**Hoe Creek Groundwater Restoration
1989**

Topical Report

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January 1990

Work Performed Under Cooperative Agreement No.: DE-FC21-86MC11076

**For
U.S. Department of Energy
Office of Fossil Energy
Morgantown Energy Technology Center
Morgantown, West Virginia**

**By
Western Research Institute
Laramie, Wyoming**

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SUMMARY

During the summer of 1989, approximately 6.5 million gallons of contaminated groundwater were pumped from 23 wells at the Hoe Creek underground coal gasification site, near Gillette, Wyoming. The organic contaminants were removed using activated carbon before the water was sprayed on 15.4 acres at the site. Approximately 2647 g (5.8 lb) of phenols and 10,714 g (23.6 lb) of benzene were removed from the site aquifers.

Phenols, benzene, toluene, ethylbenzene, and naphthalene concentrations were measured in 43 wells. Benzene is the only contaminant at the site that exceeds the federal standard for drinking water (5 $\mu\text{g/L}$). Benzene leaches into the groundwater and is slow to biologically degrade; therefore, the benzene concentration has remained high in the groundwater at the site. The groundwater in the channel sands and Felix 1 aquifers are more contaminated than Felix 2. The Hoe Creek III site is more contaminated than the Hoe Creek I/II site. However, there are no channel sands wells at the Hoe Creek III; therefore, there is no groundwater quality data for the channel sands at this site.

The pumping operation did lower the high benzene concentrations around the Hoe Creek I/II site in the channel sands and Felix 1 groundwaters. The pumping did not significantly lower the already low benzene concentrations in the Felix 2 groundwater at the site. The pumping also lowered the high phenols concentrations around the Hoe Creek III site in the Felix 1 groundwater; however, it had little effect on the already low phenols concentrations found in groundwater throughout the rest of the site.

The pumping operation affected groundwater elevations across the entire 80-acre site. In general, the groundwater elevation at perimeter wells dropped 1 to 2 feet, whereas it dropped 7 to 8 feet at the pumping sites. The water levels rebounded quickly when the pumping operation was stopped on October 1, 1989.

Removing contaminated groundwater by pumping is not an effective way to clean up the site because the continuous release of benzene from coal tars is slow. As much as 64 tons of coal tar are present on the site. This is based on 1255 tons of unrecovered coal (Hill et al. 1980) and a usual estimate of 5% of these losses remaining as tar (Hendrickson 1975). Groundwater benzene concentrations as high as 2100 $\mu\text{g/L}$ and phenols concentrations as high as 320 $\mu\text{g/L}$ are still present at the site. Benzene will continue to leach out of the tars for a long time unless its source is removed or the leaching rate retarded through mitigation techniques.

The application of the treated groundwater to the surface stimulated plant growth. No adverse effects were noted or recorded from some 60 soil samples taken from twenty locations in the spray field area.

INTRODUCTION

All figures for this report are contained in the section entitled FIGURES.

History

Three underground coal gasification (UCG) burns were performed for the U.S. Department of Energy (DOE) at the Hoe Creek UCG facility near Gillette, Wyoming, from 1976 to 1979. The site is located 18 miles south of Gillette, just south of Caballo Creek (mile post 97), then 5.8 miles west on Hoe Creek Road (7 cattle guard crossings), and then 0.4 miles south (Figure 1, page 23). The Hoe Creek I burn was conducted in 1976, lasted 11 days, and gasified 129 tons of coal, of which approximately 9 tons of gas was not recovered. The Hoe Creek II burn was conducted in 1977 for 58 days and gasified 2480 tons of coal, of which approximately 496 tons of gas was not recovered. The Hoe Creek III burn was conducted in 1979 for 47 days and gasified 3950 tons of coal, of which approximately 750 tons of gas was not recovered. Gas losses were estimated using oxygen and helium tracer gas injection (Hill et al. 1980).

The Felix 2 coal was the target coal seam for each burn. It is approximately 25 feet thick and located approximately 200 feet below the surface. Separating the Felix 2 coal seam from the overlying Felix 1 coal seam is a mixed claystone-sandstone layer (interburden) of irregular thickness (Figure 2, page 24). The Felix 1 coal seam, which is about 10 feet thick, is above the interburden. A channel sands aquifer overlies the Felix 1, and siltstone overburden overlies the sandstone (Figure 2, page 24).

In each of the three burns, coal was consumed, forming cavities in the coal seam that subsided and filled the zone with rubble. The Hoe Creek I test was contained within the Felix 2 coal seam. The Hoe Creek II and III experiments burned through the Felix 2 coal seam into the interburden and the Felix 1 coal seam. Subsidence has occurred in both the Hoe Creek II and III cavities and has reached the surface above the Hoe Creek III cavity.

Area groundwater is principally transported through the Felix 1 and Felix 2 coal seams (Barrash et al. 1987). Lesser amounts of groundwater are transported through the sandstone overburden unit (Figure 2, page 24, Unit E).

Gas products from approximately 1255 tons of gasified coal was not recovered during the UCG tests. These coal gases penetrated and contaminated the Felix 1 and 2 coal seams as well as the upper lithologic units. It is estimated that these coal gases contained 64 tons of coal tars (5% of the total) (Hendrickson 1975). Analyses of similar coal tars have shown that approximately 1% of coal tars is present as benzene (Barbour et al. 1988). Applying this standard to the 64 tons of coal tar generated by the Hoe Creek UCG experiments results in nearly 1000 lb of benzene on the site. As groundwater reentered these areas, it contacted these condensed coal tars and

became contaminated with organic materials (Stuermer et al. 1982). Benzene is probably the worst contaminant because it is a carcinogen and because it is less water soluble than phenol. The solubility of benzene is on the order of one hundred times less than that of phenol (700 mg/L compared to 82,000 mg/L); thus, benzene will continue to leach into the groundwater over a longer time than other contaminants.

Over the past fifteen years approximately 150 wells have been drilled on, or near, the 80-acre site, 123 of which remain (Figure 3, page 25). These wells have been used to establish the groundwater hydrology and the water quality at the site, both before and after the gasification. Most of the wells drilled before 1983 were located down gradient (east-southeast) of the cavities. Twelve of the remaining 123 wells are multiply-completed wells that the DOE drilled in 1983 across the site to more precisely determine the extent of contamination and the direction of groundwater flow.

DOE has had the groundwater analyzed for organic and inorganic constituents on a semiannual or quarterly basis from a network of wells. The most comprehensive organic contamination report at the site to date was completed in May of 1988 (Sanderson et al. 1988). Analyses on 31 wells recorded the highest benzene concentration of 2700 $\mu\text{g/L}$ at well W-22a and a total phenols concentration of 570 $\mu\text{g/L}$. In general, at a given well, the benzene concentration is higher than the phenols concentration. Four specific organic compounds were identified as a result of this sampling and analysis. These compounds are benzene, toluene, ethylbenzene, and naphthalene. Along with phenols, these organic compounds represent the main contamination problem at the Hoe Creek site. Inorganic and radioactive materials were not present in high enough concentrations to cause concern (Sanderson et al. 1988).

Past Restoration Work

In 1986, a total of 134,000 gallons of groundwater was pumped from wells WS-10 and WS-22 (Figure 3, page 25). The water was pumped through activated carbon to remove organic compounds and reinjected into the Hoe Creek II cavity (Nolan 1987). In 1987, more than two million gallons of groundwater was pumped from these same wells, treated to remove organics using activated carbon (Nordin et al. 1988), and reinjected into the cavity wells. As a result of these treatments, as well as the natural processes of biodegradation and diffusion, the quality of the groundwater has improved. For example, the total phenols concentration in well WS-10 dropped from 37,000 $\mu\text{g/L}$ in 1978 to 240 $\mu\text{g/L}$ in 1988.

RESTORATION PLAN

Restoration Plan Objective

The objective is to restore the quality of the Hoe Creek UCG facility area groundwater, which is contaminated with organic species, to acceptable levels. The area groundwater is primarily used for livestock, and the Wyoming Department of Environmental Quality (WDEQ) has basically applied this use to establish groundwater quality restoration requirements. However, livestock use restoration requirements do not set organic contaminant limits, so additional organic contaminant goal levels were instated. Also, in meetings with WDEQ, most recently December 14, 1989, the WDEQ determined that the groundwater quality is acceptable, with respect to the inorganic contaminant levels. Therefore, only organic contaminants need to be removed from the groundwater. In April 1989, WDEQ approved the restoration plan submitted by DOE to treat the Hoe Creek groundwater.

The approved plan outlined the cleanup of the groundwater by removing the contaminated groundwater and allowing clean groundwater to infiltrate. The postgasification water quality data and hydrologic information were reviewed to determine how much groundwater should be pumped and which wells to pump to best achieve restoration. The twenty-five wells used in the restoration were cleaned, redeveloped, and logged in the spring of 1989 (Renk et al. 1989).

The basic restoration plan was to bring the contaminated groundwater to the surface, pass it through activated carbon to remove organic species, and dispose of the treated water by spray evaporation (Figure 4, page 26). A schematic of the groundwater treatment system is shown in Figure 5, page 27. Two activated carbon treatment units were used (Figures 6 and 7, pages 28-29). One unit was placed near the Hoe Creek II cavity area and the other near the Hoe Creek III cavity area.

The wells in each area feed into separate 16,000-gallon tanks, one for each of the carbon treatment units. Each of the carbon treatment units draws water from its own tank and processes it into another 10,000- or 16,000-gallon tank. The treated water was pumped from these two tanks to two separate spray fields. Each spray field consists of about seven acres with two to five acres reserved for additional spraying (Figure 4, page 26).

Soil Testing and Groundwater Sampling

In April, July, and October of 1989, soil samples were collected to determine the impact of the groundwater on the spray field sites (Renk et al. 1989). Approximately 20 soil samples were collected during each sampling on a grid pattern throughout the 22 acres of spray fields (15 acres of spray field plus 7 acres of reserve field) (Figures 48-50, pages 70-72). These samples were collected from the top six inches of soil, which is the principle root zone. The soil samples were analyzed for pH, electrical conductivity, mechanical texture, cation exchange

capacity, and base saturation. Soil cores were also collected in the spring of 1989 to ensure that 2 to 3 feet of soil was present throughout the proposed fields.

Groundwater was analyzed for total phenols, benzene, ethylbenzene, naphthalene, and toluene before, after, and once during the restoration operations from the following wells:

WS-5*	WS-14	WS-22*	WS-24*	WS-17*	DOE-11
WS-6*	DW-4*	WS-13	WS-7*	W-1a*	DOE-14
WS-10*	W-4a	W-6*	W-17a*	W-21*	DOE-17
WS-15*	W-22a*	WS-16*	P-2*	WS-19*	CSR-1
WS-21*	WS-23*	WS-26*	EXP-4	DOE-10	FIR-1
DOE-39	DOE-49	DOE-59	DOE-40	DOE-50	FIR-2
DOE-60					

* pumping well

Groundwater from these wells and from wells WS-12, W-10a, DOE-2 and M-1 was sampled every two weeks for a total phenols analysis.

Twenty-two wells were pumped during the operation to remove contaminated groundwater. The temperature, pH, and conductivity of the groundwater from each of these pumping wells were measured daily to follow the movement of pollution plumes. Groundwater samples in the field were measured daily for phenols using a phenols field kit sensitive to 100 µg/L. The daily phenol measurements provided comparison with laboratory analysis and a method for determining daily changes in contaminant concentration. The groundwater was also analyzed in the laboratory for phenols, using EPA method 420.2, and other organic species (benzene, toluene, ethylbenzene, and naphthalene) using a modification of EPA method 624 (purge-and-trap capillary column gas chromatography). The sampling and testing procedures are listed in Renk et al. (1989).

A chain-of-custody procedure was followed for the collection, transportation, and handling of samples (Renk et al. 1989).

Groundwater samples were collected with dedicated pumps from 23 wells in continuous operation. A portable sampling pump was used for the additional 18 monitoring wells. One set of field rinsate samples was collected after each sampling series, and it was analyzed along with the raw rinsate water. No rinsate samples were collected between individual wells. The wells and sampling equipment were flushed before sampling by pumping until stable sampling parameters were measured (minimum of 60 minutes at approximately one gallon per minute).

The samples were preserved and analyzed in accordance with established EPA methods, 420 and 624 modified. Quality Assurance/Quality Control (QA/QC) analysis included using the calibration procedures, standards, spikes, duplicates, and field blanks outlined in Renk et al. (1989).

The Surface Treatment System

A network of wells delivered groundwater to the two activated carbon treatment units (Figure 4, page 26). Construction of the carbon treatment units started in March 1989. On May 28, 1989, field construction assembly began on 19 pumping wells, two activated carbon treatment units, and 2000 feet of water line for the distribution and spraying of the treated water. Water sampling, water level monitoring, and pumping and spraying operations started on June 1-5, 1989, and continued until October 1-5, 1989. By October 6, all equipment was removed from the site. As the pumps were removed from the wells, they were wiped with paper towels to collect the coal fines and bacteria slimes that had built up on them during the operation. Samples were also collected from all of the pumping well casings by placing a cloth around the pumps and lowering it down the well casings to the original pump depth. These samples were collected to determine if coal tars had deposited in the well casings during the gasification tests and were contributing to high organic readings in certain wells. Samples were taken of the casing wipings for eventual growth of microorganisms for biodegradation studies.

Based on the results of the soil analysis, the spray fields were located as shown in Figure 4 (page 26). Two spray fields were set up between May 28 and June 1, 1989. Each field had its own diesel-fueled power source and carbon treatment unit loaded with 3000 pounds of activated carbon (Figure 6 and 7, pages 28-29). The north spray field (Hoe Creek I/II) had 28 spray heads. This was later increased to 34 heads and covered 9.2 acres. The system was fed by 15 pumping wells delivering a total of approximately 25 gallons of water per minute. The pumping wells included the WS wells 5, 6, 7, 10, 12, 15, 16, 17, 19, 21, 22, 23, 24, and 26 and well DW-4.

The south spray field (Hoe Creek III) had 18 spray heads that covered 6.2 acres. The system is fed by seven wells pumping a total of approximately 10 gallons per minute. These wells included the W wells 1a, 6, 10a, 17a, 21, and 22a and well P-2.

With only minor interruptions, the treatment system operated 24 hours per day, seven days per week for approximately four months. A field crew inspected the operation daily to move the spray heads, perform maintenance, take measurements, collect data, and ensure that the operation was proceeding properly. Table 1 lists the tasks and schedules for this project. A sampling crew took samples every two weeks for phenol analysis. Groundwater elevations were measured daily at the site from approximately 60 wells and compiled. This information established the direction of the groundwater flow in the area. The results from the water sampling established the quality of the groundwater in different areas. A summary of the wells that were pumped, monitored, and sampled is listed in Renk et al. (1989).

Table 1. Hoe Creek Restoration Schedule

<u>Task</u>	<u>Dates of Performance</u>
Plan preparation	October - December, 1988
Order equipment	December, 1988 - April 1989
Constructed treatment units	March to April 1989
Well construction and development	April - May 1989
Site construction	May 1989
Soil and water sampling	May 1989
Start operations	June 1989
Shut down operation	October 1989
Remove equipment from site	October 1989

Safety Review

A safety analysis and review system (SARS) was completed to provide field personnel with applicable safety and health information concerning the restoration operation at Hoe Creek. The SARS addressed hazards associated with handling electrical equipment, pressurized systems, and potentially dangerous liquids. The safety and health plan and an operations and maintenance manual prepared by Renk et al. (1989) outlines the specific equipment and operation of this equipment.

RESULTS

Groundwater Pumpage

Approximately 6.4 million gallons of contaminated groundwater was treated, 4.5 million gallons at the Hoe Creek I/II site and 1.9 million gallons at the Hoe Creek III site. At Hoe Creek I/II, about 253,000 gallons of groundwater was pumped from the channel sands aquifer and about 2,100,000 gallons each were pumped from the Felix 1 and Felix 2 aquifers. At Hoe Creek III about 165,000 gallons was pumped from the Felix 1 aquifer, whereas about 1,750,000 gallons was pumped from the Felix 2 aquifer.

Nineteen wells were originally pumped. One well went dry (WS-17), and three additional wells were pumped later in the operation. The three additional wells include WS-24, which was pumped only for the last month of operation ; WS-12, which was pumped only for the last week; and W-10a, which was pumped for the last 3 months (Table 2). Well W-4a was never pumped because the well casing could not receive a 4-inch-diameter submersible pump. Twenty-two wells were pumped at some time during the operation. Pumping started on June 2, 1989, and ended on September 30, 1989. The average pumping rate for each well over the 4-month system operation was 1.5 gallons per minute (gpm). The detailed pumping rates and total pumpage for individual wells is listed in Table 3.

Table 2. Pumping Well Operation

Well	Operating Time	Reason for change from normal operation
DW-4	6/1 - 10/1	
WS-5	6/1 - 10/1	
WS-6	6/1 - 10/1	
WS-7	6/1 - 10/1	
WS-10	6/1 - 10/1	
WS-15	6/1 - 10/1	
WS-16	6/1 - 10/1	
WS-17	6/1 - 7/3	Well went dry
WS-19	6/1 - 10/1	
WS-21	6/1 - 10/1	
WS-22	6/1 - 10/1	
WS-23	6/1 - 10/1	
WS-24	9/4 - 10/1	Started pumping because phenol concentration went up
WS-26	6/1 - 10/1	
P-2	6/1 - 10/1	
W-21	6/1 - 10/1	
W-22a	6/1 - 10/1	
W-1a	6/1 - 10/1	
W-17a	6/1 - 10/1	
W-6	6/1 - 10/1	
W-10a	7/3 - 10/1	Pumping started to increase flow through Hoe Creek III system
WS-12	9/25- 10/1	Did not obtain pump until 9/5

Groundwater Levels

The water level in each of 60 wells was monitored and recorded (Appendix A) over the 120-day operation and showed the following general trends: (1) the water level in the upper channel sands aquifer dropped 1 foot at perimeter wells, whereas it dropped 5 feet near the pumping area of Hoe Creek I/II; (2) the water level in the Felix 1 dropped 3 feet at perimeter wells, whereas near the pumping areas it dropped 5 to 20 feet; and (3) the water level in the Felix 2 dropped 2 to 3 feet at perimeter wells, whereas near the pumping areas it dropped 10 to 50 feet. All three aquifers began to recover after the pumping was stopped, and this included the recovery of dry well WS-17.

The site consists of a multiple leaky aquifer system (Stone and Snoeberger 1976; Stone et al. 1983). Preburn aquifer tests of the Felix 1 and Felix 2 near the Hoe Creek I, Hoe Creek II and Hoe Creek III sites yielded storage coefficients of approximately 2×10^{-2} for Felix 1 and 1×10^{-2} to 1.6×10^{-3} for Felix 2. In comparison, values of storage (specific yield) for unconfined aquifers typically range from 1×10^{-2} to 3×10^{-1} , whereas the storage coefficient for confined aquifers is typically between 5×10^{-5} and 5×10^{-3} (Freeze and Cherry 1979). Storage values for Felix 1 and Felix 2 are between the ranges of values for confined and unconfined aquifers suggesting that both the Felix 1 and Felix 2 behave as leaky aquifers.

Table 3. Summary of Hoe Creek Groundwater Quality for the 1989 Restoration

Well	Formation	Pumping rate, gal/min	Total pumpage, gal	Total pumped phenol grams	Total pumped benzene grams	Phenols, µg/L low-high	Benzene, µg/L 6/1-8/1-10/1
Hoe Creek I/II Area							
WS-15	S	0.2	30,011	34	148	160-703	170-2300-<5
WS-16	S	0.2	42,040	30	109	100-370	960-1300-91
WS-17	S	0.0	57	0.04	0.4	100-280	2000
WS-19	S	0.1	181,440	20	78	<20-51	170- 1-280
WS-10	F1	6.2	1,074,096	465	1034	130-260	190- 500-460
WS-12	F1	1.1	11,274	2.0	<0.2	<20-100	<5
WS-21	F1	1.5	256,100	65	329	20-260	180- 420-330
WS-22	F1	3.0	511,652	96	541	30-120	540- 180-400
WS-23	F1	0.0	791	0.4	0.2	60-280	<5- 86-660
WS-24	F1	0.7	20,000	<3	<0.4	<20-140	1- 470-<5
WS-26	F1	0.6	99,150	36	67	68-175	180- 160-200
WS-5	F2	3.4	528,210	61	229	21-50	190- 95-99
WS-6	F2	2.2	373,550	80	235	40-100	320- <5-250
WS-7	F2	2.7	462,570	60	687	21-45	490- 470-130
DW-4	F2/UA	5.3	911,731	69	131	<20-<20	56- 39-35
			4,502,672	936	3588		
Hoe Creek III Area							
W1a	F1	1.3	216,629	237	1113	172-520	1200-1300-1700
W10a	F1	3.5	150,912	50	--	40-120	
W17a	F1	0.2	40,934	34	18.4	60-440	130- 130-63
W21	F1	4.3	743,620	<56	6	<20-<20	1- <5-<5
W22a	F1	3.4	582,836	1390	5967	320-790	2800-2400-2100
W6	F2	0.8	132,706	<10	<2.3	<20-<20	<5- <5-<5
P2	F2	0.2	32,202	<3.4	22.7	<20-60	55- 190-200
			1,899,839	1711	7126		

S = channel sand
F1 = Felix 1
F2 = Felix 2
UA = underburden aquifer

A downward decreasing hydraulic gradient in all but the southern area of the site causes some groundwater flow from Felix 1 downward into the Felix 2 and from the channel sands into the lower aquifers (Figures 8-20, pages 30-42). This effect is best seen around the Hoe Creek II and III cavity areas. The Hoe Creek III cavity (Figure 51, page 73) is completely filled with rubble from overburden collapse. The Hoe Creek II cavity (Figure 52, page 74) is filled with rubble except for a 5- to 15- foot void at the top of the burn cavity (Stephens 1981). These cavities have hydraulic conductivities at least three times greater than the interburden (Stone et al. 1983), and they provide enhanced paths for groundwater flow from the upper to the lower aquifers. This appears as groundwater depressions in the upper aquifers and groundwater mounds in the Felix 2 aquifer.

Even with these pathways for vertical flow, the majority of flow occurs horizontally in the three aquifers (Stone et al. 1983). Although the hydraulic gradient is steeper vertically, the horizontal hydraulic conductivities in the channel sands, Felix 1, and Felix 2 aquifers allow for groundwater flow four to five times greater despite the shallower gradient.

For example, through a 1-ft² area, vertical flow from Felix 1 to Felix 2 through the collapsed rubble in the Hoe Creek II cavity is be:

$$Q = -K \frac{\partial h}{\partial s} A$$

where

- A = cross section area perpendicular to flow = 1 ft²
- K = hydraulic conductivity = 0.35 ft/day (Stone et al. 1983)
- ∂h = change in hydraulic head = -1.2 ft (Appendix A)
- ∂s = distance along flow path corresponding to the change in head = 24 ft (Stone et al. 1983)

$$Q = -(0.35 \text{ ft/day}) \left[\frac{-1.2 \text{ ft}}{24 \text{ ft}} \right] (1 \text{ ft}^2)$$

$$Q = 0.0175 \text{ ft}^3/\text{day}$$

The horizontal flow through the Felix 1 is:

$$Q = -K \cdot \frac{\partial h}{\partial s} \cdot A$$

where

- K = hydraulic conductivity = 9.7 ft/day (Stone et al. 1983)
- ∂h = change in hydraulic head = -1 ft (Appendix A)
- ∂s = distance along flow path corresponding to the change in head = 115 ft (Figure 19, page 41)

$$Q = -(9.7 \text{ ft/day}) \frac{-1 \text{ ft}}{115 \text{ ft}} (1 \text{ ft}^2)$$

$$Q = 0.084 \text{ ft}^3/\text{day}$$

Hydrologic data collected during the site operation supports the idea of relatively independent aquifers. A fairly uniform water drawdown from pumping suggests that the aquifers are not strongly interconnected away from the gasification cavity and can be pumped somewhat independently. Water levels taken from each aquifer around the perimeter of the site show distinctly different potentiometric surface elevations for each aquifer. Differences between channel sands, Felix 1, and Felix 2 water table elevations are listed in Table 4.

Table 4. Water Table Elevation, June 1, 1989

Well (aquifer)	Elevation (ft above sea level)
DOE 1 (CS)	4678.32
DOE 2 (F1)	4676.65
DOE 3 (F2)	4667.97
DOE 64 (CS)	4676.42
DOE 60 (F1)	4672.28
DOE 59 (F2)	4668.02
DOE 7 (CS)	dry
DOE 8 (F1)	4668.55
DOE 9 (F2)	4668.87
DOE 44 (CS)	4670.45
DOE 40 (F1)	4666.89
DOE 39 (F2)	4670.26
CSR-1 (CS)	4673.54
FIR-1 (F1)	4671.52
DOE-17 (F2)	4663.72

CS = Channel Sands
F1 = Felix 1
F2 = Felix 2

Water levels near the Hoe Creek I/II and Hoe Creek III pumping areas show that starting or stopping pumping from any of the three aquifers has comparatively little effect on the other two (Table 5). During System I, startup for example, pumping the Felix 2 aquifer for several days from F-2 well, WS-6 and F-2/underburden well DW-4 caused little change in the water levels of Felix 1 and channel sands wells. Water levels in the Felix 1 and channel sands aquifers showed changes of only 0 to 1.5 feet, whereas during this same interval water levels in the Felix 2 dropped 11 to 28 feet. This was followed by 2 days of pumping Felix 1 in addition to Felix 2. Again, little effect was seen in channel sands wells. Water levels in Felix 1 dropped as much as 21 feet, whereas in the channel sands, water levels dropped only 0 to 2 feet.

Table 5. Effect of Pumping on Water Levels

	June 2, 1989 No Pumping	June 4, 1989 Felix 2 Pumping	June 5, 1989 Felix 1 and Felix 2 Pumping
<u>Felix 2 Well</u>	<u>Water Level</u>	<u>Water Level</u>	<u>Water Level</u>
DW-6	72.50	96.65	100.3
DW-3	73.15	100.3	101.0
EM-4	67.30	87.1	87.75
EM-3	75.0	83.8	84.35
<u>Felix 1 Well</u>			
WS-23	56.65	57.32	58.46
WS-26	62.60	64.45	66.85
WS-21	62.55	61.52	87.67
<u>Channel Sands Well</u>			
OW-10	67.75	67.75	67.75
WS-15	62.30	63.14	64.17
WS-19	57.49	57.66	57.83
	September 27, 1989 Felix 2 and Felix 1 Pumping	September 29, 1989 Felix 1 and E-2 Well CS-6 Pumping	
<u>Felix 2 Well</u>	<u>Water Level</u>	<u>Water Level</u>	
W-6	159.59	155.57	
W-21	133.49	117.28	
<u>Felix 1 Well</u>			
W-1a	115.53	112.80	
W-17a	122.35	121.30	
W-10a	120.52	120.44	

Note: Water levels are given in feet below top of casing.

This same trend occurred during the system shut down. At the Hoe Creek III site, shutdown of F-2 well, W-21 caused water levels in Felix 2 wells to rise 4 to 16 feet, whereas Felix 1 wells showed changes of only 0.1 to 2.5 feet.

The hydrological data also suggest that the wells are well sealed and have been drilled into the proper formations. The only exceptions appear to be well WW-3, which apparently is in the Felix 2 aquifer rather than Felix 1, and well DW-4, which apparently penetrates an aquifer below the Felix 2 coal seam in addition to the Felix 2.

The prepumping flow of groundwater in Felix 1 coal seam was, in general, toward the south. In the Felix 2 coal seam the groundwater flow was more complex; however it generally flowed to the southeast. In the channel sands aquifer the groundwater flowed toward the southeast. Figures 8-20 (pages 30-42) reflect these general trends and show the effect of the pumping operation on groundwater levels. During pumping, the cone of depression continued to increase until it virtually covered the entire site for all three aquifers. This does not, however, mean that water was evacuated from all three aquifers such that an unsaturated zone formed in the Felix 1 and Felix 2. The prepumping potentiometric surface for Felix 1 and Felix 2 lies well above (5 to 15 ft) the elevation of the Felix 1 and Felix 2 strata. The potentiometric surfaces for Felix 1 and Felix 2 dropped below the elevation of the top of their respective aquifers to create an unsaturated or dewatered zone around only a few of the pumping wells. The wells that caused dewatering were W-22 in the Felix 1 and WS-5, WS-6, WS-7, P-2, and W-6 in the Felix 2. WRI estimates that approximately 3 million cubic feet of the channel sands aquifer, one thousand cubic feet of the Felix 1 aquifer, and ten thousand cubic feet of the Felix 2 aquifer was dewatered.

Contaminant Removal

Over 34,500 kg (38 tons) of salt was pumped from the Hoe Creek groundwater site and applied to spray fields. Approximately 2,647 g (5.8 lb) of phenols and 10,714 g (23.6 lb) of benzene was removed from the site groundwater by adsorption on activated carbon. The specific discharge of total dissolved salts, ammonia, sulfate, total organic carbon, phenols, benzene, toluene, ethylbenzene, and naphthalene is listed for individual wells in Table 6.

The phenols concentration from some forty wells was measured by WRI every two weeks, whereas benzene, toluene, ethylbenzene, naphthalene concentrations were measured before, once during, and after the operation. The concentrations of contaminants at each well and sampling date are listed in Appendix B. The phenols, temperature, pH, and the conductivity of the groundwater was also recorded daily at the 20 pumping wells (Appendix C). The phenols concentration was measured using a field test kit that had a detection limit of 100 µg/L. However, because other materials may cause interference, measurements with this field test kit are less accurate than laboratory measurements. In general, the phenols and benzene concentrations trends (Figures 21-41, pages 43-63) are as follows:

Hoe Creek I/II

Channel Sands. High concentrations of phenols (100 to 700 µg/L) and benzene (200 to 1000 µg/L); pumping significantly reduced the concentrations of phenols, and some areas with high benzene concentrations (Figures 21-23, pages 43-45; Figures 30-33, pages 52-55).

Table 6. Total Discharge of Contaminants from Individual Wells

Well	Discharge, gallons	Salt, kg	Ammonia, g	Total		Phenols, g	Benzene, g	Toulene, g	Ethyl- benzene, g	Naphth- alene, g
				Organic Carbon, g	Sulfate, kg					
Hoe Creek I/II Site Area										
DW-4	911,731	3,839	14,000	<72,000	987	69	131	-3-9	47	=15
WS-5	528,210	2,094	21,000	<20,000	957	61	229	13	44	51
WS-6	373,550	1,337	3,900	<10,000	217	80	234-237	4.3-7.3	5-8.3	11.2-5
WS-10	1,074,096	2,430	27,000	<22,000	800	465	1,024	140	68	400
WS-15	30,011	122.5	30	<1,100	13	34	148.3-148.5	0.65-0.86	<3.4	<3.4
WS-16	42,040	169.8	50	<1,600	24	30.2	108.6	<4.5	<4.5	<4.5
WS-19	181,440	535.7	200	<7,000	92	16-24.3	78.2	1-3	22-4	<22
WS-21	256,100	1,191	7,500	11,000-16,000	433	65	329	15	16.2-17.2	24.8-25.8
WS-22	511,652	2,867	6,300	2,500	1,060	96	541	73	37.7-49.1	117-133
WS-23	791	3,054	14	110	0.0	0.42	0.16-0.166	0.093-0.099	0.018-0.024	0.058-0.072
WS-26	99,150	400.3	5,500	<3,700	153	36.5	67.3	13	5.1	29.6
WS-17	57	0.234	<0.04	<2	0.0	0.041	0.43	=0.0097	=0.0071	<0.011
Hoe Creek III Site Area										
WS-24	=20,000	-100	-40	<800	40	<3	<0.4	<0.4	<0.4	<0.4
WS-12	11,274	77.24	77	512	33	2.0	<0.2	<0.2	<0.2	<0.2
P-2	32,202	176	360	1,800	60	<3.4	22.7	<1.2	=0.13-0.73	<1.2
W-22a	582,836	4,628	22,000	41,000-54,000	1,400	1,390	5,961	1,180	1,500	1,440
W-6	132,705.5	423.5	400	2,500-5,500	19	<10	<2.3	<2.3	<2.3	<2.3
W-10a	150,911.5	970.1	610	10,200-12,200	369	50	18.4	2.4	0.8	4.2
W-17a	40,934.3	369.04	4,500	2,600	155	34	1,113	98.7	90.4	54.8
W-1a	216,629	1,340	5,400	6,600-11,600	585	237	=0.4-12.4	<16	<14	<14
W-21	743,614.8	6,854	85,000	<28,000	5,973	<56	10,714	>1,550	>1,784	>9,456
TOTAL	6,402,511	34,555	202,081	>78,910	13,370	2,647				

Note: Inorganics are included because they were sampled for

Felix 1. Moderate concentrations of phenols (50 to 200 µg/L) and benzene (200 to 400 µg/L); pumping had no real effect on phenols concentrations, but increased most benzene concentrations (Figures 24-26, pages 46-48; Figures 34-37, pages 56-59).

Felix 2. Low concentrations of phenols (30 to 60 µg/L) and moderate concentrations of benzene (200 to 400 µg/L); pumping had no effect on phenols concentrations, but lowered benzene concentrations by 50% (Figures 27-29, pages 49-51; Figures 38-41, pages 60-63).

Hoe Creek III

Channel Sands. No channel sands wells were pumped or monitored in the Hoe Creek III area, but contaminant levels will most likely be high based on concentrations at Hoe Creek I/II.

Felix 1. High concentrations of phenols (200 to 800 µg/L) and benzene (1000 to 2000 µg/L); pumping generally lowered phenols concentrations by one-half, but had no effect on benzene concentrations (Figures 24-26, pages 46-48; Figures 38-41, pages 60-63).

Felix 2. Very low concentrations of phenols and benzene (<20 to 60 µg/L). Pumping had no effect on either species (Figures 27-29, pages 49-51; Figures 38-41, pages 60-63).

The well-by-well listing of the low and high values of phenols and benzene concentrations during the operation are listed in Table 3. These data points are used to suggest that pumping the wells to remove low levels of organic contaminants was not successful. For example, the total phenols concentration in wells WS-10 and WS-22 decreased with time; however, at low concentrations (below ~100 µg/L), additional removal was not accomplished by pumping. The example of these two wells is consistent with the pumping wells across the site. Table 7 shows that pumping was not particularly effective in lowering these phenols concentrations.

Table 7. Reduction of Phenols in Wells WS-10 and WS-22 with Time and Water Removal

	Phenole Concentration, µg/L			
	Well WS-10		Well WS-22	
4/11/81	7,500	(zero)	7,700	(zero)
9/02/86	550	(zero)	70	(zero)
10/08/86	960	(83,000)	260	(51,000)
7/02/87	974	(83,000)	183	(51,000)
9/11/87	230	(1,608,500)	144	(559,500)
6/01/89	130	(1,608,500)	62	(559,500)
10/01/89	165	(2,682,596)	50	(1,071,152)

() Total gallons of water pumped from well at given date

The contaminant of greatest concern at the Hoe Creek site is benzene. This nonionic (neutral) compound is less water soluble than phenols and can continue to slowly leach into the groundwater for years. This slow release of benzene into the groundwater and the ineffectiveness of pumping is illustrated in Table 8. If benzene was just dissolved in the water and there was no source leachate material, a decrease in benzene contamination would have been exhibited. Other neutral compounds, such as toluene, ethylbenzene, and naphthalene, are more biodegradable than benzene and will break down over time (Table 8).

The application of treated groundwater at the spray fields site stimulated plant growth. The salts in the water did not damage plants or adversely affect plant growth. The highest rate of growth was around leaks in the spray system. Several old alfalfa patches in the spray field grew extremely well. The total salt loading to the spray fields was 34,555 kg (38.0 tons), including 202,081 g (445 lb) nitrogen as ammonia and 13,370 kg (14.7 tons) of sulfate. Details of the loading are listed in Table 6. Little pregasification data is available to determine with precision what fraction of the sulfate, ammonia, and TDS discharge is due to background levels and how much is a result of the UCG burn. The limited available data suggests that specific conductance doubled and in some cases tripled after the burns (Campbell et al. 1978). From this, WRI estimates that TDS levels were affected similarly and that approximately one-half of the 38 tons of salt discharged is due to preburn TDS levels. These same data suggest that current ammonia levels are two to three times greater than pregasification levels whereas current sulfate levels are nearly the same as pregasification levels. These data are an average of six wells, only two of which were sampled for analyses during the summer of 1989.

Review of the QA/QC analyses shows that, in general, the analyses were within satisfactory limits, $\pm 10\%$ of expected results Appendix D. Results from the field blanks show that no contamination was contributed from air-borne elements or from storage and transportation. System rinsate samples show that no contamination came from the system line and that the system line was cleaned by well purging. Field duplicate samples show that analytical results are consistent and reproducible, with the exception of total organic carbon for 10/01/89. This discrepancy is most likely a result of sampling error in the field.

WRI's QA/QC officer reviewed the results for the field standards. His report states that, in general, the analyses are within satisfactory limits. The phenols results on 06/01/89 was low, but all other samples are within acceptable limits. The phenols values are almost evenly distributed above and below the standard value.

The volatile organic analyses are all within acceptable limits ($\pm 20\%$), except the benzene analysis on 10/01/89. That sample is just outside the acceptable range of $\pm 20\%$ for volatile organics. All volatile organic analyses range about 10-15% below the expected value. This may be due to the long holding times or lack of refrigeration in the field. The reported field values are internally very consistent.

Table 8. Concentrations of Selected Organic Neutral Compound

Date	Compound Concentration, $\mu\text{g/L}$				
	Well WS-6	Well WS-10	Well W-1a	Well DW-4	Well DW-5
<u>Benzene</u>					
October, 1976 ^a	-	-	-	11.62	87.23
May, 1988 ^c	320	160	1800	51	31
June, 1989 ^d	320	190 B	1200	14	56
October, 1989 ^d	250	460	1700	5 U	35
<u>Toluene</u>					
October, 1976	-	-	-	5.38	58.05
January, 1981 ^b	420	170	740	-	-
May, 1988	<25	72	180	>5	<5
June, 1989	10	89	220	3 J	5 U
October, 1989	2 J	49	73	5 U	5 U
<u>Ethylbenzene</u>					
October, 1976	-	-	-	33.25	6.17
January, 1981	400	92	250	-	-
May, 1988	<25	19	180	5	<5
June, 1989	10 U	27	120	4 J	5 U
October, 1989	7	30	130	1 J	5 U
<u>Naphthalene</u>					
October, 1976	-	-	-	0.71	0.22
January, 1981	1800	740	380	-	-
May, 1988	<20	130	76	<10	+
June, 1989	10 U	170	100	3 J	5 U
October, 1989	5	150	60	3 J	5 U
<u>Total Well Pumpage</u>					
October, 1976	zero	zero	zero	zero	zero
January, 1981	zero	zero	zero	zero	zero
May, 1988	zero	1,608,500	zero	zero	zero
June, 1989	zero	1,608,500	zero	zero	zero
October, 1989	373,550	2,682,596	216,629	911,731	zero

^a Campbell et al. 1978

^b Stuermer et al. 1982

^c Sanderson et al. 1988

^d Hoe Creek 1989 Restoration project (See Table 2)

U = not detected at this limit

J = estimated value below method limit of detection

B = possible sample contamination

The actual and expected values for the field blanks, standards, duplicates, and rinsates are listed in Appendix D.

Soil samples were collected in a grid pattern over the spray fields before, during, and after spraying. The samples were collected from the top six inches of soil, and each was analyzed for pH, electrical conductivity, mechanical texture, cation exchange capacity, and base saturation. No adverse effects of the spray application were detected. The soil sampling locations are shown in Figures 48-50, pages 70-72. The interpreted results are in Appendix E.

The groundwater was not affected by the application of the salts to the ground surface. The total dissolved salt (TDS) concentrations for the groundwater are shown in Figures 42-47, pages 64-69). The highest concentration of salts in the groundwater occurs near the coal cavities and appears to have moved slightly downgradient. Pumping removed some of the salts, but did not significantly change the concentration patterns. The salt contamination has moved to the southeast of the cavities at 10 to 40 feet per year in all three aquifers. The principle constituents of the salts are calcium, magnesium, sodium, bicarbonate, and sulfate.

CONCLUSIONS

At both areas, Hoe Creek I/II and Hoe Creek III, the highest concentration of groundwater contaminants occurs in the channel sands and Felix 1 aquifers. Benzene is slow to leach out and remains relatively high (100 $\mu\text{g/L}$) in the Felix 2 aquifer; however, phenols remain low (50 $\mu\text{g/L}$) throughout the Felix 2. The phenols concentrations at Hoe Creek I/II were relatively unaffected by the pumping operations, whereas the phenols concentrations at Hoe Creek III decreased by about one-half, most likely because of their higher initial values. Little is known about the extent of contamination in the channel sands aquifer near Hoe Creek III; however, it is probably a heavily contaminated area based on the sampling results at Hoe Creek II.

In general, the pumping operation reduced the benzene contamination in all aquifers; however, benzene in the cavity areas still remains high and appears to be unaffected by the pumping operation (see Figures 31-41, pages 53-63). The concentrations of phenols, toluene, ethylbenzene, and naphthalene are decreasing with time. Benzene is the problem contaminant because it is slow to leach out and biologically break down; therefore benzene remains in high concentrations near the burn site. Apparently, pumping the contaminated water from the aquifers is ineffective for reducing contaminant concentrations to near-background levels because phenols and benzene are being continuously released from source material.

The scope of the problem is partially defined by the fact that the perimeter wells remain uncontaminated. No extraneous contaminant plumes appeared away from the cavities, either moving onto or off of the site. This suggests that the contamination is confined to the cavity areas and is associated with the UCG burn.

The groundwater in the channel sands, Felix 1, and Felix 2 aquifers flows toward the east, south, southeast, respectively. The total dissolved solids data show the same flow pattern as salts generated by the gasification move to the east and southeast. These salts move through the site at 10 to 40 feet per year. The salts and phenols are more water soluble than benzene and are moving eastward off the northeast corner of the site (Figures 21-29, pages 43-51; Figures 42-47, pages 64-69). The pumping operation pulled some of this water back onto the site (Figures 22-23, pages 44-45; Figures 28-29, pages 50-51; Figures 42-43, pages 64-65).

The hydrological data suggest that the aquifers are fairly well isolated from each other and respond independently when pumped. The aquifers are fairly uniform and easily affected by pumping.

The treated groundwater applied to spray fields did not damage plants, but, in fact, stimulated new growth. No adverse effects were detected from the application of groundwater that contained salts.

RECOMMENDATIONS

Based on phenols and benzene concentrations and how these changed with pumping, significant reduction of these materials to acceptable levels will not be achieved through pumping the contaminated groundwater from the site. Apparently, the coal tar material, the source of contamination, will continue to release these contaminants into the groundwater and maintain unacceptable phenols and benzene concentrations in the groundwater.

Therefore, WRI recommends that these coal tar source materials be treated or removed. In addition, the contaminants, which have adsorbed onto the aquifer formation and will continue to release into the groundwater, should also be treated or removed. WRI also recommends that the techniques of bioremediation and air-stripping be given consideration as they appear to be applicable to the site.

Benzene is the major contaminant of concern because it is carcinogenic, above the drinking water standard (5 μ g/L), and remains at relatively high concentrations in the groundwater (2000 μ g/L).

Wells should be drilled in the channel sands aquifer at the Hoe Creek III site. Water quality sampling and analysis should be done to evaluate the extent of contamination in this area.

ACKNOWLEDGMENTS

We express appreciation to the U.S. Department of Energy for funding of this work under Cooperative Agreement No. DE-AC21-86MC11076.

DISCLAIMER

Mention of specific brand names or models of equipment is for information only and does not imply endorsement of any particular brand.

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FIGURES

Figure 1. Location of the Hoe Creek Underground Coal Gasification Facility near Gillette, Wyoming

Figure 2. Generalized Stratigraphic Column of Major Lithologic Units at the Hoe Creek UCG Facility

Figure 3 Location of Wells at the Hoe Creek Site

HOE CREEK I/II UNIT

HOE CREEK III UNIT

Figure 5. Schematic of the Groundwater Treatment System at Hoe Creek, 1989

Figure 6. Schematic of Carbon Treatment Unit #1

Figure 8. Channel Sands Groundwater Elevations Just Prior to Pumping in May 1989

Figure 9. Channel Sands Groundwater Elevations During Pumping (June 7, 1989)

Figure 10. Channel Sands Groundwater Elevations During Pumping (June 30, 1989)

Figure 11. Channel Sands Groundwater Elevations During Pumping
(July 30, 1989)

Figure 12. Channel Sands Groundwater Elevations Five Days After Pumping Stopped (October 5, 1989)

Figure 13. Felix 1 Groundwater Elevations Prior to Pumping (May 1989)

Figure 18. Felix 2 Groundwater Elevations During Pumping
(June 30, 1989)

Figure 19. Felix 2 Groundwater Elevations During Pumping (July 31, 1989)

Figure 20. Felix 2 Groundwater Elevations Five Days After Pumping Stopped (October 5, 1989)

Figure 21. Phenols Concentrations in Channel Sands Groundwater on June 1, 1989

Figure 22. Phenols Concentrations in Channel Sands Groundwater on June 30, 1989

Figure 23. Phenols Concentrations in Channel Sands Groundwater on October 1, 1989

Figure 24. Phenols Concentrations in Felix 1 Groundwater on June 1, 1989

Figure 25. Phenols Concentrations in Felix 1 Groundwater on August 1, 1989

Figure 27. Phenols Concentrations in Felix 2 Groundwater on June 1, 1989

Figure 28. Phenols Concentrations in Felix 2 Groundwater on August 15, 1989

Figure 29. Phenols Concentrations in Felix 2 Groundwater on October 1, 1989

Figure 30. Benzene Concentrations in Channel Sands Groundwater in May 1988

Figure 31. Benzene Concentrations in Channel Sands Groundwater on June 1, 1989

Figure 32. Benzene Concentrations in Channel Sands Groundwater on August 1, 1989

Figure 33. Benzene Concentrations in Channel Sands Groundwater on October 1, 1989

Figure 34. Benzene Concentrations in Felix 1 Groundwater in May 1988

Figure 35. Benzene Concentrations in Felix 1 Groundwater on June 1, 1989

Figure 36. Benzene Concentrations in Felix 1 Groundwater on August 1, 1989

Figure 38. Benzene Concentrations in Felix 2 Groundwater in May 1988

Figure 39. Benzene Concentrations in Felix 2 Groundwater on June 1, 1989

Figure 40. Benzene Concentrations in Felix 2 Groundwater on August 1, 1989

Figure 41. Benzene Concentrations in Felix 2 Groundwater on October 1, 1989

Figure 42. Total Dissolved Salt Concentrations in the Channel Sands Groundwater on June 15, 1989

Figure 43. Total Dissolved Salt Concentrations in the Channel Sands Groundwater on October 1, 1989

Figure 44. Total Dissolved Salt Concentrations in the Felix 1 Groundwater on June 15, 1989

Figure 45. Total Dissolved Salt Concentrations in the Felix 1 Groundwater on October 1, 1989

Figure 46. Total Dissolved Salt Concentrations in the Felix 2 Groundwater on June 15, 1989

Figure 47. Total Dissolved Salt Concentrations in the Felix 2 Groundwater on October 1, 1989

Figure 48. Locations of Soil Samples taken on April 26, 1989

Figure 49. Locations of Soil Samples taken on July 25, 1989

Figure 51. Cross Section of Hoe Creek II

Figure 52. Cross Section of Hoe Creek III

APPENDIX A

Groundwater Elevations at Selected Wells
During the Summer Restoration at the Hoe Creek Site, 1989

DOE 1

Elevation of the top of the well casing: 4,787.62 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	109.30	7/17/89	109.65	8/26/89	110.05
6/8/89	109.30	7/18/89	109.85	8/27/89	110.05
6/9/89	109.25	7/19/89	109.95	8/28/89	110.10
6/10/89	109.20	7/20/89	109.75	8/29/89	110.20
6/11/89	109.25	7/21/89	109.70	8/30/89	109.80
6/12/89	109.50	7/22/89	109.70	8/31/89	110.05
6/13/89	109.55	7/23/89	109.80	9/1/89	110.25
6/14/89	109.55	7/24/89	109.80	9/2/89	110.10
6/15/89	109.30	7/25/89	109.80	9/3/89	110.25
6/16/89	109.20	7/26/89	109.90	9/4/89	110.30
6/17/89	109.45	7/27/89	109.85	9/5/89	110.10
6/18/89	109.50	7/28/89	109.75	9/6/89	110.15
6/19/89	109.30	7/29/89	109.80	9/7/89	110.10
6/20/89	109.25	7/30/89	109.85	9/8/89	110.25
6/21/89	109.55	7/31/89	109.85	9/9/89	110.37
6/22/89	109.45	8/1/89	109.70	9/10/89	110.35
6/23/89	109.50	8/2/89	109.65	9/11/89	110.36
6/24/89	109.50	8/3/89	109.80	9/12/89	110.40
6/25/89	109.40	8/4/89	109.80	9/13/89	110.30
6/26/89	109.40	8/5/89	110.05	9/14/89	110.20
6/27/89	109.30	8/6/89	110.15	9/15/89	110.15
6/28/89	109.40	8/7/89	--	9/16/89	110.20
6/29/89	109.45	8/8/89	109.90	9/17/89	109.90
6/30/89	109.55	8/9/89	109.80	9/18/89	110.00
7/1/89	109.45	8/10/89	109.95	9/19/89	110.20
7/2/89	109.60	8/11/89	110.00	9/20/89	110.15
7/3/89	109.65	8/12/89	110.00	9/21/89	110.50
7/4/89	109.65	8/13/89	110.03	9/22/89	110.60
7/5/89	109.65	8/14/89	109.96	9/23/89	110.50
7/6/89	109.80	8/15/89	109.90	9/24/89	110.30
7/7/89	109.75	8/16/89	109.80	9/25/89	110.50
7/8/89	109.60	8/17/89	109.85	9/26/89	110.30
7/9/89	109.60	8/18/89	109.90	9/27/89	110.30
7/10/89	109.60	8/19/89	109.90	9/28/89	110.45
7/11/89	109.70	8/20/89	109.95	9/29/89	110.35
7/12/89	109.90	8/21/89	110.00	9/30/89	110.05
7/13/89	109.95	8/22/89	110.00	10/5/89	110.24
7/14/89	109.70	8/23/89	109.90		
7/15/89	109.75	8/24/89	110.00		
7/16/89	109.85	8/25/89	110.00		

* Water level measured below the top of the casing in feet

DOE 2

Elevation of the top of the well casing: 4,787.3 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	110.65	7/17/89	112.00	8/26/89	112.75
6/8/89	110.70	7/18/89	112.25	8/27/89	112.85
6/9/89	110.70	7/19/89	112.35	8/28/89	112.90
6/10/89	110.70	7/20/89	112.25	8/29/89	113.00
6/11/89	110.75	7/21/89	112.20	8/30/89	112.70
6/12/89	110.75	7/22/89	112.25	8/31/89	112.85
6/13/89	110.80	7/23/89	112.35	9/1/89	113.10
6/14/89	111.05	7/24/89	112.40	9/2/89	113.00
6/15/89	110.95	7/25/89	112.40	9/3/89	113.10
6/16/89	110.85	7/26/89	112.45	9/4/89	113.10
6/17/89	110.60	7/27/89	112.45	9/5/89	112.90
6/18/89	111.00	7/28/89	112.40	9/6/89	113.00
6/19/89	110.95	7/29/89	112.45	9/7/89	113.00
6/20/89	110.85	7/30/89	112.50	9/8/89	113.10
6/21/89	111.10	7/31/89	112.50	9/9/89	113.05
6/22/89	111.20	8/1/89	112.40	9/10/89	113.00
6/23/89	111.25	8/2/89	112.40	9/11/89	112.85
6/24/89	111.05	8/3/89	112.45	9/12/89	113.05
6/25/89	111.10	8/4/89	112.55	9/13/89	113.10
6/26/89	111.20	8/5/89	112.70	9/14/89	113.05
6/27/89	111.25	8/6/89	112.80	9/15/89	113.05
6/28/89	111.40	8/7/89	--	9/16/89	113.10
6/29/89	111.45	8/8/89	112.60	9/17/89	112.95
6/30/89	111.80	8/9/89	112.60	9/18/89	112.95
7/1/89	111.45	8/10/89	112.70	9/19/89	113.10
7/2/89	111.65	8/11/89	112.75	9/20/89	113.10
7/3/89	111.70	8/12/89	112.70	9/21/89	113.00
7/4/89	111.70	8/13/89	112.74	9/22/89	113.30
7/5/89	111.70	8/14/89	112.73	9/23/89	113.30
7/6/89	111.90	8/15/89	112.68	9/24/89	113.30
7/7/89	111.90	8/16/89	112.60	9/25/89	113.40
7/8/89	111.85	8/17/89	112.75	9/26/89	113.30
7/9/89	111.90	8/18/89	112.75	9/27/89	113.25
7/10/89	112.00	8/19/89	112.75	9/28/89	113.40
7/11/89	112.10	8/20/89	112.70	9/29/89	113.25
7/12/89	112.25	8/21/89	112.75	9/30/89	113.80
7/13/89	112.30	8/22/89	112.75	10/5/89	112.32
7/14/89	111.80	8/23/89	112.40		
7/15/89	111.90	8/24/89	112.50		
7/16/89	111.95	8/25/89	112.75		

* Water level measured below the top of the casing in feet

DOE 3

Elevation of the top of the well casing: 4,786.92 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	118.95	7/17/89	121.80	8/26/89	122.20
6/8/89	119.10	7/18/89	122.10	8/27/89	122.50
6/9/89	119.25	7/19/89	122.20	8/28/89	122.60
6/10/89	119.35	7/20/89	122.25	8/29/89	122.70
6/11/89	119.05	7/21/89	122.25	8/30/89	122.60
6/12/89	118.45	7/22/89	122.25	8/31/89	122.65
6/13/89	119.05	7/23/89	122.35	9/1/89	122.80
6/14/89	119.75	7/24/89	122.40	9/2/89	122.75
6/15/89	120.10	7/25/89	122.40	9/3/89	122.80
6/16/89	120.25	7/26/89	122.50	9/4/89	122.85
6/17/89	119.45	7/27/89	122.50	9/5/89	122.80
6/18/89	119.82	7/28/89	122.55	9/6/89	122.70
6/19/89	120.10	7/29/89	122.55	9/7/89	122.65
6/20/89	119.70	7/30/89	122.60	9/8/89	122.75
6/21/89	119.85	7/31/89	122.65	9/9/89	122.40
6/22/89	120.30	8/1/89	122.65	9/10/89	122.45
6/23/89	120.55	8/2/89	122.65	9/11/89	121.45
6/24/89	119.85	8/3/89	122.65	9/12/89	122.07
6/25/89	120.15	8/4/89	122.70	9/13/89	122.50
6/26/89	120.60	8/5/89	122.75	9/14/89	122.70
6/27/89	120.80	8/6/89	122.85	9/15/89	122.75
6/28/89	121.05	8/7/89	--	9/16/89	122.80
6/29/89	121.15	8/8/89	122.55	9/17/89	122.75
6/30/89	121.30	8/9/89	122.65	9/18/89	122.80
7/1/89	121.40	8/10/89	122.70	9/19/89	122.95
7/2/89	121.55	8/11/89	122.70	9/20/89	122.90
7/3/89	121.60	8/12/89	122.65	9/21/89	121.40
7/4/89	121.65	8/13/89	122.75	9/22/89	122.10
7/5/89	121.70	8/14/89	122.83	9/23/89	122.60
7/6/89	121.80	8/15/89	122.85	9/24/89	122.80
7/7/89	121.80	8/16/89	122.80	9/25/89	122.90
7/8/89	121.85	8/17/89	122.90	9/26/89	122.90
7/9/89	121.95	8/18/89	122.90	9/27/89	122.90
7/10/89	122.05	8/19/89	122.80	9/28/89	122.90
7/11/89	122.10	8/20/89	122.90	9/29/89	122.10
7/12/89	122.15	8/21/89	122.95	9/30/89	121.05
7/13/89	122.20	8/22/89	122.05	10/5/89	119.17
7/14/89	121.20	8/23/89	120.80		
7/15/89	120.05	8/24/89	121.20		
7/16/89	120.35	8/25/89	122.15		

* Water level measured below the top of the casing in feet

PERM 2

Elevation of the top of the well casing: 4.783.08 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	116.90	7/17/89	119.70	8/26/89	120.10
6/8/89	117.00	7/18/89	120.05	8/27/89	120.50
6/9/89	117.10	7/19/89	120.20	8/28/89	120.60
6/10/89	117.25	7/20/89	120.20	8/29/89	120.65
6/11/89	116.70	7/21/89	120.20	8/30/89	120.55
6/12/89	115.85	7/22/89	120.20	8/31/89	120.65
6/13/89	116.80	7/23/89	120.30	9/1/89	120.75
6/14/89	117.70	7/24/89	120.35	9/2/89	120.70
6/15/89	118.00	7/25/89	120.40	9/3/89	120.80
6/16/89	118.20	7/26/89	120.45	9/4/89	120.85
6/17/89	116.95	7/27/89	120.45	9/5/89	120.70
6/18/89	117.65	7/28/89	120.45	9/6/89	120.65
6/19/89	117.85	7/29/89	120.55	9/7/89	126.50
6/20/89	117.15	7/30/89	120.60	9/8/89	120.65
6/21/89	117.40	7/31/89	120.60	9/9/89	120.30
6/22/89	118.20	8/1/89	120.55	9/10/89	120.35
6/23/89	118.40	8/2/89	120.60	9/11/89	118.85
6/24/89	117.25	8/3/89	120.60	9/12/89	120.00
6/25/89	118.00	8/4/89	120.65	9/13/89	120.50
6/26/89	118.50	8/5/89	120.70	9/14/89	120.65
6/27/89	118.75	8/6/89	120.80	9/15/89	120.75
6/28/89	119.00	8/7/89	--	9/16/89	120.75
6/29/89	119.05	8/8/89	120.50	9/17/89	120.80
6/30/89	119.40	8/9/89	120.60	9/18/89	120.80
7/1/89	119.35	8/10/89	120.65	9/19/89	120.80
7/2/89	119.50	8/11/89	120.15	9/20/89	120.80
7/3/89	119.55	8/12/89	120.55	9/21/89	118.70
7/4/89	119.60	8/13/89	120.70	9/22/89	120.00
7/5/89	119.60	8/14/89	120.77	9/23/89	120.50
7/6/89	119.70	8/15/89	120.82	9/24/89	120.70
7/7/89	119.75	8/16/89	120.75	9/25/89	120.90
7/8/89	119.85	8/17/89	120.85	9/26/89	120.90
7/9/89	119.95	8/18/89	120.90	9/27/89	120.90
7/10/89	120.00	8/19/89	120.90	9/28/89	120.30
7/11/89	120.10	8/20/89	120.95	9/29/89	119.65
7/12/89	120.15	8/21/89	120.95	9/30/89	118.35
7/13/89	120.20	8/22/89	119.55	10/5/89	116.36
7/14/89	118.65	8/23/89	118.15		
7/15/89	118.40	8/24/89	119.20		
7/16/89	118.55	8/25/89	120.10		

* Water level measured below the top of the casing in feet

M-3

Elevation of the top of the well casing: 4,783.12 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	113.60	7/17/89	116.05	8/26/89	116.60
6/8/89	113.75	7/18/89	116.35	8/27/89	116.80
6/9/89	113.90	7/19/89	111.45	8/28/89	116.85
6/10/89	113.95	7/20/89	116.45	8/29/89	116.95
6/11/89	113.75	7/21/89	116.40	8/30/89	116.80
6/12/89	113.45	7/22/89	116.45	8/31/89	116.80
6/13/89	113.80	7/23/89	116.55	9/1/89	117.10
6/14/89	114.30	7/24/89	116.60	9/2/89	117.00
6/15/89	114.45	7/25/89	116.60	9/3/89	117.10
6/16/89	114.50	7/26/89	116.70	9/4/89	117.15
6/17/89	114.10	7/27/89	116.70	9/5/89	117.00
6/18/89	114.30	7/28/89	116.75	9/6/89	116.95
6/19/89	114.40	7/29/89	116.75	9/7/89	116.95
6/20/89	114.15	7/30/89	116.80	9/8/89	117.05
6/21/89	114.35	7/31/89	116.80	9/9/89	117.90
6/22/89	114.65	8/1/89	116.70	9/10/89	116.82
6/23/89	114.85	8/2/89	116.75	9/11/89	116.20
6/24/89	114.40	8/3/89	116.75	9/12/89	116.60
6/25/89	114.55	8/4/89	116.85	9/13/89	116.85
6/26/89	114.90	8/5/89	116.95	9/14/89	116.45
6/27/89	115.05	8/6/89	117.00	9/15/89	117.00
6/28/89	115.30	8/7/89	--	9/16/89	116.95
6/29/89	115.35	8/8/89	116.80	9/17/89	116.90
6/30/89	115.55	8/9/89	116.80	9/18/89	117.00
7/1/89	115.55	8/10/89	116.90	9/19/89	117.10
7/2/89	115.65	8/11/89	116.75	9/20/89	117.05
7/3/89	115.70	8/12/89	116.85	9/21/89	116.20
7/4/89	115.80	8/13/89	116.95	9/22/89	116.70
7/5/89	115.80	8/14/89	116.99	9/23/89	116.90
7/6/89	115.95	8/15/89	116.96	9/24/89	117.00
7/7/89	115.95	8/16/89	116.95	9/25/89	117.10
7/8/89	116.00	8/17/89	117.00	9/26/89	117.10
7/9/89	116.10	8/18/89	117.05	9/27/89	117.15
7/10/89	116.15	8/19/89	117.05	9/28/89	117.00
7/11/89	116.30	8/20/89	117.10	9/29/89	116.65
7/12/89	116.40	8/21/89	117.05	9/30/89	115.90
7/13/89	116.40	8/22/89	116.55	10/5/89	114.50
7/14/89	115.65	8/23/89	115.70		
7/15/89	115.45	8/24/89	115.80		
7/16/89	115.50	8/25/89	116.55		

* Water level measured below the top of the casing in feet

DOE 64

Elevation of the top of the well casing: 4,783.38 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	106.40	7/17/89	106.80	8/26/89	107.25
6/8/89	106.35	7/18/89	108.05	8/27/89	107.25
6/9/89	106.30	7/19/89	107.15	8/28/89	107.30
6/10/89	106.30	7/20/89	107.65	8/29/89	107.40
6/11/89	106.35	7/21/89	107.90	8/30/89	107.00
6/12/89	106.55	7/22/89	107.95	8/31/89	107.20
6/13/89	106.60	7/23/89	107.00	9/1/89	107.45
6/14/89	106.65	7/24/89	107.00	9/2/89	107.30
6/15/89	106.45	7/25/89	107.00	9/3/89	107.45
6/16/89	106.30	7/26/89	107.10	9/4/89	107.50
6/17/89	106.55	7/27/89	107.05	9/5/89	107.30
6/18/89	106.60	7/28/89	107.10	9/6/89	107.35
6/19/89	106.40	7/29/89	107.05	9/7/89	107.35
6/20/89	106.35	7/30/89	107.05	9/8/89	107.42
6/21/89	106.70	7/31/89	107.05	9/9/89	107.55
6/22/89	106.55	8/1/89	106.90	9/10/89	107.42
6/23/89	106.65	8/2/89	106.90	9/11/89	107.55
6/24/89	106.60	8/3/89	106.85	9/12/89	107.60
6/25/89	106.50	8/4/89	107.00	9/13/89	107.58
6/26/89	106.50	8/5/89	107.20	9/14/89	107.40
6/27/89	106.45	8/6/89	107.35	9/15/89	107.35
6/28/89	106.55	8/7/89	--	9/16/89	107.40
6/29/89	106.50	8/8/89	107.10	9/17/89	107.10
6/30/89	106.65	8/9/89	107.05	9/18/89	107.20
7/1/89	106.60	8/10/89	107.05	9/19/89	107.10
7/2/89	106.80	8/11/89	107.25	9/20/89	107.40
7/3/89	106.80	8/12/89	107.20	9/21/89	107.70
7/4/89	106.80	8/13/89	107.26	9/22/89	107.80
7/5/89	106.85	8/14/89	107.17	9/23/89	107.80
7/6/89	107.00	8/15/89	107.10	9/24/89	107.50
7/7/89	106.95	8/16/89	107.05	9/25/89	107.70
7/8/89	106.80	8/17/89	107.10	9/26/89	107.50
7/9/89	106.80	8/18/89	107.10	9/27/89	107.50
7/10/89	106.85	8/19/89	107.15	9/28/89	107.65
7/11/89	106.90	8/20/89	107.15	9/29/89	107.50
7/12/89	107.10	8/21/89	107.25	9/30/89	107.20
7/13/89	107.05	8/22/89	107.20	10/5/89	107.37
7/14/89	106.95	8/23/89	107.10		
7/15/89	106.95	8/24/89	107.10		
7/16/89	106.95	8/25/89	107.20		

* Water level measured below the top of the casing in feet

DOE 59

Elevation of the top of the well casing: 4,783.28 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	111.00	7/17/89	113.25	8/26/89	113.40
6/8/89	111.15	7/18/89	113.50	8/27/89	113.90
6/9/89	111.20	7/19/89	113.70	8/28/89	114.20
6/10/89	111.20	7/20/89	113.50	8/29/89	114.05
6/11/89	111.05	7/21/89	113.45	8/30/89	113.85
6/12/89	110.85	7/22/89	113.50	8/31/89	113.95
6/13/89	111.20	7/23/89	113.60	9/1/89	114.15
6/14/89	111.60	7/24/89	113.60	9/2/89	114.00
6/15/89	111.60	7/25/89	113.65	9/3/89	114.15
6/16/89	111.60	7/26/89	113.70	9/4/89	114.15
6/17/89	111.45	7/27/89	113.70	9/5/89	113.80
6/18/89	111.55	7/28/89	113.75	9/6/89	113.95
6/19/89	111.50	7/29/89	113.75	9/7/89	114.00
6/20/89	111.30	7/30/89	113.80	9/8/89	114.08
6/21/89	111.50	7/31/89	113.85	9/9/89	114.05
6/22/89	111.85	8/1/89	113.75	9/10/89	114.08
6/23/89	112.00	8/2/89	113.70	9/11/89	113.40
6/24/89	111.50	8/3/89	113.75	9/12/89	113.93
6/25/89	111.75	8/4/89	113.75	9/13/89	114.10
6/26/89	112.05	8/5/89	113.95	9/14/89	114.15
6/27/89	112.15	8/6/89	114.05	9/15/89	114.10
6/28/89	112.40	8/7/89	--	9/16/89	114.10
6/29/89	112.45	8/8/89	113.80	9/17/89	114.00
6/30/89	112.95	8/9/89	113.85	9/18/89	114.05
7/1/89	112.60	8/10/89	113.95	9/19/89	114.10
7/2/89	112.70	8/11/89	--	9/20/89	114.85
7/3/89	122.85	8/12/89	113.90	9/21/89	113.30
7/4/89	112.90	8/13/89	114.00	9/22/89	113.30
7/5/89	112.90	8/14/89	114.00	9/23/89	114.20
7/6/89	113.05	8/15/89	113.97	9/24/89	114.20
7/7/89	113.05	8/16/89	113.90	9/25/89	114.30
7/8/89	113.10	8/17/89	114.00	9/26/89	114.30
7/9/89	113.20	8/18/89	114.05	9/27/89	114.35
7/10/89	113.25	8/19/89	114.00	9/28/89	114.15
7/11/89	113.35	8/20/89	114.00	9/29/89	113.75
7/12/89	113.50	8/21/89	113.90	9/30/89	112.90
7/13/89	112.50	8/22/89	113.55	10/5/89	111.72
7/14/89	112.80	8/23/89	112.90		
7/15/89	112.70	8/24/89	112.95		
7/16/89	112.75	8/25/89	113.15		

* Water level measured below the top of the casing in feet

DOE 60

Elevation of the top of the well casing: 4,783.42 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	115.40	7/17/89	118.00	8/26/89	118.10
6/8/89	115.50	7/18/89	118.30	8/27/89	118.70
6/9/89	115.60	7/19/89	118.45	8/28/89	118.75
6/10/89	115.70	7/20/89	118.40	8/29/89	118.90
6/11/89	115.05	7/21/89	118.45	8/30/89	118.75
6/12/89	114.35	7/22/89	118.40	8/31/89	118.90
6/13/89	115.30	7/23/89	118.50	9/1/89	119.00
6/14/89	116.10	7/24/89	118.55	9/2/89	118.95
6/15/89	116.35	7/25/89	118.55	9/3/89	119.00
6/16/89	116.50	7/26/89	118.65	9/4/89	119.05
6/17/89	115.00	7/27/89	118.65	9/5/89	118.85
6/18/89	116.00	7/28/89	118.65	9/6/89	118.85
6/19/89	116.15	7/29/89	118.70	9/7/89	118.85
6/20/89	115.50	7/30/89	118.75	9/8/89	118.85
6/21/89	115.70	7/31/89	118.80	9/9/89	118.85
6/22/89	116.55	8/1/89	118.75	9/10/89	118.50
6/23/89	116.75	8/2/89	118.80	9/11/89	117.07
6/24/89	115.55	8/3/89	118.80	9/12/89	118.25
6/25/89	116.35	8/4/89	118.85	9/13/89	118.70
6/26/89	116.85	8/5/89	118.95	9/14/89	118.85
6/27/89	117.05	8/6/89	119.00	9/15/89	118.90
6/28/89	117.35	8/7/89	--	9/16/89	118.85
6/29/89	117.40	8/8/89	118.70	9/17/89	118.90
6/30/89	117.80	8/9/89	118.80	9/18/89	118.95
7/1/89	117.65	8/10/89	118.80	9/19/89	119.05
7/2/89	117.75	8/11/89	--	9/20/89	118.80
7/3/89	117.80	8/12/89	118.75	9/21/89	117.00
7/4/89	117.90	8/13/89	118.88	9/22/89	118.50
7/5/89	117.90	8/14/89	118.85	9/23/89	118.70
7/6/89	118.00	8/15/89	118.96	9/24/89	118.90
7/7/89	118.05	8/16/89	118.90	9/25/89	119.00
7/8/89	108.10	8/17/89	119.00	9/26/89	119.10
7/9/89	118.20	8/18/89	119.05	9/27/89	119.10
7/10/89	118.25	8/19/89	119.00	9/28/89	118.40
7/11/89	118.35	8/20/89	119.05	9/29/89	117.75
7/12/89	118.40	8/21/89	119.05	9/30/89	116.55
7/13/89	118.40	8/22/89	117.70	10/5/89	114.67
7/14/89	116.90	8/23/89	116.45		
7/15/89	116.60	8/24/89	116.55		
7/16/89	116.75	8/25/89	118.05		

* Water level measured below the top of the casing in feet

DOE 4

Elevation of the top of the well casing: 4,760.18 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	86.50	7/17/89	88.85	8/26/89	89.35
6/8/89	86.75	7/18/89	89.05	8/27/89	89.40
6/9/89	86.75	7/19/89	89.10	8/28/89	89.40
6/10/89	86.80	7/20/89	89.10	8/29/89	89.50
6/11/89	86.85	7/21/89	89.05	8/30/89	89.30
6/12/89	86.90	7/22/89	89.05	8/31/89	89.35
6/13/89	87.00	7/23/89	89.15	9/1/89	89.50
6/14/89	87.20	7/24/89	89.15	9/2/89	89.40
6/15/89	87.05	7/25/89	89.15	9/3/89	89.50
6/16/89	87.00	7/26/89	89.20	9/4/89	89.50
6/17/89	87.00	7/27/89	89.25	9/5/89	88.90
6/18/89	87.10	7/28/89	89.25	9/6/89	89.25
6/19/89	87.10	7/29/89	89.25	9/7/89	89.30
6/20/89	87.05	7/30/89	89.30	9/8/89	89.43
6/21/89	87.20	7/31/89	89.35	9/9/89	89.50
6/22/89	87.30	8/1/89	89.30	9/10/89	89.45
6/23/89	87.35	8/2/89	89.25	9/11/89	89.40
6/24/89	87.30	8/3/89	89.25	9/12/89	89.32
6/25/89	87.25	8/4/89	89.30	9/13/89	89.45
6/26/89	87.40	8/5/89	89.45	9/14/89	89.40
6/27/89	87.45	8/6/89	89.55	9/15/89	89.40
6/28/89	87.75	8/7/89	--	9/16/89	89.45
6/29/89	88.00	8/8/89	89.45	9/17/89	89.30
6/30/89	88.05	8/9/89	89.40	9/18/89	89.35
7/1/89	88.10	8/10/89	89.45	9/19/89	89.35
7/2/89	88.20	8/11/89	89.50	9/20/89	88.90
7/3/89	88.30	8/12/89	89.45	9/21/89	89.10
7/4/89	88.40	8/13/89	89.54	9/22/89	89.30
7/5/89	88.40	8/14/89	89.54	9/23/89	89.40
7/6/89	88.55	8/15/89	89.50	9/24/89	89.40
7/7/89	88.55	8/16/89	89.40	9/25/89	89.50
7/8/89	88.65	8/17/89	89.50	9/26/89	89.50
7/9/89	88.75	8/18/89	89.50	9/27/89	89.50
7/10/89	88.80	8/19/89	89.45	9/28/89	89.50
7/11/89	88.90	8/20/89	89.45	9/29/89	89.10
7/12/89	89.00	8/21/89	89.50	9/30/89	88.60
7/13/89	89.05	8/22/89	89.45	10/5/89	88.48
7/14/89	88.85	8/23/89	89.15		
7/15/89	88.80	8/24/89	89.20		
7/16/89	88.80	8/25/89	89.25		

* Water level measured below the top of the casing in feet

DOE 5

Elevation of the top of the well casing: 4,759.43 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	86.30	7/17/89	88.70	8/26/89	89.25
6/8/89	86.50	7/18/89	88.90	8/27/89	89.25
6/9/89	86.50	7/19/89	89.00	8/28/89	89.30
6/10/89	86.55	7/20/89	88.90	8/29/89	89.35
6/11/89	86.60	7/21/89	88.90	8/30/89	89.10
6/12/89	86.60	7/22/89	88.95	8/31/89	89.20
6/13/89	86.75	7/23/89	89.00	9/1/89	89.40
6/14/89	86.85	7/24/89	89.00	9/2/89	89.30
6/15/89	86.75	7/25/89	89.00	9/3/89	89.35
6/16/89	86.75	7/26/89	89.10	9/4/89	89.40
6/17/89	86.75	7/27/89	89.05	9/5/89	88.55
6/18/89	86.80	7/28/89	89.15	9/6/89	89.10
6/19/89	86.75	7/29/89	89.20	9/7/89	89.15
6/20/89	86.75	7/30/89	89.20	9/8/89	89.30
6/21/89	86.95	7/31/89	89.20	9/9/89	89.35
6/22/89	87.00	8/1/89	89.10	9/10/89	89.25
6/23/89	87.15	8/2/89	89.15	9/11/89	89.20
6/24/89	87.00	8/3/89	89.10	9/12/89	89.15
6/25/89	87.00	8/4/89	89.20	9/13/89	89.25
6/26/89	87.15	8/5/89	89.35	9/14/89	89.25
6/27/89	87.25	8/6/89	89.40	9/15/89	89.25
6/28/89	87.65	8/7/89	--	9/16/89	89.30
6/29/89	87.75	8/8/89	89.30	9/17/89	89.10
6/30/89	87.90	8/9/89	89.25	9/18/89	89.15
7/1/89	87.90	8/10/89	89.30	9/19/89	89.20
7/2/89	88.05	8/11/89	89.40	9/20/89	88.50
7/3/89	88.15	8/12/89	89.30	9/21/89	88.90
7/4/89	88.20	8/13/89	89.35	9/22/89	89.10
7/5/89	88.20	8/14/89	89.40	9/23/89	89.20
7/6/89	88.40	8/15/89	89.35	9/24/89	89.20
7/7/89	88.40	8/16/89	89.30	9/25/89	89.30
7/8/89	88.55	8/17/89	89.35	9/26/89	89.30
7/9/89	88.60	8/18/89	89.40	9/27/89	89.40
7/10/89	88.65	8/19/89	89.40	9/28/89	89.35
7/11/89	88.75	8/20/89	89.35	9/29/89	88.70
7/12/89	88.90	8/21/89	89.35	9/30/89	88.15
7/13/89	88.85	8/22/89	89.30	10/5/89	87.08
7/14/89	88.85	8/23/89	88.95		
7/15/89	88.60	8/24/89	89.00		
7/16/89	88.65	8/25/89	89.10		

* Water level measured below the top of the casing in feet

DOE 6

Elevation of the top of the well casing: 4,758.58 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	90.20	7/17/89	92.70	8/26/89	93.30
6/8/89	90.35	7/18/89	92.95	8/27/89	93.40
6/9/89	90.45	7/19/89	93.05	8/28/89	93.50
6/10/89	90.60	7/20/89	93.10	8/29/89	93.55
6/11/89	90.25	7/21/89	93.10	8/30/89	93.50
6/12/89	89.95	7/22/89	93.15	8/31/89	93.55
6/13/89	90.30	7/23/89	93.20	9/1/89	93.65
6/14/89	90.90	7/24/89	93.25	9/2/89	93.65
6/15/89	91.15	7/25/89	93.25	9/3/89	93.70
6/16/89	91.30	7/26/89	93.35	9/4/89	93.70
6/17/89	90.75	7/27/89	93.35	9/5/89	93.55
6/18/89	90.90	7/28/89	93.45	9/6/89	93.55
6/19/89	90.90	7/29/89	93.45	9/7/89	93.60
6/20/89	90.90	7/30/89	93.45	9/8/89	93.40
6/21/89	91.00	7/31/89	93.45	9/9/89	93.40
6/22/89	91.35	8/1/89	93.45	9/10/89	93.37
6/23/89	91.55	8/2/89	93.45	9/11/89	93.60
6/24/89	91.10	8/3/89	93.50	9/12/89	82.98
6/25/89	91.25	8/4/89	93.50	9/13/89	93.40
6/26/89	91.60	8/5/89	93.60	9/14/89	93.55
6/27/89	91.80	8/6/89	93.65	9/15/89	93.60
6/28/89	92.05	8/7/89	--	9/16/89	93.60
6/29/89	92.30	8/8/89	93.40	9/17/89	93.60
6/30/89	92.40	8/9/89	93.50	9/18/89	93.60
7/1/89	92.45	8/10/89	93.55	9/19/89	93.80
7/2/89	92.55	8/11/89	93.35	9/20/89	93.60
7/3/89	92.60	8/12/89	93.45	9/21/89	92.60
7/4/89	92.65	8/13/89	93.57	9/22/89	93.00
7/5/89	92.65	8/14/89	93.62	9/23/89	93.40
7/6/89	92.75	8/15/89	93.67	9/24/89	93.60
7/7/89	92.80	8/16/89	93.65	9/25/89	93.70
7/8/89	92.85	8/17/89	93.70	9/26/89	93.70
7/9/89	92.90	8/18/89	93.75	9/27/89	93.80
7/10/89	92.95	8/19/89	93.70	9/28/89	93.45
7/11/89	93.05	8/20/89	93.75	9/29/89	93.00
7/12/89	93.05	8/21/89	93.75	9/30/89	92.15
7/13/89	93.10	8/22/89	93.15	10/5/89	90.41
7/14/89	92.35	8/23/89	92.15		
7/15/89	92.15	8/24/89	92.25		
7/16/89	92.15	8/25/89	93.10		

* Water level measured below the top of the casing in feet

DOE 54

Elevation of the top of the well casing: 4,752.17 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	dry at 80.45 (bottom of casing).				
6/8/89 through 10/5: Well was dry.					

* Water level measured below the top of the casing in feet

DOE 49

Elevation of the top of the well casing: 4,750.60 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	81.20	7/17/89	81.65	8/26/89	82.15
6/8/89	81.10	7/18/89	81.75	8/27/89	82.00
6/9/89	81.15	7/19/89	81.85	8/28/89	82.10
6/10/89	81.10	7/20/89	81.70	8/29/89	82.10
6/11/89	81.25	7/21/89	81.70	8/30/89	81.90
6/12/89	81.40	7/22/89	81.75	8/31/89	82.20
6/13/89	81.35	7/23/89	81.80	9/1/89	82.25
6/14/89	82.40	7/24/89	81.80	9/2/89	82.15
6/15/89	81.20	7/25/89	81.80	9/3/89	82.30
6/16/89	81.15	7/26/89	81.90	9/4/89	82.25
6/17/89	81.50	7/27/89	81.85	9/5/89	82.10
6/18/89	81.45	7/28/89	81.85	9/6/89	82.10
6/19/89	81.45	7/29/89	81.95	9/7/89	82.05
6/20/89	81.45	7/30/89	81.95	9/8/89	82.15
6/21/89	81.60	7/31/89	81.95	9/9/89	82.20
6/22/89	81.40	8/1/89	81.80	9/10/89	82.10
6/23/89	81.45	8/2/89	81.85	9/11/89	82.20
6/24/89	81.45	8/3/89	81.80	9/12/89	82.27
6/25/89	81.30	8/4/89	82.00	9/13/89	82.15
6/26/89	81.30	8/5/89	82.15	9/14/89	82.05
6/27/89	81.40	8/6/89	82.15	9/15/89	82.10
6/28/89	81.50	8/7/89	--	9/16/89	82.20
6/29/89	82.30	8/8/89	81.90	9/17/89	81.95
6/30/89	81.50	8/9/89	81.85	9/18/89	82.00
7/1/89	81.55	8/10/89	82.00	9/19/89	82.30
7/2/89	81.60	8/11/89	82.05	9/20/89	82.30
7/3/89	81.60	8/12/89	81.95	9/21/89	82.30
7/4/89	81.60	8/13/89	82.00	9/22/89	82.40
7/5/89	81.65	8/14/89	81.94	9/23/89	82.20
7/6/89	81.75	8/15/89	81.92	9/24/89	82.20
7/7/89	81.60	8/16/89	81.90	9/25/89	82.30
7/8/89	81.55	8/17/89	82.00	9/26/89	82.20
7/9/89	81.60	8/18/89	82.00	9/27/89	82.20
7/10/89	81.65	8/19/89	82.05	9/28/89	82.30
7/11/89	81.75	8/20/89	82.10	9/29/89	82.25
7/12/89	81.80	8/21/89	82.10	9/30/89	81.95
7/13/89	81.85	8/22/89	82.15	10/5/89	82.07
7/14/89	81.75	8/23/89	82.10		
7/15/89	81.70	8/24/89	82.10		
7/16/89	81.60	8/25/89	82.15		

* Water level measured below the top of the casing in feet

DOE 50

Elevation of the top of the well casing: 4,750.52 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	81.70	7/17/89	83.70	8/26/89	84.20
6/8/89	81.85	7/18/89	83.85	8/27/89	84.40
6/9/89	81.90	7/19/89	83.95	8/28/89	84.40
6/10/89	82.00	7/20/89	84.05	8/29/89	84.50
6/11/89	82.00	7/21/89	84.05	8/30/89	84.50
6/12/89	81.95	7/22/89	84.05	8/31/89	84.55
6/13/89	82.00	7/23/89	84.10	9/1/89	84.70
6/14/89	82.25	7/24/89	84.15	9/2/89	84.60
6/15/89	82.35	7/25/89	84.20	9/3/89	84.70
6/16/89	82.40	7/26/89	84.25	9/4/89	84.70
6/17/89	82.50	7/27/89	84.20	9/5/89	84.60
6/18/89	82.35	7/28/89	84.25	9/6/89	84.60
6/19/89	82.45	7/29/89	84.25	9/7/89	84.60
6/20/89	82.45	7/30/89	84.25	9/8/89	84.64
6/21/89	82.65	7/31/89	84.30	9/9/89	84.55
6/22/89	82.65	8/1/89	84.30	9/10/89	84.45
6/23/89	82.80	8/2/89	84.35	9/11/89	85.45
6/24/89	82.80	8/3/89	84.35	9/12/89	84.30
6/25/89	82.60	8/4/89	84.45	9/13/89	84.48
6/26/89	82.80	8/5/89	84.50	9/14/89	84.50
6/27/89	82.90	8/6/89	84.55	9/15/89	84.60
6/28/89	83.10	8/7/89	--	9/16/89	84.65
6/29/89	83.30	8/8/89	84.40	9/17/89	84.65
6/30/89	83.40	8/9/89	84.45	9/18/89	84.70
7/1/89	83.45	8/10/89	84.40	9/19/89	84.80
7/2/89	83.50	8/11/89	84.35	9/20/89	84.70
7/3/89	83.50	8/12/89	84.30	9/21/89	84.50
7/4/89	83.65	8/13/89	84.40	9/22/89	84.40
7/5/89	83.70	8/14/89	84.47	9/23/89	84.50
7/6/89	83.80	8/15/89	84.54	9/24/89	84.50
7/7/89	83.80	8/16/89	84.50	9/25/89	84.70
7/8/89	83.80	8/17/89	84.55	9/26/89	84.70
7/9/89	83.85	8/18/89	84.60	9/27/89	84.75
7/10/89	83.90	8/19/89	84.65	9/28/89	84.80
7/11/89	84.00	8/20/89	84.65	9/29/89	84.55
7/12/89	84.00	8/21/89	84.60	9/30/89	84.10
7/13/89	84.10	8/22/89	84.60	10/5/89	82.88
7/14/89	84.00	8/23/89	84.10		
7/15/89	83.75	8/24/89	82.85		
7/16/89	81.75	8/25/89	84.15		

* Water level measured below the top of the casing in feet

DOE 7

Elevation of the top of the well casing: 4,733.6 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	dry at 53.85 (bottom of casing).				
6/8/89	through 10/5: Well was dry.				

* Water level measured below the top of the casing in feet

DOE 8

Elevation of the top of the well casing: 4,733.10 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	64.55	7/17/89	64.70	8/26/89	65.15
6/8/89	64.45	7/18/89	64.95	8/27/89	65.10
6/9/89	64.45	7/19/89	65.00	8/28/89	65.15
6/10/89	64.45	7/20/89	64.80	8/29/89	65.15
6/11/89	64.55	7/21/89	64.85	8/30/89	64.90
6/12/89	64.70	7/22/89	64.90	8/31/89	65.20
6/13/89	64.70	7/23/89	64.95	9/1/89	65.35
6/14/89	64.85	7/24/89	64.95	9/2/89	65.15
6/15/89	64.50	7/25/89	64.95	9/3/89	65.30
6/16/89	64.50	7/26/89	65.00	9/4/89	65.30
6/17/89	64.75	7/27/89	64.95	9/5/89	65.10
6/18/89	64.75	7/28/89	65.00	9/6/89	65.20
6/19/89	64.55	7/29/89	65.00	9/7/89	65.15
6/20/89	64.60	7/30/89	65.05	9/8/89	65.25
6/21/89	64.90	7/31/89	65.00	9/9/89	65.30
6/22/89	64.60	8/1/89	64.85	9/10/89	65.15
6/23/89	64.70	8/2/89	64.95	9/11/89	65.25
6/24/89	64.70	8/3/89	64.95	9/12/89	65.25
6/25/89	64.60	8/4/89	65.05	9/13/89	65.20
6/26/89	64.60	8/5/89	65.20	9/14/89	65.10
6/27/89	64.70	8/6/89	65.20	9/15/89	65.15
6/28/89	64.75	8/7/89	--	9/16/89	65.20
6/29/89	64.80	8/8/89	64.95	9/17/89	65.00
6/30/89	64.75	8/9/89	64.95	9/18/89	65.05
7/1/89	64.80	8/10/89	65.10	9/19/89	65.35
7/2/89	64.90	8/11/89	65.10	9/20/89	65.30
7/3/89	64.85	8/12/89	65.05	9/21/89	65.40
7/4/89	64.80	8/13/89	65.08	9/22/89	65.50
7/5/89	64.85	8/14/89	64.98	9/23/89	65.20
7/6/89	64.95	8/15/89	64.96	9/24/89	65.20
7/7/89	64.80	8/16/89	65.00	9/25/89	65.30
7/8/89	64.75	8/17/89	65.05	9/26/89	65.20
7/9/89	64.80	8/18/89	65.10	9/27/89	65.25
7/10/89	64.80	8/19/89	65.10	9/28/89	65.35
7/11/89	64.90	8/20/89	65.15	9/29/89	65.25
7/12/89	65.00	8/21/89	65.15	9/30/89	65.05
7/13/89	65.05	8/22/89	65.20	10/5/89	65.25
7/14/89	65.00	8/23/89	65.10		
7/15/89	64.85	8/24/89	65.05		
7/16/89	64.70	8/25/89	65.15		

* Water level measured below the top of the casing in feet

DOE 9

Elevation of the top of the well casing: 4,732.47 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	63.60	7/17/89	65.50	8/26/89	66.05
6/8/89	63.70	7/18/89	65.60	8/27/89	66.20
6/9/89	63.85	7/19/89	65.85	8/28/89	66.20
6/10/89	63.95	7/20/89	65.90	8/29/89	66.30
6/11/89	64.00	7/21/89	65.90	8/30/89	66.25
6/12/89	63.95	7/22/89	65.90	8/31/89	66.30
6/13/89	63.95	7/23/89	66.00	9/1/89	66.40
6/14/89	64.15	7/24/89	66.00	9/2/89	66.40
6/15/89	64.30	7/25/89	66.00	9/3/89	66.45
6/16/89	64.40	7/26/89	66.05	9/4/89	66.45
6/17/89	64.50	7/27/89	66.10	9/5/89	66.40
6/18/89	64.40	7/28/89	66.10	9/6/89	66.40
6/19/89	64.45	7/29/89	66.10	9/7/89	66.40
6/20/89	64.40	7/30/89	66.15	9/8/89	66.40
6/21/89	64.60	7/31/89	66.20	9/9/89	66.35
6/22/89	64.60	8/1/89	66.15	9/10/89	66.30
6/23/89	64.70	8/2/89	66.15	9/11/89	66.27
6/24/89	64.70	8/3/89	66.20	9/12/89	66.10
6/25/89	64.60	8/4/89	66.25	9/13/89	66.29
6/26/89	64.65	8/5/89	66.25	9/14/89	66.30
6/27/89	64.80	8/6/89	66.30	9/15/89	66.35
6/28/89	65.00	8/7/89	--	9/16/89	66.35
6/29/89	65.20	8/8/89	66.25	9/17/89	66.45
6/30/89	65.25	8/9/89	66.25	9/18/89	66.45
7/1/89	65.25	8/10/89	66.30	9/19/89	66.50
7/2/89	65.40	8/11/89	66.35	9/20/89	66.45
7/3/89	65.45	8/12/89	66.20	9/21/89	66.30
7/4/89	65.50	8/13/89	66.26	9/22/89	64.20
7/5/89	65.55	8/14/89	66.30	9/23/89	66.30
7/6/89	65.65	8/15/89	66.33	9/24/89	66.30
7/7/89	65.65	8/16/89	66.35	9/25/89	66.50
7/8/89	65.65	8/17/89	66.35	9/26/89	66.50
7/9/89	65.70	8/18/89	66.40	9/27/89	66.50
7/10/89	65.75	8/19/89	66.45	9/28/89	66.55
7/11/89	65.80	8/20/89	66.45	9/29/89	66.40
7/12/89	65.85	8/21/89	66.40	9/30/89	66.05
7/13/89	65.90	8/22/89	66.40	10/5/89	64.88
7/14/89	65.90	8/23/89	66.05		
7/15/89	65.65	8/24/89	66.05		
7/16/89	65.50	8/25/89	66.00		

* Water level measured below the top of the casing in feet

DOE 39

Elevation of the top of the well casing: 4,766.66 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	96.40	7/17/89	97.10	8/26/89	97.55
6/8/89	96.35	7/18/89	97.15	8/27/89	97.45
6/9/89	96.35	7/19/89	97.15	8/28/89	97.55
6/10/89	96.40	7/20/89	97.05	8/29/89	97.55
6/11/89	96.45	7/21/89	97.05	8/30/89	97.35
6/12/89	96.55	7/22/89	97.10	8/31/89	97.60
6/13/89	96.55	7/23/89	97.15	9/1/89	97.65
6/14/89	96.55	7/24/89	97.15	9/2/89	97.55
6/15/89	96.45	7/25/89	97.20	9/3/89	97.65
6/16/89	96.45	7/26/89	97.25	9/4/89	97.65
6/17/89	96.65	7/27/89	97.20	9/5/89	97.50
6/18/89	96.80	7/28/89	97.20	9/6/89	97.60
6/19/89	96.50	7/29/89	97.20	9/7/89	97.54
6/20/89	96.55	7/30/89	97.20	9/8/89	97.65
6/21/89	96.75	7/31/89	97.25	9/9/89	97.68
6/22/89	96.55	8/1/89	97.15	9/10/89	97.60
6/23/89	96.65	8/2/89	97.25	9/11/89	87.65
6/24/89	96.65	8/3/89	97.25	9/12/89	97.65
6/25/89	96.55	8/4/89	97.30	9/13/89	97.60
6/26/89	96.60	8/5/89	97.40	9/14/89	97.60
6/27/89	96.60	8/6/89	97.45	9/15/89	97.60
6/28/89	96.70	8/7/89	--	9/16/89	97.65
6/29/89	97.00	8/8/89	97.30	9/17/89	97.60
6/30/89	96.75	8/9/89	97.30	9/18/89	97.60
7/1/89	96.80	8/10/89	97.00	9/19/89	97.65
7/2/89	96.90	8/11/89	97.40	9/20/89	97.65
7/3/89	96.85	8/12/89	97.35	9/21/89	97.80
7/4/89	96.85	8/13/89	97.38	9/22/89	97.80
7/5/89	96.90	8/14/89	97.33	9/23/89	97.30
7/6/89	97.00	8/15/89	97.35	9/24/89	97.70
7/7/89	96.90	8/16/89	97.35	9/25/89	98.70
7/8/89	96.85	8/17/89	97.40	9/26/89	97.70
7/9/89	96.95	8/18/89	97.45	9/27/89	97.65
7/10/89	96.95	8/19/89	97.50	9/28/89	97.75
7/11/89	97.05	8/20/89	97.50	9/29/89	97.65
7/12/89	97.10	8/21/89	97.55	9/30/89	95.50
7/13/89	97.20	8/22/89	97.55	10/5/89	97.50
7/14/89	97.00	8/23/89	97.45		
7/15/89	97.05	8/24/89	97.50		
7/16/89	97.10	8/25/89	97.50		

* Water level measured below the top of the casing in feet

DOE 40

Elevation of the top of the well casing: 4,766.34 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	99.45	7/17/89	101.55	8/26/89	101.75
6/8/89	99.60	7/18/89	101.70	8/27/89	102.15
6/9/89	99.70	7/19/89	101.90	8/28/89	102.30
6/10/89	99.85	7/20/89	101.85	8/29/89	102.35
6/11/89	99.55	7/21/89	101.85	8/30/89	102.30
6/12/89	99.30	7/22/89	101.90	8/31/89	102.35
6/13/89	99.45	7/23/89	101.95	9/1/89	102.45
6/14/89	99.95	7/24/89	101.95	9/2/89	102.40
6/15/89	100.20	7/25/89	102.00	9/3/89	102.50
6/16/89	100.35	7/26/89	102.05	9/4/89	102.55
6/17/89	100.25	7/27/89	102.05	9/5/89	102.25
6/18/89	99.90	7/28/89	102.10	9/6/89	102.35
6/19/89	100.20	7/29/89	102.10	9/7/89	102.35
6/20/89	100.20	7/30/89	102.15	9/8/89	102.40
6/21/89	100.25	7/31/89	102.15	9/9/89	102.20
6/22/89	100.35	8/1/89	102.15	9/10/89	102.50
6/23/89	100.55	8/2/89	102.20	9/11/89	101.85
6/24/89	100.40	8/3/89	102.15	9/12/89	101.80
6/25/89	100.25	8/4/89	102.20	9/13/89	102.07
6/26/89	100.60	8/5/89	102.30	9/14/89	102.30
6/27/89	100.75	8/6/89	102.30	9/15/89	102.35
6/28/89	101.05	8/7/89	--	9/16/89	102.35
6/29/89	101.30	8/8/89	102.10	9/17/89	102.35
6/30/89	101.40	8/9/89	102.20	9/18/89	102.35
7/1/89	101.50	8/10/89	101.25	9/19/89	102.50
7/2/89	101.50	8/11/89	102.00	9/20/89	102.40
7/3/89	101.50	8/12/89	102.05	9/21/89	101.90
7/4/89	101.55	8/13/89	102.02	9/22/89	101.80
7/5/89	101.60	8/14/89	102.30	9/23/89	102.10
7/6/89	101.65	8/15/89	102.32	9/24/89	102.30
7/7/89	101.65	8/16/89	102.30	9/25/89	102.50
7/8/89	101.70	8/17/89	102.35	9/26/89	102.50
7/9/89	101.75	8/18/89	102.40	9/27/89	102.55
7/10/89	101.80	8/19/89	102.35	9/28/89	102.35
7/11/89	101.90	8/20/89	102.30	9/29/89	101.90
7/12/89	101.85	8/21/89	102.30	9/30/89	101.15
7/13/89	101.90	8/22/89	102.20	10/5/89	99.30
7/14/89	101.60	8/23/89	101.30		
7/15/89	101.35	8/24/89	100.75		
7/16/89	101.65	8/25/89	101.70		

* Water level measured below the top of the casing in feet

DOE 44

Elevation of the top of the well casing: 4,766.35 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	95.90	7/17/89	96.55	8/26/89	97.00
6/8/89	95.85	7/18/89	96.65	8/27/89	96.95
6/9/89	95.85	7/19/89	96.65	8/28/89	97.10
6/10/89	95.90	7/20/89	96.55	8/29/89	97.05
6/11/89	95.95	7/21/89	96.55	8/30/89	96.85
6/12/89	96.05	7/22/89	96.60	8/31/89	97.05
6/13/89	96.10	7/23/89	96.50	9/1/89	97.15
6/14/89	96.05	7/24/89	96.65	9/2/89	97.05
6/15/89	95.95	7/25/89	96.65	9/3/89	97.15
6/16/89	95.95	7/26/89	96.75	9/4/89	97.15
6/17/89	96.10	7/27/89	96.70	9/5/89	97.00
6/18/89	96.20	7/28/89	96.75	9/6/89	97.05
6/19/89	96.00	7/29/89	96.75	9/7/89	97.05
6/20/89	96.10	7/30/89	96.70	9/8/89	97.13
6/21/89	96.25	7/31/89	96.75	9/9/89	97.17
6/22/89	96.05	8/1/89	96.65	9/10/89	97.00
6/23/89	96.15	8/2/89	96.70	9/11/89	87.15
6/24/89	96.10	8/3/89	96.75	9/12/89	97.15
6/25/89	96.05	8/4/89	96.80	9/13/89	97.12
6/26/89	96.10	8/5/89	96.90	9/14/89	97.05
6/27/89	96.10	8/6/89	96.95	9/15/89	97.05
6/28/89	96.20	8/7/89	--	9/16/89	97.10
6/29/89	96.25	8/8/89	96.80	9/17/89	96.80
6/30/89	96.25	8/9/89	96.80	9/18/89	96.90
7/1/89	96.25	8/10/89	96.85	9/19/89	97.20
7/2/89	96.40	8/11/89	96.90	9/20/89	97.15
7/3/89	96.35	8/12/89	96.85	9/21/89	97.30
7/4/89	96.35	8/13/89	96.85	9/22/89	97.30
7/5/89	96.40	8/14/89	96.84	9/23/89	97.40
7/6/89	96.45	8/15/89	96.83	9/24/89	97.10
7/7/89	96.40	8/16/89	96.85	9/25/89	97.20
7/8/89	96.35	8/17/89	96.80	9/26/89	97.20
7/9/89	96.45	8/18/89	96.95	9/27/89	97.15
7/10/89	96.45	8/19/89	96.95	9/28/89	97.25
7/11/89	96.50	8/20/89	96.95	9/29/89	97.15
7/12/89	96.60	8/21/89	97.00	9/30/89	94.95
7/13/89	96.65	8/22/89	97.05	10/5/89	96.48
7/14/89	96.50	8/23/89	96.95		
7/15/89	96.55	8/24/8	96.90		
7/16/89	96.65	8/25/89	97.00		

* Water level measured below the top of the casing in feet

M-1

Elevation of the top of the well casing: 4,792.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	121.95	7/17/89	122.95	8/26/89	123.55
6/8/89	121.95	7/18/89	123.00	8/27/89	123.50
6/9/89	121.90	7/19/89	123.15	8/28/89	123.65
6/10/89	121.90	7/20/89	123.00	8/29/89	123.60
6/11/89	122.05	7/21/89	123.00	8/30/89	123.25
6/12/89	122.25	7/22/89	123.00	8/31/89	123.55
6/13/89	122.25	7/23/89	123.15	9/1/89	123.70
6/14/89	122.20	7/24/89	123.15	9/2/89	123.55
6/15/89	121.95	7/25/89	123.15	9/3/89	123.70
6/16/89	121.90	7/26/89	123.20	9/4/89	123.70
6/17/89	121.95	7/27/89	123.15	9/5/89	123.10
6/18/89	122.15	7/28/89	123.20	9/6/89	123.50
6/19/89	122.25	7/29/89	123.20	9/7/89	123.45
6/20/89	122.00	7/30/89	123.25	9/8/89	123.63
6/21/89	122.30	7/31/89	123.25	9/9/89	123.70
6/22/89	122.15	8/1/89	123.10	9/10/89	123.73
6/23/89	122.20	8/2/89	123.20	9/11/89	123.70
6/24/89	122.15	8/3/89	123.15	9/12/89	123.65
6/25/89	122.05	8/4/89	123.35	9/13/89	123.60
6/26/89	122.10	8/5/89	123.50	9/14/89	123.45
6/27/89	122.10	8/6/89	123.55	9/15/89	123.35
6/28/89	122.35	8/7/89	--	9/16/89	123.40
6/29/89	122.60	8/8/89	123.30	9/17/89	123.25
6/30/89	122.45	8/9/89	123.30	9/18/89	123.30
7/1/89	122.50	8/10/89	123.40	9/19/89	123.30
7/2/89	122.60	8/11/89	123.40	9/20/89	123.25
7/3/89	122.60	8/12/89	123.40	9/21/89	123.70
7/4/89	122.60	8/13/89	123.45	9/22/89	123.80
7/5/89	122.65	8/14/89	123.37	9/23/89	123.60
7/6/89	122.80	8/15/89	123.35	9/24/89	123.50
7/7/89	122.70	8/16/89	123.30	9/25/89	123.70
7/8/89	122.20	8/17/89	123.40	9/26/89	123.70
7/9/89	122.80	8/18/89	123.45	9/27/89	123.55
7/10/89	122.85	8/19/89	123.45	9/28/89	123.70
7/11/89	122.95	8/20/89	123.50	9/29/89	123.25
7/12/89	123.10	8/21/89	123.50	9/30/89	122.90
7/13/89	123.10	8/22/89	123.55	10/5/89	122.94
7/14/89	123.05	8/23/89	123.45		
7/15/89	123.00	8/24/89	123.55		
7/16/89	122.55	8/25/89	123.50		

* Water level measured below the top of the casing in feet

SW-1

Elevation of the top of the well casing: 4,791.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	171.95	7/17/89	172.00	8/26/89	172.10
6/8/89	171.60	7/18/89	172.05	8/27/89	172.15
6/9/89	171.60	7/19/89	172.10	8/28/89	172.20
6/10/89	171.85	7/20/89	172.10	8/29/89	172.25
6/11/89	171.60	7/21/89	172.15	8/30/89	172.00
6/12/89	171.70	7/22/89	172.15	8/31/89	172.00
6/13/89	171.75	7/23/89	172.15	9/1/89	172.20
6/14/89	171.80	7/24/89	172.20	9/2/89	172.15
6/15/89	171.70	7/25/89	172.15	9/3/89	172.35
6/16/89	171.60	7/26/89	172.20	9/4/89	172.40
6/17/89	171.65	7/27/89	172.20	9/5/89	172.40
6/18/89	171.75	7/28/89	172.15	9/6/89	172.25
6/19/89	171.80	7/29/89	172.15	9/7/89	172.25
6/20/89	171.65	7/30/89	172.15	9/8/89	172.25
6/21/89	171.80	7/31/89	172.20	9/9/89	172.28
6/22/89	171.75	8/1/89	172.10	9/10/89	172.25
6/23/89	171.70	8/2/89	172.10	9/11/89	172.32
6/24/89	171.70	8/3/89	172.05	9/12/89	172.35
6/25/89	171.65	8/4/89	172.10	9/13/89	172.30
6/26/89	171.65	8/5/89	172.25	9/14/89	172.25
6/27/89	171.60	8/6/89	172.35	9/15/89	172.15
6/28/89	171.65	8/7/89	--	9/16/89	172.20
6/29/89	171.70	8/8/89	172.25	9/17/89	172.00
6/30/89	171.75	8/9/89	172.20	9/18/89	172.10
7/1/89	171.80	8/10/89	172.15	9/19/89	172.10
7/2/89	171.85	8/11/89	172.20	9/20/89	171.90
7/3/89	171.90	8/12/89	172.20	9/21/89	172.30
7/4/89	171.95	8/13/89	172.25	9/22/89	172.30
7/5/89	171.95	8/14/89	172.20	9/23/89	172.30
7/6/89	171.95	8/15/89	172.16	9/24/89	172.20
7/7/89	172.05	8/16/89	172.10	9/25/89	172.30
7/8/89	171.95	8/17/89	172.10	9/26/89	172.30
7/9/89	171.90	8/18/89	172.15	9/27/89	172.10
7/10/89	171.95	8/19/89	172.10	9/28/89	172.15
7/11/89	171.95	8/20/89	172.15	9/29/89	172.20
7/12/89	172.05	8/21/89	172.10	9/30/89	172.05
7/13/89	172.00	8/22/89	172.10	10/5/89	172.13
7/14/89	171.95	8/23/89	172.10		
7/15/89	172.05	8/24/89	172.10		
7/16/89	172.05	8/25/89	172.05		

* Water level measured below the top of the casing in feet

W-22a

Elevation of the top of the well casing: 4,785.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	127.57	7/17/89	130.55	8/26/89	130.94
6/8/89	126.10	7/18/89	130.78	8/27/89	130.08
6/9/89	120.80	7/19/89	130.28	8/28/89	131.54
6/10/89	126.07	7/20/89	130.62	8/29/89	129.57
6/11/89	126.39	7/21/89	130.65	8/30/89	118.49
6/12/89	126.51	7/22/89	130.78	8/31/89	131.54
6/13/89	--	7/23/89	130.33	9/1/89	131.54
6/14/89	--	7/24/89	130.91	9/2/89	131.51
6/15/89	109.38	7/25/89	130.04	9/3/89	137.80
6/16/89	122.27	7/26/89	129.88	9/4/89	137.80
6/17/89	122.12	7/27/89	118.01	9/5/89	116.89
6/18/89	122.40	7/28/89	117.45	9/6/89	129.83
6/19/89	111.17	7/29/89	131.16	9/7/89	130.42
6/20/89	122.40	7/30/89	131.22	9/8/89	136.65
6/21/89	122.56	7/31/89	130.84	9/9/89	136.71
6/22/89	122.16	8/1/89	130.08	9/10/89	137.92
6/23/89	122.25	8/2/89	130.62	9/11/89	135.21
6/24/89	127.67	8/3/89	119.96	9/12/89	135.05
6/25/89	122.20	8/4/89	130.52	9/13/89	134.86
6/26/89	122.41	8/5/89	131.35	9/14/89	128.99
6/27/89	125.10	8/6/89	129.89	9/15/89	134.23
6/28/89	125.60	8/7/89	--	9/16/89	127.30
6/29/89	113.54	8/8/89	130.56	9/17/89	127.17
6/30/89	125.80	8/9/89	131.20	9/18/89	128.99
7/1/89	125.76	8/10/89	118.33	9/19/89	124.05
7/2/89	123.00	8/11/89	130.81	9/20/89	129.75
7/3/89	126.24	8/12/89	131.00	9/21/89	126.56
7/4/89	126.11	8/13/89	130.68	9/22/89	132.80
7/5/89	126.27	8/14/89	130.49	9/23/89	128.19
7/6/89	126.47	8/15/89	130.30	9/24/89	127.59
7/7/89	126.31	8/16/89	129.69	9/25/89	128.32
7/8/89	130.17	8/17/89	131.57	9/26/89	126.66
7/9/89	130.20	8/18/89	130.68	9/27/89	115.14
7/10/89	130.40	8/19/89	131.40	9/28/89	128.38
7/11/89	130.55	8/20/89	130.68	9/29/89	117.09
7/12/89	130.68	8/21/89	131.02	9/30/89	116.48
7/13/89	130.49	8/22/89	131.41	10/2/89	116.20
7/14/89	129.88	8/23/89	130.36	10/5/89	115.66
7/15/89	129.82	8/24/89	118.23		
7/16/89	130.62	8/25/89	130.71		

* Water level measured below the top of the casing in feet

P-2

Elevation of the top of the well casing: 4,785.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	150.00	7/17/89	163.68	8/26/89	163.65
6/8/89	151.40	7/18/89	163.68	8/27/89	163.62
6/9/89	142.08	7/19/89	163.68	8/28/89	163.62
6/10/89	149.85	7/20/89	163.68	8/29/89	163.65
6/11/89	148.19	7/21/89	163.68	8/30/89	163.59
6/12/89	161.51	7/22/89	163.59	8/31/89	163.62
6/13/89	--	7/23/89	163.68	9/1/89	163.62
6/14/89	--	7/24/89	163.68	9/2/89	163.62
6/15/89	155.14	7/25/89	163.65	9/3/89	163.62
6/16/89	154.76	7/26/89	163.59	9/4/89	163.62
6/17/89	150.16	7/27/89	163.72	9/5/89	126.32
6/18/89	153.35	7/28/89	163.65	9/6/89	163.49
6/19/89	153.00	7/29/89	163.68	9/7/89	162.34
6/20/89	149.50	7/30/89	163.65	9/8/89	160.52
6/21/89	149.97	7/31/89	163.68	9/9/89	155.72
6/22/89	163.50	8/1/89	163.68	9/10/89	154.57
6/23/89	163.50	8/2/89	163.68	9/11/89	155.47
6/24/89	163.60	8/3/89	163.68	9/12/89	156.78
6/25/89	163.60	8/4/89	163.62	9/13/89	157.51
6/26/89	163.68	8/5/89	163.62	9/14/89	161.22
6/27/89	163.56	8/6/89	163.68	9/15/89	161.29
6/28/89	163.68	8/7/89	--	9/16/89	160.84
6/29/89	163.65	8/8/89	163.68	9/17/89	163.37
6/30/89	163.68	8/9/89	163.65	9/18/89	163.40
7/1/89	163.56	8/10/89	163.65	9/19/89	163.04
7/2/89	163.60	8/11/89	163.72	9/20/89	129.97
7/3/89	163.59	8/12/89	163.62	9/21/89	163.43
7/4/89	163.68	8/13/89	163.68	9/22/89	163.46
7/5/89	163.68	8/14/89	163.65	9/23/89	163.43
7/6/89	163.62	8/15/89	163.65	9/24/89	163.49
7/7/89	163.65	8/16/89	163.68	9/25/89	163.56
7/8/89	163.68	8/17/89	163.65	9/26/89	163.52
7/9/89	163.68	8/18/89	163.59	9/27/89	163.52
7/10/89	163.59	8/19/89	163.57	9/28/89	163.59
7/11/89	163.68	8/20/89	163.61	9/29/89	163.59
7/12/89	163.59	8/21/89	163.58	9/30/89	163.62
7/13/89	163.72	8/22/89	163.59	10/2/89	2.50
7/14/89	163.68	8/23/89	163.62	10/5/89	118.60
7/15/89	163.72	8/24/89	163.65		
7/16/89	163.68	8/25/89	163.65		

* Water level measured below the top of the casing in feet

W-6

Elevation of the top of the well casing: 4,786.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	165.80	7/17/89	161.74	8/26/89	162.98
6/8/89	166.95	7/18/89	161.20	8/27/89	162.19
6/9/89	129.40	7/19/89	161.77	8/28/89	164.36
6/10/89	168.06	7/20/89	161.71	8/29/89	161.96
6/11/89	146.19	7/21/89	160.88	8/30/89	163.30
6/12/89	146.30	7/22/89	175.92	8/31/89	165.22
6/13/89	--	7/23/89	160.91	9/1/89	163.94
6/14/89	--	7/24/89	161.13	9/2/89	162.79
6/15/89	173.82	7/25/89	160.46	9/3/89	164.04
6/16/89	162.73	7/26/89	159.12	9/4/89	163.78
6/17/89	151.58	7/27/89	159.02	9/5/89	125.48
6/18/89	160.34	7/28/89	160.71	9/6/89	157.84
6/19/89	162.32	7/29/89	159.53	9/7/89	160.33
6/20/89	161.10	7/30/89	161.61	9/8/89	161.22
6/21/89	161.84	7/31/89	158.93	9/9/89	160.90
6/22/89	165.22	8/1/89	159.06	9/10/89	162.66
6/23/89	164.70	8/2/89	159.50	9/11/89	161.22
6/24/89	162.95	8/3/89	158.48	9/12/89	161.73
6/25/89	163.50	8/4/89	160.56	9/13/89	162.28
6/26/89	165.32	8/5/89	159.25	9/14/89	162.22
6/27/89	176.00	8/6/89	159.96	9/15/89	161.39
6/28/89	175.98	8/7/89	--	9/16/89	160.08
6/29/89	175.99	8/8/89	159.34	9/17/89	157.55
6/30/89	175.97	8/9/89	160.78	9/18/89	163.02
7/1/89	175.99	8/10/89	159.31	9/19/89	162.34
7/2/89	176.00	8/11/89	160.17	9/20/89	130.97
7/3/89	175.98	8/12/89	159.02	9/21/89	194.33
7/4/89	175.99	8/13/89	159.43	9/22/89	156.94
7/5/89	175.99	8/14/89	159.00	9/23/89	159.85
7/6/89	176.00	8/15/89	159.92	9/24/89	159.25
7/7/89	176.02	8/16/89	175.89	9/25/89	160.33
7/8/89	176.02	8/17/89	160.59	9/26/89	157.36
7/9/89	176.02	8/18/89	171.42	9/27/89	160.01
7/10/89	176.02	8/19/89	171.02	9/28/89	160.01
7/11/89	176.02	8/20/89	159.41	9/29/89	158.35
7/12/89	163.18	8/21/89	157.26	9/30/89	122.89
7/13/89	161.32	8/22/89	155.64	10/2/89	121.10
7/14/89	160.41	8/23/89	160.33	10/5/89	120.21
7/15/89	159.31	8/24/89	162.50		
7/16/89	160.08	8/25/89	162.57		

* Water level measured below the top of the casing in feet

W-21

Elevation of the top of the well casing: 4,784 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	125.20	7/17/89	133.53	8/26/89	133.59
6/8/89	126.90	7/18/89	133.52	8/27/89	133.62
6/9/89	124.21	7/19/89	133.52	8/28/89	133.59
6/10/89	127.66	7/20/89	133.49	8/29/89	133.59
6/11/89	128.71	7/21/89	133.53	8/30/89	133.62
6/12/89	129.38	7/22/89	133.68	8/31/89	133.59
6/13/89	--	7/23/89	133.52	9/1/89	133.59
6/14/89	--	7/24/89	133.53	9/2/89	133.59
6/15/89	130.56	7/25/89	133.50	9/3/89	133.59
6/16/89	131.26	7/26/89	133.78	9/4/89	133.59
6/17/89	130.68	7/27/89	133.56	9/5/89	117.79
6/18/89	131.35	7/28/89	133.59	9/6/89	132.69
6/19/89	132.12	7/29/89	133.59	9/7/89	133.65
6/20/89	132.50	7/30/89	133.59	9/8/89	133.58
6/21/89	133.05	7/31/89	133.59	9/9/89	132.62
6/22/89	132.47	8/1/89	133.59	9/10/89	133.62
6/23/89	133.20	8/2/89	133.59	9/11/89	133.78
6/24/89	133.30	8/3/89	133.56	9/12/89	133.68
6/25/89	133.40	8/4/89	133.59	9/13/89	133.62
6/26/89	133.42	8/5/89	133.59	9/14/89	133.59
6/27/89	133.46	8/6/89	133.56	9/15/89	133.62
6/28/89	133.46	8/7/89	--	9/16/89	132.70
6/29/89	133.43	8/8/89	133.53	9/17/89	132.87
6/30/89	133.46	8/9/89	133.56	9/18/89	133.59
7/1/89	133.46	8/10/89	133.62	9/19/89	133.56
7/2/89	133.46	8/11/89	133.62	9/20/89	129.06
7/3/89	133.49	8/12/89	133.52	9/21/89	132.41
7/4/89	133.49	8/13/89	133.59	9/22/89	132.44
7/5/89	133.49	8/14/89	133.53	9/23/89	133.62
7/6/89	133.52	8/15/89	133.56	9/24/89	133.56
7/7/89	133.52	8/16/89	133.56	9/25/89	133.59
7/8/89	133.49	8/17/89	133.59	9/26/89	132.31
7/9/89	133.49	8/18/89	133.59	9/27/89	133.59
7/10/89	133.52	8/19/89	133.61	9/28/89	117.85
7/11/89	133.49	8/20/89	133.59	9/29/89	117.25
7/12/89	133.49	8/21/89	133.61	9/30/89	116.74
7/13/89	133.53	8/22/89	133.62	10/2/89	116.00
7/14/89	133.49	8/23/89	133.59	10/5/89	115.20
7/15/89	133.57	8/24/89	133.65		
7/16/89	133.53	8/25/89	133.59		

* Water level measured below the top of the casing in feet

W-1a

Elevation of the top of the well casing: 4,778.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	111.29	7/17/89	123.33	8/26/89	116.97
6/8/89	114.35	7/18/89	123.27	8/27/89	117.44
6/9/89	111.78	7/19/89	123.78	8/28/89	116.55
6/10/89	114.13	7/20/89	123.94	8/29/89	116.23
6/11/89	116.17	7/21/89	123.78	8/30/89	117.48
6/12/89	114.60	7/22/89	122.54	8/31/89	115.85
6/13/89	--	7/23/89	123.11	9/1/89	115.53
6/14/89	--	7/24/89	123.43	9/2/89	115.41
6/15/89	116.23	7/25/89	123.71	9/3/89	115.12
6/16/89	115.79	7/26/89	123.28	9/4/89	114.87
6/17/89	114.71	7/27/89	123.87	9/5/89	109.58
6/18/89	115.82	7/28/89	124.00	9/6/89	114.71
6/19/89	116.42	7/29/89	123.46	9/7/89	115.34
6/20/89	115.50	7/30/89	124.00	9/8/89	114.42
6/21/89	114.40	7/31/89	123.27	9/9/89	114.07
6/22/89	115.09	8/1/89	122.60	9/10/89	114.89
6/23/89	115.20	8/2/89	122.98	9/11/89	114.29
6/24/89	114.30	8/3/89	124.06	9/12/89	114.57
6/25/89	115.55	8/4/89	123.14	9/13/89	114.32
6/26/89	116.01	8/5/89	123.24	9/14/89	116.11
6/27/89	122.54	8/6/89	122.47	9/15/89	115.57
6/28/89	123.04	8/7/89	--	9/16/89	114.48
6/29/89	123.81	8/8/89	123.75	9/17/89	115.03
6/30/89	122.22	8/9/89	122.57	9/18/89	115.09
7/1/89	122.41	8/10/89	123.77	9/19/89	114.55
7/2/89	122.30	8/11/89	123.30	9/20/89	111.08
7/3/89	122.66	8/12/89	122.92	9/21/89	113.56
7/4/89	122.40	8/13/89	122.82	9/22/89	113.78
7/5/89	122.50	8/14/89	123.62	9/23/89	113.91
7/6/89	122.28	8/15/89	122.25	9/24/89	115.41
7/7/89	122.25	8/16/89	120.34	9/25/89	114.42
7/8/89	123.71	8/17/89	122.12	9/26/89	114.33
7/9/89	123.05	8/18/89	120.02	9/27/89	115.79
7/10/89	122.34	8/19/89	121.07	9/28/89	114.99
7/11/89	123.08	8/20/89	122.14	9/29/89	112.48
7/12/89	123.14	8/21/89	121.07	9/30/89	112.42
7/13/89	123.08	8/22/89	121.45	10/2/89	109.20
7/14/89	121.58	8/23/89	119.20	10/5/89	108.00
7/15/89	122.50	8/24/89	118.49		
7/16/89	124.50	8/25/89	116.74		

* Water level measured below the top of the casing in feet

W-17a

Elevation of the top of the well casing: 4,784.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	119.98	7/17/89	121.69	8/26/89	120.89
6/8/89	120.50	7/18/89	121.85	8/27/89	120.38
6/9/89	114.98	7/19/89	121.97	8/28/89	120.35
6/10/89	115.87	7/20/89	121.94	8/29/89	120.38
6/11/89	116.89	7/21/89	121.97	8/30/89	120.41
6/12/89	116.60	7/22/89	121.97	8/31/89	120.35
6/13/89	--	7/23/89	122.10	9/1/89	120.44
6/14/89	--	7/24/89	122.10	9/2/89	120.35
6/15/89	118.45	7/25/89	122.13	9/3/89	120.44
6/16/89	118.45	7/26/89	122.07	9/4/89	120.41
6/17/89	118.23	7/27/89	122.26	9/5/89	118.50
6/18/89	118.58	7/28/89	122.42	9/6/89	119.74
6/19/89	118.77	7/29/89	122.36	9/7/89	119.99
6/20/89	118.20	7/30/89	122.42	9/8/89	119.96
6/21/89	118.84	7/31/89	122.26	9/9/89	120.02
6/22/89	115.01	8/1/89	122.26	9/10/89	120.57
6/23/89	118.60	8/2/89	122.29	9/11/89	120.15
6/24/89	118.53	8/3/89	122.36	9/12/89	120.09
6/25/89	118.79	8/4/89	122.32	9/13/89	119.93
6/26/89	118.91	8/5/89	122.23	9/14/89	120.00
6/27/89	118.95	8/6/89	122.23	9/15/89	120.03
6/28/89	119.36	8/7/89	--	9/16/89	120.03
6/29/89	119.68	8/8/89	121.50	9/17/89	119.90
6/30/89	119.68	8/9/89	121.21	9/18/89	119.93
7/1/89	119.84	8/10/89	121.88	9/19/89	120.06
7/2/89	120.00	8/11/89	121.72	9/20/89	118.63
7/3/89	120.25	8/12/89	121.50	9/21/89	119.36
7/4/89	120.41	8/13/89	121.94	9/22/89	119.71
7/5/89	120.57	8/14/89	121.81	9/23/89	119.87
7/6/89	120.67	8/15/89	121.59	9/24/89	119.68
7/7/89	120.76	8/16/89	121.62	9/25/89	119.71
7/8/89	121.02	8/17/89	121.94	9/26/89	119.55
7/9/89	121.15	8/18/89	121.50	9/27/89	122.29
7/10/89	121.21	8/19/89	121.62	9/28/89	112.32
7/11/89	121.46	8/20/89	121.83	9/29/89	121.34
7/12/89	121.72	8/21/89	121.54	9/30/89	120.76
7/13/89	121.72	8/22/89	121.62	10/2/89	116.50
7/14/89	121.59	8/23/89	121.37	10/5/89	115.54
7/15/89	121.69	8/24/89	121.21		
7/16/89	121.85	8/25/89	120.83		

* Water level measured below the top of the casing in feet

W-10a

Elevation of the top of the well casing: 4,775.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	103.05	7/17/89	117.43	8/26/89	117.73
6/8/89	103.10	7/18/89	117.00	8/27/89	117.26
6/9/89	103.15	7/19/89	117.40	8/28/89	118.17
6/10/89	103.20	7/20/89	117.39	8/29/89	116.85
6/11/89	103.25	7/21/89	117.39	8/30/89	117.24
6/12/89	103.35	7/22/89	117.10	8/31/89	118.00
6/13/89	103.50	7/23/89	116.96	9/1/89	118.03
6/14/89	103.50	7/24/89	117.43	9/2/89	117.86
6/15/89	103.40	7/25/89	117.06	9/3/89	118.03
6/16/89	103.40	7/26/89	116.68	9/4/89	117.98
6/17/89	103.45	7/27/89	116.14	9/5/89	105.80
6/18/89	103.60	7/28/89	116.46	9/6/89	116.43
6/19/89	103.45	7/29/89	116.57	9/7/89	117.18
6/20/89	103.45	7/30/89	116.63	9/8/89	116.69
6/21/89	103.80	7/31/89	116.42	9/9/89	116.83
6/22/89	103.75	8/1/89	115.84	9/10/89	116.97
6/23/89	102.90	8/2/89	116.16	9/11/89	116.67
6/24/89	103.75	8/3/89	117.42	9/12/89	119.88
6/25/89	103.75	8/4/89	117.07	9/13/89	119.71
6/26/89	103.90	8/5/89	117.69	9/14/89	119.50
6/27/89	103.80	8/6/89	116.95	9/15/89	118.87
6/28/89	104.25	8/7/89	--	9/16/89	117.83
6/29/89	104.30	8/8/89	116.87	9/17/89	117.46
6/30/89	104.45	8/9/89	117.12	9/18/89	118.93
7/1/89	104.45	8/10/89	118.02	9/19/89	119.64
7/2/89	104.70	8/11/89	117.94	9/20/89	112.88
7/3/89	116.75	8/12/89	118.06	9/21/89	117.40
7/4/89	107.93	8/13/89	118.26	9/22/89	120.45
7/5/89	112.84	8/14/89	117.40	9/23/89	120.45
7/6/89	118.80	8/15/89	116.83	9/24/89	120.47
7/7/89	118.25	8/16/89	116.54	9/25/89	120.44
7/8/89	120.20	8/17/89	118.62	9/26/89	120.44
7/9/89	116.91	8/18/89	117.75	9/27/89	120.54
7/10/89	117.28	8/19/89	118.51	9/28/89	120.50
7/11/89	117.35	8/20/89	117.97	9/29/89	120.39
7/12/89	117.78	8/21/89	117.57	9/30/89	105.01
7/13/89	117.55	8/22/89	117.64	10/2/89	105.50
7/14/89	116.66	8/23/89	116.79	10/5/89	105.01
7/15/89	116.80	8/24/89	117.32		
7/16/89	117.50	8/25/89	117.12		

* Water level measured below the top of the casing in feet

W-4a

Elevation of the top of the well casing: 4,786.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	115.25	7/17/89	118.70	8/26/89	119.40
6/8/89	115.40	7/18/89	118.95	8/27/89	119.30
6/9/89	115.50	7/19/89	118.95	8/28/89	119.50
6/10/89	115.60	7/20/89	118.80	8/29/89	119.45
6/11/89	115.75	7/21/89	118.85	8/30/89	119.20
6/12/89	115.95	7/22/89	118.90	8/31/89	119.40
6/13/89	116.10	7/23/89	118.95	9/1/89	119.55
6/14/89	116.15	7/24/89	118.95	9/2/89	--
6/15/89	116.05	7/25/89	118.95	9/3/89	119.50
6/16/89	116.05	7/26/89	119.05	9/4/89	119.50
6/17/89	116.05	7/27/89	119.05	9/5/89	118.45
6/18/89	116.25	7/28/89	119.05	9/6/89	119.10
6/19/89	116.20	7/29/89	119.05	9/7/89	119.20
6/20/89	116.20	7/30/89	119.15	9/8/89	119.40
6/21/89	116.45	7/31/89	118.60	9/9/89	119.42
6/22/89	116.45	8/1/89	119.10	9/10/89	119.40
6/23/89	116.55	8/2/89	119.20	9/11/89	119.33
6/24/89	116.50	8/3/89	119.15	9/12/89	119.40
6/25/89	116.50	8/4/89	119.30	9/13/89	119.40
6/26/89	116.65	8/5/89	119.45	9/14/89	119.30
6/27/89	116.80	8/6/89	119.50	9/15/89	119.25
6/28/89	117.05	8/7/89	--	9/16/89	119.30
6/29/89	117.15	8/8/89	119.30	9/17/89	119.10
6/30/89	117.35	8/9/89	119.30	9/18/89	119.15
7/1/89	117.40	8/10/89	119.40	9/19/89	119.30
7/2/89	117.60	8/11/89	119.45	9/20/89	118.40
7/3/89	117.95	8/12/89	119.45	9/21/89	119.00
7/4/89	117.80	8/13/89	119.48	9/22/89	119.30
7/5/89	118.00	8/14/89	119.51	9/23/89	119.20
7/6/89	118.25	8/15/89	119.40	9/24/89	119.20
7/7/89	118.25	8/16/89	119.55	9/25/89	119.50
7/8/89	118.35	8/17/89	119.50	9/26/89	119.20
7/9/89	118.45	8/18/89	119.55	9/27/89	119.30
7/10/89	118.55	8/19/89	119.50	9/28/89	119.15
7/11/89	118.65	8/20/89	119.40	9/29/89	118.50
7/12/89	118.80	8/21/89	119.35	9/30/89	117.85
7/13/89	118.85	8/22/89	119.45	10/2/89	117.50
7/14/89	118.60	8/23/89	119.20	10/5/89	116.92
7/15/89	118.60	8/24/89	119.35		
7/16/89	118.75	8/25/89	119.35		

* Water level measured below the top of the casing in feet

W-11

Elevation of the top of the well casing: 4,755.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	91.85	7/17/89	94.30	8/26/89	94.65
6/8/89	92.00	7/18/89	94.65	8/27/89	95.05
6/9/89	92.10	7/19/89	94.85	8/28/89	95.20
6/10/89	92.10	7/20/89	94.80	8/29/89	95.25
6/11/89	90.90	7/21/89	94.80	8/30/89	95.20
6/12/89	89.90	7/22/89	94.90	8/31/89	95.30
6/13/89	91.25	7/23/89	94.90	9/1/89	95.45
6/14/89	92.50	7/24/89	94.95	9/2/89	95.40
6/15/89	93.00	7/25/89	94.95	9/3/89	95.45
6/16/89	93.10	7/26/89	95.05	9/4/89	95.50
6/17/89	93.15	7/27/89	95.00	9/5/89	94.75
6/18/89	92.10	7/28/89	95.05	9/6/89	95.15
6/19/89	92.35	7/29/89	95.05	9/7/89	95.20
6/20/89	91.60	7/30/89	95.10	9/8/89	95.30
6/21/89	91.75	7/31/89	95.15	9/9/89	94.75
6/22/89	92.75	8/1/89	95.15	9/10/89	94.82
6/23/89	93.10	8/2/89	93.15	9/11/89	92.95
6/24/89	91.60	8/3/89	95.10	9/12/89	94.25
6/25/89	92.50	8/4/89	95.20	9/13/89	94.95
6/26/89	93.20	8/5/89	95.30	9/14/89	95.20
6/27/89	93.55	8/6/89	95.35	9/15/89	95.40
6/28/89	94.00	8/7/89	--	9/16/89	95.40
6/29/89	94.05	8/8/89	94.95	9/17/89	95.40
6/30/89	94.30	8/9/89	95.10	9/18/89	95.45
7/1/89	94.35	8/10/89	95.20	9/19/89	95.50
7/2/89	94.50	8/11/89	94.00	9/20/89	94.85
7/3/89	94.55	8/12/89	94.95	9/21/89	92.80
7/4/89	94.55	8/13/89	95.20	9/22/89	94.20
7/5/89	94.55	8/14/89	95.30	9/23/89	94.40
7/6/89	94.65	8/15/89	95.32	9/24/89	95.20
7/7/89	94.65	8/16/89	95.30	9/25/89	95.40
7/8/89	94.70	8/17/89	95.35	9/26/89	85.50
7/9/89	94.80	8/18/89	95.45	9/27/89	95.50
7/10/89	94.90	8/19/89	95.45	9/28/89	94.35
7/11/89	94.95	8/20/89	95.50	9/29/89	93.40
7/12/89	94.80	8/21/89	95.60	9/30/89	91.55
7/13/89	94.90	8/22/89	93.65	10/5/89	88.97
7/14/89	93.05	8/23/89	82.00		
7/15/89	92.70	8/24/89	92.80		
7/16/89	94.35	8/25/89	94.45		

* Water level measured below the top of the casing in feet

W-16a

Elevation of the top of the well casing: 4,732.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	60.75	7/17/89	62.50	8/26/89	63.70
6/8/89	59.85	7/18/89	62.80	8/27/89	63.40
6/9/89	59.90	7/19/89	62.85	8/28/89	63.55
6/10/89	59.90	7/20/89	62.75	8/29/89	63.50
6/11/89	59.85	7/21/89	62.80	8/30/89	63.35
6/12/89	59.75	7/22/89	62.85	8/31/89	63.50
6/13/89	59.95	7/23/89	62.90	9/1/89	63.65
6/14/89	60.15	7/24/89	62.90	9/2/89	63.50
6/15/89	60.10	7/25/89	62.95	9/3/89	63.70
6/16/89	60.05	7/26/89	63.05	9/4/89	63.65
6/17/89	60.05	7/27/89	62.95	9/5/89	63.40
6/18/89	60.15	7/28/89	62.95	9/6/89	63.50
6/19/89	59.95	7/29/89	63.05	9/7/89	63.60
6/20/89	59.95	7/30/89	63.10	9/8/89	63.68
6/21/89	60.35	7/31/89	63.10	9/9/89	62.50
6/22/89	60.55	8/1/89	63.00	9/10/89	62.65
6/23/89	59.70	8/2/89	63.05	9/11/89	63.20
6/24/89	60.20	8/3/89	63.00	9/12/89	53.50
6/25/89	60.50	8/4/89	63.15	9/13/89	43.70
6/26/89	60.80	8/5/89	63.30	9/14/89	63.70
6/27/89	61.00	8/6/89	63.40	9/15/89	63.75
6/28/89	61.20	8/7/89	--	9/16/89	63.75
6/29/89	61.25	8/8/89	63.10	9/17/89	63.60
6/30/89	61.40	8/9/89	63.15	9/18/89	63.65
7/1/89	61.45	8/10/89	63.30	9/19/89	63.80
7/2/89	61.65	8/11/89	63.20	9/20/89	63.75
7/3/89	61.80	8/12/89	63.35	9/21/89	63.20
7/4/89	61.75	8/13/89	63.37	9/22/89	63.60
7/5/89	61.85	8/14/89	63.34	9/23/89	63.70
7/6/89	62.05	8/15/89	63.36	9/24/89	63.80
7/7/89	62.05	8/16/89	63.30	9/25/89	64.00
7/8/89	62.15	8/17/89	63.50	9/26/89	63.90
7/9/89	62.25	8/18/89	63.55	9/27/89	64.00
7/10/89	62.35	8/19/89	63.60	9/28/89	64.05
7/11/89	62.50	8/20/89	63.65	9/29/89	63.75
7/12/89	62.65	8/21/89	63.65	9/30/89	63.20
7/13/89	62.70	8/22/89	63.15	10/5/89	61.96
7/14/89	62.05	8/23/89	62.55		
7/15/89	61.85	8/24/89	62.75		
7/16/89	62.25	8/25/8	63.30		

* Water level measured below the top of the casing in feet

WS-13

Elevation of the top of the well casing: 4,722.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	62.55	7/17/89	67.00	8/26/89	67.55
6/8/89	62.60	7/18/89	67.65	8/27/89	67.70
6/9/89	62.75	7/19/89	67.65	8/28/89	67.85
6/10/89	62.85	7/20/89	67.25	8/29/89	67.95
6/11/89	61.20	7/21/89	67.40	8/30/89	67.90
6/12/89	59.25	7/22/89	67.45	8/31/89	67.95
6/13/89	62.25	7/23/89	67.50	9/1/89	68.15
6/14/89	64.30	7/24/89	67.70	9/2/89	68.00
6/15/89	63.80	7/25/89	67.70	9/3/89	68.05
6/16/89	64.95	7/26/89	67.75	9/4/89	68.10
6/17/89	58.80	7/27/89	67.75	9/5/89	67.95
6/18/89	63.85	7/28/89	67.90	9/6/89	67.70
6/19/89	62.30	7/29/89	67.95	9/7/89	67.70
6/20/89	60.40	7/30/89	68.25	9/8/89	66.95
6/21/89	61.30	7/31/89	68.05	9/9/89	67.13
6/22/89	64.65	8/1/89	68.05	9/10/89	67.45
6/23/89	65.00	8/2/89	68.05	9/11/89	60.10
6/24/89	58.35	8/3/89	67.85	9/12/89	66.80
6/25/89	64.80	8/4/89	68.10	9/13/89	67.13
6/26/89	65.50	8/5/89	68.15	9/14/89	68.05
6/27/89	65.85	8/6/89	68.25	9/15/89	68.15
6/28/89	66.15	8/7/89	--	9/16/89	68.20
6/29/89	66.30	8/8/89	67.65	9/17/89	68.15
6/30/89	66.35	8/9/89	67.80	9/18/89	68.20
7/1/89	66.55	8/10/89	67.85	9/19/89	68.20
7/2/89	66.65	8/11/89	65.55	9/20/89	65.50
7/3/89	66.70	8/12/89	67.79	9/21/89	59.80
7/4/89	66.75	8/13/89	68.07	9/22/89	66.60
7/5/89	66.70	8/14/89	68.21	9/23/89	67.50
7/6/89	66.80	8/15/89	68.18	9/24/89	67.90
7/7/89	67.00	8/16/89	68.05	9/25/89	68.00
7/8/89	67.15	8/17/89	68.30	9/26/89	68.20
7/9/89	67.35	8/18/89	68.35	9/27/89	68.25
7/10/89	67.45	8/19/89	68.40	9/28/89	65.70
7/11/89	67.50	8/20/89	68.45	9/29/89	63.55
7/12/89	67.55	8/21/89	68.55	9/30/89	59.25
7/13/89	67.55	8/22/89	61.15	10/5/89	56.23
7/14/89	61.25	8/23/89	58.70		
7/15/89	59.95	8/24/89	66.10		
7/16/89	66.45	8/25/89	67.00		

* Water level measured below the top of the casing in feet

WS-14

Elevation of the top of the well casing: 4,722.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	50.50	7/17/89	55.70	8/26/89	57.10
6/8/89	50.65	7/18/89	56.05	8/27/89	56.65
6/9/89	50.60	7/19/89	56.20	8/28/89	56.70
6/10/89	50.70	7/20/89	56.10	8/29/89	56.75
6/11/89	50.40	7/21/89	56.20	8/30/89	56.70
6/12/89	49.90	7/22/89	56.25	8/31/89	56.50
6/13/89	50.10	7/23/89	56.30	9/1/89	56.60
6/14/89	50.55	7/24/89	56.35	9/2/89	56.60
6/15/89	50.80	7/25/89	56.35	9/3/89	56.65
6/16/89	50.85	7/26/89	56.45	9/4/89	56.70
6/17/89	50.35	7/27/89	56.40	9/5/89	56.65
6/18/89	50.70	7/28/89	56.40	9/6/89	56.55
6/19/89	50.60	7/29/89	56.45	9/7/89	57.25
6/20/89	50.50	7/30/89	56.50	9/8/89	57.10
6/21/89	51.25	7/31/89	56.50	9/9/89	57.00
6/22/89	52.00	8/1/89	56.45	9/10/89	57.45
6/23/89	52.25	8/2/89	56.50	9/11/89	54.75
6/24/89	50.70	8/3/89	56.35	9/12/89	56.80
6/25/89	51.90	8/4/89	56.35	9/13/89	57.40
6/26/89	53.05	8/5/89	56.65	9/14/89	57.65
6/27/89	53.70	8/6/89	56.70	9/15/89	57.80
6/28/89	53.80	8/7/89	--	9/16/89	57.90
6/29/89	54.00	8/8/89	56.45	9/17/89	57.65
6/30/89	54.10	8/9/89	56.65	9/18/89	57.70
7/1/89	58.00	8/10/89	56.75	9/19/89	56.25
7/2/89	54.40	8/11/89	56.75	9/20/89	55.80
7/3/89	54.45	8/12/89	56.86	9/21/89	54.50
7/4/89	54.20	8/13/89	57.02	9/22/89	56.50
7/5/89	54.25	8/14/89	56.96	9/23/89	57.00
7/6/89	54.35	8/15/89	56.96	9/24/89	57.30
7/7/89	54.75	8/16/89	56.80	9/25/89	57.90
7/8/89	55.15	8/17/89	57.25	9/26/89	58.40
7/9/89	55.40	8/18/89	57.40	9/27/89	58.80
7/10/89	55.50	8/19/89	57.45	9/28/89	58.80
7/11/89	55.70	8/20/89	57.60	9/29/89	58.20
7/12/89	55.85	8/21/89	57.65	9/30/89	56.90
7/13/89	55.85	8/22/89	54.95	10/5/89	52.88
7/14/89	53.75	8/23/89	53.55		
7/15/89	53.20	8/24/89	56.15		
7/16/89	54.30	8/25/89	56.75		

* Water level measured below the top of the casing in feet

WS-25

Elevation of the top of the well casing: 4,722.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	49.15	7/17/89	52.15	8/26/89	53.75
6/8/89	49.15	7/18/89	52.35	8/27/89	53.55
6/9/89	49.15	7/19/89	52.45	8/28/89	53.65
6/10/89	49.25	7/20/89	52.35	8/29/89	53.65
6/11/89	49.15	7/21/89	52.45	8/30/89	53.60
6/12/89	49.00	7/22/89	52.50	8/31/89	53.70
6/13/89	49.10	7/23/89	52.55	9/1/89	53.75
6/14/89	49.30	7/24/89	52.60	9/2/89	53.70
6/15/89	49.30	7/25/89	52.65	9/3/89	53.80
6/16/89	49.35	7/26/89	52.75	9/4/89	53.80
6/17/89	49.35	7/27/89	52.70	9/5/89	53.75
6/18/89	49.40	7/28/89	52.70	9/6/89	53.80
6/19/89	49.40	7/29/89	52.80	9/7/89	53.95
6/20/89	49.30	7/30/89	52.85	9/8/89	54.10
6/21/89	49.65	7/31/89	52.85	9/9/89	54.05
6/22/89	48.85	8/1/89	52.80	9/10/89	53.95
6/23/89	50.05	8/2/89	52.90	9/11/89	53.20
6/24/89	49.60	8/3/89	52.85	9/12/89	53.92
6/25/89	49.90	8/4/89	52.95	9/13/89	54.15
6/26/89	50.30	8/5/89	53.10	9/14/89	54.20
6/27/89	50.65	8/6/89	53.15	9/15/89	54.30
6/28/89	50.80	8/7/89	--	9/16/89	54.55
6/29/89	50.90	8/8/89	52.95	9/17/89	54.25
6/30/89	50.95	8/9/89	53.05	9/18/89	54.30
7/1/89	56.75	8/10/89	53.20	9/19/89	54.00
7/2/89	51.20	8/11/89	53.20	9/20/89	53.80
7/3/89	51.20	8/12/89	53.22	9/21/89	53.30
7/4/89	51.15	8/13/89	53.34	9/22/89	54.00
7/5/89	51.25	8/14/89	53.33	9/23/89	54.20
7/6/89	51.30	8/15/89	53.36	9/24/89	54.40
7/7/89	51.40	8/16/89	53.30	9/25/89	54.50
7/8/89	51.60	8/17/89	53.55	9/26/89	54.70
7/9/89	51.80	8/18/89	53.65	9/27/89	54.90
7/10/89	51.85	8/19/89	53.70	9/28/89	55.00
7/11/89	52.00	8/20/89	53.75	9/29/89	54.75
7/12/89	52.10	8/21/89	53.75	9/30/89	54.20
7/13/89	52.15	8/22/89	53.00	10/5/89	52.59
7/14/89	51.35	8/23/89	52.80		
7/15/89	51.25	8/24/89	53.20		
7/16/89	51.85	8/25/89	53.50		

* Water level measured below the top of the casing in feet

CSR-1

Elevation of the top of the well casing: 4,715.49 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	41.95				
6/8/89	42.00				
6/9/89	42.10				
6/10/89	42.15				
6/11/89	42.20				
6/12/89	42.25				
6/13/89	42.25				
6/14/89	42.30				
6/15/89	42.30				
6/16/89	42.40				
6/17/89	42.45				
6/18/89	42.40				
6/19/89	42.40				
6/20/89	42.45				
6/21/89	42.55				
6/22/89	42.60				
6/23/89	42.70				
6/24/89	42.70				
6/25/89	42.70				
6/26/89	42.75				
6/27/89	42.80				
6/28/89	42.95				
6/29/89	43.00				
6/30/89	43.05				
7/1/89	43.05				
7/2/89	43.25				
7/3/89	43.25				
7/4/89	43.35				
7/5/89	43.45				
7/6/89	43.50				
7/7/89	43.55				
7/8/89	43.60				
7/9/89	43.75				
7/10/89	43.80				
7/11/89	44.00				
7/12/89	43.95				

7/13/89 through 10/5/89: dry at 44.05 (bottom of casing).

* Water level measured below the top of the casing in feet

FIR 1

Elevation of the top of the well casing: 4,714.87 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	43.35	7/17/89	48.45	8/26/89	49.75
6/8/89	43.45	7/18/89	48.75	8/27/89	49.40
6/9/89	43.40	7/19/89	48.95	8/28/89	49.45
6/10/89	43.50	7/20/89	48.85	8/29/89	49.50
6/11/89	43.20	7/21/89	48.95	8/30/89	49.45
6/12/89	42.65	7/22/89	49.00	8/31/89	49.25
6/13/89	42.85	7/23/89	49.05	9/1/89	57.20
6/14/89	43.35	7/24/89	49.10	9/2/89	57.10
6/15/89	43.35	7/25/89	49.10	9/3/89	57.20
6/16/89	43.60	7/26/89	49.20	9/4/89	57.20
6/17/89	43.10	7/27/89	49.10	9/5/89	57.10
6/18/89	43.45	7/28/89	49.15	9/6/89	49.30
6/19/89	43.40	7/29/89	49.15	9/7/89	49.50
6/20/89	43.25	7/30/89	48.90	9/8/89	49.95
6/21/89	44.00	7/31/89	49.25	9/9/89	49.76
6/22/89	44.75	8/1/89	49.20	9/10/89	49.80
6/23/89	45.00	8/2/89	49.20	9/11/89	47.53
6/24/89	43.55	8/3/89	49.15	9/12/89	49.50
6/25/89	44.70	8/4/89	49.10	9/13/89	50.02
6/26/89	45.80	8/5/89	49.40	9/14/89	50.25
6/27/89	46.45	8/6/89	49.45	9/15/89	50.35
6/28/89	46.55	8/7/89	--	9/16/89	50.40
6/29/89	46.70	8/8/89	49.20	9/17/89	50.20
6/30/89	46.75	8/9/89	49.35	9/18/89	50.25
7/1/89	47.10	8/10/89	49.45	9/19/89	49.00
7/2/89	47.15	8/11/89	49.45	9/20/89	48.60
7/3/89	47.20	8/12/89	49.56	9/21/89	47.30
7/4/89	46.95	8/13/89	49.68	9/22/89	49.30
7/5/89	47.00	8/14/89	49.64	9/23/89	49.70
7/6/89	47.60	8/15/89	49.65	9/24/89	50.00
7/7/89	47.50	8/16/89	49.50	9/25/89	50.30
7/8/89	47.90	8/17/89	49.85	9/26/89	50.70
7/9/89	48.15	8/18/89	49.95	9/27/89	50.90
7/10/89	48.25	8/19/89	49.95	9/28/89	51.00
7/11/89	48.45	8/20/89	50.00	9/29/89	50.75
7/12/89	48.60	8/21/89	50.05	9/30/89	49.70
7/13/89	48.70	8/22/89	47.75	10/5/89	45.68
7/14/89	46.50	8/23/89	46.35		
7/15/89	46.00	8/24/89	48.90		
7/16/89	42.20	8/25/89	49.45		

* Water level measured below the top of the casing in feet

DOE 17

Elevation of the top of the well casing: 4,715.18 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	51.45	7/17/89	56.15	8/26/89	56.60
6/8/89	--	7/18/89	85.80**	8/27/89	56.80
6/9/89	51.60	7/19/89	55.95	8/28/89	56.90
6/10/89	51.85	7/20/89	56.00	8/29/89	57.00
6/11/89	50.95	7/21/89	56.25	8/30/89	56.90
6/12/89	49.50	7/22/89	56.30	8/31/89	57.00
6/13/89	51.20	7/23/89	56.50	9/1/89	49.35
6/14/89	52.55	7/24/89	56.75	9/2/89	49.35
6/15/89	53.15	7/25/89	56.80	9/3/89	49.40
6/16/89	52.50	7/26/89	56.95	9/4/89	49.45
6/17/89	49.95	7/27/89	57.00	9/5/89	49.40
6/18/89	51.80	7/28/89	57.10	9/6/89	56.95
6/19/89	51.90	7/29/89	57.10	9/7/89	56.95
6/20/89	50.55	7/30/89	54.95	9/8/89	56.95
6/21/89	50.95	7/31/89	57.05	9/9/89	56.06
6/22/89	52.80	8/1/89	57.05	9/10/89	56.65
6/23/89	53.10	8/2/89	57.10	9/11/89	52.35
6/24/89	50.30	8/3/89	57.05	9/12/89	55.90
6/25/89	52.70	8/4/89	57.20	9/13/89	56.60
6/26/89	53.60	8/5/89	57.35	9/14/89	56.95
6/27/89	64.15	8/6/89	57.45	9/15/89	57.00
6/28/89	54.30	8/7/89	--	9/16/89	57.10
6/29/89	54.55	8/8/89	57.05	9/17/89	57.10
6/30/89	54.65	8/9/89	57.20	9/18/89	57.10
7/1/89	54.75	8/10/89	57.30	9/19/89	57.20
7/2/89	55.00	8/11/89	56.25	9/20/89	56.30
7/3/89	55.10	8/12/89	57.22	9/21/89	52.10
7/4/89	55.20	8/13/89	57.40	9/22/89	55.90
7/5/89	55.30	8/14/89	57.07	9/23/89	56.70
7/6/89	55.45	8/15/89	57.02	9/24/89	56.90
7/7/89	55.65	8/16/89	56.95	9/25/89	57.10
7/8/89	55.90	8/17/89	57.15	9/26/89	57.20
7/9/89	56.15	8/18/89	57.20	9/27/89	57.30
7/10/89	56.25	8/19/89	57.25	9/28/89	56.30
7/11/89	56.45	8/20/89	57.35	9/29/89	55.15
7/12/89	56.55	8/21/89	57.40	9/30/89	52.85
7/13/89	56.65	8/22/89	53.40	10/5/89	49.27
7/14/89	53.10	8/23/89	51.35		
7/15/89	52.80	8/24/89	55.3		
7/16/89	54.75	8/25/89	56.10		

* Water level measured below the top of the casing in feet

** Water level measured after sample purging

DW-4

Elevation of the top of the well casing: 4,744.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	120.00	7/17/89	124.45	8/26/89	124.70
6/8/89	--	7/18/89	124.65	8/27/89	123.90
6/9/89	--	7/19/89	124.70	8/28/89	124.15
6/10/89	120.30/120.55**	7/20/89	124.75	8/29/89	124.20
6/11/89	116.80	7/21/89	124.45	8/30/89	124.05
6/12/89	116.80	7/22/89	124.90	8/31/89	124.80
6/13/89	119.25	7/23/89	124.90	9/1/89	125.50
6/14/89	119.25	7/24/89	124.80	9/2/89	125.20
6/15/89	118.70	7/25/89	124.80	9/3/89	125.15
6/16/89	118.80	7/26/89	125.30	9/4/89	125.10
6/17/89	75.65	7/27/89	124.70	9/5/89	124.65
6/18/89	118.45	7/28/89	125.00	9/6/89	121.80
6/19/89	85.65	7/29/89	125.35	9/7/89	121.60
6/20/89	104.40	7/30/89	125.40	9/8/89	90.15
6/21/89	113.85	7/31/89	125.45	9/9/89	105.90
6/22/89	119.70	8/1/89	125.65	9/10/89	124.40
6/23/89	103.65	8/2/89	125.50	9/11/89	78.15
6/24/89	76.05	8/3/89	124.65	9/12/89	124.35
6/25/89	120.75	8/4/89	125.65	9/13/89	124.95
6/26/89	121.60	8/5/89	125.80	9/14/89	124.90
6/27/89	121.80	8/6/89	125.75	9/15/89	125.15
6/28/89	122.25	8/7/89	--	9/16/89	125.80
6/29/89	122.50	8/8/89	124.95	9/17/89	124.90
6/30/89	122.95	8/9/89	125.60	9/18/89	125.15
7/1/89	123.40	8/10/89	124.90	9/19/89	125.05
7/2/89	123.40	8/11/89	87.55	9/20/89	92.90
7/3/89	123.70	8/12/89	125.45	9/21/89	77.90
7/4/89	123.50	8/13/89	126.18	9/22/89	75.30
7/5/89	123.70	8/14/89	125.94	9/23/89	123.10
7/6/89	123.80	8/15/89	125.92	9/24/89	122.60
7/7/89	123.85	8/16/89	125.95	9/25/89	122.00
7/8/89	123.70	8/17/89	126.05	9/26/89	121.70
7/9/89	124.35	8/18/89	126.45	9/27/89	122.06
7/10/89	124.80	8/19/89	126.25	9/28/89	82.76
7/11/89	124.65	8/20/89	126.45	9/29/89	80.74
7/12/89	124.90	8/21/89	126.40	9/30/89	77.75
7/13/89	124.95	8/22/89	80.50	10/2/89	75.70
7/14/89	111.40	8/23/89	76.65	10/5/89	74.30
7/15/89	101.75	8/24/89	123.00		
7/16/89	123.40	8/25/89	124.20		

* Water level measured below the top of the casing in feet

** Water level at 0900 hours/water level at 1300 hours

OW-12

Elevation of the top of the well casing: 4,742.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	72.85	7/17/89	76.90	8/26/89	77.80
6/8/89	--	7/18/89	77.20	8/27/89	77.45
6/9/89	--	7/19/89	77.35	8/28/89	77.55
6/10/89	--	7/20/89	77.05	8/29/89	77.65
6/11/89	--	7/21/89	77.05	8/30/89	77.50
6/12/89	--	7/22/89	77.15	8/31/89	77.50
6/13/89	73.20	7/23/89	77.20	9/1/89	77.70
6/14/89	72.70	7/24/89	77.20	9/2/89	77.60
6/15/89	72.80	7/25/89	77.20	9/3/89	77.70
6/16/89	72.85	7/26/89	77.35	9/4/89	77.70
6/17/89	70.95	7/27/89	77.25	9/5/89	77.60
6/18/89	72.65	7/28/89	77.25	9/6/89	77.45
6/19/89	71.50	7/29/89	77.35	9/7/89	77.50
6/20/89	71.50	7/30/89	77.35	9/8/89	76.10
6/21/89	72.95	7/31/89	77.40	9/9/89	77.45
6/22/89	73.75	8/1/89	77.35	9/10/89	77.70
6/23/89	73.95	8/2/89	77.30	9/11/89	74.25
6/24/89	70.95	8/3/89	77.10	9/12/89	77.57
6/25/89	73.50	8/4/89	77.30	9/13/89	77.95
6/26/89	73.95	8/5/89	77.55	9/14/89	78.05
6/27/89	74.25	8/6/89	77.60	9/15/89	78.15
6/28/89	74.30	8/7/89	--	9/16/89	78.00
6/29/89	74.50	8/8/89	77.25	9/17/89	78.00
6/30/89	74.50	8/9/89	77.40	9/18/89	78.10
7/1/89	75.55	8/10/89	77.45	9/19/89	77.45
7/2/89	75.70	8/11/89	76.50	9/20/89	77.20
7/3/89	75.85	8/12/89	77.55	9/21/89	74.20
7/4/89	75.65	8/13/89	77.69	9/22/89	78.70
7/5/89	75.70	8/14/89	77.60	9/23/89	78.00
7/6/89	75.85	8/15/89	77.60	9/24/89	78.10
7/7/89	76.10	8/16/89	77.45	9/25/89	78.50
7/8/89	76.50	8/17/89	78.00	9/26/89	78.60
7/9/89	76.70	8/18/89	78.10	9/27/89	78.80
7/10/89	76.85	8/19/89	78.20	9/28/89	77.89
7/11/89	77.00	8/20/89	78.25	9/29/89	76.72
7/12/89	77.15	8/21/89	78.30	9/30/89	75.07
7/13/89	77.20	8/22/89	74.45	10/2/89	73.40
7/14/89	75.00	8/23/89	73.35	10/5/89	72.60
7/15/89	73.60	8/24/89	77.00		
7/16/89	76.00	8/25/89	77.45		

* Water level measured below the top of the casing in feet

OW-10

Elevation of the top of the well casing: 4,743.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	67.65	7/17/89	68.15	8/26/89	68.85
6/8/89	--	7/18/89	68.15	8/27/89	68.90
6/9/89	--	7/19/89	68.20	8/28/89	68.90
6/10/89	--	7/20/89	68.25	8/29/89	68.95
6/11/89	--	7/21/89	68.25	8/30/89	68.90
6/12/89	--	7/22/89	68.25	8/31/89	68.95
6/13/89	67.80	7/23/89	68.30	9/1/89	68.95
6/14/89	67.00	7/24/89	68.35	9/2/89	69.00
6/15/89	67.80	7/25/89	68.35	9/3/89	69.00
6/16/89	67.80	7/26/89	68.35	9/4/89	69.05
6/17/89	67.85	7/27/89	68.40	9/5/89	69.05
6/18/89	67.85	7/28/89	68.40	9/6/89	69.05
6/19/89	67.85	7/29/89	68.40	9/7/89	69.05
6/20/89	67.85	7/30/89	68.40	9/8/89	69.05
6/21/89	67.85	7/31/89	68.40	9/9/89	69.10
6/22/89	67.85	8/1/89	68.45	9/10/89	69.15
6/23/89	67.90	8/2/89	68.45	9/11/89	69.14
6/24/89	67.85	8/3/89	68.45	9/12/89	69.15
6/25/89	67.90	8/4/89	68.45	9/13/89	69.10
6/26/89	67.90	8/5/89	68.50	9/14/89	69.15
6/27/89	67.90	8/6/89	68.55	9/15/89	69.20
6/28/89	67.90	8/7/89	--	9/16/89	69.20
6/29/89	67.95	8/8/89	68.55	9/17/89	69.20
6/30/89	67.95	8/9/89	68.60	9/18/89	69.20
7/1/89	67.95	8/10/89	68.60	9/19/89	69.20
7/2/89	68.00	8/11/89	68.60	9/20/89	69.20
7/3/89	68.00	8/12/89	68.63	9/21/89	69.20
7/4/89	68.05	8/13/89	68.63	9/22/89	69.20
7/5/89	68.05	8/14/89	68.65	9/23/89	69.30
7/6/89	68.05	8/15/89	68.68	9/24/89	69.30
7/7/89	68.05	8/16/89	68.70	9/25/89	69.30
7/8/89	68.05	8/17/89	68.70	9/26/89	69.30
7/9/89	68.10	8/18/89	68.70	9/27/89	69.30
7/10/89	68.10	8/19/89	68.75	9/28/89	69.33
7/11/89	68.15	8/20/89	68.75	9/29/89	69.37
7/12/89	68.15	8/21/89	68.75	9/30/89	69.37
7/13/89	68.15	8/22/89	68.80	10/2/89	69.40
7/14/89	68.15	8/23/89	68.80	10/5/89	69.40
7/15/89	68.15	8/24/89	68.80		
7/16/89	68.15	8/25/89	68.85		

* Water level measured below the top of the casing in feet

DW-5

Elevation of the top of the well casing: 4,743.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	103.15	7/17/89	106.80	8/26/89	107.50
6/8/89	--	7/18/89	107.20	8/27/89	107.20
6/9/89	--	7/19/89	107.55	8/28/89	107.40
6/10/89	--	7/20/89	107.50	8/29/89	107.45
6/11/89	--	7/21/89	107.10	8/30/89	107.45
6/12/89	--	7/22/89	107.25	8/31/89	107.80
6/13/89	101.95	7/23/89	107.25	9/1/89	108.20
6/14/89	103.25	7/24/89	107.45	9/2/89	108.10
6/15/89	102.65	7/25/89	107.40	9/3/89	108.15
6/16/89	103.45	7/26/89	107.50	9/4/89	108.10
6/17/89	77.65	7/27/89	107.20	9/5/89	107.85
6/18/89	102.30	7/28/89	107.60	9/6/89	106.35
6/19/89	87.55	7/29/89	107.80	9/7/89	106.30
6/20/89	87.65	7/30/89	107.80	9/8/89	90.15
6/21/89	87.05	7/31/89	107.90	9/9/89	105.28
6/22/89	103.40	8/1/89	107.95	9/10/89	109.20
6/23/89	119.90	8/2/89	107.95	9/11/89	80.12
6/24/89	78.05	8/3/89	107.20	9/12/89	107.05
6/25/89	103.80	8/4/89	108.05	9/13/89	107.97
6/26/89	104.80	8/5/89	108.25	9/14/89	108.20
6/27/89	105.05	8/6/89	108.15	9/15/89	108.30
6/28/89	105.45	8/7/89	--	9/16/89	108.35
6/29/89	105.55	8/8/89	107.50	9/17/89	108.35
6/30/89	105.80	8/9/89	108.00	9/18/89	108.40
7/1/89	106.05	8/10/89	107.30	9/19/89	108.10
7/2/89	106.20	8/11/89	87.10	9/20/89	93.70
7/3/89	106.25	8/12/89	107.70	9/21/89	79.80
7/4/89	106.65	8/13/89	108.58	9/22/89	106.00
7/5/89	106.30	8/14/89	108.28	9/23/89	107.20
7/6/89	106.50	8/15/89	108.33	9/24/89	107.00
7/7/89	106.55	8/16/89	108.25	9/25/89	107.20
7/8/89	106.40	8/17/89	108.50	9/26/89	107.70
7/9/89	107.00	8/18/89	108.65	9/27/89	107.20
7/10/89	107.30	8/19/89	108.70	9/28/89	84.73
7/11/89	107.30	8/20/89	108.75	9/29/89	82.75
7/12/89	107.35	8/21/89	108.80	9/30/89	79.23
7/13/89	107.40	8/22/89	81.50	10/2/89	77.70
7/14/89	93.20	8/23/89	78.60	10/5/89	76.30
7/15/89	82.25	8/24/89	105.80		
7/16/89	106.00	8/25/89	106.95		

* Water level measured below the top of the casing in feet

WW-3

Elevation of the top of the well casing: 4,745.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	104.45	7/17/89	108.15	8/26/89	108.85
6/8/89	--	7/18/89	108.50	8/27/89	108.55
6/9/89	--	7/19/89	108.70	8/28/89	108.75
6/10/89	--	7/20/89	108.70	8/29/89	108.80
6/11/89	--	7/21/89	108.45	8/30/89	108.80
6/12/89	--	7/22/89	108.60	8/31/89	109.15
6/13/89	103.30	7/23/89	108.60	9/1/89	109.60
6/14/89	104.60	7/24/89	108.75	9/2/89	109.40
6/15/89	104.00	7/25/89	108.75	9/3/89	109.45
6/16/89	104.80	7/26/89	109.00	9/4/89	109.45
6/17/89	79.40	7/27/89	108.55	9/5/89	109.20
6/18/89	103.65	7/28/89	108.90	9/6/89	107.75
6/19/89	89.05	7/29/89	109.15	9/7/89	107.65
6/20/89	89.65	7/30/89	109.15	9/8/89	93.85
6/21/89	90.35	7/31/89	109.20	9/9/89	106.60
6/22/89	104.80	8/1/89	109.30	9/10/89	109.10
6/23/89	105.05	8/2/89	109.25	9/11/89	81.90
6/24/89	79.80	8/3/89	108.50	9/12/89	108.40
6/25/89	105.10	8/4/89	109.40	9/13/89	109.35
6/26/89	106.10	8/5/89	109.55	9/14/89	109.35
6/27/89	106.40	8/6/89	109.50	9/15/89	109.65
6/28/89	106.80	8/7/89	--	9/16/89	109.80
6/29/89	106.95	8/8/89	108.80	9/17/89	109.65
6/30/89	107.15	8/9/89	109.35	9/18/89	109.70
7/1/89	107.40	8/10/89	108.70	9/19/89	109.45
7/2/89	107.50	8/11/89	88.80	9/20/89	95.25
7/3/89	107.60	8/12/89	109.04	9/21/89	81.60
7/4/89	107.65	8/13/89	108.93	9/22/89	107.40
7/5/89	107.65	8/14/89	109.62	9/23/89	108.50
7/6/89	107.80	8/15/89	109.66	9/24/89	108.40
7/7/89	107.90	8/16/89	109.60	9/25/89	108.60
7/8/89	107.75	8/17/89	109.85	9/26/89	109.10
7/9/89	108.35	8/18/89	110.00	9/27/89	108.60
7/10/89	108.65	8/19/89	110.05	9/28/89	86.44
7/11/89	108.65	8/20/89	110.10	9/29/89	84.48
7/12/89	108.70	8/21/89	110.10	9/30/89	81.50
7/13/89	108.75	8/22/89	83.25	10/2/89	79.50
7/14/89	94.80	8/23/89	80.40	10/5/89	78.10
7/15/89	84.45	8/24/89	107.20		
7/16/89	107.35	8/25/89	108.30		

* Water level measured below the top of the casing in feet

EM-4

Elevation of the top of the well casing: 4,738.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	91.05	7/17/89	94.85	8/26/89	95.30
6/8/89	--	7/18/89	95.30	8/27/89	95.20
6/9/89	90.40	7/19/89	95.45	8/28/89	95.35
6/10/89	--	7/20/89	95.55	8/29/89	95.40
6/11/89	--	7/21/89	95.15	8/30/89	95.40
6/12/89	--	7/22/89	95.25	8/31/89	95.60
6/13/89	--	7/23/89	95.25	9/1/89	95.95
6/14/89	91.85	7/24/89	95.45	9/2/89	95.75
6/15/89	91.65	7/25/89	95.40	9/3/89	95.80
6/16/89	92.20	7/26/89	95.60	9/4/89	95.80
6/17/89	73.15	7/27/89	95.20	9/5/89	95.60
6/18/89	90.95	7/28/89	95.60	9/6/89	94.60
6/19/89	82.45	7/29/89	95.75	9/7/89	94.55
6/20/89	77.70	7/30/89	95.75	9/8/89	86.40
6/21/89	85.25	7/31/89	95.80	9/9/89	94.00
6/22/89	91.95	8/1/89	95.80	9/10/89	85.40
6/23/89	91.50	8/2/89	95.85	9/11/89	75.15
6/24/89	73.03	8/3/89	95.20	9/12/89	94.60
6/25/89	92.05	8/4/89	95.95	9/13/89	95.50
6/26/89	93.15	8/5/89	96.05	9/14/89	95.90
6/27/89	93.50	8/6/89	96.10	9/15/89	96.00
6/28/89	93.80	8/7/89	--	9/16/89	96.15
6/29/89	93.95	8/8/89	95.40	9/17/89	96.00
6/30/89	94.05	8/9/89	95.80	9/18/89	96.10
7/1/89	94.30	8/10/89	95.25	9/19/89	95.90
7/2/89	94.45	8/11/89	81.90	9/20/89	87.70
7/3/89	94.50	8/12/89	95.54	9/21/89	74.80
7/4/89	94.50	8/13/89	96.32	9/22/89	93.90
7/5/89	94.45	8/14/89	96.08	9/23/89	95.00
7/6/89	94.60	8/15/89	96.07	9/24/89	95.10
7/7/89	94.70	8/16/89	95.95	9/25/89	95.30
7/8/89	94.65	8/17/89	96.25	9/26/89	95.60
7/9/89	95.15	8/18/89	96.35	9/27/89	95.40
7/10/89	95.35	8/19/89	96.35	9/28/89	80.49
7/11/89	95.40	8/20/89	96.35	9/29/89	78.28
7/12/89	95.40	8/21/89	96.40	9/30/89	74.72
7/13/89	95.40	8/22/89	76.60	10/2/89	72.40
7/14/89	81.00	8/23/89	73.60	10/5/89	71.10
7/15/89	72.25	8/24/89	93.70		
7/16/89	89.85	8/25/89	94.75		

* Water level measured below the top of the casing in feet

Exp-4

Elevation of the top of the well casing: 4,724.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	48.85	7/17/89	49.95	8/26/89	50.55
6/8/89	48.90	7/18/89	50.00	8/27/89	50.55
6/9/89	48.90	7/19/89	50.05	8/28/89	50.55
6/10/89	49.00	7/20/89	50.05	8/29/89	50.65
6/11/89	49.10	7/21/89	50.00	8/30/89	50.50
6/12/89	49.10	7/22/89	50.05	8/31/89	50.60
6/13/89	49.30	7/23/89	50.10	9/1/89	50.70
6/14/89	49.20	7/24/89	50.10	9/2/89	50.65
6/15/89	49.20	7/25/89	50.10	9/3/89	50.70
6/16/89	49.20	7/26/89	50.15	9/4/89	50.70
6/17/89	49.45	7/27/89	50.15	9/5/89	50.65
6/18/89	49.40	7/28/89	50.15	9/6/89	50.70
6/19/89	49.40	7/29/89	50.20	9/7/89	50.70
6/20/89	49.40	7/30/89	50.20	9/8/89	50.75
6/21/89	49.60	7/31/89	50.20	9/9/89	50.82
6/22/89	49.50	8/1/89	50.15	9/10/89	50.75
6/23/89	49.55	8/2/89	50.20	9/11/89	50.75
6/24/89	49.50	8/3/89	50.20	9/12/89	50.80
6/25/89	49.50	8/4/89	50.25	9/13/89	50.78
6/26/89	49.55	8/5/89	50.30	9/14/89	50.75
6/27/89	49.55	8/6/89	50.40	9/15/89	50.65
6/28/89	49.60	8/7/89	--	9/16/89	50.65
6/29/89	49.70	8/8/89	50.35	9/17/89	50.70
6/30/89	49.75	8/9/89	50.35	9/18/89	50.70
7/1/89	49.70	8/10/89	50.35	9/19/89	50.70
7/2/89	49.75	8/11/89	50.40	9/20/89	50.20
7/3/89	49.75	8/12/89	50.37	9/21/89	50.90
7/4/89	49.75	8/13/89	50.42	9/22/89	50.90
7/5/89	49.75	8/14/89	50.43	9/23/89	50.90
7/6/89	49.85	8/15/89	50.48	9/24/89	51.00
7/7/89	49.80	8/16/89	50.40	9/25/89	50.90
7/8/89	49.80	8/17/89	50.45	9/26/89	50.90
7/9/89	48.80	8/18/89	50.45	9/27/89	50.85
7/10/89	48.85	8/19/89	50.40	9/28/89	50.90
7/11/89	49.90	8/20/89	50.40	9/29/89	50.90
7/12/89	49.95	8/21/89	50.50	9/30/89	50.80
7/13/89	49.95	8/22/89	50.50	10/2/89	51.00
7/14/89	49.90	8/23/89	50.50	10/5/89	50.80
7/15/89	50.00	8/24/89	50.45		
7/16/89	49.95	8/25/89	50.50		

* Water level measured below the top of the casing in feet

DOE 11

Elevation of the top of the well casing: 4,726.85 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	64.85	7/17/89	66.40	8/26/89	69.75
6/8/89	64.95	7/18/89	66.90	8/27/89	69.65
6/9/89	65.10	7/19/89	69.45	8/28/89	69.75
6/10/89	65.20	7/20/89	69.25	8/29/89	69.90
6/11/89	65.35	7/21/89	69.30	8/30/89	69.80
6/12/89	62.50	7/22/89	69.35	8/31/89	70.90
6/13/89	64.50	7/23/89	69.40	9/1/89	69.90
6/14/89	66.30	7/24/89	69.50	9/2/89	69.90
6/15/89	66.75	7/25/89	69.55	9/3/89	69.95
6/16/89	67.10	7/26/89	69.60	9/4/89	70.00
6/17/89	63.70	7/27/89	69.65	9/5/89	69.95
6/18/89	66.00	7/28/89	69.70	9/6/89	69.75
6/19/89	65.60	7/29/89	69.80	9/7/89	69.80
6/20/89	64.15	7/30/89	69.85	9/8/89	68.90
6/21/89	64.80	7/31/89	69.90	9/9/89	68.75
6/22/89	66.80	8/1/89	69.85	9/10/89	69.43
6/23/89	67.05	8/2/89	69.90	9/11/89	69.55
6/24/89	63.75	8/3/89	69.80	9/12/89	68.85
6/25/89	66.50	8/4/89	69.90	9/13/89	69.65
6/26/89	67.30	8/5/89	70.00	9/14/89	69.95
6/27/89	67.70	8/6/89	70.05	9/15/89	70.05
6/28/89	67.90	8/7/89	--	9/16/89	70.00
6/29/89	68.10	8/8/89	69.60	9/17/89	70.05
6/30/89	68.15	8/9/89	69.80	9/18/89	70.10
7/1/89	68.30	8/10/89	69.80	9/19/89	70.15
7/2/89	68.45	8/11/89	69.00	9/20/89	68.95
7/3/89	68.45	8/12/89	69.83	9/21/89	69.10
7/4/89	68.50	8/13/89	69.70	9/22/89	68.90
7/5/89	68.50	8/14/89	70.04	9/23/89	99.10
7/6/89	68.60	8/15/89	70.04	9/24/89	70.30
7/7/89	68.70	8/16/89	69.90	9/25/89	70.10
7/8/89	68.90	8/17/89	70.15	9/26/89	70.20
7/9/89	69.10	8/18/89	70.20	9/27/89	70.30
7/10/89	69.15	8/19/89	70.25	9/28/89	69.35
7/11/89	69.30	8/20/89	70.35	9/29/89	67.95
7/12/89	69.35	8/21/89	70.40	9/30/89	64.95
7/13/89	69.35	8/22/89	66.45	10/2/89	63.20
7/14/89	65.60	8/23/89	64.30	10/5/89	62.30
7/15/89	65.40	8/24/89	68.30		
7/16/89	67.90	8/25/89	69.05		

* Water level measured below the top of the casing in feet

FIR-2

Elevation of the top of the well casing: 4,740.8 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	63.50	7/17/89	64.70	8/26/89	65.80
6/8/89	63.45	7/18/89	65.00	8/27/89	65.65
6/9/89	63.45	7/19/89	65.05	8/28/89	65.80
6/10/89	63.45	7/20/89	64.85	8/29/89	65.75
6/11/89	63.55	7/21/89	64.85	8/30/89	65.50
6/12/89	63.70	7/22/89	64.95	8/31/89	65.80
6/13/89	63.70	7/23/89	65.00	9/1/89	65.95
6/14/89	63.70	7/24/89	65.00	9/2/89	65.75
6/15/89	63.60	7/25/89	65.00	9/3/89	65.95
6/16/89	63.55	7/26/89	65.15	9/4/89	65.90
6/17/89	63.90	7/27/89	65.10	9/5/89	65.80
6/18/89	63.95	7/28/89	65.05	9/6/89	65.85
6/19/89	63.75	7/29/89	65.15	9/7/89	65.85
6/20/89	63.75	7/30/89	65.20	9/8/89	65.95
6/21/89	64.10	7/31/89	65.20	9/9/89	66.05
6/22/89	63.95	8/1/89	65.00	9/10/89	65.85
6/23/89	64.05	8/2/89	65.10	9/11/89	65.97
6/24/89	64.00	8/3/89	65.10	9/12/89	68.73
6/25/89	63.90	8/4/89	65.30	9/13/89	68.00
6/26/89	64.00	8/5/89	65.45	9/14/89	65.85
6/27/89	64.00	8/6/89	65.50	9/15/89	65.85
6/28/89	64.20	8/7/89	--	9/16/89	65.90
6/29/89	64.35	8/8/89	65.25	9/17/89	65.75
6/30/89	64.45	8/9/89	65.25	9/18/89	65.80
7/1/89	64.20	8/10/89	65.40	9/19/89	66.10
7/2/89	64.25	8/11/89	65.45	9/20/89	65.90
7/3/89	64.40	8/12/89	65.40	9/21/89	66.15
7/4/89	64.40	8/13/89	65.50	9/22/89	66.30
7/5/89	64.50	8/14/89	65.37	9/23/89	66.40
7/6/89	64.60	8/15/89	65.38	9/24/89	66.10
7/7/89	64.50	8/16/89	65.35	9/25/89	66.20
7/8/89	64.45	8/17/89	65.45	9/26/89	66.10
7/9/89	64.55	8/18/89	65.50	9/27/89	66.10
7/10/89	64.60	8/19/89	65.50	9/28/89	66.25
7/11/89	64.75	8/20/89	65.55	9/29/89	66.10
7/12/89	64.85	8/21/89	65.60	9/30/89	65.90
7/13/89	64.95	8/22/89	65.65	10/5/89	65.94
7/14/89	64.65	8/23/89	65.50		
7/15/89	64.70	8/24/89	65.45		
7/16/89	64.75	8/25/89	65.60		

* Water level measured below the top of the casing in feet

DOE 10

Elevation of the top of the well casing: 4,733.22 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	68.35	7/17/89	69.50	8/26/89	73.70
6/8/89	68.50	7/18/89	70.10	8/27/89	73.85
6/9/89	68.65	7/19/89	73.40	8/28/89	73.95
6/10/89	68.75	7/20/89	73.25	8/29/89	74.05
6/11/89	68.20	7/21/89	73.35	8/30/89	74.00
6/12/89	66.80	7/22/89	73.40	8/31/89	74.05
6/13/89	68.20	7/23/89	73.45	9/1/89	74.10
6/14/89	69.60	7/24/89	73.60	9/2/89	74.10
6/15/89	70.00	7/25/89	73.60	9/3/89	74.20
6/16/89	68.70	7/26/89	73.65	9/4/89	74.20
6/17/89	67.65	7/27/89	73.70	9/5/89	74.15
6/18/89	68.90	7/28/89	73.75	9/6/89	74.00
6/19/89	68.95	7/29/89	73.85	9/7/89	74.05
6/20/89	67.95	7/30/89	73.90	9/8/89	73.50
6/21/89	68.35	7/31/89	73.90	9/9/89	73.30
6/22/89	69.65	8/1/89	73.90	9/10/89	73.35
6/23/89	69.90	8/2/89	73.90	9/11/89	70.65
6/24/89	68.00	8/3/89	73.85	9/12/89	73.10
6/25/89	69.50	8/4/89	73.95	9/13/89	73.80
6/26/89	70.10	8/5/89	74.05	9/14/89	74.15
6/27/89	70.35	8/6/89	74.15	9/15/89	74.20
6/28/89	70.60	8/7/89	--	9/16/89	74.25
6/29/89	70.80	8/8/89	73.70	9/17/89	74.25
6/30/89	70.85	8/9/89	73.90	9/18/89	74.25
7/1/89	71.80	8/10/89	73.95	9/19/89	74.35
7/2/89	71.95	8/11/89	73.35	9/20/89	73.50
7/3/89	72.00	8/12/89	74.08	9/21/89	70.40
7/4/89	72.05	8/13/89	74.10	9/22/89	73.20
7/5/89	72.05	8/14/89	74.18	9/23/89	73.80
7/6/89	72.20	8/15/89	74.20	9/24/89	74.30
7/7/89	72.25	8/16/89	74.10	9/25/89	74.40
7/8/89	72.45	8/17/89	74.30	9/26/89	74.40
7/9/89	72.60	8/18/89	74.35	9/27/89	74.55
7/10/89	72.60	8/19/89	74.35	9/28/89	73.80
7/11/89	72.85	8/20/89	74.40	9/29/89	72.70
7/12/89	72.95	8/21/89	74.45	9/30/89	70.30
7/13/89	73.00	8/22/89	71.40	10/2/89	68.70
7/14/89	70.15	8/23/89	99.70	10/5/89	67.70
7/15/89	69.95	8/24/89	72.50		
7/16/89	71.90	8/25/89	73.10		

* Water level measured below the top of the casing in feet

DOE 14

Elevation of the top of the well casing: 4,742.97 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	77.25	7/17/89	81.85	8/26/89	82.30
6/8/89	77.40	7/18/89	81.90	8/27/89	82.40
6/9/89	77.50	7/19/89	82.10	8/28/89	82.50
6/10/89	77.60	7/20/89	81.85	8/29/89	82.60
6/11/89	76.65	7/21/89	81.95	8/30/89	82.55
6/12/89	74.80	7/22/89	81.95	8/31/89	82.60
6/13/89	76.80	7/23/89	82.05	9/1/89	82.45
6/14/89	78.65	7/24/89	82.20	9/2/89	82.60
6/15/89	79.05	7/25/89	82.20	9/3/89	82.70
6/16/89	77.30	7/26/89	82.25	9/4/89	82.75
6/17/89	75.55	7/27/89	82.25	9/5/89	82.65
6/18/89	78.50	7/28/89	82.40	9/6/89	82.50
6/19/89	77.15	7/29/89	82.45	9/7/89	82.55
6/20/89	76.10	7/30/89	82.50	9/8/89	80.85
6/21/89	77.05	7/31/89	82.50	9/9/89	80.80
6/22/89	79.20	8/1/89	82.50	9/10/89	82.24
6/23/89	79.45	8/2/89	82.50	9/11/89	77.33
6/24/89	75.20	8/3/89	82.40	9/12/89	81.75
6/25/89	79.00	8/4/89	82.55	9/13/89	82.50
6/26/89	79.70	8/5/89	82.65	9/14/89	82.75
6/27/89	80.05	8/6/89	82.75	9/15/89	82.85
6/28/89	80.30	8/7/89	--	9/16/89	82.85
6/29/89	80.45	8/8/89	82.25	9/17/89	82.85
6/30/89	80.50	8/9/89	82.45	9/18/89	82.90
7/1/89	80.60	8/10/89	82.45	9/19/89	82.90
7/2/89	80.75	8/11/89	81.55	9/20/89	81.00
7/3/89	80.80	8/12/89	82.52	9/21/89	77.00
7/4/89	80.80	8/13/89	82.65	9/22/89	81.80
7/5/89	80.85	8/14/89	82.71	9/23/89	82.50
7/6/89	80.90	8/15/89	82.72	9/24/89	82.90
7/7/89	81.65	8/16/89	82.60	9/25/89	83.00
7/8/89	81.40	8/17/89	82.85	9/26/89	83.20
7/9/89	81.65	8/18/89	82.90	9/27/89	83.10
7/10/89	81.75	8/19/89	82.95	9/28/89	82.05
7/11/89	81.85	8/20/89	83.10	9/29/89	80.60
7/12/89	81.95	8/21/89	83.15	9/30/89	77.10
7/13/89	82.05	8/22/89	78.20	10/2/89	75.40
7/14/89	77.65	8/23/89	76.20	10/5/89	74.40
7/15/89	77.70	8/24/89	81.10		
7/16/89	79.85	8/25/89	81.80		

* Water level measured below the top of the casing in feet

WS-17

Elevation of the top of the well casing: 4,736.87 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	67.00	7/17/89	71.75	8/26/89	73.25
6/8/89	67.00	7/18/89	72.15	8/27/89	73.35
6/9/89	67.00	7/19/89	72.30	8/28/89	73.50
6/10/89	67.00	7/20/89	72.15	8/29/89	73.51
6/11/89	67.00	7/21/89	72.15	8/30/89	dry
6/12/89	66.00	7/22/89	72.30	8/31/89	dry
6/13/89	--	7/23/89	72.45	9/1/89	dry
6/14/89	--	7/24/89	72.55	9/2/89	dry
6/15/89	66.00	7/25/89	72.60	9/3/89	dry
6/16/89	67.00	7/26/89	72.70	9/4/89	dry
6/17/89	67.00	7/27/89	72.60	9/5/89	dry
6/18/89	67.00	7/28/89	72.70	9/6/89	dry
6/19/89	66.20	7/29/89	72.85	9/7/89	dry
6/20/89	66.75	7/30/89	72.90	9/8/89	dry
6/21/89	67.00	7/31/89	72.95	9/9/89	dry
6/22/89	67.00	8/1/89	72.90	9/10/89	dry
6/23/89	67.13	8/2/89	73.00	9/11/89	dry
6/24/89	66.70	8/3/89	72.95	9/12/89	dry
6/25/89	68.75	8/4/89	73.00	9/13/89	dry
6/26/89	69.15	8/5/89	73.20	9/14/89	dry
6/27/89	69.36	8/6/89	73.30	9/15/89	dry
6/28/89	--	8/7/89	--	9/16/89	dry
6/29/89	--	8/8/89	72.80	9/17/89	dry
6/30/89	--	8/9/89	73.10	9/18/89	dry
7/1/89	--	8/10/89	73.20	9/19/89	dry
7/2/89	67.90	8/11/89	73.25	9/20/89	dry
7/3/89	70.05	8/12/89	73.35	9/21/89	70.80
7/4/89	70.20	8/13/89	73.44	9/22/89	73.40
7/5/89	70.30	8/14/89	73.43	9/23/89	dry
7/6/89	70.40	8/15/89	73.45	9/24/89	dry
7/7/89	70.50	8/16/89	73.30	9/25/89	dry
7/8/89	71.30	8/17/89	dry	9/26/89	dry
7/9/89	71.60	8/18/89	dry	9/27/89	dry
7/10/89	71.80	8/19/89	dry	9/28/89	dry
7/11/89	72.00	8/20/89	dry	9/29/89	dry
7/12/89	72.15	8/21/89	dry	9/30/89	71.98
7/13/89	72.20	8/22/89	71.45	10/2/89	69.80
7/14/89	69.35	8/23/89	69.75	10/5/89	68.50
7/15/89	69.20	8/24/89	72.05		
7/16/89	71.40	8/25/89	72.70		

* Water level measured below the top of the casing in feet

WS-26

Elevation of the top of the well casing: 4,737.00 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	82.90	7/17/89	88.02	8/26/89	86.32
6/8/89	82.00	7/18/89	88.24	8/27/89	86.37
6/9/89	82.00	7/19/89	88.52	8/28/89	86.67
6/10/89	83.94	7/20/89	86.44	8/29/89	86.68
6/11/89	83.20	7/21/89	86.80	8/30/89	86.48
6/12/89	66.21	7/22/89	86.51	8/31/89	86.84
6/13/89	--	7/23/89	86.86	9/1/89	84.97
6/14/89	--	7/24/89	87.04	9/2/89	86.55
6/15/89	89.41	7/25/89	87.20	9/3/89	86.83
6/16/89	84.34	7/26/89	87.32	9/4/89	86.93
6/17/89	68.59	7/27/89	87.98	9/5/89	86.67
6/18/89	83.68	7/28/89	86.84	9/6/89	87.43
6/19/89	82.13	7/29/89	88.28	9/7/89	87.42
6/20/89	84.18	7/30/89	88.13	9/8/89	74.20
6/21/89	83.57	7/31/89	88.16	9/9/89	85.61
6/22/89	78.12	8/1/89	88.24	9/10/89	85.76
6/23/89	80.50	8/2/89	88.19	9/11/89	--
6/24/89	67.51	8/3/89	87.33	9/12/89	85.36
6/25/89	79.50	8/4/89	87.42	9/13/89	86.15
6/26/89	86.40	8/5/89	87.55	9/14/89	87.16
6/27/89	86.10	8/6/89	87.67	9/15/89	86.88
6/28/89	86.93	8/7/89	--	9/16/89	87.17
6/29/89	86.98	8/8/89	84.19	9/17/89	87.90
6/30/89	87.27	8/9/89	85.02	9/18/89	87.82
7/1/89	83.90	8/10/89	85.06	9/19/89	87.82
7/2/89	84.30	8/11/89	83.78	9/20/89	74.15
7/3/89	82.67	8/12/89	84.11	9/21/89	83.88
7/4/89	82.82	8/13/89	84.18	9/22/89	87.49
7/5/89	83.05	8/14/89	84.27	9/23/89	87.96
7/6/89	83.15	8/15/89	83.79	9/24/89	87.96
7/7/89	83.64	8/16/89	81.87	9/25/89	88.21
7/8/89	92.00	8/17/89	88.47	9/26/89	89.51
7/9/89	78.77	8/18/89	88.47	9/27/89	89.27
7/10/89	91.94	8/19/89	88.22	9/28/89	89.26
7/11/89	81.18	8/20/89	88.41	9/29/89	--
7/12/89	90.99	8/21/89	88.41	9/30/89	--
7/13/89	90.92	8/22/89	71.78	10/5/89	68.10
7/14/89	86.05	8/23/89	70.03		
7/15/89	83.75	8/24/89	85.16		
7/16/89	87.14	8/25/89	85.81		

* Water level measured below the top of the casing in feet

WS-6

Elevation of the top of the well casing: 4,734.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	121.70	7/17/89	137.80	8/26/89	137.83
6/8/89	121.00	7/18/89	137.80	8/27/89	137.83
6/9/89	122.40	7/19/89	137.86	8/28/89	137.83
6/10/89	122.37	7/20/89	137.83	8/29/89	137.83
6/11/89	119.47	7/21/89	137.88	8/30/89	137.80
6/12/89	67.32	7/22/89	137.86	8/31/89	137.86
6/13/89	--	7/23/89	137.80	9/1/89	137.63
6/14/89	--	7/24/89	137.83	9/2/89	137.88
6/15/89	130.34	7/25/89	137.80	9/3/89	137.88
6/16/89	129.80	7/26/89	137.83	9/4/89	137.86
6/17/89	105.36	7/27/89	137.80	9/5/89	137.83
6/18/89	127.47	7/28/89	137.83	9/6/89	137.86
6/19/89	120.82	7/29/89	137.86	9/7/89	137.83
6/20/89	124.85	7/30/89	137.77	9/8/89	76.33
6/21/89	118.65	7/31/89	137.80	9/9/89	137.83
6/22/89	119.15	8/1/89	137.83	9/10/89	137.83
6/23/89	123.09	8/2/89	137.83	9/11/89	--
6/24/89	67.79	8/3/89	137.77	9/12/89	137.98
6/25/89	122.35	8/4/89	137.83	9/13/89	136.60
6/26/89	133.02	8/5/89	137.86	9/14/89	137.86
6/27/89	131.75	8/6/89	137.86	9/15/89	95.44
6/28/89	132.85	8/7/89	--	9/16/89	137.83
6/29/89	129.37	8/8/89	137.83	9/17/89	137.80
6/30/89	129.80	8/9/89	137.88	9/18/89	137.83
7/1/89	134.11	8/10/89	137.86	9/19/89	137.83
7/2/89	133.22	8/11/89	137.86	9/20/89	86.15
7/3/89	133.31	8/12/89	137.88	9/21/89	134.63
7/4/89	132.96	8/13/89	137.88	9/22/89	137.86
7/5/89	132.30	8/14/89	137.88	9/23/89	137.88
7/6/89	132.20	8/15/89	137.83	9/24/89	137.83
7/7/89	136.24	8/16/89	137.86	9/25/89	137.83
7/8/89	137.88	8/17/89	137.83	9/26/89	137.83
7/9/89	137.91	8/18/89	137.88	9/27/89	137.13
7/10/89	137.86	8/19/89	137.88	9/28/89	137.13
7/11/89	137.80	8/20/89	137.88	9/29/89	--
7/12/89	137.80	8/21/89	137.83	9/30/89	--
7/13/89	137.25	8/22/89	71.87	10/5/89	68.10
7/14/89	128.19	8/23/89	69.71		
7/15/89	128.65	8/24/89	137.88		
7/16/89	136.71	8/25/89	137.83		

* Water level measured below the top of the casing in feet

WS-10

Elevation of the top of the well casing: 4,735.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	83.80	7/17/89	79.77	8/26/89	81.00
6/8/89	74.00	7/18/89	80.17	8/27/89	80.75
6/9/89	73.81	7/19/89	80.35	8/28/89	81.00
6/10/89	73.95	7/20/89	80.33	8/29/89	81.02
6/11/89	73.66	7/21/89	80.28	8/30/89	80.92
6/12/89	63.88	7/22/89	80.30	8/31/89	81.01
6/13/89	--	7/23/89	80.45	9/1/89	80.89
6/14/89	--	7/24/89	80.46	9/2/89	81.00
6/15/89	84.09	7/25/89	80.49	9/3/89	81.18
6/16/89	74.04	7/26/89	80.71	9/4/89	81.27
6/17/89	73.36	7/27/89	80.49	9/5/89	81.08
6/18/89	74.18	7/28/89	80.55	9/6/89	80.58
6/19/89	72.67	7/29/89	80.77	9/7/89	81.98
6/20/89	73.09	7/30/89	80.75	9/8/89	71.63
6/21/89	73.45	7/31/89	80.78	9/9/89	80.75
6/22/89	74.96	8/1/89	80.79	9/10/89	80.72
6/23/89	75.12	8/2/89	80.77	9/11/89	--
6/24/89	65.15	8/3/89	80.59	9/12/89	80.49
6/25/89	74.20	8/4/89	80.79	9/13/89	81.38
6/26/89	73.10	8/5/89	81.04	9/14/89	81.60
6/27/89	72.85	8/6/89	81.10	9/15/89	72.97
6/28/89	73.46	8/7/89	--	9/16/89	81.46
6/29/89	73.56	8/8/89	80.52	9/17/89	81.59
6/30/89	73.69	8/9/89	80.84	9/18/89	81.31
7/1/89	73.66	8/10/89	80.91	9/19/89	81.30
7/2/89	73.72	8/11/89	80.88	9/20/89	71.47
7/3/89	73.82	8/12/89	81.13	9/21/89	77.94
7/4/89	73.68	8/13/89	81.24	9/22/89	80.82
7/5/89	73.76	8/14/89	81.23	9/23/89	81.30
7/6/89	74.02	8/15/89	81.23	9/24/89	81.54
7/7/89	74.07	8/16/89	81.01	9/25/89	81.98
7/8/89	79.12	8/17/89	81.40	9/26/89	82.13
7/9/89	79.48	8/18/89	81.63	9/27/89	92.29
7/10/89	79.80	8/19/89	81.63	9/28/89	92.35
7/11/89	79.91	8/20/89	81.70	9/29/89	--
7/12/89	80.19	8/21/89	81.70	9/30/89	--
7/13/89	80.29	8/22/89	69.28	10/5/89	66.20
7/14/89	77.00	8/23/89	67.60		
7/15/89	78.86	8/24/89	79.90		
7/16/89	79.05	8/25/89	80.42		

* Water level measured below the top of the casing in feet

WS-7

Elevation of the top of the well casing: 4,735.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	102.60	7/17/89	138.42	8/26/89	132.50
6/8/89	103.00	7/18/89	138.88	8/27/89	132.33
6/9/89	103.19	7/19/89	138.88	8/28/89	133.07
6/10/89	103.42	7/20/89	138.88	8/29/89	132.64
6/11/89	101.46	7/21/89	130.49	8/30/89	132.59
6/12/89	68.47	7/22/89	130.08	8/31/89	133.59
6/13/89	--	7/23/89	130.51	9/1/89	126.43
6/14/89	--	7/24/89	134.89	9/2/89	128.36
6/15/89	129.74	7/25/89	134.17	9/3/89	128.85
6/16/89	129.97	7/26/89	134.28	9/4/89	128.87
6/17/89	77.67	7/27/89	136.47	9/5/89	128.59
6/18/89	125.97	7/28/89	136.44	9/6/89	126.95
6/19/89	121.83	7/29/89	137.22	9/7/89	127.00
6/20/89	124.50	7/30/89	137.22	9/8/89	78.02
6/21/89	123.27	7/31/89	137.50	9/9/89	127.15
6/22/89	125.22	8/1/89	137.82	9/10/89	130.80
6/23/89	127.46	8/2/89	137.99	9/11/89	--
6/24/89	60.05	8/3/89	137.19	9/12/89	130.89
6/25/89	128.60	8/4/89	137.71	9/13/89	131.38
6/26/89	134.54	8/5/89	137.53	9/14/89	132.30
6/27/89	134.60	8/6/89	137.27	9/15/89	124.16
6/28/89	135.63	8/7/89	--	9/16/89	128.18
6/29/89	134.86	8/8/89	133.62	9/17/89	129.10
6/30/89	135.84	8/9/89	133.94	9/18/89	129.85
7/1/89	136.35	8/10/89	133.82	9/19/89	129.31
7/2/89	135.78	8/11/89	132.13	9/20/89	87.85
7/3/89	136.41	8/12/89	134.43	9/21/89	118.78
7/4/89	135.32	8/13/89	134.83	9/22/89	128.39
7/5/89	135.20	8/14/89	134.80	9/23/89	128.62
7/6/89	135.12	8/15/89	134.77	9/24/89	128.39
7/7/89	136.81	8/16/89	133.62	9/25/89	128.85
7/8/89	137.71	8/17/89	137.04	9/26/89	130.60
7/9/89	138.57	8/18/89	137.59	9/27/89	130.69
7/10/89	138.19	8/19/89	137.10	9/28/89	128.79
7/11/89	138.51	8/20/89	136.87	9/29/89	--
7/12/89	138.88	8/21/89	136.47	9/30/89	--
7/13/89	138.42	8/22/89	73.27	10/5/89	68.30
7/14/89	126.52	8/23/89	71.14		
7/15/89	129.74	8/24/89	130.28		
7/16/89	137.73	8/25/89	131.43		

* Water level measured below the top of the casing in feet

WS-5

Elevation of the top of the well casing: 4,736.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	102.60	7/17/89	129.96	8/26/89	128.86
6/8/89	102.00	7/18/89	130.24	8/27/89	128.49
6/9/89	102.59	7/19/89	130.50	8/28/89	128.98
6/10/89	103.08	7/20/89	130.53	8/29/89	128.75
6/11/89	101.70	7/21/89	130.22	8/30/89	128.60
6/12/89	66.51	7/22/89	129.93	8/31/89	129.99
6/13/89	--	7/23/89	130.24	9/1/89	124.32
6/14/89	--	7/24/89	130.76	9/2/89	129.44
6/15/89	120.87	7/25/89	130.45	9/3/89	129.90
6/16/89	121.53	7/26/89	130.82	9/4/89	130.04
6/17/89	74.22	7/27/89	130.99	9/5/89	130.96
6/18/89	120.66	7/28/89	130.91	9/6/89	127.48
6/19/89	115.65	7/29/89	131.68	9/7/89	126.94
6/20/89	118.96	7/30/89	131.48	9/8/89	75.25
6/21/89	117.06	7/31/89	131.40	9/9/89	129.81
6/22/89	115.57	8/1/89	131.68	9/10/89	129.99
6/23/89	119.60	8/2/89	131.25	9/11/89	--
6/24/89	67.05	8/3/89	131.19	9/12/89	131.22
6/25/89	120.10	8/4/89	131.63	9/13/89	130.94
6/26/89	126.36	8/5/89	131.83	9/14/89	131.48
6/27/89	126.15	8/6/89	131.91	9/15/89	126.76
6/28/89	126.79	8/7/89	--	9/16/89	131.34
6/29/89	126.30	8/8/89	130.68	9/17/89	131.80
6/30/89	126.79	8/9/89	130.91	9/18/89	131.86
7/1/89	128.32	8/10/89	131.08	9/19/89	131.88
7/2/89	126.82	8/11/89	130.39	9/20/89	75.22
7/3/89	127.22	8/12/89	131.65	9/21/89	124.03
7/4/89	126.88	8/13/89	131.83	9/22/89	131.86
7/5/89	127.11	8/14/89	131.83	9/23/89	131.94
7/6/89	127.22	8/15/89	131.71	9/24/89	130.96
7/7/89	127.94	8/16/89	128.46	9/25/89	131.54
7/8/89	128.83	8/17/89	131.80	9/26/89	131.83
7/9/89	129.53	8/18/89	131.91	9/27/89	131.77
7/10/89	129.93	8/19/89	131.83	9/28/89	131.60
7/11/89	130.16	8/20/89	131.88	9/29/89	--
7/12/89	130.47	8/21/89	131.77	9/30/89	--
7/13/89	130.45	8/22/89	71.68	10/5/89	67.70
7/14/89	122.36	8/23/89	69.73		
7/15/89	124.55	8/24/89	127.88		
7/16/89	128.89	8/25/89	127.94		

* Water level measured below the top of the casing in feet

WS-15

Elevation of the top of the well casing: 4,736.54 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	68.40	7/17/89	68.01	8/26/89	69.53
6/8/89	68.00	7/18/89	67.94	8/27/89	69.55
6/9/89	68.50	7/19/89	68.20	8/28/89	69.81
6/10/89	68.64	7/20/89	68.27	8/29/89	69.82
6/11/89	68.30	7/21/89	67.65	8/30/89	69.66
6/12/89	65.34	7/22/89	68.14	8/31/89	69.71
6/13/89	--	7/23/89	68.36	9/1/89	69.59
6/14/89	--	7/24/89	68.51	9/2/89	69.55
6/15/89	67.94	7/25/89	68.64	9/3/89	69.71
6/16/89	68.03	7/26/89	68.79	9/4/89	69.75
6/17/89	67.45	7/27/89	68.63	9/5/89	69.63
6/18/89	68.10	7/28/89	69.26	9/6/89	69.38
6/19/89	67.22	7/29/89	69.73	9/7/89	70.19
6/20/89	69.69	7/30/89	69.29	9/8/89	69.43
6/21/89	70.11	7/31/89	69.26	9/9/89	70.01
6/22/89	71.66	8/1/89	69.10	9/10/89	69.65
6/23/89	71.47	8/2/89	69.23	9/11/89	--
6/24/89	66.71	8/3/89	69.02	9/12/89	71.99
6/25/89	70.50	8/4/89	69.03	9/13/89	71.90
6/26/89	70.80	8/5/89	69.20	9/14/89	71.89
6/27/89	74.55	8/6/89	69.30	9/15/89	70.21
6/28/89	71.81	8/7/89	--	9/16/89	71.84
6/29/89	71.73	8/8/89	69.27	9/17/89	70.72
6/30/89	71.38	8/9/89	69.68	9/18/89	--
7/1/89	69.30	8/10/89	69.78	9/19/89	--
7/2/89	68.89	8/11/89	69.79	9/20/89	69.73
7/3/89	69.98	8/12/89	69.81	9/21/89	69.56
7/4/89	71.01	8/13/89	69.89	9/22/89	--
7/5/89	71.24	8/14/89	69.82	9/23/89	--
7/6/89	71.20	8/15/89	69.81	9/24/89	--
7/7/89	70.82	8/16/89	69.49	9/25/89	--
7/8/89	71.07	8/17/89	70.11	9/26/89	--
7/9/89	71.61	8/18/89	70.26	9/27/89	--
7/10/89	71.86	8/19/89	70.36	9/28/89	--
7/11/89	70.51	8/20/89	70.29	9/29/89	--
7/12/89	71.13	8/21/89	70.26	9/30/89	--
7/13/89	71.20	8/22/89	67.71	10/5/89	68.40
7/14/89	67.17	8/23/89	66.33		
7/15/89	<72.00	8/24/89	68.54		
7/16/89	75.15	8/25/89	69.10		

* Water level measured below the top of the casing in feet

WS-16

Elevation of the top of the well casing: 4,735.6 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	67.70	7/17/89	70.92	8/26/89	70.06
6/8/89	68.00	7/18/89	71.18	8/27/89	70.02
6/9/89	67.93	7/19/89	71.19	8/28/89	70.30
6/10/89	68.03	7/20/89	71.73	8/29/89	70.30
6/11/89	66.25	7/21/89	68.94	8/30/89	70.14
6/12/89	63.15	7/22/89	70.10	8/31/89	68.73
6/13/89	--	7/23/89	70.55	9/1/89	68.79
6/14/89	--	7/24/89	71.41	9/2/89	68.65
6/15/89	65.79	7/25/89	71.43	9/3/89	68.84
6/16/89	65.87	7/26/89	71.57	9/4/89	68.89
6/17/89	64.13	7/27/89	69.14	9/5/89	68.81
6/18/89	65.73	7/28/89	72.81	9/6/89	68.76
6/19/89	65.53	7/29/89	72.85	9/7/89	72.73
6/20/89	66.99	7/30/89	72.86	9/8/89	69.83
6/21/89	66.88	7/31/89	72.20	9/9/89	72.88
6/22/89	67.45	8/1/89	71.60	9/10/89	70.65
6/23/89	67.48	8/2/89	71.74	9/11/89	--
6/24/89	62.36	8/3/89	68.59	9/12/89	72.03
6/25/89	68.05	8/4/89	72.26	9/13/89	72.42
6/26/89	70.35	8/5/89	71.12	9/14/89	72.72
6/27/89	72.05	8/6/89	70.95	9/15/89	72.62
6/28/89	70.05	8/7/89	--	9/16/89	72.69
6/29/89	71.22	8/8/89	70.62	9/17/89	72.72
6/30/89	71.12	8/9/89	71.17	9/18/89	72.73
7/1/89	66.13	8/10/89	70.52	9/19/89	72.75
7/2/89	66.19	8/11/89	70.42	9/20/89	71.03
7/3/89	67.34	8/12/89	70.42	9/21/89	71.60
7/4/89	68.07	8/13/89	70.48	9/22/89	72.71
7/5/89	68.27	8/14/89	70.39	9/23/89	72.73
7/6/89	68.32	8/15/89	70.39	9/24/89	72.72
7/7/89	67.80	8/16/89	71.05	9/25/89	72.73
7/8/89	68.06	8/17/89	72.36	9/26/89	72.72
7/9/89	68.17	8/18/89	72.56	9/27/89	72.72
7/10/89	68.23	8/19/89	72.79	9/28/89	72.73
7/11/89	68.32	8/20/89	72.55	9/29/89	--
7/12/89	72.82	8/21/89	72.50	9/30/89	--
7/13/89	72.82	8/22/89	68.43	10/5/89	67.60
7/14/89	69.38	8/23/89	67.25		
7/15/89	69.48	8/24/89	69.22		
7/16/89	71.30	8/25/89	69.68		

* Water level measured below the top of the casing in feet

WS-24

Elevation of the top of the well casing: 4,729.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	58.04	7/17/89	58.42	8/26/89	58.53
6/8/89	58.00	7/18/89	58.33	8/27/89	58.53
6/9/89	58.16	7/19/89	58.42	8/28/89	58.53
6/10/89	58.16	7/20/89	58.42	8/29/89	58.53
6/11/89	58.22	7/21/89	58.39	8/30/89	58.51
6/12/89	57.31	7/22/89	58.42	8/31/89	58.56
6/13/89	--	7/23/89	58.45	9/1/89	58.53
6/14/89	--	7/24/89	58.42	9/2/89	58.53
6/15/89	58.66	7/25/89	58.42	9/3/89	58.51
6/16/89	58.27	7/26/89	58.45	9/4/89	58.51
6/17/89	58.33	7/27/89	58.48	9/5/89	58.53
6/18/89	58.24	7/28/89	58.48	9/6/89	58.53
6/19/89	58.19	7/29/89	58.48	9/7/89	58.51
6/20/89	58.27	7/30/89	58.39	9/8/89	58.48
6/21/89	58.24	7/31/89	58.48	9/9/89	58.48
6/22/89	58.24	8/1/89	58.45	9/10/89	58.53
6/23/89	58.27	8/2/89	58.48	9/11/89	--
6/24/89	58.27	8/3/89	58.45	9/12/89	58.48
6/25/89	58.27	8/4/89	58.48	9/13/89	58.53
6/26/89	58.30	8/5/89	58.48	9/14/89	58.65
6/27/89	58.30	8/6/89	58.48	9/15/89	58.65
6/28/89	58.36	8/7/89	--	9/16/89	58.56
6/29/89	58.27	8/8/89	58.36	9/17/89	58.48
6/30/89	58.33	8/9/89	58.51	9/18/89	58.48
7/1/89	58.36	8/10/89	58.48	9/19/89	58.48
7/2/89	58.30	8/11/89	58.39	9/20/89	58.45
7/3/89	58.33	8/12/89	58.48	9/21/89	58.59
7/4/89	58.33	8/13/89	58.48	9/22/89	58.48
7/5/89	58.39	8/14/89	58.48	9/23/89	58.48
7/6/89	58.36	8/15/89	58.33	9/24/89	58.51
7/7/89	58.36	8/16/89	58.51	9/25/89	58.53
7/8/89	58.42	8/17/89	58.48	9/26/89	58.53
7/9/89	58.36	8/18/89	58.51	9/27/89	58.53
7/10/89	58.39	8/19/89	58.53	9/28/89	58.53
7/11/89	58.45	8/20/89	58.53	9/29/89	--
7/12/89	58.42	8/21/89	58.53	9/30/89	--
7/13/89	58.39	8/22/89	58.51	10/5/89	60.10
7/14/89	58.42	8/23/89	58.56		
7/15/89	58.36	8/24/89	58.53		
7/16/89	58.30	8/25/89	58.53		

* Water level measured below the top of the casing in feet

WS-21

Elevation of the top of the well casing: 4,737.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	88.50	7/17/89	91.30	8/26/89	83.69
6/8/89	88.00	7/18/89	91.88	8/27/89	82.79
6/9/89	88.15	7/19/89	91.54	8/28/89	82.50
6/10/89	89.47	7/20/89	91.42	8/29/89	83.58
6/11/89	80.76	7/21/89	86.16	8/30/89	84.30
6/12/89	66.93	7/22/89	86.25	8/31/89	84.50
6/13/89	--	7/23/89	86.34	9/1/89	82.56
6/14/89	--	7/24/89	84.91	9/2/89	83.81
6/15/89	77.33	7/25/89	85.09	9/3/89	83.69
6/16/89	77.50	7/26/89	85.11	9/4/89	83.87
6/17/89	68.09	7/27/89	85.06	9/5/89	83.55
6/18/89	71.63	7/28/89	84.62	9/6/89	82.27
6/19/89	72.45	7/29/89	84.41	9/7/89	82.96
6/20/89	73.44	7/30/89	83.69	9/8/89	70.99
6/21/89	79.25	7/31/89	84.21	9/9/89	81.86
6/22/89	80.09	8/1/89	84.39	9/10/89	82.47
6/23/89	79.97	8/2/89	87.38	9/11/89	--
6/24/89	68.97	8/3/89	82.04	9/12/89	82.65
6/25/89	72.70	8/4/89	82.59	9/13/89	83.28
6/26/89	92.18	8/5/89	82.56	9/14/89	83.78
6/27/89	91.85	8/6/89	82.44	9/15/89	83.46
6/28/89	91.86	8/7/89	--	9/16/89	82.94
6/29/89	91.77	8/8/89	81.60	9/17/89	82.96
6/30/89	92.03	8/9/89	81.69	9/18/89	82.18
7/1/89	92.44	8/10/89	81.92	9/19/89	82.12
7/2/89	92.35	8/11/89	81.13	9/20/89	70.53
7/3/89	92.67	8/12/89	81.31	9/21/89	87.35
7/4/89	92.12	8/13/89	81.42	9/22/89	91.68
7/5/89	92.32	8/14/89	81.08	9/23/89	91.77
7/6/89	92.55	8/15/89	81.05	9/24/89	92.79
7/7/89	92.93	8/16/89	79.80	9/25/89	92.90
7/8/89	93.60	8/17/89	89.97	9/26/89	92.90
7/9/89	93.77	8/18/89	89.62	9/27/89	92.03
7/10/89	93.22	8/19/89	88.63	9/28/89	92.99
7/11/89	93.77	8/20/89	88.28	9/29/89	--
7/12/89	93.48	8/21/89	87.53	9/30/89	--
7/13/89	92.67	8/22/89	69.13	10/2/89	68.30
7/14/89	88.46	8/23/89	67.86	10/5/89	67.40
7/15/89	89.30	8/24/89	84.10		
7/16/89	90.96	8/25/89	83.49		

* Water level measured below the top of the casing in feet

WS-19

Elevation of the top of the well casing: 4,734.12 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	68.10	7/17/89	68.19	8/26/89	68.21
6/8/89	68.00	7/18/89	68.16	8/27/89	68.16
6/9/89	62.84	7/19/89	68.16	8/28/89	68.19
6/10/89	56.20	7/20/89	68.19	8/29/89	68.19
6/11/89	62.95	7/21/89	68.16	8/30/89	68.13
6/12/89	54.43	7/22/89	68.19	8/31/89	68.19
6/13/89	--	7/23/89	68.16	9/1/89	68.21
6/14/89	--	7/24/89	68.19	9/2/89	68.24
6/15/89	67.95	7/25/89	68.16	9/3/89	68.19
6/16/89	67.90	7/26/89	68.12	9/4/89	68.19
6/17/89	59.96	7/27/89	68.13	9/5/89	68.19
6/18/89	67.95	7/28/89	68.13	9/6/89	68.24
6/19/89	67.87	7/29/89	68.19	9/7/89	68.21
6/20/89	68.01	7/30/89	68.07	9/8/89	65.45
6/21/89	68.01	7/31/89	68.13	9/9/89	68.30
6/22/89	67.98	8/1/89	68.13	9/10/89	68.30
6/23/89	67.95	8/2/89	68.13	9/11/89	--
6/24/89	50.39	8/3/89	68.07	9/12/89	68.21
6/25/89	74.50	8/4/89	68.16	9/13/89	68.36
6/26/89	68.04	8/5/89	68.13	9/14/89	68.24
6/27/89	75.00	8/6/89	68.13	9/15/89	68.27
6/28/89	68.01	8/7/89	--	9/16/89	68.30
6/29/89	67.92	8/8/89	68.04	9/17/89	68.30
6/30/89	68.01	8/9/89	68.19	9/18/89	68.33
7/1/89	68.07	8/10/89	68.07	9/19/89	68.36
7/2/89	68.07	8/11/89	68.07	9/20/89	65.29
7/3/89	68.01	8/12/89	68.07	9/21/89	68.13
7/4/89	68.04	8/13/89	68.13	9/22/89	68.27
7/5/89	68.04	8/14/89	68.13	9/23/89	68.36
7/6/89	68.10	8/15/89	68.07	9/24/89	68.33
7/7/89	68.07	8/16/89	68.16	9/25/89	68.39
7/8/89	68.07	8/17/89	68.01	9/26/89	68.39
7/9/89	68.10	8/18/89	68.10	9/27/89	68.33
7/10/89	68.13	8/19/89	68.16	9/28/89	68.36
7/11/89	68.10	8/20/89	68.10	9/29/89	--
7/12/89	68.13	8/21/89	68.10	9/30/89	--
7/13/89	68.19	8/22/89	63.65	10/5/89	61.40
7/14/89	68.24	8/23/89	62.81		
7/15/89	68.19	8/24/89	68.21		
7/16/89	68.16	8/25/89	68.19		

* Water level measured below the top of the casing in feet

WS-22

Elevation of the top of the well casing: 4,733.00 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	67.80	7/17/89	90.45	8/26/89	89.70
6/8/89	65.00	7/18/89	89.60	8/27/89	80.75
6/9/89	--	7/19/89	89.80	8/28/89	80.95
6/10/89	--	7/20/89	90.00	8/29/89	81.20
6/11/89	--	7/21/89	90.00	8/30/89	85.58
6/12/89	--	7/22/89	89.50	8/31/89	77.50
6/13/89	--	7/23/89	89.25	9/1/89	79.10
6/14/89	--	7/24/89	90.00	9/2/89	78.30
6/15/89	68.20	7/25/89	90.00	9/3/89	78.50
6/16/89	63.35	7/26/89	89.85	9/4/89	78.40
6/17/89	62.15	7/27/89	89.30	9/5/89	78.35
6/18/89	62.75	7/28/89	88.75	9/6/89	78.65
6/19/89	62.15	7/29/89	88.80	9/7/89	78.05
6/20/89	62.55	7/30/89	88.65	9/8/89	67.95
6/21/89	70.90	7/31/89	87.50	9/9/89	82.25
6/22/89	71.90	8/1/89	87.35	9/10/89	83.25
6/23/89	71.90	8/2/89	87.15	9/11/89	65.97
6/24/89	62.05	8/3/89	87.40	9/12/89	66.00
6/25/89	71.20	8/4/89	85.10	9/13/89	69.25
6/26/89	67.60	8/5/89	89.34	9/14/89	89.95
6/27/89	84.60	8/6/89	96.56	9/15/89	90.00
6/28/89	84.65	8/7/89	--	9/16/89	90.05
6/29/89	84.65	8/8/89	90.81	9/17/89	87.80
6/30/89	84.65	8/9/89	97.56	9/18/89	86.95
7/1/89	84.70	8/10/89	88.70	9/19/89	68.90
7/2/89	85.80	8/11/89	88.80	9/20/89	67.30
7/3/89	86.00	8/12/89	88.85	9/21/89	65.80
7/4/89	79.80	8/13/89	88.68	9/22/89	81.20
7/5/89	80.05	8/14/89	88.08	9/23/89	81.00
7/6/89	80.20	8/15/89	88.10	9/24/89	80.40
7/7/89	87.20	8/16/89	86.55	9/25/89	80.30
7/8/89	90.00	8/17/89	86.87	9/26/89	80.30
7/9/89	90.38	8/18/89	89.00	9/27/89	83.45
7/10/89	86.35	8/19/89	89.25	9/28/89	83.15
7/11/89	85.49	8/20/89	89.40	9/29/89	82.87
7/12/89	90.00	8/21/89	89.30	9/30/89	81.27
7/13/89	90.15	8/22/89	66.30	10/5/89	64.20
7/14/89	88.70	8/23/89	84.90		
7/15/89	88.10	8/24/89	89.05		
7/16/89	89.55	8/25/89	89.15		

* Water level measured below the top of the casing in feet

WS-23

Elevation of the top of the well casing: 4,732.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	65.00	7/17/89	66.52	8/26/89	67.42
6/8/89	67.00	7/18/89	67.42	8/27/89	67.36
6/9/89	60.43	7/19/89	67.54	8/28/89	67.36
6/10/89	60.20	7/20/89	67.42	8/29/89	67.36
6/11/89	63.66	7/21/89	67.39	8/30/89	67.33
6/12/89	60.11	7/22/89	67.39	8/31/89	67.36
6/13/89	--	7/23/89	67.39	9/1/89	62.30
6/14/89	--	7/24/89	67.39	9/2/89	61.84
6/15/89	59.91	7/25/89	67.39	9/3/89	62.39
6/16/89	60.06	7/26/89	67.39	9/4/89	62.45
6/17/89	59.94	7/27/89	67.42	9/5/89	62.33
6/18/89	59.85	7/28/89	67.39	9/6/89	61.92
6/19/89	59.97	7/29/89	67.42	9/7/89	62.36
6/20/89	67.39	7/30/89	67.36	9/8/89	62.30
6/21/89	67.39	7/31/89	67.39	9/9/89	62.30
6/22/89	67.39	8/1/89	67.39	9/10/89	62.33
6/23/89	67.42	8/2/89	67.39	9/11/89	--
6/24/89	59.13	8/3/89	67.36	9/12/89	62.33
6/25/89	63.90	8/4/89	67.39	9/13/89	62.33
6/26/89	67.50	8/5/89	67.39	9/14/89	62.33
6/27/89	67.50	8/6/89	67.36	9/15/89	62.33
6/28/89	67.36	8/7/89	--	9/16/89	62.39
6/29/89	64.10	8/8/89	67.33	9/17/89	62.33
6/30/89	63.72	8/9/89	67.39	9/18/89	62.27
7/1/89	65.00	8/10/89	67.39	9/19/89	62.27
7/2/89	67.33	8/11/89	67.36	9/20/89	62.27
7/3/89	67.33	8/12/89	67.36	9/21/89	60.93
7/4/89	66.34	8/13/89	67.36	9/22/89	62.27
7/5/89	67.36	8/14/89	67.36	9/23/89	62.30
7/6/89	76.34	8/15/89	67.30	9/24/89	62.33
7/7/89	76.39	8/16/89	67.36	9/25/89	62.36
7/8/89	66.66	8/17/89	67.33	9/26/89	62.24
7/9/89	66.81	8/18/89	67.36	9/27/89	62.24
7/10/89	67.48	8/19/89	67.39	9/28/89	62.27
7/11/89	67.42	8/20/89	67.39	9/29/89	--
7/12/89	67.42	8/21/89	67.36	9/30/89	--
7/13/89	67.39	8/22/89	67.39	10/5/89	62.00
7/14/89	67.33	8/23/89	65.73		
7/15/89	67.39	8/24/89	65.06		
7/16/89	67.42	8/25/89	67.39		

* Water level measured below the top of the casing in feet

WS-12

Elevation of the top of the well casing: 4,730.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
6/7/89	60.35	7/17/89	66.15	8/26/89	67.30
6/8/89	60.05	7/18/89	66.45	8/27/89	66.45
6/9/89	60.05	7/19/89	66.60	8/28/89	66.50
6/10/89	60.15	7/20/89	66.45	8/29/89	66.60
6/11/89	59.75	7/21/89	66.55	8/30/89	66.50
6/12/89	59.05	7/22/89	66.55	8/31/89	66.20
6/13/89	59.30	7/23/89	66.60	9/1/89	66.30
6/14/89	59.04	7/24/89	66.65	9/2/89	66.30
6/15/89	60.05	7/25/89	66.70	9/3/89	66.40
6/16/89	60.15	7/26/89	66.75	9/4/89	66.40
6/17/89	59.30	7/27/89	66.65	9/5/89	66.30
6/18/89	59.95	7/28/89	66.60	9/6/89	66.25
6/19/89	59.45	7/29/89	66.70	9/7/89	66.25
6/20/89	59.45	7/30/89	66.70	9/8/89	65.30
6/21/89	61.05	7/31/89	66.65	9/9/89	66.65
6/22/89	61.80	8/1/89	66.60	9/10/89	67.15
6/23/89	62.05	8/2/89	66.60	9/11/89	63.35
6/24/89	59.50	8/3/89	66.10	9/12/89	66.85
6/25/89	61.65	8/4/89	66.40	9/13/89	67.45
6/26/89	63.80	8/5/89	66.80	9/14/89	67.70
6/27/89	64.35	8/6/89	66.85	9/15/89	67.80
6/28/89	64.15	8/7/89	--	9/16/89	67.85
6/29/89	64.35	8/8/89	66.55	9/17/89	67.60
6/30/89	64.45	8/9/89	66.75	9/18/89	67.75
7/1/89	64.50	8/10/89	66.80	9/19/89	65.50
7/2/89	64.70	8/11/89	66.85	9/20/89	--
7/3/89	64.80	8/12/89	67.00	9/21/89	63.20
7/4/89	64.20	8/13/89	67.10	9/22/89	66.60
7/5/89	64.25	8/14/89	67.03	9/23/89	66.70
7/6/89	64.35	8/15/89	67.07	9/24/89	67.30
7/7/89	65.10	8/16/89	66.80	9/25/89	69.40
7/8/89	65.65	8/17/89	67.40	9/26/89	68.80
7/9/89	65.90	8/18/89	67.50	9/27/89	70.20
7/10/89	66.00	8/19/89	67.55	9/28/89	--
7/11/89	66.15	8/20/89	67.60	9/29/89	68.68
7/12/89	66.40	8/21/89	67.65	9/30/89	66.21
7/13/89	66.45	8/22/89	63.65	10/2/89	62.60
7/14/89	64.30	8/23/89	81.40	10/5/89	61.50
7/15/89	64.10	8/24/89	66.35		
7/16/89	65.75	8/25/89	66.95		

* Water level measured below the top of the casing in feet

Cavity A

Elevation of the top of the well casing: 4,736.57 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
8/1/89	72.15				
8/8/89	72.00				
8/16/89	72.50				
8/22/89	69.65				
8/29/89	72.75				
9/5/89	72.95				
10/2/89	67.70				
10/5/89	66.50				

* Water level measured below the top of the casing in feet

Cavity P

Elevation of the top of the well casing: 4,741.41 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
8/1/89	171.40				
8/8/89	107.10				
8/16/89	107.80				
8/22/89	80.75				
8/29/89	107.05				
9/5/89	107.25				
10/2/89	77.00				
10/5/89	75.60				

* Water level measured below the top of the casing in feet

Cavity P-1

Elevation of the top of the well casing: 4,784.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
8/1/89	117.90				
8/8/89	118.05				
8/16/89	117.95				
8/22/89	117.90				
8/29/89	117.75				
9/5/89	116.60				

* Water level measured below the top of the casing in feet

Cavity P-3

Elevation of the top of the well casing: 4,781.02 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
8/1/89	113.50				
8/8/89	--				
8/16/89	114.35				
8/22/89	--				
8/29/89	114.85				
9/5/89	115.00				

* Water level measured below the top of the casing in feet

DW-3

Elevation of the top of the well casing: 4,744.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
10/2/89	78.50				
10/5/89	77.10				

* Water level measured below the top of the casing in feet

DW-6

Elevation of the top of the well casing: 4,744.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
10/2/89	77.80				
10/5/89	76.30				

* Water level measured below the top of the casing in feet

WW-3A

Elevation of the top of the well casing: 4,744.8 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
10/2/89	78.0				
10/5/89	76.80				

* Water level measured below the top of the casing in feet

DW-1

Elevation of the top of the well casing: 4,744.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
10/2/89	77.60				
10/5/89	76.20				

* Water level measured below the top of the casing in feet

EM-3

Elevation of the top of the well casing: 4,746.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
10/2/89	79.70				
10/5/89	78.60				

* Water level measured below the top of the casing in feet

EM-5

Elevation of the top of the well casing: 4,740.84 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
10/2/89	75.50				
10/5/89	74.10				

* Water level measured below the top of the casing in feet

EM-2

Elevation of the top of the well casing: 4,737.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
10/2/89	71.90				
10/5/89	70.70				

* Water level measured below the top of the casing in feet

EM-1

Elevation of the top of the well casing: 4,734.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
10/2/89	68.80				
10/5/89	67.60				

* Water level measured below the top of the casing in feet

WS-9

Elevation of the top of the well casing: 4,728.51 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
10/2/89	63.70				
10/5/89	62.60				

* Water level measured below the top of the casing in feet

WS-8

Elevation of the top of the well casing: 4,733.29 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
10/2/89	67.90				
10/5/89	66.70				

* Water level measured below the top of the casing in feet

WS-20

Elevation of the top of the well casing: 4,742.0 ft

Date	Water Level*	Date	Water Level*	Date	Water Level*
10/2/89	72.00				
10/5/89	71.30				

* Water level measured below the top of the casing in feet

APPENDIX B

Chemical Monitoring Results from Hoe Creek Wells, 1989

Chemical Monitoring Results from Joe Creek Wells, 1989

Well No.	Date	Ammonia, mg/L	TOC, mg/L	Sulfate, mg/L	TDS, mg/L	Phenol, µg/L	Benzene, µg/L	Toluene, µg/L	Ethylbenzene, µg/L	Naphthalene, µg/L
CBO160 (Field Blanks)	06/01					<20	5 U	1 J	5 U	1 J
	06/15	<0.2	<10	<5	<10	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
CBO161 (Field Standards)	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	<0.2	<10	<5	<10	<20	5 U	5 U	5 U	5 U
	06/01					120	46	44	44	48
	06/15					130				
	06/30					150				
	07/15					140				
	08/01					150	88	84	85	87
	08/15					150				
CBO162 (Duplicates)	09/01					150				
	09/15					141				
	10/01					130	39	43	43	51
	06/01	2.1	<10	570	1920	<20	5 U	5 U	5 U	5 U
	06/15					150				
	06/30					330				
	07/15					146				
CBO163 (Rinsates)	08/01					140	1400	46 J	110	50 U
	08/15					230				
	09/01					<20				
	09/15					272				
	10/01	2.1	37	650	999	220	1800	39 J	100	50 U
	06/01					<20	5 U	5 U	5 U	5 U
	06/15	22	<10	1560	2860	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	5.0	<10	390	1190	<20	5 U	5 U	5 U	5 U

Chemical Monitoring Results from Hoe Creek Wells, 1989

Well No.	Date	Ammonia, mg/L	TOC, mg/L	Sulfate, mg/L	TDS, mg/L	Phenol, µg/L	Benzene, µg/L	Toluene, µg/L	Ethylbenzene, µg/L	Naphthalene, µg/L
CBO164 (Raw rinsate, Treated water)	06/01					<20	5 U	5 U	5 U	5 U
	06/15	22	<10	1570	2890	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01									
	09/15					<20				
	10/01	5.2	<10	410	1220	<20	5 U	5 U	5 U	5 U
	06/01					<20	5 U	5 U	5 U	5 U
CSR1	06/15	1.7	24	460	1160	<20				
	06/30					29				
	07/15					DRY				
	08/01					DRY				
	08/15					DRY				
	09/01					DRY				
	09/15					DRY				
	10/01					DRY				
	06/01					<20				
	06/15	0.9	<10	850	1710	<20				
DOE10	06/30					<20				
	07/15					<20				
	08/01					<20				
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.8	<10	830	1650	<20	5 U	5 U	5 U	5 U
	06/01					<20				
	06/15	0.6	<10	380	1140	<20				
	06/30					<20				
DOE2	07/15					<20				
	08/01					<20				
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01					<20				
	06/01					<20				
	06/15					<20				
	06/30					<20				
	07/15					<20				
DOE10	08/01					<20				
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.7	<10	460	1180	<20	5 U	5 U	5 U	5 U
	06/01					<20				
	06/15					<20				
	06/30					<20				
	07/15					<20				
	08/01					<20				

Chemical Monitoring Results from Hoe Creek Wells, 1989

Well No.	Date	Ammonia, mg/L	TOC, mg/L	Sulfate, mg/L	TDS, mg/L	Phenol, µg/L	Benzene, µg/L	Toluene, µg/L	Ethylbenzene, µg/L	Naphthalene, µg/L
DOE11	06/01					<20	5 U	5 U	5 U	5 U
	06/15	0.3	<10	58	680	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.4	<10	23	605	<20	5 U	5 U	5 U	5 U
	06/01					<20	5 U	5 U	5 U	5 U
DOE14	06/15	0.6	<10	110	870	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.6	<10	75	882	<20	5 U	5 U	5 U	5 U
	06/01	2.8	24	1010	1940	<20	5 U	5 U	5 U	5 U
	06/15					100				
DOE17	06/30					36				
	07/15					30	5 J	5 U	5 U	5 U
	08/01					23				
	08/15					<20				
	09/01					20				
	09/15					<20				
	10/01	2.0	<10	1160	2200	<20	5 U	5 U	5 U	5 U
	06/01	0.9	<10	710	1720	<20	1 J	5 U	5 U	5 U
	06/15					<20				
	06/30					<20				
DOE39	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.8	<10	690	1740	<20	5 U	5 U	5 U	5 U

Chemical Monitoring Results from Hoe Creek Wells, 1989

Well No.	Date	Ammonia, mg/L	TOC, mg/L	Sulfate, mg/L	TDS, mg/L	Phenol, µg/L	Benzene, µg/L	Toluene, µg/L	Ethylbenzene, µg/L	Naphthalene, µg/L
DOE40	06/01					<20	5 U	5 U	5 U	5 U
	06/15	0.4	<10	19	560	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.3	<10	12	560	<20	5 U	5 U	5 U	5 U
	06/01	0.8	<10	610	1570	<20	5 U	5 U	5 U	5 U
DOE49	06/15					<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.7	<10	610	1540	<20	5 U	5 U	5 U	5 U
	06/01	0.6	<10	280	920	<20	5 U	5 U	5 U	5 U
	06/15					<20				
DOE50	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.6	<10	370	1040	<20	5 U	5 U	5 U	5 U
	06/01	0.9	<10	810	1640	<20	5 U	5 U	5 U	5 U
	06/15					<20				
	06/30					<20				
DOE59	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.8	<10	790	1600	<20	5 U	5 U	5 U	5 U
	06/01					<20				
	06/15					<20				
	06/30					<20				
	07/15					<20				

Chemical Monitoring Results from Hoe Creek Wells, 1989

Well No.	Date	Ammonia, mg/L	TOC, mg/L	Sulfate, mg/L	TDS, mg/L	Phenol, µg/L	Benzene, µg/L	Toluene, µg/L	Ethylbenzene, µg/L	Naphthalene, µg/L
DOE60	06/01					<20	5 U	5 U	5 U	5 U
	06/15	1.0	<10	860	1710	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.8	<10	910	1780	<20	5 U	5 U	5 U	5 U
	06/01					<20	56	3 J	4 J	3 J
DW4	06/15	1.8	<10	310	1130	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	39	1 J	2 J	6
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	1.4	<10	260	1050	<20	35	5 U	1 J	3 J
	06/01					<20	14	5 U	5 U	5 U
	06/15	1.6	<10	100	900	<20				
EXP4	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	1.4	<10	33	764	<20	5 U	5 U	5 U	5 U
	06/01					20	5 U	5 U	5 U	5 U
	06/15	0.5	<10	430	1200	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	4.0	<10	370	1030	<20	5 U	5 U	5 U	5 U

Chemical Monitoring Results from Hoe Creek Wells, 1989

Well No.	Date	Ammonia, mg/L	TOC, mg/L	Sulfate, mg/L	TDS, mg/L	Phenol, µg/L	Benzene, µg/L	Toluene, µg/L	Ethylbenzene, µg/L	Naphthalene, µg/L
F1R1	06/01					<20	5 U	5 U	5 U	5 U
	06/15	3.1	14	1360	2670	30				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					30				
	09/01					<20				
	09/15					<20				
	10/01	3.3	22	1050	2080	<20	5 U	5 U	5 U	5 U
	06/01					<20	5 U	5 U	5 U	5 U
F1R2	06/15	0.3	<10	680	1560	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.5	<10	620	1530	<20	5 U	5 U	5 U	5 U
	06/01					<20				
	06/15	1.0	<10	730	1820	<20				
M1	06/30					<20				
	07/15					<20				
	08/01					<20				
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01					<20				
	06/01					<20				
	06/15					<20				
	06/30					<20				
P2	07/15					<20				
	08/01					<20				
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.9	26	750	1790	<20				
	06/01					24	55	5 U	5 U	5 U
	06/15	3.1	14	530	1610	20				
	06/30					60				
	07/15					<20				
	08/01					28	190	10 U	2 J	10 U
	08/15					<20				
	09/01					22				
	09/15					<20				
	10/01	2.8	16	460	1510	21	200	10 U	10 U	10 U

Chemical Monitoring Results from Hoe Creek Wells, 1989

Well No.	Date	Ammonia, mg/L	TOC, mg/L	Sulfate, mg/L	TDS, mg/L	Phenol, µg/L	Benzene, µg/L	Toluene, µg/L	Ethylbenzene, µg/L	Naphthalene, µg/L
W6	06/01					<20	5 U	5 U	5 U	5 U
	06/15	0.7	<10	36	870	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.7	12	43	840	<20	5 U	5 U	5 U	5 U
	06/01					<20	1 J	5 U	5 U	5 U
W21	06/15	33	<10	2440	3950	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	26	<10	1640	3050	<20	5 U	5 U	5 U	5 U
	06/01					490	1200	220	120	100
	06/15	6.8	<10	710	1950	290				
W1A	06/30					520				
	07/15					217				
	08/01					200	1300	100	100	57
	08/15					280				
	09/01					172				
	09/15					238				
	10/01	6.2	22	720	941	240	1700	73	130	60
	06/01					230	1400	40 J	110	50 U
	06/15	2	10	570	1930	180				
	06/30					310				
W4A	07/15					171				
	08/01					170	1400	50 J	110	50 U
	08/15					250				
	09/01					110				
	09/15					218				
	10/01	2.1	20	700	962	220	1800	36 J	110	50 U

Chemical Monitoring Results from Hoe Creek Wells, 1989

Well No.	Date	Ammonia, mg/L	TOC, mg/L	Sulfate, mg/L	TDS, mg/L	Phenol, µg/L	Benzene, µg/L	Toluene, µg/L	Ethylbenzene, µg/L	Naphthalene, µg/L
W10A	06/01					93				
	06/15	1.2	<10	560	1790	100				
	06/30					110				
	07/15					40				
	08/01					81				
	08/15					120				
	09/01					92				
	09/15					97				
	10/01	1.0	29	700	1950	80				
	06/01					440	130	23	6	29
W17A	06/15	31	11	850	2300	340				
	06/30					240				
	07/15					149				
	08/01					140	130	14	5 J	30
	08/15					150				
	09/01					114				
	09/15					84				
	10/01	24	32	1410	2230	60	63	3 J	3 J	14
	06/01					760	2800	800	230	220
	06/15	11	<10	460	1740	730				
W22A	06/30					790				
	07/15					533				
	08/01					490	2400	450	170	170
	08/15					580				
	09/01					357				
	09/15					478				
	10/01	6.5	33	630	1850	320	2100	310	150	140
	06/01					30	190 B	18	52	64
	06/15	12	<10	240	780	40				
	06/30					50				
WS5	07/15					21				
	08/01					38	95	5 J	17	23
	08/15					37				
	09/01					23				
	09/15					29				
	10/01	10	<10	600	1290	30	99	2 J	13	9

Chemical Monitoring Results from Hoe Creek Wells, 1989

Well No.	Date	Ammonia, mg/L	TOC, mg/L	Sulfate, mg/L	TDS, mg/L	Phenol, µg/L	Benzene, µg/L	Toluene, µg/L	Ethylbenzene, µg/L	Naphthalene, µg/L
WS6	06/01					60	320	10	10 U	10 U
	06/15	2.9	<10	150	780	100				
	06/30					85				
	07/15					37				
	08/01					48	5 U	5 U	2 J	16
	08/15					40				
	09/01					55				
	09/15					53				
	10/01	3.4	<10	200	950	40	250	2 J	7	5
	06/01					30	490 B	8 J	24	11
WS7	06/15	0.8	<10	26	880	40				
	06/30					38				
	07/15					21				
	08/01					34	470	3 J	10 U	9 J
	08/15					37				
	09/01					45				
	09/15					30				
	10/01	0.8	<10	55	904	34	130	1 J	5 U	4 J
	06/01					130	190 B	89	27	170
	06/15	14	<10	320	980	240				
WS10	06/30					260				
	07/15					210				
	08/01					210	500	68	31	200
	08/15					230				
	09/01					195				
	09/15					159				
	10/01	11	<10	390	1190	165	460	49	30	150
	06/01					100	5 U	5 U	5 U	5 U
	06/15	3.0	11	780	1800	60				
	06/30					40				
WS12	07/15					28				
	08/01					39				
	08/15					43				
	09/01					<20				
	09/15					56				
	10/01	1.8	12	890	1810	39				

Chemical Monitoring Results from Hoe Creek Wells, 1989

Well No.	Date	Ammonia, mg/L	TOC, mg/L	Sulfate, mg/L	TDS, mg/L	Phenol, µg/L	Benzene, µg/L	Toluene, µg/L	Ethylbenzene, µg/L	Naphthalene, µg/L
WS13	06/01					<20	5 U	5 U	5 U	5 U
	06/15	0.7	<10	12	730	<20				
	06/30					<20				
	07/15					<20				
	08/01					<20	5 U	5 U	5 U	5 U
	08/15					<20				
	09/01					<20				
	09/15					<20				
	10/01	0.6	<10	15	865	<20	5 U	5 U	5 U	5 U
	06/01					21	5 U	5 U	5 U	5 U
WS14	06/15	2.5	17	1030	1950	80				
	06/30					100				
	07/15					39				
	08/01					48	5 U	5 U	5 U	5 U
	08/15					37				
	09/01					34				
	09/15					42				
	10/01	1.8	12	960	2010	35	5 U	5 U	5 U	5 U
	06/01					34	170	2 J	5 U	5 U
	06/15	0.2	<10	90	1110	160				
WS15	06/30					180				
	07/15					196				
	08/01					280	2300	10 J	50 U	50 U
	08/15					580				
	09/01					378				
	09/15					703				
	10/01	0.3	<10	230	1100	210	5 U	5 U	5 U	5 U
	06/01					100	960 B	18 J	25 U	25 U
	06/15	0.3	<10	130	1110	150				
	06/30					110				
WS16	07/15					153				
	08/01					140	1300	50 U	50 U	50 U
	08/15					370				
	09/01					315				
	09/15					294				
	10/01	0.3	<10	170	1000	320	91	5 U	5 U	5 U

Chemical Monitoring Results from Hoe Creek Wells, 1989

Well No.	Date	Ammonia, mg/L	TOC, mg/L	Sulfate, mg/L	TDS, mg/L	Phenol, µg/L	Benzene, µg/L	Toluene, µg/L	Ethylbenzene, µg/L	Naphthalene, µg/L
WS17	06/01					140	2000 B	45 J	33 J	50 U
	06/15	<0.2	<10	170	1130	280				
	06/30					100				
	07/15					132				
	08/01					DRY				
	08/15					DRY				
	09/01					DRY				
	09/15					DRY				
	10/01					DRY				
	06/01					51	170	2 J	5 U	5 U
WS19	06/15	0.3	<10	130	780	30				
	06/30					30				
	07/15					<20				
	08/01					40	1 J	5 U	5 U	2 J
	08/15					50				
	09/01					47				
	09/15					<20				
	10/01	0.3	<10	140	750	51	280	4 J	7 J	3 J
	06/01					20	180	10	5 U	5 U
	06/15	13	<10	320	980	260				
WS21	06/30					50				
	07/15					23				
	08/01					44	420	20	16	38
	08/15					34				
	09/01					41				
	09/15					86				
	10/01	1.0	10	610	1450	35	330	12	28	25
	06/01					62	540 B	240	61	25 U
	06/15	4.3	13	410	1280	120				
	06/30					70				
WS22	07/15					39				
	08/01					30	180	12	10 U	10 U
	08/15					54				
	09/01					39				
	09/15					63				
	10/01	2.1	14	710	1600	50	400	25	45	200

Chemical Monitoring Results from Hoe Creek Wells, 1989

Well No.	Date	Ammonia, mg/L	TOC, mg/L	Sulfate, mg/L	TDS, mg/L	Phenol, µg/L	Benzene, µg/L	Toluene, µg/L	Ethylbenzene, µg/L	Naphthalene, µg/L
WS23	06/01					69	5 U	5 U	5 U	5 U
	06/15	3.8	14	670	1640	70				
	06/30					230				
	07/15					280				
	08/01					130	86	43	3 J	5 U
	08/15					180				
	09/01					158				
	09/15					230				
	10/01	7.6	25	37	814	230	660	83	44	190
	06/01					33	1 JB	5 U	5 U	5 U
WS24	06/15	<0.2	<10	420	1380	80				
	06/30					140				
	07/15					99				
	08/01					130	470	2 J	10 U	10 U
	08/15					130				
	09/01					95				
	09/15					40				
	10/01	0.5	<10	490	1540	<20	5 U	5 U	5 U	5 U
	03/01					175	180 B	63	16	110
	06/15	15	<10	290	900	150				
WS26	05/30					100				
	07/15					84				
	08/01					84	160	32	14	80
	08/15					90				
	09/01					91				
	09/15					92				
	10/01	14	<10	530	1270	68	200	20	12	60

Data Reporting Qualifiers

For reporting results to EPA the following results qualifiers are used. Additional flags or footnotes explaining results are encouraged. However, the definition of each flag must be explicit.

Value - If the result is a value greater than or equal to the detection limit, report the value.

U - Indicates compound was analyzed for but not detected. Report the minimum detection limit for the sample with the U (e.g. 10U) based on necessary concentration/dilution action (this is not necessarily the instrument detection limit). The footnote should read: U-Compound was analyzed for but not detected. The number is the minimum attainable detection limit for the sample.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed or when the mass spectral data indicated the presence of a compound that meets the identification criteria but the result is < than the specified detection limit but > than zero (e.g. 10J). If limit of detection is 10 ug/L and a concentration of 3.0 ug/L is calculated, report as 3J.

C - This flag applies to pesticide parameters where the identification has been confirmed by GC/MS. Single component pesticides ≥ 10 ng/uL in the final extract should be confirmed by GC/MS.

B - This flag is used when the analyte is found in the blank as well as a sample. It indicates possible/probable blank contamination and warns data the user to take appropriate action.

Other - Other specific flags and footnotes may be required to properly define the results. If used, they must be fully described and such description attached to the data summary report.

Optional Flags

N - Compound not present in Calibration File.

APPENDIX C

Daily Field Measurements for Temperature, pH*, Conductivity,
and Phenols** for Pumping Wells at the Hoe Creek Site, 1989

* pH paper used from 9/14 through 9/19, while pH meter being repaired.

** Phenols measured with field test kit which had a detection limit of 100 $\mu\text{g/L}$.

Well: DW4

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	15	7.13	1580	0.0	08-01-89	14	7.02	1600	<100
06-08-89	14	7.15	1643	<100	08-02-89	14	7.01	1580	0
06-09-89	15	7.30	1595	<100	08-03-89	14	7.21	1340	0
06-10-89	15	7.39	1600	<100	08-04-89	14	7.28	1500	0
06-11-89	17	7.46	1600	<100	08-05-89	14	7.15	1505	<100
06-12-89	14	7.42	1470	<100	08-06-89	14	7.09	1550	<100
06-13-89	13	7.41	1520	100	08-07-89	13	7.26	1560	0
06-14-89	14	7.35	1520	100	08-08-89	14	7.31	1570	0
06-15-89	14	7.29	1510	<100	08-09-89	14	7.11	1550	<100
06-16-89	17	7.28	1470	<100	08-10-89	14	7.22	1560	0
06-17-89	-	-	-	-	08-11-89	14	7.12	1500	0
06-18-89	16	7.28	1520	100	08-12-89	15	7.14	1500	0
06-19-89	18	7.35	1510	<100	08-13-89	15	7.22	1440	0
06-20-89	13	7.29	1550	100	08-14-89	15	7.45	1480	<100
06-21-89	9	7.06	1500	<100	08-15-89	15	7.19	1400	<100
06-22-89	12	7.30	1646	100	08-16-89	14	7.19	1480	<100
06-23-89	12	7.33	1646	100	08-17-89	15	7.09	1460	<100
06-24-89	12	7.26	1604	<100	08-18-89	15	7.08	1440	0
06-25-89	14	7.32	1560	0	08-19-89	15	7.12	1436	0
06-26-89	14	7.27	1569	<100	08-20-89	15	7.19	1418	0
06-27-89	14	7.26	1550	0	08-21-89	15	7.29	1390	0
06-28-89	15	7.20	1520	0	08-24-89	15	7.19	1480	<100
06-29-89	16	7.27	1440	0	08-25-89	15	7.21	1400	0
06-30-89	16	7.31	1590	0	08-26-89	14	7.04	1400	0
07-01-89	16	7.35	1570	100	08-27-89	14	7.09	1380	0
07-02-89	15	7.26	1570	100	08-28-89	11	7.10	1540	0
07-03-89	14	7.29	1580	100	08-29-89	14	7.18	1460	0
07-04-89	15	7.18	1550	100	08-30-89	17	7.08	1600	0
07-05-89	14	7.28	1520	100	08-31-89	15	7.16	1320	0
07-06-89	16	7.38	1420	100	09-01-89	13	7.20	1420	0
07-07-89	15	7.17	1500	<100	09-02-89	14	7.20	1420	0
07-08-89	16	7.14	1500	100	09-03-89	13	7.21	1420	0
07-09-89	18	7.17	1450	<100	09-04-89	15	7.23	1340	0
07-10-89	14	7.20	1560	100	09-05-89	18	7.33	1320	0
07-11-89	15	7.16	1540	0	09-06-89	14	7.11	1340	0
07-12-89	15	7.25	1480	<100	09-07-89	17	7.28	1400	0
07-13-89	15	7.31	1470	<100	09-08-89	9	7.12	1700	-
07-14-89	14	7.30	1460	100	09-09-89	11	7.20	1500	0
07-15-89	14	7.26	1480	<100	09-10-89	17	7.31	1700	0
07-16-89	15	7.19	1480	<100	09-11-89	18	-	1500	0
07-17-89	16	7.26	1480	100	09-12-89	11	-	1700	0
07-18-89	16	7.31	1490	<100	09-13-89	12	-	1600	0
07-19-89	14	7.32	1560	<100	09-14-89	13	7.0	1600	0
07-20-89	14	7.29	1570	0	09-15-89	14	7.2	1700	0
07-21-89	17	7.30	1520	0	09-16-89	13	6.8	1600	0
07-22-89	15	7.17	1500	0	09-17-89	14	7.2	1700	0
07-23-89	17	7.29	1420	0	09-18-89	13	6.8	1600	0
07-24-89	17	7.22	1480	0	09-19-89	13	7.2	1600	0
07-25-89	18	7.19	1440	0	09-21-89	13.2	7.19	1500	0
07-26-89	17	7.18	1520	0	09-22-89	12.2	7.15	2000	100
07-27-89	18	7.25	1460	0	09-23-89	11.8	7.12	1600	0
07-28-89	18	7.29	1500	0	09-24-89	13.3	7.13	1500	0
07-29-89	18	7.22	-	0	09-25-89	13.1	7.76	1600	100
07-30-89	15	7.16	1500	0	09-26-89	13.6	7.18	1400	0
07-31-89	16	7.21	1460	0	09-27-89	-	-	-	-

Well: WS5

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	18	7.70	940	0	08-01-89	16	7.37	1600	<100
06-08-89	17	7.68	950	<100	08-02-89	17	7.39	1600	0
06-09-89	18	7.89	1033	<100	08-03-89	19	7.48	1240	0
06-10-89	17	8.25	1040	<100	08-04-89	20	6.60	1670	<100
06-11-89	19	7.93	1056	<100	08-05-89	16	7.54	1600	0
06-12-89	16	7.88	1020	<100	08-06-89	16	7.39	1600	0
06-13-89	15	7.91	1050	<100	08-07-89	16	7.49	1610	0
06-14-89	17	7.79	1030	<100	08-08-89	18	7.49	1560	<100
06-15-89	17	7.80	1060	<100	08-09-89	16	7.42	1615	0
06-16-89	20	7.87	1080	<100	08-10-89	17	7.42	1600	0
06-17-89	-	-	-	-	08-11-89	17	7.25	1560	<100
06-18-89	18	7.73	1130	<100	08-12-89	17	7.47	1550	<100
06-19-20	20	7.80	1090	100	08-13-89	18	7.61	1448	<100
06-20-89	16	7.67	1100	100	08-14-89	18	7.72	1552	<100
06-21-89	12	7.54	1100	<100	08-15-89	17	7.50	1560	<100
06-22-89	17	7.88	1238	<100	08-16-89	17	7.50	1660	<100
06-23-89	15	7.81	1298	100	08-17-89	17	7.48	1590	<100
06-24-89	15	7.66	1243	<100	08-18-89	16	7.37	1600	0
06-25-89	17	7.86	1225	0	08-19-89	17	7.39	1560	0
06-26-89	16	7.76	1280	<100	08-20-89	17	7.47	1538	0
06-27-89	17	7.72	1265	0	08-21-89	17	7.58	1520	0
06-28-89	17	7.66	1245	0	08-24-89	17	7.50	1560	0
06-29-89	18	7.78	1190	0	08-25-89	17	7.51	1600	0
06-30-89	19	7.80	1320	0	08-26-89	16	7.36	1560	0
07-01-89	18	7.81	1350	0	08-27-89	17	7.41	1580	0
07-02-89	17	7.78	1340	0	08-28-89	14	7.33	1640	0
07-03-89	17	7.75	1320	<100	08-29-89	15	7.42	1600	0
07-04-89	18	7.65	1330	0	08-30-89	18	7.46	1720	0
07-05-89	18	7.63	1310	0	08-31-89	18	7.44	1540	0
07-06-89	21	7.77	1240	100	09-01-89	15	7.56	1680	0
07-07-89	17	7.56	1400	200	09-02-89	17	7.50	1520	0
07-08-89	17	7.59	1380	<100	09-03-89	17	7.48	1540	0
07-09-89	18	7.68	1370	0	09-04-89	18	7.50	1560	0
07-10-89	16	7.65	1460	<100	09-05-89	18	7.61	1520	0
07-11-89	17	7.00	1380	100	09-06-89	16	7.39	1560	0
07-12-89	17	7.64	1400	<100	09-07-89	18	7.36	1700	0
07-13-89	16	7.61	1420	0	09-08-89	10	7.96	1800	0
07-14-89	16	7.64	1460	0	09-09-89	11	7.53	1800	0
07-15-89	18	7.74	1300	0	09-10-89	16	7.42	1800	0
07-16-89	18	7.69	1410	0	09-11-89	15	-	1900	0
07-17-89	18	7.69	1360	<100	09-12-89	13	-	1900	0
07-18-89	18	7.61	1420	0	09-13-89	14	-	1900	0
07-19-89	17	7.67	1440	0	09-14-89	15	6.8	1800	0
07-20-89	18	7.62	1438	0	09-15-89	15	7.4	2100	0
07-21-89	21	7.60	1400	0	09-16-89	15	6.6	1800	0
07-22-89	15	7.53	1640	0	09-17-89	15	6.8	1800	0
07-23-89	19	7.64	1520	0	09-18-89	15	6.8	1900	0
07-24-89	19	7.53	1500	0	09-19-89	15	7.2	1900	0
07-25-89	19	7.56	1500	0	09-21-89	15.5	7.36	1700	100
07-26-89	19	7.50	1560	0	09-22-89	14.4	7.45	2400	0
07-27-89	20	7.69	1420	0	09-23-89	14.0	7.41	1800	0
07-28-89	20	7.54	1490	0	09-24-89	15.1	7.38	1800	0
07-29-89	20	7.55	-	0	09-25-89	15.0	7.95	1800	100
07-30-89	17	7.62	1600	0	09-26-89	15.2	7.43	1800	0
07-31-89	17	7.59	1560	0	09-27-89	-	-	-	-

Well: WS6

Date	Temp. °C	pH	Corrected Conductivity, μmhos/cm@25 °C	Field Test Phenols, μg/L	Date	Temp. °C	pH	Corrected Conductivity, μmhos/cm@25 °C	Field Test Phenols, μg/L
06-07-89	17	7.41	1060	0	08-01-89	17	7.18	1420	<100
06-08-89	17	7.43	1124	<100	08-02-89	17	7.28	1340	0
06-09-89	17	7.6	1132	<100	08-03-89	19	7.39	1070	0
06-10-89	17	7.74	1130	<100	08-04-89	18	7.39	1210	0
06-11-89	19	7.65	1122	0	08-05-89	17	7.38	1350	0
06-12-89	16	7.49	1060	<100	08-06-89	16	7.29	1400	0
06-13-89	15	7.69	1050	100	08-07-89	16	7.34	1380	<100
06-14-89	17	7.46	1050	100	08-08-89	19	7.41	1275	0
06-15-89	18	7.12	1620	100	08-09-89	17	7.28	1340	0
06-16-89	19	7.56	1090	<100	08-10-89	18	7.31	1400	0
06-17-89	20	7.61	1080	<100	08-11-89	17	7.30	1350	0
06-18-89	18	7.40	1110	100	08-12-89	18	7.44	1250	100
06-19-89	19	7.41	1160	100	08-13-89	19	7.56	1200	<100
06-20-89	16	7.48	1070	100	08-14-89	17	7.65	1240	<100
06-21-89	10	6.80	1580	100	08-15-89	17	7.49	1280	<100
06-22-89	17	7.60	1195	100	08-16-89	17	7.43	1360	<100
06-23-89	15	7.50	1235	<100	08-17-89	18	7.35	1282	<100
06-24-89	16	7.44	1191	0	08-18-89	16	7.27	1350	0
06-25-89	17	7.54	1150	0	08-19-89	17	7.42	1310	<100
06-26-89	16	7.47	1204	<100	08-20-89	17	7.33	1302	0
06-27-89	18	7.45	1195	0	08-21-89	17	7.42	1284	<100
06-28-89	18	7.42	1155	0	08-24-89	17	7.33	1350	0
06-29-89	18	7.45	1100	0	08-25-89	17	7.43	1280	100
06-30-89	19	7.50	1190	0	08-26-89	17	7.33	1300	<100
08-27-89	19	7.54	1260	<100	08-27-89	17	7.34	1340	<100
07-02-89	18	7.50	1240	0	08-28-89	15	7.28	1320	0
07-03-89	17	7.48	1220	<100	08-29-89	15	7.40	1300	0
07-04-89	19	7.53	1220	0	08-30-89	19	7.40	1440	0
07-05-89	17	7.45	1220	0	08-31-89	18	7.37	1240	0
07-06-89	20	7.52	1140	100	09-01-89	16	7.44	1280	0
07-07-89	18	7.27	1140	100	09-02-89	17	7.43	1270	0
07-08-89	18	7.40	1220	100	09-03-89	16	7.44	1280	0
07-09-89	18	7.41	1220	0	09-04-89	18	7.39	1250	0
07-10-89	16	7.39	1300	100	09-05-89	19	7.53	1200	0
07-11-89	17	7.42	1200	0	09-06-89	17	7.26	1240	0
07-12-89	17	7.37	1220	100	09-07-89	16	7.42	1300	0
07-13-89	16	7.32	1200	0	09-08-89	10	7.18	1500	0
07-14-89	16	7.49	1240	0	09-09-89	14	7.96	1500	0
07-15-89	18	7.48	1260	0	09-10-89	16	7.45	1300	0
07-16-89	17	7.50	1280	0	09-11-89	15	-	1600	0
07-17-89	19	7.59	1200	0	09-12-89	13	-	1500	0
07-18-89	18	7.49	1230	0	09-13-89	15	-	1500	0
07-19-89	17	7.52	1290	0	09-14-89	16	6.8	1500	0
07-20-89	18	7.46	1326	0	09-15-89	18	7.2	1500	0
07-21-89	20	7.50	1300	0	09-16-89	16	7.6	1500	0
07-22-89	15	7.39	1400	0	09-17-89	16	7.2	1500	0
07-23-89	19	7.51	1300	0	09-18-89	15	7.0	1500	100
07-24-89	19	7.38	1300	0	09-19-89	15	7.6	1500	0
07-25-89	19	7.39	1300	0	09-21-89	16	7.26	1400	0
07-26-89	19	7.37	1340	0	09-22-89	14.8	7.30	1900	100
07-27-89	19	7.59	1200	100	09-23-89	14.5	7.33	1500	0
07-28-89	19	7.44	1320	100	09-24-89	15.7	7.27	1500	0
07-29-89	18	7.39	-	0	09-25-89	15.5	7.88	1500	0
07-30-89	18	7.36	1320	0	09-26-89	16.0	7.31	1400	0
07-31-89	18	7.41	1340	0	09-27-89	-	-	-	-

Well: WS7

Date	Temp, °C	pH	Corrected Conductivity, μmhos/cm@25°C	Field Test Phenols, μg/L	Date	Temp, °C	pH	Corrected Conductivity, μmhos/cm@25°C	Field Test Phenols, μg/L
06-07-89	17	7.35	1220	-	08-01-89	16	7.11	1460	<100
06-08-89	17	7.36	1285	100	08-02-89	16	7.29	1400	0
06-09-89	18	7.44	1286	>100	08-03-89	19	7.31	1090	0
06-10-89	17	7.67	1286	0	08-04-89	18	7.34	1300	0
06-11-89	19	7.53	1267	0	08-05-89	17	7.33	1350	<100
06-12-89	16	7.36	1220	100	08-06-89	16	7.32	1410	0
06-13-89	15	7.65	1200	100	08-07-89	16	7.29	1400	0
06-14-89	17	7.49	1220	<100	08-08-89	18	7.42	1300	0
06-15-89	17	7.52	1180	<100	08-09-89	17	7.29	1335	<100
06-16-89	18	7.47	1280	<100	08-10-89	17	7.33	1500	<100
06-17-89	-	-	-	-	08-11-89	16	7.19	1410	<100
06-18-89	17	7.35	1260	<100	08-12-89	17	7.32	1300	0
06-19-89	19	7.21	1210	<100	08-13-89	19	7.54	1200	0
06-20-89	16	7.40	1230	100	08-14-89	17	7.56	1240	<100
06-21-89	10	6.37	1600	100	08-15-89	17	7.38	1280	<100
06-22-89	16	7.57	1365	<100	08-16-89	17	7.33	1380	<500
06-23-89	15	7.44	1392	100	08-17-89	17	7.23	1280	<100
06-24-89	15	7.39	1325	<100	08-18-89	16	7.26	1360	<100
06-25-89	17	7.48	1285	<100	08-19-89	17	7.34	1320	<100
06-26-89	16	7.42	1335	<100	08-20-89	16	7.28	1340	0
06-27-89	17	7.39	1324	<100	08-21-89	16	7.37	1280	0
06-28-89	18	7.39	1330	0	08-24-89	17	7.33	1320	0
06-29-89	19	7.39	1190	0	08-25-89	16	7.29	1380	<100
06-30-89	19	7.54	1320	0	08-26-89	16	7.21	1260	<100
07-01-89	18	7.43	1350	0	08-27-89	16	7.22	1300	<100
07-02-89	18	7.60	1320	<100	08-28-89	14	7.21	1340	0
07-03-89	16	7.40	1350	100	08-29-89	15	7.33	1320	0
07-04-89	18	7.46	1320	0	08-30-89	17	7.28	1440	0
07-05-89	18	7.40	1310	0	08-31-89	18	7.24	1240	0
07-06-89	19	7.43	1280	100	09-01-89	15	7.34	1310	0
07-07-89	17	7.25	1340	100	09-02-89	16	7.34	1280	0
07-08-89	17	7.29	1340	100	09-03-89	15	7.28	1280	0
07-09-89	18	7.34	1320	0	09-04-89	16	7.29	1160	0
07-10-89	15	7.34	1400	100	09-05-89	18	7.38	1200	0
07-11-89	18	7.35	1220	0	09-06-89	16	7.18	1180	0
07-12-89	17	7.42	1280	100	09-07-89	18	7.34	1300	0
07-13-89	16	7.37	1300	100	09-08-89	8	7.58	1500	-
07-14-89	16	7.42	1320	0	09-09-89	14	7.95	1500	0
07-15-89	18	7.43	1260	0	09-10-89	17	7.59	1500	0
07-16-89	18	7.39	1290	0	09-11-89	15	-	1500	0
07-17-89	18	7.53	1320	0	09-12-89	13	-	1500	0
07-18-89	18	7.48	1330	0	09-13-89	14	-	1500	0
07-19-89	16	7.48	1360	0	09-14-89	16	7.0	1400	0
07-20-89	18	7.35	1350	<100	09-15-89	16	7.2	1500	0
07-21-89	19	7.40	1320	0	09-16-89	15	8.0	1500	0
07-22-89	15	7.28	1480	0	09-17-89	16	7.2	1400	0
07-23-89	18	7.47	1400	0	09-18-89	15	7.0	1400	0
07-24-89	19	7.28	1340	0	09-19-89	14	7.4	1500	0
07-25-89	20	7.32	1340	0	09-20-89	15	7.29	1400	0
07-26-89	19	7.28	1400	0	09-21-89	14.2	7.22	1900	0
07-27-89	20	7.49	1200	0	09-22-89	13.6	7.17	1500	0
07-28-89	19	7.33	1340	0	09-23-89	14.9	7.21	1500	100
07-29-89	19	7.33	-	0	09-24-89	14.9	7.83	1500	100
07-30-89	18	7.33	1360	0	09-25-89	15.2	7.24	1400	0
07-31-89	18	7.42	1400	0	09-26-89	-	-	-	-

Well: WS10

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	17	7.35	1110	400	08-01-89	15	6.79	1700	<100
06-08-89	16	7.42	1202	400	08-02-89	15	6.89	1680	300
06-09-89	17	7.55	1256	400	08-03-89	19	7.07	1260	300
06-10-89	16	7.68	1280	400	08-04-89	16	7.14	1505	300
06-11-89	17	7.64	1312	400	08-05-89	17	7.08	1600	300
06-12-89	15	7.36	1270	600	08-06-89	16	7.04	1650	300
06-13-89	15	7.53	1260	600	08-07-89	15	7.03	1625	<300
06-14-89	18	7.27	1250	600	08-08-89	18	7.06	1550	<300
06-15-89	17	7.28	1310	600	08-09-89	16	6.89	1550	<300
06-16-89	16	7.42	1350	600	08-10-89	17	7.02	1550	300
06-17-89	15	7.45	1320	400	08-11-89	16	7.08	1625	<300
06-18-89	17	7.18	1360	700	08-12-89	16	7.02	1550	400
06-19-89	18	7.22	1320	600	08-13-89	16	7.16	1360	<200
06-20-89	15	7.06	1370	800	08-14-89	16	7.17	1480	<100
06-21-89	10	7.03	1300	600	08-15-89	16	7.02	1520	<100
06-22-89	15	7.32	1455	600	08-16-89	16	6.99	1640	<200
06-23-89	14	7.29	1493	400	08-17-89	16	6.95	1520	<300
06-24-89	15	7.19	1519	400	08-18-89	15	6.85	1520	400
06-25-89	16	7.30	1390	300	08-19-89	16	6.97	1510	<300
06-26-89	15	7.26	1430	300	08-20-89	16	6.91	1516	<300
06-27-89	17	7.26	1390	300	08-21-89	16	7.03	1486	<200
06-28-89	16	7.18	1400	300	08-24-89	16	7.01	1520	300
06-29-89	19	7.19	1310	400	08-25-89	16	6.94	1520	<300
06-30-89	17	7.25	1450	500	08-26-89	15	6.87	1460	300
07-01-89	17	7.24	1490	600	08-27-89	15	6.88	1540	<300
07-02-89	17	7.27	1400	400	08-28-89	13	6.80	1640	400
07-03-89	16	7.11	1460	600	08-29-89	14	6.85	1580	600
07-04-89	18	7.13	1430	600	08-30-89	17	6.87	-	300
07-05-89	16	7.16	1400	200	08-31-89	17	6.89	1460	200
07-06-89	18	7.25	1360	400	09-01-89	15	6.99	1520	100
07-07-89	17	7.02	1440	600	09-02-89	16	6.96	1500	0
07-08-89	17	7.10	1420	600	09-03-89	14	6.97	1460	0
07-09-89	16	7.17	1442	500	09-04-89	16	6.96	1510	100
07-10-89	15	7.11	1540	600	09-05-89	17	7.07	1500	100
07-11-89	16	7.12	1380	400	09-06-89	15	6.86	1500	100
07-12-89	17	7.17	1460	400	09-07-89	16	6.95	1600	300
07-13-89	16	7.21	1420	400	09-08-89	9	7.02	1800	-
07-14-89	15	7.03	1500	400	09-09-89	15	7.92	1800	400
07-15-89	16	7.08	1540	300	09-10-89	16	6.93	1700	300
07-16-89	16	7.10	1490	300	09-11-89	14	-	1800	0
07-17-89	17	7.16	1400	400	09-12-89	13	-	1800	400
07-18-89	17	7.13	1520	300	09-13-89	13	-	1800	300
07-19-89	16	7.17	1530	400	09-14-89	15	6.8	1700	300
07-20-89	17	7.12	1540	400	09-15-89	18	6.8	1800	400
07-21-89	19	7.23	1520	400	09-16-89	15	6.8	1800	200
07-22-89	15	7.08	1700	400	09-17-89	15	7.2	1600	300
07-23-89	18	7.16	1540	400	09-18-89	14	7.0	1800	100
07-24-89	18	7.12	1540	400	09-19-89	14	7.2	1700	300
07-25-89	18	7.08	1540	300	09-21-89	14.2	6.88	1700	300
07-26-89	18	7.04	1600	300	09-22-89	13.3	6.87	2300	300
07-27-89	17	7.09	1480	300	09-23-89	13.1	6.79	1800	200
07-28-89	18	7.10	1520	300	09-24-89	14.0	6.82	1800	200
07-29-89	18	7.16	-	300	09-25-89	14.0	7.51	1700	300
07-30-89	17	7.00	1600	400	09-26-89	14.6	6.89	1700	300
07-31-89	17	7.02	1580	400	09-27-89	-	-	-	-

Well: WS15

Date	Temp, °C	pH	Corrected Conductivity, μmhos/cm@25°C	Field Test Phenols, μg/L	Date	Temp, °C	pH	Corrected Conductivity, μmhos/cm@25°C	Field Test Phenols, μg/L
06-07-89	22	6.63	1610	200	08-01-89	24	6.30	1760	300
06-08-89	22	6.46	1675	300	08-02-89	22	6.39	1700	300
06-09-89	23	6.61	1715	300	08-03-89	24	6.47	1400	200
06-10-89	23	6.65	1707	200	08-04-89	21	6.60	1640	200
06-11-89	26	6.66	1651	200	08-05-89	21	6.53	1700	200
06-12-89	21	6.52	1640	300	08-06-89	18	6.53	1700	300
06-13-89	18	6.68	1700	500	08-07-89	18	6.52	1640	200
06-14-89	22	6.51	1590	500	08-08-89	22	6.59	1625	200
06-15-89	23	6.48	1580	300	08-09-89	21	6.42	1630	300
06-16-89	29	6.64	1700	300	08-10-89	20	6.51	1700	300
06-17-89	-	-	-	-	08-11-89	20	6.49	1625	200
06-18-89	28	6.47	1600	200	08-12-89	24	6.53	1600	500
06-19-89	28	6.51	1560	200	08-13-89	29	6.69	1480	<400
06-20-89	20	6.56	1590	300	08-14-89	26	6.75	1560	<400
06-21-89	11	6.31	1420	300	08-15-89	25	6.67	1640	<400
06-22-89	19	6.51	1727	<200	08-16-89	24	6.55	1800	400
06-23-89	18	6.45	1747	<200	08-17-89	22	6.48	1570	400
06-24-89	18	6.41	1672	<200	08-18-89	20	6.44	1600	400
06-25-89	21	6.50	1625	<200	08-19-89	22	6.53	1602	500
06-26-89	19	6.49	1688	100	08-20-89	23	6.67	1600	<500
06-27-89	20	6.47	1645	100	08-21-89	23	6.61	1580	500
06-28-89	20	6.46	1650	<200	08-24-89	22	6.48	1640	400
06-29-89	22	6.67	1520	<100	08-25-89	23	6.52	1600	400
06-30-89	21	6.66	1740	200	08-26-89	24	6.46	1600	500
07-01-89	23	6.69	1720	300	08-27-89	23	6.51	1620	400
07-02-89	22	6.78	1650	200	08-28-89	19	6.37	1600	400
07-03-89	22	6.66	1690	200	08-29-89	21	6.48	1540	500
07-04-89	21	6.63	1650	200	08-30-89	31	6.50	1540	400
07-05-89	21	6.47	1662	100	08-31-89	25	6.50	1500	400
07-06-89	24	6.57	1560	200	09-01-89	25	6.57	1510	500
07-07-89	21	6.27	1700	200	09-02-89	26	6.62	1510	400
07-08-89	22	6.43	1600	200	09-03-89	24	6.50	1600	400
07-09-89	21	6.47	1685	100	09-04-89	27	6.55	1500	600
07-10-89	19	6.46	1720	200	09-05-89	30	6.62	1480	400
07-11-89	21	6.40	1600	100	09-06-89	23	6.47	1500	600
07-12-89	24	6.60	1620	200	09-07-89	26	6.60	1700	-
07-13-89	20	6.52	1590	200	09-08-89	18	6.42	1700	-
07-14-89	19	6.64	1640	200	09-09-89	21	6.95	1700	-
07-15-89	21	6.70	1500	200	09-10-89	25	6.73	1700	-
07-16-89	21	6.72	1540	200	09-11-89	18	-	1700	0
07-17-89	25	6.77	1640	200	09-12-89	14	-	1700	0
07-18-89	23	6.71	1580	200	09-13-89	15	-	1700	0
07-19-89	26	6.63	1740	200	09-14-89	18	6.6	1600	200
07-20-89	22	6.57	1660	200	09-15-89	21	6.8	1700	200
07-21-89	24	6.68	1640	200	09-16-89	21	6.8	1700	100
07-22-89	17	6.47	1780	200	09-17-89	21	6.8	1600	400
07-23-89	24	6.64	1680	200	09-18-89	19	6.6	1700	100
07-24-89	21	6.65	1680	200	09-19-89	17	6.6	1500	200
07-25-89	25	6.51	1660	200	09-21-89	20.4	6.47	1600	300
07-26-89	22	6.45	1720	100	09-22-89	18.5	6.45	2100	300
07-27-89	31	6.77	1620	200	09-23-89	17.7	6.33	1700	100
07-28-89	29	6.71	1680	200	09-24-89	21.4	6.34	1700	200
07-29-89	25	6.67	-	200	09-25-89	21.2	7.06	1700	200
07-30-89	22	6.66	1720	300	09-26-89	23.1	6.41	1700	300
07-31-89	23	6.68	1680	200	09-27-89	-	-	-	-

Well: WS16

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	20	6.48	1650	100	08-01-89	21	6.28	1640	100
06-08-89	19	6.43	1690	300	08-02-89	20	6.37	1600	100
06-09-89	20	6.95	1691	300	08-03-89	22	6.43	1310	100
06-10-89	20	6.62	1673	100	08-04-89	25	6.62	1550	200
06-11-89	25	6.68	1616	<100	08-05-89	21	6.56	1535	100
06-12-89	20	6.50	1620	300	08-06-89	18	6.48	1634	100
06-13-89	18	6.77	1610	300	08-07-89	17	7.40	1350	<100
06-14-89	23	6.59	1610	100	08-08-89	23	6.63	1520	400
06-15-89	22	6.75	1560	300	08-09-89	20	6.40	1560	<100
06-16-89	27	6.73	1610	100	08-10-89	21	6.58	1520	100
06-17-89	-	-	-	-	08-11-89	20	6.50	1410	100
06-18-89	27	6.47	1540	100	08-12-89	23	6.54	1450	300
06-19-89	28	6.72	1500	100	08-13-89	25	6.78	1400	<300
06-20-89	20	6.55	1530	200	08-14-89	24	6.68	1400	<200
06-21-89	10	6.31	1560	100	08-15-89	24	6.57	1400	200
06-22-89	19	6.55	1658	<200	08-16-89	26	6.57	1600	200
06-23-89	18	6.52	1660	<200	08-17-89	21	6.48	1440	<200
06-24-89	18	6.47	1595	<200	08-18-89	19	6.52	1480	200
06-25-89	22	6.52	1550	<200	08-19-89	20	6.57	1460	<200
06-26-89	18	6.55	1623	<200	08-20-89	21	6.50	1500	200
06-27-89	20	6.52	1590	<100	08-21-89	20	6.63	1440	<200
06-28-89	20	6.46	1570	100	08-24-89	20	6.57	1600	200
06-29-89	22	6.58	1460	<100	08-25-89	21	6.59	1540	<300
06-30-89	22	6.67	1640	100	08-26-89	25	6.52	1440	300
07-01-89	24	6.51	1620	300	08-27-89	23	6.61	1540	300
07-02-89	22	6.70	1550	200	08-28-89	18	6.37	1480	300
07-03-89	22	6.68	1530	200	08-29-89	21	6.55	1420	300
07-04-89	23	6.49	1550	300	08-30-89	28	6.57	1400	300
07-05-89	22	6.54	1604	200	08-31-89	19	6.49	1400	200
07-06-89	28	6.57	1540	200	09-01-89	21	6.52	1350	100
07-07-89	23	6.35	1640	200	09-02-89	25	6.59	1450	200
07-08-89	26	6.44	1600	300	09-03-89	21	6.57	1420	100
07-09-89	25	6.50	1620	200	09-04-89	20	6.95	1400	800+
07-10-89	20	6.45	1660	200	09-05-89	27	7.03	1350	800
07-11-89	23	6.44	1540	<100	09-06-89	15	6.61	1200	100
07-12-89	22	6.57	1500	100	09-07-89	23	6.64	1500	0
07-13-89	21	6.49	1490	100	09-08-89	9	6.59	1400	0
07-14-89	18	6.53	1600	100	09-09-89	16	7.81	1600	100
07-15-89	22	6.59	1400	100	09-10-89	22	6.63	1500	100
07-16-89	21	6.63	1470	100	09-11-89	18	-	1600	100
07-17-89	22	6.56	1520	100	09-12-89	15	-	1600	0
07-18-89	22	6.61	1590	0	09-13-89	16	-	1600	0
07-19-89	22	6.57	1600	0	09-14-89	19	6.5	1600	0
07-20-89	21	6.46	1585	0	09-15-89	21	6.8	1600	0
07-21-89	22	6.65	1540	100	09-16-89	19	6.4	1500	100
07-22-89	20	6.40	1720	100	09-17-89	18	6.6	1600	100
07-23-89	24	6.57	1560	100	09-18-89	18	6.4	1600	100
07-24-89	20	6.42	1600	<100	09-19-89	16	6.8	1400	100
07-25-89	23	6.44	1520	<100	09-21-89	18.7	6.57	1500	200
07-26-89	21	6.68	1600	200	09-22-89	17.0	6.56	2000	100
07-27-89	30	6.68	1500	100	09-23-89	16.3	6.33	1600	100
07-28-89	28	6.55	1520	100	09-24-89	18.8	6.33	1500	100
07-29-89	23	6.43	-	100	09-25-89	18.7	7.18	1500	200
07-30-89	20	6.53	1580	0	09-26-89	20.2	6.45	1500	0
07-31-89	21	6.45	1600	100	09-27-89	-	-	-	-

Well: WS17

Date	Temp, °C	pH	Corrected Conductivity, μmhos/cm@25°C	Field Test Phenols, μg/L
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06-07-89	21	6.57	1560	300
06-08-89	22	6.48	1690	300
06-09-89	PUMP OFF			
06-10-89	"			
06-11-89				
06-12-89				
06-13-89				
06-14-89				
06-15-89				
06-16-89				
06-17-89				
06-18-89				
06-19-89				
06-20-89	20	6.63	1580	1000
06-21-89	PUMP OFF			
06-22-89	"			
06-23-89				
06-24-89	18	6.51	1696	<100
06-25-89	PUMP OFF			
06-26-89	"			
06-27-89				
06-28-89				
06-29-89				
06-30-89				

07-01-89 PUMP REMOVED, NO FURTHER READINGS TAKEN.

Well: WS19

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	15	6.65	980	0	08-01-89	16	6.52	1320	<100
06-08-89	15	6.63	1075	<200	08-02-89	15	6.59	1080	<100
06-09-89	16	6.80	1088	100	08-03-89	18	6.67	830	<100
06-10-89	16	6.84	1088	100	08-04-89	18	6.68	1000	<100
06-11-89	16	6.84	1060	100	08-05-89	18	6.65	1010	<100
06-12-89	14	6.72	1020	100	08-06-89	16	6.64	1050	<100
06-13-89	15	6.91	1040	100	08-07-89	16	6.70	1050	<100
06-14-89	15	6.70	1030	100	08-08-89	18	6.72	1010	<100
06-15-89	16	6.73	1020	<100	08-09-89	17	6.60	1025	<100
06-16-89	18	6.78	1050	100	08-10-89	17	6.71	1010	<100
06-17-89	-	-	-	-	08-11-89	16	6.61	1050	0
06-18-89	17	6.72	1030	<100	08-12-89	17	6.70	950	0
06-19-89	19	6.81	1050	<100	08-13-89	18	6.83	920	<100
06-20-89	14	6.75	1050	500	08-14-89	17	6.85	920	<100
06-21-89	11	7.01	1010	200	08-15-89	17	6.69	880	<200
06-22-89	13	6.76	1154	<100	08-16-89	17	6.63	1080	<100
06-23-89	13	6.80	1176	100	08-17-89	18	6.66	960	0
06-24-89	13	6.71	1115	<100	08-18-89	15	6.60	1000	0
06-25-89	16	6.82	1080	<100	08-19-89	17	6.69	876	<200
06-26-89	15	6.72	1117	100	08-20-89	17	6.63	920	<200
06-27-89	16	6.75	1107	<100	08-21-89	17	6.75	990	<100
06-28-89	16	6.68	1110	0	08-24-89	17	6.63	1000	100
06-29-89	18	6.75	1000	<100	08-25-89	18	6.68	1020	<100
06-30-89	17	6.82	1130	<100	08-26-89	17	6.57	960	100
07-01-89	16	6.77	1130	0	08-27-89	17	6.55	1000	100
07-02-89	16	6.82	1060	0	08-28-89	13	6.50	1040	0
07-03-89	16	6.67	1070	<100	08-29-89	15	6.59	980	0
07-04-89	17	6.77	960	0	08-30-89	19	6.58	980	0
07-05-89	18	6.64	1070	<100	08-31-89	17	6.63	960	0
07-06-89	20	6.77	940	<100	09-01-89	16	6.70	1000	0
07-08-89	17	6.69	1040	100	09-02-89	18	6.75	960	0
07-09-89	18	6.68	1020	100	09-03-89	16	6.51	980	0
07-10-89	15	6.67	1140	100	09-04-89	16	6.63	970	0
07-11-89	16	6.61	1020	<100	09-05-89	20	6.75	970	0
07-12-89	18	6.81	1020	100	09-06-89	15	6.57	1000	0
07-13-89	17	6.85	1090	100	09-07-89	23	6.58	1500	0
07-14-89	14	6.71	1060	0	09-08-89	14	6.69	1100	0
07-15-89	16	6.76	1000	100	09-09-89	12	6.83	1200	0
07-16-89	17	6.82	1010	0	09-10-89	21	6.59	1100	0
07-17-89	17	6.86	1000	0	09-11-89	19	-	1200	0
07-18-89	18	6.81	1050	100	09-12-89	13	-	1200	0
07-19-89	18	6.72	1000	0	09-13-89	12	-	1200	0
07-20-89	17	6.73	1010	0	09-14-89	14	6.4	1100	0
07-21-89	18	6.72	1000	0	09-15-89	16	6.8	1200	0
07-22-89	16	6.66	1140	0	09-16-89	13	6.4	1100	0
07-23-89	18	6.77	1020	0	09-17-89	13	6.6	1200	0
07-24-89	18	6.61	1020	0	09-18-89	14	6.4	1100	0
07-25-89	20	6.63	1000	0	09-19-89	13	6.8	1200	0
07-26-89	18	6.62	1020	0	09-21-89	14.6	6.58	1000	0
07-27-89	19	6.72	900	0	09-22-89	13.1	6.61	1400	0
07-28-89	19	6.64	1020	-	09-23-89	12.5	6.50	1100	0
07-29-89	19	6.71	-	0	09-24-89	15.0	6.49	1100	0
07-30-89	16	6.67	1080	0	09-25-89	14.7	7.22	1100	100
07-31-89	17	6.69	1040	0	09-26-89	16.0	6.58	1100	0
					09-27-89	-	-	-	-

Well: WS21

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	15	6.65	1470	<100	08-01-89	18	6.77	1920	100
06-08-89	16	6.96	1600	<100	08-02-89	17	6.84	1800	100
06-09-89	16	7.15	1690	100	08-03-89	20	6.96	1470	0
06-10-89	16	7.18	1720	100	08-04-89	18	7.01	1750	<100
06-11-89	19	7.18	1627	100	08-05-89	19	6.97	1800	0
06-12-89	17	6.95	1610	<100	08-06-89	16	6.95	1825	0
06-13-89	15	7.12	1630	<100	08-07-89	17	6.99	1770	0
06-14-89	18	7.10	1620	100	08-08-89	18	7.05	1700	0
06-15-89	19	7.04	1640	<100	08-09-89	17	6.88	1800	0
06-16-89	21	7.07	1660	<100	08-10-89	18	6.98	1770	0
06-17-89	-	-	-	-	08-11-89	17	6.88	1800	0
06-18-89	25	6.97	1620	100	08-12-89	18	7.02	1650	0
06-19-89	26	7.01	1630	100	08-13-89	20	7.14	1600	<100
06-20-89	18	6.97	1630	100	08-14-89	18	7.16	1640	<100
06-21-89	9	6.92	1610	100	08-15-89	17	7.03	1680	<100
06-22-89	14	7.07	1740	100	08-16-89	18	7.03	1760	<100
06-23-89	14	7.04	1785	<100	08-17-89	18	6.97	1648	0
06-24-89	15	6.93	1696	<100	08-18-89	16	6.99	1680	0
06-25-89	19	7.04	1665	0	08-19-89	17	7.03	1660	0
06-26-89	15	7.06	1690	0	08-20-89	18	7.02	1620	0
06-27-89	16	7.05	1720	0	08-21-89	17	7.06	1680	0
06-28-89	15	6.97	1744	0	08-24-89	18	6.97	1660	0
06-29-89	20	7.26	1320	600	08-25-89	17	7.02	1620	0
06-30-89	17	7.38	1450	600	08-26-89	18	6.87	1640	0
07-01-89	17	7.01	1860	400	08-27-89	18	7.01	1640	0
07-02-89	16	7.14	1790	100	08-28-89	14	6.85	1740	0
07-03-89	16	7.09	1830	<100	08-29-89	15	6.91	1660	0
07-04-89	18	7.09	1670	<100	08-30-89	20	6.94	1650	0
07-05-89	17	7.03	1680	<100	08-31-89	18	6.87	1660	0
07-06-89	18	7.09	1600	0	09-01-89	17	7.01	1660	0
07-07-89	17	6.83	1760	100	09-02-89	20	7.04	1630	100
07-08-89	18	6.96	1560	200	09-03-89	17	7.01	1660	0
07-09-89	16	7.05	1800	100	09-04-89	17	6.91	1620	0
07-10-89	15	6.94	1860	100	09-05-89	19	7.05	1600	0
07-11-89	17	6.96	1650	0	09-06-89	15	6.88	1640	0
07-12-89	17	7.05	1740	100	09-07-89	17	6.97	1900	0
07-13-89	16	7.05	1710	100	09-08-89	15	6.86	1600	0
07-14-89	14	7.03	1780	0	09-09-89	16	7.82	2100	0
07-15-89	17	7.06	1480	400	09-10-89	18	7.56	1900	0
07-16-89	17	7.10	1550	100	09-11-89	13	-	2000	0
07-17-89	19	7.06	1660	100	09-12-89	11	-	2000	0
07-18-89	18	7.01	1690	<100	09-13-89	12	-	2000	0
07-19-89	17	7.09	1840	0	09-14-89	14	6.2	2000	0
07-20-89	17	7.04	1800	0	09-15-89	16	7.0	1900	0
07-21-89	18	7.13	1500	300	09-16-89	15	6.6	2000	0
07-22-89	16	6.94	1920	0	09-17-89	14	6.8	1900	0
07-23-89	21	7.06	1740	0	09-18-89	14	6.6	1900	0
07-24-89	16	7.07	1620	300	09-19-89	13	7.2	1700	0
07-25-89	20	6.98	1680	0	09-21-89	14.7	6.89	1800	0
07-26-89	19	6.90	1760	0	09-22-89	12.9	6.86	2300	0
07-27-89	19	7.05	1820	0	09-23-89	12.5	6.8	1900	0
07-28-89	19	7.00	1740	0	09-24-89	14.6	6.82	1900	0
07-29-89	19	7.02	-	0	09-25-89	14.3	7.49	1900	0
07-30-89	17	7.06	1780	0	09-26-89	15.2	6.85	1800	0
07-31-89	17	7.08	1760	0	09-27-89	-	-	-	-

Well: WS22

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	17	7.02	1340	200	08-01-89	14	6.65	1960	300
06-08-89	18	6.85	1670	200	08-02-89	14	6.65	1920	200
06-09-89	25	6.97	1482	300	08-03-89	18	6.78	1550	200
06-10-89	24	6.97	1515	200	08-04-89	16	6.86	1800	200
06-11-89	26	7.02	1782	200	08-05-89	18	6.77	1840	200
06-12-89	24	6.87	1620	200	08-06-89	15	6.80	1975	200
06-13-89	20	6.92	1480	200	08-07-89	15	6.77	1960	<200
06-14-89	26	6.92	1480	300	08-08-89	17	6.79	1750	200
06-15-89	26	6.92	1560	400	08-09-89	17	6.68	1845	<200
06-16-89	34	7.09	1630	600	08-10-89	17	6.73	1770	200
06-17-89	pump off				08-11-89	17	6.77	1960	300
06-18-89	42	7.06	1740	400	08-12-89	15	6.74	1700	300
06-19-89	36	7.01	1710	400	08-13-89	15	6.91	1600	<300
06-20-89	23	6.94	1700	300	08-14-89	15	6.93	1680	<200
06-21-89	12	6.77	1850	600	08-15-89	15	6.81	1680	<100
06-22-89	13	6.86	1940	200	08-16-89	15	6.75	1700	<200
06-23-89	14	6.88	1930	200	08-17-89	15	6.73	1680	100
06-24-89	14	6.80	1938	<200	08-18-89	13	6.65	1840	200
06-25-89	16	6.88	1900	<200	08-19-89	15	6.81	1690	<200
06-26-89	14	6.88	1900	<200	08-20-89	15	6.71	1704	<200
06-27-89	15	6.86	1880	<200	08-21-89	16	6.82	1726	<200
06-28-89	15	6.86	1845	<200	08-24-89	16	6.81	1690	200
06-29-89	19	6.92	1730	400	08-25-89	16	6.73	1680	200
06-30-89	18	6.97	1990	200	08-26-89	16	6.62	1600	100
07-01-89	15	6.85	1980	400	08-27-89	16	6.63	1620	100
07-02-89	15	7.02	1910	300	08-28-89	13	6.60	1840	100
07-03-89	14	6.92	1930	400	08-29-89	14	6.68	1820	200
07-04-89	16	6.85	1800	200	08-30-89	17	6.71	1720	400
07-05-89	17	6.86	1810	300	08-31-89	15	6.68	1840	100
07-07-89	15	6.71	1820	200	09-01-89	15	6.83	1800	100
07-08-89	17	6.76	1560	400	09-02-89	15	6.86	1800	100
07-09-89	14	6.81	1680	200	09-03-89	14	6.83	1820	100
07-10-89	13	6.75	1900	200	09-04-89	16	6.76	1780	100
07-11-89	17	6.83	1690	300	09-05-89	18	6.89	1720	0
07-12-89	16	6.87	1760	300	09-06-89	14	6.72	1760	0
07-13-89	16	6.91	1740	200	09-07-89	14	6.84	2100	0
07-14-89	14	6.91	1840	400	09-08-89	15	6.86	1900	-
07-15-89	16	6.93	1700	200	09-09-89	17	6.80	2100	100
07-16-89	17	6.99	1720	200	09-10-89	18	6.80	2000	100
07-17-89	17	6.96	1660	300	09-11-89	12	-	1900	0
07-18-89	16	6.88	1710	200	09-12-89	11	-	2100	0
07-19-89	14	6.88	1960	300	09-13-89	11	-	2100	0
07-20-89	15	6.89	1800	200	09-14-89	13	6.4	2100	100
07-21-89	16	6.89	1860	200	09-15-89	14	6.8	2000	100
07-22-89	16	6.81	1900	200	09-16-89	12	6.2	2100	100
07-23-89	16	6.89	1900	200	09-17-89	13	6.6	2000	<100
07-24-89	15	6.79	1900	200	09-18-89	20	6.6	2200	100
07-25-89	19	6.83	1780	200	09-19-89	15	6.8	2100	100
07-26-89	19	6.73	1780	200	09-21-89	13.1	6.77	2000	200
07-27-89	19	6.81	1850	100	09-22-89	12.5	6.71	2500	200
07-28-89	19	6.81	1780	100	09-23-89	11.8	6.64	2000	300
07-29-89	18	6.88	-	100	09-24-89	13.4	6.63	2100	100
07-30-89	18	6.82	1800	100	09-25-89	13.4	7.34	2000	200
07-31-89	18	6.79	1760	100	09-26-89	13.8	6.69	1800	300
					09-27-89	-	-	-	-

Well: WS23

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	19	7.09	1260	1250	08-01-89	24	6.76	1320	800
06-08-89	20	7.08	1234	<1000	08-02-89	23	6.89	1280	600
06-09-89	pump off				08-03-89	24	6.93	1030	800
06-10-89					08-04-89	21	6.95	1205	600
06-11-89					08-05-89	21	6.98	1260	800
06-12-89					08-06-89	18	6.89	1300	400
06-13-89					08-07-89	18	6.93	1250	600
06-14-89					08-08-89	22	6.91	1210	500
06-15-89					08-09-89	18	6.78	1220	500
06-16-89					08-10-89	21	6.92	1300	500
06-17-89					08-11-89	20	7.00	1300	600
06-18-89					08-12-89	23	6.99	1150	600
06-19-89					08-13-89	25	6.99	1200	<600
06-20-89	21	7.03	1230	1500	08-14-89	23	7.15	1200	<400
06-21-89	8	6.66	1210	1200	08-15-89	22	7.04	1240	500
06-22-89	pump off				08-16-89	25	6.97	1240	400
06-23-89					08-17-89	20	6.91	1204	600
06-24-89	13	6.87	1334	<200	08-18-89	20	6.95	1200	500
06-25-89	pump off				08-19-89	21	6.97	1260	600
06-26-89					08-20-89	20	6.86	1230	600
06-27-89					08-21-89	20	7.05	1220	600
06-28-89					08-24-89	21	6.99	1240	500
06-29-89					08-25-89	21	6.88	1280	600
06-30-89	25	7.07	1240	<600	08-26-89	21	6.92	1180	1000
07-01-89	17	6.96	1230	500	08-27-89	28	6.89	1100	700
07-02-89	17	6.82	1220	600	08-28-89	13	6.81	1200	500
07-03-89	16	6.95	1220	1000	08-29-89	17	6.98	1180	3000
07-04-89	23	7.08	1120	800	08-30-89	31	6.92	1200	300
07-05-89	20	6.82	1200	600	08-31-89	18	6.81	1200	>1000
07-06-89	20	6.92	1130	600	09-01-89	22	7.23	1250	1000
07-07-89	16	6.80	1260	400	09-02-89	24	6.89	1200	1000
07-08-89	19	6.96	1140	300	09-03-89	21	6.91	1250	800
07-09-89	21	6.96	1208	500	09-04-89	22	6.86	1200	1000
07-10-89	15	6.90	1260	600	09-05-89	30	6.99	1200	880+
07-11-89	17	6.92	1130	600	09-06-89	16	6.88	1220	800+
07-12-89	20	7.05	1180	100	09-07-89	22	6.89	1400	-
07-13-89	19	6.85	1250	800	09-08-89	17	6.73	1100	-
07-14-89	18	7.08	1260	500	09-09-89	16	6.84	1300	-
07-15-89	22	7.09	1140	700	09-10-89	18	6.82	1400	-
07-16-89	21	7.02	1200	500	09-11-89	12	-	1400	-
07-17-89	24	7.02	1200	600	09-12-89	6	-	1400	-
07-18-89	23	7.12	1220	400	09-13-89	11	-	2100	100
07-19-89	30	7.02	1340	500	09-14-89	16	6.8	1400	500
07-20-89	23	6.95	1220	400	09-15-89	18	7.0	1400	500
07-21-89	19	7.33	1460	300	09-16-89	13	6.4	1500	500
07-22-89	20	6.84	1280	600	09-17-89	14	6.8	1400	400
07-23-89	24	7.03	1280	400	09-18-89	18	6.8	1400	500
07-24-89	22	6.87	1300	400	09-19-89	17	6.8	1100	600
07-25-89	24	6.93	1260	400	09-21-89	14.6	7.07	1400	1500+
07-26-89	20	6.89	1260	600	09-22-89	13.2	6.85	1700	1500+
07-27-89	20	6.99	1360	400	09-23-89	11.0	6.63	1200	1500+
07-28-89	19	6.98	1320	300	09-24-89	21.1	6.80	1400	100+
07-29-89	19	6.88	-	300	09-25-89	19.7	7.47	1400	300
07-30-89	23	7.02	1240	600	09-26-89	24.0	7.02	1400	400
07-31-89	22	7.01	1360	400	09-27-89	-	-	-	-

Well: WS26

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25 °C µg/L	Field Test Phenols,	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25 °C	Field Test Phenols, µg/L
06-07-89	21	7.48	1130	600	08-01-89	21	7.29	1680	200
06-08-89	23	7.32	1180	600	08-02-89	20	-	-	200
06-09-89	23	7.48	1257	400	08-03-89	22	7.26	1320	200
06-10-89	22	7.50	1270	400	08-04-89	21	7.33	1550	200
06-11-89	24	7.49	1265	400	08-05-89	21	7.30	1600	200
06-12-89	19	7.33	1330	500	08-06-89	19	7.38	1675	200
06-13-89	18	7.50	1300	400	08-07-89	19	7.36	1625	200
06-14-89	19	7.52	1240	500	08-08-89	22	7.35	1550	200
06-15-89	20	7.48	1240	400	08-09-89	19	7.22	1650	200
06-16-89	24	7.61	1300	400	08-10-89	20	7.22	1640	200
06-17-89	pump off				08-11-89	19	7.32	1625	200
06-18-89	21	7.45	1280	300	08-12-89	22	7.42	1500	0
06-19-89	23	7.59	1210	300	08-13-89	24	7.49	1600	<100
06-20-89	18	7.46	1310	400	08-14-89	22	7.60	1480	<200
06-21-89	13	7.24	1360	200	08-15-89	22	7.46	1480	300
06-22-89	17	7.45	1425	300	08-16-89	22	7.32	1560	-
06-23-89	17	7.47	1446	300	08-17-89	21	7.27	1500	200
06-24-89	17	7.32	1500	300	08-18-89	17	7.22	1600	300
06-25-89	20	7.42	1380	300	08-19-89	21	7.47	1586	<300
06-26-89	19	7.40	1381	200	08-20-89	21	7.36	1560	<300
06-27-89	19	7.44	1355	200	08-21-89	20	7.40	1580	<200
06-28-89	20	7.39	1350	200	08-24-89	21	7.47	1560	<300
06-29-89	22	7.70	1230	200	08-25-89	20	7.53	1480	200
06-30-89	22	7.64	1400	400	08-26-89	20	7.33	1480	200
07-01-89	21	7.62	1400	300	08-27-89	22	7.40	1360	200
07-02-89	20	7.70	1430	300	08-28-89	18	7.29	1580	100
07-03-89	21	7.60	1390	200	08-29-89	19	7.38	1600	200
07-04-89	21	7.43	1310	100	08-30-89	23	7.42	1520	100
07-05-89	21	7.38	1386	200	08-31-89	18	7.27	1600	200
07-06-89	24	7.46	1240	400	09-01-89	21	7.48	1570	100
07-07-89	21	7.39	1360	200	09-02-89	22	7.36	1530	100
07-08-89	22	7.49	1280	300	09-03-89	20	7.41	1600	100
07-09-89	22	7.40	1480	-	09-04-89	19	7.22	1580	0
07-10-89	18	7.34	1500	300	09-05-89	23	7.40	1510	0
07-11-89	22	7.37	1420	200	09-06-89	17	7.22	1480	0
07-12-89	22	7.50	1420	200	09-07-89	20	7.40	1800	100
07-13-89	20	7.51	1390	200	09-08-89	18	7.28	1400	100
07-14-89	17	7.48	1620	300	09-09-89	16	7.74	1800	300
07-15-89	22	7.54	1560	400	09-10-89	20	7.72	1800	100
07-16-89	20	7.61	1610	300	09-11-89	14	-	2100	200
07-17-89	22	7.56	1380	300	09-12-89	15	-	1800	300
07-18-89	21	7.49	1430	400	09-13-89	14	-	1900	200
07-19-89	22	7.41	1540	200	09-14-89	17	6.4	1800	200
07-20-89	21	7.47	1480	200	09-15-89	18	7.5	2000	200
07-21-89	22	7.61	1460	200	09-16-89	16	6.4	1800	300
07-22-89	19	7.32	1640	200	09-17-89	16	6.6	2000	300
07-23-89	23	7.41	1540	200	09-18-89	18	6.8	1800	200
07-24-89	20	7.27	1620	200	09-19-89	16	6.4	1800	300
07-25-89	24	7.33	1480	200	09-21-89	17.1	7.10	1900	400
07-26-89	20	7.29	1620	200	09-22-89	16.7	7.23	2200	300
07-27-89	21	7.31	1720	100	09-23-89	16.1	7.13	1800	300
07-28-89	21	7.33	1560	100	09-24-89	18.5	7.16	1800	200
07-29-89	21	7.28	-	100	09-25-89	18.3	7.77	1800	100
07-30-89	22	7.46	1580	200	09-26-89	19.6	7.24	1800	300
07-31-89	21	7.33	1640	100	09-27-89	-	-	-	-

Well: WS24

Date	Temp, °C	pH	Corrected Conductivity, μmhos/cm@25°C	Field Test Phenols, μg/L
09-03-89	13	6.78	1820	100
09-04-89	24	6.80	1830	100
09-05-89	28	6.95	1820	0
09-06-89	14	6.77	1840	0
09-07-89	23	6.87	2200	200
09-08-89	21	6.85	2100	200
09-09-89	20	6.76	2100	100
09-10-89	24	6.91	2200	100
09-11-89	7	-	1800	0
09-12-89	9	-	2100	100
09-13-89	7	-	2300	100
09-14-89	12	6.6	2100	100
09-15-89	12	6.8	2100	100
09-16-89	15	6.8	2100	100
09-17-89	14	6.8	2100	<100
09-18-89	16	6.6	2100	0
09-19-89	14	6.8	2200	<100
09-21-89	14.9	6.64	2200	100
09-22-89	14.6	6.71	2300	100
09-23-89	11.5	6.53	2200	200
09-24-89	17.0	6.67	2100	100
09-25-89	18.1	7.31	2200	100
09-26-89	24.1	6.71	2100	100
09-27-89	-	-	-	-

Well: P2

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C µg/L	Field Test Phenols,	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	23	6.78	1100	100	08-01-89	24	7.20	2120	100
06-08-89	26	7.30	2260	100	08-02-89	25	7.34	2160	100
06-09-89	24	7.50	2190	300	08-03-89	25	7.40	1780	100
06-10-89	24	7.56	2200	300	08-04-89	22	7.48	2075	0
06-11-89	23	7.45	2120	100	08-05-89	24	7.45	2080	0
06-12-89	22	7.42	2110	100	08-06-89	20	7.41	2125	<100
06-13-89	18	7.41	2060	100	08-07-89	21	7.51	2075	0
06-14-89	25	7.33	2070	500	08-08-89	24	7.45	2000	0
06-15-89	21	7.18	2050	100	08-09-89	22	7.35	2090	0
06-16-89	28	7.05	2060	<100	08-10-89	22	7.41	2075	0
06-17-89	24	7.35	2080	100	08-11-89	21	7.37	2090	0
06-18-89	27	7.27	2060	100	08-12-89	21	7.42	2000	0
06-19-89	29	7.35	2040	100	08-13-89	26	7.45	2000	<100
06-20-89	23	7.45	2020	100	08-14-89	24	7.53	1960	<200
06-21-89	14	7.26	2080	100	08-15-89	25	7.44	1880	<100
06-22-89	23	7.50	2130	100	08-16-89	24	7.38	2060	<100
06-23-89	20	7.40	2060	100	08-17-89	23	7.36	1960	<100
06-24-89	17	7.23	1940	100	08-18-89	21	7.57	2020	<100
06-25-89	20	7.40	1980	100	08-19-89	22	7.39	2010	<100
06-26-89	23	7.45	1980	<100	08-20-89	23	7.32	2004	<100
06-27-89	22	7.36	2010	100	08-21-89	21	7.44	1990	<100
06-28-89	23	7.30	2000	<100	08-22-89	22	7.36	1940	0
06-29-89	26	7.38	1990	100	08-23-89	23	7.30	1950	0
06-30-89	26	7.44	2020	100	08-24-89	22	7.41	2010	0
07-01-89	27	7.51	2120	100	08-25-89	22	7.40	2000	0
07-02-89	23	7.43	2170	<100	08-26-89	23	7.35	1890	0
07-03-89	25	7.38	2070	<100	08-27-89	22	7.26	1980	0
07-04-89	23	7.32	2080	<100	08-28-89	20	7.35	2040	100
07-05-89	23	7.37	2060	<100	08-29-89	22	7.32	1980	0
07-06-89	24	7.41	2060	<100	08-30-89	21	7.37	1980	0
07-07-89	24	7.37	2060	<100	08-31-89	24	7.29	1960	0
07-08-89	26	7.36	1980	100	09-01-89	24	7.43	1980	0
07-09-89	24	7.39	2000	100	09-02-89	24	7.42	1930	0
07-10-89	21	7.34	2180	100	09-03-89	21	7.37	1980	0
07-11-89	24	7.36	2080	0	09-04-89	24	7.38	1970	0
07-12-89	25	7.42	2000	100	09-05-89	27	7.42	2020	0
07-13-89	23	7.38	2000	100	09-06-89	20	7.22	1980	0
07-14-89	22	7.39	2100	-	09-07-89	23	7.41	2300	0
07-15-89	25	7.44	2020	0	09-08-89	23	7.33	2200	0
07-16-89	23	7.38	2020	0	09-09-89	25	7.39	2500	0
07-17-89	23	7.42	1030	0	09-10-89	24	7.41	1900	0
07-18-89	24	7.41	2080	0	09-11-89	25	-	2200	0
07-19-89	27	7.48	2080	0	09-12-89	18	-	2300	0
07-20-89	24	7.46	1990	0	09-13-89	16	-	2300	0
07-21-89	24	7.55	2080	100	09-14-89	20	6.8	2200	0
07-22-89	20	7.43	2030	100	09-15-89	21	7.0	2300	0
07-23-89	25	7.48	2020	100	09-16-89	23	7.6	2200	100
07-24-89	23	7.40	1192	100	09-17-89	21	7.2	2300	0
07-25-89	24	7.35	2012	100	09-18-89	21	7.4	2300	100
07-26-89	21	7.36	2260	100	09-19-89	20	7.6	2200	100
07-27-89	28	7.37	1940	0	09-21-89	22.2	7.19	2100	0
07-28-89	27	7.40	2040	100	09-22-89	18.9	7.31	2900	100
07-29-89	27	7.42	-	100	09-23-89	19.9	7.25	2200	0
07-30-89	24	7.37	2100	0	09-24-89	19.6	7.21	2300	0
07-31-89	25	7.41	2220	100	09-25-89	23.2	7.86	2200	200
					09-26-89	23.4	7.30	2200	0
					09-27-89	-	-	-	-

Well: W1a

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25 °C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25 °C	Field Test Phenols, µg/L
06-07-89	24	6.30	1100	700	08-01-89	22	6.64	2720	300
06-08-89	24	6.15	2630	700	08-02-89	22	6.88	2740	300
06-09-89	24	7.10	2600	600	08-03-89	23	6.83	2270	200
06-10-89	24	7.03	2600	500	08-04-89	21	6.89	2700	300
06-11-89	22	6.87	2630	300	08-05-89	22	6.84	2650	200
06-12-89	23	6.91	2630	500	08-06-89	20	6.82	2745	300
06-13-89	20	6.88	2600	400	08-07-89	21	6.86	2650	200
06-14-89	24	6.95	2610	500	08-08-89	23	6.88	2525	200
06-15-89	22	6.64	2480	400	08-09-89	21	6.81	2650	200
06-16-89	26	6.58	2540	600	08-10-89	21	6.86	2650	300
06-17-89	25	6.93	2480	400	08-11-89	21	6.82	2750	300
06-18-89	26	6.86	2480	400	08-12-89	22	6.87	2600	400
06-19-89	26	6.86	2420	400	08-13-89	21	6.95	2680	<300
06-20-89	23	6.88	2360	300	08-14-89	23	6.95	2480	300
06-21-89	17	6.77	2490	400	08-15-89	24	6.98	2400	100
06-22-89	23	6.96	2520	300	08-16-89	23	6.80	2600	200
06-23-89	20	6.86	2540	300	08-17-89	21	6.75	2432	100
06-24-89	18	6.73	2350	300	08-18-89	19	6.73	2640	300
06-25-89	19	6.88	2370	300	08-19-89	20	6.93	2600	<300
06-26-89	23	6.90	2420	<300	08-20-89	22	6.80	2580	<300
06-27-89	21	6.84	2420	300	08-21-89	21	6.87	2500	<200
06-28-89	22	6.92	2410	300	08-22-89	21	6.90	2460	200
06-29-89	24	6.91	2480	400	08-23-89	22	6.86	2420	200
06-30-89	25	6.98	2810	400	08-24-89	22	6.92	2480	200
07-01-89	24	6.99	2610	400	08-25-89	22	6.80	2540	200
07-02-89	22	6.90	2790	400	08-26-89	21	6.86	2380	100
07-03-89	24	6.82	2720	300	08-27-89	22	6.89	2420	100
07-04-89	20	6.82	2740	400	08-28-89	21	6.90	2440	200
07-05-89	22	6.87	2600	400	08-29-89	20	6.92	2480	100
07-06-89	22	6.86	2600	400	08-30-89	23	6.91	2420	100
07-07-89	22	6.85	2660	400	08-31-89	26	6.78	2460	100
07-08-89	24	6.87	2380	600	09-01-89	27	6.90	2500	100
07-09-89	22	6.87	2700	400	09-02-89	26	6.88	2430	100
07-10-89	21	6.79	2820	400	09-03-89	21	6.92	2500	100
07-11-89	23	6.87	2600	300	09-04-89	27	6.87	2430	100
07-12-89	23	6.93	2540	300	09-05-89	28	7.02	2300	0
07-13-89	22	6.85	2490	300	09-06-89	21	6.74	2440	0
07-14-89	21	6.85	2720	400	09-07-89	27	6.95	2800	100
07-15-89	23	6.92	2560	300	09-08-89	26	6.79	2700	100
07-16-89	22	6.81	2230	300	09-09-89	27	6.93	2500	100
07-17-89	21	6.91	2720	300	09-10-89	25	6.84	2600	100
07-18-89	22	6.91	2540	300	09-11-89	22	-	2800	300
07-19-89	24	7.03	2620	300	09-12-89	17	-	2900	0
07-20-89	23	6.85	2616	300	09-13-89	17	-	2800	0
07-21-89	24	6.91	2610	300	09-14-89	21	7.0	2700	100
07-22-89	20	6.80	2820	300	09-15-89	21	6.8	2700	100
07-23-89	23	6.88	2660	300	09-16-89	24	6.6	2700	100
07-24-89	22	6.81	2740	300	09-17-89	22	6.8	2700	100
07-25-89	23	6.82	2620	200	09-18-89	21	6.8	2700	100
07-26-89	21	6.84	2786	>200	09-19-89	21	6.6	2700	100
07-27-89	25	6.93	2460	>400	09-21-89	23	6.93	2700	200
07-28-89	23	6.88	2740	400	09-22-89	19.4	6.88	3700	100
07-29-89	23	6.82	-	300	09-23-89	21.2	6.91	2800	200
07-30-89	22	6.92	2640	300	09-24-89	20.4	6.80	2700	200
07-31-89	22	6.86	2620	400	09-25-89	24.5	7.41	2700	100
					09-26-89	25.0	6.83	2700	200
					09-27-89	-	-	-	-

Well: W6									
Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	18	7.00	1300	150	08-01-89	19	7.45	1300	<100
06-08-89	18	7.40	1362	200	08-02-89	19	7.41	1260	0
06-09-89	18	7.74	1358	300	08-03-89	21	7.51	1120	0
06-10-89	19	7.74	1351	<100	08-04-89	19	7.50	1250	<100
06-11-89	19	7.69	1345	150	08-05-89	20	7.47	1225	<100
06-12-89	18	7.57	1310	100	08-06-89	18	7.48	1300	<100
06-13-89	16	7.75	1280	100	08-07-89	19	7.46	1220	0
06-14-89	18	7.71	1260	100	08-08-89	20	7.54	1150	<100
06-15-89	16	7.50	1210	100	08-09-89	19	7.42	1225	<100
06-16-89	19	7.39	1300	100	08-10-89	19	7.44	1220	100
06-17-89	19	7.69	1300	100	08-11-89	19	7.46	1225	<100
06-18-89	19	7.61	1270	200	08-12-89	19	7.42	1250	0
06-19-89	20	7.62	1250	250	08-13-89	18	7.57	1280	<100
06-20-89	18	7.72	1220	200	08-14-89	20	7.72	1200	<200
06-21-89	13	7.51	1340	200	08-15-89	20	7.56	1160	300
06-22-89	17	7.63	1370	<100	08-16-89	19	7.48	1260	<200
06-23-89	16	7.55	1405	100	08-17-89	19	7.43	1160	<200
06-24-89	14	7.44	1220	0	08-18-89	17	7.45	1260	<100
06-25-89	16	7.53	1910	100	08-19-89	19	7.48	1220	<100
06-26-89	19	7.59	1230	100	08-20-89	19	7.51	1240	<100
06-27-89	18	7.53	1210	100	08-21-89	18	7.57	1216	<100
06-28-89	18	7.49	1240	0	08-22-89	19	7.60	1180	0
06-29-89	19	7.70	1170	0	08-23-89	19	7.39	1160	100
06-30-89	19	7.71	1360	<100	08-24-89	18	7.51	1240	100
07-01-89	19	7.72	1290	0	08-25-89	19	7.48	1280	<100
07-02-89	18	7.61	1290	0	08-26-89	18	7.47	1140	<100
07-03-89	19	7.69	1250	0	08-27-89	19	7.55	1220	0
07-04-89	17	7.55	1290	0	08-28-89	17	7.48	1220	100
07-05-89	18	7.65	1200	0	08-29-89	18	7.51	1200	0
07-06-89	19	7.51	1220	100	08-30-89	19	7.63	1220	0
07-07-89	18	7.48	1280	200	08-31-89	19	7.51	1120	0
07-08-89	21	7.53	1140	100	09-01-89	18	7.55	1140	0
07-09-89	20	7.53	1160	0	09-02-89	19	7.54	1140	100
07-10-89	17	7.44	1280	100	09-03-89	19	7.52	1220	0
07-11-89	19	7.48	1200	0	09-04-89	19	7.46	1150	0
07-12-89	20	7.53	1200	<100	09-05-89	20	7.55	1230	0
07-13-89	20	7.52	1220	<100	09-06-89	17	7.28	1180	0
07-14-89	17	7.61	1260	0	09-07-89	19	7.45	1300	0
07-15-89	20	7.65	1200	0	09-08-89	18	7.67	1250	0
07-16-89	19	7.58	1220	0	09-09-89	19	7.69	1200	0
07-17-89	17	7.55	1300	0	09-10-89	20	7.57	1200	0
07-18-89	18	7.60	1240	100	09-11-89	16	-	1400	0
07-19-89	20	7.54	1060	100	09-12-89	15	-	1400	0
07-20-89	19	7.54	1260	0	09-13-89	15	-	1400	0
07-21-89	22	7.53	1240	100	09-14-89	17	6.8	1300	0
07-22-89	18	7.37	1280	100	09-15-89	18	7.6	1400	0
07-23-89	22	7.49	1200	100	09-16-89	18	6.8	1300	0
07-24-89	20	7.44	1280	0	09-17-89	18	6.8	1400	0
07-25-89	20	7.48	1220	100	09-18-89	16	7.0	1400	0
07-26-89	19	7.43	1280	100	09-19-89	16	7.6	1200	0
07-27-89	24	7.63	1200	0	09-21-89	16.5	7.57	1300	100
07-28-89	23	7.52	1220	0	09-22-89	14.8	7.38	1900	100
07-29-89	24	7.56	-	0	09-23-89	15.4	7.42	1400	0
07-30-89	18	7.59	1280	0	09-24-89	16.2	7.32	1400	100
07-31-89	20	7.58	1300	0	09-25-89	17	7.97	1300	0
					09-26-89	18.3	7.35	1300	100
					09-27-89	-	-	-	-

Well: W10a

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
07-03-89	18	7.16	2410	<100	08-23-89	18	6.81	2260	0
07-04-89	20	6.98	1550	0	08-24-89	18	6.85	2140	0
07-05-89	18	6.96	2200	0	08-25-89	18	6.88	2240	0
07-06-89	17	7.07	2340	100	08-26-89	18	6.77	2180	0
07-07-89	18	7.03	2340	100	08-27-89	19	6.91	2160	0
07-08-89	20	6.94	2200	200	08-28-89	14	6.84	2440	0
07-09-89	18	6.93	2300	0	08-29-89	17	6.87	2400	0
07-10-89	16	6.90	2460	100	08-30-89	18	6.91	2160	0
07-11-89	18	6.85	2280	0	08-31-89	19	6.90	2380	0
07-12-89	18	6.90	2360	<100	09-01-89	19	7.02	2300	0
07-13-89	17	6.99	2300	0	09-02-89	18	6.91	2160	0
07-14-89	15	7.00	2560	100	09-03-89	18	6.90	2380	0
07-15-89	18	7.04	2260	100	09-04-89	18	6.83	2320	0
07-16-89	18	7.08	2410	100	09-05-89	20	7.02	2300	0
07-17-89	16	6.89	2440	100	09-06-89	16	6.82	2320	0
07-18-89	17	7.02	2230	100	09-07-89	18	6.96	2700	0
07-19-89	19	7.00	2200	100	09-08-89	19	6.89	2600	0
07-20-89	18	6.95	2440	0	09-09-89	18	6.94	2700	0
07-21-89	20	6.98	2260	0	09-10-89	20	6.97	2500	0
07-22-89	18	6.81	2500	0	09-11-89	14	-	2700	0
07-23-89	20	6.89	2440	0	09-12-89	14	-	2800	0
07-24-89	18	6.89	2460	0	09-13-89	12	-	2700	0
07-25-89	19	7.54	1360	0	09-14-89	14	6.4	2700	0
07-26-89	19	6.83	2560	0	09-15-89	15	6.6	2700	0
07-27-89	22	6.96	2380	0	09-16-89	16	6.8	2600	0
07-28-89	22	6.83	2400	0	09-17-89	16	6.6	2700	0
07-29-89	21	6.99	-	0	09-18-89	14	6.8	2800	0
07-30-89	17	6.96	2380	0	09-19-89	14	6.6	2300	0
07-31-89	19	6.97	2400	0	09-21-89	14.8	6.87	2600	0
08-01-89	19	6.81	2480	<100	09-22-89	12.1	6.90	3700	100
08-02-89	18	6.94	2560	0	09-23-89	13.4	6.76	2700	0
08-03-89	20	6.83	2070	0	09-24-89	13.7	6.79	2700	0
08-04-89	18	6.90	2500	0	09-25-89	15.0	7.41	2600	0
08-05-89	17	6.89	2550	<100	09-26-89	16.1	6.89	2500	0
08-06-89	17	6.82	2550	0	09-27-89	-	-	-	-
08-07-89	18	6.87	2440	0					
08-08-89	20	6.86	2250	0					
08-09-89	18	6.77	2400	0					
08-10-89	19	6.81	2500	0					
08-11-89	18	6.86	2440	0					
08-12-89	19	6.87	2500	0					
08-13-89	19	6.93	2560	<100					
08-14-89	18	7.13	2400	<100					
08-15-89	18	6.93	2200	<100					
08-16-89	19	6.92	2440	<100					
08-17-89	19	6.78	2200	<100					
08-18-89	16	6.77	2460	0					
08-19-89	17	6.91	2420	<100					
08-20-89	18	6.97	2260	0					
08-21-89	16	6.89	2390	0					
08-22-89	18	6.91	2240	0					

Well: W17a

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	24	6.52	3690	700	08-0-89	26	6.63	3220	300
06-08-89	25	6.80	2630	800	08-02-89	27	6.78	3300	400
06-09-89	27	7.34	3390	900	08-03-89	26	6.84	2830	300
06-10-89	26	7.20	3230	700	08-04-89	23	6.89	3200	300
06-11-89	25	7.16	3170	700	08-05-89	24	6.85	3160	300
06-12-89	24	7.12	3210	700	08-06-89	22	6.86	3345	300
06-13-89	22	7.10	2990	800	08-07-89	22	6.87	3200	300
06-14-89	26	7.24	3040	500	08-08-89	25	6.89	3060	300
06-15-89	25	6.98	2990	750	08-09-89	23	6.84	3200	300
06-16-89	28	6.87	3080	800	08-10-89	23	6.89	3200	400
06-17-89	27	7.12	3010	800	08-11-89	22	6.84	3160	400
06-18-89	27	7.07	3000	800	08-12-89	22	6.84	3200	400
06-19-89	28	7.14	2960	800	08-13-89	28	6.89	3220	<300
06-20-89	25	7.26	2900	1000	08-14-89	26	6.94	3040	<500
06-21-89	19	6.98	3040	1000	08-15-89	28	6.84	2960	<100
06-22-89	24	7.10	3140	1000	08-16-89	27	6.79	3100	<100
06-23-89	24	7.00	3130	700	08-17-89	24	6.77	2960	200
06-24-89	21	6.88	2880	700	08-18-89	21	6.77	3140	200
06-25-89	23	7.00	2950	400	08-19-89	22	6.84	3200	200
06-26-89	25	7.04	3000	400	08-20-89	21	6.79	3160	200
06-27-89	23	7.00	3150	400	08-21-89	21	6.95	3020	200
06-28-89	25	6.98	2930	400	08-22-89	23	6.94	2880	200
06-29-89	28	6.96	2940	600	08-23-89	24	6.78	2940	200
06-30-89	28	7.19	3330	600	08-24-89	22	6.82	2800	200
07-01-89	27	7.07	3250	600	08-25-89	23	6.79	2900	200
07-02-89	27	7.15	3250	800	08-26-89	22	6.88	2880	200
07-04-89	25	7.00	1660	600	08-27-89	23	6.88	2900	<300
07-05-89	26	6.95	3000	400	08-28-89	18	6.81	2940	400
07-06-89	27	6.92	3100	600	08-29-89	21	6.83	2940	400
07-07-89	26	6.84	3180	600	08-30-89	22	6.85	2940	400
07-08-89	27	6.87	2900	600	08-31-89	27	6.89	2960	300
07-09-89	26	6.88	3200	500	09-01-89	28	6.97	2940	0
07-10-89	25	6.78	3340	400	09-02-89	28	6.93	2960	200
07-11-89	25	6.85	3400	400	09-03-89	26	6.89	2960	200
07-12-89	27	6.87	3160	400	09-04-89	27	6.89	2930	100
07-13-89	24	6.75	3220	300	09-05-89	29	6.97	2950	200
07-14-89	24	7.06	3300	400	09-06-89	18	6.77	2960	100
07-15-89	27	6.91	3140	400	09-07-89	26	6.89	3300	200
07-16-89	25	6.99	3220	300	09-08-89	25	6.74	2700	100
07-17-89	23	6.86	3320	400	09-09-89	24	6.82	2800	100
07-18-89	24	6.92	3390	400	09-10-89	27	6.90	2900	100
07-19-89	29	6.96	3200	300	09-11-89	20	-	3500	100
07-20-89	23	6.89	2640	300	09-12-89	19	-	3400	100
07-21-89	22	6.78	2600	300	09-13-89	13	-	3300	300
07-22-89	22	6.85	3420	300	09-14-89	18	6.6	3300	600
07-23-89	26	6.89	3320	300	09-15-89	18	6.6	3400	600
07-24-89	24	6.81	3360	300	09-16-89	22	6.8	3300	400
07-25-89	26	6.89	3240	200	09-17-89	20	6.6	3300	400
07-26-89	24	6.88	3360	300	09-18-89	19	6.8	3400	400
07-27-89	29	6.87	3120	400	09-19-89	18	6.6	3200	600
07-28-89	26	6.88	3240	300	09-21-89	21.9	6.75	3400	200
07-29-89	24	6.97	-	400	09-22-89	16.2	6.87	4500	300
07-30-89	26	6.77	3220	600	09-23-89	18.5	6.86	3300	400
07-31-89	26	6.82	3320	400	09-24-89	18.1	6.78	3300	300
					09-25-89	24.4	7.43	3300	600
					09-26-89	25.8	6.80	3300	600
					09-27-89	-	-	-	-

Well: W21

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	23	7.13	4340	500	08-01-89	23	7.09	3960	400
06-08-89	25	7.63	4350	400	08-02-89	24	7.27	4060	600
06-09-89	24	8.03	4330	400	08-03-89	24	7.37	3320	200
06-10-89	24	7.93	4300	<100	08-04-89	23	7.41	3840	200
06-11-89	23	7.84	4280	<100	08-05-89	23	7.32	3780	300
06-12-89	24	7.88	4380	100	08-06-89	22	7.24	3875	300
06-13-89	22	7.85	3970	200	08-07-89	22	7.26	3810	200
06-14-89	24	7.85	4290	250	08-08-89	24	7.29	3625	200
06-15-89	22	7.72	4160	100	08-09-89	22	7.19	3800	200
06-16-89	24	7.43	4320	300	08-10-89	23	7.22	3810	200
06-17-89	23	7.79	4150	400	08-11-89	22	7.26	3345	200
06-18-89	24	7.63	4160	600	08-12-89	22	7.29	3800	200
06-19-89	25	7.64	4150	400	08-13-89	24	7.28	3760	<200
06-20-89	24	7.85	4060	500	08-14-89	25	7.39	3600	300
06-21-89	20	7.61	4250	600	08-15-89	26	7.29	3400	300
06-22-89	24	7.76	4300	200	08-16-89	25	7.21	3640	200
06-23-89	22	7.72	4210	200	08-17-89	23	7.26	3500	<200
06-24-89	20	7.57	4000	100	08-18-89	19	7.17	4000	<200
06-25-89	21	7.66	4120	100	08-19-89	22	7.21	3620	<200
06-26-89	24	7.67	4010	100	08-20-89	22	7.26	3580	<200
06-27-89	23	7.58	4080	100	08-21-89	22	7.30	3540	<200
06-28-89	23	7.62	4000	100	08-22-89	22	7.25	3440	200
06-29-89	27	7.67	3930	300	08-23-89	23	7.28	3540	200
06-30-89	26	7.69	4380	200	08-24-89	22	6.99	2800	200
07-01-89	26	7.73	4290	200	08-25-89	23	7.22	3400	200
07-02-89	24	7.65	4200	300	08-26-89	22	7.31	3580	200
07-03-89	25	7.71	4060	400	08-27-89	24	7.21	3600	100
07-04-89	23	7.57	2330	400	08-28-89	22	7.20	3520	200
07-05-89	24	7.58	4000	400	08-29-89	22	7.14	3640	300
07-06-89	25	7.54	3860	250	08-30-89	22	7.22	3600	200
07-07-89	24	7.46	3900	300	08-31-89	23	7.14	3550	200
07-08-89	26	7.44	3720	300	09-01-89	24	7.34	3480	0
07-09-89	23	7.57	4080	200	09-02-89	24	7.18	3500	100
07-10-89	-	-	-	-	09-03-89	23	7.29	3480	100
07-11-89	24	7.43	4000	300	09-04-89	23	7.14	3450	0
07-12-89	25	7.53	3960	<200	09-05-89	24	7.25	3350	0
07-13-89	22	7.51	4210	300	09-06-89	20	7.05	3500	0
07-14-89	23	7.54	4140	400	09-07-89	24	7.27	3900	100
07-15-89	24	7.54	1880	600	09-08-89	23	7.35	3900	100
07-16-89	23	7.55	2120	400	09-09-89	22	7.30	4100	100
07-17-89	22	7.43	4120	400	09-10-89	24	7.56	3800	100
07-18-89	22	7.54	4110	300	09-11-89	22	-	4100	100
07-19-89	27	7.51	4000	400	09-12-89	21	-	4000	100
07-20-89	24	7.41	3960	300	09-13-89	20	-	3900	100
07-21-89	24	7.58	3800	300	09-14-89	23	6.2	3900	100
07-22-89	22	7.41	4200	300	09-15-89	24	6.4	3900	100
07-23-89	25	7.49	4020	200	09-16-89	24	6.4	3300	100
07-24-89	24	7.33	4200	300	09-17-89	24	6.4	3900	100
07-25-89	25	7.30	4000	300	09-18-89	22	6.4	4000	100
07-26-89	22	7.41	4000	<300	09-19-89	20	6.4	4000	100
07-27-89	26	7.37	3720	400	09-21-89	23.3	7.2	3800	100
07-28-89	26	7.42	3800	400	09-22-89	20.6	7.18	5800	100
07-29-89	25	7.39	-	400	09-23-89	21.4	7.13	4000	100
07-30-89	24	7.42	3800	400	09-24-89	21.5	7.09	3900	100
07-31-89	24	7.41	3760	400	09-25-89	22.5	7.74	3800	100
					09-26-89	23.0	7.13	3800	200
					09-27-89	-	-	-	-

Well: W22a

Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L	Date	Temp, °C	pH	Corrected Conductivity, µmhos/cm@25°C	Field Test Phenols, µg/L
06-07-89	17	6.34	2440	1500	08-01-89	19	6.70	2560	600
06-08-89	18	6.95	2470	1200	08-02-89	18	6.98	2500	600
06-09-89	19	7.26	2470	1200	08-03-89	21	6.91	2050	400
06-10-89	18	7.15	2430	1000	08-04-89	19	6.97	2320	400
06-11-89	17	7.05	2460	800	08-05-89	19	6.91	2440	600
06-12-89	18	7.03	2560	1400	08-06-89	18	6.88	2450	400
06-13-89	15	7.05	2430	1000	08-07-89	17	6.88	2320	400
06-14-89	19	7.01	2460	1000	08-08-89	17	6.97	2250	400
06-15-89	19	6.94	2350	900	08-09-89	18	6.86	2290	400
06-16-89	20	6.75	2370	1000	08-10-89	18	6.92	2400	400
06-17-89	19	7.17	2280	800	08-11-89	18	6.89	2270	500
06-18-89	19	6.84	2290	800	08-12-89	18	6.91	2400	500
06-19-89	20	6.91	2280	800	08-13-89	18	6.99	2400	600
06-20-89	19	7.07	2100	800	08-14-89	18	7.02	2240	500
06-21-89	13	6.82	2350	600	08-15-89	17	6.86	2200	500
06-22-89	19	6.99	2370	800	08-16-89	18	6.83	2380	500
06-23-89	16	6.94	2350	800	08-17-89	18	6.82	2208	500
06-24-89	14	6.83	2140	800	08-18-89	16	6.77	2440	500
06-25-89	17	6.99	2220	800	08-19-89	18	6.84	2210	500
06-26-89	18	7.06	2240	800	08-20-89	18	6.81	2252	500
06-27-89	18	6.98	2230	600	08-21-89	17	6.90	2290	500
06-28-89	17	6.96	2240	600	08-22-89	17	6.95	2280	400
06-29-89	19	6.92	2280	800	08-23-89	17	6.86	2280	400
06-30-89	20	6.98	2580	600	08-24-89	18	6.82	2480	500
07-01-89	20	6.99	2610	600	08-25-89	18	6.79	2340	400
07-02-89	18	6.97	2510	600	08-26-89	18	6.89	2240	400
07-03-89	19	7.06	2120	600	08-27-89	18	6.81	2430	400
07-04-89	18	6.80	1760	400	08-28-89	16	6.80	2440	400
07-05-89	18	7.01	2240	400	08-29-89	16	6.75	2400	300
07-06-89	18	7.03	2200	800	08-30-89	16	6.82	2400	300
07-07-89	18	6.94	2340	800	08-31-89	19	6.86	2350	300
07-08-89	20	6.86	2060	900	09-01-89	21	6.86	2300	100
07-09-89	17	7.00	2040	800	09-02-89	18	6.89	2230	100
07-11-89	18	6.91	2220	600	09-03-89	18	6.80	2320	100
07-12-89	18	6.94	2320	600	09-04-89	18	6.81	2340	100
07-13-89	17	6.85	2100	600	09-05-89	19	7.03	2250	100
07-14-89	16	6.89	2480	800	09-06-89	15	6.75	2300	100
07-15-89	18	6.94	2380	600	09-07-89	17	6.88	2600	300
07-16-89	18	6.89	2510	600	09-08-89	17	6.96	2600	300
07-17-89	18	6.86	2360	800	09-09-89	15	6.82	2800	300
07-18-89	19	6.87	2460	600	09-10-89	18	6.80	2300	300
07-19-89	18	7.07	2420	600	09-11-89	16	-	2600	300
07-20-89	20	6.95	2240	600	09-12-89	17	-	2800	300
07-21-89	20	6.99	2200	500	09-13-89	14	-	2700	300
07-22-89	18	6.81	2520	500	09-14-89	16	6.8	2600	300
07-23-89	19	6.95	2460	700	09-15-89	17	6.8	2800	300
07-24-89	18	6.86	2440	500	09-16-89	17	6.8	2500	300
07-25-89	19	6.86	2380	400	09-17-89	17	7.0	2700	300
07-26-89	19	6.87	2380	500	09-18-89	15	6.8	2700	300
07-27-89	22	6.87	2160	800	09-19-89	15	7.2	2600	300
07-28-89	22	6.86	2360	600	09-21-89	16.3	6.87	2600	400
07-29-89	21	6.81	-	600	09-22-89	13.8	6.9	3600	200
07-30-89	19	6.84	2340	800	09-23-89	14.6	6.88	2700	200
07-31-89	19	6.82	2180	800	09-24-89	15.0	6.8	2600	200
					09-25-89	16.5	7.50	2500	400
					09-26-89	16.0	6.93	2500	400
					09-27-89	-	-	-	-

APPENDIX D

Results for Field QA/QC Samples at Hoe Creek, 1989

Results for Field QA/QC Samples at Hoe Creek, 1989

Parameter	Field Blank		Field Standard		Field Duplicate		System Rinsate	
	Actual	Expected	Actual	Expected	Actual	Expected	Actual	Expected
Phenol, $\mu\text{g/L}$								
06/01	<20	<20	120	141	<20	<20	<20	<20
06/15	<20	<20	130	141	150	180	<20	<20
06/30	<20	<20	150	141	330	310	<20	<20
07/15	<20	<20	140	141	146	171	<20	<20
08/01	<20	<20	150	141	140	170	<20	<20
08/15	<20	<20	150	141	230	250	<20	<20
09/01	<20	<20	150	141	<20	<20	NM	NM
09/15	<20	<20	141	141	272	218	<20	<20
10/01	<20	<20	130	141	220	220	<20	<20
Benzene, $\mu\text{g/L}$								
06/01	<5	<5	46	50	<5	<5	<5	<5
08/01	<5	<5	88	100	1400	1400	<5	<5
10/01	<5	<5	39	50	1800	1800	<5	<5
Toluene, $\mu\text{g/L}$								
06/01	1	<5	44	50	<5	<5	<5	<5
08/01	<5	<5	84	100	46	50	<5	<5
10/01	<5	<5	43	50	36	39	<5	<5
Ethylbenzene, $\mu\text{g/L}$								
06/01	<5	<5	44	50	<5	<5	<5	<5
8/01	<5	<5	85	100	110	110	<5	<5
10/01	<5	<5	43	50	100	110	<5	<5
Naphthalene, $\mu\text{g/L}$								
06/01	1	<5	48	50	<5	<5	<5	<5
08/01	<5	<5	87	100	<50	<50	<5	<5
10/01	<5	<5	51	50	<50	<50	<5	<5
Ammonia, mg/L								
06/15	<0.2	<0.2	NM	NM	2.1	2.0	22	22
10/01	<0.2	<0.2	NM	NM	2.1	2.1	5.0	5.2
TOC, mg/L								
06/15	<10	<10	NM	NM	<10	10	<10	<10
10/01	<10	<10	NM	NM	37	20	<10	<10
Sulfate, mg/L								
06/15	<5	<5	NM	NM	570	710	1560	1570
10/01	<5	<5	NM	NM	650	700	390	410
TDS, mg/L								
06/15	<10	<10	NM	NM	1920	1950	2860	2890
10/01	<10	<10	NM	NM	962	999	1190	1220

NM=not measured

APPENDIX E

Soil Sampling Locations and Results

This interpretation of the results of soil analyses of samples taken at the Hoe Creek site describes the analysis method done and then interprets the results of analysis on each parameter. The methods are standard for agricultural soil analyses. The terms used are typical and are common throughout the soil science literature.

The first parameter is soil pH. The usual method is described by Page (1982) where a pH electrode is inserted into a saturated paste of soil and water. A more detailed description of the same method is in USDA (1972).

The pH values of the final samples range from 6.7 to 7.8. This range presents no restrictions to the availability of nutrients in amounts usual for native vegetation. The range also presents no hazard to long-term productivity (Davidescu et al. 1972).

The next parameter is electrical conductivity, or EC. The common method is described in Page (1982) and USDA (1972). The method measures the electrical conductivity of a saturated extract of soil and water in units of 1,000 mhos/cm. A saturated extract is the liquid extracted from a saturated soil (usually 20 g of soil and 20 mL of water). Electrical conductivity is the quickest method of determining the soluble salt content of soil. The approximate conversion of EC to mg/L is $EC \times 640$.

The final values of EC range from 0.2 to 0.5 mmhos/cm. This corresponds to about 128 to 320 mg/L soluble salts in the saturation extract. This is a small amount that will have no effect on native plant growth. It will also have no effect on soil structure, infiltration, or permeability (Fuller 1975; Page 1982).

The particle size analysis of the samples comes next in the analysis report. The typical method is a USDA method (USDA 1972). The particles in soil have a defined range of sizes that determine their texture. These are sand, 2.0 to 0.05 mm; silt, 0.05 to 0.002 mm; and clay, less than 0.002 mm (USDA 1962). The soil texture is classified using a sand-silt-clay ternary diagram. The Hoe Creek samples are of relatively heavy textured soils, from loam to clay. These soils have a high water-holding capacity, low infiltration rate, and low erosion hazard. These soils are very likely to compact when moist under a load, reducing their productivity (Fuller 1975).

Next in the analysis is the amount of calcium, magnesium, sodium, and potassium in the saturation extract of the soil. The methods here are the same for each, and are described in Page (1982) and USDA (1972). The conversion factors for meq/100 g to ppm are as follows:

ppm Na/23 = meq/l Na
ppm Ca/20 = meq/l Ca
ppm Mg/12.2 = meq/l Mg
ppm K/39 = meq/l K
1 meq/l = 10 meq/100 g

These conversions hold true so long as the percent saturation of the soil extract is reasonably close to 50%. A more exact amount can be calculated from the percent saturation in the analysis report (Ray and Halderman 1961).

The ranges of results here are typical for a semidesert range soil. However, they are relatively low in sodium. This is a benefit to the productivity and management of these soils. The amount of calcium is high, probably due to evaporated calcium salts at the surface from the water spraying.

The next parameter is cation exchange capacity, or CEC. This is a measure of the exchangeable cations in the soil that are neutralizing negative charges. It is a direct measure of the relative fertility of a soil. It is also an indicator of the exchange sites in the soil due to lattice clays and organic matter. Descriptions of CEC and method are in Page (1982) and USDA (1972).

The values for the final samples range from 19.7 to 35.3. These are fairly low values, consistent with a low organic matter content and parent material of fine-grained sedimentary rock.

The final parameter is base saturation percent, calculated from the exchangeable cations and the cation exchange capacity. The method is described in USDA (1972). It is basically the sum of Ca, Mg, Na, and K values in meq/100 g divided by the CEC. This parameter is used for calculation of fertilizer requirements (USDA 1972). Here the measured values for the soil samples support precipitated calcium and magnesium salts at the soil surface.

The results of these analyses show no decrease in the productivity of the soil under native vegetation. The precipitated salts at the soil surface will form a fine layer at the surface over time. This will gradually be dissolved and moved down through the soil profile after many years of normal precipitation, due to low average temperatures and low precipitation in the environment.

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 Fort Collins, CO 80523
 303-491-5061
 Date: 12/6/89
 Billing: 50415

Research Soil Analysis

Lab #	Sample ID #	pH	Paste E.C. mmhos/cm	Sand %	Silt %	Clay %	Texture	--NH ₄ OAc extractable--					BS*
								Ca	Mg	Na	K	meq/100g CEC	
R 570	1-1	7.3	1.4	33	33	34	CL	25.7	5.0	1.4	0.7	21.3	154.0
571	2	7.4	1.2	33	37	30	CL	18.6	5.5	1.3	0.7	20.0	130.5
572	3	6.7	1.2	33	39	28	CL	10.1	3.7	1.1	0.6	17.3	89.6
573	4	6.9	1.2	33	35	32	CL	17.2	4.8	0.9	0.7	22.3	105.8
574	5	6.8	1.0	33	31	36	CL	18.0	5.5	0.6	0.6	21.5	114.9
575	6	7.0	1.3	58	24	18	SL	9.4	2.7	0.9	0.7	14.4	95.1
576	7	7.0	1.8	36	36	28	CL	11.2	4.2	1.3	0.9	15.6	112.8
577	8	7.2	0.9	32	32	36	CL	15.9	7.3	1.2	1.0	22.1	114.9
578	9	7.3	1.0	32	32	36	CL	18.3	5.1	1.1	0.7	22.0	114.5
579	10	7.2	1.5	32	30	38	CL	16.6	6.5	1.2	0.6	23.4	106.4
580	2-1	6.6	3.5	26	40	34	CL	15.1	4.4	2.9	0.7	22.1	104.5
581	2	6.7	4.0	32	38	30	CL	15.1	5.3	2.5	0.7	20.9	112.9
582	3	6.6	3.1	24	40	36	CL	18.6	5.5	1.8	0.8	24.8	107.7
583	4	7.2	2.6	32	36	32	CL	17.4	4.6	2.5	0.5	20.9	119.6
584	5	7.2	1.7	26	32	42	C	26.7	3.9	0.9	0.5	22.4	142.9
585	6	7.0	3.8	31	35	34	CL	22.9	4.9	2.9	0.6	24.5	127.8
586	7	7.3	3.9	34	36	30	CL	21.3	4.8	3.2	0.8	20.9	144.0
587	8	7.3	3.2	33	39	28	CL	22.1	3.6	2.0	0.5	19.8	142.4
588	9	7.7	4.5	52	24	24	SCL	14.6	2.7	5.9	0.7	19.4	123.2
589	10	7.5	1.7	27	22	51	C	24.8	9.3	2.4	1.0	28.1	123.5

* High base saturation may be due to dissolving calcite

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 303-491-5061
 Date: 12/6/89
 Billing: 509415

Research Soil Analysis

Lab #	Sample ID #	pH	Paste E.C. mmhos/cm	Sand %	Silt %	Clay %	Texture	--NH ₄ OAc extractable--					BS*
								Ca	Mg	Na	K	CEC	
R 570	1-1	7.3	1.4	33	33	34	CL	25.7	5.0	1.4	0.7	21.3	154.0
571	2	7.4	1.2	33	37	30	CL	18.6	5.5	1.3	0.7	20.0	130.5
572	3	6.7	1.2	33	39	28	CL	10.1	3.7	1.1	0.6	17.3	89.6
573	4	6.9	1.2	33	35	32	CL	17.2	4.8	0.9	0.7	22.3	105.8
574	5	6.8	1.0	33	31	36	CL	18.0	5.5	0.6	0.6	21.5	114.9
575	6	7.0	1.3	58	24	18	SL	9.4	2.7	0.9	0.7	14.4	95.1
576	7	7.0	1.8	36	36	28	CL	11.2	4.2	1.3	0.9	15.6	112.8
577	8	7.2	0.9	32	32	36	CL	15.9	7.3	1.2	1.0	22.1	114.9
578	9	7.3	1.0	32	32	36	CL	18.3	5.1	1.1	0.7	22.0	114.5
579	10	7.2	1.5	32	30	38	CL	16.6	6.5	1.2	0.6	23.4	106.4
580	2-1	6.6	3.5	26	40	34	CL	15.1	4.4	2.9	0.7	22.1	104.5
581	2	6.7	4.0	32	38	30	CL	15.1	5.3	2.5	0.7	20.9	112.9
582	3	6.6	3.1	24	40	36	CL	18.6	5.5	1.8	0.8	24.8	107.7
583	4	7.2	2.6	32	36	32	CL	17.4	4.6	2.5	0.5	20.9	119.6
584	5	7.2	1.7	26	32	42	C	26.7	3.9	0.9	0.5	22.4	142.9
585	6	7.0	3.8	31	35	34	CL	22.9	4.9	2.9	0.6	24.5	127.8
586	7	7.3	3.9	34	36	30	CL	21.3	4.8	3.2	0.8	20.9	144.0
587	8	7.3	3.2	33	39	28	CL	22.1	3.6	2.0	0.5	19.8	142.4
588	9	7.7	4.5	52	24	24	SCL	14.6	2.7	5.9	0.7	19.4	123.2
589	10	7.5	1.7	27	22	51	C	24.8	9.3	2.4	1.0	28.1	133.5

* High base saturation may be due to dissolving calcite

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Research Soil Analysis

Lab #	Sample ID #	Texture	---NH ₄ OAc extractable---				Ca	Mg	Na	K	meq/100g CEC	% BS*
			% Sand	% Silt	% Clay	% Texture						
R 570	1-1	CL	32	32	36	25.3	5.0	1.4	0.8	22.2	148.6	
571	2	CL	32	34	34	18.4	5.4	1.3	0.7	21.0	122.9	
572	3	CL	32	40	28	9.4	3.6	1.1	0.5	17.3	84.4	
573	4	CL	32	32	36	16.3	4.8	0.9	0.6	21.9	103.2	
574	5	CL	32	32	36	16.5	5.3	0.5	0.6	21.1	108.5	
575	6	SL	58	24	18	8.7	2.7	0.9	0.6	14.7	87.8	
576	7	L	38	36	26	10.1	4.1	1.3	0.8	16.0	101.9	
577	8	CL	32	30	38	14.2	7.0	1.2	0.9	24.1	96.7	
578	9	CL	32	31	37	19.5	5.4	1.2	0.7	22.9	117.0	
579	10	CL	30	32	38	17.4	6.8	1.2	0.7	24.0	108.8	
580	2-1	CL	26	39	35	15.6	4.6	2.9	0.7	23.1	103.0	
581	2	CL	32	38	30	15.4	5.4	2.5	0.8	22.0	109.5	
582	3	CL	24	40	36	17.9	5.4	1.9	0.8	25.3	102.8	
583	4	CL	32	37	31	16.9	4.5	2.5	0.4	21.6	112.5	
584	5	C	26	32	42	25.8	3.8	0.9	0.4	22.5	137.3	
585	6	CL	31	33	36	22.1	4.9	2.8	0.6	25.0	121.6	
586	7	CL	34	36	30	20.7	4.7	3.2	0.8	21.6	136.1	
587	8	CL	32	40	28	21.5	3.6	2.0	0.4	19.8	138.9	
588	9	CL	40	32	28	14.0	2.6	5.7	0.7	19.3	119.2	
589	10	C	18	30	52	24.2	9.2	2.4	0.9	25.7	142.8	

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Date Rec:8/7/89

CSU Soil Testing Lab
Room 6, Voc. Ed. Bldg.
Fort Collins, CO 80523
303-491-5061
Date: 12/6/89

Research Soil Analysis

Lab #	Sample ID #	Sand %	Silt %	Clay %	Texture	---NH ₄ OAc extractable---				CEC	BS*
						Ca	Mg	Na	K		
</											

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Research Soil Analysis

Lab #	Sample ID #	Texture	NH ₄ OAc extractable				meq/100g				BS*
			% Sand	% Silt	% Clay	Ca	Mg	Na	K	CEC	
R 570	1-1	CL	32	32	36	25.8	5.0	1.4	0.8	22.2	148.6
571	2	CL	32	34	34	18.4	5.4	1.3	0.7	21.0	122.9
572	3	CL	32	40	28	9.4	3.6	1.1	0.5	17.3	84.4
573	4	CL	32	32	36	16.3	4.8	0.9	0.6	21.9	103.2
574	5	CL	32	32	36	16.5	5.3	0.5	0.6	21.1	108.5
575	6	SL	58	24	18	8.7	2.7	0.9	0.3	14.7	87.8
576	7	L	38	36	26	10.1	4.1	1.3	0.8	16.0	101.9
577	8	CL	32	30	38	14.2	7.0	1.2	0.9	24.1	96.7
578	9	CL	32	31	37	19.5	5.4	1.2	0.7	22.9	117.0
579	10	CL	30	32	38	17.4	6.8	1.2	0.7	24.0	108.8
580	2-1	CL	26	39	35	15.6	4.6	2.9	0.7	23.1	103.0
581	2	CL	32	38	30	15.4	5.4	2.5	0.8	22.0	109.5
582	3	CL	24	40	36	17.9	5.4	1.9	0.8	25.3	102.8
583	4	CL	32	37	31	16.9	4.5	2.5	0.4	21.6	112.5
584	5	C	26	32	42	25.8	3.8	0.9	0.4	22.5	137.3
585	6	CL	31	33	36	22.1	4.9	2.8	0.6	25.0	121.6
586	7	CL	34	36	30	20.7	4.7	3.2	0.8	21.6	136.1
587	8	CL	32	40	28	21.5	3.6	2.0	0.4	19.8	138.9
588	9	CL	40	32	28	14.0	2.6	5.7	0.7	19.3	119.2
589	10	C	18	30	52	24.2	9.2	2.4	0.9	22.7	152.8

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Fort Collins, CO 80523
303-491-5061
Date: 12/6/89
Billing:

Research Soil Analysis

Lab #	Sample ID #	-----meq/l-----				Lab #	Sample ID #	-----meq/l-----				% Sat
		Ca	Mg	Na	K			Ca	Mg	Na	K	
R2503	0570-57 N1	5.1	3.4	9.5	0.6	36.6	R2503	4.9	3.4	10.2	0.6	35.1
2504	2	4.3	2.0	14.9	0.8	32.1	2504	3.5	1.6	12.7	0.7	30.7
2505	3	3.5	1.9	15.0	0.4	41.0	2505	4.2	2.2	14.3	0.4	39.8
2506	4	4.4	2.3	16.3	0.2	37.3	2506	4.6	2.6	17.5	0.3	41.1
2507	5	4.2	1.6	12.1	0.1	46.8	2507	3.8	1.5	10.4	0.1	47.5
2508	6	5.0	2.2	11.5	0.3	48.2	2508	4.3	1.8	9.1	0.3	50.8
2509	7	6.8	2.1	11.8	0.2	49.0	2509	6.7	2.1	12.4	0.2	48.5
2510	8	3.1	1.3	9.3	0.2	40.7	2510	2.4	1.1	9.8	0.2	43.5
2511	9	3.6	1.5	10.8	0.2	41.3	2511	3.4	1.4	11.3	0.2	44.8
2512	10	5.7	2.3	9.7	0.4	47.7	2512	5.3	2.1	9.4	0.4	50.4
2513	S1	12.0	4.2	9.5	0.4	45.2	2513	12.1	4.2	9.0	0.4	48.9
2514	2	4.9	1.6	19.7	0.3	54.9	2514	5.3	1.8	18.7	0.3	50.9
2515	3	5.8	2.3	24.4	0.5	46.4	2515	5.9	2.3	25.3	0.5	49.5
2516	4	4.1	1.1	26.9	0.2	42.5	2516	4.7	1.2	31.0	0.3	40.1
2517	5	6.5	3.6	23.7	0.4	62.7	2517	6.2	3.4	21.6	0.4	65.1
2518	6	8.5	1.9	20.7	0.3	50.9	2518	7.5	1.6	18.7	0.3	51.8
2519	7	11.9	4.2	34.0	0.3	46.2	2519	12.4	4.4	36.3	0.3	48.9
2520	8	14.2	4.5	35.4	0.7	46.8	2520	14.4	4.6	35.9	0.7	50.8
2521	9	15.9	4.6	31.5	0.4	47.3	2521	16.8	4.9	33.1	0.5	45.8
2522	10	19.4	7.0	33.0	0.8	54.8	2522	19.0	6.9	33.0	0.7	56.5

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 Fort Collins, CO 80523
 303-491-5061
 Date: 12/6/89
 Billing:

Research Soil Analysis

Lab #	Sample ID #	% Sand	% Silt	% Clay	Texture	Ca	Mg	Na	K	meq/100g CEC	% BS*
R2503	0570-57 N1	66	18	16	SL	6.6	3.5	0.8	<0.1	11.8	92.1
2504	2	64	20	16	SL	8.1	3.0	1.1	0.2	13.4	92.3
2505	3	39	39	22	L	10.1	4.1	1.7	0.2	16.6	97.3
2506	4	34	35	31	CL	13.0	6.4	2.4	0.1	22.8	96.1
2507	5	30	33	37	CL	18.8	6.3	1.9	0.2	27.6	98.4
2508	6	34	33	33	CL	18.5	6.4	1.6	0.5	25.6	105.2
2509	7	36	32	32	CL	18.9	5.0	1.7	0.1	26.2	98.1
2510	8	34	33	33	CL	16.7	6.5	1.7	0.3	25.5	98.9
2511	9	35	34	31	CL	21.4	5.8	1.9	0.1	23.1	126.5
2512	10	36	33	31	CL	24.5	5.7	1.4	0.4	24.4	131.0
2513	S1	30	41	29	CL	18.8	5.7	1.2	0.1	23.3	110.6
2514	2	28	35	37	CL	29.9	5.9	3.9	0.3	27.7	144.3
2515	3	32	36	32	CL	21.3	5.4	3.7	0.4	23.6	130.3
2516	4	42	32	26	L	15.5	3.2	4.5	0.1	21.0	110.9
2517	5	15	33	52	C	39.1	9.3	4.3	0.2	29.3	149.6
2518	6	30	30	40	C/CL	33.8	4.0	2.8	<0.1	22.6	179.8
2519	7	36	34	30	CL	15.8	4.7	4.2	0.1	21.5	115.3
2520	8	30	38	32	CL	16.4	4.7	4.3	0.3	22.7	113.4
2521	9	34	36	30	CL	16.1	4.1	3.6	0.1	21.1	113.5
2522	10	37	35	28	CL	16.9	5.0	3.7	0.2	21.9	117.7

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Fort Collins, CO 80523
303-491-5061
Date: 12/18/89
Billing: 508450

Research Soil Analysis

Lab #	Sample ID #	pH	Paste E.C. mmhos/cm	% Sand	% Silt	% Clay	Texture	-----meq/100g-----				meq/100g CEC	% BS*
								Ca	Mg	Na	K		
R2503	0570-57 N1	7.7	1.4	62	20	18	SL	7.2	3.7	0.8	0.1	11.1	106.0
2504	2	7.8	1.4	66	16	18	SL	8.4	3.1	1.2	0.2	13.3	96.7
2505	3	7.7	2.5	40	38	22	L	10.5	4.2	1.7	0.2	16.6	99.9
2506	4	7.7	2.7	40	29	31	CL	14.0	7.1	0.4	0.2	23.5	92.0
2507	5	7.6	1.5	31	30	39	CL	20.2	6.8	2.0	0.1	28.0	104.0
2508	6	7.7	1.2	32	33	35	CL	19.0	6.7	1.7	0.4	27.1	102.4
2509	7	7.8	1.4	34	32	34	CL	19.3	5.2	1.6	0.2	26.1	100.7
2510	8	7.8	1.2	33	31	36	CL	18.1	6.9	1.8	0.3	26.0	104.1
2511	9	7.9	1.4	34	34	32	CL	22.3	5.9	1.9	0.1	23.9	126.0
2512	10	7.8	1.4	40	29	31	CL	25.3	5.8	1.4	0.3	24.6	133.5
2513	S1	7.9	2.0	32	40	28	CL	18.4	5.5	1.2	0.2	23.0	109.9
2514	2	7.9	2.7	28	34	38	CL	30.8	6.0	4.0	0.4	28.0	147.0
2515	3	7.9	2.8	36	32	32	CL	21.3	5.5	3.8	0.4	23.5	132.1
2516	4	8.1	3.3	44	30	26	L	16.2	3.4	4.9	0.2	21.1	116.9
2517	5	7.9	3.1	15	33	52	C	29.5	9.4	4.4	0.3	27.9	156.2
2518	6	7.8	2.8	34	26	40	C/CL	31.9	3.7	2.6	<0.1	22.4	170.7
2519	7	7.9	4.5	38	32	30	CL	15.8	4.7	4.3	0.2	23.1	107.8
2520	8	7.7	4.6	36	32	32	CL	15.7	4.2	3.9	0.5	24.9	97.6
2521	9	7.8	4.8	37	33	30	CL	15.1	3.8	3.4	0.2	21.2	106.4
2522	10	7.8	4.7	38	34	28	CL	15.6	4.7	3.6	0.3	21.4	112.9

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END

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