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BX IN SITU OIL SHALE PROJECT

Annual Status Report on Environmental Monitoring
and Analysis, March 1, 1980—February 28, 1981

MASTER

September 1981

Work Performed Under Contract No. FC20-78LC10747

Equity Oil Company
Salt Lake City, Utah

U. S. DEPARTMENT OF ENERGY

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BX IN SITU OIL SHALE PROJECT
ANNUAL STATUS REPORT ON
ENVIRONMENTAL MONITORING AND ANALYSIS
MARCH 1, 1980 - FEBRUARY 28, 1981

Prepared for:
U.S. DEPARTMENT OF ENERGY

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September 1981

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ABSTRACT

The objective of the BX In Situ Oil Shale Project is to demonstrate the technical feasibility of using superheated steam as a heat-carrying medium to retort in situ the oil shale in the Green River Formation "leached" zone and provide a mechanism for the recovery of this shale oil with a minimum impact on the environment. Utilizing primarily the natural porosity in the leached zone, approximately one trillion BTUs of heat will be injected into a site over a two-year period to heat to retorting temperature a shale zone approximately 550 feet thick and covering about one acre. The field project is located at Equity's BX In Situ site in Rio Blanco County in northwestern Colorado.

Environmental activities conducted from March 1, 1980 through February 28, 1981 were a continuation of operational monitoring initiated the previous year that included meteorology, water quality and aquatic ecology monitoring.

WORK PERFORMED

Air Resources

The air resources program has directed its efforts in two areas during the last year; the first area being the meteorological monitoring at the ridge location and the second monitoring at the 100-foot tower.

Ridge Site

By the end of May 1980, two years of data had been collected at the ridge site (see Figure 1). Analysis of data indicated almost no variations, either seasonally or annually, in wind patterns and only minor variations in temperature. Figure 2 presents a comparison of seasonal wind data and the two-year mean. The figure gives a clear indication of the low variability of winds in the Black Sulphur Creek drainage. Table 1 presents the data used to prepare Figure 2. A report stating VTN's findings (i.e., that adequate data has been collected to characterize the meteorologic condition existing at the ridge site) and a request to discontinue monitoring at the ridge was filed with DOE in August 1980. DOE gave approval for decommissioning of the ridge location in September 1980. The station was removed and sent to MRI for repair and calibration and is currently being held by VTN pending selection of a new monitoring location.

All data collected since June, 1980 are presented in Appendix A-1 of the March 1981 Quarterly Progress Report. All data collected prior to June, 1980 has been presented in the Quarterly Progress Reports as listed in Table 2.

100-Foot Tower

The on-site meteorological tower was severely damaged in March 1980, after being struck by a truck. Instrumentation from the tower was

CONTOUR INTERVAL 20 FEET

DATUM IS MEAN SEA LEVEL

COLORADO

QUADRANGLE LOCATION

UTM GRID AND 1952 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

scale (miles)

RIDGE SITE

FIGURE 1

SEASONAL WIND DATA COMPARISON
FIGURE 2

TABLE 1

SEASONAL WIND DATA

<u>Direction</u>	<u>6/78- 7/78</u>	<u>9/78- 11/78</u>	<u>12/78- 2/79</u>	<u>3/79- 5/79</u>	<u>6/79- 8/79</u>	<u>9/79- 11/79</u>	<u>12/79- 2/80</u>	<u>3/80- 5/80</u>	<u>Mean</u>	<u>Standard Deviation</u>
N	1.88	2.80	3.57	4.53	4.41	4.59	1.39	4.70	3.48	1.3
NNE	8.16	7.74	2.32	6.68	7.05	4.96	1.51	7.25	5.71	2.5
NE	6.73	9.76	15.02	10.97	10.15	17.64	13.22	6.83	11.29	3.8
ENE	2.20	4.63	5.49	2.33	2.04	4.17	7.51	4.09	4.06	1.9
E	1.75	1.42	4.30	1.43	1.95	1.17	3.75	1.49	2.16	1.2
ESE	0.78	0.46	2.09	1.95	0.36	0.38	1.15	0.70	0.98	0.7
SE	1.36	0.27	2.04	1.76	1.18	0.42	0.84	0.60	1.06	0.6
SSE	2.59	0.73	1.98	1.90	1.13	0.42	3.45	1.91	1.76	1.0
S	2.39	1.97	5.72	3.62	3.50	3.14	9.21	3.77	4.17	2.3
SSW	19.48	18.32	16.21	13.26	21.43	17.44	31.47	28.96	20.82	6.3
SW	31.48	26.44	29.08	31.78	29.49	29.61	13.64	22.55	26.76	6.1
WSW	6.08	9.90	5.10	6.15	5.73	8.55	6.48	7.62	6.95	1.6
W	3.88	3.76	3.11	5.29	4.50	4.16	3.27	4.46	4.05	0.7
WNW	2.59	2.47	1.24	3.24	2.68	1.36	1.09	2.05	2.09	0.8
NW	2.27	0.50	1.70	3.48	2.54	1.16	0.36	0.93	1.62	1.1
NNW	2.33	6.97	0.96	1.52	1.77	0.79	1.57	2.09	2.25	2.0
Calms	N.R.	N.R.	8.04	5.63	3.32	8.42	9.21	6.00	6.77	2.2

TABLE 2
METEOROLOGICAL DATA REPORTING

<u>Quarterly Progress Report for:</u>	<u>Meteorological Data Presented for the Period:</u>
September 1, 1978 - November 30, 1978	June 1, 1978 - August 31, 1978
December 1, 1978 - February 28, 1979	September 1, 1978 - November 30, 1978
June 1, 1979 - August 31, 1979	December 1, 1978 - February 28, 1979
	March 1, 1979 - May 31, 1979
September 1, 1979 - November 30, 1979	June 1, 1979 - August 31, 1979
December 1, 1979 - February 29, 1980	September 1, 1979 November 30, 1979
March 1, 1980 - May 31, 1980	December 1, 1979 - February 29, 1980
June 1, 1980 - August 31, 1980	March 1, 1980 May 31, 1980

returned to MRI for determination of the salvageability of the damaged sensors. Review of sensors indicated that it would be more favorable to purchase new instruments rather than repair damaged sensors. Quotes were solicited and received for equipment and installation of a 100-foot tower from:

- 1) MRI Inc.
- 2) Tower Systems Inc.
- 3) Tri-Ex Tower Corp.

Based upon the bids received and past experience, VTN recommended that MRI be chosen for tower reinstallation. The VTN recommendation is based upon:

- 1) Previously used MRI equipment provided reliable, field-worthy measurements over the past nine months at the Equity site.
- 2) Data formerly collected must be compatible with that to be collected in the future. Since the damage to the tower system was limited to the tower and sensors, the existing transmuter and data logger will continue to be used. Data will continue to be recorded on floppy disc. Therefore, the use of identical sensor equipment will assure consistent data collection.
- 3) The logistics of installation for both the tower and meteorological sensors will be simplified by using one firm for both work items. Overall costs may also be somewhat reduced.

During the week of August 17, 1980, a field crew from MRI and VTN were sent to the Equity site to install the new monitoring equipment. To reduce the possibility of the recurrence of the problem that occurred in March, the tower has been installed on a flat area near disposal well 9. By August 21, 1980, all field work was complete except for

the installation of transmission cable. Since the system (sensor and logger) could not be completed, a field calibration of both the tower sensors and the transmuter/logger was made to insure that when cables were obtained and installed, recorded data would be accurate. Cables were purchased separately by Equity; upon receipt they were installed by field personnel. The new tower system became operational on September 9, 1980.

Field personnel made a check on the systems' accuracy by comparing temperature readings obtained from a laboratory thermometer placed adjacent to the lower temperature sensor on the tower. No difference in readings was noted. Since tower reinstallation, no problems with equipment have been noted.

Table 3 lists the equipment that comprise the new tower system and the data collected. This data, along with data on the chemical composition of the make gas will allow the modeling of air quality to be conducted. Figure 3 shows the new tower location.

On February 19-20, 1981, personnel from the Luther Renfro Company and VTN performed the first semi-annual calibration of the tower system. The results are presented in Appendix A.

Eck Ruddick of Williams Brothers was contacted in February 1981 to determine the status of data collected by the 100-foot tower since September 9, 1980. Mr. Ruddick stated that data was being processed and would be sent to VTN in the near future. A request was made that VTN be sent data on a monthly basis hereafter.

Data was received by VTN the first week of March. The late arrival precludes its presentation at this time.

TABLE 3
EQUIPMENT LIST FOR VALLEY SITE

Make	Model	Parameter	Specifications
MRI, Inc.	1022 Wind Sensor	1) Wind Speed	Range: 0.5 to 120 mph Accuracy: +1.5 mph Starting Threshold: 0.5 mph Response Distance: <5 ft., 63% recovery
		2) Wind Direction	Range: 540° Accuracy: +2.5° Distance: 3.7 ft. Damping Ratio: 0.4 Starting Threshold: 0.70 mph
MRI, Inc.	840 Power Aspirated Temp- erature Sensor	3) Temperature	Range: -58°F to 122°F Effects of Radiation: <0.05°C at maximum solar intensity Air Flow Accuracy: 15 ft/sec Accuracy: +0.3°F
MRI, Inc.	1064-2 Sigma Meter	4) Wind Direction Deviation	Accuracy: +0.5% of full scale Scale: 0-45°
Rohn	RS-222A 100-foot Tower

Water Resources

The water resources operational monitoring program from March 1, 1980 to February 28, 1981 consisted of two separate monitoring schemes. The first was to characterize the water and to determine any sources of degradation in water quality of surface, alluvial and deep aquifer ground water attributable to the project activities. The second scheme involved monitoring the surface flow of Black Sulphur Creek above and below the plant site and determining if an appreciable gain or loss in surface flow was attributable to operational activities and to assist in characterizing the flow and quality of surface water through the site. Table 4 presents the water resource monitoring stations and their respective monitoring components.

During the March 1980 sampling period VTN initiated a change from Colorado Analytical Laboratories (CAL) to Colorado School of Mines Research Institute (CSMRI) and Huffman Laboratories to perform the laboratory analysis of water quality samples. Discrepancies between the CAL and CSMRI results are attributable to variations in techniques, accuracy, and sample handling. A careful review of both laboratories revealed CSMRI and Huffman Laboratories to be more qualified in their analytical methodologies and employed better quality control procedures. In addition to their own internal quality control procedures, external quality control methods are employed. CSMRI is required to analyze 10% of all samples in duplicate and/or analyze one sample in each sample set in duplicate. Huffman Laboratories is required to analyze one duplicate sample, one spiked sample and one reference sample with a known concentration. The results of these analyses are included in the laboratory report submitted after each sampling period and are presented here in Table 5. Appendix B contains Tables 6-17 which present the water quality results to date.

Field Water quality parameters were determined utilizing a Horiba U-7 water checker (water temperature, dissolved oxygen, pH, turbidity,

TABLE 4
WATER RESOURCES MONITORING STATIONS
AND COMPONENTS

Station Designation		Location	Measurements	Comments
Surface Water	ES-2	Black Sulphur Creek above project site	FWQ,LWQ,ID	
	ES-3	Black Sulphur Creek below project site	FWQ,LWQ,ID	
	USGS Station No. 09306175	Black Sulphur Creek near Rio Blanco	FWQ,LWQ, ID, CS,CC, CT	Maintained and sampled by USGS only
Alluvial Ground Water	A-1	Alluvial well near Black Sulphur Creek above project area	FWQ,SWL	
	A-1A	Alluvial well near Black Sulphur Creek above project area	FWQ,SWL	
	A-2	Alluvial well near Black Sulphur Creek adjacent to process water storage pond	FWQ,SWL	
	A-3	Alluvial well near Black Sulphur Creek adjacent to process water storage pond	FWQ,SWL	
	A-4	Alluvial well near Black Sulphur Creek downstream from project area	FWQ,SWL	
Deep Ground Water	BX-13	Plant site - lower aquifer	FWQ,LWQ	
	BX-36	Plant site - upper aquifer	FWQ,LWQ	
Production Water	PIL	Pond Intake Line	FWQ,LWQ	
	FWKO	Free Water Knock-Out	FWQ,LWQ	
	DW	Disposal Water	FWQ,LWQ	

FWQ - Field Water Quality
LWQ - Lab Water Quality
SWL - Static Water Level

ID - Instantaneous Discharge
CS - Continuous Stage (discharge)
CC - Continuous Conductance
CT - Continuous Stream Water Temperature

TABLE 5

RESULTS OF LABORATORY (HUFFMAN)
QUALITY CONTROL ANALYSES FOR TOTAL ORGANIC
CARBON (TOC) AND DISSOLVED ORGANIC CARBON (DOC)

	Standard		Spike*		Calculated Determined Value	Duplicates		
	True Value	Determined Value	Standard	Sample		Lab Value	Sample	Dupli- cates
TOC:								
5/8/80	10.2	9.7	10.2	62	36.1	35	62	62
6/12/80	28.5	29.4	28.5	5	16.75	16	5	6
9/30/80	15	14	15	4	9.5	9	4	3
DOC:								
5/8/80	10.2	9.7	10.2	61	35.6	35	61	60
6/12/80	28.5	29.4	28.5	5	16.75	16	4	4
9/30/80	15	14	15	4	9.5	9	4	4

*Spike: $\frac{\text{Standard Value} + \text{Sample Value}}{2} = \text{Calculated Determined Value}$

where an equal portion of the standard sample is mixed with an equal portion from a field collected sample

specific conductance). In addition, VTN cross-checked the Horiba measurements with a Yellow Springs Instruments (YSI) 51B oxygen meter, YSI 33 specific conductance meter, and Guardex and Hach field kits (alkalinity, pH, dissolved oxygen). The Horiba was sent into the factory for annual adjustment and recalibration following the February field trip. All field instruments are calibrated as per manufacturers' recommended procedures before each field monitoring trip and prior to each day of field monitoring.

Table 18 presents the parameters analyzed during the present monitoring program. During the last sampling trip (February 3, 1981) total metals were deleted from the parameter list and Thiocyanate (SCN^-) and Phenols were added.

Surface Water

During the 1980-1981 monitoring program, gage readings were observed and recorded from permanent gages installed on each of the flumes. A rating table is used to determine instantaneous discharge. Gage height and instantaneous discharge are included in Tables 6 and 7. During the September 1980 and February 1981 sampling trips, increased sedimentation was observed in the flumes at Stations ES-2 and ES-3. The sedimentation was decreasing the accuracy of discharge measurements. In addition, ES-3 has been exhibiting a backwater effect for the period beginning in June 1980 (from a high flow event) to the present day.

The results of surface water quality (field and laboratory analysis) samples are presented in Tables 6 and 7. Minor fluctuations were observed in the water quality of stations ES-2 and ES-3 during the 1980-1981 monitoring program. Stiff diagrams of the major ions are presented in Figure 4. These fluctuations are attributable to seasonal and diurnal variations which normally occur during the period of sampling. (See VTN report "Surface Water Hydrology of the Piceance Creek Basin and BX In-Situ Oil Shale Project, Rio Blanco County, Colorado.")

DISTRIBUTION OF MAJOR IONS FOR BLACK SULPHUR CREEK NEAR
EQUITY BX IN-SITU PROJECT, COLORADO

MARCH 1980 – FEBRUARY 1981

FIGURE 4

TABLE 18

WATER QUALITY PHYSICOCHEMICAL PARAMETERS
EQUITY BX IN-SITU PROJECT

A. Field Measurements

Water and Air Temperature
pH
Dissolved Oxygen**
Conductance
Turbidity**

B. Laboratory Measurements

Specific Conductance at 25°C
pH ° 25°C
Turbidity**
Suspended Solids**
Total Dissolved Solids (calc. sum)
Total Dissolved solids (180°C)
Calcium (diss.)
Magnesium (diss.)

Sodium (diss.)
Potassium (diss.)
Chloride (diss.)
Fluoride (diss.)
Bromide (diss.)
Sulfate (diss.)
Sulfide - S
Silica as SiO₂ (diss.)
Sodium Adsorption Ratio

Total Hardness
Total Alkalinity
Bicarbonate
Carbonate
Chemical Oxygen Demand
Oil and Grease
Total Organic Carbon
Dissolved Organic Carbon
Ammonia - N (diss.)
Total Kjeldahl Nitrogen - N
Nitrate - N (diss.)
Nitrite - N (diss.)
Total Phosphorus - P
Ortho-Phosphorus - P (diss.)

Aluminum (diss.)
Arsenic (diss.)
Barium (diss.)
Boron (diss.)
Cadmium (diss.)*
Chromium (diss.)*
Cobalt (diss.)*
Copper (diss.)*
Cyanide
Iron (diss.)*

TABLE 18 (cont.)

Lead (diss.)*
Lithium (diss.)
Manganese (diss.)*
Mercury (diss.)*
Molybdenum (diss.)*
Nickel (diss.)*
Selenium (diss.)
Vanadium (diss.)*
Zinc (diss.)*

Phenols
Thiocyanate

* Total phase was analyzed prior to 2/3/81.

**Analysis not performed on ground water quality samples or process water.

Ground Water

A summary of the ground water monitoring stations is presented in Table 4. During the 1980-1981 program, difficulties were encountered with both deep ground water monitoring wells (BX-13 and BX-36). BX-13 frequently would not produce water during pumping and could not be sampled. BX-36 has produced water but in limited amounts and frequently has been sampled without pre-pumping of the aquifer. At present, the reason for the production characteristics of BX-36 is unknown. The pump in BX-13 was replaced prior to the February sampling trip and was pumped 24 hours before sampling in accordance with standard methods.

The water quality data for the BX-13 and BX-36 are presented in Tables 8 and 9. The water quality has remained relatively unchanged in each respective well during the 1980-1981 monitoring program. Stiff diagrams of the major ions are presented in Figure 5. An untypically high iron value (10.9 mg/l) for BX-36 was found during the February sampling. This value is probably attributable to the lack of pre-pumping of the well (iron contributed by well casing). Phenols were detected in both wells and thiocyanate in BX-13. No comments on the detection of these parameters can be presented at this time.

The alluvial wells are located at selected points along Black Sulphur Creek adjacent to the project area (see Figure 3). Alluvial well A-2 has remained inaccessible for the last two sampling periods (September 1980 and February 1981) due to the water level of Black Sulphur Creek covering the top of the casing.

During the 1980-1981 monitoring program, alluvial ground water quality exhibited minor fluctuations. These fluctuations generally followed the fluctuations exhibited during the same period by the water quality of Black Sulphur Creek. Alluvial water quality is presented in Tables 10 through 14. A comparison of specific conductance and pH are presented in Tables 19 and 20 for selected alluvial wells and Black Sulphur Creek.

DISTRIBUTION OF MAJOR IONS FOR UPPER (BX-36) AND LOWER (BX-13) AQUIFERS
EQUITY BX IN-SITU PROJECT, COLORADO

MARCH 1980 – FEBRUARY 1981

FIGURE 5

TABLE 19

COMPARISON OF pH (FIELD) FOR SELECTED
ALLUVIAL WELLS (A-1, A-3, A-4) AND
BLACK SULPHUR CREEK (ES-3)

	<u>ES-3</u>	<u>A-1</u>	<u>A-3</u>	<u>A-4</u>
7/19/79	7.9	7.5	7.7	7.4
9/27/79	7.7	7.0	7.7	7.7
12/3/79	7.9	7.2	7.8	7.6
12/27/79	8.2	7.4	7.9	7.7
1/24/80	8.3	8.0	8.2	7.8
3/9/80	8.2	7.5	7.6	7.1
9/30/80	8.3	7.1	7.5	7.3
2/3/81	8.5	7.5	7.7	7.8
3/27/81	8.7	7.8	7.8	7.8

TABLE 20

COMPARISON OF SPECIFIC CONDUCTANCE (FIELD)
FOR SELECTED ALLUVIAL WELLS (A-1, A-3, A-4)
AND BLACK SULPHUR CREEK (ES-30)

	<u>ES-3</u>	<u>A-1</u>	<u>A-3</u>	<u>A-4</u>
7/19/79	490	450	550	590
9/27/79	720	790	810	900
12/3/79	520	1490	820	970
12/27/79	400	950	710	840
1/24/80	420	850	670	780
3/9/80	480	980	790	850
9/30/80	589	610	675	769
2/3/81	973	860	889	904
3/27/81	759	884	834	897

Aquatic Biology

Three field visits were conducted between March 1, 1980 and February 28, 1981. These occurred on March 27, 1980, August 26, 1980 and February 3, 1981. Benthic macroinvertebrate and periphyton algae samples were collected above and below the two weirs during each field visit. Three invertebrate samples and four periphyton algae samples were collected at each sampling location. Visual observations and assessment of the stream habitat were also made during each field visit.

Results for the March and August, 1980 field visits are presented in a detailed aquatic resources status report submitted to Equity in October 1980 (see Monthly Status Report #41, Attachment - Aquatic Resources Status Report, October 1980). Samples from the February, 1981 field visit are still being analyzed.

Results of the periphyton algae samples showed no significant differences in diversity or species composition between the upper and lower weir sample sites. Benthic invertebrate populations, however, differed between the two weirs. Invertebrate densities were consistently higher at the upper weir although these differences were not significant. The species composition at the lower weir was dominated by taxa tolerant of fine and partly silted substrate. At the upper weir the major taxa were species preferring larger, unsilted substrate.

The differences in invertebrate populations appear to result from the substrate differences at the two weirs. The substrate is smaller and generally more unstable at the lower weir than at the upper weir. Since October 1979, several channel alterations have occurred at the lower weir. These have been both man made and due to high streamflows. Continued channel shifts can be expected at the lower weir due to the unstable nature of the streambed. Bank stabilization could

improve stream conditions at the lower weir site. Other than channel alterations at the lower weir, no affects from plant operations were observed on the stream fauna or flora during the past year.

WORK SCHEDULED

The work to be conducted for the current environmental studies is the subject of an ongoing process to revise the Environmental Monitoring and Mitigation Plan (EMMP). These efforts should be completed by LETC in the near future so that the scope of work and budget for present and future environmental studies will be defined.

Air Resources

The air resources program is scheduled to continue monitoring meteorological conditions in the Black Sulphur Creek drainage using the existing 100-foot tower. A review of data collected at Tracts Ca and Cb will be conducted as it becomes available and correlated with the BX site data. A second field calibration is scheduled for late August.

Water Resources

The water resources monitoring program will be coordinated with the aquatic biological sampling program during 1981-1982. The following months are tentatively scheduled for water resource-aquatic biology sampling: March, August and October. These months were chosen to correspond with aquatic sampling.

In addition, readjustment and calibration of the flumes at ES-2 and ES-3 will be performed during low flow period for Black Sulphur Creek (summer-early fall). VTN will continue to obtain continuous records and water quality data for USGS station 09306175 as they become available. The USGS data will be used to assist in quantifying seasonal variations of surface water hydrology and quality during the

operational phase. However, due to the contributions from various sources (anthropogenic) between the project site and the USGS station, the station will not be used to quantify the impacts of the project during operational activities.

Ground Water

The 1981-1982 monitoring program involves sampling wells BX-13 and BX-36. No plans have been formalized to enhance water production from BX-36. Presently, BX-13 is pumping water adequately and no improvements are anticipated.

Commencing in March 1981, four alluvial wells (A-1A, A-2, A-3 and A-4) will be sampled (by bailing) for laboratory analysis (see Table 5). In addition, alluvial wells A-1A and A-2 will have extensions added to their surface casing during the 1981 summer low flow period.

Aquatic Biology

Three field trips are scheduled for the remainder of 1981. These are tentatively scheduled for March, August and October. These months have been chosen so that changes in the food chain can be observed. The March sampling is set to monitor the food chain prior to spring high runoff, August for low flow, and October the end of season of major production. Benthic invertebrate and periphyton algae samples will be collected during each field visit. In addition, stream substrate and fish populations will be sampled during the March and October field visits. Fish populations will be estimated both within and above and below the project site.

APPENDIX A

SUMMARY TRIP REPORT - FIELD OPERATIONS

CUSTOMER VTN CONSOLIDATED, INC.

SITE LOCATION Equity Oil Operation, Colo.

CHARGE NUMBER VTN P.O. # 7464

DATES COVERED Feb 19, 20, 1981

PERSON CONTACTED Tom Gardiner

REPORT BY Luther Renfroe

REASON FOR TRIP

Installation _____

Calibration x Calibration check forms attached x

Repair - Warranty _____ Nonwarranty _____

Chart Change _____

DAY BY DAY ACTION TAKEN (Chronological listing of tasks)

2-19-81. I traveled to Grand Junction, Colo. where I met Tom gardiner. He rented an auto and we drove to Rifle, Colo. where we secured our motel rooms. We went to the site where I commenced the Calibration.

2-20-81 I completed the calibration of the system. We returned to Grand Junction and left for Calif.

PARTS REPLACED

Wind speed sensor bearings.

PROBLEMS ENCOUNTERED AND RECOMMENDED ACTION

None

Project Manager contacted _____

DISTRIBUTION - Project Manager
Engineering
Quality Control

Field Operations File
Sales Order File
Customer

TRIP REPORT

INSTRUMENTS USED FOR CALIBRATION

1. DIGITAL MULTIMETER
 Mfg.: DATA PRECISION Model 245 S/N 10306
 Last Calibration Date: 30 Sep 80
 Calibration Due Date: 30 MAR 80
2. THERMOMETERS:
 Mfg.: BROOKLYN Model +19°C to +61°C S/N 56924
 Last Calibration Date: 2 OCT 80
 Calibration Due Date: 2 OCT 81

 Mfg. BROOKLYN Model -19°C to +21°C S/N 6D664
 Last Calibration Date: 2 OCT 80
 Calibration Due Date: 2 OCT 81
3. OSCILLATOR:
 Mfg. MRI Model 13181 S/N 101
 Last Calibration Date: 5 OCT 80
 Calibration Due Date: 5 APR 81
4. RESISTOR DECADE BOXES:
 Mfg. GENERAL RADIO Model 1434-X S/N 7907
 Last Calibration Date: 19 DEC 80
 Calibration Due Date: 19 DEC 81

 Mfg. GENERAL RADIO Model 1434-X S/N 7952
 Last Calibration Date: 19 DEC 80
 Calibration Due Date: 19 DEC 81
5. OSCILLOSCOPE:
 Mfg. SONY/TERTEONIX Model 323 S/N 306621
 Last Calibration Date: REF ONLY
 Calibration Due Date: _____
6. OTHER INSTRUMENTS:
 Mfg. WATERS Model TORQUE WATCH 651X-3 S/N 17509
 Last Calibration Date: 7 OCT 80
 Calibration Due Date: 7 OCT 81

 Mfg. WATERS Model TORQUE WATCH 366-3 S/N 3390
 Last Calibration Date: 7 OCT 80
 Calibration Due Date: 7 APR 81

 Mfg. DATA PRECISION Model FREQ. COUNTER 5740 S/N 2604
 Last Calibration Date: 20 MAR 80
 Calibration Due Date: 20 MAR 81

 Mfg. _____ Model _____ S/N _____
 Last Calibration Date: _____
 Calibration Due Date: _____

FIELD CALIBRATION DATA SHEET - WIND DIRECTION (540°)

Re: Field Operations Manual Procedure FC-3, FC-10

Customer VTN Site Location Equity Oil, Colo SO# _____ Date 2-19-81

Model# 1022D Serial# 809 Amp Assembly# 14303 Level 100'

BEFORE REMOVAL FROM TOWER

. Sensor alignment on true north 0.042 Volts (0.00 ± .04 VDC) or (3.33 ± .04 VDC)

BEFORE ADJUSTMENT

- POT A POT B
- a. Minimum 0.002 VDC (0.00 ± .04 VDC) c. POT A to B Switch Point 3.329 VDC (3.33 ± .04 VDC)
- b. Maximum 3.357 VDC (3.33 ± .04 VDC) d. Maximum 4.987 VDC (5.00 ± .04 VDC)
- . Difference between POT A Maximum and POT A to B Switch Point 0.029 VDC (± .04 VDC)
- . Automatic switching is functioning properly. Yes ☒ No ☐
- . Torque 0.10 oz. in. (Maximum torque 1074, 0.5 oz. in.) 1022, 0.25 oz. in.)
- . Within manufacturer's tolerances. Yes ☒ No ☐

AFTER ADJUSTMENT

- POT A POT B
- a. Minimum _____ VDC (0.00 ± .04 VDC) c. POT A to B Switch Point _____ VDC (3.33 ± .04 VDC)
- b. Maximum _____ VDC (3.33 ± .04 VDC) d. Maximum _____ VDC (5.00 ± .04 VDC)
- . Difference between POT A Maximum and POT A to B Switch Point _____ VDC (± .04 VDC)
- . Automatic switching is functioning properly. Yes _____ No ☐
- . Torque _____ oz. in. (Maximum torque 1074, 0.5 oz. in.) 1022, 0.25 oz. in.)

AFTER REPLACEMENT ON TOWER

- . Sensor realignment on true north 0.004 Volts (0.00 ± .04 VDC) or (3.33 ± .04 VDC)
- . Within manufacturer's tolerances. Yes ☒ No ☐

ARTS REPLACED NONE

REMARKS _____

BY P. Kenfue

FIELD CALIBRATION DATA SHEET - DELTA TEMPERATURE (ΔT)
Re: Field Operations Manual, Procedure FC-9

Customer VTN Site Location Equity Oil SO# _____ Date 2-19-81
Amplifier Assembly# 179900 Temperature Range +5.0°C to -5.0°C
Sensor Model #1 17364 Serial# B840 Level 100' Cable Res. N/A ohms
Sensor Model #2 17364 Serial# A840 Level 33' Cable Res. N/A ohms
Tower Cables - Actual Cables Used N/A Simulated by Decade Box N/A
Resistance Between Sensor Case and Leads: Sensor #1 10 Megohms
Sensor #2 10 Megohms Reject if <10 Megohms

All tolerances on temperatures are $\pm 0.1^\circ\text{C}$.

1. Sensor Bath Check Before Adjustment

a. Cold bath temperature 2.6 °C DVM 2.517 VDC (2.50 ± 0.025 VDC)
b. Hot bath temperature 45.2 °C DVM 2.521 VDC (2.50 ± 0.025 VDC)

2. Sensor Bath Check After Adjustment

a. Cold bath temperature 2.1 °C DVM 2.503 VDC (2.50 ± 0.025 VDC) (Adjust using R17)
b. Hot bath temperature 48.5 °C DVM 2.506 VDC (2.50 ± 0.025 VDC) (Adjust using R15)

3. Span Check (Sensor Input Disconnected)

a. Set each decade box to 10,000 ohms.
b. Reset decade box #1 (PINS 14 and 12) so that output is 2.50 ± 0.00 VDC.
Decade box #1 now reads 9995.7 ohms.
c. Reset decade box #2 (PINS 8 and 10) to 9364 ohms by subtracting 636 ohms.
(See Table 1 of procedure)
d. Output (PIN 16) 5.001 VDC (5.00 ± 0.025 VDC) (Adjusting R10)

4. Reciprocal Check

a. Reset decade box #2 to 10,000 ohms.
b. Reset decade box #2 to 10636 ohms by adding 636 ohms. (See Table 1 of procedure)
c. Output (PIN 16) 0.001 VDC (0.00 ± 0.025 VDC)

5. Within manufacturer's tolerances: Yes ☒ No ☐

6. Parts replaced NONE

7. Remarks _____

Performed by PKenfoc

FIELD CALIBRATION CHECK REPORT

CUSTOMER VTN SITE LOCATION Equity Oil DATE 2-19-81
TYPE INSTRUMENT TRANSMITTER MODEL # 1002 SERIAL # 457

OBSERVED VOLTAGES

+15.036

-14.942

REQUIRED VOLTAGES

+15.000 $\pm$ 0.150 V.D.C.

-15.000 $\pm$ 0.150 V.D.C.

PARTS REPLACED: NONE

REMARKS:

Performed By: P. Renfro

FIELD CALIBRATION CHECK REPORT

CUSTOMER VTN SITE LOCATION Equity Oil, Colo DATE 2-19-81
TYPE INSTRUMENT TRANSMITTER MODEL # 1002 SERIAL # 456

OBSERVED VOLTAGES

+ 15.102

- 14.995

REQUIRED VOLTAGES

+ 15.000 $\pm$ 0.150 V.D.C.- 15.000 $\pm$ 0.150 V.D.C.PARTS REPLACED: NONE

REMARKS:

Performed By: P. Renfro

FIELD CALIBRATION DATA SHEET - SIGMA
Re: Field Operations Manual, Procedure FC-6

Customer VTN Site Location _____ SO# _____ Date 2-19-81
Amplifier Assy# 14312 Model# 10220 Serial _____ Level 100'

1. Before Adjustment

- Install Sigma Calibration Card in Place of Wind Direction Card
- Set Sigma Card to 5-Second Position and Allow Time For Sigma Card to Stabilize (charge)
- Readings: DVM 4.832 VDC (5 ± 0.050 VDC)
- Throw Discharge Switch On Sigma Card; output should return to zero.
- Readings: DVM 0.002 VDC (0.0 ± 0.050 VDC)

2. After Adjustment

- Allow Time For Sigma Card to Charge
- Readings: DVM 5.002 VDC (5 ± 0.050 VDC)
- Discharge Sigma Card
- Readings: DVM 0.002 VDC (0.0 ± 0.050 VDC)

3. Within Manufacturer's Tolerances: Yes ✓ No _____

4. Parts Replaced None

5. Remarks _____

Prepared by J. Benfield

FIELD CALIBRATION DATA SHEET - SIGMA
Re: Field Operations Manual, Procedure FC-6

Customer VTN Site Location Equity Oil Co SO# _____ Date 2-19-81
Amplifier Assy# 14312 Model# 1022D Serial 809 Level 100'

1. Before Adjustment

- a. Install Sigma Calibration Card in Place of Wind Direction Card
- b. Set Sigma Card to 5-Second Position and Allow Time For Sigma Card to Stabilize (charge)
- c. Readings: DVM 4.832 VDC (5 ± 0.050 VDC)
- d. Throw Discharge Switch On Sigma Card; output should return to zero.
- e. Readings: DVM 0.002 VDC (0.0 ± 0.050 VDC)

2. After Adjustment

- a. Allow Time For Sigma Card to Charge
- b. Readings: DVM 5.002 VDC (5 ± 0.050 VDC)
- c. Discharge Sigma Card
- d. Readings: DVM 0.002 VDC (0.0 ± 0.050 VDC)

3. Within Manufacturer's Tolerances: Yes ✓ No _____

4. Parts Replaced NONE

5. Remarks _____

Prepared by P. Remy

FIELD CALIBRATION DATA SHEET - WIND SPEED
Re: Field Operations Manual Procedure FC-16

Customer VTN Site Location Equity Oil, Colo Date 2-19-81
Amplifier Assembly# 12905-1 Range 0-100 mph Sensor Model# 1022 S
Serial# 831 Level 100'

Before Adjustment

- a. Zero Output 0.013 VDC (0.015 $\pm$ 0.010 VDC) @ 0 Hz
b. Full Scale 5.002 VDC (5.000 $\pm$ 0.050 VDC) @ 2.444 Hz
c. Torque 0.012 oz. in. (Maximum torque: ~~1074, 0.040 oz. in.~~
1022, 0.005 oz. in.)

After Adjustment

- a. Zero Output _____ VDC
b. Full Scale _____ VDC
c. Torque 0.002 oz. in.
d. Threshold adjusted Yes ☒ No _____

. Within manufacturer's tolerance Yes ☒ No _____

. Parts replaced BEARINGS

. Remarks _____

Performed by J. Renfree

FIELD CALIBRATION DATA SHEET - TEMPERATURE

Re: Field Operations Manual, Procedure FC-18

Customer V T. N Site Location Equity Oil, Col Date 2-19-81
Amplifier Assy# 13495 Model# 840-2 Serial# _____ Level 100' Cable Res. _____ ohms
Range -30°C to +50°C

1. Sensor Bath Check Before Adjustment

Tolerances: $\pm 0.2^{\circ}\text{C}$

a. Cold Bath: Temp 0.85 $^{\circ}\text{C}$
b. Hot Bath: Temp 47.0 $^{\circ}\text{C}$

DVM 1.930 V
DVM 4.808 V

Calculated Temp 0.88 $^{\circ}\text{C}$
Calculated Temp 46.92 $^{\circ}\text{C}$

2. Sensor Bath Check After Adjustment

Tolerances: $\pm 0.2^{\circ}\text{C}$

a. Cold Bath: Temp _____ $^{\circ}\text{C}$
b. Hot Bath: Temp _____ $^{\circ}\text{C}$

DVM _____ V
DVM _____ V

Calculated Temp _____ $^{\circ}\text{C}$
Calculated Temp _____ $^{\circ}\text{C}$

3. Within Manufacturer's Tolerances

Yes ☒ No _____4. Parts Replaced none

5. Remarks _____

Performed by P. R. Ruffolo

APPENDIX B

TABLE 6

STATION ES-2

Lab	Date	Spec. Cond. at 25°C Field (umhos/cm)	Spec. Cond. at 25°C Lab (umhos/cm)	Water Temp. (°C)	pH Field (units)	pH Lab (units)	Turb. Field (ppm)	Turb. Lab (NTU)	Diss. Oxygen (mg/l)	Gage Height (ft)	Stream Flow (cfs)	Susp. Solids (mg/l)	Diss. Solids Cal.Sum. (mg/l)	Alka- linity as CaCO ₃ (mg/l)	Hard- ness as CaCO ₃ (mg/l)	Sodium Adsorption Ratio
	7/5/79	550		13.7	8.2		2		10.0	1.31	9.09					
(CAL)	7/19/79	550	680	14.4	7.1	8.0	7	4	10.2	0.92	5.28	<5	395	288	273	1.2
	8/17/79	540		12.4	8.3		15		10.2	0.73	3.70					
(CAL)	9/7/79	690	900	15.7	8.3	7.8	6	1	12.3	0.41	1.52	<5	513	318	345	1.4
(CAL)	9/27/79	730	620	17.9	7.5	8.0	1	<1	14.3	0.38	1.36	<5	426	304	274	1.3
(CAL)	12/3/79	570	740	5.3	8.2	8.0	7	2	10.9	0.32	1.04	<5	585	284	378	1.5
(CAL)	12/27/79	500	690	1.1	8.3	8.0	5	<1	10.8	0.32	1.04	<5	557	313	364	1.4
(CAL)	1/10/80	480	785	2.7	8.2	7.9	8	2	10.8	0.34	1.14	<5	614	312	360	1.9
(CAL)	1/21/80	530	850	4.6	8.4	7.7	9	3	10.2	0.34	1.14	16	560	309	357	1.5
(CAL)	1/24/80	460	840	2.8	8.6	7.9	12	<1		0.34	1.14	<5	558	317	350	1.7
(CAL)	2/7/80	520	910	1.4	8.0	8.1	3	1	12.0	0.33	1.09	<5	585	340	375	1.6
(CAL)	2/21/80	560	900	5.4	8.2	8.0	1	2	14.3	0.34	1.14	8	590	331	361	1.7
(CAL)	3/9/80	510	540	8.8	8.5	7.9	18	1	11.5	0.35	1.19	<5	434	311	304	1.2
	3/13/80	390		8.5	8.1		108		13.2	0.34	1.14					
(CSMRI)	3/18/80	590	874	10.7	8.0	8.4	2		14.8	0.33	1.09	2	565	325	320	1.65
	4/10/80	690		8.7	8.2		3			0.32	1.04					
(CAL)	5/8/80	430	660	4.8	7.7	8.3	580	340		>1.5		1391	556	291	323	0.9
(CSMRI)	5/8/80	430	703	4.8	7.7	8.3	580	350		>1.5		1570	406	256	267	0.98
	5/16/80	350		6.5	8.4		430			>1.5						
(CAL)	6/12/80	440	510	13.0	8.1	8.3	35	26		>1.5		123	528	255	328	1.4
(CSMRI)	6/12/80	440	765	13.0	8.1	8.0	35	11.2		>1.5		118	440	214	321	1.10
	6/20/80	550		14.8	8.2		14		9.9	>1.5						
	7/7/80	580		11.0	8.3		129		9.5	0.96	5.64					
(CAL)	9/29/80	605	770	13.5	8.2	8.2	11	0	13.9	0.40	1.46	<5	575	251	342	1.6
(CSMRI)	9/29/80	605	860	13.5	8.2	8.4	11	1.8	13.9	0.40	1.46	1	572	313	341	1.62
(CSMRI)	2/3/81	853	874	3.0	8.0	8.3	--	<0.5	11.1	1.32	9.20	2	588	319	374	1.55

STATION ES-2 (continued)

Lab	Date	Oil & Grease (mg/l)	Carbonate (mg/l)	Bicarbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Sulfide as S (mg/l)	Fluoride (mg/l)	Bromide (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Sodium (mg/l)	Potassium (mg/l)	Ammonia as N (mg/l)	Total Kjeldahl Nitrogen as N (mg/l)
(CAL)	7/5/79														
(CAL)	7/19/79	<5	0	345	3	69	<0.1	0.42	<0.1	54	33	46	1	0.52	1.72
(CAL)	8/17/79														
(CAL)	9/7/79	<5	0	419	3	123	<0.1	1.0	<0.1	71	40	60	<1	0.35	0.46
(CAL)	9/27/79	5	0	371	4	72	<0.1	1.5	<0.1	79	18	50	1	0.08	1.6
(CAL)	12/3/79	<5	0	440	5	153	<0.1	0.42	<0.1	76	45	69	1	0.16	0.24
(CAL)	12/27/79	<5	0	382	8	162	<0.1	0.84	<0.1	74	43	59	<1	0.14	0.22
(CAL)	1/10/80	<5	0	381	10	201	<0.1	1.2	<0.1	69	45	81	<1	0.08	1.2
(CAL)	1/21/80	<5	0	377	1	177	<0.1	0.71	<0.1	70	44	64	<1	0.10	0.23
(CAL)	1/24/80	12	0	387	1	168	<0.1	0.57	<0.1	65	45	73	<1	0.10	0.22
(CAL)	2/7/80	7	0	414	3	174	<0.1	1.3	<0.1	75	45	70	<1	0.08	0.25
(CAL)	2/21/80	<5	0	403	5	183	<0.1	0.9	<0.1	71	44	76	2	0.06	0.31
(CAL)	3/9/80	<5	0	380	7	84	0.2	1.0	<0.1	61	36	48	<1	0.19	0.29
(CAL)	3/13/80														
(CSMRI)	3/18/80	<2	17	362	3.8	172	0.3	0.04	1.5	72	34	68	0.60	0.03	0.4
(CAL)	4/10/80														
(CAL)	5/8/80	<5	0	355	4	102	0.1	0.96	<0.1	76	32	37	1	0.10	0.33
(CSMRI)	5/8/80	9	12	288	5.0	108	<0.1	0.29	0.3	52.5	33.0	36.8	0.80	0.23	4.0
(CAL)	5/16/80														
(CAL)	6/12/80	<5	0	311	4	189	<0.1	0.89	<0.1	71	36	57	4	0.16	0.41
(CSMRI)	6/12/80	<2	0	261	4.9	133	<0.1	0.29	0.7	69.0	36.2	45.2	0.66	0.06	<0.2
(CAL)	6/20/80														
(CAL)	7/7/80														
(CAL)	9/29/80	<5	0	306	2	231	<0.1	0.46	<0.1	70	40	70	<1	0.08	0.31
(CSMRI)	9/29/80	<4	8	366	4.1	178	<0.1	0.37	0.8	66.6	42.4	68.4	0.63	<0.02	0.3
(CSMRI)	2/3/81	<5	<0.5	389	4.0	178	<0.1	0.34	0.7	75.6	45.0	69.0	0.53	<0.1	0.4

STATION ES-2 (continued)

Lab	Date	Nitrite as N (mg/l)	Nitrate as N (mg/l)	Total Phosphorus as P (mg/l)	Diss. Ortho. Phos. as P (mg/l)	COD (mg/l)	TOC (mg/l)	DOC (mg/l)	Arsenic (mg/l)	Aluminum (mg/l)	Barium (mg/l)	Boron (mg/l)	Diss. Cadmium (mg/l)	Total Cadmium (mg/l)	Diss. Chromium (mg/l)	Total Chromium (mg/l)
39	7/5/79															
	(CAL) 7/19/79	0.01	0.91	0.78	0.65	77	24	21	<0.002	<0.1	<0.03	0.32	<0.002	<0.002	<0.02	<0.02
	8/17/79															
	(CAL) 9/7/79	<0.01	1.6	0.29	0.28	59	23	20	<0.002	<0.1	<0.03	0.05	<0.002	<0.002	<0.02	<0.02
	(CAL) 9/27/79	0.01	1.5	0.46	0.38	20.4	8.0	8.0	<0.002	<0.1	<0.03	0.55	<0.002	<0.002	<0.02	<0.02
	(CAL) 12/3/79	0.02	0.61	0.52	0.36	23	8.0	7.3	<0.002	<0.1	<0.03	0.62	<0.002	<0.002	<0.02	<0.02
	(CAL) 12/27/79	<0.01	2.1	0.36	0.22	59.1	21	20	<0.002	<0.1	<0.03	0.13	<0.002	<0.002	<0.02	<0.02
	(CAL) 1/10/80	0.01	3.2	0.10	0.07	11	3.8	2.8	<0.002	<0.1	<0.03	0.09	<0.002	<0.002	<0.02	<0.02
	(CAL) 1/21/80	0.01	0.90	0.38	0.24	15	4.5	3.6	<0.002	<0.1	<0.03	0.04	<0.002	<0.002	<0.02	<0.02
	(CAL) 1/24/80	0.01	0.71	0.40	0.25	6.9	2.0	1.0	<0.002	<0.1	<0.03	0.04	<0.002	<0.002	<0.02	<0.02
	(CAL) 2/7/80	0.01	0.30	0.08	0.06	16	6	5	<0.002	<0.1	<0.03	0.09	<0.002	<0.002	<0.02	<0.02
	(CAL) 2/21/80	<0.01	0.8	0.05	0.02	8	3	3	<0.002	<0.1	<0.03	0.07	<0.002	<0.002	<0.02	<0.02
	(CAL) 3/9/80	0.03	0.03	<0.01	<0.01	13	5	4	<0.002	<0.1	<0.03	0.13	<0.002	<0.002	<0.02	<0.02
	3/13/80															
	(CSMRI) 3/18/80	<0.01	0.06	<0.01	<0.01	13	5	5	0.002	<0.1	<0.1	0.2	<0.01	<0.01	<0.01	<0.01
	4/10/80															
	(CAL) 5/8/80	0.01	2.0	0.09	0.01	11	8	6	<0.002	<0.1	<0.03	0.05	<0.002	<0.002	<0.02	<0.02
	(CSMRI) 5/8/80	0.01	2.4	0.20	0.01	84	7	7	0.005	<0.2	<0.2	<0.05	<0.01	<0.01	<0.02	<0.02
	5/16/80															
	(CAL) 6/12/80	<0.01	1.3	<0.01	<0.01	6	4	4	<0.002	<0.1	<0.03	0.03	<0.002	<0.002	<0.02	<0.02
	(CSMRI) 6/12/80	<0.01	1.21	0.13	0.06	8	5	4	<0.005	<0.2	<0.1	0.2	<0.01	<0.01	<0.02	0.02
	6/20/80															
	7/7/80															
	(CAL) 9/29/80	0.01	0.6	0.03	<0.01	7	5	5	<0.002	<0.1	<0.03	0.08	<0.002	<0.002	<0.02	<0.02
	(CSMRI) 9/29/80	<0.01	0.02	0.01	0.02	23	4	4	0.005	0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.01
	(CSMRI) 2/3/81	0.01	0.13	0.01	<0.01	7	3	2	<0.003	<0.2	<0.1	<0.1	<0.01	--	<0.02	--

STATION ES-2 (continued)

Lab	Date	Diss. Cobalt (mg/l)	Total Cobalt (mg/l)	Diss. Copper (mg/l)	Total Copper (mg/l)	Cyanide (mg/l)	Diss. Iron (mg/l)	Total Iron (mg/l)	Diss. Lead (mg/l)	Total Lead (mg/l)	Lithium (mg/l)	Diss. Manganese (mg/l)	Total Manganese (mg/l)	Diss. Mercury (mg/l)	Total Mercury (mg/l)	Diss. Molyb- denum (mg/l)	Total Molyb- denum (mg/l)
(CAL)	7/5/79																
	7/19/79	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	0.24	<0.05	<0.05	<0.03	0.03	0.04		<0.0002	<0.1	<0.1
	8/17/79																
(CAL)	9/7/79	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	0.03	0.04		<0.0002	<0.1	<0.1
(CAL)	9/27/79	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	<0.01	0.02		<0.0002	<0.1	<0.1
(CAL)	12/3/79	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	0.03	<0.05	<0.05	<0.03	0.01	0.03		<0.0002	<0.1	<0.1
(CAL)	12/27/79	<0.03	<0.03	<0.01	0.03	<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	<0.01	0.01		<0.0002	<0.1	<0.1
(CAL)	1/10/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	<0.01	<0.01	<0.0002	<0.0002	<0.1	<0.1
(CAL)	1/21/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	<0.01	<0.01	<0.0002	<0.0002	<0.1	<0.1
(CAL)	1/24/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	<0.01	<0.01	<0.0002	<0.0002	<0.1	<0.1
(CAL)	2/7/80	<0.03	<0.03	<0.01	<0.01	<0.02	0.08	0.10	<0.05	<0.05	<0.03	<0.01	<0.01	<0.0002	<0.0002	<0.1	<0.1
(CAL)	2/21/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	0.02	0.05	<0.0002	<0.0002	<0.1	<0.1
(CAL)	3/9/80	<0.03	<0.03	0.01	0.89	<0.02	0.05	0.14	<0.05	<0.05	<0.03	<0.01	0.02	<0.0002	<0.0002	<0.1	<0.1
	3/13/80																
(CSMRI)	3/18/80	0.02	0.02	0.01	0.01	<0.01	<0.01	0.03	<0.02	0.05	0.01	0.01	0.02	<0.0005	<0.0005	<0.1	<0.1
	4/10/80																
(CAL)	5/8/80	<0.03	<0.03	<0.01	0.04	<0.02	0.02	0.04	<0.05	<0.05	<0.03	<0.01	0.08	<0.0002	<0.0002	<0.1	<0.1
(CSMRI)	5/8/80	<0.02	0.02	<0.01	0.06	<0.01	0.07	360	<0.03	<0.03	0.02	0.01	0.79	<0.0005	<0.0005	<0.1	<0.1
	5/16/80																
(CAL)	6/12/80	<0.03	<0.03	<0.01	0.02	<0.02	<0.02	1.0	<0.05	<0.05	0.03	<0.01	0.10	<0.0002	<0.0002	<0.1	<0.1
(CSMRI)	6/12/80	<0.02	<0.02	<0.01	0.02	<0.005	0.02	1.75	<0.05	<0.05	<0.01	<0.01	0.05	<0.0005	<0.0005	<0.1	<0.1
	6/20/80																
	7/7/80																
(CAL)	9/29/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	0.03	<0.05	<0.05	<0.01	0.01	0.03	<0.0002	<0.0002	<0.1	<0.1
(CSMRI)	9/29/80	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	0.10	<0.02	<0.02	<0.01	<0.01	0.01	<0.0005	<0.0005	<0.1	<0.1
(CAL)	9/29/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	0.03	<0.05	<0.05	<0.01	0.01	0.03	<0.0002	<0.0002	<0.1	<0.1
(CSMRI)	9/29/80	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	0.10	<0.02	<0.02	<0.01	<0.01	0.01	<0.0005	<0.0005	<0.1	<0.1
(CSMRI)	2/3/81	<0.02	--	<0.02	--	<0.01	<0.02	--	<0.05	--	<0.01	<0.01	--	<0.0005	--	<0.1	--

STATION ES-2 (continued)

Lab	Date	Diss. Nickel (mg/l)	Total Nickel (mg/l)	Selenium (mg/l)	Silica as SiO ₂ (mg/l)	Diss. Vanadium (mg/l)	Total Vanadium (mg/l)	Diss. Zinc (mg/l)	Total Zinc (mg/l)	Diss. Solids FR180C (mg/l)	Phenols (mg/l)	Thiocyanate (mg/l)
(CAL)	7/5/79	<0.02	<0.02	<0.002	16	<0.2	<0.2	<0.005	<0.005	388		
(CAL)	7/19/79	<0.02	<0.02	<0.002	15	<0.2	<0.2	<0.005	0.007	613	<0.1	
(CAL)	8/17/79	<0.02	<0.02	<0.002	17	<0.2	<0.2	<0.005	0.04	612		
(CAL)	9/7/79	<0.02	<0.02	<0.002	19	<0.2	<0.2	<0.005	0.02	622		
(CAL)	9/27/79	<0.02	<0.02	<0.002	16	<0.2	<0.2	<0.005	<0.005	606		
(CAL)	12/3/79	<0.02	<0.02	<0.002	16	<0.2	<0.2	<0.005	<0.005	389		
(CAL)	12/27/79	<0.02	<0.02	<0.002	16	<0.2	<0.2	<0.005	<0.005	595		
(CAL)	1/10/80	<0.02	<0.02	<0.002	14	<0.2	<0.2	<0.005	<0.005	650		
(CAL)	1/21/80	<0.02	<0.02	<0.002	11	<0.2	<0.2	<0.005	<0.005	449		
(CAL)	1/24/80	<0.02	<0.02	<0.002	9	<0.2	<0.2	<0.005	<0.005	410		
(CAL)	2/7/80	<0.02	<0.02	<0.002	9	<0.2	<0.2	0.036	0.14	358		
(CAL)	2/21/80	<0.02	<0.02	<0.002	14.4	<0.1	<0.1	<0.01	<0.01	563		
(CAL)	3/9/80	<0.02	<0.02	<0.002	10	<0.2	<0.2	<0.01	0.03	357		
(CSMRI)	3/13/80	<0.01	<0.01	<0.002	6.9	<0.1	0.1	0.01	0.13	449		
(CAL)	3/18/80	<0.02	<0.02	<0.002	12	<0.2	<0.2	<0.005	0.011	371		
(CAL)	4/10/80	<0.02	<0.02	<0.002	18.2	<0.1	<0.1	<0.01	<0.02	489		
(CSMRI)	5/8/80	<0.02	<0.02	<0.005	11	<0.2	<0.2	<0.005	<0.005	436		
(CAL)	5/8/80	<0.02	<0.02	<0.005	20.0	<0.1	<0.1	<0.01	0.06	578		
(CAL)	5/16/80	<0.02	<0.02	<0.002	19.8	<0.2	<0.2	0.01	--	542	<0.005	<0.1
(CAL)	6/12/80	<0.02	<0.02	<0.002								
(CSMRI)	6/12/80	<0.02	<0.02	<0.005								
(CAL)	6/20/80	<0.02	<0.02	<0.002								
(CAL)	7/7/80	<0.02	<0.02	<0.002								
(CAL)	9/29/80	<0.02	<0.02	<0.002								
(CSMRI)	9/29/80	<0.02	<0.02	<0.005								
(CSMRI)	2/3/81	<0.03	--	<0.003								

TABLE 7

STATION ES-3

Lab	Date	Spec. Cond. at 25°C Field (umhos/cm)	Spec. Cond. at 25°C Lab (umhos/cm)	Water Temp. (°C)	pH Field (units)	pH Lab (units)	Turb. Field (ppm)	Turb. Lab (NTU)	Diss. Oxygen (mg/l)	Gage Height (ft)	Stream Flow (cfs)	Susp. Solids (mg/l)	Diss. Solids Cal.Sum. (mg/l)	Alka- linity as CaCO ₃ (mg/l)	Hard- ness as CaCO ₃ (mg/l)	Sodium Adsorption Ratio
(CAL)	7/5/79	540	690	13.6	8.0	7.9	1	1	10.3	1.20	7.95	7	475	286	303	1.1
(CAL)	7/19/79	490	680	12.5	7.9	8.1	2	3	9.3	0.92	5.28	<5	409	292	293	1.1
	8/17/79	540		12.9	8.3		42		10.5							
(CAL)	9/7/79	660	870	20.3	8.3	8.0	5	<1	9.2			<5	564	308	369	1.5
(CAL)	9/27/79	720	570	20.3	7.7	8.0		1	9.6			<5	475	284	288	1.5
(CAL)	10/11/79	750	870	18.4	8.3	7.9		3	9.4			<5	508	288	323	1.4
(CAL)	11/22/79	370	810	1.1	9.4	7.8	20	3	9.5	0.19	0.47	<5	522	326	345	1.4
(CAL)	12/3/79	520	720	4.4	7.9	8.0	7.5	2		0.22	0.58	<5	575	309	360	1.6
(CAL)	12/6/79	500	820	4.3	8.3	7.9	8	<1	8.7	0.12	0.23	<5	588	328	386	1.5
(CAL)	12/20/79	390	860	3.9	8.4	7.8	4	1	10.0	0.26	0.75	<5	599	306	372	1.7
(CAL)	12/27/79	400	640	0.5	8.2	7.8	15	<1	9.6	0.26	0.75	<5	628	303	376	1.5
(CAL)	1/3/80	350	590	1.2	8.5	8.0	5	5	10.4	0.22	0.58	<5	500	309	351	1.6
(CAL)	1/10/80	430	975	2.0	8.2	7.8	6	1	10.7	0.24	0.67	<5	562	295	353	1.5
(CAL)	1/21/80	500	790	4.5	8.3	8.1	13	1	10.0	0.21	0.54	<5	527	315	348	1.4
(CAL)	1/25/80	420	860	1.4	8.3	8.0	11	1	9.9	0.25	0.71	<5	556	318	363	1.5
(CAL)	1/31/80	330	570	1.3	9.0	7.9		1	8.5	0.23	0.63	<5	707	343	418	1.6
(CAL)	2/7/80	470	880	0.9	8.0	8.0	4	<1	11.2	0.21	0.54	7	600	321	371	1.6
(CAL)	2/14/80	500	630	4.2	8.3	8.2	1	<1	12.6	0.21	0.54	<5	551	312	347	1.8
(CAL)	2/21/80	550	890	5.1	8.3	8.1	1	2	11.7	0.21	0.54	8	559	325	356	1.6
(CAL)	3/9/80	480	520	9.8	8.2	8.0	5	0	9.6	0.21	0.54	<5	438	295	289	1.4
(CAL)	3/13/80	300	540	9.3	7.9	8.3		0	8.3	0.22	0.58	<5	462	312	297	1.5
(CSMRI)	3/18/80	580	875	12.5	7.9	7.2	2	<1	11.8	0.21	0.54	4	528	263	310	1.71
	4/10/80	690		10.0	8.4		3			0.18	0.43					
(CAL)	5/8/80	450	640	5.4	7.8	8.1	586	350		>1.5		1584	565	331	330	0.90
(CSMRI)	5/8/80	450	729	5.4	7.8	7.8	586	360		>1.5		1610	394	237	266	0.94
	5/16/80	320		6.5	8.3		480			>1.5						
(CAL)	6/12/80	460	510	15.2	8.1	8.3	15	26		>1.5		123	508	247	343	1.1
(CSMRI)	6/12/80	460	747	15.2	8.1	6.8	15	13.4		>1.5		116	462	217	330	1.07
	6/20/80	540		15.2	8.2		11		10.4	>1.5						
	7/7/80	660		11.8	8.3		127		10.6							
(CAL)	9/29/80	589	820	18.1	8.3	8.3	3	0	13.3			<5	553	222	317	1.7
(CSMRI)	9/29/80	589	833	18.1	8.3	8.5	3	<0.5	13.3			<1	547	293	321	1.62
(CSMRI)	2/3/81	793	903	0.1	8.5	8.3	-	<0.5	11.7			3	604	330	380	1.58

STATION ES-3 (continued)

Lab	Date	Oil &	Carbonate	Bicarbonate	Chloride	Sulfate	Sulfide	Fluoride	Bromide	Calcium	Magnesium	Sodium	Potassium	Ammonia	Total
		Grease (mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	as S (mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	as N (mg/l)	Kjeldahl Nitrogen as N (mg/l)
(CAL)	7/5/79	<5	0	349	1.1	129	<0.1	0.38		61	43	47	1	0.36	0.54
(CAL)	7/19/79	<5	0	351	1	70	<0.1	0.33	<0.1	57	36	44	1	0.13	1.43
	8/17/79														
(CAL)	9/7/79	<5	0	404	2	171	<0.1	0.76	<0.1	71	46	66	<1	0.09	0.13
(CAL)	9/27/79	<5	0	346	4	123	<0.1	1.2	<0.1	67	29	59	2	0.05	1.9
(CAL)	10/11/79	7	0	352	9	147	<0.1	0.63	<0.1	59	42	60	2	0.14	0.26
(CAL)	11/22/79	<5	0	398	4	135	<0.1	0.48	<0.1	68	42	58	<1	0.01	0.03
(CAL)	12/3/79	5	0	377	5	183	<0.1	0.25	<0.1	69	45	68	1	0.16	0.19
(CAL)	12/6/79	<5	0	401	3	174	<0.1	0.40	<0.1	76	47	69	1	0.20	1.3
(CAL)	12/20/79	<5	0	430	4	174	<0.1	0.72	<0.1	72	46	76	2	0.11	0.98
(CAL)	12/27/79	<5	0	292	6	270	<0.1	0.45	<0.1	72	47	69	2	0.07	0.16
(CAL)	1/3/80	<5	0	377	2	114	<0.1	0.83	<0.1	62	47	69	<1	0.05	0.11
(CAL)	1/10/80	<5	0	362	10	180	<0.1	0.9	<0.1	66	45	65	<1	0.03	0.05
(CAL)	1/21/80	<5	0	401	4	141	<0.1	0.71	<0.1	65	44	61	<1	0.21	0.22
(CAL)	1/25/80	<5	0	437	2	141	<0.1	0.53	<0.1	70	45	66	<1	0.08	0.09
(CAL)	1/31/80	5	0	419	3	264	<0.1	0.7	<0.1	84	50	77	2	0.1	0.23
(CAL)	2/7/80	7	0	392	5	204	<0.1	0.76	<0.1	70	47	70	<1	0.10	0.29
(CAL)	2/14/80	5	0	381	3	162	<0.1	0.8	<0.1	67	43	75	<1	0.08	0.21
(CAL)	2/21/80	<5	0	398	3	168	<0.1	0.7	<0.1	67	45	69	1	0.04	0.19
(CAL)	3/9/80	<5	0	360	3	102	0.2	0.8	<0.1	56	36	54	<1	0.13	0.19
(CAL)	3/13/80	<5	0	381	4	105	0.7	0.81	<0.1	57	37	61	<1	0.09	0.23
(CSMRI)	3/18/80	<2	0	321	4.2	176	0.2	0.04	1.5	68	34	69	0.63	<0.02	0.3
(CAL)	5/8/80	<5	0	403	5	69	0.2	0.62	<0.1	77	33	36	1	0.08	0.21
(CSMRI)	5/8/80	12	0	290	4.8	106		0.28	0.2	53	32.5	35.4	0.83	0.10	4.1
	5/16/80														
(CAL)	6/12/80	<5	3	294	4	186	<0.1	0.61	<0.1	74	38	46	1	0.11	0.31
(CSMRI)	6/12/80	<2	0	265	4.2	149	<0.1	0.25	0.5	69.6	38.0	44.7	0.68	0.12	0.3
	6/20/80														
	7/7/80														
(CAL)	9/29/80	<5	0	271	4	237	<0.1	0.45	<0.1	60	40	70	<1	0.06	0.27
(CSMRI)	9/29/80	<4	18	321	4.2	176	<0.1	0.36	0.4	58.7	42.4	66.7	0.63	<0.02	0.7
(CSMRI)	2/3/81	<5	<0.5	403	4.2	182	<0.1	0.37	0.8	76.3	46.1	71.0	0.62	<0.1	0.3

STATION ES-3 (continued)

Lab	Date	Nitrite as N (mg/l)	Nitrate as N (mg/l)	Total Phosphorus as P (mg/l)	Diss. Ortho. Phos. as P (mg/l)	COD (mg/l)	TOC (mg/l)	DOC (mg/l)	Arsenic (mg/l)	Aluminum (mg/l)	Barium (mg/l)	Boron (mg/l)	Diss. Cadmium (mg/l)	Total Cadmium (mg/l)	Diss. Chromium (mg/l)	Total Chromium (mg/l)
(CAL)	7/5/79	0.01	1.2	0.91	0.43							0.02				
(CAL)	7/19/79	0.01	0.82	0.72	0.59	31	8.8	8.6	<0.002	<0.1	<0.03	0.26	<0.002	<0.002	<0.02	<0.02
	8/17/79															
(CAL)	9/7/79	<0.01	0.9	0.29	0.29	23	11	11	<0.002	<0.1	<0.03	0.05	<0.002	<0.002	<0.02	<0.02
(CAL)	9/27/79	<0.01	1.2	0.36	0.35	22.8	7.0	6.0	<0.002	<0.1	<0.03	0.75	<0.002	<0.002	<0.02	<0.02
(CAL)	10/11/79	0.01	1.0	0.39	0.26	29	10	7	<0.002	<0.1	<0.03	0.30	<0.002	<0.002	<0.02	<0.02
(CAL)	11/22/79	0.03	4.5	0.71	0.59	14	5.0	4.8	<0.002	<0.1	<0.03	0.7	<0.002	<0.002	<0.02	<0.02
(CAL)	12/3/79	0.02	0.73	0.44	0.33	33	10	6.1	<0.002	<0.1	<0.03	0.71	<0.002	<0.002	<0.02	<0.02
(CAL)	12/6/79	<0.01	3.1	1.85	1.74	13	5.0	3.2	<0.002	<0.1	<0.03	0.45	<0.002	<0.002	<0.02	<0.02
(CAL)	12/20/79	<0.01	0.5	0.44	0.37	38	10	7.3	<0.002	<0.1	<0.03	0.28	<0.002	<0.002	<0.02	<0.02
(CAL)	12/27/79	<0.01	2.4	0.34	0.20	41.1	16	15	<0.002	<0.1	<0.03	0.13	<0.002	<0.002	<0.02	<0.02
(CAL)	1/3/80	0.01	3.3	0.62	0.40	19.3	6.4	5.8	<0.002	<0.1	<0.03	0.06	<0.002		<0.02	
(CAL)	1/10/80	0.01	2.2	0.13	0.09	8.3	2.0	1.3	<0.002	<0.1	<0.03	0.11	<0.002	<0.002	<0.02	<0.02
(CAL)	1/21/80	0.01	0.62	0.34	0.26	8.1	2.7	1.3	<0.002	<0.1	<0.03	0.04	<0.002	<0.002	<0.02	<0.02
(CAL)	1/25/80	0.02	0.72	0.39	0.26	5.9	1.8	1.6	<0.002	<0.1	<0.03	0.04	<0.002	<0.002	<0.02	<0.02
(CAL)	1/31/80	0.01	1.5	0.38	0.10	38	12	8.9	<0.002	<0.1	<0.03	0.29	<0.002	<0.002	<0.02	<0.02
(CAL)	2/7/80	0.01	0.30	0.10	0.08	21	3	6	<0.002	<0.1	<0.03	0.07	<0.002	<0.002	<0.02	<0.02
(CAL)	2/14/80	0.01	0.8	0.41	0.34	26	10	8	<0.002	<0.1	<0.03	0.08	<0.002	<0.002	<0.02	<0.02
(CAL)	2/21/80	<0.01	0.7	0.07	0.04	14	5	4	<0.002	<0.1	<0.03	0.08	<0.002	<0.002	<0.02	<0.02
(CAL)	3/9/80	0.03	0.5	0.03	<0.01	17	5	5	<0.002	<0.1	<0.03	0.12	<0.002	<0.002	<0.02	<0.02
(CAL)	3/13/80	0.03	0.5	0.01	<0.01	20	7	6	<0.002	<0.1	<0.03	0.11	<0.002	<0.002	<0.02	<0.02
(CSMRI)	3/18/80	<0.01	0.02	<0.01	<0.01	12	4	4	0.003	0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.01
(CAL)	5/8/80	0.01	2.1	0.11	0.03	12	5	4	<0.002	<0.1	<0.03	0.04	<0.002	<0.002	<0.02	<0.02
(CSMRI)	5/8/80	<0.01	2.6	0.16	0.01	128	5	5	0.004	<0.2	<0.2	0.1	<0.01	<0.01	<0.02	<0.02
	5/16/80															
(CAL)	6/12/80	<0.01	1.5	<0.01	<0.01	7	5	5	<0.002	<0.1	<0.03	0.03	<0.002	<0.002	<0.02	<0.02
(CSMRI)	6/12/80	<0.01	1.31	0.14	0.03	12	6	4	<0.005	<0.2	<0.1	0.3	<0.01	<0.01	<0.02	<0.02
	6/20/80															
	7/7/80															
(CAL)	9/29/80	<0.01	0.5	<0.01	<0.01	9	6	6	<0.002	<0.1	<0.03	0.09	<0.002	<0.002	<0.02	<0.02
(CSMRI)	9/29/80	<0.01	<0.01	0.01	0.02	6	4	4	<0.005	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.01
(CSMRI)	2/3/81	0.01	0.16	0.01	<0.01	7	3	1	<0.003	<0.2	<0.1	<0.1	<0.01	--	<0.02	--

STATION ES-3 (continued)

Lab	Date	Diss. Cobalt (mg/l)	Total Cobalt (mg/l)	Diss. Copper (mg/l)	Total Copper (mg/l)	Cyanide (mg/l)	Diss. Iron (mg/l)	Total Iron (mg/l)	Diss. Lead (mg/l)	Total Lead (mg/l)	Lithium (mg/l)	Diss. Manganese (mg/l)	Total Manganese (mg/l)	Diss. Mercury (mg/l)	Total Mercury (mg/l)	Diss. Molyb- denum (mg/l)	Total Molyb- denum (mg/l)
(CAL)	7/5/79						<0.02	0.23				0.01	0.04				
(CAL)	7/19/79	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	0.24	<0.05	<0.05	<0.03	0.04	0.04		<0.0002	<0.1	<0.1
	8/17/79																
(CAL)	9/7/79	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	0.02	0.02		<0.0002	<0.1	<0.1
(CAL)	9/27/79	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	<0.01	0.01		<0.0002	<0.1	<0.1
(CAL)	10/11/79	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	0.10	<0.05	<0.05	<0.03	0.02	0.03		<0.0002	<0.1	<0.1
(CAL)	11/22/79	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	0.03	<0.01	<0.01		<0.0002	<0.1	<0.1
(CAL)	12/3/79	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	0.13	<0.01	<0.01		<0.0002	<0.1	<0.1
(CAL)	12/6/79	<0.03	<0.03	<0.01	<0.01	<0.02	0.04	0.06	<0.05	<0.05	<0.03	<0.01	<0.01		0.0003	<0.1	<0.1
(CAL)	12/20/79	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	<0.01	<0.01	<0.0002	<0.0002	<0.1	<0.1
(CAL)	12/27/79	<0.03	<0.03	<0.01	0.03	<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	<0.01	<0.01		<0.0002	<0.1	<0.1
(CAL)	1/3/80	<0.03	<0.03	<0.01		<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	<0.01	0.01	<0.0002	<0.0002	<0.1	<0.1
(CAL)	1/10/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	0.04	<0.05	<0.05	<0.03	<0.01	<0.01	<0.0002	<0.0002	<0.1	<0.1
(CAL)	1/21/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.03	<0.01	<0.01	<0.0002	<0.0002	<0.1	<0.1
(CAL)	1/25/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	0.04	<0.05	<0.05	<0.03	<0.01	<0.01	<0.0002	<0.0002	<0.1	<0.1
(CAL)	1/31/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	0.05	<0.01	<0.01	<0.0002	<0.0002	<0.1	<0.1
(CAL)	2/7/80	<0.03	<0.03	<0.01	<0.01	<0.02	0.05	0.15	<0.05	<0.05	<0.03	<0.01	<0.01	<0.0002	<0.0002	<0.1	<0.1
(CAL)	2/14/80	<0.03	<0.03	<0.01	<0.01	<0.02	0.03	0.09	<0.05	<0.05	<0.03	<0.01	0.03	<0.0002	<0.0002	<0.1	<0.1
(CAL)	2/21/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	0.07	<0.05	<0.05	<0.03	0.01	0.05	<0.0002	<0.0002	<0.1	<0.1
(CAL)	3/9/80	<0.03	<0.03	0.01	0.44	<0.02	0.04	0.22	<0.05	<0.05	<0.03	<0.01	<0.01	<0.0002	<0.0002	<0.1	<0.1
(CAL)	3/13/80	<0.03	<0.03	0.01	0.05	<0.02	0.08	0.15	<0.05	<0.05	<0.03	<0.01	<0.01	<0.0002	<0.0002	<0.1	<0.1
(CSMRI)	3/18/80	0.02	0.01	0.01	0.01	<0.01	<0.01	0.11	<0.02	0.04	0.01	<0.01	<0.01	<0.0005	<0.0005	<0.1	<0.1
(CAL)	5/8/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.01	0.06	<0.05	<0.05	<0.03	<0.01	0.14	<0.0002	<0.0002	<0.1	<0.1
(CSMRI)	5/8/80	<0.02	0.02	<0.01	0.05	<0.01	0.07	360	<0.03	<0.03	0.02	<0.01	0.76	<0.0005	<0.0005	<0.1	<0.1
	5/16/80																
(CAL)	6/12/80	<0.03	<0.03	<0.01	0.01	<0.02	<0.02	0.80	<0.05	<0.05	0.04	<0.01	0.08	<0.0002	<0.0002	<0.1	<0.1
(CSMRI)	6/12/80	<0.02	<0.02	<0.01	0.02	<0.005	0.02	1.63	<0.05	<0.05	<0.01	<0.01	0.04	<0.0005	<0.0005	<0.1	<0.1
	6/20/80																
	7/7/80																
(CAL)	9/29/80	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.05	<0.01	0.01	0.02	<0.0002	<0.0002	<0.1	<0.1
(CSMRI)	9/29/80	<0.01	<0.01	<0.01	<0.01	<0.01	0.04	0.12	<0.02	<0.02	<0.01	<0.01	<0.01	<0.0005	<0.0005	<0.1	<0.1
(CSMRI)	2/3/81	<0.02	--	<0.02	--	<0.01	<0.02	--	<0.05	--	<0.01	<0.01	--	<0.0005	--	<0.1	--

STATION ES-3 (continued)

Lab	Date	Diss. Nickel (mg/l)	Total Nickel (mg/l)	Selenium (mg/l)	Silica as SiO ₂ (mg/l)	Diss. Vanadium (mg/l)	Total Vanadium (mg/l)	Diss. Zinc (mg/l)	Total Zinc (mg/l)	Diss. Solids FR180C (mg/l)	Phenols (mg/l)	Thiocyanate (mg/l)
(CAL)	7/5/79				19					428		
(CAL)	7/19/79	<0.02	<0.02	0.002	17	<0.2	<0.2	<0.005	<0.005	379		
	8/17/79											
(CAL)	9/7/79	<0.02	<0.02	<0.002	7.2	<0.2	<0.2	<0.005	0.009	579	<0.1	
(CAL)	9/27/79	<0.02	<0.02	0.002	17	<0.2	<0.2	0.04	0.04	582		
(CAL)	10/11/79	<0.02	<0.02	0.003	13	<0.2	<0.2	<0.005	0.10	621		
(CAL)	11/22/79	<0.02	<0.02	0.003	13	<0.2	<0.2	<0.005	<0.005	603		
(CAL)	12/3/79	<0.02	<0.02	0.002	16	<0.2	<0.2	0.007	0.02	588		
(CAL)	12/6/79	<0.02	<0.02	0.005	16	<0.2	<0.2	<0.005	<0.005	549		
(CAL)	12/20/79	<0.02	<0.02	0.002	11	<0.2	<0.2	<0.005	<0.005	580		
(CAL)	12/27/79	<0.02	<0.02	0.003	15	<0.2	<0.2	<0.005	0.02	478		
(CAL)	1/3/80	<0.02	<0.02	0.005	16	<0.2	<0.2	0.03	0.05	403		
(CAL)	1/10/80	<0.02	<0.02	0.002	14	<0.2	<0.2	<0.005	0.04	398		
(CAL)	1/21/80	<0.02	<0.02	<0.002	13	<0.2	<0.2	<0.005	0.02	573		
(CAL)	1/25/80	<0.02	<0.02	<0.002	15	<0.2	<0.2	<0.005	0.02	638		
(CAL)	1/31/80	<0.02	<0.02	0.002	18	<0.2	<0.2	<0.005	<0.005	448		
(CAL)	2/7/80	<0.02	<0.02	<0.002	9	<0.2	<0.2	<0.005	<0.005	441		
(CAL)	2/14/80	<0.02	<0.02	<0.002	10	<0.2	<0.2	<0.005	<0.005	383		
(CAL)	2/21/80	<0.02	<0.02	<0.002	8	<0.2	<0.2	<0.005	<0.005	391		
(CAL)	3/9/80	<0.02	<0.02	<0.002	8	<0.2	<0.2	<0.005	0.02	349		
(CAL)	3/13/80	<0.02	<0.02	<0.002	8	<0.2	<0.2	<0.005	<0.005	349		
(CSMRI)	3/18/80	<0.01	<0.01	0.003	14.1	<0.1	<0.1	<0.01	<0.01	562		
(CAL)	5/8/80	<0.02	<0.02	<0.002	11	<0.2	<0.2	<0.005	<0.005	353		
(CSMRI)	5/8/80	<0.02	0.06	<0.002	7.3	<0.1	0.1	0.02	0.11	441		
	5/16/80											
(CAL)	6/12/80	<0.02	<0.02	<0.002	9	<0.2	<0.2	<0.005	<0.005	330		
(CSMRI)	6/12/80	<0.02	<0.02	<0.005	17.8	<0.1	<0.1	<0.01	<0.02	486		
	6/20/80											
	7/7/80											
(CAL)	9/29/80	<0.02	<0.02	<0.002	8	<0.2	<0.2	<0.005	<0.005	392		
(CSMRI)	9/29/80	<0.02	<0.02	<0.005	19.0	<0.1	<0.1	<0.01	0.02	540		
(CSMRI)	2/3/81	<0.03	--	<0.003	20.0	<0.3	--	0.01	--	563	<0.005	<0.1

TABLE 8

WELL BX-13

Lab	Date	Spec. Cond. at 25°C Field (umhos/cm)	Spec. Cond. at 25°C Lab (umhos/cm)	Water Temp. (°C)	pH Field (units)	pH Lab (units)	Turb. Lab (NTU)	Diss. Oxygen (mg/l)	Susp. Solids (mg/l)	Diss. Solids, Calc. Sum. (mg/l)	Diss. Solids, FR 180C (mg/l)	Alka- linity as CaCO ₃ (mg/l)
(CAL)	7/5/79	5910	4770	12.7	7.1	7.1	15	1.5	<5	3088	2830	2250
(CAL)	7/19/79	5810	4400	12.5	7.0	7.1	14	1.5	<5	3471	4355	2231
(CAL)	9/27/79	4970	3200	13.8	7.0	7.7	6	1.9	23	3047	5127	1936
(CAL)	10/11/79	6130	5650	11.5	6.8	6.8	86	0.3	<5		3641	
(CAL)	11/22/79	5320	4660	12.6	7.6	7.1	47	0.8	<5	3255	4256	2287
(CAL)	12/3/79	4910	4300	13.1		7.8	69	1.2	<5	3407	4433	2464
(CAL)	12/6/79	5420	4850	11.1	7.1	7.7	40	0.5	<5	3255	3267	2623
(CAL)	12/20/79	5490	4850	7.1	7.1	7.2	3	0.4	12	3400	3589	2688
(CAL)	12/27/79	4910	3860	4.2	7.0	7.8	347	2.0	64	3295	3080	2578
	1/3/80	5190		0.7	7.8			2.5				
	3/9/80	4630		5.9	8.1			5.0				
(CAL)	3/13/80	2930	2950	3.4	8.2	8.8	15	4.3	10	3072	2692	2318
(CSMRI)	3/18/80	5560	4760	8.2	6.9	7.3	28	1.8	3	3470	3580	2860
(CSMRI)	2/3/81	5770	5040	14.8	6.5	7.0	--	2.2	--	3910	3770	2920

WELL BX-13 (continued)

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Lab	Date	Hardness as CaCO ₃ (mg/l)	Sodium Adsorption Ratio	Oil & Grease (mg/l)	Bicar- bonate (mg/l)	Carbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Sulfide as S (mg/l)	Fluoride (mg/l)	Bromide (mg/l)	Calcium (mg/l)	Magne- sium (mg/l)	Sodium (mg/l)
(CAL)	7/5/79	288	24.9	<5	2748	0	451	48	69	14.5		55	42	1020
(CAL)	7/19/79	330	28.3	<5	2678	0	409	45	354	14.5	<0.1	57	45	1183
(CAL)	9/27/79	203	35.7	<5	2360	0	555	30	12	32	<0.1	33	29	1169
(CAL)	10/11/79	933	18	<5		0	753	30	631	9.6	<0.1	118	153	1230
(CAL)	11/22/79	342	26.4	<5	2790	0	506	24	75	17	<0.1	60	46	1120
(CAL)	12/3/79	308	24.7	<5	3006	0	433	48	227	9.1	<0.1	53	42	996
(CAL)	12/6/79	258	25.6	<5	3200	0	299	48	220	19	<0.1	45	35	975
(CAL)	12/20/79	151	47.9	<5	3254	0	281	33	32	15	<0.1	27	20	1352
(CAL)	12/27/79	214	37.2	<5	2957	0	325	60	77.4	16	<0.1	39	28	1250
	1/3/80													
	3/9/80													
(CAL)	3/13/80	60	71.9	<5	2662	81	238	60	24.4	17.2	<0.1	4	12	1280
(CSMRI)	3/18/80	194	41.2	34	3490	0	280	11	3.5	15.0	10.3	30	29	1320
(CSMRI)	2/3/81	345	35.84	<5	3560	<0.5	415	10	8.0	14.0	<0.1	66.9	43.2	1530

WELL BX-13 (continued)

Lab	Date	Potas- sium (mg/l)	Ammonia as N (mg/l)	Total Kjeldahl Nitrogen as N (mg/l)	Nitrite as N (mg/l)	Nitrate as N (mg/l)	Total Phosphorus as P (mg/l)	Diss. Ortho Phosph. as P (mg/l)	COD (mg/l)	TOC (mg/l)	DOC (mg/l)	Arsenic (mg/l)	Alumi- num (mg/l)	Barium (mg/l)
(CAL)	7/5/79	6	3.5	5.9	0.01	1.7	0.86	0.13						
(CAL)	7/19/79	9	4.47	6.23	<0.01	1.3	1.56	1.31	90	30.0	29.0	<0.002	<0.1	<0.03
(CAL)	9/27/79	5	3.8	8.7	0.01	3.2	0.98	0.68	18	18.0	16	<0.002	<0.1	<0.03
(CAL)	10/11/79	11	0.93	10	0.07	3.2	0.42	0.42	462	146	28	<0.002	<0.1	<0.03
(CAL)	11/22/79	6	5.3	6.1	0.03	4.2	1.59	0.36	188	55	38	<0.002	<0.1	<0.03
(CAL)	12/3/79	8	4.1	6.3	0.01	2.2	1.06	0.58	141	51	37	<0.002	<0.1	<0.03
(CAL)	12/6/79	8	3.3	9.6	<0.01	4.3	3.12	2.78	121	45	39	<0.002	<0.1	<0.03
(CAL)	12/20/79	6	4.5	5.6	<0.01	5.1	0.53	0.47	123	46	38	<0.002	<0.1	<0.03
(CAL)	12/27/79	10	2.7	6.3	<0.01	5.8	1.62	0.48	85.8	31	27	<0.002	<0.1	<0.03
	1/3/80													
	3/9/80													
(CAL)	3/13/80	23	3.6	7.8	0.01	1.5	0.14	<0.01	38	15	13	<0.002	<0.1	<0.03
(CSMRI)	3/18/80	7.4	4.7	5.3	<0.01	0.10	0.03	0.02	31	10	10	0.002	0.4	2.3
(CSMRI)	2/3/81	7.60	8.0	2.8	<0.01	<0.01	0.09	0.02	85	26	26	<0.003	<0.2	2.5

WELL BX-13 (continued)

Lab	Date	Boron (mg/l)	Diss. Cadmium (mg/l)	Total Cadmium (mg/l)	Diss. Chromium (mg/l)	Total Chromium (mg/l)	Diss. Cobalt (mg/l)	Total Cobalt (mg/l)	Diss. Copper (mg/l)	Total Copper (mg/l)	Cyanide (mg/l)	Diss. Iron (mg/l)	Total Iron (mg/l)	Diss. Lead (mg/l)	Total Lead (mg/l)
(CAL)	7/5/79	2.6										0.03	0.11		
(CAL)	7/19/79	2.44	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.90	2.44	<0.05	<0.05
(CAL)	9/27/79	1.8	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	1.97	<0.05	<0.05
(CAL)	10/11/79	1.7	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.13	1.4	<0.05	<0.05
(CAL)	11/22/79	4.7	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.09	1.2	<0.05	<0.05
(CAL)	12/3/79	4.6	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.54	0.72	<0.05	<0.05
(CAL)	12/6/79	2.5	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.39	1.33	<0.05	<0.05
(CAL)	12/20/79	2.3	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.30	3.0	<0.05	<0.05
(CAL)	12/27/79	1.5	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	0.02	<0.02	0.06	0.35	<0.05	<0.05
	1/3/80														
	3/9/80														
(CAL)	3/13/80	0.99	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	0.01	<0.02	0.73	1.8	<0.05	<0.05
(CSMRI)	3/18/80	4.1	<0.01	0.02	0.01	<0.01	0.03	0.03	0.01	0.01	<0.01	0.62	5.2	0.08	0.09
(CSMRI)	2/3/81	4.8	<0.01	--	<0.02	--	<0.02	--	<0.02	--	<0.01	0.12	--	0.05	--

WELL BX-13 (continued)

Lab	Date	Lithium (mg/l)	Diss. Manga- nese (mg/l)	Total Manga- nese (mg/l)	Diss. Mer- cury (mg/l)	Total Mer- cury (mg/l)	Diss. Molyb- denum (mg/l)	Total Molyb- denum (mg/l)	Diss. Nickel (mg/l)	Total Nickel (mg/l)	Sele- nium (mg/l)	Silica as SiO2 (mg/l)	Diss. Vana- dium (mg/l)	Total Vana- dium (mg/l)	Diss. Zinc (mg/l)	Total Zinc (mg/l)	
51	(CAL)	7/5/79		0.14	0.15							21					
	(CAL)	7/19/79	0.14	0.05	0.15		0.0002	<0.1	<0.1	<0.02	<0.02	0.004	<0.2	<0.2	0.02	0.07	
	(CAL)	9/27/79	0.37	0.45	0.47		0.0003	<0.1	<0.1	<0.02	<0.02	0.003	<0.2	<0.2	0.18	0.18	
	(CAL)	10/11/79	0.56	0.08	1.1		<0.0002	<0.1	<0.1	<0.02	<0.02	0.004	<0.2	<0.2	0.02	0.07	
	(CAL)	11/22/79	0.15	0.08	0.13		0.0003	<0.1	<0.1	<0.02	<0.02	0.004	<0.2	<0.2	0.06	0.24	
	(CAL)	12/3/79	0.12	0.08	0.18		0.0003	<0.1	<0.1	<0.02	<0.02	0.003	<0.2	<0.2	0.03	0.07	
	(CAL)	12/6/79	0.11	0.09	0.25		0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	<0.2	<0.2	<0.005	<0.005	
	(CAL)	12/20/79	0.13	0.11	0.11	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	0.002	<0.2	<0.2	<0.005	<0.005	
	(CAL)	12/27/79	0.10	0.09	0.68		<0.0002	<0.1	<0.1	<0.02	<0.02	0.004	<0.2	<0.2	0.05	0.11	
		1/3/80															
		3/9/80															
	(CAL)	3/13/80	0.05	0.03	0.08	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	14	<0.2	<0.2	0.009	0.03
	(CSMRI)	3/18/80	0.12	0.09	0.10	<0.0005	<0.0005	<0.1	<0.1	0.02	0.06	<0.002	18.0	<0.1	<0.1	<0.01	0.44
	(CSMRI)	2/3/81	0.15	0.06	--	<0.0005	--	<0.1	--	<0.03	--	<0.003	25.0	<0.3	--	0.02	--

WELL BX-13 (continued)

Lab	Date	Phe- nols (mg/l)	Thiocy- anate (mg/l)
(CAL)	7/5/79		
(CAL)	7/19/79	<0.1	
(CAL)	3/27/79		
(CAL)	10/11/79		
(CAL)	11/22/79	<0.1	
(CAL)	12/3/79	<0.1	
(CAL)	12/6/79		
(CAL)	12/20/79		
(CAL)	12/27/79	<0.1	
	1/3/80		
	1/9/80		
(CAL)	1/13/80		
(CSMRI)	1/18/80		
(CSMRI)	2/3/81	0.024	0.2

TABLE 9

WELL BX-36

Lab	Date	Spec. Cond. at 25°C Field (umhos/cm)	Spec. Cond. at 25°C Lab (umhos/cm)	Water Temp. (°C)	pH Field (units)	pH Lab (units)	Turb. Lab (NTU)	Diss. Oxygen (mg/l)	Susp. Solids (mg/l)	Diss. Solids, Calc. Sum. (mg/l)	Diss. Solids, FR 180C (mg/l)	Alka- linity as CaCO ₃ (mg/l)
(CAL)	8/17/79	1480	1370	11.4		9.1	65	2.1	21	1242	939	1085
(CAL)	9/7/79	1490	1520	12.9	9.6	9.2	21	0.7	13	943	1091	813
(CAL)	9/27/79	1630	1070	13.3	9.1	8.9	11	2.7	9	862	1256	868
(CAL)	10/11/79	1700	1650	12.8	8.7	8.8	14	0.7	<5	1067	1033	866
(CAL)	12/6/79	1320	1450	7.5	8.7	9.0	6	0.7	<5	1095	959	888
(CAL)	12/20/79	1330	1480	6.7	8.9	8.6	2	1.1	7	1067	1044	901
(CAL)	1/3/80	1220	1020	4.6	8.7	8.8	24	1.7	8	1016	700	838
(CAL)	1/10/80	1300	1170	7.2	8.3	8.4	11	2.5	5	1011	441	850
(CAL)	1/24/80	1070	1420	0.3	8.6	8.7	20	1.1	13	965	1016	861
(CAL)	1/31/80	1260	980	6.5	8.8	8.3	26	0.1	<5	1011	529	868
(CAL)	2/7/80	1290	1610	4.5	8.2	8.4	19	0.7	10	1025	883	866
(CAL)	2/14/80	1330	1120	5.6	8.3	8.5	30	1.6	<5	1051	808	878
(CAL)	2/21/80	1330	1510	1.7	8.2	8.4	21	2.3	12	1079	824	858
(CAL)	3/9/80	1260	940	7.8	8.2	8.3	5	2.3	<5	970	917	844
(CAL)	3/13/80	550	950	4.7	8.2	8.4	11	4.4	<5	979	927	863
(CAL)	3/18/80	1320		6.6	8.3			3.7				
(CAL)	5/8/80	1520	1230	14.9	8.1	8.6	90		65	1102	916	938
(CAL)	6/12/80	1490	1140	9.1	8.1	8.5	14		20	1106	633	886
(CSMRI)	6/12/80	1490	1600	9.1	8.1	8.1	21.9		16	1050	1020	884
(CAL)	9/30/80	1455	1590	6.6	8.3	8.4	38	0.6	19	885	876	673
(CSMRI)	9/30/80	1455	1570	6.6	8.3	8.3	30	0.6	16	990	1020	872
(CSMRI)	2/3/81	1630	1590	8.0	8.0	7.6	--	2.7	--	1010	976	859

WELL BX-36 (continued)

Lab	Date	Hardness as CaCO ₃ (mg/l)	Sodium Adsorption Ratio	Oil & Grease (mg/l)	Bicar- bonate (mg/l)	Carbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Sulfide as S (mg/l)	Fluoride (mg/l)	Bromide (mg/l)	Calcium (mg/l)	Magne- sium (mg/l)	Sodium (mg/l)
(CAL)	8/17/79	125	17.7	<5	979	181	16	27	<0.1	8.3	<0.1	30	12	456
(CAL)	9/7/79	54	21.8	<5	875	57	14	27	<0.1	15.1	<0.1	12	6	368
(CAL)	9/27/79	47	20.3	<5	813	24	14	18	24	29	<0.1	7	7	319
(CAL)	10/11/79	149	13	<5	994	31	20	18	47	11	<0.1	46	8	377
(CAL)	12/6/79	61	23.4	<5	1015	34	15	51	24	11	<0.1	6	11	420
(CAL)	12/20/79	75	21.1	<5	1036	31	16	45	21	10	<0.1	15	9	420
(CAL)	1/3/80	172	11.2	<5	958	31	13	45	22.3	17	<0.1	52	10	336
(CAL)	1/10/80	51	24.2	<5	1022	8	16	39	12.5	8.9	<0.1	7	8	397
(CAL)	1/24/80	83	17.4	<5	969	25	14	24	8.6	5.9	<0.1	12	13	366
(CAL)	1/31/80	60	21.9	<5	1058	0	15	12	12	6.9	<0.1	9	9	390
(CAL)	2/7/80	55	23.5	7	1042	8	14	30	11.9	16.6	<0.1	7	9	400
(CAL)	2/14/80	51	25.2	<5	1031	20	17	48	7.6	9.6	<0.1	7	8	413
(CAL)	2/21/80	48	28.2	<5	1036	5	16	60	2.8	7.7	<0.1	6	8	450
(CAL)	3/9/80	53	22.7	<5	1029	0	16	15	18.1	7.5	<0.1	8	8	381
(CAL)	3/13/80	53	23.1	<5	1028	12	16	12	12.5	8.1	<0.1	8	8	388
(CAL)	3/18/80													
(CAL)	5/8/80	53	26.1	<5	1076	34	20	39	6.1	7.7	<0.1	8	8	437
(CAL)	6/12/80	98	18.0	<5	1032	11	17	64	0.4	4.14	<0.1	16	14	410
(CSMRI)	6/12/80	82	20.1	<2	1080	0	18.0	34	<0.1	7.1	0.7	12.5	12.3	418
(CAL)	9/30/80	48	21.3	<5	809	0	20	93	<0.1	5.24	<0.1	6	8	340
(CSMRI)	9/30/80	54	22.99	<4	1020	22	20.2	18	<0.1	8.6	<0.1	6.97	8.93	390
(CSMRI)	2/3/81	83	24.98	5	1050	<0.5	22.5	8	<0.1	8.6	<0.1	7.29	8.67	420

WELL BX-36 (continued)

Lab	Date	Potas- sium (mg/l)	Ammonia as N (mg/l)	Total Kjeldahl Nitrogen as N (mg/l)	Nitrite as N (mg/l)	Nitrate as N (mg/l)	Total Phosphorus as P (mg/l)	Diss. Ortho Phosph. as P (mg/l)	COD (mg/l)	TOC (mg/l)	DOC (mg/l)	Arsenic (mg/l)	Alumi- num (mg/l)	Barium (mg/l)
		(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)	(mg/l)
(CAL)	8/17/79	12	0.08	0.31	0.03	2.4	0.62	0.25	55.7	30	18	<0.002	<0.1	<0.03
(CAL)	9/7/79	<1	2.2	2.6	0.01	1.8	0.26	0.22	53	29	16	<0.003	<0.1	<0.03
(CAL)	9/27/79	3	0.66	2.6	<0.01	1.9	0.49	0.42	16	5.0	5.0	<0.002	<0.1	<0.03
(CAL)	10/11/79	3	0.93	2.6	0.01	1.3	0.48	0.12	20	8	7	<0.002	<0.1	<0.03
(CAL)	12/6/79	3	0.93	3.4	<0.01	2.4	0.54	0.34	17	6.0	5.8	<0.002	<0.1	<0.03
(CAL)	12/20/79	3	0.81	1.3	<0.01	1.4	0.36	0.25	17	5.1	5.1	<0.002	<0.1	<0.03
(CAL)	1/3/80	<1	0.22	0.43	<0.01	3.7	0.71	0.45	15.8	4.8	4.7	<0.002	<0.1	<0.03
(CAL)	1/10/80	<1	1.04	2.3	0.01	1.7	0.12	0.10	12	4.0	3.1	<0.002	<0.1	<0.03
(CAL)	1/24/80	3	0.84	1.8	0.05	0.83	0.51	0.38	15	5.3	4.6	<0.002	<0.1	<0.03
(CAL)	1/31/80	13	0.86	2.4	0.01	1.2	0.52	0.34	30	9	4.3	<0.002	<0.1	<0.03
(CAL)	2/7/80	5	0.58	3.7	0.02	0.50	0.31	0.18	22	8	6	<0.002	<0.1	<0.03
(CAL)	2/14/80	2	0.84	4.2	0.01	0.7	0.14	0.09	17	6	5	<0.002	<0.1	<0.03
(CAL)	2/21/80	2	1.26	4.23	0.01	1.2	0.16	0.14	17	6	5	<0.002	<0.1	<0.03
(CAL)	3/9/80	<1	0.58	3.9	0.04	0.6	0.04	<0.01	15	5	4	<0.002	<0.1	<0.03
(CAL)	3/13/80	<1	0.61	3.7	0.04	0.6	0.05	0.01	20	8	7	<0.002	<0.1	<0.03
(CAL)	3/18/80													
(CAL)	5/8/80	1	0.37	1.9	0.02	2.4	0.14	0.04	23	9	7	<0.002	<0.1	<0.03
(CAL)	6/12/80	2	0.61	0.93	0.02	1.3	0.17	<0.01	5	3	3	<0.002	<0.1	<0.03
(CSMRI)	6/12/80	1.03	0.23	0.3	<0.01	0.16	0.08	0.01	<5	5	5	<0.005	<0.2	0.2
(CAL)	9/30/80	<1	0.40	0.5	0.08	0.01	0.01	0.11	6	4	4	<0.002	<0.1	<0.03
(CSMRI)	9/30/80	0.90	0.60	0.7	0.01	<0.01	0.04	<0.01	<5	3	3	<0.005	<0.1	0.3
(CSMRI)	2/3/81	0.82	0.62	0.4	<0.01	<0.01	0.04	<0.01	11	5	3	<0.003	<0.2	0.3

WELL BX-35 (continued)

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Lab	Date	Boron (mg/l)	Diss. Cadmium (mg/l)	Total Cadmium (mg/l)	Diss. Chromium (mg/l)	Total Chromium (mg/l)	Diss. Cobalt (mg/l)	Total Cobalt (mg/l)	Diss. Copper (mg/l)	Total Copper (mg/l)	Cyanide (mg/l)	Diss. Iron (mg/l)	Total Iron (mg/l)	Diss. Lead (mg/l)	Total Lead (mg/l)
(CAL)	8/17/79	0.35	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.64	1.2	<0.05	<0.05
(CAL)	9/7/79	0.23	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	0.06	<0.02	<0.02	0.90	<0.05	<0.05
(CAL)	9/27/79	0.60	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	0.60	<0.05	<0.05
(CAL)	10/11/79	0.30	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	2.7	<0.05	<0.05
(CAL)	12/6/79	0.47	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.09	0.61	<0.05	<0.05
(CAL)	12/20/79	0.31	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	<0.02	3.0	<0.05	<0.05
(CAL)	1/3/80	0.12	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.10	0.56	<0.05	<0.05
(CAL)	1/10/80	0.10	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.43	0.68	<0.05	<0.05
(CAL)	1/24/80	0.06	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.41	0.70	<0.05	<0.05
(CAL)	1/31/80	0.46	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.05	0.98	<0.05	<0.05
(CAL)	2/7/80	0.08	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.35	2.4	<0.05	<0.05
(CAL)	2/14/80	0.08	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	<0.01	<0.02	0.25	2.17	<0.05	<0.05
(CAL)	2/21/80	0.10	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	0.02	<0.02	0.85	6.0	<0.05	<0.05
(CAL)	3/9/80	0.13	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	0.02	0.04	<0.02	0.13	2.1	<0.05	<0.05
(CAL)	3/13/80	0.12	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	0.02	0.04	<0.02	0.08	3.2	<0.05	<0.05
(CAL)	3/18/80														
(CAL)	5/8/80	0.07	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.02	<0.02	<0.02	<0.01	0.23	<0.05	<0.05
(CAL)	6/12/80	0.07	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	0.04	<0.02	<0.02	2.7	<0.05	<0.05
(CSMRI)	6/12/80	0.4	<0.01	<0.01	<0.02	0.03	<0.02	<0.02	<0.01	0.01	0.006	0.03	4.35	<0.05	<0.05
(CAL)	9/30/80	0.11	<0.002	<0.002	<0.02	<0.02	<0.03	<0.03	<0.01	0.02	<0.02	<0.02	6.7	<0.05	<0.05
(CSMRI)	9/30/80	0.8	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.03	0.03	<0.01	0.24	8.4	0.03	0.05
(CSMRI)	2/3/81	0.4	<0.01	--	<0.02	--	<0.02	--	<0.02	--	<0.01	10.9	--	<0.05	--

WELL BX-36 (continued)

Lab	Date	Lithium (mg/l)	Diss. Manga- nese (mg/l)	Total Manga- nese (mg/l)	Diss. Mercury (mg/l)	Total Mercury (mg/l)	Diss. Molyb- denum (mg/l)	Total Molyb- denum (mg/l)	Diss. Nickel (mg/l)	Total Nickel (mg/l)	Sele- nium (mg/l)	Silica as SiO2 (mg/l)	Diss. Vana- dium (mg/l)	Total Vana- dium (mg/l)	Diss. Zinc (mg/l)	Total Zinc (mg/l)
(CAL)	8/17/79	0.21	0.04	0.08		0.0003	<0.1	<0.1	<0.02	<0.02	0.003	13	<0.2	<0.2	0.23	0.31
(CAL)	9/7/79	0.20	0.03	0.07		0.0004	<0.1	<0.1	<0.02	<0.02	0.003	11	<0.2	<0.2	0.29	0.36
(CAL)	9/27/79	0.19	0.08	0.08			<0.1	<0.1	<0.02	<0.02	<0.002	12	<0.2	<0.2	0.27	0.27
(CAL)	10/11/79	0.16	0.06	0.06		<0.0002	<0.1	<0.1	<0.02	<0.02	0.005	14	<0.2	<0.2	0.15	0.19
(CAL)	12/6/79	0.16	<0.01	<0.01		0.0003	<0.1	<0.1	<0.02	<0.02	0.003	17	<0.2	<0.2	0.18	0.22
(CAL)	12/20/79	0.22	0.03	0.04	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	0.003	14	<0.2	<0.2	0.38	0.46
(CAL)	1/3/80	0.13	0.07	0.09	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	13	<0.2	<0.2	0.24	0.32
(CAL)	1/10/80	0.14	0.06	0.06	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	15	<0.2	<0.2	0.24	0.30
(CAL)	1/24/80	0.11	0.06	0.07	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	13	<0.2	<0.2	0.28	0.33
(CAL)	1/31/80	0.18	<0.01	0.05	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	0.003	14	<0.2	<0.2	0.22	0.27
(CAL)	2/7/80	0.10	0.04	0.06	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	8	<0.2	<0.2	0.12	0.18
(CAL)	2/14/80	0.16	<0.01	0.04	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	9	<0.2	<0.2	0.08	0.13
(CAL)	2/21/80	0.15	0.05	0.08	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	7	<0.2	<0.2	0.08	0.22
(CAL)	3/9/80	0.14	<0.01	0.02	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	8	<0.2	<0.2	0.012	0.11
(CAL)	3/13/80	0.13	0.02	0.06	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	6	<0.2	<0.2	0.018	0.19
(CAL)	3/18/80															
(CAL)	5/8/80	0.11	<0.01	0.01	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	8	<0.2	<0.2	0.04	0.09
(CAL)	6/12/80	0.04	0.01	0.12	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	13	<0.2	<0.2	0.02	0.18
(CSMRI)	6/12/80	<0.01	0.07	0.12	<0.0005	<0.0005	<0.1	<0.1	<0.02	0.03	<0.005	3.4	<0.1	<0.1	<0.01	0.50
(CAL)	9/30/80	0.02	0.02	0.02	<0.0002	<0.0002	<0.1	<0.1	<0.02	<0.02	<0.002	14	<0.2	<0.2	0.034	0.561
(CSMRI)	9/30/80	0.20	0.03	0.08	<0.0005	<0.0005	<0.1	<0.1	<0.02	0.02	<0.005	3.2	<0.1	<0.1	<0.01	0.61
(CSMRI)	2/3/81	0.16	0.06	--	<0.0005	--	<0.1	--	0.03	--	<0.003	4.4	<0.3	--	0.02	--

WELL BX-36 (continued)

Lab	Date	Phenols (mg/l)	Thiocyanate (mg/l)
(CAL)	8/17/79	<0.1	
(CAL)	9/7/79	<0.1	
(CAL)	9/27/79		
(CAL)	10/11/79		
(CAL)	12/6/79	<0.1	
(CAL)	12/20/79		
(CAL)	1/3/80		
(CAL)	1/10/80		
(CAL)	1/24/80		
(CAL)	1/31/80		
(CAL)	2/7/80		
(CAL)	2/14/80		
(CAL)	2/21/80		
(CAL)	3/9/80		
(CAL)	3/13/80		
(CAL)	3/18/80		
(CAL)	5/8/80		
(CAL)	6/12/80		
(CSMRI)	6/12/80	<	
(CAL)	9/30/80		
(CSMRI)	9/30/80		
(CSMRI)	2/3/81	0.118	<0.1

TABLE 10

WELL A-1

Date	Spec. Cond. at 25° C Field (umhos/cm)	Water Temp. (°C)	pH Field (units)	Diss. Oxygen (mg/l)	Static Water Level (inches)
7/19/79	450	13.1	7.5	6.5	91
9/27/79	790	15.0	7.0	4.1	141
12/3/79	1490(a)	7.5	7.15	3.1	114
12/27/79	950(a)	3.3	7.4	4.1	150
1/24/80	850(a)	1.1	8.0	1.0	169.5
3/9/80	980(a)	2.7	7.5	4.7	144
9/30/80	610	11.5	7.1	7.5	136
2/3/81	860	6.0	7.5	2.9	154

(a) Value has been corrected for systematic instrument error.

TABLE 11

WELL A-1A

Date	Spec. Cond. at 25° C Field (umhos/cm)	Water Temp. (°C)	pH Field (units)	Diss. Oxygen (mg/l)	Static Water Level (inches)
7/19/79	210	19.1	7.0	5.5	125
9/27/79	640	12.9	7.6	8.3	108
12/3/79	980(a)	1.7	7.75	6.8	90
12/27/79	700(a)	1.3	7.9	7.2	124
1/25/80	740(a)	0.9	8.1	2.7	124
3/9/80	840(a)	2.7	7.5	6.3	122
9/30/80	629	8.7	7.5	4.0	100
2/3/81	907	6.0	8.0	3.0	118

(a) Value has been corrected for systematic instrument error.

TABLE 12

WELL A-2

Date	Spec. Cond. at 25° C Field (umhos/cm)	Water Temp. (°C)	pH Field (units)	Diss. Oxygen (mg/l)	Static Water Level (inches)
7/19/79	540	13.9	7.5	3.2	20
9/27/79	850	13.5	7.8	3.3	37
12/3/79	940(a)	0.6	7.7	7.3	42
12/27/79	710(a)	1.6	7.7	7.0	52
1/25/80	710(a)	1.6	8.1	6.1	57
3/9/80	880(a)	3.2	7.5	7.9	50
9/30/80	-	-	-	-	*
2/3/81	-	-	-	-	*

(a) Value has been corrected for systematic instrument error.

* Stream water level was above top of well casing.

TABLE 13

WELL A-3

Date	Spec. Cond. at 25° C Field (umhos/cm)	Water Temp. (°C)	pH Field (units)	Diss. Oxygen (mg/l)	Static Water Level (inches)
7/19/79	550	14.4	7.7	5.2	28
9/27/79	810	14.8	7.7	3.6	55
12/3/79	820(a)	0.1	7.8	8.5	48
12/27/79	710(a)	1.3	7.9	7.1	61.5
1/25/80	670(a)	0.6	8.2	6.1	66
3/9/80	790(a)	2.3	7.6	6.9	65
9/30/80	675	10.1	7.5	5.5	46
2/3/81	889	8.0	7.7	4.2	62

(a) Value has been corrected for systematic instrument error.

TABLE 14

WELL A-4

Date	Spec. Cond. at 25° C Field (umhos/cm)	Water Temp. (°C)	pH Field (units)	Diss. Oxygen (mg/l)	Static Water Level (inches)
7/19/79	590	13.5	7.4	2.2	56
9/27/79	900	15.3	7.7	9.1	67
12/3/79	970(a)	4.3	7.6	2.9	78
12/27/79	840(a)	0.3	7.7	4.5	91.5
1/25/80	780(a)	2.2	7.8	0.6	92
3/9/80	850(a)	2.3	7.1	4.6	90
9/30/80	769	11.0	7.3	4.6	64
2/3/81	904	7.3	7.8	3.8	90

(a) Value has been corrected for systematic instrument error.

TABLE 15

POND INTAKE LINE

Lab	Date	Spec. Cond. at 25°C Field (umhos/cm)	Spec. Cond. at 25°C Lab (umhos/cm)	Water Temp. (°C)	pH Field (Units)	pH Lab (units)	Turb. Lab (NTU)	Diss. Oxygen (mg/l)	Susp. Solids (mg/l)	Diss. Solids, Calc. Sum. (mg/l)	Diss. Solids, FR 180C (mg/l)	Alka- linity as CaCO ₃ (mg/l)
(CSMRI)	9/30 80	2490	6260	15.6	7.8	7.9	39	3.0	16	4320	4530	1020
(CSMRI)	2/3/81	2720	2580	12.0	8.0	7.7	--	1.9	--	1720	1600	1140

POND INTAKE LINE (cont.)

Lab	Date	Hardness as CaCO ₃ (mg/l)	Sodium Adsorption Ratio	Oil & Grease (mg/l)	Bicar- bonate (mg/l)	Carbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Sulfide as S (mg/l)	Fluoride (mg/l)	Bromide (mg/l)	Calcium (mg/l)	Magne- sium (mg/l)	Sodium (mg/l)
(CSMRI)	9/30/80	337	40.25	<4	1240	<0.4	2150	137	1.5	4.3	<0.1	60.5	45.3	1700
(CSMRI)	2/3/81	400	11.52	<5	1390	<0.5	195	117	0.6	4.1	<0.1	79.1	49.3	530

POND INTAKE LINE (cont.)

Lab	Date	Potas- sium (mg/l)	Ammonia as N (mg/l)	Total Kjeldahl Nitrogen as N (mg/l)	Nitrite as N (mg/l)	Nitrate as N (mg/l)	Total Phosphorus as P (mg/l)	Diss. Ortho- Phosph. as P (mg/l)	COD (mg/l)	TOC (mg/l)	DOC (mg/l)	Arsenic (mg/l)	Alumi- num (mg/l)	Barium (mg/l)
(CSMRI)	9/30/80	4.46	6.7	8.9	<0.01	0.01	0.08	0.02	31	9	8	<0.005	<0.1	0.9
(CSMRI)	2/3/81	4.55	18.5	7.4	0.01	0.02	0.26	0.06	125	20	19	<0.003	<0.2	1.1

POND INTAKE LINE (cont.)

Lab	Date	Boron (mg/l)	Diss. Cadmium (mg/l)	Total Cadmium (mg/l)	Diss. Chromium (mg/l)	Total Chromium (mg/l)	Diss. Cobalt (mg/l)	Total Cobalt (mg/l)	Diss. Copper (mg/l)	Total Copper (mg/l)	Cyanide (mg/l)	Diss. Iron (mg/l)	Total Iron (mg/l)	Diss. Lead (mg/l)	Total Lead (mg/l)
(CSMRI)	9/30/80	2.6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.01	<0.01	0.17	0.69	<0.02	<0.02
(CSMRI)	2/3/81	1.4	<0.01	--	<0.02	--	<0.02	--	<0.02	--	<0.01	0.16	--	<0.05	--

POND INTAKE LINE (cont.)

Lab	Date	Lithium (mg/l)	Diss. Manga- nese (mg/l)	Total Manga- nese (mg/l)	Diss. Mercury (mg/l)	Total Mercury (mg/l)	Diss. Molyb- denum (mg/l)	Total Molyb- denum (mg/l)	Diss. Nickel (mg/l)	Total Nickel (mg/l)	Sele- nium (mg/l)	Silica as SiO2 (mg/l)	Diss. Vana- dium (mg/l)	Total Vana- dium (mg/l)	Diss. Zinc (mg/l)	Total Zinc (mg/l)
(CSMRI)	9/30/80	0.30	0.05	0.04	<0.0005	<0.0005	<0.1	<0.1	<0.02	<0.02	<0.005	24.0	<0.1	<0.1	0.06	0.05
(CSMRI)	2/3/81	0.39	0.01	--	<0.0005	--	<0.1	--	<0.03	--	<0.003	26.0	<0.3	--	0.02	--

POND INTAKE LINE (cont.)

<u>Lab</u>	<u>Date</u>	<u>Phenols (mg/l)</u>	<u>Thiocyanate (mg/l)</u>
(CSMRI)	2/3/81	0.70	0.1

TABLE 16.

FREE WATER KNOCKOUT

Lab	Date	Spec. Cond. at 25°C Field (umhos/cm)	Spec. Cond. at 25°C Lab (umhos/cm)	Water Temp. (°C)	pH Field (units)	pH Lab (units)	Turb. Lab (NTU)	Diss. Oxygen (mg/l)	Susp. Solids (mg/l)	Diss. Solids, Calc. Sum. (mg/l)	Diss. Solids, FR 180C (mg/l)	Alka- linity as CaCO ₃ (mg/l)
(CSMRI)	3/18/80	4980	4390	20.0	7.2	7.8	14	0.2	6	3200	3160	2190
(CSMRI)	5/8/80	5040	4310	26.8	6.8	7.8	27		14	3110	3190	2320

FREE WATER KNOCKOUT (cont.)

Lab	Date	Hardness as CaCO ₃ (mg/l)	Sodium Adsorption Ratio	Oil & Grease (mg/l)	Bicar- bonate (mg/l)	Carbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Sulfide as S (mg/l)	Fluoride (mg/l)	Bromide (mg/l)	Calcium (mg/l)	Magne- sium (mg/l)	Sodium (mg/l)
(CSMRI)	3/18/80	424	24.9	<2	2670	0	480	28	10.7	11.0	4.8	52	72	1180
(CSMRI)	5/8/80	250	31.1	5	2830	0	350	<5	11.3	10.1	<1	17.8	50.0	1130

FREE WATER KNOCKOUT (cont.)

Lab	Date	Potas- sium (mg/l)	Ammonia as N (mg/l)	Total Kjeldahl Nitrogen as N (mg/l)	Nitrite as N (mg/l)	Nitrate as N (mg/l)	Total Phosphorus as P (mg/l)	Diss. Ortho Phosph. as P (mg/l)	COD (mg/l)	TOC (mg/l)	DOC (mg/l)	Arsenic (mg/l)	Alumi- num (mg/l)	Barium (mg/l)
(CSMRI)	3/18/80	9.9	6.3	8.5	<0.01	0.05	0.03	0.04	216	62	60	0.003	0.4	7.8
(CSMRI)	5/8/80	10.5	10.4	24	<0.01	0.02	0.24	0.24	294	87	87	<0.002	0.2	7.3

FREE WATER KNOCKOUT (cont.)

Lab	Date	Boron (mg/l)	Diss. Cadmium (mg/l)	Total Cadmium (mg/l)	Diss. Chromium (mg/l)	Total Chromium (mg/l)	Diss. Cobalt (mg/l)	Total Cobalt (mg/l)	Diss. Copper (mg/l)	Total Copper (mg/l)	Cyanide (mg/l)	Diss. Iron (mg/l)	Total Iron (mg/l)	Diss. Lead (mg/l)	Total Lead (mg/l)
(CSMRI)	3/18/80	2.3	<0.01	0.03	<0.01	<0.01	0.03	0.03	<0.01	0.01	<0.01	0.16	0.60	0.08	0.10
(CSMRI)	5/8/80	3.4	<0.01	0.01	0.02	0.03	<0.02	<0.02	<0.01	0.02	<0.01	0.12	2.82	<0.03	<0.03

FREE WATER KNOCKOUT (cont.)

Lab	Date	Lithium (mg/l)	Diss. Manga- nese (mg/l)	Total Manga- nese (mg/l)	Diss. Mercury (mg/l)	Total Mercury (mg/l)	Diss. Molyb- denum (mg/l)	Total Molyb- denum (mg/l)	Diss. Nickel (mg/l)	Total Nickel (mg/l)	Sele- nium (mg/l)	Silica as SiO2 (mg/l)	Diss. Vana- dium (mg/l)	Total Vana- dium (mg/l)	Diss. Zinc (mg/l)	Total Zinc (mg/l)
(CSMRI)	3/18/80	0.59	0.07	0.06	<0.0005	<0.0005	<0.1	<0.1	0.03	0.04	<0.002	19.3	<0.1	<0.1	<0.01	<0.04
(CSMRI)	5/8/80	0.69	0.03	0.05	<0.0005	<0.0005	<0.1	<0.1	<0.02	<0.02	<0.002	10.6	0.1	0.2	0.01	0.04

TABLE 17

DISPOSAL WATER

Lab	Date	Spec. Cond. at 25°C Field (umhos/cm)	Spec. Cond. at 25°C Lab (umhos/cm)	Water Temp. (°C)	pH Field (units)	pH Lab (units)	Turb. Lab (NTU)	Diss. Oxygen (mg/l)	Susp. Solids (mg/l)	Diss. Solids, Calc. Sum. (mg/l)	Diss. Solids, FR 180C (mg/l)	Alka- linity as CaCO ₃ (mg/l)	Hardness as CaCO ₃ (mg/l)	Sodium Adsorption Ratio
(CSMRI)	5/8/80		7570		10.8	11.8	35		38	4190	4790	3340	2.45	517

DISPOSAL WATER (cont.)

Lab	Date	Oil & Grease (mg/l)	Carbonate (mg/l)	Bicarbonate (mg/l)	Chloride (mg/l)	Sulfate (mg/l)	Sulfide as S (mg/l)	Fluoride (mg/l)	Bromide (mg/l)	Calcium (mg/l)	Magnesium (mg/l)	Sodium (mg/l)	Potassium (mg/l)	Ammonia as N (mg/l)	Total Kjeldahl Nitrogen as N (mg/l)
(CSMRI)	5/8/80	<5	1540	265	326	251	2.6	10.0	<1	0.9	<0.05	1860	3.9	<0.05	2.3

DISPOSAL WATER (cont.)

Lab	Date	Nitrite as N (mg/l)	Nitrate as N (mg/l)	Total Phosphorus as P (mg/l)	Diss. Ortho. Phos. as P (mg/l)	COD (mg/l)	TOC (mg/l)	DOC (mg/l)	Arsenic (mg/l)	Aluminum (mg/l)	Barium (mg/l)	Boron (mg/l)	Diss. Cadmium (mg/l)	Total Cadmium (mg/l)	Diss. Chromium (mg/l)	Total Chromium (mg/l)
(CSMRI)	5/8/80	<0.01	<0.01	11.0	11.2	194	62	60	0.010	2.5	<0.2	3.0	<0.01	<0.01	<0.02	0.02

DISPCAL WATER (cont.)

Lab	Date	Diss. Cobalt (mg/l)	Total Cobalt (mg/l)	Diss. Copper (mg/l)	Total Copper (mg/l)	Cyanide (mg/l)	Diss. Iron (mg/l)	Total Iron (mg/l)	Diss. Lead (mg/l)	Total Lead (mg/l)	Lithium (mg/l)	Diss. Manganese (mg/l)	Total Manganese (mg/l)	Diss. Mercury (mg/l)	Total Mercury (mg/l)	Diss. Molyb- denum (mg/l)	Total Molyb- denum (mg/l)
(CSMR1)	5/8/80	<0.02	<0.02	<0.01	0.03	<0.01	0.06	1.36	<0.03	<0.03	0.39	<0.01	0.02	<0.0005	<0.0005	<0.1	<0.1

DISPOSAL WATER (cont.)

Lab	Date	Diss. Nickel (mg/l)	Total Nickel (mg/l)	Selenium (mg/l)	Silica as SiO ₂ (mg/l)	Diss. Vanadium (mg/l)	Total Vanadium (mg/l)	Diss. Zinc (mg/l)	Total Zinc (mg/l)
(CSMRI)	5/8/80	<0.02	0.04	<0.002	27.7	0.2	0.5	<0.01	0.01