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**GEOHYDROLOGIC INVESTIGATION REPORT  
NAVAL AIR WEAPONS STATION  
INDIAN WELLS VALLEY  
CHINA LAKE, CALIFORNIA**

**November 30, 1996**

**Prepared by:  
Houghton HydroGeo-Logic  
Bakersfield, California**

**Prepared for:  
Naval Air Weapons Station  
Environmental Projects Office  
China Lake, California**



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## **1.0 INTRODUCTION**

Houghton HydroGeo-Logic was contracted by the Department of the Navy, Environmental Projects Office to perform a geohydrologic investigation of the ground water basin located in the Indian Wells Valley (Valley), Kern County, California (Figure 1). Work was executed following the Task List specified in the Scope of Work (Section 1.2). The following report documents the methods and findings of the investigation.

## **1.1 BACKGROUND**

The Valley is located approximately 110 miles east of Bakersfield and 125 miles north of Los Angeles, California in the Basin and Range geomorphic province. The Valley is confined by the Sierra Nevada mountain range to the west, the Argus Range to the east, the Coso Range to the north and the El Paso Mountains to the south.

Recharge of water into the Valley is estimated to be between 11,000 acre-feet/year (St. Amand, 1986) to 30,000 acre-feet/year (Thompson, 1929). Sources of recharge are believed to be from the surrounding mountains, Little Lake (located northwest of the Valley) and possibly fracture flow through the Sierra. Average precipitation in the form of rain or snow in the Valley from 1960 through 1993 is 4.6 inches per year (Corbett, 1994). Precipitation in the Valley is not believed to be a significant source of recharge.

In 1992, ground water withdrawals in the Valley were approximately 30,700 acre-feet/year and estimated to increase to approximately 36,350 acre-feet/year by 2010 (Watt, et-al, 1993). Ground water levels have been decreasing steadily throughout most of the Valley prior to the 1950's, suggesting that withdrawals exceed recharge. For this reason ground water management planning is currently being conducted in the Valley to determine the best use of the resource in the future.

## **1.2 SCOPE OF WORK**

The following Scope of Work was outlined in the request for services issued by Naval Air Weapons Station (NAWS). Work to be performed was outlined in four tasks summarized as follows:

- Task 1. Literature Search/Historical Data

- Task 2. Chemical/Isotopic Sampling
- Task 3. Water Well Pump (Aquifer) Tests
- Task 4. Data Report

## **2.0 HISTORICAL DATA**

Historical data includes previous ground water geochemical studies from Kunkel and Chase (1969), Dutcher and Moyle (1973), Warner (1975), Whelan and Baskin (1989) and Houghton (1994). Well construction and water levels were obtained from United States Geological Survey (USGS) records, the Environmental Projects Office records, Kern County Water Agency measurements, the Bureau of Reclamation (BOR) and the Indian Wells Valley Water District.

## **2.1 PREVIOUS GEOCHEMICAL DATA**

Kunkel and Chase (1969), Dutcher and Moyle (1973) and Warner (1975) classified the ground water in the Valley into three types:

1. Sodium bicarbonate ( $\text{Na-HCO}_3$ ) water found predominantly in the western and southwestern portion of the Valley. Total Dissolved Solids (TDS) were less than 600 milligrams per liter (mg/l).
2.  $\text{Na-HCO}_3$  water with lower levels of magnesium ( $\text{Mg}^{2+}$ ) and calcium ( $\text{Ca}^{2+}$ ) than the previous type, found near the Naval Air Weapons Station main gate and north of the Intermediate well field. TDS were less than 600 mg/l.
3. Sodium chloride ( $\text{Na-Cl}$ ) water found in the playa areas on the eastern portion of the Valley. TDS were greater than 1,000 mg/l.

Whelan and Baskin (1989) separated ground water into 55 different types from a compilation of data collected from the Valley, Rose Valley, Sierra, Coso and Argus Ranges, Coso Geothermal Field, Salt Wells and Poison Canyon. Whelan and Baskin (1989) combined these 55 types into eight "Groundwater Flow Cells":

1.  $\text{Na-Cl}$  water distributed in the Coso geothermal field, China Lake Playa, southeastern Ridgecrest, Salt Wells, and Poison Canyon.

2. Sodium carbonate ( $\text{Na-CO}_3$ ) water. found in the southwest of the Valley and isolated samples were encountered in the Coso Geothermal Field.
3.  $\text{Na-HCO}_3$  waters detected from Inyokern east to NAWS.
4. Sulfate water encountered in the isolated wells on the west side of the Valley, wells north of Inyokern, and in Rose Valley.
5. Alpine waters (calcium-sodium-magnesium-bicarbonate composition with low TDS) found in the "mountainous regions".
6. Calcium-sodium-magnesium-bicarbonate-chloride-sulfate water found at Red Hill, Little Lake and the Lumber Mill site.
7.  $\text{Na-HCO}_3$ , Calcium-bicarbonate ( $\text{Ca-HCO}_3$ ),  $\text{Na-Cl}$ , or Calcium-chloride ( $\text{Ca-Cl}$ ) water with low  $\text{Mg}^{2+}$  content found in the Inyokern, Intermediate, and Ridgecrest well fields.
8. Sodium-calcium-magnesium-bicarbonate water found in the Argus Range.

Houghton (1994) separated the Valley ground water into three groups based on differences in chemical characteristics between groups. The areas of these groupings are similar to the groups discussed by Kunkel and Chase (1969), Dutcher and Moyle (1973) and Warner (1975):

1.  $\text{Na-HCO}_3$  in the southwest portion of the Valley. TDS were less than 400 mg/l.
2.  $\text{Na-HCO}_3$  in the northwestern and western portion of the Valley. TDS ranged from 330 mg/l to 960 mg/l. This group also included surface water samples from the Sierran streams and the Little Lake discharge at the north end of the Valley. The Sierran streams were predominantly  $\text{Ca-HCO}_3$  composition with TDS ranging from 360 mg/l to 1060 mg/l. The Little Lake sample was  $\text{Na-HCO}_3$  with TDS of 1240 mg/l.
3.  $\text{Na-Cl}$  and sodium-sulfate ( $\text{Na-SO}_4$ ) water detected on the eastern portion of the Valley in the vicinity of the playa lakes.

The information obtained from the researchers suggests that good quality ground water has been found in the southwestern portion of the Valley and the northwest portion has ground water of moderate quality. Poor quality water is found on the eastern portion of the Valley near the playa lakes.

Prepared by HOUGHTON HYDROGEO-LOGIC-1996

TABLE 1. WELL CONSTRUCTION, WATER LEVEL AND WATER CHEMISTRY OF WELLS AND SURFACE WATERS.

| LOCATION                     | DATE INST'LD | DIAM. (INCHES) | SCREEN INTERVAL (FEET)                                     | CASING INTERVAL (FEET)                 | TD (FEET)                               | MATERIAL | TYPE | ELEVATION (MSL) | WATER LEVEL (FEET)   | WATER CHEMISTRY  | TDS (mg/l)   | T (ft <sup>2</sup> /day)  |
|------------------------------|--------------|----------------|--|--|---|----------|------|-----------------|--|--|--|---|
| <b>WELLS</b>                 |              |                |  |  |   |          |      |                 |  |  |  |   |
| 24/38-21 J1<br>(BR 10)       | 1992         | 2              | 1. 640-660<br>2. 1180-1200<br>3. 1560-1580<br>4. 1930-1950 |  | 1. 660<br>2. 1200<br>3. 1580<br>4. 1950 | IRON     | M    | 2560            | 1. 313 (Fall '95) <sup>2</sup><br>2. ~321 <sup>2</sup><br>3. ~362 <sup>2</sup><br>4. ~364 <sup>2</sup> | 1. Na-HCO <sub>3</sub> +CO <sub>2</sub> /Cl<br>2. Na-Cl<br>3. Na-HCO <sub>3</sub> +CO <sub>2</sub><br>4. Na-Cl   | 1. 980<br>2. 750<br>3. 880<br>4. 930                           | 1. 273.6 <sup>2</sup><br>2. 28.8 <sup>2</sup><br>3. 201.6 <sup>2</sup><br>4. 129 <sup>2</sup>   |
| 24/39-34 D1<br>N. BAKER WELL | 1989         |                | 205-305  | 0-205<br>305-325                       | 325                                     | PVC      | M    | 2225            |  | Na-HCO <sub>3</sub> <sup>1</sup>   | 500 <sup>1</sup>   |   |
| 25/38-12 L1<br>(BR6)         | 1992         | 2              | 1. 330-350<br>2. 1190-1210<br>3. 1640-1660                 |  | 1. 350<br>2. 1210<br>3. 1660            | IRON     | M    | 2375.2          | 1. 171 (Win '96) <sup>3</sup><br>2. 168<br>3. 151.2 <sup>1</sup>                                       | 1. Na-Cl<br>2. Na-HCO <sub>3</sub><br>3. Na-HCO <sub>3</sub>   | 1. 380<br>2. 850<br>3. 600                                     | 1. 38.8 <sup>2</sup><br>2. 360 <sup>2</sup><br>3. 288 <sup>2</sup>                              |
| 25/38-34 J1<br>(BR 5)        | 1992         | 2              | 1. 850-870<br>2. 1590-1610<br>3. 1960-1980                 |  | 1. 870<br>2. 1610<br>3. 1980            | IRON     | M    | 2518.6          | 1. ~335 <sup>2</sup><br>2. ~341 <sup>2</sup><br>3. ~344 <sup>2</sup>                                   | 1. Na-HCO <sub>3</sub> +CO <sub>2</sub> (Cl)<br>2. Na-HCO <sub>3</sub><br>3. Na-HCO <sub>3</sub>   | 1. 440<br>2. 1100<br>3. 1200                                   | 1. 28.8 <sup>2</sup><br>2. 360 <sup>2</sup><br>3. 259.2 <sup>2</sup>                            |
| 25/39-03 R1                  | 1989         |                | 60-160   | 0-60<br>168-180                        | 180                                     |          | M    | 2225            |  |  |  |   |
| 25/39-30 F1                  | 1988         |                | 420-520  | 0-420<br>520-540                       | 540                                     |          | M    | 2255            |  |  |  |   |
| 25/39-31 R1                  | 1985         |                | 320-380  | 0-320<br>380-480                       | 600                                     |          | M    | 2260            |  |  |  |   |
| 25/41-19 L1                  | <1953        | 1.25           | 21.9-23.5  | 0-21.9                                 | 23.5                                    |          | M    | 2157.8          | 7.2  | Na-Cl  | 8100   |   |
| 26/39-11 E1                  | <1946        | 16             |  |  | 250                                     |          | WS   | 2305            |  |  |  |   |
| 26/39-11 E2                  |              | 6              |  |  |   | PVC      | M    |                 | 124.4  | Na/Ca-HCO <sub>3</sub>   | 490  | 14,000  |
| 26/39-13 R7                  | 1986         |                | 100-120<br>180-200<br>230-250                              | 0-100<br>120-180<br>200-230<br>250-300 | 300                                     |          | WS   | 2305            |  |  |  |   |
| 26/39-15 J1                  | 1992         | 6              | 600-700  | 0-600<br>700-720                       | 885                                     | PVC      | M    | 2355            | 196.4  | Ca/Na-HCO <sub>3</sub>   | 210  | 2625  |
| 26/39-25 D1<br>BR 4          | 1990         | 2              | 1190-1200  | 0-1190                                 | 1200                                    |          | M    | 2375.2          | 252 <sup>2</sup>   | Na-HCO <sub>3</sub> +CO <sub>2</sub>   | 180  | 403.2 <sup>2</sup>  |
| 26/39-27 D1<br>(MW32)        | 1991         | 2              | 1. 380-380<br>2. 880-900<br>3. 1240-1260<br>4. 1900-1920   |  | 1. 380<br>2. 900<br>3. 1260<br>4. 1920  | IRON     | M    | 2418            | 1. ~241 <sup>2</sup><br>2. ~240 <sup>2</sup><br>3. ~240 <sup>2</sup><br>4. ~240 <sup>2</sup>           | 1. Na-HCO <sub>3</sub> <sup>2</sup><br>2. Na-HCO <sub>3</sub> +CO <sub>2</sub><br>3. Na-HCO <sub>3</sub> +CO <sub>2</sub><br>4. Na-HCO <sub>3</sub> <sup>2</sup> | 1. 270 <sup>1</sup><br>2. 140<br>3. 320<br>4. 526 <sup>2</sup> | 1. 1.28 <sup>2</sup><br>2. 446.4 <sup>2</sup><br>3. 331.2 <sup>2</sup><br>4. 158.4 <sup>2</sup> |
| 26/39-30 C1                  | <1944        |                | 238-382<br>388-338   |  |   |          |      |                 |  |  |  |   |
| 26/39-30 F1                  | <1944        | 16             | 250-321<br>389-388   |  | 385                                     |          | WS   | 2433.5          |  |  |  |   |
| 26/40-01 Q2                  | 1956         | 2              |  |  | 22.9                                    | IRON?    | M    | 2159.7          | 7.9  | Na-Cl  | 13000  |   |
| 26/40-06 D1                  | 1988         | 6              | 276-300  | 0-276<br>300-320                       | 320                                     | PVC      | M    | 2220            |  |  |  |   |
| 26/40-06 D2                  | 1987         | 6              | 120-200  | 0-120<br>200-280                       | 260                                     | PVC      | M    | 2210            | 38.1   | Na-HCO <sub>3</sub> +CO <sub>2</sub>   | 26000  |   |

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TABLE 1. WELL CONSTRUCTION, WATER LEVEL AND WATER CHEMISTRY OF WELLS AND SURFACE WATERS.

| LOCATION    | DATE INSTLD | DIAM. (INCHES) | SCREEN INTERVAL (FEET) | CASING INTERVAL (FEET) | TD (FEET) | MATERIAL TYPE | ELEVATION (MSL) | WATER LEVEL (FEET) | WATER CHEMISTRY | TDS (mg/l) | T (l <sup>2</sup> /day) |
|-------------|-------------|----------------|------------------------|------------------------|-----------|---------------|-----------------|--------------------|-----------------|------------|-------------------------|
| 26/40-09 A1 | 1988        |                | 20-40                  | 60-100                 | 100       | M             | 2187            |                    |                 |            |                         |
| 26/40-11 J2 | 1982        | 6              | 5-60                   | 0-5                    | 60        | M             | 2175.1          |                    |                 |            |                         |
| 26/40-12 D1 |             | 2              |                        |                        | 43.5      | M             |                 |                    |                 |            |                         |
| 26/40-12 Q1 | <1956       | 2              |                        |                        | 21.8      | M             | 2175.7          |                    |                 |            | 11000                   |
| 26/40-12 R1 | <1956       | 2              |                        |                        | 20.9      | M             | 2181.5          |                    |                 |            | 1000                    |
| 26/40-13 A1 |             | 6              |                        |                        |           | M             |                 |                    |                 |            | 1500                    |
| 26/40-13 C1 | <1956       | 2              |                        |                        | 21.5      | M             | 2189.1          |                    |                 |            | 1100                    |
| 26/40-13 M1 | <1956       | 2              |                        |                        | 22.2      | M             | 2198.2          |                    |                 |            | 1500                    |
| 26/40-13 Q1 | 1986        | 6              |                        |                        |           | M             |                 |                    |                 |            |                         |
| 26/40-14 A1 |             | 6              |                        |                        |           | M             |                 |                    |                 |            | 552.6                   |
| 26/40-14 B2 | 1982        | 2.5            | 4-52.5                 | 0-4                    | 52.5      | M             | 2185.4          |                    |                 |            | 1300                    |
| 26/40-14 B2 |             | 2              |                        |                        | 100       | M             |                 |                    |                 |            | 1900                    |
| 26/40-15 N2 |             | 2              |                        |                        |           | M             |                 |                    |                 |            | 3000                    |
| 26/40-17 J1 |             | 2              |                        |                        | 96        | M             |                 |                    |                 |            | 260                     |
| 26/40-17 N1 | <1921       | 13             |                        |                        | 178.1     | M             | 2293            |                    |                 |            |                         |
| 26/40-17 Q2 | 1986        | 6              |                        |                        |           | M             |                 |                    |                 |            |                         |
| 26/40-19 N1 | <1912       | 14             | 192-220                |                        | 306       | M             | 2337.7          |                    |                 |            | 300                     |
| 26/40-19 P1 | <1944       | 16             | 253-259                |                        | 261       | M             | 2336            |                    |                 |            |                         |
| 26/40-20 L1 | 1989        | 6              | 280-380                | 0-280                  |           | M             |                 |                    |                 |            |                         |
| 26/40-20 N1 | 1952        | 16             |                        |                        | 190.1     | M             | 2311.8          |                    |                 |            |                         |
| 26/40-22 H1 | <1972       | 2              | 47-49                  |                        | 49        | M             | 2226.62         |                    |                 |            |                         |
| 26/40-22 H2 | <1972       | 2              | 75-77                  |                        | 77        | M             | 2227.03         |                    |                 |            | 4800                    |
| 26/40-22 H3 | <1972       | 2              | 85-97                  |                        | 97        | M             | 2226.23         |                    |                 |            |                         |
| 26/40-22 P1 | <1954       | 8              | 530-830                |                        | 1358      | M             | 2258.7          |                    |                 |            | 860                     |
| 26/40-22 P2 |             | 2              |                        |                        |           | M             |                 |                    |                 |            |                         |
| 26/40-22 P3 | 1981        | 6              |                        |                        | 415       | M             | 2273            |                    |                 |            | 1400                    |
| 26/40-22 P4 | 1981        | 6              |                        |                        | 215       | M             | 2273            |                    |                 |            | 1400                    |
| 26/40-23 A2 | 1972        | 2              | 75-77                  |                        | 77        | M             | 2217.72         |                    |                 |            | 700                     |
| 26/40-23 B2 |             | 6              |                        |                        |           | M             |                 |                    |                 |            | 2400                    |
| 26/40-23 D1 |             | 6              |                        |                        |           | M             |                 |                    |                 |            | 1300                    |
| 26/40-23 G1 |             | 2              |                        |                        | 57        | M             |                 |                    |                 |            | 153.1                   |
| 26/40-23 G1 |             | 2              |                        |                        | 57        | M             |                 |                    |                 |            | 2000                    |
| 26/40-26 F1 | <1971       | 2              | 75-77                  |                        | 77        | M             | 2225            |                    |                 |            | 4400                    |
| 26/40-27 D1 | 1987        | 6              | 65-145                 |                        | 155       | M             | 2267.41         |                    |                 |            | 1400                    |
| 26/40-35 G1 |             | 4              |                        |                        | 79.6      | M             |                 |                    |                 |            | 1000                    |
| 26/40-35 H2 | 1987        | 6              | 340-480                |                        | 500       | M             | 2250            |                    |                 |            | 2200                    |
| 26/40-35 Q2 | 1989        | 6              | 60-160                 |                        | 200       | M             | 2247            |                    |                 |            | 553                     |

TABLE 1. WELL CONSTRUCTION, WATER LEVEL AND WATER CHEMISTRY OF WELLS AND SURFACE WATERS.

| LOCATION              | DATE INST'LD | DIAM. (INCHES) | SCREEN INTERVAL (FEET)                                     | CASING INTERVAL (FEET) | TD (FEET)                               | MATERIAL | TYPE | ELEVATION (MSL) | WATER LEVEL (FEET)  | WATER CHEMISTRY  | TDS (mg/l)                           | T (ft <sup>2</sup> /day)   |
|-----------------------|--------------|----------------|--|------------------------|---|----------|------|-----------------|---|--|--------------------------------------|--|
| 26/40-38 A1           | <1954        | 8              | 80-90<br>107-127<br>187-195<br>240-260                     |                        | 270.2                                   | IRON     | M    | 2247.2          |   |  |                                      |  |
| 26/41-07 D1           | 1982         | 2.5            | 10-50  | 0-10                   | 50                                      |          | M    | 2169.4          |   |  |                                      |  |
| 27/38-02 B1 (BR 2)    | 1990         | 2              | 1. 620-640<br>2. 1460-1480<br>3. 1940-1960                 |                        | 1. 640<br>2. 1480<br>3. 1960            | IRON     | M    | 2655.9          | 1. ~276 <sup>2</sup><br>2. ~272 <sup>2</sup><br>3. ~281 <sup>2</sup>            | 1. Na-CO <sub>3</sub><br>2. Na-SO <sub>4</sub><br>3. Na-HCO <sub>3</sub> +CO <sub>2</sub>  | 1. 450<br>2. 330<br>3. 300           | 1. 14.4 <sup>2</sup><br>2. 273.6 <sup>2</sup><br>3. 23.04 <sup>2</sup>                         |
| 27/38-23 F1 (BR 1)    | 1991         | 2              | 1. 615-635<br>2. 1040-1060<br>3. 1500-1520<br>4. 1750-1770 |                        | 1. 635<br>2. 1060<br>3. 1520<br>4. 1770 | IRON     | M    | 2848.3          | 1. ~185 <sup>2</sup><br>2. ~182 <sup>2</sup><br>3. ~187 <sup>2</sup><br>4. ~186 | 1. Na-HCO <sub>3</sub> +CO <sub>2</sub><br>2. Na-HCO <sub>3</sub> +CO <sub>2</sub><br>3. Na-HCO <sub>3</sub> +CO <sub>2</sub><br>4. Na-HCO <sub>3</sub> +CO <sub>2</sub> | 1. 270<br>2. 230<br>3. 230<br>4. 240 | 1. 302.4 <sup>2</sup><br>2. 345.6 <sup>2</sup><br>3. 14.4 <sup>2</sup><br>4. 5.78 <sup>2</sup> |
| 27/39-08 M1           |              | 16             | 560-1000   | 0-560<br>1000-1020     | 1020                                    | IRON     | WS   |                 | 367 <sup>4</sup>  | Na-Cl  | 140                                  |  |
| 27/39-11 D1 (BR 3)    | 1991         | 2              | 1. 620-670<br>2. 1320-1340<br>3. 1850-1870                 |                        | 1. 640<br>2. 1480<br>3. 1960            | IRON     | M    | 2508.6          | 1. ~331 <sup>2</sup><br>2. ~331 <sup>2</sup><br>3. ~312 <sup>2</sup>            | 1. Na-HCO <sub>3</sub> +CO <sub>2</sub> /SO <sub>4</sub><br>2. Na-Cl<br>3. Na-Cl   | 1. 290<br>2. 9400<br>3. 6500         | 1. No data <sup>2</sup><br>2. 86.4 <sup>2</sup><br>3. 8.64 <sup>2</sup>                        |
| 27/40-01 G1           | 1995         | 6              |  |                        |   | PVC      | M    |                 |   | Na-Cl  | 690                                  |  |
| SURFACE WATER SAMPLES |              |                |  |                        |   |          |      |                 |   |  |                                      |  |
| BIRD SPG              |              |                |  |                        |   |          |      |                 |   | Na-HCO <sub>3</sub>  | 280                                  |  |
| HORSE CYN             |              |                |  |                        |   |          |      |                 |   | Ca-HCO <sub>3</sub>  | 350                                  |  |
| SAGE CYN              |              |                |  |                        |   |          |      |                 |   | Ca-HCO <sub>3</sub>  | 380                                  |  |
| COW HEAV.             |              |                |  |                        |   |          |      |                 |   | Ca-HCO <sub>3</sub>  | 230                                  |  |
| BIG SPG               |              |                |  |                        |   |          |      |                 |   | Ca-HCO <sub>3</sub>  | 320                                  |  |
| WALKER WL             |              |                |  |                        |   |          |      |                 |   | Ca-HCO <sub>3</sub> /SO <sub>4</sub>   | 280                                  |  |
| IND. WLS.             |              |                |  |                        |   |          |      |                 |   | Ca-HCO <sub>3</sub>  | 430                                  |  |
| SHORT CYN             |              |                |  |                        |   |          |      |                 |   | Ca-HCO <sub>3</sub>  | 390                                  |  |
| GRAPEVN               |              |                |  |                        |   |          |      |                 |   | Ca-HCO <sub>3</sub>  | 520                                  |  |
| SAND                  |              |                |  |                        |   |          |      |                 |   | Ca-HCO <sub>3</sub>  | 450                                  |  |
| NONAME                |              |                |  |                        |   |          |      |                 |   | Mg/Na/Ca-HCO <sub>3</sub>  | 1100                                 |  |
| NINEMILE              |              |                |  |                        |   |          |      |                 |   | Mg-HCO <sub>3</sub>  | 690                                  |  |
| FIVEMILE              |              |                |  |                        |   |          |      |                 |   | Ca-HCO <sub>3</sub>  | 660                                  |  |
| LIT. LK. OUT.         |              |                |  |                        |   |          |      |                 |   | Na-HCO <sub>3</sub>  | 1200                                 |  |
| HAIWEE                |              |                |  |                        |   |          |      |                 |   | Ca-HCO <sub>3</sub>  | 390                                  |  |

<sup>1</sup>Houghton, 1994

<sup>2</sup>Bureau of Reclamation Report, 1993.

<sup>3</sup>Kern County Water Agency Measurements.

<sup>4</sup>Indian Wells Valley Water District.

Well construction obtained from USGS and NAWs, unless otherwise referenced.

Water levels and chemistry obtained during field work for this report unless otherwise referenced.

M = Monitoring Well

WT = Water Table Well

WS = Water Supply Well

## 2.2 WELL CONSTRUCTION

Information on wells sampled and tested for this report and additional wells that may be sampled in the future is included in Table 1. Construction information, water levels and water chemistry were obtained from the USGS, NAWWS, Indian Wells Valley Water District and during field work. Well construction of certain wells was not available during the time of this study; however, the wells were used because of location.

## 3.0 GROUND WATER SAMPLING METHODS

In May through June 1996, 68 ground water samples were collected from various locations throughout the Valley and the Sierra Nevada (Figures 2, 3, 4, 5, 6, 7). Fifteen surface water samples (Figures 3 and 4) and 53 ground water samples were collected from wells or piezometers (Figures 3, 5, 6, 7). TDS and temperature were recorded during sampling when feasible (Table A1 Appendix A). Many wells were purged either by bailing or pumping a minimum of three well volumes.<sup>1</sup> Samples were collected with either a disposable polyethylene bailer, a Teflon® or stainless steel bailer which were cleaned between each sampling event.

In August 1996, samples were collected from 8 wells (Figures 5, 6 and 7) at the conclusion of aquifer testing from the discharge pipe. Samples were analyzed for the constituents specified in Section 3.1.

Samples specified for isotope analysis were filtered with a 0.5 micron disposable filter into containers such that there was no head space. Samples analyzed for general minerals were not filtered, except BR3-medium and deep. Samples were managed in accordance with EPA protocols (SW 846), recorded on a Chain-of-Custody form for the analyses specified in Section 3.1, placed in a cooler that was maintained at four degrees centigrade and transported to the laboratory with the Chain-of-Custody. Samples were analyzed by Zymax Envirotechnology, Inc. and Global Geochemistry, both California State Certified laboratories. Laboratory reports, completed chain-of-custody forms and summary tables of general mineral results (Table A2) and isotopic results (Table A3) and are included in Appendix A.

## 3.1 GROUND WATER ANALYSIS

Ground water samples were analyzed for the following constituents by Zymax Envirotechnology and Global Geochemistry:

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<sup>1</sup> Wells not purged are noted Table A1, Appendix A. Future comparison of new data with these samples, if they differ, should account for the wells not being purged.

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1. All Samples:
  - general minerals;
  - boron;
  - arsenic;
2. Aquifer Test Samples:
  - oxygen-18 isotopes;
  - deuterium isotopes.

### 3.2 AQUIFER TEST METHODS

Aquifer tests were performed on ten wells located in the eastern and central portions of the Valley (Figure 5, 6 and 7). Four of the tests were performed using a 5 horsepower Grundfos® pump with a discharge rate of 60 gallons per minute (gpm). The remaining six tests were performed using a 10 horsepower Grundfos® pump set at different discharge rates for each test. The pumps were attached to two inch galvanized pipe. The pumps were set in each well approximately 100 feet below static water level, which was measured prior to installation of the pump with a Solinst® water level sounder. The pumps were powered with a 24 kilovolt diesel powered generator.

Prior to commencing the aquifer test a second water level measurement was collected and recorded. Upon starting of the pump, the time was recorded and measurements were collected as follows:

| TIME                         | INTERVAL            |
|------------------------------|---------------------|
| 0 to 5 minutes:              | 30 second intervals |
| 5 to 15 minutes:             | 60 second intervals |
| 15 to 60 minutes:            | 5 minute intervals  |
| 60 to 300 minutes (5 hours): | 30 minute intervals |
| 300 to completion of test    | 1 hour intervals    |

Tests were run for a minimum of 12 hours, with the exception of one test that was terminated after 3 hours due to test problems (located at 26/40-23 D1). At the intervals specified above, water level readings were collected using the Solinst® water level device. Change in water level, discharge and observations of events during testing were recorded. The collected water levels were subtracted from the initial static water level and graphed (Appendix B). The x axis of the graph consists of time (minutes) and the scale is logarithmic, the y axis consists of the corrected water levels or drawdown (s) and the scale is linear. Results of the tests are given Section 4.2 and interpreted in Section 5.2. Graphs and the data collected in the field are included in Appendix B.

### 3.3 DATA INTERPRETATION

Geochemical data was evaluated by plotting the chemical analysis results obtained from the laboratory on Piper (1944), Stiff (1951), fingerprint diagrams and mapping results. Samples were grouped based on similarities in patterns of these diagrams and by geographical areas (Figure 2) as follows:

1. Northwest (Figure 3)
2. Southwest springs (Figure 4)
3. Southwest (Figure 5)
4. East (Figure 6)
  - 4a. Township 26 south, Range 40 east, Section 22 (Figure 7)

Isotopes were evaluated based on the relationship of the samples  $^{18}\text{O}$  value versus their Deuterium value and the meteoric water line for North America based on a calculation developed by Dansgaard (1964). The results of the isotopic evaluation are shown on Figure 8.

Change in water level collected from the wells during the aquifer tests was graphed as described in the previous section using the Jacob time-drawdown method. "Best-fit" lines were drawn from the curves in order to obtain a change in drawdown ( $ds$ ) over one logarithmic period. The  $ds$  obtained was used to calculate the transmissivity in feet squared per day ( $\text{ft}^2/\text{day}$ ) of the surrounding aquifer materials using the following equation:

$$T = 35 Q/ds$$

$T = \text{Transmissivity}$   
 $Q = \text{Discharge (gpm)}$   
 $ds = \text{Change in drawdown (ft)}$

### 4.0 RESULTS

The results of chemical samples are separated into the four groups specified in the previous section. The results are presented in this manner based on previous researchers findings, the results of this study and because it simplified data interpretation. Geochemical results in  $\text{mg/l}$  are shown on Table A2 and isotopic results are shown on Table A3 in Appendix A.

Aquifer test results are summarized on Table 2. Laboratory TDS values have also been included on this table to show the relationship between water flow and water quality.

## 4.1 GEOCHEMICAL ANALYSIS

### 4.1.1 NORTHWEST

Eight surface samples and ten piezometer samples (from three locations: BR5, BR6 and BR10) were collected from the northwest area (Figure 2 and 3). TDS of surface waters sampled ranged from 390 mg/l (Short Canyon) to 1900 mg/l (Little Lake runoff) (Figure 9). However, most surface water sampled had TDS values of less than 700 mg/l.

Most of the surface water samples had a Ca-HCO<sub>3</sub> composition. Exceptions were Little Lake outlet which had a Na-HCO<sub>3</sub> composition and Noname Canyon which had even distribution of magnesium, calcium and sodium cations and predominantly bicarbonate anions. These two samples also had TDS values greater than 1000 mg/l (Figure 9, Table 1).

Ten ground water samples were collected from nested piezometers (BR5, BR6 and BR10) completed at various depths. BR5 had TDS values that increased with depth (Table 1, Figure 9). The shallow sample had a TDS of 440 mg/l and a composition of Na-HCO<sub>3</sub>+CO<sub>3</sub>/Cl. The medium and deep piezometer had TDS values of 1100 mg/l and 1200 mg/l respectively and both samples had Na-HCO<sub>3</sub> composition.

Samples from BR6 did not have increasing TDS values with depth. The shallow sample from BR6 had a TDS value of 380 mg/l and a Na-Cl composition. The medium and deep sample had TDS values of 850 mg/l and 600 mg/l respectively and both samples had Na-HCO<sub>3</sub> composition.

TDS values in BR10 increased from the medium-shallow sample to the deep sample; however, the shallowest sample had the highest TDS values of all samples collected from BR10 (980 mg/l) (Table 1, Figure 9). TDS values from the medium shallow, medium-deep and deep samples had TDS values of 750 mg/l, 880 mg/l, 930 mg/l, respectively. The shallow sample had a Na-HCO<sub>3</sub>+CO<sub>3</sub>/Cl composition, medium-shallow and deep samples had Na-Cl compositions and the medium-deep sample had a Na-HCO<sub>3</sub>+CO<sub>3</sub> composition.

Concentrations of boron equaled or exceeded the acceptable level of 2 mg/l recommended for the irrigation of plants (Driscoll, 1986) in all piezometers sampled in the northwest (except BR5-shallow) and in the Little Lake and Haiwee samples (Table A2, Appendix A).

None of the piezometers sampled had any arsenic detected above the laboratory detection levels. Arsenic concentrations from the Little Lake sample (0.09 mg/l) and the Haiwee sample (0.05 mg/l) equaled or exceeded the Federal maximum contaminant level (MCL) of 0.05 mg/l.

#### 4.1.2 SOUTH SPRINGS

Six surface samples were collected from the springs southwest of the Valley (Table 1, Figure 2 and 4). All of the surface samples had TDS values of less than 500 mg/l (Figure 10, Table 1). TDS values ranged from 230 mg/l (Cow Haven<sup>2</sup>) to 380 mg/l (Sage Canyon). The majority of the springs had a Ca-HCO<sub>3</sub> composition. Exceptions were Bird Spring which had a Na-HCO<sub>3</sub> composition and the Walker Well which had a Ca-HCO<sub>3</sub>/SO<sub>4</sub>.

Boron concentrations were well below the 2.0 mg/l limit recommended for safe irrigation of plants. No arsenic was detected in any of the south springs samples above the laboratory detection limits (Table A2, Appendix A).

#### 4.1.3 SOUTHWEST

Eight well locations were sampled in the southwest portion of the Valley (Figure 2 and 5). Multiple samples were collected from four of the eight locations at nested piezometers completed at various depths. Most of the samples collected in the southwest had TDS values of less than 500 mg/l, ranging from 140 mg/l (MW32, medium-shallow and 27/39-08 M1, the Indian Wells Valley Water District Southwest Production Well [IWWWD-SWP]) to 490 mg/l (26/39-11 E2) (Figure 11). The medium and deep samples from BR3 had TDS values of 9400 mg/l and 6500 mg/l, respectively.

The majority of the samples collected in this area had Na-HCO<sub>3</sub> or Na-HCO<sub>3</sub> +CO<sub>3</sub> composition (Table 1). The sample collected from 26/39-11 E2 had a Na/Ca-HCO<sub>3</sub> and the sample collected from 26/39-15 J1 had a Ca/Na-HCO<sub>3</sub>. The sample from the medium piezometer of BR2 had Na-SO<sub>4</sub> composition. The IWWWD-SWP (27/39-08 M1) and the medium and deep piezometers of BR3 had a Na-Cl composition.

Concentrations of boron exceeded levels recommended for safe irrigation of plants in the samples collected from 26/39-11 E2, BR3-medium and deep, BR2-medium (Table A2, Appendix A). Arsenic was not detected above laboratory detection limits in any of the samples collected in the southwest.

#### 4.1.4 EAST

Twenty six ground water samples were collected from the eastern portion of the Valley (Figures 2, 6 and 7). TDS values ranged from 260 mg/l (26/40-17 J1) to 26,000 mg/l (26/40-6D2)(Table 1, Figure 12 and 13). Chemical compositions of ground water were Na-HCO<sub>3</sub>, Na-HCO<sub>3</sub>+CO<sub>3</sub>, Na-SO<sub>4</sub> and Na-Cl.

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<sup>2</sup> Also known as Cow Heaven.

Boron concentrations exceeded the 2.0 mg/l recommended for the irrigation of plants in all wells sampled in this area except 26/40-17 J1, 26/40-22 P1, 26/40-22 P2, 26/40-35 G1 and 27/40-01 G1. Arsenic concentrations exceeded the federal MCL in 26/40-12 D1, 26/40-14 B1, 26/40-23 G1, 27/40-01 G1.

#### 4.1.5 ISOTOPIC ANALYSIS RESULTS

Isotopic analysis results are summarized on Table A3, Appendix A. Figure 8 is a graph of isotopic samples results in relationship to the North American meteoric water line. Samples were slightly lighter than the meteoric water line with respect to  $\delta^{18}\text{O}$  and  $\delta\text{D}$ .

#### 4.2 AQUIFER TESTS

Ten aquifer tests were performed in the Valley to determine transmissivity (T) values in the vicinity of the wells tested. Two aquifer tests were conducted northwest of the Intermediate well field (Figure 5). The majority of the aquifer tests were conducted in the vicinity of the sewer ponds located on NAWS (Figure 6 and 7). T values are listed on the following table in gallons per day per foot (gpd/ft), meters squared per day ( $\text{m}^2/\text{d}$ ) and feet squared per day ( $\text{ft}^2/\text{d}$ ) and the location of the wells tested with T values in  $\text{ft}^2/\text{day}$  are shown on Figure 14:

Table 2. Calculated Transmissivity Values

| WELL LOCATION | Q (gpm) | Q ( $\text{m}^3/\text{d}$ ) | ds (ft) | ds (m) | T (gpd/ft) | T ( $\text{m}^2/\text{d}$ ) | T ( $\text{ft}^2/\text{d}$ ) | TDS (mg/l) |
|---------------|---------|-----------------------------|---------|--------|------------|-----------------------------|------------------------------|------------|
| 26/39-11E2    | 100     | 542                         | 0.25    | 0.076  | 105600     | 1305                        | 14000                        | 490        |
| 26/39-15J1    | 37.5    | 203.25                      | 0.5     | 0.15   | 19800      | 249                         | 2625                         | 210        |
| 26/40-13A1    | 100     | 542                         | 21      | 6.4    | 1257       | 6.9                         | 166.7                        | 1100       |
| 26/40-13Q2    | 60      | 325.2                       | 3.8     | 1.2    | 4168       | 51.4                        | 552.6                        | -          |
| 26/40-14A1    | 100     | 542                         | 6       | 1.8    | 4400       | 54.2                        | 583.3                        | 1300       |
| 26/40-17Q2    | 60      | 325.2                       | 7       | 2.1    | 2262.9     | 28.3                        | 300                          | 2400       |
| 26/40-22P4    | 60      | 325.2                       | 3       | 0.91   | 5280       | 65                          | 700                          | 460        |
| 26/40-23B2    | 35      | 189.7                       | 8       | 2.4    | 1155       | 14.5                        | 153.1                        | 1300       |
| 26/40-23D1    | 8.15    | 44.2                        | 152.5   | 46.48  | 14.1       | 0.17                        | 1.87                         | 2000       |
| 26/40-35H2    | 60      | 325.2                       | 3.8     | 1.2    | 4168       | 162.7                       | 553                          | 2200       |

#### 5.0 DATA INTERPRETATIONS

Results of the water chemical analysis and aquifer tests are interpreted in the following sections. Laboratory reports and tables summarizing field and laboratory analysis are included in Appendix A. Field data collected during aquifer tests and graphs created from the corrected data are included in Appendix B.

## 5.1 GEOCHEMICAL ANALYSIS

Data has been interpreted using Piper Diagrams, Stiff Diagrams and fingerprint plots. Based on previous researchers conclusions, data was interpreted for each geographical area and then a comparison was made between samples throughout the Valley.

### 5.1.1 NORTHWEST

Piper, Stiff and fingerprint diagrams (Figures 15 through 18) show similarities between the following ground water and surface water samples collected in the northwest:

1. Little Lake and BR10-medium deep
2. BR10-shallow, medium-shallow and deep
3. BR5-shallow and BR6-shallow
4. BR5-medium and deep; BR6-medium and deep.

All samples from BR5 and BR6 had similar characteristics to each other; however the shallow samples had lower TDS and less bicarbonate than the deeper samples. These samples also plotted near BR10-medium-deep and Little Lake on the Piper diagram (Figure 15). There was no obvious correlation between the piezometer samples and the surface water samples except Little Lake. BR5-deep may be a mixture of water that recharges BR6-medium and deep and BR5-medium (Figure 15 and Figure 18). BR6-medium and deep are chemically the same.

Based on these observations it appears that the shallow ground water in the northwest is recharged from Little Lake and probably Sierran water (since the shallow piezometer samples have lower TDS values than Little Lake). The deeper piezometer samples collected from BR5 and BR6 have similar composition indicating that they may be completed in the same aquifer system and may have a different recharge source than the shallower samples. The BR10-medium-shallow and deep samples are similar to each other (Figures 15, 16 and 17), but not to any of the other samples.

Although the deeper samples from BR5 and BR6 are have similar patterns, the samples from BR 5 have a higher TDS (Table 1). Higher TDS values with similar ratios of ions indicates that the ground water in the deeper piezometers of BR5 may have a longer residence time in the aquifer.

### 5.1.2 SOUTH SPRINGS AND SOUTHWEST

Piper, Stiff and fingerprint diagrams (Figures 19 through 23) indicated the following similarities between ground water samples in the southwest and spring samples collected from south of the Valley:

1. 26/39-11E2 and 26/39-15J1 are ionically similar to southern springs.
2. BR1 (all depths), BR2-shallow and deep, MW32-medium-shallow and medium-deep are similar to each other and have similar anion patterns to southern springs especially Cow Haven and Sage Canyons.
3. BR4 and IWWWD-SWP are similar.
4. BR3-shallow and BR2-medium are similar to each other and similar to the south springs especially Bird Spring.
5. BR3-medium and deep are not similar to the other samples collected in the southwest area.

TDS values decreased slightly with depth in BR2 and greatly with depth in BR3 and diagrams showed differences in chemistry between samples in each respective piezometer, indicating that there may be more than one source of recharge to these wells and probably separate aquifer systems in the vicinity of BR3 (Figure 20). BR1 had almost no variation in TDS and chemistry with depth, indicating the same recharge source (Figures 20, 22 and 23).

### 5.1.3 EAST

Piper, Stiff and fingerprint diagrams (Figures 24 through 27) indicated similarities between the following ground water samples in the eastern portion of the Valley:

1. 26/40-22H1, 22P1, 22P2, 26F1
2. 26/40-22P4 and 23G1
3. 26/40-12D1, 12Q1, 12R1, 14A1, 23B2, 23D1
4. 25/41-19L1, 26/40-06D2, 17Q1, 22P3
5. 27/40-1G1, 26/40-13A1, 13M1, 14B1

The sample collected from 26/40-17J1 was very different from all the other samples collected in this area (Figures 24 and 25). This sample had a low TDS (260 mg/l). An adjacent well, 26/40-17Q1 had a TDS of 2,400 mg/l (Figure 12). The 17Q1 well is a deeper well and the difference in TDS of these two samples may show the presence of an aquifer system that has had more reaction time with sediments than 17J1 waters.

Samples collected from 26/40-12Q1, 12R1, 13A1, 13M1, 14A1, 14B1 and 23D1 have TDS values between 500 to 2000 mg/l (Figure 12, Table 1). These wells are shallow (100 feet of total depth or less) and it is likely that the water from the drainage ditch and sewer ponds has influenced their chemistry.

Generally, there was no correlation found during this study between well depth and TDS. Both deep and shallow wells were found to have high (greater than 2000 mg/l) and low TDS. There was also no correlation between water chemistry and TDS, and

water chemistry and depth. Water chemistries of Na-Cl, Na-SO<sub>4</sub> and Na-HCO<sub>3</sub> were found in the eastern area at various depths and TDS values.

Na-HCO<sub>3</sub> ground water found on the western portion of this area (Figure 2), Na-Cl water was found on the east and the south, and Na-SO<sub>4</sub> water was found in the central portion. Water chemistry may be affected by sediment type near the wells and local recharge (surface irrigation, sewer ponds, drainage ditch and playa lakes).

#### 5.1.4 VALLEY-WIDE

Generally TDS values were lowest in the southwest, with increasing TDS in the northwest and with the highest TDS values present in the eastern portion of the Valley. Ground water samples collected in the northwest generally had higher magnesium concentrations than samples collected from the southwest and east (Figures 18, 23, 26 and 27). Samples collected from BR5-medium and deep, BR6-medium and deep, BR2-shallow, BR1 (all depths) and BR4 had similar chemistries, suggesting similar sources and/or reaction of the ground water with aquifer materials. One sample collected in the eastern portion of the Valley 26/40-17J1 had similar chemistry to 26/39-11E2 and 26/39-15J1, indicating that these samples may be affected by the same recharge source and/or ground water reaction with aquifer sediments.

The southern springs were similar to each other and to the springs sampled in the northwest (Figures 18 and 23); however the southwest springs were generally lower in TDS. Samples in the southwest that had similarities to the south springs also were similar to the northwest surface water samples, but the southwest ground water again generally had lower TDS.

Samples collected from BR 3-medium and deep were not similar to any of the other samples collected during this study, including high TDS samples collected from the eastern portion of the Valley (Figure 28). The BR 3-medium and deep piezometers may be influenced by recharge from the El Paso mountains to the south.

Overall the most common chemical composition found in the ground water was Na-HCO<sub>3</sub>. This composition was found in samples from all areas of the Valley including some of the high TDS ground water collected from the eastern portion. Na-Cl ground water was the second most common composition. This water type also was not indicative of TDS as it was found in one of the wells with the lowest TDS, (IWWWD-SWP, TDS of 140 mg/l). Na-SO<sub>4</sub> ground water was the least common ground water present.

### 5.1.5 ISOTOPIC ANALYSIS

Samples were analyzed for the isotopes  $^{18}\text{O}$  and Deuterium to determine the relationship of ground water collected to a generalized meteoric water line for North America. Figure 8 shows a graph of the analytical results and their relationship to the meteoric water line. As shown on the graph, samples collected for this study plot close to the meteoric water line indicating that evaporation or isotopic exchange with aquifer materials has been minor. Rapid infiltration of rain water would cause the evaporation rate to be low and the aquifer materials of the Valley are generally composed of granitic sediments, high in silica rich minerals, that may not readily give up oxygen for exchange.

### 5.2 AQUIFER TESTS

Data collected during the aquifer tests conducted for this report and graphs used to obtain T values are included in Appendix B. T values are summarized on Table 1 and Table 2, and T values obtained during the BOR (1992) study for BR1, BR2, BR3, BR4, BR5, BR6, BR10 and MW32 (BOR wells) are included on Table 1.

Aquifer tests conducted on the NAWS showed a large variation in T values (Table 2, Figure 14). T values ranged from  $1.87 \text{ ft}^2/\text{day}$  (26/40-23D1, Figure B9, Appendix B) to  $14000 \text{ ft}^2/\text{day}$  (26/39-11E2, Figure B1). The higher T values were found in the vicinity of the SNORT facility (26/30-11E2 and 26/39-15J1, Figure 14). The aquifer sediments in this area are known to be composed of gravels and sands, which should have good transmissivity. Low T values were found on the east (Figure 14); these values averaged  $376 \text{ ft}^2/\text{day}$ . Low T values would be expected in this area of the Valley due to low energy deposits of lake sediments consisting of clay and silt.

A T value of  $1.87 \text{ ft}^2/\text{day}$  was obtained from the well located at 26/40-23D1 (Figure B9). It is suspected that this value may be in error, since it is much lower than other values obtained in the area. Discharge during the test had to be dropped to less than 10 gallons per minute in order to prevent the water level from dropping to the depth where the pump was set (approximately 100 feet below static water level). Water level readings leveled off in less than 10 minutes of pumping at this low discharge rate. The first readings during an aquifer test are generally due to the evacuation of water from the well casing. It then must be assumed that the T value from this test is due to casing evacuation and not recharge from the aquifer. Low recharge to this well could be due to a plugged gravel pack or well screen. Other T values in the vicinity of this well were probably more representative of the area.

Problems with water level readings occurred during the aquifer test conducted on the well located at 26/40-17Q1 (Figure B6). Approximately 5 hours into the test, a foam column developed in the casing. The foam interfered with the Solinst® water level device causing it to activate when the foam was encountered, yielding a false reading. However, enough data was collected to calculate a representative T value.

Foaming may have also been a factor during the test of 26/40-22 P4. Between 150 minutes and 180 minutes the water level rose 8 feet and continued to rise until the 420 minute reading, where levels began to drop again. Enough data was collected however, to obtain an adequate T value.

There was minor correlation between T values and TDS (Table 1 and 2). Wells with higher T values tended to have lower TDS and wells with low T values had higher TDS. There was also minor correlation between T values and chemistry. Wells with lower T values tended to have Na-Cl composition and wells with high T values had Na-HCO<sub>3</sub>, Ca-HCO<sub>3</sub> or Na-SO<sub>4</sub> compositions. However, more data should be evaluated before concluding a relationship between TDS, chemistry and transmissivity in this area.

## **6.0 CONCLUSIONS**

A review of ground water and surface water samples collected for this report suggested the following:

1. Ground water in the northwest is probably recharged by surface runoff from nearby Sierran streams, Little Lake water entering the Valley from the north, and southwest ground water. The deeper BOR wells in the northwest may be affected by ground water from the southwest and Little Lake surface water. The shallower BOR wells are most likely recharged by the Sierran streams and Little Lake surface water.
2. Ground water in the southwest is of high quality and the source of this water may be springs located south of the Valley and perennial Sierran streams on the western portion of the Valley. The BOR wells in the southwest appear to be recharged by the same source, with the exception of BR3 which shows that there is probably a separate aquifer system with poor quality ground water below a system of high quality ground water. The chemistry of the BR3-shallow and deep samples was not similar to any of the samples found in the Valley, including the high TDS samples collected on the eastern portion of the Valley.
3. Ground water on the eastern portion of the Valley currently may be recharged by surface water from the sewer ponds and a fresh water drainage ditch. Higher TDS water found here has not yet been affected by this recharge. The higher TDS water may have originated from the western portion of the Valley as water moved from west to east. This high TDS water may also be what Dutch and Moyle (1973) described as in-situ water that originated from the Pleistocene Lake

China. There may also be two vertically separate aquifer systems in the eastern portion of the Valley, based on the high variation in TDS found within short distances between sampling points.

4. The eastern portion of the Valley has low transmissivity and the central portion of the Valley has moderate to high transmissivity. Differences in T values are due to differences in aquifer materials.

## **7.0 RECOMMENDATIONS FOR FUTURE STUDY**

The following are recommendations for further study:

1. Since there is a concern in the Valley of migration of lower quality water from the playa and the central portion of the Valley to the current water supply, periodic monitoring of key wells should be conducted to determine if water quality is being affected by pumping.
2. If aquifer tests are conducted, the use of observation wells should be considered. Observation well data would help to determine if different aquifer systems exist and the storativity of the aquifer.
3. There is little data available on recharge sources from the Argus and Coso ranges in the north and northeastern portions of the Valley. It would be of interest to determine water quality in this region and thereby develop information on source(s) of recharge.
4. Future sampling of wells should be conducted after the removal of ground water until pH, conductivity (TDS) and temperature stabilize or by using a micropurge system. Either of these methods will ensure that a representative sample of the aquifer is collected.

## **8.0 REFERENCES**

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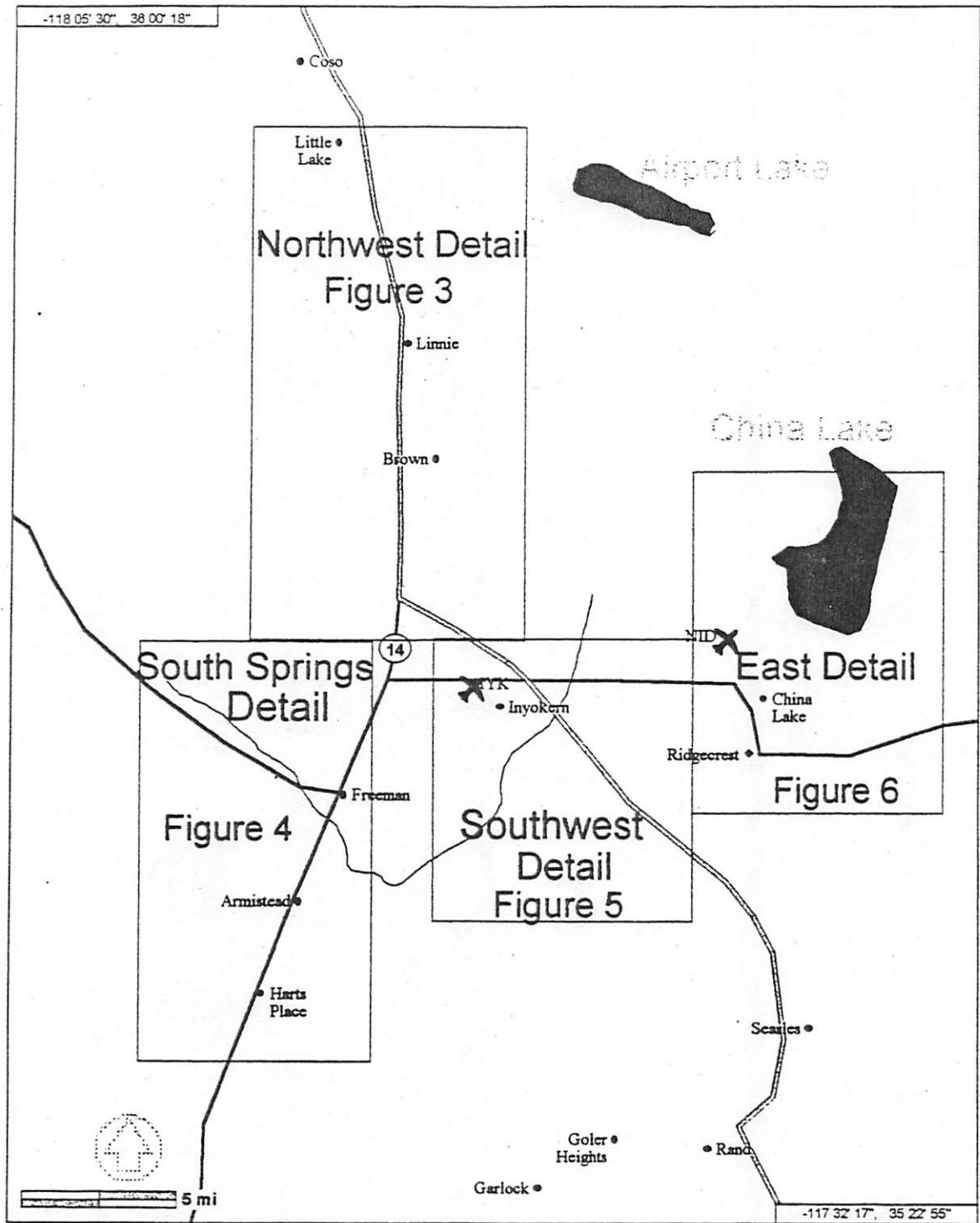
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## FIGURES



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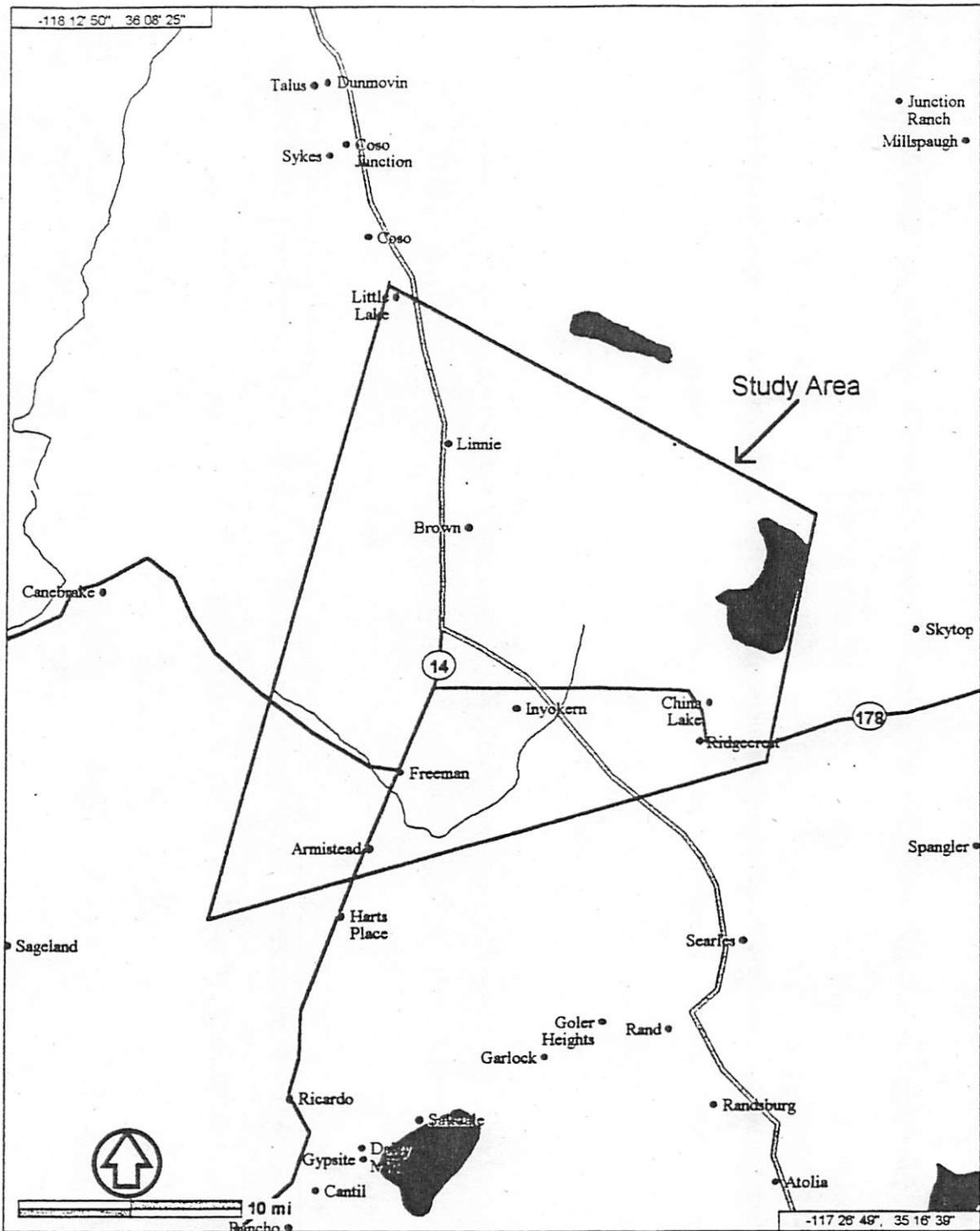
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**Figure 2. Guide to Detailed Sample Maps**

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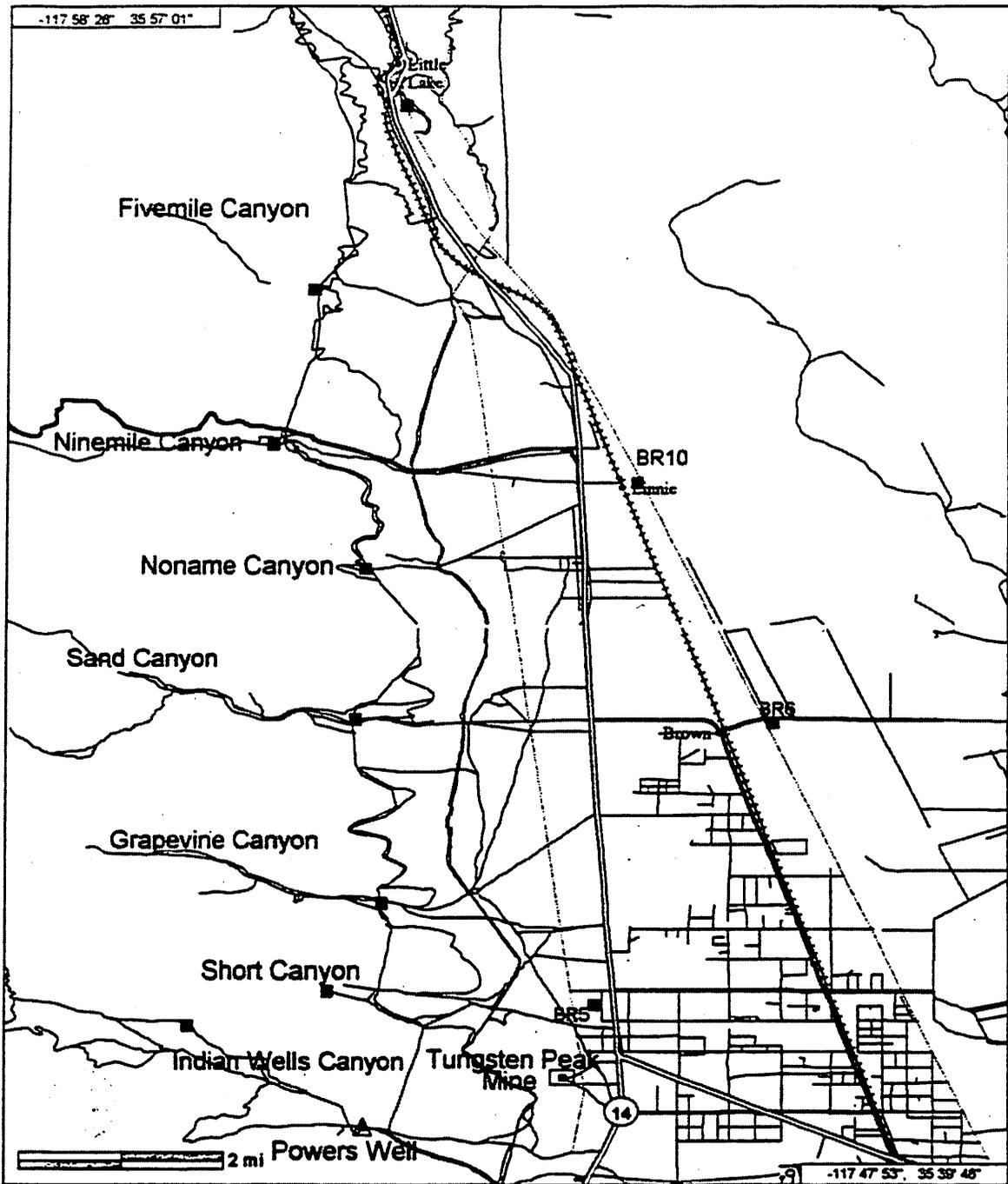
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- Sample Location
- ▲ Well (No Sample)



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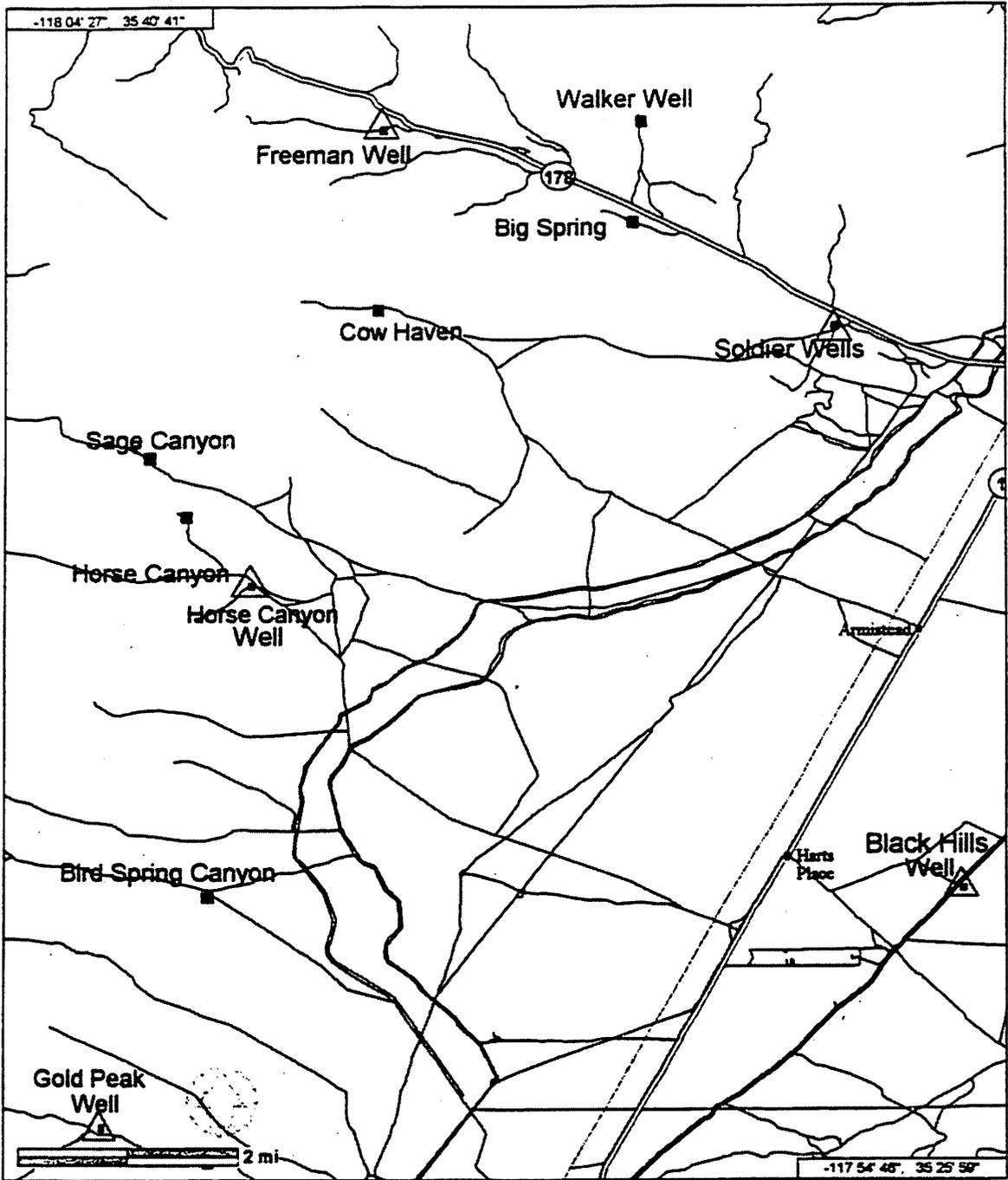
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TITLE:  
**Figure 3. Sample Locations - Northwest**

SCALE:  
**See Above**

FILE NO:  
**IWW\_NW.OVR**



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- Sample Location
- ▲ Well (No Sample)



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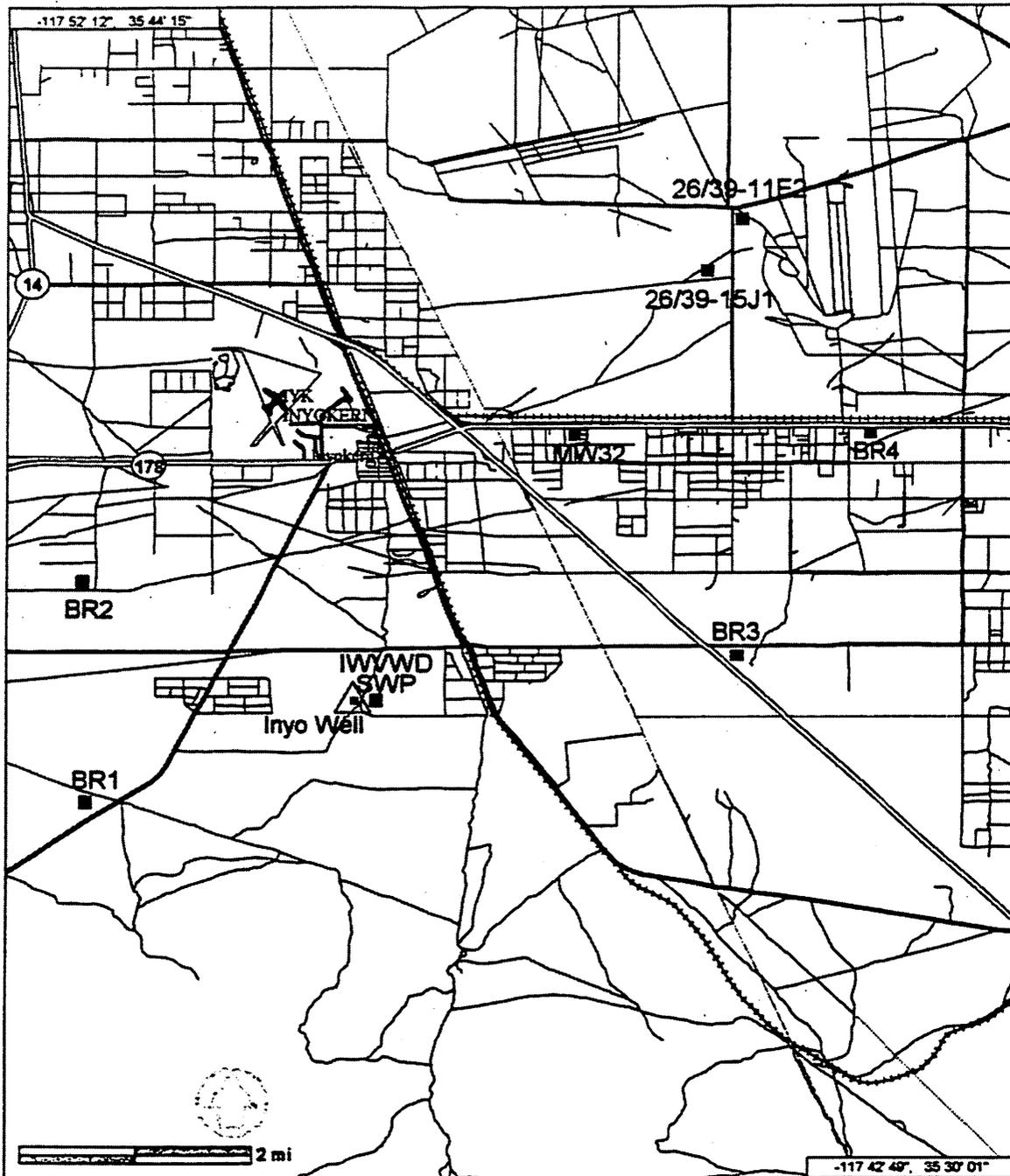
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TITLE:  
**Figure 4. Sample Locations-South Springs**

SCALE:  
**See Above**

FILE NO:  
**IWW\_SPG.OVR**



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- Sample Location
- ▲ Well (No Sample)
- Aquifer Test and Sample Location



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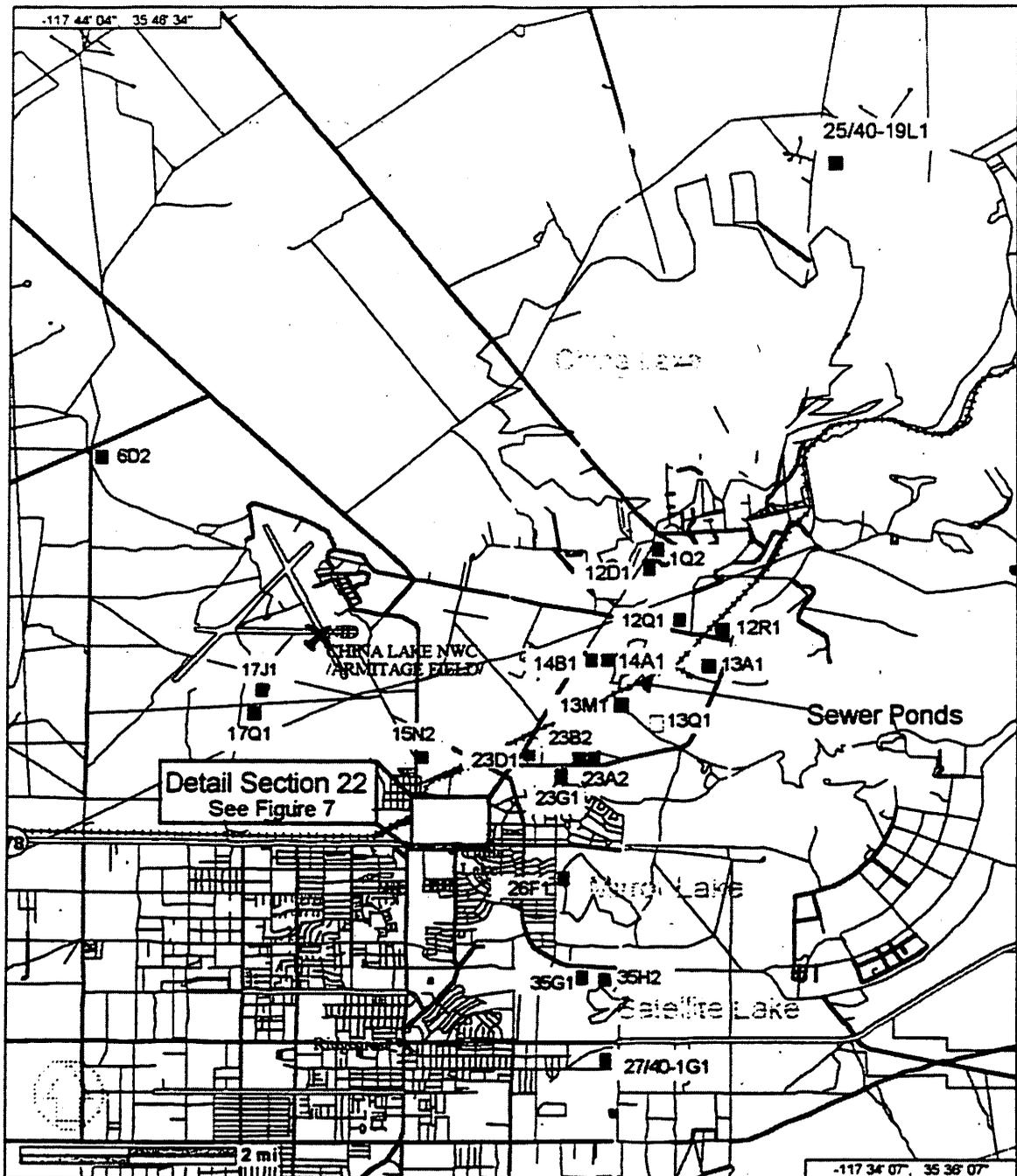
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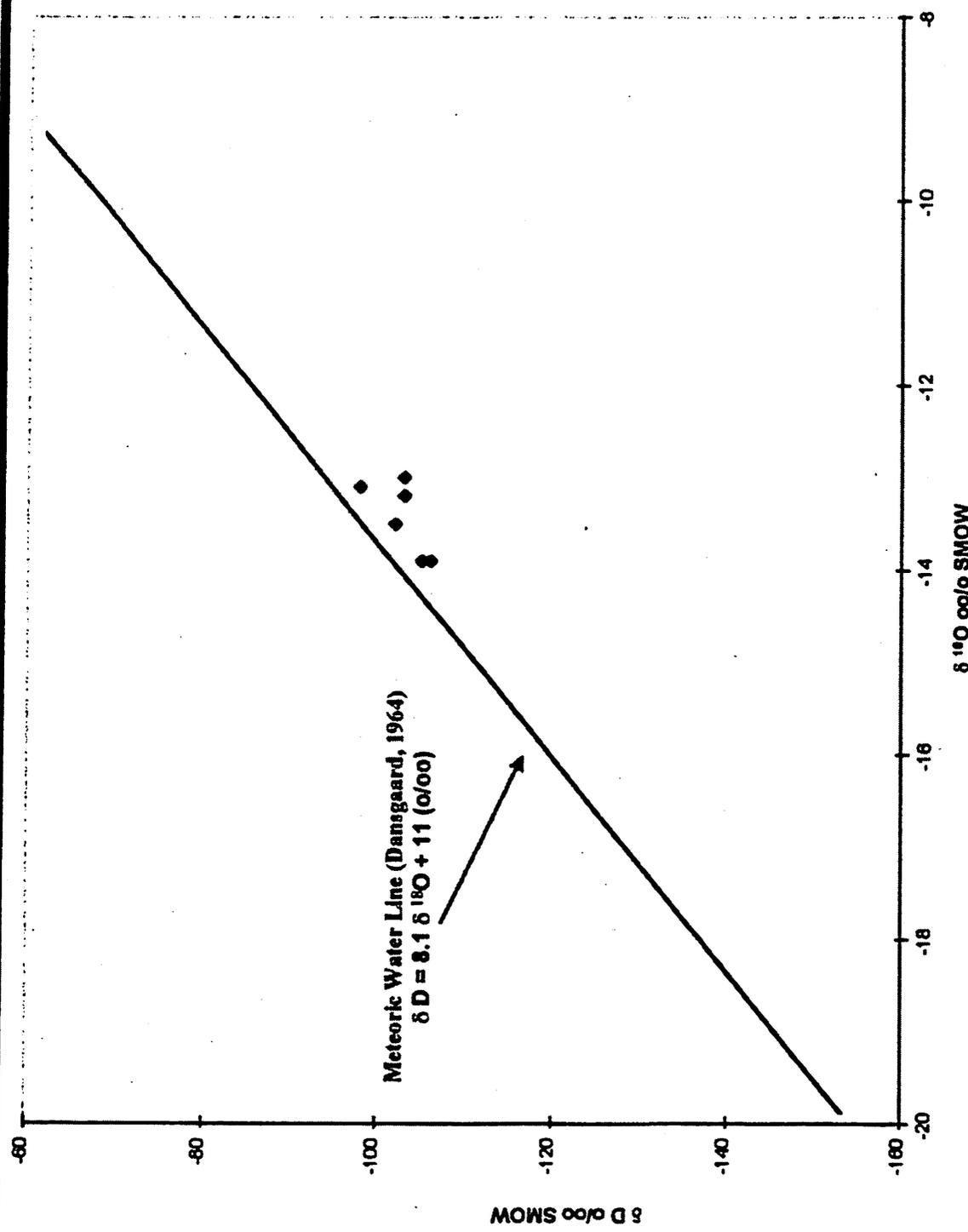


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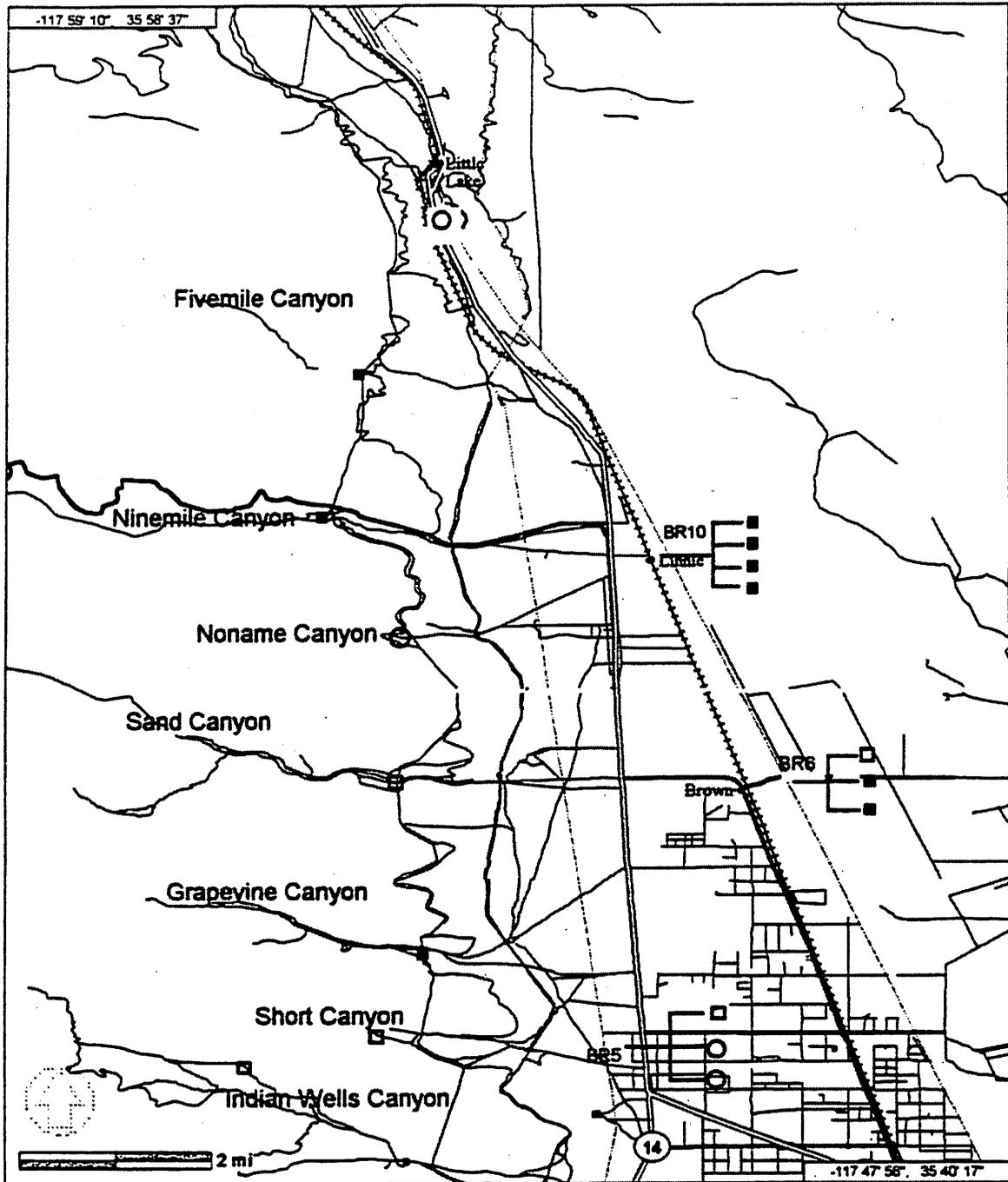
- Sample Location
- Aquifer Test (No Sample)
- Aquifer Test and Sample Location

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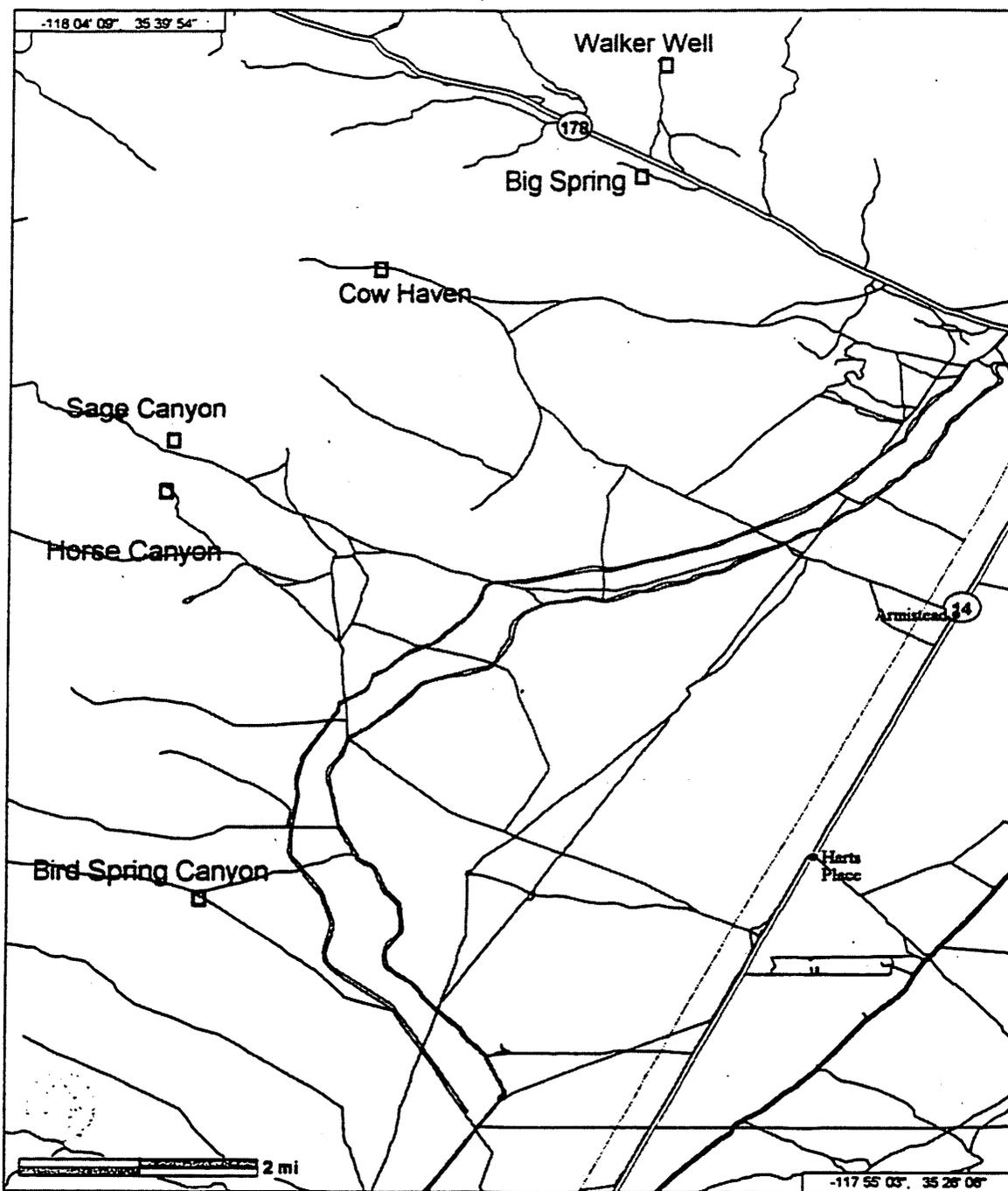
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- TDS: 0-500 mg/l      ○ TDS: 1001-1500 mg/l
- TDS: 501-1000 mg/l

|   |                              |  |  |                            |
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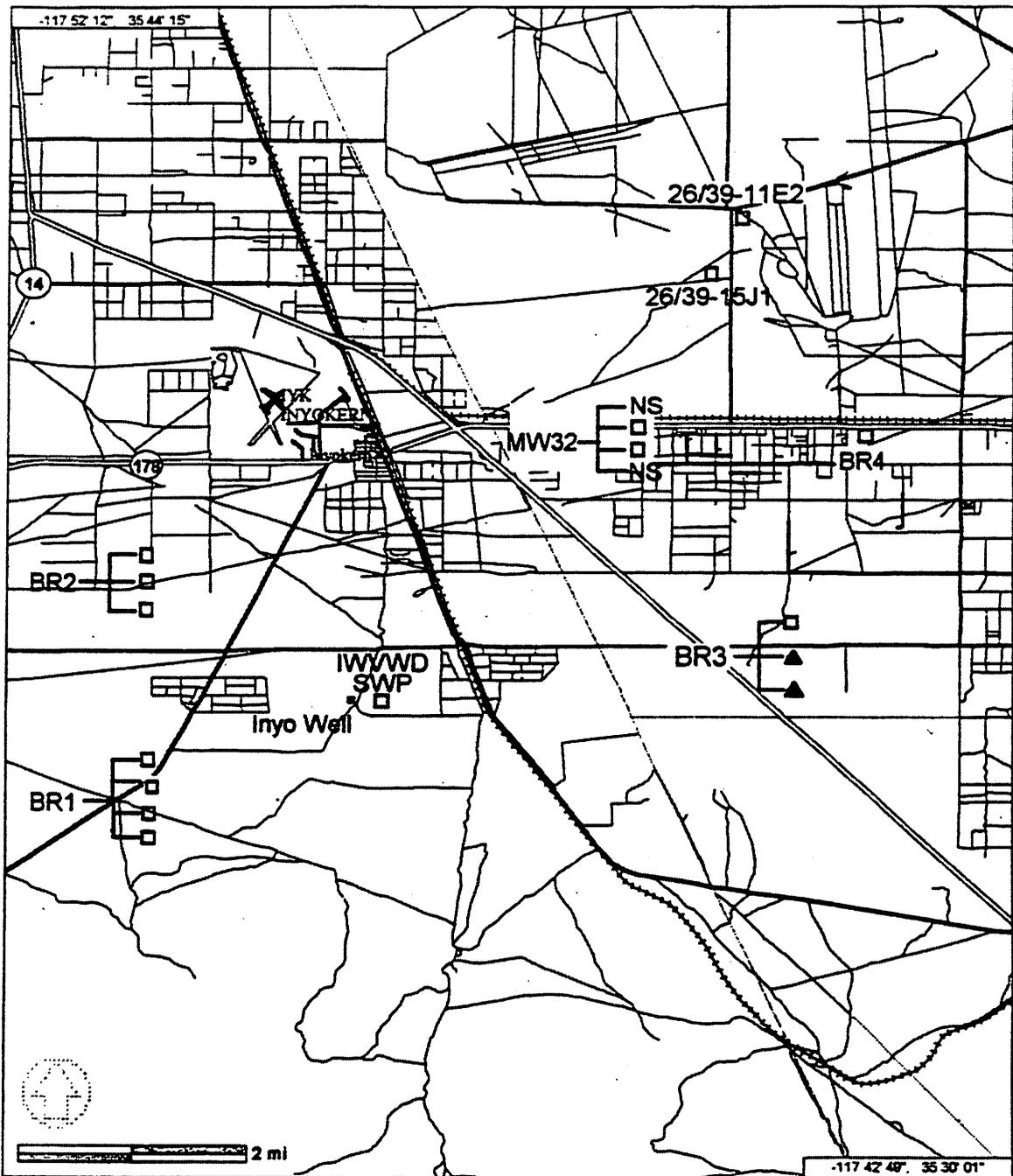
□ TDS: 0-500 mg/l



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- TDS: 0-500 mg/l
- ▲ TDS: > 5001 mg/l



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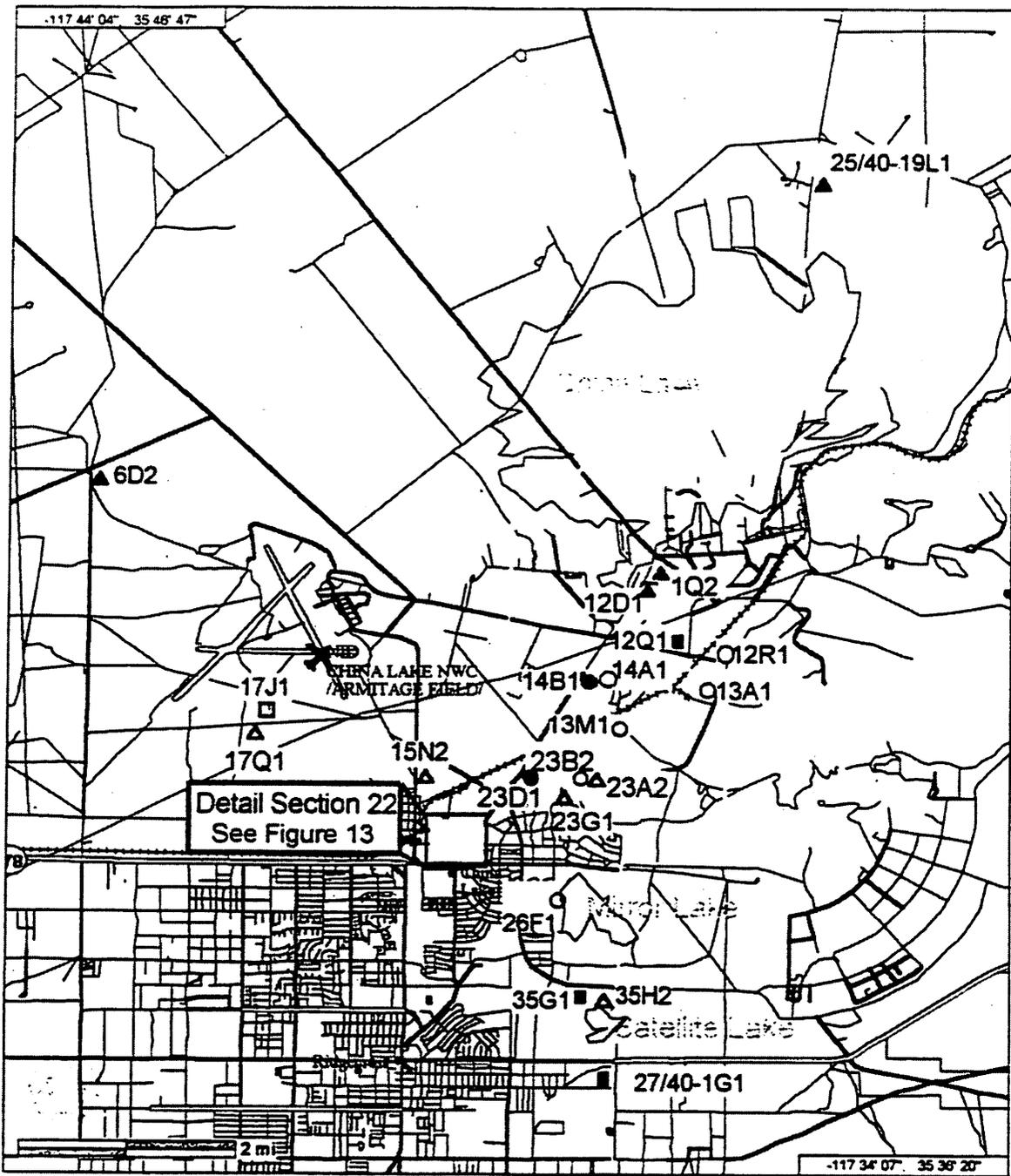
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SCALE:  
**See Above**

FILE NO:  
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- TDS: 0-500 mg/l    ○ TDS: 1001-1500 mg/l    ▲ TDS: 2001-5000 mg/l
- TDS: 501-1000 mg/l    ● TDS: 1501-2000 mg/l    ▲ TDS: > 5001 mg/l



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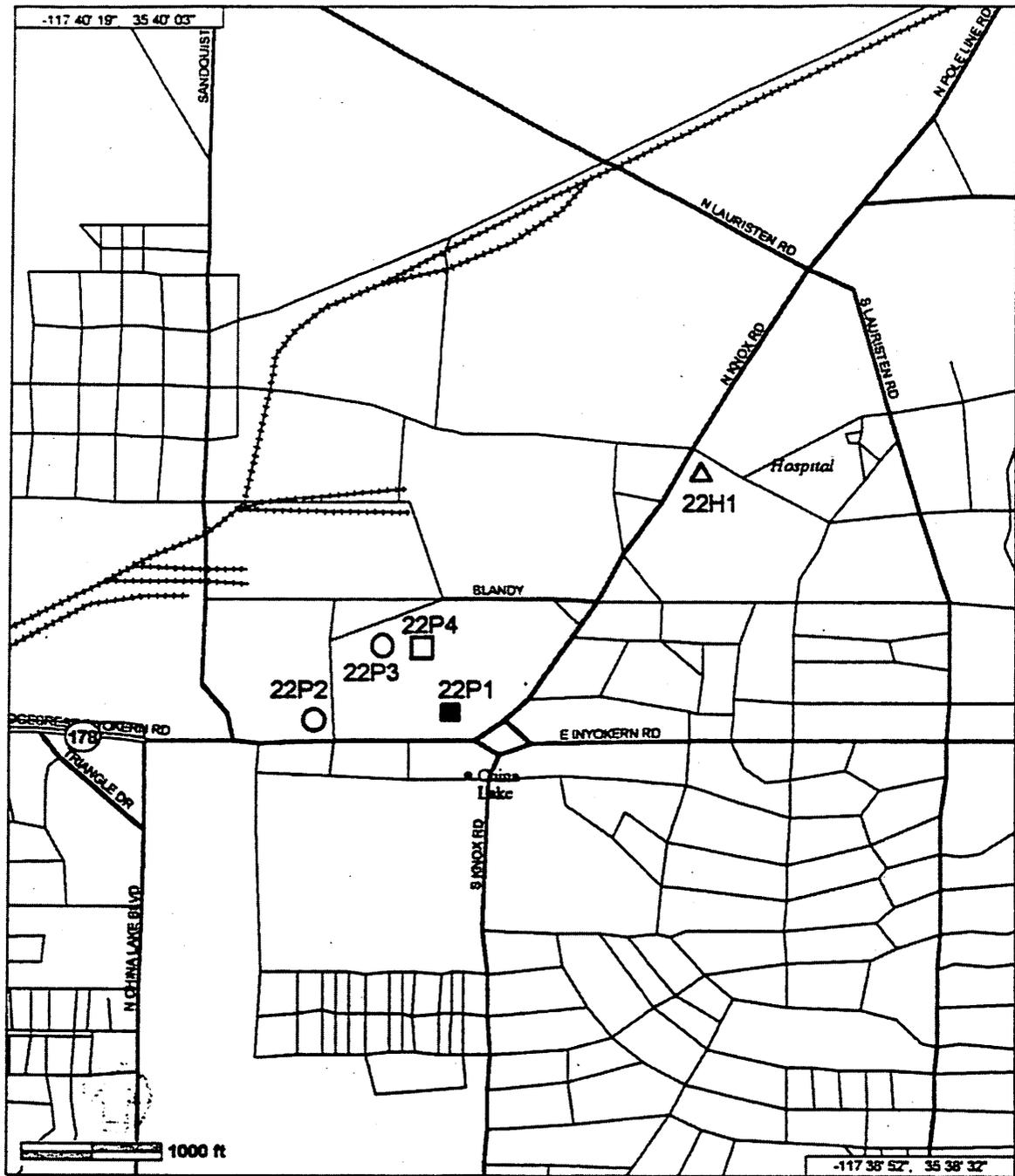
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TITLE:  
**Figure 12. TDS East Samples**

SCALE:  
**See Above**

FILE NO:  
**BASETDS OVR**



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- TDS: 0-500 mg/l      ○ TDS: 1001-1500 mg/l
- TDS: 501-1000 mg/l    ▲ TDS: 2001- 5000 mg/l



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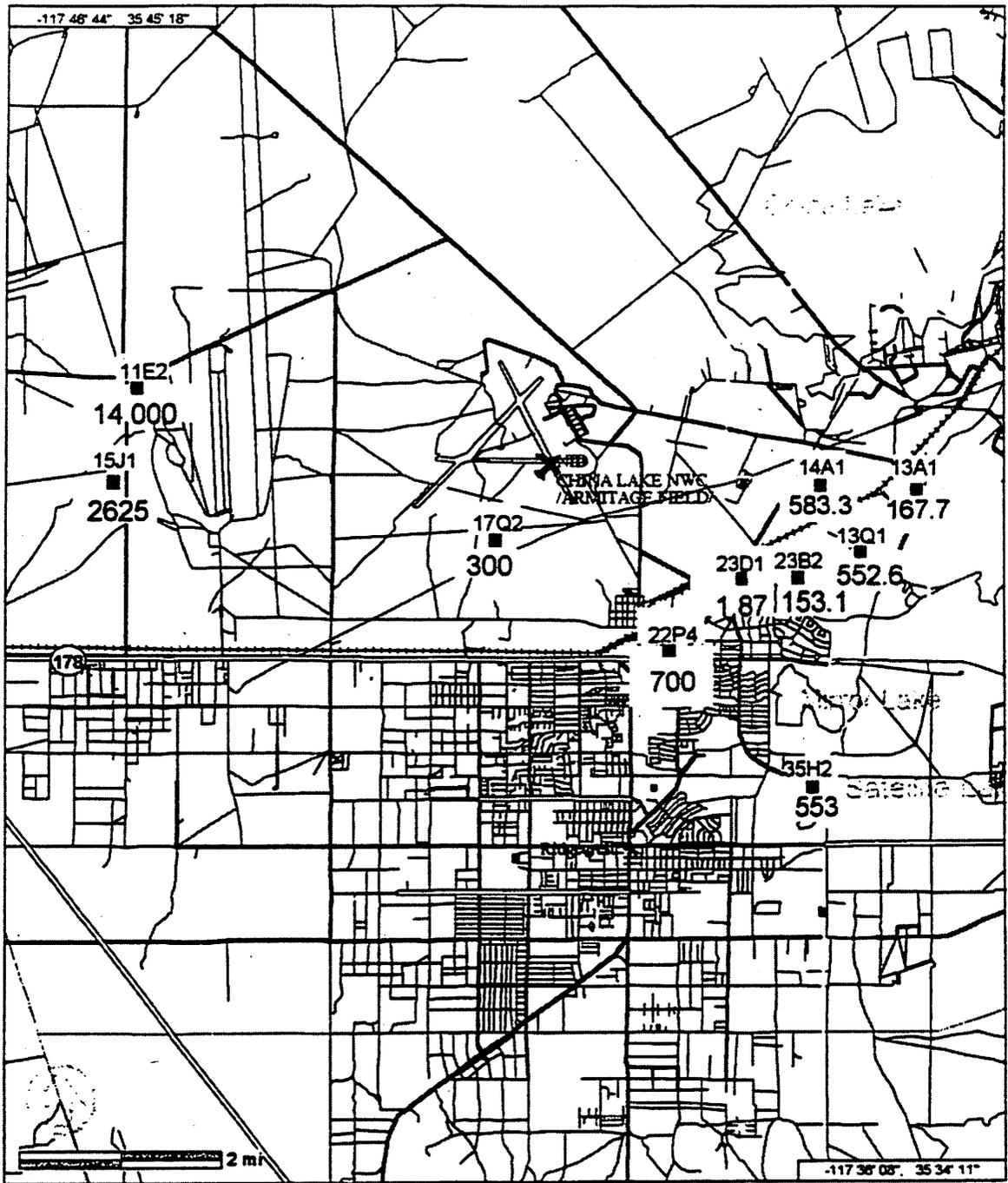
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SCALE:  
**See Above**

FILE NO:  
**22TDS.OVR**



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**22P4 Location of Aquifer Test**



700 T value in ft<sup>2</sup>/day

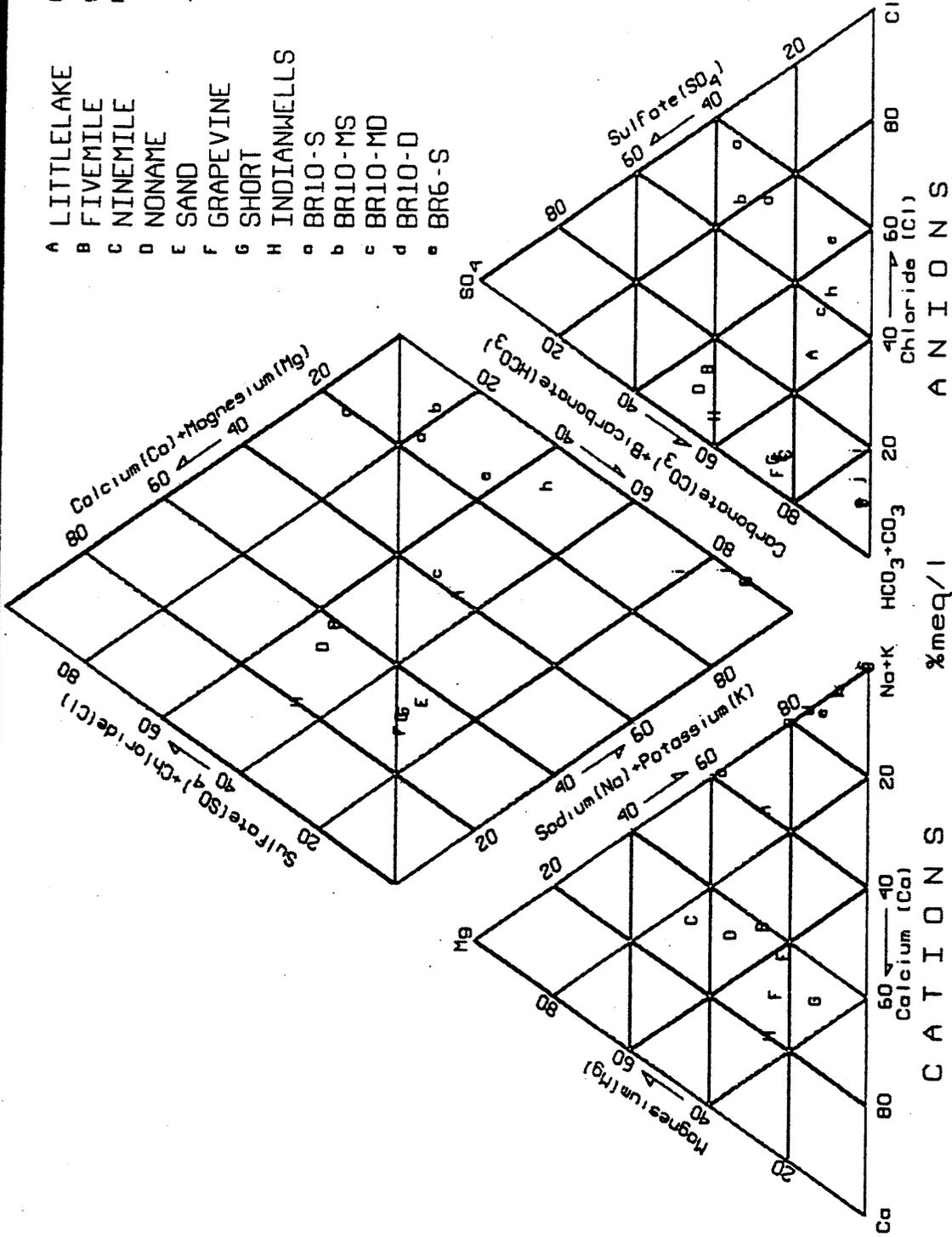


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| PROJECT NO:<br>96-002  | PROJECT NAME:<br>Geohydrologic Investigation,<br>Indian Wells Valley | SCALE:<br>See Above  | FILE NO:<br>PUMPTST.OVR |

- f BR6-M
- g BR6-D
- h BR5-S
- i BR5-M
- j BR5-D

- A LITTLELAKE
- B FIVEMILE
- C NINEMILE
- D NONAME
- E SAND
- F GRAPEVINE
- G SHORT
- H INDIANWELLS
- a BR10-S
- b BR10-MS
- c BR10-MD
- d BR10-D
- e BR6-S

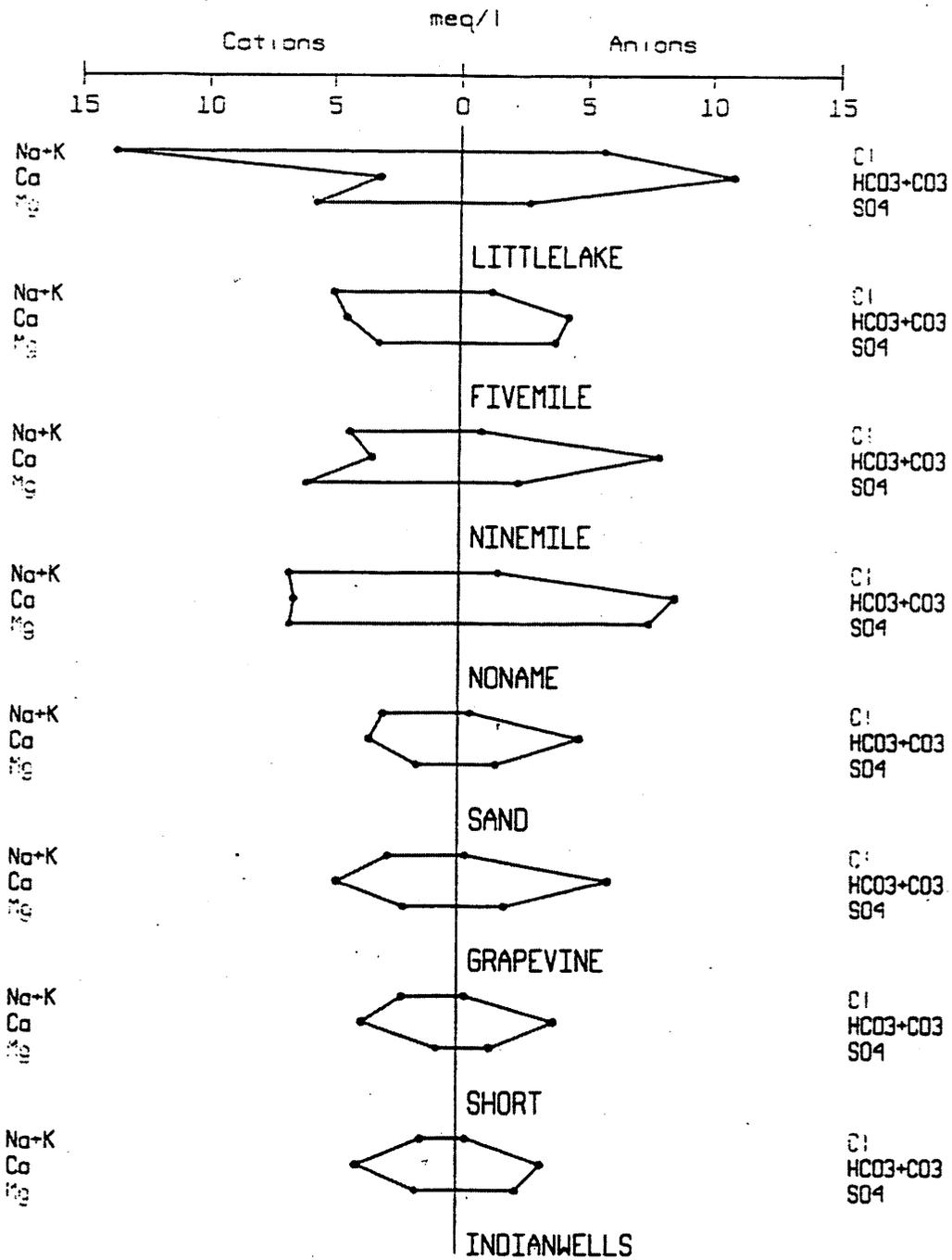


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TITLE: Figure 15. Piper Diagram for Northwest Samples  
 PROJECT NAME: Geohydrologic Investigation, Indian Wells Valley  
 SCALE: N/A

FILE NO: NW piper.ppt



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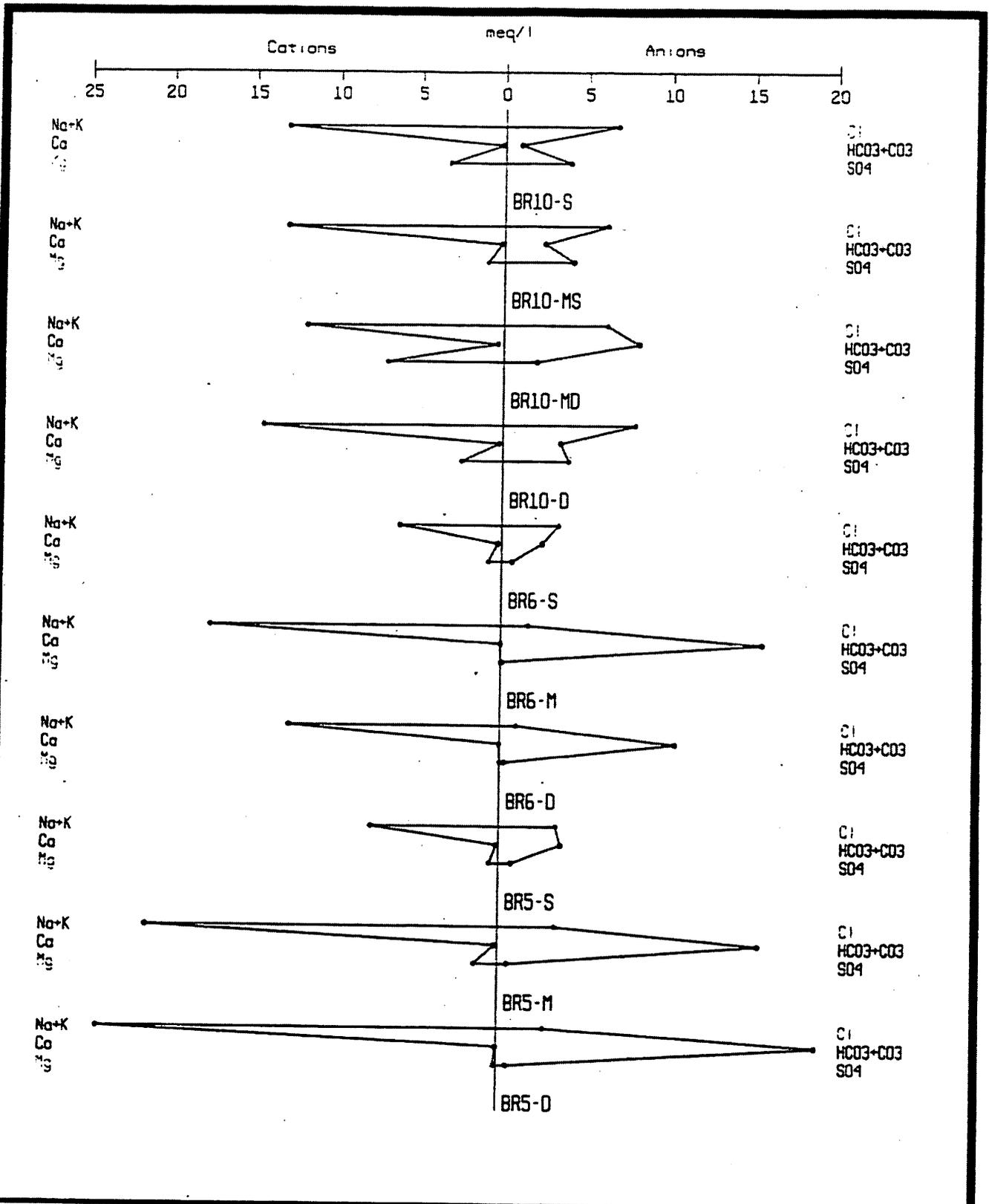
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PROJECT NO:  
 96-002

PROJECT NAME:  
 Geohydrologic investigation,  
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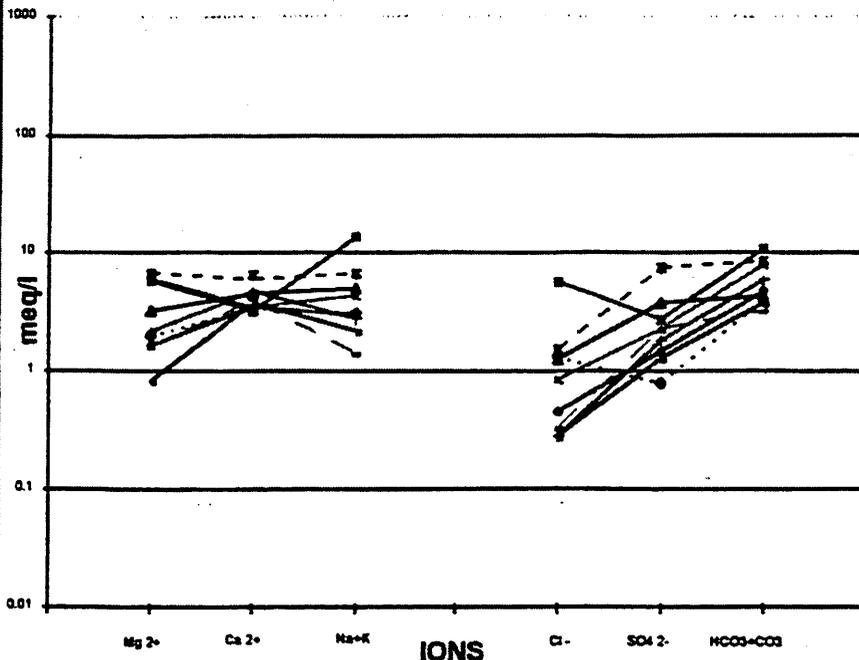
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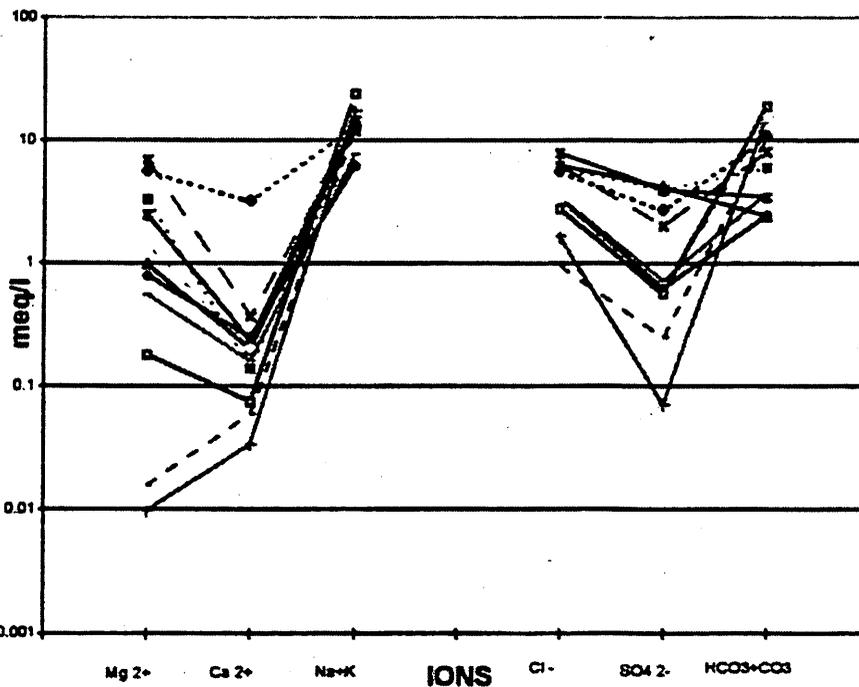
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|   | <b>PROJECT NO:</b><br>98-002 | <b>PROJECT NAME:</b><br>Geohydrologic Investigation, Indian Wells Valley |   | <b>SCALE:</b><br>N/A |

NORTHWEST SURFACE SAMPLES



- ◆ HAIWEE-96 Ca-HCO3
- LITTLE LKOUT-96 Na-HCO3
- ▲ FIVEMILE-96 Na-HCO3
- × NINEMILE-96 Mg-HCO3+CO3
- \* NONAME-96 Mg/Na/Ca-HCO3
- SAND-96 Ca-HCO3
- + GRAPEVINE-96 Ca-HCO3
- SHORT-96 Ca-HCO3
- INDIAN WELLS-96 Ca-HCO3

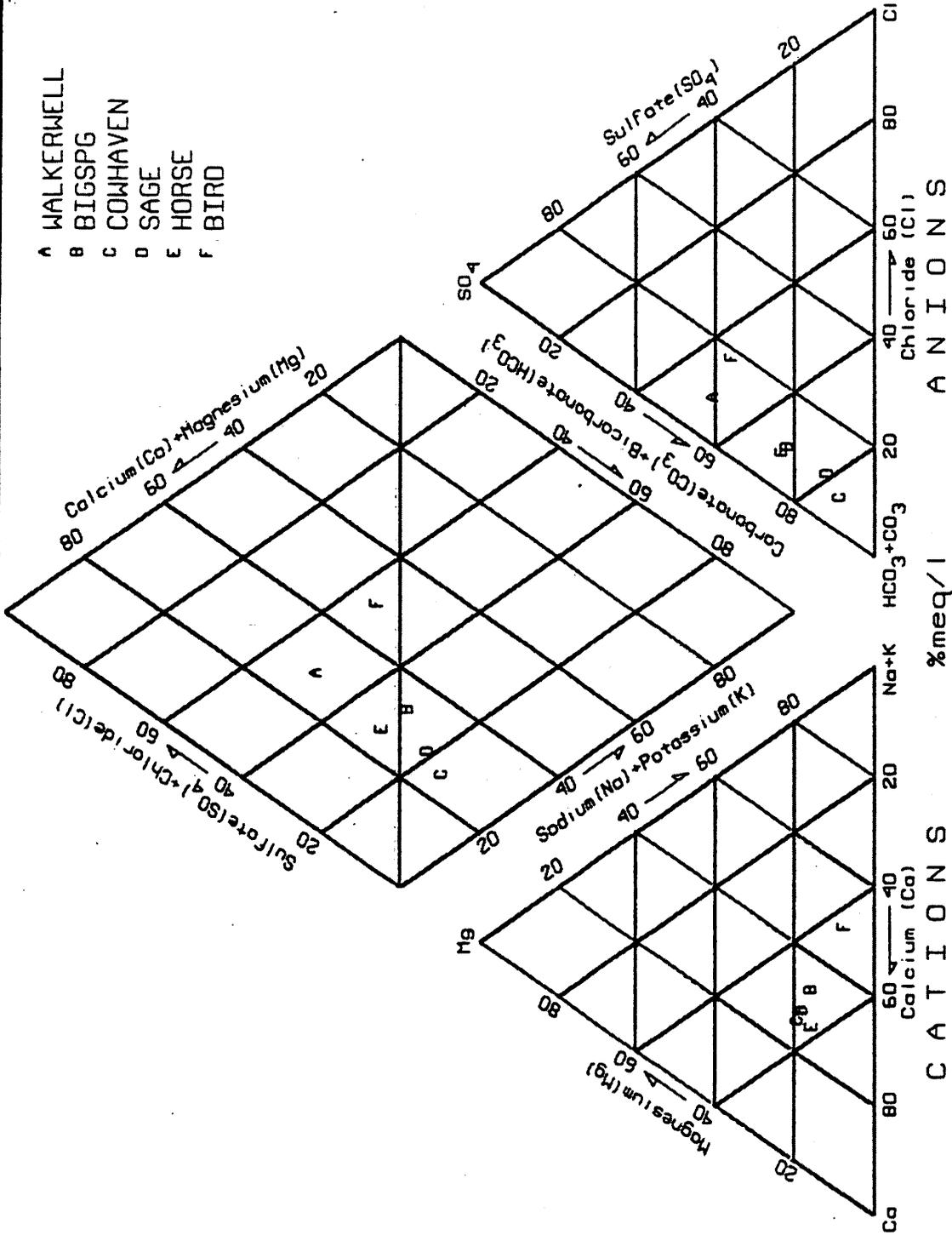
NORTHWEST-BUREAU OF RECLAMATION & LITTLE LAKE



- ◆ LITTLE LKOUT-96 Na-HCO3
- BR10-S Na-HCO3+CO3/Cl
- ▲ BR10-MS Na-Cl
- × BR10-MD Na-HCO3+CO3
- \* BR10-D Na-Cl
- BR6-S Na-Cl
- + BR6-M Na-HCO3+CO3
- BR6-D Na-HCO3+CO3
- BR5-S Na-HCO3+CO3/Cl
- ... BR5-M Na-HCO3+CO3
- BR5-D Na-HCO3+CO3

|  |                       |  |   |                     |
|--|-----------------------|--|---|---------------------|
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|  | PROJECT NO:<br>96-002 | PROJECT NAME:<br>Geohydrologic Investigation,<br>Indian Wells Valley |   | SCALE:<br>See Above |

- A WALKERWELL
- B BIGSPG
- C COWHAVEN
- D SAGE
- E HORSE
- F BIRD

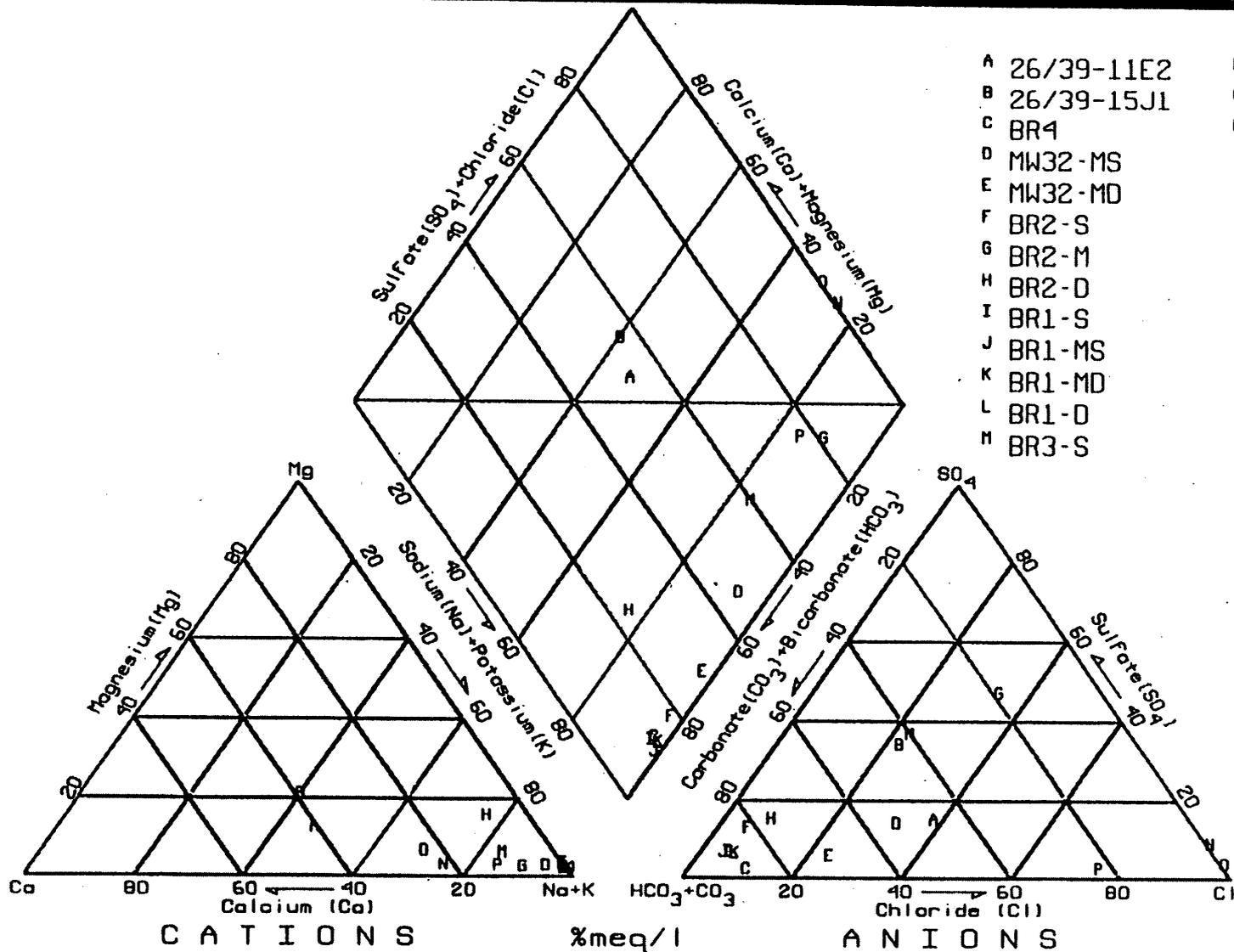


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TITLE: Figure 19. Piper Diagram for South Springs Samples  
 SCALE: N/A  
 FILE NO: South spg  
 piper.ppt



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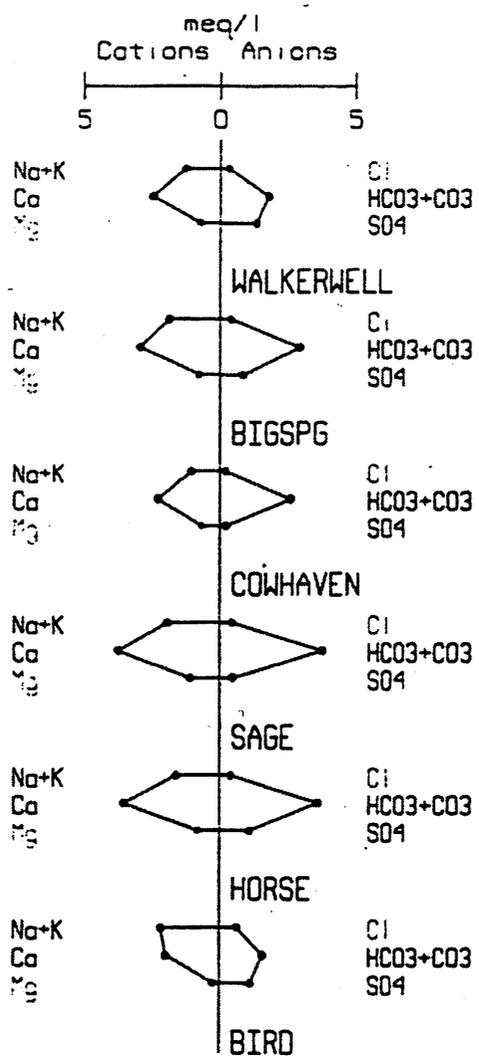
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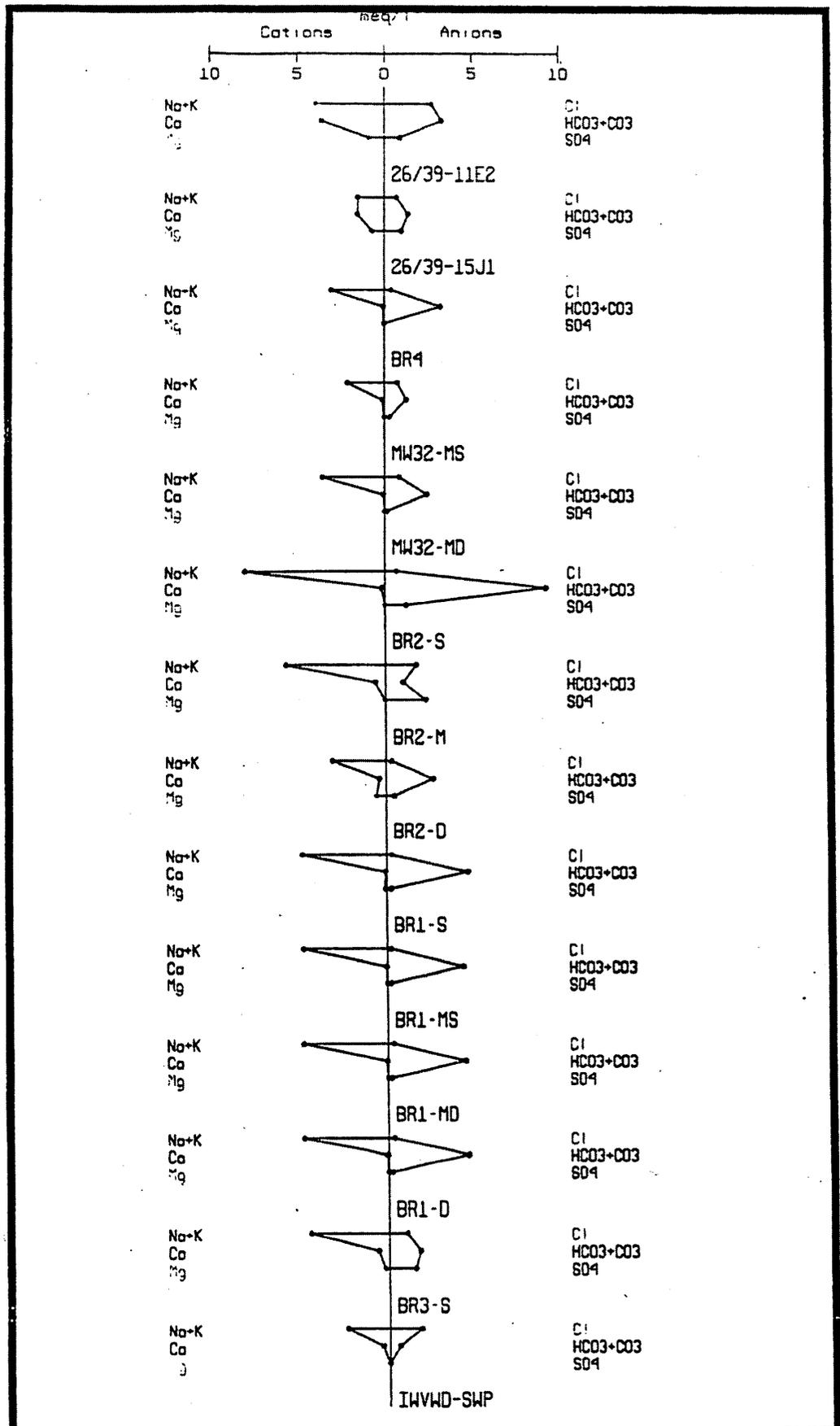
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SCALE:  
 N/A

FILE NO:  
 SW piper.ppt



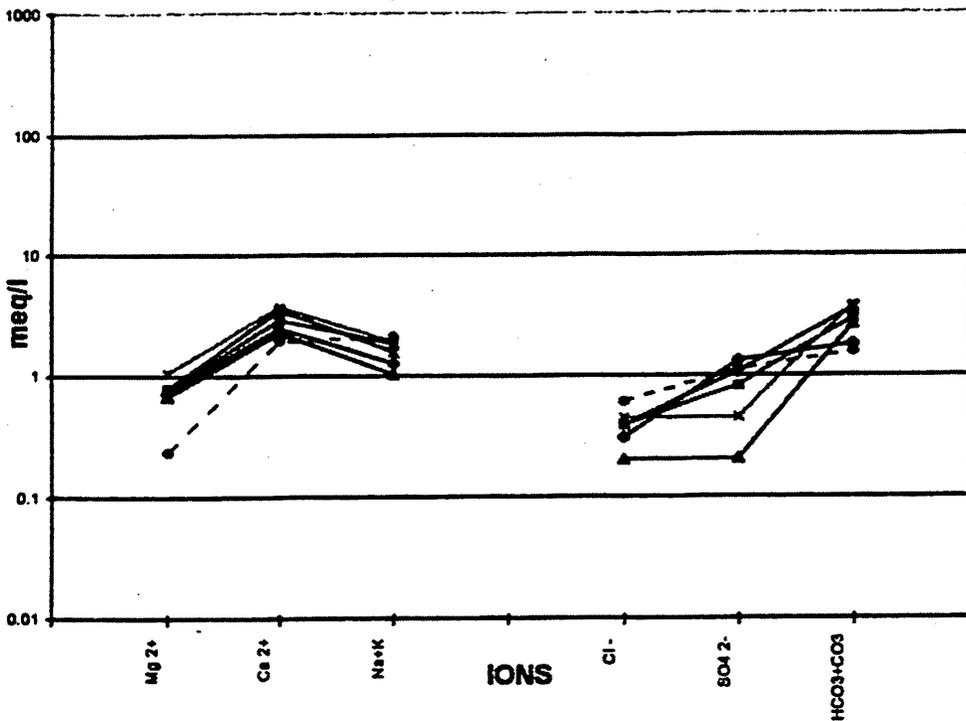
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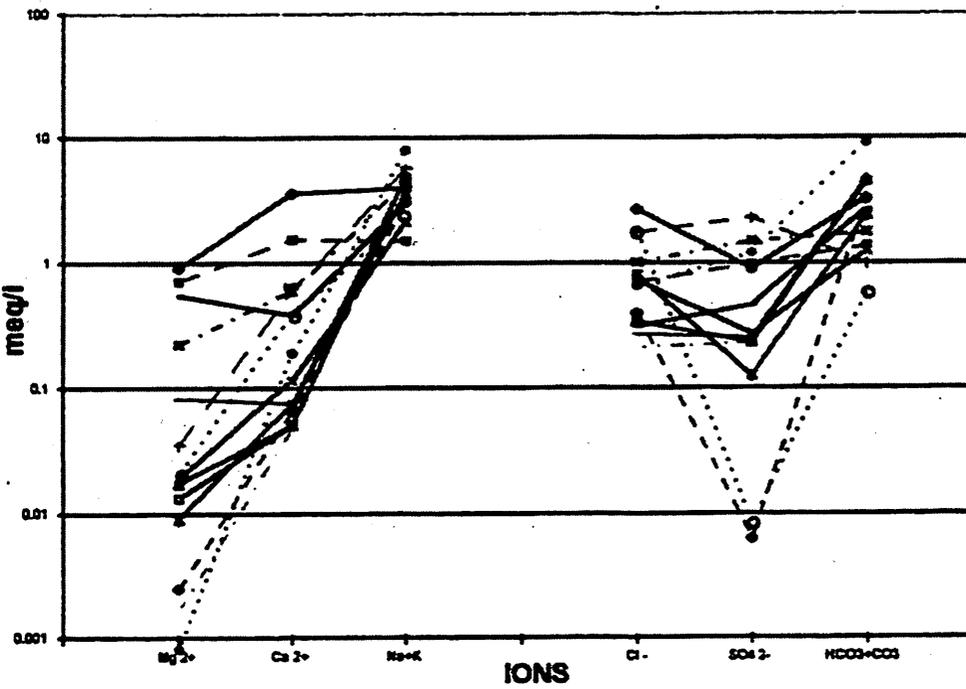
|                       |  |   |                              |
|-----------------------|--|---|------------------------------|
| BY:<br>Houghton       | DATE:<br>11-13-98  | TITLE:<br><b>Figure 22. Stiff Diagram for<br/>Southwest Samples</b> |                              |
| PROJECT NO:<br>98-002 | PROJECT NAME:<br>Geohydrologic Investigation,<br>Indian Wells Valley | SCALE:  | FILE NO:<br>SW_Stiff.<br>ppt |

**SOUTH SPRINGS**

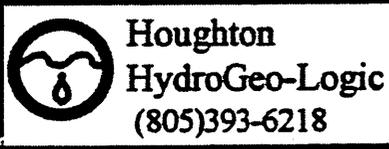


- ◆ WALKER WELL Ca-HCO<sub>3</sub>
- BIG SPRING Ca-HCO<sub>3</sub>
- ▲ COW HEAVEN Ca-HCO<sub>3</sub>
- × SAGE-96 Ca-HCO<sub>3</sub>
- ✱ HORSE-96 Ca-HCO<sub>3</sub>
- BIRD Na-HCO<sub>3</sub>

**SOUTHWEST WELL SAMPLES**



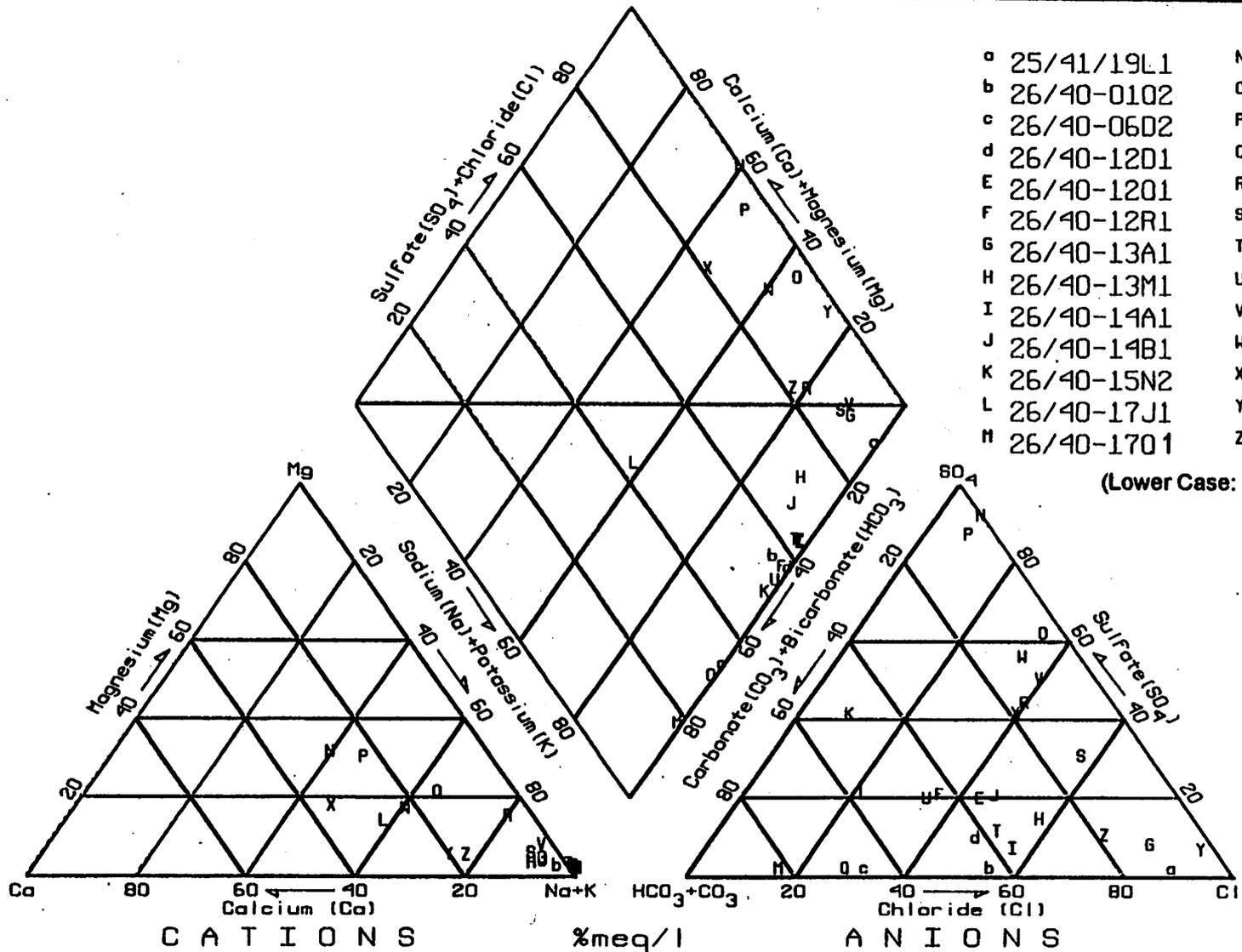
- ◆ 2639-11E2 Na/Ca-HCO<sub>3</sub>
- 2639-15J1 Ca/Na-HCO<sub>3</sub>
- BR4 Na-HCO<sub>3</sub>+CO<sub>3</sub>
- × MW32-MS Na-HCO<sub>3</sub>+CO<sub>3</sub>
- ✱ MW32-MD Na-HCO<sub>3</sub>+CO<sub>3</sub>
- BR2-S Na-HCO<sub>3</sub>+CO<sub>3</sub>
- ✱ BR2-M Na-SO<sub>4</sub>
- BR2-D Na-HCO<sub>3</sub>+CO<sub>3</sub>
- ✱ BR1-S Na-HCO<sub>3</sub>+CO<sub>3</sub>
- BR1-MS Na-HCO<sub>3</sub>+CO<sub>3</sub>
- BR1-MD Na-HCO<sub>3</sub>+CO<sub>3</sub>
- ▲ BR1-D Na-HCO<sub>3</sub>+CO<sub>3</sub>
- × BR3-S Na-HCO<sub>3</sub>/SO<sub>4</sub>
- WVVWD-SWP Na-Cl



BY:  
**HOUGHTON**  
PROJECT NO:  
**96-002**

DATE:  
**11-13-96**  
PROJECT NAME:  
**Geohydrologic investigation,  
Indian Wells Valley**

TITLE: **Figure 23. Fingerprint Diagram for Southwest Samples**  
SCALE:  
**N/A**  
FILE NO:  
**SW Fingerprint.pdf**



- a 25/41/19L1
- b 26/40-0102
- c 26/40-0602
- d 26/40-1201
- e 26/40-1201
- f 26/40-12R1
- g 26/40-13A1
- h 26/40-13M1
- i 26/40-14A1
- j 26/40-14B1
- k 26/40-15N2
- l 26/40-17J1
- m 26/40-1701
- n 26/40-22H1
- o 26/40-22P1
- p 26/40-22P2
- q 26/40-22P3
- r 26/40-22P4
- s 26/40-23A2
- t 26/40-23B2
- u 26/40-23D1
- v 26/40-23G1
- w 26/40-26F1
- x 26/40-35G1
- y 26/40-35H2
- z 27/40-01G1



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 98-002

DATE:  
 11-13-96  
 PROJECT NAME:  
 Geohydrologic Investigation, Indian Wells Valley

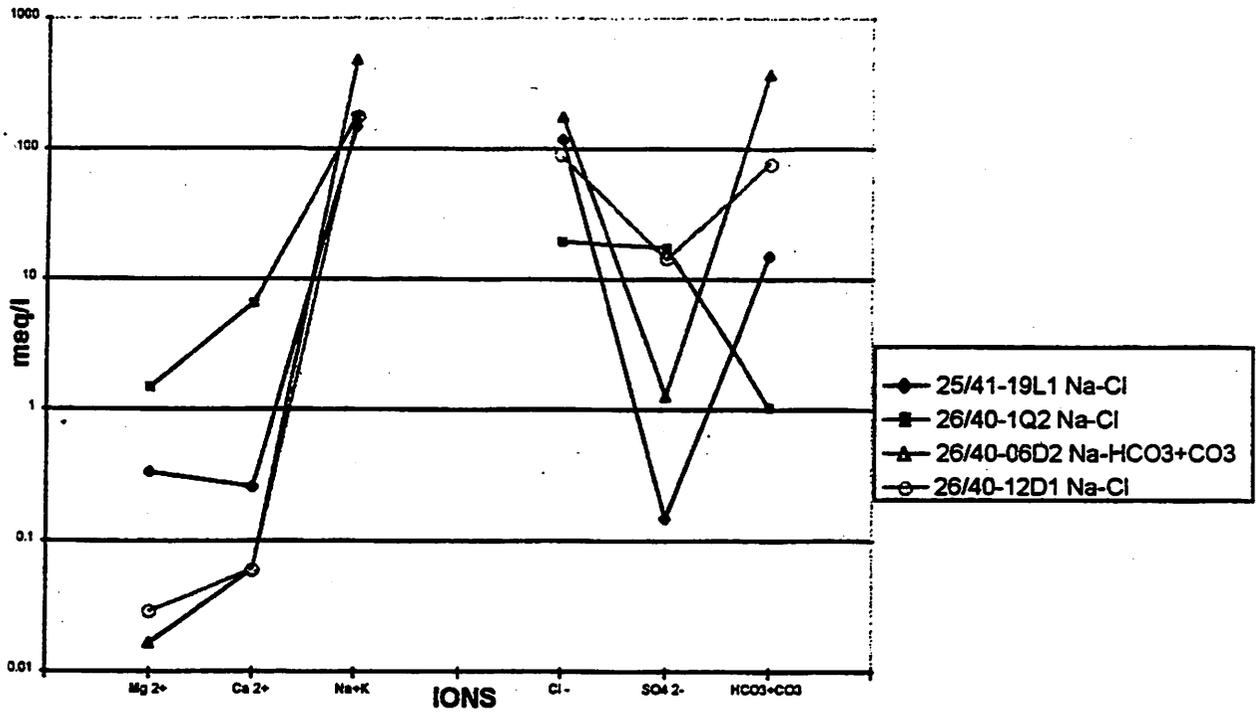
TITLE:  
 Figure 24. Piper Diagram for East Samples

SCALE:  
 N/A

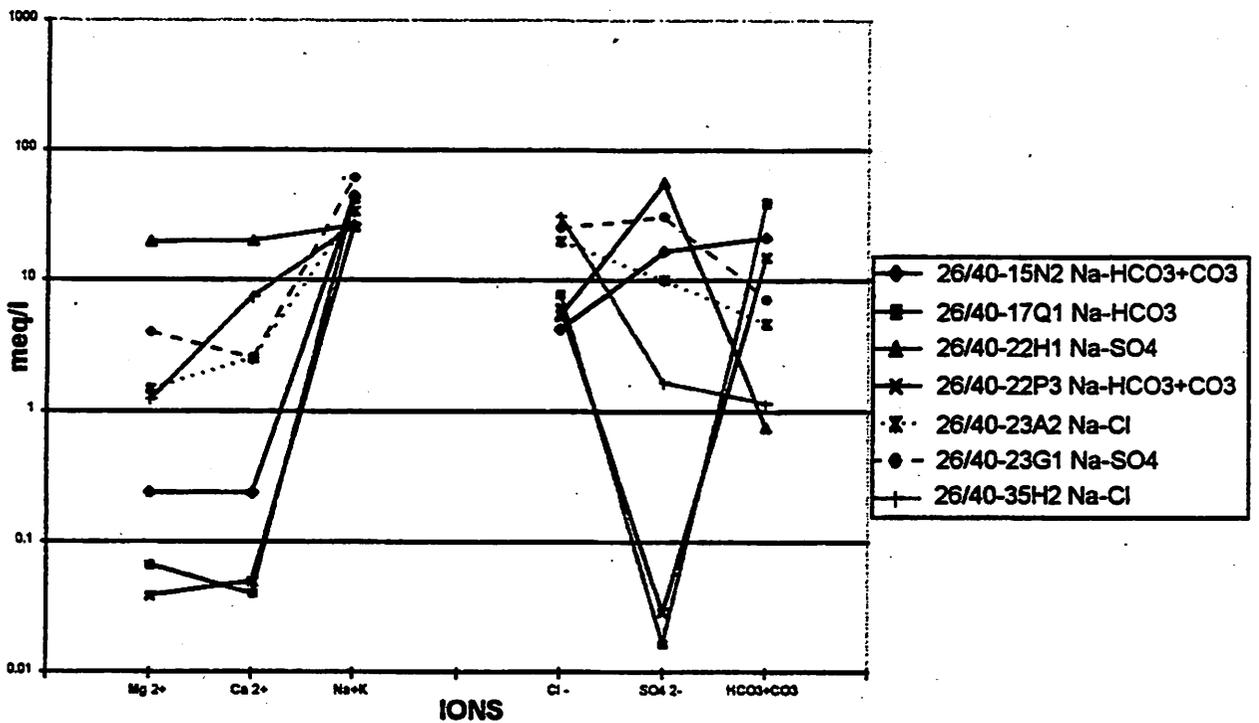
FILE NO:  
 east piper.ppt



EAST SAMPLES - TDS >10,000 mg/l



EAST SAMPLES - TDS >2001 mg/l



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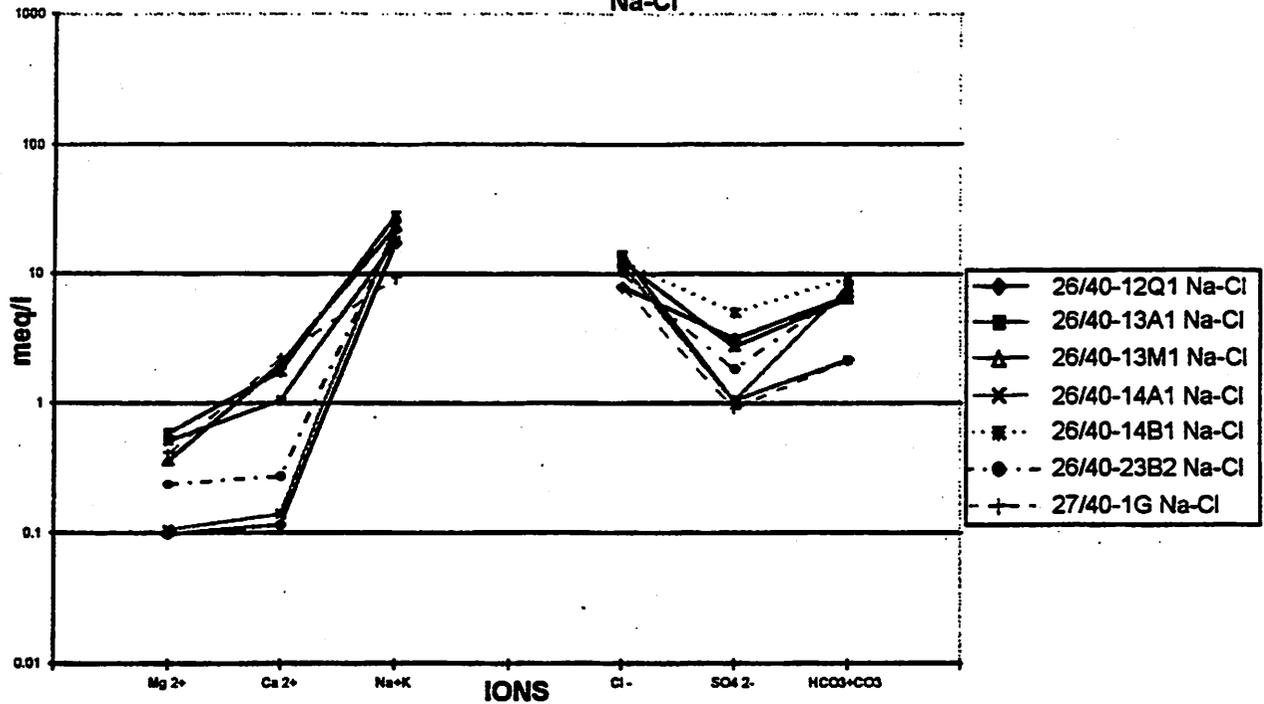
DATE:  
11-13-96  
PROJECT NAME:  
Geohydrologic investigation,  
Indian Wells Valley

TITLE: Figure 26. Fingerprint Diagram for  
East Samples - TDS > 2001 mg/l

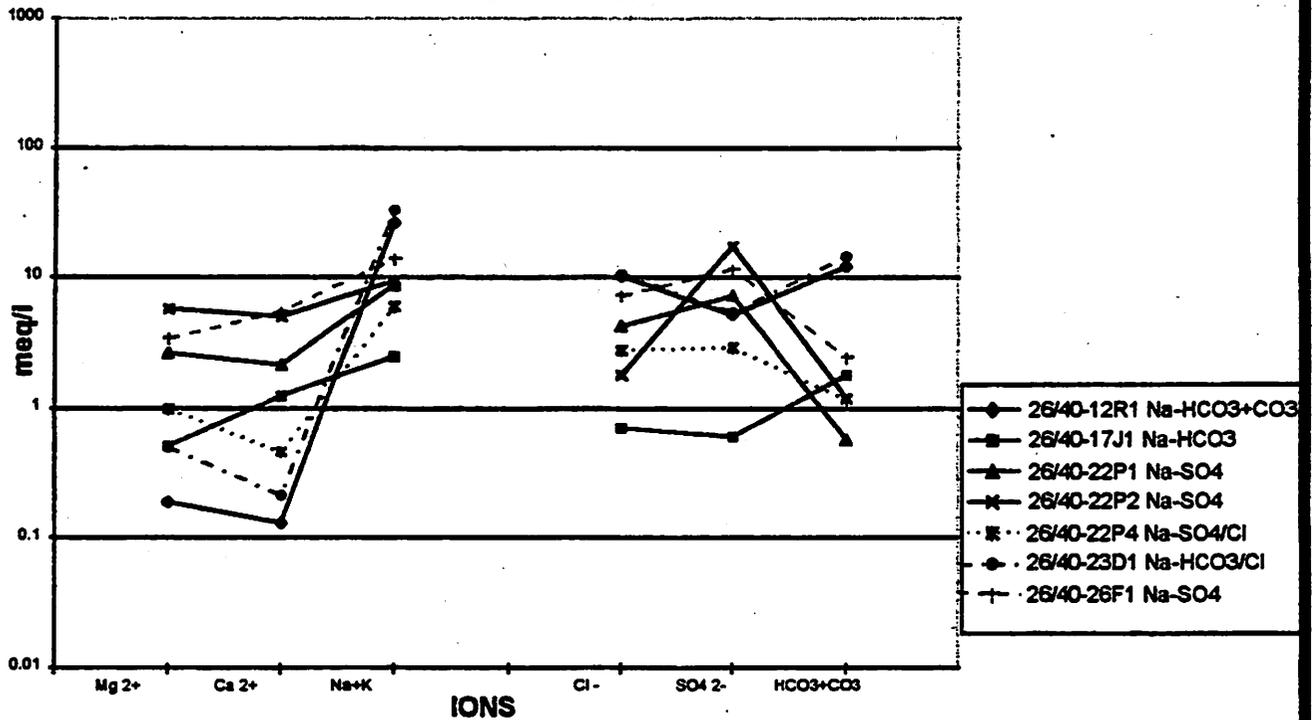
SCALE:  
N/A

FILE NO:  
E. Fingerprint  
hi TDS.ppt

EAST SAMPLES - TDS < 2000 mg/l  
Na-Cl



EAST SAMPLES - TDS < 2000 mg/l  
(Na-HCO<sub>3</sub> & Na-SO<sub>4</sub>)



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PROJECT NO:  
96-002

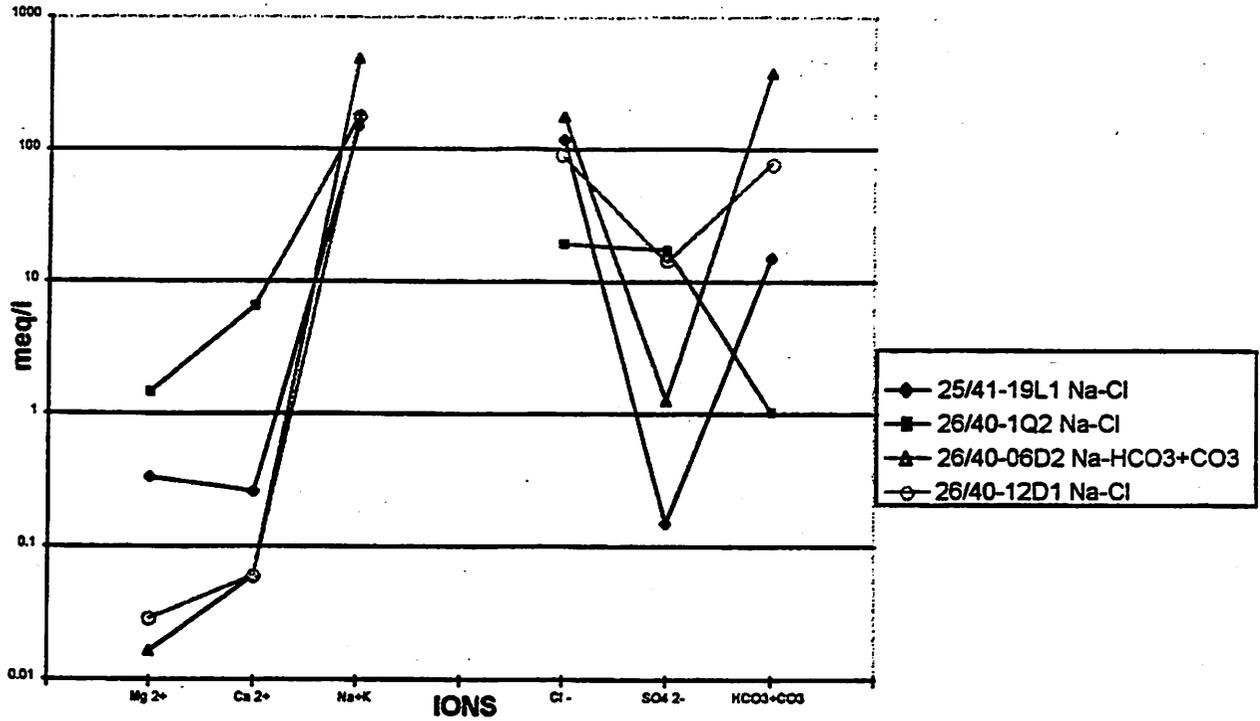
DATE:  
11-13-96  
PROJECT NAME:  
Geohydrologic Investigation,  
Indian Wells Valley

TITLE: Figure 27. Fingerprint Diagram for  
East Samples - TDS < 2000 mg/l

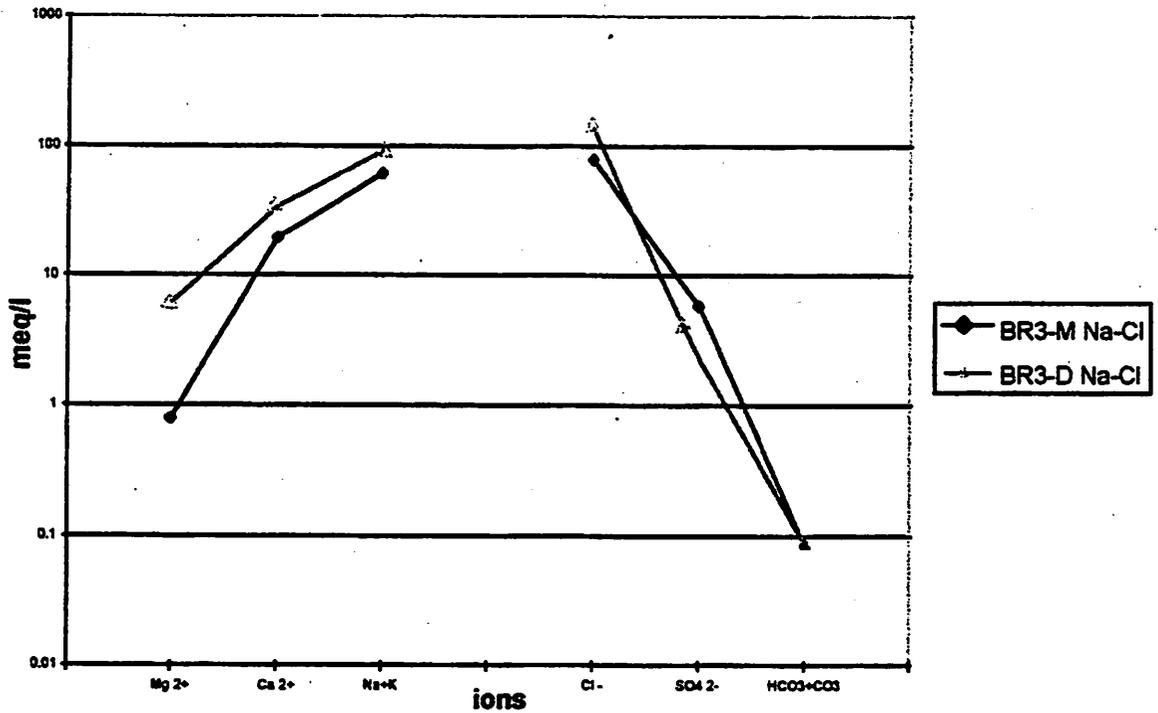
SCALE:  
N/A

FILE NO:  
E. Fingerprint  
ppt

EAST SAMPLES - TDS >10,000 mg/l



BR 3 - Medium & Deep



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BY:  
HOUGHTON  
PROJECT NO:  
96-002

DATE:  
11-13-96  
PROJECT NAME:  
Geohydrologic Investigation,  
Indian Wells Valley

TITLE: Figure 28. Fingerprint Diagram for East  
Samples - TDS > 10,001 mg/l and  
BR 3-Medium and Deep

SCALE:  
N/A

FILE NO:  
BR 3 and Hi  
TDS FP.ppt

**APPENDIX A**  
**LABORATORY RESULTS**



TABLE A1. FIELD DATA INDIAN WELLS VALLEY STUDY - 1996

| SAMPLE NO         | DATE    | TIME | WL (ft) | TDS (mg/l) | TEMP (°C) | PURGED (Y/N) | COMMENTS                       |
|-------------------|---------|------|---------|------------|-----------|--------------|--------------------------------|
| BIRD-96           | 5/22/96 | 945  | S       | 193        | 16.60     |              | NEAR CATTLE WATERING AREA      |
| HORSE-96          | 5/22/96 | 1200 | 6-8     | 630        | 16.40     |              | DUG WELL NEAR SPRING           |
| SAGE-96           | 5/22/96 | 1300 | S       | 198        | 19.70     |              | POND                           |
| COW HEAVEN-96     | 5/22/96 | 1356 | S       | 191        | 22.20     |              | HOSE                           |
| BIG SPG-96        | 5/22/96 | 1441 | S       | 232        | 19.60     |              | TROUGH                         |
| WALKER-96         | 5/23/96 | 900  | S       | 232        | 18.70     |              | WINDMILL PUMP                  |
| IND. WLS-96       | 5/23/96 | 944  | S       | 105        | 15.20     |              | FROM SPRING                    |
| SHORT-96          | 5/23/96 | 1030 | S       | 279        | 17.80     |              | FROM BASE OF CREEK             |
| GRAPEVINE-96      | 5/23/96 | 1100 | S       | 444        | 18.60     |              | FROM CREEK                     |
| SAND-96           | 5/23/96 | 1120 | S       | 758        | 18.00     |              | FROM CREEK                     |
| NONAME-96         | 5/23/96 | 1200 | S       | 575        | N/A       |              | FROM CAVE                      |
| NINEMILE-96       | 5/23/96 | 1330 | S       | 540        | 21.00     |              | FROM CREEK                     |
| FIVEMILE-96       | 5/23/96 | 1415 | S       | 496        | 17.50     |              | LARGE WATERSHED DEEPEST CANYON |
| LITTLE LK. OUT-96 | 5/23/96 | 1500 | S       | 1010       | 19.00     |              | FROM STREAM                    |
| 26/40-01Q2        | 5/24/96 | 1100 | 7.90    | N/A        | N/A       | N            | RED/BROWN COLOR                |
| 26/40-12 D1       | 5/24/96 | 1100 | 4.40    | 2020       | 21.30     | Y            | GREEN/BLACK TURBIDITY          |
| 26/40-12 Q1       | 5/24/96 | 1045 | 3.60    | 1170       | 22.80     | Y            | SLIGHTLY TURBID                |
| 26/41-12 R1       | 5/24/96 | 1035 | 3.60    | 1560       | 27.00     | Y            | SLIGHTLY TURBID                |
| 26/40-13 M1       | 5/24/96 | 1000 | 13.70   | 1340       | 20.10     | Y            | CLEAR TO LT. BRN COLOR         |
| 26/40-14 B1       | 5/24/96 | 1120 | 4.25    | 1560       | 17.70     | Y            | CLEAR                          |
| 26/40-22 H1       | 5/24/96 | 940  | 25.20   | 2480       | 24.20     | Y            | CLEAR                          |
| 26/40-26 F1       | 5/24/96 | 920  | 47.90   | N/A        | N/A       | Y            | CLEAR                          |
| 27/40-01G1        | 5/29/96 | 812  | 135.80  | 680        | 23.00     | N            | 6" PVC; SEABEE                 |



TABLE A1. FIELD DATA INDIAN WELLS VALLEY STUDY - 1996

| SAMPLE NO              | DATE    | TIME | WL (ft)   | TDS (mg/l) | TEMP (°C) | PURGED (Y/N) | COMMENTS                          |
|------------------------|---------|------|-----------|------------|-----------|--------------|-----------------------------------|
| 26/40-35 G1            | 5/29/96 | 950  | 70.90     | 800        | 23.50     | N            | TD-79.6; 4" PVC; RSLA-22-06W      |
| 26/40-22 P2            | 5/29/96 | 1015 | 43.90     | 958        | 23.00     | N            | TD-76; 2" PVC                     |
| 26/40-15 N2            | 5/29/96 | 1040 | 56.9      | 2080       | 32+       | N            | TD-100; 2" PVC; BRN, SULFIDE ODOR |
| 26/40-17 J1            | 5/29/96 | 1100 | 85.8      | 203/42     | 23.5      | N            | TD-96.5; 2" PVC                   |
| 26/40-23 A2            | 5/26/96 | 1620 | 34.9      | 1980       | 22.5      | Y            | TD-79.8; 2" PVC?                  |
| 26/40-23 G1            | 5/29/96 | 1730 | 30.05     | 3360       | 22        | Y            | TD-57.5; 2" PVC                   |
| 26/39-25 D1 BR 4       | 5/30/96 | 900  |           | 152        | 26        | N            | BLACK RESIDUE                     |
| 26/39-27 D1, MW32-MS   | 5/30/96 | 950  |           | 259        | 25        | N            | BLACK RESIDUE - MED. SHALLOW      |
| 24/38-21 J1, BR10-S    | 5/30/96 | 1050 | 313.4-F95 | 1560       | 24        | N            | SHALLOW                           |
| 25/38-12 L1 B6         | 5/30/96 | 1120 | 171.6-W95 | 841        | 26        | N            | BLACK RESIDUE                     |
| 27/39-08 M1, IWWWD-SWP | 5/30/96 | 1240 |           | 364        | 27+       | N            | BLACK RESIDUE; NOT PURGED         |
| 27/38-23 F1, BR1-S     | 6/4/96  | 1015 |           | 231        | 29        | N            | SLIGHT BLK RESIDUE                |
| 27/38-23 F1, BR1-MS    | 6/4/96  | 1030 |           | 202        | 29        | N            |                                   |
| 27/38-23 F1, BR1-MD    | 6/4/96  | 1040 |           | 190        | 27        | N            | BLACK RESIDUE                     |
| 27/38-23 F1, BR1-D     | 6/4/96  | 1045 |           | 450        | 27        | N            | BLACK RESIDUE                     |
| 27/38-02 B1, BR2-S     | 6/4/96  | 1115 |           | 650        | 26        | N            | SLIGHT BLACK                      |
| 27/38-02 B1, BR2-D     | 6/4/96  | 1130 |           | 643        | 27.5      | N            | HEAVY BLACK RESIDUE               |
| 27/38-02 B1, BR2-M     | 6/4/96  | 1230 |           | 188        | 25.5      | N            | MILKY                             |
| 26/39-27 D1, MW32-MD   | 6/4/96  | 1300 |           | 369        | 29        | N            | BLACK FRAGMENTS OF BLK PIPE       |
| HAIWEE-96              | 6/5/96  | 900  | S         | 450        | 19        |              | FROM CREEK                        |
| 24/38-21 J1, BR10-MS   | 6/5/96  | 1000 |           | 722        | 27        | N            | MEDIUM SHALLOW                    |
| 24/38-21 J1, BR10-MD   | 6/5/96  | 1030 |           | 765        | 27        | N            | BLACK RESIDUE; MEDIUM DEEP        |
| 24/38-21 J1, BR10-D    | 6/5/96  | 1100 |           | 851        | 27        | N            | BLACK RESIDUE; DEEP               |



TABLE A1. FIELD DATA INDIAN WELLS VALLEY STUDY - 1996

| SAMPLE NO          | DATE    | TIME | WL (ft) | TDS (mg/l) | TEMP (°C) | PURGED (Y/N) | COMMENTS                               |
|--------------------|---------|------|---------|------------|-----------|--------------|--|
| 25/38-34 J1, BR5-S | 6/5/96  | 1130 |         | 434        | 29        | N            | SLIGHT BLK RESIDUE; SHALLOW            |
| 25/38-34 J1, BR5-M | 6/5/96  | 1150 |         | 940        | 27        | N            | SLIGHT BLK RESIDUE; MEDIUM             |
| 25/38-34 J1, BR5-D | 6/5/96  | 1210 |         | 958        | 29+       | N            | SLIGHT BLK RESIDUE; SULFIDE ODOR; DEEP |
| 26/40-22 P4        | 6/18/96 | 900  | 769     | 422        | 26        | N            | 6" METAL TD=                           |
| 26/40-22 P3        | 6/18/96 | 915  | 107.2   | 1146       | 26        | N            | 6" METAL TD=                           |
| 26/40-22 P1        | 6/18/96 | 940  | 114.8   | 720        | 27+       | N            | 8" METAL TD=1300'                      |
| 25/38-12 L1, BR6-M | 6/18/96 | 1020 | 168.2   | 793        | 26        | N            | MEDIUM; SLT BLACK                      |
| 25/38-12 L1, BR6-D | 6/18/96 | 1030 | 151.2   | 491        | 26        | N            | DEEP; BLACK; H2S SMELL                 |
| 26/40-06 D2        | 6/18/96 | 1300 | 38.1    | 14400      | 27        | N            | 26/39-01A2; 8" PVC                     |
| 25/41-19 L1        | 6/19/96 | 814  | 7.2     | 7810       | --        | N            | 1.25" METAL; TD=24.4                   |
| 27/39-11 D1, BR3-D | 6/25/96 | 1000 | ~312"   | 7700       | --        | N            | *KCWA; AIRLIFT                         |
| 27/39-11 D1, BR3-M | 6/25/96 | 1055 | ~331"   | 4900       | --        | N            | *KCWA; AIRLIFT                         |
| 27/39-11 D1, BR3-S | 6/25/96 | 1140 | ~331"   | 230        |           | N            | *KCWA; AIRLIFT                         |
| 26/40-35 H2        | 8/6/96  | 1000 | 90.8    |            |           | Y            | PUMP TEST                              |
| 26/40-17 Q1        | 8/6/96  | 615  | 141.45  |            |           | Y            | PUMP TEST                              |
| 26/39-15 J1        | 8/7/96  | 640  | 196.4   |            |           | Y            | PUMP TEST                              |
| 26/39-11 E2        | 8/15/96 | 615  | 124.35  |            |           | Y            | PUMP TEST                              |
| 26/40-14A1         | 8/21/96 | 640  | 9.9     |            |           | Y            | PUMP TEST                              |
| 26/40-13 A1        | 8/22/96 | 700  | 22.75   |            |           | Y            | PUMP TEST                              |
| 26/40-23 B2        | 8/23/96 | 700  | 31.4    |            |           | Y            | PUMP TEST                              |
| 26/40-23 D1        | 8/26/96 | 2000 | 39.7    |            |           | Y            | PUMP TEST                              |



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TABLE A2. GENERAL MINERAL LABORATORY ANALYSIS RESULTS SUMMARY

| SAMPLE #               | ANALYTES                 |                          |                         |                        |                          |                          |                          |                          |                          |                         |                         |                                       |                                       |                                       |                                       |                                      |               | TDS-calc.<br>mg/l | TDS-lab<br>mg/l | SC<br>umhos/cm | pH    |
|------------------------|--------------------------|--------------------------|-------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|---------------|-------------------|-----------------|----------------|-------|
|                        | Ca <sup>2+</sup><br>mg/l | Mg <sup>2+</sup><br>mg/l | Na <sup>+</sup><br>mg/l | K <sup>+</sup><br>mg/l | Mn <sup>2+</sup><br>mg/l | Fe <sup>2+</sup><br>mg/l | As <sup>3+</sup><br>mg/l | Cu <sup>2+</sup><br>mg/l | Zn <sup>2+</sup><br>mg/l | Cl <sup>-</sup><br>mg/l | Fl <sup>-</sup><br>mg/l | SO <sub>4</sub> <sup>2-</sup><br>mg/l | HCO <sub>3</sub> <sup>-</sup><br>mg/l | CO <sub>3</sub> <sup>2-</sup><br>mg/l | PO <sub>4</sub> <sup>4-</sup><br>mg/l | NO <sub>3</sub> <sup>-</sup><br>mg/l | BORON<br>mg/l |                   |                 |                |       |
| <b>SURFACE SAMPLES</b> |                          |                          |                         |                        |                          |                          |                          |                          |                          |                         |                         |                                       |                                       |                                       |                                       |                                      |               |                   |                 |                |       |
| BIRD                   | 39.000                   | 2.900                    | 48.000                  | 1.200                  | 0.000                    | 0.000                    | 0.000                    | 0.000                    | 0.000                    | 22.000                  | 3.400                   | 54.000                                | 98.000                                | 0.000                                 | 0.000                                 | 10.000                               | 0.075         | 278.500           | 280.000         | 400.000        | 7.200 |
| HORSE-98               | 70.000                   | 9.700                    | 34.000                  | 3.800                  | 0.005                    | 0.094                    | 0.000                    | 0.000                    | 0.000                    | 14.000                  | 1.900                   | 52.000                                | 220.000                               | 0.000                                 | 0.000                                 | 8.000                                | 0.047         | 413.499           | 350.000         | 520.000        | 8.900 |
| SAGE-98                | 74.000                   | 13.000                   | 43.000                  | 1.100                  | 0.000                    | 0.030                    | 0.000                    | 0.000                    | 0.000                    | 18.000                  | 2.300                   | 22.000                                | 230.000                               | 0.000                                 | 0.000                                 | 0.000                                | 0.052         | 401.430           | 380.000         | 530.000        | 8.100 |
| COW HEAVEN-98          | 45.000                   | 8.300                    | 23.000                  | 1.500                  | 0.000                    | 0.002                    | 0.000                    | 0.000                    | 0.014                    | 7.200                   | 0.340                   | 9.900                                 | 160.000                               | 0.000                                 | 0.000                                 | 1.700                                | 0.034         | 258.958           | 230.000         | 350.000        | 6.800 |
| BIG SPRING-98          | 58.000                   | 9.200                    | 42.000                  | 0.600                  | 0.004                    | 0.018                    | 0.000                    | 0.000                    | 0.004                    | 14.000                  | 0.600                   | 40.000                                | 180.000                               | 0.000                                 | 0.000                                 | 4.300                                | 0.056         | 348.728           | 320.000         | 490.000        | 6.800 |
| WALKER WELL            | 49.000                   | 8.900                    | 28.000                  | 1.900                  | 0.004                    | 0.033                    | 0.000                    | 0.028                    | 0.048                    | 11.000                  | 0.210                   | 84.000                                | 110.000                               | 0.000                                 | 0.000                                 | 20.000                               | 0.140         | 283.123           | 280.000         | 420.000        | 7.200 |
| INDIAN WELLS-98        | 79.000                   | 20.000                   | 31.000                  | 2.900                  | 0.000                    | 0.009                    | 0.000                    | 0.008                    | 0.000                    | 12.000                  | 0.690                   | 110.000                               | 200.000                               | 0.000                                 | 0.000                                 | 0.000                                | 0.080         | 455.497           | 430.000         | 620.000        | 8.000 |
| SHORT-98               | 75.000                   | 10.000                   | 50.000                  | 0.500                  | 0.000                    | 0.012                    | 0.000                    | 0.008                    | 0.000                    | 10.000                  | 0.910                   | 61.000                                | 230.000                               | 0.000                                 | 0.000                                 | 0.000                                | 0.092         | 437.431           | 390.000         | 570.000        | 8.000 |
| GRAPEVINE-98           | 95.000                   | 28.000                   | 60.000                  | 5.700                  | 0.000                    | 0.020                    | 0.000                    | 0.000                    | 0.000                    | 10.000                  | 0.730                   | 87.000                                | 360.000                               | 0.000                                 | 0.000                                 | 0.000                                | 0.140         | 644.450           | 520.000         | 780.000        | 7.900 |
| SAND-98                | 70.000                   | 20.000                   | 68.000                  | 3.500                  | 0.000                    | 0.009                    | 0.000                    | 0.000                    | 0.000                    | 18.000                  | 1.600                   | 70.000                                | 290.000                               | 0.000                                 | 0.000                                 | 0.000                                | 0.200         | 537.109           | 450.000         | 680.000        | 8.200 |
| NONAME-98              | 130.000                  | 81.000                   | 150.000                 | 8.200                  | 0.000                    | 0.000                    | 0.000                    | 0.000                    | 0.000                    | 54.000                  | 1.900                   | 360.000                               | 520.000                               | 0.000                                 | 0.000                                 | 0.000                                | 0.350         | 1303.100          | 1100.000        | 1700.000       | 8.000 |
| NINEMILE-98            | 69.000                   | 73.000                   | 95.000                  | 7.200                  | 0.000                    | 0.002                    | 0.000                    | 0.000                    | 0.000                    | 30.000                  | 0.820                   | 110.000                               | 440.000                               | 20.000                                | 0.000                                 | 0.000                                | 0.350         | 845.122           | 690.000         | 1000.000       | 8.100 |
| FIVEMILE-98            | 69.000                   | 39.000                   | 110.000                 | 8.500                  | 0.000                    | 0.004                    | 0.000                    | 0.000                    | 0.000                    | 44.000                  | 2.500                   | 180.000                               | 260.000                               | 0.000                                 | 0.000                                 | 0.000                                | 0.350         | 731.004           | 660.000         | 930.000        | 8.000 |
| LITTLE LKOUT-98        | 64.000                   | 69.000                   | 300.000                 | 24.000                 | 0.000                    | 0.005                    | 0.090                    | 0.000                    | 0.000                    | 200.000                 | 0.710                   | 130.000                               | 840.000                               | 10.000                                | 0.000                                 | 0.000                                | 0.000         | 1437.805          | 1200.000        | 1900.000       | 8.300 |
| HAWEE-98               | 68.000                   | 24.000                   | 68.000                  | 7.600                  | 0.003                    | 0.016                    | 0.050                    | 0.000                    | 0.000                    | 47.000                  | 0.210                   | 38.000                                | 240.000                               | 0.000                                 | 0.000                                 | 0.000                                | 2.000         | 490.879           | 390.000         | 650.000        | 8.100 |
| <b>WELL SAMPLES</b>    |                          |                          |                         |                        |                          |                          |                          |                          |                          |                         |                         |                                       |                                       |                                       |                                       |                                      |               |                   |                 |                |       |
| 24/38-21J1 (BR10-S)    | 2.800                    | 40.000                   | 290.000                 | 18.000                 | 0.012                    | 0.043                    | 0.000                    | 0.000                    | 0.000                    | 210.000                 | 0.380                   | 190.000                               | 240.000                               | 60.000                                | 0.000                                 | 0.000                                | 5.800         | 1051.235          | 980.000         | 1600.000       | 8.900 |
| 24/38-21J1 (BR10-MS)   | 4.000                    | 12.000                   | 290.000                 | 17.000                 | 0.009                    | 0.044                    | 0.000                    | 0.000                    | 0.000                    | 220.000                 | 1.800                   | 200.000                               | 31.000                                | 58.000                                | 0.000                                 | 0.000                                | 3.500         | 833.844           | 750.000         | 1300.000       | 9.700 |
| 24/38-21J1 (BR10-MD)   | 7.400                    | 85.000                   | 260.000                 | 22.000                 | 0.044                    | 0.130                    | 0.000                    | 0.000                    | 0.000                    | 220.000                 | 0.520                   | 87.000                                | 310.000                               | 90.000                                | 0.000                                 | 0.000                                | 2.200         | 1092.094          | 880.000         | 1500.000       | 9.100 |
| 24/38-21J1 (BR10-D)    | 4.700                    | 30.000                   | 320.000                 | 20.000                 | 0.015                    | 0.037                    | 0.090                    | 0.000                    | 0.008                    | 280.000                 | 0.620                   | 180.000                               | 110.000                               | 50.000                                | 0.000                                 | 0.000                                | 4.800         | 1005.378          | 930.000         | 1500.000       | 9.100 |
| 28/38-12L1 (BR6-S)     | 5.000                    | 9.700                    | 130.000                 | 19.000                 | 0.004                    | 0.100                    | 0.000                    | 0.000                    | 0.000                    | 120.000                 | 0.540                   | 30.000                                | 78.000                                | 35.000                                | 0.000                                 | 0.000                                | 2.200         | 427.344           | 380.000         | 670.000        | 9.200 |
| 28/38-12L1 (BR6-M)     | 0.680                    | 0.120                    | 400.000                 | 2.400                  | 0.010                    | 0.430                    | 0.000                    | 0.000                    | 0.004                    | 58.000                  | 5.800                   | 3.400                                 | 360.000                               | 290.000                               | 0.000                                 | 0.000                                | 2.900         | 1120.644          | 850.000         | 1500.000       | 9.700 |
| 28/38-12L1 (BR6-D)     | 1.200                    | 0.190                    | 280.000                 | 4.100                  | 0.019                    | 0.680                    | 0.000                    | 0.000                    | 0.009                    | 34.000                  | 1.500                   | 12.000                                | 330.000                               | 150.000                               | 0.000                                 | 0.000                                | 2.000         | 823.689           | 600.000         | 1000.000       | 9.500 |
| 28/38-34J1 (BR5-S)     | 3.200                    | 8.600                    | 170.000                 | 14.000                 | 0.007                    | 0.053                    | 0.000                    | 0.000                    | 0.008                    | 120.000                 | 0.690                   | 35.000                                | 130.000                               | 47.000                                | 0.000                                 | 0.000                                | 1.300         | 526.756           | 440.000         | 770.000        | 9.300 |
| 28/38-34J1 (BR5-M)     | 4.100                    | 17.000                   | 480.000                 | 12.000                 | 0.018                    | 0.017                    | 0.000                    | 0.000                    | 0.003                    | 120.000                 | 1.300                   | 27.000                                | 700.000                               | 120.000                               | 0.000                                 | 0.000                                | 4.700         | 1481.438          | 1100.000        | 1700.000       | 9.000 |
| 28/38-34J1 (BR5-D)     | 1.500                    | 2.200                    | 550.000                 | 9.300                  | 0.003                    | 0.020                    | 0.000                    | 0.000                    | 0.008                    | 98.000                  | 1.400                   | 27.000                                | 650.000                               | 250.000                               | 0.000                                 | 0.000                                | 3.600         | 1586.428          | 1200.000        | 1900.000       | 8.500 |
| 28/41-19L1             | 5.200                    | 4.100                    | 3400.000                | 71.000                 | 0.007                    | 0.180                    | 0.000                    | 0.680                    | 0.200                    | 4200.000                | 1.800                   | 7.100                                 | 270.000                               | 320.000                               | 0.000                                 | 0.000                                | 28.000        | 6280.267          | 8100.000        | 13000.000      | 8.500 |
| 28/39-11E2*            | 72.000                   | 11.000                   | 69.000                  | 3.400                  | 0.009                    | 0.007                    | 0.000                    | 0.000                    | 0.005                    | 85.000                  | 0.450                   | 43.000                                | 200.000                               | 0.000                                 | 0.000                                 | 2.300                                | 2.200         | 516.170           | 490.000         | 770.000        | 7.800 |
| 28/39-16J1*            | 31.000                   | 8.700                    | 32.000                  | 4.500                  | 0.011                    | 0.004                    | 0.000                    | 0.000                    | 0.015                    | 25.000                  | 0.650                   | 47.000                                | 83.000                                | 0.000                                 | 0.000                                 | 2.500                                | 0.240         | 234.380           | 210.000         | 350.000        | 7.700 |
| 28/39-28D1 (BR4)       | 1.500                    | 0.030                    | 68.000                  | 1.300                  | 0.008                    | 1.300                    | 0.000                    | 0.000                    | 0.008                    | 14.000                  | 1.100                   | 0.300                                 | 47.000                                | 73.000                                | 0.000                                 | 0.000                                | 0.760         | 208.348           | 180.000         | 300.000        | 9.800 |
| 28/39-27D1 (MW32-MS)   | 2.300                    | 0.230                    | 47.000                  | 2.900                  | 0.004                    | 0.180                    | 0.000                    | 0.000                    | 0.000                    | 26.000                  | 0.430                   | 13.000                                | 41.000                                | 17.000                                | 0.000                                 | 0.000                                | 0.240         | 150.024           | 140.000         | 230.000        | 8.100 |
| 28/39-27D1 (MW32-MD)   | 1.500                    | 0.110                    | 80.000                  | 2.900                  | 0.000                    | 0.140                    | 0.000                    | 0.000                    | 0.004                    | 28.000                  | 0.650                   | 8.000                                 | 61.000                                | 42.000                                | 0.000                                 | 0.300                                | 0.240         | 223.604           | 160.000         | 320.000        | 9.600 |
| 28/40-01Q2             | 130.000                  | 18.000                   | 4100.000                | 84.000                 | 0.150                    | 280.000                  | 0.000                    | 0.000                    | 100.000                  | 680.000                 | 4.400                   | 830.000                               | 64.000                                | 0.000                                 | 0.000                                 | 0.000                                | 41.000        | 6260.550          | 13000.000       | 20000.000      | 5.900 |
| 28/40-06D2             | 1.200                    | 0.200                    | 11000.000               | 59.000                 | 0.200                    | 0.074                    | 0.050                    | 0.008                    | 0.000                    | 6300.000                | 24.000                  | 61.000                                | 2400.000                              | 10000.000                             | 83.000                                | 0.000                                | 340.000       | 29928.730         | 28000.000       | 34000.000      | 9.800 |
| 28/40-12D1             | 1.200                    | 0.350                    | 4100.000                | 53.000                 | 0.004                    | 0.200                    | 1.100                    | 0.000                    | 0.130                    | 3100.000                | 9.900                   | 680.000                               | 1500.000                              | 1600.000                              | 18.000                                | 0.000                                | 120.000       | 11061.884         | 11000.000       | 16000.000      | 9.600 |
| 28/40-12C1             | 2.300                    | 1.200                    | 390.000                 | 15.000                 | 0.000                    | 0.025                    | 0.000                    | 0.008                    | 0.047                    | 280.000                 | 1.200                   | 150.000                               | 120.000                               | 140.000                               | 0.000                                 | 4.900                                | 3.300         | 1104.678          | 1000.000        | 1800.000       | 9.700 |
| 28/40-12R1             | 2.500                    | 2.300                    | 600.000                 | 14.000                 | 0.000                    | 0.120                    | 0.000                    | 0.000                    | 0.089                    | 360.000                 | 2.100                   | 250.000                               | 320.000                               | 210.000                               | 0.000                                 | 1.000                                | 5.100         | 1782.219          | 1500.000        | 2600.000       | 9.500 |
| 28/40-13A1*            | 21.000                   | 6.300                    | 410.000                 | 10.000                 | 0.010                    | 0.020                    | 0.000                    | 0.000                    | 0.003                    | 500.000                 | 1.800                   | 50.000                                | 130.000                               | 0.000                                 | 0.000                                 | 0.000                                | 4.000         | 1129.130          | 1100.000        | 2000.000       | 8.200 |

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TABLE A2. GENERAL MINERAL LABORATORY ANALYSIS RESULTS SUMMARY

| SAMPLE #              | ANALYTES                 |                          |                         |                        |                          |                          |                          |                          |                          |                         |                         |                                       |                                       |                                       |                                       |                                      |               |                   |                 |                |        |
|-----------------------|--------------------------|--------------------------|-------------------------|------------------------|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|-------------------------|-------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|--------------------------------------|---------------|-------------------|-----------------|----------------|--------|
|                       | Ca <sup>++</sup><br>mg/l | Mg <sup>++</sup><br>mg/l | Na <sup>+</sup><br>mg/l | K <sup>+</sup><br>mg/l | Mn <sup>++</sup><br>mg/l | Fe <sup>++</sup><br>mg/l | As <sup>++</sup><br>mg/l | Cu <sup>++</sup><br>mg/l | Zn <sup>++</sup><br>mg/l | Cl <sup>-</sup><br>mg/l | Fl <sup>-</sup><br>mg/l | SO <sub>4</sub> <sup>2-</sup><br>mg/l | HCO <sub>3</sub> <sup>-</sup><br>mg/l | CO <sub>3</sub> <sup>2-</sup><br>mg/l | PO <sub>4</sub> <sup>4-</sup><br>mg/l | NO <sub>3</sub> <sup>-</sup><br>mg/l | BORON<br>mg/l | TDS-calc.<br>mg/l | TDS-lab<br>mg/l | SC<br>umhos/cm | pH     |
| 26/40-13M1            | 40.000                   | 4.400                    | 530.000                 | 6.200                  | 0.180                    | 0.140                    | 0.000                    | 0.000                    | 5.900                    | 450.000                 | 5.300                   | 130.000                               | 390.000                               | 0.000                                 | 0.000                                 | 0.000                                | 2.900         | 1582.130          | 1500.000        | 2500.000       | 8.700  |
| 26/40-14A1*           | 2.800                    | 1.300                    | 550.000                 | 6.200                  | 0.000                    | 0.047                    | 0.000                    | 0.000                    | 0.000                    | 420.000                 | 2.200                   | 50.000                                | 420.000                               | 30.000                                | 0.000                                 | 0.000                                | 7.300         | 1482.550          | 1300.000        | 2200.000       | 8.600  |
| 26/40-14B1            | 35.000                   | 7.200                    | 650.000                 | 10.000                 | 0.047                    | 0.049                    | 1.200                    | 0.007                    | 0.650                    | 450.000                 | 5.100                   | 240.000                               | 570.000                               | 0.000                                 | 0.000                                 | 2.200                                | 5.000         | 1971.453          | 1900.000        | 2900.000       | 7.800  |
| 26/40-15N2            | 4.700                    | 2.900                    | 1000.000                | 17.000                 | 0.024                    | 0.150                    | 0.000                    | 0.012                    | 0.028                    | 150.000                 | 1.800                   | 800.000                               | 900.000                               | 200.000                               | 0.000                                 | 0.000                                | 78.000        | 3076.912          | 3000.000        | 4000.000       | 8.700  |
| 26/40-17J1            | 25.000                   | 6.200                    | 54.000                  | 5.500                  | 0.043                    | 0.260                    | 0.000                    | 0.008                    | 0.048                    | 25.000                  | 0.720                   | 29.000                                | 110.000                               | 0.000                                 | 0.000                                 | 4.600                                | 0.280         | 260.378           | 260.000         | 390.000        | 7.400  |
| 26/40-17Q1*           | 0.810                    | 0.810                    | 960.000                 | 7.600                  | 0.009                    | 0.470                    | 0.000                    | 0.000                    | 0.000                    | 280.000                 | 14.000                  | 0.800                                 | 1000.000                              | 700.000                               | 0.000                                 | 0.000                                | 56.000        | 2964.500          | 2400.000        | 3700.000       | 8.400  |
| 26/40-22H1            | 400.000                  | 240.000                  | 570.000                 | 65.000                 | 0.220                    | 0.018                    | 0.050                    | 0.000                    | 1.400                    | 190.000                 | 1.100                   | 2700.000                              | 46.000                                | 0.000                                 | 0.000                                 | 0.000                                | 2.500         | 4213.788          | 4800.000        | 4900.000       | 7.400  |
| 26/40-22P1            | 43.000                   | 32.000                   | 190.000                 | 19.000                 | 0.017                    | 0.180                    | 0.000                    | 0.000                    | 0.000                    | 150.000                 | 0.190                   | 350.000                               | 35.000                                | 0.000                                 | 0.000                                 | 0.000                                | 0.770         | 819.367           | 860.000         | 1300.000       | 8.100  |
| 26/40-22P2            | 100.000                  | 70.000                   | 200.000                 | 29.000                 | 0.018                    | 0.023                    | 0.030                    | 0.000                    | 0.019                    | 64.000                  | 1.600                   | 840.000                               | 73.000                                | 0.000                                 | 0.000                                 | 0.500                                | 0.600         | 1378.191          | 1400.000        | 1800.000       | 7.300  |
| 26/40-22P3            | 1.000                    | 0.470                    | 590.000                 | 7.500                  | 0.030                    | 0.630                    | 0.000                    | 0.000                    | 0.003                    | 220.000                 | 5.000                   | 1.400                                 | 770.000                               | 60.000                                | 0.000                                 | 0.000                                | 14.000        | 1678.233          | 1400.000        | 2200.000       | 8.800  |
| 26/40-22P4*           | 9.300                    | 12.000                   | 130.000                 | 15.000                 | 0.200                    | 0.100                    | 0.000                    | 0.000                    | 0.008                    | 99.000                  | 0.110                   | 140.000                               | 72.000                                | 0.000                                 | 0.000                                 | 0.000                                | 9.300         | 477.718           | 460.000         | 860.000        | 7.700  |
| 26/40-23A2            | 51.000                   | 18.000                   | 770.000                 | 26.000                 | 0.005                    | 0.050                    | 0.000                    | 0.000                    | 0.007                    | 720.000                 | 1.500                   | 490.000                               | 290.000                               | 0.000                                 | 0.000                                 | 0.000                                | 7.800         | 2368.582          | 2400.000        | 3300.000       | 8.000  |
| 26/40-23B2*           | 5.500                    | 2.900                    | 490.000                 | 13.000                 | 0.003                    | 0.037                    | 0.000                    | 0.000                    | 0.000                    | 390.000                 | 2.200                   | 88.000                                | 440.000                               | 10.000                                | 0.000                                 | 0.000                                | 5.500         | 1411.640          | 1300.000        | 2100.000       | 8.600  |
| 26/40-23D1*           | 4.300                    | 6.100                    | 750.000                 | 15.000                 | 0.012                    | 0.180                    | 0.000                    | 0.000                    | 0.005                    | 390.000                 | 5.900                   | 280.000                               | 580.000                               | 150.000                               | 0.000                                 | 0.000                                | 16.000        | 2151.500          | 2000.000        | 3000.000       | 8.900  |
| 26/40-23G1            | 51.000                   | 49.000                   | 1400.000                | 28.000                 | 0.049                    | 0.700                    | 1.400                    | 0.000                    | 0.013                    | 910.000                 | 3.200                   | 1500.000                              | 440.000                               | 0.000                                 | 0.000                                 | 0.000                                | 17.000        | 4381.362          | 4400.000        | 6300.000       | 8.000  |
| 26/40-26F1            | 110.000                  | 42.000                   | 310.000                 | 20.000                 | 0.000                    | 0.035                    | 0.000                    | 0.000                    | 1.800                    | 260.000                 | 0.460                   | 560.000                               | 180.000                               | 0.000                                 | 0.000                                 | 0.600                                | 1.900         | 1496.695          | 1400.000        | 2200.000       | 7.400  |
| 26/40-36G1            | 120.000                  | 31.000                   | 170.000                 | 8.100                  | 0.000                    | 0.004                    | 0.000                    | 0.000                    | 0.021                    | 210.000                 | 0.330                   | 280.000                               | 180.000                               | 0.000                                 | 0.000                                 | 4.800                                | 1.400         | 1005.255          | 1000.000        | 1500.000       | 7.300  |
| 26/40-36H2*           | 150.000                  | 15.000                   | 590.000                 | 20.000                 | 0.069                    | 0.039                    | 0.040                    | 0.000                    | 0.010                    | 1100.000                | 0.800                   | 79.000                                | 70.000                                | 0.000                                 | 0.000                                 | 0.000                                | 4.500         | 2014.880          | 2200.000        | 3700.000       | 7.800  |
| 27/38-02B1 (BR2-S)    | 3.800                    | 0.010                    | 180.000                 | 6.200                  | 0.000                    | 0.038                    | 0.000                    | 0.000                    | 0.004                    | 23.000                  | 0.590                   | 58.000                                | 0.000                                 | 278.000                               | 0.000                                 | 0.000                                | 0.120         | 547.642           | 450.000         | 1100.000       | 11.700 |
| 27/38-02B1 (BR2-M)    | 12.000                   | 0.430                    | 130.000                 | 1.200                  | 0.000                    | 0.069                    | 0.000                    | 0.000                    | 0.000                    | 62.000                  | 13.000                  | 110.000                               | 8.000                                 | 28.000                                | 0.000                                 | 0.000                                | 3.100         | 362.719           | 330.000         | 600.000        | 9.400  |
| 27/38-02B1 (BR2-D)    | 7.600                    | 6.700                    | 89.000                  | 2.100                  | 0.220                    | 13.000                   | 0.000                    | 0.020                    | 0.068                    | 11.000                  | 0.770                   | 22.000                                | 47.000                                | 57.000                                | 0.000                                 | 0.000                                | 0.110         | 236.478           | 500.000         | 300.000        | 9.900  |
| 27/38-23F1 (BR1-S)    | 1.500                    | 1.000                    | 110.000                 | 0.600                  | 0.043                    | 3.100                    | 0.000                    | 0.007                    | 0.013                    | 8.600                   | 0.770                   | 12.000                                | 80.000                                | 100.000                               | 0.000                                 | 0.000                                | 0.150         | 318.833           | 270.000         | 420.000        | 10.000 |
| 27/38-23F1 (BR1-MS)   | 0.950                    | 0.020                    | 110.000                 | 0.000                  | 0.003                    | 0.220                    | 0.000                    | 0.008                    | 0.003                    | 7.400                   | 0.630                   | 11.000                                | 110.000                               | 76.000                                | 0.000                                 | 0.000                                | 0.140         | 316.232           | 230.000         | 410.000        | 9.800  |
| 27/38-23F1 (BR1-MD)   | 1.000                    | 0.160                    | 110.000                 | 0.400                  | 0.010                    | 0.590                    | 0.000                    | 0.000                    | 0.004                    | 12.000                  | 1.400                   | 11.000                                | 82.000                                | 88.000                                | 0.000                                 | 0.000                                | 0.200         | 318.554           | 230.000         | 420.000        | 9.900  |
| 27/38-23F1 (BR1-D)    | 1.000                    | 0.210                    | 110.000                 | 0.400                  | 0.014                    | 0.900                    | 0.000                    | 0.000                    | 0.004                    | 12.000                  | 1.200                   | 11.000                                | 82.000                                | 97.000                                | 0.000                                 | 0.000                                | 0.160         | 315.728           | 240.000         | 430.000        | 10.000 |
| 27/38-08M1 (BWWD-SWP) | 7.800                    | 0.250                    | 63.000                  | 3.200                  | 0.000                    | 0.055                    | 0.000                    | 0.000                    | 0.000                    | 65.000                  | 1.300                   | 0.400                                 | 15.000                                | 10.000                                | 0.000                                 | 0.000                                | 0.280         | 156.005           | 140.000         | 300.000        | 10.400 |
| 27/39-11D1 (BR3-S)    | 12.000                   | 2.700                    | 93.000                  | 15.000                 | 0.035                    | 0.520                    | 0.000                    | 0.000                    | 0.004                    | 36.000                  | 1.500                   | 72.000                                | 95.000                                | 6.400                                 | 0.000                                 | 6.500                                | 0.580         | 340.659           | 290.000         | 500.000        | 8.600  |
| 27/39-11D1 (BR3-M)    | 390.000                  | 9.900                    | 1400.000                | 25.000                 | 0.210                    | 0.160                    | 0.000                    | 0.000                    | 0.000                    | 2800.000                | 0.730                   | 280.000                               | 5.300                                 | 0.000                                 | 0.000                                 | 0.000                                | 2.000         | 4911.000          | 6500.000        | 9100.000       | 8.100  |
| 27/39-11D1 (BR3-D)    | 680.000                  | 75.000                   | 2100.000                | 38.000                 | 0.240                    | 0.190                    | 0.000                    | 0.000                    | 0.000                    | 4900.000                | 1.300                   | 110.000                               | 5.400                                 | 0.000                                 | 0.000                                 | 0.000                                | 5.600         | 7910.130          | 8400.000        | 14000.000      | 6.600  |
| 27/40-01G             | 45.000                   | 5.000                    | 210.000                 | 10.000                 | 0.002                    | 0.017                    | 0.090                    | 0.000                    | 0.034                    | 280.000                 | 1.400                   | 44.000                                | 130.000                               | 0.000                                 | 0.000                                 | 3.200                                | 1.600         | 728.743           | 690.000         | 1200.000       | 7.500  |

\*Aquifer Test

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Houghton  
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**TABLE A3. ISOTOPIC LABORATORY ANALYSIS  
RESULTS SUMMARY**

| <b>SAMPLE #</b> | <b><math>\delta^{18}\text{O}</math> ‰</b> | <b><math>\delta\text{D}</math> ‰</b> | <b>MWL (<math>\delta\text{D} = 8.1(\delta^{18}\text{O})+11</math>)</b> |
|-----------------|---|--------------------------------------|--|
| 26/39-11E2      | -13                                       | -103                                 | -94.3  |
| 26/39-15J1      | -13.1                                     | -98                                  | -95.11   |
| 26/40-13A1      | -13.5                                     | -102                                 | -98.35   |
| 26/40-14A1      | -13.9                                     | -105                                 | -101.59  |
| 26/40-17Q2      | -13.9                                     | -106                                 | -101.59  |
| 26/40-23B2      | -13.9                                     | -106                                 | -101.59  |
| 26/40-23D1      | -13.9                                     | -105                                 | -101.59  |
| 26/40-35H2      | -13.2                                     | -103                                 | -95.92   |

|   |                         |                                  |                    |          |                         |                                     |                                     |                                     |  |  |  |  |  |  |  |         |
|---|-------------------------|----------------------------------|--------------------|----------|-------------------------|-------------------------------------|-------------------------------------|-------------------------------------|--|--|--|--|--|--|--|---------|
| Project Manager<br><b>B. HOUGHTON</b>                           |                         | Phone<br><b>(805)393-6218</b>    | Fax<br><b>SAME</b> |          | Analysis Requested      |                                     |                                     |                                     |  |  |  |  |  |  |  |         |
| Company<br><b>HOUGHTON HYDROGEO-LOGIC</b>                       |                         | Project Number<br><b>96-002</b>  |                    |          | <b>GENERAL MINERALS</b> | <b>ARSENIC</b>                      | <b>BORON</b>                        |                                     |  |  |  |  |  |  |  |         |
| Address<br><b>P.O. BOX 80126<br/>BAKERSFIELD, CA 93380-0126</b> |                         | Project Name<br><b>I WV-NAWS</b> |                    |          |                         |                                     |                                     |                                     |  |  |  |  |  |  |  |         |
|   |                         | Sampler<br><b>HOUGHTON</b>       |                    |          |                         |                                     |                                     |                                     |  |  |  |  |  |  |  |         |
| For Zymax Use Only  | Sample Description      | Date Sampled                     | Time Sampled       | Matrix   |                         |                                     |                                     | Preserve                            |  |  |  |  |  |  |  | Remarks |
|   | <b>8902-1 BIRD-96</b>   | <b>5/22/96</b>                   | <b>0945</b>        | <b>W</b> | <b>N</b>                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |         |
|   | <b>-2 HORSE-96</b>      | <b>"</b>                         | <b>1200</b>        | <b>"</b> | <b>"</b>                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |         |
|   | <b>-3 SAGE-96</b>       | <b>"</b>                         | <b>1300</b>        | <b>"</b> | <b>"</b>                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |         |
|   | <b>-4 COW HEAVEN-96</b> | <b>"</b>                         | <b>1356</b>        | <b>"</b> | <b>"</b>                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |         |
|   | <b>-5 BIG SPG-96</b>    | <b>"</b>                         | <b>1441</b>        | <b>"</b> | <b>"</b>                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |         |
|   | <b>-6 WALKER-96</b>     | <b>5/23/96</b>                   | <b>0900</b>        | <b>"</b> | <b>"</b>                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |         |
|   | <b>-7 IND. WLS.-96</b>  | <b>"</b>                         | <b>0944</b>        | <b>"</b> | <b>"</b>                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |         |
|   | <b>-8 SHORT-96</b>      | <b>"</b>                         | <b>1030</b>        | <b>"</b> | <b>"</b>                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |         |
|   | <b>-9 GRAPEVINE-96</b>  | <b>"</b>                         | <b>1100</b>        | <b>"</b> | <b>"</b>                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |         |
|   | <b>-10 SAND-96</b>      | <b>"</b>                         | <b>1120</b>        | <b>"</b> | <b>"</b>                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |         |
|   | <b>-11 NONAME-96</b>    | <b>"</b>                         | <b>1200</b>        | <b>"</b> | <b>"</b>                | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |  |  |  |  |  |  |  |         |

|   |  |                                      |
|---|--|--------------------------------------|
| Special Billing/Comments:                                   | Relinquished by:                       | Received by:                         |
|   | Signature <u>B. D. Houghton</u>        | Signature _____                      |
|   | Print <u>B.D. HOUGHTON</u>             | Print _____                          |
|   | Company <u>HOUGHTON HYDROGEO-LOGIC</u> | Company _____                        |
|   | Date <u>5/25/96</u> Time <u>1010</u>   | Date _____ Time _____                |
| Sample Integrity upon receipt:                              | Relinquished by:                       | Received for Zymax by:               |
| Samples received intact <input checked="" type="checkbox"/> | Signature _____                        | Signature <u>Richard Besco</u>       |
| Samples received cold <input checked="" type="checkbox"/>   | Print _____                            | Print <u>RICH BESCO</u>              |
| Custody seals <input checked="" type="checkbox"/>           | Company _____                          | Company <u>Zymax</u>                 |
| Correct container types <input checked="" type="checkbox"/> | Date _____ Time _____                  | Date <u>5-28-96</u> Time <u>1010</u> |

|   |                       |                                 |                 |                                 |          |                     |         |       |                                     |                                     |                                     |         |  |  |
|---|-----------------------|---------------------------------|-----------------|---------------------------------|----------|---------------------|---------|-------|-------------------------------------|-------------------------------------|-------------------------------------|---------|--|--|
| Project Manager<br><b>B. HOUGHTON</b>     |                       | Phone<br><b>(805) 393-6218</b>  |                 | Fax<br><b>SAME</b>              |          | Analysis Requested  |         |       |                                     |                                     |                                     | Remarks |  |  |
| Company<br><b>HOUGHTON HYDROGeo-LOGIC</b> |                       | Project Number<br><b>96-002</b> |                 | Project Name<br><b>IWV-NAWS</b> |          | GENERAL<br>MINERALS | ARSENIC | BORON |                                     |                                     |                                     |         |  |  |
| Address<br><b>See pg 1</b>                |                       | Sampler<br><b>HOUGHTON</b>      |                 |                                 |          |                     |         |       |                                     |                                     |                                     |         |  |  |
| For Zymax<br>Use Only                     | Sample Description    | Date<br>Sampled                 | Time<br>Sampled | Matrix                          | Preserve |                     |         |       |                                     |                                     |                                     |         |  |  |
| <b>8902-12</b>                            | <b>NINEMILE-96</b>    | <b>5/23/96</b>                  | <b>1330</b>     | <b>W</b>                        | <b>N</b> |                     |         |       | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |         |  |  |
| <b>-13</b>                                | <b>FIVEMILE-96</b>    | <b>5/23/96</b>                  | <b>1415</b>     |                                 |          |                     |         |       |                                     |                                     |                                     |         |  |  |
| <b>-14</b>                                | <b>LITTLELKOUT-96</b> | <b>"</b>                        | <b>1500</b>     |                                 |          |                     |         |       |                                     |                                     |                                     |         |  |  |
| <b>-15</b>                                | <b>26/40-1Q2</b>      | <b>5/24/96</b>                  | <b>1110</b>     |                                 |          |                     |         |       |                                     |                                     |                                     |         |  |  |
| <b>-16</b>                                | <b>26/40-12D1</b>     | <b>"</b>                        | <b>1100</b>     |                                 |          |                     |         |       |                                     |                                     |                                     |         |  |  |
| <b>-17</b>                                | <b>26/40-12Q1</b>     | <b>"</b>                        | <b>1045</b>     |                                 |          |                     |         |       |                                     |                                     |                                     |         |  |  |
| <b>-18</b>                                | <b>26/40-12R1</b>     | <b>"</b>                        | <b>1035</b>     |                                 |          |                     |         |       |                                     |                                     |                                     |         |  |  |
| <b>-19</b>                                | <b>26/40-13M01</b>    | <b>"</b>                        | <b>1000</b>     |                                 |          |                     |         |       |                                     |                                     |                                     |         |  |  |
| <b>-20</b>                                | <b>26/40-14B1</b>     | <b>"</b>                        | <b>1120</b>     |                                 |          |                     |         |       |                                     |                                     |                                     |         |  |  |
| <b>-21</b>                                | <b>26/40-22H1</b>     | <b>"</b>                        | <b>0940</b>     |                                 |          |                     |         |       |                                     |                                     |                                     |         |  |  |
| <b>-22</b>                                | <b>26/40-26F1</b>     | <b>"</b>                        | <b>0920</b>     |                                 |          |                     |         |       |                                     |                                     |                                     |         |  |  |

|   |  |                                      |
|---|--|--------------------------------------|
| Special Billing/Comments:                                   | Relinquished by:                       | Received by:                         |
|   | Signature <u>B.D. Houghton</u>         | Signature _____                      |
| Sample Integrity upon receipt:                              | Print <u>B.D. HOUGHTON</u>             | Print _____                          |
|   | Company <u>HOUGHTON HYDROGeo-LOGIC</u> | Company _____                        |
| Samples received intact <input checked="" type="checkbox"/> | Date <u>5/28/96</u> Time <u>1010</u>   | Date _____ Time _____                |
| Samples received cold <input checked="" type="checkbox"/>   | Relinquished by:                       | Received for Zymax by:               |
| Custody seals <input checked="" type="checkbox"/>           | Signature _____                        | Signature <u>Richard Besco</u>       |
| Correct container types <input checked="" type="checkbox"/> | Print _____                            | Print <u>Richard Besco</u>           |
|   | Company _____                          | Company <u>Zymax</u>                 |
|   | Date _____ Time _____                  | Date <u>5-28-96</u> Time <u>1010</u> |

| Project Manager<br><b>B. HOUGHTON</b>  |                      | Phone<br><b>(805)393-6218</b>      | Fax<br><b>SAME</b> |        | Analysis Requested  |         |       |   |  |  |         |  |  |
|--|----------------------|------------------------------------|--------------------|--------|---------------------|---------|-------|---|--|--|---------|--|--|
| Company  |                      | Project Number<br><b>96-002</b>    |                    |        | GENERAL<br>MINERALS | ARSENIC | BORON |   |  |  |         |  |  |
| Address<br><b>Houghton Hydrogeo-Logic<br/>P.O. Box 80128<br/>Bakersfield, CA 93380-0128<br/>6216 EUCLID, BAK, CA 93308</b> |                      | Project Name<br><b>I WV - NAWs</b> |                    |        |                     |         |       |   |  |  |         |  |  |
|  |                      | Sampler<br><b>HOUGHTON</b>         |                    |        |                     |         |       |   |  |  |         |  |  |
| For Zymax<br>Use Only  | Sample Description   | Date<br>Sampled                    | Time<br>Sampled    | Matrix | Preserve            |         |       |   |  |  | Remarks |  |  |
| 8925-1   | 27/40-16             | *5/29/96                           | 0815               | W      | N                   | ✓       | ✓     | ✓ |  |  |         |  |  |
| -2   | 26/40-35G            |                                    | 0950               |        |                     |         |       |   |  |  |         |  |  |
| -3   | 26/40-22Pa           |                                    | 1015               |        |                     |         |       |   |  |  |         |  |  |
| -4   | 26/40-15Na           |                                    | 1040               |        |                     |         |       |   |  |  |         |  |  |
| -5   | 26/40-17J1           |                                    | 1100               |        |                     |         |       |   |  |  |         |  |  |
| -6   | 26/40-23G1           |                                    | 1730               |        |                     |         |       |   |  |  |         |  |  |
| -7   | 26/40-23A2           | ↓                                  | 1620               |        |                     |         |       |   |  |  |         |  |  |
| -8   | 26/39-25D1(BR4)      | 5/30/96                            | 0900               |        |                     |         |       |   |  |  |         |  |  |
| -9   | 26/39-27D1(MW-32)    |                                    | 0950               |        |                     |         |       |   |  |  |         |  |  |
| -10  | 24/38-21J1(BR10)     |                                    | 1030               |        |                     |         |       |   |  |  |         |  |  |
| -11  | 25/38-12L1(BRL)      |                                    | 1200               |        |                     |         |       |   |  |  |         |  |  |
| -12  | 27/39-8M1(IWVWD-SWP) | ↓                                  | 1340               | ↓      | ↓                   | ↓       | ↓     | ↓ |  |  |         |  |  |

|   |  |                                      |
|---|--|--------------------------------------|
| Special Billing/Comments:                                   | Relinquished by:                       | Received by:                         |
|   | Signature <u>B. D. Houghton</u>        | Signature _____                      |
| Sample integrity upon receipt:                              | Print <u>B. D. HOUGHTON</u>            | Print _____                          |
|   | Company <u>HOUGHTON HYDROGEO-LOGIC</u> | Company _____                        |
| Samples received intact <input checked="" type="checkbox"/> | Date <u>5/31/96</u> Time <u>1020</u>   | Date _____ Time _____                |
| Samples received cold <input checked="" type="checkbox"/>   | Relinquished by:                       | Received for Zymax by:               |
| Custody seals <input checked="" type="checkbox"/>           | Signature _____                        | Signature <u>Rich Besco</u>          |
| Correct container types <input checked="" type="checkbox"/> | Print _____                            | Print <u>Rich Besco</u>              |
|   | Company _____                          | Company <u>Zymax</u>                 |
|   | Date _____ Time _____                  | Date <u>5-31-96</u> Time <u>1020</u> |

|   |                        |                                 |                    |        |                     |         |       |          |  |  |  |         |
|---|------------------------|---------------------------------|--------------------|--------|---------------------|---------|-------|----------|--|--|--|---------|
| Project Manager<br><b>D. HOUGHTON</b>   |                        | Phone<br><b>(805) 393-6218</b>  | Fax<br><b>SAME</b> |        | Analysis Requested  |         |       |          |  |  |  |         |
| Company<br><b>Houghton Hydrogeo-Logic</b>   |                        | Project Number<br><b>96-002</b> |                    |        | GENERAL<br>MINERALS | ARSENIC | BORON |          |  |  |  |         |
| Address<br><b>Houghton Hydrogeo-Logic<br/>P.O. Box 80126<br/>Bakersfield, CA 93380-0126</b> |                        | Project Name<br><b>IWV-NAWS</b> |                    |        |                     |         |       |          |  |  |  |         |
|   |                        | Sampler<br><b>HOUGHTON</b>      |                    |        |                     |         |       |          |  |  |  |         |
| For Zymax Use Only  | Sample Description     | Date Sampled                    | Time Sampled       | Matrix |                     |         |       | Preserve |  |  |  | Remarks |
| 9003-1  | 27/38-23 F1 (S)        | 6/4/96                          | 1015               | W      | N                   | ✓       | ✓     | ✓        |  |  |  |         |
| -2  | 27/38-23 F1 (MS)       | 6/4/96                          | 1030               |        |                     |         |       |          |  |  |  |         |
| -3  | 27/38-23 F1 (MD)       | 6/4/96                          | 1040               |        |                     |         |       |          |  |  |  |         |
| -4  | 27/38-23 F1 (D)        | 6/4/96                          | 1045               |        |                     |         |       |          |  |  |  |         |
| -5  | 27/38-02 B1 (S)        | 6/4/96                          | 1115               |        |                     |         |       |          |  |  |  |         |
| -6  | 27/38-02 B1 (D)        | 6/4/96                          | 1230               |        |                     |         |       |          |  |  |  |         |
| -7  | 27/38-02 B1 (M)        | 6/4/96                          | 1230               |        |                     |         |       |          |  |  |  |         |
| -8  | 26/39-27 D1 (MD)       | 6/4/96                          | 1300               |        |                     |         |       |          |  |  |  |         |
|   | <del>27/39-11 D1</del> | <del>6/4/96</del>               | <del>1500</del>    |        |                     |         |       |          |  |  |  |         |
| -9  | HAWES-96               | 6/5/96                          | 0900               |        |                     |         |       |          |  |  |  |         |
| -10   | 24/38-21 J1 (MS)       | 6/5/96                          | 1000               |        |                     |         |       |          |  |  |  |         |

|                           |  |  |
|---------------------------|--|--|
| Special Billing/Comments: | Relinquished by:<br>Signature <u>B. D. Houghton</u><br>Print <u>B. D. HOUGHTON</u><br>Company <u>HOUGHTON HYDROGEOLOGIC</u><br>Date <u>6-7-96</u> Time <u>1340</u>   | Received by:<br>Signature _____<br>Print _____<br>Company _____<br>Date _____ Time _____     |
|                           | Sample Integrity upon receipt:<br>Samples received intact <input checked="" type="checkbox"/><br>Samples received cold <input checked="" type="checkbox"/><br>Custody seals <input checked="" type="checkbox"/><br>Correct container types <input checked="" type="checkbox"/> | Relinquished by:<br>Signature _____<br>Print _____<br>Company _____<br>Date _____ Time _____ |

| Project Manager<br><b>B. HOUGHTON</b>                           |                         | Phone<br><b>(805) 393-6218</b>  |              | Fax<br><b>SAME</b>              |          | Analysis Requested      |                |              |  |  |  | Remarks |  |  |  |  |  |
|---|-------------------------|---------------------------------|--------------|---------------------------------|----------|-------------------------|----------------|--------------|--|--|--|---------|--|--|--|--|--|
| Company<br><b>Houghton Hydrogeo-Logic</b>                       |                         | Project Number<br><b>96-002</b> |              | Project Name<br><b>IWV-NAWS</b> |          | <b>GENERAL MINERALS</b> | <b>ARSENIC</b> | <b>BARON</b> |  |  |  |         |  |  |  |  |  |
| Address<br><b>P.O. Box 80126<br/>Bakersfield, CA 93380-0126</b> |                         | Sampler<br><b>HOUGHTON</b>      |              |                                 |          |                         |                |              |  |  |  |         |  |  |  |  |  |
|   |                         |                                 |              |                                 |          |                         |                |              |  |  |  |         |  |  |  |  |  |
|   |                         |                                 |              |                                 |          |                         |                |              |  |  |  |         |  |  |  |  |  |
| For Zymax Use Only  | Sample Description      | Date Sampled                    | Time Sampled | Matrix                          | Preserve |                         |                |              |  |  |  |         |  |  |  |  |  |
| <b>9003-11</b>  | <b>24/38-21 J1 (MD)</b> | <b>6/5/96</b>                   | <b>1030</b>  | <b>W</b>                        | <b>N</b> | ✓                       | ✓              | ✓            |  |  |  |         |  |  |  |  |  |
| <b>-12</b>  | <b>24/38-21 J1 (D)</b>  | <b>6/5/96</b>                   | <b>1100</b>  | ↓                               | ↓        | ↓                       | ↓              | ↓            |  |  |  |         |  |  |  |  |  |
| <b>-13</b>  | <b>25/38-34 J1 (S)</b>  | <b>6/5/96</b>                   | <b>1130</b>  | ↓                               | ↓        | ↓                       | ↓              | ↓            |  |  |  |         |  |  |  |  |  |
| <b>-14</b>  | <b>25/38-34 J1 (M)</b>  | <b>6/5/96</b>                   | <b>1150</b>  | ↓                               | ↓        | ↓                       | ↓              | ↓            |  |  |  |         |  |  |  |  |  |
| <b>-15</b>  | <b>25/38-34 J1 (D)</b>  | <b>6/5/96</b>                   | <b>1210</b>  | ↓                               | ↓        | ↓                       | ↓              | ↓            |  |  |  |         |  |  |  |  |  |

|                                |  |                                      |
|--------------------------------|--|--------------------------------------|
| Special Billing/Comments:      | Relinquished by:                       | Received by:                         |
|                                | Signature <u>B.D. Houghton</u>         | Signature _____                      |
| Sample Integrity upon receipt: | Print <u>B.D. HOUGHTON</u>             | Print _____                          |
|                                | Company <u>HOUGHTON HYDROGEO-LOGIC</u> | Company _____                        |
|                                | Date <u>6-11-96</u> Time <u>1340</u>   | Date _____ Time _____                |
|                                | Time _____                             | Time _____                           |
| Samples received intact        | Relinquished by:                       | Received for Zymax by:               |
| Samples received cold          | Signature _____                        | Signature <u>[Signature]</u>         |
| Custody seals                  | Print _____                            | Print <u>R26 Besco</u>               |
| Correct container types        | Company _____                          | Company <u>Zymax</u>                 |
|                                | Date _____ Time _____                  | Date <u>6-11-96</u> Time <u>1340</u> |

| Project Manager<br><b>HOUGHTON</b>                              |                        | Phone<br><b>(805) 393-6218</b>  | Fax<br><b>SAME</b> |          | Analysis Requested |          |          |          |  |  | Remarks |  |  |  |
|---|------------------------|---------------------------------|--------------------|----------|--------------------|----------|----------|----------|--|--|---------|--|--|--|
| Company<br><b>Houghton Hydrogeo-Logic</b>                       |                        | Project Number<br><b>96-002</b> |                    |          | GENERAL MINERALS   | BORON    | ARSENIC  |          |  |  |         |  |  |  |
| Address<br><b>P.O. Box 80126<br/>Bakersfield, CA 93380-0126</b> |                        | Project Name<br><b>IWV-NAWS</b> |                    |          |                    |          |          |          |  |  |         |  |  |  |
|   |                        | Sampler<br><b>HOUGHTON</b>      |                    |          |                    |          |          |          |  |  |         |  |  |  |
| For Zymax Use Only  | Sample Description     | Date Sampled                    | Time Sampled       | Matrix   | Preserve           |          |          |          |  |  |         |  |  |  |
| <b>9068-1</b>   | <b>26/40-22 P4 (W)</b> | <b>6/15/96</b>                  | <b>0900</b>        | <b>W</b> | <b>N</b>           | <b>✓</b> | <b>✓</b> | <b>✓</b> |  |  |         |  |  |  |
| <b>-2</b>   | <b>26/40-22 P3 (E)</b> |                                 | <b>0915</b>        |          |                    |          |          |          |  |  |         |  |  |  |
| <b>-3</b>   | <b>26/40-22 P1</b>     |                                 | <b>0940</b>        |          |                    |          |          |          |  |  |         |  |  |  |
| <b>-4</b>   | <b>25/38-12 L1 (M)</b> |                                 | <b>1020</b>        |          |                    |          |          |          |  |  |         |  |  |  |
| <b>-5</b>   | <b>25/38-12 L1 (D)</b> |                                 | <b>1030</b>        |          |                    |          |          |          |  |  |         |  |  |  |
| <b>-6</b>   | <b>26/40-06 D2</b>     |                                 | <b>1300</b>        |          |                    |          |          |          |  |  |         |  |  |  |
| <b>-7</b>   | <b>25/41-19 L1</b>     | <b>6/19/96</b>                  | <b>0814</b>        | <b>↓</b> | <b>↓</b>           | <b>↓</b> | <b>↓</b> | <b>↓</b> |  |  |         |  |  |  |

Special Billing/Comments:

Relinquished by:  
 Signature *B.D. Houghton*  
 Print B.D. HOUGHTON  
 Company HOUGHTON HYDROGEO-LOGIC  
 Date 6-21-96 Time 1015

Received by:  
 Signature \_\_\_\_\_  
 Print \_\_\_\_\_  
 Company \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_

Sample Integrity upon receipt:

|                         |                                     |
|-------------------------|-------------------------------------|
| Samples received intact | <input checked="" type="checkbox"/> |
| Samples received cold   | <input checked="" type="checkbox"/> |
| Custody seals           | <input checked="" type="checkbox"/> |
| Correct container types | <input checked="" type="checkbox"/> |

Relinquished by:  
 Signature \_\_\_\_\_  
 Print \_\_\_\_\_  
 Company \_\_\_\_\_  
 Date \_\_\_\_\_ Time \_\_\_\_\_

Received for Zymax by:  
 Signature *Richard Besco*  
 Print RICH BESCO  
 Company Zymax  
 Date 6-21-96 Time 1015

| Project Manager<br><b>HOUGHTON</b>                              |                       | Phone<br><b>(805)393-6218</b>   | Fax<br><b>SAME</b> | Analysis Requested |          |                                     |                                     |                                     |                   |
|---|-----------------------|---------------------------------|--------------------|--------------------|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------|
| Company<br><b>Houghton Hydrogeo-Logic</b>                       |                       | Project Number<br><b>96-002</b> |                    | GENERAL<br>MIN.    | BORON    | ARSENIC                             | Remarks                             |                                     |                   |
| Address<br><b>P.O. Box 80128<br/>Bakersfield, CA 93380-0128</b> |                       | Project Name<br><b>IWV-NAWS</b> |                    |                    |          |                                     |                                     |                                     |                   |
|   |                       | Sampler<br><b>HOUGHTON</b>      |                    |                    |          |                                     |                                     |                                     |                   |
| For ZymaX<br>Use Only   | Sample Description    | Date<br>Sampled                 | Time<br>Sampled    | Matrix             | Preserve |                                     |                                     |                                     |                   |
| <b>9100-1</b>   | <b>27/39-11D1 (D)</b> | <b>6/25/96</b>                  | <b>1000</b>        | <b>W</b>           | <b>N</b> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <b>*FILTERED*</b> |
| <b>-2</b>   | <b>27/39-11D1 (M)</b> | <b>6/25/96</b>                  | <b>1055</b>        | <b>W</b>           | <b>N</b> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <b>  </b>         |
| <b>-3</b>   | <b>27/39-11D1 (S)</b> | <b>6/25/96</b>                  | <b>1140</b>        | <b>W</b>           | <b>N</b> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <b>  </b>         |

|   |  |                                      |
|---|--|--------------------------------------|
| Special Billing/Comments:                                   | Relinquished by:                       | Received by:                         |
|   | Signature <u>B.D. Houghton</u>         | Signature _____                      |
|   | Print <u>B.D. HOUGHTON</u>             | Print _____                          |
|   | Company <u>HOUGHTON HYDROGEO-LOGIC</u> | Company _____                        |
|   | Date <u>6-26-96</u> Time <u>1005</u>   | Date _____ Time _____                |
| Sample Integrity upon receipt:                              | Relinquished by:                       | Received for ZymaX by:               |
| Samples received intact <input checked="" type="checkbox"/> | Signature _____                        | Signature <u>Rick Besco</u>          |
| Samples received cold <input checked="" type="checkbox"/>   | Print _____                            | Print <u>Rick Besco</u>              |
| Custody seals <input checked="" type="checkbox"/>           | Company _____                          | Company <u>ZymaX</u>                 |
| Correct container types <input checked="" type="checkbox"/> | Date _____ Time _____                  | Date <u>6-26-96</u> Time <u>1005</u> |

|   |                    |                                 |              |                                    |          |                                     |                                     |                                     |                                     |                                     |                                     |
|---|--------------------|---------------------------------|--------------|------------------------------------|----------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| Project Manager<br><b>B. Houghton</b>     |                    | Phone<br><b>(805) 393-6218</b>  |              | Fax<br><b>SAME</b>                 |          | Analysis Requested                  |                                     |                                     |                                     |                                     | Remarks                             |
| Company<br><b>HOUGHTON HYDROGEO-LOGIC</b> |                    | Project Number<br><b>96-002</b> |              | Project Name<br><b>N AWS - IWV</b> |          | GEN. MINS                           | BOEHN                               | ARSENIC                             | SO <sup>4</sup> *                   | SD*                                 |                                     |
| Address                                   |                    | Sampler<br><b>HOUGHTON</b>      |              |                                    |          |                                     |                                     |                                     |                                     |                                     |                                     |
| For Zymax Use Only                        | Sample Description | Date Sampled                    | Time Sampled | Matrix                             | Preserve |                                     |                                     |                                     |                                     |                                     |                                     |
| <b>9347-1</b>                             | <b>26/40-35H2</b>  | <b>8/5/96</b>                   | <b>1000</b>  | <b>W</b>                           | <b>N</b> |                                     |                                     |                                     |                                     |                                     | <input checked="" type="checkbox"/> |
| <b>-2</b>                                 | <b>26/40-17Q2</b>  | <b>8/6/96</b>                   | <b>0615</b>  | <b>W</b>                           | <b>N</b> | <input checked="" type="checkbox"/> | <b>*FILTERED</b>                    |
| <b>-3</b>                                 | <b>26/39-15J1</b>  | <b>8/7/96</b>                   | <b>0640</b>  | <b>W</b>                           | <b>N</b> | <input checked="" type="checkbox"/> | <b>11</b>                           |

|   |  |  |
|---|--|--|
| Special Billing/Comments:                                   | Relinquished by:   | Received by:   |
|   | Signature <u><i>B.D. Houghton</i></u><br>Print <u>B.D. HOUGHTON</u><br>Company <u>HOUGHTON HYDROGEO-LOGIC</u><br>Date <u>8/9/96</u> Time <u>1335</u> | Signature _____<br>Print _____<br>Company _____<br>Date _____ Time _____ |
| Sample Integrity upon receipt:                              | Relinquished by:   | Received for Zymax by:   |
| Samples received intact <input checked="" type="checkbox"/> | Signature _____  | Signature <u><i>Rich Besco</i></u>                                       |
| Samples received cold <input checked="" type="checkbox"/>   | Print _____  | Print <u>RICH BESCO</u>  |
| Custody seals <input checked="" type="checkbox"/>           | Company _____  | Company <u>Zymax</u>   |
| Correct container types <input checked="" type="checkbox"/> | Date _____ Time _____  | Date <u>8-9-96</u> Time <u>1355</u>                                      |





71 Zaca Lane - Suite 110 - San Luis Obispo, CA 93401 - tel: 805.544.4696 - fax: 805.544.8226

chain of custody

| report to<br><b>B. HOUGHTON</b> |                    | phone<br><b>(805) 393-6218</b> |              | fax<br><b>SAME</b>         |          | ANALYSIS REQUESTED   |       |         |       |     | Turnaround Time   |  |
|---------------------------------|--------------------|--------------------------------|--------------|----------------------------|----------|--|-------|---------|-------|-----|---|--|
| company                         |                    | project<br><b>NAWS-1WV</b>     |              | project #<br><b>96-002</b> |          | GEN. MINS  | BORON | ARSENIC | SD'8* | SD* | ASAP <input type="checkbox"/> 48 hr <input type="checkbox"/>  |  |
| address                         |                    | sampler<br><b>HOUGHTON</b>     |              |                            |          |  |       |         |       |     | 12 hr <input type="checkbox"/> 72 hr <input type="checkbox"/> |  |
|                                 |                    |                                |              |                            |          | 24 hr <input type="checkbox"/> std <input checked="" type="checkbox"/> |       | Remarks |       |     |   |  |
| Zymax use only                  | SAMPLE DESCRIPTION | Date Sampled                   | Time Sampled | Matrix                     | Preserve | GEN. MINS  | BORON | ARSENIC | SD'8* | SD* |   |  |
| 9442-1                          | 26/40-13A1         | 8/22/96                        | 0700         | W                          | N        | X  | X     | X       | X     | X   | FILTERED  |  |
| -2                              | 26/40-23B2         | 8/23/96                        | 0700         | ↓                          | ↓        | ↓  | ↓     | ↓       | ↓     | ↓   |   |  |
| -3                              | 26/40-14A1         | 8/21/96                        | 0640         | ↓                          | ↓        | ↓  | ↓     | ↓       | ↓     | ↓   |   |  |

|                           |                                       |                       |
|---------------------------|---------------------------------------|-----------------------|
| Special billing/comments: | Relinquished by:                      | Received by:          |
|                           | Signature <u>B.D. Houghton</u>        | Signature _____       |
|                           | Print <u>B.D. HOUGHTON</u>            | Print _____           |
|                           | Company <u>HOUGHTON HYDROGEOLOGIC</u> | Company _____         |
|                           | Date <u>8/26/96</u> Time <u>1230</u>  | Date _____ Time _____ |

|  |                       |  |
|--|-----------------------|--|
| Sample integrity upon receipt:   | Relinquished by:      | Received by Zymax envirotechnology, inc: |
|  | Signature _____       | Signature <u>Rich Besco</u>              |
|  | Print _____           | Print <u>Rich Besco</u>                  |
|  | Company _____         | Company <u>Zymax</u>                     |
| <input checked="" type="checkbox"/> Samples received intact<br><input checked="" type="checkbox"/> Samples received cold<br><input checked="" type="checkbox"/> Custody seals<br><input checked="" type="checkbox"/> Correct container types | Date _____ Time _____ | Date <u>8-26-96</u> Time <u>1230</u>     |



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chain of custody

| report to<br><b>B. HOUGHTON</b>   | phone<br><b>(805) 393-6218</b> | fax<br><b>SAME</b> | ANALYSIS REQUESTED |          |          |                                     |                                     | Turnaround Time                     |   |                   |
|---|--------------------------------|--------------------|--------------------|----------|----------|-------------------------------------|-------------------------------------|-------------------------------------|---|-------------------|
| company   | project<br><b>NAWS-IWV</b>     |                    | GEN. MINS          | BORON    | ARSENIC  | SD <sup>18</sup> *                  | SD*                                 | ASAP <input type="checkbox"/>       | 48 hr <input type="checkbox"/>          |                   |
| address<br><b>Houghton Hydrogeo-Logic<br/>P.O. Box 80126<br/>Bakersfield, CA 93380-0126</b> | project #<br><b>96-002</b>     |                    |                    |          |          |                                     |                                     | 12 hr <input type="checkbox"/>      | 72 hr <input type="checkbox"/>          |                   |
|   | sampler<br><b>HOUGHTON</b>     |                    |                    |          |          |                                     |                                     | 24 hr <input type="checkbox"/>      | std <input checked="" type="checkbox"/> |                   |
| ZymaX use only  | SAMPLE DESCRIPTION             | Date Sampled       | Time Sampled       | Matrix   | Preserve |                                     |                                     |                                     | Remarks                                 |                   |
| <b>9447-1</b>   | <b>26/40-23 D1</b>             | <b>8/26/96</b>     | <b>2000</b>        | <b>W</b> | <b>N</b> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/>     | <b>* FILTERED</b> |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |
|   |                                |                    |                    |          |          |                                     |                                     |                                     |   |                   |

|  |  |   |
|--|--|---|
| Special billing/comments:<br><b>Research</b>   | Relinquished by:<br>Signature <b>B.D. Houghton</b><br>Print <b>B.D. HOUGHTON</b><br>Company <b>HOUGHTON HYDROGEO-LOGIC</b><br>Date <b>8/27/96</b> Time <b>1200</b> | Received by:<br>Signature _____<br>Print _____<br>Company _____<br>Date _____ Time _____  |
| Sample integrity upon receipt:<br>Samples received intact <input checked="" type="checkbox"/><br>Samples received cold <input checked="" type="checkbox"/><br>Custody seals <input checked="" type="checkbox"/><br>Correct container types <input checked="" type="checkbox"/> | Relinquished by:<br>Signature _____<br>Print _____<br>Company _____<br>Date _____ Time _____   | Received by ZymaX envirotechnology, Inc:<br>Signature <b>Kim Wacker</b><br>Print <b>Kim Wacker</b><br>Company <b>ZYMAX</b><br>Date <b>8-27-96</b> Time <b>12:00</b> |

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 8902-1  
**Collected:** 05/22/96  
**Received:** 05/28/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** BIRD-96  
**Analyzed:** 05/29/96 - 06/10/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 96.              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 96.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.075            |
| Calcium                         | EPA 6010  | 0.01         | 39.              |
| Chloride                        | EPA 300.0 | 0.05         | 22.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 3.4              |
| Iron                            | EPA 6010  | 0.002        | ND               |
| Magnesium                       | EPA 6010  | 0.01         | 2.9              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | 10.              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 1.2              |
| Sodium                          | EPA 6010  | 0.2          | 48.              |
| Sulfate                         | EPA 300.0 | 0.2          | 54.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 280.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 7.2              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 400.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.  
  
 John MacMurphey  
 Laboratory Director

8902-1g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-2  
 Collected: 05/22/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: HORSE-96  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 220.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 220.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.047            |
| Calcium                         | EPA 6010  | 0.01         | 70.              |
| Chloride                        | EPA 300.0 | 0.05         | 14.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.9              |
| Iron                            | EPA 6010  | 0.002        | 0.094            |
| Magnesium                       | EPA 6010  | 0.01         | 9.7              |
| Manganese                       | EPA 6010  | 0.002        | 0.005            |
| Nitrate                         | EPA 300.0 | 0.2          | 8.0              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 3.8              |
| Sodium                          | EPA 6010  | 0.2          | 34.              |
| Sulfate                         | EPA 300.0 | 0.2          | 52.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 350.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 6.9              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 520.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-2g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-3  
 Collected: 05/22/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 SAGE-96  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 230.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 230.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.052            |
| Calcium                         | EPA 6010  | 0.01         | 74.              |
| Chloride                        | EPA 300.0 | 0.05         | 16.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 2.3              |
| Iron                            | EPA 6010  | 0.002        | 0.030            |
| Magnesium                       | EPA 6010  | 0.01         | 13.              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 1.1              |
| Sodium                          | EPA 6010  | 0.2          | 43.              |
| Sulfate                         | EPA 300.0 | 0.2          | 22.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 380.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.1              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 530.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-3g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-4  
 Collected: 05/22/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 COW HEAVEN-96  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 160.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 160.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.034            |
| Calcium                         | EPA 6010  | 0.01         | 45.              |
| Chloride                        | EPA 300.0 | 0.05         | 7.2              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.34             |
| Iron                            | EPA 6010  | 0.002        | 0.002            |
| Magnesium                       | EPA 6010  | 0.01         | 8.3              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | 1.7              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 1.5              |
| Sodium                          | EPA 6010  | 0.2          | 23.              |
| Sulfate                         | EPA 300.0 | 0.2          | 9.9              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 230.             |
| Zinc                            | EPA 6010  | 0.002        | 0.014            |
| pH (pH units)                   | EPA 9040  |              | 6.8              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 350.             |

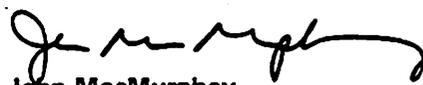
ZyMAX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZyMAX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-4g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-5  
 Collected: 05/22/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 BIG SPG-96  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

GENERAL MINERALS

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 180.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 180.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.056            |
| Calcium                         | EPA 6010  | 0.01         | 58.              |
| Chloride                        | EPA 300.0 | 0.05         | 14.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.60             |
| Iron                            | EPA 6010  | 0.002        | 0.018            |
| Magnesium                       | EPA 6010  | 0.01         | 9.2              |
| Manganese                       | EPA 6010  | 0.002        | 0.004            |
| Nitrate                         | EPA 300.0 | 0.2          | 4.3              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 0.6              |
| Sodium                          | EPA 6010  | 0.2          | 42.              |
| Sulfate                         | EPA 300.0 | 0.2          | 40.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 320.             |
| Zinc                            | EPA 6010  | 0.002        | 0.004            |
| pH (pH units)                   | EPA 9040  |              | 6.8              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 490.             |

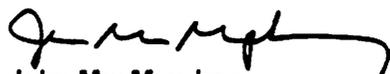
ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-5g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 8902-6  
**Collected:** 05/23/96  
**Received:** 05/28/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 WALKER-96  
**Analyzed:** 05/29/96 - 06/10/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 110.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 110.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.14             |
| Calcium                         | EPA 6010  | 0.01         | 49.              |
| Chloride                        | EPA 300.0 | 0.05         | 11.              |
| Copper                          | EPA 6010  | 0.006        | 0.028            |
| Flouride                        | EPA 340.2 | 0.01         | 0.21             |
| Iron                            | EPA 6010  | 0.002        | 0.033            |
| Magnesium                       | EPA 6010  | 0.01         | 8.9              |
| Manganese                       | EPA 6010  | 0.002        | 0.004            |
| Nitrate                         | EPA 300.0 | 0.2          | 20.              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 1.9              |
| Sodium                          | EPA 6010  | 0.2          | 28.              |
| Sulfate                         | EPA 300.0 | 0.2          | 64.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 280.             |
| Zinc                            | EPA 6010  | 0.002        | 0.048            |
| pH (pH units)                   | EPA 9040  |              | 7.2              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 420.             |

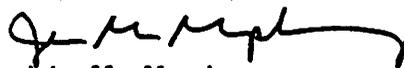
ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-6g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-7  
 Collected: 05/23/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: IND WLS-96  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 200.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 200.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.060            |
| Calcium                         | EPA 6010  | 0.01         | 79.              |
| Chloride                        | EPA 300.0 | 0.05         | 12.              |
| Copper                          | EPA 6010  | 0.006        | 0.008            |
| Flouride                        | EPA 340.2 | 0.01         | 0.68             |
| Iron                            | EPA 6010  | 0.002        | 0.009            |
| Magnesium                       | EPA 6010  | 0.01         | 20.              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 2.8              |
| Sodium                          | EPA 6010  | 0.2          | 31.              |
| Sulfate                         | EPA 300.0 | 0.2          | 110.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 430.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.0              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 620.             |

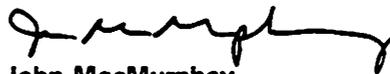
ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-7g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-8  
 Collected: 05/23/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: <sup>4</sup>  
 SHORT-96  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

GENERAL MINERALS

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 230.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 230.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.092            |
| Calcium                         | EPA 6010  | 0.01         | 75.              |
| Chloride                        | EPA 300.0 | 0.05         | 10.              |
| Copper                          | EPA 6010  | 0.006        | 0.009            |
| Flouride                        | EPA 340.2 | 0.01         | 0.91             |
| Iron                            | EPA 6010  | 0.002        | 0.012            |
| Magnesium                       | EPA 6010  | 0.01         | 10.              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 0.5              |
| Sodium                          | EPA 6010  | 0.2          | 50.              |
| Sulfate                         | EPA 300.0 | 0.2          | 61.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 390.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.0              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 570.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-8g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-9  
 Collected: 05/23/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: GRAPEVINE-96  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 360.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 360.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.14             |
| Calcium                         | EPA 6010  | 0.01         | 95.              |
| Chloride                        | EPA 300.0 | 0.05         | 10.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.73             |
| Iron                            | EPA 6010  | 0.002        | 0.020            |
| Magnesium                       | EPA 6010  | 0.01         | 26.              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 5.7              |
| Sodium                          | EPA 6010  | 0.2          | 60.              |
| Sulfate                         | EPA 300.0 | 0.2          | 87.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 520.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 7.9              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 790.             |

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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-9g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 8902-10  
**Collected:** 05/23/96  
**Received:** 05/28/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 SAND-96  
**Analyzed:** 05/29/96 - 06/10/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 290.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 290.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.20             |
| Calcium                         | EPA 6010  | 0.01         | 70.              |
| Chloride                        | EPA 300.0 | 0.05         | 16.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.6              |
| Iron                            | EPA 6010  | 0.002        | 0.009            |
| Magnesium                       | EPA 6010  | 0.01         | 20.              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 3.5              |
| Sodium                          | EPA 6010  | 0.2          | 66.              |
| Sulfate                         | EPA 300.0 | 0.2          | 70.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 450.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.2              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 680.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-10g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-11  
 Collected: 05/23/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 NONAME-96  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 520.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 520.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.35             |
| Calcium                         | EPA 6010  | 0.01         | 130.             |
| Chloride                        | EPA 300.0 | 0.05         | 54.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.9              |
| Iron                            | EPA 6010  | 0.002        | ND               |
| Magnesium                       | EPA 6010  | 0.01         | 81.              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 6.2              |
| Sodium                          | EPA 6010  | 0.2          | 150.             |
| Sulfate                         | EPA 300.0 | 0.2          | 360.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1100.            |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.0              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1700.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-11g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-12  
 Collected: 05/23/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 NINEMILE-96  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 460.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 440.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 20.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.18             |
| Calcium                         | EPA 6010  | 0.01         | 69.              |
| Chloride                        | EPA 300.0 | 0.05         | 30.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.92             |
| Iron                            | EPA 6010  | 0.002        | 0.002            |
| Magnesium                       | EPA 6010  | 0.01         | 73.              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 7.2              |
| Sodium                          | EPA 6010  | 0.2          | 95.              |
| Sulfate                         | EPA 300.0 | 0.2          | 110.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 690.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.4              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1000.            |

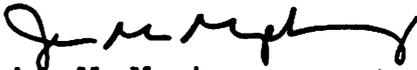
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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-12g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-13  
 Collected: 05/23/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 FIVEMILE-96  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL+<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 260.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 260.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.35             |
| Calcium                         | EPA 6010  | 0.01         | 89.              |
| Chloride                        | EPA 300.0 | 0.05         | 44.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 2.5              |
| Iron                            | EPA 6010  | 0.002        | 0.004            |
| Magnesium                       | EPA 6010  | 0.01         | 39.              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 6.5              |
| Sodium                          | EPA 6010  | 0.2          | 110.             |
| Sulfate                         | EPA 300.0 | 0.2          | 180.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 660.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.0              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 930.             |

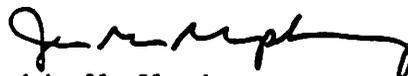
ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-13g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 8902-14  
**Collected:** 05/23/96  
**Received:** 05/28/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 LITTLE LKOUT-96  
**Analyzed:** 05/29/96 - 06/10/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 650.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 640.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 10.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | 0.09             |
| Boron                           | EPA 6010  | 0.006        | 6.0              |
| Calcium                         | EPA 6010  | 0.01         | 64.              |
| Chloride                        | EPA 300.0 | 0.05         | 200.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.71             |
| Iron                            | EPA 6010  | 0.002        | 0.005            |
| Magnesium                       | EPA 6010  | 0.01         | 69.              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 24.              |
| Sodium                          | EPA 6010  | 0.2          | 300.             |
| Sulfate                         | EPA 300.0 | 0.2          | 130.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1200.            |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.3              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1900.            |

ZyMAX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZyMAX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-14g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9003-9  
**Collected:** 06/05/96  
**Received:** 06/11/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** HAIWEE-96  
**Analyzed:** 06/13/96 - 06/26/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 240.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 240.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | 0.05             |
| Boron                           | EPA 6010  | 0.006        | 2.0              |
| Calcium                         | EPA 6010  | 0.01         | 68.              |
| Chloride                        | EPA 300.0 | 0.05         | 47.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.21             |
| Iron                            | EPA 6010  | 0.002        | 0.016            |
| Magnesium                       | EPA 6010  | 0.01         | 24.              |
| Manganese                       | EPA 6010  | 0.002        | 0.003            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 7.6              |
| Sodium                          | EPA 6010  | 0.2          | 66.              |
| Sulfate                         | EPA 300.0 | 0.2          | 38.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 390.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.1              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 650.             |

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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-9g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 8925-10  
**Collected:** 05/30/96  
**Received:** 05/31/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 24/38-21J1 (BR10)  
**Analyzed:** 06/04/96 - 06/13/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 300.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 240.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 60.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 5.6              |
| Calcium                         | EPA 6010  | 0.01         | 2.8              |
| Chloride                        | EPA 300.0 | 0.05         | 210.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.38             |
| Iron                            | EPA 6010  | 0.002        | 0.043            |
| Magnesium                       | EPA 6010  | 0.01         | 40.              |
| Manganese                       | EPA 6010  | 0.002        | 0.012            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 18.              |
| Sodium                          | EPA 6010  | 0.2          | 290.             |
| Sulfate                         | EPA 300.0 | 0.2          | 190.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 980.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.9              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1600.            |

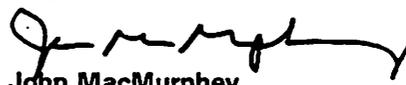
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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8925-10g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9003-10  
**Collected:** 06/05/96  
**Received:** 06/11/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** 24/38-21J1 (MS)  
**Analyzed:** 06/13/96 - 06/26/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 89.              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 31.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 58.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 3.5              |
| Calcium                         | EPA 6010  | 0.01         | 4.0              |
| Chloride                        | EPA 300.0 | 0.05         | 220.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.8              |
| Iron                            | EPA 6010  | 0.002        | 0.044            |
| Magnesium                       | EPA 6010  | 0.01         | 12.              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 17.              |
| Sodium                          | EPA 6010  | 0.2          | 290.             |
| Sulfate                         | EPA 300.0 | 0.2          | 200.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 750.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 9.7              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1300.            |

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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-10g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9003-11  
**Collected:** 06/05/96  
**Received:** 06/11/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 24/38-21J1 (MD)  
**Analyzed:** 06/13/96 - 06/26/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 400.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 310.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 90.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 2.2              |
| Calcium                         | EPA 6010  | 0.01         | 7.4              |
| Chloride                        | EPA 300.0 | 0.05         | 220.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.52             |
| Iron                            | EPA 6010  | 0.002        | 0.13             |
| Magnesium                       | EPA 6010  | 0.01         | 85.              |
| Manganese                       | EPA 6010  | 0.002        | 0.044            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 22.              |
| Sodium                          | EPA 6010  | 0.2          | 260.             |
| Sulfate                         | EPA 300.0 | 0.2          | 97.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 880.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 9.1              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1500.            |

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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-11g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9003-12  
**Collected:** 06/05/96  
**Received:** 06/11/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 24/38-21J1 (D)  
**Analyzed:** 06/13/96 - 06/26/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 160.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 110.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 50.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 4.9              |
| Calcium                         | EPA 6010  | 0.01         | 4.7              |
| Chloride                        | EPA 300.0 | 0.05         | 280.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.62             |
| Iron                            | EPA 6010  | 0.002        | 0.037            |
| Magnesium                       | EPA 6010  | 0.01         | 30.              |
| Manganese                       | EPA 6010  | 0.002        | 0.015            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 20.              |
| Sodium                          | EPA 6010  | 0.2          | 320.             |
| Sulfate                         | EPA 300.0 | 0.2          | 190.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 930.             |
| Zinc                            | EPA 6010  | 0.002        | 0.006            |
| pH (pH units)                   | EPA 9040  |              | 9.1              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1500.            |

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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-12g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8925-11  
 Collected: 05/30/96  
 Received: 05/31/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 25/38-12L1 (BR6)  
 Analyzed: 06/04/96 - 06/13/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 113.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 78.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 35.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 2.2              |
| Calcium                         | EPA 6010  | 0.01         | 5.0              |
| Chloride                        | EPA 300.0 | 0.05         | 120.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.54             |
| Iron                            | EPA 6010  | 0.002        | 0.10             |
| Magnesium                       | EPA 6010  | 0.01         | 9.7              |
| Manganese                       | EPA 6010  | 0.002        | 0.004            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 19.              |
| Sodium                          | EPA 6010  | 0.2          | 130.             |
| Sulfate                         | EPA 300.0 | 0.2          | 30.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 380.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 9.2              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 670.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8925-11g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9068-4  
 Collected: 06/18/96  
 Received: 06/21/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 25/38-12L1 (M)  
 Analyzed: 06/22/96 - 07/04/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 650.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 360.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 290.             |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 2.9              |
| Calcium                         | EPA 6010  | 0.01         | 0.68             |
| Chloride                        | EPA 300.0 | 0.05         | 58.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 5.6              |
| Iron                            | EPA 6010  | 0.002        | 0.43             |
| Magnesium                       | EPA 6010  | 0.01         | 0.12             |
| Manganese                       | EPA 6010  | 0.002        | 0.010            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 2.4              |
| Sodium                          | EPA 6010  | 0.2          | 400.             |
| Sulfate                         | EPA 300.0 | 0.2          | 3.4              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 850.             |
| Zinc                            | EPA 6010  | 0.002        | 0.004            |
| pH (pH units)                   | EPA 9040  |              | 9.7              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1500.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9068-4g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9068-5  
 Collected: 06/18/96  
 Received: 06/21/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 25/38-12L1 (D)  
 Analyzed: 06/22/96 - 07/04/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 480.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 330.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 150.             |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 2.0              |
| Calcium                         | EPA 6010  | 0.01         | 1.2              |
| Chloride                        | EPA 300.0 | 0.05         | 34.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.5              |
| Iron                            | EPA 6010  | 0.002        | 0.69             |
| Magnesium                       | EPA 6010  | 0.01         | 0.19             |
| Manganese                       | EPA 6010  | 0.002        | 0.010            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 4.1              |
| Sodium                          | EPA 6010  | 0.2          | 290.             |
| Sulfate                         | EPA 300.0 | 0.2          | 12.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 600.             |
| Zinc                            | EPA 6010  | 0.002        | 0.009            |
| pH (pH units)                   | EPA 9040  |              | 9.5              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1000.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9068-5g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9003-13  
 Collected: 06/05/96  
 Received: 06/11/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: 25/38-34J1 (S)  
 Analyzed: 06/13/96 - 06/26/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 177.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 130.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 47.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 1.3              |
| Calcium                         | EPA 6010  | 0.01         | 3.2              |
| Chloride                        | EPA 300.0 | 0.05         | 120.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.69             |
| Iron                            | EPA 6010  | 0.002        | 0.053            |
| Magnesium                       | EPA 6010  | 0.01         | 6.8              |
| Manganese                       | EPA 6010  | 0.002        | 0.007            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 14.              |
| Sodium                          | EPA 6010  | 0.2          | 170.             |
| Sulfate                         | EPA 300.0 | 0.2          | 35.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 440.             |
| Zinc                            | EPA 6010  | 0.002        | 0.006            |
| pH (pH units)                   | EPA 9040  |              | 9.3              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 770.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-13g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9003-14  
 Collected: 06/05/96  
 Received: 06/11/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 25/38-34J1 (M)  
 Analyzed: 06/13/96 - 06/26/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 820.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 700.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 120.             |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 4.7              |
| Calcium                         | EPA 6010  | 0.01         | 4.1              |
| Chloride                        | EPA 300.0 | 0.05         | 120.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.3              |
| Iron                            | EPA 6010  | 0.002        | 0.017            |
| Magnesium                       | EPA 6010  | 0.01         | 17.              |
| Manganese                       | EPA 6010  | 0.002        | 0.018            |
| Nitrate                         | EPA 300.0 | 0.2          | 0.4              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 12.              |
| Sodium                          | EPA 6010  | 0.2          | 480.             |
| Sulfate                         | EPA 300.0 | 0.2          | 27.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1100.            |
| Zinc                            | EPA 6010  | 0.002        | 0.003            |
| pH (pH units)                   | EPA 9040  |              | 9.0              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1700.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-14g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9003-15  
**Collected:** 06/05/96  
**Received:** 06/11/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** 25/38-34J1 (D)  
**Analyzed:** 06/13/96 - 06/26/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 900.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 650.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 250.             |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 3.6              |
| Calcium                         | EPA 6010  | 0.01         | 1.5              |
| Chloride                        | EPA 300.0 | 0.05         | 98.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.4              |
| Iron                            | EPA 6010  | 0.002        | 0.020            |
| Magnesium                       | EPA 6010  | 0.01         | 2.2              |
| Manganese                       | EPA 6010  | 0.002        | 0.003            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 6.3              |
| Sodium                          | EPA 6010  | 0.2          | 550.             |
| Sulfate                         | EPA 300.0 | 0.2          | 27.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1200.            |
| Zinc                            | EPA 6010  | 0.002        | 0.006            |
| pH (pH units)                   | EPA 9040  |              | 9.5              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1900.            |

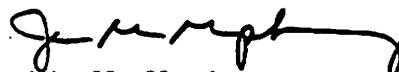
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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZyMAX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-15xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9068-7  
 Collected: 06/19/96  
 Received: 06/21/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: 25/41-19L1  
 Analyzed: 06/22/96 - 07/04/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 590.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 270.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 320.             |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 28.              |
| Calcium                         | EPA 6010  | 0.01         | 5.2              |
| Chloride                        | EPA 300.0 | 0.05         | 4200.            |
| Copper                          | EPA 6010  | 0.006        | 0.68             |
| Flouride                        | EPA 340.2 | 0.01         | 1.8              |
| Iron                            | EPA 6010  | 0.002        | 0.18             |
| Magnesium                       | EPA 6010  | 0.01         | 4.1              |
| Manganese                       | EPA 6010  | 0.002        | 0.007            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 71.              |
| Sodium                          | EPA 6010  | 0.2          | 3400.            |
| Sulfate                         | EPA 300.0 | 0.2          | 7.1              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 8100.            |
| Zinc                            | EPA 6010  | 0.002        | 0.20             |
| pH (pH units)                   | EPA 9040  |              | 9.5              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 13000.           |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9068-7g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9385-1  
 Collected: 08/15/96  
 Received: 08/16/96  
 Matrix: Aqueous

Project: NAWS-IWV  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 26/39 - 11E2  
 Analyzed: 08/20/96 - 09/06/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 200.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 200.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 2.2              |
| Calcium                         | EPA 6010  | 0.01         | 72.              |
| Chloride                        | EPA 300.0 | 0.05         | 95.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Fluoride                        | EPA 340.2 | 0.01         | 0.45             |
| Iron                            | EPA 6010  | 0.002        | 0.007            |
| Magnesium                       | EPA 6010  | 0.01         | 11.              |
| Manganese                       | EPA 6010  | 0.002        | 0.009            |
| Nitrate                         | EPA 300.0 | 0.2          | 2.3              |
| Phosphate                       | EPA 300.0 | 1.0          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 3.4              |
| Sodium                          | EPA 6010  | 0.2          | 89.              |
| Sulfate                         | EPA 300.0 | 0.2          | 43.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 490.             |
| Zinc                            | EPA 6010  | 0.002        | 0.005            |
| pH (pH units)                   | EPA 9040  |              | 7.8              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 770.             |

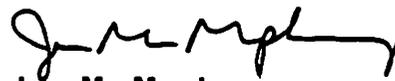
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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9381-1g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9347-3  
 Collected: 08/07/96  
 Received: 08/09/96  
 Matrix: Aqueous

Project: NAWS-IWV  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 26/39 - 15J1  
 Analyzed: 08/10/96 - 08/21/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 83.              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 83.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.24             |
| Calcium                         | EPA 6010  | 0.01         | 31.              |
| Chloride                        | EPA 300.0 | 0.05         | 25.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Fluoride                        | EPA 340.2 | 0.01         | 0.65             |
| Iron                            | EPA 6010  | 0.002        | 0.004            |
| Magnesium                       | EPA 6010  | 0.01         | 8.7              |
| Manganese                       | EPA 6010  | 0.002        | 0.011            |
| Nitrate                         | EPA 300.0 | 0.2          | 2.5              |
| Phosphate                       | EPA 300.0 | 1.0          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 4.5              |
| Sodium                          | EPA 6010  | 0.2          | 32.              |
| Sulfate                         | EPA 300.0 | 0.2          | 47.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 210.             |
| Zinc                            | EPA 6010  | 0.002        | 0.015            |
| pH (pH units)                   | EPA 9040  |              | 7.7              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 350.             |

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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZyMAX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9347-3g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8925-8  
 Collected: 05/30/96  
 Received: 05/31/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: 26/39-25D1 (BR4)  
 Analyzed: 06/04/96 - 06/13/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 120.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 47.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 73.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.76             |
| Calcium                         | EPA 6010  | 0.01         | 1.3              |
| Chloride                        | EPA 300.0 | 0.05         | 14.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.1              |
| Iron                            | EPA 6010  | 0.002        | 1.3              |
| Magnesium                       | EPA 6010  | 0.01         | 0.03             |
| Manganese                       | EPA 6010  | 0.002        | 0.008            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 1.3              |
| Sodium                          | EPA 6010  | 0.2          | 69.              |
| Sulfate                         | EPA 300.0 | 0.2          | 0.3              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 180.             |
| Zinc                            | EPA 6010  | 0.002        | 0.008            |
| pH (pH units)                   | EPA 9040  |              | 9.8              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 300.             |

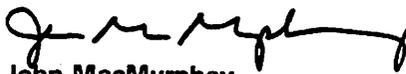
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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8925-8g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8925-9  
 Collected: 05/30/96  
 Received: 05/31/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 26/39-27D1 (MW-32)  
 Analyzed: 06/04/96 - 06/13/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 58.              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 41.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 17.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.24             |
| Calcium                         | EPA 6010  | 0.01         | 2.3              |
| Chloride                        | EPA 300.0 | 0.05         | 26.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.43             |
| Iron                            | EPA 6010  | 0.002        | 0.16             |
| Magnesium                       | EPA 6010  | 0.01         | 0.23             |
| Manganese                       | EPA 6010  | 0.002        | 0.004            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 2.9              |
| Sodium                          | EPA 6010  | 0.2          | 47.              |
| Sulfate                         | EPA 300.0 | 0.2          | 13.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 140.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 9.1              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 230.             |

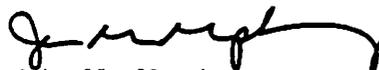
ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8925-9g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9003-8  
**Collected:** 06/04/96  
**Received:** 06/11/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** 26/39-27D1 (MD)  
**Analyzed:** 06/13/96 - 06/26/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 103.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 61.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 42.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.24             |
| Calcium                         | EPA 6010  | 0.01         | 1.5              |
| Chloride                        | EPA 300.0 | 0.05         | 29.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.65             |
| Iron                            | EPA 6010  | 0.002        | 0.14             |
| Magnesium                       | EPA 6010  | 0.01         | 0.11             |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | 0.3              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 2.9              |
| Sodium                          | EPA 6010  | 0.2          | 80.              |
| Sulfate                         | EPA 300.0 | 0.2          | 6.0              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 160.             |
| Zinc                            | EPA 6010  | 0.002        | 0.004            |
| pH (pH units)                   | EPA 9040  |              | 9.6              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 320.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-8g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 8902-15  
**Collected:** 05/24/96  
**Received:** 05/28/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** 26/40-1Q2  
**Analyzed:** 05/29/96 - 06/10/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 64.              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 64.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 41.              |
| Calcium                         | EPA 6010  | 0.01         | 130.             |
| Chloride                        | EPA 300.0 | 0.05         | 690.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 4.4              |
| Iron                            | EPA 6010  | 0.002        | 260.             |
| Magnesium                       | EPA 6010  | 0.01         | 18.              |
| Manganese                       | EPA 6010  | 0.002        | 0.15             |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 64.              |
| Sodium                          | EPA 6010  | 0.2          | 4100.            |
| Sulfate                         | EPA 300.0 | 0.2          | 830.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 13000.           |
| Zinc                            | EPA 6010  | 0.002        | 100.             |
| pH (pH units)                   | EPA 9040  |              | 5.9              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 20000.           |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-15g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9068-6  
 Collected: 06/18/96  
 Received: 06/21/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: 26/40-06D2  
 Analyzed: 06/22/96 - 07/04/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 12400.           |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 2400.            |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 10000.           |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | 0.05             |
| Boron                           | EPA 6010  | 0.006        | 340.             |
| Calcium                         | EPA 6010  | 0.01         | 1.2              |
| Chloride                        | EPA 300.0 | 0.05         | 6300.            |
| Copper                          | EPA 6010  | 0.006        | 0.006            |
| Flouride                        | EPA 340.2 | 0.01         | 24.              |
| Iron                            | EPA 6010  | 0.002        | 0.074            |
| Magnesium                       | EPA 6010  | 0.01         | 0.20             |
| Manganese                       | EPA 6010  | 0.002        | 0.015            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | 83.              |
| Potassium                       | EPA 6010  | 0.2          | 59.              |
| Sodium                          | EPA 6010  | 0.2          | 11000.           |
| Sulfate                         | EPA 300.0 | 0.2          | 61.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 26000.           |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 9.8              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 34000.           |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9068-6g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-16  
 Collected: 05/24/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 26/40-12D1  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 3100.            |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 1500.            |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 1600.            |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | 1.1              |
| Boron                           | EPA 6010  | 0.006        | 120.             |
| Calcium                         | EPA 6010  | 0.01         | 1.2              |
| Chloride                        | EPA 300.0 | 0.05         | 3100.            |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 9.9              |
| Iron                            | EPA 6010  | 0.002        | 0.20             |
| Magnesium                       | EPA 6010  | 0.01         | 0.35             |
| Manganese                       | EPA 6010  | 0.002        | 0.004            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | 16.              |
| Potassium                       | EPA 6010  | 0.2          | 53.              |
| Sodium                          | EPA 6010  | 0.2          | 4100.            |
| Sulfate                         | EPA 300.0 | 0.2          | 680.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 11000.           |
| Zinc                            | EPA 6010  | 0.002        | 0.13             |
| pH (pH units)                   | EPA 9040  |              | 9.6              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 16000.           |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-16g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-17  
 Collected: 05/24/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 26/40-12Q1  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 260.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 120.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 140.             |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 3.3              |
| Calcium                         | EPA 6010  | 0.01         | 2.3              |
| Chloride                        | EPA 300.0 | 0.05         | 280.             |
| Copper                          | EPA 6010  | 0.006        | 0.006            |
| Flouride                        | EPA 340.2 | 0.01         | 1.2              |
| Iron                            | EPA 6010  | 0.002        | 0.025            |
| Magnesium                       | EPA 6010  | 0.01         | 1.2              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | 4.9              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 15.              |
| Sodium                          | EPA 6010  | 0.2          | 390.             |
| Sulfate                         | EPA 300.0 | 0.2          | 150.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1000.            |
| Zinc                            | EPA 6010  | 0.002        | 0.047            |
| pH (pH units)                   | EPA 9040  |              | 9.7              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1800.            |

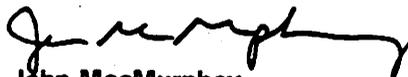
ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-17g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-18  
 Collected: 05/24/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: 26/40-12R1  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 530.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 320.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 210.             |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 5.1              |
| Calcium                         | EPA 6010  | 0.01         | 2.6              |
| Chloride                        | EPA 300.0 | 0.05         | 360.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 2.1              |
| Iron                            | EPA 6010  | 0.002        | 0.12             |
| Magnesium                       | EPA 6010  | 0.01         | 2.3              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | 1.0              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 14.              |
| Sodium                          | EPA 6010  | 0.2          | 600.             |
| Sulfate                         | EPA 300.0 | 0.2          | 250.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1500.            |
| Zinc                            | EPA 6010  | 0.002        | 0.099            |
| pH (pH units)                   | EPA 9040  |              | 9.5              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 2600.            |

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Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-18g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9442-1  
**Collected:** 08/22/96  
**Received:** 08/26/96  
**Matrix:** Aqueous

**Project:** NAWS-IWV  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 26/40 - 13A1  
**Analyzed:** 08/27/96 - 09/06/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 130.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 130.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 4.0              |
| Calcium                         | EPA 6010  | 0.01         | 21.              |
| Chloride                        | EPA 300.0 | 0.05         | 500.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Fluoride                        | EPA 340.2 | 0.01         | 1.8              |
| Iron                            | EPA 6010  | 0.002        | 0.020            |
| Magnesium                       | EPA 6010  | 0.01         | 6.3              |
| Manganese                       | EPA 6010  | 0.002        | 0.010            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 1.0          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 10.              |
| Sodium                          | EPA 6010  | 0.2          | 410.             |
| Sulfate                         | EPA 300.0 | 0.2          | 50.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1100.            |
| Zinc                            | EPA 6010  | 0.002        | 0.003            |
| pH (pH units)                   | EPA 9040  |              | 8.2              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 2000.            |

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Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9442-1g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-19  
 Collected: 05/24/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 26/40-13M1  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 390.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 390.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 2.9              |
| Calcium                         | EPA 6010  | 0.01         | 40.              |
| Chloride                        | EPA 300.0 | 0.05         | 450.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 5.3              |
| Iron                            | EPA 6010  | 0.002        | 0.14             |
| Magnesium                       | EPA 6010  | 0.01         | 4.4              |
| Manganese                       | EPA 6010  | 0.002        | 0.19             |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 6.2              |
| Sodium                          | EPA 6010  | 0.2          | 530.             |
| Sulfate                         | EPA 300.0 | 0.2          | 130.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1500.            |
| Zinc                            | EPA 6010  | 0.002        | 5.9              |
| pH (pH units)                   | EPA 9040  |              | 6.7              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 2500.            |

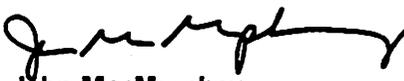
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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-19g.xls  
 JMM/jgt/ts.

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9442-3  
**Collected:** 08/21/96  
**Received:** 08/26/96  
**Matrix:** Aqueous

**Project:** NAWS-IWV  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** 26/40 - 14A1  
**Analyzed:** 08/27/96 - 09/06/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 450.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 420.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 30.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 7.3              |
| Calcium                         | EPA 6010  | 0.01         | 2.8              |
| Chloride                        | EPA 300.0 | 0.05         | 420.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Fluoride                        | EPA 340.2 | 0.01         | 2.2              |
| Iron                            | EPA 6010  | 0.002        | 0.047            |
| Magnesium                       | EPA 6010  | 0.01         | 1.3              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 1.0          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 6.2              |
| Sodium                          | EPA 6010  | 0.2          | 550.             |
| Sulfate                         | EPA 300.0 | 0.2          | 50.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1300.            |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.6              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 2200.            |

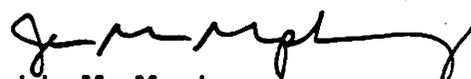
ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9442-3g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-20  
 Collected: 05/24/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: 26/40-14B1  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 570.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 570.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | 1.2              |
| Boron                           | EPA 6010  | 0.006        | 5.0              |
| Calcium                         | EPA 6010  | 0.01         | 35.              |
| Chloride                        | EPA 300.0 | 0.05         | 450.             |
| Copper                          | EPA 6010  | 0.006        | 0.007            |
| Flouride                        | EPA 340.2 | 0.01         | 5.1              |
| Iron                            | EPA 6010  | 0.002        | 0.049            |
| Magnesium                       | EPA 6010  | 0.01         | 7.2              |
| Manganese                       | EPA 6010  | 0.002        | 0.047            |
| Nitrate                         | EPA 300.0 | 0.2          | 2.2              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 10.              |
| Sodium                          | EPA 6010  | 0.2          | 650.             |
| Sulfate                         | EPA 300.0 | 0.2          | 240.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1900.            |
| Zinc                            | EPA 6010  | 0.002        | 0.65             |
| pH (pH units)                   | EPA 9040  |              | 7.8              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 2900.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

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Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-20g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8925-4  
 Collected: 05/29/96  
 Received: 05/31/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: 26/40-15N2  
 Analyzed: 06/04/96 - 06/13/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 1100.            |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 900.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 200.             |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 78.              |
| Calcium                         | EPA 6010  | 0.01         | 4.7              |
| Chloride                        | EPA 300.0 | 0.05         | 150.             |
| Copper                          | EPA 6010  | 0.006        | 0.012            |
| Flouride                        | EPA 340.2 | 0.01         | 1.8              |
| Iron                            | EPA 6010  | 0.002        | 0.15             |
| Magnesium                       | EPA 6010  | 0.01         | 2.9              |
| Manganese                       | EPA 6010  | 0.002        | 0.024            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 17.              |
| Sodium                          | EPA 6010  | 0.2          | 1000.            |
| Sulfate                         | EPA 300.0 | 0.2          | 800.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 3000.            |
| Zinc                            | EPA 6010  | 0.002        | 0.026            |
| pH (pH units)                   | EPA 9040  |              | 8.7              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 4000.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8925-4g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8925-5  
 Collected: 05/29/96  
 Received: 05/31/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 26/40-17J1  
 Analyzed: 06/04/96 - 06/13/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 110.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 110.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.28             |
| Calcium                         | EPA 6010  | 0.01         | 25.              |
| Chloride                        | EPA 300.0 | 0.05         | 25.              |
| Copper                          | EPA 6010  | 0.006        | 0.008            |
| Flouride                        | EPA 340.2 | 0.01         | 0.72             |
| Iron                            | EPA 6010  | 0.002        | 0.26             |
| Magnesium                       | EPA 6010  | 0.01         | 6.2              |
| Manganese                       | EPA 6010  | 0.002        | 0.043            |
| Nitrate                         | EPA 300.0 | 0.2          | 4.6              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 5.5              |
| Sodium                          | EPA 6010  | 0.2          | 54.              |
| Sulfate                         | EPA 300.0 | 0.2          | 29.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 260.             |
| Zinc                            | EPA 6010  | 0.002        | 0.048            |
| pH (pH units)                   | EPA 9040  |              | 7.4              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 390.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8925-5g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9347-2  
 Collected: 08/06/96  
 Received: 08/09/96  
 Matrix: Aqueous

Project: NAWS-IWV  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: 26/40 - 17Q2  
 Analyzed: 08/10/96 - 08/21/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 1700.            |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 1000.            |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 700.             |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 56.              |
| Calcium                         | EPA 6010  | 0.01         | 0.81             |
| Chloride                        | EPA 300.0 | 0.05         | 280.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Fluoride                        | EPA 340.2 | 0.01         | 14.              |
| Iron                            | EPA 6010  | 0.002        | 0.47             |
| Magnesium                       | EPA 6010  | 0.01         | 0.81             |
| Manganese                       | EPA 6010  | 0.002        | 0.009            |
| Nitrate                         | EPA 300.0 | 0.12         | ND               |
| Phosphate                       | EPA 300.0 | 1.0          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 7.6              |
| Sodium                          | EPA 6010  | 0.2          | 960.             |
| Sulfate                         | EPA 300.0 | 0.2          | 0.8              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 2400.            |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 9.4              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 3700.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9347-2g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 8902-21  
**Collected:** 05/24/96  
**Received:** 05/28/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 26/40-22H1  
**Analyzed:** 05/29/96 - 06/10/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 46.              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 46.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | 0.05             |
| Boron                           | EPA 6010  | 0.006        | 2.5              |
| Calcium                         | EPA 6010  | 0.01         | 400.             |
| Chloride                        | EPA 300.0 | 0.05         | 190.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.1              |
| Iron                            | EPA 6010  | 0.002        | 0.018            |
| Magnesium                       | EPA 6010  | 0.01         | 240.             |
| Manganese                       | EPA 6010  | 0.002        | 0.22             |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 65.              |
| Sodium                          | EPA 6010  | 0.2          | 570.             |
| Sulfate                         | EPA 300.0 | 0.2          | 2700.            |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 4800.            |
| Zinc                            | EPA 6010  | 0.002        | 1.4              |
| pH (pH units)                   | EPA 9040  |              | 7.4              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 4900.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-21g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9068-3  
**Collected:** 06/18/96  
**Received:** 06/21/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** 26/40-22P1  
**Analyzed:** 06/22/96 - 07/04/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 35.              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 35.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.77             |
| Calcium                         | EPA 6010  | 0.01         | 43.              |
| Chloride                        | EPA 300.0 | 0.05         | 150.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.19             |
| Iron                            | EPA 6010  | 0.002        | 0.16             |
| Magnesium                       | EPA 6010  | 0.01         | 32.              |
| Manganese                       | EPA 6010  | 0.002        | 0.017            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 19.              |
| Sodium                          | EPA 6010  | 0.2          | 190.             |
| Sulfate                         | EPA 300.0 | 0.2          | 350.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 860.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.1              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1300.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9068-3g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8925-3  
 Collected: 05/29/96  
 Received: 05/31/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: 26/40-22P2  
 Analyzed: 06/04/96 - 06/13/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 73.              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 73.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | 0.03             |
| Boron                           | EPA 6010  | 0.006        | 0.60             |
| Calcium                         | EPA 6010  | 0.01         | 100.             |
| Chloride                        | EPA 300.0 | 0.05         | 64.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.6              |
| Iron                            | EPA 6010  | 0.002        | 0.023            |
| Magnesium                       | EPA 6010  | 0.01         | 70.              |
| Manganese                       | EPA 6010  | 0.002        | 0.019            |
| Nitrate                         | EPA 300.0 | 0.2          | 0.5              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 29.              |
| Sodium                          | EPA 6010  | 0.2          | 200.             |
| Sulfate                         | EPA 300.0 | 0.2          | 840.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1400.            |
| Zinc                            | EPA 6010  | 0.002        | 0.019            |
| pH (pH units)                   | EPA 9040  |              | 7.3              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1800.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8925-3g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9068-2  
**Collected:** 06/18/96  
**Received:** 06/21/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** 26/40-22P3 (Ea) W2  
**Analyzed:** 06/22/96 - 07/04/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 850.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 770.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 80.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 14.              |
| Calcium                         | EPA 6010  | 0.01         | 1.0              |
| Chloride                        | EPA 300.0 | 0.05         | 220.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 5.0              |
| Iron                            | EPA 6010  | 0.002        | 0.83             |
| Magnesium                       | EPA 6010  | 0.01         | 0.47             |
| Manganese                       | EPA 6010  | 0.002        | 0.030            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 7.5              |
| Sodium                          | EPA 6010  | 0.2          | 590.             |
| Sulfate                         | EPA 300.0 | 0.2          | 1.4              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1400.            |
| Zinc                            | EPA 6010  | 0.002        | 0.003            |
| pH (pH units)                   | EPA 9040  |              | 8.8              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 2200.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9068-2g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9068-1  
 Collected: 06/18/96  
 Received: 06/21/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: *Ei*  
 26/40-22P4 (We)  
 Analyzed: 06/22/96 - 07/04/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 72.              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 72.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.26             |
| Calcium                         | EPA 6010  | 0.01         | 9.3              |
| Chloride                        | EPA 300.0 | 0.05         | 99.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.11             |
| Iron                            | EPA 6010  | 0.002        | 0.10             |
| Magnesium                       | EPA 6010  | 0.01         | 12.              |
| Manganese                       | EPA 6010  | 0.002        | 0.20             |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 15.              |
| Sodium                          | EPA 6010  | 0.2          | 130.             |
| Sulfate                         | EPA 300.0 | 0.2          | 140.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 460.             |
| Zinc                            | EPA 6010  | 0.002        | 0.006            |
| pH (pH units)                   | EPA 9040  |              | 7.7              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 860.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9068-1g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 8925-7  
**Collected:** 05/29/96  
**Received:** 05/31/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** 26/40-23A2  
**Analyzed:** 06/04/96 - 06/13/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 290.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 290.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 7.8              |
| Calcium                         | EPA 6010  | 0.01         | 51.              |
| Chloride                        | EPA 300.0 | 0.05         | 720.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.5              |
| Iron                            | EPA 6010  | 0.002        | 0.050            |
| Magnesium                       | EPA 6010  | 0.01         | 18.              |
| Manganese                       | EPA 6010  | 0.002        | 0.005            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 26.              |
| Sodium                          | EPA 6010  | 0.2          | 770.             |
| Sulfate                         | EPA 300.0 | 0.2          | 490.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 2400.            |
| Zinc                            | EPA 6010  | 0.002        | 0.007            |
| pH (pH units)                   | EPA 9040  |              | 8.0              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 3300.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8925-7g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9442-2  
**Collected:** 08/23/96  
**Received:** 08/26/96  
**Matrix:** Aqueous

**Project:** NAWS-IWV  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 26/40 - 23B2  
**Analyzed:** 08/27/96 - 09/06/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 450.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 440.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 10.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 5.5              |
| Calcium                         | EPA 6010  | 0.01         | 5.5              |
| Chloride                        | EPA 300.0 | 0.05         | 360.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Fluoride                        | EPA 340.2 | 0.01         | 2.2              |
| Iron                            | EPA 6010  | 0.002        | 0.037            |
| Magnesium                       | EPA 6010  | 0.01         | 2.9              |
| Manganese                       | EPA 6010  | 0.002        | 0.003            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 1.0          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 13.              |
| Sodium                          | EPA 6010  | 0.2          | 490.             |
| Sulfate                         | EPA 300.0 | 0.2          | 88.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1300.            |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 8.6              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 2100.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9442-2g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9447-1  
 Collected: 08/26/96  
 Received: 08/27/96  
 Matrix: Aqueous

Project: NAWS-IWV  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 26/40 - 23D1  
 Analyzed: 08/27/96 - 09/06/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 730.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 580.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 150.             |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 16.              |
| Calcium                         | EPA 6010  | 0.01         | 4.3              |
| Chloride                        | EPA 300.0 | 0.05         | 380.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Fluoride                        | EPA 340.2 | 0.01         | 5.9              |
| Iron                            | EPA 6010  | 0.002        | 0.18             |
| Magnesium                       | EPA 6010  | 0.01         | 6.1              |
| Manganese                       | EPA 6010  | 0.002        | 0.012            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 1.0          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 15.              |
| Sodium                          | EPA 6010  | 0.2          | 750.             |
| Sulfate                         | EPA 300.0 | 0.2          | 260.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 2000.            |
| Zinc                            | EPA 6010  | 0.002        | 0.005            |
| pH (pH units)                   | EPA 9040  |              | 9.0              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 3000.            |

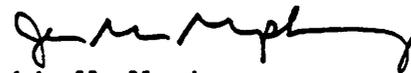
ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.



John MacMurphey  
 Laboratory Director

9447-1g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 8925-6  
**Collected:** 05/29/96  
**Received:** 05/31/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** 26/40-23G1  
**Analyzed:** 06/04/96 - 06/13/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 440.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 440.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | 1.4              |
| Boron                           | EPA 6010  | 0.006        | 17.              |
| Calcium                         | EPA 6010  | 0.01         | 51.              |
| Chloride                        | EPA 300.0 | 0.05         | 910.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 3.2              |
| Iron                            | EPA 6010  | 0.002        | 0.70             |
| Magnesium                       | EPA 6010  | 0.01         | 49.              |
| Manganese                       | EPA 6010  | 0.002        | 0.049            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 26.              |
| Sodium                          | EPA 6010  | 0.2          | 1400.            |
| Sulfate                         | EPA 300.0 | 0.2          | 1500.            |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 4400.            |
| Zinc                            | EPA 6010  | 0.002        | 0.013            |
| pH (pH units)                   | EPA 9040  |              | 8.0              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 6300.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8925-6g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8902-22  
 Collected: 05/24/96  
 Received: 05/28/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: 26/40-26F1  
 Analyzed: 05/29/96 - 06/10/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 150.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 150.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 1.9              |
| Calcium                         | EPA 6010  | 0.01         | 110.             |
| Chloride                        | EPA 300.0 | 0.05         | 260.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.46             |
| Iron                            | EPA 6010  | 0.002        | 0.035            |
| Magnesium                       | EPA 6010  | 0.01         | 42.              |
| Manganese                       | EPA 6010  | 0.002        | 0.022            |
| Nitrate                         | EPA 300.0 | 0.2          | 0.6              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 20.              |
| Sodium                          | EPA 6010  | 0.2          | 310.             |
| Sulfate                         | EPA 300.0 | 0.2          | 560.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1400.            |
| Zinc                            | EPA 6010  | 0.002        | 1.6              |
| pH (pH units)                   | EPA 9040  |              | 7.4              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 2200.            |

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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8902-22g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8925-2  
 Collected: 05/29/96  
 Received: 05/31/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 26/40-35G  
 Analyzed: 06/04/96 - 06/13/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 180.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 180.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 1.4              |
| Calcium                         | EPA 6010  | 0.01         | 120.             |
| Chloride                        | EPA 300.0 | 0.05         | 210.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.33             |
| Iron                            | EPA 6010  | 0.002        | 0.004            |
| Magnesium                       | EPA 6010  | 0.01         | 31.              |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | 4.8              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 9.1              |
| Sodium                          | EPA 6010  | 0.2          | 170.             |
| Sulfate                         | EPA 300.0 | 0.2          | 280.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 1000.            |
| Zinc                            | EPA 6010  | 0.002        | 0.021            |
| pH (pH units)                   | EPA 9040  |              | 7.3              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1500.            |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8925-2g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9347-1  
 Collected: 08/05/96  
 Received: 08/09/96  
 Matrix: Aqueous

Project: NAWS-IWV  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 26/40 - 35H2  
 Analyzed: 08/10/96 - 08/21/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 70.              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 70.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | 0.04             |
| Boron                           | EPA 6010  | 0.006        | 4.5              |
| Calcium                         | EPA 6010  | 0.01         | 150.             |
| Chloride                        | EPA 300.0 | 0.05         | 1100.            |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Fluoride                        | EPA 340.2 | 0.01         | 0.80             |
| Iron                            | EPA 6010  | 0.002        | 0.039            |
| Magnesium                       | EPA 6010  | 0.01         | 15.              |
| Manganese                       | EPA 6010  | 0.002        | 0.086            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 1.0          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 20.              |
| Sodium                          | EPA 6010  | 0.2          | 580.             |
| Sulfate                         | EPA 300.0 | 0.2          | 79.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 2200.            |
| Zinc                            | EPA 6010  | 0.002        | 0.010            |
| pH (pH units)                   | EPA 9040  |              | 7.8              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 3700.            |

ZyMAX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZyMAX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9347-1g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9003-5  
**Collected:** 06/04/96  
**Received:** 06/11/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** 27/38-02B1 (S)  
**Analyzed:** 06/13/96 - 06/26/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 276.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | ND               |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 56.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 220.             |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.12             |
| Calcium                         | EPA 6010  | 0.01         | 3.8              |
| Chloride                        | EPA 300.0 | 0.05         | 23.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.59             |
| Iron                            | EPA 6010  | 0.002        | 0.038            |
| Magnesium                       | EPA 6010  | 0.01         | 0.01             |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 6.2              |
| Sodium                          | EPA 6010  | 0.2          | 180.             |
| Sulfate                         | EPA 300.0 | 0.2          | 58.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 450.             |
| Zinc                            | EPA 6010  | 0.002        | 0.004            |
| pH (pH units)                   | EPA 9040  |              | 11.7             |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1100.            |

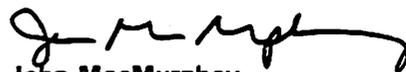
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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.



John MacMurphey  
 Laboratory Director

9003-5g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9003-7  
 Collected: 06/04/96  
 Received: 06/11/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 27/38-02B1 (M)  
 Analyzed: 06/13/96 - 06/26/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 34.              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 8.0              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 26.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 3.1              |
| Calcium                         | EPA 6010  | 0.01         | 12.              |
| Chloride                        | EPA 300.0 | 0.05         | 62.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 13.              |
| Iron                            | EPA 6010  | 0.002        | 0.089            |
| Magnesium                       | EPA 6010  | 0.01         | 0.43             |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 1.2              |
| Sodium                          | EPA 6010  | 0.2          | 130.             |
| Sulfate                         | EPA 300.0 | 0.2          | 110.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 330.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 9.4              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 600.             |

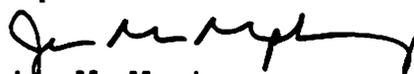
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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-7g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9003-6  
**Collected:** 06/04/96  
**Received:** 06/11/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** 27/38-02B1 (D)  
**Analyzed:** 06/13/96 - 06/26/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 104.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 47.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 57.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.11             |
| Calcium                         | EPA 6010  | 0.01         | 7.6              |
| Chloride                        | EPA 300.0 | 0.05         | 11.              |
| Copper                          | EPA 6010  | 0.006        | 0.020            |
| Flouride                        | EPA 340.2 | 0.01         | 0.77             |
| Iron                            | EPA 6010  | 0.002        | 13.              |
| Magnesium                       | EPA 6010  | 0.01         | 6.7              |
| Manganese                       | EPA 6010  | 0.002        | 0.22             |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 2.1              |
| Sodium                          | EPA 6010  | 0.2          | 69.              |
| Sulfate                         | EPA 300.0 | 0.2          | 22.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 500.             |
| Zinc                            | EPA 6010  | 0.002        | 0.068            |
| pH (pH units)                   | EPA 9040  |              | 9.9              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 300.             |

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\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-6g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9003-1  
**Collected:** 06/04/96  
**Received:** 06/11/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 27/38-23F1 (S)  
**Analyzed:** 06/13/96 - 06/26/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 180.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 80.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 100.             |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.15             |
| Calcium                         | EPA 6010  | 0.01         | 1.5              |
| Chloride                        | EPA 300.0 | 0.05         | 9.6              |
| Copper                          | EPA 6010  | 0.006        | 0.007            |
| Flouride                        | EPA 340.2 | 0.01         | 0.77             |
| Iron                            | EPA 6010  | 0.002        | 3.1              |
| Magnesium                       | EPA 6010  | 0.01         | 1.0              |
| Manganese                       | EPA 6010  | 0.002        | 0.043            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 0.8              |
| Sodium                          | EPA 6010  | 0.2          | 110.             |
| Sulfate                         | EPA 300.0 | 0.2          | 12.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 270.             |
| Zinc                            | EPA 6010  | 0.002        | 0.013            |
| pH (pH units)                   | EPA 9040  |              | 10.              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 420.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.



John MacMurphey  
 Laboratory Director

9003-1g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9003-2  
 Collected: 06/04/96  
 Received: 06/11/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 27/38-23F1 (MS)  
 Analyzed: 06/13/96 - 06/26/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 186.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 110.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 76.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.14             |
| Calcium                         | EPA 6010  | 0.01         | 0.95             |
| Chloride                        | EPA 300.0 | 0.05         | 7.4              |
| Copper                          | EPA 6010  | 0.006        | 0.006            |
| Flouride                        | EPA 340.2 | 0.01         | 0.63             |
| Iron                            | EPA 6010  | 0.002        | 0.22             |
| Magnesium                       | EPA 6010  | 0.01         | 0.02             |
| Manganese                       | EPA 6010  | 0.002        | 0.003            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | ND               |
| Sodium                          | EPA 6010  | 0.2          | 110.             |
| Sulfate                         | EPA 300.0 | 0.2          | 11.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 230.             |
| Zinc                            | EPA 6010  | 0.002        | 0.003            |
| pH (pH units)                   | EPA 9040  |              | 9.8              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 410.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-2g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9003-3  
 Collected: 06/04/96  
 Received: 06/11/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description:  
 27/38-23F1 (MD)  
 Analyzed: 06/13/96 - 06/26/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 180.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 92.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 88.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.20             |
| Calcium                         | EPA 6010  | 0.01         | 1.0              |
| Chloride                        | EPA 300.0 | 0.05         | 12.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.4              |
| Iron                            | EPA 6010  | 0.002        | 0.58             |
| Magnesium                       | EPA 6010  | 0.01         | 0.16             |
| Manganese                       | EPA 6010  | 0.002        | 0.010            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 0.4              |
| Sodium                          | EPA 6010  | 0.2          | 110.             |
| Sulfate                         | EPA 300.0 | 0.2          | 11.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 230.             |
| Zinc                            | EPA 6010  | 0.002        | 0.004            |
| pH (pH units)                   | EPA 9040  |              | 9.9              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 420.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-3g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9003-4  
**Collected:** 06/04/96  
**Received:** 06/11/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 27/38-23F1 (D)  
**Analyzed:** 06/13/96 - 06/26/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 179.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 82.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 97.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.18             |
| Calcium                         | EPA 6010  | 0.01         | 1.0              |
| Chloride                        | EPA 300.0 | 0.05         | 12.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.2              |
| Iron                            | EPA 6010  | 0.002        | 0.90             |
| Magnesium                       | EPA 6010  | 0.01         | 0.21             |
| Manganese                       | EPA 6010  | 0.002        | 0.014            |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 0.4              |
| Sodium                          | EPA 6010  | 0.2          | 110.             |
| Sulfate                         | EPA 300.0 | 0.2          | 11.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 240.             |
| Zinc                            | EPA 6010  | 0.002        | 0.004            |
| pH (pH units)                   | EPA 9040  |              | 10.              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 430.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9003-4g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 8925-12  
**Collected:** 05/30/96  
**Received:** 05/31/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:** 27/39-8M1 (IWVWD-SWP)  
**Analyzed:** 06/04/96 - 06/13/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 25.              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 15.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 10.              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.28             |
| Calcium                         | EPA 6010  | 0.01         | 7.8              |
| Chloride                        | EPA 300.0 | 0.05         | 65.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.3              |
| Iron                            | EPA 6010  | 0.002        | 0.055            |
| Magnesium                       | EPA 6010  | 0.01         | 0.25             |
| Manganese                       | EPA 6010  | 0.002        | ND               |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 3.2              |
| Sodium                          | EPA 6010  | 0.2          | 53.              |
| Sulfate                         | EPA 300.0 | 0.2          | 0.4              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 140.             |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 10.4             |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 300.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8925-12g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9100-3  
**Collected:** 06/25/96  
**Received:** 06/26/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 27/39-11D1 (S)  
**Analyzed:** 06/28/96 - 07/09/96  
**Method:** See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 101.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 95.              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | 6.4              |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 0.58             |
| Calcium                         | EPA 6010  | 0.01         | 12.              |
| Chloride                        | EPA 300.0 | 0.05         | 36.              |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.5              |
| Iron                            | EPA 6010  | 0.002        | 0.52             |
| Magnesium                       | EPA 6010  | 0.01         | 2.7              |
| Manganese                       | EPA 6010  | 0.002        | 0.035            |
| Nitrate                         | EPA 300.0 | 0.2          | 6.5              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 15.              |
| Sodium                          | EPA 6010  | 0.2          | 93.              |
| Sulfate                         | EPA 300.0 | 0.2          | 72.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 290.             |
| Zinc                            | EPA 6010  | 0.002        | 0.004            |
| pH (pH units)                   | EPA 9040  |              | 8.6              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 500.             |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9100-3g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 9100-2  
 Collected: 06/25/96  
 Received: 06/26/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: 27/39-11D1 (M)  
 Analyzed: 06/28/96 - 07/09/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 5.3              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 5.3              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 2.0              |
| Calcium                         | EPA 6010  | 0.01         | 390.             |
| Chloride                        | EPA 300.0 | 0.05         | 2800.            |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 0.73             |
| Iron                            | EPA 6010  | 0.002        | 0.16             |
| Magnesium                       | EPA 6010  | 0.01         | 9.6              |
| Manganese                       | EPA 6010  | 0.002        | 0.21             |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 25.              |
| Sodium                          | EPA 6010  | 0.2          | 1400.            |
| Sulfate                         | EPA 300.0 | 0.2          | 280.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 6500.            |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 6.1              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 9100.            |

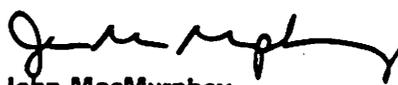
ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

9100-2g.xls  
 JMM/jgt/ts

**Client:** Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

**Lab Number:** 9100-1  
**Collected:** 06/25/96  
**Received:** 06/26/96  
**Matrix:** Aqueous

**Project:** IWV-NAWS  
**Project Number:** 96-002  
**Collected by:** Houghton

**Sample Description:**  
 27/39-11D1 (D)  
**Analyzed:** 06/28/96 - 07/09/96  
**Method:** See Below

**GENERAL MINERALS**

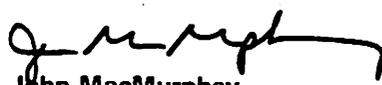
| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 5.4              |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 5.4              |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | ND               |
| Boron                           | EPA 6010  | 0.006        | 5.6              |
| Calcium                         | EPA 6010  | 0.01         | 680.             |
| Chloride                        | EPA 300.0 | 0.05         | 4900.            |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.3              |
| Iron                            | EPA 6010  | 0.002        | 0.19             |
| Magnesium                       | EPA 6010  | 0.01         | 75.              |
| Manganese                       | EPA 6010  | 0.002        | 0.24             |
| Nitrate                         | EPA 300.0 | 0.2          | ND               |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 38.              |
| Sodium                          | EPA 6010  | 0.2          | 2100.            |
| Sulfate                         | EPA 300.0 | 0.2          | 110.             |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 9400.            |
| Zinc                            | EPA 6010  | 0.002        | ND               |
| pH (pH units)                   | EPA 9040  |              | 6.6              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 14000.           |

ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.  
  
 John MacMurphey  
 Laboratory Director

9100-1g.xls  
 JMM/jgt/ts

Client: Barbara Houghton  
 Houghton Hydrogeo-Logic  
 P.O. Box 80126  
 Bakersfield, CA 93380-0126

Lab Number: 8925-1  
 Collected: 05/29/96  
 Received: 05/31/96  
 Matrix: Aqueous

Project: IWV-NAWS  
 Project Number: 96-002  
 Collected by: Houghton

Sample Description: 27/40-1G  
 Analyzed: 06/04/96 - 06/13/96  
 Method: See Below

**GENERAL MINERALS**

| CONSTITUENT                     | METHOD    | PQL*<br>mg/L | RESULT**<br>mg/L |
|---------------------------------|-----------|--------------|------------------|
| Total Alkalinity, CaCO3         | EPA 310.1 | 5.0          | 130.             |
| Bicarbonate Alkalinity, CaCO3   | EPA 310.1 | 5.0          | 130.             |
| Carbonate Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Hydroxide Alkalinity, CaCO3     | EPA 310.1 | 5.0          | ND               |
| Arsenic                         | EPA 6010  | 0.03         | 0.09             |
| Boron                           | EPA 6010  | 0.006        | 1.6              |
| Calcium                         | EPA 6010  | 0.01         | 45.              |
| Chloride                        | EPA 300.0 | 0.05         | 280.             |
| Copper                          | EPA 6010  | 0.006        | ND               |
| Flouride                        | EPA 340.2 | 0.01         | 1.4              |
| Iron                            | EPA 6010  | 0.002        | 0.017            |
| Magnesium                       | EPA 6010  | 0.01         | 5.0              |
| Manganese                       | EPA 6010  | 0.002        | 0.002            |
| Nitrate                         | EPA 300.0 | 0.2          | 3.2              |
| Phosphate                       | EPA 300.0 | 0.7          | ND               |
| Potassium                       | EPA 6010  | 0.2          | 10.              |
| Sodium                          | EPA 6010  | 0.2          | 210.             |
| Sulfate                         | EPA 300.0 | 0.2          | 44.              |
| Total Dissolved Solids          | EPA 160.1 | 10.          | 690.             |
| Zinc                            | EPA 6010  | 0.002        | 0.034            |
| pH (pH units)                   | EPA 9040  |              | 7.5              |
| Specific Conductance (umhos/cm) | EPA 9050  | 0.05         | 1200.            |

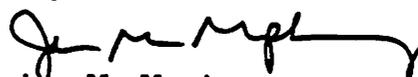
ZymaX envirotechnology, inc. is certified by CA Department of Health Services: Laboratory #1717

\*PQL - Practical Quantitation Limit

\*\*Results listed as ND would have been reported if present at or above the listed PQL.

Note: Analysis performed by CA Department of Health Services certified laboratory #1253

Submitted by,  
 ZymaX envirotechnology, inc.

  
 John MacMurphey  
 Laboratory Director

8925-1g.xls  
 JMM/jgt/ts

## Isotope ratio data for samples submitted by Zymax

| SAMPLE     | GGCID  | Water                 |                              |                  |                         |
|------------|--------|-----------------------|------------------------------|------------------|-------------------------|
|            |        | $\delta^{18}\text{O}$ | $\delta^{18}\text{O}$<br>Dup | $\delta\text{D}$ | $\delta\text{D}$<br>Dup |
|            |        | ‰                     |                              |                  |                         |
| 26/40-35H2 | 3584-1 | -13.2                 | -13.2                        | -104             | -103                    |
| 26/40-17Q2 | 3584-2 | -13.9                 |                              | -107             | -106                    |
| 26/39-15J1 | 3584-3 | -13.1                 |                              | -95              | -98                     |
| STANDARD   |        |                       |                              |                  |                         |
| NH         |        |                       |                              | 33               |                         |
| NH-DUP     |        |                       |                              | 36               |                         |
| DL         |        |                       |                              | -213             |                         |
| DL-DUP     |        |                       |                              | -215             |                         |
| NI         |        | -11.6                 |                              |                  |                         |
| NI-DUP     |        | -11.6                 |                              |                  |                         |

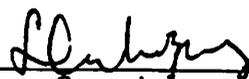
584ISO.TBL

  
Supervisor

Isotope ratio data for a sample submitted by Zymax Envirotechnology, Inc.

| SAMPLE     | GGCID  | Water                 |                              |                  |                         |
|------------|--------|-----------------------|------------------------------|------------------|-------------------------|
|            |        | $\delta^{18}\text{O}$ | $\delta^{18}\text{O}$<br>Dup | $\delta\text{D}$ | $\delta\text{D}$<br>Dup |
|            |        | ‰                     |                              |                  |                         |
| 26/39-11E2 | 3599-1 | -13.0                 | -12.8                        | -103             | -103                    |
| STANDARD   |        |                       |                              |                  |                         |
| NI         |        | -11.6                 |                              |                  |                         |
| NI-DUP     |        | -11.7                 |                              |                  |                         |
| NH         |        |                       |                              | 33               |                         |
| NH-DUP     |        |                       |                              | 35               |                         |
| DL         |        |                       |                              | -214             |                         |
| DL-DUP     |        |                       |                              | -215             |                         |

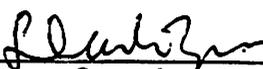
i99iso.tbl

  
Supervisor

## Isotope ratio data for samples submitted by Zymax Envirotechnology, Inc.

| SAMPLE     | GGCID  | Water                 |                              |                  |                         |
|------------|--------|-----------------------|------------------------------|------------------|-------------------------|
|            |        | $\delta^{18}\text{O}$ | $\delta^{18}\text{O}$<br>Dup | $\delta\text{D}$ | $\delta\text{D}$<br>Dup |
|            |        | ‰                     |                              |                  |                         |
| 26/40-13A1 | 3611-1 | -13.5                 | -13.7                        | -102             | -104                    |
| 26/40-23B2 | 3611-2 | -13.9                 |                              | -106             | -104                    |
| 26/40-14A1 | 3611-3 | -13.9                 |                              | -103             | -105                    |
| 26/40-23D1 | 3611-4 | -13.6                 |                              | -102             | -105                    |
| STANDARD   |        |                       |                              |                  |                         |
| NH         |        |                       |                              | 34               |                         |
| NH-DUP     |        |                       |                              | 33               |                         |
| DL         |        |                       |                              | -214             |                         |
| DL-DUP     |        |                       |                              | -213             |                         |
| NI         |        | -11.6                 |                              |                  |                         |
| NI-DUP     |        | -11.7                 |                              |                  |                         |

311ISO.TBL

  
Supervisor

Laboratory working standards for isotope ratio measurements

| Standard | $\delta D$ | $\delta^{18}O$ | $\delta^{13}C$ | $\delta^{15}N$ | $\delta^{34}S$ | Ref.               |
|----------|------------|----------------|----------------|----------------|----------------|--------------------|
|          | ‰          |                |                |                |                |                    |
| NH       | 34         |                |                |                |                | SMOW               |
| DL       | -215       |                |                |                |                | SMOW               |
| NI       |            | -11.6          |                |                |                | SMOW               |
| NBS      | -120       |                | -29.80         |                |                | SMOW, PDB          |
| STD      | -150       |                | -31.26         |                |                | SMOW, PDB          |
| TS       |            | -2.20          | 1.95           |                |                | PDB                |
| CA       |            | -29.08         | -13.25         |                |                | PDB                |
| TN       |            |                |                | -4.7           |                | Air N <sub>2</sub> |
| Air      |            |                |                | 0.0            |                | Air N <sub>2</sub> |
| KNN      |            |                |                | -3.1           |                | Air N <sub>2</sub> |
| KN       |            |                |                | -3.6           |                | Air N <sub>2</sub> |
| SW       |            |                |                |                | 20.6           | CDT                |
| ET       | -154       |                | -29.43         |                |                | SMOW, PDB          |

Standardized QA/QC acceptance limits

| Isotope Ratios                       | MS Internal Precision<br>‰ | Duplicate Reproducibility<br>‰ |
|--------------------------------------|----------------------------|--------------------------------|
| $\delta^{13}C$ (as CO <sub>2</sub> ) | 0.01                       | ±0.10                          |
| $\delta^{18}O$ (as CO <sub>2</sub> ) | 0.01                       | ±0.15                          |
| $\delta^{15}N$ (as N <sub>2</sub> )  | 0.01                       | ±0.15                          |
| $\delta^{34}S$ (as SO <sub>2</sub> ) | 0.02                       | ±0.15                          |
| $\delta D$ (as H <sub>2</sub> )      | 0.20                       | ±1.50                          |

*Samples below a threshold volume (usually 0.5 ml) will result in less accurate measurements.*

STD\_ISO.TMP

**APPENDIX B**  
**AQUIFER TEST DATA**



**Houghton**  
**HydroGeo-Logic**  
 (805) 393-6218

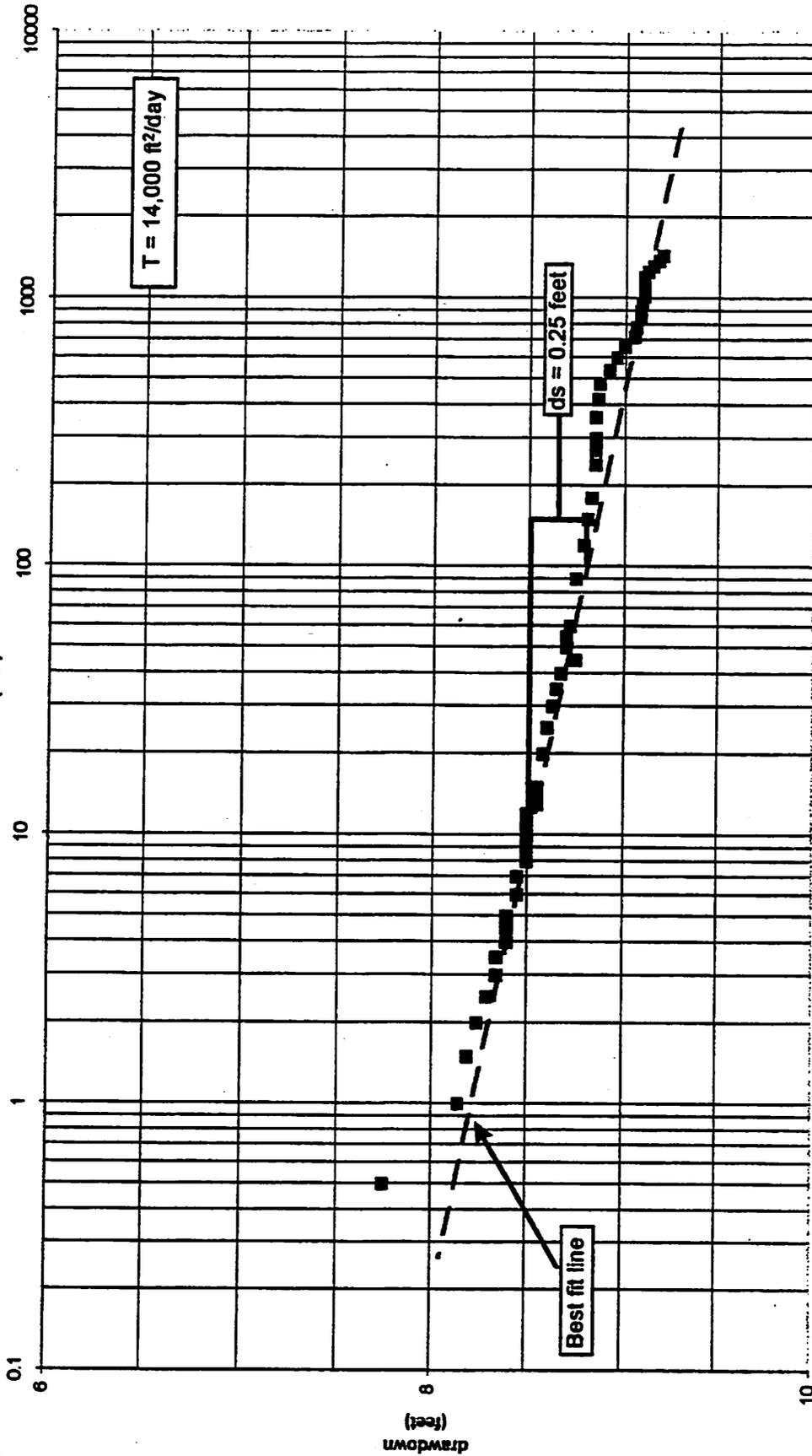
**AQUIFER TEST DATA**

PROJ. NO. 96-002 OWNER: NAWS WELL NO. 2939-11E2  
 DATE: 8/14/96 - 8/15/96 PERFORMED BY: HOUGHTON/STONER TEST NO. 1  
 DISTANCE FROM PUMPING WELL: N/A EQUIPMENT: 10 HP GRUNDFOS PUMP

| TIME DATA                      |            |                        |                  |                                 |           | WATER LEVEL DATA                   |            |                                    |                  | DISCHARGE DATA             |            |                                   |  |
|--------------------------------|------------|------------------------|------------------|---------------------------------|-----------|------------------------------------|------------|------------------------------------|------------------|----------------------------|------------|-----------------------------------|--|
| PUMP ON: DATE: <b>8/14/96</b>  |            | TIME: <b>0900</b>      |                  | STATIC W.L. (ft): <b>124.35</b> |           | Q MEASURED BY: <b>5 G. BUCKET</b>  |            | DEPTH OF PUMP: <b>277 FT. BGS.</b> |                  | PREVIOUS PUMPING? <b>Y</b> |            | DURATION: <b>8/12 FOR 16 HRS.</b> |  |
| PUMP OFF: DATE: <b>8/15/96</b> |            | TIME: <b>0915</b>      |                  | MEASURING POINT: <b>TOC</b>     |           | ELEV. OF MEAS. FT.(ft): <b>N/A</b> |            |                                    |                  |                            |            |                                   |  |
| DATE                           | CLOCK TIME | TIME SINCE START (min) | WATER LEVEL (ft) | W.L. CHANGE (s) (ft)            | RATE(gpm) | DATE                               | CLOCK TIME | TIME SINCE START (min)             | WATER LEVEL (ft) | W.L. CHANGE (s) (ft)       | RATE (gpm) |                                   |  |
| 8/14                           | 0900       | 0.5                    | 132.1            | 7.75                            | 100       | 8/15                               | 1300       | 240                                | 133.2            | 8.85                       |            |                                   |  |
|                                |            | 1                      | 132.5            | 8.15                            |           |                                    | 1330       | 270                                | 133.2            | 8.85                       |            |                                   |  |
|                                |            | 1.5                    | 132.55           | 8.2                             |           |                                    | 1400       | 300                                | 133.2            | 8.85                       | 100        |                                   |  |
|                                |            | 2                      | 132.6            | 8.25                            |           |                                    | 1500       | 360                                | 133.2            | 8.85                       |            |                                   |  |
|                                |            | 2.5                    | 132.65           | 8.3                             |           |                                    | 1600       | 420                                | 133.21           | 8.86                       |            |                                   |  |
|                                |            | 3                      | 132.7            | 8.35                            |           |                                    | 1700       | 480                                | 133.22           | 8.87                       |            |                                   |  |
|                                |            | 3.5                    | 132.7            | 8.35                            |           |                                    | 1800       | 540                                | 133.27           | 8.92                       |            |                                   |  |
|                                |            | 4                      | 132.75           | 8.4                             |           |                                    | 1900       | 600                                | 133.31           | 8.96                       |            |                                   |  |
|                                |            | 4.5                    | 132.75           | 8.4                             |           |                                    | 2000       | 660                                | 133.35           | 9                          |            |                                   |  |
|                                | 0905       | 5                      | 132.75           | 8.4                             |           |                                    | 2100       | 720                                | 133.4            | 9.05                       |            |                                   |  |
|                                |            | 6                      | 132.8            | 8.45                            |           |                                    | 2200       | 780                                | 133.41           | 9.06                       |            |                                   |  |
|                                |            | 7                      | 132.8            | 8.45                            |           |                                    | 2300       | 840                                | 133.43           | 9.08                       |            |                                   |  |
|                                |            | 8                      | 132.85           | 8.5                             |           |                                    | 2400       | 900                                | 133.43           | 9.08                       |            |                                   |  |
|                                |            | 9                      | 132.85           | 8.5                             |           |                                    | 0100       | 960                                | 133.44           | 9.09                       |            |                                   |  |
|                                | 0910       | 10                     | 132.85           | 8.5                             |           |                                    | 0200       | 1020                               | 133.45           | 9.1                        |            |                                   |  |
|                                |            | 11                     | 132.85           | 8.5                             |           |                                    | 0300       | 1080                               | 133.45           | 9.1                        |            |                                   |  |
|                                |            | 12                     | 132.85           | 8.5                             |           |                                    | 0400       | 1140                               | 133.45           | 9.1                        |            |                                   |  |
|                                |            | 13                     | 132.9            | 8.55                            |           |                                    | 0500       | 1200                               | 133.45           | 9.1                        |            |                                   |  |
|                                |            | 14                     | 132.9            | 8.55                            |           |                                    | 0600       | 1260                               | 133.47           | 9.12                       |            |                                   |  |
|                                | 0915       | 15                     | 132.9            | 8.55                            |           |                                    | 0700       | 1320                               | 133.5            | 9.15                       |            |                                   |  |
|                                |            | 20                     | 132.93           | 8.58                            |           |                                    | 0800       | 1380                               | 133.53           | 9.18                       |            |                                   |  |
|                                |            | 25                     | 132.95           | 8.6                             |           |                                    | 0900       | 1440                               | 133.55           | 9.2                        | 100        |                                   |  |
|                                |            | 30                     | 132.98           | 8.63                            |           |                                    |            |                                    |                  |                            |            |                                   |  |
|                                |            | 35                     | 133              | 8.65                            |           |                                    |            |                                    |                  |                            |            |                                   |  |
|                                | 0940       | 40                     | 133.02           | 8.67                            |           |                                    |            |                                    |                  |                            |            |                                   |  |
|                                |            | 45                     | 133.1            | 8.75                            |           |                                    |            |                                    |                  |                            |            |                                   |  |
|                                |            | 50                     | 133.05           | 8.7                             |           |                                    |            |                                    |                  |                            |            |                                   |  |
|                                |            | 55                     | 133.05           | 8.7                             |           |                                    |            |                                    |                  |                            |            |                                   |  |
|                                | 1000       | 60                     | 133.07           | 8.72                            | 100       |                                    |            |                                    |                  |                            |            |                                   |  |
|                                | 1030       | 90                     | 133.1            | 8.75                            |           |                                    |            |                                    |                  |                            |            |                                   |  |
|                                | 1100       | 120                    | 133.14           | 8.79                            |           |                                    |            |                                    |                  |                            |            |                                   |  |
|                                | 1130       | 150                    | 133.16           | 8.81                            |           |                                    |            |                                    |                  |                            |            |                                   |  |
|                                | 1200       | 180                    | 133.18           | 8.83                            |           |                                    |            |                                    |                  |                            |            |                                   |  |

26/39-11E2

time (min)



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(805)393-6218

BY: Houghton  
PROJECT NO: 98-002

DATE: 11-20-96  
PROJECT NAME: Geohydrologic Investigation, Indian Wells Valley

TITLE: Figure B1. Graph of Aquifer Test Data 26/39-11E2  
SCALE: N/A  
FILE NO: 11E2 AT.ppt



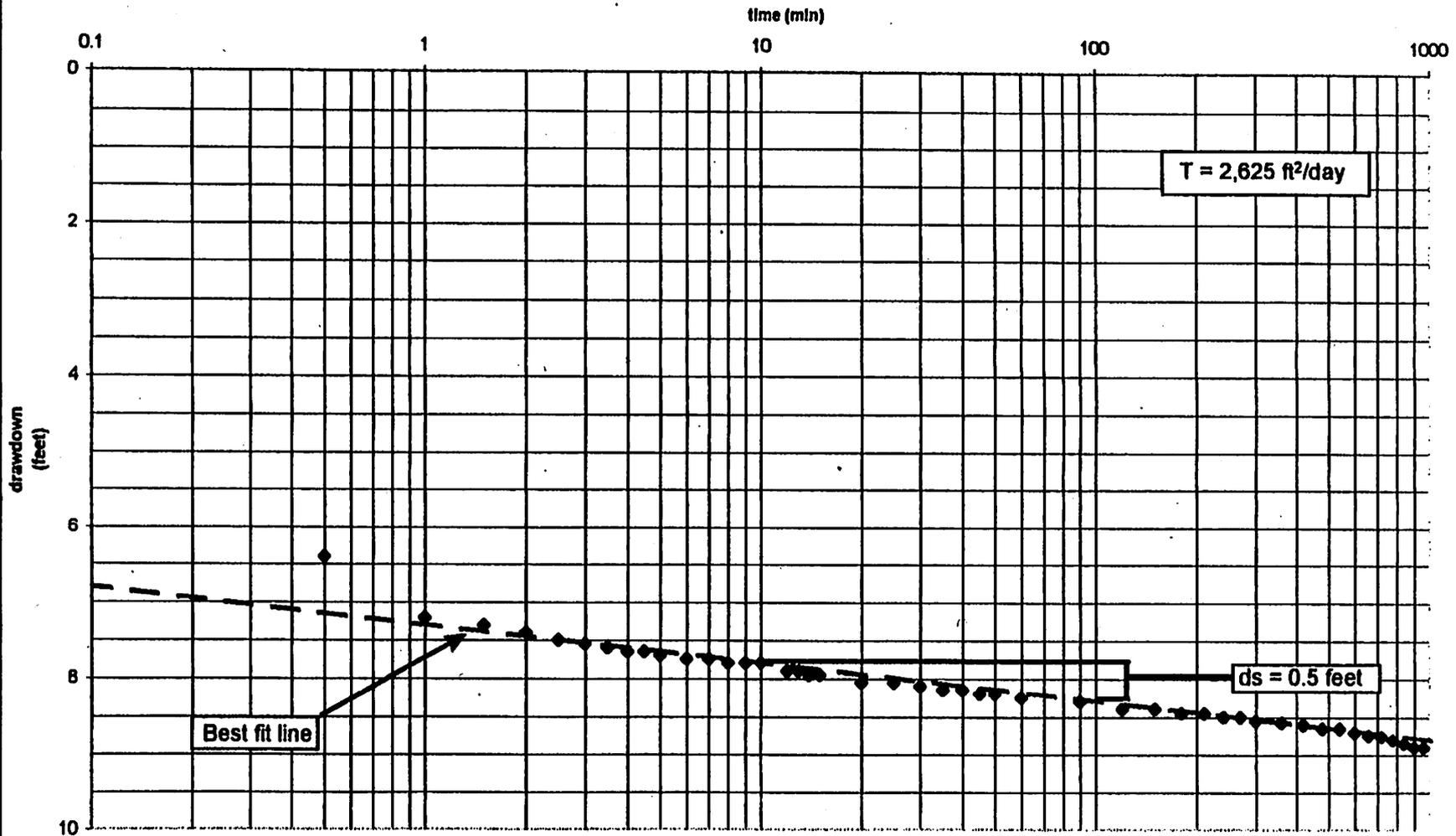
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**AQUIFER TEST DATA**

PROJ. NO. 96-002 OWNER: NAWS WELL NO. 26/39-15J1  
 DATE: 8/6/96 - 8/7/96 PERFORMED BY: HOUGHTON/STONER TEST NO. 1  
 DISTANCE FROM PUMPING WELL: N/A EQUIPMENT: 5 HP GRUNDFOS PUMP

| TIME DATA                     |            |                            |                  |                                |            | WATER LEVEL DATA                    |            |                            | DISCHARGE DATA             |                      |            |
|-------------------------------|------------|----------------------------|------------------|--------------------------------|------------|-------------------------------------|------------|----------------------------|----------------------------|----------------------|------------|
| PUMP ON: DATE: <u>8/6/96</u>  |            | TIME: <u>1734</u>          |                  | STATIC W.L. (ft): <u>196.4</u> |            | Q MEASURED BY: <u>5 G. BUCKET</u>   |            |                            |                            |                      |            |
| PUMP OFF: DATE: <u>8/7/96</u> |            | TIME: <u>0940</u>          |                  | MEASURING POINT: <u>TOC</u>    |            | DEPTH OF PUMP: <u>277 FT. BGS.</u>  |            |                            |                            |                      |            |
|                               |            |                            |                  |                                |            | ELEV. OF MEAS. PT. (ft): <u>N/A</u> |            |                            | PREVIOUS PUMPING? <u>N</u> |                      |            |
|                               |            |                            |                  |                                |            | DURATION:                           |            |                            |                            |                      |            |
| DATE                          | CLOCK TIME | TIME SINCE START (t) (min) | WATER LEVEL (ft) | W.L. CHANGE (s) (ft)           | RATE (gpm) | DATE                                | CLOCK TIME | TIME SINCE START (t) (min) | WATER LEVEL (ft)           | W.L. CHANGE (s) (ft) | RATE (gpm) |
| 8/6                           | 1734       | 0.5                        | 202.8            | 6.4                            | 37.5       | 8/6                                 | 2204       | 270                        | 204.9                      | 8.5                  |            |
|                               |            | 1                          | 203.6            | 7.2                            |            |                                     | 2234       | 300                        | 204.95                     | 8.55                 |            |
|                               |            | 1.5                        | 203.7            | 7.3                            |            |                                     | 2334       | 360                        | 204.97                     | 8.57                 |            |
|                               |            | 2                          | 203.8            | 7.4                            |            | 8/7                                 | 0034       | 420                        | 205                        | 8.6                  |            |
|                               |            | 2.5                        | 203.9            | 7.5                            |            |                                     | 0134       | 480                        | 205.05                     | 8.65                 |            |
|                               |            | 3                          | 203.95           | 7.55                           |            |                                     | 0234       | 540                        | 205.05                     | 8.65                 |            |
|                               |            | 3.5                        | 204              | 7.6                            |            |                                     | 0334       | 600                        | 205.1                      | 8.7                  |            |
|                               |            | 4                          | 204.05           | 7.65                           |            |                                     | 0434       | 660                        | 205.14                     | 8.74                 |            |
|                               |            | 4.5                        | 204.05           | 7.65                           |            |                                     | 0534       | 720                        | 205.16                     | 8.76                 |            |
|                               |            | 5                          | 204.1            | 7.7                            |            |                                     | 0634       | 780                        | 205.2                      | 8.8                  |            |
|                               |            | 6                          | 204.15           | 7.75                           |            |                                     | 0734       | 840                        | 205.25                     | 8.85                 |            |
|                               |            | 7                          | 204.15           | 7.75                           |            |                                     | 0834       | 900                        | 205.3                      | 8.9                  |            |
|                               |            | 8                          | 204.2            | 7.8                            |            |                                     | 0934       | 960                        | 205.3                      | 8.9                  | 37.5       |
|                               |            | 9                          | 204.2            | 7.8                            |            |                                     |            |                            |                            |                      |            |
|                               |            | 10                         | 204.2            | 7.8                            |            |                                     |            |                            |                            |                      |            |
|                               |            | 12                         | 204.3            | 7.9                            |            |                                     |            |                            |                            |                      |            |
|                               |            | 13                         | 204.3            | 7.9                            |            |                                     |            |                            |                            |                      |            |
|                               |            | 14                         | 204.35           | 7.95                           |            |                                     |            |                            |                            |                      |            |
|                               |            | 15                         | 204.35           | 7.95                           |            |                                     |            |                            |                            |                      |            |
|                               |            | 20                         | 204.45           | 8.05                           |            |                                     |            |                            |                            |                      |            |
|                               |            | 25                         | 204.45           | 8.05                           |            |                                     |            |                            |                            |                      |            |
|                               |            | 30                         | 204.5            | 8.1                            |            |                                     |            |                            |                            |                      |            |
|                               |            | 35                         | 204.55           | 8.15                           |            |                                     |            |                            |                            |                      |            |
|                               |            | 40                         | 204.55           | 8.15                           |            |                                     |            |                            |                            |                      |            |
|                               |            | 45                         | 204.6            | 8.2                            |            |                                     |            |                            |                            |                      |            |
|                               |            | 50                         | 204.6            | 8.2                            |            |                                     |            |                            |                            |                      |            |
|                               | 1834       | 60                         | 204.65           | 8.25                           |            |                                     |            |                            |                            |                      |            |
|                               | 1904       | 90                         | 204.7            | 8.3                            |            |                                     |            |                            |                            |                      |            |
|                               | 1934       | 120                        | 204.8            | 8.4                            | 37.5       |                                     |            |                            |                            |                      |            |
|                               | 2004       | 150                        | 204.8            | 8.4                            |            |                                     |            |                            |                            |                      |            |
|                               | 2034       | 180                        | 204.85           | 8.45                           |            |                                     |            |                            |                            |                      |            |
|                               | 2104       | 210                        | 204.85           | 8.45                           |            |                                     |            |                            |                            |                      |            |
|                               | 2134       | 240                        | 204.9            | 8.5                            |            |                                     |            |                            |                            |                      |            |

26/39-15 J1



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BY:

Houghton

PROJECT NO:

96-002

DATE:

11-20-96

PROJECT NAME:

Geohydrologic Investigation, Indian Wells Valley

TITLE:

Figure B2. Graph of Aquifer Test Data 26/39-15J1

SCALE:

N/A

FILE NO:

15J1 AT.ppt



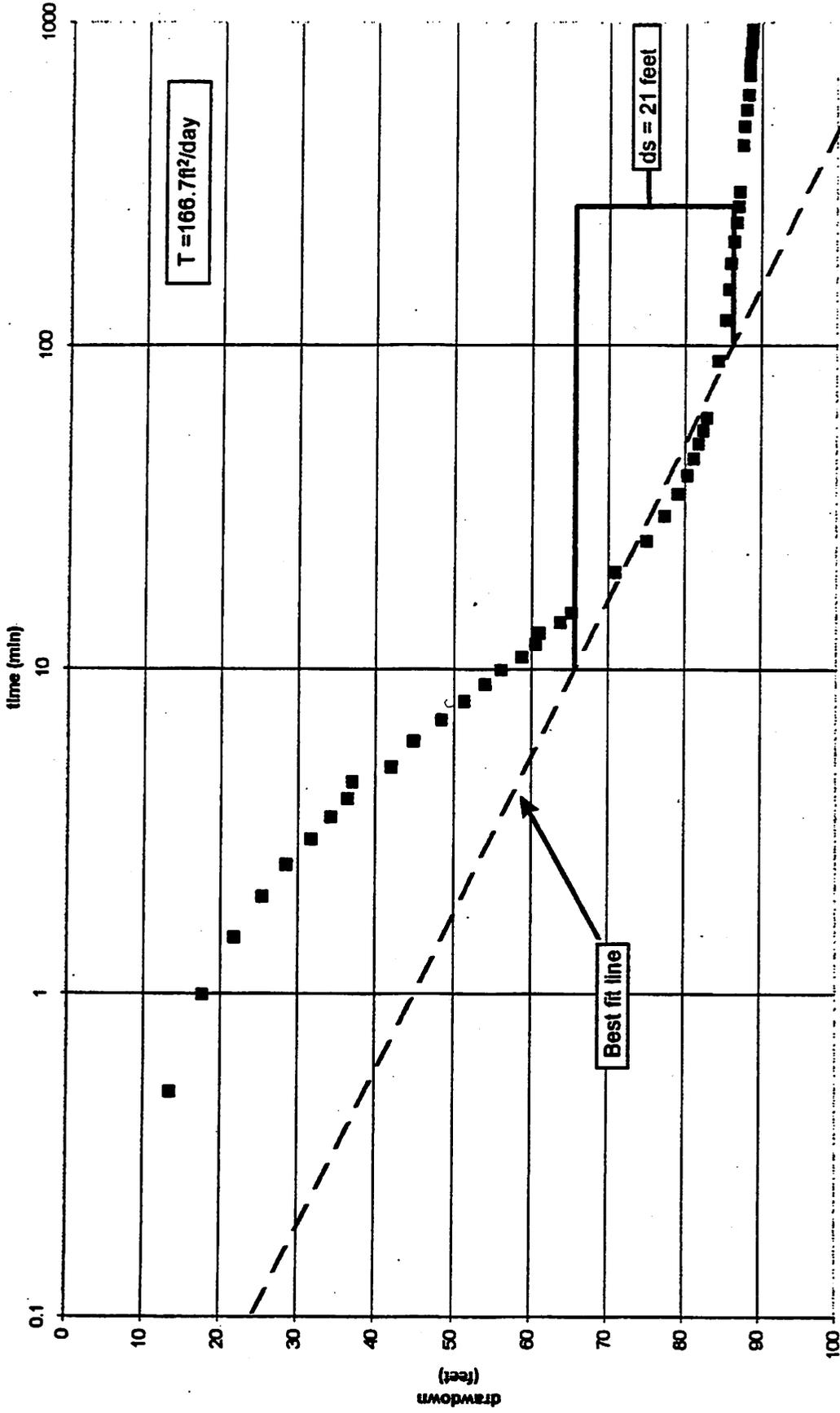
**Houghton  
HydroGeo-Logic**  
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**AQUIFER TEST DATA**

PROJ. NO. 96-002 OWNER: NAWS WELL NO. 26/40-13A1  
 DATE: 8/21/96 - 8/22/96 PERFORMED BY: HOUGHTON/STONER TEST NO. 1  
 DISTANCE FROM PUMPING WELL: N/A EQUIPMENT: 10 HP GRUNDFOS PUMP

| TIME DATA                      |            |                        |                  |                                     |            | WATER LEVEL DATA                  |            |                        | DISCHARGE DATA   |                  |            |
|--------------------------------|------------|------------------------|------------------|-------------------------------------|------------|-----------------------------------|------------|------------------------|------------------|------------------|------------|
| PUMP ON: DATE: <u>8/21/96</u>  |            | TIME: <u>1753</u>      |                  | STATIC W.L. (ft): <u>22.75</u>      |            | Q MEASURED BY: <u>5 G. BUCKET</u> |            |                        |                  |                  |            |
| PUMP OFF: DATE: <u>8/22/96</u> |            | TIME: <u>0915</u>      |                  | MEASURING POINT: <u>TOC</u>         |            | DEPTH OF PUMP: <u>299 FT. BGS</u> |            |                        |                  |                  |            |
|                                |            |                        |                  | ELEV. OF MEAS. PT. (ft): <u>N/A</u> |            | PREVIOUS PUMPING? <u>N</u>        |            |                        |                  |                  |            |
|                                |            |                        |                  |                                     |            | DURATION:                         |            |                        |                  |                  |            |
| DATE                           | CLOCK TIME | TIME SINCE START (min) | WATER LEVEL (ft) | W.L. CHANGE (ft)                    | RATE (gpm) | DATE                              | CLOCK TIME | TIME SINCE START (min) | WATER LEVEL (ft) | W.L. CHANGE (ft) | RATE (gpm) |
| 8/21                           | 1753       | 0.5                    | 36.2             | 13.45                               | 100        | 8/21                              | 2123       | 210                    | 109.3            | 86.55            |            |
|                                |            | 1                      | 40.4             | 17.65                               |            |                                   | 2153       | 240                    | 109.6            | 86.85            |            |
|                                |            | 1.5                    | 44.6             | 21.85                               |            |                                   | 2223       | 270                    | 109.85           | 87.1             |            |
|                                |            | 2                      | 48.25            | 25.5                                |            |                                   | 2253       | 300                    | 110              | 87.25            |            |
|                                |            | 2.5                    | 51.3             | 28.55                               |            | 8/22                              | 0053       | 420                    | 110.45           | 87.7             |            |
|                                |            | 3                      | 54.5             | 31.75                               |            |                                   | 0153       | 480                    | 110.6            | 87.85            |            |
|                                |            | 3.5                    | 57               | 34.25                               |            |                                   | 0253       | 540                    | 110.85           | 88.1             |            |
|                                |            | 4                      | 59.2             | 36.45                               |            |                                   | 0353       | 600                    | 111.1            | 88.35            |            |
|                                |            | 4.5                    | 59.8             | 37.05                               |            |                                   | 0523       | 690                    | 111.25           | 88.5             |            |
|                                |            | 5                      | 64.8             | 42.05                               |            |                                   | 0553       | 750                    | 111.27           | 88.52            |            |
|                                |            | 6                      | 67.6             | 44.85                               |            |                                   | 0653       | 810                    | 111.4            | 88.65            |            |
|                                |            | 7                      | 71.2             | 48.45                               |            |                                   | 0753       | 870                    | 111.5            | 88.75            |            |
|                                |            | 8                      | 74.2             | 51.45                               |            |                                   | 0914       | 952                    | 111.6            | 88.85            | 100        |
|                                |            | 9                      | 76.9             | 54.15                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 10                     | 79               | 56.25                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 11                     | 81.6             | 58.85                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 12                     | 83.4             | 60.65                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 13                     | 83.8             | 61.05                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 14                     | 86.6             | 63.85                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 15                     | 88               | 65.25                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 20                     | 93.7             | 70.95                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 25                     | 97.8             | 75.05                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 30                     | 100.15           | 77.4                                |            |                                   |            |                        |                  |                  |            |
|                                |            | 35                     | 101.9            | 79.15                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 40                     | 103.2            | 80.45                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 45                     | 104              | 81.25                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 50                     | 104.7            | 81.95                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 55                     | 105.25           | 82.5                                |            |                                   |            |                        |                  |                  |            |
|                                | 1853       | 60                     | 105.75           | 83                                  |            |                                   |            |                        |                  |                  |            |
|                                | 1923       | 90                     | 107.35           | 84.6                                |            |                                   |            |                        |                  |                  |            |
|                                | 1953       | 120                    | 108.25           | 85.5                                |            |                                   |            |                        |                  |                  |            |
|                                | 2023       | 150                    | 108.65           | 85.9                                |            |                                   |            |                        |                  |                  |            |
|                                | 2053       | 180                    | 108.9            | 86.15                               |            |                                   |            |                        |                  |                  |            |

26/40-13 A1



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BY: Houghton  
PROJECT NO: 96-002

DATE: 11-20-96  
PROJECT NAME: Geohydrologic Investigation, Indian Wells Valley

TITLE: Figure B3. Graph of Aquifer Test Data 26/40-13A1  
SCALE: N/A  
FILE NO: 13A1 AT.ppt



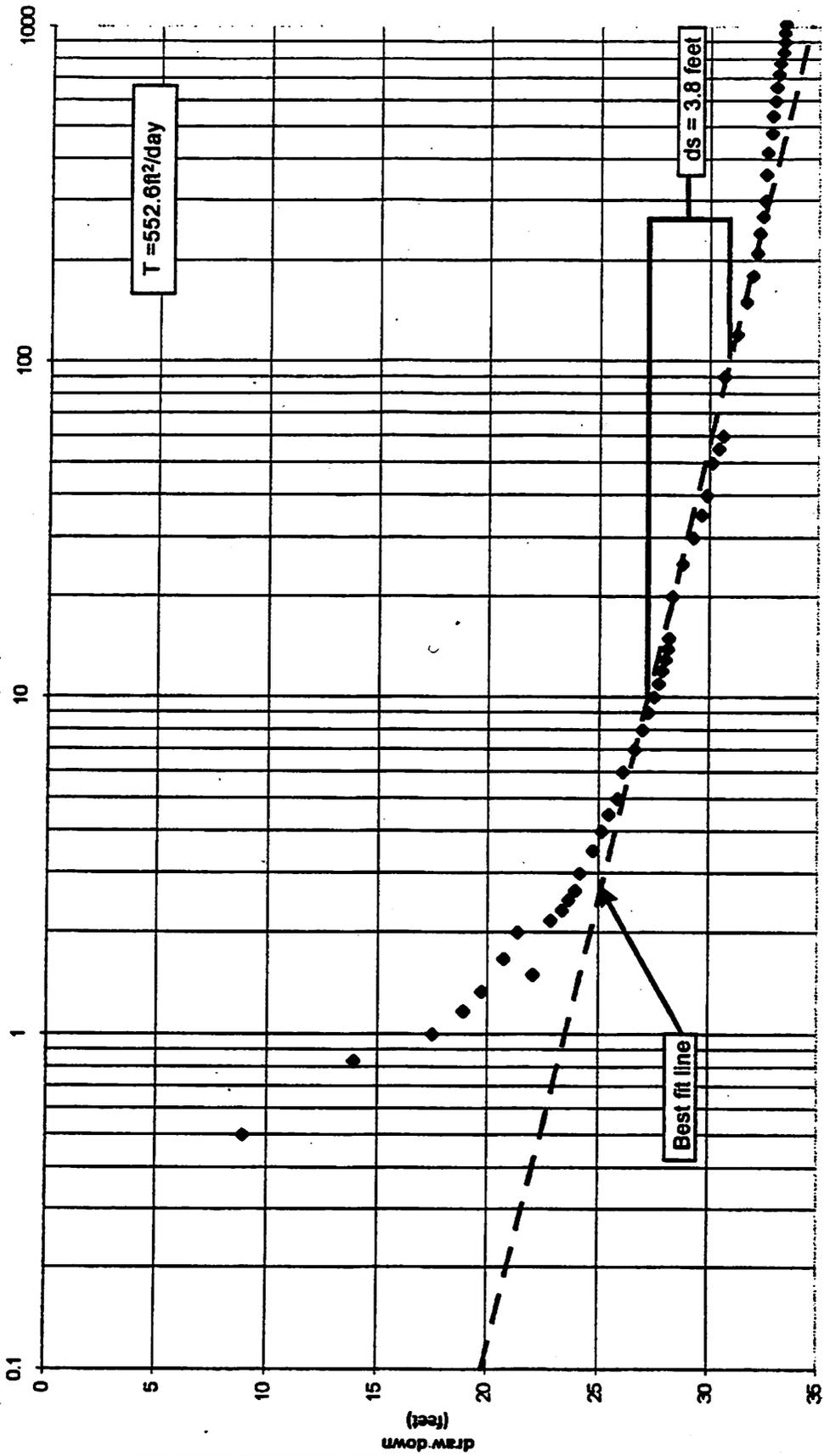
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**HydroGeo-Logic**  
 (805) 393-6218

**AQUIFER TEST DATA**

PROJ. NO. 96-002 OWNER: NAWS WELL NO. 26/40-13Q1  
 DATE: 7/31/96 - 8/1/96 PERFORMED BY: HOUGHTON/STONER TEST NO. 1  
 DISTANCE FROM PUMPING WELL: N/A EQUIPMENT: 5 HP GRUNDFOS PUMP

| TIME DATA       |            |                        |                  |                  |            | WATER LEVEL DATA         |            |                        | DISCHARGE DATA   |                   |            |             |
|-----------------|------------|------------------------|------------------|------------------|------------|--------------------------|------------|------------------------|------------------|-------------------|------------|-------------|
| PUMP ON: DATE:  |            | 7/31/96                | TIME:            |                  | 1418       | STATIC W.L. (ft):        |            | 33.05                  |                  | Q MEASURED BY:    |            | 5 G. BUCKET |
| PUMP OFF: DATE: |            | 8/1/96                 | TIME:            |                  | 0720       | MEASURING POINT:         |            | TOC                    |                  | DEPTH OF PUMP:    |            | 155 FT. BGS |
|                 |            |                        |                  |                  |            | ELEV. OF MEAS. PT. (ft): |            | N/A                    |                  | PREVIOUS PUMPING? |            | N           |
|                 |            |                        |                  |                  |            | DURATION:                |            |                        |                  |                   |            |             |
| DATE            | CLOCK TIME | TIME SINCE START (min) | WATER LEVEL (ft) | W.L. CHANGE (ft) | RATE (gpm) | DATE                     | CLOCK TIME | TIME SINCE START (min) | WATER LEVEL (ft) | W.L. CHANGE (ft)  | RATE (gpm) |             |
| 7/31            | 1418       | 0.25                   | 42               | 8.95             | 60         | 7/31                     |            | 50                     | 63.5             | 30.45             |            |             |
|                 |            | 0.50                   | 47               | 13.95            |            |                          |            | 59                     | 63.7             | 30.65             |            |             |
|                 |            | 0.83                   | 50.6             | 17.55            |            |                          | 1518       | 60                     | 63.75            | 30.7              |            |             |
|                 |            | 1.00                   | 52               | 18.95            |            |                          | 1548       | 90                     | 64.35            | 31.3              |            |             |
|                 |            | 1.17                   | 52.8             | 19.75            |            |                          | 1618       | 120                    | 64.76            | 31.71             |            |             |
|                 |            | 1.33                   | 53.8             | 20.75            |            |                          | 1648       | 150                    | 65.05            | 32                |            |             |
|                 |            | 1.67                   | 55.1             | 22.05            |            |                          | 1718       | 180                    | 65.25            | 32.2              |            |             |
|                 |            | 1.50                   | 54.4             | 21.35            |            |                          | 1748       | 210                    | 65.35            | 32.3              |            |             |
|                 |            | 2.00                   | 55.9             | 22.85            |            |                          | 1818       | 240                    | 65.5             | 32.45             |            |             |
|                 |            | 2.17                   | 56.4             | 23.35            |            |                          | 1848       | 270                    | 65.6             | 32.55             |            |             |
|                 |            | 2.33                   | 56.7             | 23.65            |            |                          | 1918       | 300                    | 65.65            | 32.6              |            |             |
|                 |            | 2.50                   | 57               | 23.95            |            |                          | 2018       | 360                    | 65.7             | 32.65             |            |             |
|                 |            | 2.67                   | 57.2             | 24.15            |            |                          | 2118       | 420                    | 65.9             | 32.85             |            |             |
|                 |            | 3                      | 57.8             | 24.75            |            |                          | 2218       | 480                    | 65.92            | 32.87             |            |             |
|                 |            | 3.5                    | 58.2             | 25.15            |            |                          | 2318       | 540                    | 66.05            | 33                |            |             |
|                 |            | 4                      | 58.5             | 25.45            |            | 8/1                      | 0018       | 600                    | 66.1             | 33.05             |            |             |
|                 |            | 4.5                    | 58.9             | 25.85            |            |                          | 0118       | 660                    | 66.2             | 33.15             |            |             |
|                 |            | 5                      | 59.15            | 26.1             |            |                          | 0218       | 720                    | 66.25            | 33.2              |            |             |
|                 |            | 6                      | 59.7             | 26.65            |            |                          | 0318       | 780                    | 66.4             | 33.35             |            |             |
|                 |            | 7                      | 60.05            | 27               |            |                          | 0418       | 840                    | 66.45            | 33.4              |            |             |
|                 |            | 8                      | 60.3             | 27.25            |            |                          | 0518       | 900                    | 66.45            | 33.4              |            |             |
|                 |            | 9                      | 60.55            | 27.5             |            |                          | 0618       | 960                    | 66.5             | 33.45             |            |             |
|                 |            | 10                     | 60.75            | 27.7             |            |                          | 0718       | 1020                   | 66.5             | 33.45             | 60         |             |
|                 |            | 11                     | 60.9             | 27.85            |            |                          |            |                        |                  |                   |            |             |
|                 |            | 12                     | 61.05            | 28               |            |                          |            |                        |                  |                   |            |             |
|                 |            | 13                     | 61.15            | 28.1             |            |                          |            |                        |                  |                   |            |             |
|                 |            | 14                     | 61.2             | 28.15            |            |                          |            |                        |                  |                   |            |             |
|                 |            | 15                     | 61.35            | 28.3             |            |                          |            |                        |                  |                   |            |             |
|                 |            | 20                     | 61.85            | 28.8             |            |                          |            |                        |                  |                   |            |             |
|                 |            | 25                     | 62.35            | 29.3             |            |                          |            |                        |                  |                   |            |             |
|                 |            | 30                     | 62.7             | 29.65            |            |                          |            |                        |                  |                   |            |             |
|                 | 1453       | 35                     | 62.95            | 29.9             |            |                          |            |                        |                  |                   |            |             |
|                 |            | 40                     | 63.2             | 30.15            |            |                          |            |                        |                  |                   |            |             |

26/40-13 Q1  
time (min)



**Houghton**  
**HydroGeo-Logic**  
(805)393-6218

BY: Houghton  
PROJECT NO: 96-002

DATE: 11-20-96  
PROJECT NAME: Geohydrologic Investigation, Indian Wells Valley

TITLE: Figure B4. Graph of Aquifer Test Data 26/40-13Q1  
SCALE: N/A  
FILE NO: 13Q1 AT.ppt



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**AQUIFER TEST DATA**

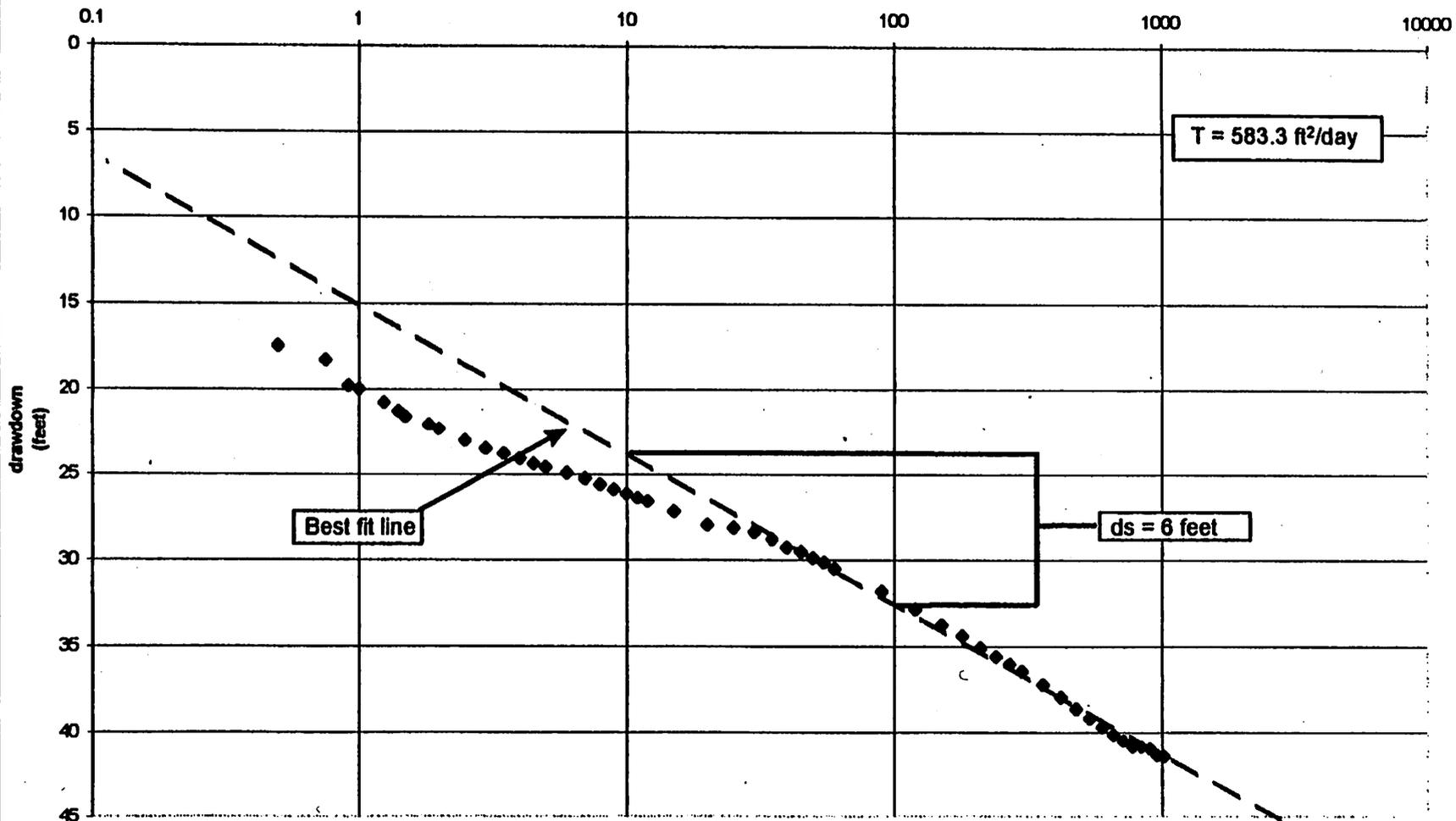
PROJ. NO. 96-002 OWNER: NAWS WELL NO. 26/40-14A1  
 DATE: 8/20/96 - 8/21/96 PERFORMED BY: HOUGHTON/STONER TEST NO. 1  
 DISTANCE FROM PUMPING WELL: N/A EQUIPMENT: 10 HP GRUNDFOS PUMP

| TIME DATA       |         |       |      | WATER LEVEL DATA        |     |                   | DISCHARGE DATA |  |  |
|-----------------|---------|-------|------|-------------------------|-----|-------------------|----------------|--|--|
| PUMP ON: DATE:  | 8/20/96 | TIME: | 1624 | STATIC W.L. (ft):       | 9.9 | Q MEASURED BY:    | 5 G. BUCKET    |  |  |
| PUMP OFF: DATE: | 8/21/96 | TIME: | 1025 | MEASURING POINT:        | TOC | DEPTH OF PUMP:    | 147 FT. BGS.   |  |  |
|                 |         |       |      | ELEV. OF MEAS. PT.(ft): | N/A | PREVIOUS PUMPING? | Y              |  |  |
|                 |         |       |      |                         |     | DURATION:         | 2 HRS.         |  |  |

| DATE | CLOCK TIME | TIME SINCE START (t) (min) | WATER LEVEL (ft) | W.L. CHANGE (s) (ft) | RATE(gpm) | DATE | CLOCK TIME | TIME SINCE START (t) (min) | WATER LEVEL (ft) | W.L. CHANGE (s) (ft) | RATE (gpm) |
|------|------------|----------------------------|------------------|----------------------|-----------|------|------------|----------------------------|------------------|----------------------|------------|
| 8/20 | 1624       | 0.50                       | 27.4             | 17.5                 | 100       | 8/20 | 1824       | 120                        | 42.75            | 32.85                |            |
|      |            | 0.75                       | 28.2             | 18.3                 |           |      | 1854       | 150                        | 43.65            | 33.75                |            |
|      |            | 0.92                       | 29.7             | 19.8                 |           |      | 1924       | 180                        | 44.3             | 34.4                 |            |
|      |            | 1.00                       | 29.9             | 20                   |           |      | 1954       | 210                        | 45               | 35.1                 |            |
|      |            | 1.25                       | 30.7             | 20.8                 |           |      | 2024       | 240                        | 45.5             | 35.6                 |            |
|      |            | 1.42                       | 31.2             | 21.3                 |           |      | 2054       | 270                        | 45.95            | 36.05                |            |
|      |            | 1.50                       | 31.5             | 21.6                 |           |      | 2124       | 300                        | 46.4             | 36.5                 |            |
|      |            | 1.83                       | 32               | 22.1                 |           |      | 2224       | 360                        | 47.15            | 37.25                |            |
|      |            | 2.00                       | 32.25            | 22.35                |           |      | 2324       | 420                        | 47.9             | 38                   |            |
|      |            | 2.50                       | 32.95            | 23.05                |           | 8/21 | 0024       | 480                        | 48.55            | 38.65                |            |
|      |            | 3.00                       | 33.4             | 23.5                 |           |      | 0124       | 540                        | 49.1             | 39.2                 |            |
|      |            | 3.50                       | 33.7             | 23.8                 |           |      | 0224       | 600                        | 49.6             | 39.7                 |            |
|      |            | 4.00                       | 34               | 24.1                 |           |      | 0324       | 660                        | 50.05            | 40.15                |            |
|      |            | 4.5                        | 34.3             | 24.4                 |           |      | 0424       | 720                        | 50.4             | 40.5                 |            |
|      |            | 5                          | 34.5             | 24.6                 |           |      | 0524       | 780                        | 50.75            | 40.85                |            |
|      |            | 6                          | 34.85            | 24.95                |           |      | 0624       | 840                        | 50.75            | 40.85                |            |
|      |            | 7                          | 35.15            | 25.25                |           |      | 0724       | 900                        | 50.85            | 40.95                |            |
|      |            | 8                          | 35.5             | 25.6                 |           |      | 0824       | 960                        | 51.25            | 41.35                |            |
|      |            | 9                          | 35.8             | 25.9                 |           |      | 0924       | 1020                       | 51.3             | 41.4                 | 100        |
|      |            | 10                         | 36.05            | 26.15                |           |      |            |                            |                  |                      |            |
|      |            | 11                         | 36.3             | 26.4                 |           |      |            |                            |                  |                      |            |
|      |            | 12                         | 36.5             | 26.6                 |           |      |            |                            |                  |                      |            |
|      |            | 15                         | 37.1             | 27.2                 |           |      |            |                            |                  |                      |            |
|      |            | 20                         | 37.9             | 28                   |           |      |            |                            |                  |                      |            |
|      | 1649       | 25                         | 38.05            | 28.15                | 100       |      |            |                            |                  |                      |            |
|      |            | 30                         | 38.3             | 28.4                 |           |      |            |                            |                  |                      |            |
|      |            | 35                         | 38.7             | 28.8                 |           |      |            |                            |                  |                      |            |
|      |            | 40                         | 39.2             | 29.3                 |           |      |            |                            |                  |                      |            |
|      |            | 45                         | 39.45            | 29.55                |           |      |            |                            |                  |                      |            |
|      |            | 50                         | 39.8             | 29.9                 |           |      |            |                            |                  |                      |            |
|      |            | 55                         | 40.05            | 30.15                |           |      |            |                            |                  |                      |            |
|      | 1724       | 60                         | 40.4             | 30.5                 |           |      |            |                            |                  |                      |            |
|      | 1754       | 90                         | 41.7             | 31.8                 |           |      |            |                            |                  |                      |            |

26/40-14A1

time (min)



**Houghton  
HydroGeo-Logic**

(805)393-6218

BY:

Houghton

PROJECT NO:

96-002

DATE:

11-20-96

PROJECT NAME:

Geohydrologic Investigation, Indian Wells Valley

TITLE:

Figure B5. Graph of Aquifer Test Data 26/40-14A1

SCALE:

N/A

FILE NO:

14A1 AT.ppt

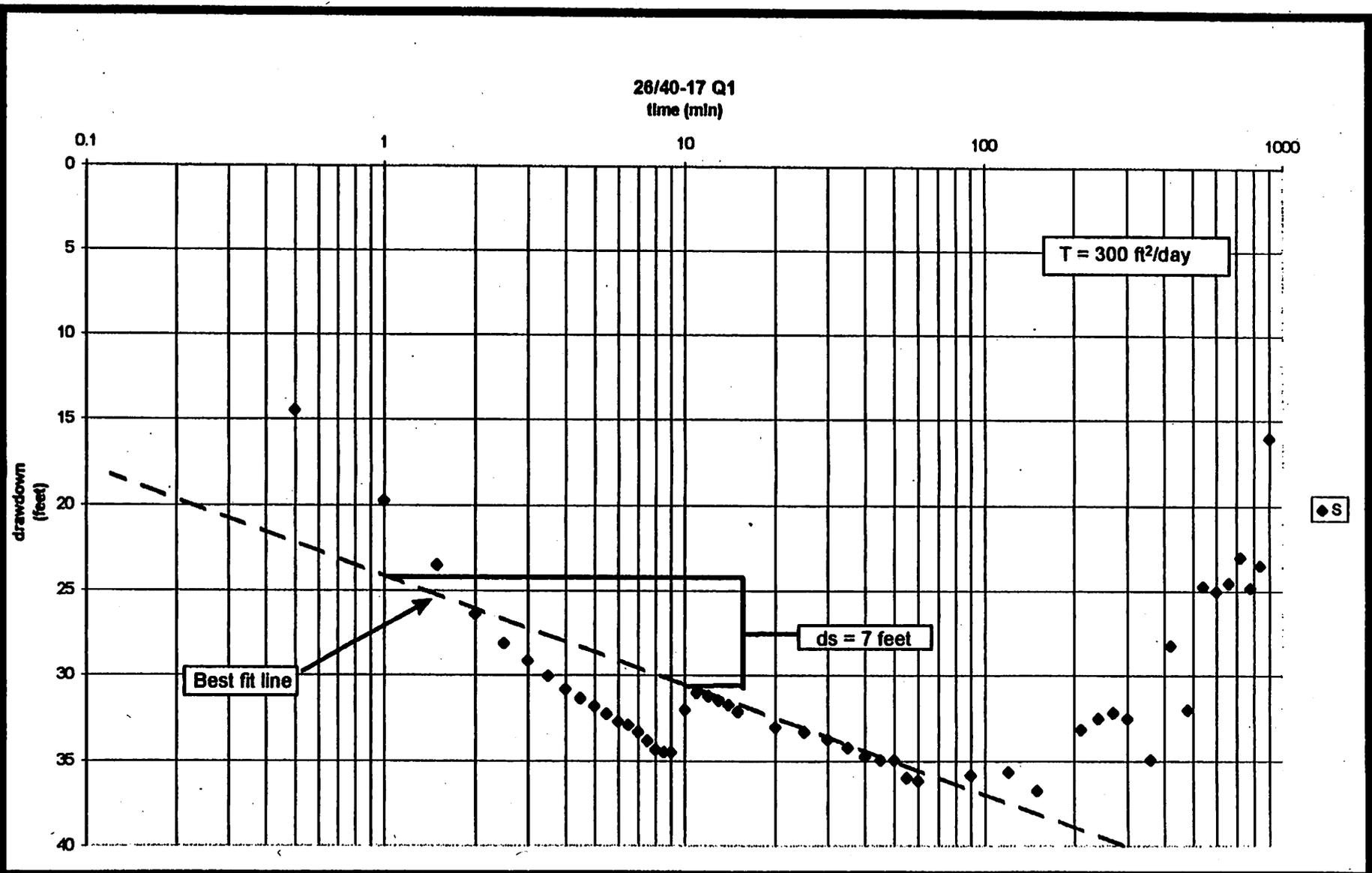


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**AQUIFER TEST DATA**

PROJ. NO. 96-002 OWNER: NAWS WELL NO. 26/40-17Q1  
 DATE: 8/5/96 - 8/6/96 PERFORMED BY: HOUGHTON/STONER TEST NO. 1  
 DISTANCE FROM PUMPING WELL: N/A EQUIPMENT: 5 HP GRUNDFOS PUMP

| TIME DATA       |            |                            |                  | WATER LEVEL DATA     |           |      |            | DISCHARGE DATA             |                  |                      |            |                   |  |             |  |
|-----------------|------------|----------------------------|------------------|----------------------|-----------|------|------------|----------------------------|------------------|----------------------|------------|-------------------|--|-------------|--|
| PUMP ON: DATE:  |            | 8/5/96                     |                  | TIME:                |           | 1602 |            | STATIC W.L. (ft):          |                  | 141.45               |            | Q MEASURED BY:    |  | 5 G. BUCKET |  |
| PUMP OFF: DATE: |            | 8/6/96                     |                  | TIME:                |           | 0800 |            | MEASURING POINT:           |                  | TOC                  |            | DEPTH OF PUMP:    |  | 240         |  |
|                 |            |                            |                  |                      |           |      |            | ELEV. OF MEAS. FT.(ft):    |                  | N/A                  |            | PREVIOUS PUMPING? |  | N           |  |
|                 |            |                            |                  |                      |           |      |            | DURATION:                  |                  |                      |            |                   |  |             |  |
| DATE            | CLOCK TIME | TIME SINCE START (t) (min) | WATER LEVEL (ft) | W.L. CHANGE (s) (ft) | RATE(gpm) | DATE | CLOCK TIME | TIME SINCE START (t) (min) | WATER LEVEL (ft) | W.L. CHANGE (s) (ft) | RATE (gpm) |                   |  |             |  |
| 8/5             | 1602       | 0.5                        | 155.9            | 14.45                | 60        | 8/5  | 1732       | 90                         | 177.3            | 35.85                |            |                   |  |             |  |
|                 |            | 1                          | 161.2            | 19.75                |           |      | 1802       | 120                        | 177.1            | 35.65                |            |                   |  |             |  |
|                 |            | 1.5                        | 165              | 23.55                |           |      | 1832       | 150                        | 178.2            | 36.75                |            |                   |  |             |  |
|                 |            | 2                          | 167.85           | 26.4                 |           |      | 1932       | 240                        | 174              | 32.55                |            |                   |  |             |  |
|                 |            | 2.5                        | 169.6            | 28.15                |           |      | 2002       | 270                        | 173.65           | 32.2                 |            |                   |  |             |  |
|                 |            | 3                          | 170.6            | 29.15                |           |      | 2032       | 300                        | 174              | 32.55                |            |                   |  |             |  |
|                 |            | 3.5                        | 171.5            | 30.05                |           |      | 2102       | 360                        | 176.4            | 34.95                |            |                   |  |             |  |
|                 |            | 4                          | 172.3            | 30.85                |           |      | 2202       | 420                        | 169.7            | 28.25                |            |                   |  |             |  |
|                 |            | 4.5                        | 172.85           | 31.4                 |           |      | 2302       | 480                        | 173.5            | 32.05                |            |                   |  |             |  |
|                 |            | 5                          | 173.3            | 31.85                |           | 8/6  | 0002       | 540                        | 166.2            | 24.75                |            |                   |  |             |  |
|                 |            | 5.5                        | 173.75           | 32.3                 |           |      | 0102       | 600                        | 166.5            | 25.05                |            |                   |  |             |  |
|                 |            | 6                          | 174.2            | 32.75                |           |      | 0202       | 660                        | 166              | 24.55                |            |                   |  |             |  |
|                 |            | 6.5                        | 174.4            | 32.95                |           |      | 0302       | 720                        | 164.5            | 23.05                |            |                   |  |             |  |
|                 |            | 7                          | 174.8            | 33.35                |           |      | 0402       | 780                        | 166.3            | 24.85                |            |                   |  |             |  |
|                 |            | 7.5                        | 175.3            | 33.85                |           |      | 0502       | 840                        | 165              | 23.55                |            |                   |  |             |  |
|                 |            | 8                          | 175.8            | 34.35                |           |      | 0602       | 900                        | 157.5            | 16.05                | 60         |                   |  |             |  |
|                 |            | 8.5                        | 175.95           | 34.5                 |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 9                          | 175.95           | 34.5                 |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 10                         | 173.5            | 32.05                |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 11                         | 172.5            | 31.05                |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 12                         | 172.7            | 31.25                |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 13                         | 172.95           | 31.5                 |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 14                         | 173.2            | 31.75                |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 15                         | 173.6            | 32.15                |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 20                         | 174.5            | 33.05                |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 25                         | 174.8            | 33.35                |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 30                         | 175.2            | 33.75                |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 35                         | 175.7            | 34.25                |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 40                         | 176.2            | 34.75                |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 45                         | 176.4            | 34.95                |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 |            | 50                         | 176.4            | 34.95                |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 | 1724       | 55                         | 177.45           | 36                   |           |      |            |                            |                  |                      |            |                   |  |             |  |
|                 | 1754       | 60                         | 177.6            | 36.15                |           |      |            |                            |                  |                      |            |                   |  |             |  |



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BY:  
Houghton  
PROJECT NO:  
98-002

DATE:  
11-20-96  
PROJECT NAME:  
Geohydrologic Investigation, Indian Wells Valley

TITLE:  
Figure B6. Graph of Aquifer Test Data 26/40-17Q1

SCALE:  
N/A

FILE NO:  
17Q1 AT.ppt



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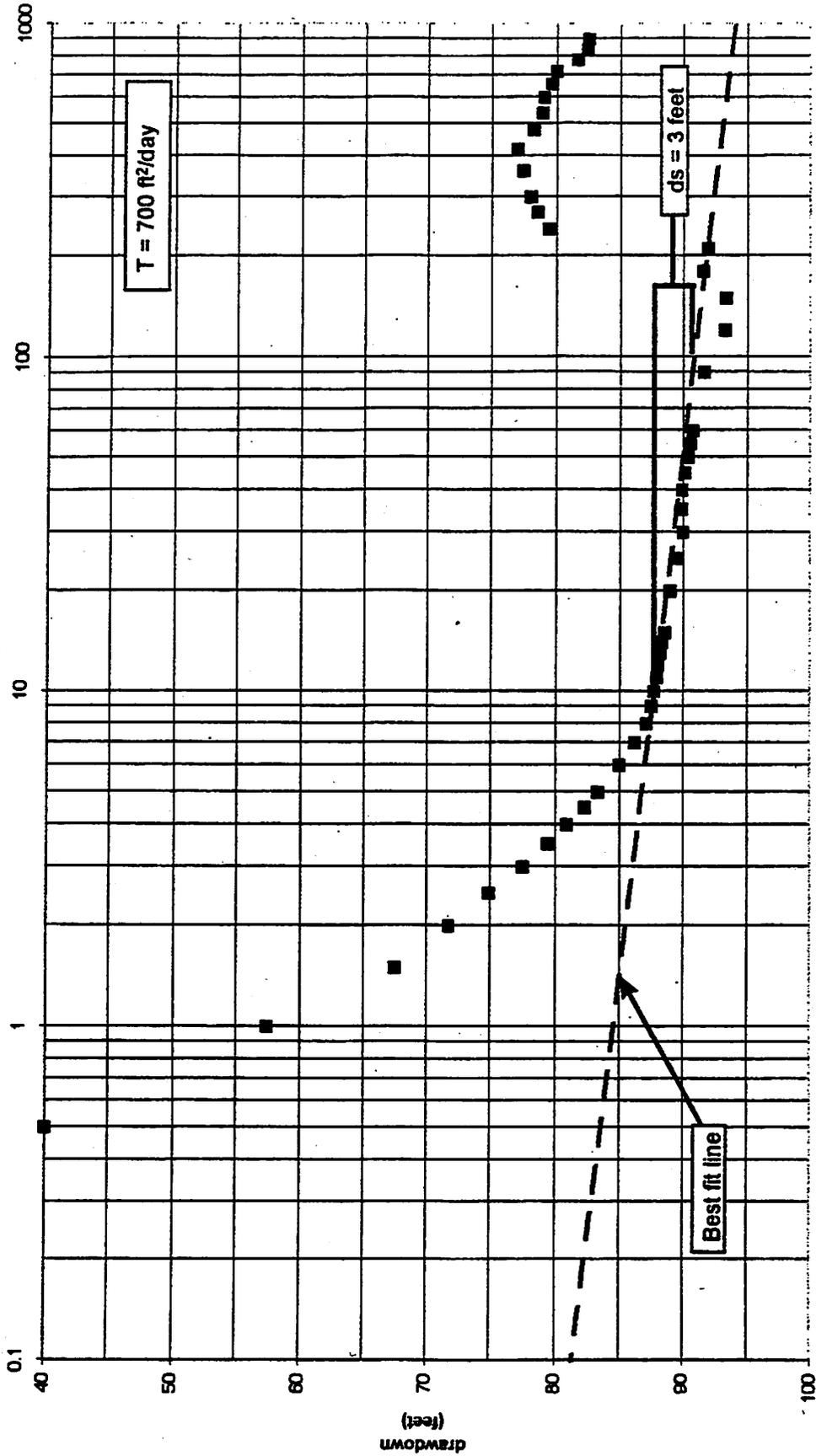
**AQUIFER TEST DATA**

PROJ. NO. 96-002 OWNER: NAWS WELL NO. 26/40-22P4  
 DATE: 7/30/96 - 7/31/96 PERFORMED BY: HOUGHTON/STONER TEST NO. 1  
 DISTANCE FROM PUMPING WELL: N/A EQUIPMENT: 5 HP GRUNDFOS PUMP

| TIME DATA                      |            |                        |                  |                                     |            | WATER LEVEL DATA                  |            |                        | DISCHARGE DATA   |                  |            |
|--------------------------------|------------|------------------------|------------------|-------------------------------------|------------|-----------------------------------|------------|------------------------|------------------|------------------|------------|
| PUMP ON: DATE: <u>7/30/96</u>  |            | TIME: <u>1816</u>      |                  | STATIC W.L. (ft): <u>113.1</u>      |            | Q MEASURED BY: <u>5 G. BUCKET</u> |            |                        |                  |                  |            |
| PUMP OFF: DATE: <u>7/31/96</u> |            | TIME: <u>0925</u>      |                  | MEASURING POINT: <u>TOC</u>         |            | DEPTH OF PUMP: <u>220</u>         |            |                        |                  |                  |            |
|                                |            |                        |                  | ELEV. OF MEAS. PT. (ft): <u>N/A</u> |            | PREVIOUS PUMPING? <u>Y</u>        |            |                        |                  |                  |            |
|                                |            |                        |                  |                                     |            | DURATION: <u>2 HRS.</u>           |            |                        |                  |                  |            |
| DATE                           | CLOCK TIME | TIME SINCE START (min) | WATER LEVEL (ft) | W.L. CHANGE (ft)                    | RATE (gpm) | DATE                              | CLOCK TIME | TIME SINCE START (min) | WATER LEVEL (ft) | W.L. CHANGE (ft) | RATE (gpm) |
| 7/30                           | 1816       | 0.5                    | 117              | 40.05                               | 60         | 7/30                              | 2146       | 210                    | 169              | 92.05            |            |
|                                |            | 1                      | 134.5            | 57.55                               |            |                                   | 2216       | 240                    | 156.4            | 79.45            |            |
|                                |            | 1.5                    | 144.5            | 67.55                               |            |                                   | 2246       | 270                    | 155.5            | 78.55            |            |
|                                |            | 2                      | 148.8            | 71.85                               |            |                                   | 2316       | 300                    | 155              | 78.05            |            |
|                                |            | 2.5                    | 151.9            | 74.95                               |            | 7/31                              | 0016       | 360                    | 154.4            | 77.45            |            |
|                                |            | 3                      | 154.5            | 77.55                               |            |                                   | 0116       | 420                    | 154              | 77.05            |            |
|                                | 1820       | 3.5                    | 156.4            | 79.45                               |            |                                   | 0216       | 480                    | 155.2            | 78.25            |            |
|                                |            | 4                      | 157.9            | 80.95                               |            |                                   | 0316       | 540                    | 155.9            | 78.95            |            |
|                                |            | 4.5                    | 159.3            | 82.35                               |            |                                   | 0416       | 600                    | 156              | 79.05            |            |
|                                |            | 5                      | 160.3            | 83.35                               |            |                                   | 0516       | 660                    | 156.6            | 79.65            |            |
|                                |            | 6                      | 162              | 85.05                               |            |                                   | 0616       | 720                    | 157              | 80.05            |            |
|                                |            | 7                      | 163.2            | 86.25                               |            |                                   | 0716       | 780                    | 158.65           | 81.7             |            |
|                                |            | 8                      | 164.1            | 87.15                               |            |                                   | 0816       | 840                    | 159.4            | 82.45            |            |
|                                |            | 9                      | 164.5            | 87.55                               |            |                                   | 0916       | 900                    | 159.5            | 82.55            | 60         |
|                                |            | 10                     | 164.7            | 87.75                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 11                     | 164.9            | 87.95                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 12                     | 165              | 88.05                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 13                     | 165.15           | 88.2                                |            |                                   |            |                        |                  |                  |            |
|                                |            | 14                     | 165.3            | 88.35                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 15                     | 165.5            | 88.55                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 20                     | 165.95           | 89                                  |            |                                   |            |                        |                  |                  |            |
|                                |            | 25                     | 166.5            | 89.55                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 30                     | 167              | 90.05                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 35                     | 166.9            | 89.95                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 40                     | 166.9            | 89.95                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 45                     | 167.15           | 90.2                                |            |                                   |            |                        |                  |                  |            |
|                                |            | 50                     | 167.4            | 90.45                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 55                     | 167.6            | 90.65                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 60                     | 167.8            | 90.85                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 90                     | 168.7            | 91.75                               |            |                                   |            |                        |                  |                  |            |
|                                |            | 120                    | 170.3            | 93.35                               |            |                                   |            |                        |                  |                  |            |
|                                | 2045       | 150                    | 170.4            | 93.45                               |            |                                   |            |                        |                  |                  |            |
|                                | 2116       | 180                    | 168.6            | 91.65                               |            |                                   |            |                        |                  |                  |            |

26/40-22 P4

time (min)



**Houghton**  
**HydroGeo-Logic**  
(805)393-6218

BY: Houghton  
PROJECT NO: 96-002

DATE: 11-20-96  
PROJECT NAME: Geohydrologic Investigation, Indian Wells Valley

TITLE: Figure B7. Graph of Aquifer Test Data 26/40-22P4  
SCALE: N/A  
FILE NO: 22P4 AT.ppt



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**AQUIFER TEST DATA**

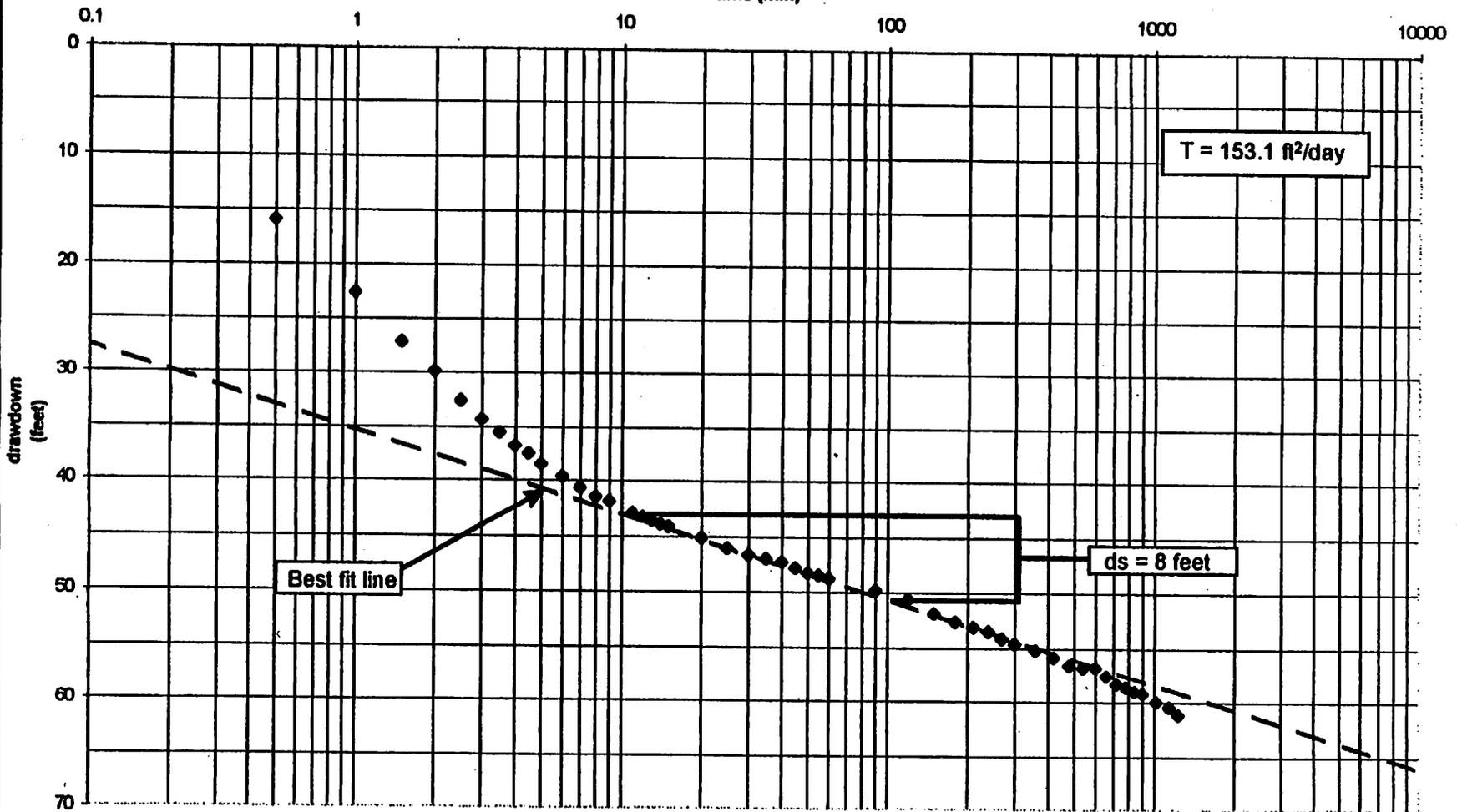
PROJ. NO. 96-002 OWNER: NAWS WELL NO. 26/40-2382  
 DATE: 8/22/96 - 8/23/96 PERFORMED BY: HOUGHTON/STONER TEST NO. 1  
 DISTANCE FROM PUMPING WELL: N/A EQUIPMENT: 10 HP GRUNDFOS PUMP

| TIME DATA       |         |       |      | WATER LEVEL DATA         |      |                   | DISCHARGE DATA |  |  |
|-----------------|---------|-------|------|--------------------------|------|-------------------|----------------|--|--|
| PUMP ON: DATE:  | 8/22/96 | TIME: | 1640 | STATIC W.L. (ft):        | 31.4 | Q MEASURED BY:    | 5 G. BUCKET    |  |  |
| PUMP OFF: DATE: | 8/23/96 | TIME: | 1415 | MEASURING POINT:         | TOC  | DEPTH OF PUMP:    | 220            |  |  |
|                 |         |       |      | ELEV. OF MEAS. PT. (ft): | N/A  | PREVIOUS PUMPING? | N              |  |  |
|                 |         |       |      |                          |      | DURATION:         |                |  |  |

| DATE | CLOCK TIME | TIME SINCE START (t) (min) | WATER LEVEL (ft) | W.L. CHANGE (s) (ft) | RATE(gpm) | DATE | CLOCK TIME | TIME SINCE START (t) (min) | WATER LEVEL (ft) | W.L. CHANGE (s) (ft) | RATE (gpm) |
|------|------------|----------------------------|------------------|----------------------|-----------|------|------------|----------------------------|------------------|----------------------|------------|
| 8/22 | 1640       | 0.5                        | 47.3             | 15.9                 | 35        | 8/22 | 2040       | 240                        | 84.95            | 53.55                |            |
|      |            | 1                          | 54               | 22.6                 |           |      | 2110       | 270                        | 85.6             | 54.2                 |            |
|      |            | 1.5                        | 58.6             | 27.2                 |           |      | 2140       | 300                        | 86               | 54.6                 |            |
|      |            | 2                          | 61.3             | 29.9                 |           |      | 2240       | 360                        | 86.6             | 55.2                 |            |
|      |            | 2.5                        | 64               | 32.6                 |           |      | 2340       | 420                        | 87.25            | 55.85                |            |
|      |            | 3                          | 65.7             | 34.3                 |           | 8/23 | 0040       | 480                        | 88               | 56.6                 |            |
|      |            | 3.5                        | 66.95            | 35.55                |           |      | 0140       | 540                        | 88.2             | 56.8                 |            |
|      |            | 4                          | 68.15            | 36.75                |           |      | 0240       | 600                        | 88.2             | 56.8                 |            |
|      |            | 4.5                        | 68.9             | 37.5                 |           |      | 0340       | 660                        | 89               | 57.6                 |            |
|      |            | 5                          | 69.9             | 38.5                 |           |      | 0440       | 720                        | 89.7             | 58.3                 |            |
|      |            | 6                          | 71.05            | 39.65                |           |      | 0540       | 780                        | 90               | 58.6                 |            |
|      |            | 7                          | 72               | 40.6                 |           |      | 0640       | 840                        | 90.4             | 59                   |            |
|      |            | 8                          | 72.8             | 41.4                 |           |      | 0740       | 900                        | 90.6             | 59.2                 |            |
|      |            | 9                          | 73.2             | 41.8                 |           |      | 0940       | 1020                       | 91.4             | 60                   |            |
|      |            | 11                         | 74.3             | 42.9                 |           |      | 1140       | 1140                       | 91.9             | 60.5                 |            |
|      |            | 12                         | 74.65            | 43.25                |           |      | 1405       | 1230                       | 92.6             | 61.2                 | 35         |
|      |            | 13                         | 75               | 43.6                 |           |      |            |                            |                  |                      |            |
|      |            | 14                         | 75.25            | 43.85                |           |      |            |                            |                  |                      |            |
|      |            | 15                         | 75.5             | 44.1                 |           |      |            |                            |                  |                      |            |
|      |            | 20                         | 76.5             | 45.1                 |           |      |            |                            |                  |                      |            |
|      |            | 25                         | 77.45            | 46.05                |           |      |            |                            |                  |                      |            |
|      |            | 30                         | 78.05            | 46.65                |           |      |            |                            |                  |                      |            |
|      |            | 35                         | 78.4             | 47                   |           |      |            |                            |                  |                      |            |
|      |            | 40                         | 78.65            | 47.25                |           |      |            |                            |                  |                      |            |
|      |            | 45                         | 79.2             | 47.8                 |           |      |            |                            |                  |                      |            |
|      |            | 50                         | 79.65            | 48.25                |           |      |            |                            |                  |                      |            |
|      |            | 55                         | 79.85            | 48.45                |           |      |            |                            |                  |                      |            |
|      | 1740       | 60                         | 80.15            | 48.75                |           |      |            |                            |                  |                      |            |
|      | 1810       | 90                         | 81.2             | 49.8                 |           |      |            |                            |                  |                      |            |
|      | 1840       | 120                        | 82.05            | 50.65                |           |      |            |                            |                  |                      |            |
|      | 1910       | 150                        | 83.3             | 51.9                 |           |      |            |                            |                  |                      |            |
|      | 1940       | 180                        | 84.05            | 52.65                |           |      |            |                            |                  |                      |            |
|      | 2010       | 210                        | 84.55            | 53.15                |           |      |            |                            |                  |                      |            |

26/40-23 B2

time (min)



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96-002

DATE:

11-20-98

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TITLE:

Figure B8. Graph of Aquifer Test Data 26/40-23B2

SCALE:

N/A

FILE NO:

23B2 AT.ppt

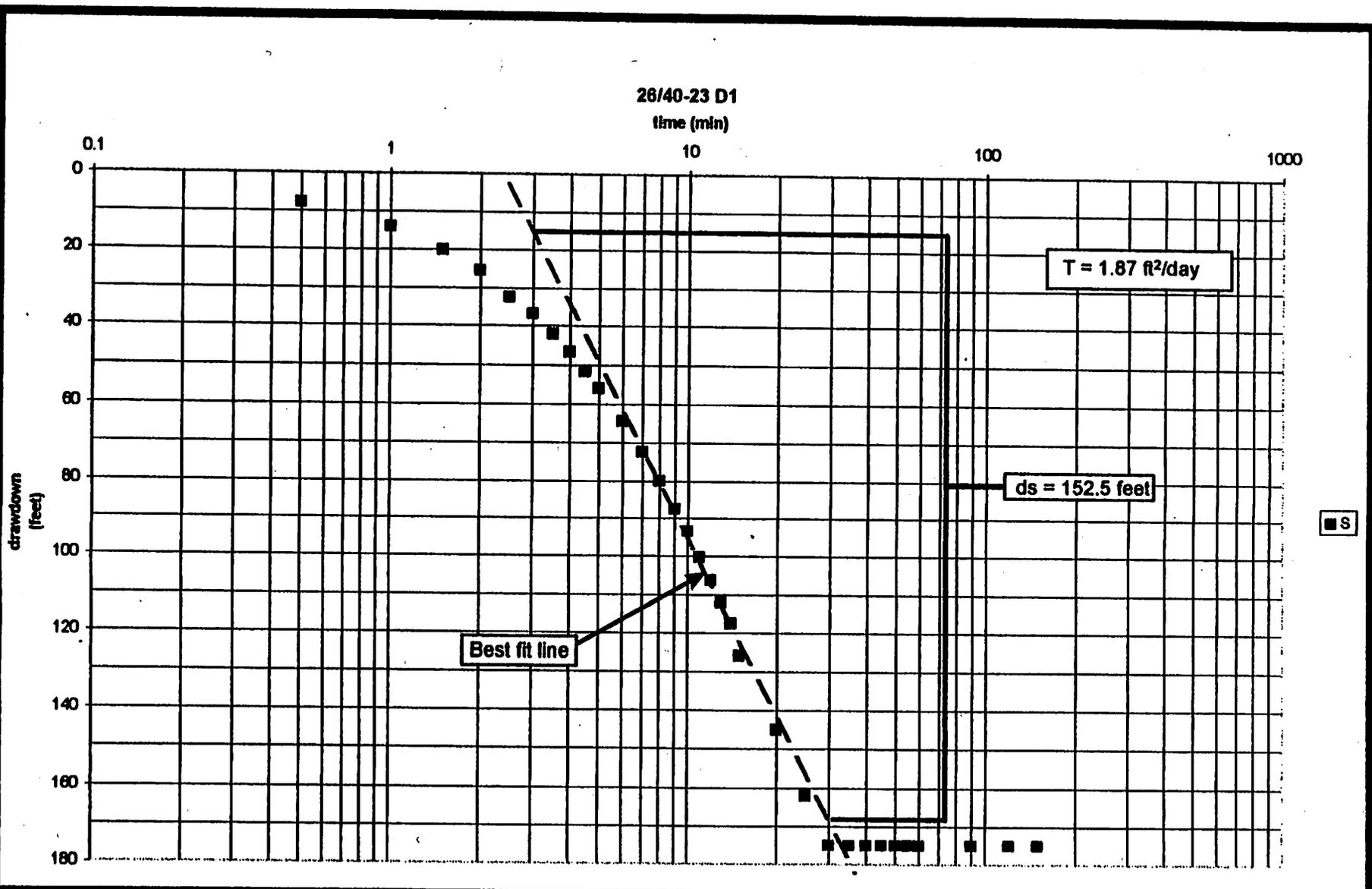


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**AQUIFER TEST DATA**

PROJ. NO. 96-002 OWNER: NAWS WELL NO. 26/40-23D1  
 DATE: 8/26/96 PERFORMED BY: HOUGHTON/STONER TEST NO. 1  
 DISTANCE FROM PUMPING WELL: N/A EQUIPMENT: 10 HP GRUNDFOS PUMP

| TIME DATA                      |            |                            |                  |                                     |           | WATER LEVEL DATA                  |                          |                            | DISCHARGE DATA   |                      |            |
|--------------------------------|------------|----------------------------|------------------|-------------------------------------|-----------|-----------------------------------|--------------------------|----------------------------|------------------|----------------------|------------|
| PUMP ON: DATE: <u>8/26/96</u>  |            | TIME: <u>1905</u>          |                  | STATIC W.L. (ft): <u>48.9</u>       |           | Q MEASURED BY: <u>5 G. BUCKET</u> |                          |                            |                  |                      |            |
| PUMP OFF: DATE: <u>8/26/96</u> |            | TIME: <u>2105</u>          |                  | MEASURING POINT: <u>TOC</u>         |           | DEPTH OF PUMP: <u>231</u>         |                          |                            |                  |                      |            |
|                                |            |                            |                  | ELEV. OF MEAS. PT. (ft): <u>N/A</u> |           | PREVIOUS PUMPING? <u>Y</u>        |                          |                            |                  |                      |            |
|                                |            |                            |                  |                                     |           |                                   | DURATION: <u>5 MINS.</u> |                            |                  |                      |            |
| DATE                           | CLOCK TIME | TIME SINCE START (t) (min) | WATER LEVEL (ft) | W.L. CHANGE (s) (ft)                | RATE(gpm) | DATE                              | CLOCK TIME               | TIME SINCE START (t) (min) | WATER LEVEL (ft) | W.L. CHANGE (s) (ft) | RATE (gpm) |
| 8/22                           | 1640       | 0.5                        | 56.7             | 7.8                                 | 8.6       |                                   |                          |                            |                  |                      |            |
|                                |            | 1                          | 63               | 14.1                                |           |                                   |                          |                            |                  |                      |            |
|                                |            | 1.5                        | 69               | 20.1                                |           |                                   |                          |                            |                  |                      |            |
|                                |            | 2                          | 74.4             | 25.5                                |           |                                   |                          |                            |                  |                      |            |
|                                |            | 2.5                        | 81.3             | 32.4                                |           |                                   |                          |                            |                  |                      |            |
|                                |            | 3                          | 85.7             | 36.8                                |           |                                   |                          |                            |                  |                      |            |
|                                |            | 3.5                        | 91               | 42.1                                |           |                                   |                          |                            |                  |                      |            |
|                                |            | 4                          | 95.6             | 46.7                                |           |                                   |                          |                            |                  |                      |            |
|                                |            | 4.5                        | 100.5            | 51.6                                |           |                                   |                          |                            |                  |                      |            |
|                                |            | 5                          | 104.9            | 56                                  |           |                                   |                          |                            |                  |                      |            |
|                                |            | 6                          | 113.4            | 64.5                                |           |                                   |                          |                            |                  |                      |            |
|                                |            | 7                          | 121.3            | 72.4                                |           |                                   |                          |                            |                  |                      |            |
|                                |            | 8                          | 128.9            | 80                                  |           |                                   |                          |                            |                  |                      |            |
|                                |            | 9                          | 136.4            | 87.5                                |           |                                   |                          |                            |                  |                      |            |
|                                |            | 10                         | 142.5            | 93.6                                |           |                                   |                          |                            |                  |                      |            |
|                                |            | 11                         | 149.25           | 100.35                              |           |                                   |                          |                            |                  |                      |            |
|                                |            | 12                         | 155.2            | 106.3                               |           |                                   |                          |                            |                  |                      |            |
|                                |            | 13                         | 161              | 112.1                               |           |                                   |                          |                            |                  |                      |            |
|                                |            | 14                         | 166.5            | 117.6                               |           |                                   |                          |                            |                  |                      |            |
|                                |            | 15                         | 174.8            | 125.9                               |           |                                   |                          |                            |                  |                      |            |
|                                |            | 20                         | 194              | 145.1                               |           |                                   |                          |                            |                  |                      |            |
|                                |            | 25                         | 211              | 162.1                               |           |                                   |                          |                            |                  |                      |            |
|                                |            | 30                         | 223.9            | 175                                 |           |                                   |                          |                            |                  |                      |            |
|                                |            | 35                         | 223.9            | 175                                 |           |                                   |                          |                            |                  |                      |            |
|                                |            | 40                         | 223.9            | 175                                 |           |                                   |                          |                            |                  |                      |            |
|                                |            | 45                         | 223.9            | 175                                 |           |                                   |                          |                            |                  |                      |            |
|                                |            | 50                         | 223.9            | 175                                 |           |                                   |                          |                            |                  |                      |            |
|                                |            | 55                         | 223.9            | 175                                 |           |                                   |                          |                            |                  |                      |            |
|                                | 1905       | 60                         | 223.9            | 175                                 |           |                                   |                          |                            |                  |                      |            |
|                                | 1935       | 90                         | 223.9            | 175                                 |           |                                   |                          |                            |                  |                      |            |
|                                | 2005       | 120                        | 223.9            | 175                                 |           |                                   |                          |                            |                  |                      |            |
|                                | 2035       | 150                        | 223.9            | 175                                 | 7.7       |                                   |                          |                            |                  |                      |            |



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Figure B9. Graph of Aquifer Test Data 26/40-23D1

SCALE:

N/A

FILE NO:

23D1 AT.ppt



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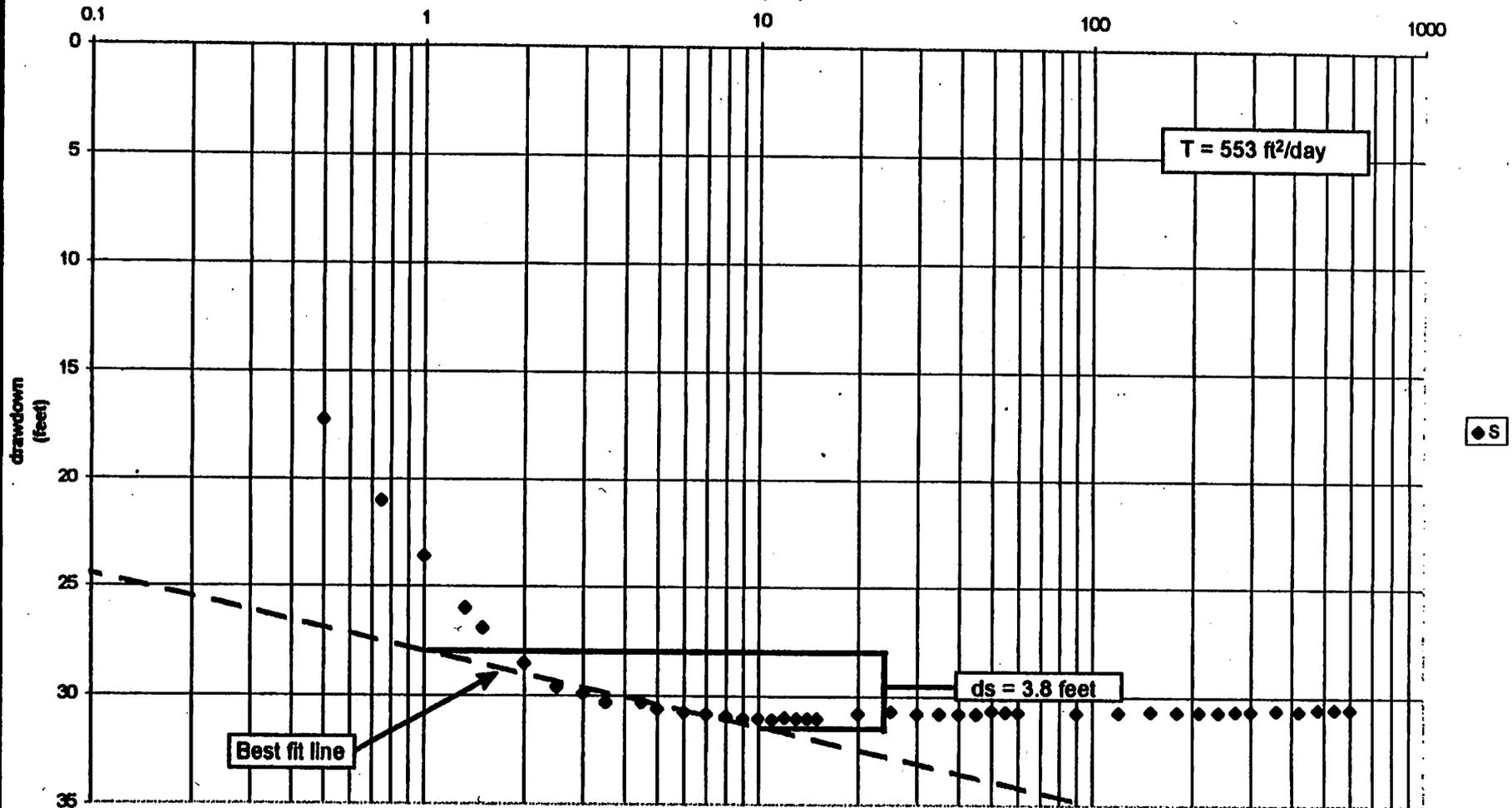
**AQUIFER TEST DATA**

PROJ. NO. 96-002 OWNER: NAWS WELL NO. 26/40-35H2  
 DATE: 8/5/96 - 8/6/96 PERFORMED BY: HOUGHTON/STONER TEST NO. 1  
 DISTANCE FROM PUMPING WELL: N/A EQUIPMENT: 5 HP GRUNDFOS PUMP

| TIME DATA      |            |                        |                  |                  |            | WATER LEVEL DATA         |            |                        |                  | DISCHARGE DATA    |            |             |  |
|----------------|------------|------------------------|------------------|------------------|------------|--------------------------|------------|------------------------|------------------|-------------------|------------|-------------|--|
| PUMP ON DATE:  |            | 8/6/96                 |                  | TIME: 0018       |            | STATIC W.L. (ft):        |            | 90.8                   |                  | Q MEASURED BY:    |            | 5 G. BUCKET |  |
| PUMP OFF DATE: |            | 8/6/96                 |                  | TIME: 1045       |            | MEASURING POINT:         |            | TOC                    |                  | DEPTH OF PUMP:    |            | 220         |  |
|                |            |                        |                  |                  |            | ELEV. OF MEAS. PT. (ft): |            | N/A                    |                  | PREVIOUS PUMPING? |            | N           |  |
|                |            |                        |                  |                  |            |                          |            |                        |                  | DURATION:         |            |             |  |
| DATE           | CLOCK TIME | TIME SINCE START (min) | WATER LEVEL (ft) | W.L. CHANGE (ft) | RATE (gpm) | DATE                     | CLOCK TIME | TIME SINCE START (min) | WATER LEVEL (ft) | W.L. CHANGE (ft)  | RATE (gpm) |             |  |
| 8/5            | 0018       | 0.5                    | 107.3            | 17.22            | 60         | 8/5                      | 0318       | 180                    | 120.8            | 30.72             |            |             |  |
|                |            | 0.75                   | 111.1            | 21.02            |            |                          | 0348       | 210                    | 120.8            | 30.72             |            |             |  |
|                |            | 1                      | 113.7            | 23.62            |            |                          | 0418       | 240                    | 120.8            | 30.72             |            |             |  |
|                |            | 1.33                   | 116.1            | 26.02            |            |                          | 0448       | 270                    | 120.75           | 30.67             |            |             |  |
|                |            | 1.5                    | 117              | 26.92            |            |                          | 0518       | 300                    | 120.75           | 30.67             |            |             |  |
|                |            | 2                      | 118.6            | 28.52            |            |                          | 0618       | 360                    | 120.72           | 30.64             |            |             |  |
|                |            | 2.5                    | 119.7            | 29.62            |            |                          | 0718       | 420                    | 120.75           | 30.67             |            |             |  |
|                |            | 3                      | 120              | 29.92            |            |                          | 0818       | 480                    | 120.67           | 30.59             |            |             |  |
|                |            | 3.5                    | 120.4            | 30.32            |            |                          | 0918       | 540                    | 120.65           | 30.57             |            |             |  |
|                |            | 4.5                    | 120.4            | 30.32            |            |                          | 1018       | 600                    | 120.67           | 30.59             | 60         |             |  |
|                |            | 5                      | 120.7            | 30.62            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 6                      | 120.85           | 30.77            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 7                      | 120.95           | 30.87            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 8                      | 121.05           | 30.97            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 9                      | 121.15           | 31.07            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 10                     | 121.15           | 31.07            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 11                     | 121.2            | 31.12            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 12                     | 121.1            | 31.02            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 13                     | 121.15           | 31.07            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 14                     | 121.15           | 31.07            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 15                     | 121.15           | 31.07            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 20                     | 120.9            | 30.82            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 25                     | 120.8            | 30.72            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 30                     | 120.9            | 30.82            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 35                     | 120.9            | 30.82            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 40                     | 120.9            | 30.82            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 45                     | 120.9            | 30.82            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 50                     | 120.75           | 30.67            |            |                          |            |                        |                  |                   |            |             |  |
|                |            | 55                     | 120.8            | 30.72            |            |                          |            |                        |                  |                   |            |             |  |
|                | 0118       | 60                     | 120.82           | 30.74            |            |                          |            |                        |                  |                   |            |             |  |
|                | 0148       | 90                     | 120.85           | 30.77            |            |                          |            |                        |                  |                   |            |             |  |
|                | 0218       | 120                    | 120.82           | 30.74            |            |                          |            |                        |                  |                   |            |             |  |
|                | 0248       | 150                    | 120.77           | 30.69            |            |                          |            |                        |                  |                   |            |             |  |

26/40-35 H2

time (min)



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TITLE:  
Figure B10. Graph of Aquifer Test Data 26/40-35H2

SCALE:  
N/A

FILE NO:  
35H2 AT.ppt