

12-20-86	Ph	Ec (µMhos)	Temp (C°)
9:45	6-7	20	9
10:15	6-7	50	9
10:35	6-7	50	10
10:50	6-7	55	11

COMMENTS: Ec Meter # 12764
Developed with air until water was clear & sand free. Used litmus to check Ph.

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

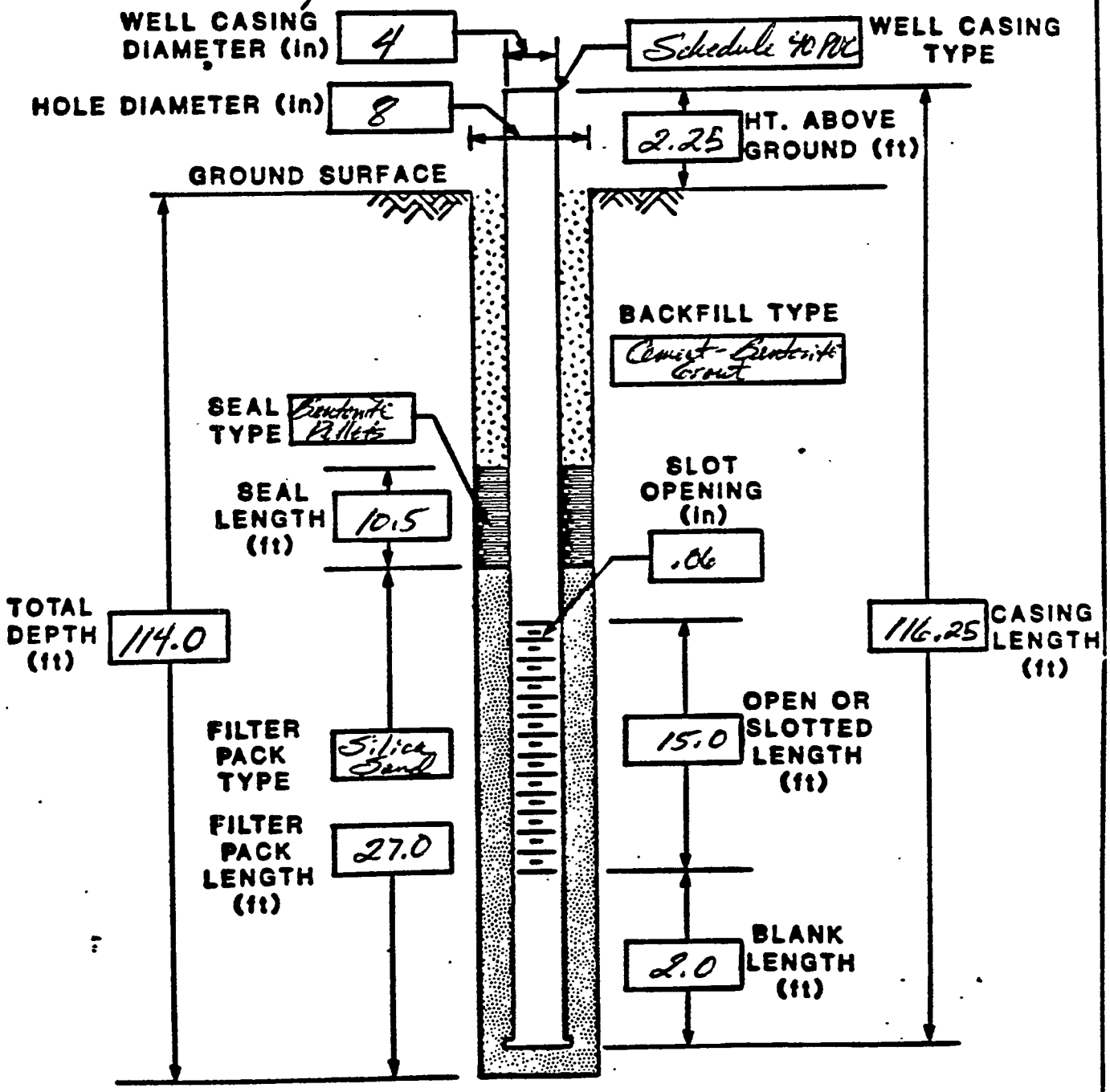
SITE ID: SPK-01 LOCATION ID: ~~9EZ~~ 912 DATE INSTALLED: 11-23-86

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) _____

FORMATION OF COMPLETION: Wasatch

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



COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

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

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

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

BOREHOLE SUMMARY

DRILLER: Boyles Bros.

RIG TYPE: Failing 1500

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
Tricone	12	5.5	Air
Tricone	8	114.0	Air/Mist

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH ✚ (ft.)
*P	Protective Steel	8 3/8	5.5
B	Schedule 40 PVC	4	97.0
S	Sch 40 PVC slotted	4	112.0
B	Schedule 40 PVC	4	114.0
	*Set as permanent		
	surface casing		

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

✚ Depth from Top of Casing

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	11-21-86	3:40	4:30
	11-22-86	11:15	1:00
CASING	11-22-86	1:30	2:50
FILTER PACK	11-22-86	2:50	3:40
SEAL	11-22-86	3:40	4:15
BACKFILL	11-23-86	11:00	12:30
DEVELOPMENT	12-17-86	9:00	12:00
OTHER			

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH ● (ft.)
B	Cement-Bentonite Grout	76.5
S	Bentonite Pellets	87.0
F	Silica Sand (8-12)	114.0

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

WELL DEVELOPMENT

12-17-86	Pk	EC (µMhos)
9:10	7-8	250
10:00	7-8	275
10:30	7-8	275
11:15	7-8	275

Developed until Water was clear and sediment free.

COMMENTS: _____

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

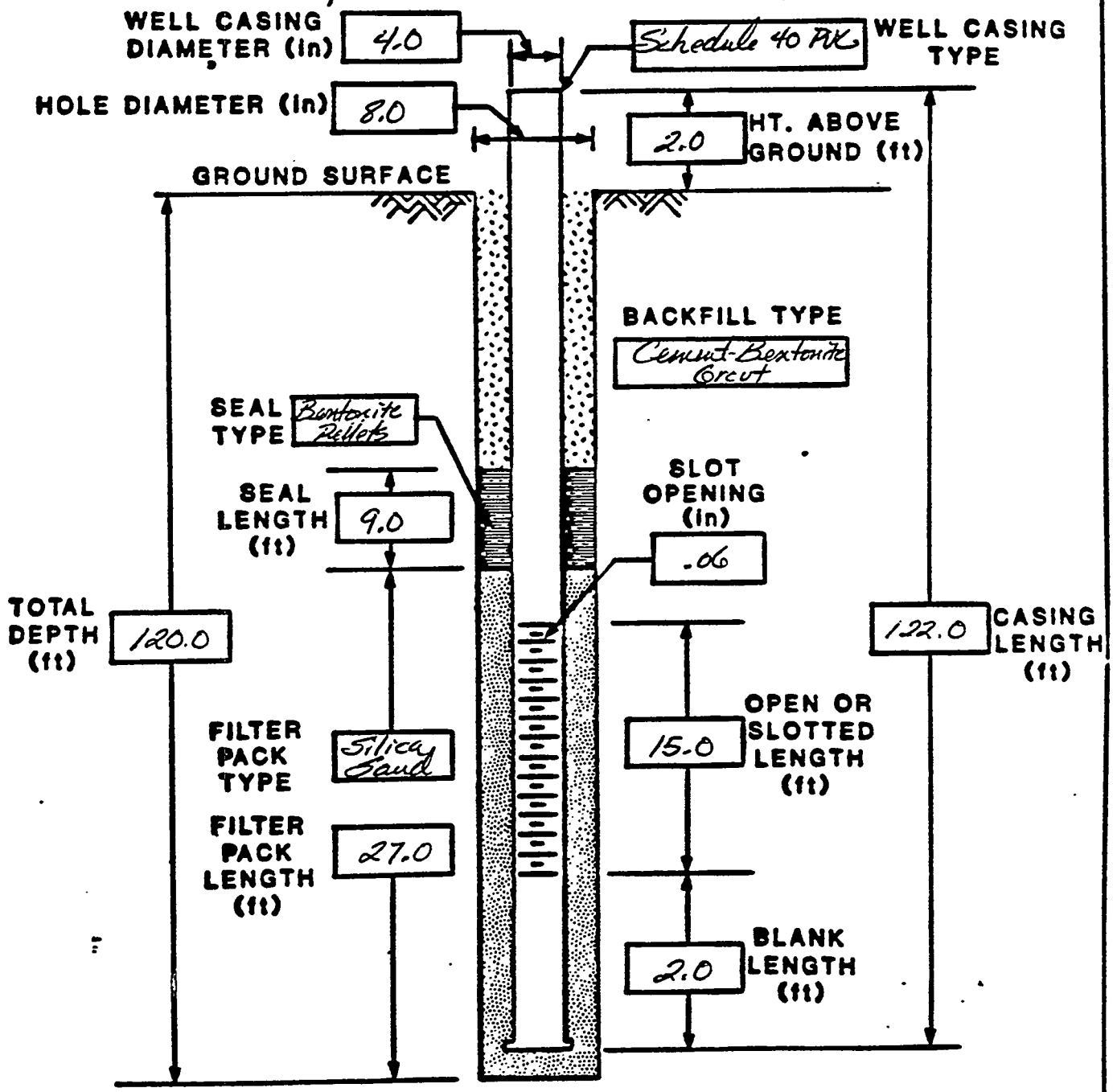
SITE ID: SPK-01 LOCATION ID: ~~903~~ 913 DATE INSTALLED: 12-14-86

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) _____

FORMATION OF COMPLETION: Wasatch (SS/Sh)

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



COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: ~~903~~ 913 FIELD REP: L. Phyfe

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

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

BOREHOLE SUMMARY

DRILLER: Boyles Bros.

RIG TYPE: Failing 1500

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
Tricone	8.0"	120.0'	Air/Mist

CASING SUMMARY

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

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

♦ Depth from Top of Casing

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	12-13-86	3:10	5:15
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	5:30
OTHER			

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH ● (ft.)
B	Cement-Bentonite Grout	84.0
S	Bentonite Pellets (4")	93.0
F	Colo. Silica Sand (8-12)	120.0

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

WELL DEVELOPMENT

12-20-86	Ph	Ec (uMhos)	Temp C°
2:30	7-8	360	10
2:45	5-6	370	12
2:55	5-6	370	13
3:15	5-6	375	13
Stop			

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

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

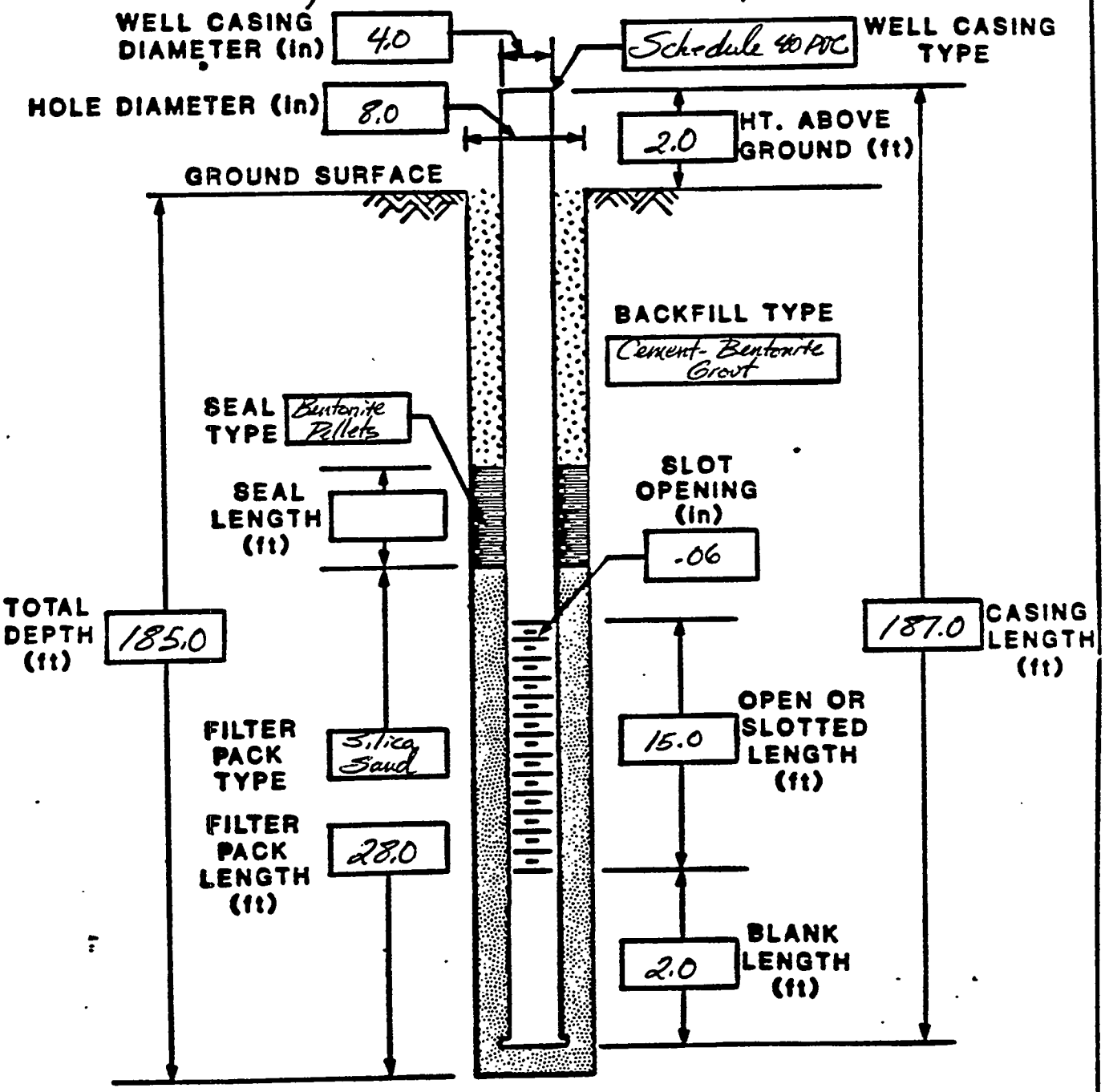
SITE ID: SPK-01 LOCATION ID: 904 914 DATE INSTALLED: 12-15-86

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) _____

FORMATION OF COMPLETION: Wasatch (SL/SS)

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



COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

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

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
Tricone	8.0	185.0	Air/Mist

CASING SUMMARY

CASING TYPE ●	DESCRIPTION	DIA. (in.)	END ✚ DEPTH (ft.)
* P	Protective Steel	8 5/8	5.5
B	Schedule 40 PVC	4.0	168.0
S	Sch 40 PVC (.06")	4.0	183.0
B	Schedule 40 PVC	4.0	185.0
	* 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.)
B	Cement-Bentonite Grout	147.0
S	Bentonite Pellets (1/4")	157.0
F	Colo. Silica Sand (8-12)	185.0

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END 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			

WELL DEVELOPMENT

12-20-86	Ph	Ec (µmhos)	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: Ec meter I.D. # 12764
Developed with air until water was clear & sediment free. Litmus Paper used for Ph check

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

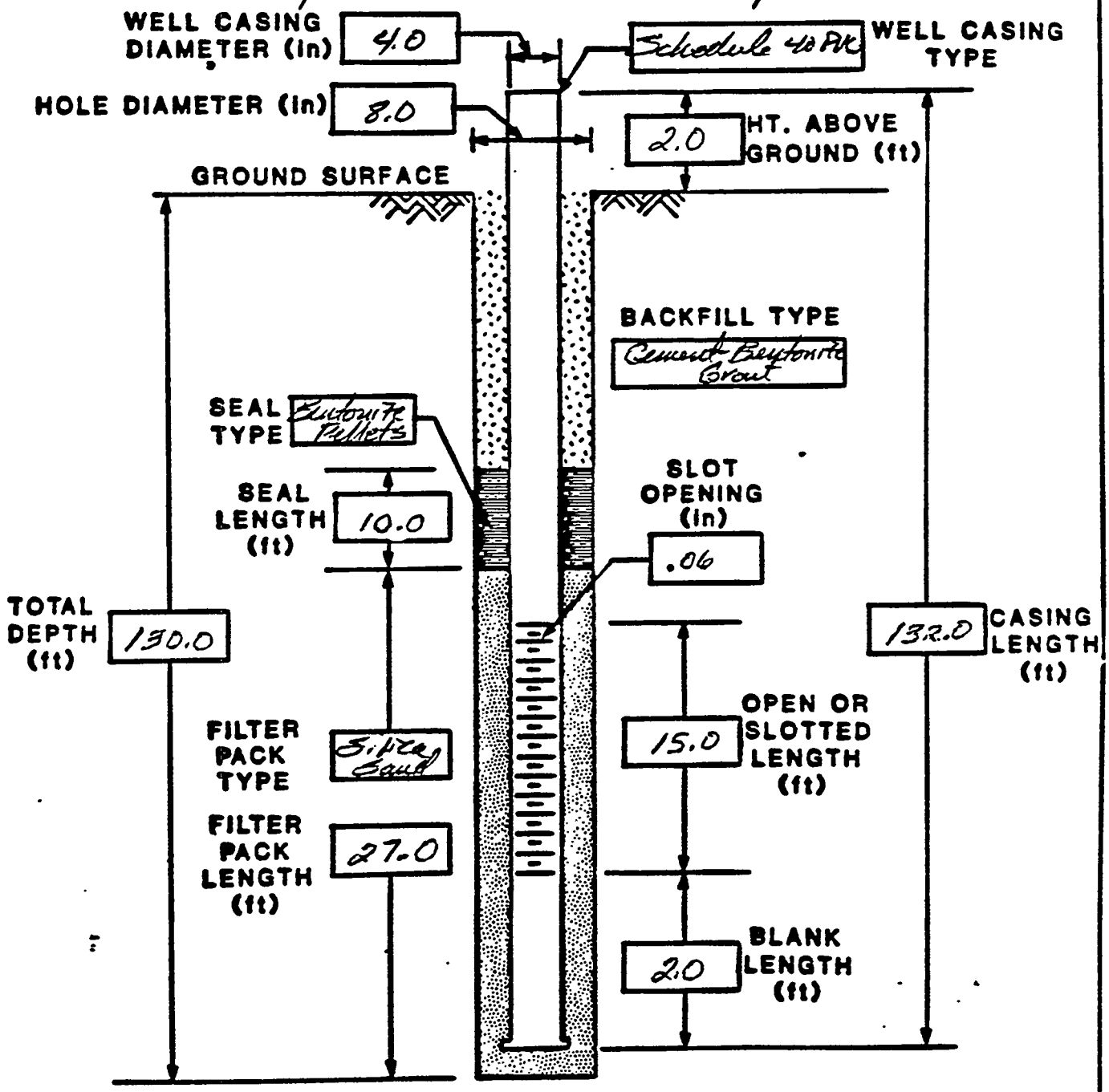
SITE ID: SPK-01 LOCATION ID: 905 915 DATE INSTALLED: 12-10-86

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) _____

FORMATION OF COMPLETION: _____

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



COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 905 915 FIELD REP: L. Fluetz

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

GROUND ELEVATION (FT. MSL): _____ COMPLETION DATE: 12-10-86

BOREHOLE SUMMARY

DRILLER: Boyles Bros.

RIG TYPE: Failing 1500

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
Tricone	8.0	130.0	Air/Mist

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END✚ DEPTH (ft.)
*P	Protective Steel	8 3/8	5.5
B	Schedule 40 PVC	4.0	113.0
S	Schedule 40 PVC (.06")	4.0	128.0
B	Schedule 40 PVC	4.0	130.0
	*Set as permanent		
	surface casing		

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

✚ Depth from Top of Casing

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	12-6-86	11:30	1:30
	12-9-86	11:50	1:45
CASING	12-9-86	3:59	5:00
FILTER PACK	12-9-86	5:00	5:25
SEAL	12-9-86	5:25	6:00
BACKFILL	12-10-86	10:30	3:15
DEVELOPMENT	12-19-86	12:20	3:50
OTHER			

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END● DEPTH (ft.)
B	Cement-Bentonite Grout	93.0
S	Bentonite Pellets (1/4")	1[illegible]
F	Colo. Silica Sand (8-12)	130.0

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

WELL DEVELOPMENT

12-19-86	Pk	Ec (uMhos)	Temp C°
12:40	7-8	20	10
1:15	7-8	20	10
1:48	6-7	15	12
12-20-86			
8:00	6-7	12	11

COMMENTS: Ec meter I.D. # 12764
12-20-86 Water clear & sediment free.
Litmus paper used to check PH.
PH meter not working (# 350222)

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

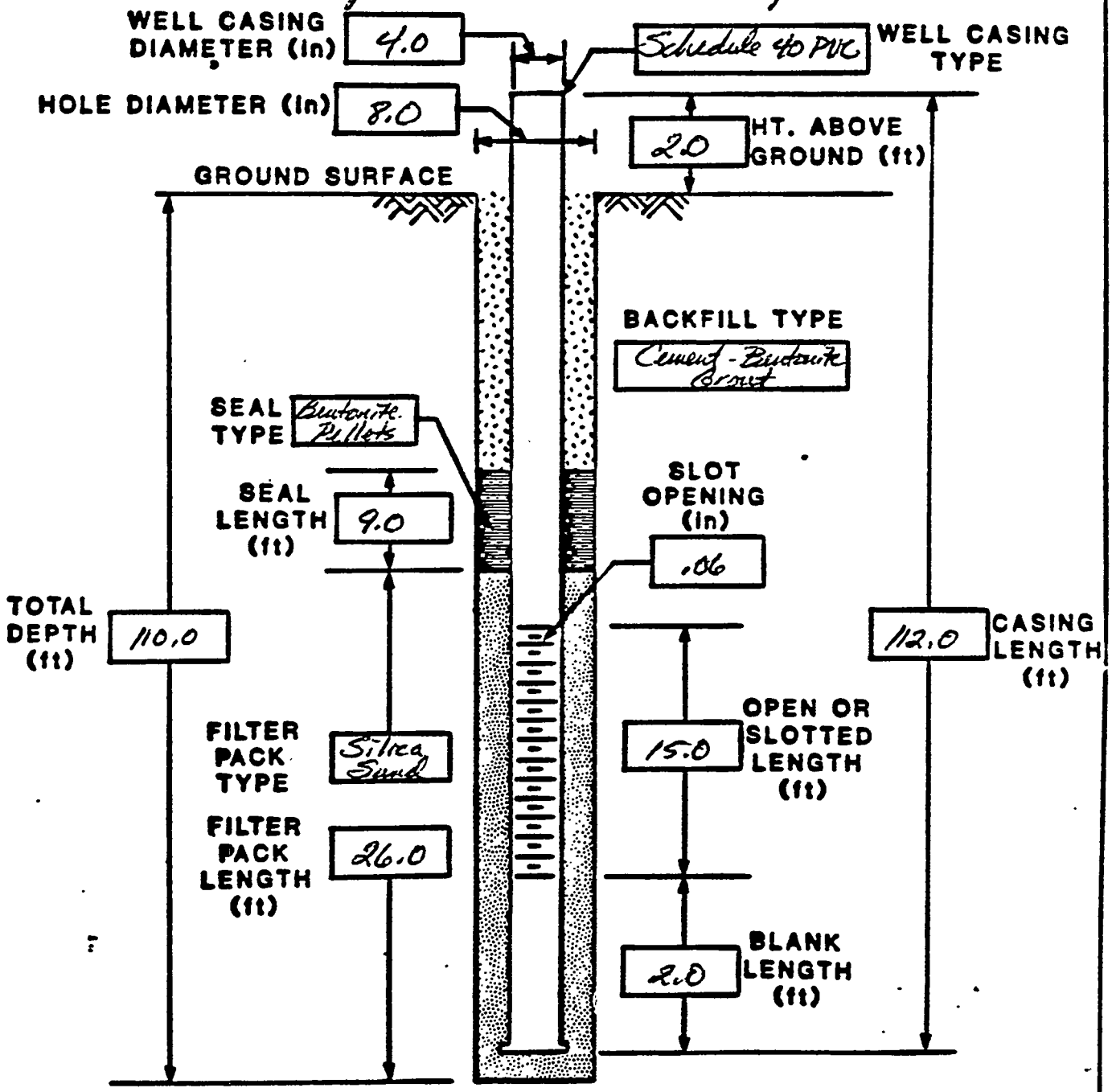
SITE ID: SPK-01 LOCATION ID: ~~906~~ 916 DATE INSTALLED: 12-6-86

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) _____

FORMATION OF COMPLETION: Wasatch (SS/Sh)

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



COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: ~~906~~ 916 FIELD REP: L. Phyfe

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

GROUND ELEVATION (FT. MSL): 5075 COMPLETION DATE: 12-6-86

BOREHOLE SUMMARY

DRILLER: Boyles Bros.

RIG TYPE: Failing 1500

BIT TYPE	HOLE DIA. (in.)	END ● DEPTH (ft.)	FLUID TYPE
Tricone	8.0	110.0	Air/Water

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END✚ DEPTH (ft.)
*P	Protective Steel	8 3/8	5.5
B	Schedule 40 PVC	4.0	93.0
S	Sch. 40 PVC (.06")	4.0	108.0
B	Schedule 40 PVC	4.0	110.0
	*Set as permanent		
	surface casing		

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

✚ Depth from Top of Casing

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	12-5-86	12:35	2:37
CASING	12-5-86	3:30	4:00
FILTER PACK	12-5-86	4:00	4:35
SEAL	12-5-86	4:35	5:00
BACKFILL	12-6-86	8:40	10:30
DEVELOPMENT	12-12-86	2:05	3:00
OTHER			

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END ● DEPTH (ft.)
B	Cement-Bentonite Grout	75.0
S	Bentonite Pellets (1/4")	84.0
F	Colo. Silica Sand (8-12)	110.0

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

WELL DEVELOPMENT

12-12-86	Ph	Ec (u Mohs)	Temp C°
2:20	6-7	20	10
2:35	6-7	50	10
2:50	6-7	60	8.5

Water clear & sediment free

COMMENTS: Ec Meter I.D# 12764
Litmus paper used to check Ph -
Ph meter I.D# 350222 not
working.

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

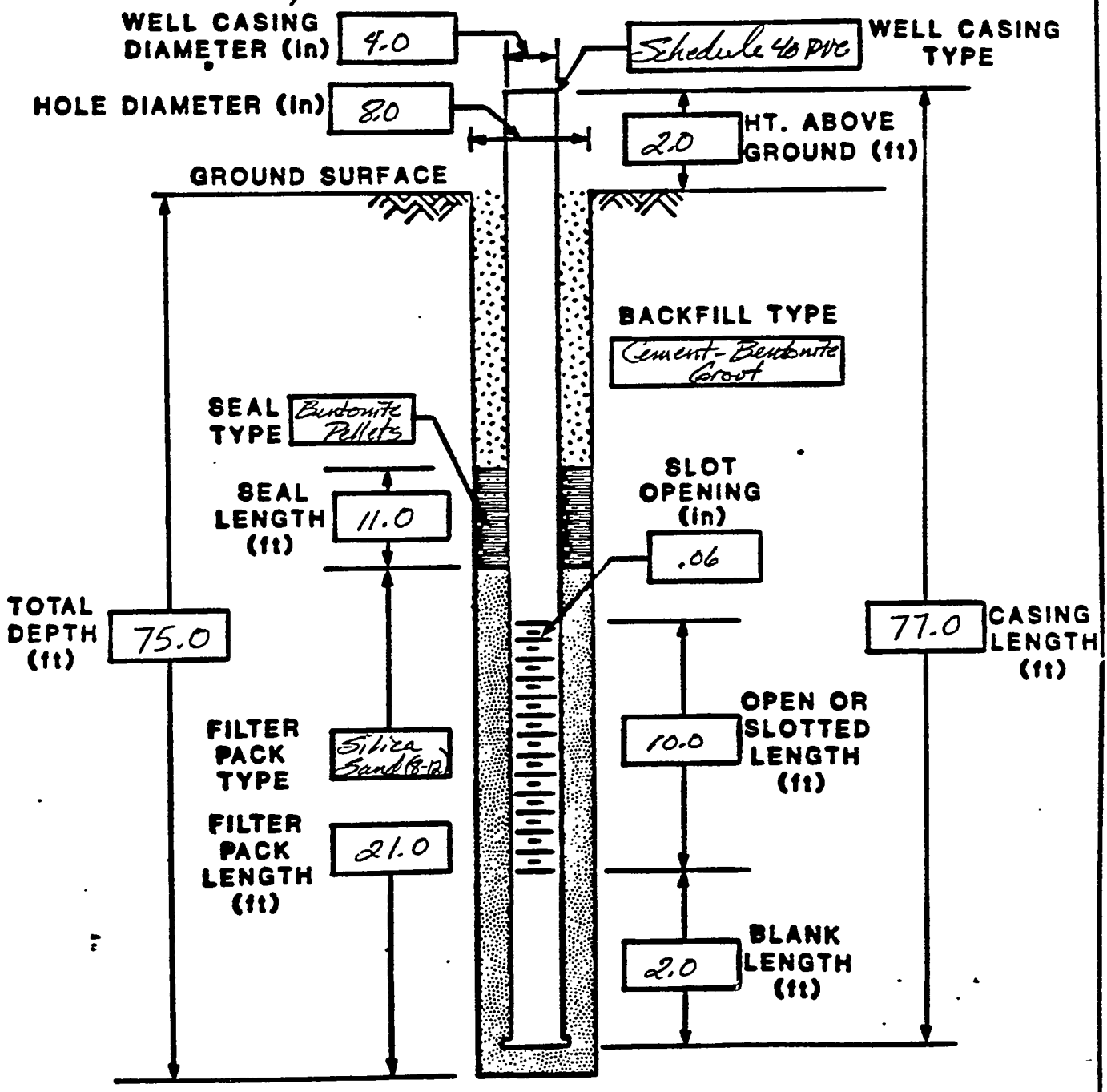
SITE ID: SPK-01 LOCATION ID: 907 917 DATE INSTALLED: 12-11-86

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) _____

FORMATION OF COMPLETION: Wasatch (SS/Sh)

FIELD REP.: L. Phyfe DRILLER: _____



COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

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

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

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

BOREHOLE SUMMARY

DRILLER: Boyles Bros.

RIG TYPE: Failing 1500

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
Tricone	8.0	75.0	Air Mist

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH ✚ (ft.)
*P	Protective Steel	8 3/8	5.5
B	Schedule 40 PVC	4.0	63.0
S	Sch 40 PVC (.06")	4.0	73.0
B	Schedule 40 PVC	4.0	75.0
	* 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.)
B	Cement-Bentonite Grout	43.0
S	Bentonite Pellets (1/4")	54.0
F	Colo. Silica Sand (8-12)	75.0

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	12-11-86	9:10	10:30
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			

WELL DEVELOPMENT

12-18-86	Ph	Ec (uMhos)	Temp C°
1:15	6-7	10	10
1:30	6-7	35	5
1:45	7-8	45	6

Water clear & sed free

COMMENTS: Ec Meter ID. # 12764

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

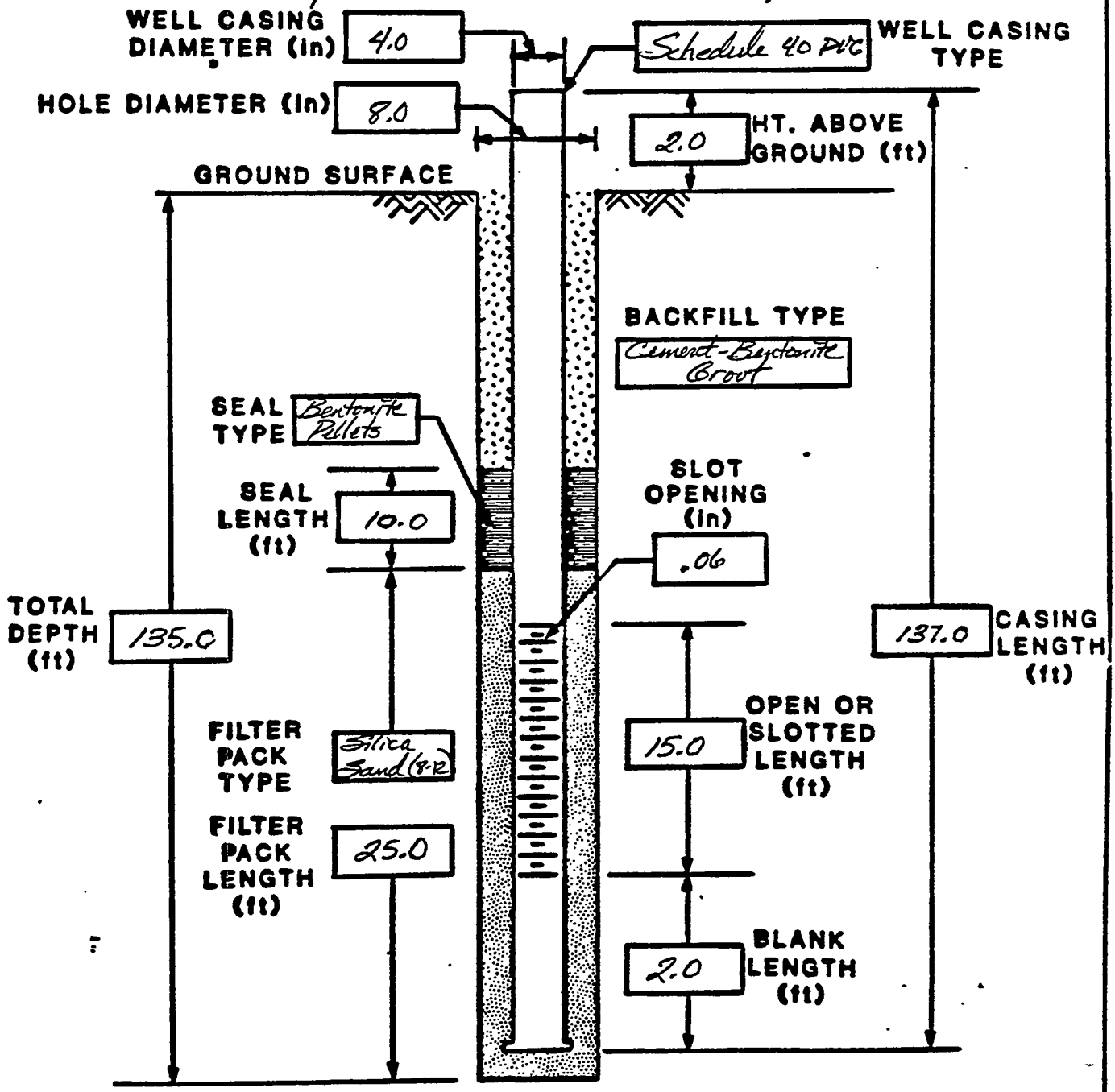
SITE ID: SPK-01 LOCATION ID: ~~908~~ 918 DATE INSTALLED: 12-13-86

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) _____

FORMATION OF COMPLETION: _____

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



COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

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

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
Tricone	8.0	135.0	Air/Mist

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.) ✚
*P	Protective Steel	8 3/8	5.5
B	Schedule 40 PVC	4.0	118.0
S	Sch. 40 PVC (.06")	4.0	133.0
B	Schedule 40 PVC	4.0	135.0
	*: Set as permanent		
	surface casing		

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

✚ Depth from Top of Casing

CONSTRUCTION TIME LOG

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

WELL CONSTRUCTION

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

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

WELL DEVELOPMENT

12-20-86	Ph	Ec (uMhos)	Temp C°
12:59	6-7	190	10
1:20	6-7	175	10
1:40	6-7	240	11
2:00 Stop	6-7	260	11

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

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

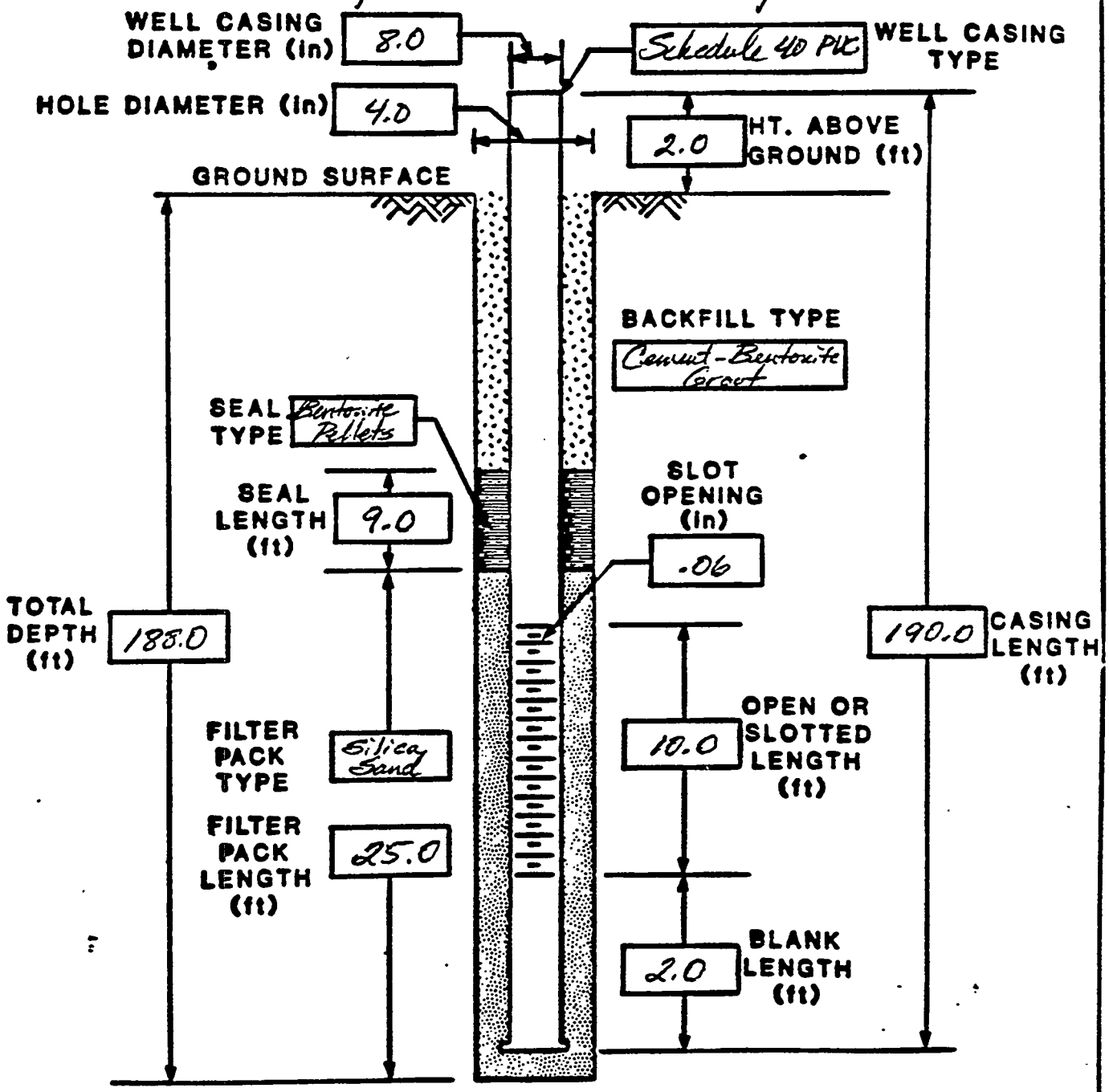
SITE ID: SPK LOCATION ID: 909 919 DATE INSTALLED: 12-5-86

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) _____

FORMATION OF COMPLETION: Wasatch (Sandstone)

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



COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK LOCATION ID: 909-919 FIELD REP: L. Phyfe

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

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

BOREHOLE SUMMARY

DRILLER: Boyles Bros.

RIG TYPE: Failing 1500

BIT TYPE	HOLE DIA. (in.)	END DEPTH (ft.) ●	FLUID TYPE
Blade bit	8.0	188.0	Air/Mist

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH (ft.) ✚
*P	Protective Steel	8 3/8	5.5
B	Schedule 40 PVC	4.0	176.0
S	Sch. 40 PVC slotted	4.0	186.0
B	Schedule 40 PVC	4.0	188.0
	*Set as permanent		
	surface casing		

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

✚ Depth from Top of Casing

CONSTRUCTION TIME LOG

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

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH (ft.) ●
B	Cement-Bentonite Grout	154.0
S	Bentonite Pellets (1/4")	163.0
F	Colo. Silica Sand (6-12)	188.0

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

WELL DEVELOPMENT

12-17-86	Ph	Ec (µMhos)	Temp °C
12:35	7-8	125	11
1:19	6-7	600	10
1:30	6-7	675	10

Water clear & sed. free.

COMMENTS: Ec meter I.D.# 12264
Lithmus paper used to check Ph -
Ph meter # 350222 not working -

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

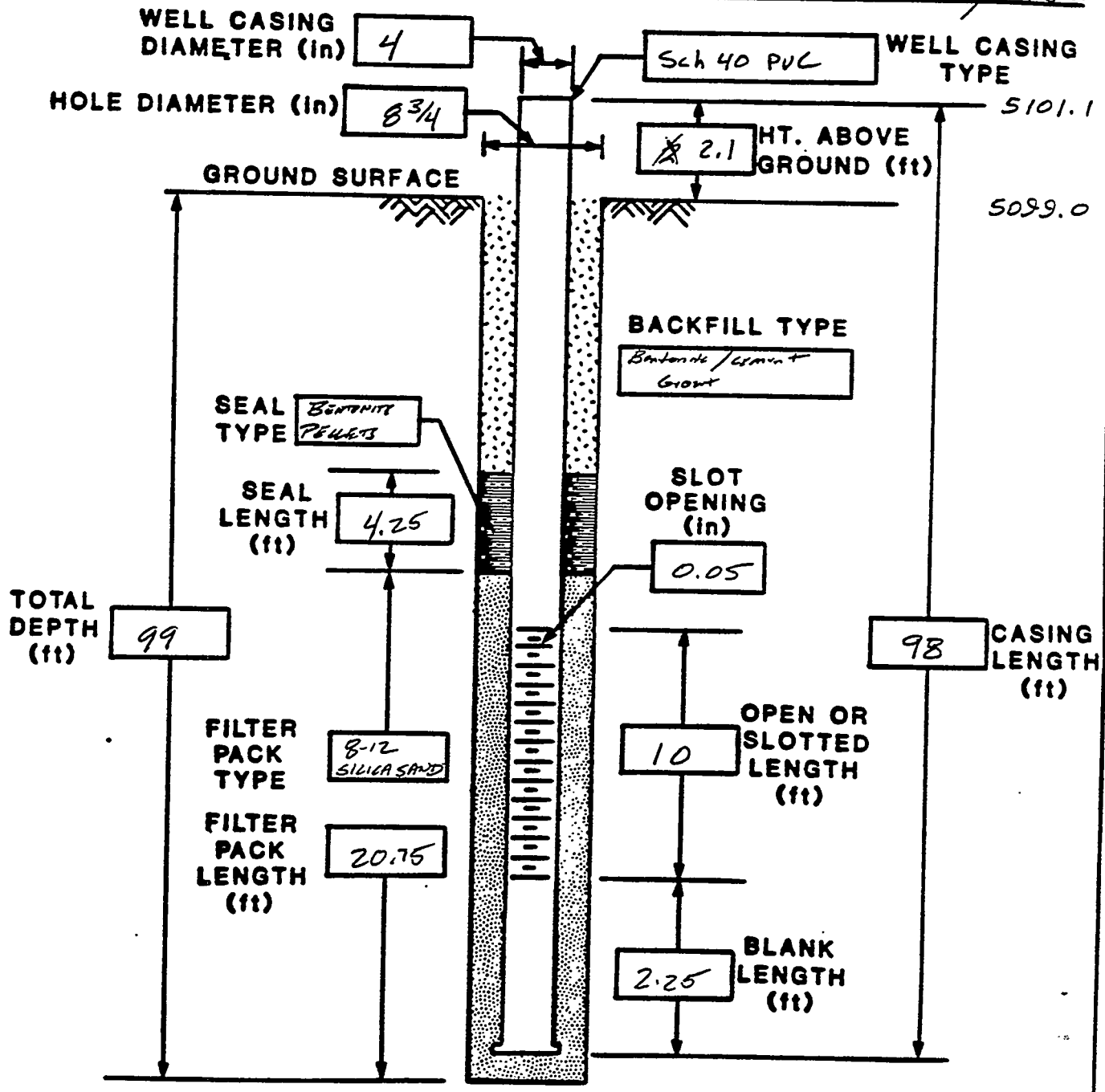
SITE ID: SPK-01 LOCATION ID: 920 DATE INSTALLED: 8/11/87

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) .05 slot

FORMATION OF COMPLETION: WASATCH Fm – Upper Sandstone

FIELD REP.: O. Holmquist DRILLER: SUNRISE ENTERPRISES / ETRUTILLO



COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 920 FIELD REP: O. Hommond

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

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

BOREHOLE SUMMARY

DRILLER: Sunrise Enterprises

RIG TYPE: Portadrill

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
DRAG	5	98	Air/water
ROLLER	8 3/4	99	Air/water

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH ✚ (ft.)
B	Sch 40 PVC	4"	86
S	Sch 40 PVC, .05 slot	4"	96
B	Sch 40 PVC	4"	98
P	Steel casing	8"	N/A

* 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	96
S	Bentonite pellets	75.25
B	Bentonite grout (Type II Portl.)	67'
B	Caved Sands	71'±

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	8-10-87	7:30 AM 9 AM	9 AM 12 PM
CASING	8-10-87	12 PM	—
FILTER PACK	8-10-87	—	—
SEAL	8-10-87	—	6:15 PM
BACKFILL	8/11/87	3 PM	6 PM
DEVELOPMENT	9/9/87	12:15 PM	5:20 PM
OTHER			

WELL DEVELOPMENT

W.L. Before development = 88' BTOC
Well making clean - very dirty & silty
Well clean & trace fine sand @ end of development
W.L. 9/9/87 after development = 88.25' BTOC

COMMENTS: Suspected oil/grease contamination

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

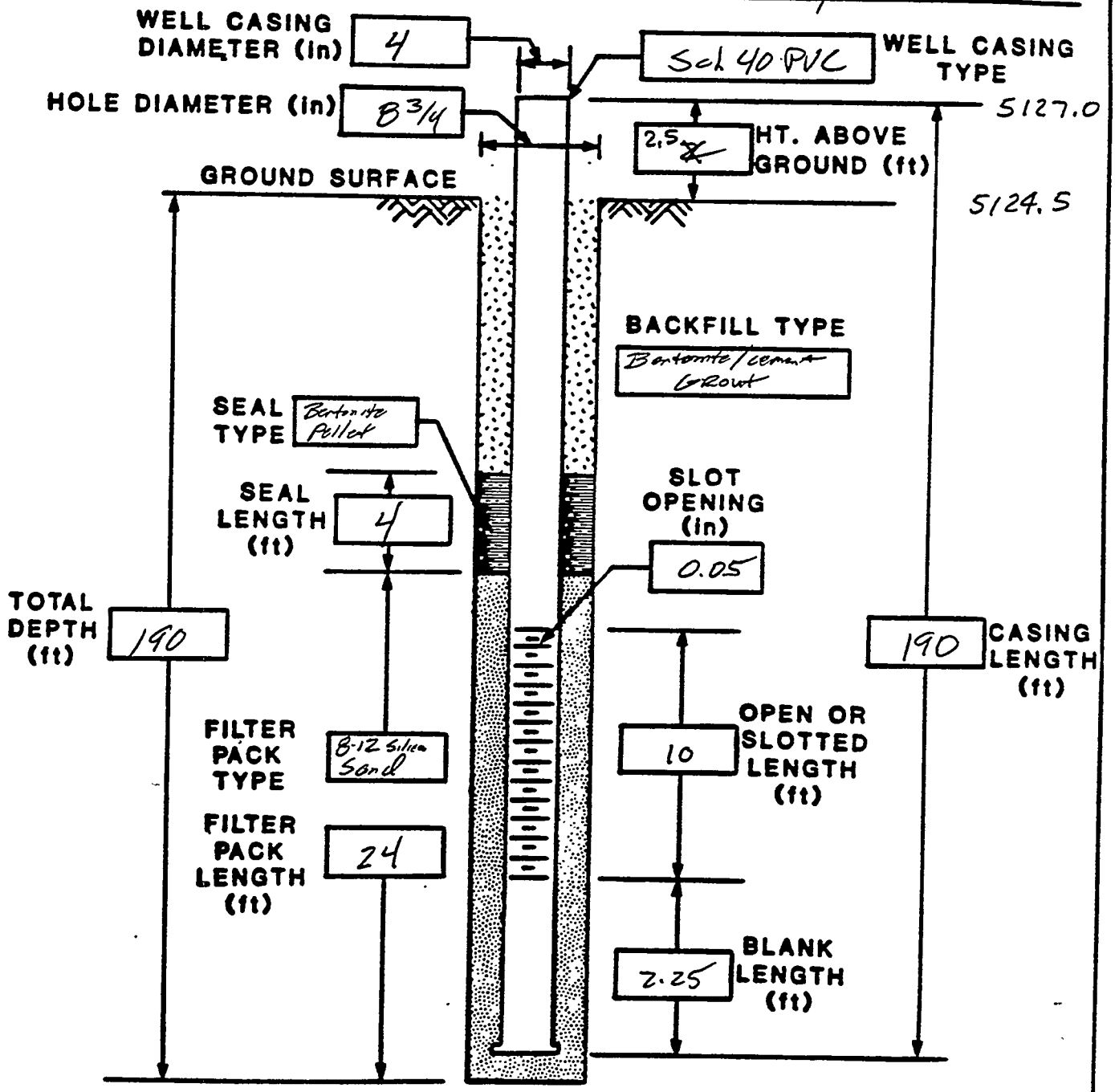
SITE ID: SPK-01 LOCATION ID: 921 DATE INSTALLED: 8-15-87

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) 0.05 Slot -

FORMATION OF COMPLETION: WASATCH Fm - Lower Sandstone

FIELD REP.: O. Holmquist DRILLER: E Trujillo / Sunrise Enterprises



COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SBK-01 LOCATION ID: 921 FIELD REP: D. Hormouzd

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

GROUND ELEVATION (FT. MSL): DK COMPLETION DATE: 8/15/87

BOREHOLE SUMMARY

DRILLER: Sunrise Enterprises

RIG TYPE: Portadrill #524

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
8 3/4 Roller	8 3/4	190	WATER

CASING SUMMARY

CASING TYPE ●	DESCRIPTION	DIA. (in.)	END ✚ DEPTH (ft.)
P	8" Prod. casing	8"	7 1/2
B	Sch 40 PVC	4"	178
S	Sch 40 PVC - .05 slot	4"	188
B	Sch 40 PVC	4"	198

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

✚ Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE ●	DESCRIPTION	END ● DEPTH (ft.)
B	3/0 7.5 gal/sack PC Grout	160
S	Bentonite Pellets	164
F	8-12 Silica sand	188

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	8-14-87	3 40 PM	6 45 PM
	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 AM	12 55 PM
OTHER			

WELL DEVELOPMENT

- Water muddy / cleared quickly
- Flow ≈ 2 gpm

water level @ 118.75 BTOC

Cleared up nicely (clear, slight S.CT @

T = 19°C

S = 0.5 ‰

C = 750 umhos

pH = 6.0

water level 9/14 = 122.9' BTOC

COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

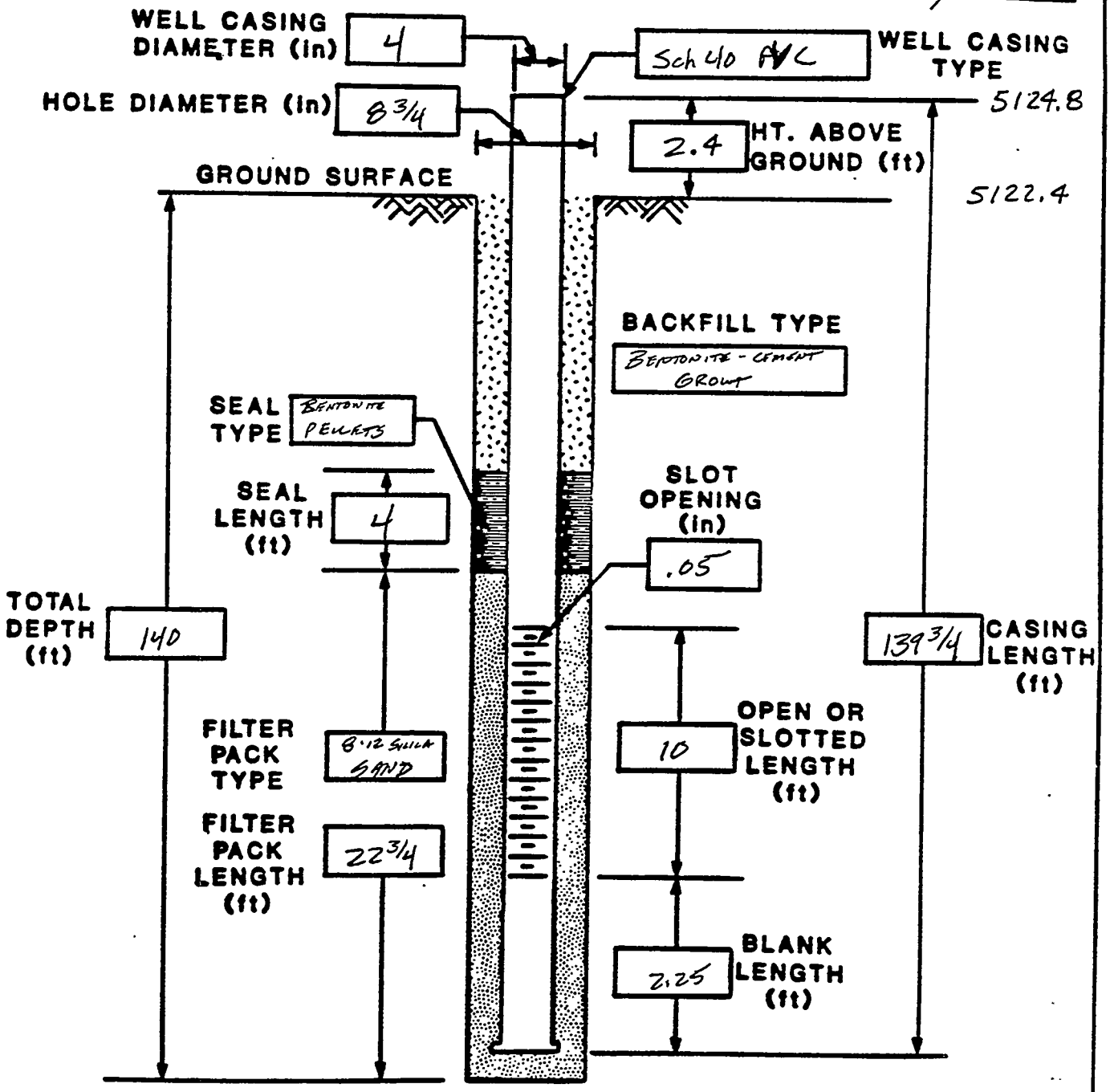
SITE ID: SPK-01 LOCATION ID: 922 DATE INSTALLED: 8/17/87

APPROX. SITE COORDINATES: (FT.) N 58,163.6 E 59,210.6

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) .05 slot

FORMATION OF COMPLETION: WASATCH Fm - Upper Sandstone

FIELD REP.: O. Hormquist DRILLER: SUNRISE ENTERPRISES / E. TRUJILLO



COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 922 FIELD REP: O. HOLMQUIST

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

GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 8/17/87

BOREHOLE SUMMARY

DRILLER: SUNRISE ENTERPRISES / E. TRUJILLO

RIG TYPE: PORTADRILL 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 PVC BLANK	4	127 1/2
S	Sch 40 PVC .05 slot	4	137 1/2
B	Sch 40 PVC SUMP	4	139 3/4

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

✚ Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH ● (ft.)
B	BENTONITE/CEMENT GROUT	111
S	BENTONITE PELLET SEAL	115
F	8-12 SILICA SAND	137 3/4

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	8/16/87	12 NOON	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 BTOC
END WATER LEVEL 9/12/87 = 118.75 BTOC
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-C-T-pH STABILIZED to the following:
S = 0.25%, C = 500 umhos, T = 14.5°C, pH = 6.0

COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

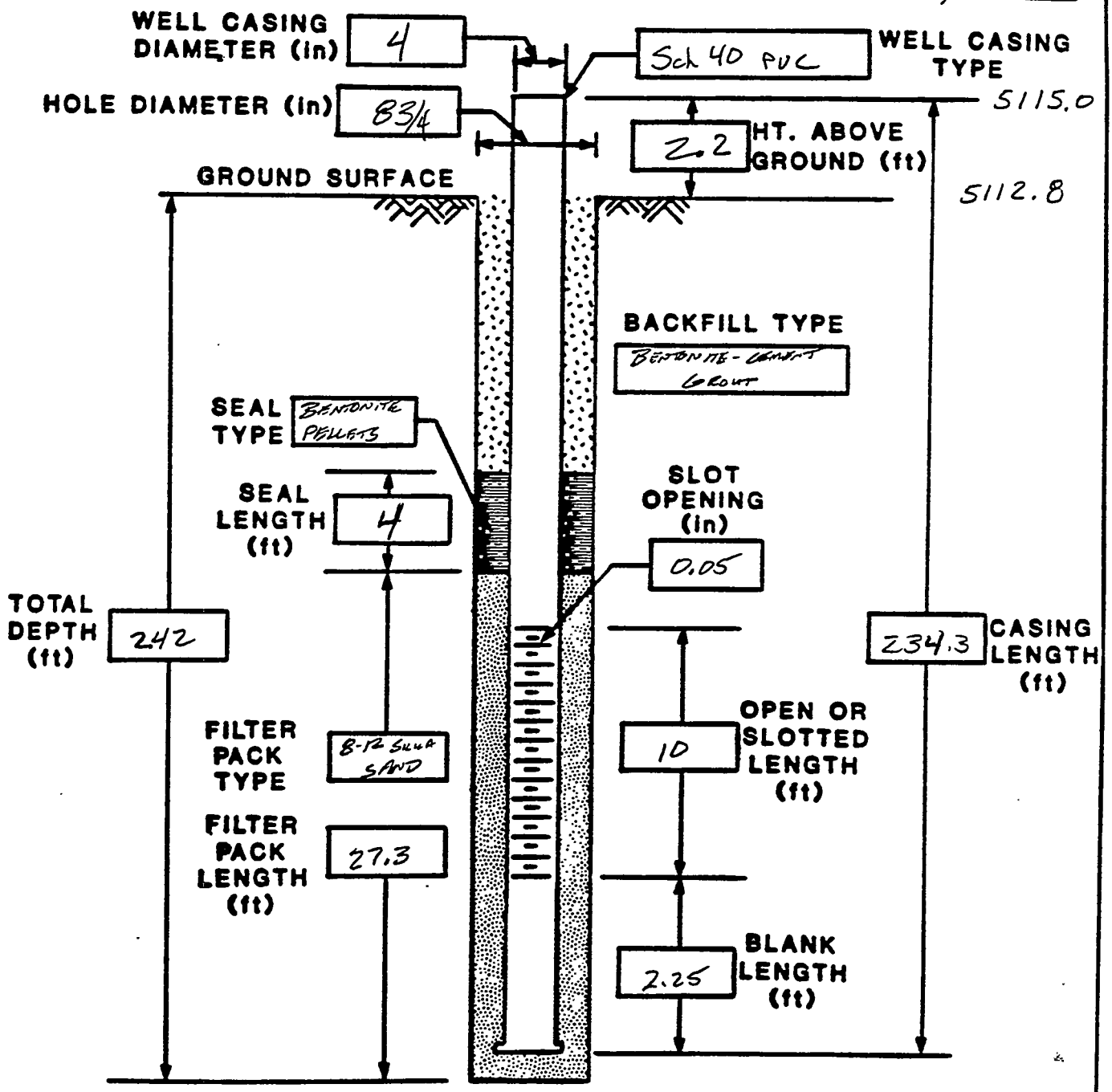
SITE ID: SPK-01 LOCATION ID: 923 DATE INSTALLED: 8/18/87

APPROX. SITE COORDINATES: (FT.) N 59,654.0 E 59,828.6

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) .05 slot

FORMATION OF COMPLETION: WASATCH Fm – Lower Sandstone

FIELD REP.: D. Holmquist DRILLER: Sunrise Enterprises / E. Trujillo



COMMENTS: _____

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

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: 8/28/87

BOREHOLE SUMMARY

DRILLER: Suprise Enterprises/E. Trujillo

RIG TYPE: Portadrill 524

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
Tricone/Garret	8 3/4	242	Water

CASING SUMMARY

CASING TYPE ●	DESCRIPTION	DIA. (in.)	END ✚ DEPTH (ft.)
P	Sch 40 Steel	8	5(-)
B	Sch 40 PVC Blank	4	222
S	Sch 40 PVC, .05 slot	4	232
B	Sch 40 PVC, Sump	4	234.3

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

✚ Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE ●	DESCRIPTION	END ● DEPTH (ft.)
B	Bentonite-Cement Grout	201
S	Bentonite Pellets	205
F	8-12 Silica Sand	232.3

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	8/18/87	7:30 AM	1:30 PM
CASING	8/19/87	10:30 AM	11:30
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			

WELL DEVELOPMENT

WL Before development: 119.75 BTOC 9/13/87
WL After development = 119.9 BTOC 9/19/87
Water began very dirty @ 10-15 gpm
Water ended clear @ 10-15 gpm
Finals:
S: 0.5 %
C: 600 umhos
T: 15 °C
pH = 6.0

COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 924 FIELD REP: D. Hammonist

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

GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 8/30/87

BOREHOLE SUMMARY

DRILLER: Sunrise Enterprises

RIG TYPE: Portadrill #524

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
8			
Tricone	8 3/4	19	WATER
"	8	130	WATER

CASING SUMMARY

CASING TYPE ●	DESCRIPTION	DIA. (in.)	END ✚ DEPTH (ft.)
P	Steel prot. casing	8	7 1/2
B	Sch 40 pvc Blank	4	117.7
S	Sch 40 pvc, .05 slot	4	127.7
B	Sch 40 pvc, blank sump	4	129.9

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

✚ Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE ●	DESCRIPTION	END ● DEPTH (ft.)
B	3% Portland Cement Grout	98.0
S	Bentonite Pellets	103.5
F	8-12 Silica Sand	127.9
		27.4

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	8/29/87	7:40 Am	9 AM
CASING	8/30/87	9:15 Am	9:30 Am
FILTER PACK	8/30	9:45 Am	10 AM
SEAL	8/30	10:05	10:20
BACKFILL	8/30/87	11:30 Am	12:15 PM
DEVELOPMENT	9/14/87	8:45 Am	12:45 Am
OTHER			

WELL DEVELOPMENT

Begin WL = 89.25 BTOC 9/14/87
END WL = 89.25 BTOC 9/15/87
WATER BEGAN VERY CLOUDY - FINISHED VERY CLEAR
2-3 gpm
FINAL READINGS:
S = 0.75%
C = 1000 µmhos
T = 16°C
pH = 6.0

COMMENTS:

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

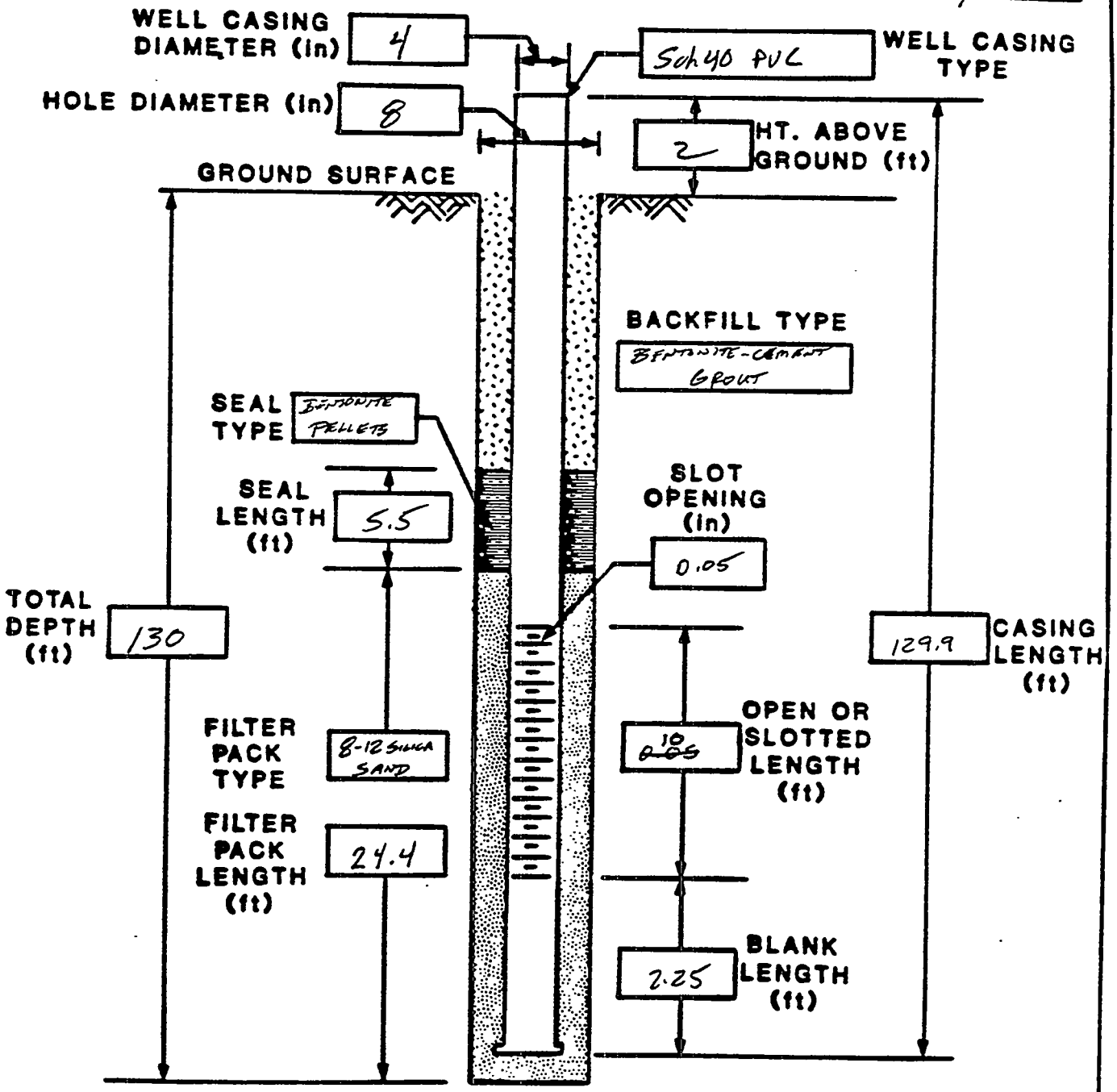
SITE ID: SPK-01 LOCATION ID: 924 DATE INSTALLED: 8/30/87

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) .055/ft

FORMATION OF COMPLETION: WASATCH

FIELD REP.: O. Hermanist DRILLER: Sunrise Enterprises / E. Tenting



COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

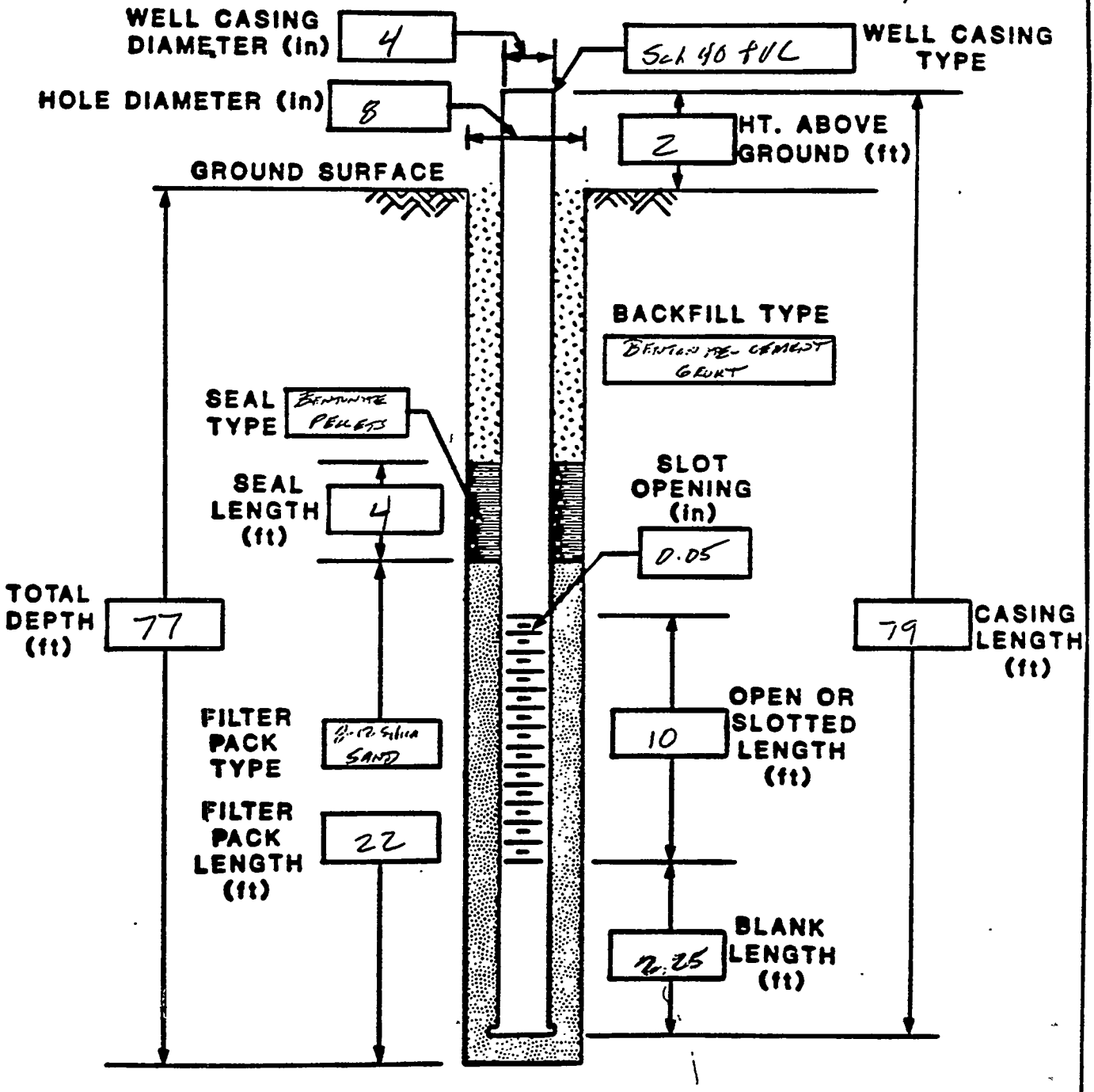
SITE ID: SPK-01 LOCATION ID: 925 DATE INSTALLED: 8/24/87

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) .05 slot

FORMATION OF COMPLETION: WASATCH

FIELD REP.: O. Holmquist DRILLER: SUNRISE ENTERPRISES / K. TENJUS



COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SK-01 LOCATION ID: 925 FIELD REP: A. Hermouist

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

GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 8/24/87

BOREHOLE SUMMARY

DRILLER: Sunrise Enterprises / F. Trujillo

RIG TYPE: Portadrill 4824

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
Tricone	8 3/4	19	WATER
Tricone	8"	79	WATER

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH ◆ (ft.)
P	8" steel prot. casing	8"	5'2" BLS
B	Sch 40 PVC	4"	67
S	Sch 40 PVC, .05 slot	4"	77
B	Sch 40 PVC, sump	4"	79

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

◆ Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE*	DESCRIPTION	END DEPTH ● (ft.)
B	3% bentonite, Port. cement grout	52
S	Bentonite pellet seal	56
F	8-12 silica sand	77

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	8/24/87	9 45 AM	10 45 AM
CASING	8/24	10 45	—
FILTER PACK	8/24	—	—
SEAL	8/24	—	1 15 PM
BACKFILL	8/24	3 10 PM	3 45 PM
DEVELOPMENT	9/14/87 (AROUND)	1 20 PM	5 20 PM
OTHER			

WELL DEVELOPMENT

Begin WL = 55.5 BTOC 9/14/87
End WL = 56.6 BTOC 9/16/87

Water began v. dirty - end v. clear
1-2 gpm

FINAL READINGS:
S: 0.25 ppm
C: 550 umhos
T = 15°C
pH = 6.0

COMMENTS:

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

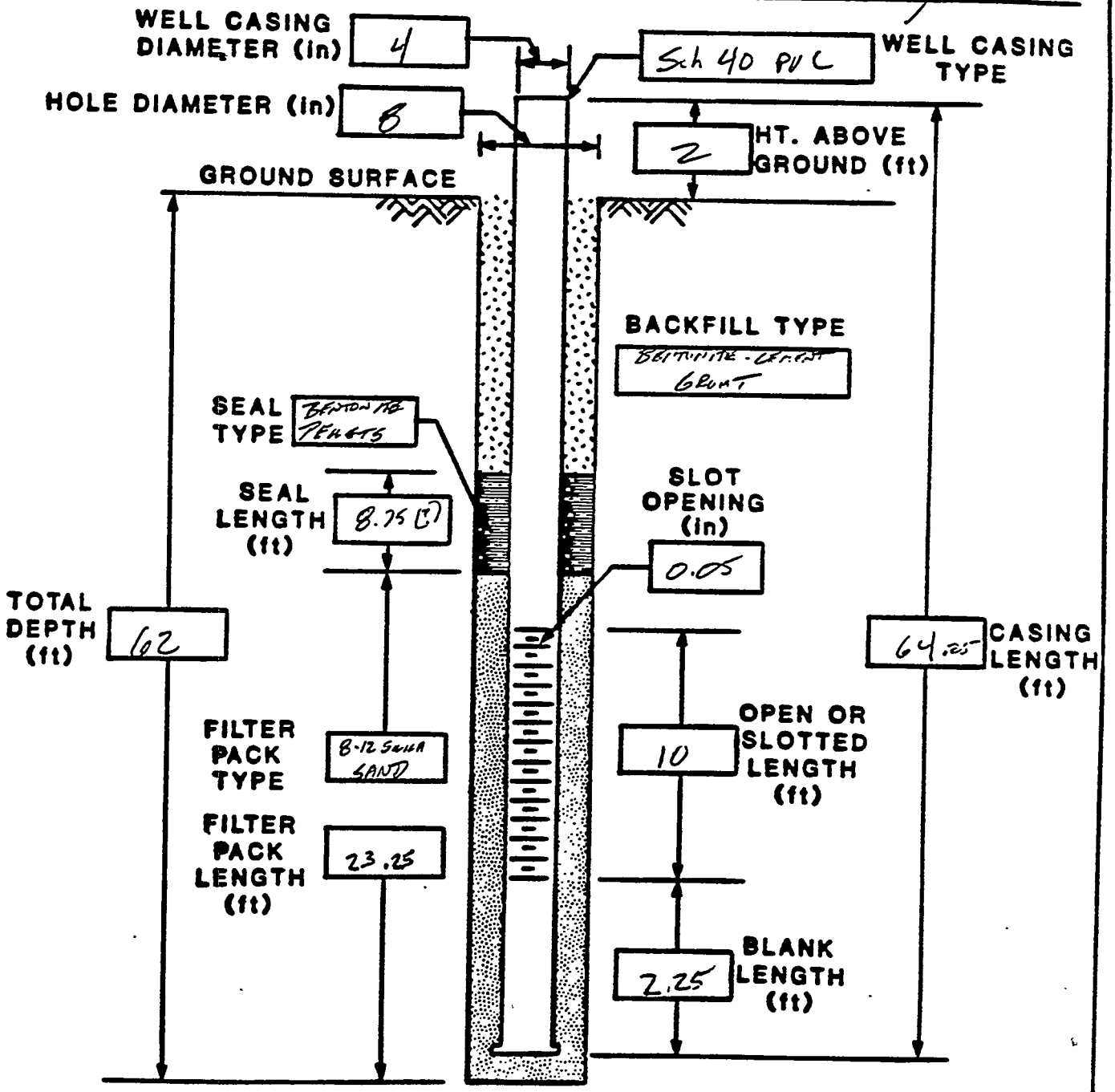
SITE ID: SPK-01 LOCATION ID: 926 DATE INSTALLED: 8/27/87

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) .05 slot

FORMATION OF COMPLETION: WASATCH

FIELD REP.: R. Holmquist DRILLER: Sunrise Enterprises / F. Trujillo



COMMENTS:

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

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: 8/27/87

BOREHOLE SUMMARY

DRILLER: Sunrise Enterprises / E. Trujillo

RIG TYPE: Portadrill 524

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
Gearbit	8 3/4	19	Water
Gearbit	8	65	Water

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH ✚ (ft.)
P	Sch 40 steel	8	5±
B	Sch 40 PVC Blank	4	52
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

TYPE CODE*	DESCRIPTION	END DEPTH ● (ft.)
B	Bentonite-Cement Grout	30
S	Bentonite Pellets	38.75
F	8-12 Silica Sand	62

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	8/27/87	9 AM	10:15 AM
CASING	8/27/87	10:30	11 AM
FILTER PACK	8/27/87	11:05	11:25
SEAL	8/27/87	11:25	11:35
BACKFILL	8/27/87	1:15	1:45
DEVELOPMENT	9/15/87	12:05 PM	1:30 PM
OTHER			

WELL DEVELOPMENT

Bgm WL -

Well making very dirty water & a large amount of sand (filter pack) after getting development pipe to bottom once, could not get there again.

COMMENTS: Broken screen/or casing - not developed

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

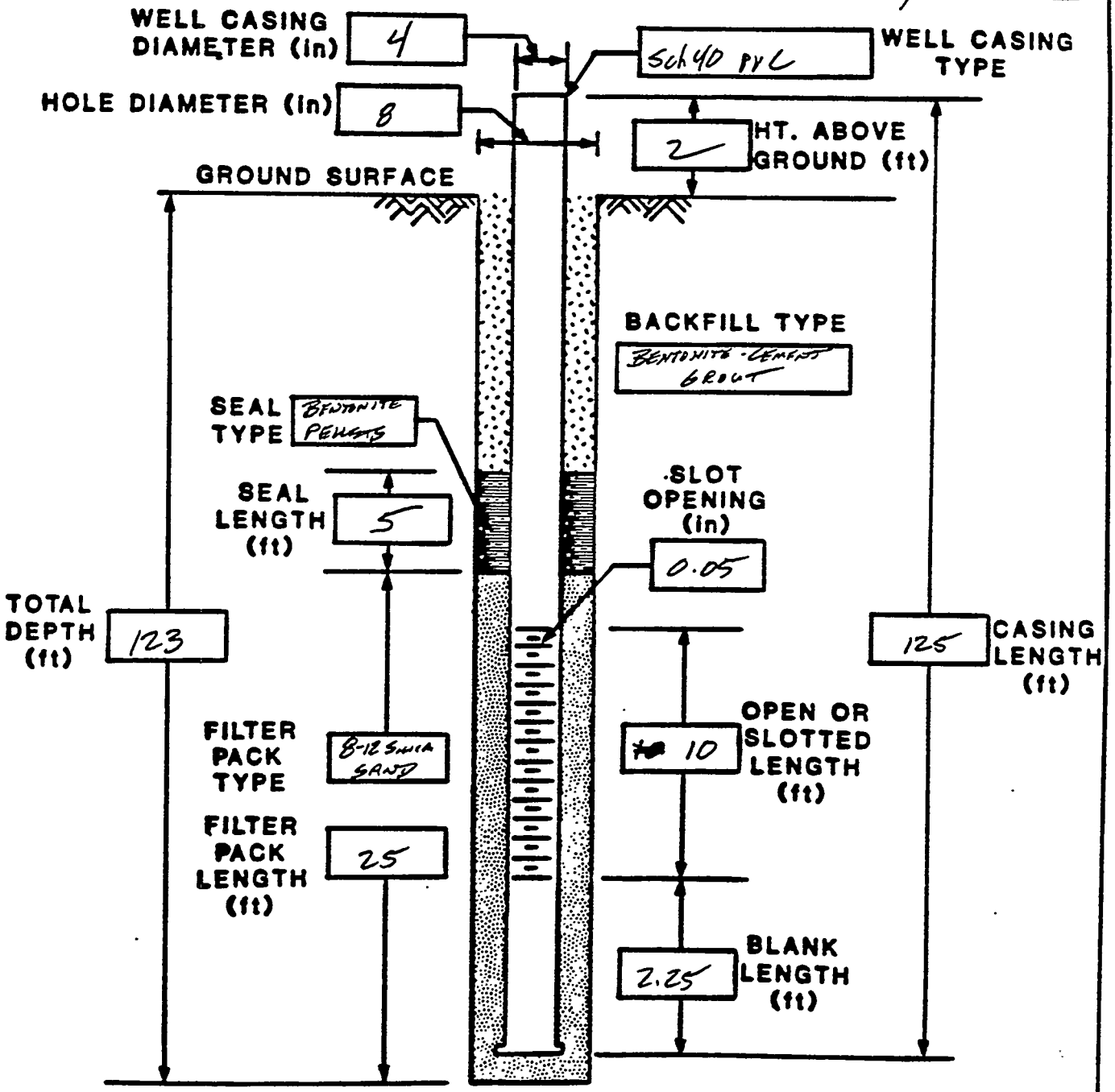
SITE ID: SPK-01 LOCATION ID: 927 DATE INSTALLED: 8/28/87

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) 0.05 slot

FORMATION OF COMPLETION: WASATCH

FIELD REP.: O. Holmquist DRILLER: Sunrise Enterprises / E Tewins



COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 927 FIELD REP: O. Holmquist

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

GROUND ELEVATION (FT. MSL): N/K COMPLETION DATE: 8/28/87

BOREHOLE SUMMARY

DRILLER: Sunrise Enterprises [Etruscan]

RIG TYPE: Portadrill #524

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
Tricone Roller	8 3/4	20	WATER
" "	8	125	WATER

CASING SUMMARY

CASING TYPE●	DESCRIPTION	DIA. (in.)	END✚ DEPTH (ft.)
P	Steel Prot. casing	8	7 1/2
B	Sch 40 PVC Blank	4	113
S	Sch 40 PVC, 0.025 slot	4	125
B	Sch 40 PVC, Sump	4	125

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

✚ Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE●	DESCRIPTION	END● DEPTH (ft.)
B	3% bentonite/Portland Cement grout	95
S	Bentonite Pellet seal	98
F	8-12 Silica Sand	123

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	8/29/87	3:45 pm	5:15 pm
CASING	8/28/87	9:45 Am	10:30 Am
FILTER PACK	8/28	10:30	11 Am
SEAL	8/28	11:00	11:15 Am
BACKFILL	8/28	1:30 pm	2:30 pm
DEVELOPMENT	9/15/87	3:30 pm	5:35 pm
	9/16/87	6:50 Am	9 Am
OTHER			

WELL DEVELOPMENT

Begin WL = 97.9 BTOC
End WL = 97.9 BTOC 9/18/87
S = 1.25%
C: 1750 umhos
T: 12.5°C
pH: 6.0
water very clear @ end of development

COMMENTS:

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

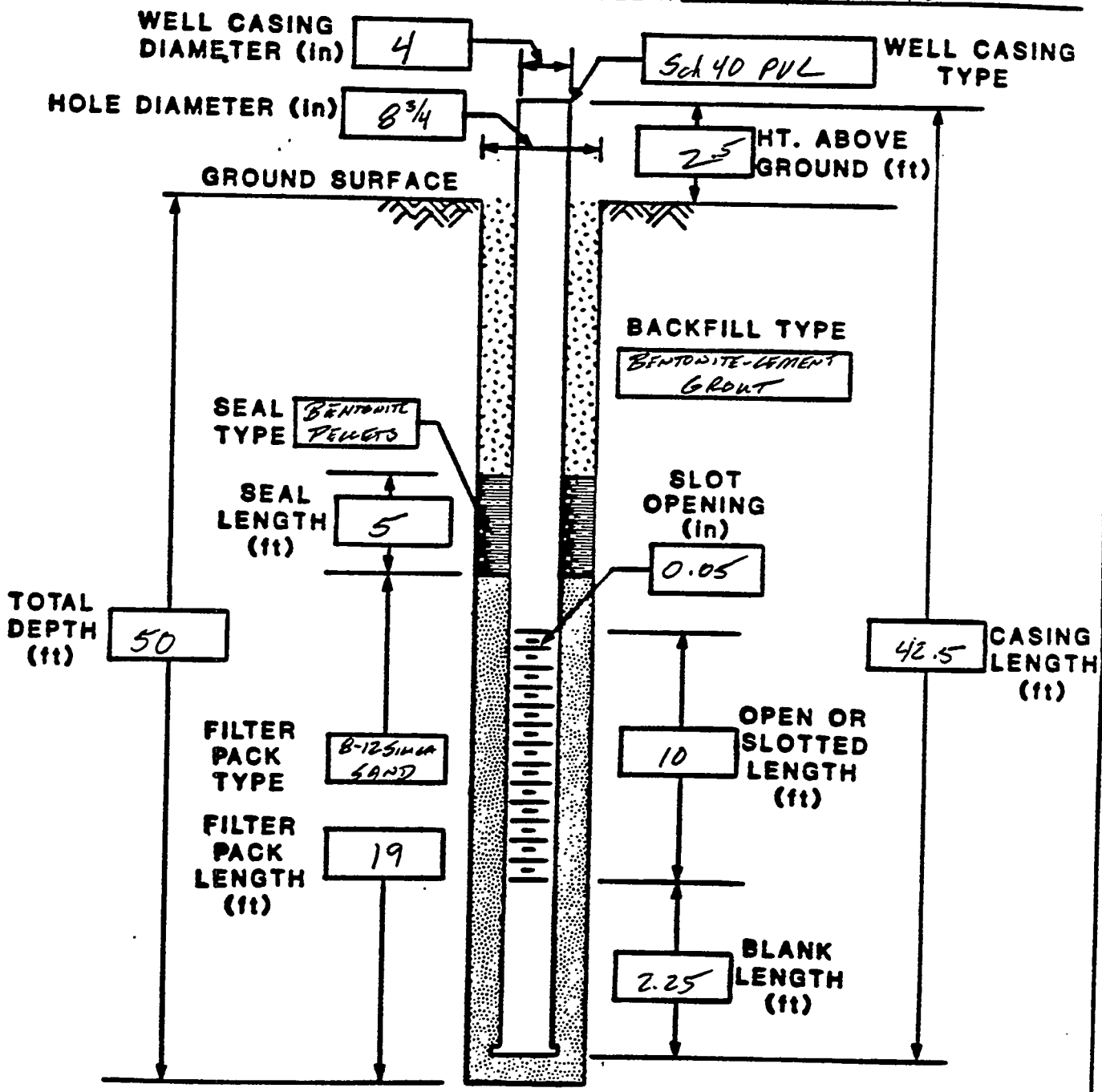
SITE ID: SPK-01 LOCATION ID: 928 DATE INSTALLED: 8/31/87

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) 0.05 slot

FORMATION OF COMPLETION: WASATCH

FIELD REP.: O. Holmquist DRILLER: Sunrise Enterprises



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

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 928 FIELD REP: O. Holmquist

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

GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 8/31/87

BOREHOLE SUMMARY

DRILLER: Sunrise Enterprises / E. Trujillo

RIG TYPE: Portadrill 524

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
NX core	4	50	Bentonite/Guilliglec mud
DRAG	5 1/8	30	Bentonite/Guilliglec mud
GEARBIT	8 3/4	40	WATER

CASING SUMMARY

CASING TYPE ●	DESCRIPTION	DIA. (in.)	END DEPTH ● (ft.)
P	Sch 40 STEEL	8	5 ±
B	Sch 40 PVC BLANK	4	30.25
S	Sch 40 PVC, .05 slot	4	40.25
B	Sch 40 PVC, SUMP	4	42.5

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

● Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE ●	DESCRIPTION	END DEPTH ● (ft.)
B	Bentonite-Cement Grout	16
S	Bentonite Pellet Seal	21
F	8-12 Silica Sand	40
S	Bentonite Pellet Seal	50

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	8/30/87	3:15 pm	5:45 pm
	8/31/87	8:30 am	12:50 pm
CASING	8/31/87	1 pm	1:10 pm
FILTER PACK	8/31/87	1:10 pm	1:25 pm
SEAL	8/31/87	1:30 pm	1:35 pm
BACKFILL	8/31/87	2:45 pm	3:15 pm
DEVELOPMENT	9/16/87	3:45 pm	4:45 pm
	9/17/87	6:40 am	9:40 pm
OTHER			

WELL DEVELOPMENT

Begin WL = 23' BTOC 9/16/87
End WL = 23' BTOC 9/18/87
Water began dirty / no sand
Water ended very clean
T = 10°C
S = 1%0
C = 1330 µmhos
pH = 5.5 to 6.0

COMMENTS: 8/30/87 Cored (NX) to 30', 8/30/87 Reamed w/ 5 1/8 to 30, cored (NX) to 50', 8/31 Reamed to 8 3/4 to 40'

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

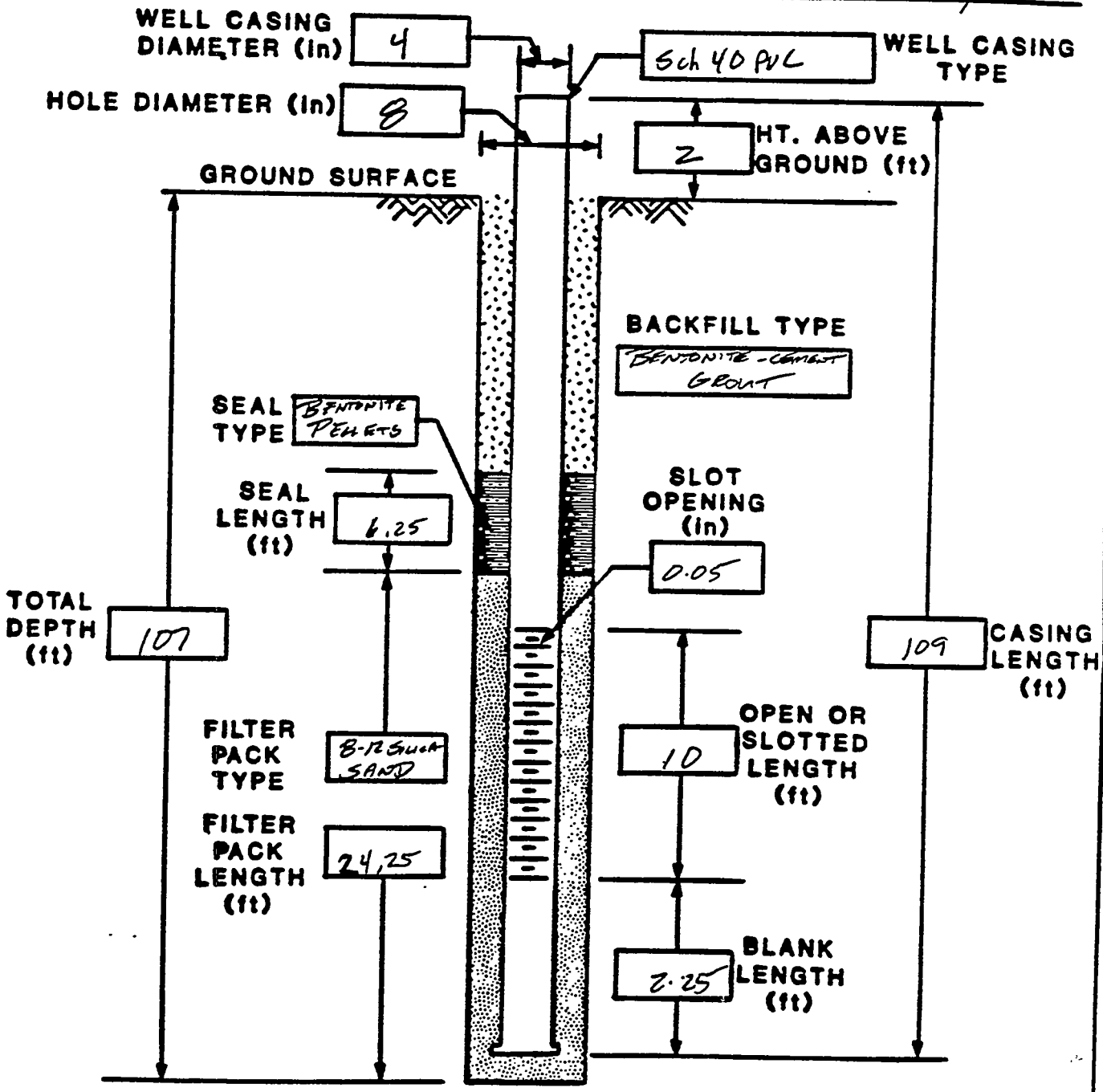
SITE ID: SPK-01 LOCATION ID: 929 DATE INSTALLED: 9/4/87

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) 0.05 est

FORMATION OF COMPLETION: WASATCH

FIELD REP.: O. Holmquist DRILLER: Sunrise Enterprises / E. Trujillo



COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 929 FIELD REP: O Hamson, S

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

GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 9/4/87

BOREHOLE SUMMARY

DRILLER: E. Trujillo

RIG TYPE: Portadrill 524

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
NX core	4	100	Air/water
Rotary/Tricone	8	110	Air/water

CASING SUMMARY

CASING TYPE ●	DESCRIPTION	DIA. (in.)	END ✚ DEPTH (ft.)
P	Steel prot. casing	8	7 1/2
B	Sch 40 PVC Blank	4	94.75
S	Sch 40, .05 slot PVC	4	104.75
B	Sch 40 PVC sump	4	107

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

✚ Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE ●	DESCRIPTION	END ● DEPTH (ft.)
B	Bentonite/grout seal	~~82.75~~ 76.5
S	BENTONITE PELLETS	82.75
F	B-12 SILICA SAND	107

● B - Backfill S - Seal F - Filter Pack

Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	9/1/87	—	—
	9/3/87	—	—
	9/4/87	—	—
CASING	9/4/87	9 AM	9 30 AM
FILTER PACK	9/4/87	9 45	10 20
SEAL	9/4/87	10 22	10 24
BACKFILL	9/4/87	1 30	2 PM
DEVELOPMENT	9/8/87	8 45 AM	11 30 AM
OTHER			

WELL DEVELOPMENT

Bgn WL = 79.5 BTOC

Much trouble with this well - casing broken - drilled thru -

developed 2 3/4 hrs - pH ≈ 8.5 to 9.0

Very little or no water recovery

COMMENTS:

AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

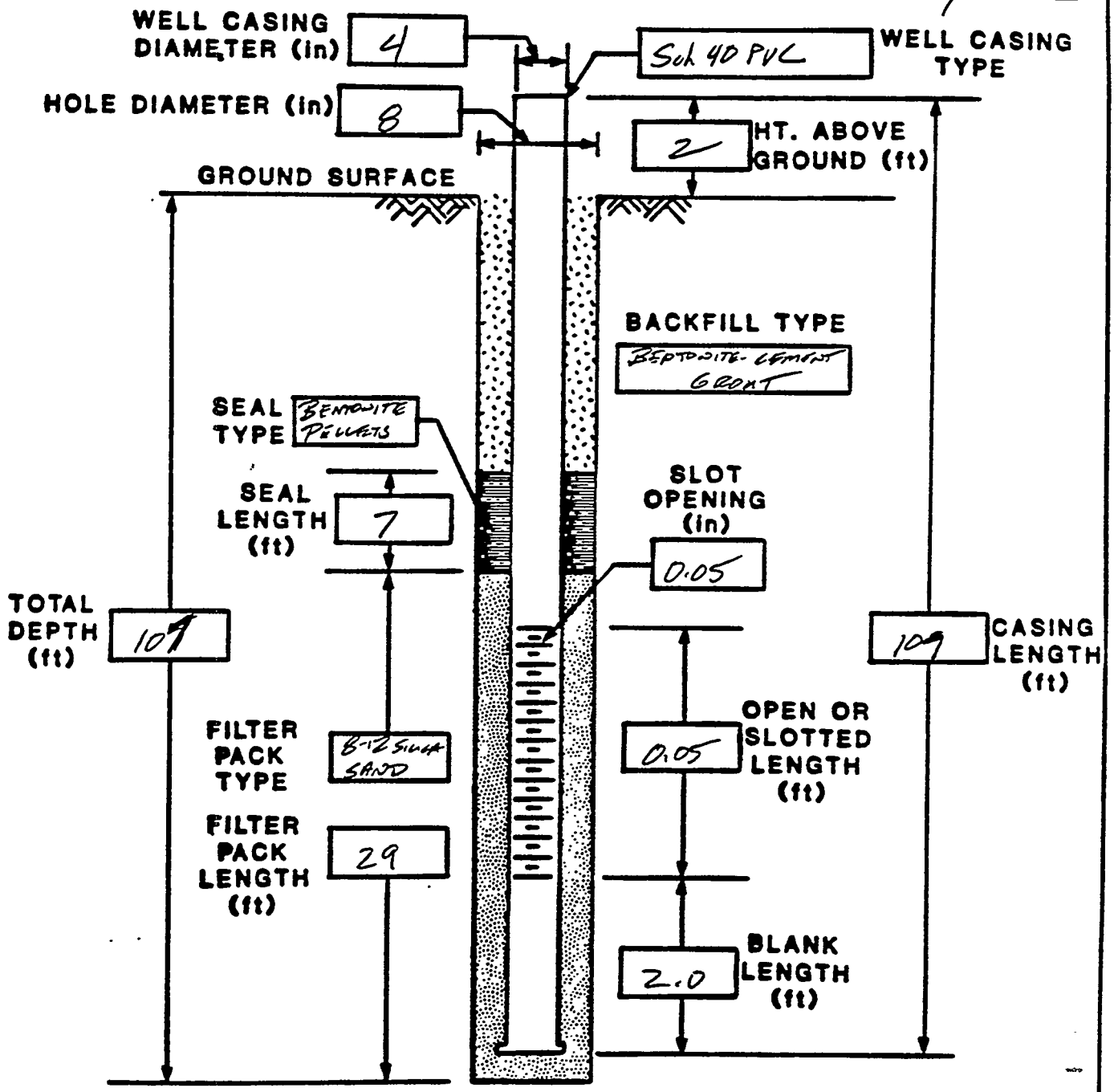
SITE ID: SPK-01 LOCATION ID: 930 DATE INSTALLED: 9/10/87

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) .05 slot

FORMATION OF COMPLETION: WASATCH

FIELD REP.: O. Holmquist DRILLER: Sunrise Enterprises / E. Trujillo



COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-01 LOCATION ID: 930 FIELD REP: O. Holmquist

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

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

BOREHOLE SUMMARY

DRILLER: E. Trujillo / Sunrise Enterprises

RIG TYPE: Randdrill 524

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
8 3/4			
Roller/Hammer	8 3/4	19	Water
Roller/Hammer	8	107	Water

CASING SUMMARY

CASING TYPE ●	DESCRIPTION	DIA. (in.)	END ✚ DEPTH (ft.)
P	8" sch 40 steel	8"	5
B	Sch 40 PVC blank	4	95
S	sch 40 PVC, .05 slot	4	105
B	sch 40 PVC sump	4	107

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

✚ Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE ●	DESCRIPTION	END ● DEPTH (ft.)
B	Bentonite/Cement grout	71
S	~~8x12 silica sand~~ Bent. Pellets	78
F	8x12 silica sand	~~109~~ 105

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	9/10/87	8:15 AM	9:30 AM
CASING	9/10/87	10:45 AM	11 AM
FILTER PACK	9/10/87	11:25 AM	11:45 AM
SEAL	9/10/87	1:45 PM	1:50 PM
BACKFILL	9/10/87	12:50 PM	1:45 PM
DEVELOPMENT	~~9/14/87~~ 9/16/87	~~8:45 AM~~ 10:35 AM	2 PM
OTHER			

WELL DEVELOPMENT

Water level - 9/14/87 7:30 AM = 89 BTOC
9/18/87 = 89 BTOC

Water bag on very dirty
mentr. recovery to test S.C.T -
pH ≈ 6.0

COMMENTS:

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

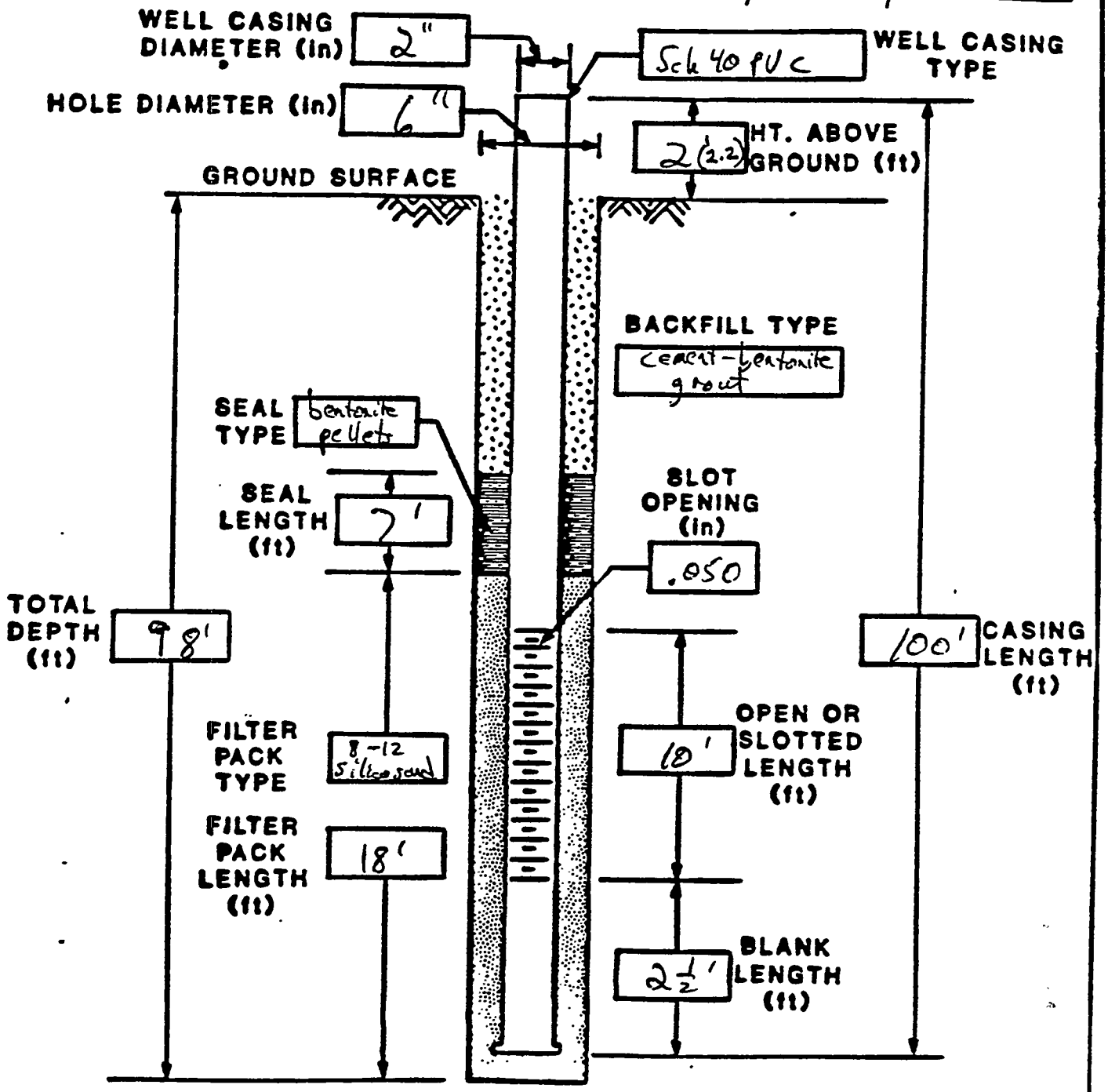
SITE ID: Spk01 LOCATION ID: 931 DATE INSTALLED: 12/13/87

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) N/K

FORMATION OF COMPLETION: Wasatch

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



COMMENTS:

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: Spk01 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: Baxter Bros / S Moore

RIG TYPE: Mobile Drill B-57

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
~~6" 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, .050 slot	2"	97.5
B	Sch 40 PVC (2½' sump)	2"	100.0

* 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	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 DATE	START TIME	END 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 Ec 10.8°C

Final ph 7, Ec 25, 10°C
static 80.5

COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

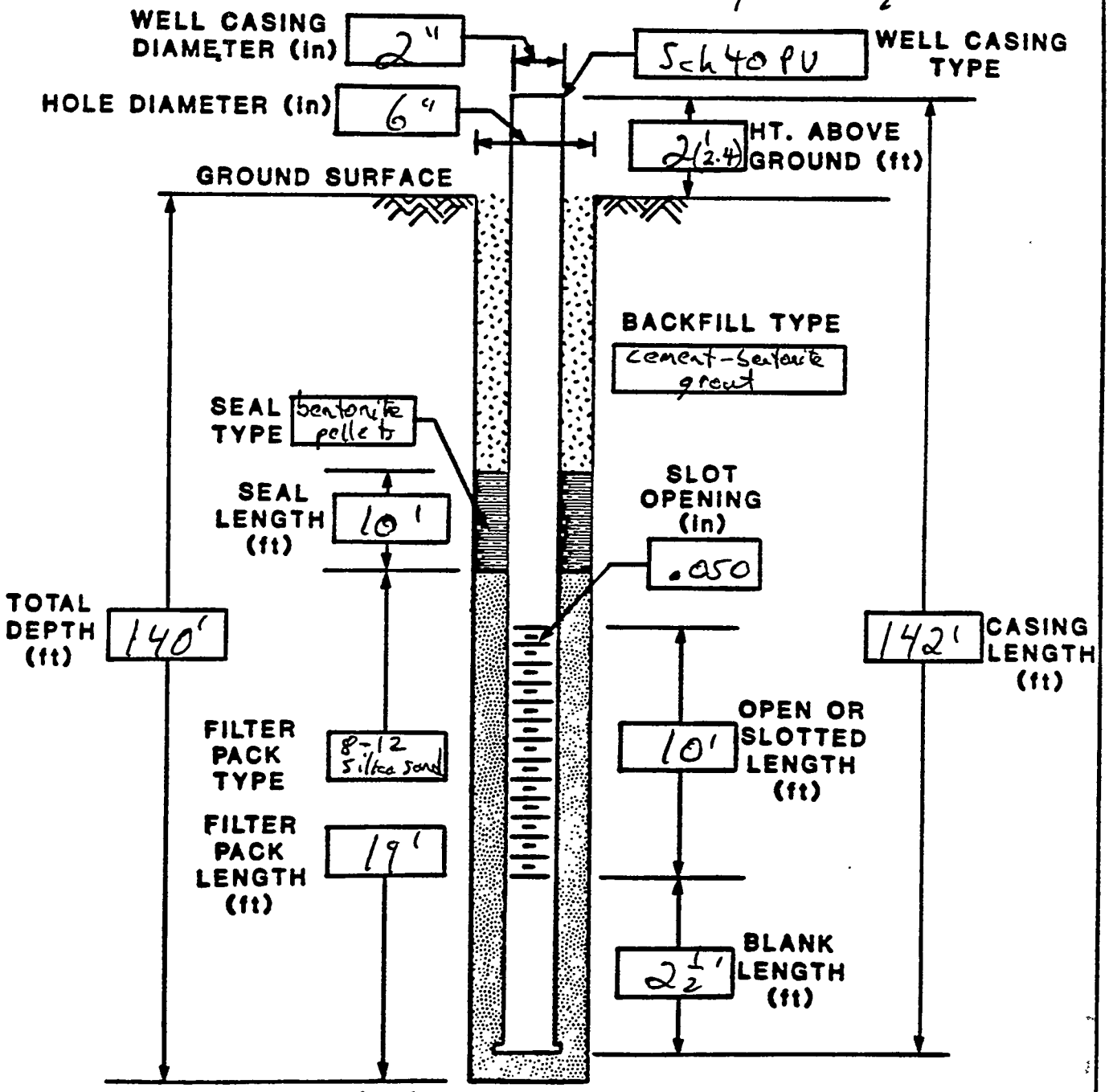
SITE ID: Spk01 LOCATION ID: 932 DATE INSTALLED: 12/16/02

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) N/K

FORMATION OF COMPLETION: Wasatch

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



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

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: Spk 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: Boyles 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'k	none
k cored 3'			

CASING SUMMARY

CASING TYPE●	DESCRIPTION	DIA. (in.)	END✚ DEPTH (ft.)
P	steel casing, 3' stickup	6"	5'
B	Sch 40 PVC	2"	129.5
S	Sch 40 PVC, .050 slot	2"	139.5
B	Sch 40 PVC (2½' sump)	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.)
G	Cement-bentonite grout	111'
S	bentonite pellets	121'
F	8-12 silica sand	140'

● G - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	12/13/87	12:45	4:15
	12/14	9:45	12:10
CASING	12/16	8:25	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, 2½°C

Final: 'static pH 6.5 Ec 25, 5°C

COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

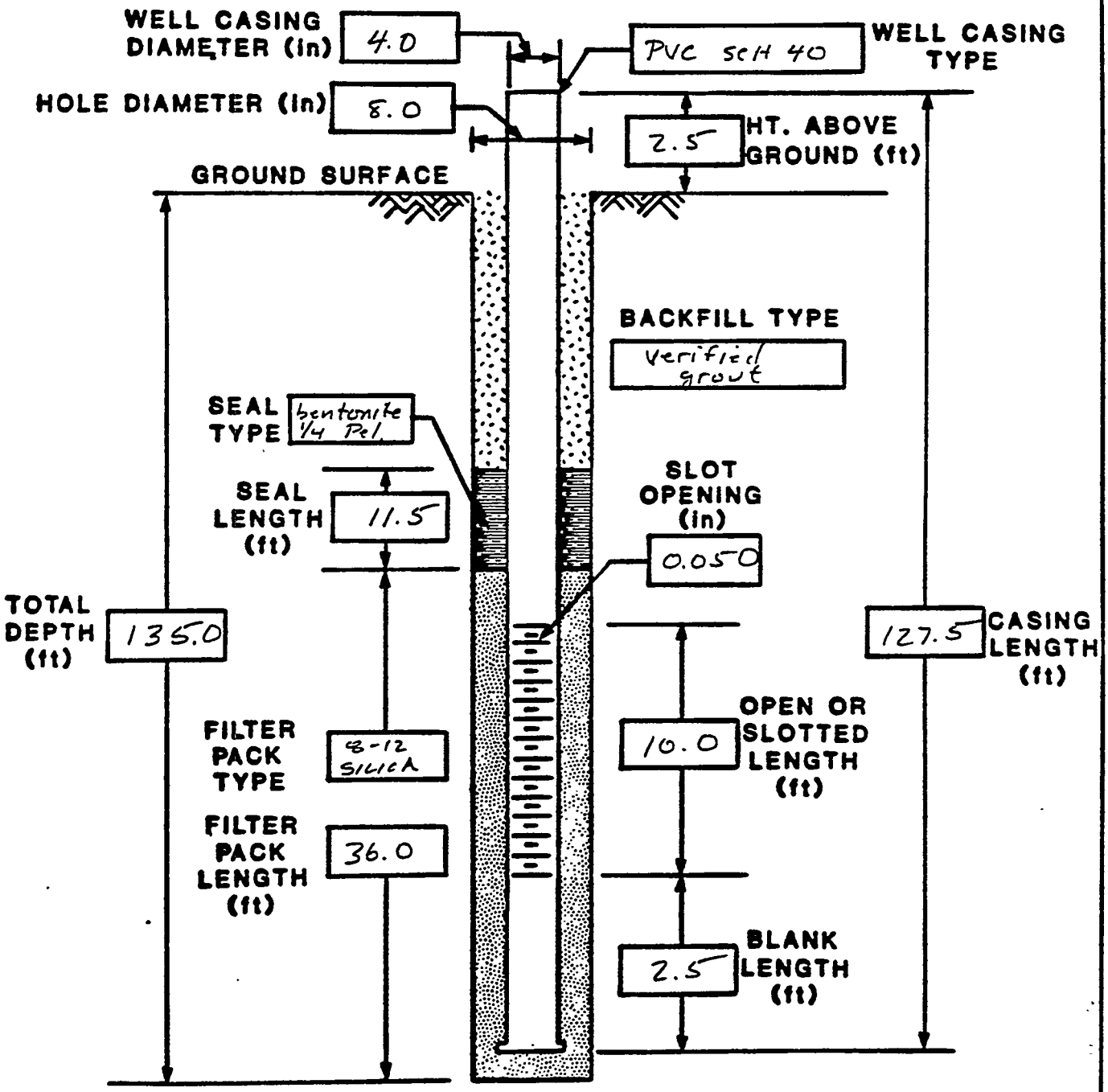
SITE ID: SPK-15 LOCATION ID: 933 DATE INSTALLED: 7-28-88

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) $(7\frac{7}{8} - 4'')^2$

FORMATION OF COMPLETION: Wasatch fm.

FIELD REP.: D. Metzler DRILLER: Barnhart



COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

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BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 933 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:

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

CASING SUMMARY

CASING TYPE●	DESCRIPTION	DIA. (in.)	END● DEPTH (ft.)
O	FILTER NO CASING	–	135
B	PVC SCH 40 SUMP + CAP	4.0	127.5
S	" " " screen	"	125.0
B	" " " casing	"	115.0
P	6' long 8 5/8 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	135.0
S	bentonite seal 1/4" Pel.	99.0
B	bentonite-cement grout	87.5

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

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

WELL DEVELOPMENT

COMMENTS:

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

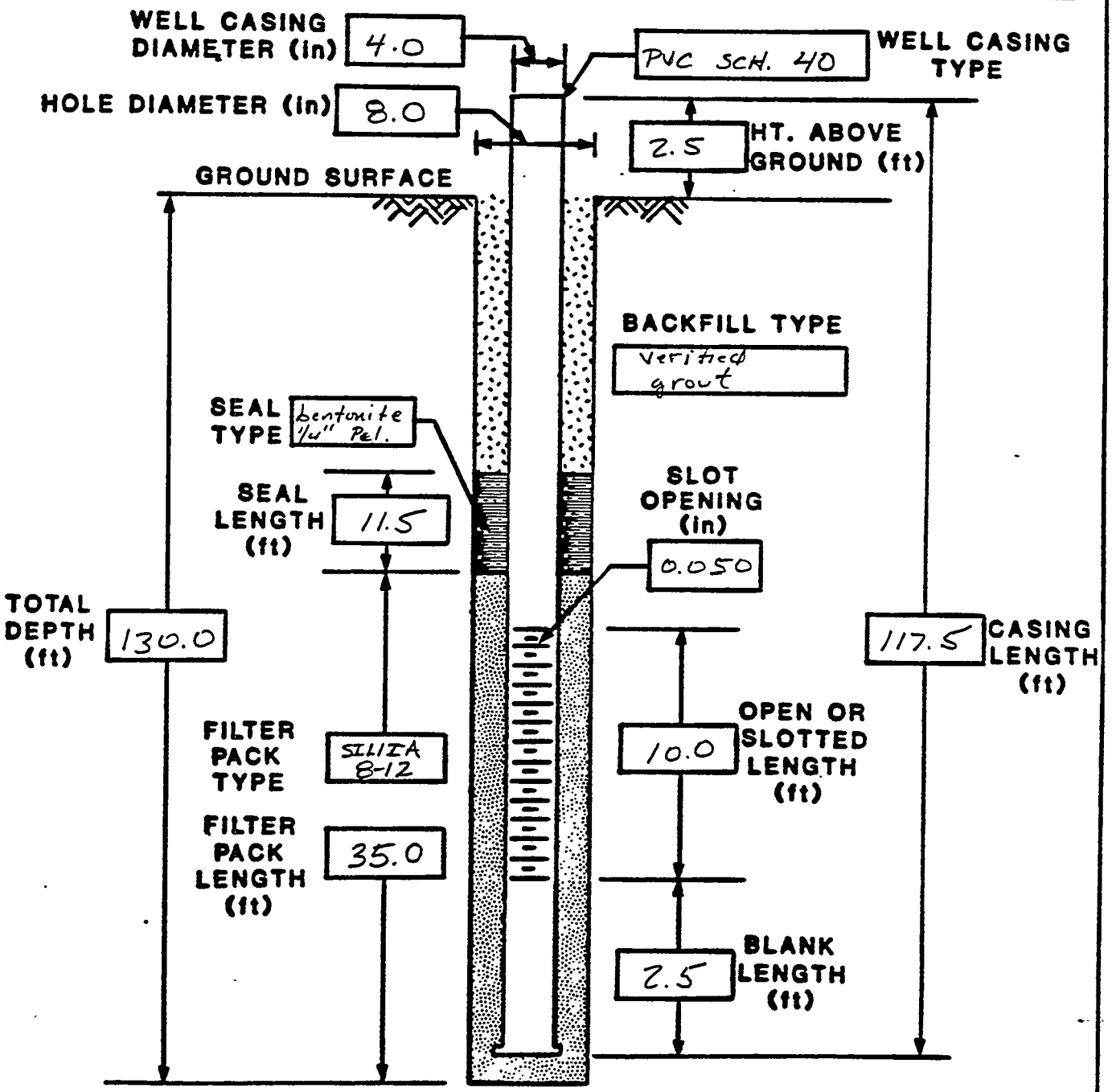
SITE ID: SPK-15 LOCATION ID: 934 DATE INSTALLED: 7-28-88

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

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

FORMATION OF COMPLETION: WASATCH fm.

FIELD REP.: D. METZLER DRILLER: BARNHART



COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

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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: E.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
			& AIR

CASING SUMMARY

CASING TYPE●	DESCRIPTION	DIA. (in.)	END DEPTH ◆ (ft.)
N	SILICA SAND		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	~~114.5~~
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 DATE	START TIME	END TIME
DRILLING ~~7-27-88~~	7-27-88	500	6 30 pm
steamed	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:

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

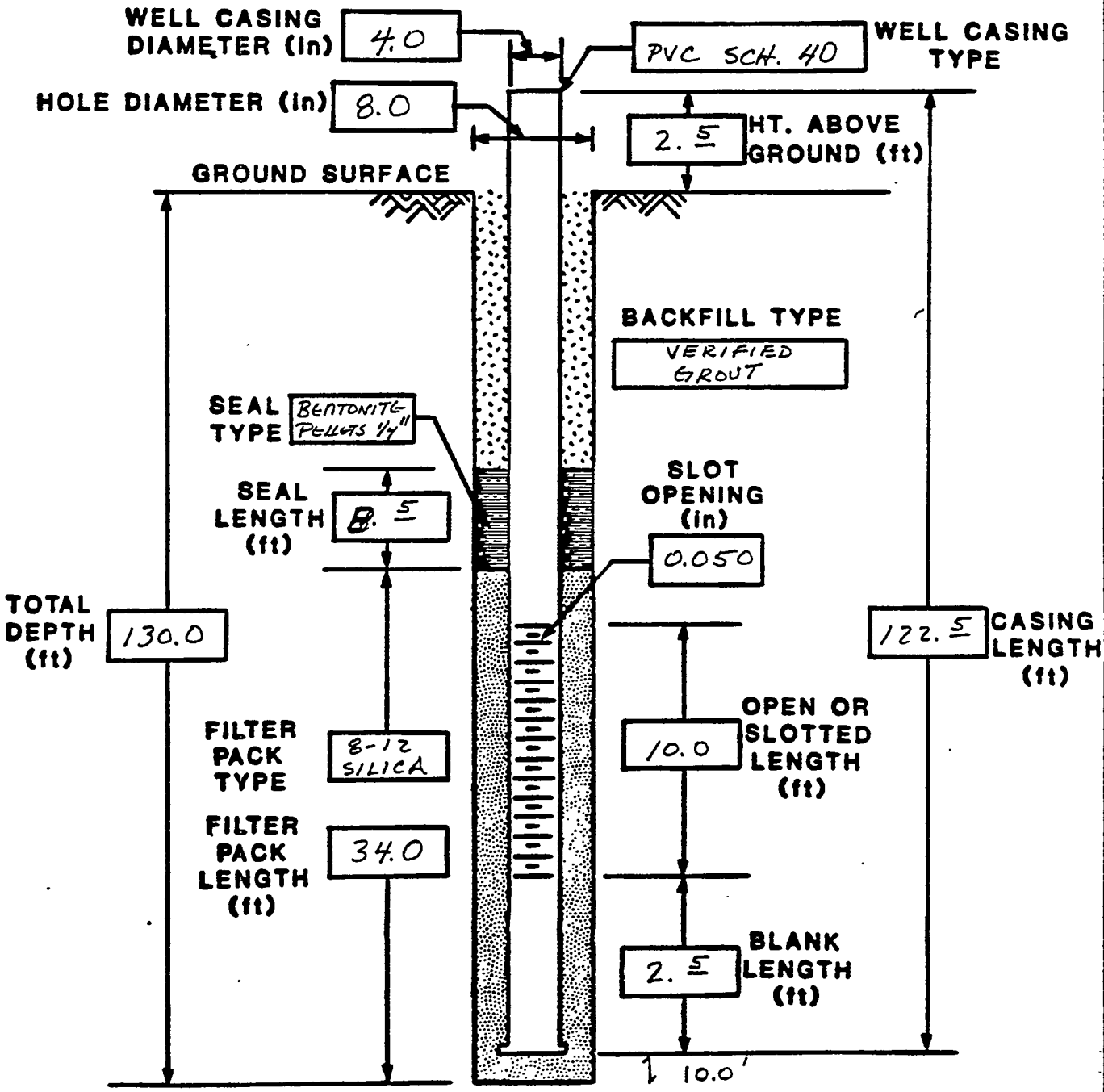
SITE ID: SPK-15 LOCATION ID: 935 DATE INSTALLED: 7-19-88

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) $(2\frac{3}{8}" - 4\frac{0}{}")^2$ /ft

FORMATION OF COMPLETION: WASATCH FM.

FIELD REP.: D. METZLER DRILLER: BARNHART



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

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

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 DATE	START TIME	END 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:

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

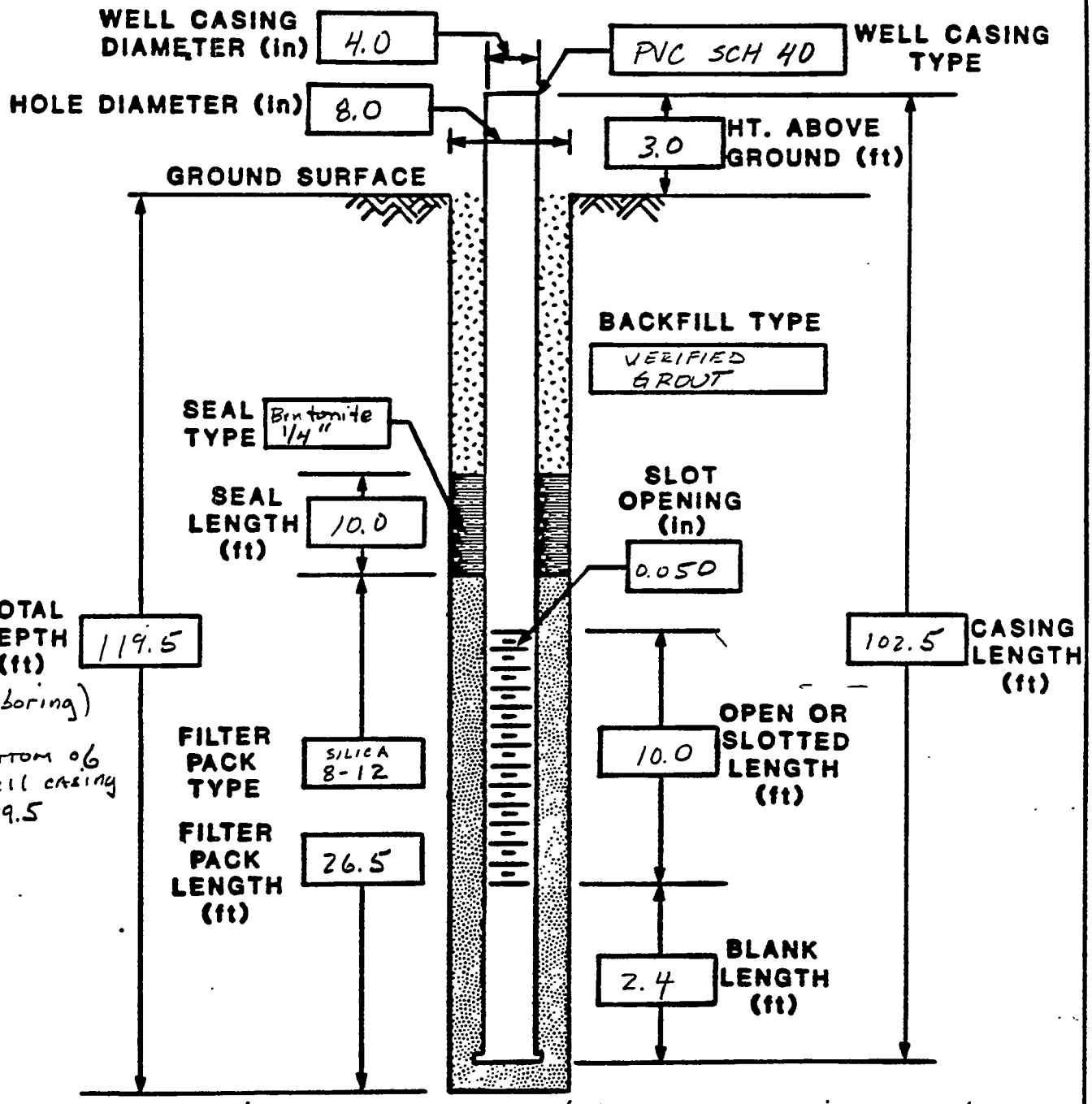
SITE ID: SPK-15 LOCATION ID: 936 DATE INSTALLED: 7-16-88

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) $(8\frac{3}{4} - 4.0)^2$ for 20' / $(7\frac{7}{8} - 4.0)^2$ to T.D.

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.

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

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 silica 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 DATE	START TIME	END 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 ≈ 10-15 min. Now wait for casing to fill up.

COMMENTS: GROUT SETTLED ≈ 15'

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

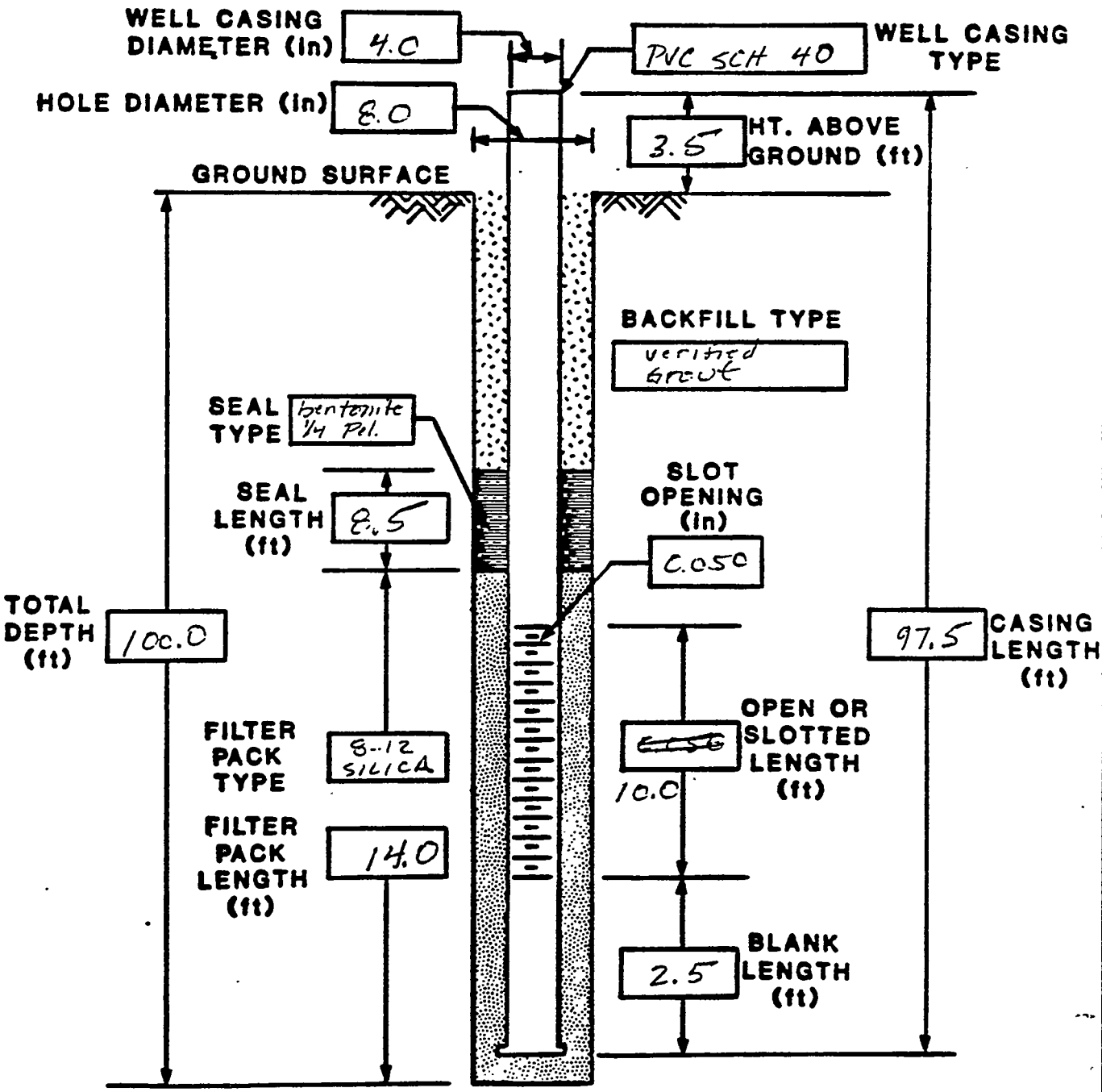
SITE ID: SPK-15 LOCATION ID: 937 DATE INSTALLED: 9-18-88

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) $(8'' - 4'')^2 / 84$

FORMATION OF COMPLETION: WASATCH fm. top of Blue shale

FIELD REP.: D. METZLER DRILLER:



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

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 937 FIELD REP: D. METZLER

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

GROUND ELEVATION (FT. MSL): UK COMPLETION DATE: 7-18-88

BOREHOLE SUMMARY

DRILLER: BARNHART

RIG TYPE: G.D. 15WD ROTARY

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
TRI-CONE	7 7/8"	100.0'	WATER

CASING SUMMARY

CASING TYPE ●	DESCRIPTION	DIA. (in.)	END DEPTH ✚ (ft.)
B	PVC SCH 40 SUMP	4.0	94.5
S	" " "	"	92.0
B	" " "	"	82.0

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

✚ Depth from Top of Casing

WELL CONSTRUCTION

TYPE CODE ●	DESCRIPTION	END DEPTH ● (ft.)
B	BORING WALL SLUFF	100.0
F	12 SACKS / 8-12 SILICA S.	94.5
S	3 SACKS bentonite 1/4"	80.0
B	bentonite-cement grout	71.5

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING ~~7-17-88~~	7-17-88	12:15 pm	1:45 pm
CLEANING HOLE	7-18-88	7:00 am	8:00 AM
STEAMED	7-17-88	1:45 pm	2:30 pm
CASING	7-18-88	8:00 am	8:30 AM
FILTER PACK	7-18-88	8:30 am	9:45 am
SEAL	7-18-88	9:45 am	10:00 am
BACKFILL	7-18-88	11:05 am	11:15 am
DEVELOPMENT			
OTHER			

WELL DEVELOPMENT

COMMENTS: Large cavern in bottom of hole: 12 sacks of silica sand to cover screen. Grout ~7' below gr. level.

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

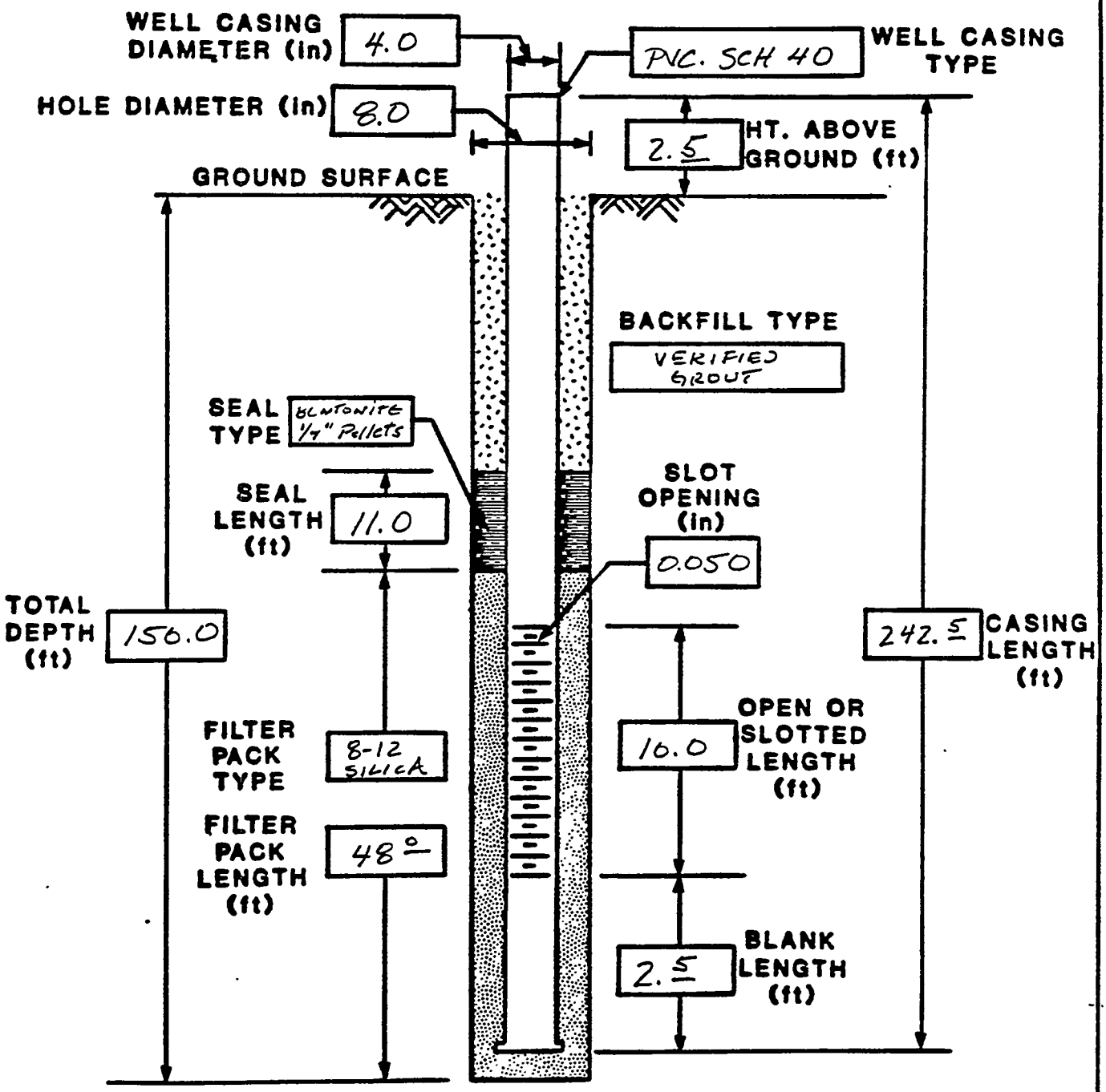
SITE ID: SPK-15 LOCATION ID: 938 DATE INSTALLED: 7-20-88

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) (7 7/8" - 4.0")

FORMATION OF COMPLETION: WATSATCH FM: LOWER CONFINED AQUIFER

FIELD REP.: D. METZLER DRILLER: BARNHART



COMMENTS:

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

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

DRILLER: BARNHART

RIG TYPE: G.D. ROTARY 15WD

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
TRI-CONE	7 7/8"	250.0	AIR
			+ WATER

CASING SUMMARY

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

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

◆ Depth from Top of Casing

WELL CONSTRUCTION

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

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING relocate	7-19-88	3:30 pm	4:00 pm
	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 12 SACKS	7-20-88	4:30 pm	5:00 pm
SEAL	7-20-88	5:00 pm	5:15 pm
BACKFILL	7-21-88	8:45 am	1:15 pm
DEVELOPMENT			
OTHER			

WELL DEVELOPMENT

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

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

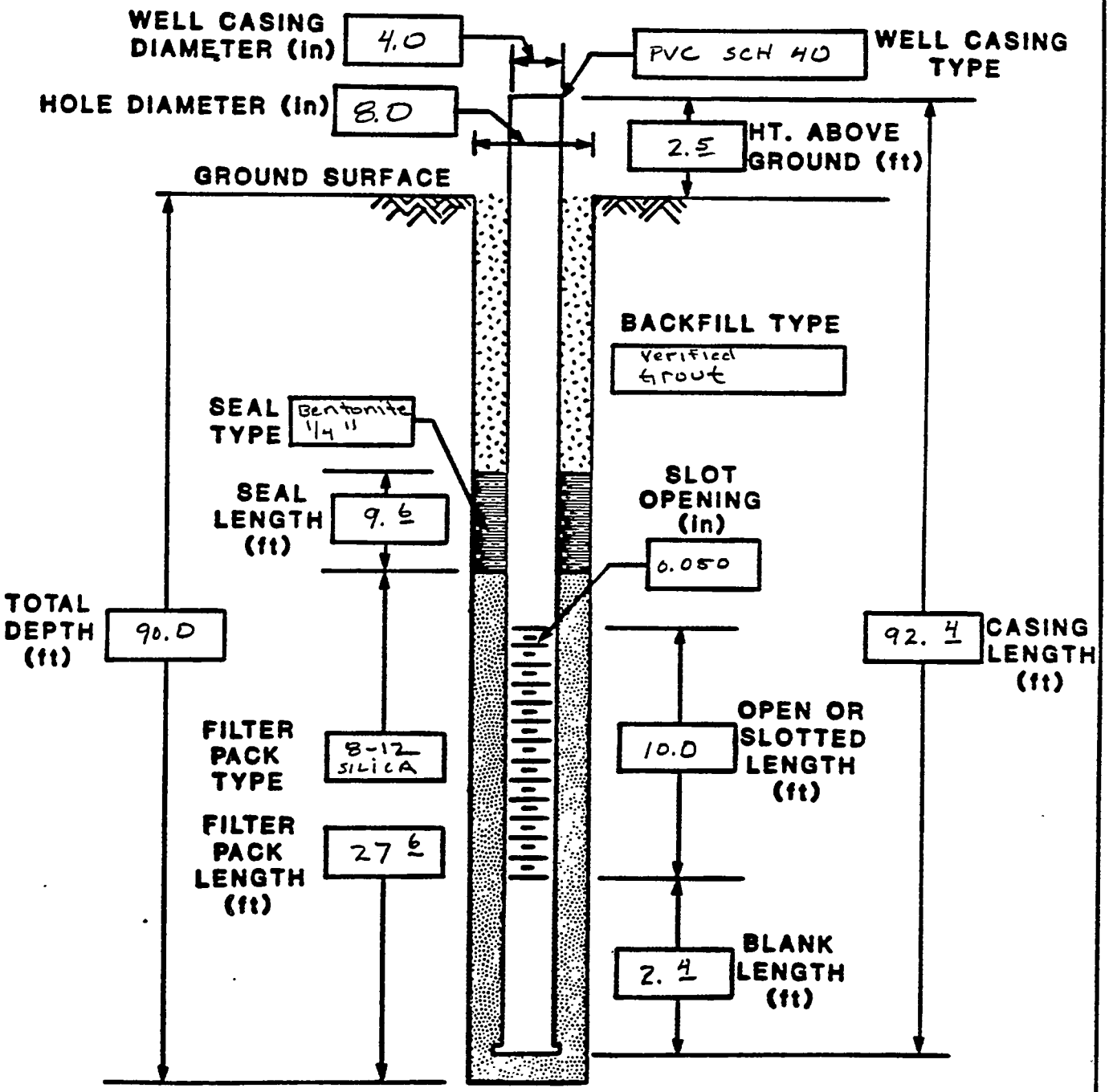
SITE ID: SPK-15 LOCATION ID: 939 DATE INSTALLED: 7-17-88

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) 7 7/8 - 4.0 = 3 7/8 ^{2} /ft.

FORMATION OF COMPLETION: WASATCH FM:

FIELD REP.: D. METZLER DRILLER: BARNHART



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

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-16 LOCATION ID: 939 FIELD REP: D. METZLER

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

GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 7-17-88

BOREHOLE SUMMARY

DRILLER: BARNHART, WY

RIG TYPE: G.D. 15 WD ROTARY

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
TRI-CONE	7 7/8"	90.0	AIR
* " "	"	90.0	WATER
* cleaned hole w/ water			
NOTE: DID NOT SET surface casing			

CASING SUMMARY

CASING TYPE ●	DESCRIPTION	DIA. (in.)	END ✚ DEPTH (ft.)
B	PVC SCH 40 SUMP	4.0	89.7
S	" " "	"	87.4
B	" " "	"	77.4

● F-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	89.7
S	Bentonite Pellets 1/4" H_2O	62.2
B	bentonite-cement grout	52.5

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	7-16-88	2:45 PM	5:00 PM
CLEANED HOLE	7-17-88	7:00 AM	8:00 AM
STEAMED CASING	7-17-88	8:00 AM	8:30 AM
	7-17-88	8:30 AM	9:00 AM
FILTER PACK	7-17-88	9:00 AM	9:10 AM
SEAL	7-17-88	9:10 AM	9:20 AM
BACKFILL	7-17-88	10:40 AM	11:15 AM
DEVELOPMENT	7-21-88	8:00 AM	12:00 PM
OTHER			

WELL DEVELOPMENT

Basically it's a dry hole. We'll try again next week. (7-21)

COMMENTS:

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

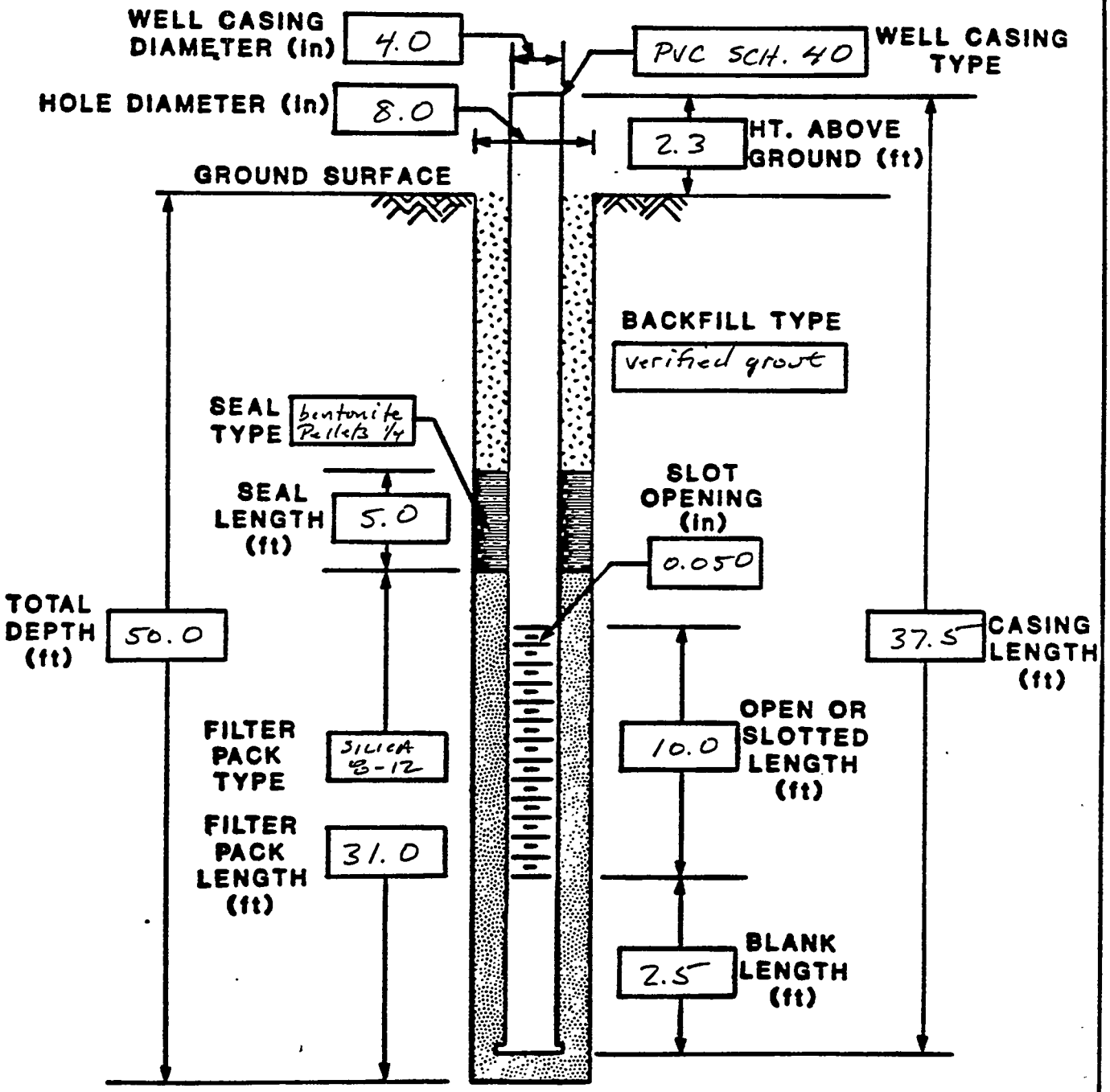
SITE ID: SPK-15 LOCATION ID: 940 DATE INSTALLED: 7-27-88

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) (7 7/8" - 4.0")

FORMATION OF COMPLETION: Bottom of Pit Wasatch fm.

FIELD REP.: D. MEYLER DRILLER: BARNHART



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

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

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BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 940 FIELD REP: D. METZLER

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

GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 7-27-88

BOREHOLE SUMMARY

DRILLER: BARNHART

RIG TYPE: G.D. 1500 WD ROTARY

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
TRI CONE TOOTH BIT	7 7/8	50.0	AIR

CASING SUMMARY

CASING TYPE●	DESCRIPTION	DIA. (in.)	END DEPTH ◆ (ft.)
B	PVC Sch 40 SUMP	4.0	37.5
S	" " " Screen	4.0	35.0
B	" " " Casing	4.0	25.0
P	6' long steel casing 8 5/8 OD	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	50.0
S	bentonite 1/4" Pellets	19.0
B	bentonite-cement grout	14.0

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	7-27-88	11 15 am	12 15 pm
steamed	7-27-88	12 30 pm	1 00 pm
tripped out	"	1 00 pm	1 20 pm
CASING	7-27-88	1 15	1 35 pm
FILTER PACK	7-27-88	1 45	2 05 pm
SEAL	7-27-88	2 05	2 10 pm
BACKFILL	7-27-88	~~2 25~~ 3 10 pm	3 25 pm
DEVELOPMENT			
OTHER			

WELL DEVELOPMENT

COMMENTS: water level at 19'

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

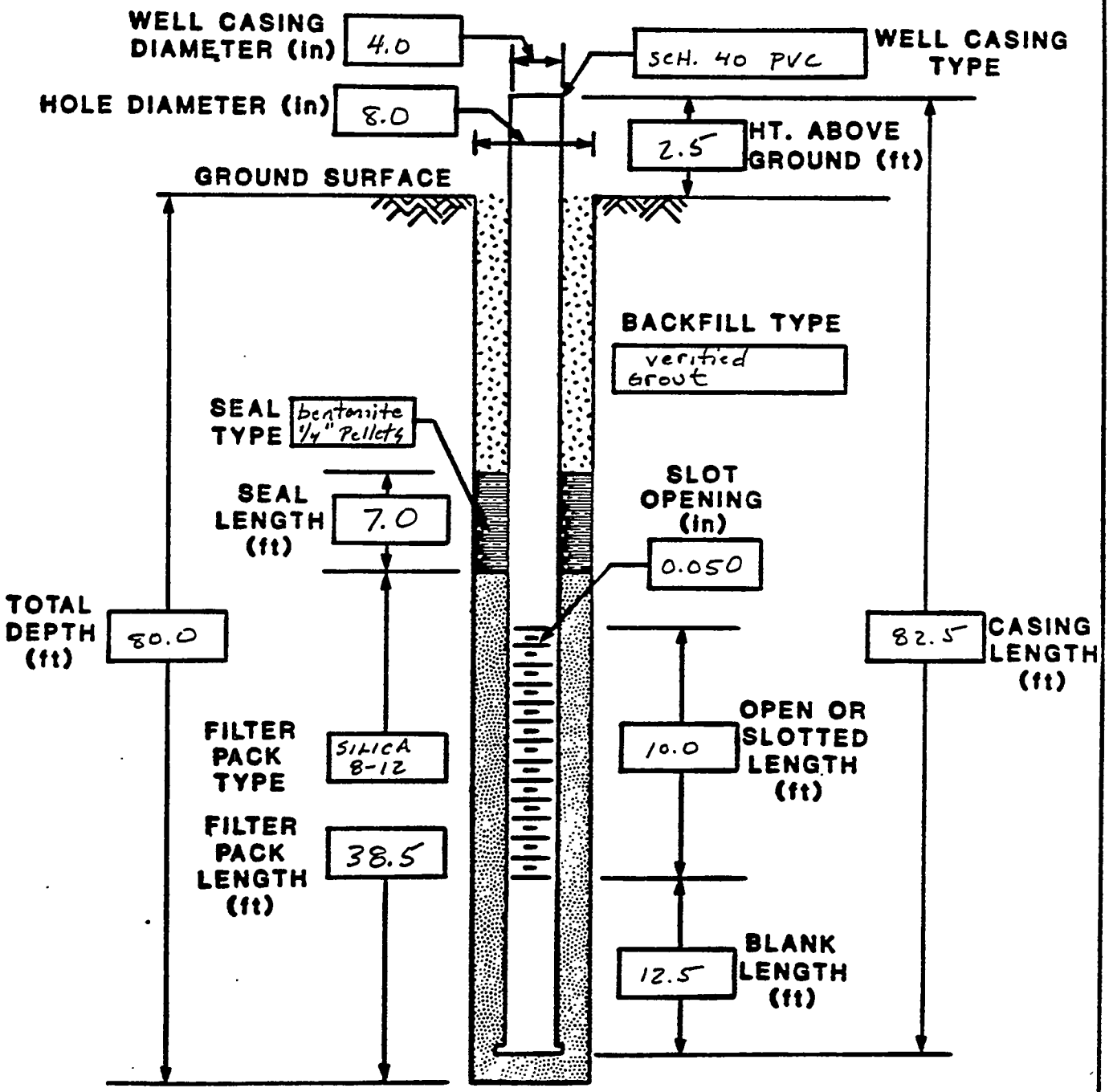
SITE ID: SPK-15 LOCATION ID: 941 DATE INSTALLED: 7-26-88

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) $(7\ 7/8'' - 4.0'')^2$

FORMATION OF COMPLETION: shaley upper zone of Wasatch fm.

FIELD REP.: D. METZLER DRILLER: BARNHART



COMMENTS: water level 9-27-88 7:30 am at 45.0'
bentonite seal cured all night

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 941 FIELD REP: D. METZLER

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

WELL DEVELOPMENT

COMMENTS: water level 7-27-88 45'

Coarse sand lense at 60'-65'

JL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

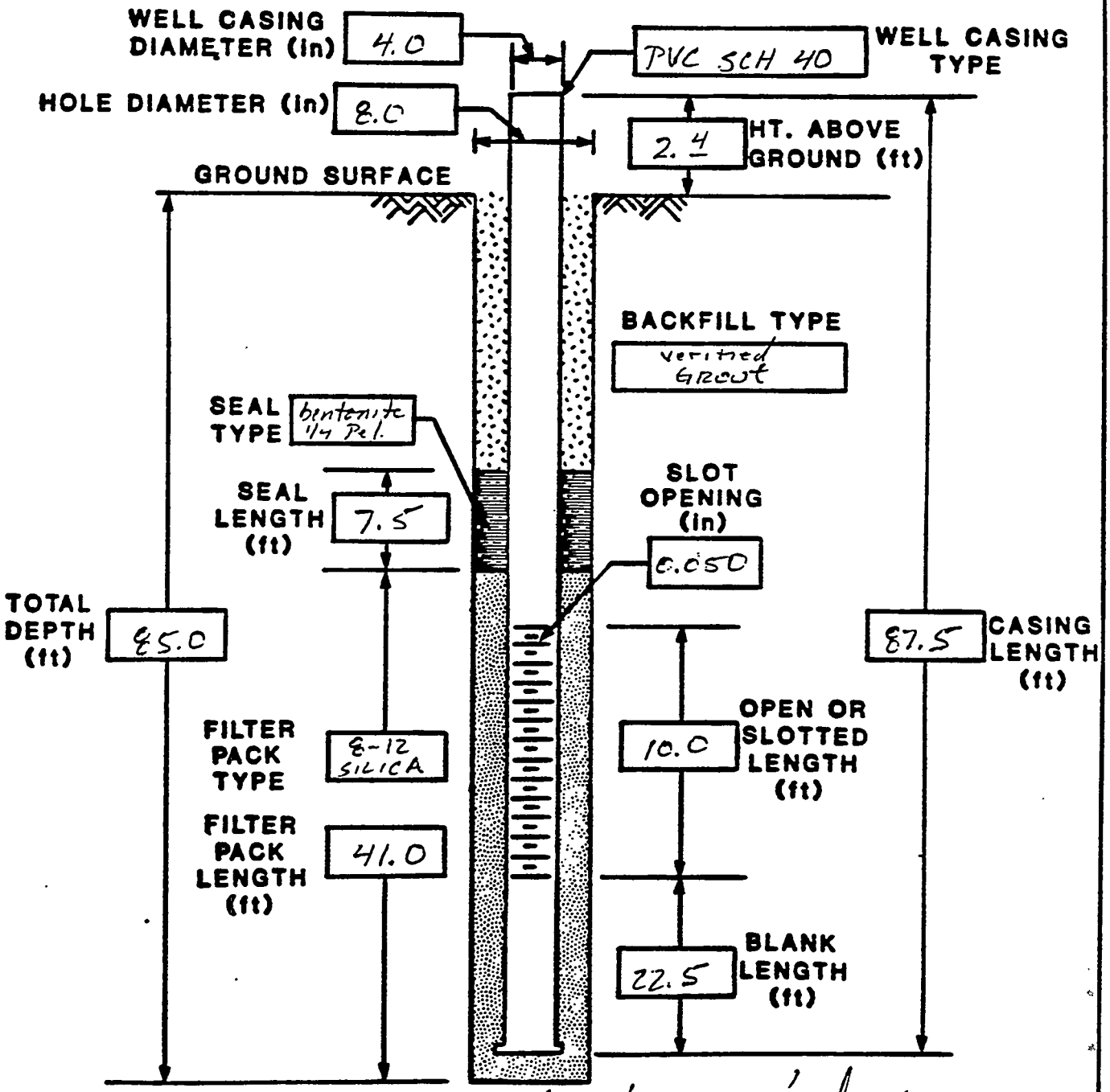
SITE ID: SPK-15 LOCATION ID: 942 DATE INSTALLED: 9-18-88

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

OPEN AREA PER LINEAL FT. ($IN^2/FT.$) $(7\frac{7}{8}" - 4")^2 / 84$

FORMATION OF COMPLETION: WASATCH FM.

FIELD REP.: D. METZLER DRILLER: BARNHART



COMMENTS: 5.5 / shale contact at 62.0' depth

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

BOREHOLE/WELL CONSTRUCTION LOG

SITE ID: SPK-15 LOCATION ID: 942 FIELD REP: D. METZLER

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

GROUND ELEVATION (FT. MSL): NK COMPLETION DATE: 7-18-88

BOREHOLE SUMMARY

DRILLER: BARNHART

RIG TYPE: G.D. 15WD ROTARY

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
TRI-CONE	7 7/8"	85.0	AIR +
			SOME H_2O

CASING SUMMARY

CASING TYPE*	DESCRIPTION	DIA. (in.)	END DEPTH ✚ (ft.)
B	PVC SCH 40	4.0	85.0
S	" " " Screen	"	62.5
B	" " "	"	52.5

* 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	85.0
S	2 SACKS bentonite 1/4"	44.0
B	bentonite-cement grout	36.5

* B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	7-18-88	12:00 pm	1:15 pm
Steaming	" "	1:15 pm	1:45 pm
CASING	7-18-88	1:45 pm	2:15 pm
FILTER PACK	7-18-88	2:15 pm	2:30 pm
SEAL	7-18-88	2:30 pm	2:40 pm
BACKFILL	7-18-88	4:00 pm	4:20 pm
DEVELOPMENT			
OTHER			

WELL DEVELOPMENT

COMMENTS: 22.5' sump in bottom of hole: putting the screen at contact s.s./shale.

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

12

WELL COMPLETION RECORD

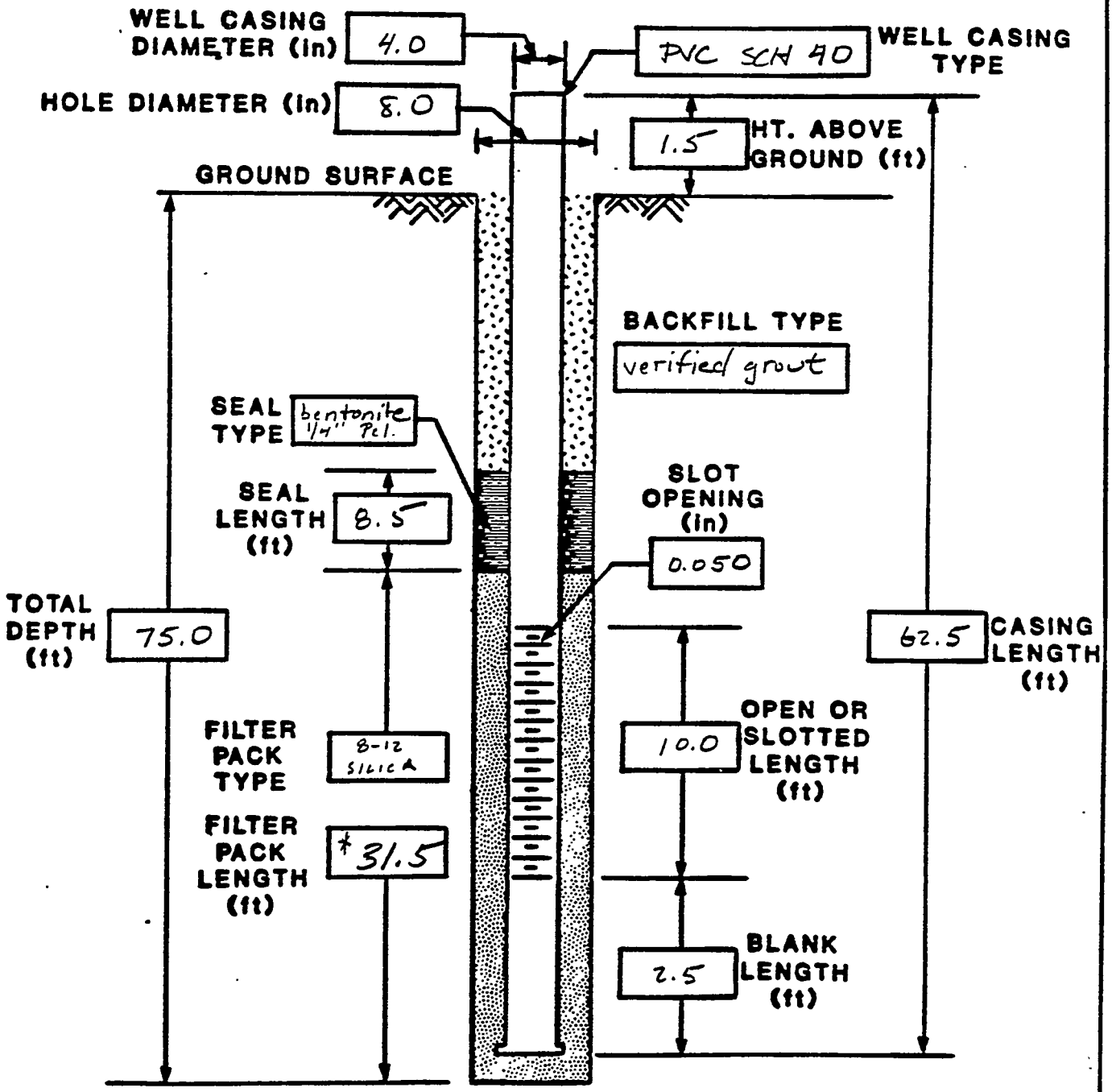
SITE ID: SPK-15 LOCATION ID: 943 DATE INSTALLED: 7-30-88

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

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

FORMATION OF COMPLETION: WASATCH FM

FIELD REP.: D. METZLER DRILLER: BARNHART



COMMENTS: * 1½' of bentonite seal at 64 - 62½ : Plug

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

12

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 WO ROTARY

BIT TYPE	HOLE DIA. (in.)	END DEPTH ● (ft.)	FLUID TYPE
TRI CONE 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 sumpcap	4.0	61.0
S	" " " screen	"	58.5
B	" " "	"	48.5
P	6' long steel casing	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 bottom plug	75.0
S	bentonite plug seal	64.0
F	8-12 silica filter	62.5
S	bentonite 1/4 Pel	43.5
B	bentonite-cement grout	35.0

● B - Backfill S - Seal F - Filter Pack

● Depth from Ground Surface

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START TIME	END TIME
DRILLING	7-30-88	10:00 am	11:30 am
steamed	"	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 observations

JEG-AL-ENG-1 (8/84)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

WELL COMPLETION RECORD

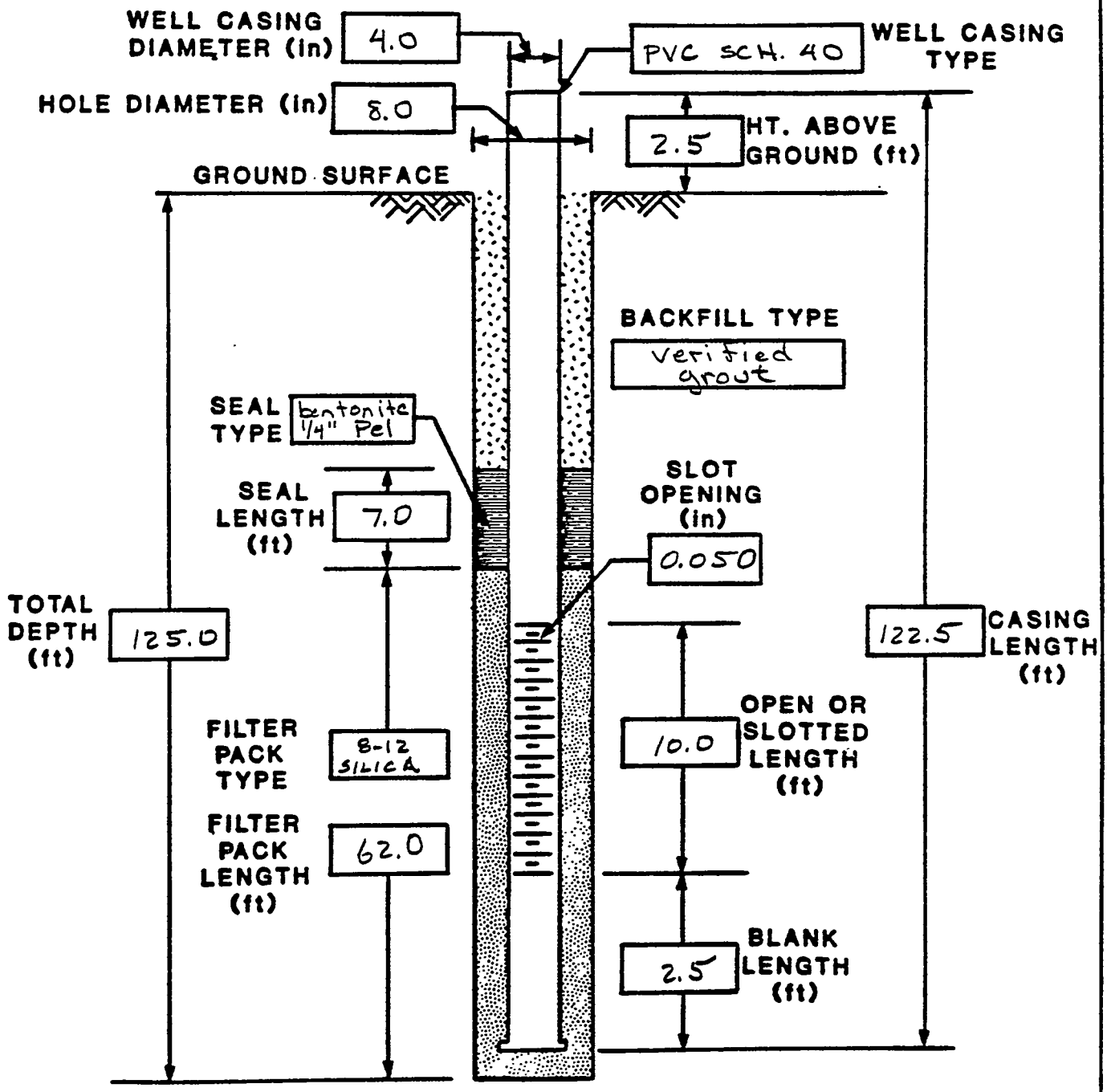
SITE ID: SPK-15 LOCATION ID: 944 DATE INSTALLED: 7-29-88

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

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

FORMATION OF COMPLETION: WATSATCH FM.

FIELD REP.: D. METZLER DRILLER: BARNHART



COMMENTS: 8 sacks of silica: most probably some fines are in among the 8-12 silica

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

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

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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

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 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 8 sacks + 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

CONSTRUCTION TIME LOG

ACTIVITY	START DATE	START 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
	7-29-88	6:00 pm	6:45 pm
SEAL	7-29-88	6:45 pm	7:00 pm
BACKFILL	7-30-88	7:00 pm	8:30 am
DEVELOPMENT			
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.

JEG-AL-ENG-1 (8/84)

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
							07/29/94	15:47	108.62	107.22	5002.48
0913	58150.1	60546.0	WU	N	5098.60	5096.80	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
							12/08/88	12:50	100.55	98.75	4998.05
							07/29/94	14:10	101.62	99.82	4996.98
0914	58134.9	60512.1	WL	N	5099.50	5097.50	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
							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	10:00	123.25	120.75	5003.75
							04/24/88	09:15	122.26	119.76	5004.74
							08/09/88	10:40	123.55	121.05	5003.45
							12/07/88	14:50	124.38	121.88	5002.62
							07/29/94	11:35	125.76	123.26	5001.24
0922	58163.6	59210.6	WU	N	5124.80	5122.40	02/02/88	13:30	119.58	117.18	5005.22
							04/24/88	11:20	119.68	117.28	5005.12
							08/07/88	10:45	119.63	117.23	5005.17
							12/07/88	16:02	120.46	118.06	5004.34
							07/29/94	11:30	121.80	119.40	5003.00
0923	59654.0	59828.6	WL	N	5115.00	5112.80	01/29/88	12:45	119.96	117.76	4995.04
							04/25/88	09:35	119.86	117.66	4995.14
							08/08/88	14:20	119.84	117.64	4995.16
							12/09/88	10:00	120.73	118.53	4994.27
							07/29/94	11:47	121.32	119.12	4993.68
0924	59855.8	61191.0	WU	N	5081.20	5079.10	01/03/88	14:00	89.46	87.36	4991.74
							04/25/88	12:35	89.50	87.40	4991.70
							08/25/88	13:15	89.65	87.55	4991.55
							12/06/88	12:00	88.29	86.19	4992.91
							07/29/94	12:22	90.45	88.35	4990.75
0925	59815.3	62832.1	WU	N	5042.10	5039.90	02/02/88	13:45	55.98	53.78	4986.12
							04/25/88	13:57	55.86	53.66	4986.24
							08/25/88	10:08	56.17	53.97	4985.93
							12/04/88	10:45	56.05	53.85	4986.05
							07/29/94	12:42	56.31	54.11	4985.79
0927	59161.8	60115.4	WU	N	5096.7	5094.7	01/03/88	12:30	98.57	96.57	4998.13
							04/24/88	14:10	98.67	96.67	4998.03
							08/24/88	15:15	99.10	97.10	4997.60
							12/03/88	14:20	99.10	97.10	4997.60
							07/29/94	12:10	96.77	94.77	4999.93
0928	57963.3	59497.0	WU	N	5028.50	5025.60	01/31/88	11:00	23.65	20.75	5004.85
							04/22/88	11:28	23.76	20.86	5004.74
							08/03/88	13:15	24.08	21.18	5004.42
							12/02/88	09:00	24.39	21.49	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	12:10	55.78	53.48	4980.22
							07/29/94	13:42	54.73	52.43	4981.27
0939	56195.2	59518.6	WU	N	5106.70	5104.70	08/05/88	13:35	88.20	86.20	5018.50
							11/30/88	14:50	88.00	86.00	5018.70
							07/29/94	14:49	88.49	86.49	5018.21
0940	58599.8	60040.7	WU	N	5016.70	5015.70	08/06/88	11:15	16.11	15.11	5000.59
							12/01/88	13:20	16.48	15.48	5000.22
0941	58222.4	62882.6	WU	N	5036.10	5033.90	08/06/88	14:40	47.72	45.52	4988.38
							12/07/88	13:00	48.19	45.99	4987.91
							07/29/94	13:39	48.39	46.19	4987.71
0942	56061.2	61105.4	WU	N	5049.10	5047.70	08/06/88	13:00	62.10	60.70	4987.00
							12/01/88	11:20	62.52	61.12	4986.58
							07/29/94	15:15	61.96	60.56	4987.14
0943	59282.9	64523.6	WU	N	5028.40	5027.20	08/08/88	12:00	49.84	48.64	4978.56
							12/06/88	10:45	50.00	48.80	4978.40
							07/29/94	16:48	50.30	49.10	4978.10
0944	60946.7	66463.1	WU	N	4995.90	4993.90	08/10/88	10:00	56.01	54.01	4939.89
							12/05/88	14:15	56.35	54.35	4939.55
							07/29/94	17:03	55.03	53.03	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	PVI	PARAMETER 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	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI	VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ALKALINITY	0922	02/03/88	0001	WU	N	MG/L CACO3		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.		-	-
	0929	04/28/88	0001	WU	N			400.	J	-	-
	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:
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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	PARAMETER PVI	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

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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	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI	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	09/20/87	0001	WU	N			0.23		0.1	-
	0928	02/03/88	0001	WU	N			0.34		0.1	-
	0928	04/22/88	0001	WU	N			0.13		0.1	-
	0928	08/04/88	0001	WU	N			0.2		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	J	0.1	-
	0929	08/11/88	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	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER 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		0.1	-
	0932	04/28/88	0001	WU	N			0.06	J	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		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		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		0.1	-
	0911	09/18/87	0001	WU	N			21.5		0.1	-
	0911	01/30/88	0001	WU	N			14.6		0.1	-
	0911	04/22/88	0001	WU	N			11.		0.1	-
	0911	08/11/88	0001	WU	N			9.8		0.1	-
	0911	12/10/88	0001	WU	N			6.7		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		<	0.1		0.1	-
	0912	08/27/88	0001	WU	N		<	0.1		0.1	-
	0912	12/04/88	0001	WU	N			0.2		0.1	-
	0913	02/18/87	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	-
	0913	04/22/88	0001	WU	N		<	0.1		0.1	-
	0913	08/04/88	0001	WU	N		<	0.1		0.1	-
	0913	12/10/88	0001	WU	N		<	0.1		0.1	-
	0916	02/20/87	0001	WU	N		<	0.1		0.1	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP 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	PARAMETER PVI	PARAMETER VALUE	PARAMETER 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:
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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	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI	PARAMETER VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
AMMONIUM	0943	08/09/88	0001	WU	N	MG/L	<	0.1		0.1	-
	0943	12/07/88	0001	WU	N		<	0.1		0.1	-
	0944	08/11/88	0001	WU	N		<	0.1		0.1	-
	0944	12/07/88	0001	WU	N		<	0.1		0.1	-
ANTIMONY	0911	02/17/87	0001	WU	N	MG/L	<	0.003		0.003	-
	0911	09/18/87	0001	WU	N		<	0.003		0.003	-
	0911	01/30/88	0001	WU	N		<	0.003		0.003	-
	0911	04/22/88	0001	WU	N			0.003		0.003	-
	0911	08/11/88	0001	WU	N			0.004		0.003	-
	0912	02/18/87	0001	WU	N		<	0.003		0.003	-
	0912	02/03/88	0001	WU	N		<	0.003		0.003	-
	0912	04/22/88	0001	WU	N			0.014		0.003	-
	0912	08/27/88	0001	WU	N		<	0.003	J	0.003	-
	0913	02/18/87	0001	WU	N			0.007		0.003	-
	0913	09/18/87	0001	WU	N		<	0.003		0.003	-
	0913	02/03/88	0001	WU	N		<	0.003		0.003	-
	0913	04/22/88	0001	WU	N			0.007		0.003	-
	0913	08/04/88	0001	WU	N			0.004		0.003	-
	0916	02/20/87	0001	WU	N		<	0.003		0.003	-
	0916	09/20/87	0001	WU	N		<	0.003		0.003	-
	0916	02/03/88	0001	WU	N		<	0.003		0.003	-
	0916	04/22/88	0001	WU	N			0.010		0.003	-
	0916	08/04/88	0001	WU	N			0.008		0.003	-
	0917	02/19/87	0001	WU	N			0.004		0.003	-
	0917	09/20/87	0001	WU	N		<	0.003		0.003	-
	0917	01/30/88	0001	WU	N			0.004		0.003	-
	0917	04/22/88	0001	WU	N			0.004		0.003	-
	0917	08/27/88	0001	WU	N			0.004	J	0.003	-
	0918	02/20/87	0001	WU	N		<	0.003		0.003	-
	0918	09/20/87	0001	WU	N		<	0.003		0.003	-
	0918	02/03/88	0001	WU	N		<	0.003		0.003	-
	0918	04/22/88	0001	WU	N			0.003		0.003	-
	0918	08/26/88	0001	WU	N		<	0.003	J	0.003	-
	0920	09/20/87	0001	WU	N		<	0.003		0.003	-
	0920	01/30/88	0001	WU	N			0.019		0.003	-
	0920	04/26/88	0001	WU	N			0.020		0.003	-
	0920	08/27/88	0001	WU	N			0.036	J	0.003	-
	0922	09/20/87	0001	WU	N		<	0.003		0.003	-
	0922	02/03/88	0001	WU	N			0.004		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	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:
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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	PARAMETER VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ANTIMONY	0942	08/08/88	0001	WU	N	MG/L	<	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	MG/L	<	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 COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ARSENIC	0920	01/30/88	0001	WU	N	MG/L		0.012		0.01	-
	0920	04/26/88	0001	WU	N			0.004	J	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:
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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	PARAMETER VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ARSENIC	0931	12/04/88	0001	WU	N	MG/L	<	0.01		0.01	-
	0932	01/30/88	0001	WU	N			0.002	J	0.01	-
	0932	04/28/88	0001	WU	N		<	0.001	J	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	MG/L	<	0.1		0.1	-
	0911	09/18/87	0001	WU	N			0.03	J	0.1	-
	0911	01/30/88	0001	WU	N		<	0.1		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	02/18/87	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	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			0.04	J	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)

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
BARIUM	0913	04/22/88	0001	WU	N	MG/L		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			0.1		0.1	-
	0918	09/20/87	0001	WU	N			0.06	J	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 (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	PARAMETER VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
BARIUM	0928	08/04/88	0001	WU	N	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	N	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	-

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
BORON	0916	04/22/88	0001	WU	N	MG/L		0.10		0.1	-
	0916	08/04/88	0001	WU	N			0.1		0.1	-
	0917	09/20/87	0001	WU	N			0.05	J	0.1	-
	0917	01/30/88	0001	WU	N			0.13		0.1	-
	0917	04/22/88	0001	WU	N			0.05	J	0.1	-
	0917	08/27/88	0001	WU	N		<	0.1		0.1	-
	0918	09/20/87	0001	WU	N			0.03	J	0.1	-
	0918	02/03/88	0001	WU	N			0.11		0.1	-
	0918	04/22/88	0001	WU	N			0.04	J	0.1	-
	0918	08/26/88	0001	WU	N		<	0.1		0.1	-
	0920	09/20/87	0001	WU	N			0.15		0.1	-
	0920	01/30/88	0001	WU	N			0.23		0.1	-
	0920	04/26/88	0001	WU	N			0.16		0.1	-
	0920	08/27/88	0001	WU	N			0.2		0.1	-
	0922	09/20/87	0001	WU	N			0.06	J	0.1	-
	0922	02/03/88	0001	WU	N			0.12		0.1	-
	0922	04/26/88	0001	WU	N			0.05	J	0.1	-
	0922	08/08/88	0001	WU	N		<	0.1		0.1	-
	0924	09/20/87	0001	WU	N			0.05	J	0.1	-
	0924	02/04/88	0001	WU	N			0.14		0.1	-
	0924	04/26/88	0001	WU	N			0.05	J	0.1	-
	0924	08/26/88	0001	WU	N		<	0.1		0.1	-
	0925	09/20/87	0001	WU	N			0.05	J	0.1	-
	0925	02/03/88	0001	WU	N			0.14		0.1	-
	0925	04/26/88	0001	WU	N			0.05	J	0.1	-
	0925	08/26/88	0001	WU	N		<	0.1		0.1	-
	0927	09/20/87	0001	WU	N			0.07	J	0.1	-
	0927	02/04/88	0001	WU	N			0.16		0.1	-
	0927	04/26/88	0001	WU	N			0.07	J	0.1	-
	0927	08/26/88	0001	WU	N		<	0.1		0.1	-
	0928	09/20/87	0001	WU	N			0.11		0.1	-
	0928	02/03/88	0001	WU	N			0.16		0.1	-
	0928	04/22/88	0001	WU	N			0.09	J	0.1	-
	0928	08/04/88	0001	WU	N		<	0.1		0.1	-
	0929	09/20/87	0001	WU	N			0.12		0.1	-
	0929	02/03/88	0001	WU	N			0.142		0.1	-
	0929	04/28/88	0001	WU	N			0.07	J	0.1	-
	0929	08/11/88	0001	WU	N		<	0.1		0.1	-
	0930	09/20/87	0001	WU	N			0.14		0.1	-
	0930	01/30/88	0001	WU	N			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	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
BORON	0930	04/26/88	0001	WU	N	MG/L		0.14		0.1	-
	0930	08/27/88	0001	WU	N			0.1		0.1	-
	0931	01/30/88	0001	WU	N			0.142		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			0.143		0.1	-
	0932	04/28/88	0001	WU	N			0.04	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			0.2		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	-
BROMIDE	0913	08/04/88	0001	WU	N	MG/L	<	0.1		0.1	-
	0916	08/04/88	0001	WU	N		<	0.1		0.1	-
	0922	08/08/88	0001	WU	N		<	0.1		0.1	-
	0928	08/04/88	0001	WU	N		<	0.1		0.1	-
	0940	08/08/88	0001	WU	N			0.1		0.1	-
CADMIUM	0911	02/17/87	0001	WU	N	MG/L	<	0.001		0.001	-
	0911	09/18/87	0001	WU	N		<	0.005		0.005	-
	0911	01/30/88	0001	WU	N		<	0.001		0.001	-
	0911	04/22/88	0001	WU	N			0.001		0.001	-
	0911	08/11/88	0001	WU	N		<	0.001		0.001	-
	0911	12/10/88	0001	WU	N		<	0.001		0.001	-
	0912	02/18/87	0001	WU	N		<	0.001		0.001	-
	0912	02/03/88	0001	WU	N		<	0.001		0.001	-
	0912	04/22/88	0001	WU	N			0.002		0.001	-
	0912	08/27/88	0001	WU	N		<	0.001		0.001	-
	0912	12/04/88	0001	WU	N		<	0.001		0.001	-
	0913	02/18/87	0001	WU	N		<	0.001		0.001	-
	0913	09/18/87	0001	WU	N		<	0.005		0.005	-
	0913	02/03/88	0001	WU	N			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		0.005	-
	0917	01/30/88	0001	WU	N		<	0.001		0.001	-
	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		<	0.005		0.005	-
	0918	02/03/88	0001	WU	N		<	0.001		0.001	-
	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		<	0.005		0.005	-
	0920	01/30/88	0001	WU	N			0.003		0.001	-
	0920	04/26/88	0001	WU	N			0.021		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		0.005	-
	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 COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI	PARAMETER VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CADMIUM	0927	09/20/87	0001	WU	N	MG/L	<	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	J	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

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	0941	08/08/88	0001	WU	N	MG/L	<	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	-
CALCIUM	0911	02/17/87	0001	WU	N	MG/L		204.		0.01	-
	0911	09/18/87	0001	WU	N			86.8		0.01	-
	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			389.		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	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CALCIUM	0918	04/22/88	0001	WU	N	MG/L	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	09/20/87	0001	WU	N		152.		0.01	-
	0922	02/03/88	0001	WU	N		111.		0.01	-
	0922	04/26/88	0001	WU	N		119.		0.01	-
	0922	08/08/88	0001	WU	N		120.		0.01	-
	0922	12/10/88	0001	WU	N		118.		0.01	-
	0924	09/20/87	0001	WU	N		246.		0.01	-
	0924	02/04/88	0001	WU	N		234.		0.01	-
	0924	04/26/88	0001	WU	N		244.		0.01	-
	0924	08/26/88	0001	WU	N		249.		0.01	-
	0924	12/07/88	0001	WU	N		245.		0.01	-
	0925	09/20/87	0001	WU	N		105.		0.01	-
	0925	02/03/88	0001	WU	N		104.		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

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
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	J	1.	-
	0925	08/26/88	0001	WU	N			2.1		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.		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:
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
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	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI	VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
CHROMIUM	0931	04/28/88	0001	WU	N	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	N	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	N	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	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
COPPER	0912	02/18/87	0001	WU	N	MG/L	<	0.01	J	0.02	-
	0912	02/03/88	0001	WU	N			0.01	J	0.02	-
	0912	04/22/88	0001	WU	N		<	0.01	J	0.02	-
	0912	08/27/88	0001	WU	N		<	0.02		0.02	-
	0913	02/18/87	0001	WU	N			0.02		0.02	-
	0913	09/18/87	0001	WU	N			0.02		0.02	-
	0913	02/03/88	0001	WU	N			0.02		0.02	-
	0913	04/22/88	0001	WU	N			0.02		0.02	-
	0913	08/04/88	0001	WU	N			0.03		0.02	-
	0916	02/20/87	0001	WU	N		<	0.01	J	0.02	-
	0916	09/20/87	0001	WU	N			0.06		0.02	-
	0916	02/03/88	0001	WU	N			0.05		0.02	-
	0916	04/22/88	0001	WU	N			0.05		0.02	-
	0916	08/04/88	0001	WU	N			0.06		0.02	-
	0917	02/19/87	0001	WU	N		<	0.01	J	0.02	-
	0917	09/20/87	0001	WU	N			0.02		0.02	-
	0917	01/30/88	0001	WU	N			0.02		0.02	-
	0917	04/22/88	0001	WU	N			0.02		0.02	-
	0917	08/27/88	0001	WU	N		<	0.02		0.02	-
	0918	02/20/87	0001	WU	N		<	0.01	J	0.02	-
	0918	09/20/87	0001	WU	N		<	0.01	J	0.02	-
	0918	02/03/88	0001	WU	N			0.02		0.02	-
	0918	04/22/88	0001	WU	N			0.02		0.02	-
	0918	08/26/88	0001	WU	N		<	0.02		0.02	-
	0920	09/20/87	0001	WU	N			0.05		0.02	-
	0920	01/30/88	0001	WU	N			0.03		0.02	-
	0920	04/26/88	0001	WU	N			0.03		0.02	-
	0920	08/27/88	0001	WU	N		<	0.02		0.02	-
	0922	09/20/87	0001	WU	N			0.02		0.02	-
	0922	02/03/88	0001	WU	N			0.01	J	0.02	-
	0922	04/26/88	0001	WU	N			0.01	J	0.02	-
	0922	08/08/88	0001	WU	N		<	0.02		0.02	-
	0924	09/20/87	0001	WU	N			0.03		0.02	-
	0924	02/04/88	0001	WU	N			0.02		0.02	-
	0924	04/26/88	0001	WU	N			0.02		0.02	-
	0924	08/26/88	0001	WU	N		<	0.02		0.02	-
	0925	09/20/87	0001	WU	N			0.02		0.02	-
	0925	02/03/88	0001	WU	N			0.01	J	0.02	-
	0925	04/26/88	0001	WU	N			0.01	J	0.02	-
	0925	08/26/88	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	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI	PARAMETER VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
COPPER	0927	09/20/87	0001	WU	N	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	N	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	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			0.53		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	PARAMETER PVI	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		0.1	-
	0929	04/28/88	0001	WU	N			0.24	J	0.1	-
	0929	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	-
	0930	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	-
	0931	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	-
	0934	08/11/88	0001	WU	N			0.5		0.1	-
	0935	08/09/88	0001	WU	N			1.5		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			0.3		0.1	-
	0940	08/08/88	0001	WU	N			0.2		0.1	-
	0941	08/08/88	0001	WU	N			0.1		0.1	-
	0942	08/08/88	0001	WU	N			0.3		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.
	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	PCI/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:
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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 BETA	0920	12/10/88	0001	WU	N	PCI/L		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.
	0928	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:
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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
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:
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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
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	-

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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	PARAMETER PVI	PARAMETER VALUE	PARAMETER 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

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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
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	-

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SITE: SPK01 SPOOK
02/17/87 TO 12/10/88
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PARAMETER NAME	LOCATION ID	LOG DATE	SAMPLE ID	FORM COMP	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI	PARAMETER VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
LEAD	0930	04/26/88	0001	WU	N	MG/L	<	0.01		0.01	-
	0930	08/27/88	0001	WU	N		<	0.01		0.01	-
	0931	01/30/88	0001	WU	N		<	0.01		0.01	-
	0931	04/28/88	0001	WU	N		<	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		<	0.01		0.01	-
	0932	04/28/88	0001	WU	N		<	0.01		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			0.02		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	-
LEAD-210	0911	09/18/87	0001	WU	N	PCI/L		3.3		1.5	1.1
	0911	01/30/88	0001	WU	N			1.0		1.5	1.1
	0911	04/22/88	0001	WU	N			1.7		1.5	1.1
	0911	08/11/88	0001	WU	N			1.0		1.5	1.0
	0912	02/03/88	0001	WU	N			46.		1.5	2.
	0912	04/22/88	0001	WU	N			77.		1.5	3.
	0912	08/27/88	0001	WU	N			9.5		1.5	1.1
	0913	09/18/87	0001	WU	N			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	PARAMETER PVI	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	PARAMETER PVI	VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
LEAD-210	0929	04/28/88	0001	WU	N	PCI/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	PARAMETER PVI 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	-
	0918	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	-
	0924	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	PARAMETER PVI	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	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MAGNESIUM	0942	08/08/88	0001	WU	N	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	N	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	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI	PARAMETER VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MANGANESE	0918	12/04/88	0001	WU	N	MG/L	<	0.01		0.01	-
	0920	09/20/87	0001	WU	N			15.0		0.01	-
	0920	01/30/88	0001	WU	N			14.2		0.01	-
	0920	04/26/88	0001	WU	N			15.1		0.01	-
	0920	08/27/88	0001	WU	N			15.6		0.01	-
	0920	12/10/88	0001	WU	N			14.7		0.01	-
	0922	09/20/87	0001	WU	N			0.39		0.01	-
	0922	02/03/88	0001	WU	N			0.25		0.01	-
	0922	04/26/88	0001	WU	N			0.26		0.01	-
	0922	08/08/88	0001	WU	N			0.18		0.01	-
	0922	12/10/88	0001	WU	N			0.22		0.01	-
	0924	09/20/87	0001	WU	N			0.13		0.01	-
	0924	02/04/88	0001	WU	N			0.14		0.01	-
	0924	04/26/88	0001	WU	N			0.14		0.01	-
	0924	08/26/88	0001	WU	N			0.13		0.01	-
	0924	12/07/88	0001	WU	N			0.12		0.01	-
	0925	09/20/87	0001	WU	N			0.04		0.01	-
	0925	02/03/88	0001	WU	N			0.02		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			0.16		0.01	-
	0927	02/04/88	0001	WU	N			0.15		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			0.15		0.01	-
	0928	09/20/87	0001	WU	N			0.02		0.01	-
	0928	02/03/88	0001	WU	N			0.15		0.01	-
	0928	04/22/88	0001	WU	N			0.02		0.01	-
	0928	08/04/88	0001	WU	N			0.02		0.01	-
	0928	12/04/88	0001	WU	N			0.02		0.01	-
	0929	09/20/87	0001	WU	N			0.04		0.01	-
	0929	02/03/88	0001	WU	N			0.044		0.01	-
	0929	04/28/88	0001	WU	N			0.05	J	0.01	-
	0929	08/11/88	0001	WU	N			0.07		0.01	-
	0930	09/20/87	0001	WU	N			9.82		0.01	-
	0930	01/30/88	0001	WU	N			19.0		0.01	-
	0930	04/26/88	0001	WU	N			17.5		0.01	-
	0930	08/27/88	0001	WU	N			12.7		0.01	-
	0931	01/30/88	0001	WU	N			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	PARAMETER PVI	PARAMETER VALUE	PARAMETER 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	-

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	PARAMETER VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MERCURY	0913	02/03/88	0001	WU	N	MG/L		0.0004		0.0002	-
	0913	04/22/88	0001	WU	N			0.0002		0.0002	-
	0913	08/04/88	0001	WU	N		<	0.0002		0.0002	-
	0916	02/20/87	0001	WU	N			0.0002		0.0002	-
	0916	09/20/87	0001	WU	N		<	0.0002		0.0002	-
	0916	02/03/88	0001	WU	N			0.0005		0.0002	-
	0916	04/22/88	0001	WU	N		<	0.0002		0.0002	-
	0916	08/04/88	0001	WU	N		<	0.0002		0.0002	-
	0917	02/19/87	0001	WU	N		<	0.0002		0.0002	-
	0917	09/20/87	0001	WU	N		<	0.0002		0.0002	-
	0917	01/30/88	0001	WU	N			0.0004		0.0002	-
	0917	04/22/88	0001	WU	N		<	0.0002		0.0002	-
	0917	08/27/88	0001	WU	N		<	0.0002		0.0002	-
	0918	02/20/87	0001	WU	N			0.0002		0.0002	-
	0918	09/20/87	0001	WU	N		<	0.0002		0.0002	-
	0918	02/03/88	0001	WU	N			0.0004		0.0002	-
	0918	04/22/88	0001	WU	N			0.0002		0.0002	-
	0918	08/26/88	0001	WU	N		<	0.0002		0.0002	-
	0920	09/20/87	0001	WU	N		<	0.0002		0.0002	-
	0920	01/30/88	0001	WU	N			0.0003		0.0002	-
	0920	04/26/88	0001	WU	N			0.0004		0.0002	-
	0920	08/27/88	0001	WU	N		<	0.0002		0.0002	-
	0922	09/20/87	0001	WU	N		<	0.0002		0.0002	-
	0922	02/03/88	0001	WU	N			0.0003		0.0002	-
	0922	04/26/88	0001	WU	N			0.0005		0.0002	-
	0922	08/08/88	0001	WU	N		<	0.0002		0.0002	-
	0924	09/20/87	0001	WU	N		<	0.0002		0.0002	-
	0924	02/04/88	0001	WU	N			0.0003		0.0002	-
	0924	04/26/88	0001	WU	N			0.0005		0.0002	-
	0924	08/26/88	0001	WU	N		<	0.0002		0.0002	-
	0925	09/20/87	0001	WU	N		<	0.0002		0.0002	-
	0925	02/03/88	0001	WU	N			0.0002		0.0002	-
	0925	04/26/88	0001	WU	N			0.0005		0.0002	-
	0925	08/26/88	0001	WU	N		<	0.0002		0.0002	-
	0927	09/20/87	0001	WU	N		<	0.0002		0.0002	-
	0927	02/04/88	0001	WU	N			0.0002		0.0002	-
	0927	04/26/88	0001	WU	N			0.0004		0.0002	-
	0927	08/26/88	0001	WU	N		<	0.0002		0.0002	-
	0928	09/20/87	0001	WU	N		<	0.0002		0.0002	-
	0928	02/03/88	0001	WU	N			0.0002		0.0002	-
	0928	04/22/88	0001	WU	N			0.0005		0.0002	-

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	PARAMETER VALUE	PARAMETER 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	PARAMETER PVI	PARAMETER VALUE	PARAMETER 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	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
MOLYBDENUM	0925	12/07/88	0001	WU	N	MG/L		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		0.01	-
	0929	04/28/88	0001	WU	N			0.02	J	0.01	-
	0929	08/11/88	0001	WU	N			0.01		0.01	-
	0930	09/20/87	0001	WU	N			0.02		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	PVI	PARAMETER 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	PVI	PARAMETER 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:
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
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	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
NICKEL	0913	04/22/88	0001	WU	N	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		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		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		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

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	PARAMETER PVI	PARAMETER VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
NICKEL	0929	04/28/88	0001	WU	N	MG/L		0.02	J	0.04	-
	0929	08/11/88	0001	WU	N		<	0.04		0.04	-
	0930	09/20/87	0001	WU	N			0.23		0.04	-
	0930	01/30/88	0001	WU	N			0.762		0.04	-
	0930	04/26/88	0001	WU	N			0.76		0.04	-
	0930	08/27/88	0001	WU	N			0.39		0.04	-
	0931	01/30/88	0001	WU	N		<	0.01	J	0.04	-
	0931	04/28/88	0001	WU	N			0.01	J	0.04	-
	0931	08/10/88	0001	WU	N		<	0.04		0.04	-
	0932	01/30/88	0001	WU	N			0.018	J	0.04	-
	0932	04/28/88	0001	WU	N			0.02	J	0.04	-
	0932	08/09/88	0001	WU	N		<	0.04		0.04	-
	0933	08/10/88	0001	WU	N		<	0.04		0.04	-
	0934	08/11/88	0001	WU	N		<	0.04		0.04	-
	0935	08/09/88	0001	WU	N			1.16		0.04	-
	0936	08/08/88	0001	WU	N		<	0.04		0.04	-
	0937	08/08/88	0001	WU	N		<	0.04		0.04	-
	0939	08/08/88	0001	WU	N		<	0.04		0.04	-
	0940	08/08/88	0001	WU	N			0.09		0.04	-
	0941	08/08/88	0001	WU	N		<	0.04		0.04	-
	0942	08/08/88	0001	WU	N		<	0.04		0.04	-
	0943	08/09/88	0001	WU	N		<	0.04		0.04	-
	0944	08/11/88	0001	WU	N		<	0.04		0.04	-
NITRATE	0911	02/17/87	0001	WU	N	MG/L		230.		1.	-
	0911	09/18/87	0001	WU	N			18.6		1.	-
	0911	01/30/88	0001	WU	N			7.1		1.	-
	0911	04/22/88	0001	WU	N			5.0		1.	-
	0911	08/11/88	0001	WU	N			4.7		1.	-
	0911	12/10/88	0001	WU	N			7.4		1.	-
	0912	02/18/87	0001	WU	N			3.1		1.	-
	0912	02/03/88	0001	WU	N			0.8	J	1.	-
	0912	04/22/88	0001	WU	N			2.7		1.	-
	0912	08/27/88	0001	WU	N			2.9		1.	-
	0912	12/04/88	0001	WU	N			2.5		1.	-
	0913	02/18/87	0001	WU	N			84.		1.	-
	0913	09/18/87	0001	WU	N			94.8		1.	-
	0913	02/03/88	0001	WU	N			130.		1.	-
	0913	04/22/88	0001	WU	N			140.		1.	-
	0913	08/04/88	0001	WU	N			155.		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:
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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
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.	-
	0924	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:
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
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	PARAMETER PVI 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	PVI	PARAMETER 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	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			0.8		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	PARAMETER PVI	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	PARAMETER PVI	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
	0922	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	PARAMETER 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	PARAMETER PVI 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	PARAMETER PVI 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	-
	0929	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:
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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
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:
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PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

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	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-226	0924	04/26/88	0001	WU	N	PCI/L	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

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-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	PARAMETER PVI 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	PVI	PARAMETER 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	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
RADIUM-228	0927	09/20/87	0001	WU	N	PCI/L	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		1.8		1.	0.9
	0932	01/30/88	0001	WU	N		1.4		1.	1.0
	0932	04/28/88	0001	WU	N		1.0		1.	0.8
	0932	08/09/88	0001	WU	N		1.4		1.	0.8
	0932	12/07/88	0001	WU	N		1.8		1.	0.9
	0933	08/10/88	0001	WU	N		1.4		1.	0.9
	0933	12/07/88	0001	WU	N		1.9		1.	0.9
	0934	08/11/88	0001	WU	N		1.3		1.	0.9
	0934	12/07/88	0001	WU	N		1.6		1.	0.9
	0935	08/09/88	0001	WU	N		8.8		1.	1.3
	0935	12/04/88	0001	WU	N		15.		1.	2.
	0936	08/08/88	0001	WU	N		1.7		1.	0.9
	0936	12/04/88	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	PVI	PARAMETER 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	PARAMETER PVI	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:
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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	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:
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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
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

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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	PARAMETER PVI	VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SILICA - SIO2	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 - WASATCH - UPPER SANDSTONE

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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
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	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SILVER	0925	02/03/88	0001	WU	N	MG/L		0.01		0.01	-
	0925	04/26/88	0001	WU	N			0.02		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			0.03		0.01	-
	0927	04/26/88	0001	WU	N			0.03		0.01	-
	0927	08/26/88	0001	WU	N			0.02		0.01	-
	0927	12/04/88	0001	WU	N			0.03		0.01	-
	0928	09/20/87	0001	WU	N		<	0.01		0.01	-
	0928	02/03/88	0001	WU	N			0.03		0.01	-
	0928	04/22/88	0001	WU	N			0.03		0.01	-
	0928	08/04/88	0001	WU	N			0.01		0.01	-
	0928	12/04/88	0001	WU	N			0.03		0.01	-
	0929	09/20/87	0001	WU	N		<	0.01		0.01	-
	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		<	0.01		0.01	-
	0930	01/30/88	0001	WU	N			0.018		0.01	-
	0930	04/26/88	0001	WU	N			0.04		0.01	-
	0930	08/27/88	0001	WU	N			0.02		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		<	0.01		0.01	-
	0932	04/28/88	0001	WU	N			0.01		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			0.03		0.01	-
	0936	08/08/88	0001	WU	N			0.01		0.01	-
	0936	12/04/88	0001	WU	N			0.03		0.01	-
	0937	08/08/88	0001	WU	N			0.03		0.01	-
	0937	12/04/88	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)

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
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	PARAMETER PVI	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	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
SODIUM	0929	08/11/88	0001	WU	N	MG/L	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	UMHO/CM	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	PARAMETER PVI	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:
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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	PARAMETER VALUE	PARAMETER 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:
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PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

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	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
STRONTIUM	0920	01/30/88	0001	WU	N	MG/L	5.95		0.1	-
	0920	04/26/88	0001	WU	N		4.98		0.1	-
	0920	08/27/88	0001	WU	N		6.5		0.1	-
	0922	09/20/87	0001	WU	N		1.04		0.1	-
	0922	02/03/88	0001	WU	N		0.81		0.1	-
	0922	04/26/88	0001	WU	N		0.58		0.1	-
	0922	08/08/88	0001	WU	N		0.9		0.1	-
	0924	09/20/87	0001	WU	N		1.53		0.1	-
	0924	02/04/88	0001	WU	N		1.51		0.1	-
	0924	04/26/88	0001	WU	N		1.20		0.1	-
	0924	08/26/88	0001	WU	N		1.6		0.1	-
	0925	09/20/87	0001	WU	N		1.12		0.1	-
	0925	02/03/88	0001	WU	N		1.01		0.1	-
	0925	04/26/88	0001	WU	N		0.80		0.1	-
	0925	08/26/88	0001	WU	N		1.1		0.1	-
	0927	09/20/87	0001	WU	N		2.19		0.1	-
	0927	02/04/88	0001	WU	N		2.33		0.1	-
	0927	04/26/88	0001	WU	N		1.85		0.1	-
	0927	08/26/88	0001	WU	N		2.3		0.1	-
	0928	09/20/87	0001	WU	N		2.18		0.1	-
	0928	02/03/88	0001	WU	N		2.33		0.1	-
	0928	04/22/88	0001	WU	N		1.81		0.1	-
	0928	08/04/88	0001	WU	N		2.0		0.1	-
	0929	09/20/87	0001	WU	N		2.07		0.1	-
	0929	02/03/88	0001	WU	N		0.94		0.1	-
	0929	04/28/88	0001	WU	N		0.91	J	0.1	-
	0929	08/11/88	0001	WU	N		1.0		0.1	-
	0930	09/20/87	0001	WU	N		4.72		0.1	-
	0930	01/30/88	0001	WU	N		5.50		0.1	-
	0930	04/26/88	0001	WU	N		5.28		0.1	-
	0930	08/27/88	0001	WU	N		6.0		0.1	-
	0931	01/30/88	0001	WU	N		1.20		0.1	-
	0931	04/28/88	0001	WU	N		1.12		0.1	-
	0931	08/10/88	0001	WU	N		1.0		0.1	-
	0932	01/30/88	0001	WU	N		0.98		0.1	-
	0932	04/28/88	0001	WU	N		0.93		0.1	-
	0932	08/09/88	0001	WU	N		1.0		0.1	-
	0933	08/10/88	0001	WU	N		1.4		0.1	-
	0934	08/11/88	0001	WU	N		1.0		0.1	-
	0935	08/09/88	0001	WU	N		5.5		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	PARAMETER PVI 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

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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
SULFATE	0918	04/22/88	0001	WU	N	MG/L		264.		0.1	-
	0918	08/26/88	0001	WU	N			265.		0.1	-
	0918	12/04/88	0001	WU	N			263.		0.1	-
	0920	09/20/87	0001	WU	N			3030.		0.1	-
	0920	01/30/88	0001	WU	N			3240.		0.1	-
	0920	04/26/88	0001	WU	N			3240.		0.1	-
	0920	08/27/88	0001	WU	N			2870.		0.1	-
	0920	12/10/88	0001	WU	N			2760.		0.1	-
	0922	09/20/87	0001	WU	N			330.		0.1	-
	0922	02/03/88	0001	WU	N			274.		0.1	-
	0922	04/26/88	0001	WU	N			275.		0.1	-
	0922	08/08/88	0001	WU	N			304.		0.1	-
	0922	12/10/88	0001	WU	N			293.		0.1	-
	0924	09/20/87	0001	WU	N			556.		0.1	-
	0924	02/04/88	0001	WU	N			579.		0.1	-
	0924	04/26/88	0001	WU	N			606.		0.1	-
	0924	08/26/88	0001	WU	N			617.		0.1	-
	0924	12/07/88	0001	WU	N			634.		0.1	-
	0925	09/20/87	0001	WU	N			152.		0.1	-
	0925	02/03/88	0001	WU	N			151.		0.1	-
	0925	04/26/88	0001	WU	N			150.		0.1	-
	0925	08/26/88	0001	WU	N			156.		0.1	-
	0925	12/07/88	0001	WU	N			154.		0.1	-
	0927	09/20/87	0001	WU	N			1210.		0.1	-
	0927	02/04/88	0001	WU	N			1220.		0.1	-
	0927	04/26/88	0001	WU	N			1380.		0.1	-
	0927	08/26/88	0001	WU	N			1360.		0.1	-
	0927	12/04/88	0001	WU	N			1350.		0.1	-
	0928	09/20/87	0001	WU	N			1180.		0.1	-
	0928	02/03/88	0001	WU	N			1050.		0.1	-
	0928	04/22/88	0001	WU	N			1190.		0.1	-
	0928	08/04/88	0001	WU	N			1180.		0.1	-
	0928	12/04/88	0001	WU	N			1150.		0.1	-
	0929	09/20/87	0001	WU	N			576.		0.1	-
	0929	02/03/88	0001	WU	N			109.		0.1	-
	0929	04/28/88	0001	WU	N			100.	J	0.1	-
	0929	08/11/88	0001	WU	N			98.		0.1	-
	0930	09/20/87	0001	WU	N			2800.		0.1	-
	0930	01/30/88	0001	WU	N			2940.		0.1	-
	0930	04/26/88	0001	WU	N			3180.		0.1	-

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	PARAMETER PVI	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

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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
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	PARAMETER PVI	PARAMETER VALUE	PARAMETER 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	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI	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		-	-
	0930	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	PARAMETER PVI 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	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
TIN	0912	04/22/88	0001	WU	N	MG/L		0.017		0.005	-
	0912	08/27/88	0001	WU	N		<	0.005		0.005	-
	0913	09/18/87	0001	WU	N			0.029		0.005	-
	0913	02/03/88	0001	WU	N			0.008		0.005	-
	0913	04/22/88	0001	WU	N			0.013		0.005	-
	0913	08/04/88	0001	WU	N			0.009		0.005	-
	0916	09/20/87	0001	WU	N			0.044		0.005	-
	0916	02/03/88	0001	WU	N			0.013		0.005	-
	0916	04/22/88	0001	WU	N			0.025		0.005	-
	0916	08/04/88	0001	WU	N			0.020		0.005	-
	0917	09/20/87	0001	WU	N			0.024		0.005	-
	0917	01/30/88	0001	WU	N		<	0.005		0.005	-
	0917	04/22/88	0001	WU	N			0.014		0.005	-
	0917	08/27/88	0001	WU	N		<	0.005		0.005	-
	0918	09/20/87	0001	WU	N			0.020		0.005	-
	0918	02/03/88	0001	WU	N		<	0.005		0.005	-
	0918	04/22/88	0001	WU	N			0.012		0.005	-
	0918	08/26/88	0001	WU	N		<	0.005		0.005	-
	0920	09/20/87	0001	WU	N			0.157		0.005	-
	0920	01/30/88	0001	WU	N			0.042		0.005	-
	0920	04/26/88	0001	WU	N			0.020		0.005	-
	0920	08/27/88	0001	WU	N			0.024		0.005	-
	0922	09/20/87	0001	WU	N			0.019		0.005	-
	0922	02/03/88	0001	WU	N		<	0.005		0.005	-
	0922	04/26/88	0001	WU	N			0.007		0.005	-
	0922	08/08/88	0001	WU	N		<	0.003	J	0.005	-
	0924	09/20/87	0001	WU	N			0.026		0.005	-
	0924	02/04/88	0001	WU	N			0.005		0.005	-
	0924	04/26/88	0001	WU	N			0.012		0.005	-
	0924	08/26/88	0001	WU	N		<	0.005		0.005	-
	0925	09/20/87	0001	WU	N			0.012		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		<	0.005		0.005	-
	0927	09/20/87	0001	WU	N			0.051		0.005	-
	0927	02/04/88	0001	WU	N			0.011		0.005	-
	0927	04/26/88	0001	WU	N			0.022		0.005	-
	0927	08/26/88	0001	WU	N			0.005		0.005	-
	0928	09/20/87	0001	WU	N			0.036		0.005	-
	0928	02/03/88	0001	WU	N			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	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
TIN	0928	04/22/88	0001	WU	N	MG/L		0.021		0.005	-
	0928	08/04/88	0001	WU	N			0.016		0.005	-
	0929	09/20/87	0001	WU	N			0.026		0.005	-
	0929	02/03/88	0001	WU	N		<	0.005		0.005	-
	0929	04/28/88	0001	WU	N			0.004	J	0.005	-
	0929	08/11/88	0001	WU	N		<	0.005		0.005	-
	0930	09/20/87	0001	WU	N			0.133		0.005	-
	0930	01/30/88	0001	WU	N			0.041		0.005	-
	0930	04/26/88	0001	WU	N			0.026		0.005	-
	0930	08/27/88	0001	WU	N			0.017		0.005	-
	0931	01/30/88	0001	WU	N		<	0.005		0.005	-
	0931	04/28/88	0001	WU	N			0.003	J	0.005	-
	0931	08/10/88	0001	WU	N			0.12		0.005	-
	0932	01/30/88	0001	WU	N		<	0.005		0.005	-
	0932	04/28/88	0001	WU	N			0.010		0.005	-
	0932	08/09/88	0001	WU	N		<	0.003	J	0.005	-
	0933	08/10/88	0001	WU	N		<	0.003	J	0.005	-
	0934	08/11/88	0001	WU	N		<	0.003	J	0.005	-
	0935	08/09/88	0001	WU	N			0.125		0.005	-
	0936	08/08/88	0001	WU	N			0.017		0.005	-
	0937	08/08/88	0001	WU	N		<	0.005		0.005	-
	0939	08/08/88	0001	WU	N			0.015		0.005	-
	0940	08/08/88	0001	WU	N			0.088		0.005	-
	0941	08/08/88	0001	WU	N		<	0.003	J	0.005	-
	0942	08/08/88	0001	WU	N		<	0.005		0.005	-
	0943	08/09/88	0001	WU	N		<	0.003	J	0.005	-
	0944	08/11/88	0001	WU	N		<	0.003	J	0.005	-
TOTAL DISSOLVED SOLIDS	0911	02/17/87	0001	WU	N	MG/L		1370.		10.	-
	0911	09/18/87	0001	WU	N			609.		10.	-
	0911	01/30/88	0001	WU	N			477.		10.	-
	0911	04/22/88	0001	WU	N			467.		10.	-
	0911	08/11/88	0001	WU	N			514.		10.	-
	0911	12/10/88	0001	WU	N			510.		10.	-
	0912	02/18/87	0001	WU	N			348.		10.	-
	0912	02/03/88	0001	WU	N			363.		10.	-
	0912	04/22/88	0001	WU	N			364.		10.	-
	0912	08/27/88	0001	WU	N			355.		10.	-
	0912	12/04/88	0001	WU	N			55.2		10.	-
	0913	02/18/87	0001	WU	N			1020.		10.	-

FORMATION OF COMPLETION CODE:
WU - WASATCH - UPPER SANDSTONE

FLOW RELATIONSHIP CODE:
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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
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

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
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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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	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

FLOW RELATIONSHIP 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
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	-

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
URANIUM	0930	01/30/88	0001	WU	N	MG/L		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	MG/L		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			0.07		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			0.08		0.01	-
	0922	09/20/87	0001	WU	N			0.03		0.01	-
	0922	02/03/88	0001	WU	N			0.02		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			0.02		0.01	-
	0924	09/20/87	0001	WU	N			0.04		0.01	-
	0924	02/04/88	0001	WU	N			0.03		0.01	-
	0924	04/26/88	0001	WU	N			0.05		0.01	-
	0924	08/26/88	0001	WU	N			0.05		0.01	-
	0924	12/07/88	0001	WU	N			0.04		0.01	-
	0925	09/20/87	0001	WU	N			0.02		0.01	-
	0925	02/03/88	0001	WU	N			0.02		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	WU	N	MG/L		0.03		0.01	-
	0927	09/20/87	0001	WU	N			0.05		0.01	-
	0927	02/04/88	0001	WU	N			0.05		0.01	-
	0927	04/26/88	0001	WU	N			0.06		0.01	-
	0927	08/26/88	0001	WU	N			0.05		0.01	-
	0927	12/04/88	0001	WU	N			0.06		0.01	-
	0928	09/20/87	0001	WU	N			0.05		0.01	-
	0928	02/03/88	0001	WU	N			0.05		0.01	-
	0928	04/22/88	0001	WU	N			0.05		0.01	-
	0928	08/04/88	0001	WU	N			0.04		0.01	-
	0928	12/04/88	0001	WU	N			0.05		0.01	-
	0929	09/20/87	0001	WU	N			0.04		0.01	-
	0929	02/03/88	0001	WU	N			0.015		0.01	-
	0929	04/28/88	0001	WU	N			0.02	J	0.01	-
	0929	08/11/88	0001	WU	N		<	0.01		0.01	-
	0930	09/20/87	0001	WU	N			0.08		0.01	-
	0930	01/30/88	0001	WU	N			0.059		0.01	-
	0930	04/26/88	0001	WU	N			0.08		0.01	-
	0930	08/27/88	0001	WU	N			0.07		0.01	-
	0931	01/30/88	0001	WU	N			0.016		0.01	-
	0931	04/28/88	0001	WU	N			0.03		0.01	-
	0931	08/10/88	0001	WU	N			0.02		0.01	-
	0931	12/04/88	0001	WU	N			0.03		0.01	-
	0932	01/30/88	0001	WU	N			0.021		0.01	-
	0932	04/28/88	0001	WU	N			0.03		0.01	-
	0932	08/09/88	0001	WU	N			0.02		0.01	-
	0932	12/07/88	0001	WU	N			0.03		0.01	-
	0933	08/10/88	0001	WU	N			0.02		0.01	-
	0933	12/07/88	0001	WU	N			0.03		0.01	-
	0934	08/11/88	0001	WU	N			0.01		0.01	-
	0934	12/07/88	0001	WU	N			0.03		0.01	-
	0935	08/09/88	0001	WU	N			0.07		0.01	-
	0935	12/04/88	0001	WU	N			0.09		0.01	-
	0936	08/08/88	0001	WU	N			0.03		0.01	-
	0936	12/04/88	0001	WU	N			0.04		0.01	-
	0937	08/08/88	0001	WU	N			0.04		0.01	-
	0937	12/04/88	0001	WU	N			0.03		0.01	-
	0939	08/08/88	0001	WU	N			0.02		0.01	-
	0939	12/04/88	0001	WU	N			0.04		0.01	-
	0940	08/08/88	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)

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
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	-
	0944	12/07/88	0001	WU	N			0.03		0.01	-
ZINC	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	PARAMETER PVI	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	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ALUMINUM	0910	01/30/88	0001	WL	N	MG/L	<	0.01	J	0.1	-
	0910	04/22/88	0001	WL	N			0.03	J	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	J	0.1	-
	0914	04/22/88	0001	WL	N			0.03	J	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	J	0.1	-
	0915	02/03/88	0001	WM	N			0.02	J	0.1	-
	0915	04/22/88	0001	WM	N			0.05	J	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	J	0.1	-
	0919	01/30/88	0001	WL	N			0.08	J	0.1	-
	0919	04/26/88	0001	WL	N			0.03	J	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	J	0.1	-
	0921	08/10/88	0001	WL	N		<	0.1		0.1	-
	0923	09/20/87	0001	WL	N			0.07	J	0.1	-
	0923	01/30/88	0001	WL	N			0.09	J	0.1	-
	0923	04/26/88	0001	WL	N			0.02	J	0.1	-
	0923	08/09/88	0001	WL	N		<	0.1		0.1	-
	0938	08/09/88	0001	WL	N			0.1	J	0.1	-
AMMONIUM	0910	02/17/87	0001	WL	N	MG/L	<	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	-

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	PARAMETER VALUE	PARAMETER 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	-
	0923	12/10/88	0001	WL	N		<	0.1		0.1	-
	0938	08/09/88	0001	WL	N		<	0.1	J	0.1	-
	0938	12/10/88	0001	WL	N		<	0.1		0.1	-
ANTIMONY	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	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ANTIMONY	0915	04/22/88	0001	WM	N	MG/L	<	0.003		0.003	-
	0915	08/10/88	0001	WM	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	-
	0938	08/09/88	0001	WL	N		<	0.003	J	0.003	-
ARSENIC	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	WM	N		<	0.001	J	0.01	-
	0915	09/20/87	0001	WM	N		<	0.001	J	0.01	-
	0915	02/03/88	0001	WM	N		<	0.001	J	0.01	-
	0915	04/22/88	0001	WM	N		<	0.001	J	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		<	0.001	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	-

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	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
ARSENIC	0919	08/27/88	0001	WL	N	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	J	0.01	-
	0921	02/04/88	0001	WL	N		<	0.01		0.01	-
	0921	04/26/88	0001	WL	N		<	0.001	J	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	J	0.01	-
	0923	01/30/88	0001	WL	N		<	0.01		0.01	-
	0923	04/26/88	0001	WL	N		<	0.001	J	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	-
BARIUM	0910	02/17/87	0001	WL	N	MG/L		0.1		0.1	-
	0910	09/18/87	0001	WL	N			0.02	J	0.1	-
	0910	01/30/88	0001	WL	N		<	0.1		0.1	-
	0910	04/22/88	0001	WL	N			0.02	J	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	J	0.1	-
	0914	02/03/88	0001	WL	N		<	0.1		0.1	-
	0914	04/22/88	0001	WL	N			0.02	J	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	J	0.1	-
	0915	02/03/88	0001	WM	N		<	0.1		0.1	-
	0915	04/22/88	0001	WM	N			0.02	J	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	J	0.1	-
	0919	01/30/88	0001	WL	N		<	0.01	J	0.1	-
	0919	04/26/88	0001	WL	N			0.02	J	0.1	-
	0919	08/27/88	0001	WL	N		<	0.1		0.1	-
	0921	09/20/87	0001	WL	N			0.01	J	0.1	-
	0921	02/04/88	0001	WL	N		<	0.01	J	0.1	-
	0921	04/26/88	0001	WL	N			0.02	J	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	PARAMETER VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
BARIUM	0923	09/20/87	0001	WL	N	MG/L		0.02	J	0.1	-
	0923	01/30/88	0001	WL	N		<	0.01	J	0.1	-
	0923	04/26/88	0001	WL	N			0.02	J	0.1	-
	0923	08/09/88	0001	WL	N		<	0.1		0.1	-
	0938	08/09/88	0001	WL	N			0.1	J	0.1	-
BORON	0910	09/18/87	0001	WL	N	MG/L		0.05	J	0.1	-
	0910	01/30/88	0001	WL	N			0.16		0.1	-
	0910	04/22/88	0001	WL	N			0.06	J	0.1	-
	0910	08/11/88	0001	WL	N		<	0.1		0.1	-
	0914	09/18/87	0001	WL	N			0.05	J	0.1	-
	0914	02/03/88	0001	WL	N			0.29		0.1	-
	0914	04/22/88	0001	WL	N			0.06	J	0.1	-
	0914	08/08/88	0001	WL	N		<	0.1		0.1	-
	0915	09/20/87	0001	WM	N			0.07	J	0.1	-
	0915	02/03/88	0001	WM	N			0.14		0.1	-
	0915	04/22/88	0001	WM	N			0.06	J	0.1	-
	0915	08/10/88	0001	WM	N		<	0.1		0.1	-
	0919	09/20/87	0001	WL	N			0.06	J	0.1	-
	0919	01/30/88	0001	WL	N			0.12		0.1	-
	0919	04/26/88	0001	WL	N			0.05	J	0.1	-
	0919	08/27/88	0001	WL	N		<	0.1		0.1	-
	0921	09/20/87	0001	WL	N			0.07	J	0.1	-
	0921	02/04/88	0001	WL	N			0.12		0.1	-
	0921	04/26/88	0001	WL	N			0.07	J	0.1	-
	0921	08/10/88	0001	WL	N		<	0.1		0.1	-
	0923	09/20/87	0001	WL	N			0.06	J	0.1	-
	0923	01/30/88	0001	WL	N			0.17		0.1	-
	0923	04/26/88	0001	WL	N			0.06	J	0.1	-
	0923	08/09/88	0001	WL	N		<	0.1		0.1	-
	0938	08/09/88	0001	WL	N		<	0.1	J	0.1	-
CADMIUM	0910	02/17/87	0001	WL	N	MG/L	<	0.001		0.001	-
	0910	09/18/87	0001	WL	N		<	0.005		0.005	-
	0910	01/30/88	0001	WL	N		<	0.001		0.001	-
	0910	04/22/88	0001	WL	N			0.003		0.001	-
	0910	08/11/88	0001	WL	N		<	0.001		0.001	-
	0910	12/10/88	0001	WL	N		<	0.001		0.001	-
	0914	02/18/87	0001	WL	N		<	0.001		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
CADMIUM	0914	09/18/87	0001	WL	N	MG/L	<	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		<	0.005		0.005	-
	0923	01/30/88	0001	WL	N		<	0.001		0.001	-
	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	MG/L		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	-

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
CALCIUM	0914	04/22/88	0001	WL	N	MG/L		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		0.01	-
	0915	09/20/87	0001	WM	N			40.2	J	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	MG/L		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	PARAMETER PVI	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	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI	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	PARAMETER PVI	PARAMETER VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
COPPER	0919	08/27/88	0001	WL	N	MG/L	<	0.02		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	-
	0921	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

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
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:
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
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 COMP	FLOW REL.	UNITS OF MEASURE	PVI	PARAMETER 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	WM	N		<	0.03		0.03	-
	0915	09/20/87	0001	WM	N		<	0.01	J	0.03	-
	0915	02/03/88	0001	WM	N			0.17		0.03	-
	0915	04/22/88	0001	WM	N			0.04		0.03	-
	0915	08/10/88	0001	WM	N			0.07		0.03	-
	0915	12/10/88	0001	WM	N		<	0.03		0.03	-
	0919	02/19/87	0001	WL	N			0.11		0.03	-
	0919	09/20/87	0001	WL	N			0.07		0.03	-
	0919	01/30/88	0001	WL	N			0.07		0.03	-
	0919	04/26/88	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	-
	0923	08/09/88	0001	WL	N			0.06		0.03	-
	0923	12/10/88	0001	WL	N			0.07		0.03	-
	0938	08/09/88	0001	WL	N			0.03	J	0.03	-
	0938	12/10/88	0001	WL	N		<	0.03		0.03	-
LEAD	0910	02/17/87	0001	WL	N	MG/L	<	0.001	J	0.01	-
	0910	09/18/87	0001	WL	N		<	0.02		0.02	-
	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		0.02	-
	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	-

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
LEAD	0915	02/20/87	0001	WM	N	MG/L	<	0.001	J	0.01	-
	0915	09/20/87	0001	WM	N		<	0.02	J	0.02	-
	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			0.010		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		<	0.01		0.01	-
	0921	04/26/88	0001	WL	N		<	0.01		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		<	0.01		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	-
LEAD-210	0910	09/18/87	0001	WL	N	PCI/L		2.0		1.5	1.4
	0910	01/30/88	0001	WL	N			0.0		1.5	1.0
	0910	04/22/88	0001	WL	N			0.1		1.5	0.9
	0910	08/11/88	0001	WL	N			0.9		1.5	0.9
	0914	09/18/87	0001	WL	N			0.0		1.5	1.0
	0914	02/03/88	0001	WL	N			0.7		1.5	0.9
	0914	04/22/88	0001	WL	N			0.0		1.5	1.0
	0914	08/08/88	0001	WL	N			0.9		1.5	0.9
	0915	09/20/87	0001	WM	N			1.4	J	1.5	0.9
	0915	02/03/88	0001	WM	N			0.0		1.5	1.1
	0915	04/22/88	0001	WM	N			1.4		1.5	0.9
	0915	08/10/88	0001	WM	N			0.5		1.5	0.8
	0919	09/20/87	0001	WL	N			1.6		1.5	1.1
	0919	01/30/88	0001	WL	N			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	FLOW REL.	UNITS OF MEASURE	PARAMETER PVI VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
LEAD-210	0919	04/26/88	0001	WL	N	PCI/L	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	MG/L	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	PARAMETER PVI	PARAMETER VALUE	PARAMETER 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:
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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:
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:
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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
NICKEL	0914	08/08/88	0001	WL	N	MG/L	<	0.04		0.04	-
	0915	09/20/87	0001	WM	N		<	0.01	J	0.04	-
	0915	02/03/88	0001	WM	N		<	0.01	J	0.04	-
	0915	04/22/88	0001	WM	N			0.01	J	0.04	-
	0915	08/10/88	0001	WM	N		<	0.04		0.04	-
	0919	09/20/87	0001	WL	N		<	0.01	J	0.04	-
	0919	01/30/88	0001	WL	N			0.01	J	0.04	-
	0919	04/26/88	0001	WL	N			0.01	J	0.04	-
	0919	08/27/88	0001	WL	N		<	0.04		0.04	-
	0921	09/20/87	0001	WL	N		<	0.01	J	0.04	-
	0921	02/04/88	0001	WL	N			0.01	J	0.04	-
	0921	04/26/88	0001	WL	N			0.02	J	0.04	-
	0921	08/10/88	0001	WL	N		<	0.04		0.04	-
	0923	09/20/87	0001	WL	N		<	0.01	J	0.04	-
	0923	01/30/88	0001	WL	N			0.01	J	0.04	-
	0923	04/26/88	0001	WL	N		<	0.01	J	0.04	-
	0923	08/09/88	0001	WL	N		<	0.04		0.04	-
	0938	08/09/88	0001	WL	N		<	0.04	J	0.04	-
NITRATE	0910	02/17/87	0001	WL	N	MG/L		60.2		1.	-
	0910	09/18/87	0001	WL	N			2.7		1.	-
	0910	01/30/88	0001	WL	N		<	0.1	J	1.	-
	0910	04/22/88	0001	WL	N			2.2		1.	-
	0910	08/11/88	0001	WL	N		<	1.0		1.	-
	0910	12/10/88	0001	WL	N			7.6		1.	-
	0914	02/18/87	0001	WL	N			0.4	J	1.	-
	0914	09/18/87	0001	WL	N			1.8		1.	-
	0914	02/03/88	0001	WL	N		<	0.1	J	1.	-
	0914	04/22/88	0001	WL	N			3.8		1.	-
	0914	08/08/88	0001	WL	N			1.6		1.	-
	0914	12/10/88	0001	WL	N			7.0		1.	-
	0915	02/20/87	0001	WM	N			0.4	J	1.	-
	0915	09/20/87	0001	WM	N			0.9	J	1.	-
	0915	02/03/88	0001	WM	N			0.7	J	1.	-
	0915	04/22/88	0001	WM	N			3.9		1.	-
	0915	08/10/88	0001	WM	N			3.8		1.	-
	0915	12/10/88	0001	WM	N			1.0		1.	-
	0919	02/19/87	0001	WL	N			0.8	J	1.	-
	0919	09/20/87	0001	WL	N		<	0.1	J	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	PARAMETER PVI	PARAMETER VALUE	PARAMETER 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:
WL - WASATCH - LOWER SANDSTONE
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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		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	-
	0919	02/19/87	0001	WL	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	-

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

FLOW RELATIONSHIP CODE:
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PARAMETER VALUE INDICATOR (PVI): < - LESS THAN DETECTION LIMIT

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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	PARAMETER PVI	PARAMETER VALUE	PARAMETER FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
PHOSPHATE	0923	01/30/88	0001	WL	N	MG/L	<	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	-
	0938	08/09/88	0001	WL	N		<	0.1	J	0.1	-
POLONIUM-210	0910	09/18/87	0001	WL	N	PCI/L		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	MG/L		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:
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
POTASSIUM	0914	02/03/88	0001	WL	N	MG/L	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	PCI/L	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		1.	0.3
	0938	08/09/88	0001	WL	N		0.3	J	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	PARAMETER 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	WM	N			0.005		0.005	-
	0919	02/19/87	0001	WL	N			0.014		0.005	-
	0919	09/20/87	0001	WL	N			0.009		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:
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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
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:
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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
SILVER	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		<	0.01		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		<	0.01		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		<	0.01		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		<	0.01		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		<	0.01		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		<	0.01		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			0.02		0.01	-
	0921	04/26/88	0001	WL	N			0.01		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			0.01		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	-
SODIUM	0910	02/17/87	0001	WL	N	MG/L		102.		0.002	-
	0910	09/18/87	0001	WL	N			85.9		0.002	-
	0910	01/30/88	0001	WL	N			82.6		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	WM	N			39.3		0.002	-
	0915	09/20/87	0001	WM	N			44.0	J	0.002	-
	0915	02/03/88	0001	WM	N			51.9		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	PARAMETER PVI	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: 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
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	-
	0923	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 (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
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 (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	PARAMETER PVI	VALUE	FLAGS	DETECTION LIMIT	PARAMETER UNCERTAINTY
THORIUM-230	0910	01/30/88	0001	WL	N	PCI/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	WM	N			0.0	J	1.	0.4
	0915	02/03/88	0001	WM	N			0.0		1.	0.5
	0915	04/22/88	0001	WM	N			0.0		1.	0.4
	0915	08/10/88	0001	WM	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.	0.6
	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
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	WM	N			0.018	J	0.005	-
	0915	02/03/88	0001	WM	N		<	0.005		0.005	-
	0915	04/22/88	0001	WM	N			0.010		0.005	-
	0915	08/10/88	0001	WM	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	-

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
TIN	0919	04/26/88	0001	WL	N	MG/L		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	MG/L		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	PARAMETER PVI	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:
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	PARAMETER VALUE	PARAMETER 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	-
	0938	12/10/88	0001	WL	N			0.0004	J	0.003	-
VANADIUM	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			0.06	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	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			0.03		0.01	-
	0921	02/04/88	0001	WL	N			0.02		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			0.02		0.01	-
	0923	09/20/87	0001	WL	N			0.02		0.01	-
	0923	01/30/88	0001	WL	N			0.01		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
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
VANADIUM	0938	12/10/88	0001	WL	N	MG/L	<	0.01		0.01	-
ZINC	0910	02/17/87	0001	WL	N	MG/L		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		0.005	-
	0915	09/20/87	0001	WM	N		<	0.005	J	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		<	0.005		0.005	-
	0919	02/19/87	0001	WL	N			0.055		0.005	-
	0919	09/20/87	0001	WL	N			0.016		0.005	-
	0919	01/30/88	0001	WL	N			0.010		0.005	-
	0919	04/26/88	0001	WL	N			0.012		0.005	-
	0919	08/27/88	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
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

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	PARAMETER PVI	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:
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
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:
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
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	-

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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	PARAMETER PVI	PARAMETER VALUE	PARAMETER 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

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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
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	-

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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	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	-

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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
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	-

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DATA FILE NAME: M:\DART\SPK01\GWQ10010.DAT

APPENDIX E

AQUIFER PUMPING TEST CALCULATION SET

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

CALCULATION COVER SHEET

CALC NO. 07-756-01-00 DISCIPLINE Hydrology NO. OF SHEETS ~~24~~ 28

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 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
		RJ Hardenburg	Sep 88	[illegible]	07/94		

4/85

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.

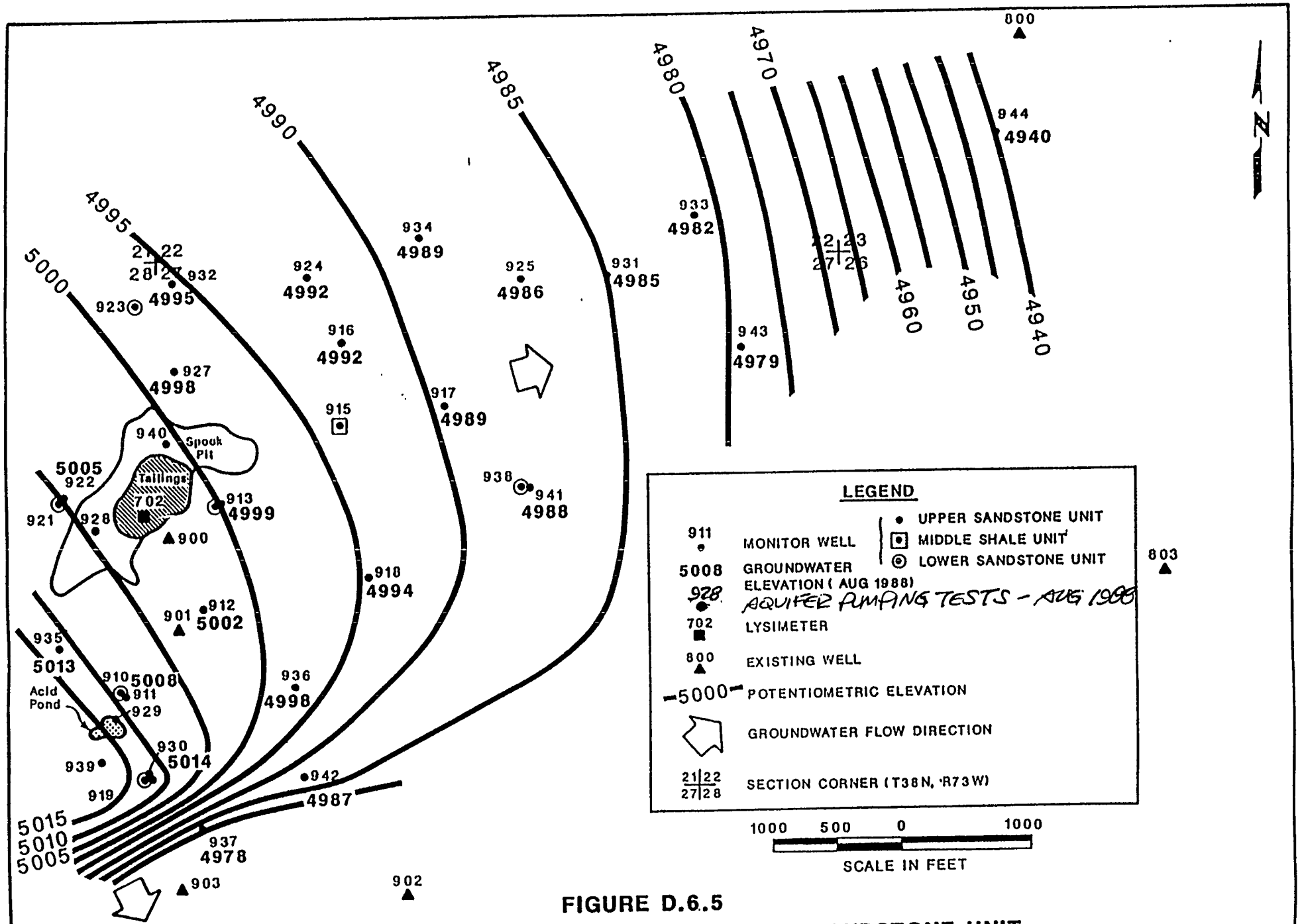


FIGURE D.6.5

POTENTIOMETRIC SURFACE OF THE UPPER SANDSTONE UNIT AT THE SPOOK SITE - CONVERSE COUNTY, WYOMING

Table B.2.3 (EA) D.6.4 (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) (ft²/day)	Hydraulic Conductivity (K) (ft/day)
913	08-15-88	13.1	3.33	15	211.65 (2.29 cm²/s)	14.11 (5.0×10⁻³ cm/s)
928	08-13-88	16.8	4.20	14	225.96 (2.43 cm²/s)	16.14 (5.7×10⁻³ cm/s)

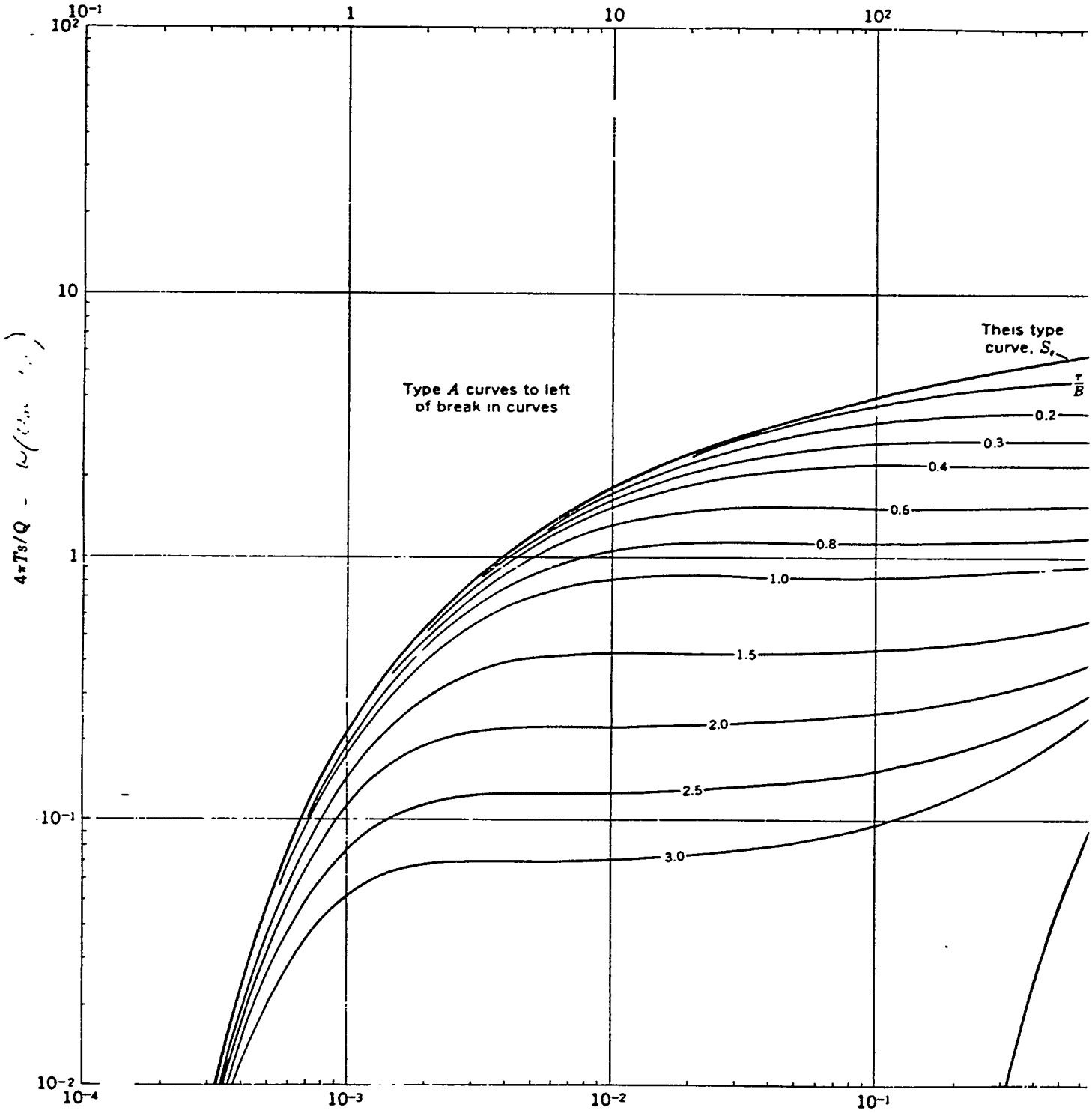
(See Groundwater Calculation Number 07-756-01-00)

JACOBS ENGINEERING

DATE ____ SUBJECT ____ SHEET NO. ____

BY ____ CHKD. ____ JOB NO. ____

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



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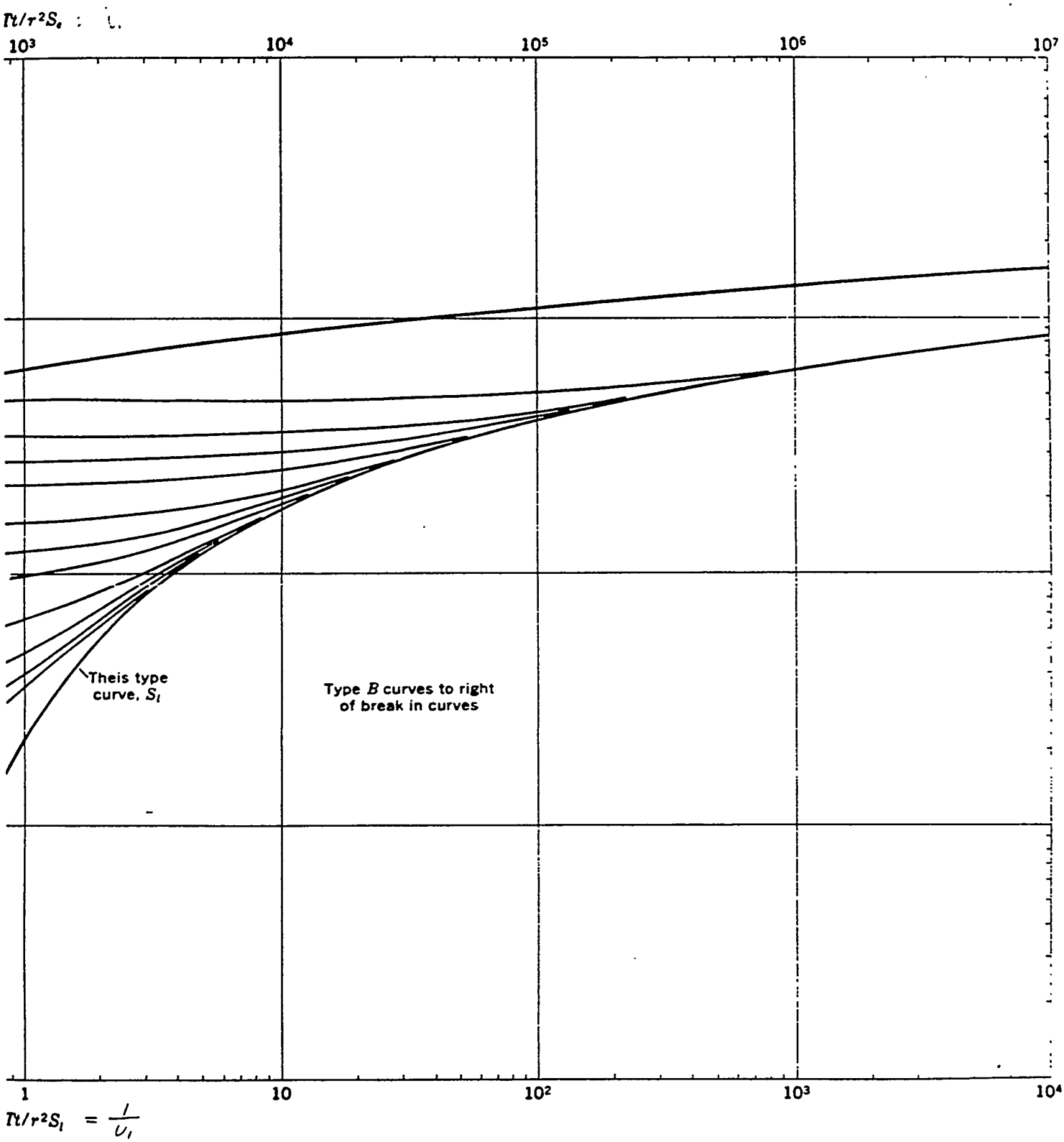


D TYPE CURVES

ton(1963, fig. 1)

JACOBS ENGINEERING SPOOK, WY

DATE _____ SUBJECT AQUIFER PUMPING TEST SHEET NO. _____

BY RJH CHKD. _____ 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		
	0905	50	104.33	4.08		
		65	104.33	4.08		
	0935	80	104.43	4.18		
	0955	100	104.53	4.28	.45	
	1135	200	104.98	4.73	.05	
	1315	300	105.03	4.78	.44	
	1455	400	105.47	5.22	.13	
	1635	500	105.60	5.35		
	1815	600	—	—	.23	
	1955	700	105.83	5.58		
	2123 ~~2135~~	788 ~~800~~	=	≈ 5.70 = estim		→ Generator stopped @ 2123 (= 788 min) → Pump off ...
		900				
		1000				

FORM 91 005 1 (4/81)

JACOBS ENGINEERING SPOOK, WY

DATE SUBJECT SHEET NO.

BY RJH 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	3.78	
	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	4.43	
	2153	818	30	27.3	101.43	1.18	4.52	
	2203	828	40	20.7	101.37	1.12	4.58	
	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	4.87	

FORM 91.005.1 (4/81)

JACOBS ENGINEERING SPOOK, WY

DATE _____ SUBJECT AQUIFER PUMPING TEST SHEET NO. _____

BY RJH CHKD. _____ JOB NO. _____

SITE: SPOOK, WY REFERENCE POINT: TOP OF PVC CASING

LOCATION: OW-913-1

PUMP MW-913 — OBSERVATION WELL 1 r = 18.15' 539W

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			

FORM 01.005-1 (4/81)

JACOBS ENGINEERING SPOOK, WY

DATE _____ SUBJECT _____ SHEET NO. _____

BY RJH CHKD. _____ AQUIFER PUMPING TEST JOB NO. _____

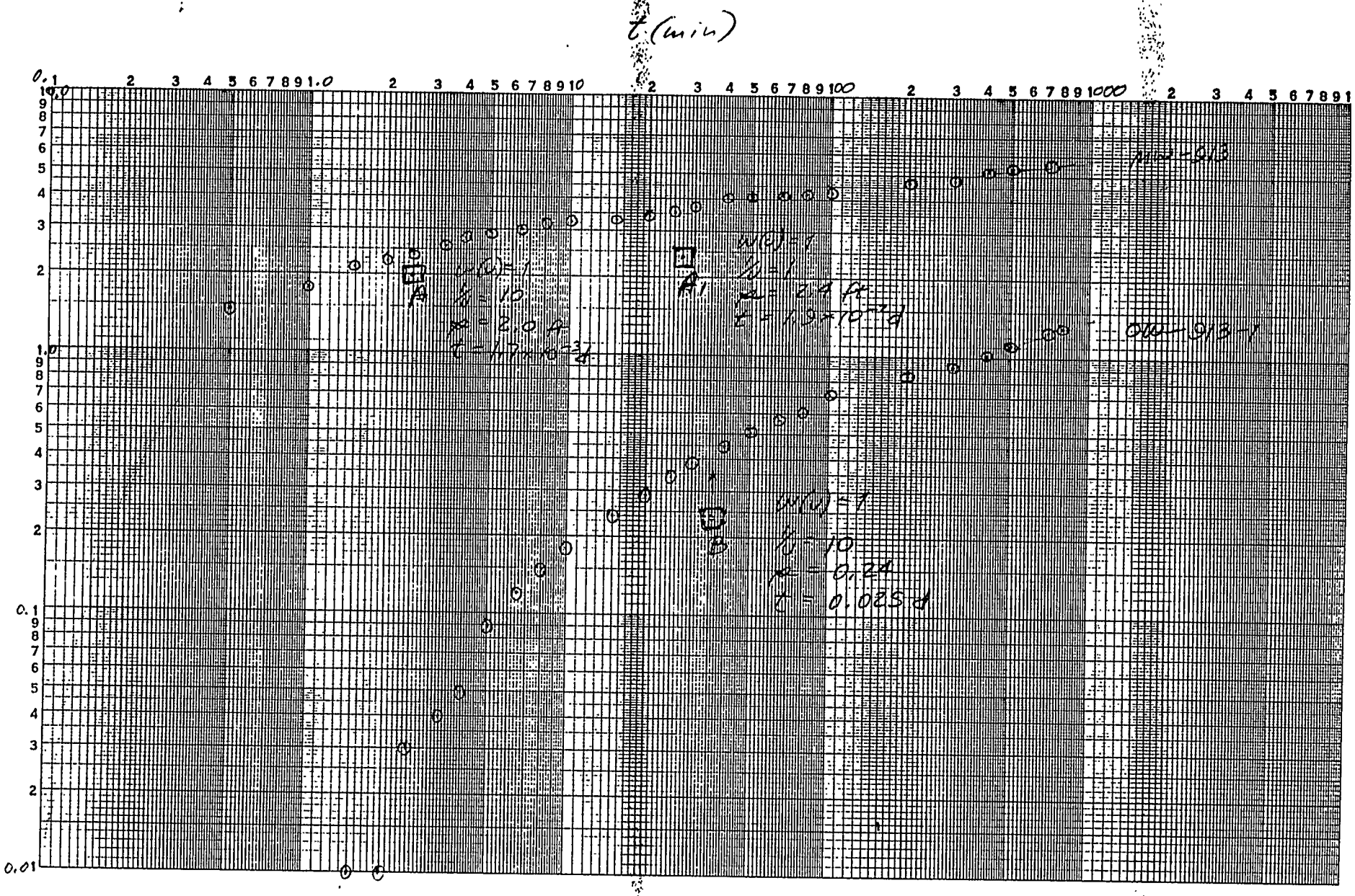
SITE: SPOOK, WY
LOCATION: OW-913-1
RECOVERY - OBSERVATION WELL

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	102.10	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	

FORM 91-005-1 (4/81)

NO. 340-L35 DIETZGEN GRAPH PAPER
LOGARITHMIC
3 CYCLES X 5 CYCLES

DIETZGEN CORPORATION
MADE IN U.S.A.

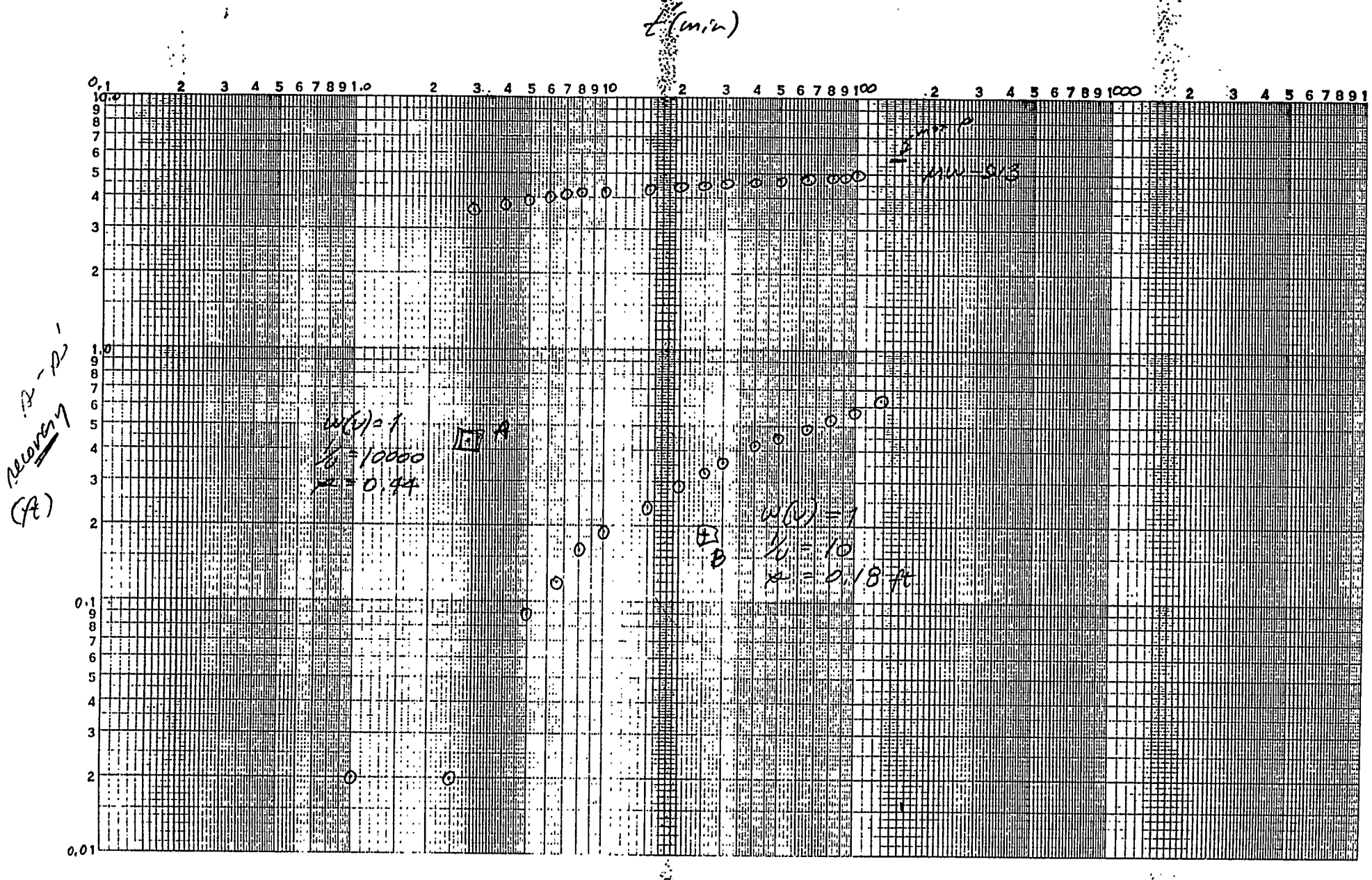


t (min)
time after pumping started

SPOOK, WY
MW-913
Pumping

NO. 340-L35 DIETZGEN GRAPH PAPER
LOGARITHMIC
3 CYCLES X 5 CYCLES

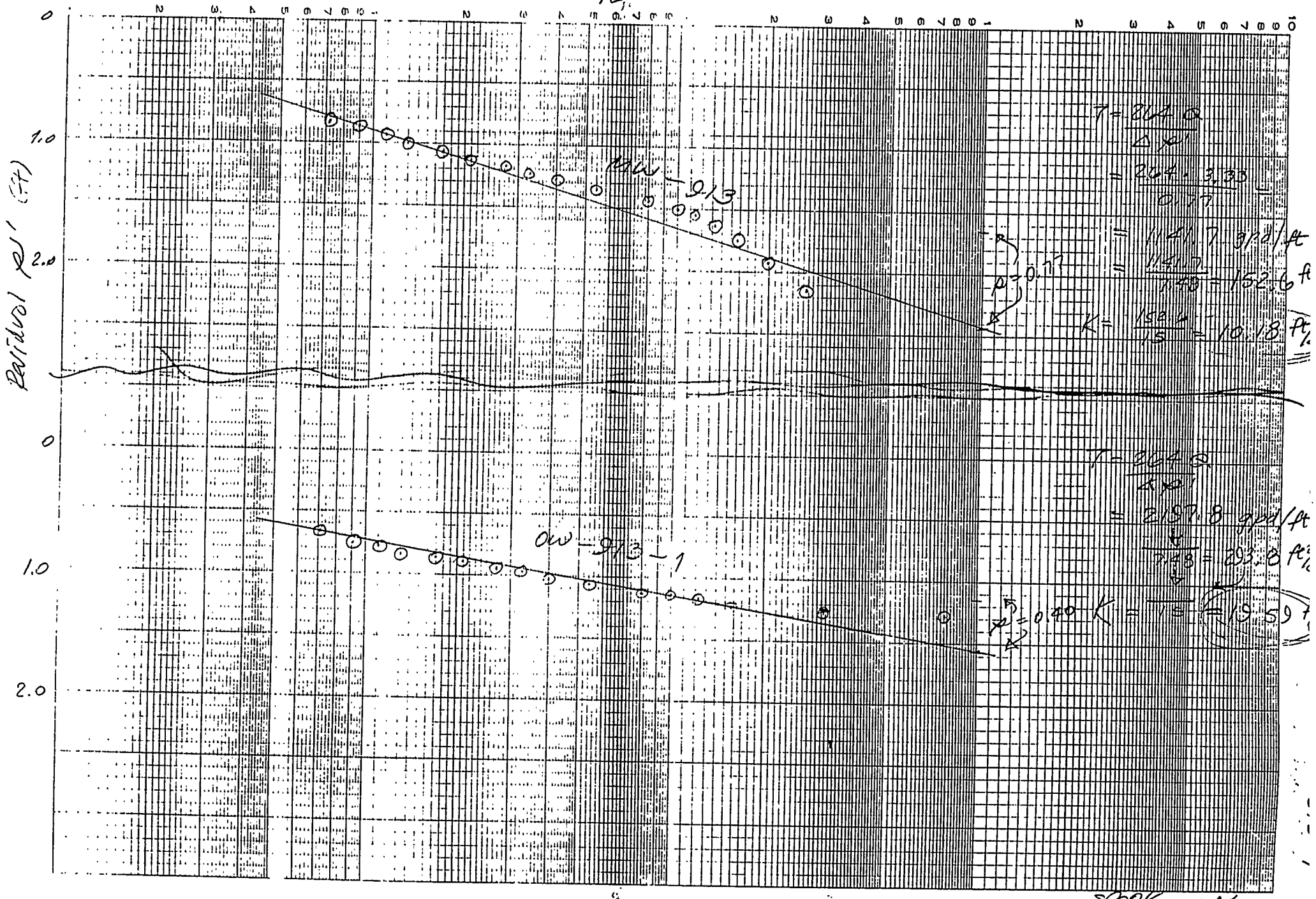
DIETZGEN CORPORATION
MADE IN U.S.A.



SPOOK, WY
MW-913
Recovery

NO. 340-L410 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
4 CYCLES X 10 DIVISIONS PER INCH

DIETZGEN CORPORATION
MADE IN U.S.A.



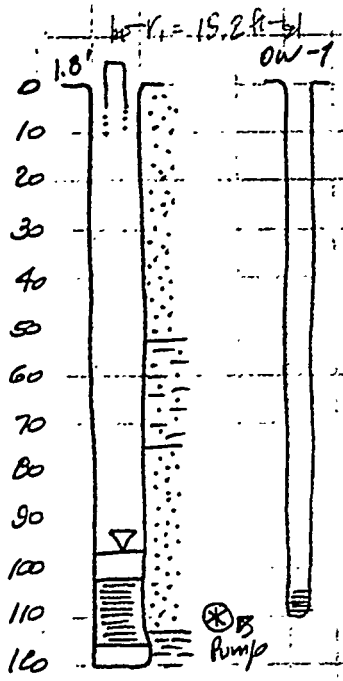
SPOOK, WY

JACOBS ENGINEERING

DATE Sun 25 Sep 08 SUBJECT SHEET NO.

BY RJH CHKD. AQUIFER PUMPING TESTS JOB NO.

MW-913



$Q = 3.33\ gpm \times 1440\ m/d = 4795\ gpd \times 1.337\times10^{-1} =$
$= 641\ ft^3/d$

$r_1 = 18.2\ ft;\quad r_1^2 = 331\ ft^2$

$b = 15\ ft$

Aquifer unconfined

(Lower limit $r_{w\,eff}$)

1) MW-913 Pumping (Theis)

$$T = \frac{Q}{4\cdot\pi\cdot s}\cdot W(u) \qquad K = T/b$$

A ☐ $T(early) = \frac{641}{4\cdot\pi\cdot 2.0}\cdot 1 = 25.50\ ft^2/d$

$K = \frac{25.50}{15} = \underline{1.70}\ ft/d$

A₁ ☐ $T(late) = \frac{641}{4\cdot\pi\cdot 2.4}\cdot 1 = 21.25\ ft^2/d$

$K = \frac{21.25}{15} = \underline{1.42}\ ft/d$

Note: These K values not reliable due to well inefficiency and partial penetration effects

2) MW-913 Recovery (Theis)

A ☐ $T = \frac{641}{4\cdot\pi\cdot 0.44}\cdot 1 = 115.93\ ft^2/d$

$K = \frac{115.93\ ft^2/d}{15\ ft} = \underline{7.73}\ ft/d$

JACOBS ENGINEERING

SPOOK, WY

DATE Sun 25 Sep 88 SUBJECT SHEET NO.

BY RJH CHKD. AQUIFER PUMPING TESTS JOB NO.

3) MW-913 Recovery (Straight line)

$K = \underline{10.18}$ ft/d (see calculations on graph...)

4) OW-913-1 Pumping (Theis)

B ☐ $T = \frac{641}{4 \cdot \pi \cdot 0.24} \cdot 1 = 212.54$ ft²/d

$K = \frac{212.54}{15} = \underline{14.17}$ ft/d

5) OW-913-1

$S = \frac{4Ttu}{r^2}$

$S = \frac{4 \cdot 212.54 \cdot 0.025 \cdot 0.1}{331} = 6.4 \times 10^{-3}$ (early)

(no indication of delayed yield phenomenon for S_y (Ptt).

6) OW-913-1 Recovery (Theis)

$T = \frac{641}{4 \cdot \pi \cdot 0.18} \cdot 1 = 283.38$ ft²/d

$K = \frac{283.38}{15} = \underline{18.89}$ ft/d

7) OW-913-1 Recovery (Straight line)

$K = 19.59$ ft/d (see calculations on graph...)

JACOBS ENGINEERING

SPOOK, WY

DATE Sun 25 Sep 88 SUBJECT SHEET NO.

BY RLH CHKD. AQUIFER PUMPING TESTS JOB NO.

MW-913 (Cont)

SUMMARY — K

MW-913	Recovery (Theis) *	7.73	ft/d
"	Recovery (Ste line)	10.18	"
OW-913-1	Pumping (Theis)	14.17	"
"	Recovery (Theis) *	18.89	"
"	Recovery (Ste line)	19.59	
K average		14.11	ft/d

(Range ≅ 8-20 ft/d)

JACOBS ENGINEERING

SPOOK, WY

DATE _____ SUBJECT _____ SHEET NO. _____

BY RJH CHKD. _____ AQUIFER PUMPING TEST JOB NO. _____

SITE: SPOOK, WY
LOCATION: MW-928
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
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

FORM 81 005 1 (4/81)

JACOBS ENGINEERING SPOOK, WY

DATE SUBJECT SHEET NO.

BY RJH CHKD. AQUIFER PUMPING TEST JOB NO.

SITE: SPOOK, WY
LOCATION: MW-928
RECOVERY - TEST WELL

Date	Time	t, 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 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	1.60	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
		1069	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

FORM 91.005.1 (4/81)

JACOBS ENGINEERING SPOOK, WY

DATE _____ SUBJECT _____ SHEET NO. _____

BY RJH CHKD. _____ AQUIFER PUMPING TEST JOB NO. _____

SITE: SPOOK, WY 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

FORM 91.005.1 (4/81)

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	0.52
		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	0.95
		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

JACOBS ENGINEERING SPOOK, WY

2'

DATE _____ SUBJECT _____ SHEET NO. _____

BY RJLF CHKD. _____ AQUIFER PUMPING TEST JOB NO. _____

SITE: SPOOK, WY REFERENCE POINT: TOP OF PVC CASING

LOCATION: OW-928-2

PUMP MW-928 - OBSERVATION WELL 2 r = 81.0' N90W

Date	Time	Time, min	Depth to water, ft	Drawdown, ft	Remarks
BAUGB	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	

FORM 91-005 1 (4/81)

JACOBS ENGINEERING SPOOK, WY

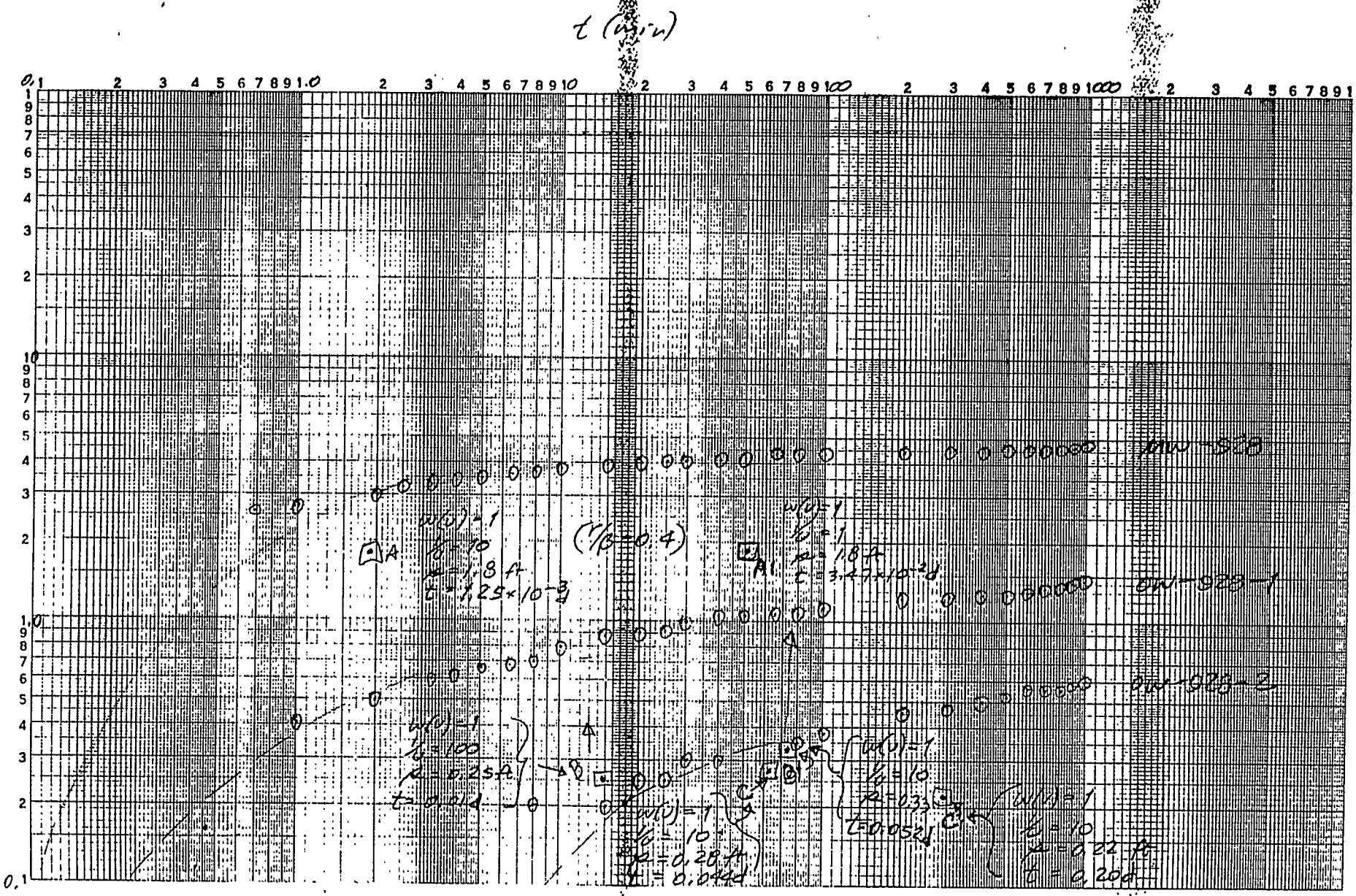
DATE _____ SUBJECT _____ SHEET NO. _____

BY RJH CHKD. _____ AQUIFER PUMPING TEST JOB NO. _____

SITE: SPOOK, WY
LOCATION: OW-928-2
RECOVERY - OBSERVATION WELL 2

Date	Time	t, min	t', min	t/t'	Depth to water, ft	Residual Drawdown, ft	Remarks
14 AUG 08	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	404.6	—	—	
		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

FORM 91.005.1 (4/91)

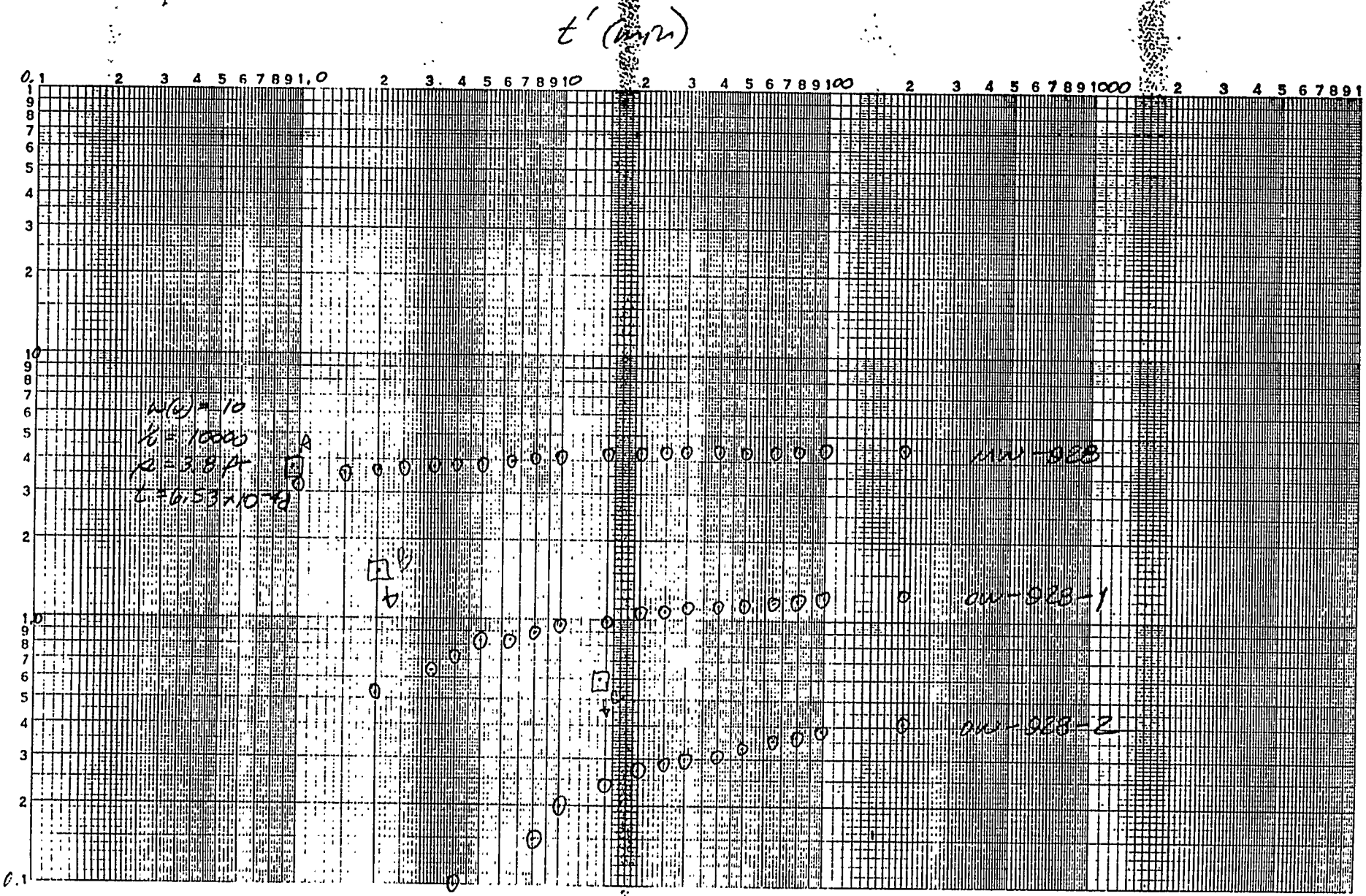


t (min)
time after pumping started

SPOOK, WY
MW-928
Pumping

NO. 340-L35 DIETZGEN GRAPH PAPER
LOGARITHMIC
3 CYCLES X 5 CYCLES

DIETZGEN CORPORATION
MADE IN U.S.A.

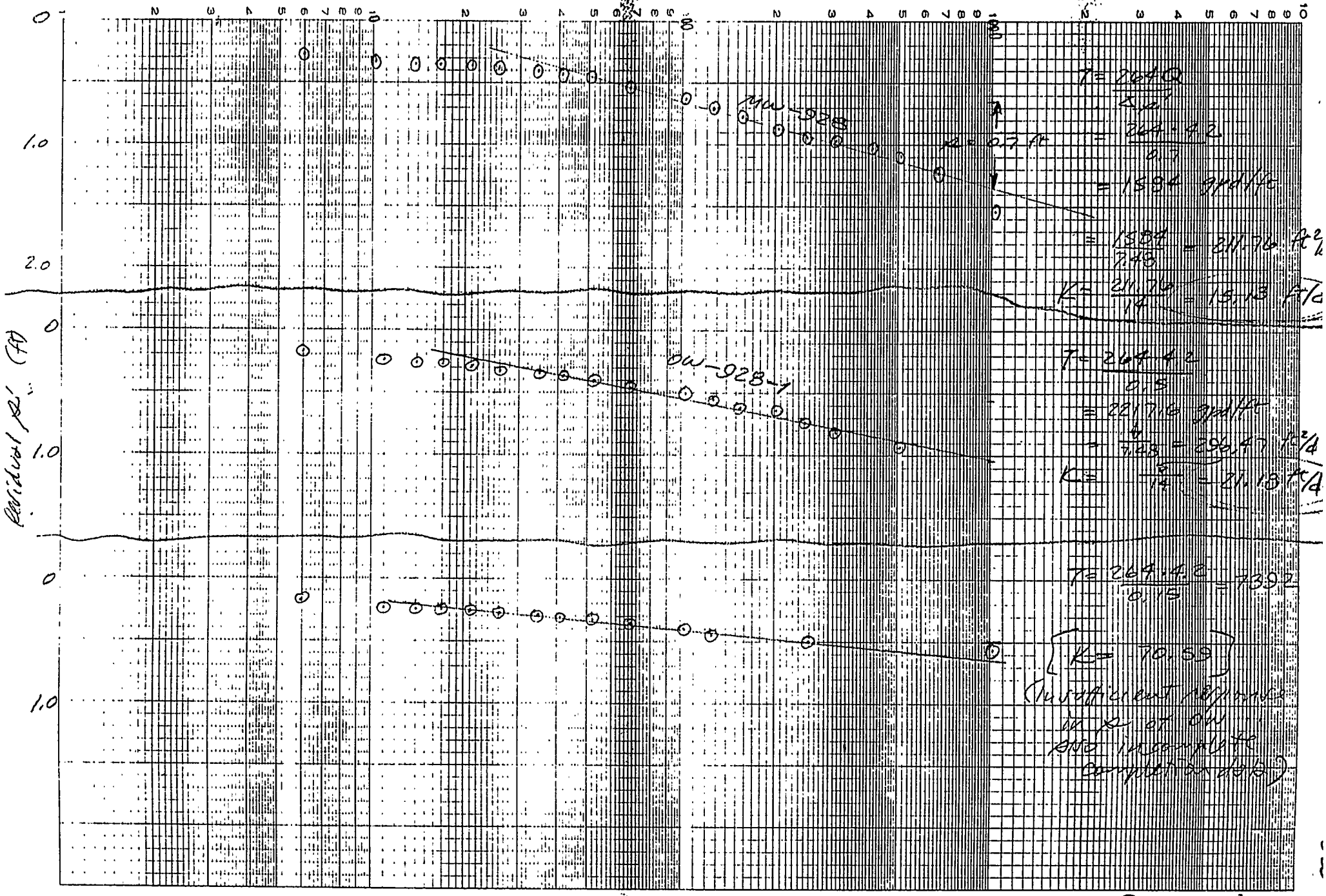


t' (min)
time after pumping stopped

SPOOK, WY
MW-928
DRAWDOWN

NO. 340-L410 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
4 CYCLES X 10 DIVISIONS PER INCH

DIETZGEN CORPORATION
MADE IN U.S.A.



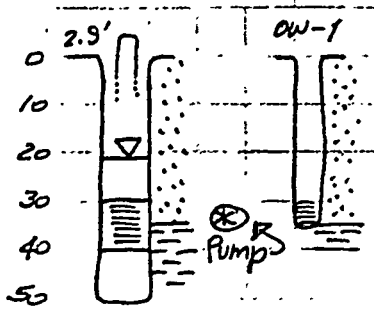
SPOOK, WY

JACOBS ENGINEERING

DATE Sun 25 Sep 88 SUBJECT SHEET NO.

BY RJH CHKD. AQUIFER PUMPING TESTS JOB NO.

MW-928



$Q = 4.2\ gpm \times 1440\ m/d = 6048\ gpd \times 1.337 \times 10^{-1} =$
$= 808.6\ ft^3/d$

$r_1 = 20\ ft;\ r_1^2 = 400\ ft^2;\ r_2 = 81\ ft;\ r_2^2 = 6561\ ft^2$

$b = 14\ ft$

Aquifer = unconfined

---

1) MW-928 Pumping (Theis)

$$T = \frac{Q}{4\pi s} \cdot W(U\ldots) \qquad K = T/b$$

A ⊡ $T(early) = \dfrac{808.6\ ft^3/d}{4 \cdot \pi \cdot 1.8\ ft} \cdot 1 = 35.75\ ft^2/d$

$K = \dfrac{35.75}{14} = \underline{2.55\ ft/d}$

A, ⊡ $T(late)$ = same as above $= \underline{2.55\ ft/d} = K$

Note: these K values not reliable due to well inefficiencies & partial penetration effects...

2) MW-928 Recovery (Theis)

A ⊡ $T = \dfrac{808.6}{4 \cdot \pi \cdot 3.8} \cdot 10 = 169.33\ ft^2/d$

$K = \dfrac{169.33}{14} = \underline{12.10\ ft/d}$

3) MW-928 Recovery (Straight line)

$K = \underline{15.13\ ft/d}$ (see calculations on graph...)

MW-928 (cont)

4) OW-928-1 Pumping (Theis)

B ☐ $T(\text{early}) = \frac{808.6}{4 \cdot \pi \cdot 0.25} \cdot 1 = 257.39 \ ft^2/d$

$K = \frac{257.39}{14} = \underline{18.38} \ ft/d$

B, ☐ $T(\text{late}) = \frac{808.6}{4 \cdot \pi \cdot 0.33} \cdot 1 = 194.99 \ ft^2/d$

$K = \frac{194.99}{14} = \underline{13.92} \ ft/d$

5) OW-928-1

$S = \frac{4Ttu}{r^2}$

B ☐ $S(\text{early}) = \frac{4 \cdot 257.39 \cdot 0.01 \cdot 0.01}{400} = \underline{2.57 \times 10^{-4}}$

B, ☐ $S_y(\text{late}) = \frac{4 \cdot 194.99 \cdot 0.052 \cdot 0.1}{400} = \underline{0.01}$

$\eta = \frac{S + S_y}{S} > 6.5 = \frac{2.57 \times 10^{-4} \cdot 0.01}{2.57 \times 10^{-4}} = 39.9$

6) OW-928-1 Recovery (Straight line)

$K = \underline{21.18} \ ft/d$ (see calculations on graph...)

JACOBS ENGINEERING

DATE Sun 25 Sep 88 SUBJECT SHEET NO.

BY RJH CHKD. AQUIFER PUMPING TESTS JOB NO.

MW-928 (cont)

7) OW-928-2 Pumping (Theis)

C ⊡ $T(\text{early}) = \frac{808.6}{4 \cdot \pi \cdot 0.28} \cdot 1 = 229.81 \text{ ft}^2/\text{d}$

$K = \frac{229.81}{14} = \underline{16.41 \text{ ft/d}}$

C_1 ⊡ $T(\text{late}) = \frac{808.6}{4 \cdot \pi \cdot 0.22} \cdot 1 = 292.48 \text{ ft}^2/\text{d}$

$K = \frac{292.48}{14} = \underline{20.89 \text{ ft/d}}$

8) OW-928-2

C ⊡ $S(\text{early}) = \frac{4 \cdot 229.81 \cdot 0.044 \cdot 0.1}{6561} = 6.16 \times 10^{-4}$

C_1 ⊡ $S_y(\text{late}) = \frac{4 \cdot 292.48 \cdot 0.20 \cdot 0.1}{6561} = 0.004$

$\eta = \frac{S + S_y}{S} > 6.5 = 7.49$

SUMMARY — K

MW-928	Recovery (Theis)	12.10	ft/d
"	Recovery (Str Line)	15.13	"
OW-928-1	Pumping (Theis)	16.15	"
"	Recovery (Str Line)	21.18	"

K average: 16.14 ft/d

(Range ≅ 12-21 ft/d)

JACOBS ENGINEERING GROUP INC.
ADVANCED SYSTEMS DIVISION, ALBUQUERQUE OPERATIONS

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:

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 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
		C Weydenbach	5/93	[illegible]	07/94		

4/86

SPK — AQUIFER PUMPING TESTS

A summary sheet will be inserted stating:

A. Purpose of calculation:

B. Methods & procedures:

C. Assumptions:

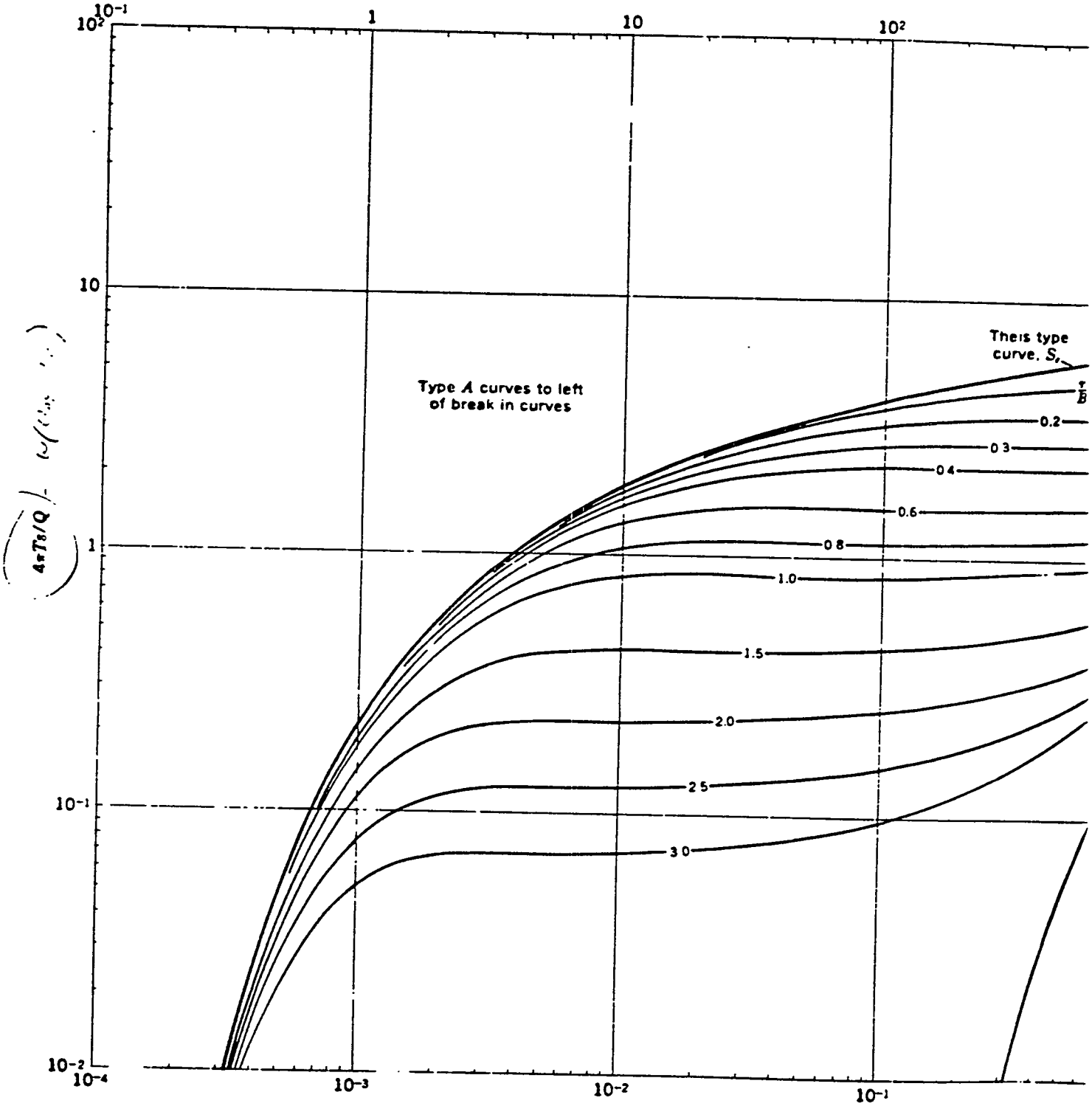
D. Material properties:

E. Data sources:

F. Calculations & analyses:

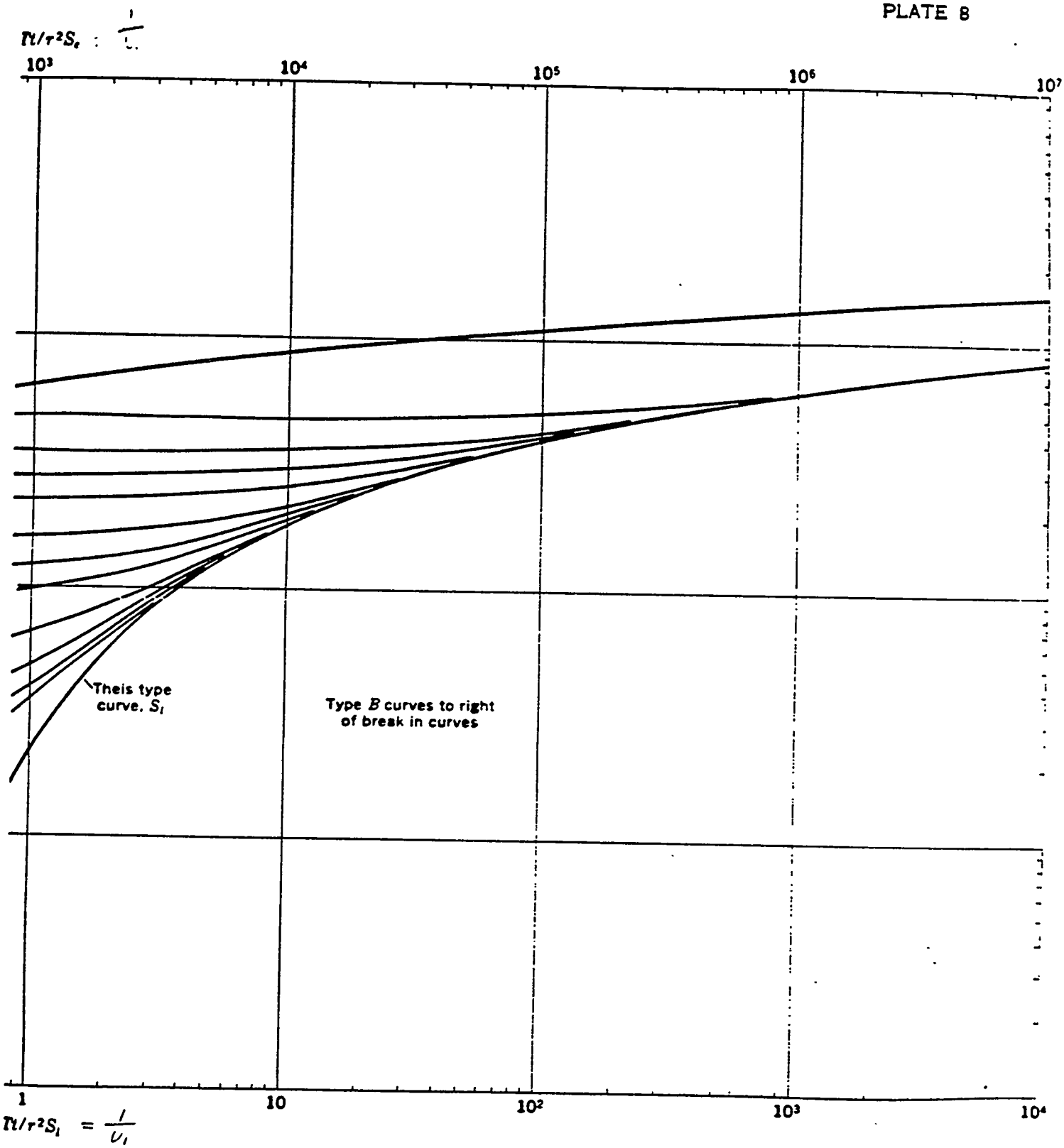
G. Results:

UNITED STATES DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY



DELAYED-YIE

After B



.D TYPE CURVES

ton(1963, fig. 1)

JACOBS ENGINEERING SPOOK, WY

DATE _____ SUBJECT _____ SHEET NO _____

BY RJH CHKD. _____ AQUIFER 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' 539W

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			

FORM 91-005-1 (4/81)

JACOBS ENGINEERING SPOOK, WY

DATE _____ SUBJECT AQUIFER PUMPING TEST SHEET NO. _____

BY RJH CHKD. _____ 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		
	0905	50	104.33	4.08		
		65	104.33	4.08		
	0935	80	104.43	4.18		
	0955	100	104.53	4.28	.45	
	1135	200	104.98	4.73	.05	
	1315	300	105.03	4.78	.44	
	1455	400	105.47	5.22	.13	
	1635	500	105.60	5.35		
	1815	600	—	—	.23	
	1955	700	105.83	5.58		
	2123	788	=	~ 5.70 = estim		Generator stopped @ 2123 (= 788 min) → Pump off ...
	~~2135~~	~~800~~				
		900				
		1000				

FORM 91.005.1 (4/81)

JACOBS ENGINEERING SPOOK, WY

DATE _____ SUBJECT AQUIFER PUMPING TEST SHEET NO. _____

BY RJH CHKD. _____ 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
15Aug88	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	3.78	
	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	4.48	
	2153	818	30	27.3	101.43	1.18	4.52	
	2203	828	40	20.7	101.37	1.12	4.58	
	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	4.87	

JACOBS ENGINEERING SPOOK, WY 913-4

DATE _____ SUBJECT SHEET NO. _____

BY RJH CHKD. _____ AQUIFER PUMPING TEST JOB NO. _____

SITE: SPOOK, WY

LOCATION: OW-913-1

RECOVERY - OBSERVATION WELL

DOW	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	102.10	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	

FORM 91-005-1 (4/81)

JACOBS ENGINEERING STOOEL, WY

DATE Sun 25 Sep 88 SUBJECT SHEET NO.

BY RJL CHKD. AQUIFER PUMPING TESTS JOB NO.

3) MW-913 Recovery (Straight line)

$K = \underline{10.18}$ ft/d (see calculations on graph...)

4) OW-913-1 Pumping (Theis)

B ☐ $T = \frac{641}{4 \cdot \pi \cdot 0.24} \cdot 1 = 212.\overset{6}{\underline{5}}4$ ft²/d ✓

$K = \frac{212.54}{15} = \underline{14.1\overset{5}{\underline{7}}}$ ft/d ✓

5) OW-913-1

$S = \frac{4Ttu}{r^2}$

$S = \frac{4 \cdot 212.54 \cdot 0.025 \cdot 0.1}{331} = 6.4 \times 10^{-3}$ ✓ (early)

(no indication of delayed yield phenomenon for S_y (ISU).

6) OW-913-1 Recovery (Theis)

$T = \frac{641}{4 \cdot \pi \cdot 0.18} \cdot 1 = 283.\overset{52}{\underline{3}}\underline{8}$ ft²/d ✓

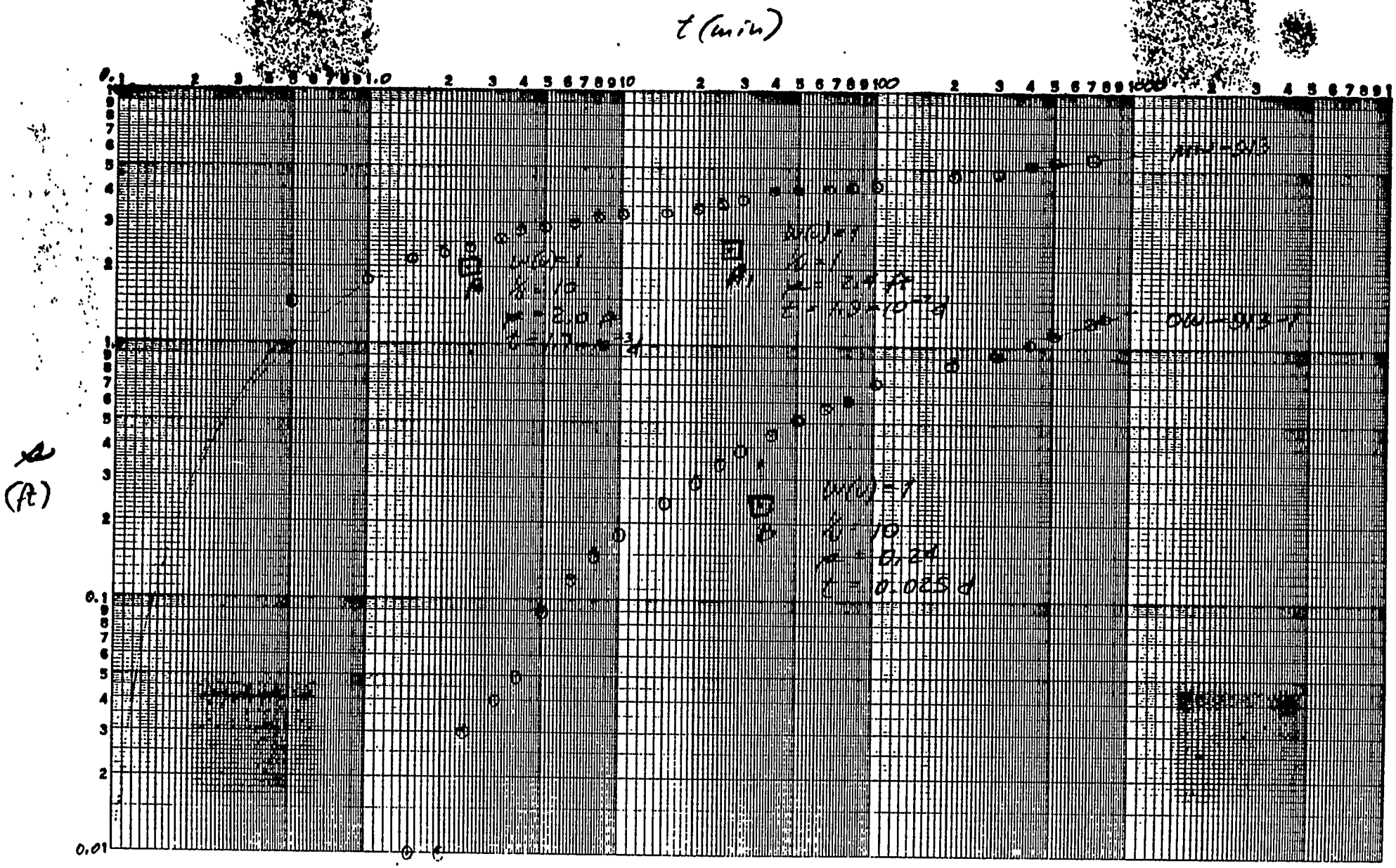
$K = \frac{283.38}{15} = \underline{18.89}$ ft/d ✓

7) OW-913-1 Recovery (Straight line)

$K = 19.59$ ft/d (see calculations on graph...)

FORM 91-005-1 (4/81)

8640-D



t (min)
time after pumping started

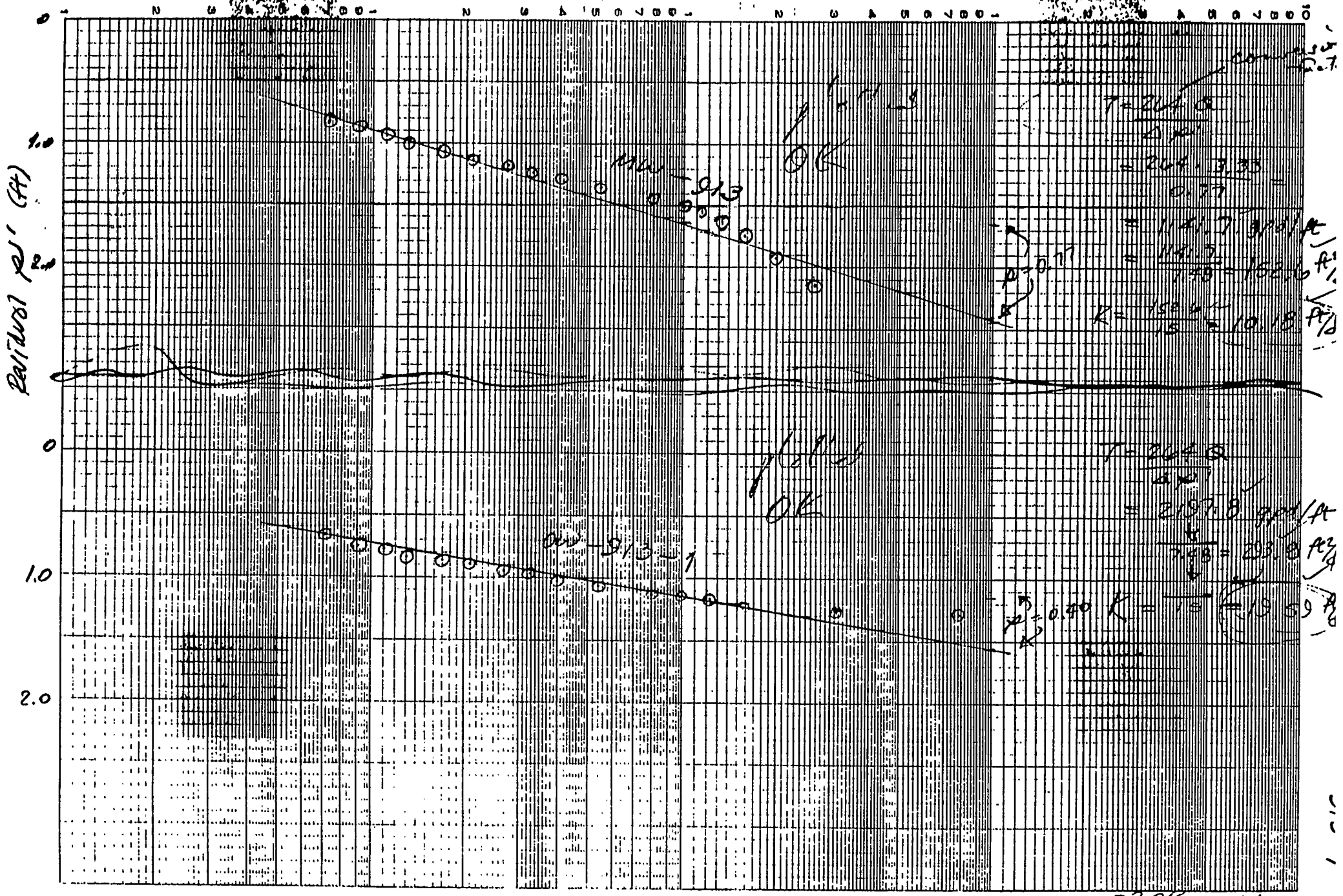
EPOOK, WY
MW-913
Pumping

5-215

NO. 340-L410 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
4 CYCLES X 10 DIVISIONS PER INCH

DIETZGEN CORPORATION
MADE IN U.S.A.

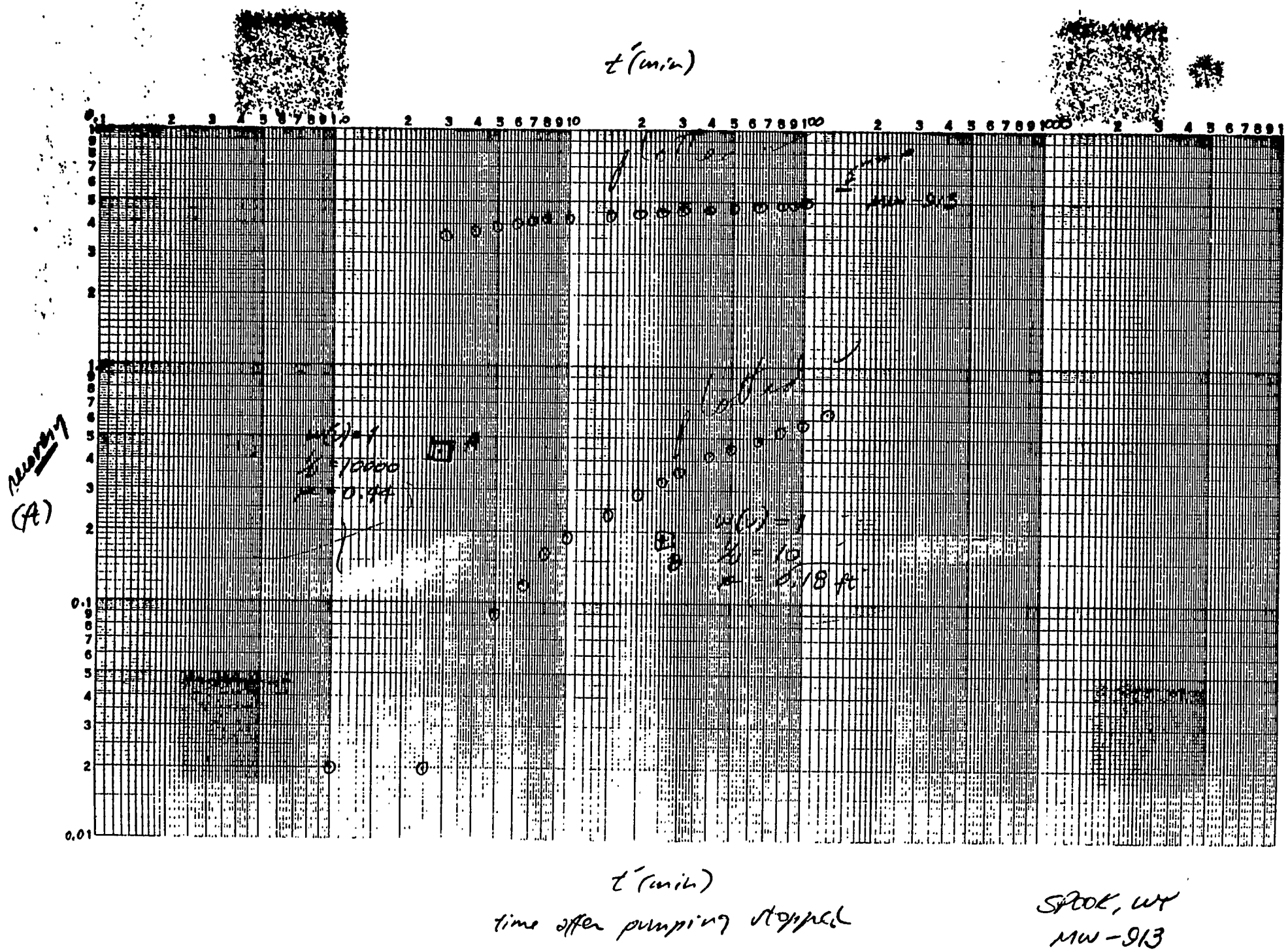
Ratio t/t'



SPOOK, WY

NO. 340-L35 DIETZGEN GRAPH PAPER
LOGARITHMIC
3 CYCLES X 5 CYCLES

DIETZGEN CORPORATION
MADE IN U.S.A.



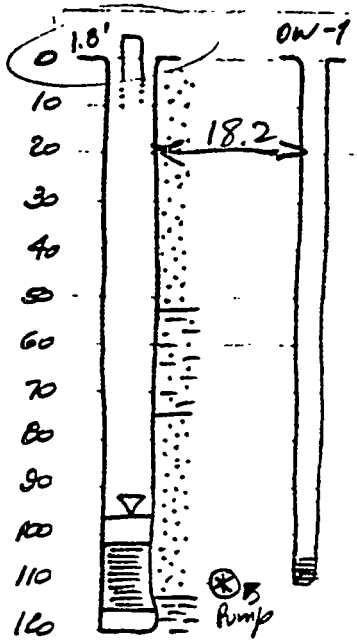
SPOOK, WY
MW-913
Provenzano

JACOBS ENGINEERING

DATE Sun 25 Sep 88 SUBJECT SHEET NO.

BY RJH CHKD. AQUIFER PUMPING TESTS JOB NO.

MW-913



$Q = 3.33\ gpm \times 1440\ m/d = 4795\ gpd \times 1.337\times10^{-1} =$
$= 641\ ft^3/d$

$r_1 = 18.2\ ft$; $r_1^2 = 331\ ft^2$

$b = 15\ ft$

Aquifer unconfined

1) MW-913 Pumping (Theis)

$T = \frac{Q}{4\cdot\pi\cdot s}\cdot W(u)$ $K = T/b$

A ⊡ $T(early) = \frac{641}{4\cdot\pi\cdot 2.0}\cdot 1 = 25.50\ ft^2/d$

$K = \frac{25.50}{15} = 1.70\ ft/d$

A₁ ⊡ $T(late) = \frac{641}{4\cdot\pi\cdot 2.4}\cdot 1 = 21.25\ ft^2/d$

$K = \frac{21.25}{15} = 1.42\ ft/d$

Note: these K values not reliable due to well inefficiency and partial penetration effects.

2) MW-913 Recovery (Theis)

A ⊡ $T = \frac{641}{4\cdot\pi\cdot 0.44}\cdot 1 = 115.93\ ft^2/d$

$K = \frac{115.93\ ft^2/d}{15\ ft} = 7.73\ ft/d$

JACOBS ENGINEERING

DATE Sun 25 Sep 88 SUBJECT

BY RJH CHKD. AQUIFER PUMPING TESTS

SHEET NO.

JOB NO.

MW-913 (Cont)

SUMMARY — K

MW-913	Recovery (Theis) *	7.73	ft/d
"	Recovery (Ste line)	10.18	"
OW-913-1	Pumping (Theis)	14.17	"
"	Recovery (Theis) *	18.89	"
"	Recovery (Ste line)	19.59	
	K average	14.11	ft/d

(Range ≅ 8-20 ft/d)

FORM 91-005-1 (4/81)

NO. 340-L35 DIETZGEN GRAPH PAPER
LOGARITHMIC
3 CYCLES X 5 CYCLES

DIETZGEN CORPORATION
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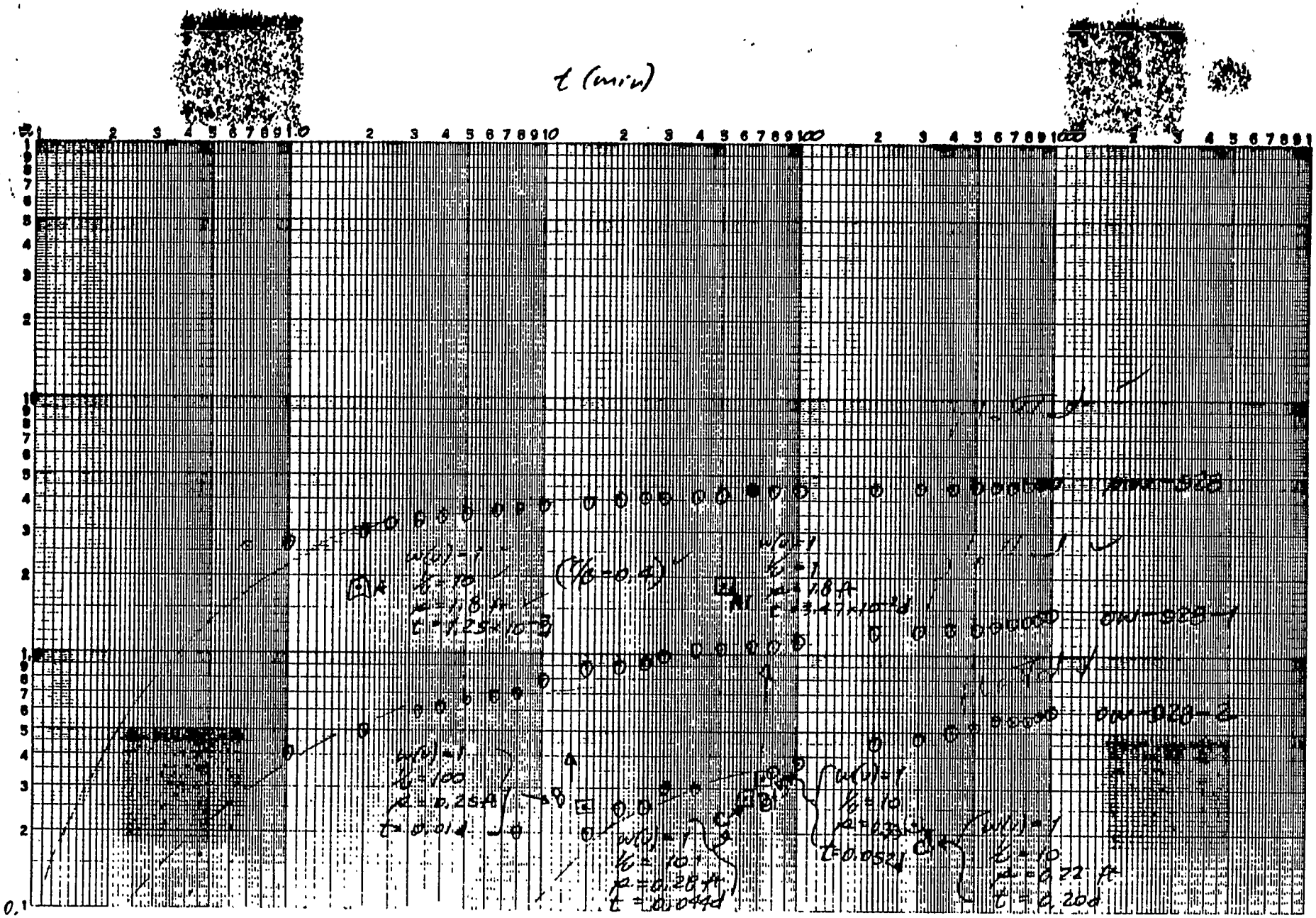


t (min)
time after pumping started

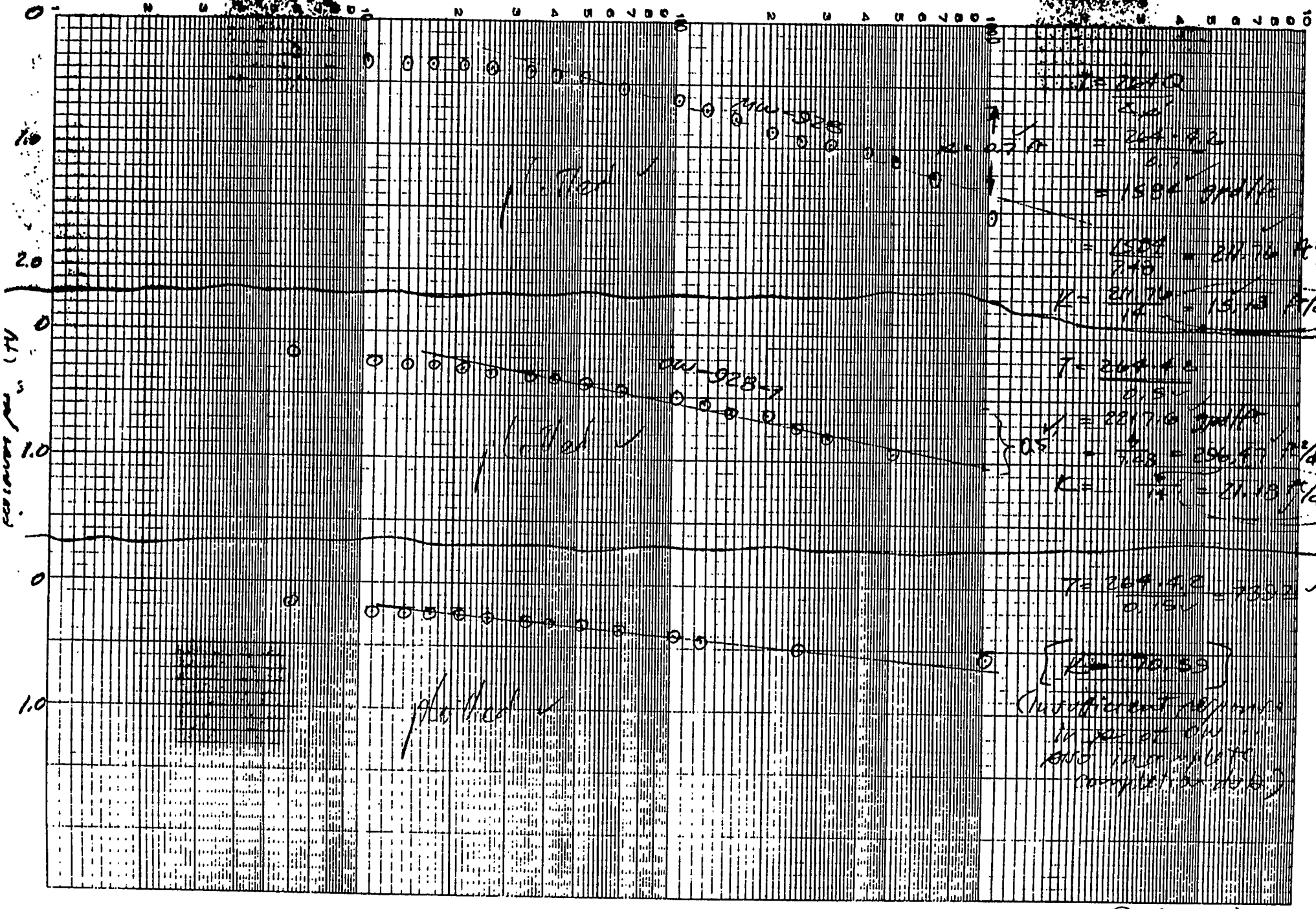
SPOK, WA
MW-928
Pumping

928-7

NO. 340-L410 DIETZGEN GRAPH PAPER
SEMI-LOGARITHMIC
4 CYCLES X 10 DIVISIONS PER INCH

DIETZGEN CORPORATION
MADE IN U.S.A.

Ratio t/t'

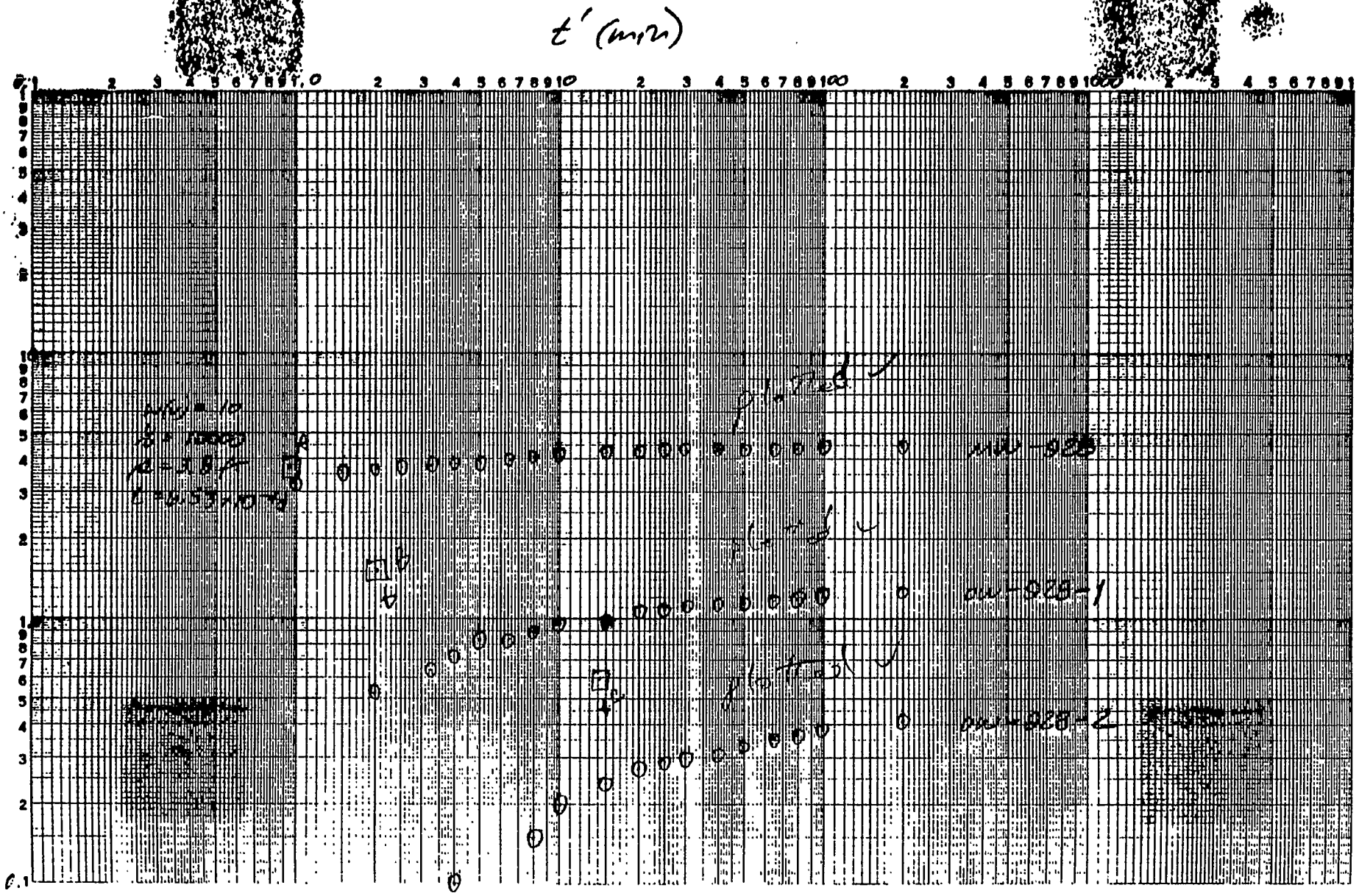


SPOOK, WY

928-3

NO. 340-L35 DIETZGEN GRAPH PAPER
LOGARITHMIC
3 CYCLES X 5 CYCLES

DIETZGEN CORPORATION
MADE IN U.S.A.



t' (min)
time after pumping stopped

SPOOK, WY
MW-928
Drawdown

928-B

JACOBS ENGINEERING SPOOK, WY

DATE _____ SUBJECT _____ SHEET NO. _____

BY RJH CHKD. _____ AQUIFER PUMPING TEST JOB NO. _____

SITE: SPOOK, WY
LOCATION: MW-928
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
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

FORM 91-005-1 (4/81)

JACOBS ENGINEERING SPOOK, WY

DATE _____ SUBJECT _____ SHEET NO. _____

BY RJH CHKD. _____ AQUIFER PUMPING TEST JOB NO. _____

SITE: SPOOK, WY
LOCATION: MW-928
RECOVERY-TEST WELL

Date	Time	t, 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	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
		1069	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
				✓		✓	✓

FORM 91-005-1 (4/81)

JACOBS ENGINEERING SPOOK, WY

DATE _____ SUBJECT _____ SHEET NO. _____

BY RJH CHKD. _____ AQUIFER PUMPING TEST JOB NO. _____

SITE: SPOOK, WY 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

FORM 91-005-1 (4/81)

JACOBS ENGINEERING SPOOK, WY

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 88	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	0.95
		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
				✓		✓	✓

FORM 91-005-1 (4/81)

JACOBS ENGINEERING SPOOK, WY

DATE _____ SUBJECT _____ SHEET NO. _____

BY RJH CHKD. _____ AQUIFER PUMPING TEST JOB NO. _____

SITE: SPOOK, WY REFERENCE POINT: TOP OF PVC CASING

LOCATION: OW-928-2

PUMP MW-928 - OBSERVATION WELL 2 r = 81.0' N90W

Date	Time	Time, min	Depth to water, ft	Drawdown, ft	Remarks
BAUG88	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	

FORM 91-005-1 (4/81)

JACOBS ENGINEERING SPOOK, WY

DATE _____ SUBJECT _____ SHEET NO. _____

BY RJH CHKD. _____ AQUIFER PUMPING TEST JOB NO. _____

SITE: SPOOK, WY

LOCATION: OW-928-2

RECOVERY - OBSERVATION WELL 2

Date	Time	t, min	t', min	t/t'	Depth to water, ft	Residual Drawdown, ft	Remarks
14 Jul 88	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	404.6	—	—	
		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
				✓		✓	✓

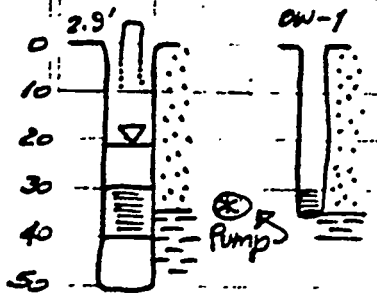
FORM 91-005-1 (4/81)

JACOBS ENGINEERING

DATE Sun 25 Sep 88 SUBJECT SHEET NO.

BY RJH CHKD. AQUIFER PUMPING TESTS JOB NO.

MW-928



$Q = 4.2\ gpm \times 1440\ m/d = 6048\ gpd \times 1.337\times10^{-1} =$
$= 808.6\ ft^3/d$

$r_1 = 20\ ft;\ r_1^2 = 400\ ft^2;\ r_2 = 81\ ft;\ r_2^2 = 6561\ ft$

$b = 14\ ft$

Aquifer - unconfined

---

1) MW-928 Pumping (Theis)

$$T = \frac{Q}{4\pi s} \cdot W(u\ldots) \qquad K = T/b$$

A ☐ $T_{(early)} = \frac{808.6\ ft^3/d}{4\cdot\pi\cdot 1.8\ ft}\cdot 1 = 35.75\ ft^2/d$

$K = \frac{35.75}{14} = \underline{2.55}\ ft/d$

A, ☐ $T_{(late)}$ = same as above $= \underline{2.55}\ ft/d = K$

Note: these K values not reliable due to well inefficiency & partial penetration effects...

2) MW-928 Recovery (Theis)

A ☐ $T = \frac{808.6}{4\cdot\pi\cdot 3.8}\cdot 10 = 169.33\ ft^2/d$

$K = \frac{169.33}{14} = \underline{12.10}\ ft/d$

3) MW-928 Recovery (Straight line)

$K = \underline{15.13}\ ft/d$ (see calculations on graph...)

FORM 91-005-1 (4/81)

JACOBS ENGINEERING SPOOL, WY

DATE Jan 25 Sep 88 SUBJECT SHEET NO.

BY RJH CHKD. AQUIFER PUMPING TESTS JOB NO.

MW-928 (cont)

4) OW-928-1 Pumping (Theis)

B ☐ $T(early) = \frac{808.6}{4 \cdot \pi \cdot 0.25} \cdot 1 = 257.39 \ ft^2/d$

$K = \frac{257.39}{14} = \underline{18.38} \ ft/d$

B, ☐ $T(late) = \frac{808.6}{4 \cdot \pi \cdot 0.33} \cdot 1 = 194.99 \ ft^2/d$

$K = \frac{194.99}{14} = \underline{13.92} \ ft/d$

5) OW-928-1

$S = \frac{4Ttu}{r^2}$

B ☐ $S(early) = \frac{4 \cdot 257.39 \cdot 0.01 \cdot 0.01}{400} = \underline{2.57 \times 10^{-4}}$

B, ☐ $S_y \ (late) = \frac{4 \cdot 194.99 \cdot 0.052 \cdot 0.1}{400} = \underline{0.01}$

$\eta = \frac{S + S_y}{S} > 6.5 = \frac{2.57 \times 10^{-4} \cdot 0.01}{2.57 \times 10^{-4}} = 39.9$

6) OW-928-1 Recovery (Straight line)

$K = \underline{21.18} \ ft/d$ (See calculations on graph...)

FORM 91-005-1 (4/81)

JACOBS ENGINEERING

DATE Sun 25 Sep 88 SUBJECT

BY RJU CHKD. AQUIFER PUMPING TESTS

SHEET NO.

JOB NO.

MW-928 (cont)

7) OW-928-2 Pumping (Theis)

C ⊡ $T(early) = \frac{808.6}{4 \cdot \pi \cdot 0.28} \cdot 1 = 229.81 \ ft^2/d$

$K = \frac{229.81}{14} = \underline{16.41} \ ft/d$

C_1 ⊡ $T(late) = \frac{808.6}{4 \cdot \pi \cdot 0.22} \cdot 1 = 292.48 \ ft^2/d$

$K = \frac{292.48}{14} = \underline{20.89} \ ft/d$

8) OW-928-2

C ⊡ $S(early) = \frac{4 \cdot 229.81 \cdot 0.044 \cdot 0.1}{6561} = 6.16 \times 10^{-4}$

C_1 ⊡ $S_y(late) = \frac{4 \cdot 292.48 \cdot 0.20 \cdot 0.1}{6561} = 0.004$

$\eta = \frac{S + S_y}{S} > 6.5 = 7.49$

SUMMARY — K

MW-928	Recovery (Theis)	12.10	ft/d
"	Recovery (Straight Line)	15.13	"
OW-928-1	Pumping (Theis)	16.15	"
"	Recovery (Straight Line)	21.18	"

K average: 16.14 ft/d

(Range ≈ 12-21 ft/d)

FORM 91-005-1 (4/81)

JACOBS ENGINEERING

DATE Sun 25 Sep 88 SUBJECT SHEET NO.

BY RJH CHKD. AQUIFER PUMPING TESTS JOB NO.

MW-928 (cont)

7) OW-928-2 Pumping (Theis)

C ☐ $T(\text{early}) = \frac{808.6}{4 \cdot \pi \cdot 0.28} \cdot 1 = 229.81 \ ft^2/d$

$K = \frac{229.81}{14} = \underline{16.41} \ ft/d$

C_1 ☐ $T(\text{late}) = \frac{808.6}{4 \cdot \pi \cdot 0.22} \cdot 1 = 292.48 \ ft^2/d$

$K = \frac{292.48}{14} = \underline{20.89} \ ft/d$

8) OW-928-2

C ☐ $S(\text{early}) = \frac{4 \cdot 229.81 \cdot 0.044 \cdot 0.1}{6561} = 6.16 \times 10^{-4}$

C_1 ☐ $S_y(\text{late}) = \frac{4 \cdot 292.48 \cdot 0.20 \cdot 0.1}{6561} = 0.004$

$\eta = \frac{S + S_y}{S} > 6.5 = 7.49$

SUMMARY — K

MW-928	Recovery (Theis)	12.10	ft/d
"	Recovery (Str Line)	15.13	"
OW-928-1	Pumping (Theis)	16.15	"
"	Recovery (Str Line)	21.18	"

K average: 16.14 ft/d

(Range ≈ 12-21 ft/d)

FORM 91-005-1 (4/81)

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

[a]Concentrations are reported in milligrams per liter (mg/L) unless noted otherwise in first column.
[b]Mean of the average of detects for each background well. If a well had no detects, one-half the detection limit was used.
[c]Maximum safe concentrations, EPA, 1972.
[d]EPA (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.

<u>Conclusions of the risk analysis</u>

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.

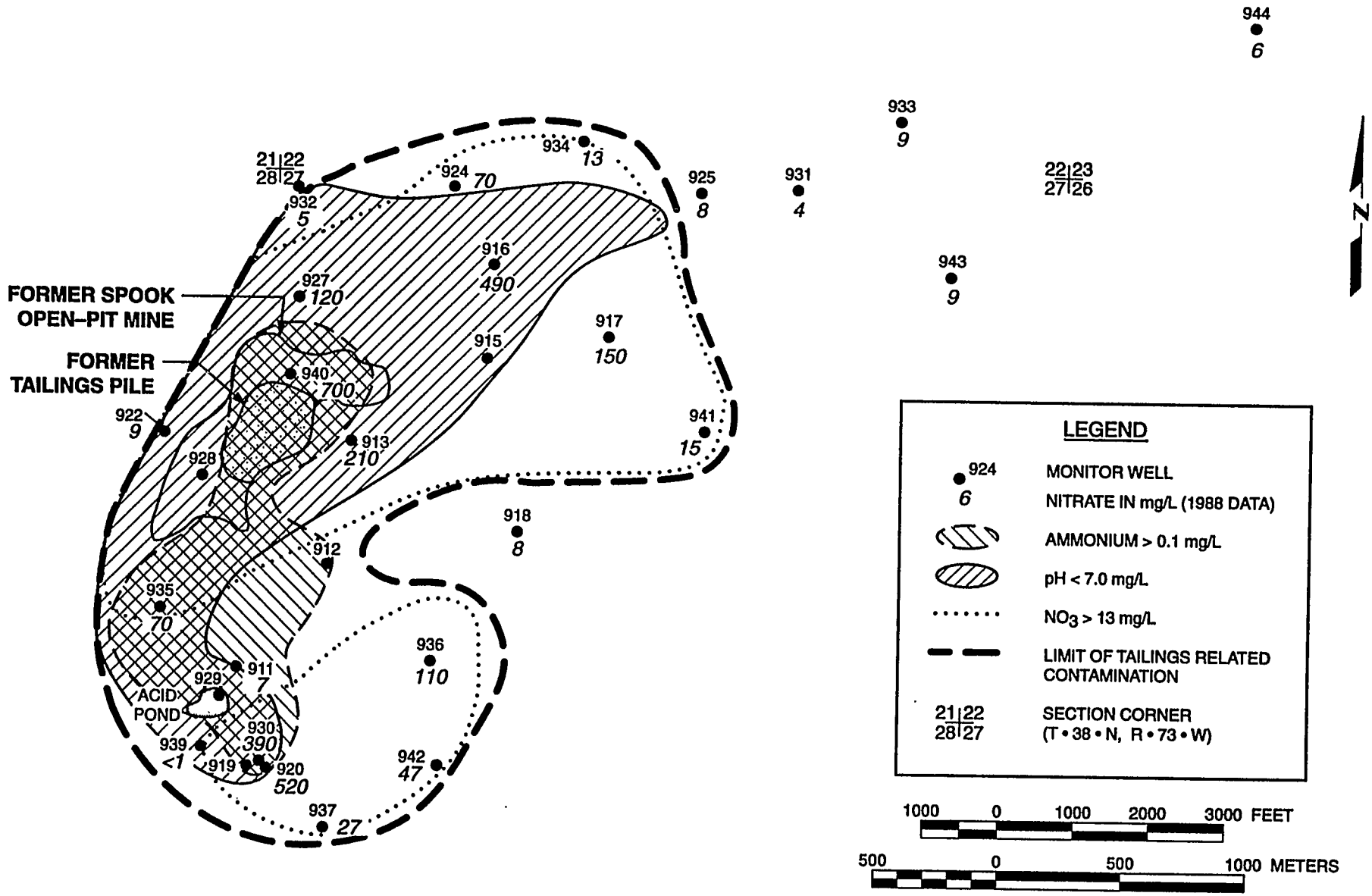


FIGURE F.1
EXTENT OF CONTAMINATION IN THE UPPER SANDSTONE UNIT BASED ON DISTRIBUTION OF AMMONIUM, ACID pH, AND NITRATE AT THE SPOOK, WYOMING, SITE

MAC: SITE/SPK/SOWP/BASE1-EXTOFCONTAMF1

REFERENCES

EPA (U.S. Environmental Protection Agency), 1989. *Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual, Part A, Interim Final*, EPA/540/1-89/002, Office of Solid Waste, Waste Management Division, Washington, D.C.

EPA (U.S. Environmental Protection Agency), 1972. *Quality Criteria for Water 1972, A Report of the Committee on Water Quality Criteria*, prepared by the National Academy of Sciences-National Academy of Engineering, Environmental Studies Board, Washington.

CODE OF FEDERAL REGULATIONS

40 CFR Part 300, "National Oil and Hazardous Substance Pollution Contingency Plan," U.S. Environmental Protection Agency (1994).