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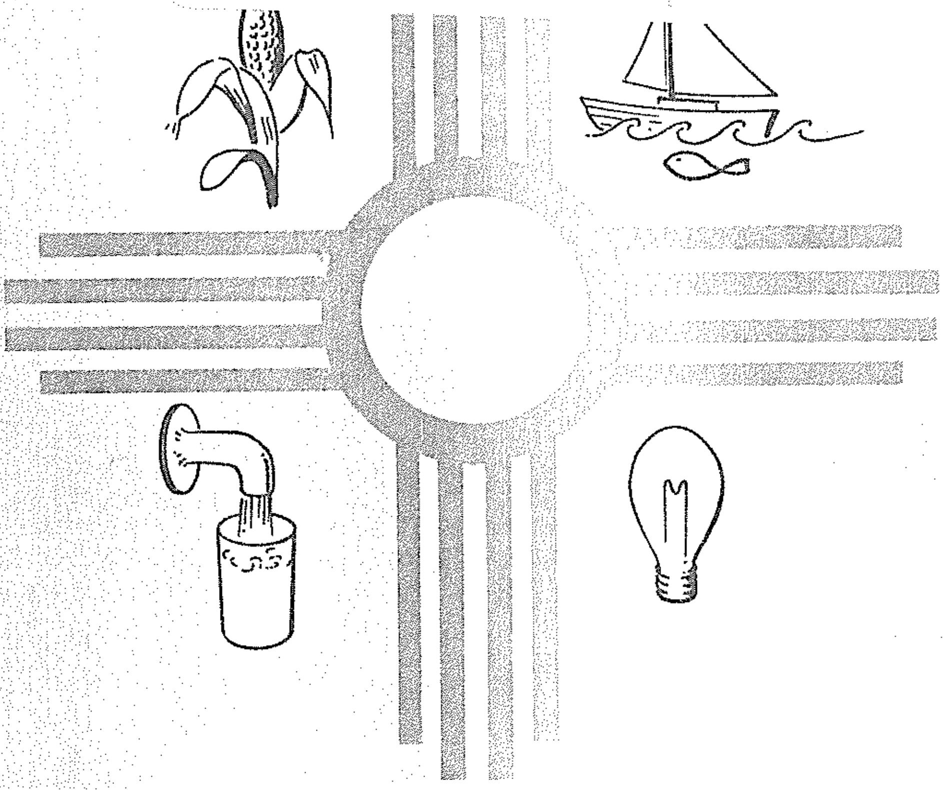
CHEMICAL DYNAMICS OF A CONFINED LIMESTONE AQUIFER

Technical Completion Report

Project No. B-048-NMEX



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CHEMICAL DYNAMICS OF A CONFINED LIMESTONE AQUIFER

by

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in cooperation with
Department of Physics
New Mexico Institute of Mining and Technology

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Abstract

The evolution of groundwater in the Roswell Limestone Aquifer is measured using some rather ordinary and easily determined characteristics of the water. Randomness caused by analytical error and matrix inhomogeneity is suppressed by dividing the study area into subsections on the basis of hydrologic function and using averaged values of the measured characteristics to describe each subdivision.

It is found that temperature, ionic solute concentrations, calcite saturation, and dissolved oxygen content change in a reasonably steady and monotonic manner as the water flows from the recharge to the discharge region.

Simple models are developed to quantify the oxygen and temperature measurements. On the basis of these models the groundwater flow is found to be a factor of 6 faster in the northern part of the Roswell Limestone Aquifer and the residence time is a factor of 3 longer in the southern part. Solute concentrations indicate intrusion into the northeast corner of the Limestone Aquifer from an upper Alluvium Aquifer.

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ACKNOWLEDGEMENTS

A number of persons contributed to the work presented in this report.

Jim Childers and Tom Ewing assisted with the field sampling program. Ray Wyche, manager of the Pecos Valley Artesian Conservancy District, made available for sampling a group of observation wells. Dr. G. Gross, on several occasions, collected water samples.

Laboratory analyses were done by Virginia McLemore, Bradly Woodworth and Tom Ewing. Jim Childers, Vickie Gabin and Bradly Woodworth collated the laboratory results and wrote the computer programs that processed these results.

INTRODUCTORY NOTE

Several sections contained in this report (dissolved oxygen, ionic concentrations, and chemical saturation) were given at the Spring and Fall (1976) American Geophysical Union meetings held in Washington, D.C. and San Francisco, California. Abstracts of these papers appear in the April 1976 and December 1976 issues of the Transactions, American Geophysical Union, Volume 57.

1. Introduction

Most groundwater originates as rainfall that has infiltrated through the soil zone to the water table. While underground, the physical and chemical character of the water changes. The type and extent of the physical and chemical changes depend on the aquifer matrix material, the residence time of the water in the aquifer, the water flow path in the aquifer, and the chemical species acquired by the water as it passed through the soil zone. These changes may be random in time or they may be monotonic functions of time. Monotonic changes are important because they provide a means for determining the residence time of the water in the aquifer and the flow path of the water through the aquifer.

In this study, some physical and chemical characteristics (temperature, major ion concentrations, trace element concentrations, dissolved gas concentrations, and chemical saturation) are determined for the water in the Roswell Limestone Aquifer located in southeastern New Mexico. Water samples were taken from a number of different sampling sites over a two year period. Spacial changes in these characteristics are tabulated and since the approximate flow path of the water in the aquifer is known, these spacial changes are transformed to changes in time. The changes in several characteristics (temperature, oxygen content, and calcite saturation) appear to be monotonic in time. The other characteristics exhibit either a random change in time or no change in time.

Using the three characteristics that appear to change monotonically in time, three hydrologic aspects of the Roswell Limestone Aquifer are investigated: 1) the relative flow velocity through the recharge area, 2) the source of the salt water intrusion in the northeast section of the aquifer, and 3) the residence time of the water in the southern half of the confined region.

2. Location

The study area is located in southeastern New Mexico and covers an area between the Pecos River and the Sacramento Mountains which can be approximated by a square with sides 50 miles long (Fig. 1). Two cities, Roswell and Artesia, are located along the eastern border of the study area. Farming is practiced along the western bank of the Pecos River (eastern side of the study area) using water pumped from the Roswell Limestone Aquifer and from an overlying aquifer in the alluvium. Most of the remaining land in the study area is devoted to sheep and cattle grazing.

Because of randomness in the measured characteristics, which was, in part, caused by analytical error, the study area is divided into two major divisions, north and south. These are further divided into subdivisions labeled R, I, and C (Fig. 1). In the north, the C subdivision contains a further subdivision labeled S (Fig. 1). The letter designating a subdivision indicates the hydrologic nature of that subdivision: (R) recharge, (I) intermediate, (C) confined, and (S) salt water intrusion. The character of the ground water in each subdivison is determined by averaging over the wells in that subdivision. This technique averages out any random analytical errors and supresses local variations in the ground water character. As a result, only regional trends are examined in this study.

Although 82 springs and wells were used to sample the water in the Roswell Confined Aquifer and the overlying Alluvium Aquifer, only 52 of these are included in the final data development. Several of the excluded wells have questionable depths while others are located on the western and northern boundaries of the study area.

Table 1 is a listing of the wells used to sample the water in the Roswell Limestone Aquifer and the upper Alluvium Aquifer. Average values for those characteristics that are found to vary monotonically with time

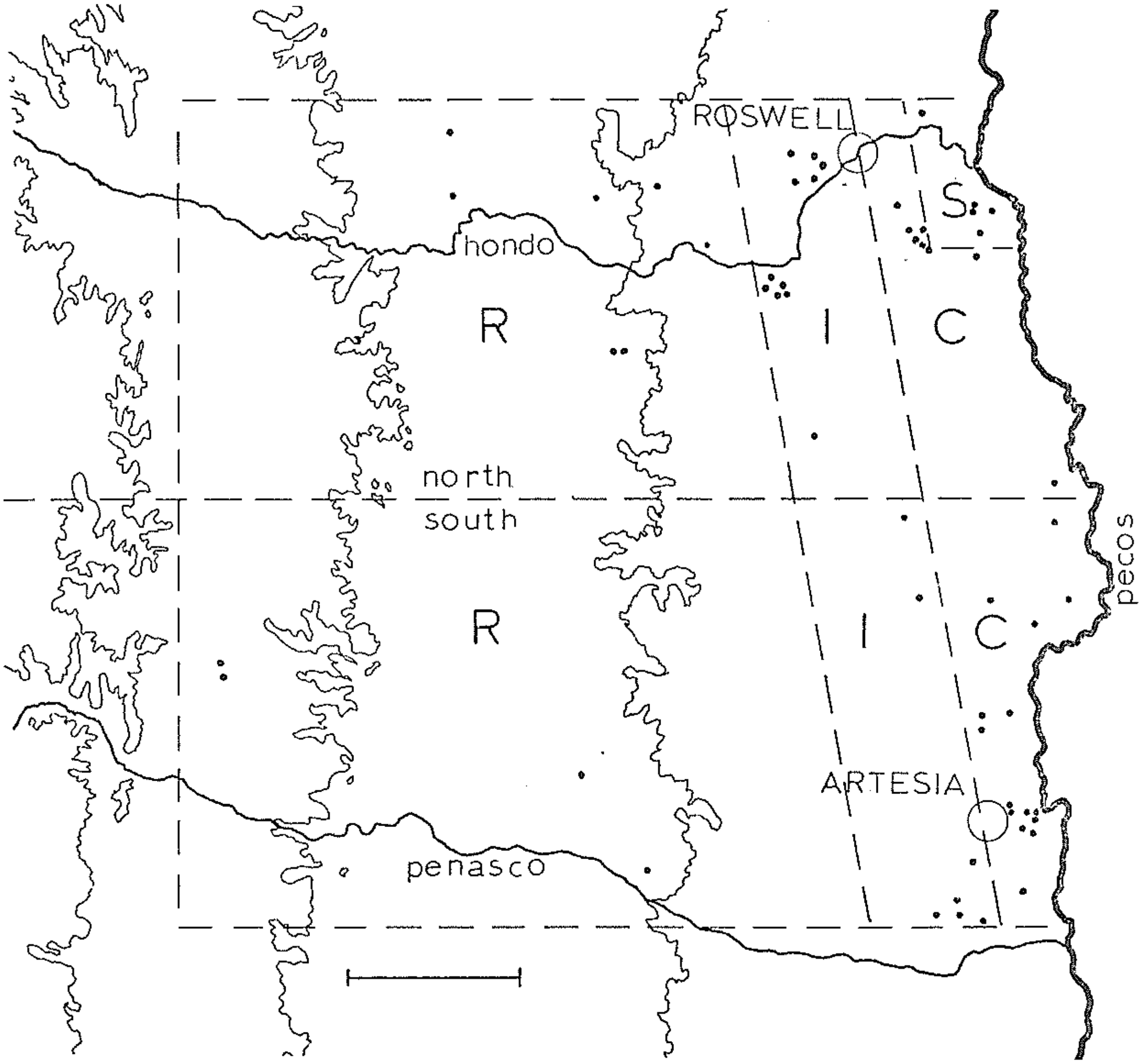


Figure 1. Location and subdivisions of the study area. The thin jagged vertical lines are 1,000 ft. contours which increase in value from right (Pecos River elevation is approximately 3,200 ft.) to left. In the east, the study area is bounded by the Pecos River; the other boundaries are indicated by dashed lines. Two major divisions (north and south) are formed by the middle dashed horizontal line. These divisions are further partitioned into subdivisions designated R, I, and C. In the northeast corner of the study area, an S subdivision is identified. Two major cities (Roswell and Artesia) and three rivers (Penasco, Hondo and Pecos) are shown. The distance scale indicates 10 miles.

Table 1

Listing of Wells in the Study Area

Roswell Limestone Aquifer

subdivision[*]	location	RA[Δ]	elevation[o]	depth[o]	formation[Δ]	type[Δ]
Nr	10-20-16-444		4504	503	Y	DU
Nr	11-20-15-111		4592		SL	DU
Nr	11-21-18-333	3697	4283	524	GS	DU
Nr	11-22-07-400				SL	DU
Nr	11-22-09-321		3954	435	SL	DU
Nr	13-20-13-222		4524	386	GS	DU
Sr	15-17-14-312	4326	5500	400	SL	DC
Sr	15-18-18-141	4761	5500		SL	DC
Sr	16-20-16-241		4500		SL	DU
Sr	16-20-18-333		4481	767	SL	DU
Ni	12-22-15-433		3800	402	SL	DU
Ni	12-23-05-311	2887	3800	691	SL	DU
Ni	12-23-05-313		3800	390	SL	DU
Ni	12-23-05-341	2863	3808	458	SL	DU
Ni	12-23-06-214	2888	3800	660	SL	DU
Ni	12-23-06-411	2887	3830	620	MF	MA
Ni	11-23-15-222	2555	3672	485	MF	MA
Ni	13-24-34-411	1017	3700	500	SL	DU
Si	14-25-02-411		3587		SL	DU
Si	14-25-33-432		3529		SL	DU
Si	17-26-29-111	1925	3400	1150	SL	DU
Si	18-26-18-332	1469	3428	1167	SL	DC
Si	18-26-18-411		3414		SL	DC
Nc	11-24-25-341	1015	3575	678	SL	DC
Nc	11-24-25-312	1015	3574	669	SL	DC
Nc	11-24-26-220	1012	3577	592	SL	DC
Nc	11-24-23-443			535	SL	DC
Sc	15-26-04-123	633	3443	1220	SL	DC
Sc	15-26-13-121	165	3362	1381	SL	DC
Sc	16-26-20-433	558	3378	1063	SL	DC
Sc	17-26-10-433	397	3342	1095	MF	MA
Sc	17-26-11-433	777	3314	1034	SL	DC
Sc	17-26-14-211	895	3313	1013	SL	DC
Sc	18-26-10-133	1029	3350	1100	SL	DC
Ns	11-25-15-343	1102	3475	843	SL	DC
Ns	11-25-21-333	2054	3500	815	SL	DC
Ns	11-25-23-111	62	3477	847	SL	DC

Table 1 Con't.
Upper Alluvium Aquifer

subdivision*	location	RA Δ	elevation o	depth o	formation Δ	type Δ
Ni	11-23-01-413	1879	3621	160	AL	SU
Ni	11-23-01-433	1879	3630	160	AL	SU
Ni	11-23-12-221	458	3630	160	AG	SU
Ni	11-23-12-333	1521	3640	171	AL	SU
Si	18-26-17-322	3181	3400	240	AL	SU
Si	18-26-18-221	3181	3404	258	AL	SU
Nc	11-24-14-314	1920	3590	205	AL	SU
Nc	11-25-28-333	1572	3519	150	AG	SC
Nc	13-26-33-421	1317	3435	213	AL	SU
Sc	16-26-16-331	1295		110	AL	SU
Sc	16-26-21-333	1459	3370	127	AL	SU
Sc	17-26-15-113	1227	3340	240	AL	SU
Sc	17-26-15-133	2050	3350	240	AL	SU
Sc	17-26-15-211	1183	3343	225	AL	SU
Ns	10-24-15-333		3550	120	AL	SU

Symbols

o depth and elevation given in feet

Δ special symbols defined in appendix B

* the major division of the study area is given by N (north) or S (south); the subdivision is given by the lower case r, i, c, or s.

are given in Table 2. Sodium concentrations, which exhibit very little change throughout most of the limestone aquifer, are included in Table 2 because the salt water intrusion in the northeast part of the study area is characterized by an enormous increase in sodium concentration. The total ionic concentration, which is also given in Table 2, reflects the sodium chloride concentration increase in the salt water intrusion region.

3. Hydrogeology

The study area rises from an elevation of 3,200 feet at the eastern boundary along the Pecos River to almost 6,000 feet along the west edge. An approximate geologic cross section is given in Figure 2. Both the north and south divisions are displayed, the principal difference being the shape of the bottom of the Roswell Limestone Aquifer. This difference was inferred from the average well depths and elevations for the seven subdivisions of the study area (Fig. 3) and may only reflect the conformation of the water producing regions of the limestone aquifer rather than the actual distribution of the limestone.

The Roswell Limestone Aquifer is in the San Andres Limestone.[1] In the eastern part of the study area, the down sloping San Andres Limestone is covered by the relatively impermeable Artesia Group which forms an aquitard, confining the Roswell Limestone Aquifer. Above the aquitard along the eastern border of the study area is an upper, unconfined, aquifer in the valley alluvium.

Arrows (Fig. 2) indicate the water flow direction in the Roswell Limestone Aquifer. Rain water is ingested in the recharge area (R) and flows under the aquitard (I), to the confined (C) region of the aquifer. Other flow paths are possible. Of particular interest to this study is the possibility of water entering the Roswell Limestone Aquifer from the

Table 2

Average Values and Standard Deviations (σ) for Selected Groundwater Characteristics

location[7]	total conc.[1]		SO_4[2]		Na[3]		% Na	O_2[4]		calcite sat[5]		temperature[6]	
north limestone		σ		σ		σ			σ		σ		σ
r	.22	0.1	.47	0.2	1.78	0.6	27	6.5	0.0	.65	0.3	19.1	2.4
i	.21	0.1	.43	0.2	1.70	0.1	18	6.1	0.5	1.26	0.5	19.5	0.2
c	.24	0.1	.41	0.2	1.70	0.1	21	6.0	0.1	1.24	0.4	20.2	0.2
s	.47	0.1	.58	0.1	12.2	4.0	57	5.6	0.4	.69	0.4	20.4	0.1
north alluvium													
i	.30	0.0	.51	0.3	4.5	0.0	34	7.2	0.0	1.60	0.4	19.5	0.5
c	.78	0.2	1.9	0.3	12.9	0.5	35	6.8	1.0	1.80	1.1	17.5	0.5
s[8]	1.51		2.4		.9		77	7.2		1.50			
south limestone													
r	.25	0.1	.54	0.6	.88	0.4	13	6.5	0.6	.56	0.2	17.3	1.6
i	.20	0.0	.42	0.2	1.00	0.3	15	5.5	1.6	.81	0.1	21.1	2.3
c	.28	0.0	.61	0.2	1.35	0.9	23	3.6	1.0	.89	0.3	23.5	0.8
south alluvium													
i	.27	0.1	.57	0.2	1.2	0.1	12	7.5	1.3	.90	0.1	19.9	0.1
c	.63	0.4	1.52	0.5	6.5	0.1	36	7.5	2.0	.78	0.2	18.1	0.4

1. concentration given as moles x 10^1
2. concentration given as moles x 10^2
3. concentration given as moles x 10^3
4. concentration given as ppm
5. given as the saturation index (appendix B)
6. temperature given as °C
7. location given in terms of the major divisions (N,S) and subdivisions (r,i,c,s) of the study area
8. one sample point

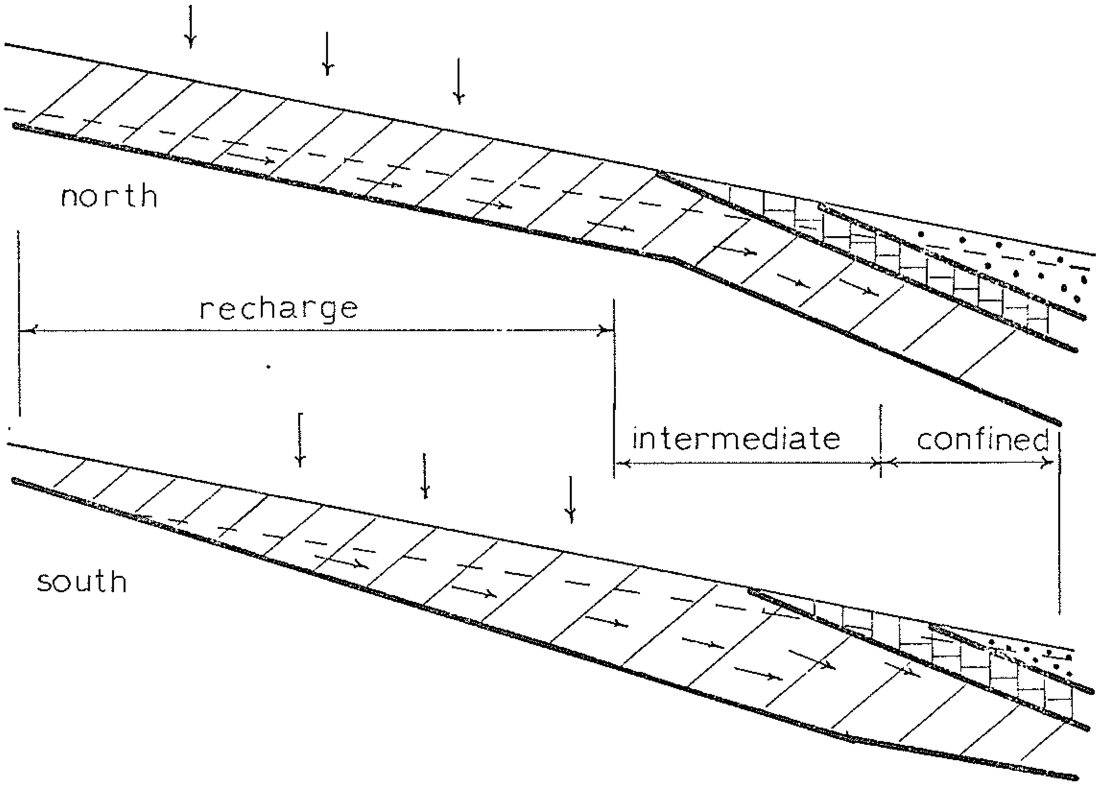


Figure 2. Geologic cross sections of the north and south divisions of the study area. The hydrologic subdivisions are identified by the terms: recharge, intermediate, and confined. Matrix material for the limestone aquifer, the aquitard, and the alluvium aquifer are indicated using slanting lines, blocks, and dots. Arrows indicate rainfall and ground water flow direction. The dashed line gives the approximate location of the water table.

overlying Alluvium Aquifer. This type of flow could be induced by heavy pumping from the Roswell Limestone Aquifer in the confined region.

4. Temperature Changes

To a rough approximation, the upper soil layers reflect the mean annual surface temperature of the overlying atmosphere. Water reaching the Roswell Limestone Aquifer in the recharge area (Fig. 2) must first pass through this upper soil layer where it acquires the average regional atmospheric temperature. Below the upper layers of the soil zone and in the aquifer, the water is heated by the geothermal heat flux. Warming of the water in the aquifer continues until a steady state is reached where convective and conductive heat losses to the surface are equal to the heat acquired from the geothermal flux.

Since warming of the water in the aquifer requires a finite, non zero, time span, the water temperature can be used as an indicator of residence time and flow path. However, absolute values for the residence time are difficult to determine using the groundwater temperature because the equations defining the temperature as a function of time contain a number of parameters, such as the adiabatic atmospheric lapse rate and the geothermal heat flux, which are not generally known with any precision. Comparative determinations using the ground water temperatures can be more easily made since by careful selection of the portions of the aquifer to be compared, those parameters which are not known will cancel since they characterize both sections of the aquifer being compared. In this study a comparison of the "thermal inertia" in the north and south sections of the recharge area is made using the ground water temperature measurements.

Heating of the ground water in the Roswell Limestone Aquifer as it flows from the recharge area to the discharge area is indicated in Figure 4.

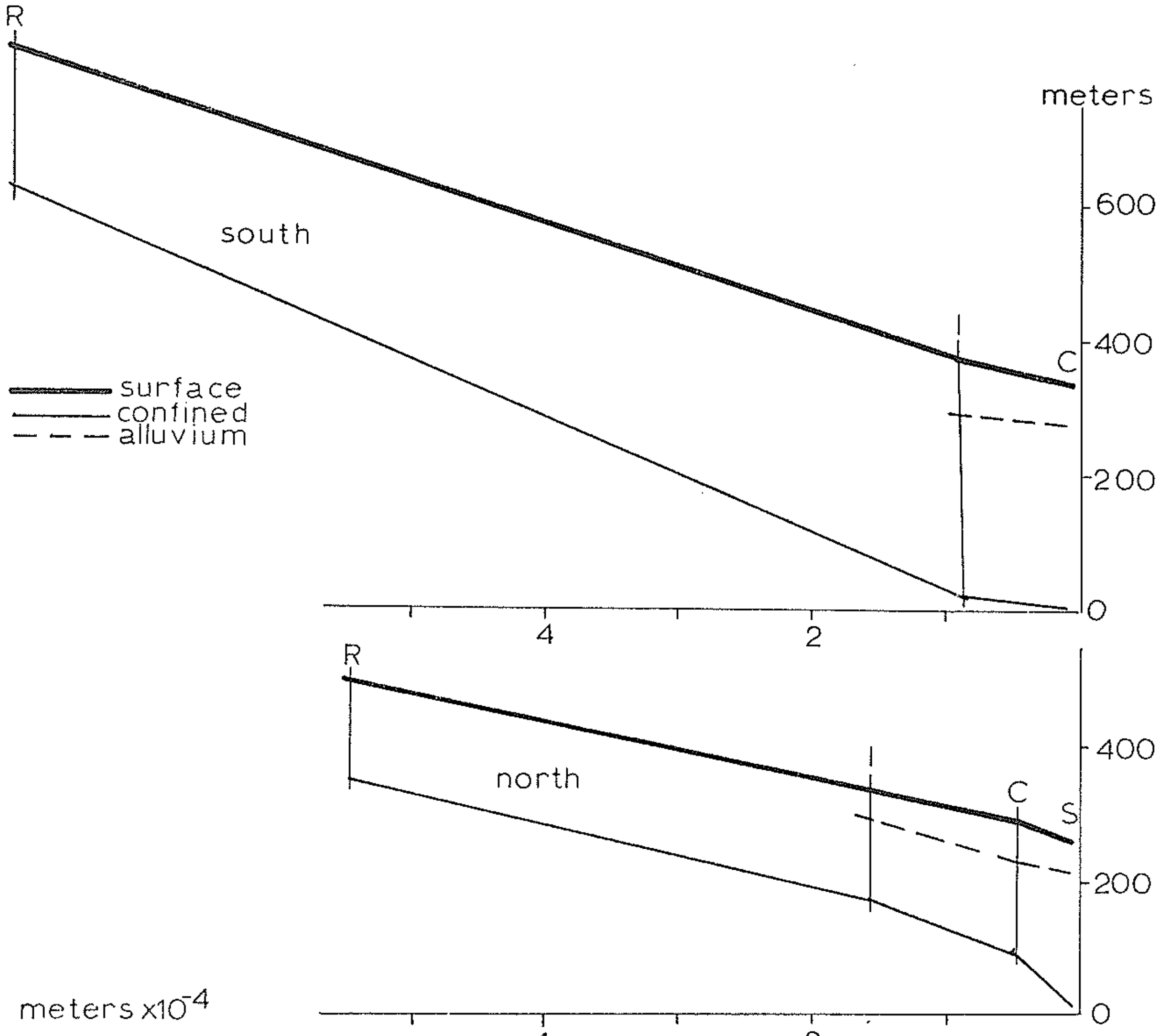


Figure 3. Scaled diagrams showing the average well depths and elevations for the subdivisions (R,I,C, and S) of the north and south sections of the study area. Average depths for the shallow wells in the confined and intermediate subdivisions are indicated by dashed lines.

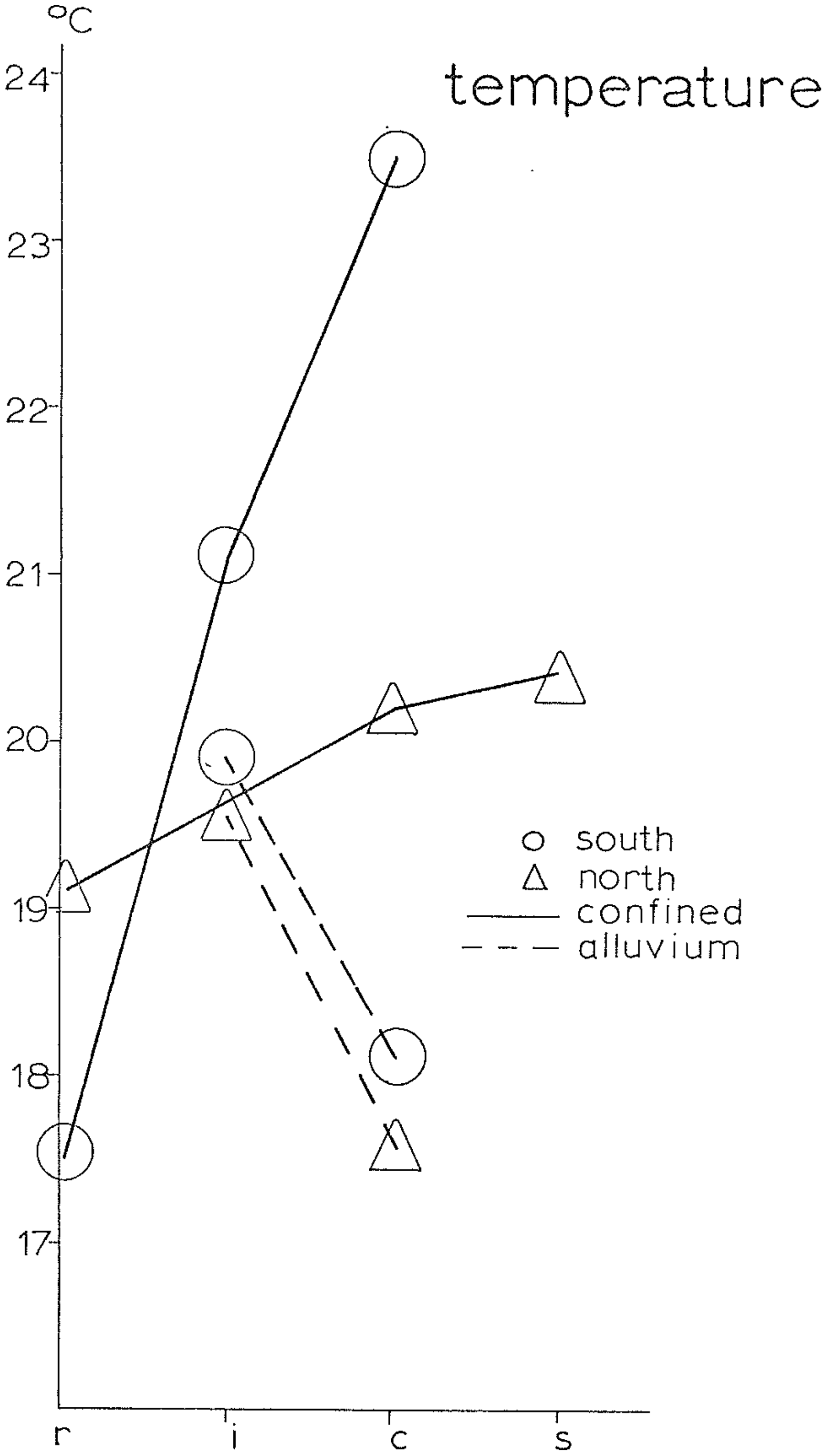
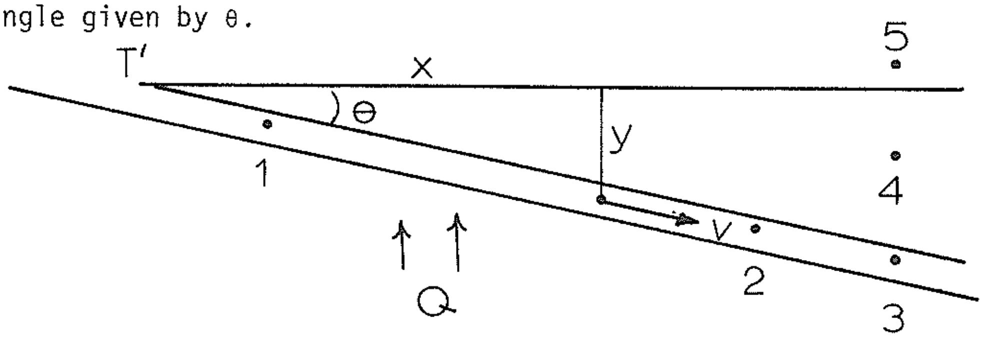


Figure 4. Temperature - location graphs for the northern and southern regions of the study area. Average values are shown for each subregion in the unconfined (alluvium) and confined aquifers. The symbol size is a measure of the standard deviation for each subregion.

The slope of the temperature-depth curve in Figure 5 is a measure of the "thermal inertia" of the groundwater; water with a greater "thermal inertia" exhibits a smaller temperature change as it flows through the aquifer. From Figure 5 it is apparent that ground water flow at shallow depth has greater "thermal inertia" in the north than in the south; for a given increase in depth, the temperature change for the ground water is less in the northern section.

The thermal behavior of the Roswell Limestone Aquifer can be modeled in the following manner: consider a flat conduit descending into the earth with the dip angle given by θ.



The subdivisions of the study area, R, I, and C, are centered at points 1, 2, and 3. Point 4 characterizes the alluvium aquifer in the confined region, and point 5 is located on the ground surface over the confined region. Recharge water acquires the temperature T_1 in the upper layers of the soil zone and is heated to T_1 by the geothermal flux in the recharge area. The ground water is characterized by the temperature T_2 in the intermediate region and T_3 in the confined region. Table 2 summarizes the thermal parameters for the north and south divisions of the study area. Descent or dip angles for the flow path from the recharge to the intermediate regions of the limestone aquifer are 5×10^{-3} radians and 8×10^{-3} radians for the north and south sections of the aquifer.

Water descending the aquifer with velocity V is warmed by the amount dT as it moves down the vertical distance dy in the time interval dt. The

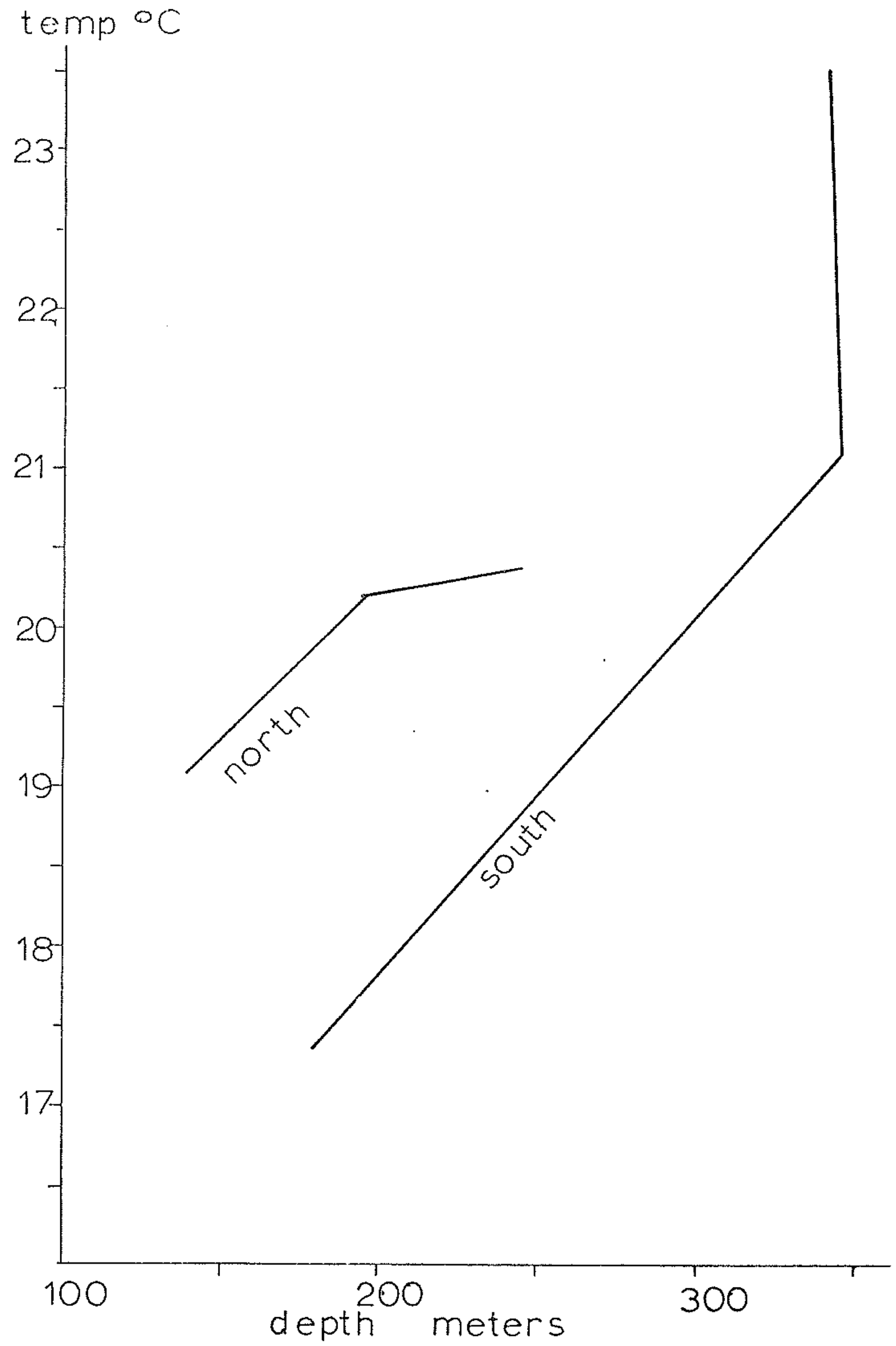


Figure 5. Temperature - depth graphs for the northern and southern regions of the study area. Average values are shown for each subregion.

heating rate is the difference between the thermal energy acquired from the geothermal flux Q and the heat lost by conduction to the surface, $K \frac{T-(T^1 + by)}{y}$, where K is the thermal conductivity above the aquifer and b corrects the surface temperature for the atmospheric adiabatic lapse rate. Using energy conservation,

$$CV \sin\theta \frac{dT}{dy} = Q - K \frac{T-(T^1 + by)}{y} \quad (1)$$

where C is the heat capacity of a column of water in the aquifer having a unit horizontal cross section. Thermal inertia is identified with the product CV. If depths greater than several hundred meters are considered, the solution to equation (1) reduces to

$$T = T^1 + \frac{Q + bK}{K + CV \sin\theta} y \quad (2)$$

where the temperature T^1 is the mean annual surface temperature in the recharge area. If all the differences between the north and south sections of the study area are ascribed to the thermal inertia term, equation (2) can be manipulated to yield the ratio of the thermal inertia in the north to the thermal inertia in the south.

$$\frac{CV \text{ north}}{CV \text{ south}} = 6.3$$

Although the difference in thermal inertia depends on two parameters, C and V, it is usual to assume that the effective height of the descending column of water is the same in both the north and south. This causes the north and south heat capacity terms to be identical so that the thermal inertial difference becomes a velocity difference. As a result, the flow velocity in the north is approximately 6 times faster than the flow velocity in the south. Other, more traditional, hydrologic methods have arrived at a similar conclusion.[2]

The atmospheric adiabatic lapse rate is an important correction in these calculations. Thermal gradients measured along the flow path from the recharge to the intermediate regions in both the north and south sections are approximately 2×10^{-2} °C/m. This gradient gives the groundwater temperature change for a unit increase in the depth of the aquifer. The average adiabatic lapse rate is 8×10^{-3} °C/m. Since elevation changes are a factor of 2 (or more) greater than depth changes along the flow path, surface temperature changes caused by elevation changes are almost as large as the underlying groundwater temperature changes.

In summary, groundwater temperature increases along the flow path from the recharge to the intermediate region. This temperature increase is sensitive to flow velocity. Using the groundwater temperature, the flow velocity is found to be a factor of 6 greater in the northern section of the study area.

5. Dissolved Oxygen

In the Roswell Limestone Aquifer, dissolved oxygen is found to be a good indicator of groundwater residence time. The dissolved oxygen concentration diminishes in time so that along the flow path from the recharge area to the confined area the oxygen concentration decreases (Fig. 6). This behavior is attributed to two properties of the Roswell Limestone Aquifer: 1) oxygen in the groundwater is consumed in a time interval comparable to the groundwater flow through time for the aquifer and 2) confinement in the lower reaches of the aquifer prevents replenishment of the consumed oxygen.

No attempt was made to determine the mechanism by which the dissolved oxygen is consumed in the aquifer. Several possibilities, all difficult to substantiate, suggest themselves. The oxygen may be consumed by

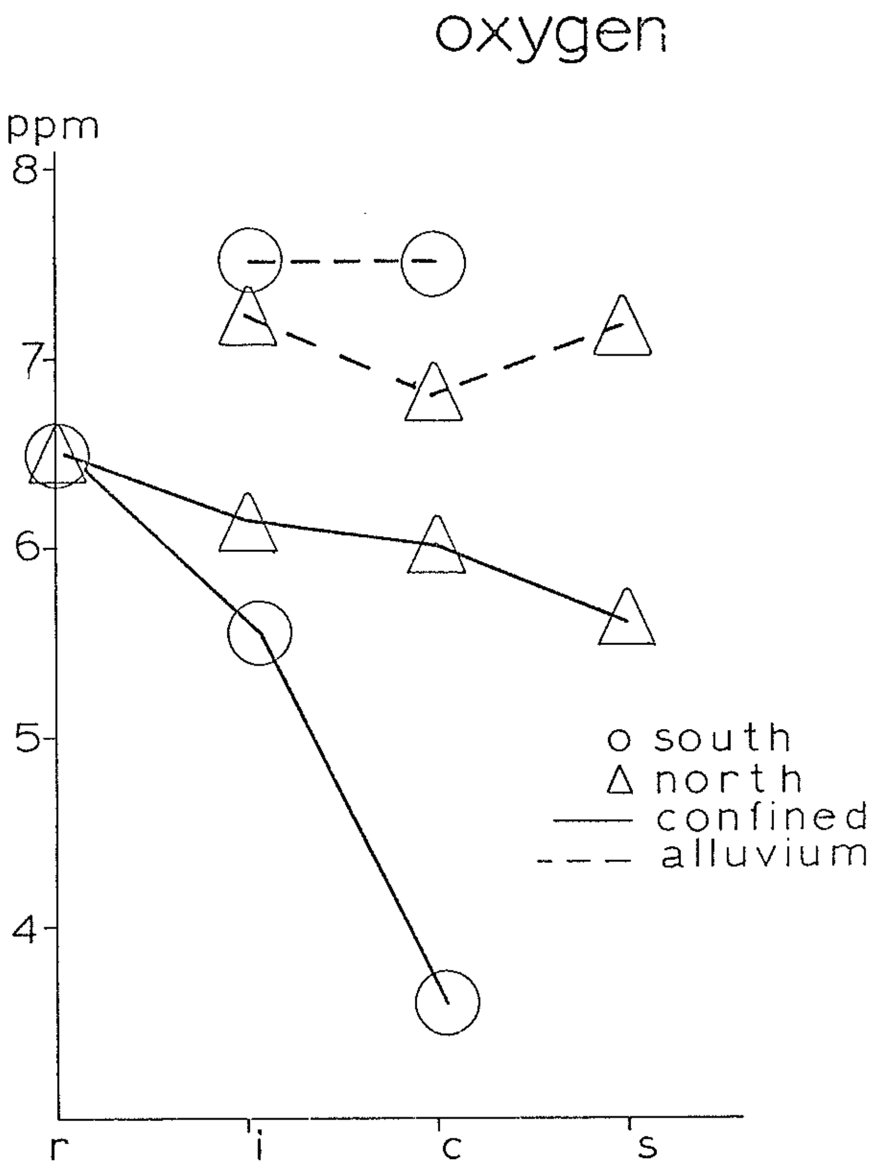


Figure 6. Oxygen - location graphs for the northern and southern regions of the study area. Average values are shown for each subregion in the unconfined (alluvium) and confined aquifers. The symbol size is a measure of the standard deviation for each subregion.

organic material, either ingested with the water or contained in the limestone matrix. Also, the oxygen may be consumed by mixing with oxygen depleted waters from a lower aquifer.

To a first approximation the oxygen consumption rate is first order with respect to the dissolved oxygen concentration

$$\frac{dC}{dK} = - kC \qquad (3)$$

where C is the dissolved oxygen concentration and k is the first order rate constant. Using the tritium determined age[3] for the groundwater in the confined subdivision of the northern part of the study area (4 years), the oxygen content of the water found in this part of the aquifer (listed in Table 2, 6 ppm), and the initial concentration in the recharge area (Fig. 6, 8 ppm), the rate constant is found to be .072 yr^{-1}. This gives an oxygen half-life of 9.6 yrs. Equation (3) can be solved for the residence time as a function of oxygen concentration

$$t = \frac{1}{k} \ln \frac{C_o}{C} \qquad (4)$$

where C_o is the original oxygen concentration which is assumed to be the saturation value for the recharge area (8 ppm, Fig. 7). Applying equation (4) to the southern confined subsection where the oxygen concentration is 3.6 ppm (Table 2) and the recharge oxygen concentration is approximately 8.1 ppm (Fig. 6), the residence time is computed to be 11.3 yrs. This result is qualitatively consistent with the temperature determined flow rates (Section 4). The flow rates (Section 4) indicate that the groundwater in the south is older by a factor of 6 (since its flow velocity is smaller by a factor of 6) whereas the oxygen content suggests a factor close to 3. However, flow rates were determined along the path from the

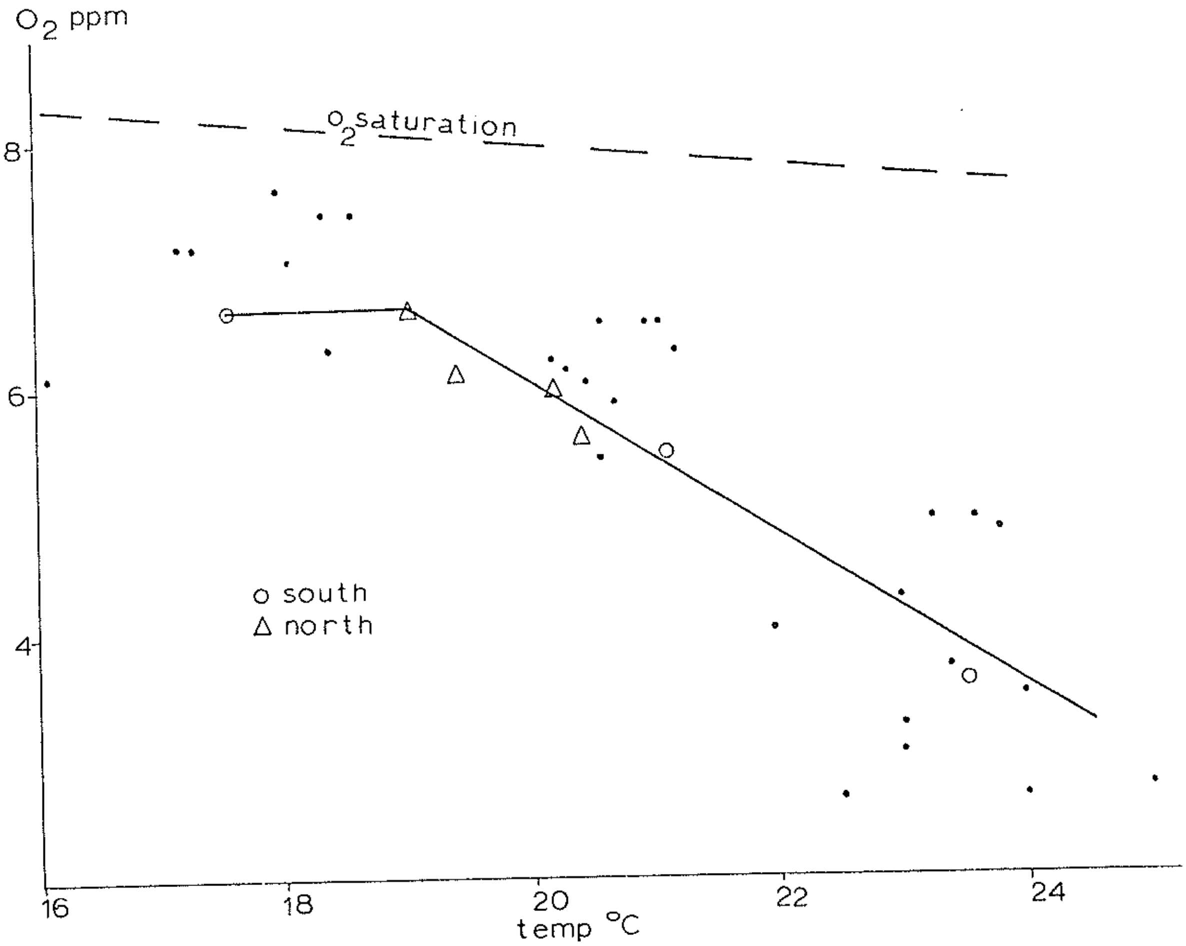


Figure 7. Oxygen - temperature graph for the confined aquifer. Individual well measurements are indicated by dots. The curve connects average values for both the northern and southern sets of subregions. Elevation corrected values for the saturation oxygen concentration are given by the dashed line.

recharge to the intermediate region while the oxygen concentrations were determined for the water in the confined subsection of the aquifer. It is quite possible that some storage of groundwater occurs in the confined area of the aquifer. Such storage would reduce the residence time difference computed using flow rates.

Agreement between the dissolved oxygen and temperature indications of residence time is displayed in Figure 7. The fact that the points representing the subdivisions of the study area fall along a single straight line, except for the two highest values which characterize the recharge region, indicates a rather high degree of correlation between these two indicators. Temperature and dissolved oxygen values for the recharge areas appear along the upper horizontal segment of the curve and reflect an altitude related temperature difference.

As groundwater flows from the recharge to the confined subdivisons of the aquifer, the temperature increases, the dissolved oxygen concentration decreases, and the degree of oxygen saturation decreases (Fig. 7).

6. Ionic Concentrations

Groundwater behaves as a repository for soluble substances (mostly ionic) that form the matrix through which the water flows. As groundwater moves, first through the soil zone and then through the aquifer system, the concentration of dissolved species in the groundwater increases until chemical saturation is reached. Sometimes, concentrations may even increase beyond those values required for chemical saturation. This situation is usually caused by a common ion effect. In the Roswell Limestone Aquifer calcite ($CaCO_3$) is driven to supersaturation by the calcium ions resulting from the dissolution of gypsum ($CaSO_4 \cdot 2H_2O$). The calcite precipitation rate is slower than the gypsum dissolution rate so that more calcium is aquired from the dissolution of gypsum than is lost by the precipitation of calcite. Calcite supersaturation results.

Clays contained in the limestone matrix of the Roswell Limestone Aquifer and in the Artesia Group which forms the confining layer have the capacity to exchange ions. These clays adsorb certain ionic species found in the ground and release an equivalent number of ions of a different species. This ionic exchange will modify the groundwater composition from one which reflects the mineralogy of the soil and aquifer matrix. As part of the error analysis of the analytical determinations, an attempt was made to determine any systematic deviation from the groundwater compositon resulting from the known mineralogy. Although a deviation was always present (Appendix B) it was random and usually small. As a result, exchange effects caused by naturally occurring clays in the soil and aquifer are neglected.

If the S subsection of the study area is not considered, (Section 8), the total concentration (Fig. 8) changes very little as the groundwater flows through the aquifer. Perhaps a slight increase can be detected, but most of the solute appears to be acquired before the water reaches the aquifer. Sulfate (SO_4) and sodium (Na) concentrations exhibit similar behavior (Figure 9 and 10) if, once again, the rather special subsection labeled S is disregarded. In order to confirm the importance of the soil zone as a contributer of solute to the groundwater, several soil samples were abstracted from the study area and leached with distilled water using cylindrical plastic columns (Appendix C). Results for two of the major constituents are displayed in Table 3.

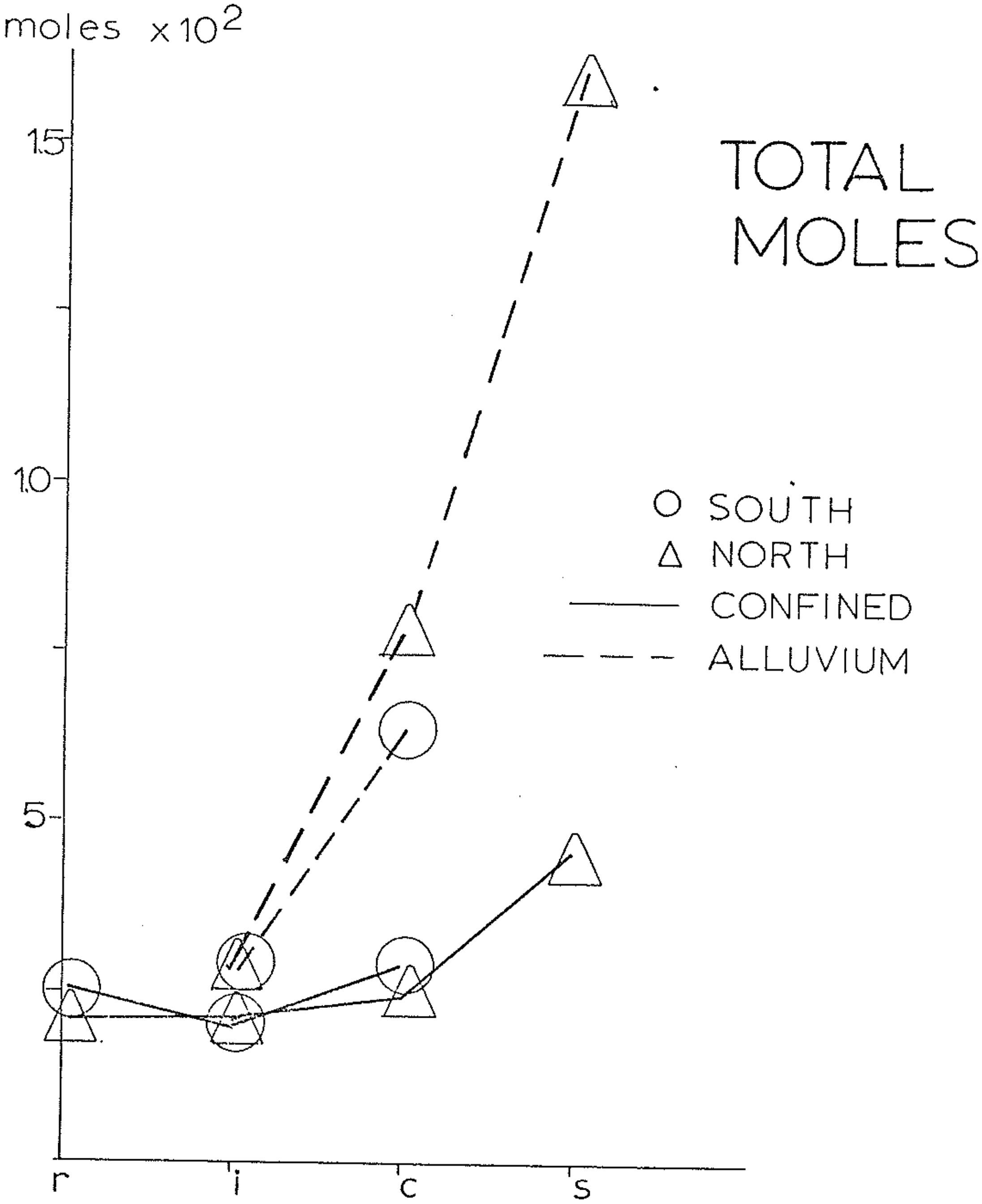


Figure 8. Total molar concentration - location graphs for the northern and southern regions of the study area. Average values are shown for each subregion in the unconfined (alluvium) and confined aquivers. The symbol size is a measure of the standard deviation for each subregion.

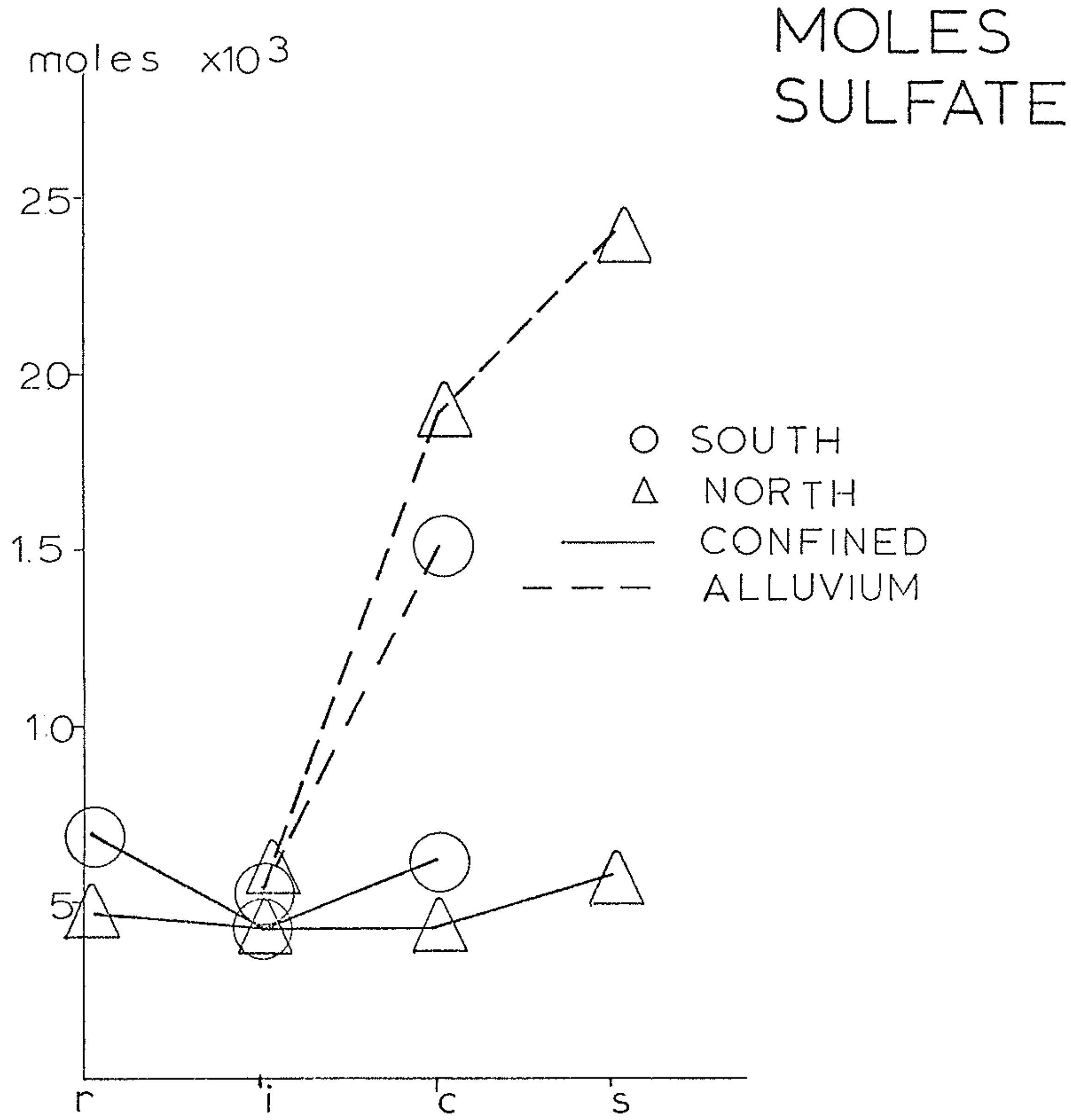


Figure 9. Sulfate ion concentration - location graphs for the northern and southern regions of the study area. Average values are shown for each subregion in the unconfined (alluvium) and confined aquifers. The symbol size is a measure of the standard deviation for each subregion.

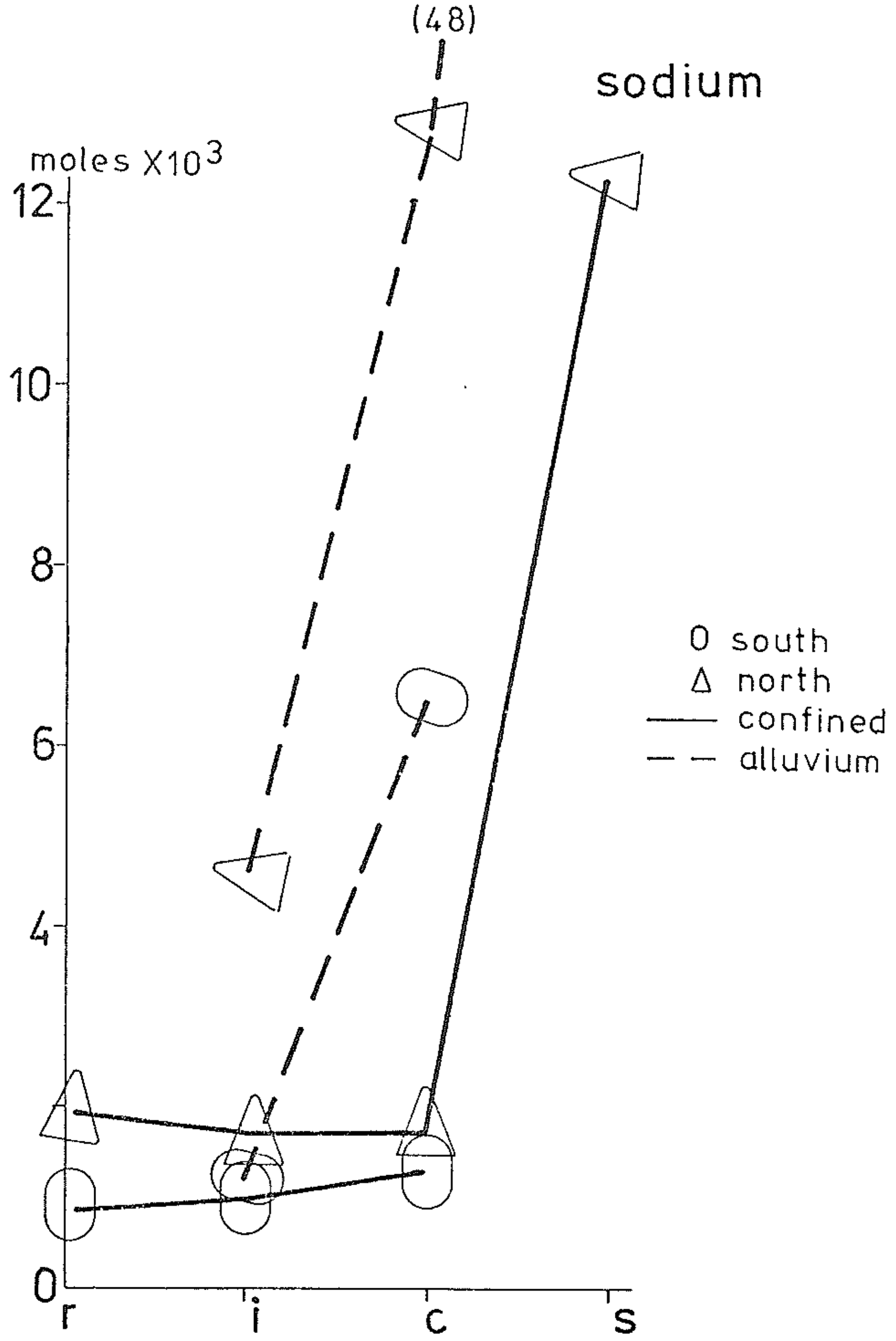


Figure 10. Sodium ion concentration - location graphs for the northern and southern regions of the study area. Average values are shown for each subregion in the unconfined (alluvium) and confined aquifers. The symbol size is a measure of the standard deviation for each subregion.

Table 3

Solute Concentration (molar)

ion	recharge	soil column
SO_4	0.5×10^{-3}	1.2×10^{-3}
Na	2.0×10^{-3}	7.3×10^{-3}

In both cases, the solute concentration derived from the soil sample is greater than the concentration found in the recharge area. This indicates that the soil zone is capable of supplying the solute concentrations found in the recharge area.

In all probability, the solute concentration does increase as the water flows through the aquifer. However, the magnitude of the increase is probably 10% or less and would require a precise analysis of a considerable number of water samples taken from the various regions of the aquifer to be detected. Figures 8, 9, and 10 indicate a slight increase in solute concentration as the groundwater flows from the recharge to the confined regions of the aquifer. In most cases this increase is within the standard deviation of our concentration determinations for a particular subdivision of the study area. In summary, the small concentration increase which, in all probability, occurs along the flow path, barely surfaces above the "noise level" of our determinations.

7. Chemical Saturation

Calcite saturation (Fig. 11) measurably increases as the groundwater flows from the recharge to the intermediate regions of the aquifer. An additional, slight, increase occurs along the path from the intermediate to the confined regions. The S region is not considered in this section (see Section 8). Since the calcite saturation index has values greater

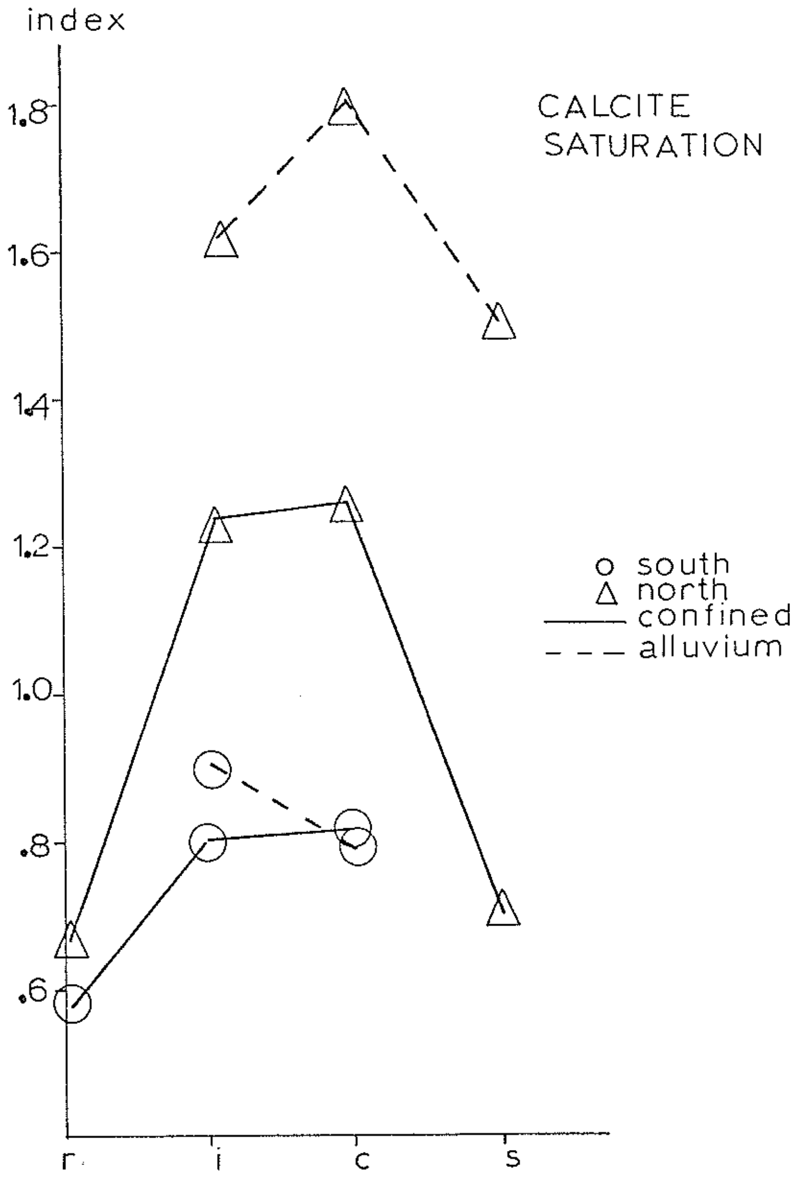


Figure 11. Calcite saturation - location graphs for the northern and southern regions of the study area. Average values are shown for each subregion in the unconfined (alluvium) and confined aquifers. The symbol size is a measure of the standard deviation for each subregion.

than 1 in parts of the northern section, the gypsum dissolution rate is larger than the calcite precipitation rate in this region. In the southern section of the study area, calcite saturation indices are less than one indicating that calcite and probably gypsum dissolution are occurring in this region. Calcite saturation increases along the flow path have been postulated in previous studies of this area[4] but never found. Only through the averaging technique employed in this study did the trend in calcite saturation surface. One reason for this difficulty is the rather convoluted calculation needed to determine the value of the saturation index (Appendix B).

8. Salt Water Intrusion

Located in the northeast corner of the study area is the subdivision labeled S (Fig. 1). Water from the Roswell Limestone Aquifer in this region has a much higher solute concentration (Fig. 8) than water normally encountered in the aquifer. Most of the solute increase is due to a greatly increased sodium ion concentration (Fig. 10) and a similar increase in the chloride ion concentration. High solute concentrations have not always characterized water taken from this area; in the past, water from this region had solute concentrations that were typical of the rest of the aquifer. However, over the last 25 years the solute concentration, mostly NaCl but other salts as well (Fig. 11), has increased. Recently, the city of Roswell had to abandon a municipal well field located in this region (S) because of deteriorating water quality.

The fact that the high salt concentration is a recent attribute of water from this region indicates that intrusion is occurring from a neighboring aquifer. Speculation has centered on water intruding from a lower aquifer located in the Yeso Formation.[5] This formation is known to

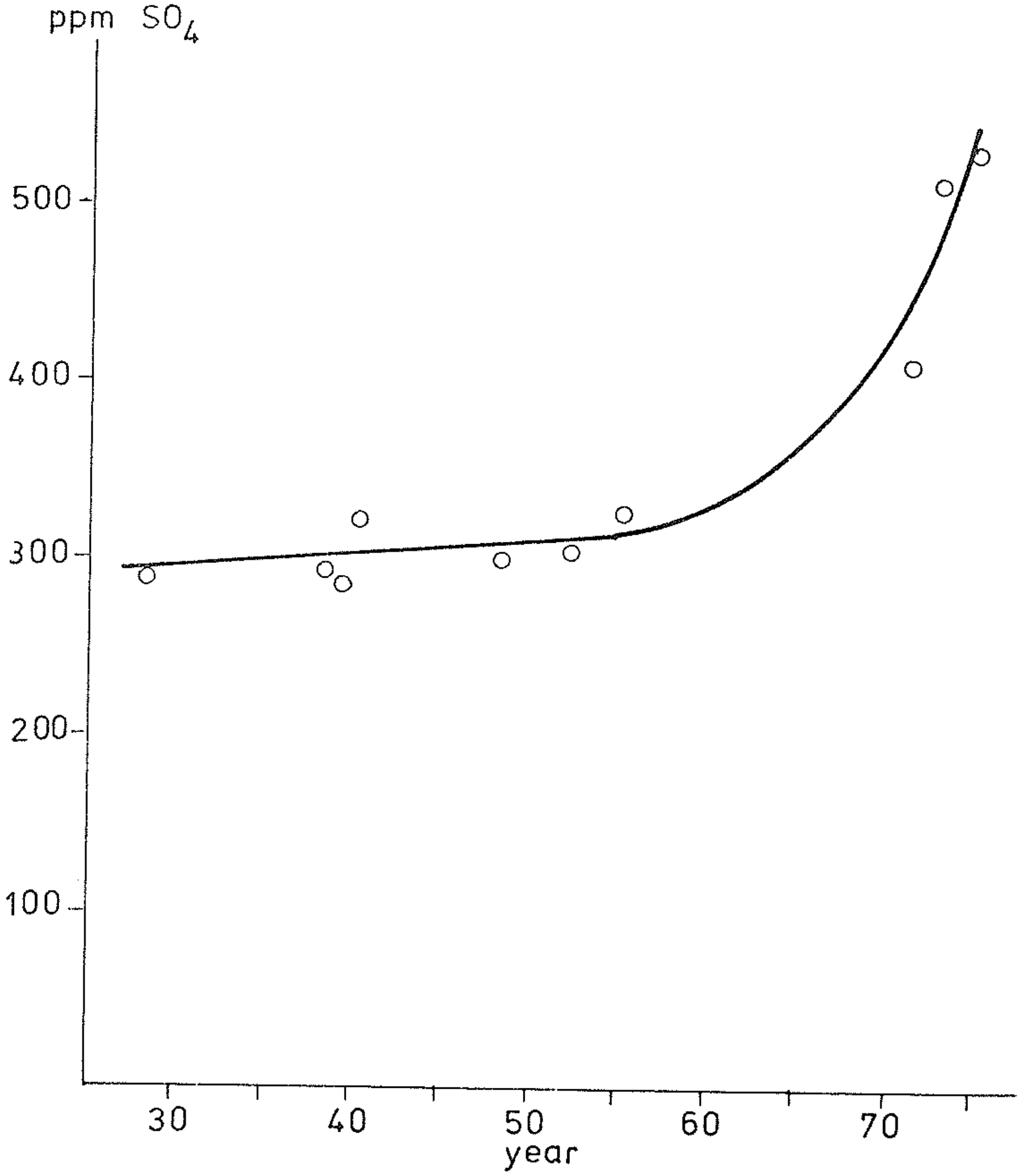


Figure 11. Sulfate ion increase over the last 45 years in the S region of the Roswell Limestone Aquifer. Water samples taken from well no. 11-25-15-333. Data taken from USGS and New Mexico Tech records.

contain a brine in its West Texas extension. However, several characteristics of the water from this section of the Roswell Limestone Aquifer indicate intrusion from the Alluvium Aquifer. The water has a relatively high oxygen content (5.5 ppm, Fig. 6), and a low temperature (20.5° C, Fig. 4); both are characteristics of water from the Alluvium Aquifer (Figs. 6 and 4). High sulfate and calcium concentrations, which characterize this segment of the Limestone Aquifer, are also found in the Alluvium Aquifer (Fig. 9). In general, the upper Alluvium Aquifer is capable of providing the solute increases that are measured in this segment of the Limestone Aquifer.

Thermal changes as the water enters the confined section of the Roswell Limestone Aquifer also indicate intrusion from above. Water entering the confined segment in the south becomes markedly warmer (Fig. 4) even though there is no increase in depth. This warming is probably due to a decreased flow velocity caused by an increased storage capacity in the confined region. Such an effect should be evident in the north but almost the opposite occurs (Fig. 5); the rate of warming decreases as the water flows from the intermediate to the confined and salt-water subdivisions of the aquifer. Intrusion of cooler water from above would produce this deviation.

Intrusion of water from the upper to the lower aquifer is probably induced by over pumping the lower aquifer during the summer months.[6] Summer groundwater demand is especially heavy because the major use for the water is agriculture. During the summer months excessive drawdown of the water in the lower aquifer induces seepage across the overlying aquitard. Water from the upper aquifer enters the lower aquifer causing the calcium concentration, oxygen concentration, and ionic strength to increase (Fig. 12). The changes in the water from the lower aquifer in the region (S) appear to be seasonal (Fig. 12), confirming this mechanism. Water from the upper aquifer should display a complementary change but the lack of good sampling wells in this region of the upper aquifer have prevented detection of any seasonal effects.

Conclusion

Water flow in a limestone aquifer can be traced using such easily determined characteristics as temperature, dissolved oxygen content, and the more theoretical, calcite saturation index. Any randomness displayed by these quantities can be suppressed by forming a suitable partition of the aquifer and finding the average values of the measured characteristics for each division of the partition. For the Roswell Limestone Aquifer these techniques were used to evaluate the relative flow velocity in the north (6.3 times the southern velocity), the relative residence time in the south (3 times the northern residence time) and the source of the intruding salt water in the northeast corner of the aquifer. One obvious limitation of these techniques is that they produce relative values. This is due, in part, to a lack of information. For example, the oxygen consumption mechanism is not known so that the absolute residence time could not be determined (this limitation was circumvented by using previously determined tritium ages to calibrate a first order rate equation). The absolute flow velocity could not be determined because the volume of water flowing under the recharge area is not known. Another limitation of these techniques is that the partition of the aquifer which is made to reduce randomness in the measurements is based on previously obtained knowledge of the hydrology. Some parameters concerning the groundwater flow must be known before the techniques can be used. The techniques

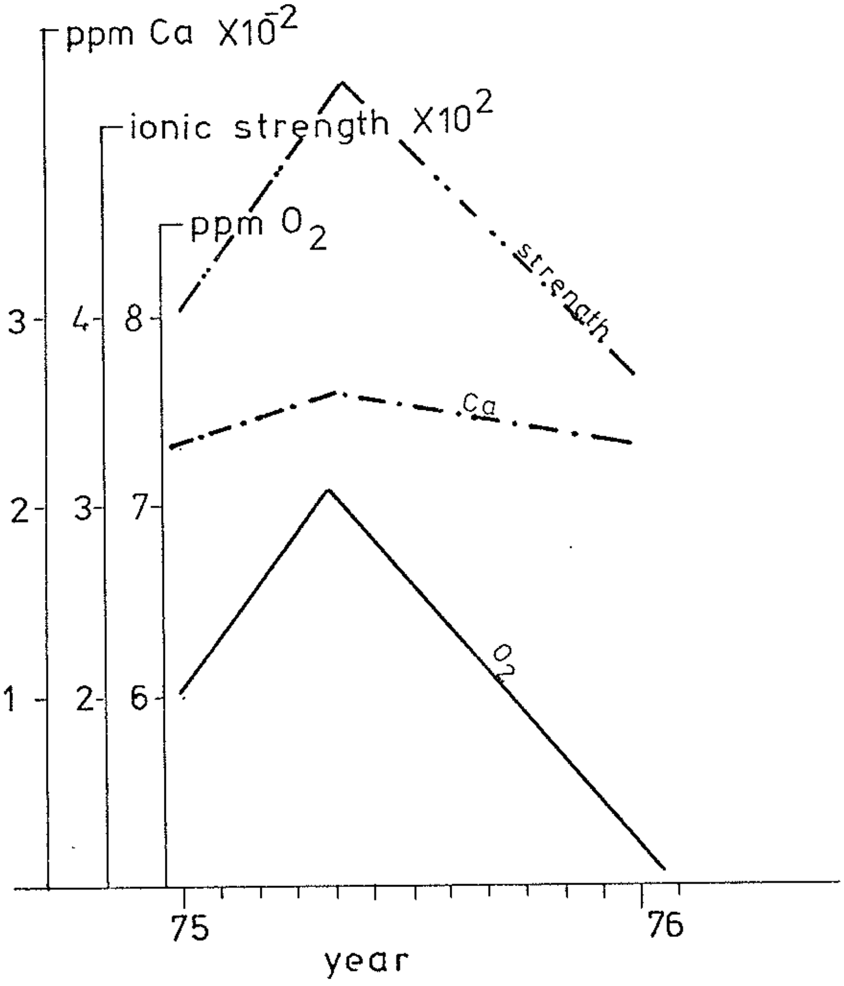


Figure 12. Seasonal variations of selected characteristics for the Roswell Limestone Aquifer in the S region. Measurements made 2/21/75, 5/20/75, and 1/12/76. Samples taken from well no. 11-25-23-111.

cannot be easily applied to an aquifer about which nothing is known.

This study has demonstrated that groundwater evolves in a measurable manner as it flows through an aquifer. Both physical (temperature) and chemical (oxygen contend and calcite saturation) parameters change in a predictable fashion.

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APPENDIX A

ANALYTICAL PROCEDURES

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1. Laboratory Measurements

All cation concentrations (except hydrogen ion) were determined using atomic adsorption (Perkin Elmer model 40 3). Major constituents were determined using the flame. The carbon furnace was used for trace element determination. Sulfate was measured using a turbidometric method (Bausch and Lomb spectronic 20). Nitrate and chloride ions were usually determined using Orion Specific Ion Electrodes. On several occasions, the Mohr Argentometric method was used for chloride determination.

Trace element determinations using the carbon furnace were, in some cases, not repeatable.

2. Field Measurements

Temperature, dissolved oxygen, pH, and the bicarbonate concentration (HCO_3^-) were usually measured in the field. The temperature, pH, and HCO_3^- measurements were made from the very beginning of the study (July, 1974). Dissolved oxygen was added to the list of field measurements in February of 1975.

Portable pH meters (Corning model 610-A and Orion model 401) and combination pH electrodes (Corning 476115 and Beckman 39183) were used to measure the pH and bicarbonate concentrations. The bicarbonate concentration was found by titrating a 20 ml water sample with ~.02N H_2SO_4 to a pH of 4.5 using a Gilmont micrometer buret. Solutions were stirred during the pH measurements and bicarbonate titrations using a small portable magnetic stirrer. Dissolved oxygen was measured with a Clark type membrane-covered polarographic probe (Yellow Spring model 54 oxygen meter). Before each oxygen determination, the probe was calibrated using a standard solution that was aerated with the atmosphere at the sampling site for approximately three minutes. The oxygen content of the standard was determined from the atmospheric pressure of the sampling site and the temperature of the sampling solution.

Dissolved oxygen determinations exhibited good repeatability (± ½ ppm). pH, the most common field measurement, was less certain because a large drift usually occurred during the measurement. Reported in Appendix B are readings registered after stirring the sample for three minutes. Since complete relaxation had not occurred during this time interval the listed values may be too low by as much as .4 of a pH unit. An attempt was made to determine the cause of this drift. The pH electrode was removed from the sample solution during several determinations, rinsed with distilled water, and reinserted into the sample. The drift reoccurred over approximately the same pH span indicating that outgasing of CO_2 was not the cause of the drift. Probably, the drift was caused by a slow establishment of the electric double layer on the glass surface of the pH electrode. This reflects a weak pH buffering in the water samples.

From time to time during the study period, attempts were made to measure three other quantities in the field: 1) calcium activity with an orion calcium electrode, 2) hydrogen sulfide (H_2S) using a silver precipitate, and 3) microcrystalline content using a series filtration through two filters (pore sizes .45 and .20 μ).

Temperature variations of the water samples and calcium activity standard solutions were too large to measure the calcium activity with any precision in the field. There was good qualitative agreement between the measured calcium activity and the measured calcium concentration but quantitative comparison between the corrected calcium concentration multiplied by the activity coefficient (Appendix B) and the measured calcium activity, which this product should calculate, gave poor agreement. The errors were systematic rather than random and seemed to depend on the time of year of the field measurement. This probably reflects the temperature of the calcium activity standards used in the field. Hydrogen sulfide could be detected by smell at certain deep wells in the northern part of the basin (Fig. 1). Our method to quantify the H_2S concentration was to precipitate the sulfide using silver ions. However, sunlight precipitated neutral silver from our silver nitrate reagents and we were never able to either completely exclude the sun from our precipitate or separate the metallic silver from the silver sulfide.

Attempts to measure the microcrystalline content of the ground water involved pouring the water through two successively smaller filters and measuring the major constituents and some trace elements in the three resulting water samples (1. unfiltered, 2. filtered through the .45 μ filter, 3. filtered through the .20 μ filter). Since our methods for measuring the major constituents and trace elements (Ba, Fe, Sr, Pb, Cr, Zn) did not differentiate between free ions and ions bound in ion pairs and larger aggregates such as microcrystals, the filtering out of microcrystals would diminish the concentration of the ions found in the crystal. No differences were found between the three samples. As a result, microcrystals do not account for more than 10% (our measurement error) of the total measured ion content and probably considerably less.

APPENDIX B

DATA LISTING

APPENDIX B

DATA LISTING

1. Order and Content

This listing contains most of the results of the laboratory and field measurements made on the water samples collected from the Roswell Basin during the period from March of 1974 to August of 1976. In addition, several determinations made during the summer and fall of 1973 are listed.

Ground water samples were taken from seventy-nine wells and three springs (Fig. B-1). A total of one hundred and seventy-eight ground water samples were analysed. In most cases, the results of a water sample analysis occupy one page of this listing. However, in those few cases where the trace element determinations contain significant uncertainties, the listing may extend onto the following page. This displacement is caused by the printing of statements which identify the questionable trace element determinations.

Wells and springs are located in this listing by their location numbers, a series of nine numbers, used by the U. S. Geological Survey, which subdivides the land surface into townships, ranges, and sections (Fig. B-2). For a particular location, the analytical results are given in the order of the well (or spring) sampling dates.

Included in this listing are the well parameters (first line), sample date, (second line), results of the laboratory and field determinations (vertical columns), and some preliminary processing of the analytical determinations (bottom half of the page). The well parameters give the well location (Fig. B-2), permit number (listed under RA), depth (feet), and production interval (feet). Also some information concerning the hydrology and geology of the aquifer is included. Usually, the well

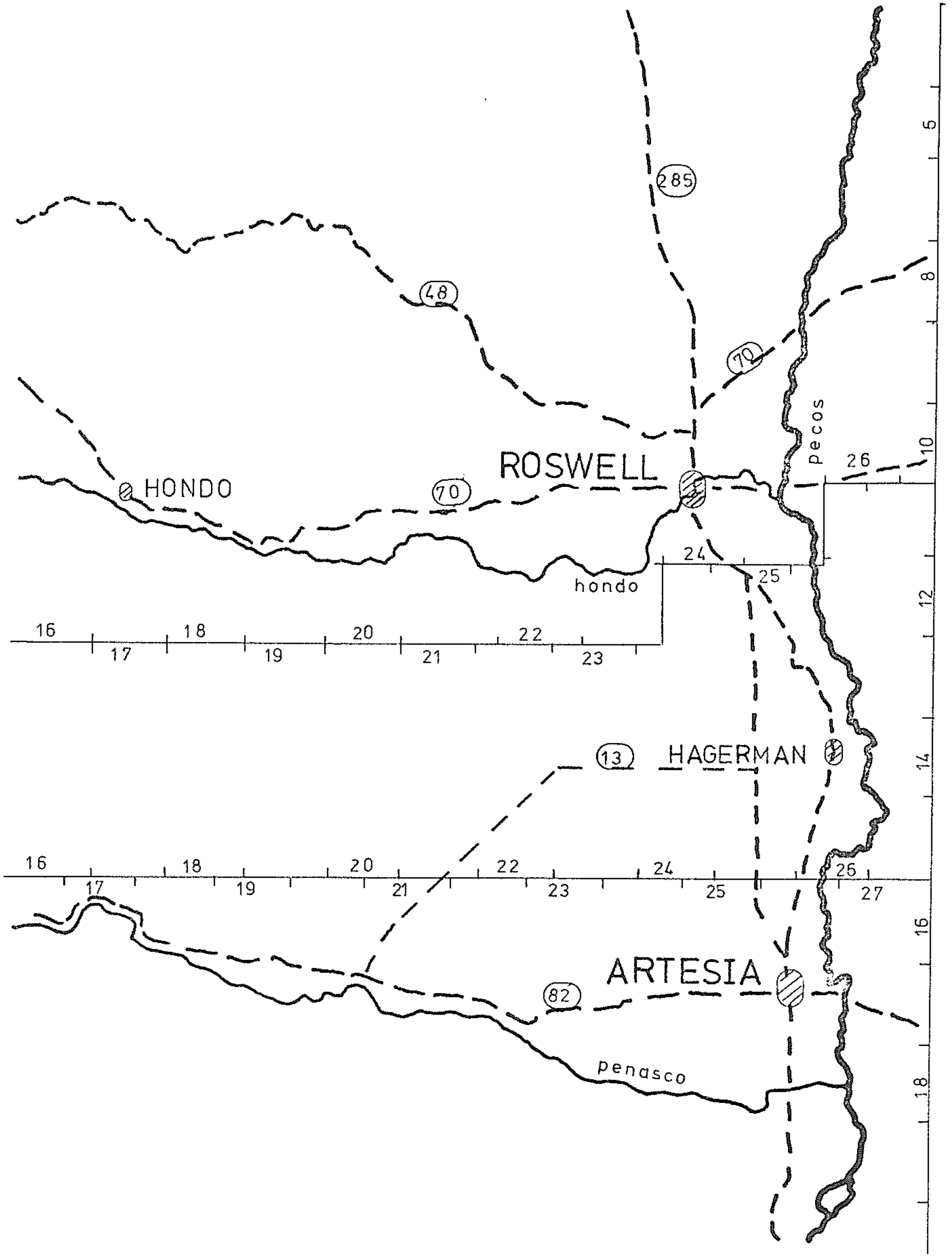

Figure B-1. Township (vertical scale) and range (horizontal scale) grid for the study area.

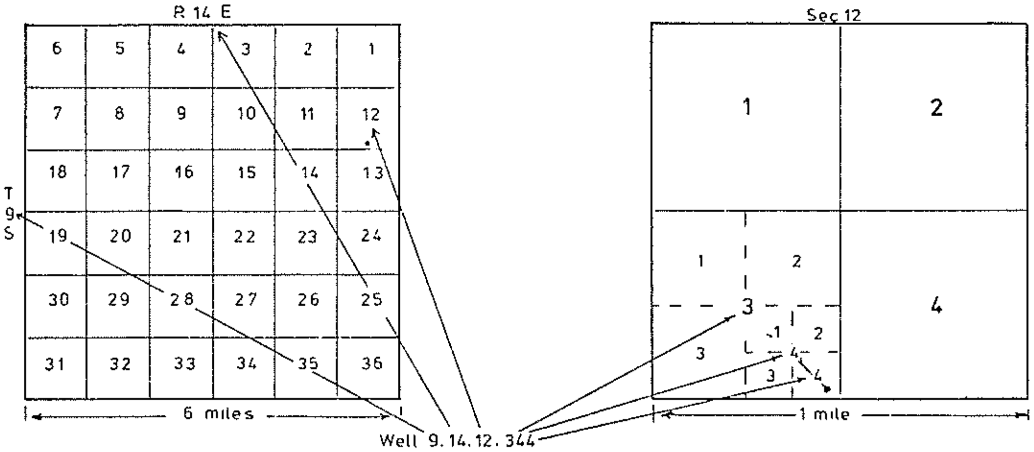

Figure B-2. Coordinate system for locating the sampling sites. Township and range locations are given by T and R.

parameter information is only printed with the first entry of a chronological series of analysis for a particular well.

The preliminary processing involves the determination of analytical error, the determination of the ion pair concentrations, the determination of the activity coefficients, the characterizations of certain mineral saturations, the calculation of the soil zone carbon dioxide content, and the calculation of the hydrogen ion concentration needed for calcite saturation. This processing only occurs if the first eight constituents in the vertical table are specified, otherwise the list is terminated after the field and laboratory results.

2. Special Symbols

Special symbols are employed to characterize the geology, hydrology and flow velocity at the sample sites. These characteristics are given on the first line of the listing for the first sample date as formation, type, and yield and employ the following special symbols:

Formation

GS - glorieta sandstone
YF - yeso formation
SL - san andres limestone
AG - artesia group
GQ - grayberg - queen (subdivision of AG)
AL - alluvium
MF - multiple formation

Type

DU - deep unconfined
DC - deep confined
SC - shallow confined
SU - shallow unconfined
MA - multiple aquifer
SP - spring

Yield

numerical values are given in gallons per minute (gpm)
OW - observation well, no yield
WM - windmill, highly variable yield, maximum about 1 gpm
IW - irrigation well, yields in range of 1,000 gpm
DW - domestic well, yields in range of 50 gpm

3. Comments on Special Symbols

Formation refers to the geologic formation from which the well abstracts water, type refers to the hydraulic nature of the aquifer tapped by the well, and yield refers to the rate at which water is pumped from the well. The categories formation and type are closely related and in most cases the information supplied by these two classifications is somewhat redundant. For example, all wells pumping from the alluvium formation are also pumping from a shallow unconfined type of aquifer.

The formation referred to as the Artesia Group contains a number of subdivisions (Tansill, Yates, Seven Rivers, Queen, and Grayberg). This listing, however, refers to the Artesia Group as a whole or, in some cases, to the Queen and Grayberg subdivisions. The other three subdivisions are not referenced. This peculiar habit was inherited from one of our primary well classification sources compiled by Kelly Summers.

Multiple formation (MF) and multiple aquifer (MA) are somewhat ambiguous terms used to describe wells that, in theory, extract water from two neighboring geologic formations containing two different aquifer types. In all cases (three in number) the adjoining formations are the Artesia Group (shallow confined hydraulic type) and the San Andres Limestone (deep confined hydraulic type). Since water from these wells displays physical and chemical characteristics similar to water taken from the San Andres Limestone, they were used in the data set characterizing the limestone aquifer in the confined region.

Drillers logs for shallow wells indicate, in most cases, penetration into the upper part of the Artesia Group. Since the boundary between these two formations is not sharply defined, these wells are considered to be pumping from a shallow unconfined type of aquifer located in the Alluvium Formation. However, these wells are classified as either shallow-confined and pumping from the Artesia Group or shallow-unconfined and pumping from the alluvium. The classification in the listing gives the assignments of our primary data sources and not the abridged categories that were used in this study.

In summary, the classifications present in this listing are not tainted by any structure imposed on the data set by this study.

4. Chemical Concentration Listing

Concentrations of the chemical species are tabulated under two headings: original units and molarity. Except for the hydrogen ion concentration, which was determined as the negative of the log (base 10) of the concentration (pH), the original unit of the concentrations was parts-per-million (ppm). In most cases, the original units reflect the units that were inscribed on the dial of the machine used to make the determination. Filter, if used, and temperature are recorded as pore size and degrees centigrade. The category "Ref" denotes the data source. Usually the water sample was collected and analysed by New Mexico Tech. This is indicated by an NMT in this row. No entry for "Ref" also indicates that personnel from New Mexico Tech collected and analysed the water sample.

5. Errors

The first eight species, excluding the hydrogen ion (Na, K, Ca, SO_4, Cl, HCO_3) are regarded as the major constituents and were used to determine the analytical percentage error (Fig. B-3). This error is listed directly below the chemical species table and was calculated by dividing the molar charge imbalance by the total molar charge (total positive ion concentration) and multiplying by 100.

Charge imbalance is further investigated on the next lower line. On this line the ionic species are attributed to certain mineral progenitors ($NaCl$, $CaCO_3$, $CaSO_4$, $MgCa(CO_3)_2$, $MgCO_3$, and KCL) which are divided into two groups (Ca, Mg, HCO_3, SO_4, and NaCl); the charge imbalance for each group is determined. This was done to isolate the analytical error into one of the two groups. It was originally supposed that the list of mineral progenitors was reasonably complete and that if no errors were incurred, the charge imbalance within each group would be zero. However, it was found that those anlayses which gave virtually no analytical error (<5%) still exhibited large charge imbalances within the two mineral groups. One phenomenon that would upset the genealogy of the groundwater is ion exchange on the siliceous minerals embedded in the aquifer matrix. An attempt was made to determine the sign of the charge imbalance within each group; ion exchange would cause one group to have a positive charge excess while the other group would have a negative charge excess. A random sampling of the charge imbalance of each group indicated no "polarization" of the charge excess. Random analytical errors, obviously, dominate the data set and a more systematic analysis would be required to uncover evidence of ion exchange.

If two successive determinations of a particular trace element differed by more than a factor of two, the average value is reported and the statement "A discrepancy exists for the value of SM (   )" is printed below the sample date. The location of the questionable determination is given

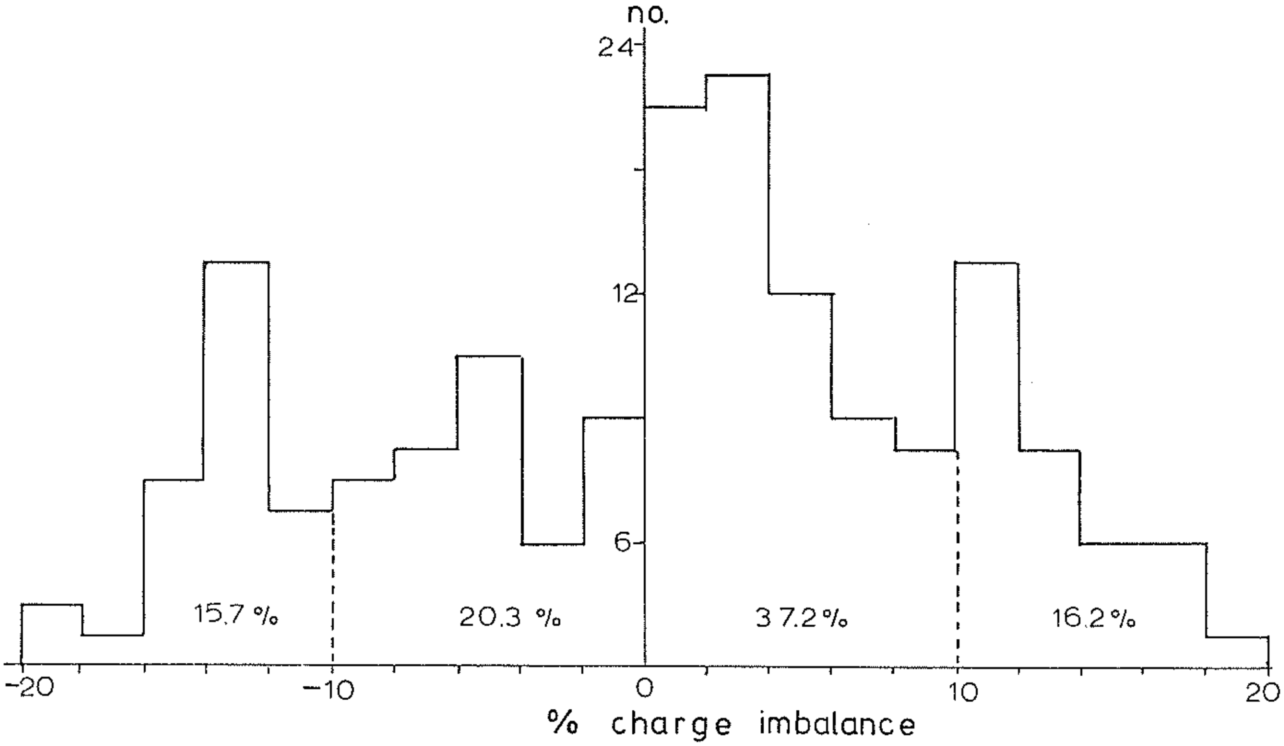

Figure B-3. Frequency distribution of the charge imbalance errors. Errors greater than ± 20% occurred for some special samples which were not subjected to a complete chemical analysis.

by the "SM" number which locates the trace element with respect to the top of the analytical result list.

6. Activity and Ion Pair Corrections

The concentrations given in the listing are the results of the chemical analyses performed on the water samples and include free ions as well as ions in microcrystals and ion pairs. Field estimates of the microcrystalline concentration were made by filtering the sample and looking for differences between filtered and unfiltered samples. No differences were found indicating a low microcrystalline content. Ion pairs, if they exist, cannot be differentiated experimentally from free ions. However, the literature abounds with formulas purporting to calculate their concentrations. We have taken one of the more popular sets of formulas[1] and calculated the concentrations of the following ion pairs: $CaSO_4^o$, $CaCO_3^o$, $MgCO_3^o$, $CaHCO_3^+$, $MgHCO_3^+$, $MgSO_4$, $NaSO_4^-$, KSO_4^-, and $NaCO_4^-$. These are tabulated in the listing by the symbols C1 to C9 which are assigned in the order given above. Temperature corrected equilibrium constants for the ion pairs are indicated by the symbols AK01 to AK09, where the final integer refers to the identity of the ion by its position in the listing given above (Table B-1). Concentrations, corrected for ion pairs, are given for the first eight species on the third line from the bottom. These concentrations are less than the concentrations given in the main table by the amount held in the ion pair.

Most thermodynamic formulations are based on the simplifying assumption that the substance of interest behaves as an ideal gas. When these formulations are applied to real substances, certain arbitrary parameters are necessarily introduced to compensate for the ideal gas assumption. In the case of ionic solutions, the deviation from ideality is attributed to the electric fields created by the charged atoms. A measure of the electric field perturbation is the ion strength "I" ($I = \frac{\Sigma CiVi}{2}$ where Ci and Vi are the concentration and charge of the i^{th} species). The effect of the electric field on the ideal gas approximation is to modify the concentration term in the ideal gas equation ($P = CRT$). Activity (a) is introduced as a modified concentration

$$a = \gamma C$$

where the modification factor γ (or activity) is said to "correct" the concentration. Usually, γ is less than one and is related to the ion strength (I) through the DeBye-Hückle equation. This equation is somewhat emperical and is found in most physical chemistry texts.[2]

Referring to the listing, the ion strength and the activity coefficients, Gamma I and Gamma II, are found on the bottom quarter of the page. Gamma I corrects divalent ions and Gamma II corrects monovalent ions.

7. Chemical Saturation

Solubility products are used to test the chemical saturation of the ground water with respect to certain mineral species. The product of the corrected concentrations (activites) of the ions which compose the mineral is compared to the solubility product for the mineral; if the product of the activities is less than the solubility product the solution is under-saturated with respect to mineral. Chemical saturation with respect to three minerals (calcite [$CaCO_3$], gypsum [$CaSO_4 \cdot 2H_2O$], and dolomite [$CaMg(CO_3)_2$]) is determined. The results are tabulated as the activity product divided by the solubility product; therefore, numbers less than one indicate under-saturation, while numbers equal to or greater than one indicate saturation and over (or super) saturation. The results for calcite

Table B-1

Temperature Corrected Equilibrium Constants

species	symbol[1]	equ. const.[1]	a[2]	b[2]	c[2]
CO_2	PCO2	AK02	-13.417	2299.6	.01422
HCO_3^-	HCO3	AK1	14.8435	-3404.71	-.03279
$CO_3^=$	CCO3	AK2	6.498	-2902.39	-.02379
$CaSO_4^o$	C1	AK01	- 1.24	0	-.0036
$CaCO_3^o$	C2	AK02	- 8.167	1175.	.02478
$MgCO_3^o$	C3	AK03	-10.27	1597.	.02614
$CaHCO_3^+$	C4	AK04	2.95	0	-.0133
$MgHCO_3^+$	C5	AK05	2.13	0	-.0100
$MgSO_4^o$	C6	AK06	.95	0	-.0110
$NaSO_4^-$	C7	AK07	- .71	0	0
KSO_4^-	C8	AK08	- .96	0	0
$NaCO_3^-$	C9	AK09	- 1.27	0	0

notes:

1. symbols used on the data listing
2. the tabulated values of a, b, and c are used in the formula $\log_{10}k = a + b/T + cT$ to calculate for temperature corrected equilibrium constants listed in the third column (equ. const.)

(Ca Sat), dolomite (Dd Sat), and gypsum (Gyp Sat), are the first three entries on the bottom line of the listing.

8. Carbon Dioxide Content

Before reaching the aquifer, rain water percolates through the soil zone where it acquires carbon dioxide that is given off by the roots of plants and the decay of vegetation. Since the carbon dioxide partial pressure in the soil zone may be several thousand times the atmospheric carbon dioxide partial pressure, most of the carbon dioxide found in the ground water is acquired in the soil zone.

The corrosive effect of water in the limestone aquifer is attributed to the carbonic acid formed by water and carbon dioxide.

$$CO_2 + H_2O \rightarrow H_2CO_3 \qquad (1)$$

This acid reacts with the limestone matrix forming calcium and bicarbonate ions.

$$H_2CO_3 + CaCO_3 \rightleftarrows C\bar{a}^{2} + 2HCO_3^{-2} \qquad (2)$$

In addition, carbonic acid ionizes, producing hydrogen and bicarbonate ions.

$$H_2CO_3 \rightleftarrows H^{+} + HCO_3^{-} \qquad (3)$$

The soil zone carbon dioxide concentration is found by adding to the actual carbon dioxide content in the water sample (calculate from the pH and bicarbonate concentration using equation 3) one-half the bicarbonate concentration which represents the carbon dioxide that has reacted with the limesone matrix.

On the bottom line of the listing are two entries labeled PCO2 and SCO2 which give the actual carbon dioxide content and the calculated soil carbond dioxide content.

The motivation for the soil carbon dioxide calculation was to determine if the soil carbon dioxide concentration would reflect the sparce vegetation found in the regcharge area. Comparison of soil carbon dioxide concentration for the confined limestone aquifer and the alluvium aquifer indicate no measurable difference. This is rather surprising since the alluvium has a much denser plant cover.

9. Saturation pH

pH determinations in the field are made by estimating the final position of a drifting needle on a pH meter. The needle always drifts to higher pH readings. Even after three minutes, needle movement is still detectable. After waiting until impatience sets in (usually four or five minutes), the pH measurement is recorded as the observed reading, or if the needle is still moving detectably, 0.1 or 0.2 higher than the indicated pH reading. Laboratory measurements indicate that, in some cases, this procedure underestimates the final pH by, unfortunately, highly variable amounts.

To a first approximation, water in contact with limestone for any length of time (greater than one month) should be saturated with calcite. A number of samples are not saturated with calcite. It may be that this lack of saturation is an aberrant result caused by faulty pH measurements. To test this hypothesis, the pH values that would result if the samples were saturated with calcite are tabulated and listed as SATPH.

In all cases of under-saturated solutions, the calculated pH is higher than the measured pH. This may indicate that instrument drift had not stopped before the pH was recorded. However, a comparison of pH values measured in the field for known saturated solutions and these calculated pH values for postulated saturation are very different. The calculated pH values are around eight pH units whereas the measured pH values for saturated solutions are in the lower and middle seven's.

Although the pH values of unsaturated solutions are, on the average, somewhat lower than the pH values for the saturated solution, the calculated pH resulting from an assumed calcite saturation is usually much higher than the measured values for known saturated solutions. It would seem, then, that the lack of calcite saturation is not due to a faulty pH determination in the field.

REFERENCES

1. Jacobson, R. L. and D. Langmuir (1974): Controls on the Quality Variations of Some Carbonate Spring Waters, J. Hydrology, 23, 247-265.

2. Moore, W. J., 1964, Physical Chemistry. Prentice-Hall, Englewood Cliff, N. J.

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LOCATION      RA    ELEVATION     DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

4 21 33 1110    0. 4408.        760.          620.  720.              GS          OU         OW        PVACD       6 57

                                          OBSERVATION WELL 20.  40 MILES NORTH AND WEST OF ROSWELL

         SAMPLE DATE 3 74
             SPECIES         CHARGE      MOLALITY        ORIGINAL UNITS
             --------        ------     ----------       -------------

             NA+                1        0.8265E-02        0.1900E 03
             K+                 1        0.7928E-04        0.3100E 01
             CA++               2        0.4516E-02        0.1810E 03
             MG++               2        0.2559E-02        0.6200E 02
             H+                 1        0.1000E-06        0.7300E 01
             SO4--             -2        0.7912E-02        0.7600E 03
             CL-               -1        0.7052E-02        0.2500E 03
             HCO3-             -1        0.5802E-03        0.3540E 02
             BA                 0        0.0               0.0
             FE                 0        0.0               0.0
             CU                 0        0.0               0.0
             SR                 0        0.0               0.0
             PB                 0        0.0               0.0
             CR                 0        0.3462E-03        0.1800E 02
             ZN                 0        0.0               0.0
             HG                 0        0.0               0.0
             F                  0        0.4053E-01        0.7700E 03
             NO3                0        0.4032E-03        0.2500E 02
             O2 SAM             0        0.1187E-05        0.3800E-01
             O2 CAL             0        0.1250E-03        0.4000E 01
             FILTER             0        0.0               0.0
             TEMP               0        0.2100E-02        0.2100E-02
             REF                0
                                0
             THE EXCESS SAMPLE CHARGE IS-0.9787E-03AND THE ANALYTICAL PERCENT ERROR IS   2.130876

             THE EXCESS CHARGE FOR NACL IS 0.1213E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2271E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.77E-01    0.24E-06    0.21E-10    0.60E-02    0.97E-03    0.17E-02    0.21E 00    0.25E 00    0.89E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.40E-08    0.28E-16


                                                ION STRENGTH         GAMMA 1     GAMMA 2

                                                     0.321E-01       0.522E 00     0.850E 00
C4I          CA          MG          SO4         HCO3         H+          CO3         C1

.0          0.349E-02   0.213E-02   0.642E-02   0.571E-03   0.100E-06   0.195E-06   0.102E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.191E-06   0.659E-07   0.498E-05   0.252E-05   0.421E-03   0.472E-04   0.805E-06   0.522E-08

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2       SATPH
 0.460E-01   0.762E-03   0.275E 00   0.188E-04   0.409E-04   0.827E 01
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LOCATION      RA      ELEVATION      DEPTH      PRODUCTION INTERVAL      FORMATION      TYPE      YIELD      OWNER      DATE DRILLED

4 21 33 1110      0. 4403.         760.            620.  720.              GS          OU          OW          PVACD          6 57

                                        OBSERVATION WELL #9.  60 MILES NORTH AND WEST OF ROSWELL

      SAMPLE DATE 3 75
          SPECIES          CHARGE       MOLARITY          ORIGINAL UNITS
          --------         ------      ----------        --------------

          NA+                 1        0.1414E-02         0.3250E 02
          K+                  1        0.4603E-04         0.1800E 01
          CA++                2        0.4915E-02         0.1970E 03
          MG++                2        0.2591E-02         0.6300E 02
          H+                  1        0.1000E 01         0.0
          SO4--              -2        0.7495E-02         0.7200E 03
          CL-                -1        0.1241E-02         0.4400E 02
          HCO3-              -1        0.0                0.0
          BA                  0        0.3131E-06         0.4300E-01
          FE                  0        0.5372E-04         0.3000E 01
          CU                  0        0.6295E-07         0.4000E-02
          SR                  0        0.3196E-04         0.2800E 01
          PB                  0        0.1159E-06         0.2400E-01
          CR                  0        0.1923E-07         0.1000E-02
          ZN                  0        0.0                0.0
          HG                  0        0.0                0.0
          F                   0        0.4579E 00         0.8700E 04
          NO3                 0        0.2903E-04         0.1800E 01
          O2 SAM              0        0.8437E-04         0.2700E 01
          O2 CAL              0        0.2719E-03         0.8700E 01
          FILTER              0        0.0                0.0
          TEMP                0        0.0                0.0
          REF                 0        NMT                NMT
                              0
          THE EXCESS SAMPLE CHARGE IS 0.1000E 01AND THE ANALYTICAL PERCENT ERROR IS  96.856491
          THE EXCESS CHARGE FOR NACL IS 0.1213E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2271E-02
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         SAMPLE DATE12 74
A DISCREPANCY EXISTS FOR THE VALUE OF SM 11
A DISCREPANCY EXISTS FOR THE VALUE OF SM 12
          SPECIES        CHARGE      MOLARITY          ORIGINAL UNITS
          --------       ------      ----------        -------------

          NA+              1         0.6525E-02          0.1500E 03
          K+               1         0.7416E-04          0.2900E 01
          CA++             2         0.6113E-02          0.2450E 03
          MG++             2         0.3126E-02          0.7600E 02
          H+               1         0.2512E-07          0.7600E 01
          SO4--           -2         0.9744E-02          0.8400E 03
          CL-             -1         0.5213E-02          0.1850E 03
          HCO3-           -1         0.2868E-02          0.1750E 03
          BA               0         0.2257E-06          0.3100E-01
          FE               0         0.1952E-03          0.1090E 02
          CU               0         0.1574E-06          0.1000E-01
          SR               0         0.4903E-04          0.4300E 01
          PB               0         0.1443E-06          0.3000E-01
          CR               0         0.4808E-07          0.2500E-02
          ZN               0         0.0                 0.0
          HG               0         0.0                 0.0
          F                0         0.0                 0.0
          NO3              0         0.0                 0.0
          O2 SAM           0         0.0                 0.0
          O2 CAL           0         0.0                 0.0
          FILTER           0         0.0                 0.0
          TEMP             0         0.1730E 02          0.1730E 02
          REF              0         NMT                 NMT
                           0
          THE EXCESS SAMPLE CHARGE IS-0.4986E-03AND THE ANALYTICAL PERCENT ERROR IS    0.984310

          THE EXCESS CHARGE FOR NACL IS 0.1306E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1879E-02
AK02        AK1       AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.43E-01   0.35E-06   0.35E-10   0.52E-02   0.82E-03   0.15E-02   0.12E 00   0.17E 00   0.57E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.37E-08   0.14E-16

                                                ION STRENGTH        GAMMA 1     GAMMA 2

                                                       0.342E-01     0.514E 00     0.847E 00

C4T           CA          MG          SO4         HCO3        H+          CO3         C1

.0          0.455E-02   0.239E-02   0.649E-02   0.273E-02   0.251E-07   0.626E-05   0.150E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.911E-05   0.264E-05   0.519E-04   0.199E-04   0.716E-03   0.365E-04   0.741E-06   0.128E-06
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.204E 01   0.206E 01   0.314E 00   0.841E-05   0.670E-04   0.722E 01
```

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LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

7 20 16 3330    0. 4694.         750.          657.  720.                GS         DU         OW          PVACD        10 55

                                          OBSERVATION WELL #1

        SAMPLE DATE 3  74
           SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
           --------        ------     ----------       --------------

           NA+               1        0.8700E-03        0.2000E 02
           K+                1        0.3580E-04        0.1400E 01
           CA++              2        0.1722E-02        0.6900E 02
           MG++              2        0.8638E-03        0.2100E 02
           H+                1        0.3162E-07        0.7500E 01
           SO4--            -2        0.9577E-03        0.9200E 02
           CL-              -1        0.6205E-03        0.2200E 02
           HCO3-            -1        0.2589E-02        0.1580E 03
           BA                0        0.4514E-06        0.6200E-01
           FE                0        0.0               0.0
           CU                0        0.7869E-06        0.5000E-01
           SR                0        0.3424E-05        0.3000E 00
           PB                0        0.0               0.0
           CR                0        0.0               0.0
           ZN                0        0.0               0.0
           HG                0        0.0               0.0
           F                 0        0.0               0.0
           NO3               0        0.0               0.0
           O2  SAM           0        0.0               0.0
           O2  CAL           0        0.0               0.0
           FILTER            0        0.0               0.0
           TEMP              0        0.1850E 02        0.1850E 02
           REF               0
                             0
           THE EXCESS SAMPLE CHARGE IS 0.9510E-03AND THE ANALYTICAL PERCENT ERROR IS    8.489936

           THE EXCESS CHARGE FOR NACL IS 0.2494E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS   0.6658E-03
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.41E-01    0.36E-06    0.36E-10    0.51E-02    0.81E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08    0.14E-16

                                                      ION STRENGTH       GAMMA 1     GAMMA 2

                                                            0.838E-02     0.688E 00     0.911E 00

C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0           0.158E-02   0.800E-03   0.788E-03   0.253E-02   0.316E-07   0.379E-05   0.115E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.352E-05   0.975E-06   0.232E-04   0.847E-05   0.539E-04   0.803E-06   0.588E-07   0.140E-07

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.777E 00   0.298E 00   0.237E-01   0.926E-05   0.615E-04   0.757E 01
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LOCATION      RA    ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

7 22 26 1310    0. 4170.          650.           610.  650.                  SL          DU         UM          CORN            0  0

                                          WINDMILL  T. CORN RANCH HOUSE

          SAMPLE DATE 5 75
              SPECIES          CHARGE         MOLALITY          ORIGINAL UNITS
              --------         ------        ----------        --------------

              NA+                 1          0.1522E-01          0.3500E 03
              K+                  1          0.5115E-04          0.2000E 01
              CA++                2          0.7535E-02          0.3020E 03
              MG++                2          0.4195E-02          0.1020E 03
              H+                  1          0.7943E-07          0.7100E 01
              SO4--              -2          0.1165E-01          0.1[illegible] 04
              CL-                -1          0.3[illegible]E-02          0.[illegible] 03
              HCO3-              -1          0.2475E-02          0.151[illegible] 03
              BA                  0          0.2134E-06          0.3000E-01
              FE                  0          0.8416E-04          0.4700E 01
              CU                  0          0.0                 0.0
              SR                  0          0.5364E-04          0.4700E 01
              PB                  0          0.6516E-07          0.1350E-01
              CR                  0          0.2789E-07          0.1450E-02
              ZN                  0          0.1147E-05          0.7500E-01
              HG                  0          0.0                 0.0
              F                   0          0.3158E-04          0.6000E 00
              NO3                 0          0.1031E-03          0.6390E 01
              O2 SAM              0          0.1781E-03          0.5700E 01
              O2 CAL              0          0.2031E-03          0.6500E 01
              FILTER              0          0.0                 0.0
              TEMP                0          0.2200E 02          0.2200E 02
              REF                 0          NMT                 NMT
                                  0
              THE EXCESS SAMPLE CHARGE IS 0.4925E-02AND THE ANALYTICAL PERCENT ERROR IS    6.788778

              THE EXCESS CHARGE FOR NACL IS 0.7185E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2311E-02
AKO2          AK1          AK2          AKO1          AKO2          AKO3          AKO4          AKO5          AKO6          AKO7          AKO8          AKO9

0.37E-01     0.38E-06     0.39E-10     0.50E-02     0.75E-03     0.14E-02     0.11E 00     0.15E 00     0.51E-02     0.19E 00     0.11E 00     0.54E-01
   AKC          AKD

 0.35E-08     0.12E-16

                                                ION STRENGTH          GAMMA 1      GAMMA 2

                                                      0.466E-01        0.473E 00        0.829E 00

C4I            CA             MG             SO4            HCO3           H+             CO3            C1

.0             0.543E-02      0.304E-02      0.838E-02      0.236E-02      0.794E-07      0.202E-05      0.204E-02

     C2            C3             C4             C5             C6             C7             C8             C9
 0.327E-05     0.591E-06      0.572E-04      0.225E-04      0.113E-02      0.103E-03      0.615E-06      0.902E-07

     CA SAT        DOLSAT         GYPSAT         PCO2           SCO2          SATPH
 0.704E 00     0.292E 00      0.408E 00      0.186E-04      0.629E-04      0.717E 01
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LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION    TYPE     YIELD     OWNER    DATE DRILLED

 7 22 36 4220     0. 4125.          0.          0.     0.             SL         GU        WM         CORN         0  0

                                              CORN WINDMILL

        SAMPLE DATE 5 73
            SPECIES          CHARGE     MOLARITY        ORIGINAL UNITS
            --------         ------     ----------      -------------

            NA+                1        0.1740E-01        0.4000E 03
            K+                 1        0.7672E-04        0.3000E 01
            CA++               2        0.8683E-02        0.3480E 03
            MG++               2        0.4771E-02        0.1160E 03
            H+                 1        0.2818E-07        0.7550E 01
            SO4--             -2        0.7100E-02        0.6820E 03
            CL-               -1        0.1706E-01        0.6250E 03
            HCO3-             -1        0.4425E-07        0.2700E-02
            BA                 0        0.2621E-06        0.3600E-01
            FE                 0        0.3581E-03        0.2000E 02
            CU                 0        0.0               0.0
            SR                 0        0.4908E-04        0.4300E 01
            PB                 0        0.0               0.0
            CR                 0        0.0               0.0
            ZN                 0        0.0               0.0
            HG                 0        0.0               0.0
            F                  0        0.0               0.0
            NO3                0        0.0               0.0
            O2 SAM             0        0.0               0.0
            O2 CAL             0        0.0               0.0
            FILTER             0        0.0               0.0
            TEMP               0        0.2200E 02       .0.2200E 02
            REF                0        NMT               NMT
                               0
            THE EXCESS SAMPLE CHARGE IS 0.1312E-01AND THE ANALYTICAL PERCENT ERROR IS  17.342911
            THE EXCESS CHARGE FOR NACL IS 0.3342E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1271E-01
AK02        AK1        AK2        AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.37E-01   0.38E-06   0.39E-10   0.50E-02   0.75E-03   0.14E-02   0.11E 00   0.15E 00   0.51E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD
 0.35E-08   0.12E-16

                                                ION STRENGTH        GAMMA 1      GAMMA 2
                                                       0.491E-01     0.467E 00     0.827E 00
C4I          CA          MG          SO4          HCO3          H+          CO03          C1
.0          0.719E-02   0.397E-02   0.474E-02   0.410E-07   0.282E-07   0.100E-09   0.149E-02

    C2           C3           C4           C5           C6           C7           C8           C9
 0.208E-09   0.621E-10   0.129E-08   0.500E-09   0.806E-03   0.644E-04   0.508E-06   0.498E-11
    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.450E-04   0.117E-08   0.297E 00   0.115E-09   0.881E-09   0.118E 02
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SAMPLE DATE 5 75
    SPECIES         CHARGE      MOLARITY         ORIGINAL UNITS
    --------        ------     -----------       --------------

    NA+                1       0.2218E-01         0.5100E 03
    K+                 1       0.5780E-04         0.2260E 01
    CA++               2       0.7260E-02         0.2910E 03
    MG++               2       0.3003E-02         0.7300E 02
    H+                 1       0.1585E-06         0.6800E 01
    SO4--             -2       0.8213E-02         0.7890E 03
    CL-               -1       0.2229E-01         0.7900E 03
    HCO3-             -1       0.2639E-02         0.1610E 03
    BA                 0       0.1893E-06         0.2600E-01
    FE                 0       0.3044E-04         0.1700E 01
    CU                 0       0.0                0.0
    SR                 0       0.4793E-04         0.4200E 01
    PB                 0       0.1448E-06         0.3000E-01
    CR                 0       0.7308E-07         0.3800E-02
    ZN                 0       0.1836E-04         0.1200E 01
    HG                 0       0.0                0.0
    F                  0       0.2632E-04         0.5000E 00
    NO3                0       0.1855E-03         0.1150E 02
    O2 SAM             0       0.1250E-03         0.4000E 01
    O2 CAL             0       0.2062E-03         0.6600E 01
    FILTER             0       0.0                0.0
    TEMP               0       0.2200E 02         0.2200E 02
    REF                0       NMT                NMT
                       0
    THE EXCESS SAMPLE CHARGE IS 0.1419E-02AND THE ANALYTICAL PERCENT ERROR IS    1.687337

    THE EXCESS CHARGE FOR NACL IS-0.9929E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1461E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.37E-01    0.38E-06    0.39E-10    0.50E-02    0.75E-03    0.14E-02    0.11E 00    0.15E 00    0.51E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.35E-08   0.12E-16


                                                ION STRENGTH        GAMMA 1     GAMMA 2

                                                     0.519E-01      0.459E 00       0.823E 00

C4T         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.573E-02   0.238E-02   0.604E-02   0.254E-02   0.158E-06   0.111E-05   0.146E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.179E-05   0.402E-06   0.629E-04   0.184E-04   0.599E-03   0.105E-03   0.486E-06   0.702E-07
   CA SAT      DOLSAT      GYPSAT       PCO2        SCO2        SATPH
 0.385E 00   0.648E-01   0.293E 00   0.400E-04   0.875E-04    0.713E 01
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SAMPLE DATE 3  74
    SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
    --------        ------      ----------      --------------

    NA+                1        0.1305E-01        0.3000E 03
    K+                 1        0.5882E-04        0.2300E 01
    CA++               2        0.6189E-02        0.2480E 03
    MG++               2        0.2345E-02        0.5700E 02
    H+                 1        0.6310E-07        0.7200E 01
    SO4--             -2        0.7287E-02        0.7000E 03
    CL-               -1        0.1565E-01        0.5550E 02
    HCO3-             -1        0.2573E-02        0.1570E 03
    BA                 0        0.2621E-06        0.3600E-01
    FE                 0        0.1253E-03        0.7000E 01
    CU                 0        0.1275E-05        0.8100E-01
    SR                 0        0.4451E-04        0.3900E 01
    PB                 0        0.0               0.0
    CR                 0        0.0               0.0
    ZN                 0        0.0               0.0
    HG                 0        0.0               0.0
    F                  0        0.0               0.0
    NO3                0        0.0               0.0
    O2 SAM             0        0.0               0.0
    O2 CAL             0        0.0               0.0
    FILTER             0        0.0               0.0
    TEMP               0        0.2000E 02        0.2000E 02
    REF                0        NMT               NMT
                       0
    THE EXCESS SAMPLE CHARGE IS-0.2629E-02AND THE ANALYTICAL PERCENT ERROR IS    4.174927

    THE EXCESS CHARGE FOR NACL IS-0.2605E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.8273E-04
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD

 0.36E-08    0.13E-16


                                                      ION STRENGTH          GAMMA 1      GAMMA 2

                                                           0.401E-01         0.493E 00      0.838E 00

C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0           0.485E-02   0.186E-02   0.548E-02   0.247E-02   0.631E-07   0.247E-05   0.128E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.372E-05   0.779E-06   0.524E-04   0.143E-04   0.466E-03   0.630E-04   0.482E-06   0.984E-07

    CA SAT     DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.814E 00   0.256E 00   0.260E 00   0.169E-04   0.659E-04   0.721E 01
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SAMPLE DATE 7 75
    SPECIES       CHARGE      MOLARITY        ORIGINAL UNITS
    --------      ------     ----------      --------------

    NA+              1       0.2114E-01        0.4860E 03
    K+               1       0.6139E-04        0.2400E 01
    CA++             2       0.6577E-02        0.2636E 03
    MG++             2       0.2957E-02        0.7190E 02
    H+               1       0.7943E-07        0.7100E 01
    SO4--           -2       0.8063E-02        0.7750E 03
    CL-             -1       0.2059E-01        0.7300E 03
    HCO3-           -1       0.2786E-02        0.1700E 03
    BA               0       0.2184E-06        0.3000E-01
    FE               0       0.27[illegible]E-04        0.1[illegible]E 01
    CU               0       0.1464E-06        0.9[illegible]E-02
    SR               0       0.5592E-04        0.[illegible]00E 01
    PB               0       0.4416E-02        0.9150E 03
    CR               0       0.0               0.0
    ZN               0       0.0               0.0
    HG               0       0.0               0.0
    F                0       0.3474E 00        0.6600E 04
    NO3              0       0.2081E-03        0.1290E 02
    O2 SAM           0       0.5937E-04        0.1900E 01
    O2 CAL           0       0.2359E-03        0.7550E 01
    FILTER           0       0.0               0.0
    TEMP             0       0.2340E 02        0.2340E 02
    REF              0       NMT               NMT
                     0
    THE EXCESS SAMPLE CHARGE IS 0.7575E-03AND THE ANALYTICAL PERCENT ERROR IS    0.949482

    THE EXCESS CHARGE FOR NACL IS 0.5492E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1469E-03
AKO2       AK1        AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.36E-01   0.38E-06   0.40E-10    0.49E-02    0.73E-03    0.14E-02    0.10E 00    0.15E 00    0.49E-02    0.19E 00    0.11E 00    0.54E-01
  AKC        AKD

 0.34E-08   0.11E-16

                                                    ION STRENGTH          GAMMA 1     GAMMA 2

                                                               0.492E-01      0.466E 00      0.826E 00
C4I          CA          MG           SO4          HCO3          H+          CCO3         C1

.0           0.515E-02   0.232E-02    0.599E-02    0.267E-02    0.794E-07    0.238E-05    0.136E-02

    C2           C3           C4           C5           C6           C7           C8           C9
 0.364E-05    0.882E-06    0.629E-04    0.197E-04    0.617E-03    0.100E-03    0.520E-06    0.145E-06

    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.776E 00    0.294E 00    0.269E 00    0.199E-04    0.679E-04    0.713E 01
```

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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

8 22 13 2230    0. 4394.        450.            0.     0.              SL         DU        WM         CORN          0  0

                                             CORN WINDMILL

        SAMPLE DATE12 74
A DISCREPANCY EXISTS FOR THE VALUE OF SM 11
         SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
         --------       ------     ----------      --------------

         NA+               1       0.1240E-01       0.2850E 03
         K+                1       0.4859E-04       0.1900E 01
         CA++              2       0.3618E-02       0.1450E 03
         MG++              2       0.2735E-02       0.6650E 02
         H+                1       0.2512E-07       0.7600E 01
         SO4--            -2       0.2707E-02       0.2600E 03
         CL-              -1       0.1269E-01       0.4500E 03
         HCO3-            -1       0.2869E-02       0.1750E 03
         BA                0       0.2330E-06       0.3200E-01
         FE                0       0.9490E-04       0.5300E 01
         CU                0       0.5508E-04       0.3500E 01
         SR                0       0.1494E-04       0.1300E 01
         PB                0       0.3668E-06       0.7600E-01
         CR                0       0.1039E-06       0.5400E-02
         ZN                0       0.0              0.0
         HG                0       0.0              0.0
         F                 0       0.0              0.0
         NO3               0       0.0              0.0
         O2 SAM            0       0.0              0.0
         O2 CAL            0       0.0              0.0
         FILTER            0       0.0              0.0
         TEMP              0       0.1820E 02       0.1820E 02
         REF               0       NMT              NMT
                           0
         THE EXCESS SAMPLE CHARGE IS 0.4177E-02AND THE ANALYTICAL PERCENT ERROR IS   9.056556

         THE EXCESS CHARGE FOR NACL IS-0.2961E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.4425E-02
AKO2       AK1        AK2        AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.42E-01   0.36E-06   0.36E-10   0.51E-02    0.81E-03    0.15E-02    0.12E 00    0.17E 00    0.56E-02    0.19E 00    0.11E 00    0.54E-01
 AKC        AKD

 0.37E-08   0.14E-16

                                              ION STRENGTH          GAMMA 1      GAMMA 2

                                                    0.294E-01       0.534E 00     0.855E 00

C4I          CA          MG          SO4          HCO3         H+           CCO3         C1

.0           0.321E-02   0.245E-02   0.206E-02    0.273E-02    0.251E-07    0.622E-05    0.365E-03

    C2           C3          C4           C5           C6           C7           C8           C9
 0.701E-05    0.294E-05   0.392E-04    0.217E-04    0.258E-03    0.232E-04    0.162E-06    0.254E-06
    CA SAT       DOLSAT      GYPSAT       PCO2         SCO2         SATPH
 0.155E 01    0.178E 01   0.756E-01    0.807E-05    0.651E-04    0.734E 01
```

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SAMPLE DATE 6 75
    SPECIES          CHARGE       MOLARITY          ORIGINAL UNITS
    --------         ------      ----------         --------------

    NA+                1         0.2262E-01          0.5200E 03
    K+                 1         0.3478E-04          0.1360E 01
    CA++               2         0.2919E-02          0.1170E 03
    MG++               2         0.2221E-02          0.5400E 02
    H+                 1         0.7943E-07          0.7100E 01
    SO4--             -2         0.2696E-02          0.2580E 03
    CL-               -1         0.1312E-01          0.4650E 03
    HCO3-             -1         0.3032E-02          0.1850E 03
    BA                 0         0.1602E-06          0.2200E-01
    FE                 0         0.4835E-04          0.2700E 01
    CU                 0         0.6295E-07          0.4000E-02
    SR                 0         0.1347E-04          0.1180E 01
    PB                 0         0.4353E-02          0.9020E 03
    CR                 0         0.8270E-07          0.4300E-02
    ZN                 0         0.6119E-05          0.4000E 00
    HG                 0         0.0                 0.0
    F                  0         0.0                 0.0
    NO3                0         0.1919E-03          0.1190E 02
    O2 SAM             0         0.2375E-03          0.7600E 01
    O2 CAL             0         0.2062E-03          0.6600E 01
    FILTER             0         0.0                 0.0
    TEMP               0         0.2100E 02          0.2100E 02
    REF                0         NMT                 NMT
                       0
    THE EXCESS SAMPLE CHARGE IS 0.1141E-01AND THE ANALYTICAL PERCENT ERROR IS  20.962265
    THE EXCESS CHARGE FOR NACL IS 0.9503E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1877E-02
AK02      AK1       AK2       AK01      AK02      AK03      AK04      AK05      AK06      AK07      AK08      AK09
0.38E-01  0.37E-06  0.38E-10  0.50E-02  0.77E-03  0.14E-02  0.11E 00  0.15E 00  0.52E-02  0.19E 00  0.11E 00  0.54E-01
 AKC       AKO
 0.35E-08  0.12E-16


                                             ION STRENGTH        GAMMA 1      GAMMA 2
                                                  0.328E-01       0.519E 00     0.849E 00
C4I       CA          MG          SO4         HCO3        H+          CO3         C1
.0        0.259E-02   0.198E-02   0.213E-02   0.295E-02   0.794E-07   0.231E-05   0.295E-03

   C2          C3          C4          C5          C6          C7          C8          C9
0.209E-05   0.869E-06   0.362E-04   0.196E-04   0.219E-03   0.425E-04   0.117E-06   0.168E-06
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.454E 00   0.162E 00   0.595E-01   0.243E-04   0.812E-04   0.737E 01
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LOCATION     RA    ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

8 22 22 2220     0. 4000.         0.           0.      0.              SL          OU         WM          CORN           0  0


        SAMPLE DATE 7 75
            SPECIES          CHARGE       MOLARITY        ORIGINAL UNITS
            --------         ------      ----------       --------------

            NA+                 1         0.1444E-01        0.3320E 03
            K+                  1         0.3580E-04        0.1400E 01
            CA++                2         0.2575E-02        0.1032E 03
            MG++                2         0.1431E-02        0.3480E 02
            H+                  1         0.3981E-07        0.7400E 01
            SO4--              -2         0.2207E-02        0.2120E 03
            CL-                -1         0.9788E-02        0.3470E 03
            HCO3-              -1         0.2917E-02        0.1780E 03
            BA                  0         0.2184E-06        0.3000E-01
            FE                  0         0.2328E-04        0.1300E 01
            CU                  0         0.0               0.0
            SR                  0         0.1370E-04        0.1200E 01
            PB                  0         0.7481E-07        0.1550E-01
            CR                  0         0.3366E-07        0.1750E-02
            ZN                  0         0.0               0.0
            HG                  0         0.0               0.0
            F                   0         0.2316E 00        0.4400E 04
            NO3                 0         0.2113E-03        0.1310E 02
            O2 SAM              0         0.2312E-03        0.7400E 01
            O2 CAL              0         0.2359E-03        0.7550E 01
            FILTER              0         0.0               0.0
            TEMP                0         0.2400E 02        0.2400E 02
            REF                 0         NMT               NMT
                                0
            THE EXCESS SAMPLE CHARGE IS 0.5414E-02AND THE ANALYTICAL PERCENT ERROR IS  13.654816
            THE EXCESS CHARGE FOR NACL IS 0.4697E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.6814E-03
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.35E-01    0.39E-06    0.40E-10    0.49E-02    0.72E-03    0.13E-02    0.10E 00    0.14E 00    0.48E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.34E-08    0.11E-16

                                                 ION STRENGTH        GAMMA 1     GAMMA 2

                                                       0.243E-01      0.559E 00      0.865E 00

C4I         CA          MG          SO4         HCO3        H+          CO3         C1

.0          0.228E-02   0.127E-02   0.178E-02   0.282E-02   0.398E-07   0.445E-05   0.258E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.437E-05   0.131E-05   0.359E-04   0.139E-04   0.146E-03   0.245E-04   0.108E-06   0.222E-06

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.928E 00   0.526E 00   0.506E-01   0.103E-04   0.603E-04    0.737E 01
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LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

8 23 16 1100 4680. 4049.        585.          0.     0.             SL         DU        WM        CORN         0 62

                                        [illegible]

        SAMPLE DATE 3 73
           SPECIES       CHARGE      MOLARITY       ORIGINAL UNITS
           --------      ------     ----------     --------------

           NA+              1       0.2044E-01       0.4700E 03
           K+               1       0.8134E-04       0.3200E 01
           CA++             2       0.1325E-01       0.5310E 03
           MG++             2       0.9769E-02       0.2380E 03
           H+               1       0.3162E-07       0.7500E 01
           SO4--           -2       0.1683E-01       0.1617E 04
           CL-             -1       0.1580E-01       0.5600E 03
           HCO3-           -1       0.3000E-02       0.3000E-02
           BA               0       0.3859E-06       0.5300E-01
           FE               0       0.2149E-04       0.1200E 01
           CU               0       0.0              0.0
           SR               0       0.1039E-03       0.9100E 01
           PB               0       0.0              0.0
           CR               0       0.0              0.0
           ZN               0       0.0              0.0
           HG               0       0.0              0.0
           F                0       0.0              0.0
           NO3              0       0.0              0.0
           O2 SAM           0       0.0              0.0
           O2 CAL           0       0.0              0.0
           FILTER           0       0.0              0.0
           TEMP             0       0.2400E 02       0.2400E 02
           REF              0       NMT              NMT
                            0
           THE EXCESS SAMPLE CHARGE IS 0.1414E-01AND THE ANALYTICAL PERCENT ERROR IS  11.876094

           THE EXCESS CHARGE FOR NACL  IS 0.4648E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.9410E-02
AKO2        AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9

0.35E-01    0.39E-06   0.40E-10   0.49E-02   0.72E-03   0.13E-02   0.10E 00   0.14E 00   0.48E-02   0.19E 00   0.11E 00   0.54E-01
  AKC         AKD

 0.34E-08    0.11E-16

                                                ION STRENGTH          GAMMA 1       GAMMA 2

                                                       0.741E-01      0.414E 00      0.802E 00

C4I           CA           MG           SO4          HCO3         H+           CCO3         C1

.0          0.960E-02    0.708E-02    0.105E-01    0.272E-02    0.316E-07    0.678E-05    0.352E-02

    C2          C3           C4           C5           C6           C7           C8           C9
 0.154E-04   0.612E-05    0.108E-03    0.552E-04    0.264E-02    0.149E-03    0.107E-05    0.350E-06

   CA SAT      DOLSAT       GYPSAT       PCO2         SCO2        SATPH
 0.327E 01   0.867E 01    0.693E 00    0.786E-05    0.559E-04    0.689E 01
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AMPLE DATE 5 73
   SPECIES        CHARGE     MOLARITY         ORIGINAL UNITS
   --------       ------     ----------       --------------

   NA+              1        0.1927E-01       [illegible] 03
   K+               1        0.7572E-[illegible] [illegible]
   CA++             2        0.1[illegible]E-01 [illegible] 03
   MG++             2        0.1[illegible]E-01 [illegible] 03
   B+               1        0.1000E-05       0.7000E 01
   SO4--           -2        0.1501E-01       0.1442E 04
   CL-             -1        0.1495E-01       0.5300E 03
   HCO3-           -1        0.4900E-02       0.4900E-02
   BA               0        0.3131E-06       0.4300E-01
   FE               0        0.4656E-04       0.2600E 01
   CU               0        0.0              0.0
   SR               0        0.1027E-03       0.9000E 01
   PB               0        0.0              0.0
   CR               0        0.0              0.0
   ZN               0        0.0              0.0
   HG               0        0.0              0.0
   F                0        0.0              0.0
   NO3              0        0.0              0.0
   O2 SAM           0        0.0              0.0
   O2 CAL           0        0.0              0.0
   FILTER           0        0.0              0.0
   TEMP             0        0.2400E 02       0.2400E 02
   REF              0        NMT              NMT
                    0
   THE EXCESS SAMPLE CHARGE IS 0.1689E-01AND THE ANALYTICAL PERCENT ERROR IS  14.479929
   THE EXCESS CHARGE FOR NACL IS 0.3320E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1349E-01
AKO2        AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9
0.35E-01    0.39E-06   0.40E-10   0.49E-02   0.72E-03   0.13E-02   0.10E 00   0.14E 00   0.48E-02   0.19E 00   0.11E 00   0.54E-01
  AKC         AKD
 0.34E-08    0.11E-16

                                              ION STRENGTH        GAMMA 1     GAMMA 2
                                                    0.735E-01     0.415E 00     0.803E 00
C4I         CA          MG          SO4         HCO3        H+          CCO3        C1
.0          0.997E-02   0.812E-02   0.908E-02   0.452E-02   0.100E-06   0.354E-05   0.318E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.842E-05   0.367E-05   0.187E-03   0.105E-03   0.263E-02   0.117E-03   0.876E-06   0.166E-06
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.178E 01   0.284E 01   0.625E 00   0.413E-04   0.121E-03   0.665E 01
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SAMPLE DATE 3 74
   SPECIES        CHARGE     MOLALITY       ORIGINAL UNITS
   --------       ------    ----------     --------------

   NA+              1       0.1335E-01      0.3000E 03
   K+               1       0.7672E-04      0.3000E 01
   CA++             2       0.1078E-01      0.4320E 03
   MG++             2       0.6170E-02      0.1500E 03
   H+               1       0.1000E-06      0.7000E 01
   SO4--           -2       0.1561E-01      0.1500E 04
   CL-             -1       0.1537E-01      0.5450E 03
   HCO3-           -1       0.5474E-02      0.3340E 03
   BA               0       0.2330E-06      0.3200E-01
   FE               0       0.1343E-03      0.7500E 01
   CU               0       0.4879E-06      0.3100E-01
   SR               0       0.1084E-03      0.9500E 01
   PB               0       0.0             0.0
   CR               0       0.1058E-06      0.5500E-02
   ZN               0       0.0             0.0
   HG               0       0.0             0.0
   F                0       0.0             0.0
   NO3              0       0.0             0.0
   O2 SAM           0       0.0             0.0
   O2 CAL           0       0.0             0.0
   FILTER           0       0.0             0.0
   TEMP             0       0.2400E 02      0.2400E 02
   REF              0       NMT             NMT
                    0
   THE EXCESS SAMPLE CHARGE IS-0.5054E-02AND THE ANALYTICAL PERCENT ERROR IS   5.099682

   THE EXCESS CHARGE FOR NACL IS-0.2323E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2807E-02
AKO2      AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8        AKO9

0.35E-01  0.39E-06   0.40E-10   0.49E-02   0.72E-03   0.13E-02   0.10E 00   0.14E 00   0.48E-02   0.19E 00   0.11E 00    0.54E-01
 AKC       AKD

 0.34E-08  0.11E-16

                                            ION STRENGTH         GAMMA 1    GAMMA 2

                                                 0.618E-01      0.437E 00    0.813E 00

C4T        CA          MG          SO4         HCO3        H+          CCO3        C1

.0         0.750E-02   0.430E-02   0.106E-01   0.516E-02   0.100E-06   0.389E-05   0.310E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.771E-05   0.237E-05   0.169E-03   0.671E-04   0.180E-02   0.103E-03   0.108E-05   0.137E-06

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.164E 01   0.168E 01   0.609E 00   0.472E-04   0.139E-03   0.670E 01
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SAMPLE DATE11 74
    SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
    --------        ------      ----------      --------------

    NA+              1          0.32[illegible]E-02     0.15[illegible]E 02
    K+               1          0.[illegible]E-04       0.[illegible]E 01
    CA++             2          0.1173E-01      0.4700E 03
    MG++             2          0.7815E-02      0.1900E 03
    H+               1          0.3162E-07      0.7500E 01
    SO4--           -2          0.2290E-01      0.2200E 04
    CL-             -1          0.5021E-02      0.1780E 03
    HCO3-           -1          0.5572E-02      0.3400E 03
    BA               0          0.1893E-06      0.2600E-01
    FE               0          0.2865E-03      0.1600E 02
    CU               0          0.0             0.0
    SR               0          0.1141E-03      0.1000E 02
    PB               0          0.9653E-07      0.2000E-01
    CR               0          0.8655E-07      0.4500E-02
    ZN               0          0.0             0.0
    HG               0          0.0             0.0
    F                0          0.2895E-04      0.5500E 00
    NO3              0          0.0             0.0
    O2 SAM           0          0.0             0.0
    O2 CAL           0          0.0             0.0
    FILTER           0          0.0             0.0
    TEMP             0          0.2150E 02      0.2150E 02
    REF              0          NMT             NMT
                     0
    THE EXCESS SAMPLE CHARGE IS-0.8985E-02AND THE ANALYTICAL PERCENT ERROR IS   8.655477
    THE EXCESS CHARGE FOR NACL IS 0.3244E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1229E-01
AKO2        AK1         AK2         AK11        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.38E-01    0.37E-06    0.38E-10    0.50E-02    0.76E-03    0.14E-02    0.11E 00    0.15E 00    0.51E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.35E-08    0.12E-16

                                                ION STRENGTH        GAMMA 1     GAMMA 2

                                                      0.655E-01     0.430E 00     0.810E 00

C4T         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.731E-02   0.494E-02   0.158E-01   0.519E-02   0.316E-07   0.119E-04   0.424E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.211E-04   0.774E-05   0.151E-03   0.721E-04   0.280E-02   0.942E-04   0.130E-05   0.259E-06

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.456E 01   0.146E 02   0.851E 00   0.166E-04   0.115E-03   0.675E 01
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LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION     TYPE    YIELD    OWNER    DATE DRILLED

8 23 16 1100 4680. 4049.        585.            0.     0.             SL          DU        WM        CORN          0 62

                                       CORN WINDMILL

SAMPLE DATE11 74
  SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
  --------        ------     ----------       --------------

  NA+                1       0.1392E-01         0.3200E 03
  K+                 1       0.6649E-04         0.2600E 01
  CA++               2       0.1173E-01         0.4700E 03
  MG++               2       0.7815E-02         0.1900E 03
  H+                 1       0.3162E-07         0.7500E 01
  SO4--             -2       0.2290E-01         0.2200E 04
  CL-               -1       0.4231E-02         0.1500E 03
  HCO3-             -1       0.0                0.0
  BA                 0       0.2330E-06         0.3200E-01
  FE                 0       0.1791E-03         0.1000E 02
  CU                 0       0.0                0.0
  SR                 0       0.1027E-03         0.9000E 01
  PB                 0       0.1931E-07         0.4000E-02
  CD                 0       0.6731E-07         0.3500E-02
  ZN                 0       0.0                0.0
  HG                 0       0.0                0.0
  F                  0       0.4106E-04         0.7800E 00
  NO3                0       0.0                0.0
  O2 SAM             0       0.0                0.0
  O2 CAL             0       0.0                0.0
  FILTER             0       0.4500E 00         0.4500E 00
  TEMP               0       0.2150E 02         0.2150E 02
  REF                0       NMT                NMT
                     0
  THE EXCESS SAMPLE CHARGE IS 0.3034E-02AND THE ANALYTICAL PERCENT ERROR IS   2.942753
  THE EXCESS CHARGE FOR NACL IS 0.3244E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1229E-01
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CATION    NO    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

23 16 1100 4680. 4049.       585.            0.     0.             SL        OU        WM          CORN          0 62

                                   CORN WINDMILL

SAMPLE DATE11 74
     SPECIES      CHARGE     MOLARITY       ORIGINAL UNITS
     --------     ------    ----------      --------------

     NA+             1      0.7395E-02       0.1700E 03
     K+              1      0.6649E-04       0.2600E 01
     CA++            2      0.1248E-01       0.5090E 03
     MG++            2      0.7280E-02       0.1770E 03
     H+              1      0.3162E-07       0.7500E 01
     SO4--          -2      0.2394E-01       0.2300E 04
     CL-            -1      0.4936E-02       0.1750E 03
     HCO3-          -1      0.0              0.0
     BA              0      0.2548E-06       0.3500E-01
     FE              0      0.1343E-03       0.7500E 01
     CU              0      0.0              0.0
     SR              0      0.1027E-03       0.9000E 01
     PB              0      0.5309E-07       0.1100E-01
     CR              0      0.6731E-07       0.3500E-02
     ZN              0      0.0              0.0
     HG              0      0.0              0.0
     F               0      0.3527E-04       0.6700E 00
     NO3             0      0.0              0.0
     O2  SAM         0      0.0              0.0
     O2  CAL         0      0.0              0.0
     FILTER          0      0.2000E 00       0.2000E 00
     TEMP            0      0.2150E 02       0.2150E 02
     REF             0      NMT              NMT
                     0
     THE EXCESS SAMPLE CHARGE IS-0.5850E-02AND THE ANALYTICAL PERCENT ERROR IS    5.862206

     THE EXCESS CHARGE FOR NACL IS 0.3244E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1229E-01
```

```
          SAMPLE DATE 5 75
               SPECIES       CHARGE      MOLARITY        ORIGINAL UNITS
               --------      ------     ----------      ---------------

               NA+              1       0.1100E-01        0.2530E 03
               K+               1       0.7007E-04        0.2740E 01
               CA++             2       0.9256E-02        0.3710E 03
               MG++             2       0.7116E-02        0.1730E 03
               H+               1       0.1000E-06        0.7000E 01
               SO4--           -2       0.1640E-01        0.1575E 04
               CL-             -1       0.1410E-01        0.5000E 03
               HCO3-           -1       0.4900E-02        0.2990E 03
               BA               0       0.2912E-06        0.4000E-01
               FE               0       0.1576E-03        0.8800E 01
               CU               0       0.2675E-07        0.1700E-02
               SR               0       0.5136E-04        0.4500E 01
               PB               0       0.1327E-06        0.2750E-01
               CR               0       0.5577E-07        0.2900E-02
               ZN               0       0.1989E-05        0.1300E 00
               HG               0       0.0               0.0
               F                0       0.3685E-04        0.7000E 00
               NO3              0       0.3290E-03        0.2040E 02
               O2 SAM           0       0.1156E-03        0.3700E 01
               O2 CAL           0       0.2156E-03        0.6900E 01
               FILTER           0       0.0               0.0
               TEMP             0       0.2500E 02        0.2500E 02
               REF              0       NMT               NMT
                                0
               THE EXCESS SAMPLE CHARGE IS-0.7975E-02AND THE ANALYTICAL PERCENT ERROR IS   8.340996

               THE EXCESS CHARGE FOR NACL IS-0.3098E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.4947E-02
 AKO2       AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

 0.34E-01   0.39E-06    0.41E-10    0.49E-02    0.71E-03    0.13E-02    0.97E-01    0.14E 00    0.47E-02    0.19E 00    0.11E 00    0.54E-01
   AKC        AKD

  0.34E-08   0.10E-16

                                                  ION STRENGTH          GAMMA 1      GAMMA 2

                                                        0.597E-01      0.441E 00      0.815E 00

 C4I         CA          MG          SO4         HCO3        H+          CO3         C1

 .0          0.629E-02   0.481E-02   0.112E-01   0.463E-02   0.100E-06   0.354E-05   0.283E-02

     C2          C3          C4          C5          C6          C7          C8          C9
 0.613E-05   0.250E-05   0.133E-03   0.696E-04   0.274E-02   0.929E-04   0.105E-05   0.106E-06
     CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.129E 01   0.142E 01   0.552E 00   0.407E-04   0.121E-03   0.680E 01
```

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SAMPLE DATE 7 75
    SPECIES          CHARGE       MOLARITY        ORIGINAL UNITS
    --------         ------      ----------       --------------

    NA+                1         0.1519E-01        0.3490E 03
    K+                 1         0.6905E-04        0.2700E 01
    CA++               2         0.9112E-02        0.3652E 03
    MG++               2         0.7157E-02        0.1740E 03
    H+                 1         0.7943E-07        0.7100E 01
    SO4--             -2         0.2160E-01        0.2075E 04
    CL-               -1         0.9167E-02        0.3250E 03
    HCO3-             -1         0.5179E-02        0.3160E 03
    BA                 0         0.1820E-06        0.2500E-01
    FE                 0         0.0               0.0
    CU                 0         0.1259E-07        0.8000E-03
    SR                 0         0.1118E-03        0.9800E 01
    PB                 0         0.1110E-06        0.2300E-01
    CR                 0         0.1923E-07        0.1000E-02
    ZN                 0         0.1683E-05        0.1100E 00
    HG                 0         0.0               0.0
    F                  0         0.3632E-04        0.6900E 00
    NO3                0         0.5484E-04        0.3400E 01
    O2 SAM             0         0.1250E-03        0.4000E 01
    O2 CAL             0         0.2297E-03        0.7350E 01
    FILTER             0         0.0               0.0
    TEMP               0         0.2100E 02        0.2100E 02
    REF                0         NMT               NMT
                       0
    THE EXCESS SAMPLE CHARGE IS-0.9760E-02AND THE ANALYTICAL PERCENT ERROR IS    9.265821

    THE EXCESS CHARGE FOR NACL IS 0.6014E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1584E-01
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.38E-01    0.37E-06    0.38E-10    0.50E-02    0.77E-03    0.14E-02    0.11E 00    0.15E 00    0.52E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.35E-08    0.12E-16


                                                ION STRENGTH          GAMMA 1     GAMMA 2

                                                       0.668E-01       0.427E 00    0.808E 00

C4T         CA          MG          SO4         HCO3        H+          CO3         C1

.0          0.574E-02   0.458E-02   0.157E-01   0.496E-02   0.794E-07   0.449E-05   0.326E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.608E-05   0.264E-05   0.110E-03   0.625E-04   0.251E-02   0.171E-03   0.139E-05   0.178E-06

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.132E 01   0.144E 01   0.656E 00   0.408E-04   0.136E-03   0.689E 01
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

10 17 29 1300     0. 5200.          0.           0.     0.           SL          SP       0000.       0000          0  0

                                              TROUT FARM

        SAMPLE DATE 1 76
           SPECIES       CHARGE      MOLARITY        ORIGINAL UNITS
           -------       ------     ----------       --------------

           NA+              1       0.5220E-03       0.1200E 02
           K+               1       0.1023E-04       0.4000E 00
           CA++             2       0.2645E-02       0.1060E 03
           MG++             2       0.6581E-03       0.1600E 02
           H+               1       0.3981E-07       0.7400E 01
           SO4--           -2       0.2051E-02       0.1970E 03
           CL-             -1       0.3977E-03       0.1410E 02
           HCO3-           -1       0.3200E-02       0.3200E-02
           BA               0       0.0              0.0
           FE               0       0.0              0.0
           CU               0       0.0              0.0
           SR               0       0.9359E-05       0.8200E 00
           PB               0       0.0              0.0
           CR               0       0.0              0.0
           ZN               0       0.0              0.0
           HG               0       0.0              0.0
           F                0       0.0              0.0
           NO3              0       0.1048E-03       0.6500E 01
           O2 SAM           0       0.2375E-03       0.7600E 01
           O2 CAL           0       0.2562E-03       0.8200E 01
           FILTER           0       0.0              0.0
           TEMP             0       0.1800E 02       0.1800E 02
           REF              0       NMT              NMT
                            0
           THE EXCESS SAMPLE CHARGE IS-0.5614E-03AND THE ANALYTICAL PERCENT ERROR IS   3.783556

           THE EXCESS CHARGE FOR NACL IS 0.1243E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.6959E-03
AKO2        AK1        AK2        AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.42E-01    0.35E-06   0.35E-10   0.52E-02    0.81E-03    0.15E-02    0.12E 00    0.17E 00    0.56E-02    0.19E 00    0.11E 00    0.54E-01
  AKC        AKD

 0.37E-08   0.14E-16

                                              ION STRENGTH          GAMMA 1     GAMMA 2

                                                    0.111E-01     0.656E 00      0.900E 00

C4I          CA          MG          SO4          HCO3          H+          CCO3          C1

.0          0.228E-02   0.577E-03   0.166E-02    0.312E-02    0.398E-07   0.381E-05     0.316E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.460E-05   0.637E-06   0.389E-04   0.711E-05   0.734E-04   0.968E-06   0.337E-07   0.806E-08
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.102E 01   0.252E 00   0.656E-01   0.147E-04   0.802E-04   0.735E 01
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LOCATION     PA    ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

10 20 16 4440    0. 4504.         503.         435.  500.              Y           DU        OW        PVACD        1 56

                                          RECHARGE AREA.  OBSERVATION WELL #2 WEST OF ROSWELL


        SAMPLE DATE 3 74
            SPECIES        CHARGE      MOLARITY       ORIGINAL UNITS
            --------       ------     ----------     -------------

            NA+              1        0.1087E-02       0.2500E 02
            K+               1        0.4092E-04       0.1600E 01
            CA++             2        0.1248E-02       0.5000E 02
            MG++             2        0.1028E-02       0.2500E 02
            H+               1        0.1995E-07       0.7700E 01
            SO4--           -2        0.1062E-02       0.1020E 03
            CL-             -1        0.1128E-02       0.4000E 02
            HCO3-           -1        0.1934E-02       0.1180E 03
            BA               0        0.3053E-06       0.4200E-01
            FE               0        0.2865E-03       0.1600E 02
            CU               0        0.1070E-05       0.6800E-01
            SR               0        0.2283E-05       0.2000E 00
            PB               0        0.0              0.0
            CR               0        0.4616E-07       0.2400E-02
            ZN               0        0.0              0.0
            HG               0        0.0              0.0
            F                0        0.0              0.0
            NO3              0        0.0              0.0
            O2 SAM           0        0.0              0.0
            O2 CAL           0        0.0              0.0
            FILTER           0        0.0              0.0
            TEMP             0        0.1860E 02       0.1860E 02
            REF              0        NMT              NMT
                             0
            THE EXCESS SAMPLE CHARGE IS 0.4942E-03AND THE ANALYTICAL PERCENT ERROR IS   4.548332

            THE EXCESS CHARGE FOR NACL IS-0.4082E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.4941E-03
AKO2        AKL          AK2          AKO1         AKO2         AKO3         AKO4         AKO5         AKO6         AKO7         AKO8         AKO9

0.41E-01    0.36E-06    0.36E-10    0.51E-02    0.80E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08    0.14E-16


                                            ION STRENGTH          GAMMA 1      GAMMA 2

                                                 0.803E-02       0.693E 00        0.912E 00

C4I          CA           MG           SO4          HCO3         H+           CCO3         C1

.0          0.114E-02    0.946E-03    0.892E-03    0.188E-02    0.200E-07    0.447E-05    0.949E-04

     C2           C3           C4           C5           C6           C7           C8           C9
 0.303E-05    0.138E-05    0.126E-04    0.754E-05    0.733E-04    0.114E-05    0.766E-07    0.208E-07

    CA SAT       DOLSAT       GYPSAT        PCO2         SCO2        SATPH
 0.669E 00    0.363E 00    0.196E-01    0.433E-05    0.432E-04    0.784E 01
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           SAMPLE DATE 3 75
               SPECIES          CHARGE       MOLARITY          ORIGINAL UNITS
               --------         ------      ----------        --------------

               NA+                 1        0.1131E-02          0.2600E 02
               K+                  1        0.4859E-04          0.1900E 01
               CA++                2        0.1372E-02          0.5500E 02
               MG++                2        0.1111E-02          0.2700E 02
               H+                  1        0.3981E-07          0.7400E 01
               SO4--              -2        0.1561E-02          0.1500E 03
               CL-                -1        0.4513E-03          0.1600E 02
               HCO3-              -1        0.1786E-02          0.1090E 03
               BA                  0        0.2912E-06          0.4000E-01
               FE                  0        0.6088E-03          0.3400E 02
               CU                  0        0.1899E-06          0.1200E-01
               SR                  0        0.2283E-05          0.2000E 00
               PB                  0        0.3185E-06          0.6600E-01
               CR                  0        0.1154E-06          0.6000E-02
               ZN                  0        0.0                 0.0
               HG                  0        0.0                 0.0
               F                   0        0.2527E 00          0.4800E 04
               NO3                 0        0.1935E-04          0.1200E 01
               O2 SAM              0        0.4062E-04          0.1300E 01
               O2 CAL              0        0.2594E-03          0.8300E 01
               FILTER              0        0.0                 0.0
               TEMP                0        0.1750E 02          0.1750E 02
               REF                 0        NMT                 NMT
                                   0
               THE EXCESS SAMPLE CHARGE IS 0.7845E-03AND THE ANALYTICAL PERCENT ERROR IS   6.818431
               THE EXCESS CHARGE FOR NACL IS 0.6796E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5626E-04
AK02      AK1       AK2       AK01      AK02      AK03      AK04      AK05      AK06      AK07      AK08      AK09
0.43E-01  0.35E-06  0.35E-10  0.52E-02  0.82E-03  0.15E-02  0.12E 00  0.17E 00  0.57E-02  0.19E 00  0.11E 00  0.54E-01
  AKC       AKD
 0.37E-08  0.14E-16

                                                ION STRENGTH          GAMMA 1     GAMMA 2
                                                          0.874E-02    0.683E 00     0.909E 00
C4I          CA          MG          SO4          HCO3         H+           CCO3         C1
.0           0.122E-02   0.996E-03   0.131E-02    0.175E-02    0.398E-07    0.205E-05    0.144E-03

    C2           C3           C4           C5           C6           C7           C8           C9
 0.142E-05    0.638E-06    0.119E-04    0.710E-05    0.107E-03    0.172E-05    0.132E-06    0.980E-08
    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.316E 00    0.775E-01    0.299E-01    0.847E-05    0.458E-04    0.786E 01
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 LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

10 21 16 2220     0. 4133.        672.          585.  672.             GS         OU        OW          PVACD        3 56


        SAMPLE DATE 3 75
           SPECIES         CHARGE       MOLARITY        ORIGINAL UNITS
           --------        ------      ----------      --------------

           NA+                1        0.7830E-03        0.1800E 02
           K+                 1        0.5115E-04        0.2000E 01
           CA++               2        0.1921E-02        0.7700E 02
           MG++               2        0.2879E-03        0.7000E 01
           H+                 1        0.0               0.1000E 03
           SO4--             -2        0.1353E-03        0.1300E 02
           CL-               -1        0.6685E-02        0.2370E 03
           HCO3-             -1        0.0               0.0
           BA                 0        0.3641E-06        0.5000E-01
           FE                 0        0.9311E-04        0.5200E 01
           CU                 0        0.1102E-06        0.7000E-02
           SR                 0        0.1598E-04        0.1400E 01
           PB                 0        0.1158E-06        0.2400E-01
           CR                 0        0.9231E-07        0.4800E-02
           ZN                 0        0.0               0.0
           HG                 0        0.0               0.0
           F                  0        0.1369E 00        0.2600E 04
           NO3                0        0.3871E-03        0.2400E 02
           O2 SAM             0        0.2312E-03        0.7400E 01
           O2 CAL             0        0.2719E-03        0.8700E 01
           FILTER             0        0.0               0.0
           TEMP               0        0.1800E 02        0.1800E 02
           REF                0        NMT               NMT
                              0
           THE EXCESS SAMPLE CHARGE IS-0.1703E-02AND THE ANALYTICAL PERCENT ERROR IS  13.952553
           THE EXCESS CHARGE FOR NACL IS 0.6796E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5626E-04
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LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

10 24 15 3330    0. 3550.        120.         55.  120.            AL          SU       DW        COGDILL      0  0



        SAMPLE DATE 3 73
            SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
            --------       ------     ----------      --------------

            NA+              1        0.3349E-01        0.7700E 03
            K+               1        0.8439E-04        0.3300E 01
            CA++             2        0.1524E-01        0.6110E 03
            MG++             2        0.9831E-02        0.2390E 03
            H+               1        0.5012E-08        0.8300E 01
            SO4--           -2        0.1878E-01        0.1804E 04
            CL-             -1        0.4048E-01        0.1435E 04
            HCO3-           -1        0.2800E-02        0.2800E-02
            BA               0        0.0               0.0
            FE               0        0.0               0.0
            CU               0        0.0               0.0
            SR               0        0.0               0.0
            PB               0        0.0               0.0
            CR               0        0.0               0.0
            ZN               0        0.0               0.0
            HG               0        0.0               0.0
            F                0        0.0               0.0
            NO3              0        0.0               0.0
            O2 SAM           0        0.0               0.0
            O2 CAL           0        0.0               0.0
            FILTER           0        0.0               0.0
            TEMP             0        0.2000E 02        0.2000E 02
            REF              0        NMT               NMT
                             0
            THE EXCESS SAMPLE CHARGE IS 0.2892E-02AND THE ANALYTICAL PERCENT ERROR IS   1.757531

            THE EXCESS CHARGE FOR NACL IS-0.6983E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.9791E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD

 0.36E-08    0.13E-16

                                                    ION STRENGTH          GAMMA 1     GAMMA 2

                                                           0.100E 00       0.377E 00      0.783E 00

C41          CA           MG           SO4          HCO3         H+           CO3          C1

.0           0.112E-01    0.737E-02    0.123E-01    0.210E-02    0.501E-08    0.337E-04    0.385E-02

     C2           C3           C4           C5           C6           C7           C8           C9
 0.707E-04    0.254E-04    0.921E-04    0.381E-04    0.240E-02    0.259E-03    0.117E-05    0.256E-05
     CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.150E 02    0.143E 03    0.784E 00    0.114E-05    0.427E-04    0.704E 01
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```
SAMPLE DATE 7 76
    SPECIES          CHARGE      MOLARITY        ORIGINAL UNITS
    -------          ------      ----------      --------------

    NA+                 1        0.6307E-01       0.1450E 04
    K+                  1        0.8695E-04       0.3400E 01
    CA++                2        0.1771E-01       0.7100E 03
    MG++                2        0.9049E-03       0.2200E 02
    H+                  1        0.7943E-07       0.7100E 01
    SO4--              -2        0.2832E-01       0.2720E 04
    CL-                -1        0.6135E-01       0.2175E 04
    HCO3-              -1        0.3800E-02       0.3800E-02
    BA                  0        0.0              0.0
    FE                  0        0.0              0.0
    CU                  0        0.0              0.0
    SR                  0        0.0              0.0
    PB                  0        0.0              0.0
    CR                  0        0.0              0.0
    ZN                  0        0.0              0.0
    HG                  0        0.0              0.0
    F                   0        0.0              0.0
    NO3                 0        0.0              0.0
    O2 SAM              0        0.2094E-03       0.6700E 01
    O2 CAL              0        0.2312E-03       0.7400E 01
    FILTER              0        0.0              0.0
    TEMP                0        0.2000E 02       0.2000E 02
    REF                 0        NMT              NMT
                        0
    THE EXCESS SAMPLE CHARGE IS-0.2138E-01AND THE ANALYTICAL PERCENT ERROR IS   9.623837
    THE EXCESS CHARGE FOR NACL IS 0.1723E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2319E-01
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08    0.13E-16

                                                        ION STRENGTH          GAMMA 1      GAMMA 2

                                                               0.132E 00     0.344E 00      0.766E 00

C4I           CA           MG            SO4           HCO3          H+            CO3           C1

.0           0.117E-01    0.611E-03    0.214E-01     0.362E-02     0.794E-07     C.377E-05     0.585E-02

    C2           C3           C4            C5            C6            C7            C8            C9
 0.666E-05    0.190E-06    0.129E-03    0.481E-05     0.289E-03     0.773E-03     0.193E-05     0.503E-06

    CA SAT       DOLSAT       GYPSAT        PCO2          SCO2          SATPH
 0.146E 01    0.112E 00    0.119E 01    0.312E-04     0.103E-03     0.682E 01
```

```
LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

10 24 22 1140     0. 3570.          270.          233.   270.              AG          SU        0.           MCHOLLEY     0  0


        SAMPLE DATE 3  73
            SPECIES       CHARGE       MOLARITY        ORIGINAL UNITS
            --------      ------      ----------      --------------

            NA+               1       0.3915E-01        0.9000E 03
            K+                1       0.8439E-04        0.3300E 01
            CA++              2       0.8258E-02        0.3310E 03
            MG++              2       0.4072E-02        0.9900E 02
            H+                1       0.1000E-06        0.7000E 01
            SO4--            -2       0.1033E-01        0.9920E 03
            CL-              -1       0.3455E-01        0.1225E 04
            HCO3-            -1       0.4900E-02        0.4900E-02
            BA                0       0.0               0.0
            FE                0       0.0               0.0
            CU                0       0.0               0.0
            SR                0       0.0               0.0
            PB                0       0.0               0.0
            CR                0       0.0               0.0
            ZN                0       0.0               0.0
            HG                0       0.0               0.0
            F                 0       0.0               0.0
            NO3               0       0.0               0.0
            O2 SAM            0       0.0               0.0
            O2 CAL            0       0.0               0.0
            FILTER            0       0.0               0.0
            TEMP              0       0.2000E 02        0.2000E 02
            REF               0       NMT               NMT
                              0
            THE EXCESS SAMPLE CHARGE IS 0.3787E-02AND THE ANALYTICAL PERCENT ERROR IS   3.054104

            THE EXCESS CHARGE FOR NACL IS 0.4595E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.8923E-03
AKO2        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08    0.13E-16


                                                ION STRENGTH          GAMMA 1      GAMMA 2

                                                       0.741E-01       0.414E 00       0.802E 00

C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0           0.647E-02   0.324E-02   0.765E-02   0.470E-02   0.100E-06   0.338E-05   0.167E-02

    C2           C3          C4          C5          C6          C7          C8          C9
 0.478E-05   0.130E-05   0.111E-03   0.397E-04   0.794E-03   0.210E-03   0.811E-06   0.339E-06

   CA SAT        DOLSAT       GYPSAT        PCO2        SCO2       SATPH
 0.104E 01   0.549E 00   0.340E 00   0.509E-04   0.144E-03   0.689E 01
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LOCATION      RA     ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION     TYPE      YIELD      OWNER      DATE DRILLED

10 25 22 3240     0. 3650.         650.          621.  650.               SL         DC        1000.       STENGROF     0 61

                                              ELK WELL.  EAST SIDE OF PECOS (ROSWELL)

          SAMPLE DATE 3 74
               SPECIES         CHARGE      MOLARITY         ORIGINAL UNITS
               --------        ------      ----------       -------------

               NA+                1        0.6742E-01         0.1550E 04
               K+                 1        0.2174E-03         0.8500E 01
               CA++               2        0.8433E-02         0.3380E 03
               MG++               2        0.3537E-02         0.8600E 02
               H+                 1        0.6310E-09         0.9200E 01
               SO4--             -2        0.1353E-01         0.1300E 04
               CL-               -1        0.8744E-01         0.3100E 04
               HCO3-             -1        0.1139E-03         0.6950E 01
               BA                 0        0.3359E-06         0.5300E-01
               FE                 0        0.3760E-05         0.2100E 00
               CU                 0        0.2125E-06         0.1350E-01
               SR                 0        0.9701E-04         0.8500E 01
               PB                 0        0.0                0.0
               CR                 0        0.0                0.0
               ZN                 0        0.0                0.0
               HG                 0        0.0                0.0
               F                  0        0.0                0.0
               NO3                0        0.0                0.0
               O2 SAM             0        0.0                0.0
               O2 CAL             0        0.0                0.0
               FILTER             0        0.0                0.0
               TEMP               0        0.1950E 02         0.1950E 02
               REF                0        NMT                NMT
                                  0
               THE EXCESS SAMPLE CHARGE IS-0.2304E-01AND THE ANALYTICAL PERCENT ERROR IS  11.173760

               THE EXCESS CHARGE FOR NACL IS-0.2002E-01AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3239E-02
AK02         AK1          AK2          AK01         AK02         AK03         AK04         AK05         AK06         AK07         AK08         AK09

0.40E-01     0.36E-06     0.37E-10     0.51E-02     0.79E-03     0.15E-02     0.11E 00     0.16E 00     0.54E-02     0.19E 00     0.11E 00     0.54E-01
  AKC          AKD

 0.36E-08    0.13E-16

                                                  ION STRENGTH          GAMMA 1      GAMMA 2

                                                         0.118E 00      0.357E 00        0.773E 00

C4I          CA           MG           SO4          HCO3         H+           CCO3         C1

.0           0.666E-02    0.283E-02    0.106E-01    0.321E-04    0.631E-09    0.519E-05    0.177E-02

     C2           C3           C4           C5           C6           C7           C8           C9
 0.710E-05    0.165E-05    0.921E-06    0.260E-06    0.707E-03    0.424E-02    0.249E-05    0.677E-06
    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.122E 01    0.631E 00    0.362E 00    0.225E-08    0.648E-06    0.911E 01
```

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LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

11 18 24 3200    0. 5000.          0.          0.     0.              00          00         IW         000000      0  0

                                           IRRIGATION WELL(LARGE FLOW)    .7 MILE TO WHERE ROAD LEAVES VALLEY

        SAMPLE DATE 1 76
           SPECIES        CHARGE     MOLARITY       ORIGINAL UNITS
           --------       ------     ----------     --------------

           NA+               1       0.1827E-02      0.4200E 02
           K+                1       0.1790E-04      0.7000E 00
           CA++              2       0.7535E-02      0.3020E 03
           MG++              2       0.1481E-02      0.3600E 02
           H+                1       0.1259E-06      0.6900E 01
           SO4--            -2       0.9057E-02      0.8700E 03
           CL-              -1       0.1038E-02      0.3680E 02
           HCO3-            -1       0.3600E-02      0.3600E-02
           BA                0       0.0             0.0
           FE                0       0.0             0.0
           CU                0       0.0             0.0
           SR                0       0.3595E-04      0.3150E 01
           PB                0       0.0             0.0
           CD                0       0.0             0.0
           ZN                0       0.0             0.0
           HG                0       0.0             0.0
           F                 0       0.0             0.0
           NO3               0       0.8871E-04      0.5500E 01
           O2 SAM            0       0.1281E-03      0.4100E 01
           O2 CAL            0       0.2469E-03      0.7900E 01
           FILTER            0       0.0             0.0
           TEMP              0       0.1900E 02      0.1900E 02
           REF               0       NMT             NMT
                             0
           THE EXCESS SAMPLE CHARGE IS-0.2875E-02AND THE ANALYTICAL PERCENT ERROR IS    6.744664
           THE EXCESS CHARGE FOR NACL IS 0.7889E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3682E-02
AKO2         AK1          AK2          AK01         AK02         AK03         AK04         AK05         AK06         AK07         AK08         AK09

0.41E-01     0.36E-06     0.36E-10     0.51E-02     0.80E-03     0.15E-02     0.12E 00     0.16E 00     0.55E-02     0.19E 00     0.11E 00     0.54E-01
   AKC          AKD
 0.36E-08     0.13E-16

                                                            ION STRENGTH          GAMMA 1      GAMMA 2
                                                                  0.296E-01       0.533E 00       0.854E 00
C4I          CA           MG           SO4          HCO3         H+           CCO3         C1

.0           0.544E-02    0.109E-02    0.666E-02    0.348E-02    0.126E-06    0.161E-05    0.201E-02

    C2           C3           C4           C5           C6           C7           C8           C9
 0.310E-05    0.340E-06    0.863E-04    0.125E-04    0.377E-03    0.110E-04    0.192E-06    0.967E-08
     CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.683E 00    0.920E-01    0.413E 00    0.496E-04    0.120E-03    0.700E 01
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 20 15 1110    0. 4592.          0.           0.      0.               SL           DU        WM          000          0  0


        SAMPLE DATE 5 75
           SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
           --------        ------     ----------       --------------

           NA+                1       0.2392E-02        0.5500E 02
           K+                 1       0.3273E-04        0.1280E 01
           CA++               2       0.6113E-02        0.2450E 03
           MG++               2       0.4031E-02        0.9800E 02
           H+                 1       0.1595E-06        0.6800E 01
           SO4--             -2       0.7287E-02        0.7000E 03
           CL-               -1       0.1467E-02        0.5200E 02
           HCO3-             -1       0.2442E-02        0.1490E 03
           BA                 0       0.3495E-06        0.4800E-01
           FE                 0       0.2167E-03        0.1210E 02
           CU                 0       0.1967E-07        0.1250E-02
           SR                 0       0.1917E-04        0.1680E 01
           PB                 0       0.1158E-07        0.2400E-02
           CR                 0       0.7308E-07        0.3800E-02
           ZN                 0       0.1438E-05        0.9400E-01
           HG                 0       0.0               0.0
           F                  0       0.0               0.0
           NO3                0       0.2177E-03        0.1350E 02
           O2 SAM             0       0.2031E-03        0.6500E 01
           O2 CAL             0       0.2250E-03        0.7200E 01
           FILTER             0       0.0               0.0
           TEMP               0       0.2050E 02        0.2050E 02
           REF                0       NMT               NMT
                              0
           THE EXCESS SAMPLE CHARGE IS 0.4230E-02AND THE ANALYTICAL PERCENT ERROR IS  10.268199

           THE EXCESS CHARGE FOR NACL IS 0.9256E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.3271E-02
AKO2        AK1        AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.39E-01   0.37E-06   0.37E-10   0.51E-02   0.78E-03   0.14E-02   0.11E 00   0.16E 00   0.53E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.36E-08   0.13E-16


                                                ION STRENGTH         GAMMA 1     GAMMA 2

                                                      0.290E-01      0.336E 00      0.856E 00

C41          CA          MG          SO4          HCO3          H+          CCO3          C1

.0          0.471E-02   0.314E-02   0.506E-02   0.235E-02   0.158E-06   0.888E-06   0.135E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.154E-05   0.560E-06   0.531E-04   0.252E-04   0.865E-03   0.110E-04   0.269E-06   0.704E-08

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.336E 00   0.767E-01   0.274E 00   0.394E-04   0.853E-04   0.721E 01
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SAMPLE DATE 7 75
        SPECIES        CHARGE       MOLALITY         ORIGINAL UNITS
        --------       ------      ----------       --------------

        NA+               1        0.1757E-02         0.4040E 02
        K+                1        0.3325E-04         0.1300E 01
        CA++              2        0.4691E-02         0.1880E 03
        MG++              2        0.2571E-02         0.6250E 02
        H+                1        0.3162E-07         0.7500E 01
        SO4--            -2        0.5725E-02         0.5500E 03
        CL-              -1        0.1303E-02         0.4620E 02
        HCO3-            -1        0.3343E-02         0.2040E 03
        BA                0        0.1092E-06         0.1500E-01
        FE                0        0.1123E-03         0.6300E 01
        CU                0        0.1574E-07         0.1000E-02
        SR                0        0.2454E-04         0.2150E 01
        PB                0        0.5309E-07         0.1100E-01
        CR                0        0.4616E-07         0.2400E-02
        ZN                0        0.1224E-05         0.8000E-01
        HG                0        0.0                0.0
        F                 0        0.2632E 00         0.5000E 04
        NO3               0        0.1019E-03         0.6320E 01
        O2 SAM            0        0.2125E-03         0.6800E 01
        O2 CAL            0        0.2062E-03         0.6600E 01
        FILTER            0        0.0                0.0
        TEMP              0        0.2270E 02         0.2270E 02
        REF               0        NMT                NMT
                          0
        THE EXCESS SAMPLE CHARGE IS 0.2159E-03AND THE ANALYTICAL PERCENT ERROR IS   0.666037

        THE EXCESS CHARGE FOR NACL IS 0.4542E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2716E-03
AK02         AK1          AK2          AK01         AK02         AK03         AK04         AK05         AK06         AK07         AK08         AK09

0.37E-01     0.33E-06     0.39E-10     0.50E-02     0.74E-03     0.14E-02     0.10E 00     0.15E 00     0.59E-02     0.19E 00     0.11E 00     0.54E-01
  AKC          AKD

 0.35E-08     0.11E-16


                                                 ION STRENGTH          GAMMA 1     GAMMA 2

                                                        0.228E-01        0.567E 00     0.868E 00
C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.363E-02   0.200E-02   0.419E-02   0.316E-02   0.316E-07   0.605E-05   0.985E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.951E-05   0.283E-05   0.628E-04   0.242E-04   0.541E-03   0.710E-05   0.239E-06   0.372E-07

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.203E 01   0.243E 01   0.196E 00   0.966E-05   0.677E-04   0.713E 01
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SAMPLE DATE 1 76
    SPECIES        CHARGE      MOLARITY         ORIGINAL UNITS
    --------       ------      ----------       -------------

    NA+               1        0.1392E-02         0.3200E 02
    K+                1        0.1279E-04         0.5000E 00
    CA++              2        0.5469E-02         0.2200E 03
    MG++              2        0.1275E-02         0.3100E 02
    H+                1        0.7943E-07         0.7100E 01
    SO4--            -2        0.7495E-02         0.7200E 03
    CL-              -1        0.9731E-03         0.3450E 02
    HCO3-            -1        0.3400E-02         0.3400E-02
    BA                0        0.0                0.0
    FE                0        0.4297E-04         0.2400E 01
    CU                0        0.0                0.0
    SR                0        0.2283E-04         0.2000E 01
    PB                0        0.0                0.0
    CR                0        0.0                0.0
    ZN                0        0.0                0.0
    HG                0        0.0                0.0
    F                 0        0.0                0.0
    NO3               0        0.1113E-03         0.6900E 01
    O2 SAM            0        0.1531E-03         0.4900E 01
    O2 CAL            0        0.0                0.0
    FILTER            0        0.0                0.0
    TEMP              0        0.2000E 02         0.2000E 02
    REF               0        NMT                NMT
                      0
    THE EXCESS SAMPLE CHARGE IS-0.4430E-02AND THE ANALYTICAL PERCENT ERROR IS  12.918216

    THE EXCESS CHARGE FOR NACL IS 0.4188E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.4862E-02
AK02       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.40E-01   0.37E-06   0.37E-10   0.51E-02   0.78E-03   0.14E-02   0.11E 00   0.16E 00   0.53E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.36E-08   0.13E-16

                                                ION STRENGTH        GAMMA 1     GAMMA 2

                                                       0.243E-01    0.559E 00    0.865E 00

C4I        CA          MG          SO4         HCO3        H+          CCO3        C1

.0         0.400E-02   0.945E-03   0.575E-02   0.329E-02   0.794E-07   0.238E-05   0.142E-02

     C2          C3          C4          C5          C6          C7          C8          C9
 0.379E-05   0.488E-06   0.651E-04   0.110E-04   0.318E-03   0.762E-05   0.124E-06   0.114E-07

   CA SAT      DOLSAT      GYPSAT       PCO2        SCO2       SATPH
 0.829E 00   0.163E 00   0.283E 00   0.283E-04   0.935E-04   0.712E 01
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 LOCATION    SA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION   TYPE   YIELD   OWNER    DATE DRILLED

11 21 18 3330 3697. 4283.        524.          410.  489.             GS        DU       OW        PVACD        3 57

                                            OBSERVATION WELL #8.  WEST AND SOUTH OF ROSWELL

          SAMPLE DATE 3 74
              SPECIES        CHARGE     MOLARITY       ORIGINAL UNITS
              --------       ------     ----------     --------------

              NA+               1       0.1783E-02       0.4100E 02
              K+                1       0.4859E-04       0.1900E 01
              CA++              2       0.2670E-02       0.1070E 03
              MG++              2       0.1851E-02       0.4500E 02
              H+                1       0.7943E-07       0.7100E 01
              SO4--            -2       0.4476E-02       0.4300E 03
              CL-              -1       0.2962E-02       0.1050E 03
              HCO3-            -1       0.1278E-02       0.7800E 02
              BA                0       0.8737E-06       0.1200E 00
              FE                0       0.4029E-03       0.2250E 02
              CU                0       0.4879E-06       0.3100E-01
              SR                0       0.2625E-04       0.2300E 01
              PB                0       0.0              0.0
              CR                0       0.1577E-06       0.8200E-02
              ZN                0       0.0              0.0
              HG                0       0.0              0.0
              F                 0       0.0              0.0
              NO3               0       0.0              0.0
              O2 SAM            0       0.0              0.0
              O2 CAL            0       0.0              0.0
              FILTER            0       0.0              0.0
              TEMP              0       0.1700E 02       0.1700E 02
              REF               0       NMT              NMT
                                0
              THE EXCESS SAMPLE CHARGE IS-0.2319E-02AND THE ANALYTICAL PERCENT ERROR IS    9.637391

              THE EXCESS CHARGE FOR NACL IS-0.1178E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1190E-02
AKO2        AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9

0.43E-01    0.35E-06   0.35E-10   0.52E-02   0.83E-03   0.15E-02   0.12E 00   0.17E 00   0.58E-02   0.19E 00   0.11E 00   0.54E-01
  AKC         AKD
 0.37E-08   0.15E-16

                                                   ION STRENGTH         GAMMA 1      GAMMA 2

                                                          0.175E-01      0.600E 00      0.880E 00
C4T           CA          MG          SO4         HCO3        H+          CO3         C1

.0          0.213E-02   0.150E-02   0.360E-02   0.125E-02   0.794E-07   0.799E-06   0.531E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.739E-06   0.288E-06   0.129E-04   0.665E-05   0.339E-03   0.656E-05   0.318E-06   0.529E-08
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.165E 00   0.181E-01   0.111E 00   0.124E-04   0.394E-04   0.783E 01
```

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              SAMPLE DATE12 74
 A DISCREPANCY EXISTS FOR THE VALUE OF SM 11
                 SPECIES        CHARGE      MOLARITY         ORIGINAL UNITS
                 --------       ------      ----------       -------------

                 NA+              1         0.2223E-02         0.5110E 02
                 K+               1         0.1125E-03         0.4400E 01
                 CA++             2         0.4890E-02         0.1960E 03
                 MG++             2         0.2715E-02         0.6600E 02
                 H+               1         0.5624E-07         0.7250E 01
                 SO4--           -2         0.5621E-02         0.5400E 03
                 CL-             -1         0.1467E-02         0.5200E 02
                 HCO3-           -1         0.2212E-02         0.1350E 03
                 BA               0         0.4077E-06         0.5600E-01
                 FE               0         0.1683E-03         0.9400E 01
                 CU               0         0.3148E-05         0.2000E 00
                 SR               0         0.3024E-04         0.2650E 01
                 PB               0         0.9653E-07         0.2000E-01
                 CR               0         0.1058E-06         0.5500E-02
                 ZN               0         0.0                0.0
                 HG               0         0.0                0.0
                 F                0         0.0                0.0
                 NO3              0         0.0                0.0
                 O2 SAM           0         0.0                0.0
                 O2 CAL           0         0.0                0.0
                 FILTER           0         0.0                0.0
                 TEMP             0         0.1620E 02         0.1620E 02
                 REF              0         NMT                NMT
                                  0
                 THE EXCESS SAMPLE CHARGE IS 0.2623E-02AND THE ANALYTICAL PERCENT ERROR IS   8.079415

                 THE EXCESS CHARGE FOR NACL IS 0.7560E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1755E-02
 AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

 0.44E-01    0.34E-06    0.34E-10    0.52E-02    0.84E-03    0.15E-02    0.13E 00    0.17E 00    0.59E-02    0.19E 00    0.11E 00    0.54E-01
   AKC         AKD

  0.37E-08    0.15E-16

                                                     ION STRENGTH         GAMMA 1      GAMMA 2

                                                             0.235E-01      0.563E 00      0.866E 00

 C4I          CA           MG           SO4          HCO3         H+           CCO3         C1

 .0           0.388E-02    0.221E-02    0.414E-02    0.213E-02    0.562E-07    0.198E-05    0.974E-03

     C2           C3           C4           C5           C6           C7           C8           C9
  0.290E-05    0.911E-06    0.367E-04    0.153E-04    0.493E-03    0.883E-05    0.795E-06    0.153E-07

     CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
  0.651E 00    0.222E 00    0.206E 00    0.155E-04    0.628E-04    0.737E 01
```

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SAMPLE DATE 3 75
     SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
     --------        ------     ----------       --------------

     NA+               1        0.1957E-02        0.4500E 02
     K+                1        0.3325E-04        0.1300E 01
     CA++              2        0.5489E-02        0.2200E 03
     MG++              2        0.2303E-02        0.5600E 02
     H+                1        0.5012E-06        0.6300E 01
     SO4--            -2        0.5517E-02        0.5300E 03
     CL-              -1        0.1128E-02        0.4000E 02
     HCO3-            -1        0.1442E-02        0.8800E 02
     BA                0        0.5097E-06        0.7000E-01
     FE                0        0.5372E-03        0.3000E 02
     CU                0        0.9600E-06        0.6100E-01
     SR                0        0.2397E-04        0.2100E 01
     PB                0        0.8688E-07        0.1800E-01
     CR                0        0.1539E-07        0.8000E-03
     ZN                0        0.0               0.0
     HG                0        0.0               0.0
     F                 0        0.1474E 00        0.2800E 04
     NO3               0        0.0               0.0
     O2 SAM            0        0.5625E-04        0.1800E 01
     O2 CAL            0        0.2719E-03        0.8700E 01
     FILTER            0        0.0               0.0
     TEMP              0        0.1670E 02        0.1670E 02
     REF               0        NMT               NMT
                       0
     THE EXCESS SAMPLE CHARGE IS 0.3971E-02AND THE ANALYTICAL PERCENT ERROR IS  12.734985

     THE EXCESS CHARGE FOR NACL IS 0.8291E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.3108E-02
AKC2         AK1          AK2          AK01         AK02         AK03         AK04         AK05         AK06         AK07         AK08         AK09

0.44E-01     0.35E-06     0.34E-10     0.52E-02     0.83E-03     0.15E-02     0.13E 00     0.17E 00     0.58E-02     0.19E 00     0.11E 00     0.54E-01
  AKC          AKD

 0.37E-08     0.15E-16


                                                   ION STRENGTH          GAMMA 1     GAMMA 2

                                                        0.228E-01        0.567E 00        0.868E 00

C4I          CA           MG           SO4          HCO3         H+           CO3          C1

.0           0.438E-02    0.188E-02    0.401E-02    0.140E-02    0.501E-06    0.147E-06    0.108E-02

    C2           C3           C4           C5           C6           C7           C8           C9
 0.248E-06    0.587E-07    0.278E-04    0.872E-05    0.417E-03    0.757E-05    0.229E-06    0.101E-08
   CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.556E-01    0.124E-02    0.228E 00    0.887E-04    0.119E-03    0.749E 01
```

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LOCATION    BA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

11 22  7 4000    0. 4000.        0.           0.    0.              SL         DU       WM         WOODS       0  0

                                  WINDMILL WEST OF WOODS RANCH

        SAMPLE DATE 5 75
            SPECIES      CHARGE     MOLARITY       ORIGINAL UNITS
            --------     ------    ----------     --------------

            NA+             1      0.3480E-02       0.8000E 02
            K+              1      0.3427E-04       0.1340E 01
            CA++            2      0.5439E-02       0.2180E 03
            MG++            2      0.3291E-02       0.8000E 02
            H+              1      0.1259E-06       0.6900E 01
            SO4--          -2      0.6350E-02       0.6100E 03
            CL-            -1      0.4654E-02       0.1650E 03
            HCO3-          -1      0.3261E-02       0.1990E 03
            BA              0      0.3349E-06       0.4600E-01
            FE              0      0.1039E-03       0.5800E 01
            CU              0      0.6453E-07       0.4100E-02
            SR              0      0.2739E-04       0.2400E 01
            PB              0      0.7240E-07       0.1500E-01
            CR              0      0.3173E-06       0.1650E-01
            ZN              0      0.3060E-05       0.2000E 00
            HG              0      0.0              0.0
            F               0      0.3695E-04       0.7000E 00
            NO3             0      0.1529E-03       0.9480E 01
            O2 SAM          0      0.2031E-03       0.6500E 01
            O2 CAL          0      0.2250E-03       0.7200E 01
            FILTER          0      0.0              0.0
            TEMP            0      0.2100E 02       0.2100E 02
            REF             0      NMT              NMT
                            0
            THE EXCESS SAMPLE CHARGE IS 0.3579E-03AND THE ANALYTICAL PERCENT ERROR IS    0.860669

            THE EXCESS CHARGE FOR NACL IS-0.1174E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1498E-02
AKO2         AK1          AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.38E-01    0.37E-06    0.38E-10    0.50E-02    0.77E-03    0.14E-02    0.11E 00    0.15E 00    0.52E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.35E-08    0.12E-16

                                              ION STRENGTH          GAMMA 1     GAMMA 2

                                                     0.285E-01     0.538E 00      0.856E 00

C4I          CA          MG          SO4         HCO3        H+          CCO3        CL

.0          0.426E-02   0.260E-02   0.456E-02   0.314E-02   0.126E-06   0.151E-05   0.112E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.241E-05   0.800E-06   0.656E-04   0.284E-04   0.659E-03   0.145E-04   0.254E-06   0.175E-07
     CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.524E 00   0.172E 00   0.225E 00   0.410E-04   0.102E-03   0.711E 01
```

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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 22  9 3211    0. 3954.         435.            0.      0.                SL          DC         WM          WOODS        0  0


        SAMPLE DATE 3  74
             SPECIES          CHARGE        MOLARITY           ORIGINAL UNITS
             --------         ------       ----------         --------------

             NA+                 1          0.2436E-02           0.5600E 02
             K+                  1          0.3580E-04           0.1400E 01
             CA++                2          0.3418E-02           0.1370E 03
             MG++                2          0.1892E-02           0.4600E 02
             H+                  1          0.1000E 01           0.0
             SO4--              -2          0.4476E-02           0.4300E 03
             CL-                -1          0.2736E-02           0.9700E 02
             HCO3-              -1          0.0                  0.0
             BA                  0          0.1602E-06           0.2200E-01
             FE                  0          0.8953E-06           0.5000E-01
             CU                  0          0.7869E-07           0.5000E-02
             SR                  0          0.2283E-04           0.2000E 01
             PB                  0          0.0                  0.0
             CR                  0          0.0                  0.0
             ZN                  0          0.0                  0.0
             HG                  0          0.0                  0.0
             F                   0          0.0                  0.0
             NO3                 0          0.0                  0.0
             O2  SAM             0          0.0                  0.0
             O2  CAL             0          0.0                  0.0
             FILTER              0          0.0                  0.0
             TEMP                0          0.2000E 02           0.2000E 02
             REF                 0          NMT                  NMT
                                 0
             THE EXCESS SAMPLE CHARGE IS 0.1001E 01AND THE ANALYTICAL PERCENT ERROR IS  97.718872
             THE EXCESS CHARGE FOR NACL IS-0.1174E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1498E-02
```

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LOCATION    RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

11 23  1 4130 1879. 3621.       160.          160.  160.           AL        SU      1500.      LANE        4 45


     SAMPLE DATE 3 73
          SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
          --------       ------      ----------      --------------

          NA+              1         0.4698E-02        0.1080E 03
          K+               1         0.4859E-04        0.1900E 01
          CA++             2         0.4591E-02        0.1840E 03
          MG++             2         0.2345E-02        0.5700E 02
          H+               1         0.5012E-07        0.7300E 01
          SO4--           -2         0.4997E-02        0.4800E 03
          CL-             -1         0.5641E-02        0.2000E 03
          HCO3-           -1         0.3600E-02        0.3600E-02
          BA               0         0.2330E-06        0.3200E-01
          FE               0         0.1791E-08        0.1000E-03
          CU               0         0.0               0.0
          SR               0         0.2397E-04        0.2100E 01
          PB               0         0.0               0.0
          CR               0         0.0               0.0
          ZN               0         0.0               0.0
          HG               0         0.0               0.0
          F                0         0.0               0.0
          NO3              0         0.0               0.0
          O2 SAM           0         0.0               0.0
          O2 CAL           0         0.0               0.0
          FILTER           0         0.0               0.0
          TEMP             0         0.1910E 02        0.1910E 02
          REF              0         NMT               NMT
                           0
          THE EXCESS SAMPLE CHARGE IS-0.6178E-03AND THE ANALYTICAL PERCENT ERROR IS   1.632162

          THE EXCESS CHARGE FOR NACL IS-0.9435E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2771E-03
AKO2       AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9

0.41E-01   0.36E-06   0.36E-10   0.51E-02   0.80E-03   0.15E-02   0.12E 00   0.16E 00   0.55E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.36E-08   0.13E-16


                                              ION STRENGTH        GAMMA 1     GAMMA 2

                                                    0.257E-01     0.551E 00     0.862E 00

C4T          CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.370E-02   0.192E-02   0.375E-02   0.346E-02   0.501E-07   0.393E-05   0.825E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.554E-05   0.157E-05   0.603E-04   0.227E-04   0.401E-03   0.165E-04   0.304E-06   0.629E-07

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.122E 01   0.759E 00   0.169E 00   0.196E-04   0.900E-04   0.715E 01
```

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SAMPLE DATE 5 73
    SPECIES          CHARGE      MOLARITY        ORIGINAL UNITS
    --------         ------     ----------       --------------

    NA+                 1       0.4263E-02        0.9800E 02
    K+                  1       0.4092E-04        0.1600E 01
    CA++                2       0.5489E-02        0.2200E 03
    MG++                2       0.3620E-02        0.8800E 02
    H+                  1       0.4467E-07        0.7350E 01
    SO4--              -2       0.4914E-02        0.4720E 03
    CL-                -1       0.4936E-02        0.1750E 03
    HCO3-              -1       0.3500E-02        0.3500E-02
    BA                  0       0.1893E-06        0.2600E-01
    FE                  0       0.8953E-06        0.5000E-01
    CU                  0       0.0               0.0
    SR                  0       0.2283E-04        0.2000E 01
    PB                  0       0.0               0.0
    CR                  0       0.0               0.0
    ZN                  0       0.0               0.0
    HG                  0       0.0               0.0
    F                   0       0.0               0.0
    NO3                 0       0.0               0.0
    O2 SAM              0       0.0               0.0
    O2 CAL              0       0.0               0.0
    FILTER              0       0.0               0.0
    TEMP                0       0.1950E 02        0.1950E 02
    REF                 0       NMT               NMT
                        0
    THE EXCESS SAMPLE CHARGE IS 0.4258E-02AND THE ANALYTICAL PERCENT ERROR IS  10.439932
    THE EXCESS CHARGE FOR NACL IS-0.6734E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.4890E-02
AKP2        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.40E-01    0.36E-06    0.37E-10    0.51E-02    0.79E-03    0.15E-02    0.11E 00    0.16E 00    0.54E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD
 0.36E-08    0.13E-16


                                                 ION STRENGTH       GAMMA 1     GAMMA 2
                                                       0.283E-01    0.539E 00    0.857E 00
C4I         CA          MG          SO4         HCO3        H+          CO3         C1
.0          0.452E-02   0.302E-02   0.345E-02   0.232E-02   0.447E-07   0.435E-05   0.889E-03

    C2          C3          C4          C5          C6          C7          C8          C9
0.721E-05   0.263E-05   0.706E-04   0.338E-04   0.560E-03   0.135E-04   0.230E-06   0.617E-07
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2       SATPH
0.158E 01   0.166E 01   0.182E 00   0.164E-04   0.832E-04   0.709E 01
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SAMPLE DATE 7 76
   SPECIES          CHARGE     MOLARITY         ORIGINAL UNITS
   --------         ------    ----------        --------------

   NA+                 1      0.3784E-02         0.8700E 02
   K+                  1      0.3580E-04         0.1400E 01
   CA++                2      0.4242E-02         0.1700E 03
   MG++                2      0.2509E-02         0.6100E 02
   H+                  1      0.3162E-07         0.7500E 01
   SO4--              -2      0.6662E-02         0.6400E 03
   CL-                -1      0.4457E-02         0.1580E 03
   HCO3-              -1      0.3200E-02         0.3200E-02
   BA                  0      0.0                0.0
   FE                  0      0.0                0.0
   CU                  0      0.0                0.0
   SR                  0      0.0                0.0
   PB                  0      0.0                0.0
   CR                  0      0.0                0.0
   ZN                  0      0.0                0.0
   HG                  0      0.0                0.0
   F                   0      0.0                0.0
   NO3                 0      0.0                0.0
   O2 SAM              0      0.0                0.0
   O2 CAL              0      0.2250E-03         0.7200E 01
   FILTER              0      0.2500E-03         0.8000E 01
   TEMP                0      0.0                0.0
   REF                 0      0.1900E 02         0.1900E 02
                       0      NMT                NMT
   THE EXCESS SAMPLE CHARGE IS-0.3660E-02AND THE ANALYTICAL PERCENT ERROR IS    9.555828
   THE EXCESS CHARGE FOR NACL IS-0.6723E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3024E-02
AKC2       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09
0.41E-01   0.36E-06   0.36E-10   0.51E-02   0.80E-03   0.15E-02   0.12E 00   0.16E 00   0.55E-02   0.19E 00   0.11E 00   0.54E-01
 AKC        AKD
0.36E-08   0.13E-16


                                                  ION STRENGTH          GAMMA 1     GAMMA 2
                                                        0.263E-01      0.548E 00     0.861E 00
C4I          CA          MG          SO4         HCO3        H+          CO3         C1
.0          0.322E-02   0.194E-02   0.513E-02   0.307E-02   0.316E-07   0.553E-05   0.970E-03

   C2          C3          C4          C5          C6          C7          C8          C9
0.671E-05   0.221E-05   0.465E-04   0.232E-04   0.547E-03   0.181E-04   0.305E-06   0.709E-07
  CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.147E 01   0.129E 01   0.199E 00   0.110E-04   0.735E-04   0.727E 01
```

```
 LOCATION     RA    ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 23  1 4330 1879. 3630.          160.            0.     0.             AL         SU       1300.       HENDRICK     0  0


        SAMPLE DATE 3 73
            SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
            --------       ------     ----------       --------------

            NA+              1        0.4437E-02        0.1020E 03
            K+               1        0.8134E-04        0.3200E 01
            CA++             2        0.5115E-02        0.2050E 03
            MG++             2        0.2015E-02        0.4900E 02
            H+               1        0.3548E-07        0.7450E 01
            SO4--           -2        0.5538E-02        0.5320E 03
            CL-             -1        0.5585E-02        0.1980E 03
            HCO3-           -1        0.3800E-02        0.3800E-02
            BA               0        0.2548E-06        0.3500E-01
            FE               0        0.8953E-06        0.5000E-01
            CU               0        0.0               0.0
            SR               0        0.2625E-04        0.2300E 01
            PB               0        0.0               0.0
            CR               0        0.0               0.0
            ZN               0        0.0               0.0
            HG               0        0.0               0.0
            F                0        0.0               0.0
            NO3              0        0.0               0.0
            O2  SAM          0        0.0               0.0
            O2  CAL          0        0.0               0.0
            FILTER           0        0.0               0.0
            TEMP             0        0.1900E 02        0.1900E 02
            REF              0        NMT               NMT
                             0
            THE EXCESS SAMPLE CHARGE IS-0.1682E-02AND THE ANALYTICAL PERCENT ERROR IS    4.286419

            THE EXCESS CHARGE FOR NACL IS-0.1148E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.6158E-03
AK02        AK1         AK2         AK01         AK02         AK03         AK04         AK05         AK06         AK07         AK08         AK09

0.41E-01    0.36E-06    0.36E-10    0.51E-02     0.80E-03     0.15E-02     0.12E 00     0.16E 00     0.55E-02     0.19E 00     0.11E 00     0.54E-01
  AKC         AKD

 0.36E-08    0.13E-16

                                                   ION STRENGTH         GAMMA 1      GAMMA 2

                                                         0.266E-01     0.547E 00     0.860E 00

C4I          CA          MG          SO4          HCO3         H+          CO03         C1

.0          0.405E-02   0.162E-02   0.416E-02    0.363E-02    0.355E-07   0.585E-05    0.986E-03

     C2          C3          C4          C5          C6          C7          C8          C9
 0.887E-05   0.195E-05   0.691E-04   0.199E-04   0.370E-03   0.172E-04   0.564E-06   0.877E-07

    CA SAT      DOLSAT      GYPSAT       PCO2        SIO2        SATPH
 0.195E 01   0.150E 01   0.202E 00   0.146E-04   0.886E-04   0.710E 01
```

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SAMPLE DATE 5 73
    SPECIES            CHARGE        MOLARITY         ORIGINAL UNITS
    --------           ------       ----------        --------------

    NA+                  1          0.3480E-02          0.8000E 02
    K+                   1          0.4343E-04          0.1700E 01
    CA++                 2          0.5489E-02          0.2200E 03
    MG++                 2          0.3373E-02          0.8200E 02
    H+                   1          0.1000E-06          0.7000E 01
    SO4--               -2          0.5642E-02          0.5420E 03
    CL-                 -1          0.5218E-02          0.1850E 03
    HCO3-               -1          0.3400E-02          0.3400E-02
    BA                   0          0.2257E-06          0.3100E-01
    FE                   0          0.1791E-08          0.1000E-03
    CU                   0          0.0                 0.0
    SR                   0          0.2511E-04          0.2200E 01
    PB                   0          0.0                 0.0
    CR                   0          0.0                 0.0
    ZN                   0          0.0                 0.0
    HG                   0          0.0                 0.0
    F                    0          0.0                 0.0
    NO3                  0          0.0                 0.0
    O2 SAM               0          0.0                 0.0
    O2 CAL               0          0.0                 0.0
    FILTER               0          0.0                 0.0
    TEMP                 0          0.1910E 02          0.1910E 02
    REF                  0          NMT                 NMT
                         0
    THE EXCESS SAMPLE CHARGE IS 0.1344E-02AND THE ANALYTICAL PERCENT ERROR IS   3.267225
    THE EXCESS CHARGE FOR NACL IS-0.1738E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.3039E-02
AKO2       AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9
0.41E-01   0.36E-06   0.36E-10   0.51E-02   0.80E-03   0.15E-02   0.12E 00   0.16E 00   0.55E-02   0.19E 00   0.11E 00   0.54E-01
 AKC        AKD
 0.36E-08   0.13E-16

                                            ION STRENGTH         GAMMA 1     GAMMA 2
                                                 0.285E-01       0.538E 00    0.856E 00
C4I        CA         MG         SO4        HCO3       H+         CCO3       C1
.0         0.441E-02  0.275E-02  0.403E-02  0.327E-02  0.100E-06  0.189E-05  0.101E-02

    C2         C3         C4         C5         C6         C7         C8         C9
0.303E-05  0.103E-05  0.668E-04  0.300E-04  0.589E-03  0.128E-04  0.286E-06  0.219E-07
   CA SAT     DOLSAT     GYPSAT     PCO2       SCO2       SATPH
0.667E 00  0.274E 00  0.207E 00  0.369E-04  0.103E-03  0.711E 01
```

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           SAMPLE DATE 5 75
               SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
               --------        ------     -----------      ---------------

               NA+                1        0.7177E-02        0.1650E 03
               K+                 1        0.3273E-04        0.1290E 01
               CA++               2        0.4965E-02        0.1950E 03
               MG++               2        0.3949E-02        0.9600E 02
               H+                 1        0.7943E-07        0.7100E 01
               SO4--             -2        0.4955E-02        0.4760E 03
               CL-               -1        0.4795E-02        0.1700E 03
               HCO3-             -1        0.3638E-02        0.2220E 03
               BA                 0        0.1456E-06        0.2000E-01
               FE                 0        0.8953E-04        0.5000E 01
               CU                 0        0.0               0.0
               SR                 0        0.1940E-04        0.1700E 01
               PB                 0        0.4585E-07        0.9500E-02
               CR                 0        0.2116E-07        0.1100E-02
               ZN                 0        0.1071E-05        0.7000E-01
               HG                 0        0.0               0.0
               F                  0        0.0               0.0
               NO3                0        0.2145E-03        0.1330E 02
               O2 SAM             0        0.2250E-03        0.7200E 01
               O2 CAL             0        0.2156E-03        0.6900E 01
               FILTER             0        0.0               0.0
               TEMP               0        0.2060E 02        0.2060E 02
               REF                0        NMT               NMT
                                  0
               THE EXCESS SAMPLE CHARGE IS 0.6694E-02AND THE ANALYTICAL PERCENT ERROR IS  15.429955
               THE EXCESS CHARGE FOR NACL IS 0.2382E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.4279E-02
 AK02       AK1        AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.39E-01   0.37E-06   0.38E-10    0.50E-02    0.77E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC        AKD
 0.36E-08   0.12E-16


                                                ION STRENGTH         GAMMA 1     GAMMA 2
                                                      0.296E-01      0.533E 00     0.854E 00
C4T         CA          MG          SO4         HCO3        H+          CCO3        C1
.0          0.409E-07   0.329E-02   0.350E-02   0.349E-02   0.794E-07   0.265E-05   0.806E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.397E-05   0.173E-05   0.685E-04   0.391E-04   0.622E-03   0.228E-04   0.185E-06   0.627E-07
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.864E 00   0.611E 00   0.163E 00   0.292E-04   0.972E-04   0.710E 01
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER      DATE DRILLED

11 23 12 2210  458. 3630.         160.          0.     0.              AG           SU       0000.      HENDRICH     8 64


        SAMPLE DATE 3 73
           SPECIES          CHARGE      MOLARITY        ORIGINAL UNITS
           --------         ------     ----------       --------------

           NA+                 1       0.4524E-02        0.1040E 03
           K+                  1       0.3580E-04        0.1400E 01
           CA++                2       0.4990E-02        0.2000E 03
           MG++                2       0.3332E-02        0.8100E 02
           H+                  1       0.3162E-07        0.7500E 01
           SO4--              -2       0.5330E-02        0.5120E 03
           CL-                -1       0.5359E-02        0.1900E 03
           HCO3-              -1       0.3900E-02        0.3900E-02
           BA                  0       0.2330E-06        0.3200E-01
           FE                  0       0.3953E-06        0.5000E-01
           CU                  0       0.0               0.0
           SR                  0       0.2511E-04        0.2200E 01
           PB                  0       0.0               0.0
           CR                  0       0.0               0.0
           ZN                  0       0.0               0.0
           HG                  0       0.0               0.0
           F                   0       0.0               0.0
           NO3                 0       0.0               0.0
           O2 SAM              0       0.0               0.0
           O2 CAL              0       0.0               0.0
           FILTER              0       0.0               0.0
           TEMP                0       0.1890E 02        0.1890E 02
           REF                 0       NMT               NMT
                               0
           THE EXCESS SAMPLE CHARGE IS 0.1284E-02AND THE ANALYTICAL PERCENT ERROR IS   3.122303
           THE EXCESS CHARGE FOR NACL IS-0.8355E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2084E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.41E-01    0.36E-06    0.36E-10    0.51E-02    0.80E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
0.36E-08    0.13E-16


                                              ION STRENGTH        GAMMA 1     GAMMA 2
                                                   0.281E-01      0.540E 00     0.857E 00
C4I          CA          MG          SO4          HCO3        H+          CCO3        C1
.0           0.403E-02   0.273E-02   0.387E-02    0.370E-02   0.316E-07   0.674E-05   0.885E-03

    C2          C3          C4          C5          C6          C7          C8          C9
0.988E-05   0.367E-05   0.689E-04   0.336E-04   0.561E-03   0.161E-04   0.226E-06   0.192E-06
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.217E 01   0.314E 01   0.182E 00   0.133E-04   0.389E-04   0.710E 01
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 LOCATION     RA     ELEVATION      DEPTH     PRODUCTION INTERVAL      FORMATION      TYPE     YIELD     OWNER     DATE DRILLED

11 23 12 3330 1521. 3640.          171.              0.      0.               AL          SU        900.       JENNINGS     0  0


         SAMPLE DATE 3 73
             SPECIES          CHARGE        MOLARITY         ORIGINAL UNITS
             --------         ------       ----------        --------------

             NA+                 1         0.4306E-02          0.9900E 02
             K+                  1         0.3580E-04          0.1400E 01
             CA++                2         0.5364E-02          0.2150E 03
             MG++                2         0.2011E-02          0.4890E 02
             H+                  1         0.3991E-07          0.7400E 01
             SO4--              -2         0.4738E-02          0.4600E 03
             CL-                -1         0.4795E-02          0.1700E 03
             HCO3-              -1         0.3800E-02          0.3800E-02
             BA                  0         0.2694E-06          0.3700E-01
             FE                  0         0.1791E-05          0.1000E 00
             CU                  0         0.0                 0.0
             SR                  0         0.2283E-04          0.2000E 01
             PB                  0         0.0                 0.0
             CS                  0         0.0                 0.0
             ZN                  0         0.0                 0.0
             HG                  0         0.0                 0.0
             F                   0         0.0                 0.0
             NO3                 0         0.0                 0.0
             O2  SAM             0         0.0                 0.0
             O2 CAL              0         0.0                 0.0
             FILTER              0         0.0                 0.0
             TEMP                0         0.2000E 02          0.2000E 02
             REF                 0         NMT                 NMT
                                 0
             THE EXCESS SAMPLE CHARGE IS 0.9211E-03AND THE ANALYTICAL PERCENT ERROR IS   2.471640
AKO2        AK1THE EXCESS CHARGE FOR NACL IS-0.4888E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1374E-02
                    AK2          AKO1          AKO2          AKO3          AKO4          AKO5          AKO6          AKO7          AKO8           AKO9
0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03     0.14E-02     0.11E 00     0.16E 00     0.53E-02     0.19E 00     0.11E 00     0.54E-01
  AKC         AKD
 0.36E-08    0.13E-16


                                                   ION STRENGTH          GAMMA 1      GAMMA 2
                                                          0.255E-01       0.552E 00      0.862E 00
C4I          CA           MG           SO4           HCO3          H+            CCO3          C1
.0          0.436E-02    0.166E-02    0.352E-02    0.362E-02    0.398E-07    0.528E-05    0.922E-03

   C2           C3           C4           C5           C6           C7           C8           C9
0.895E-05    0.185E-05    0.772E-04    0.209E-04    0.333E-03    0.142E-04    0.211E-06    0.776E-07
   CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
0.196E 01    0.146E 01    0.187E 00    0.156E-04    0.874E-04    0.705E 01
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SAMPLE DATE 5 73
    SPECIES          CHARGE      MOLARITY        ORIGINAL UNITS
    --------         ------     ----------      --------------

    NA+                  1      0.2218E-02        0.5100E 02
    K+                   1      0.3325E-04        0.1300E 01
    CA++                 2      0.5040E-02        0.2020E 03
    MG++                 2      0.3373E-02        0.9200E 02
    H+                   1      0.6310E-07        0.7200E 01
    SO4--               -2      0.5434E-02        0.5220E 03
    CL-                 -1      0.4372E-02        0.1550E 03
    HCO3-               -1      0.3500E-02        0.3500E-02
    BA                   0      0.2257E-06        0.3100E-01
    FE                   0      0.1791E-08        0.1000E-03
    CU                   0      0.0               0.0
    SR                   0      0.2283E-04        0.2000E 01
    PB                   0      0.0               0.0
    CD                   0      0.0               0.0
    ZN                   0      0.0               0.0
    HG                   0      0.0               0.0
    F                    0      0.0               0.0
    NO3                  0      0.0               0.0
    O2 SAM               0      0.0               0.0
    O2 CAL               0      0.0               0.0
    FILTER               0      0.0               0.0
    TEMP                 0      0.2035E 02        0.2035E 02
    REF                  0      NMT               NMT
                         0
    THE EXCESS SAMPLE CHARGE IS 0.3371E-03AND THE ANALYTICAL PERCENT ERROR IS   0.891525
    THE EXCESS CHARGE FOR NACL IS-0.2154E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2457E-02
AK02        AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09
0.39E-01    0.37E-06   0.37E-10   0.51E-02   0.78E-03   0.14E-02   0.11E 00   0.16E 00   0.53E-02   0.19E 00   0.11E 00   0.54E-01
  AKC         AKD
 0.36E-08   0.13E-16

                                              ION STRENGTH         GAMMA 1     GAMMA 2
                                                    0.264E-01      0.548E 00    0.860E 00
C4T          CA          MG          SO4          HCO3        H+          CCO3        C1
.0           0.404E-02   0.274E-02   0.389E-02    0.335E-02   0.631E-07   0.312E-05   0.932E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.486E-05   0.179E-05   0.663E-04   0.320E-04   0.604E-03   0.805E-05   0.215E-06   0.235E-07
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.106E 01   0.771E 00   0.189E 00   0.226E-04   0.883E-04   0.711E 01
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 LOCATION    RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

11 23 15 2220 2555. 3672.        685.          49.  685.            MF          MA       0000.     SMITH      11 65


        SAMPLE DATE 3 73
            SPECIES        CHARGE     MOLARITY        ORIGINAL UNITS
            --------       ------    ----------       --------------

            NA+              1       0.2523E-02        0.5800E 02
            K+               1       0.3580E-04        0.1400E 01
            CA++             2       0.4990E-02        0.2000E 03
            MG++             2       0.3003E-02        0.7300E 02
            H+               1       0.3981E-07        0.7400E 01
            SO4--           -2       0.5621E-02        0.5400E 03
            CL-             -1       0.3498E-02        0.1240E 03
            HCO3-           -1       0.3800E-02        0.3800E-02
            BA               0       0.2548E-06        0.3500E-01
            FE               0       0.8953E-06        0.5000E-01
            CU               0       0.0               0.0
            SR               0       0.2511E-04        0.2200E 01
            PB               0       0.0               0.0
            CR               0       0.0               0.0
            ZN               0       0.0               0.0
            HG               0       0.0               0.0
            F                0       0.0               0.0
            NO3              0       0.0               0.0
            O2 SAM           0       0.0               0.0
            O2 CAL           0       0.0               0.0
            FILTER           0       0.0               0.0
            TEMP             0       0.2050E 02        0.2050E 02
            REF              0       NMT               NMT
                             0
            THE EXCESS SAMPLE CHARGE IS 0.3624E-05AND THE ANALYTICAL PERCENT ERROR IS   0.009774

            THE EXCESS CHARGE FOR NACL IS-0.9747E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.9425E-03
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.39E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.36E-08    0.13E-16


                                                  ION STRENGTH        GAMMA 1      GAMMA 2
                                                      0.258E-01      0.551E 00      0.862E 00
C4I         CA          MG          SO4         HCO3        H+          CO3         C1
.0          0.394E-02   0.240E-02   0.408E-02   0.362E-02   0.398E-07   0.534E-05   0.967E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.824E-05   0.273E-05   0.707E-04   0.306E-04   0.565E-03   0.965E-05   0.244E-06   0.459E-07
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.179E 01   0.199E 01   0.196E 00   0.153E-04   0.859E-04   0.798E 01
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SAMPLE DATE 7 76
     SPECIES          CHARGE       MOLARITY          ORIGINAL UNITS
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     NA+                1         0.2327E-02           0.5350E 02
     K+                 1         0.3325E-04           0.1300E 01
     CA++               2         0.3493E-02           0.1400E 03
     MG++               2         0.2057E-03           0.5000E 01
     H+                 1         0.3981E-07           0.7400E 01
     SO4--             -2         0.5621E-02           0.5400E 03
     CL-               -1         0.2228E-02           0.7900E 02
     HCO3-             -1         0.3200E-02           0.3200E-02
     BA                 0         0.0                  0.0
     FE                 0         0.0                  0.0
     CU                 0         0.0                  0.0
     SR                 0         0.0                  0.0
     PB                 0         0.0                  0.0
     CR                 0         0.0                  0.0
     ZN                 0         0.0                  0.0
     HG                 0         0.0                  0.0
     F                  0         0.0                  0.0
     NO3                0         0.0                  0.0
     O2 SAM             0         0.1969E-03           0.6300E 01
     O2 CAL             0         0.2500E-03           0.9000E 01
     FILTER             0         0.0                  0.0
     TEMP               0         0.2200E 02           0.2200E 02
     PFF                0         NMT                  NMT
                        0
     THE EXCESS SAMPLE CHARGE IS-0.6913E-02AND THE ANALYTICAL PERCENT ERROR IS  26.158310
     THE EXCESS CHARGE FOR NACL IS 0.9882E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.7045E-02
AK02        AK1          AK2          AK01         AK02         AK03         AK04         AK05         AK06         AK07         AK08         AK09
0.37E-01    0.39E-16     0.39E-10     0.50E-02     0.75E-03     0.14E-02     0.11E 00     0.15E 00     0.51E-02     0.19E 00     0.11E 00     0.54E-01
 AKC         AKD
 0.35E-08    0.12E-16


                                                  ION STRENGTH        GAMMA 1     GAMMA 2
                                                        0.188E-01     0.591E 00      0.877E 00
C4I          CA           MG           SO4          HCO3         H+           CCO3         C1
.0           0.259E-02    0.154E-03    0.471E-02    0.312E-02    0.398E-07    0.451E-05    0.854E-03

    C2           C3           C4           C5           C6           C7           C8           C9
 0.541E-05    0.174E-06    0.448E-04    0.188E-05    0.498E-04    0.109E-04    0.277E-06    0.380E-07
    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.117E 01    0.852E-01    0.171E 00    0.124E-04    0.708E-04    0.728E 01
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 LOCATION    RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED
 11 24  7 2140   55. 3630.          0.           0.     0.               AL          SU      0000.      ROBERTS      0  0


         SAMPLE DATE 3 73
              SPECIES         CHARGE       MOLARITY        ORIGINAL UNITS
              --------        ------      ----------      --------------
              NA+                1         0.1044E-01       0.2400E 03
              K+                 1         0.4348E-04       0.1700E 01
              CA++               2         0.5539E-02       0.2220E 03
              MG++               2         0.3167E-02       0.7700E 02
              H+                 1         0.7943E-07       0.7100E 01
              SO4--             -2         0.5955E-02       0.5720E 03
              CL-               -1         0.8518E-02       0.3020E 03
              HCO3-             -1         0.3400E-02       0.3400E-02
              BA                 0         0.2694E-06       0.3700E-01
              FE                 0         0.7162E-05       0.4000E 00
              CU                 0         0.0              0.0
              SR                 0         0.2739E-04       0.2400E 01
              PB                 0         0.0              0.0
              CR                 0         0.0              0.0
              ZN                 0         0.0              0.0
              HG                 0         0.0              0.0
              F                  0         0.0              0.0
              NO3                0         0.0              0.0
              O2  SAM            0         0.0              0.0
              O2  CAL            0         0.0              0.0
              FILTER             0         0.0              0.0
              TEMP               0         0.1880E 02       0.1880E 02
              REF                0         NMT              NMT
                                 0
              THE EXCESS SAMPLE CHARGE IS 0.4068E-02AND THE ANALYTICAL PERCENT ERROR IS    7.864624
              THE EXCESS CHARGE FOR NACL IS 0.1921E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2103E-02
 AK02        AK1      AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
 0.41E-01    0.36E-06    0.36E-10    0.51E-02    0.80E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
  0.36E-08    0.14E-16


                                                        ION STRENGTH        GAMMA 1      GAMMA 2
                                                             0.340E-01      0.515E 00      0.847E 00
 C4I          CA           MG           SO4          HCO3         H+           CO3          C1
 .0           0.446E-02    0.259E-02    0.436E-02    0.327E-02    0.794E-07    0.245E-05    0.101E-02

     C2           C3           C4           C5           C6           C7           C8           C9
  0.361E-05    0.115E-05    0.641E-04    0.263E-04    0.545E-03    0.399E-04    0.296E-06    0.814E-07
     CA SAT       DOL SAT      GYPSAT       PCO2         SCO2         SATPH
  0.796E 00    0.360E 00    0.207E 00    0.297E-04    0.969E-04    0.713E 01
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LOCATION     RA    ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER      DATE DRILLED

11 24 14 3140 1920. 3590.          205.            0.  205.              AL          SU        800.       EBERHART     7 65


         SAMPLE DATE 7 76
             SPECIES        CHARGE       MOLARITY        ORIGINAL UNITS
             --------       ------      ----------       -------------

             NA+               1        0.5655E-02        0.1300E 03
             K+                1        0.7161E-04        0.2800E 01
             CA++              2        0.2221E-01        0.8900E 03
             MG++              2        0.8638E-03        0.2100E 02
             H+                1        0.7943E-07        0.7100E 01
             SO4--            -2        0.2228E-01        0.2140E 04
             CL-              -1        0.1447E-01        0.5130E 03
             HCO3-            -1        0.3600E-02        0.3600E-02
             BA                0        0.0               0.0
             FE                0        0.0               0.0
             CU                0        0.0               0.0
             SR                0        0.0               0.0
             PB                0        0.0               0.0
             CR                0        0.0               0.0
             ZN                0        0.0               0.0
             HG                0        0.0               0.0
             F                 0        0.0               0.0
             NO3               0        0.0               0.0
             O2 SAM            0        0.1906E-03        0.6100E 01
             O2 CAL            0        0.2312E-03        0.7400E 01
             FILTER            0        0.0               0.0
             TEMP              0        0.1800E 02        0.1800E 02
             REF               0        NMT               NMT
                               0
             THE EXCESS SAMPLE CHARGE IS-0.1076E-01AND THE ANALYTICAL PERCENT ERROR IS    9.397810

             THE EXCESS CHARGE FOR NACL IS-0.8815E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2016E-02
AKO2        AK1        AK2        AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.42E-01    0.35E-06   0.35E-10   0.52E-02    0.81E-03    0.15E-02    0.12E 00    0.17E 00    0.56E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.37E-08   0.14E-16


                                              ION  STRENGTH          GAMMA 1       GAMMA 2

                                                     0.718E-01       0.418E 00      0.804E 00
C4I          CA          MG          SO4          HCO3         H+          CCO3         C1

.0           0.147E-01   0.590E-03   0.147E-01    0.337E-02    0.794E-07   0.290E-05    0.730E-02

     C2           C3          C4          C5           C6           C7           C8          C9
 0.912E-05    0.202E-06   0.172E-03   0.502E-05    0.269E-03    0.583E-04    0.132E-05   0.419E-07
     CA SAT        DOLSAT       GYPSAT      PCO2         SCO2         SATPH
 0.203E 01    0.159E 00   0.151E 01   0.318E-04    0.103E-03    0.670E 01
```

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 LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 24 23 4430  996. 3577.          535.         298.   535.                MC          MA          1300.     LINCOLN      4 28


          SAMPLE DATE 3 73
              SPECIES          CHARGE      MOLARITY        ORIGINAL UNITS
              --------         ------     ----------      --------------

              NA+                 1        0.2305E-02        0.5300E 02
              K+                  1        0.3836E-04        0.1500E 01
              CA++                2        0.5489E-02        0.2200E 03
              MG++                2        0.4237E-02        0.1030E 03
              H+                  1        0.6310E-07        0.7200E 01
              SO4--              -2        0.6267E-02        0.6020E 03
              CL-                -1        0.3046E-02        0.1080E 03
              HCO3-              -1        0.5400E-02        0.5400E-02
              BA                  0        0.2548E-06        0.3500E-01
              FE                  0        0.1791E-05        0.1000E 00
              CU                  0        0.0               0.0
              SR                  0        0.2967E-04        0.2600E 01
              PB                  0        0.0               0.0
              CR                  0        0.0               0.0
              ZN                  0        0.0               0.0
              HG                  0        0.0               0.0
              F                   0        0.0               0.0
              NO3                 0        0.0               0.0
              O2 SAM              0        0.0               0.0
              O2 CAL              0        0.0               0.0
              FILTER              0        0.0               0.0
              TEMP                0        0.2000E 02        0.2000E 02
              REF                 0        NMT               NMT
                                  0
              THE EXCESS SAMPLE CHARGE IS 0.8151E-03AND THE ANALYTICAL PERCENT ERROR IS    1.905559
              THE EXCESS CHARGE FOR NACL IS-0.7409E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1518E-02
AK02        AK1        AK2        AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.40E-01    0.37E-06   0.37E-10   0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
0.36E-08    0.13E-16


                                                   ION STRENGTH        GAMMA 1      GAMMA 2
                                                         0.296E-01     0.533E 00     0.854E 00
C4I          CA          MG          SO4         HCO3        H+          CCO3        C1
.0          0.431E-02   0.338E-02   0.440E-02   0.516E-02   0.631E-07   0.487E-05   0.106E-02

   C2          C3          C4          C5          C6          C7          C8          C9
0.761E-05   0.325E-05   0.105E-03   0.587E-04   0.793E-03   0.921E-05   0.272E-06   0.370E-07
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.166E 01   0.218E 01   0.216E 00   0.352E-04   0.137E-03   0.691E 01
```

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SAMPLE DATE 5 73
    SPECIES       CHARGE     MOLARITY        ORIGINAL UNITS
    --------      ------     ----------      --------------

    NA+              1       0.2566E-02       0.5900E 02
    K+               1       0.3580E-04       0.1400E 01
    CA++             2       0.5739E-02       0.2300E 03
    MG++             2       0.5100E-02       0.1240E 03
    H+               1       0.3981E-07       0.7400E 01
    SO4--           -2       0.5955E-02       0.5720E 03
    CL -            -1       0.2821E-02       0.1000E 03
    HCO3-           -1       0.3800E-02       0.3800E-02
    BA               0       0.2257E-06       0.3100E-01
    FE               0       0.1791E-08       0.1000E-03
    CU               0       0.0              0.0
    SR               0       0.2739E-04       0.2400E 01
    PB               0       0.0              0.0
    CR               0       0.0              0.0
    ZN               0       0.0              0.0
    HG               0       0.0              0.0
    F                0       0.0              0.0
    NO3              0       0.0              0.0
    O2 SAM           0       0.0              0.0
    O2 CAL           0       0.0              0.0
    FILTER           0       0.0              0.0
    TEMP             0       0.1960E 02       0.1960E 02
    REF              0       NMT              NMT
                     0
    THE EXCESS SAMPLE CHARGE IS 0.5750E-02AND THE ANALYTICAL PERCENT ERROR IS  13.432252

    THE EXCESS CHARGE FOR NACL IS-0.2543E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5969E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.40E-01    0.36E-06    0.37E-10    0.51E-02    0.79E-03    0.14E-02    0.11E 00    0.16E 00    0.54E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08    0.13E-16

                                                 ION STRENGTH        GAMMA 1     GAMMA 2

                                                        0.302E-01     0.530E 00     0.853E 00

C4T          CA          MG          SO4         HCO3        H+          CCO3        C1

.0           0.462E-02   0.417E-02   0.404E-02   0.358E-02   0.398E-07   0.533E-05   0.103E-02

   C2           C3          C4          C5          C6          C7          C8          C9
 0.378E-05    0.432E-05   0.768E-04   0.495E-04   0.878E-03   0.935E-05   0.232E-06   0.448E-07

   CA SAT       DOLSAT      GYPSAT      PCO2        SCO2       SATPH
 0.192E 01    0.332E 01   0.210E 00   0.157E-04   0.874E-04   0.705E 01
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LOCATION    RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

11 24 24 3340 1231. 3568.       193.         180.  193.              AG          SC       700.       ASTON        9 61


         SAMPLE DATE 5 73
             SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
             --------       ------      ----------      --------------

             NA+               1       0.4959E-02         0.1140E 03
             K+                1       0.3836E-04         0.1500E 01
             CA++              2       0.9980E-02         0.4000E 03
             MG++              2       0.8885E-02         0.2160E 03
             H+                1       0.7943E-07         0.7100E 01
             SO4--            -2       0.1293E-01         0.1242E 04
             CL-              -1       0.2962E-02         0.1050E 03
             HCO3-            -1       0.4300E-02         0.4300E-02
             BA                0       0.2767E-06         0.3800E-01
             FE                0       0.2686E-05         0.1500E 00
             CU                0       0.0                0.0
             SR                0       0.5364E-04         0.4700E 01
             PB                0       0.0                0.0
             CR                0       0.0                0.0
             ZN                0       0.0                0.0
             HG                0       0.0                0.0
             F                 0       0.0                0.0
             NO3               0       0.0                0.0
             O2 SAM            0       0.0                0.0
             O2 CAL            0       0.0                0.0
             FILTER            0       0.0                0.0
             TEMP              0       0.1720E 02         0.1720E 02
             REF               0       NMT                NMT
                               0
             THE EXCESS SAMPLE CHARGE IS 0.9606E-02AND THE ANALYTICAL PERCENT ERROR IS  12.665301
             THE EXCESS CHARGE FOR NACL IS 0.1597E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.7571E-02
AKO2         AK1          AK2          AKO1         AKO2         AKO3         AKO4         AKO5         AKO6         AKO7         AKO8         AKO9
0.43E-01     0.35E-06     0.35E-10     0.52E-02     0.82E-03     0.15E-02     0.12E 00     0.17E 00     0.57E-02     0.19E 00     0.11E 00     0.54E-01
 AKC          AKD
 0.37E-08     0.15E-16


                                                  ION STRENGTH          GAMMA 1      GAMMA 2
                                                       0.509E-01        0.462E 00     0.824E 00
C4I          CA           MG           SO4          HCO3         H+           CCO3         C1
.0           0.735E-02    0.673E-02    0.830E-02    0.405E-02    0.794E-07    0.316E-05    0.251E-02

    C2           C3           C4           C5           C6           C7           C8           C9
0.602E-05    0.303E-05    0.112E-03    0.744E-04    0.208E-02    0.324E-04    0.446E-06    0.448E-07
   CA SAT       DOLSAT       GYPSAT        PCO2         SCO2        SATPH
0.134E 01    0.155E 01    0.525E 00    0.396E-04    0.127E-03    0.689E 01
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LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

11 24 24 4320  986. 3560.       581.          382.   581.          SL         DC        1700.     LUCAS        0  0


         SAMPLE DATE 5 73
             SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
             --------       ------     ----------       --------------

             NA +              1       0.0               0.0
             K+                1       0.0               0.0
             CA++              2       0.0               0.0
             MG++              2       0.0               0.0
             H+                1       0.3981E-07        0.7400E 01
             SO4--            -2       0.4705E-02        0.4520E 03
             CL -             -1       0.3074E-02        0.1090E 03
             HCO3-            -1       0.3609E-02        0.3600E-02
             BA                0       0.2257E-06        0.3100E-01
             FE                0       0.8953E-06        0.5000E-01
             CU                0       0.0               0.0
             SR                0       0.2397E-04        0.2100E 01
             PB                0       0.0               0.0
             CR                0       0.0               0.0
             ZN                0       0.0               0.0
             HG                0       0.0               0.0
             F                 0       0.0               0.0
             NO3               0       0.0               0.0
             O2  SAM           0       0.0               0.0
             O2  CAL           0       0.0               0.0
             FILTER            0       0.0               0.0
             TEMP              0       0.1985E 02        0.1985E 02
             REF               0       NMT               NMT
                               0
             THE EXCESS SAMPLE CHARGE IS-0.1609E-01AND THE ANALYTICAL PERCENT ERROR IS  99.999496

             THE EXCESS CHARGE FOR NACL IS 0.1997E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.7571E-02
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 24 25 3120 1015. 3574.        669.         369.  669.               SL          DC        0000.       ALLYSON      0  0

                                              ALLYSCN.  NEAR DRIVEWAY.

          SAMPLE DATE 3 73
              SPECIES       CHARGE      MOLARITY        ORIGINAL UNITS
              --------      ------     ----------      --------------

              NA+              1       0.1479E-02        0.3400E 02
              K+               1       0.4603E-04        0.1800E 01
              CA++             2       0.3393E-02        0.1360E 03
              MG++             2       0.2262E-02        0.5500E 02
              H+               1       0.5012E-07        0.7300E 01
              SO4--           -2       0.3352E-02        0.3220E 03
              CL-             -1       0.1749E-02        0.6200E 02
              HCO3-           -1       0.3600E-02        0.3600E-02
              BA               0       0.3495E-06        0.4800E-01
              FE               0       0.1791E-08        0.1000E-03
              CU               0       0.0               0.0
              SR               0       0.1940E-04        0.1700E 01
              PB               0       0.0               0.0
              CR               0       0.0               0.0
              ZN               0       0.0               0.0
              HG               0       0.0               0.0
              F                0       0.0               0.0
              NO3              0       0.0               0.0
              O2  SAM          0       0.0               0.0
              O2  CAL          0       0.0               0.0
              FILTER           0       0.0               0.0
              TEMP             0       0.2000E 02        0.2000E 02
              REF              0       NMT               NMT
                               0
              THE EXCESS SAMPLE CHARGE IS 0.7831E-03AND THE ANALYTICAL PERCENT ERROR IS    3.146439

              THE EXCESS CHARGE FOR NACL IS-0.2699E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1007E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08    0.13E-16

                                              ION STRENGTH          GAMMA 1     GAMMA 2

                                                    0.180E-01        0.597E 00     0.879E 00

C4I          CA          MG          SO4          HCO3         H+           CO3          C1

.0           0.283E-02   0.191E-02   0.252E-02    0.347E-02    0.501E-07    0.379E-05    0.503E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.488E-05   0.180E-05   0.520E-04   0.250E-04   0.323E-03   0.379E-05   0.210E-06   0.207E-07

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.107E 01   0.774E 00   0.102E 00   0.189E-04   0.377E-04    0.722E 01
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SAMPLE DATE 5 73
    SPECIES        CHARGE      MOLARITY         ORIGINAL UNITS
    --------       ------     ----------        --------------

    NA+               1       0.1479E-02         0.3400E 02
    K+                1       0.3069E-04         0.1200E 01
    CA++              2       0.4067E-02         0.1630E 03
    MG++              2       0.2632E-02         0.6400E 02
    H+                1       0.3548E-07         0.7450E 01
    SO4--            -2       0.3243E-02         0.3120E 03
    CL-              -1       0.1580E-02         0.5600E 02
    HCO3-            -1       0.3700E-02         0.3700E-02
    BA                0       0.2257E-06         0.3100E-01
    FE                0       0.8953E-06         0.5000E-01
    CU                0       0.0                0.0
    SR                0       0.1826E-04         0.1600E 01
    PB                0       0.0                0.0
    CR                0       0.0                0.0
    ZN                0       0.0                0.0
    HG                0       0.0                0.0
    F                 0       0.0                0.0
    NO3               0       0.0                0.0
    O2 SAM            0       0.0                0.0
    O2 CAL            0       0.0                0.0
    FILTER            0       0.0                0.0
    TEMP              0       0.2070E 02         0.2070E 02
    REF               0       NMT                NMT
                      0
    THE EXCESS SAMPLE CHARGE IS 0.3133E-02AND THE ANALYTICAL PERCENT ERROR IS  11.740756

    THE EXCESS CHARGE FOR NACL IS-0.1006E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.3203E-02
AKO2       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.39E-01   0.37E-06   0.38E-10   0.50E-02   0.77E-03   0.14E-02   0.11E 00   0.16E 00   0.52E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.36E-08   0.12E-16


                                                 ION STRENGTH        GAMMA 1     GAMMA 2

                                                        0.194E-01     0.587E 00     0.875E 00

C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0           0.344E-02   0.225E-02   0.235E-02   0.352E-02   0.355E-07   0.559E-05   0.552E-03


    C2          C3          C4          C5          C6          C7          C8          C9
 0.858E-05   0.305E-05   0.644E-04   0.299E-04   0.347E-03   0.347E-05   0.128E-06   0.300E-07

   CA SAT      DOLSAT      GYPSAT       PCO2        SCO2       SATPH
 0.186E 01   0.232E 01   0.111E 00   0.131E-04   0.815E-04   0.712E 01
```

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SAMPLE DATE 7 73
    SPECIES        CHARGE      MOLARITY         ORIGINAL UNITS
    --------       ------     ----------        --------------

    NA+                 1     0.1479E-02          0.3400E 02
    K+                  1     0.4603E-04          0.1800E 01
    CA++                2     0.3393E-02          0.1360E 03
    MG++                2     0.2262E-02          0.5500E 02
    H+                  1     0.4786E-07          0.7320E 01
    SO4--              -2     0.3352E-02          0.3220E 03
    CL-                -1     0.1749E-02          0.6200E 02
    HCO3-              -1     0.3500E-02          0.3500E-02
    BA                  0     0.0                 0.0
    FE                  0     0.0                 0.0
    CU                  0     0.0                 0.0
    SR                  0     0.0                 0.0
    PB                  0     0.0                 0.0
    CR                  0     0.0                 0.0
    ZN                  0     0.0                 0.0
    HG                  0     0.0                 0.0
    F                   0     0.0                 0.0
    NO3                 0     0.0                 0.0
    O2 SAM              0     0.0                 0.0
    O2 CAL              0     0.0                 0.0
    FILTER              0     0.0                 0.0
    TEMP                0     0.2000E 02          0.2000E 02
    REF                 0     NMT                 NMT
                        0
    THE EXCESS SAMPLE CHARGE IS 0.8831E-03AND THE ANALYTICAL PERCENT ERROR IS   3.562525

    THE EXCESS CHARGE FOR NACL IS-0.2699E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1107E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.36E-08    0.13E-16


                                                 ION STRENGTH          GAMMA 1      GAMMA 2

                                                        0.179E-01     0.598E 00     0.879E 00
C4I          CA           MG           SO4          HCO3         H+           CCO3         C1

.0           0.283E-02    0.191E-02    0.252E-02    0.338E-02    0.479E-07    0.385E-05    0.503E-03

   C2           C3           C4           C5           C6           C7           C8           C9
 0.497E-05    0.183E-05    0.506E-04    0.244E-04    0.323E-03    0.379E-05    0.210E-06    0.210E-07
   CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.109E 01    0.802E 00    0.102E 00    0.175E-04    0.844E-04    0.723E 01
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SAMPLE DATE 4  74
     SPECIES         CHARGE       MOLARITY         ORIGINAL UNITS
     --------        ------      ----------        --------------

     NA+               1         0.1131E-02          0.2600E 02
     K+                1         0.3836E-04          0.1500E 01
     CA++              2         0.3342E-02          0.1540E 03
     MG++              2         0.1723E-02          0.4200E 02
     H+                1         0.6310E-07          0.7200E 01
     SO4--            -2         0.3227E-02          0.3100E 03
     CL -             -1         0.1664E-02          0.5900E 02
     HCO3-            -1         0.3589E-02          0.2190E 03
     BA                0         0.3495E-06          0.4800E-01
     FE                0         0.1791E-08          0.1000E-03
     CU                0         0.3148E-07          0.2000E-02
     SR                0         0.1940E-04          0.1700E 01
     PB                0         0.0                 0.0
     CR                0         0.0                 0.0
     ZN                0         0.0                 0.0
     HG                0         0.0                 0.0
     F                 0         0.0                 0.0
     NO3               0         0.0                 0.0
     O2 SAM            0         0.0                 0.0
     O2 CAL            0         0.0                 0.0
     FILTER            0         0.0                 0.0
     TEMP              0         0.2020E 02          0.2020E 02
     REF               0         NMT                 NMT
                       0
     THE EXCESS SAMPLE CHARGE IS 0.6016E-03AND THE ANALYTICAL PERCENT ERROR IS   2.504729

     THE EXCESS CHARGE FOR NACL IS-0.5332E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1096E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.39E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08    0.13E-16

                                                ION STRENGTH        GAMMA 1     GAMMA 2

                                                      0.174E-01     0.601E 00     0.880E 00

C4I         CA          MG          SO4         HCO3        H+          CO3         C1

.0          0.322E-02   0.147E-02   0.243E-02   0.347E-02   0.631E-07   0.300E-05   0.557E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.447E-05   0.111E-05   0.593E-04   0.194E-04   0.242E-03   0.281E-05   0.169E-06   0.126E-07
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.977E 00   0.438E 00   0.113E 00   0.235E-04   0.918E-04   0.716E 01
```

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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 24 25 3410 1015. 3576.        679.          461.  679.               SL          DC        1850.       ALLYSON      0  0


          SAMPLE DATE 5 73
               SPECIES          CHARGE       MOLARITY        ORIGINAL UNITS
               --------         ------      ----------      --------------

               NA+                 1        0.1827E-02        0.4200E 02
               K+                  1        0.3836E-04        0.1500E 01
               CA++                2        0.5464E-02        0.2190E 03
               MG++                2        0.2674E-02        0.6500E 02
               H+                  1        0.3162E-07        0.7500E 01
               SO4--              -2        0.3040E-02        0.2920E 03
               CL-                -1        0.2821E-02        0.1000E 03
               HCO3-              -1        0.3900E-02        0.3900E-02
               BA                  0        0.0               0.0
               FE                  0        0.0               0.0
               CU                  0        0.0               0.0
               SR                  0        0.0               0.0
               PB                  0        0.0               0.0
               CR                  0        0.0               0.0
               ZN                  0        0.0               0.0
               HG                  0        0.0               0.0
               F                   0        0.0               0.0
               NO3                 0        0.0               0.0
               O2 SAM              0        0.0               0.0
               O2 CAL              0        0.0               0.0
               FILTER              0        0.0               0.0
               TEMP                0        0.2050E 02        0.2050E 02
               REF                 0        NMT               NMT
                                   0
               THE EXCESS SAMPLE CHARGE IS 0.5341E-02AND THE ANALYTICAL PERCENT ERROR IS  17.260483
               THE EXCESS CHARGE FOR NACL IS-0.9937E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.6296E-02
AK02        AK1        AK2          AK01         AK02         AK03         AK04         AK05         AK06         AK07         AK08         AK09

0.39E-01    0.37E-06   0.37E-10     0.51E-02     0.78E-03     0.14E-02     0.11E 00     0.16E 00     0.53E-02     0.19E 00     0.11E 00     0.54E-01
  AKC         AKD

 0.36E-08    0.13E-16


                                                      ION STRENGTH          GAMMA 1      GAMMA 2

                                                            0.226E-01        0.568E 00        0.868E 00

C4I          CA          MG          SO4          HCO3         H+           CCO3         C1

.0           0.473E-02   0.234E-02   0.210E-02    0.366E-02    0.316E-07    0.666E-05    0.635E-03

    C2           C3          C4          C5           C6           C7           C8           C9
 0.131E-04    0.352E-05   0.885E-04   0.311E-04    0.301E-03    0.371E-05    0.139E-06    0.427E-07

    CA SAT       DOLSAT      GYPSAT      PCO2         SCO2         SATPH
 0.285E 01    0.403E 01   0.128E 00   0.123E-04    0.827E-04    0.699E 01
```

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SAMPLE DATE 4 74
    SPECIES       CHARGE       MOLARITY        ORIGINAL UNITS
    --------      ------      ----------      --------------

    NA+              1        0.1131E-02        0.2600E 02
    K+               1        0.2557E-04        0.1000E 01
    CA++             2        0.2071E-02        0.8300E 02
    MG++             2        0.1522E-02        0.3700E 02
    H+               1        0.3981E-07        0.7400E 01
    SO4--           -2        0.2612E-02        0.2500E 03
    CL-             -1        0.1777E-02        0.6300E 02
    HCO3-           -1        0.3704E-02        0.2260E 03
    BA               0        0.2694E-06        0.3700E-01
    FE               0        0.1791E-08        0.1000E-03
    CU               0        0.4249E-07        0.2700E-02
    SR               0        0.1326E-04        0.1600E 01
    PB               0        0.0               0.0
    CR               0        0.0               0.0
    ZN               0        0.0               0.0
    HG               0        0.0               0.0
    F                0        0.0               0.0
    NO3              0        0.0               0.0
    O2 SAM           0        0.0               0.0
    O2 CAL           0        0.0               0.0
    FILTER           0        0.0               0.0
    TEMP             0        0.2020E 02        0.2020E 02
    REF              0        NMT               NMT
                     0
    THE EXCESS SAMPLE CHARGE IS-0.2344E-02AND THE ANALYTICAL PERCENT ERROR IS  12.317883

    THE EXCESS CHARGE FOR NACL IS-0.6461E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1723E-02
AKO2       AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9

0.39E-01   0.37E-06   0.37E-10   0.51E-02   0.78E-03   0.14E-02   0.11E 00   0.16E 00   0.53E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.36E-08   0.13E-16

                                             ION STRENGTH        GAMMA 1      GAMMA 2

                                                   0.136E-01     0.632E 00     0.892E 00
C4I         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.174E-02   0.130E-02   0.211E-02   0.361E-02   0.398E-07   0.477E-05   0.289E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.424E-05   0.172E-05   0.353E-04   0.187E-04   0.205E-03   0.256E-05   0.103E-06   0.211E-07

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.926E 00   0.645E 00   0.587E-01   0.154E-04   0.864E-04   0.738E 01
```

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           SAMPLE DATE 3 75
 A DISCREPANCY EXISTS FOR THE VALUE OF SM  9
             SPECIES        CHARGE        MOLARITY         ORIGINAL UNITS
             --------       ------       ----------        --------------

             NA+              1          0.1131E-02         0.2600E 02
             K+               1          0.3069E-04         0.1200E 01
             CA++             2          0.1322E-01         0.5300E 03
             MG++             2          0.1645E-02         0.4000E 02
             H+               1          0.6310E-07         0.7200E 01
             SO4--           -2          0.2707E-02         0.2600E 03
             CL-             -1          0.8744E-03         0.3100E 02
             HCO3-           -1          0.3769E-02         0.2300E 03
             BA               0          0.2184E-06         0.3000E-01
             FE               0          0.2149E-05         0.1200E 00
             CU               0          0.3935E-07         0.2500E-02
             SR               0          0.1826E-04         0.1600E 01
             PB               0          0.8205E-07         0.1700E-01
             CR               0          0.1154E-07         0.6000E-03
             ZN               0          0.0                0.0
             HG               0          0.0                0.0
             F                0          0.4527E-04         0.8600E 00
             NO3              0          0.6935E-04         0.4300E 01
             O2 SAM           0          0.1766E-03         0.5650E 01
             O2 CAL           0          0.3281E-03         0.1050E 02
             FILTER           0          0.0                0.0
             TEMP             0          0.2000E 02         0.2000E 02
             REF              0          NMT                NMT
                              0
             THE EXCESS SAMPLE CHARGE IS 0.2084E-01AND THE ANALYTICAL PERCENT ERROR IS  50.889099
 AK02        AK1 THE EXCESS CHARGE FOR NACL IS 0.2565E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2056E-01
                        AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
 0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
   AKC         AKD
 0.36E-08    0.13E-16


                                                   ION STRENGTH          GAMMA 1      GAMMA 2
                                                        0.331E-01        0.518E 00       0.849E 00
 C4I         CA          MG          SO4         HCO3         H+           CCO3         C1
 .0          0.120E-01   0.151E-02   0.158E-02   0.345E-02    0.631E-07    0.334E-05    0.101E-02
      C2          C3          C4          C5          C6          C7           C8           C9
 0.139E-04   0.941E-06   0.191E-03   0.171E-04   0.120E-03   0.158E-05    0.761E-07    0.121E-07
     CA SAT      DOLSAT      GYPSAT       PCO2        SCO2      SATPH
 0.300E 01   0.114E 01   0.204E 00   0.236E-04   0.921E-04    0.665E 01
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SAMPLE DATE 3 75
    SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
    --------       ------     ----------       --------------

    NA+               1       0.1131E-02         0.2600E 02
    K+                1       0.3069E-04         0.1200E 01
    CA++              2       0.2745E-02         0.1100E 03
    MG++              2       0.1645E-02         0.4000E 02
    H+                1       0.6310E-07         0.7200E 01
    SO4--            -2       0.2707E-02         0.2600E 03
    CL-              -1       0.3744E-03         0.3100E 02
    HCO3-            -1       0.3769E-02         0.2300E 03
    BA                0       0.2184E-06         0.3000E-01
    FE                0       0.1791E-05         0.1000E 00
    CU                0       0.3935E-07         0.2500E-02
    SR                0       0.1826E-04         0.1600E 01
    PB                0       0.8205E-07         0.1700E-01
    CR                0       0.1346E-07         0.7000E-03
    ZN                0       0.0                0.0
    HG                0       0.0                0.0
    F                 0       0.4527E 00         0.8600E 04
    NO3               0       0.6935E-04         0.4300E 01
    O2 SAM            0       0.1766E-03         0.5650E 01
    O2 CAL            0       0.3281E-03         0.1050E 02
    FILTER            0       0.0                0.0
    TEMP              0       0.2000E 02         0.2000E 02
    REF               0       NMT                NMT
                      0
    THE EXCESS SAMPLE CHARGE IS-0.1158E-03AND THE ANALYTICAL PERCENT ERROR IS   0.578820

    THE EXCESS CHARGE FOR NACL IS 0.2565E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.4030E-03
AKO2      AK1       AK2       AKO1      AKO2      AKO3      AKO4      AKO5      AKO6      AKO7      AKO8      AKO9

0.40E-01  0.37E-06  0.37E-10  0.51E-02  0.78E-03  0.14E-02  0.11E 00  0.16E 00  0.53E-02  0.19E 00  0.11E 00  0.54E-01
  AKC       AKD

 0.36E-08  0.13E-16

                                          ION STRENGTH          GAMMA 1      GAMMA 2

                                                0.146E-01     0.623E 00      0.889E 00

C4I         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.232E-02   0.141E-02   0.211E-02   0.367E-02   0.631E-07   0.308E-05   0.375E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.353E-05   0.117E-05   0.469E-04   0.203E-04   0.216E-03   0.253E-05   0.122E-06   0.134E-07
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.772E 00   0.364E 00   0.763E-01   0.251E-04   0.977E-04   0.726E 01
```

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SAMPLE DATE 5 75
    SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
    --------       ------     ----------      --------------

    NA+               1       0.1087E-02       0.2500E 02
    K+                1       0.3683E-04       0.1440E 01
    CA++              2       0.3244E-02       0.1300E 03
    MG++              2       0.1481E-02       0.3600E 02
    H+                1       0.1000E-06       0.7000E 01
    SO4--            -2       0.2509E-02       0.2410E 03
    CL-              -1       0.1213E-02       0.4300E 02
    HCO3-            -1       0.3802E-02       0.2320E 03
    BA                0       0.2194E-06       0.3000E-01
    FE                0       0.2059E-04       0.1150E 01
    CU                0       0.0              0.0
    SR                0       0.1347E-04       0.1180E 01
    PB                0       0.3137E-07       0.6500E-02
    CR                0       0.2116E-07       0.1100E-02
    ZN                0       0.5201E-07       0.3400E-02
    HG                0       0.0              0.0
    F                 0       0.2632E-04       0.5000E 00
    NO3               0       0.1231E-03       0.7630E 01
    O2 SAM            0       0.1969E-03       0.6300E 01
    O2 CAL            0       0.2562E-03       0.8200E 01
    FILTER            0       0.0              0.0
    TEMP              0       0.2090E 02       0.2090E 02
    REF               0       NMT              NMT
                      0
    THE EXCESS SAMPLE CHARGE IS 0.5402E-03AND THE ANALYTICAL PERCENT ERROR IS   2.621630
    THE EXCESS CHARGE FOR NACL IS-0.1254E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.6287E-03
AK02       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09
0.39E-01   0.37E-06   0.38E-10   0.50E-02   0.77E-03   0.14E-02   0.11E 00   0.16E 00   0.52E-02   0.19E 00   0.11E 00   0.54E-01
 AKC        AKD
 0.35E-08   0.12E-16


                                                ION STRENGTH          GAMMA 1     GAMMA 2
                                                       0.150E-01       0.620E 00     0.887E 00
C4T        CA         MG         SO4        HCO3       H+         CCO3       C1
.0         0.278E-02  0.128E-02  0.192E-02  0.370E-02  0.100E-06  0.201E-05  0.406E-03

    C2         C3         C4         C5         C6         C7         C8         C9
0.277E-05  0.694E-06  0.578E-04  0.189E-04  0.181E-03  0.220E-05  0.133E-06  0.836E-08
  CA SAT     DOLSAT     GYPSAT     PCO2       SCO2       SATPH
0.603E 00  0.172E 00  0.819E-01  0.385E-04  0.110E-03  0.717E 01
```

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SAMPLE DATE 7 75
    SPECIES       CHARGE      MOLARITY       ORIGINAL UNITS
    --------      ------     ----------      --------------

    NA+             1        0.1161E-02       0.2670E 02
    K+              1        0.2046E-04       0.8000E 00
    CA++            2        0.2495E-02       0.1000E 03
    MG++            2        0.1542E-02       0.3750E 02
    H+              1        0.6310E-07       0.7290E 01
    SO4--          -2        0.1957E-02       0.1380E 03
    CL-            -1        0.1142E-02       0.4050E 02
    HCO3-          -1        0.3671E-02       0.2240E 03
    BA              0        0.2184E-06       0.3000E-01
    FE              0        0.2507E-06       0.1400E-01
    CU              0        0.0              0.0
    SR              0        0.2054E-04       0.1800E 01
    PB              0        0.4826E-07       0.1000E-01
    CR              0        0.0              0.0
    ZN              0        0.0              0.0
    HG              0        0.0              0.0
    F               0        0.4369E 00       0.8300E 04
    NO3             0        0.1519E-03       0.9420E 01
    O2 SAM          0        0.2062E-03       0.6600E 01
    O2 CAL          0        0.2219E-03       0.7100E 01
    FILTER          0        0.0              0.0
    TEMP            0        0.2080E 02       0.2080E 02
    REF             0        NMT              NMT
                    0
    THE EXCESS SAMPLE CHARGE IS 0.5292E-03AND THE ANALYTICAL PERCENT ERROR IS   2.942608

    THE EXCESS CHARGE FOR NACL IS 0.1903E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.4897E-03
AKC2        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.39E-01    0.37E-06    0.38E-10    0.50E-02    0.77E-03    0.14E-02    0.11E 00    0.16E 00    0.52E-02    0.19E 00    0.11E 00    0.54E-01
  AKC          AKD

 0.36E-08     0.12E-16


                                                ION STRENGTH         GAMMA 1      GAMMA 2

                                                       0.131E-01      0.636E 00       0.893E 00

C4T         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.218E-02   0.136E-02   0.153E-02   0.357E-02   0.631E-07   0.300E-05   0.267E-03

     C2          C3          C4          C5          C6          C7          C8          C9
 0.343E-05   0.116E-05   0.449E-04   0.199E-04   0.161E-03   0.192E-05   0.602E-07   0.137E-07

    CA SAT      DOLSAT      GYPSAT       PCO2        SCO2       SATPH
 0.746E 00   0.355E 00   0.539E-01   0.236E-04   0.928E-04   0.728E 01
```

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SAMPLE DATE 7 76
    SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
    --------       ------     ----------       --------------

    NA+               1       0.1305E-02        0.3000E 02
    K+                1       0.2557E-04        0.1000E 01
    CA++              2       0.3743E-02        0.1500E 03
    MG++              2       0.1686E-03        0.4100E 01
    H+                1       0.1585E-07        0.7800E 01
    SO4--            -2       0.3852E-02        0.3700E 03
    CL-              -1       0.1283E-02        0.4550E 02
    HCO3-            -1       0.3600E-02        0.3600E-02
    BA                0       0.0               0.0
    FE                0       0.0               0.0
    CU                0       0.0               0.0
    SR                0       0.0               0.0
    PB                0       0.0               0.0
    CR                0       0.0               0.0
    ZN                0       0.0               0.0
    HG                0       0.0               0.0
    F                 0       0.0               0.0
    NO3               0       0.0               0.0
    O2 SAM            0       0.2031E-03        0.6500E 01
    O2 CAL            0       0.2281E-03        0.7300E 01
    FILTER            0       0.0               0.0
    TEMP              0       0.2100E 02        0.2100E 02
    REF               0       NMT               NMT
                      0
    THE EXCESS SAMPLE CHARGE IS-0.3434E-02AND THE ANALYTICAL PERCENT ERROR IS  15.795844

    THE EXCESS CHARGE FOR NACL IS 0.2154E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3481E-02
AKO2       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.38E-01   0.37E-06   0.38E-10   0.50E-02   0.77E-03   0.14E-02   0.11E 00   0.15E 00   0.52E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.35E-08   0.12E-16

                                                ION STRENGTH        GAMMA 1     GAMMA 2

                                                      0.155E-01     0.616E 00      0.886E 00

C4I         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.297E-02   0.136E-03   0.312E-02   0.341E-02.  0.158E-07   0.118E-04   0.698E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.173E-04   0.429E-06   0.571E-04   0.184E-05   0.308E-04   0.426E-05   0.149E-06   0.585E-07

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.375E 01   0.658E 00   0.141E 00   0.560E-05   0.712E-04   0.718E 01
```

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LOCATION     RA     ELEVATION      DEPTH      PRODUCTION INTERVAL      FORMATION.  TYPE     YIELD     OWNER      DATE DRILLED

11 24 26 2240 1312. 3577.          592.          446.  592.              SL        DC        1800.       ALLISON      0  0


         SAMPLE DATE 5 73
             SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
             --------       ------     ----------       --------------

             NA+              1        0.1783E-02        0.4100E 02
             K+               1        0.6649E-04        0.2600E 01
             CA++             2        0.4192E-02        0.1680E 03
             MG++             2        0.2833E-02        0.6900E 02
             H+               1        0.3981E-07        0.7400E 01
             SO4--           -2        0.3768E-02        0.3620E 03
             CL-             -1        0.2115E-02        0.7500E 02
             HCO3-           -1        0.3800E-02        0.3800E-02
             BA               0        0.2112E-06        0.2900E-01
             FE               0        0.1791E-08        0.1000E-03
             CU               0        0.0               0.0
             SP               0        0.1940E-04        0.1700E 01
             PB               0        0.0               0.0
             CR               0        0.0               0.0
             ZN               0        0.0               0.0
             HG               0        0.0               0.0
             F                0        0.0               0.0
             NO3              0        0.0               0.0
             O2 SAM           0        0.0               0.0
             O2 CAL           0        0.0               0.0
             FILTER           0        0.0               0.0
             TEMP             0        0.2070E 02        0.2070E 02
             REF              0        NMT               NMT
                              0
             THE EXCESS SAMPLE CHARGE IS 0.2457E-02AND THE ANALYTICAL PERCENT ERROR IS   8.368259

             THE EXCESS CHARGE FOR NACL IS-0.3321E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2723E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.39E-01    0.37E-06    0.38E-10    0.50E-02    0.77E-03    0.14E-02    0.11E 00    0.16E 00    0.52E-02    0.19E 00    0.11E 00    0.54E-01
   AKC         AKD
 0.36E-08    0.12E-16

                                                ION STRENGTH        GAMMA 1     GAMMA 2

                                                     0.211E-01      0.577E 00     0.872E 00
C41         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.349E-02   0.239E-02   0.272E-02   0.362E-02   0.398E-07   0.519E-05   0.627E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.780E-05   0.290E-05   0.660E-04   0.321E-04   0.413E-03   0.477E-05   0.316E-06   0.330E-07
   CA SAT     DOL SAT      GYPSAT       PCO2        SCO2        SATPH
 0.170E 01   0.201E 01   0.127E 00   0.152E-04   0.855E-04   0.711E 01
```

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SAMPLE DATE 3 75
    SPECIES          CHARGE      MOLARITY         ORIGINAL UNITS
    --------         ------      ----------       --------------

    NA+                1         0.1240E-02         0.2850E 02
    K+                 1         0.3069E-04         0.1200E 01
    CA++               2         0.2794E-02         0.1120E 03
    MG++               2         0.1686E-02         0.4100E 02
    H+                 1         0.1000E-06         0.7000E 01
    SO4--             -2         0.3435E-02         0.3300E 03
    CL-               -1         0.9308E-03         0.3300E 02
    HCO3-             -1         0.3524E-02         0.2150E 03
    BA                 0         0.2184E-06         0.3000E-01
    FE                 0         0.1576E-05         0.8800E-01
    CU                 0         0.3935E-07         0.2500E-02
    SR                 0         0.2054E-04         0.1800E 01
    PB                 0         0.9170E-07         0.1900E-01
    CR                 0         0.1346E-07         0.7000E-03
    ZN                 0         0.0                0.0
    HG                 0         0.0                0.0
    F                  0         0.4211E 00         0.8000E 04
    NO3                0         0.9032E-04         0.5600E 01
    O2 SAM             0         0.1781E-03         0.5700E 01
    O2 CAL             0         0.3281E-03         0.1050E 02
    FILTER             0         0.0                0.0
    TEMP               0         0.2050E 02         0.2050E 02
    REF                0         NMT                NMT
                       0
    THE EXCESS SAMPLE CHARGE IS-0.1093E-02AND THE ANALYTICAL PERCENT ERROR IS    5.069732

    THE EXCESS CHARGE FOR NACL IS 0.3089E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1433E-02
AKO2        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.39E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD

 0.36E-08    0.13E-16


                                                  ION STRENGTH          GAMMA 1     GAMMA 2

                                                        0.156E-01       0.615E 00     0.885E 00
C4I          CA           MG           SO4          HCO3         H+           CCO3         C1

.0           0.229E-02    0.140E-02    0.270E-02    0.344E-02    0.100E-06    0.186E-05    0.462E-03

    C2           C3           C4           C5           C6           C7           C8           C9
 0.207E-05    0.686E-06    0.434E-04    0.188E-04    0.270E-03    0.350E-05    0.154E-06    0.876E-08

   CA SAT       DOLSAT       GYPSAT       PCO2         SCO2        SATPH
 0.451E 00    0.126E 00    0.935E-01    0.365E-04    0.104E-03    0.729E 01
```

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SAMPLE DATE 7 75
    SPECIES        CHARGE       MOLARITY        ORIGINAL UNITS
    --------       ------      ----------      --------------

    NA+               1        0.2088E-02        0.4800E 02
    K+                1        0.3325E-04        0.1300E 01
    CA++              2        0.3253E-02        0.1304E 03
    MG++              2        0.1900E-02        0.4620E 02
    H+                1        0.6761E-07        0.7170E 01
    SO4--            -2        0.2207E-02        0.2120E 03
    CL-              -1        0.1156E-02        0.4100E 02
    HCO3-            -1        0.3753E-02        0.2290E 03
    BA                0        0.1347E-06        0.1850E-01
    FE                0        0.2149E-06        0.1200E-01
    CU                0        0.0               0.0
    SR                0        0.1997E-04        0.1750E 01
    PB                0        0.3137E-07        0.6500E-02
    CR                0        0.0               0.0
    ZN                0        0.1989E-06        0.1300E-01
    HG                0        0.0               0.0
    F                 0        0.4264E 00        0.8100E 04
    NO3               0        0.1610E-03        0.9980E 01
    O2 SAM            0        0.1906E-03        0.6100E 01
    O2 CAL            0        0.2219E-03        0.7100E 01
    FILTER            0        0.0               0.0
    TEMP              0        0.2080E 02        0.2080E 02
    REF               0        NMT               NMT
                      0
    THE EXCESS SAMPLE CHARGE IS 0.3105E-02AND THE ANALYTICAL PERCENT ERROR IS  14.276510

    THE EXCESS CHARGE FOR NACL IS 0.9314E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2141E-02
AK02         AKI        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09
0.39E-01   0.37E-06   0.38E-10   0.50E-02   0.77E-03   0.14E-02   0.11E 00   0.16E 00   0.52E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.36E-08   0.12E-16


                                             ION STRENGTH          GAMMA 1      GAMMA 2

                                                   0.158E-01      0.613E 00     0.885E 00
C4I          CA          MG          SO4         HCO3        H+          CCO3         C1

.0         0.284E-02   0.168E-02   0.165E-02   0.363E-02   0.676E-07   0.293E-05   0.350E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.405E-05   0.130E-05   0.573E-04   0.240E-04   0.199E-03   0.360E-05   0.102E-06   0.232E-07
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2       SATPH
 0.881E 00   0.468E 00   0.707E-01   0.257E-04   0.960E-04   0.717E 01
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LOCATION     PA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 25 15 3330    61. 3475.         780.          613.  780.              SL          DC         2000.     OASIS        0  0


        SAMPLE DATE 5 73
            SPECIES          CHARGE       MOLARITY         ORIGINAL UNITS
            --------         ------      ----------       --------------

            NA +               1         0.1870E-01          0.4300E 03
            K +                1         0.5115E-04          0.2000E 01
            CA++               2         0.5439E-02          0.2180E 03
            MG++               2         0.3496E-02          0.8500E 02
            H+                 1         0.5012E-07          0.7300E 01
            SO4--             -2         0.5226E-02          0.5020E 03
            CL-               -1         0.9872E-02          0.3500E 03
            HCO3-             -1         0.3400E-02          0.3400E-02
            BA                 0         0.2257E-06          0.3100E-01
            FE                 0         0.1791E-08          0.1000E-03
            CU                 0         0.0                 0.0
            SR                 0         0.2967E-04          0.2600E 01
            PB                 0         0.0                 0.0
            CR                 0         0.0                 0.0
            ZN                 0         0.0                 0.0
            HG                 0         0.0                 0.0
            F                  0         0.0                 0.0
            NO3                0         0.0                 0.0
            O2 SAM             0         0.0                 0.0
            O2 CAL             0         0.0                 0.0
            FILTER             0         0.0                 0.0
            TEMP               0         0.2050E 02          0.2050E 02
            REF                0         NMT                 NMT
                               0
            THE EXCESS SAMPLE CHARGE IS 0.1290E-01AND THE ANALYTICAL PERCENT ERROR IS  21.378662

            THE EXCESS CHARGE FOR NACL IS 0.8832E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.4019E-02
AKO2        AK1        AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.39E-01    0.37E-06   0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.36E-08   0.13E-16

                                               ION STRENGTH         GAMMA 1      GAMMA 2

                                                     0.385E-01      0.498E 00      0.840E 00

C4I          CA           MG          SO4          HCO3         H+          CCO3         C1

.0         0.452E-02    0.294E-02   0.380E-02    0.324E-02    0.501E-07    0.410E-05    0.844E-03

    C2           C3           C4           C5           C6           C7           C8           C9
 0.593E-05    0.210E-05    0.657E-04    0.303E-04    0.526E-03    0.601E-04    0.293E-06    0.236E-06
    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.129E 01    0.110E 01    0.171E 00    0.172E-04    0.806E-04    0.711E 01
```

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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 25 15 3330   61. 3475.          730.          613.  780.          SL          DC          2000.     OASIS          0  0


SAMPLE DATE 3 74
      SPECIES          CHARGE        MOLARITY          ORIGINAL UNITS
      -------          ------        ----------        -------------

      NA+                 1          0.9569E-02          0.2200E 03
      K+                  1          0.5371E-04          0.2100E 01
      CA++                2          0.3668E-02          0.1470E 03
      MG++                2          0.2303E-02          0.5600E 02
      H+                  1          0.1000E-01          0.0
      SO4--              -2          0.4268E-02          0.4100E 03
      CL-                -1          0.1142E-01          0.4050E 03
      HCO3-              -1          0.0                 0.0
      BA                  0          0.2039E-06          0.2800E-01
      FE                  0          0.1791E-08          0.1000E-03
      CU                  0          0.4721E-07          0.3000E-02
      SR                  0          0.3424E-04          0.3000E 01
      PB                  0          0.0                 0.0
      CR                  0          0.0                 0.0
      ZN                  0          0.0                 0.0
      HG                  0          0.0                 0.0
      F                   0          0.0                 0.0
      NO3                 0          0.0                 0.0
      O2 SAM              0          0.0                 0.0
      O2 CAL              0          0.0                 0.0
      FILTER              0          0.0                 0.0
      TEMP                0          0.1730E 02          0.1730E 02
      REF                 0          NMT                 NMT
                          0
      THE EXCESS SAMPLE CHARGE IS 0.1002E 01AND THE ANALYTICAL PERCENT ERROR IS  96.167252

      THE EXCESS CHARGE FOR NACL IS 0.8832E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.4019E-02
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SAMPLE DATE11 74
    SPECIES         CHARGE      MOLARITY         ORIGINAL UNITS
    --------        ------     -----------       --------------

    NA+               1        0.1066E-01          0.2450E 03
    K+                1        0.4859E-04          0.1900E 01
    CA++              2        0.5489E-02          0.2200E 03
    MG++              2        0.2632E-02          0.6400E 02
    H+                1        0.1000E-06          0.7000E 01
    SO4--            -2        0.5830E-02          0.5600E 03
    CL-              -1        0.1059E-01          0.3750E 03
    HCO3-            -1        0.3360E-02          0.2050E 03
    BA                0        0.3204E-06          0.4400E-01
    FE                0        0.1074E-04          0.6000E 00
    CU                0        0.0                 0.0
    SR                0        0.3196E-04          0.2800E 01
    PB                0        0.1351E-06          0.2800E-01
    CR                0        0.4039E-07          0.2100E-02
    ZN                0        0.0                 0.0
    HG                0        0.0                 0.0
    F                 0        0.4000E 00          0.7600E 04
    NO3               0        0.0                 0.0
    O2 SAM            0        0.0                 0.0
    O2 CAL            0        0.0                 0.0
    FILTER            0        0.0                 0.0
    TEMP              0        0.2000E 02          0.2000E 02
    REF               0        NMT                 NMT
                      0
    THE EXCESS SAMPLE CHARGE IS 0.1352E-02AND THE ANALYTICAL PERCENT ERROR IS    2.573493

    THE EXCESS CHARGE FOR NACL IS 0.7951E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1224E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08    0.13E-16

                                                        ION STRENGTH        GAMMA 1     GAMMA 2

                                                              0.341E-01    0.514E 00    0.847E 00

C4T          CA          MG          SO4         HCO3        H+          CO3         C1

.0           0.442E-02   0.215E-02   0.433E-02   0.324E-02   0.100E-06   0.198E-05   0.998E-03

   C2          C3          C4          C5          C6          C7          C8          C9
0.295E-05   0.782E-06   0.652E-04   0.226E-04   0.461E-03   0.404E-04   0.328E-06   0.672E-07

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.646E 00   0.204E 00   0.203E 00   0.351E-04   0.994E-04   0.712E 01
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LOCATION      RA     ELEVATION      DEPTH     PRODUCTION INTERVAL      FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 25 15 3330   61. 3475.         780.           613.  780.              SL          DC        2000.      OASIS        0  0


      SAMPLE DATE11  74
           SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
           --------       ------     ----------       --------------

           NA+              1        0.1066E-01        0.2450E 03
           K+               1        0.4859E-04        0.1900E 01
           CA++             2        0.5739E-02        0.2300E 03
           MG++             2        0.2468E-02        0.6000E 02
           H+               1        0.1000E-06        0.7000E 01
           SO4--           -2        0.5413E-02        0.5200E 03
           CL-             -1        0.1058E-01        0.3750E 03
           HCO3-           -1        0.0               0.0
           BA               0        0.1747E-06        0.2400E-01
           FE               0        0.1791E-05        0.1000E 00
           CU               0        0.0               0.0
           SR               0        0.3081E-04        0.2700E 01
           PB               0        0.1544E-06        0.3200E-01
           CR               0        0.6924E-07        0.3600E-02
           ZN               0        0.0               0.0
           HG               0        0.0               0.0
           F                0        0.3948E 00        0.7500E 04
           NO3              0        0.0               0.0
           O2 SAM           0        0.0               0.0
           O2 CAL           0        0.0               0.0
           FILTER           0        0.4500E 00        0.4500E 00
           TEMP             0        0.2000E 02        0.2000E 02
           REF              0        NMT               NMT
                            0
           THE EXCESS SAMPLE CHARGE IS 0.5715E-02AND THE ANALYTICAL PERCENT ERROR IS  11.777466

           THE EXCESS CHARGE FOR NACL IS 0.7951E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1224E-02
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 25 15 3330   61. 3475.        780.          613.  780.            SL         DC        2000.     OASIS        0  0


      SAMPLE DATE11 74
         SPECIES         CHARGE       MOLARITY         ORIGINAL UNITS
         --------        ------      -----------       --------------

         NA+                1        0.9569E-02          0.2200E 03
         K+                 1        0.5115E-04          0.2000E 01
         CA++               2        0.5364E-02          0.2150E 03
         MG++               2        0.2550E-02          0.6200E 02
         H+                 1        0.1000E-06          0.7000E 01
         SO4--             -2        0.5517E-02          0.5300E 03
         CL-               -1        0.1096E-01          0.3850E 03
         HCO3-             -1        0.0                 0.0
         BA                 0        0.1747E-06          0.2400E-01
         FE                 0        0.1791E-05          0.1000E 00
         CU                 0        0.0                 0.0
         SR                 0        0.3081E-04          0.2700E 01
         PB                 0        0.1255E-06          0.2600E-01
         CR                 0        0.6347E-07          0.3300E-02
         ZN                 0        0.0                 0.0
         HG                 0        0.0                 0.0
         F                  0        0.4106E 00          0.7800E 04
         NO3                0        0.0                 0.0
         O2 SAM             0        0.0                 0.0
         O2 CAL             0        0.0                 0.0
         FILTER             0        0.2000E 00          0.2000E 00
         TEMP               0        0.2000E 02          0.2000E 02
         REF                0        NMT                 NMT
                            0
         THE EXCESS SAMPLE CHARGE IS 0.3556E-02AND THE ANALYTICAL PERCENT ERROR IS   7.510138

         THE EXCESS CHARGE FOR NACL IS 0.7951E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1224E-02
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              SAMPLE DATE 5 75
                  SPECIES        CHARGE     MOLARITY       ORIGINAL UNITS
                  --------       ------    -----------     --------------

                  NA+                 1    0.8700E-02        0.2000E 03
                  K+                  1    0.4092E-04        0.1600E 01
                  CA++                2    0.4865E-02        0.1950E 03
                  MG++                2    0.2460E-02        0.5980E 02
                  H+                  1    0.1595E-06        0.6800E 01
                  SO4--              -2    0.4299E-02        0.4120E 03
                  CL-                -1    0.8744E-02        0.3100E 03
                  HCO3-              -1    0.3491E-02        0.2130E 03
                  BA                  0    0.1747E-06        0.2400E-01
                  FE                  0    0.1432E-03        0.8000E 01
                  CU                  0    0.3620E-07        0.2300E-02
                  SR                  0    0.2990E-04        0.2620E 01
                  PB                  0    0.2220E-06        0.4600E-01
                  CR                  0    0.2116E-07        0.1100E-02
                  ZN                  0    0.4589E-07        0.3000E-02
                  HG                  0    0.0               0.0
                  F                   0    0.3685E-04        0.7000E 00
                  NO3                 0    0.3355E-03        0.2080E 02
                  O2 SAM              0    0.1937E-03        0.6200E 01
                  O2 CAL              0    0.2594E-03        0.8300E 01
                  FILTER              0    0.0               0.0
                  TEMP                0    0.2050E 02        0.2050E 02
                  REF                 0    NMT               NMT
                                      0
                  THE EXCESS SAMPLE CHARGE IS 0.2578E-02AND THE ANALYTICAL PERCENT ERROR IS    5.831917

                  THE EXCESS CHARGE FOR NACL IS-0.4447E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2581E-02
AK02          AK1          AK2          AK01          AK02          AK03          AK04          AK05          AK06          AK07          AK08          AK09

0.39E-01      0.37E-06     0.37E-10     0.51E-02      0.78E-03      0.14E-02      0.11E 00      0.16E 00      0.53E-02      0.19E 00      0.11E 00      0.54E-01
  AKC           AKD

 0.36E-08     0.13E-16


                                                             ION STRENGTH          GAMMA 1     GAMMA 2

                                                                      0.291E-01     0.535E 00       0.855E 00

C4I           CA           MG           SO4          HCO3         H+           CCO3          C1

.0            0.407E-02    0.208E-02    0.317E-02    0.338E-02    0.158E-06    0.128E-05     0.731E-03

     C2            C3            C4            C5            C6            C7            C8            C9
 0.192E-05     0.532E-06     0.660E-04     0.240E-04     0.358E-03     0.251E-04     0.210E-06     0.368E-07
     CA SAT        DOLSAT        GYPSAT        PCO2          SCO2          SATPH
 0.418E 00     0.906E-01     0.148E 00     0.568E-04     0.123E-03      0.711E 01
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LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION     TYPE    YIELD    OWNER     DATE DRILLED

11 25 15 3430 1102. 3475.        843.          643.  843.              SL          DC       2500.      CLARDY       2 31

                                              CLARDY EAST

           SAMPLE DATE 5 73
                SPECIES       CHARGE      MOLARITY          ORIGINAL UNITS
                --------      ------     ----------        --------------

                NA+              1        0.1392E-01          0.3200E 03
                K+               1        0.4603E-04          0.1800E 01
                CA++             2        0.5165E-02          0.2070E 03
                MG++             2        0.3792E-02          0.9000E 02
                H+               1        0.6310E-07          0.7200E 01
                SO4--           -2        0.5330E-02          0.5120E 03
                CL-             -1        0.1058E-01          0.3750E 03
                HCO3-           -1        0.3700E-02          0.3700E-02
                BA               0        0.2403E-06          0.3300E-01
                FE               0        0.8953E-06          0.5000E-01
                CU               0        0.0                 0.0
                SR               0        0.2853E-04          0.2500E 01
                PB               0        0.0                 0.0
                CR               0        0.0                 0.0
                ZN               0        0.0                 0.0
                HG               0        0.0                 0.0
                F                0        0.0                 0.0
                NO3              0        0.0                 0.0
                O2 SAM           0        0.0                 0.0
                O2 CAL           0        0.0                 0.0
                FILTER           0        0.0                 0.0
                TEMP             0        0.2055E 02          0.2055E 02
                REF              0        NMT                 NMT
                                 0
                THE EXCESS SAMPLE CHARGE IS 0.6761E-02AND THE ANALYTICAL PERCENT ERROR IS  11.938041

                THE EXCESS CHARGE FOR NACL IS 0.3342E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.3373E-02
AKO2         AK1          AK2          AKO1         AKO2         AKO3         AKO4         AKO5         AKO6         AKO7         AKO8         AKO9

0.39E-01     0.37E-06     0.38E-10     0.50E-02     0.78E-03     0.14E-02     0.11E 00     0.16E 00     0.53E-02     0.19E 00     0.11E 00     0.54E-01
 AKC          AKD

 0.36E-08     0.12E-16

                                                    ION STRENGTH          GAMMA 1      GAMMA 2

                                                          0.365E-01       0.505E 00      0.843E 00
C4I          CA           MG           SO4          HCO3         H+           CCO3         C1

.0           0.426E-02    0.309E-02    0.387E-02    0.354E-02    0.631E-07    0.352E-05    0.833E-03

    C2           C3           C4           C5           C6           C7           C8           C9
0.494E-05    0.195E-05    0.686E-04    0.353E-04    0.579E-03    0.463E-04    0.273E-06    0.153E-06

   CA SAT       DOLSAT       GYPSAT       PCO2         SCO2        SATPH
0.108E 01    0.853E 00    0.169E 00    0.236E-04    0.928E-04    0.710E 01
```

```
SAMPLE DATE 3 74
     SPECIES       CHARGE      MOLARITY       ORIGINAL UNITS
     --------      ------     ----------      --------------

     NA+              1       0.1087E-01        0.2500E 03
     K+               1       0.5882E-04        0.2300E 01
     CA++             2       0.3318E-02        0.1330E 03
     MG++             2       0.2468E-02        0.6000E 02
     H+               1       0.7943E-07        0.7100E 01
     SO4--           -2       0.5830E-02        0.5600E 03
     CL-             -1       0.1340E-01        0.4750E 03
     HCO3-           -1       0.3474E-02        0.2120E 03
     BA               0       0.2039E-06        0.2800E-01
     FE               0       0.1791E-08        0.1000E-03
     CU               0       0.1889E-06        0.1200E-01
     SR               0       0.3081E-04        0.2700E 01
     PB               0       0.0               0.0
     CR               0       0.0               0.0
     ZN               0       0.0               0.0
     HG               0       0.0               0.0
     F                0       0.0               0.0
     NO3              0       0.0               0.0
     O2 SAM           0       0.0               0.0
     O2 CAL           0       0.0               0.0
     FILTER           0       0.0               0.0
     TEMP             0       0.2000E 02        0.2000E 02
     REF              0       NMT               NMT
                      0
     THE EXCESS SAMPLE CHARGE IS-0.6026E-02AND THE ANALYTICAL PERCENT ERROR IS  11.806589

     THE EXCESS CHARGE FOR NACL IS-0.2524E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3561E-02
AKO2      AK1       AK2       AKO1      AKO2      AKO3      AKO4      AKO5      AKO6      AKO7      AKO8      AKO9

0.40E-01  0.37E-06  0.37E-10  0.51E-02  0.78E-03  0.14E-02  0.11E 00  0.16E 00  0.53E-02  0.19E 00  0.11E 00  0.54E-01
  AKC       AKD

 0.36E-08  0.13E-16

                                              ION STRENGTH       GAMMA 1     GAMMA 2

                                                  0.324E-01     0.521E 00     0.850E 00
C4I        CA        MG         SO4        HCO3       H+         CO03       C1

.0         0.262E-02  0.198E-02  0.466E-02  0.339E-02  0.794E-07  0.258E-05  0.654E-03

    C2         C3         C4         C5         C6         C7         C8         C9
 0.234E-05  0.961E-06  0.409E-04  0.220E-04  0.469E-03  0.449E-04  0.433E-06  0.904E-07

   CA SAT     DOLSAT     GYPSAT      PCO2       SCO2      SATPH
 0.512E 00  0.198E 00  0.133E 00  0.291E-04  0.962E-04  0.732E 01
```

```
SAMPLE DATE11 74
     SPECIES         CHARGE       MOLARITY          ORIGINAL UNITS
     --------        ------      ----------         --------------

     NA+                 1       0.1000E-01          0.2300E 03
     K+                  1       0.4859E-04          0.1900E 01
     CA++                2       0.4990E-02          0.2000E 03
     MG++                2       0.2551E-02          0.6200E 02
     H+                  1       0.1259E-06          0.6900E 01
     SO4--              -2       0.5830E-02          0.5600E 03
     CL-                -1       0.9590E-02          0.3400E 03
     HCO3-              -1       0.3409E-02          0.2080E 03
     BA                  0       0.2039E-06          0.2800E-01
     FE                  0       0.3760E-05          0.2100E 00
     CU                  0       0.0                 0.0
     SR                  0       0.3081E-04          0.2700E 01
     PB                  0       0.1400E-06          0.2900E-01
     CR                  0       0.4231E-07          0.2200E-02
     ZN                  0       0.0                 0.0
     HG                  0       0.0                 0.0
     F                   0       0.3895E 00          0.7400E 04
     NO3                 0       0.0                 0.0
     O2 SAM              0       0.0                 0.0
     O2 CAL              0       0.0                 0.0
     FILTER              0       0.0                 0.0
     TEMP                0       0.2000E 02          0.2000E 02
     REF                 0       NMT                 NMT
                         0
     THE EXCESS SAMPLE CHARGE IS 0.4753E-03AND THE ANALYTICAL PERCENT ERROR IS   0.954627

     THE EXCESS CHARGE FOR NACL IS 0.4143E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1234E-04
AKC2        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-02    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08   0.13E-16

                                              ION STRENGTH        GAMMA 1     GAMMA 2

                                                   0.324E-01      0.521E 00     0.850E 00

C4T          CA          MG          SO4         HCO3        H+          CO03        C1

.0           0.399E-02   0.207E-02   0.439E-02   0.330E-02   0.126E-06   0.159E-05   0.937E-03

    C2          C3          C4          C5          C6          C7          C8          C9
0.219E-05   0.613E-06   0.607E-04   0.224E-04   0.451E-03   0.389E-04   0.337E-06   0.512E-07
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.479E 00   0.120E 00   0.191E 00   0.451E-04   0.111E-03   0.715E 01
```

```
LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 25 15 3430 1102. 3475.        843.         643.  843.             SL          DC       2500.      CLARDY       2 31

                                             CLARDY EAST

          SAMPLE DATE11 74
               SPECIES       CHARGE       MOLARITY        ORIGINAL UNITS
               --------      ------      ----------       -------------

               NA+              1        0.9569E-02        0.2200E 03
               K+               1        0.4603E-04        0.1200E 01
               CA++             2        0.5489E-02        0.2200E 03
               MG++             2        0.2427E-02        0.5900E 02
               H+               1        0.1259E-06        0.6900E 01
               SO4--           -2        0.5309E-02        0.5100E 03
               CL-             -1        0.9731E-02        0.3450E 03
               HCO3-           -1        0.0               0.0
               BA               0        0.1747E-06        0.2400E-01
               FE               0        0.8953E-06        0.5000E-01
               CU               0        0.0               0.0
               SR               0        0.2967E-04        0.2600E 01
               PB               0        0.1062E-06        0.2200E-01
               CR               0        0.4423E-07        0.2300E-02
               ZN               0        0.0               0.0
               HG               0        0.0               0.0
               F                0        0.3579E 00        0.6800E 04
               NO3              0        0.0               0.0
               O2 SAM           0        0.0               0.0
               O2 CAL           0        0.0               0.0
               FILTER           0        0.4500E 00        0.4500E 00
               TEMP             0        0.2000E 02        0.2000E 02
               REF              0        NMT               NMT
                                0
               THE EXCESS SAMPLE CHARGE IS 0.5098E-02AND THE ANALYTICAL PERCENT ERROR IS  11.131501
               THE EXCESS CHARGE FOR NACL IS 0.4143E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1234E-04
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 25 15 3430 1102. 3475.         843.          643.  843.              SL          DC        2500.      CLARDY       2 31

                                       CLARDY FAST

        SAMPLE CATE11 74
            SPECIES       CHARGE      MOLARITY        ORIGINAL UNITS
            --------      ------     ----------       --------------

            NA+             1        0.1261E-01        0.2900E 03
            K+              1        0.4859E-04        0.1900E 01
            CA++            2        0.4990E-02        0.2000E 03
            MG++            2        0.2468E-02        0.6000E 02
            H+              1        0.1259E-06        0.6900E 01
            SO4--          -2        0.5101E-02        0.4900E 03
            CL-            -1        0.9449E-02        0.3350E 03
            HCO3-          -1        0.0               0.0
            BA              0        0.2403E-06        0.3300E-01
            FE              0        0.3953E-06        0.5000E-01
            CU              0        0.0               0.0
            SR              0        0.2233E-04        0.2000E 01
            PB              0        0.8688E-07        0.1800E-01
            CR              0        0.1135E-06        0.5900E-02
            ZN              0        0.0               0.0
            HG              0        0.0               0.0
            F               0        0.4211E 00        0.8000E 04
            NO3             0        0.0               0.0
            O2 SAM          0        0.0               0.0
            O2 CAL          0        0.0               0.0
            FILTER          0        0.2000E 00        0.2000E 00
            TEMP            0        0.2000E 02        0.2000E 02
            REF             0        NMT               NMT
                            0
            THE EXCESS SAMPLE CHARGE IS 0.7928E-02AND THE ANALYTICAL PERCENT ERROR IS  16.785919
            THE EXCESS CHARGE FOR NACL IS 0.4143E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1234E-04
```

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SAMPLE DATE 2 75
    SPECIES         CHARGE      MOLARITY       ORIGINAL UNITS
    --------        ------.     ----------     --------------

    NA+                1        0.1096E-01       0.2520E 03
    K+                 1        0.4859E-04       0.1900E 01
    CA++               2        0.5863E-02       0.2350E 03
    MG++               2        0.2674E-02       0.6500E 02
    H+                 1        0.1259E-06       0.6900E 01
    SO4--             -2        0.6038E-02       0.5800E 03
    CL-               -1        0.1255E-01       0.4450E 03
    HCO3-             -1        0.3491E-02       0.2130E 03
    BA                 0        0.2912E-06       0.4000E-01
    FE                 0        0.2954E-05       0.1650E 00
    CU                 0        0.9123E-07       0.5800E-02
    SR                 0        0.3253E-04       0.2850E 01
    PB                 0        0.1689E-06       0.3500E-01
    CR                 0        0.2116E-07       0.1100E-02
    ZN                 0        0.0              0.0
    HG                 0        0.0              0.0
    F                  0        0.3474E-04       0.6600E 00
    NO3                0        0.1452E-03       0.9000E 01
    O2 SAM             0        0.1687E-03       0.5400E 01
    O2 CAL             0        0.2687E-03       0.8600E 01
    FILTER             0        0.0              0.0
    TEMP               0        0.1950E 02       0.1950E 02
    REF                0        NMT              NMT
                       0
    THE EXCESS SAMPLE CHARGE IS-0.3443E-04AND THE ANALYTICAL PERCENT ERROR IS   0.061269

    THE EXCESS CHARGE FOR NACL IS-0.1590E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1507E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.40E-01    0.36E-06    0.37E-10    0.51E-02    0.79E-03    0.15E-02    0.11E 00    0.16E 00    0.54E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08   0.13E-16


                                                ION STRENGTH          GAMMA 1     GAMMA 2

                                                      0.363E-01       0.506E 00     0.843E 00

C4T         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.473E-02   0.219E-02   0.447E-02   0.337E-02   0.126E-06   0.164E-05   0.106E-02

   C2          C3          C4          C5          C6          C7          C8          C9
 0.250E-05   0.632E-06   0.703E-04   0.233E-04   0.463E-03   0.422E-04   0.333E-06   0.562E-07

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2       SATPH
 0.550E 00   0.139E 00   0.217E 00   0.471E-04   0.115E-03   0.709E 01
```

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SAMPLE DATE 7 75
    SPECIES        CHARGE      MOLARITY       ORIGINAL UNITS
    --------       ------     ----------      --------------

    NA +             1        0.1135E-01        0.2610E 03
    K+               1        0.4092E-04        0.1600E 01
    CA++             2        0.5853E-02        0.2346E 03
    MG++             2        0.3142E-02        0.7640E 02
    H+               1        0.1413E-06        0.6850E 01
    SO4--           -2        0.2998E-02        0.2890E 03
    CL -            -1        0.1027E-01        0.3640E 03
    HCO3-           -1        0.3425E-02        0.2090E 03
    BA               0        0.2476E-06        0.3400E-01
    FE               0        0.7341E-06        0.4100E-01
    CU               0        0.0               0.0
    SR               0        0.3173E-04        0.2780E 01
    PB               0        0.1110E-06        0.2300E-01
    CR               0        0.1923E-07        0.1000E-02
    ZN               0        0.3365E-07        0.2200E-02
    HG               0        0.0               0.0
    F                0        0.4000E 00        0.7600E 04
    NO3              0        0.2855E-03        0.1770E 02
    O2 SAM           0        0.1656E-03        0.5300E 01
    O2 CAL           0        0.2219E-03        0.7100E 01
    FILTER           0        0.0               0.0
    TEMP             0        0.2100E 02        0.2100E 02
    REF              0        NMT               NMT
                     0
    THE EXCESS SAMPLE CHARGE IS 0.9707E-02AND THE ANALYTICAL PERCENT ERROR IS  19.776138

    THE EXCESS CHARGE FOR NACL IS 0.1086E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.8580E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.38E-01    0.37E-06    0.38E-10    0.50E-02    0.77E-03    0.14E-02    0.11E 00    0.15E 00    0.52E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.35E-08    0.12E-16

                                                ION STRENGTH          GAMMA 1     GAMMA 2

                                                       0.327E-01     0.520E 00      0.849E 00

C4T          CA          MG          SO4          HCO3         H+           CCO3         C1

.0           0.519E-02   0.281E-02   0.209E-02    0.329E-02    0.141E-06    0.144E-05    0.583E-03

    C2          C3          C4          C5           C6           C7           C8           C9
 0.263E-05   0.771E-06   0.309E-04   0.309E-04    0.304E-03    0.210E-04    0.135E-06    0.526E-07

   CA SAT      DOLSAT      GYPSAT       PCO2         SCO2        SATPH
 0.571E 00   0.181E 00   0.117E 00   0.482E-04    0.111E-03    0.702E 01
```

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        SAMPLE DATE 1 76
           SPECIES        CHARGE      MOLARITY       ORIGINAL UNITS
           --------       ------     ----------      -------------

           NA+               1        0.5655E-02       0.1300E 03
           K+                1        0.2557E-04       0.1000E 01
           CA++              2        0.4741E-02       0.1900E 03
           MG++              2        0.1152E-02       0.2800E 02
           H+                1        0.1995E-06       0.6700E 01
           SO4--            -2        0.5236E-02       0.5030E 03
           CL-              -1        0.1058E-01       0.3750E 03
           HCO3-            -1        0.3400E-02       0.3400E-02
           BA                0        0.0              0.0
           FE                0        0.0              0.0
           CU                0        0.0              0.0
           SR                0        0.2157E-04       0.1890E 01
           PB                0        0.0              0.0
           CR                0        0.0              0.0
           ZN                0        0.0              0.0
           HG                0        0.0              0.0
           F                 0        0.0              0.0
           NO3               0        0.1468E-03       0.9100E 01
           O2 SAM            0        0.1594E-03       0.5100E 01
           O2 CAL            0        0.2562E-03       0.8200E 01
           FILTER            0        0.0              0.0
           TEMP              0        0.2070E 02       0.2070E 02
           REF               0        NMT              NMT
                             0
           THE EXCESS SAMPLE CHARGE IS-0.6985E-02AND THE ANALYTICAL PERCENT ERROR IS  16.664658

           THE EXCESS CHARGE FOR NACL IS-0.4923E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2088E-02
AKO2       AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9

0.39E-01   0.37E-06   0.38E-10   0.50E-02   0.77E-03   0.14E-02   0.11E 00   0.16E 00   0.52E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.36E-08   0.12E-16

                                                ION STRENGTH       GAMMA 1     GAMMA 2

                                                      0.274E-01     0.543E 00    0.858E 00

C4T        CA         MG         SO4        HCO3       H+         CCO3       C1

.0         0.377E-02  0.927E-03  0.410E-02  0.332E-02  0.200E-06  0.990E-06  0.904E-03

   C2         C3         C4         C5         C6         C7         C8         C9
 0.142E-05  0.190E-06  0.613E-04  0.107E-04  0.214E-03  0.214E-04  0.172E-06  0.188E-07

  CA SAT     DOLSAT     GYPSAT     PCO2       SCO2       SATPH
 0.310E 00  0.240E-01  0.183E 00  0.695E-04  0.134E-03  0.714E 01
```

```
LOCATION    RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

11 25 21 3330 2054. 3590.        815.          0.    0.              SL         DC       2300.      000          0 17

                                          . DEPTH ED.PR. GOTTEN FROM STATE ENGINEERS OFFICE IN ROSWELL 3/25/76

        SAMPLE DATE 5 73
            SPECIES        CHARGE      MOLARITY       ORIGINAL UNITS
            --------       ------     ----------     --------------

            NA+               1       0.1696E-01       0.3900E 03
            K+                1       0.7161E-04       0.2800E 01
            CA++              2       0.5889E-02       0.2360E 03
            MG++              2       0.3702E-02       0.9000E 02
            H+                1       0.5012E-07       0.7300E 01
            SO4--            -2       0.5434E-02       0.5220E 03
            CL-              -1       0.4936E-02       0.1750E 03
            HCO3-            -1       0.3700E-02       0.3700E-02
            BA                0       0.2621E-06       0.3600E-01
            FE                0       0.6446E-05       0.3600E 00
            CU                0       0.0              0.0
            SR                0       0.3538E-04       0.3100E 01
            PB                0       0.0              0.0
            CR                0       0.0              0.0
            ZN                0       0.0              0.0
            HG                0       0.0              0.0
            F                 0       0.0              0.0
            NO3               0       0.0              0.0
            O2 SAM            0       0.0              0.0
            O2 CAL            0       0.0              0.0
            FILTER            0       0.0              0.0
            TEMP              0       0.2000E 02       0.2000E 02
            REF               0       NMT              NMT
                              0
            THE EXCESS SAMPLE CHARGE IS 0.1671E-01AND THE ANALYTICAL PERCENT ERROR IS  29.992340

            THE EXCESS CHARGE FOR NACL IS 0.1203E-01AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.4612E-02
AK02        AK1        AK2        AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.40E-01    0.37E-06   0.37E-10   0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD

 0.36E-08   0.13E-16


                                               ION STRENGTH          GAMMA 1     GAMMA 2

                                                      0.365E-01      0.506E 00      0.843E 00

C4I         CA          MG          SO4         HCO3        H+          CO3         CI

.0          0.486E-02   0.309E-02   0.386E-02   0.352E-02   0.501E-07   0.435E-05   0.945E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.690E-05   0.232E-05   0.766E-04   0.347E-04   0.572E-03   0.563E-04   0.423E-06   0.231E-06

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.151E 01   0.145E 01   0.192E 00   0.191E-04   0.888E-04   0.705E 01
```

```
SAMPLE DATE 3 75
        SPECIES          CHARGE       MOLARITY        ORIGINAL UNITS
        --------         ------      ----------       --------------

        NA+                 1        0.1174E-02         0.2700E 02
        K+                  1        0.7672E-04         0.3000E 01
        CA++                2        0.5614E-02         0.2250E 03
        MG++                2        0.2550E-02         0.6200E 02
        H+                  1        0.6310E-07         0.7200E 01
        SO4--              -2        0.4790E-02         0.4600E 03
        CL-                -1        0.1241E-01         0.4400E 03
        HCO3-              -1        0.3327E-02         0.2030E 03
        BA                  0        0.2330E-06         0.3200E-01
        FE                  0        0.6088E-05         0.3400E 00
        CU                  0        0.1338E-06         0.8500E-02
        SR                  0        0.3424E-04         0.3000E 01
        PB                  0        0.1979E-06         0.4100E-01
        CR                  0        0.5577E-07         0.2900E-02
        ZN                  0        0.0                0.0
        HG                  0        0.0                0.0
        F                   0        0.4316E 00         0.8200E 04
        NO3                 0        0.0                0.0
        O2 SAM              0        0.1719E-03         0.5500E 01
        O2 CAL              0        0.3281E-03         0.1050E 02
        FILTER              0        0.0                0.0
        TEMP                0        0.2050E 02         0.2050E 02
        REFF                0        NMT                NMT
                            0
        THE EXCESS SAMPLE CHARGE IS-0.7736E-02AND THE ANALYTICAL PERCENT ERROR IS  18.034653

        THE EXCESS CHARGE FOR NACL IS-0.1124E-01AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.3424E-02
AK02       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.39E-01   0.37E-06   0.37E-10   0.51E-02   0.78E-03   0.14E-02   0.11E 00   0.16E 00   0.53E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKO

 0.36E-08   0.13E-16


                                                ION STRENGTH        GAMMA 1     GAMMA 2

                                                     0.289E-01      0.536E 00      0.856E 00
C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0           0.462E-02   0.212E-02   0.347E-02   0.319E-02   0.631E-07   0.303E-05   0.913E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.518E-05   0.129E-05   0.710E-04   0.232E-04   0.402E-03   0.372E-05   0.432E-06   0.118E-07
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.113E 01   0.594E 00   0.185E 00   0.213E-04   0.335E-04   0.708E 01
```

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SAMPLE DATE 7 75
    SPECIES        CHARGE     MOLARITY       ORIGINAL UNITS
    --------       ------     ----------     --------------

    NA+              1        0.9917E-02       0.2280E 03
    K+               1        0.4603E-04       0.1800E 01
    CA++             2        0.3972E-02       0.1592E 03
    MG++             2        0.2151E-02       0.5230E 02
    H+               1        0.4467E-07       0.7350E 01
    SO4--           -2        0.3904E-02       0.3750E 03
    CL-             -1        0.1258E-01       0.4460E 03
    HCO3-           -1        0.3425E-02       0.2090E 03
    BA               0        0.2621E-06       0.3600E-01
    FE               0        0.1132E-04       0.6600E 00
    CU               0        0.0              0.0
    SR               0        0.3139E-04       0.2750E 01
    PB               0        0.4826E-06       0.1000E 00
    CR               0        0.0              0.0
    ZN               0        0.3518E-07       0.2300E-02
    HG               0        0.0              0.0
    F                0        0.4158E 00       0.7900E 04
    NO3              0        0.2597E-03       0.1610E 02
    O2 SAM           0        0.1687E-03       0.5400E 01
    O2 CAL           0        0.2187E-03       0.7000E 01
    FILTER           0        0.0              0.0
    TEMP             0        0.2100E 02       0.2100E 02
    REF              0        NMT              NMT
                     0
    THE EXCESS SAMPLE CHARGE IS-0.1603E-02AND THE ANALYTICAL PERCENT ERROR IS    3.482524

    THE EXCESS CHARGE FOR NACL IS-0.2663E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1014E-02
AK02        AK1         AK2 .       AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.38E-01    0.37E-06    0.38E-10    0.50E-02    0.77E-03    0.14E-02    0.11E 00    0.15E 00    0.52E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.35E-08    0.12E-16

                                                ION STRENGTH        GAMMA 1     GAMMA 2

                                                     0.293E-01       0.534E 00      0.855E 00
C4I         CA          MG          SO4         HCO3        H+          CO3         C1

.0          0.334E-02   0.183E-02   0.301E-02   0.330E-02   0.447E-07   0.449E-05   0.570E-03

     C2          C3          C4          C5          C6          C7          C8          C9
 0.557E-05   0.165E-05   0.537E-04   0.208E-04   0.301E-03   0.271E-04   0.224E-06   0.147E-06
    CA SAT      DOLSAT      GYPSAT       PCO2        SCO2       SATPH
 0.121E 01   0.820E 00   0.115E 00   0.153E-04   0.787E-04   0.720E 01
```

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LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION    TYPE    YIELD    OWNER     DATE DRILLED

11 25 23 1110   62. 3477.         847.          629.  847.             SL         DC        1000.    CLARDY       6 57


        SAMPLE DATE 5 73
            SPECIES        CHARGE       MOLARITY         ORIGINAL UNITS
            --------       ------      ----------       --------------

            NA+              1         0.2610E-01         0.6000E 03
            K+               1         0.8695E-04         0.3400E 01
            CA++             2         0.6961E-02         0.2790E 03
            MG++             2         0.4278E-02         0.1040E 03
            H+               1         0.7943E-07         0.7100E 01
            SO4--           -2         0.6590E-02         0.6330E 03
            CL-             -1         0.2172E-01         0.7700E 03
            HCO3-           -1         0.3400E-02         0.3400E-02
            BA               0         0.2767E-06         0.3800E-01
            FE               0         0.8953E-06         0.5000E-01
            CU               0         0.0                0.0
            SR               0         0.3652E-04         0.3200E 01
            PB               0         0.0                0.0
            CR               0         0.0                0.0
            ZN               0         0.0                0.0
            HG               0         0.0                0.0
            F                0         0.0                0.0
            NO3              0         0.0                0.0
            O2 SAM           0         0.0                0.0
            O2 CAL           0         0.0                0.0
            FILTER           0         0.0                0.0
            TEMP             0         0.2060E 02         0.2060E 02
            REF              0         NMT                NMT
                             0
            THE EXCESS SAMPLE CHARGE IS 0.1037E-01AND THE ANALYTICAL PERCENT ERROR IS  11.919367

            THE EXCESS CHARGE FOR NACL IS 0.4380E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5899E-02
AK02        AK1         AK2          AK01         AK02          AK03         AK04         AK05         AK06         AK07         AK08         AK09

0.39E-01    0.37E-06    0.38E-10     0.50E-02     0.77E-03      0.14E-02     0.11E 00     0.16E 00     0.53E-02     0.19E 00     0.11E 00     0.54E-01
  AKC         AKD

 0.36E-08    0.12E-16

                                                        ION STRENGTH         GAMMA 1      GAMMA 2

                                                              0.538E-01       0.455E 00     0.821E 00
C4I          CA          MG           SO4          HCO3         H+          CCO3         C1

.0          0.577E-02   0.359E-02    0.472E-02    0.325E-02    0.794E-07   0.278E-05    0.111E-02

    C2          C3          C4           C5           C6           C7          C8           C9
 0.427E-05   0.144E-05   0.767E-04    0.338E-04    0.664E-03    0.950E-04   0.565E-06    0.204E-06
     CA SAT      DOLSAT      GYPSAT       PCO2         SCO2        SATPH
 0.930E 00   0.547E 00   0.225E 00    0.272E-04    0.904E-04    0.705E 01
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LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

11 25 23 1110   52. 3477.        847.          629.  847.            SL        OC       1000.    CLARDY      6 57


        SAMPLE DATE 3 74
           SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
           --------       ------      ----------      --------------

           NA+               1        0.1566E-01       0.3600E 03
           K+                1        0.6394E-04       0.2500E 01
           CA++              2        0.2994E-02       0.1200E 03
           MG++              2        0.2550E-02       0.6200E 02
           H+                1        0.1000E 01       0.0
           SO4--            -2        0.6454E-02       0.6200E 03
           CL-              -1        0.1848E-01       0.6550E 03
           HCO3-            -1        0.0              0.0
           BA                0        0.1747E-06       0.2400E-01
           FE                0        0.1791E-08       0.1000E-03
           CU                0        0.3620E-06       0.2300E-01
           SR                0        0.3424E-04       0.3000E 01
           PB                0        0.0              0.0
           CR                0        0.0              0.0
           ZN                0        0.0              0.0
           HG                0        0.0              0.0
           F                 0        0.0              0.0
           NO3               0        0.0              0.0
           O2 SAM            0        0.0              0.0
           O2 CAL            0        0.0              0.0
           FILTER            0        0.0              0.0
           TEMP              0        0.2000E 02       0.2000E 02
           REF               0        NMT              NMT
                             0
           THE EXCESS SAMPLE CHARGE IS 0.9954E 00AND THE ANALYTICAL PERCENT ERROR IS  94.068497

           THE EXCESS CHARGE FOR NACL IS 0.4380E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5899E-02
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SAMPLE DATFIL 74
    SPECIES       CHARGE      MOLARITY        ORIGINAL UNITS
    --------      ------     ----------       --------------

    NA+              1       0.1783E-01        0.4100E 03
    K+               1       0.5882E-04        0.2300E 01
    CA++             2       0.5737E-02        0.2300E 03
    MG++             2       0.2674E-02        0.6500E 02
    H+               1       0.1585E-06        0.6800E 01
    SO4--           -2       0.6038E-02        0.5800E 03
    CL-             -1       0.1622E-01        0.5750E 03
    HCO3-           -1       0.2327E-02        0.2230E 03
    BA               0       0.2039E-06        0.2800E-01
    FE               0       0.2686E-04        0.1500E 01
    CU               0       0.0               0.0
    SR               0       0.3538E-04        0.3100E 01
    PB               0       0.1738E-06        0.3600E-01
    CR               0       0.4616E-07        0.2400E-02
    ZN               0       0.0               0.0
    HG               0       0.0               0.0
    F                0       0.4264E 00        0.8100E 04
    NO3              0       0.0               0.0
    O2 SAM           0       0.0               0.0
    O2 CAL           0       0.0               0.0
    FILTER           0       0.0               0.0
    TEMP             0       0.2000E 02        0.2000E 02
    REF              0       NMT               NMT
                     0
    THE EXCESS SAMPLE CHARGE IS 0.3096E-02AND THE ANALYTICAL PERCENT ERROR IS   4.666995
    THE EXCESS CHARGE FOR NACL IS 0.1615E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1422E-02
AK02       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09
0.40E-01   0.37E-06   0.37E-10   0.51E-02   0.78E-03   0.14E-02   0.11E 00   0.16E 00   0.53E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD
 0.36E-08   0.13E-16

                                                ION STRENGTH        GAMMA 1     GAMMA 2
                                                      0.416E-01      0.488E 00      0.836E 00
C4T         CA          MG          SO4         HCO3        H+          CCO3        C1
.0          0.468E-02   0.220E-02   0.453E-02   0.322E-02   0.158E-06   0.129E-05   0.996E-03

    C2          C3          C4          C5          C6          C7          C8          C9
0.183E-05   0.471E-05   0.651E-04   0.219E-04   0.446E-03   0.670E-04   0.394E-06   0.696E-07
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.401E 00   0.764E-01   0.202E 00   0.553E-04   0.119E-03   0.712E 01
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LOCATION      BA     ELEVATION      DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

11 25 23 1110   62. 3477.          847.          629.  847.            SL          DC       1000.     CLARDY       6 57


SAMPLE DATE11 74
     SPECIES        CHARGE      MOLARITY       ORIGINAL UNITS
     --------       ------     ----------     --------------

     NA+               1        0.1870E-01      0.4300E 03
     K+                1        0.6905E-04      0.2700E 01
     CA++              2        0.5739E-02      0.2300E 03
     MG++              2        0.2674E-02      0.6500E 02
     H+                1        0.1585E-06      0.6800E 01
     SO4--            -2        0.5621E-02      0.5400E 03
     CL-              -1        0.1523E-01      0.5400E 03
     HCO3-            -1        0.0             0.0
     BA                0        0.2767E-06      0.3800E-01
     FE                0        0.5372E-05      0.3000E 00
     CU                0        0.0             0.0
     SR                0        0.3424E-04      0.3000E 01
     PB                0        0.2075E-06      0.4300E-01
     CR                0        0.4039E-07      0.2100E-02
     ZN                0        0.0             0.0
     HG                0        0.0             0.0
     F                 0        0.4211E 00      0.8000E 04
     NO3               0        0.0             0.0
     O2 SAM            0        0.0             0.0
     O2 CAL            0        0.0             0.0
     FILTER            0        0.4500E 00      0.4500E 00
     TEMP              0        0.2000E 02      0.2000E 02
     REF               0        NMT             NMT
                       0
     THE EXCESS SAMPLE CHARGE IS 0.9123E-02AND THE ANALYTICAL PERCENT ERROR IS  14.697748
     THE EXCESS CHARGE FOR NACL IS 0.1615E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1422E-02
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LOCATION     RA    ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 25 23 1110   62. 3477.          847.          629.  847.              SL         DC          1000.     CLARDY       6 57


SAMPLE DATE11 74
    SPECIES          CHARGE       MOLARITY          ORIGINAL UNITS
    --------         ------      ----------         --------------

    NA +                1        0.1827E-01          0.4200E 03
    K+                  1        0.5382E-04          0.2300E 01
    CA++                2        0.5998E-02          0.2400E 03
    MG++                2        0.2715E-02          0.6600E 02
    H+                  1        0.1585E-06          0.6800E 01
    SO4--              -2        0.6194E-02          0.5950E 03
    CL -               -1        0.1650E-01          0.5850E 03
    HCO3-              -1        0.0                 0.0
    BA                  0        0.2039E-06          0.2800E-01
    FE                  0        0.6446E-05          0.3600E 00
    CU                  0        0.0                 0.0
    SR                  0        0.3538E-04          0.3100E 01
    PB                  0        0.2124E-06          0.4400E-01
    CR                  0        0.5000E-07          0.2600E-02
    ZN                  0        0.0                 0.0
    HG                  0        0.0                 0.0
    F                   0        0.3842E 00          0.7300E 04
    NO3                 0        0.0                 0.0
    O2 SAM              0        0.0                 0.0
    O2 CAL              0        0.0                 0.0
    FILTER              0        0.2000E 00          0.2000E 00
    TEMP                0        0.2000E 02          0.2000E 02
    REF                 0        NMT                 NMT
                        0
    THE EXCESS SAMPLE CHARGE IS 0.6845E-02AND THE ANALYTICAL PERCENT ERROR IS  10.592037
    THE EXCESS CHARGE FOR NACL IS 0.1615E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1422E-02
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          SAMPLE DATE 2 75
A DISCREPANCY EXISTS FOR THE VALUE OF SM 11
               SPECIES        CHARGE     MOLARITY          ORIGINAL UNITS
               --------       ------    ----------         --------------

               NA+               1      0.1348E-01           0.3100E 03
               K+                1      0.4967E-04           0.1950E 01
               CA++              2      0.5863E-02           0.2350E 03
               MG++              2      0.2776E-02           0.6750E 02
               H+                1      0.1259E-06           0.6900E 01
               SO4--            -2      0.5621E-02           0.5400E 03
               CL-              -1      0.1495E-01           0.5300E 03
               HCO3-            -1      0.3491E-02           0.2130E 03
               BA                0      0.3056E-06           0.4200E-01
               FE                0      0.2453E-05           0.1370E 00
               CU                0      0.1574E-06           0.1900E-01
               SR                0      0.3533E-04           0.3100E 01
               PB                0      0.2553E-06           0.5300E-01
               CR                0      0.2885E-07           0.1500E-02
               ZN                0      0.0                  0.0
               HG                0      0.0                  0.0
               F                 0      0.4474E-04           0.8500E 00
               NO3               0      0.1774E-03           0.1100E 02
               O2 SAM            0      0.1875E-03           0.6000E 01
               O2 CAL            0      0.2687E-03           0.8600E 01
               FILTER            0      0.0                  0.0
               TEMP              0      0.0                  0.0
               REF               0      NMT                  NMT
                                 0
               THE EXCESS SAMPLE CHARGE IS 0.1131E-02AND THE ANALYTICAL PERCENT ERROR IS   1.868900
               THE EXCESS CHARGE FOR NACL IS-0.1465E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2546E-02
AK02       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.77E-01   0.24E-06   0.21E-10   0.60E-02   0.97E-03   0.17E-02   0.21E 00   0.25E 00   0.89E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.40E-08   0.28E-16


                                               ION STRENGTH        GAMMA 1     GAMMA 2

                                                      0.396E-01     0.495E 00      0.839E 00
C4I         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.494E-02   0.246E-02   0.439E-02   0.342E-02   0.126E-06   0.969E-06   0.886E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.120E-05   0.339E-06   0.400E-04   0.166E-04   0.298E-03   0.498E-04   0.328E-06   0.400E-07
     CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.290E 00   0.247E-01   0.239E 00   0.142E-03   0.274E-03   0.736E 01
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SAMPLE DATE 5 75
    SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
    --------       ------     ----------      --------------

    NA+               1       0.2001E-01        0.4600E 03
    K+                1       0.6394E-04        0.2500E 01
    CA++              2       0.6487E-02        0.2600E 03
    MG++              2       0.4319E-02        0.1050E 03
    H+                1       0.1259E-06        0.6900E 01
    SO4--            -2       0.6238E-02        0.6040E 03
    CL-              -1       0.2482E-01        0.8900E 03
    HCO3-            -1       0.3409E-02        0.2080E 03
    BA                0       0.1456E-06        0.2000E-01
    FE                0       0.1343E-04        0.7500E 00
    CU                0       0.0               0.0
    SR                0       0.3652E-04        0.3200E 01
    PB                0       0.1062E-06        0.2200E-01
    CR                0       0.3077E-07        0.1600E-02
    ZN                0       0.4742E-07        0.3100E-02
    HG                0       0.0               0.0
    F                 0       0.3685E-04        0.7000E 00
    NO3               0       0.2774E-03        0.1720E 02
    O2 SAM            0       0.2219E-03        0.7100E 01
    O2 CAL            0       0.2594E-03        0.8300E 01
    FILTER            0       0.0               0.0
    TEMP              0       0.2100E 02        0.2100E 02
    REF               0       NMT               NMT
                      0
    THE EXCESS SAMPLE CHARGE IS 0.8790E-03AND THE ANALYTICAL PERCENT ERROR IS   1.065536

    THE EXCESS CHARGE FOR NACL IS-0.4813E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5628E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.38E-01    0.37E-06    0.38E-10    0.50E-02    0.77E-03    0.14E-02    0.11E 00    0.15E 00    0.52E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD

 0.35E-08    0.12E-16

                                                ION STRENGTH          GAMMA 1      GAMMA 2

                                                       0.512E-01      0.461E 00      0.824E 00
C4I         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.538E-02   0.361E-02   0.452E-02   0.327E-02   0.126E-06   0.176E-05   0.103E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.262E-05   0.956E-06   0.741E-04   0.352E-04   0.668E-03   0.709E-04   0.404E-06   0.101E-06
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.569E 00   0.224E 00   0.207E 00   0.427E-04   0.106E-03   0.706E 01
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        SAMPLE DATE 7 75
            SPECIES          CHARGE      MOLARITY        ORIGINAL UNITS
            --------         ------     ----------      --------------

            NA+                 1       0.1997E-01       0.4590E 03
            K+                  1       0.5626E-04       0.2200E 01
            CA++                2       0.4521E-02       0.1812E 03
            MG++                2       0.2373E-02       0.5770E 02
            H+                  1       0.7080E-07       0.7150E 01
            SO4--              -2       0.6642E-02       0.6380E 03
            CL-                -1       0.2685E-01       0.9520E 03
            HCO3-              -1       0.3343E-02       0.2040E 03
            BA                  0       0.2621E-06       0.3600E-01
            FE                  0       0.1612E-05       0.9000E-01
            CU                  0       0.2361E-07       0.1500E-02
            SR                  0       0.3958E-04       0.3380E 01
            PB                  0       0.3089E-06       0.6400E-01
            CR                  0       0.2116E-07       0.1100E-02
            ZN                  0       0.6578E-07       0.4300E-02
            HG                  0       0.0              0.0
            F                   0       0.4106E 00       0.7800E 04
            NO3                 0       0.3065E-03       0.1900E 02
            O2 SAM              0       0.2000E-03       0.6400E 01
            O2 CAL              0       0.2219E-03       0.7100E 01
            FILTER              0       0.0              0.0
            TEMP                0       0.2100E 02       0.2100E 02
            REF                 0       NMT              NMT
                                0
            THE EXCESS SAMPLE CHARGE IS-0.9669E-02AND THE ANALYTICAL PERCENT ERROR IS  12.509745
            THE EXCESS CHARGE FOR NACL IS-0.6887E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2838E-02
AKC2        AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09
0.39E-01    0.37E-06   0.38E-10   0.50E-02   0.77E-03   0.14E-02   0.11E 00   0.15E 00   0.52E-02   0.19E 00   0.11E 00   0.54E-01
  AKC         AKD
 0.35E-08   0.12E-16


                                                 ION STRENGTH          GAMMA 1     GAMMA 2
                                                       0.468E-01       0.473E 00     0.829E 00
C4T          CA          MG          SO4          HCO3          H+          CCO3          C1
.0          0.362E-02   0.192E-02   0.527E-02    0.324E-02    0.708E-07    0.305E-05    0.849E-03

    C2           C3          C4          C5           C6           C7           C8           C9
 0.321E-05   0.923E-06   0.506E-04   0.190E-04    0.435E-03    0.846E-04    0.425E-06    0.178E-06
    CA SAT      DOLSAT      GYPSAT       PCO2         SCO2        SATPH
 0.696E 00   0.264E 00   0.171E 00   0.238E-04    0.862E-04    0.723E 01
```

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SAMPLE DATE 1 76
       SPECIES          CHARGE        MOLARITY          ORIGINAL UNITS
       --------         ------       ----------        ---------------

       NA+                 1         0.8265E-02         0.1900E 03
       K+                  1         0.2069E-04         0.1200E 01
       CA++                2         0.5115E-02         0.2050E 03
       MG++                2         0.1234E-02         0.3000E 02
       H+                  1         0.1995E-06         0.6700E 01
       SO4--              -2         0.5465E-02         0.5250E 03
       CL-                -1         0.1596E-01         0.5660E 03
       HCO3-              -1         0.3400E-02         0.3400E-02
       BA                  0         0.0                0.0
       FE                  0         0.0                0.0
       CU                  0         0.0                0.0
       SR                  0         0.2226E-04         0.1950E 01
       PB                  0         0.0                0.0
       CR                  0         0.0                0.0
       ZN                  0         0.0                0.0
       HG                  0         0.0                0.0
       F                   0         0.0                0.0
       NO3                 0         0.1403E-03         0.8700E 01
       O2 SAM              0         0.1531E-03         0.4900E 01
       O2 CAL              0         0.2500E-03         0.8000E 01
       FILTER              0         0.0                0.0
       TEMP                0         0.2070E 02         0.2070E 02
       REF                 0         NMT                NMT
                           0
       THE EXCESS SAMPLE CHARGE IS-0.9302E-02AND THE ANALYTICAL PERCENT ERROR IS  18.137527
       THE EXCESS CHARGE FOR NACL IS-0.7700E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1633E-02
AK02       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09
0.39E-01   0.37E-06   0.38E-10   0.50E-02   0.77E-03   0.14E-02   0.11E 00   0.16E 00   0.52E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD
 0.36E-08   0.12E-16

                                             ION STRENGTH          GAMMA 1      GAMMA 2
                                                  0.326E-01        0.520E 00       0.849E 00
C41        CA          MG          SO4         HCO3        H+          CCO3        C1
.0         0.411E-02   0.100E-02   0.427E-02   0.331E-02   0.200E-06   0.102E-05   0.942E-03

   C2          C3          C4          C5          C6          C7          C8          C9
 0.147E-05   0.194E-06   0.639E-04   0.111E-04   0.221E-03   0.312E-04   0.207E-06   0.272E-07
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.319E 00   0.254E-01   0.190E 00   0.694E-04   0.134E-03   0.713E 01
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LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

11 25 28 3330 1572. 3519.          150.          150.  150.                AG          SC        0000.     WHEELER      6 49


         SAMPLE DATE 3 73
            SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
            --------       ------     ----------      --------------

            NA+              1        0.1044E-01        0.2400E 03
            K+               1        0.5882E-04        0.2300E 01
            CA++             2        0.1073E-01        0.4300E 03
            MG++             2        0.8555E-02        0.2080E 03
            H+               1        0.5624E-07        0.7250E 01
            SO4--           -2        0.1437E-01        0.1380E 04
            CL-             -1        0.1049E-01        0.3720E 03
            HCO3-           -1        0.4600E-02        0.4600E-02
            BA               0        0.6043E-06        0.8300E-01
            FE               0        0.1791E-05        0.1000E 00
            CU               0        0.0               0.0
            S2               0        0.8560E-04        0.7500E 01
            PB               0        0.0               0.0
            CR               0        0.0               0.0
            ZN               0        0.0               0.0
            HG               0        0.0               0.0
            F                0        0.0               0.0
            NO3              0        0.0               0.0
            O2 SAM           0        0.0               0.0
            O2 CAL           0        0.0               0.0
            FILTER           0        0.0               0.0
            TEMP             0        0.2000E 02        0.2000E 02
            REF              0        NMT               NMT
                             0
            THE EXCESS SAMPLE CHARGE IS 0.5242E-02AND THE ANALYTICAL PERCENT ERROR IS    5.643132

            THE EXCESS CHARGE FOR NACL IS-0.5335E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5236E-02
AK02        AK1        AK2        AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.40E-01    0.37E-06   0.37E-10   0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC        AKD

 0.36E-08    0.13E-16

                                                ION STRENGTH          GAMMA 1      GAMMA 2

                                                      0.597E-01        0.441E 00       0.815E 00

C4I          CA          MG          SO4          HCO3         H+          CCO3         C1

.0          0.779E-02   0.632E-02   0.934E-02    0.428E-02    0.562E-07   0.523E-05    0.280E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.101E-04   0.448E-05   0.131E-03   0.755E-04   0.216E-02   0.732E-04   0.735E-06   0.149E-06

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.221E 01   0.400E 01   0.568E 00   0.261E-04   0.111E-03   0.682E 01
```

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SAMPLE DATE 7 76
    SPECIES       CHARGE      MOLARITY       ORIGINAL UNITS
    --------      ------     ----------      --------------

    NA+              1       0.1000E-01       0.2300E 03
    K+               1       0.4348E-04       0.1700E 01
    CA++             2       0.1921E-01       0.7700E 03
    MG++             2       0.6992E-03       0.1700E 02
    H+               1       0.6310E-07       0.7200E 01
    SO4--           -2       0.1707E-01       0.1640E 04
    CL-             -1       0.9026E-02       0.3200E 03
    HCO3-           -1       0.4000E-02       0.4000E-02
    BA               0       0.0              0.0
    FE               0       0.0              0.0
    CU               0       0.0              0.0
    SR               0       0.0              0.0
    PB               0       0.0              0.0
    CR               0       0.0              0.0
    ZN               0       0.0              0.0
    HG               0       0.0              0.0
    F                0       0.0              0.0
    NO3              0       0.0              0.0
    O2 SAM           0       0.2031E-03       0.6500E 01
    O2 CAL           0       0.2281E-03       0.7300E 01
    FILTER           0       0.0              0.0
    TEMP             0       0.1750E 02       0.1750E 02
    REF              0       NMT              NMT
                     0
    THE EXCESS SAMPLE CHARGE IS 0.2699E-02AND THE ANALYTICAL PERCENT ERROR IS   2.781116

    THE EXCESS CHARGE FOR NACL IS 0.9784E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1677E-02
AKP2         AK1          AK2          AK01         AK02         AK03         AK04         AK05         AK06         AK07         AK08         AK09

0.42E-01     0.35E-06     0.35E-10     0.52E-02     0.82E-03     0.15E-02     0.12E 00     0.17E 00     0.57E-02     0.19E 00     0.11E 00     0.54E-01
  AKC          AKD

 0.37E-08     0.14E-16

                                                       ION STRENGTH          GAMMA 1     GAMMA 2

                                                             0.619E-01      0.437E 00      0.813E 00

C4T          CA           MG           SO4          HCO3         H+           CCO3         C1

.0           0.135E-01    0.504E-03    0.112E-01    0.375E-02    0.631E-07    0.388E-05    0.556E-02

     C2           C3           C4           C5           C6           C7           C8           C9
 0.121E-04    0.251E-06    0.183E-03    0.493E-05    0.190E-03    0.826E-04    0.640E-06    0.104E-06

   CA SAT       DOLSAT       GYPSAT        PCO2         SCO2        SATPH
 0.270E 01    0.259E 00    0.116E 01    0.287E-04    0.109E-03    0.668E 01
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LOCATION     RA    ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION    TYPE     YIELD    OWNER     DATE DRILLED

11 25 29 4440  544. 3520.         925.          577.  925.             MF        MA       1200.      WHEELER      2 28


        SAMPLE DATE 3 73
            SPECIES         CHARGE       MOLARITY         ORIGINAL UNITS
            --------        ------      ----------        --------------

            NA+               1         0.4176E-02          0.9600E 02
            K+                1         0.5371E-04          0.2100E 01
            CA++              2         0.4466E-02          0.1790E 03
            MG++              2         0.2838E-02          0.6900E 02
            H+                1         0.3981E-07          0.7400E 01
            SO4--            -2         0.4393E-02          0.4220E 03
            CL-              -1         0.5359E-02          0.1900E 03
            HCO3-            -1         0.4300E-02          0.4300E-02
            BA                0         0.0                 0.0
            FE                0         0.0                 0.0
            CU                0         0.0                 0.0
            SR                0         0.0                 0.0
            PB                0         0.0                 0.0
            CR                0         0.0                 0.0
            ZN                0         0.0                 0.0
            HG                0         0.0                 0.0
            F                 0         0.0                 0.0
            NO3               0         0.0                 0.0
            O2 SAM            0         0.0                 0.0
            O2 CAL            0         0.0                 0.0
            FILTER            0         0.0                 0.0
            TEMP              0         0.2000E 02          0.2000E 02
            REF               0         NMT                 NMT
                              0
            THE EXCESS SAMPLE CHARGE IS 0.3926E-03AND THE ANALYTICAL PERCENT ERROR IS    1.053047

            THE EXCESS CHARGE FOR NACL IS-0.1183E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1522E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.49E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08   0.13E-16


                                                  ION STRENGTH          GAMMA 1     GAMMA 2

                                                         0.254E-01       0.553E 00     0.862E 00

C4T         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.367E-02   0.236E-02   0.323E-02   0.411E-02   0.398E-07   0.598E-05   0.714E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.856E-05   0.300E-05   0.738E-04   0.339E-04   0.427E-03   0.127E-04   0.290E-06   0.853E-07

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.187E 01   0.226E 01   0.145E 00   0.177E-04   0.991E-04   0.707E 01
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LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

12 22 15 4330    0. 3830.         402.            0.     0.             SL        DU       WM         PATTERSO    0  0

                                           PATTERSON RED HOUSE (WINDMILL)

        SAMPLE DATE 5 73
           SPECIES          CHARGE       MOLARITY          ORIGINAL UNITS
           --------         ------      ----------        --------------

           NA+                 1        0.1218E-02          0.2800E 02
           K+                  1        0.6394E-04          0.2500E 01
           CA++                2        0.3293E-02          0.1320E 03
           MG++                2        0.2345E-02          0.5700E 02
           H+                  1        0.3981E-07          0.7400E 01
           SO4--              -2        0.2103E-02          0.2020E 03
           CL-                -1        0.1692E-02          0.6000E 02
           HCO3-              -1        0.4409E-02          0.4400E-02
           BA                  0        0.3641E-06          0.5000E-01
           FE                  0        0.4118E-04          0.2300E 01
           CU                  0        0.0                 0.0
           SR                  0        0.4109E-04          0.3600E 01
           PB                  0        0.0                 0.0
           CR                  0        0.0                 0.0
           ZN                  0        0.0                 0.0
           HG                  0        0.0                 0.0
           F                   0        0.0                 0.0
           NO3                 0        0.0                 0.0
           O2 SAM              0        0.0                 0.0
           O2 CAL              0        0.0                 0.0
           FILTER              0        0.0                 0.0
           TEMP                0        0.1600E 02          0.1600E 02
           REF                 0        NMT                 NMT
                               0
           THE EXCESS SAMPLE CHARGE IS 0.2260E-02AND THE ANALYTICAL PERCENT ERROR IS    9.887028

           THE EXCESS CHARGE FOR NACL IS-0.4745E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2670E-02
AKO2        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.45E-01    0.34E-06    0.34E-10    0.52E-02    0.84E-03    0.15E-02    0.13E 00    0.17E 00    0.59E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.37E-08    0.15E-16

                                                    ION STRENGTH          GAMMA 1      GAMMA 2

                                                           0.168E-01       0.605E 00       0.882E 00

C4I           CA          MG          SO4         HCO3        H+          CCO3        C1

.0            0.291E-02   0.211E-02   0.157E-02   0.424E-02   0.398E-07   0.525E-05   0.320E-03

    C2           C3          C4          C5          C6          C7          C8          C9
 0.665E-05   0.266E-05   0.585E-04   0.311E-04   0.206E-03   0.198E-05   0.184E-06   0.239E-07
    CA SAT       DOLSAT      GYPSAT       PCO2        SCO2        SATPH
 0.149E 01   0.148E 01   0.678E-01   0.220E-04   0.117E-03   0.717E 01
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SAMPLE DATE 3 74
    SPECIES        CHARGE      MOLARITY         ORIGINAL UNITS
    --------       ------     ----------        --------------

    NA+               1       0.8700E-03         0.2000E 02
    K+                1       0.4603E-04         0.1800E 01
    CA++              2       0.2769E-02         0.1110E 03
    MG++              2       0.1440E-02         0.3500E 02
    H+                1       0.7943E-07         0.7100E 01
    SO4--            -2       0.3019E-02         0.2900E 03
    CL-              -1       0.3103E-02         0.1100E 03
    HCO3-            -1       0.3606E-02         0.2200E 03
    BA                0       0.3204E-06         0.4400E-01
    FE                0       0.2149E-03         0.1200E 02
    CU                0       0.1416E-05         0.9000E-01
    SR                0       0.1826E-04         0.1600E 01
    PB                0       0.0                0.0
    CD                0       0.0                0.0
    ZN                0       0.0                0.0
    HG                0       0.0                0.0
    F                 0       0.0                0.0
    NO3               0       0.0                0.0
    O2 SAM            0       0.0                0.0
    O2 CAL            0       0.0                0.0
    FILTER            0       0.0                0.0
    TEMP              0       0.1590E 02         0.1590E 02
    REF               0       NMT                NMT
                      0
    THE EXCESS SAMPLE CHARGE IS-0.3412E-02AND THE ANALYTICAL PERCENT ERROR IS  15.451860

    THE EXCESS CHARGE FOR NACL IS-0.2233E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1225E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.45E-01    0.34E-06    0.34E-10    0.52E-02    0.84E-03    0.15E-02    0.13E 00    0.17E 00    0.59E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.37E-08    0.15E-16

                                             ION STRENGTH         GAMMA 1     GAMMA 2

                                                    0.158E-01     0.613E 00      0.885E 00
C4T         CA          MG          SO4         HCO3        H+          CO3         C1

.0          0.232E-02   0.123E-02   0.242E-02   0.353E-02   0.794E-07   0.216E-05   0.404E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.224E-05   0.656E-06   0.392E-04   0.153E-04   0.190E-03   0.220E-05   0.207E-06   0.712E-08
     CA SAT      DOLSAT      GYPSAT      PCO2        SCO2       SATPH
 0.503E 00   0.123E 00   0.857E-01   0.368E-04   0.116E-03   0.735E 01
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

12 22 15 4330    0. 3800.        402.            0.     0.           SL          DU         WM          PATTERSO    0  0

                                      PATTERSON RED HOUSE (WINDMILL)

         SAMPLE DATE11 74
             SPECIES          CHARGE       MOLARITY        ORIGINAL UNITS
             --------         ------      ----------       --------------

             NA+                 1         0.1131E-02        0.2600E 02
             K+                  1         0.4092E-04        0.1600E 01
             CA++                2         0.2994E-02        0.1200E 03
             MG++                2         0.1563E-02        0.3800E 02
             H+                  1         0.1000E 01        0.0
             SO4--              -2         0.3123E-02        0.3000E 03
             CL-                -1         0.1072E-02        0.3800E 02
             HCO3-              -1         0.0               0.0
             BA                  0         0.3641E-06        0.5000E-01
             FE                  0         0.1880E-03        0.1050E 02
             CU                  0         0.0               0.0
             SR                  0         0.1826E-04        0.1600E 01
             PB                  0         0.6274E-07        0.1300E-01
             CR                  0         0.7693E-07        0.4000E-02
             ZN                  0         0.0               0.0
             HG                  0         0.0               0.0
             F                   0         0.4369E 00        0.8300E 04
             NO3                 0         0.0               0.0
             02 SAM              0         0.0               0.0
             02 CAL              0         0.0               0.0
             FILTER              0         0.0               0.0
             TEMP                0         0.1750E 02        0.1750E 02
             REF                 0         NMT               NMT
                                 0
             THE EXCESS SAMPLE CHARGE IS 0.1003E 01AND THE ANALYTICAL PERCENT ERROR IS  98.561798
             THE EXCESS CHARGE FOR NACL IS-0.2233E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1225E-02
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

12 22 15 4330    0. 3300.       402.           0.      0.             SL          OU        WM          PATTERSO     0  0

                                           PATTERSON RED HOUSE (WINDMILL)

        SAMPLE DATE11 74
            SPECIES       CHARGE      MOLARITY        ORIGINAL UNITS
            -------       ------      ----------      -------------

            NA+              1        0.9134E-03        0.2100E 02
            K+               1        0.3580E-04        0.1400E 01
            CA++             2        0.3244E-02        0.1300E 03
            MG++             2        0.1604E-02        0.3900E 02
            H+               1        0.1000E 01        0.0
            SO4--           -2        0.3331E-02        0.3200E 03
            CL-             -1        0.9308E-03        0.3300E 02
            HCO3-           -1        0.0               0.0
            BA               0        0.2039E-06        0.2800E-01
            FE               0        0.8953E-06        0.5000E-01
            CU               0        0.0               0.0
            SR               0        0.1712E-04        0.1500E 01
            PB               0        0.5792E-07        0.1200E-01
            CR               0        0.3269E-07        0.1700E-02
            ZN               0        0.0               0.0
            HG               0        0.0               0.0
            F                0        0.4421E 00        0.8400E 04
            NO3              0        0.0               0.0
            O2 SAM           0        0.0               0.0
            O2 CAL           0        0.0               0.0
            FILTER           0        0.4500E 00        0.4500E 00
            TEMP             0        0.1750E 02        0.1750E 02
            REF              0        NMT               NMT
                             0
            THE EXCESS SAMPLE CHARGE IS 0.1003E 01AND THE ANALYTICAL PERCENT ERROR IS  98.508560

            THE EXCESS CHARGE FOR NACL IS-0.2233E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1225E-02
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LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

12 22 15 433C    0. 3800.        402.            0.     0.             SL          DU        WM          PATTERSO    0  0

                                        PATTERSON RED HOUSE (WINDMILL)

          SAMPLE DATE11 74
               SPECIES        CHARGE       MOLARITY        ORIGINAL UNITS
               --------       ------      ----------      --------------

               NA+              1         0.9569E-03        0.2200E 02
               K+               1         0.3580E-04        0.1400E 01
               CA++             2         0.2994E-02        0.1200E 03
               MG++             2         0.1686E-02        0.4100E 02
               H+               1         0.1000E 01        0.0
               SO4--           -2         0.3331E-02        0.3200E 03
               CL-             -1         0.8462E-03        0.3000E 02
               HCO3-           -1         0.0               0.0
               BA               0         0.2621E-06        0.3600E-01
               FE               0         0.1970E-04        0.1100E 01
               CU               0         0.0               0.0
               SR               0         0.1712E-04        0.1500E 01
               PB               0         0.4826E-08        0.1000E-02
               CR               0         0.1923E-07        0.1000E-02
               ZN               0         0.0               0.0
               HG               0         0.0               0.0
               F                0         0.4632E 00        0.8800E 04
               NO3              0         0.0               0.0
               O2 SAM           0         0.0               0.0
               O2 CAL           0         0.0               0.0
               FILTER           0         0.2000E 00        0.2000E 00
               TEMP             0         0.1750E 02        0.1750E 02
               REF              0         NMT               NMT
                                0
               THE EXCESS SAMPLE CHARGE IS 0.1003E 01AND THE ANALYTICAL PERCENT ERROR IS  98.524597
               THE EXCESS CHARGE FOR NACL IS-0.2233E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1225E-02
```

```
LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

12 23  5 3110 2887. 3800.         691.             0.      0.              SL          DU       WM          PATTERSO     0  0


      SAMPLE DATE 7 75
          SPECIES         CHARGE       MOLARITY         ORIGINAL UNITS
          --------        ------      ----------        --------------

          NA+                1        0.2566E-02          0.5900E 02
          K+                 1        0.3836E-04          0.1500E 01
          CA++               2        0.7255E-02          0.2908E 03
          MG++               2        0.3492E-02          0.8490E 02
          H+                 1        0.1000E-06          0.7000E 01
          SO4--             -2        0.9499E-02          0.9125E 03
          CL-               -1        0.1833E-02          0.6500E 02
          HCO3-             -1        0.5671E-02          0.3460E 03
          BA                 0        0.1820E-06          0.2500E-01
          FE                 0        0.2239E-05          0.1250E 00
          CU                 0        0.1259E-07          0.8000E-03
          SR                 0        0.3880E-04          0.3400E 01
          PB                 0        0.1351E-06          0.2800E-01
          CR                 0        0.0                 0.0
          ZN                 0        0.1683E-05          0.1100E 00
          HG                 0        0.0                 0.0
          F                  0        0.2948E 00          0.5600E 04
          NO3                0        0.1400E-02          0.8680E 02
          O2 SAM             0        0.1875E-03          0.6000E 01
          O2 CAL             0        0.2500E-03          0.8000E 01
          FILTER             0        0.0                 0.0
          TEMP               0        0.1800E 02          0.1800E 02
          REF                0        NMT                 NMT
                             0
          THE EXCESS SAMPLE CHARGE IS-0.2402E-02AND THE ANALYTICAL PERCENT ERROR IS    4.747157

          THE EXCESS CHARGE FOR NACL IS 0.7329E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3174E-02
AK02          AK1          AK2          AK01         AK02          AK03          AK04         AK05         AK06          AK07         AK08          AK09

0.42E-01     0.35E-06     0.35E-10     0.52E-02     0.81E-03      0.15E-02      0.12E 00     0.17E 00     0.56E-02      0.19E 00     0.11E 00      0.54E-01
  AKC          AKD

 0.37E-08     0.14E-16


                                                           ION STRENGTH          GAMMA 1      GAMMA 2

                                                                0.345E-01        0.513E 00      0.846E 00

C4I           CA           MG           SO4          HCO3          H+           CCO3         C1

.0           0.529E-02    0.261E-02    0.681E-02    0.545E-02     0.100E-06    0.319E-05    0.184E-02

     C2           C3           C4           C5           C6            C7           C8           C9
 0.545E-05    0.148E-05    0.123E-03    0.440E-04    0.834E-03     0.153E-04    0.406E-06    0.260E-07

    CA SAT       DOLSAT       GYPSAT        PCO2         SCO2         SATPH
 0.121E 01    0.693E 00    0.381E 00    0.647E-04    0.179E-03     0.685E 01
```

```
LOCATION     RA    ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

12 23  5 3130     0.     0.       390.            0.     0.             SL          DU        360.        PATTERSO     0  0

                                        PATTERSON DOMESTIC WELL

        SAMPLE DATE 5 73
            SPECIES        CHARGE       MOLARITY        ORIGINAL UNITS
            --------       ------      ----------      --------------

            NA+               1        0.2784E-02        0.6400E 02
            K+                1        0.4603E-04        0.1800E 01
            CA++              2        0.8159E-02        0.3270E 03
            MG++              2        0.5224E-02        0.1270E 03
            H+                1        0.6310E-07        0.7200E 01
            SO4--            -2        0.9265E-02        0.8900E 03
            CL-              -1        0.0               0.0
            HCO3-            -1        0.5400E-02        0.5400E-02
            BA                0        0.2912E-06        0.4000E-01
            FE                0        0.1791E-05        0.1000E 00
            CU                0        0.0               0.0
            SR                0        0.4337E-04        0.3800E 01
            PB                0        0.0               0.0
            CR                0        0.0               0.0
            ZN                0        0.0               0.0
            HG                0        0.0               0.0
            F                 0        0.0               0.0
            NO3               0        0.0               0.0
            O2 SAM            0        0.0               0.0
            O2 CAL            0        0.0               0.0
            FILTER            0        0.0               0.0
            TEMP              0        0.1850E 02        0.1850E 02
            REF               0        NMT               NMT
                              0
            THE EXCESS SAMPLE CHARGE IS 0.5665E-02AND THE ANALYTICAL PERCENT ERROR IS  10.583979
            THE EXCESS CHARGE FOR NACL IS 0.7329E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3174E-02
```

```
SAMPLE DATE 3 74
    SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
    --------        ------      ----------      --------------

    NA+                1        0.2175E-02       0.5000E 02
    K+                 1        0.4603E-04       0.1800E 01
    CA++               2        0.5988E-02       0.2400E 03
    MG++               2        0.3003E-02       0.7300E 02
    H+                 1        0.1585E-06       0.6800E 01
    SO4--             -2        0.7391E-02       0.7100E 03
    CL-               -1        0.2003E-02       0.7100E 02
    HCO3-             -1        0.4966E-02       0.3030E 03
    BA                 0        0.2621E-06       0.3600E-01
    FE                 0        0.1074E-04       0.6000E 00
    CU                 0        0.4407E-06       0.2800E-01
    S2                 0        0.5250E-04       0.4600E 01
    PB                 0        0.0              0.0
    CR                 0        0.0              0.0
    ZN                 0        0.0              0.0
    HG                 0        0.0              0.0
    F                  0        0.0              0.0
    NO3                0        0.0              0.0
    O2 SAM             0        0.0              0.0
    O2 CAL             0        0.0              0.0
    FILTER             0        0.0              0.0
    TEMP               0        0.1800E 02       0.1800E 02
    REF                0        NMT              NMT
                       0
    THE EXCESS SAMPLE CHARGE IS-0.1548E-02AND THE ANALYTICAL PERCENT ERROR IS   3.690469

    THE EXCESS CHARGE FOR NACL IS 0.1722E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1767E-02
AKO2       AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9

0.42E-01   0.35E-06   0.35E-10   0.52E-02   0.81E-03   0.15E-02   0.12E 00   0.17E 00   0.56E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.37E-08   0.14E-16

                                              ION STRENGTH          GAMMA 1     GAMMA 2

                                                     0.291E-01       0.535E 00     0.855E 00

C4T        CA          MG          SO4         HCO3        H+          CCO3        C1

.0         0.453E-02   0.233E-02   0.538E-02   0.481E-02   0.158E-06   0.172E-05   0.136E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.274E-05   0.771E-06   0.970E-04   0.361E-04   0.639E-03   0.107E-04   0.402E-06   0.124E-07

   CA SAT      DOLSAT      GYPSAT       PCO2        SCO2        SATPH
 0.607E 00   0.182E 00   0.281E 00   0.904E-04   0.191E-03   0.695E 01
```

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LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

12 23  5 3130    0.    0.        390.          0.    0.            SL        DU      360.       PATTERSO    0  0

                                     PATTERSON DOMESTIC WELL

       SAMPLE DATE11 74
           SPECIES        CHARGE       MOLARITY        ORIGINAL UNITS
           --------       ------      ----------      --------------

           NA +              1        0.2827E-02        0.6500E 02
           K+                1        0.4092E-04        0.1600E 01
           CA++              2        0.7236E-02        0.2900E 03
           MG++              2        0.3208E-02        0.7800E 02
           H+                1        0.1122E-06        0.6950E 01
           SO4--            -2        0.8744E-02        0.8400E 03
           CL -             -1        0.2115E-02        0.7500E 02
           HCO3-            -1        0.0               0.0
           BA                0        0.2476E-06        0.3400E-01
           FE                0        0.8953E-06        0.5000E-01
           CU                0        0.0               0.0
           SR                0        0.3880E-04        0.3400E 01
           PB                0        0.1931E-07        0.4000E-02
           CR                0        0.4616E-07        0.2400E-02
           ZN                0        0.0               0.0
           HG                0        0.0               0.0
           F                 0        0.3474E 00        0.6600E 04
           NO3               0        0.0               0.0
           O2 SAM            0        0.0               0.0
           O2 CAL            0        0.0               0.0
           FILTER            0        0.0               0.0
           TEMP              0        0.1660E 02        0.1660E 02
           REF               0        NMT               NMT
                             0
           THE EXCESS SAMPLE CHARGE IS 0.4152E-02AND THE ANALYTICAL PERCENT ERROR IS   9.575027
           THE EXCESS CHARGE FOR NACL IS 0.1722E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1767E-02
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

12 23  5 3130     0.     0.          390.          0.      0.            SL         DU        360.        PATTERSO     0  0

                                       PATTERSON DOMESTIC WELL

        SAMPLE DATE11 74
           SPECIES      CHARGE      MOLARITY        ORIGINAL UNITS
           --------     ------     ----------       --------------

           NA+             1       0.2436E-02        0.5600E 02
           K+              1       0.4092E-04        0.1600E 01
           CA++            2       0.7485E-02        0.3000E 03
           MG++            2       0.3167E-02        0.7700E 02
           H+              1       0.1122E-06        0.6950E 01
           SO4--          -2       0.9057E-02        0.8700E 03
           CL-            -1       0.1946E-02        0.6900E 02
           HCO3-          -1       0.0               0.0
           BA              0       0.3495E-06        0.4800E-01
           FE              0       0.8953E-06        0.5000E-01
           CU              0       0.0               0.0
           SR              0       0.3995E-04        0.3500E 01
           PB              0       0.4826E-07        0.1000E-01
           CR              0       0.5000E-07        0.2600E-02
           ZN              0       0.0               0.0
           HG              0       0.0               0.0
           F               0       0.3474E 00        0.6600E 04
           NO3             0       0.0               0.0
           O2  SAM         0       0.0               0.0
           O2  CAL         0       0.0               0.0
           FILTER          0       0.4500E 00        0.4500E 00
           TEMP            0       0.1660E 02        0.1660E 02
           REF             0       NMT               NMT
                           0
           THE EXCESS SAMPLE CHARGE IS 0.3722E-02AND THE ANALYTICAL PERCENT ERROR IS   8.488989
           THE EXCESS CHARGE FOR NACL IS 0.1722E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1767E-02
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LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

12 23  5 3130    0.     0.        390.          0.     0.            SL         DU      360.       PATTERSO    0  0

                                    PATTERSON DOMESTIC WELL

       SAMPLE DATE11 74
          SPECIES          CHARGE      MOLARITY        ORIGINAL UNITS
          --------         ------     ----------      --------------

          NA+                 1        0.2436E-02         0.5600E 02
          K+                  1        0.3336E-04         0.1500E 01
          CA++                2        0.6737E-02         0.2700E 03
          MG++                2        0.3085E-02         0.7500E 02
          H+                  1        0.1122E-06         0.6950E 01
          SO4--              -2        0.8432E-02         0.8100E 03
          CL-                -1        0.1974E-02         0.7000E 02
          HCO3-              -1        0.0                0.0
          BA                  0        0.2039E-06         0.2800E-01
          FE                  0        0.8953E-06         0.5000E-01
          CU                  0        0.0                0.0
          SR                  0        0.3880E-04         0.3400E 01
          PB                  0        0.4826E-08         0.1000E-02
          CR                  0        0.4039E-07         0.2100E-02
          ZN                  0        0.0                0.0
          HG                  0        0.0                0.0
          F                   0        0.3316E 00         0.6300E 04
          NO3                 0        0.0                0.0
          O2 SAM              0        0.0                0.0
          O2 CAL              0        0.0                0.0
          FILTER              0        0.2000E 00         0.2000E 00
          TEMP                0        0.1660E 02         0.1660E 02
          REF                 0        NMT                NMT
                              0
          THE EXCESS SAMPLE CHARGE IS 0.3279E-02AND THE ANALYTICAL PERCENT ERROR IS   8.005100
          THE EXCESS CHARGE FOR NACL IS 0.1722E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1767E-02
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SAMPLE DATE 7 75
     SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
     --------       ------     ----------      --------------

     NA+               1        0.2614E-02       0.6010E 02
     K+                1        0.3836E-04       0.1500E 01
     CA++              2        0.6966E-02       0.2792E 03
     MG++              2        0.3225E-02       0.7840E 02
     H+                1        0.1000E-06       0.7000E 01
     SO4--            -2        0.9473E-02       0.9100E 03
     CL-              -1        0.1833E-02       0.6500E 02
     HCO3-            -1        0.4982E-02       0.3040E 03
     BA                0        0.3022E-06       0.4150E-01
     FE                0        0.9311E-05       0.5200E 00
     CU                0        0.3935E-07       0.2500E-02
     SR                0        0.3995E-04       0.3500E 01
     PB                0        0.1207E-06       0.2500E-01
     CR                0        0.0              0.0
     ZN                0        0.9179E-06       0.6000E-01
     HG                0        0.0              0.0
     F                 0        0.3316E 00       0.6300E 04
     NO3               0        0.1169E-02       0.7250E 02
     O2 SAM            0        0.2000E-03       0.6400E 01
     O2 CAL            0        0.2500E-03       0.8000E 01
      FILTER           0        0.0              0.0
      TEMP             0        0.1850E 02       0.1850E 02
      REF              0        NMT              NMT
                       0
     THE EXCESS SAMPLE CHARGE IS-0.2728E-02AND THE ANALYTICAL PERCENT ERROR IS   5.589601

     THE EXCESS CHARGE FOR NACL IS 0.7808E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3547E-02
AK02        AK1      .  AK2        AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.41E-01    0.36E-06    0.36E-10    0.51E-02    0.81E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC          AKD

 0.36E-08    0.14E-16


                                                     ION STRENGTH          GAMMA 1      GAMMA 2

                                                          0.333E-01      0.517E 00       0.848E 00

C4I          CA           MG           SO4          HCO3         H+           CCO3         C1

.0           0.505E-02    0.239E-02    0.686E-02    0.480E-02    0.100E-06    0.282E-05    0.181E-02

    C2           C3           C4           C5           C6           C7           C8           C9
 0.472E-05    0.123E-05    0.106E-03    0.362E-04    0.793E-03    0.158E-04    0.412E-06    0.236E-07

   CA SAT       DOLSAT       GYPSAT        PCO2         SCO2        SATPH
 0.104E 01    0.502E 00    0.372E 00    0.556E-04    0.155E-03    0.691E 01
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

12 23   5 3410 2863. 3308.        458.          143.   458.              SL          DU        DW          PATTERSO    0  0

                                              PATTERSON

          SAMPLE DATE 5 73
               SPECIES         CHARGE        MOLARITY          ORIGINAL UNITS
               --------        ------       ----------        --------------

               NA+                1         0.2479E-02          0.5700E 02
               K+                 1         0.3069E-04          0.1200E 01
               CA++               2         0.4616E-02          0.1850E 03
               MG++               2         0.2920E-02          0.7100E 02
               H+                 1         0.5624E-07          0.7250E 01
               SO4--             -2         0.4601E-02          0.4420E 03
               CL-               -1         0.2257E-02          0.8000E 02
               HCO3-             -1         0.4600E-02          0.4600E-02
               BA                 0         0.2621E-06          0.3600E-01
               FE                 0         0.8953E-06          0.5000E-01
               CU                 0         0.0                 0.0
               SR                 0         0.2739E-04          0.2400E 01
               PB                 0         0.0                 0.0
               CR                 0         0.0                 0.0
               ZN                 0         0.0                 0.0
               HG                 0         0.0                 0.0
               F                  0         0.0                 0.0
               NO3                0         0.0                 0.0
               O2  SAM            0         0.0                 0.0
               O2  CAL            0         0.0                 0.0
               FILTER             0         0.0                 0.0
               TEMP               0         0.1900E 02          0.1900E 02
               REF                0         NMT                 NMT
                                  0
               THE EXCESS SAMPLE CHARGE IS 0.1523E-02AND THE ANALYTICAL PERCENT ERROR IS    4.528467
               THE EXCESS CHARGE FOR NACL IS 0.2229E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1270E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9
0.41E-01    0.36E-06    0.36E-10    0.51E-02    0.80E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD
 0.36E-08    0.13E-16

                                                      ION STRENGTH          GAMMA 1       GAMMA 2
                                                             0.237E-01      0.562E 00      0.866E 00
C4I          CA          MG          SO4          HCO3         H+           CCO3         C1
.0           0.375E-02   0.241E-02   0.335E-02    0.442E-02    0.562E-07    0.440E-05    0.776E-03

    C2           C3          C4          C5          C6          C7          C8          C9
 0.652E-05   0.223E-05   0.800E-04   0.370E-04   0.467E-03   0.794E-05   0.175E-06   0.378E-07
    CA SAT       DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.143E 01   0.130E 01   0.159E 00   0.282E-04   0.118E-03   0.703E 01
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SAMPLE DATE 3 74
    SPECIES        CHARGE     MOLARITY        ORIGINAL UNITS
    --------       ------    -----------      --------------

    NA+              1       0.1566E-02        0.3600E 02
    K+               1       0.3325E-04        0.1300E 01
    CA++             2       0.2570E-02        0.1030E 03
    MG++             2       0.1810E-02        0.4400E 02
    H+               1       0.3162E-07        0.7500E 01
    SO4--           -2       0.3227E-02        0.3100E 03
    CL-             -1       0.1721E-02        0.6100E 02
    HCO3-           -1       0.3982E-02        0.2430E 03
    BA               0       0.2621E-06        0.3600E-01
    FE               0       0.1791E-08        0.1000E-03
    CU               0       0.1259E-06        0.8000E-02
    SR               0       0.2739E-04        0.2400E 01
    PB               0       0.0               0.0
    CD               0       0.0               0.0
    ZN               0       0.0               0.0
    HG               0       0.0               0.0
    F                0       0.0               0.0
    NO3              0       0.0               0.0
    O2 SAM           0       0.0               0.0
    O2 CAL           0       0.0               0.0
    FILTER           0       0.0               0.0
    TEMP             0       0.1900E 02        0.1900E 02
    REF              0       NMT               NMT
                     0
    THE EXCESS SAMPLE CHARGE IS-0.1799E-02AND THE ANALYTICAL PERCENT ERROR IS    7.988780

    THE EXCESS CHARGE FOR NACL IS-0.1547E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1677E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.41E-01    0.36E-06    0.36E-10    0.51E-02    0.80E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08    0.13E-16


                                              ION STRENGTH          GAMMA 1     GAMMA 2

                                                     0.160E-01     0.611E 00     0.884E 00
C4I         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.212E-02   0.152E-02   0.256E-02   0.385E-02   0.316E-07   0.640E-05   0.397E-03

     C2          C3          C4          C5          C6          C7          C8          C9
 0.636E-05   0.249E-05   0.430E-04   0.221E-04   0.266E-03   0.417E-05   0.158E-06   0.379E-07
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2       SATPH
 0.140E 01   0.138E 01   0.816E-01   0.138E-04   0.924E-04   0.730E 01
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SAMPLE DATE 5 75
    SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
    --------        ------     ----------       --------------

    NA+                1       0.1327E-02         0.4200E 02
    K+                 1       0.2762E-04         0.1080E 01
    CA++               2       0.3792E-02         0.1520E 03
    MG++               2       0.1645E-02         0.4000E 02
    H+                 1       0.1995E-06         0.6700E 01
    SO4--             -2       0.2967E-02         0.2850E 03
    CL-               -1       0.1326E-02         0.4700E 02
    HCO3-             -1       0.3950E-02         0.2410E 03
    BA                 0       0.2403E-06         0.3300E-01
    FE                 0       0.1379E-04         0.7700E 00
    CU                 0       0.0                0.0
    SR                 0       0.2511E-04         0.2200E 01
    PB                 0       0.4585E-07         0.9500E-02
    CR                 0       0.2789E-07         0.1450E-02
    ZN                 0       0.6425E-07         0.4200E-02
    HG                 0       0.0                0.0
    F                  0       0.5264E-05         0.1000E 00
    NO3                0       0.2645E-03         0.1640E 02
    O2 SAM             0       0.2000E-03         0.6400E 01
    O2 CAL             0       0.2406E-03         0.7700E 01
    FILTER             0       0.0                0.0
    TEMP               0       0.2000E 02         0.2000E 02
    REF                0       NMT                NMT
                       0
    THE EXCESS SAMPLE CHARGE IS 0.1521E-02AND THE ANALYTICAL PERCENT ERROR IS   6.353628

    THE EXCESS CHARGE FOR NACL IS 0.5012E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.9920E-03
AK02      AK1       AK2       AK01      AK02      AK03      AK04      AK05      AK06      AK07      AK08      AK09

0.40E-01  0.37E-06  0.37E-10  0.51E-02  0.78E-03  0.14E-02  0.11E 00  0.16E 00  0.53E-02  0.19E 00  0.11E 00  0.54E-01
  AKC       AKD

 0.36E-08  0.13E-16


                                        ION STRENGTH         GAMMA 1     GAMMA 2

                                              0.173E-01     0.602E 00     0.881E 00

C4I        CA         MG         SO4        HCO3       H+         CCO3       C1

.0         0.321E-02  0.141E-02  0.224E-02  0.385E-02  0.200E-06  0.105E-05  0.513E-03

    C2         C3         C4         C5         C6         C7         C8         C9
 0.155E-05  0.371E-06  0.658E-04  0.206E-04  0.214E-03  0.418E-05  0.113E-06  0.712E-08

   CA SAT     DOLSAT     GYPSAT      PCO2       SCO2      SATPH
 0.340E 00  0.510E-01  0.104E 00  0.832E-04  0.159E-03  0.711E 01
```

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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

12 23  6 2140 2088. 3800.        660.            0.     0.              SL         DU        IW          PATTERSO     0  0

                                            IPR. WELL      'LITTLE CAT'

        SAMPLE DATE 7 75
            SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
            --------        ------      ----------      --------------

            NA+                1        0.1231E-02        0.2830E 02
            K+                 1        0.3069E-04        0.1200E 01
            CA++               2        0.2216E-02        0.8880E 02
            MG++               2        0.1534E-02        0.3730E 02
            H+                 1        0.6310E-07        0.7200E 01
            SO4--             -2        0.2998E-02        0.2880E 03
            CL-               -1        0.8603E-03        0.3050E 02
            HCO3-             -1        0.3982E-02        0.2430E 03
            BA                 0        0.1820E-06        0.2500E-01
            FE                 0        0.7700E-05        0.4300E 00
            CU                 0        0.5194E-07        0.3300E-02
            SR                 0        0.2054E-04        0.1800E 01
            PB                 0        0.4826E-07        0.1000E-01
            CR                 0        0.1154E-07        0.6000E-03
            ZN                 0        0.2065E-06        0.1350E-01
            HG                 0        0.0               0.0
            F                  0        0.4053E 00        0.7700E 04
            NO3                0        0.1600E-03        0.9920E 01
            O2 SAM             0        0.1719E-03        0.5500E 01
            O2 CAL             0        0.2500E-03        0.8000E 01
            FILTER             0        0.0               0.0
            TEMP               0        0.2070E 02        0.2070E 02
            REF                0        NMT               NMT
                               0
            THE EXCESS SAMPLE CHARGE IS-0.2078E-02AND THE ANALYTICAL PERCENT ERROR IS  10.599953

            THE EXCESS CHARGE FOR NACL IS 0.3707E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2479E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.39E-01    0.37E-06    0.38E-10    0.50E-02    0.77E-03    0.14E-02    0.11E 00    0.16E 00    0.52E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKO

 0.36E-08    0.12E-16

                                                ION STRENGTH         GAMMA 1      GAMMA 2

                                                    0.141E-01         0.627E 00      0.890E 00

C4I          CA          MG          SO4          HCO3         H+           CCO3         C1

.0           0.133E-02   0.123E-02   0.242E-02    0.389E-02    0.631E-07    0.330E-05    0.345E-03

    C2           C3          C4           C5           C6           C7           C8           C9
0.306E-05    0.117E-05   0.403E-04    0.200E-04    0.232E-03    0.318E-05    0.141E-06    0.157E-07

    CA SAT       DOLSAT      GYPSAT       PCO2         SCO2         SATPH
0.667E 00    0.319E 00   0.696E-01    0.258E-04    0.101E-03    0.733E 01
```

```
 LOCATION     BA     ELEVATION      DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED
12 23  6 4110 2347. 3830.          620.            19.  620.              MF          MA       1300.      PATTERSO     0  0


        SAMPLE DATE 5 73
            SPECIES         CHARGE      MOLARITY          ORIGINAL UNITS
            --------        ------     ----------        --------------

            NA+                  1      0.0                 0.0
            K+                   1      0.0                 0.0
            CA++                 2      0.0                 0.0
            MG++                 2      0.0                 0.0
            H+                   1      0.3981E-07          0.7400E 01
            SO4--               -2      0.2832E-02          0.2720E 03
            CL-                 -1      0.1551E-02          0.5500E 02
            HCO3-               -1      0.4100E-02          0.4100E-02
            BA                   0      0.1893E-06          0.2600E-01
            FE                   0      0.1791E-05          0.1000E 00
            CU                   0      0.0                 0.0
            SR                   0      0.2054E-04          0.1800E 01
            PB                   0      0.0                 0.0
            CR                   0      0.0                 0.0
            ZN                   0      0.0                 0.0
            HG                   0      0.0                 0.0
            F                    0      0.0                 0.0
            NO3                  0      0.0                 0.0
            O2 SAM               0      0.0                 0.0
            O2 CAL               0      0.0                 0.0
            FILTER               0      0.0                 0.0
            TEMP                 0      0.2040E 02          0.2040E 02
            REF                  0      NMT                 NMT
                                 0
            THE EXCESS SAMPLE CHARGE IS-0.1131E-01AND THE ANALYTICAL PERCENT ERROR IS  99.999298
            THE EXCESS CHARGE FOR NACL IS 0.3707E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2479E-02
```

```
LOCATION     RA    ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

13 20 13 2220     0. 4524.          386.          238.  386.                GS          DU          OW          PVACD        12 55

                                              OBSERVATION WELL #4.  30 MILES SOUTH OF #3

        SAMPLE DATE 3 74
            SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
            --------       ------     ----------      --------------

            NA+              1        0.5220E-03        0.1200E 02
            K+               1        0.2557E-04        0.1000E 01
            CA++             2        0.8109E-02        0.3250E 03
            MG++             2        0.1440E-02        0.3500E 02
            H+               1        0.5012E-07        0.7300E 01
            SO4--           -2        0.2498E-02        0.2400E 03
            CL-             -1        0.7052E-02        0.2500E 03
            HCO3-           -1        0.3573E-02        0.2180E 03
            BA               0        0.5315E-06        0.7300E-01
            FE               0        0.4477E-03        0.2500E 02
            CU               0        0.4879E-06        0.3100E-01
            SR               0        0.1255E-04        0.1100E 01
            PB               0        0.0               0.0
            CR               0        0.8462E-07        0.4400E-02
            ZN               0        0.0               0.0
            HG               0        0.0               0.0
            F                0        0.0               0.0
            NO3              0        0.0               0.0
            O2 SAM           0        0.0               0.0
            O2 CAL           0        0.0               0.0
            FILTER           0        0.0               0.0
            TEMP             0        0.1900E 02        0.1900E 02
            REF              0        NMT               NMT
                             0
            THE EXCESS SAMPLE CHARGE IS 0.4023E-02AND THE ANALYTICAL PERCENT ERROR IS  11.408448
            THE EXCESS CHARGE FOR NACL IS-0.6530E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1053E-01
AKO2        AK1         AK2        AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.41E-01    0.36E-06    0.36E-10   0.51E-02    0.80E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.36E-08    0.13E-16


                                                        ION STRENGTH        GAMMA 1     GAMMA 2

                                                           0.260E-01        0.550E 00     0.861E 00
C4I          CA          MG          SO4          HCO3         H+           CO3          C1

.0          0.727E-02   0.130E-02   0.166E-02    0.336E-02    0.501E-07    0.382E-05    0.714E-03

    C2          C3          C4          C5           C6           C7           C8           C9
 0.105E-04   0.103E-05   0.115E-03   0.149E-04    0.120E-03    0.812E-06    0.708E-07    0.676E-08
   CA SAT      DOLSAT      GYPSAT      PCO2         SCO2         SATPH
 0.231E 01   0.941E 00   0.147E 00   0.191E-04    0.876E-04    0.687E 01
```

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          SAMPLE DATE12 74
               SPECIES         CHARGE        MOLARITY          ORIGINAL UNITS
               --------        ------       ----------         --------------

               NA+                1         0.8265E-03           0.1900E 02
               K+                 1         0.3703E-04           0.1450E 01
               CA++               2         0.2894E-02           0.1160E 03
               MG++               2         0.1563E-02           0.3800E 02
               H+                 1         0.6310E-07           0.7200E 01
               SO4--             -2         0.4476E-02           0.4300E 03
               CL-               -1         0.4513E-03           0.1600E 02
               HCO3-             -1         0.3753E-02           0.2290E 03
               BA                 0         0.4077E-06           0.5600E-01
               FE                 0         0.5372E-04           0.3000E 01
               CU                 0         0.3305E-06           0.2100E-01
               SR                 0         0.1312E-04           0.1150E 01
               PB                 0         0.1303E-06           0.2700E-01
               CR                 0         0.5000E-07           0.2600E-02
               ZN                 0         0.0                  0.0
               HG                 0         0.0                  0.0
               F                  0         0.0                  0.0
               NO3                0         0.0                  0.0
               O2 SAM             0         0.0                  0.0
               O2 CAL             0         0.0                  0.0
               FILTER             0         0.0                  0.0
               TEMP               0         0.1870E 02           0.1870E 02
               REF                0         NMT                  NMT
                                  0
               THE EXCESS SAMPLE CHARGE IS-0.3379E-02AND THE ANALYTICAL PERCENT ERROR IS  14.732432
               THE EXCESS CHARGE FOR NACL IS 0.3752E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3791E-02
AKC2       AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.41E-01   0.36E-06    0.36E-10    0.51E-02    0.80E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC        AKD
 0.36E-08   0.14E-16

                                                          ION STRENGTH        GAMMA 1     GAMMA 2
                                                               0.167E-01      0.606E 00     0.882E 00
C4I        CA          MG          SO4         HCO3        H+          CCO3        C1
.0         0.227E-02   0.125E-02   0.359E-02   0.366E-02   0.631E-07   0.304E-05   0.583E-03

   C2          C3          C4          C5          C6          C7          C8          C9
 0.315E-05   0.950E-06   0.429E-04   0.169E-04   0.298E-03   0.306E-05   0.244E-06   0.943E-08
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.696E 00   0.260E 00   0.120E 00   0.266E-04   0.102E-03   0.730E 01
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SAMPLE DATE 3 75
    SPECIES          CHARGE       MOLARITY        ORIGINAL UNITS
    --------         ------      -----------      --------------

    NA+                 1        0.6960E-03        0.1600E 02
    K+                  1        0.2813E-04        0.1100E 01
    CA++                2        0.2819E-02        0.1130E 03
    MG++                2        0.1563E-02        0.3800E 02
    H+                  1        0.3981E-07        0.7400E 01
    SO4--              -2        0.3331E-02        0.3200E 03
    CL-                -1        0.2821E-03        0.1000E 02
    HCO3-              -1        0.3769E-02        0.2300E 03
    BA                  0        0.3277E-06        0.4500E-01
    FE                  0        0.7700E-03        0.4300E 02
    CU                  0        0.2046E-06        0.1300E-01
    SR                  0        0.1027E-04        0.9000E 00
    PB                  0        0.1448E-06        0.3000E-01
    CR                  0        0.2885E-07        0.1500E-02
    ZN                  0        0.0               0.0
    HG                  0        0.0               0.0
    F                   0        0.2158E 00        0.4100E 04
    NO3                 0        0.5323E-04        0.2300E 01
    O2 SAM              0        0.1125E-03        0.3600E 01
    O2 CAL              0        0.2687E-03        0.8600E 01
    FILTER              0        0.0               0.0
    TEMP                0        0.1800E 02        0.1800E 02
    REF                 0        NMT               NMT
                        0
    THE EXCESS SAMPLE CHARGE IS-0.1225E-02AND THE ANALYTICAL PERCENT ERROR IS   6.063547
    THE EXCESS CHARGE FOR NACL IS 0.4139E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1667E-02
AKO2       AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9
0.42E-01   0.35E-06   0.35E-10   0.52E-02   0.81E-03   0.15E-02   0.12E 00   0.17E 00   0.56E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKO
 0.37E-08   0.14E-16


                                                ION STRENGTH          GAMMA 1     GAMMA 2
                                                      0.149E-01     0.621E 00    0.888E 00
C4T        CA         MG         SO4        HCO3       H+         CO3        C1
.0         0.231E-02  0.131E-02  0.264E-02  0.366E-02  0.398E-07  0.466E-05  0.456E-03

    C2         C3         C4         C5         C6         C7         C8         C9
0.511E-05  0.158E-05  0.438E-04  0.179E-04  0.236E-03  0.194E-05  0.139E-06  0.124E-07
  CA SAT     DOLSAT     GYPSAT      PCO2       SCO2      SATPH
0.113E 01  0.696E 00  0.945E-01  0.173E-04  0.941E-04  0.730E 01
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SAMPLE DATE 5 75
     SPECIES          CHARGE       MOLARITY         ORIGINAL UNITS
     --------         ------      ----------        --------------

     NA +               1         0.1740E-02          0.4000E 02
     K+                 1         0.2430E-04          0.9500E 00
     CA++               2         0.3144E-02          0.1260E 03
     MG++               2         0.1563E-02          0.3800E 02
     H+                 1         0.1000E-06          0.7000E 01
     SO4--             -2         0.2228E-02          0.2140E 03
     CL-               -1         0.8744E-03          0.3100E 02
     HCO3-             -1         0.3802E-02          0.2320E 03
     BA                 0         0.1456E-06          0.2000E-01
     FE                 0         0.2507E-04          0.1400E 01
     CU                 0         0.0                 0.0
     SR                 0         0.1997E-04          0.1750E 01
     PB                 0         0.0                 0.0
     CR                 0         0.2212E-07          0.1150E-02
     ZN                 0         0.6731E-07          0.4400E-02
     HG                 0         0.0                 0.0
     F                  0         0.2105E-04          0.4000E 00
     NO3                0         0.1350E-04          0.8370E 00
     O2  SAM            0         0.1687E-03          0.5400E 01
     O2  CAL            0         0.2344E-03          0.7500E 01
     FILTER             0         0.0                 0.0
     TEMP               0         0.2050E 02          0.2050E 02
     REF                0         NMT                 NMT
                        0
     THE EXCESS SAMPLE CHARGE IS 0.2046E-02AND THE ANALYTICAL PERCENT ERROR IS  10.072327

     THE EXCESS CHARGE FOR NACL IS 0.8655E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1156E-02
AKO2       AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9

0.39E-01   0.37E-06   0.37E-10   0.51E-02   0.78E-03   0.14E-02   0.11E 00   0.16E 00   0.53E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.36E-08   0.13E-16


                                                    ION STRENGTH         GAMMA 1     GAMMA 2

                                                          0.148E-01     0.621E 00      0.838E 00

C4T          CA           MG          SO4          HCO3         H+          CCO3         C1

.0           0.273E-02    0.137E-02   0.170E-02    0.370E-02    0.100E-06   0.198E-05    0.354E-03


    C2           C3           C4           C5           C6           C7.          C8          C9
 0.269E-05    0.734E-06    0.563E-04    0.201E-04    0.171E-03    0.313E-05    0.776E-07   0.133E-07

    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2        SATPH
 0.586E 00    0.176E 00    0.717E-01    0.392E-04    0.111E-03    0.718E 01
```

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LOCATION . RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

13 24 34 4110 1017. 3700.       500.         380.  500.               SL        DU      DW.        000          0 59

                                              RA # IS 1017-A  VILLA SOLANO SCHOOL

         SAMPLE DATE 5 75
             SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
             --------       ------      ----------      --------------

             NA+                1       0.9134E-03       0.2100E 02
             K+                 1       0.2353E-04       0.9200E 00
             CA++               2       0.3493E-02       0.1400E 03
             MG++               2       0.2262E-02       0.5500E 02
             H+                 1       0.1000E 01       0.0
             SO4--             -2       0.3591E-02       0.3450E 03
             CL-               -1       0.2821E-04       0.1000E 01
             HC03-             -1       0.0              0.0
             BA                 0       0.2403E-06       0.3300E-01
             FE                 0       0.2185E-05       0.1220E 00
             CU                 0       0.1259E-06       0.9000E-02
             SR                 0       0.2054E-04       0.1800E 01
             PB                 0       0.6274E-07       0.1300E-01
             CR                 0       0.1154E-07       0.6000E-03
             ZN                 0       0.1683E-05       0.1100E 00
             HG                 0       0.0              0.0
             F                  0       0.1579E-04       0.3000E 00
             N03                0       0.1613E-03       0.1000E 02
             02 SAM             0       0.0              0.0
             02 CAL             0       0.0              0.0
             FILTER             0       0.0              0.0
             TEMP               0       0.0              0.0
             REF                0       NMT              NMT

             THE EXCESS SAMPLE CHARGE IS 0.1005E 01AND THE ANALYTICAL PERCENT ERROR IS  98.585648
             THE EXCESS CHARGE FOR NACL IS 0.8655E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1156E-02
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SAMPLE DATE 7 75
    SPECIES        CHARGE       MOLARITY         ORIGINAL UNITS
    --------       ------      ----------        --------------

    NA+               1        0.9221E-03         0.2120E 02
    K+                1        0.2557E-04         0.1000E 01
    CA++              2        0.3184E-02         0.1276E 03
    MG++              2        0.1896E-02         0.4610E 02
    H+                1        0.6310E-07         0.7200E 01
    SO4--            -2        0.2998E-02         0.2880E 03
    CL-              -1        0.3892E-03         0.1380E 02
    HCO3-            -1        0.3671E-02         0.2240E 03
    BA                0        0.7281E-07         0.1000E-01
    FE                0        0.8147E-04         0.4550E 01
    CU                0        0.3557E-06         0.2260E-01
    SR                0        0.2168E-04         0.1900E 01
    PB                0        0.6757E-07         0.1400E-01
    CR                0        0.0                0.0
    ZN                0        0.2065E-05         0.1350E 00
    HG                0        0.0                0.0
    F                 0        0.4790E 00         0.9100E 04
    NO3               0        0.8065E-05         0.5000E 00
    O2  SAM           0        0.2094E-03         0.6700E 01
    O2  CAL           0        0.2125E-03         0.6800E 01
    FILTER            0        0.0                0.0
    TEMP              0        0.2220E 02         0.2220E 02
    REF               0        NMT                NMT
                      0
    THE EXCESS SAMPLE CHARGE IS 0.1051E-02AND THE ANALYTICAL PERCENT ERROR IS   4.965640

    THE EXCESS CHARGE FOR NACL IS 0.5329E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.4924E-03
AKO2      AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.37E-01  0.38E-06   0.39E-10   0.50E-02   0.75E-03   0.14E-02   0.11E 00   0.15E 00   0.50E-02   0.19E 00   0.11E 00   0.54E-01
 AKC       AKD

 0.35E-08  0.12E-16


                                                 ION STRENGTH        GAMMA 1     GAMMA 2

                                                     0.155E-01      0.615E 00    0.886E 00
C4T        CA         MG         SO4        HCO3       H+         CCO3       C1

.0        0.267E-02  0.160E-02  0.227E-02  0.355E-02  0.631E-07  0.316E-05  0.459E-03

   C2         C3         C4         C5         C6         C7         C8         C9
 0.424E-05  0.133E-05  0.551E-04  0.232E-04  0.272E-03  0.219E-05  0.108E-06  0.111E-07

   CA SAT     DOLSAT     GYPSAT     PCO2       SCO2       SATPH
 0.913E 00  0.528E 00  0.915E-01  0.221E-04  0.882E-04  0.719E 01
```

```
SAMPLE DATE 1 76
    SPECIES       CHARGE      MOLARITY        ORIGINAL UNITS
    --------      ------     ----------      -------------

    NA+              1       0.7830E-03        0.1800E 02
    K+               1       0.7672E-05        0.3000E 00
    CA++             2       0.2994E-02        0.1200E 03
    MG++             2       0.8638E-03        0.2100E 02
    H+               1       0.3162E-07        0.7500E 01
    SO4--           -2       0.3612E-02        0.3470E 03
    CL-             -1       0.2933E-03        0.1040E 02
    HCO3-           -1       0.3800E-02        0.3800E-02
    BA               0       0.0               0.0
    FE               0       0.8953E-05        0.5000E 00
    CU               0       0.4548E-04        0.2890E 01
    SR               0       0.0               0.0
    PB               0       0.0               0.0
    CR               0       0.0               0.0
    ZN               0       0.0               0.0
    HG               0       0.0               0.0
    F                0       0.0               0.0
    NO3              0       0.5645E-04        0.3500E 01
    O2 SAM           0       0.1750E-03        0.5600E 01
    O2 CAL           0       0.2844E-03        0.9100E 01
    FILTER           0       0.0               0.0
    TEMP             0       0.1900E 02        0.1900E 02
    REF              0       NMT               NMT
                     0
    THE EXCESS SAMPLE CHARGE IS-0.2812E-02AND THE ANALYTICAL PERCENT ERROR IS  14.183026

    THE EXCESS CHARGE FOR NACL IS 0.4896E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3309E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.41E-01    0.36E-06    0.36E-10    0.51E-02    0.80E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.36E-08    0.13E-16

                                                ION STRENGTH          GAMMA 1     GAMMA 2

                                                      0.145E-01       0.624E 00       0.889E 00

C4I          CA          MG          SO4         HCO3        H+          CO3         C1

.0           0.240E-02   0.706E-03   0.293E-02   0.368E-02   0.316E-07   0.602E-05   0.536E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.706E-05   0.113E-05   0.474E-04   0.100E-04   0.147E-03   0.243E-05   0.424E-07   0.182E-07

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.155E 01   0.696E 00   0.110E 00   0.132E-04   0.883E-04   0.726E 01
```

```
LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

13 26 28 4110 2030. 3425.        200.          185.  200.              AL         SU        IW          MCNEIL       0  0

                                                   IRR. WELL    NEAR DEXTER EAST SIDE OF ROAD ACROSS TRACKS

          SAMPLE DATE 5 75
               SPECIES          CHARGE       MOLARITY         ORIGINAL UNITS
               --------         ------       ----------       --------------

               NA+                 1         0.1044E-02         0.2400E 02
               K+                  1         0.4654E-04         0.1820E 01
               CA++                2         0.4915E-02         0.1970E 03
               MG++                2         0.2632E-02         0.6400E 02
               H+                  1         0.1000E-06         0.7000E 01
               SO4--              -2         0.6090E-02         0.5850E 03
               CL-                -1         0.2821E-03         0.1000E 02
               HCO3-              -1         0.3491E-02         0.2130E 03
               BA                  0         0.1019E-06         0.1400E-01
               FE                  0         0.1074E-04         0.6000E 00
               CU                  0         0.0                0.0
               SR                  0         0.3139E-04         0.2750E 01
               PB                  0         0.2413E-07         0.5000E-02
               CR                  0         0.1154E-07         0.6000E-03
               ZN                  0         0.0                0.0
               HG                  0         0.0                0.0
               F                   0         0.2632E-04         0.5000E 00
               NO3                 0         0.1290E-03         0.8000E 01
               O2 SAM              0         0.1187E-03         0.3800E 01
               O2 CAL              0         0.2250E-03         0.7200E 01
               FILTER              0         0.0                0.0
               TEMP                0         0.1900E 02         0.1900E 02
               REF                 0         NMT                NMT
                                   0
               THE EXCESS SAMPLE CHARGE IS 0.2332E-03AND THE ANALYTICAL PERCENT ERROR IS   0.725747
               THE EXCESS CHARGE FOR NACL IS 0.7619E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.5753E-03
AK02       AK1           AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.41E-01   0.36E-06    0.36E-10    0.51E-02    0.80E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
 AKC        AKD
 0.36E-08   0.13E-16

                                                ION STRENGTH          GAMMA 1      GAMMA 2
                                                      0.231E-01       0.565E 00      0.867E 00
C4I         CA          MG          SO4         HCO3        H+          CCO3        C1
.0          0.379E-02   0.297E-02   0.448E-02   0.338E-02   0.100E-06   0.188E-05   0.106E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.234E-05   0.343E-05   0.629E-04   0.243E-04   0.541E-03   0.450E-05   0.357E-06   0.686E-08
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.627E 00   0.211E 01   0.218E 00   0.383E-04   0.107E-03   0.714E 01
```

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 LOCATION    RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

13 26 33 421C 1317. 3435.        213.        213.  213.           AL          SU       IW        0000          0  0

                                         HAGERMAN.  NORTH SIDE.  RA 1317

        SAMPLE DATE 4 74
           SPECIES        CHARGE     MOLARITY       ORIGINAL UNITS
           --------       ------    ----------      --------------

           NA+               1      0.2305E-01        0.5300E 03
           K+                1      0.6139E-04        0.2400E 01
           CA++              2      0.9306E-02        0.3730E 03
           MG++              2      0.1069E-01        0.2600E 03
           H+                1      0.1413E-06        0.6850E 01
           SO4--            -2      0.1770E-01        0.1700E 04
           CL-              -1      0.3357E-01        0.1190E 04
           HCO3-            -1      0.4294E-02        0.2620E 03
           BA                0      0.4150E-06        0.5700E-01
           FE                0      0.1791E-08        0.1000E-03
           CU                0      0.1810E-06        0.1150E-01
           SR                0      0.1255E-03        0.1100E 02
           CR                0      0.0               0.0
           ZN                0      0.0               0.0
           HG                0      0.0               0.0
           F                 0      0.0               0.0
           NO3               0      0.0               0.0
           O2 SAM            0      0.0               0.0
           O2 CAL            0      0.0               0.0
           FILTER            0      0.0               0.0
           TEMP              0      0.0               0.0
           REF               0      0.1700E 02        0.1700E 02
                             0      NMT               NMT
          THE EXCESS SAMPLE CHARGE IS-0.1014E-01AND THE ANALYTICAL PERCENT ERROR IS   7.433312
AK02       AK1 THE EXCESS CHARGE FOR NACL IS-0.1051E-01AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.3136E-03
                   AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09
0.43E-01   0.35E-06   0.35E-11   0.52E-02   0.83E-03   0.15E-02   0.12E 00   0.17E 00   0.58E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKO
 0.37E-08   0.15E-16


                                              ION STRENGTH          GAMMA 1     GAMMA 2
                                                     0.845E-01       0.397E 00     0.794E 00
C41         CA          MG          SO4         HCO3        H+          CCO3        C1
.0         0.671E-02   0.794E-02   0.123E-01   0.410E-02   0.141E-06   0.200E-05   0.251E-02

    C2          C3          C4          C5          C6          C7          C8          C9
0.256E-05   0.167E-05   0.381E-04   0.761E-04   0.268E-02   0.192E-03   0.911E-06   0.114E-06
  CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.573E 00   0.364E 00   0.526E 00   0.720E-04   0.161E-03   0.699E 01
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```
 LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL      FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

14 25  8 4110    0. 3587.          0.             0.     0.                SL        DU         WM        0000          0  0

                                               NORTH OF ROAD TO CHAVIS COUNTY CATTLE CO.

            SAMPLE DATE 5 75
                 SPECIES        CHARGE       MOLARITY          ORIGINAL UNITS
                 --------       ------      ----------        --------------

                 NA+               1        0.1174E-02          0.2700E 02
                 K+                1        0.2711E-04          0.1060E 01
                 CA++              2        0.3019E-02          0.1210E 03
                 MG++              2        0.2015E-02          0.4900E 02
                 H+                1        0.6310E-07          0.7200E 01
                 SO4--            -2        0.3383E-02          0.3250E 03
                 CL-              -1        0.2821E-03          0.1000E 02
                 HCO3-            -1        0.3097E-02          0.1890E 03
                 BA                0        0.1893E-06          0.2600E-01
                 FE                0        0.1039E-04          0.5800E 00
                 CU                0        0.2833E-07          0.1800E-02
                 SR                0        0.2111E-04          0.1850E 01
                 PB                0        0.5309E-07          0.1100E-01
                 CR                0        0.2116E-07          0.1100E-02
                 ZN                0        0.1713E-05          0.1120E 00
                 HG                0        0.0                 0.0
                 F                 0        0.1579E-04          0.3000E 00
                 NO3               0        0.1110E-03          0.6880E 01
                 O2 SAM            0        0.2250E-03          0.7200E 01
                 O2 CAL            0        0.2344E-03          0.7500E 01
                 FILTER            0        0.0                 0.0
                 TEMP              0        0.2060E 02          0.2060E 02
                 REF               0        NMT                 NMT
                                   0
                 THE EXCESS SAMPLE CHARGE IS 0.1124E-02AND THE ANALYTICAL PERCENT ERROR IS    5.250243
                 THE EXCESS CHARGE FOR NACL IS 0.8924E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2049E-03
 AK02         AK1          AK2          AK01         AK02         AK03         AK04         AK05         AK06         AK07         AK08         AK09
0.39E-01     0.37E-06     0.38E-10     0.50E-02     0.77E-03     0.14E-02     0.11E 00     0.16E 00     0.53E-02     0.19E 00     0.11E 00     0.54E-01
  AKC          AKD
 0.36E-08     0.12E-16

                                                       ION STRENGTH          GAMMA 1      GAMMA 2
                                                             0.158E-01      0.613E 00      0.885E 00
C4I           CA           MG           SO4          HCO3         H+           CCO3         C1
.0           0.249E-02    0.168E-02    0.259E-02    0.300E-02    0.631E-07    0.259E-05    0.481E-03

     C2           C3           C4           C5           C6           C7           C8           C9
 0.313E-05    0.113E-05    0.414E-04    0.193E-04    0.312E-03    0.317E-05    0.130E-06    0.115E-07
     CA SAT       DOL SAT      GYPSAT       PCO2         SCO2        SATPH
 0.681E 00    0.310E 00    0.972E-01    0.200E-04    0.785E-04    0.731E 01
```

```
SAMPLE DATE 7 75
    SPECIES        CHARGE       MOLARITY          ORIGINAL UNITS
    --------       ------      ----------        --------------

    NA+               1        0.8960E-03          0.2060E 02
    K+                1        0.3069E-04          0.1200E 01
    CA++              2        0.2844E-02          0.1140E 03
    MG++              2        0.1802E-02          0.4380E 02
    H+                1        0.5012E-07          0.7300E 01
    SO4--            -2        0.2727E-02          0.2620E 03
    CL-              -1        0.4316E-03          0.1530E 02
    HCO3-            -1        0.3671E-02          0.2240E 03
    BA                0        0.1092E-06          0.1500E-01
    FE                0        0.4835E-04          0.2700E 01
    CU                0        0.1062E-06          0.6750E-02
    SR                0        0.1792E-04          0.1570E 01
    PB                0        0.4826E-07          0.1000E-01
    CR                0        0.2116E-07          0.1100E-02
    ZN                0        0.4895E-05          0.3200E 00
    HG                0        0.0                 0.0
    F                 0        0.3527E 00          0.6700E 04
    NO3               0        0.7306E-04          0.4530E 01
    O2 SAM            0        0.2344E-03          0.7500E 01
    O2 CAL            0        0.2125E-03          0.6800E 01
    FILTER            0        0.0                 0.0
    TEMP              0        0.1670E 02          0.1670E 02
    REF               0        NMT                 NMT
                      0
    THE EXCESS SAMPLE CHARGE IS 0.6611E-03AND THE ANALYTICAL PERCENT ERROR IS   3.342844

    THE EXCESS CHARGE FOR NACL IS 0.4645E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1659E-03
AKO2        AKL         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.44E-01    0.35E-06    0.34E-10    0.52E-02    0.83E-03    0.15E-02    0.13E 00    0.17E 00    0.58E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.37E-08    0.15E-16

                                                ION STRENGTH        GAMMA 1     GAMMA 2
                                                       0.147E-01    0.622E 00      0.888E 00
C4I          CA          MG          SO4         HCO3        H+          CCO3        C1
.0           0.242E-02   0.156E-02   0.212E-02   0.357E-02   0.501E-07   0.349E-05   0.381E-03

    C2           C3          C4          C5          C6          C7          C8          C9
 0.393E-05   0.140E-05   0.429E-04   0.202E-04   0.221E-03   0.201E-05   0.123E-06   0.120E-07
   CA SAT      DOLSAT      GYPSAT       PCO2        SCO2       SATPH
 0.878E 00   0.464E 00   0.801E-01   0.226E-04   0.101E-03   0.731E 01
```

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LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

14 25 33 4320    0. 3529.         0.          0.     0.              SL         DU        WM        0000         0  0

                              WINDMILL WEST OF HIGHWAY****ENTRANCE ROAD SOUTH OF WINDMILL

    SAMPLE DATE 5 75
        SPECIES         CHARGE      MOLARITY       ORIGINAL UNITS
        --------        ------     ----------     --------------

        NA+                1       0.8700E-03       0.2000E 02
        K+                 1       0.2813E-04       0.1100E 01
        CA++               2       0.2769E-02       0.1110E 03
        MG++               2       0.1440E-02       0.3500E 02
        H+                 1       0.5012E-07       0.7300E 01
        SO4--             -2       0.3144E-02       0.3020E 03
        CL-               -1       0.2257E-03       0.8000E 01
        HCO3-             -1       0.2869E-02       0.1750E 03
        BA                 0       0.1966E-06       0.2700E-01
        FE                 0       0.3939E-05       0.2200E 00
        CU                 0       0.1967E-07       0.1250E-02
        SR                 0       0.1860E-04       0.1630E 01
        PB                 0       0.2172E-07       0.4500E-02
        CR                 0       0.2308E-07       0.1200E-02
        ZN                 0       0.2907E-06       0.1900E-01
        HG                 0       0.0              0.0
        F                  0       0.1053E-04       0.2000E 00
        NO3                0       0.1090E-03       0.6760E 01
        O2  SAM            0       0.1937E-03       0.6200E 01
        O2  CAL            0       0.2437E-03       0.7800E 01
        FILTER             0       0.0              0.0
        TEMP               0       0.2020E 02       0.2020E 02
        REF                0       NMT              NMT
                           0
        THE EXCESS SAMPLE CHARGE IS-0.6504E-04AND THE ANALYTICAL PERCENT ERROR IS   0.347826

        THE EXCESS CHARGE FOR NACL IS 0.6443E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.7375E-03
AK02       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.39E-01   0.37E-06   0.37E-10   0.51E-02   0.78E-03   0.14E-02   0.11E 00   0.16E 00   0.53E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.36E-08   0.13E-16


                                            ION STRENGTH          GAMMA 1       GAMMA 2

                                                  0.139E-01       0.629E 00       0.890E 00
C4I          CA          MG          SO4         HCO3        H+          CCO3        CL

.0           0.229E-02   0.120E-02   0.248E-02   0.279E-02   0.501E-07   0.294E-05   0.443E-03

     C2          C3          C4          C5          C6          C7          C8          C9
 0.340E-05   0.973E-06   0.357E-04   0.134E-04   0.222E-03   0.231E-05   0.133E-06   0.993E-08
     CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.742E 00   0.293E 00   0.399E-01   0.150E-04   0.699E-04   0.738E 01
```

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LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

14 26 15 1130 1333.    0.        150.        150.  150.            AL         SU       IW        FORD         5 55

                                    HAGERMAN.  SOUTH SIDE.  RA 1333F

         SAMPLE DATE 4 74
             SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
             --------        ------     ----------      --------------

             NA+                1       0.3393E-01       0.7800E 03
             K+                 1       0.3836E-04       0.1500E 01
             CA++               2       0.1233E-01       0.4940E 03
             MG++               2       0.1152E-01       0.2800E 03
             H+                 1       0.1995E-06       0.6700E 01
             SO4--             -2       0.2290E-01       0.2200E 04
             CL-               -1       0.5514E-01       0.1955E 04
             HCO3-             -1       0.4261E-02       0.2600E 03
             BA                 0       0.4806E-06       0.6600E-01
             FE                 0       0.2686E-05       0.1500E 00
             CU                 0       0.1574E-06       0.1000E-01
             SR                 0       0.2054E-03       0.1800E 02
             PB                 0       0.0              0.0
             CR                 0       0.0              0.0
             ZN                 0       0.0              0.0
             HG                 0       0.0              0.0
             F                  0       0.0              0.0
             NO3                0       0.0              0.0
             O2 SAM             0       0.0              0.0
             O2 CAL             0       0.0              0.0
             FILTER             0       0.0              0.0
             TEMP               0       0.1750E 02       0.1750E 02
             REF                0       NMT              NMT
                                0
             THE EXCESS SAMPLE CHARGE IS-0.2356E-01AND THE ANALYTICAL PERCENT ERROR IS  12.606936
             THE EXCESS CHARGE FOR NACL IS-0.2122E-01AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2380E-02
AK02        AK1        AK2        AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.43E-01    0.35E-06   0.35E-10   0.52E-02    0.82E-03    0.15E-02    0.12E 00    0.17E 00    0.57E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.37E-08    0.14E-16

                                                         ION STRENGTH         GAMMA 1      GAMMA 2
                                                            0.113E 00        0.362E 00       0.776E 00
C4T          CA          MG          SO4          HCO3         H+           CCO3         C1
.0           0.870E-02   0.836E-02   0.160E-01    0.406E-02    0.200E-06    0.152E-05    0.352E-02

    C2           C3           C4           C5           C6           C7           C8           C9
0.212E-05    0.112E-05    0.105E-03    0.732E-04    0.308E-02    0.333E-03    0.673E-06    0.116E-06
   CA SAT       DOLSAT       GYPSAT       PCO2         SCO2        SATPH
0.472E 00    0.203E 00    0.734E 00    0.983E-04    0.185E-03    0.692E 01
```

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 LOCATION     RA    ELEVATION      DEPTH    PRODUCTION INTERVAL     FORMATION    TYPE    YIELD     OWNER    DATE DRILLED

15 17 14 3120 4326. 6000.          400.            0.     0.             SL         DC      800.        FLYINGH      0  0


        SAMPLE DATE 7 73
            SPECIES         CHARGE     MOLARITY        ORIGINAL UNITS
            --------        ------    ----------       --------------

            NA+               1       0.1392E-02        0.3200E 02
            K+                1       0.6138E-04        0.2400E 01
            CA++              2       0.1382E-01        0.5540E 03
            MG++              2       0.3573E-02        0.8700E 02
            H+                1       0.7943E-07        0.7100E 01
            SO4--            -2       0.1499E-01        0.1440E 04
            CL-              -1       0.8462E-03        0.3000E 02
            HCO3-            -1       0.4700E-02        0.4700E-02
            BA                0       0.2548E-06        0.3500E-01
            FE                0       0.4656E-05        0.2600E 00
            CU                0       0.0               0.0
            SR                0       0.8674E-04        0.7600E 01
            PB                0       0.0               0.0
            CR                0       0.0               0.0
            ZN                0       0.0               0.0
            HG                0       0.0               0.0
            F                 0       0.0               0.0
            NO3               0       0.0               0.0
            O2 SAM            0       0.0               0.0
            O2 CAL            0       0.0               0.0
            FILTER            0       0.0               0.0
            TEMP              0       0.1840E 02        0.1840E 02
            REF               0       NMT               NMT
                              0
            THE EXCESS SAMPLE CHARGE IS 0.7281E-03AND THE ANALYTICAL PERCENT ERROR IS   1.014297
            THE EXCESS CHARGE FOR NACL IS 0.5457E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1209E-03
AK02       AK1        AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.42E-01   0.36E-06   0.36E-10    0.51E-02    0.81E-03    0.15E-02    0.12E 00    0.16E 00    0.56E-02    0.19E 00    0.11E 00    0.54E-01
 AKC        AKD
 0.37E-08   0.14E-16

                                               ION STRENGTH         GAMMA 1      GAMMA 2
                                                    0.475E-01        0.471E 00      0.828E 00
C4I          CA          MG          SO4         HCO3        H+          CCO3        C1
.0           0.956E-02   0.254E-02   0.989E-02   0.442E-02   0.794E-07   0.351E-05   0.408E-02

     C2          C3          C4          C5          C6          C7          C8          C9
 0.922E-05   0.134E-05   0.168E-03   0.322E-04   0.100E-02   0.110E-04   0.866E-06   0.142E-07
     CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.204E 01   0.107E 01   0.843E 00   0.409E-04   0.133E-03   0.671E 01
```

```
LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

15 19 17 1430 4761. 5400.      306.          0.     0.               SL           DC       1000.      FLYINGH      0  0

                                        HENDRIX FLYING H

       SAMPLE DATE 7 73
          SPECIES        CHARGE       MOLARITY         ORIGINAL UNITS
          --------       ------      ----------        --------------

          NA+               1        0.2001E-02         0.4600E 02
          K+                1        0.6138E-04         0.2400E 01
          CA++              2        0.3343E-02         0.1340E 03
          MG++              2        0.3743E-02         0.9100E 02
          H+                1        0.4266E-07         0.7370E 01
          SO4--            -2        0.2301E-02         0.2210E 03
          CL-              -1        0.7052E-03         0.2500E 02
          HCO3-            -1        0.4300E-02         0.4800E-02
          BA                0        0.2184E-06         0.3000E-01
          FE                0        0.1791E-08         0.1000E-03
          CU                0        0.0                0.0
          SR                0        0.1370E-04         0.1200E 01
          PB                0        0.0                0.0
          CR                0        0.0                0.0
          ZN                0        0.0                0.0
          HG                0        0.0                0.0
          F                 0        0.0                0.0
          NO3               0        0.0                0.0
          O2 SAM            0        0.0                0.0
          O2 CAL            0        0.0                0.0
          FILTER            0        0.0                0.0
          TEMP              0        0.1660E 02         0.1660E 02
          REF               0        NMT                NMT
                            0
          THE EXCESS SAMPLE CHARGE IS 0.6129E-02AND THE ANALYTICAL PERCENT ERROR IS  23.265991
          THE EXCESS CHARGE FOR NACL IS 0.1296E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.4771E-02
AKO2        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.44E-01    0.35E-06    0.34E-10    0.52E-02    0.83E-03    0.15E-02    0.13E 00    0.17E 00    0.58E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
0.37E-08    0.15E-16

                                                  ION STRENGTH       GAMMA 1     GAMMA 2
                                                      0.197E-01      0.506E 00      0.875E 00
C4I         CA          MG          SO4         HCO3        H+          CO3         C1
.0          0.295E-02   0.336E-02   0.165E-02   0.460E-02   0.427E-07   0.553E-05   0.320E-03

   C2          C3          C4          C5          C6          C7          C8          C9
0.672E-05   0.421E-05   0.635E-04   0.523E-04   0.327E-03   0.329E-05   0.180E-06   0.400E-07
  CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.150E 01   0.239E 01   0.674E-01   0.249E-04   0.126E-03   0.714E 01
```

```
SAMPLE DATE 3 74
    SPECIES          CHARGE     MOLARITY        ORIGINAL UNITS
    --------         ------    ----------       --------------

    NA+                 1      0.7830E-03         0.1900E 02
    K+                  1      0.2557E-04         0.1000E 01
    CA++                2      0.2071E-02         0.8300E 02
    MG++                2      0.1234E-02         0.3000E 02
    H+                  1      0.7943E-07         0.7100E 01
    SO4--              -2      0.1874E-02         0.1800E 03
    CL-                -1      0.8180E-03         0.2900E 02
    HCO3-              -1      0.4999E-02         0.3050E 03
    BA                  0      0.2330E-06         0.3200E-01
    FE                  0      0.1791E-08         0.1000E-03
    CU                  0      0.5351E-07         0.3400E-02
    SR                  0      0.6505E-04         0.5700E 01
    PB                  0      0.0                0.0
    CR                  0      0.0                0.0
    ZN                  0      0.0                0.0
    HG                  0      0.0                0.0
    F                   0      0.0                0.0
    NO3                 0      0.0                0.0
    O2 SAM              0      0.0                0.0
    O2 CAL              0      0.0                0.0
    FILTER              0      0.0                0.0
    TEMP                0      0.1620E 02         0.1620E 02
    REF                 0      NMT                NMT
                        0
    THE EXCESS SAMPLE CHARGE IS-0.2146E-02AND THE ANALYTICAL PERCENT ERROR IS  12.636148
    THE EXCESS CHARGE FOR NACL IS-0.3503E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2137E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.44E-01    0.34E-06    0.34E-10    0.52E-02    0.84E-03    0.15E-02    0.13E 00    0.17E 00    0.59E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.37E-08    0.15E-16

                                                ION STRENGTH          GAMMA 1     GAMMA 2

                                                       0.122E-01     0.645E 00     0.896E 00
C4T         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.180E-02   0.109E-02   0.153E-02   0.491E-02   0.794E-07   0.291E-05   0.220E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.260E-05   0.871E-06   0.449E-04   0.200E-04   0.119E-03   0.132E-05   0.766E-07   0.909E-08

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.584E 00   0.191E 00   0.465E-01   0.504E-04   0.159E-03   0.729E 01
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                SAMPLE DATE 2 75
A DISCREPANCY EXISTS FOR THE VALUE OF SM 10
A DISCREPANCY EXISTS FOR THE VALUE OF SM 11
A DISCREPANCY EXISTS FOR THE VALUE OF SM 13
                  SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
                  --------       ------     ----------       --------------

                  NA+                 1     0.6960E-03         0.1600E 02
                  K+                  1     0.2557E-04         0.1000E 01
                  CA++                2     0.3605E-02         0.1445F 03
                  MG++                2     0.1419F-01         0.3450F 03
                  H+                  1     0.7943E-07         0.7100F 01
                  SO4--              -2     0.1978E-02         0.1900E 03
                  CL-                -1     0.4795E-03         0.1700F 02
                  HCO3-              -1     0.4966E-02         0.3030F 03
                  BA                  0     0.2985F-06         0.4100E-01
                  FE                  0     0.8953E-06         0.5000E-01
                  CU                  0     0.3148F-07         0.2000E-02
                  SR                  0     0.1278F-04         0.1120F 01
                  PB                  0     0.7722E-07         0.1600E-01
                  CR                  0     0.1154E-07         0.6000E-03
                  ZN                  0     0.0                0.0
                  HG                  0     0.0                0.0
                  F                   0     0.2211F-04         0.4200E 00
                  NO3                 0     0.2258F-04         0.1400F 01
                  O2 SAM              0     0.1937E-03         0.6200F 01
                  O2 CAL              0     0.2906F-03         0.9300E 01
                  FILTER              0     0.0                0.0
                  TEMP                0     0.1650E 02         0.1650E 02
                  REF                 0     NMT                NMT
                                      0
                  THE EXCESS SAMPLE CHARGE IS 0.2691E-01AND THE ANALYTICAL PERCENT ERROR IS  58.870209
                  THE EXCESS CHARGE FOR NACL IS 0.2165E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2667E-01
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.44F-01    0.35E-06    0.34E-10    0.52E-02    0.83E-03    0.15E-02    0.13E 00    0.17E 00    0.58E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD
0.37F-08    0.15F-16


                                                 ION STRENGTH          GAMMA 1     GAMMA 2
                                                        0.388E-01      0.498E 00    0.840E 00
C4I         CA          MG          SO4         HCO3        H+          CC03        C1
.0          0.336E-02   0.134E-01   0.115E-02   0.465E-02   0.794E-07   0.338E-05   0.182E-03

    C2          C3          C4          C5          C6          C7          C8          C9
0.337E-05   0.738E-05   0.618E-04   0.180E-03   0.650E-03   0.675E-06   0.441E-07   0.723E-08
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.753F 00   0.209E 01   0.384F-01   0.470E-04   0.149E-03   0.715E 01
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LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER     DATE DRILLED

15 18 18 1410 4761. 5600.          0.              0.    0.             SL        DC        IW         FLYING H    0  0

                                          NORTH WEST OF PREVIOUS FLYING H -2 MILES

         SAMPLE DATE 3 75
A DISCREPANCY EXISTS FOR THE VALUE OF SM 10
A DISCREPANCY EXISTS FOR THE VALUE OF SM 11
A DISCREPANCY EXISTS FOR THE VALUE OF SM 13
             SPECIES       CHARGE      MOLARITY        ORIGINAL UNITS
             --------      ------     ----------      --------------

             NA+              1       0.7395E-03       0.1700E 02
             K+               1       0.4475E-04       0.1750E 01
             CA++             2       0.3780E-02       0.1515E 03
             MG++             2       0.1448E-02       0.3520E 02
             H+               1       0.7943E-07       0.7100E 01
             SO4--           -2       0.2602E-02       0.2500E 03
             CL-             -1       0.4654E-03       0.1650E 02
             HCO3-           -1       0.4654E-02       0.2840E 03
             BA               0       0.2403E-06       0.3300E-01
             FE               0       0.5372E-06       0.3000E-01
             CU               0       0.4721E-07       0.3000E-02
             SR               0       0.0              0.0
             PB               0       0.7240E-07       0.1500E-01
             CR               0       0.1539E-07       0.8000E-03
             ZN               0       0.0              0.0
             HG               0       0.0              0.0
             F                0       0.1895E-01       0.3600E 03
             NO3              0       0.2419E-04       0.1500E 01
             O2 SAM           0       0.1906E-03       0.6100E 01
             O2 CAL           0       0.2906E-03       0.9300E 01
             FILTER           0       0.0              0.0
             TEMP             0       0.1600E 02       0.1600E 02
             REF              0       NMT              NMT
                              0
             THE EXCESS SAMPLE CHARGE IS 0.9150E-03AND THE ANALYTICAL PERCENT ERROR IS   4.243235

             THE EXCESS CHARGE FOR NACL IS 0.2741E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5962E-03
AK02        AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.45E-01    0.34E-06   0.34E-10   0.52E-02   0.84E-03   0.15E-02   0.13E 00   0.17E 00   0.59E-02   0.19E 00   0.11E 00   0.54E-01
 AKC         AKD

0.37E-08    0.15E-16

                                            ION STRENGTH          GAMMA 1     GAMMA 2

                                                 0.159E-01        0.612E 00     0.885E 00

C4T          CA          MG          SO4          HCO3         H+           CCO3         C1

.0          0.325E-02   0.127E-02   0.198E-02    0.453E-02    0.794E-07    0.278E-05    0.460E-03

    C2          C3          C4          C5          C6           C7          C8          C9
0.402E-05   0.866E-06   0.704E-04   0.202E-04   0.159E-03   0.153E-05   0.164E-06   0.778E-08
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[illegible] 00   [illegible]   0.97 -01   [illegible]-04   0.1[illegible]   [illegible]   01

 LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

15 26  4 1234  633. 3443.        1220.         1023. 1220.            SL          DC      1000.      JOHNSON     4 65

                                       IRR. WELL

         SAMPLE DATE 2 75
A DISCREPANCY EXISTS FOR THE VALUE OF SM 11
A DISCREPANCY EXISTS FOR THE VALUE OF SM 13
             SPECIES        CHARGE      MOLARITY          ORIGINAL UNITS
             --------       ------     ----------        ---------------

             NA+               1       0.8047E-03          0.1850E 02
             K+                1       0.4987E-04          0.1950E 01
             CA++              2       0.5165E-02          0.2070E 03
             MG++              2       0.2961E-02          0.7200E 02
             H+                1       0.1259E-06          0.6900E 01
             SO4--            -2       0.6975E-02          0.6700E 03
             CL-              -1       0.5557E-03          0.1970E 02
             HCO3-            -1       0.3573E-02          0.2180E 03
             BA                0       0.2548E-06          0.3500E-01
             FE                0       0.4297E-05          0.2400E 00
             CU                0       0.1102E-06          0.7000E-02
             SR                0       0.3253E-04          0.2850E 01
             PB                0       0.6757E-07          0.1400E-01
             CR                0       0.2885E-07          0.1500E-02
             ZN                0       0.0                 0.0
             HG                0       0.0                 0.0
             F                 0       0.5158E-04          0.9800E 00
             NO3               0       0.3226E-03          0.2000E 02
             O2 SAM            0       0.9375E-04          0.3000E 01
             O2 CAL            0       0.2906E-03          0.9300E 01
             FILTER            0       0.0                 0.0
             TEMP              0       0.0                 0.0
             REF               0       NMT                 NMT
                               0
             THE EXCESS SAMPLE CHARGE IS-0.9708E-03AND THE ANALYTICAL PERCENT ERROR IS    2.759062
AK02        AK1THE EXCESS CHARGE FOR NACL IS 0.2490E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1270E-02
                        AK2           AK01          AK02          AK03          AK04          AK05          AK06          AK07          AK08          AK09
0.77E-01    0.24E-06    0.21E-10      0.60E-02      0.97E-03      0.17E-02      0.21E 00      0.25E 00      0.89E-02      0.19E 00      0.11E 00      0.54E-01
  AKC         AKD
 0.40E-08    0.28E-16

                                               ION STRENGTH           GAMMA 1      GAMMA 2
                                                     0.264E-01         0.548E 00     0.860E 00
C4I          CA           MG           SO4          HCO3         H+           CCO3         C1
.0           0.403E-02    0.249E-02    0.542E-02    0.351E-02    0.126E-06    0.920E-06    0.110E-02

   C2           C3           C4           C5           C6           C7           C8           C9
0.114E-05    0.399E-06    0.371E-04    0.190E-04    0.457E-03    0.407E-05    0.448E-06    0.251E-08
    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
```

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SAMPLE DATE 5 75
    SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
    --------        ------     ----------       --------------

    NA+               1        0.6090E-03         0.1400E 02
    K+                1        0.4706E-04         0.1840E 01
    CA++              2        0.4915E-02         0.1970E 03
    MG++              2        0.2715E-02         0.6600E 02
    H+                1        0.1000E-06         0.7000E 01
    SO4--            -2        0.6090E-02         0.5850E 03
    CL-              -1        0.2821E-03         0.1000E 02
    HCO3-            -1        0.3720E-02         0.2270E 03
    BA                0        0.2257E-06         0.3100E-01
    FE                0        0.1791E-04         0.1000E 01
    CU                0        0.3935E-08         0.2500E-03
    SR                0        0.3310E-04         0.2900E 01
    PB                0        0.7240E-07         0.1500E-01
    CR                0        0.1923E-07         0.1000E-02
    ZN                0        0.2065E-06         0.1350E-01
    HG                0        0.0                0.0
    F                 0        0.2632E-04         0.5000E 00
    NO3               0        0.9677E-04         0.6000E 01
    O2 SAM            0        0.7500E-04         0.2400E 01
    O2 CAL            0        0.2219E-03         0.7100E 01
    FILTER            0        0.0                0.0
    TEMP              0        0.2600E 02         0.2600E 02
    REF               0        NMT                NMT
                      0
    THE EXCESS SAMPLE CHARGE IS-0.2661E-03AND THE ANALYTICAL PERCENT ERROR IS   0.829136

    THE EXCESS CHARGE FOR NACL IS 0.3269E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.6402E-03
AKO2       AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9

0.34E-01   0.40E-06   0.42E-10   0.48E-02   0.69E-03   0.13E-02   0.94E-01   0.14E 00   0.46E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.33E-08   0.96E-17


                                              ION STRENGTH        GAMMA 1     GAMMA 2

                                                     0.226E-01    0.568E 00     0.868E 00
C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0           0.374E-02   0.205E-02   0.437E-02   0.357E-02   0.100E-06   0.230E-05   0.109E-02

     C2          C3          C4          C5          C6          C7          C8          C9
 0.402E-05   0.117E-05   0.806E-04   0.302E-04   0.630E-03   0.257E-05   0.353E-06   0.492E-08
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.838E 00   0.440E 00   0.211E 00   0.302E-04   0.901E-04   0.702E 01
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LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

15 26  9 1330 1522. 3415.        300.          207.  300.            AG          SC       WM        000          0  0


        SAMPLE DATE 7 75
           SPECIES         CHARGE       MOLARITY        ORIGINAL UNITS
           --------        ------      ----------       --------------

           NA+                1          0.1109E-01       0.2550E 03
           K+                 1          0.5626E-04       0.2200E 01
           CA++               2          0.7784E-02       0.3120E 03
           MG++               2          0.7980E-02       0.1940E 03
           H+                 1          0.6310E-07       0.7200E 01
           SO4--             -2          0.2212E-01       0.2125E 04
           CL-               -1          0.7616E-02       0.2700E 03
           HCO3-             -1          0.3343E-02       0.2040E 03
           BA                 0          0.1347E-06       0.1850E-01
           FE                 0          0.5014E-04       0.2800E 01
           CU                 0          0.6610E-07       0.4200E-02
           SR                 0          0.9130E-04       0.8000E 01
           PB                 0          0.2413E-06       0.5000E-01
           CR                 0          0.2885E-07       0.1500E-02
           ZN                 0          0.7955E-06       0.5200E-01
           HG                 0          0.0              0.0
           F                  0          0.4000E 00       0.7600E 04
           NO3                0          0.8339E-03       0.5170E 02
           O2 SAM             0          0.0              0.0
           O2 CAL             0          0.0              0.0
           FILTER             0          0.0              0.0
           TEMP               0          0.1940E 02       0.1940E 02
           REF                0          NMT              NMT
                              0
           THE EXCESS SAMPLE CHARGE IS-0.1253E-01AND THE ANALYTICAL PERCENT ERROR IS  12.796795
           THE EXCESS CHARGE FOR NACL IS 0.3476E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1606E-01
AK02       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09
0.40E-01   0.36E-06   0.37E-10   0.51E-02   0.79E-03   0.15E-02   0.12E 00   0.16E 00   0.54E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD
0.36E-08   0.13E-16

                                              ION STRENGTH          GAMMA 1     GAMMA 2
                                                   0.634E-01        0.434E 00     0.812E 00
C4I        CA          MG          SO4         HCO3        H+          CCO3        C1
.0         0.483E-02   0.507E-02   0.162E-01   0.321E-02   0.631E-07   0.348E-05   0.289E-02

   C2          C3          C4          C5          C6          C7          C8          C9
0.397E-05   0.229E-05   0.582E-04   0.439E-04   0.286E-02   0.131E-03   0.119E-05   0.103E-06
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.876E 00   0.799E 00   0.592E 00   0.225E-04   0.871E-04   0.717E 01
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

15 26 13 1210  165. 3362.        1381.          1100. 1381.             SL          DC       2000.      POLLARD      8 55

                                                   POLLARD.  WATER FROM TANK.  RA 165

          SAMPLE DATE 4 74
               SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
               --------       ------     ----------      --------------

               NA+              1        0.1218E-02        0.2800E 02
               K+               1        0.4603E-04        0.1800E 01
               CA++             2        0.2819E-02        0.1130E 03
               MG++             2        0.2303E-02        0.5600E 02
               H+               1        0.5012E-07        0.7300E 01
               SO4--           -2        0.4893E-02        0.4700E 03
               CL-             -1        0.7616E-03        0.2700E 02
               HCO3-           -1        0.4196E-02        0.2560E 03
               BA               0        0.2039E-06        0.2800E-01
               FE               0        0.3044E-04        0.1700E 01
               CU               0        0.6453E-07        0.4100E-02
               SR               0        0.3196E-04        0.2800E 01
               PB               0        0.0               0.0
               CR               0        0.0               0.0
               ZN               0        0.0               0.0
               HG               0        0.0               0.0
               F                0        0.0               0.0
               NO3              0        0.0               0.0
               O2 SAM           0        0.0               0.0
               O2 CAL           0        0.0               0.0
               FILTER           0        0.0               0.0
               TEMP             0        0.2420E 02        0.2420F 02
               REF              0        NMT               NMT
                                0
               THE EXCESS SAMPLE CHARGE IS-0.3233E-02AND THE ANALYTICAL PERCENT ERROR IS  12.315171

               THE EXCESS CHARGE FOR NACL IS 0.4564E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3735E-02
AK02         AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.35E-01     0.39E-06    0.41E-10    0.49E-02    0.72E-03    0.13E-02    0.99E-01    0.14E 00    0.48E-02    0.19E 00    0.11E 00    0.54E-01
  AKC          AKD

 0.34E-08    0.10E-16

                                                ION STRENGTH         GAMMA 1     GAMMA 2

                                                       0.186E-01      0.593E 00      0.877E 00

C4I          CA           MG           SO4          HCO3         H+           CO3          C1

.0           0.217E-02    0.178E-02    0.380E-02    0.406E-02    0.501E-07    0.487E-05    0.592E-03

     C2          C3           C4           C5           C6           C7           C8           C9
 0.517E-05   0.227E-05    0.526E-04    0.297E-04    0.495E-03    0.467E-05    0.314E-06    0.217E-07

    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.109E 01   0.103E 01    0.116E 00    0.185E-04    0.899E-04    0.721E 01
```

```
              SAMPLE DATE 2 75
A DISCREPANCY EXISTS FOR THE VALUE OF SM 11
A DISCREPANCY EXISTS FOR THE VALUE OF SM 13
A DISCREPANCY EXISTS FOR THE VALUE OF SM 14
                SPECIES      CHARGE     MOLARITY        ORIGINAL UNITS
                --------     ------     ----------      --------------

                NA+            1       0.8265E-03        0.1900E 02
                K+             1       0.2557E-04        0.1000E 01
                CA++           2       0.4616E-02        0.1850E 03
                MG++           2       0.2283E-02        0.5550E 02
                H+             1       0.6310E-07        0.7200E 01
                SO4--         -2       0.4893E-02        0.4700E 03
                CL-           -1       0.5077E-03        0.1800E 02
                HCO3-         -1       0.3802E-02        0.2320E 03
                BA             0       0.2548E-06        0.3500E-01
                FE             0       0.1791E-05        0.1000E 00
                CU             0       0.9443E-07        0.6000E-02
                SR             0       0.3139E-04        0.2750E 01
                PB             0       0.6757E-06        0.1400E 00
                CR             0       0.1923E-07        0.1000E-02
                ZN             0       0.0               0.0
                HG             0       0.0               0.0
                F              0       0.8159E-04        0.1550E 01
                NO3            0       0.3226E-03        0.2000E 02
                O2 SAM         0       0.8125E-04        0.2600E 01
                O2 CAL         0       0.2875E-03        0.9200E 01
                FILTER         0       0.0               0.0
                TEMP           0       0.2375E 02        0.2375E 02
                REF            0       NMT               NMT
                               0
                THE EXCESS SAMPLE CHARGE IS 0.5540E-03AND THE ANALYTICAL PERCENT ERROR IS   1.927192
                THE EXCESS CHARGE FOR NACL IS 0.3187E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2096E-03
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9
0.36E-01    0.39E-06    0.40E-10    0.49E-02    0.73E-03    0.14E-02    0.10E 00    0.15E 00    0.49E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
0.34E-08    0.11E-16


                                                   ION STRENGTH       GAMMA 1      GAMMA 2

                                                          0.206E-01     0.580E 00      0.873E 00
C4I         CA          MG          SO4         HCO3        H+          CCO3        C1
.0          0.365E-02   0.181E-02   0.356E-02   0.364E-02   0.631E-07   0.350E-05   0.887E-03

   C2          C3          C4          C5          C6          C7          C8          C9
0.591E-05   0.157E-05   0.765E-04   0.263E-04   0.446E-03   0.290E-05   0.160E-06   0.104E-07
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2       SATPH
0.126E 01   0.853E 00   0.175E 00   0.212E-04   0.862E-04   0.704E 01
```

```
LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER     DATE DRILLED

16 16  2 1110    0. 5700.          0.          0.    0.             SI        SP      0000.     00000000    0  0

                                         CLEVES SPRING.  SPRING PAST FLK.  EAST OF BATES

         SAMPLE DATE 4 74
             SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
             --------       ------     ----------       --------------

             NA+              1        0.3915E-03         0.9000E 01
             K+               1        0.2557E-04         0.1000E 01
             CA++             2        0.2171E-02         0.8700E 02
             MG++             2        0.5347E-03         0.1300E 02
             H+               1        0.1259E-07         0.7900E 01
             SO4--           -2        0.3743E-03         0.3600E 02
             CL-             -1        0.6205E-03         0.2200E 02
             HCO3-           -1        0.3032E-02         0.1850E 03
             BA               0        0.2621E-06         0.3600E-01
             FE               0        0.1791E-08         0.1000E-03
             CU               0        0.1731E-07         0.1100E-02
             SR               0        0.4565E-05         0.4000E 00
             PB               0        0.0                0.0
             CR               0        0.0                0.0
             ZN               0        0.0                0.0
             HG               0        0.0                0.0
             F                0        0.0                0.0
             NO3              0        0.0                0.0
             O2 SAM           0        0.0                0.0
             O2 CAL           0        0.0                0.0
             FILTER           0        0.0                0.0
             TEMP             0        0.1550E 02         0.1550E 02
             REF              0        NMT                NMT
                              0
             THE EXCESS SAMPLE CHARGE IS 0.1426E-02AND THE ANALYTICAL PERCENT ERROR IS  13.937932

             THE EXCESS CHARGE FOR NACL IS-0.2291E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1629E-02
AKO2        AK1         AK2          AKO1         AKO2         AKO3         AKO4         AKO5         AKO6         AKO7         AKO8         AKO9

0.45E-01    0.34E-06    0.33E-10     0.53E-02     0.85E-03     0.15E-02     0.13E 00     0.18E 00     0.60E-02     0.19E 00     0.11E 00     0.54E-01
  AKC         AKD

 0.38E-08    0.16E-16


                                                 ION STRENGTH          GAMMA 1      GAMMA 2

                                                        0.777E-02      0.697E 00      0.914E 00

C4I          CA          MG          SO4          HCO3         H+          CCO3         C1

.0          0.207E-02   0.514E-03   0.304E-03    0.290E-02    0.126E-07   0.101E-04    0.579E-04

    C2          C3          C4          C5           C6           C7           C8          C9
 0.120E-04   0.165E-05   0.322E-04   0.591E-05    0.127E-04    0.141E-06    0.164E-07   0.179E-07

    CA SAT       DOLSAT      GYPSAT       PCO2         SCO2        SATPH
 0.269E 01   0.163E 01   0.124E-01   0.487E-05    0.795E-04    0.743E 01
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```
                 SAMPLE DATE 2 75
A DISCREPANCY EXISTS FOR THE VALUE OF SM 10
A DISCREPANCY EXISTS FOR THE VALUE OF SM 11
A DISCREPANCY EXISTS FOR THE VALUE OF SM 13
A DISCREPANCY EXISTS FOR THE VALUE OF SM 14
                SPECIES      CHARGE     MOLARITY       ORIGINAL UNITS
                --------     ------    ----------      --------------

                NA+             1      0.4785E-03       0.1100E 02
                K+              1      0.1790E-04       0.7000E 00
                CA++            2      0.1784E-02       0.7150E 02
                MG++            2      0.6581E-03       0.1600E 02
                H+              1      0.5012E-07       0.7300E 01
                SO4--          -2      0.4997E-03       0.4800E 02
                CL-            -1      0.2962E-03       0.1050E 02
                HCO3-          -1      0.3032E-02       0.1850E 03
                BA              0      0.2694E-06       0.3700E-01
                FE              0      0.3581E-06       0.2000E-01
                CU              0      0.1259E-07       0.8000E-03
                SR              0      0.3424E-05       0.3000E 00
                PB              0      0.4826E-08       0.1000E-02
                CR              0      0.1346E-07       0.7000E-03
                ZN              0      0.0              0.0
                HG              0      0.0              0.0
                F               0      0.1737E-04       0.3300E 00
                NO3             0      0.1774E-03       0.1100E 02
                O2 SAM          0      0.0              0.0
                O2 CAL          0      0.0              0.0
                FILTER          0      0.0              0.0
                TEMP            0      0.1600E 02       0.1600E 02
                REF             0      NMT              NMT
                                0
                THE EXCESS SAMPLE CHARGE IS 0.1053E-02AND THE ANALYTICAL PERCENT ERROR IS  10.847288
                THE EXCESS CHARGE FOR NACL IS 0.1823E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.8528E-03
AK02        AKI        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09
0.45E-01    0.34E-06   0.34E-10   0.52E-02   0.84E-03   0.15E-02   0.13E 00   0.17E 00   0.59E-02   0.19E 00   0.11E 00   0.54E-01
 AKC         AKD
 0.37E-08   0.15E-16


                                                 ION STRENGTH        GAMMA 1     GAMMA 2
                                                      0.736E-02      0.703E 00     0.916E 00
C4I         CA          MG          SO4         HCO3        H+          CCO3        C1
.0          0.169E-02   0.628E-03   0.412E-03   0.297E-02   0.501E-07   0.261E-05   0.655E-04

   C2          C3          C4          C5          C6          C7          C8          C9
0.258E-05   0.530E-06   0.276E-04   0.754E-05   0.216E-04   0.236E-06   0.157E-07   0.542E-08
  CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.581E 00   0.115E 00   0.139E-01   0.195E-04   0.858E-04   0.750E 01
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LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

16 16  8 1210    0. 5840.        140.            0.     0.            SLO        SUD      DW          BATES        0  0

                                              BATES WELL.  CLEAVES

        SAMPLE DATE 3  74
            SPECIES         CHARGE     MOLARITY        ORIGINAL UNITS
            --------        ------    ----------      --------------

            NA+                1      0.6960E-03       0.1600E 02
            K+                 1      0.4092E-04       0.1600E 01
            CA++               2      0.7061E-02       0.2830E 03
            MG++               2      0.1152E-02       0.2800E 02
            H+                 1      0.6310E-07       0.7200E 01
            SO4--             -2      0.1666E-02       0.1600E 03
            CL-               -1      0.1297E-02       0.4600E 02
            HCO3-             -1      0.5195E-02       0.3170E 03
            BA                 0      0.2330E-06       0.3200E-01
            FE                 0      0.1791E-08       0.1000E-03
            CU                 0      0.8656E-07       0.5500E-02
            SR                 0      0.1141E-04       0.1000E 01
            PB                 0      0.0              0.0
            CR                 0      0.0              0.0
            ZN                 0      0.0              0.0
            HG                 0      0.0              0.0
            F                  0      0.0              0.0
            NO3                0      0.0              0.0
            O2 SAM             0      0.0              0.0
            O2 CAL             0      0.0              0.0
            FILTER             0      0.0              0.0
            TEMP               0      0.1320E 02       0.1320E 02
            REF                0      NMT              NMT
                               0
            THE EXCESS SAMPLE CHARGE IS 0.7338E-02AND THE ANALYTICAL PERCENT ERROR IS  27.192383

            THE EXCESS CHARGE FOR NACL IS-0.6015E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.7899E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.49E-01    0.32E-06    0.31E-10    0.54E-02    0.88E-03    0.16E-02    0.14E 00    0.19E 00    0.63E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.38E-08    0.17E-16

                                                ION STRENGTH       GAMMA 1     GAMMA 2

                                                     0.209E-01     0.578E 00     0.872E 00

C4T          CA          MG          SO4         HCO3        H+          CO3         C1

.0          0.646E-02   0.107E-02   0.114E-02   0.497E-02   0.631E-07   0.374E-05   0.459E-03

   C2          C3          C4          C5          C6          C7          C8          C9
0.920E-05   0.848E-06   0.133E-03   0.166E-04   0.643E-04   0.781E-06   0.817E-07   0.929E-08

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.210E 01   0.626E 00   0.101E 00   0.471E-04   0.168E-03   0.682E 01
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```
         SAMPLE DATE 2 75
 A DISCREPANCY EXISTS FOR THE VALUE OF SM 10
 A DISCREPANCY EXISTS FOR THE VALUE OF SM 13
               SPECIES        CHARGE      MOLARITY          ORIGINAL UNITS
               --------       ------     ----------         --------------

               NA+               1       0.7830E-03           0.1800E 02
               K+                1       0.2557E-04           0.1000E 01
               CA++              2       0.3393E-02           0.1360E 03
               MG++              2       0.1111E-02           0.2700E 02
               H+                1       0.2512E-06           0.6600E 01
               SO4--            -2       0.1561E-02           0.1500E 03
               CL -             -1       0.4993E-03           0.1770E 02
               HCO3-            -1       0.3343E-03           0.2040E 02
               BA                0       0.3277E-06           0.4500E-01
               FE                0       0.1791E-05           0.1000E 00
               CU                0       0.2046E-06           0.1300E-01
               SR                0       0.9130E-05           0.8000E 00
               PB                0       0.3861E-07           0.8000E-02
               CR                0       0.2116E-07           0.1100E-02
               ZN                0       0.0                  0.0
               HG                0       0.0                  0.0
               F                 0       0.1842E-04           0.3500E 00
               NO3               0       0.5323E-04           0.3300E 01
               O2 SAM            0       0.2750E-03           0.8800E 01
               O2 CAL            0       0.3187E-03           0.1020E 02
               FILTER            0       0.0                  0.0
               TEMP              0       0.1370E 02           0.1370E 02
               REF               0       NMT                  NMT
                                 0
               THE EXCESS SAMPLE CHARGE IS 0.5860E-02AND THE ANALYTICAL PERCENT ERROR IS  42.545441
               THE EXCESS CHARGE FOR NACL IS 0.2837E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5550E-02
AKO2         AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9
0.48E-01     0.33E-06    0.32E-10    0.53E-02    0.87E-03    0.16E-02    0.14E 00    0.18E 00    0.63E-02    0.19E 00    0.11E 00    0.54E-01
  AKC          AKD
 0.38E-08     0.17E-16


                                                 ION STRENGTH         GAMMA 1     GAMMA 2
                                                      0.114E-01       0.652E 00     0.899E 00
C4I          CA          MG          SO4         HCO3        H+          CO3         C1
.0           0.310E-02   0.103E-02   0.119E-02   0.328E-03   0.251E-06   0.571E-07   0.292E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.863E-07   0.159E-07   0.482E-05   0.119E-05   0.827E-04   0.103E-05   0.599E-07   0.180E-09
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.197E-01   0.112E-03   0.637E-01   0.120E-04   0.199E-04   0.826E 01
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

16 16  8 1210     0. 5840.        140.            0.     0.             SLD        SUD        DW          BATES        0  0

                                          BATES WELL.  CLEAVES

        SAMPLE DATE 1 76
            SPECIES        CHARGE      MOLARITY       ORIGINAL UNITS
            --------       ------     ----------      --------------

            NA+              1        0.3219E-03        0.7400E 01
            K+               1        0.0               0.0
            CA++             2        0.1497E-02        0.6000E 02
            MG++             2        0.2427E-03        0.5900E 01
            H+               1        0.1995E-07        0.7700E 01
            SO4--           -2        0.4414E-03        0.4240E 02
            CL-             -1        0.1721E-03        0.6100E 01
            HCO3-           -1        0.3400E-02        0.3400E-02
            BA               0        0.0               0.0
            FE               0        0.0               0.0
            CU               0        0.0               0.0
            SR               0        0.3424E-05        0.3000E 00
            PB               0        0.0               0.0
            CR               0        0.0               0.0
            ZN               0        0.0               0.0
            HG               0        0.0               0.0
            F                0        0.0               0.0
            NO3              0        0.1742E-03        0.1080E 02
            02  SAM          0        0.2594E-03        0.8300E 01
            02  CAL          0        0.2625E-03        0.8400E 01
            FILTER           0        0.0               0.0
            TEMP             0        0.1600E 02        0.1600E 02
            REF              0        NMT               NMT
                             0
            THE EXCESS SAMPLE CHARGE IS-0.6536E-03AND THE ANALYTICAL PERCENT ERROR IS    7.916045

            THE EXCESS CHARGE FOR NACL IS 0.2837E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5550E-02
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LOCATION      RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

16 16 11 4210     0. 5560.         180.             0.      0.               SL          SU         IW          MULCOCK       0  0

                                           MULCOCK WELL

      SAMPLE DATE 7 73
           SPECIES          CHARGE       MOLARITY          ORIGINAL UNITS
           --------         ------      ----------         --------------

           NA+                 1        0.2827E-02           0.6500E 02
           K+                  1        0.3069E-04           0.1200E 01
           CA++                2        0.3418E-02           0.1370E 03
           MG++                2        0.2797E-02           0.6800E 02
           H+                  1        0.5012E-07           0.7300E 01
           SO4--              -2        0.0                  0.0
           CL-                -1        0.0                  0.0
           HCO3-              -1        0.5500E-02           0.5500E-02
           BA                  0        0.0                  0.0
           FE                  0        0.0                  0.0
           CU                  0        0.0                  0.0
           SR                  0        0.0                  0.0
           PB                  0        0.0                  0.0
           CR                  0        0.0                  0.0
           ZN                  0        0.0                  0.0
           HG                  0        0.0                  0.0
           F                   0        0.0                  0.0
           NO3                 0        0.0                  0.0
           O2 SAM              0        0.0                  0.0
           O2 CAL              0        0.0                  0.0
           FILTER              0        0.0                  0.0
           TEMP                0        0.1540E 02           0.1540E 02
           REF                 0        NMT                  NMT
                               0
           THE EXCESS SAMPLE CHARGE IS 0.9788E-02AND THE ANALYTICAL PERCENT ERROR IS  47.085724
           THE EXCESS CHARGE FOR NACL IS 0.2837E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5550E-02
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LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

16 16 11 4310    0. 5560.         0.          0.     0.              SL         SP      0000.     MULCOCK     0  0

                                          PAUL SPRING AT MULCOCK

         SAMPLE DATE 7 73
             SPECIES        CHARGE     MOLARITY       ORIGINAL UNITS
             --------       ------     -----------    -------------

             NA+               1       0.1783E-02       0.4100E 02
             K+                1       0.5371E-04       0.2100E 01
             CA++              2       0.1597E-02       0.6400E 02
             MG++              2       0.2139E-02       0.5200E 02
             H+                1       0.2239E-07       0.7650E 01
             SO4--            -2       0.6454E-03       0.6200E 02
             CL-              -1       0.5641E-03       0.2000E 02
             HCO3-            -1       0.4900E-02       0.4900E-02
             BA                0       0.1311E-06       0.1800E-01
             FE                0       0.1791E-08       0.1000E-03
             CU                0       0.0              0.0
             SR                0       0.2283E-05       0.2000E 00
             PB                0       0.0              0.0
             CR                0       0.0              0.0
             ZN                0       0.0              0.0
             HG                0       0.0              0.0
             F                 0       0.0              0.0
             NO3               0       0.0              0.0
             O2  SAM           0       0.0              0.0
             O2  CAL           0       0.0              0.0
             FILTER            0       0.0              0.0
             TEMP              0       0.1560E 02       0.1560E 02
             REF               0       NMT              NMT
                               0
             THE EXCESS SAMPLE CHARGE IS 0.2553E-02AND THE ANALYTICAL PERCENT ERROR IS  15.896297

             THE EXCESS CHARGE FOR NACL IS 0.1219E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1280E-02
AKO2         AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.45E-01     0.34E-06    0.33E-10    0.53E-02    0.85E-03    0.15E-02    0.13E 00    0.18E 00    0.60E-02    0.19E 00    0.11E 00    0.54E-01
  AKC          AKD

 0.38E-08     0.16E-16

                                          ION STRENGTH        GAMMA 1     GAMMA 2

                                                0.117E-01      0.650E 00     0.898E 00

C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0           0.149E-02   0.202E-02   0.510E-03   0.474E-02   0.224E-07   0.978E-05   0.612E-04

   C2          C3          C4          C5          C6          C7          C8          C9
 0.729E-05   0.546E-05   0.356E-04   0.355E-04   0.731E-04   0.101E-05   0.539E-07   0.700E-07

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.164E 01   0.332E 01   0.130E-01   0.141E-04   0.121E-03   0.739E 01
```

```
SAMPLE DATE 4 74
    SPECIES         CHARGE      MOLARITY         ORIGINAL UNITS
    --------        ------      ----------       --------------

    NA+               1         0.2305E-03         0.5300E 01
    K+                1         0.2046E-04         0.8000E 00
    CA++              2         0.2370E-02         0.9500E 02
    MG++              2         0.5347E-03         0.1300E 02
    H+                1         0.1585E-07         0.7800E 01
    SO4--            -2         0.2707E-03         0.2600E 02
    CL-              -1         0.5782E-03         0.2050E 02
    HCO3-            -1         0.3638E-02         0.2220E 03
    BA                0         0.2039E-06         0.2800E-01
    FE                0         0.1791E-08         0.1000E-03
    CU                0         0.2046E-07         0.1300E-02
    SR                0         0.4565E-05         0.4000E 00
    PB                0         0.0                0.0
    CR                0         0.0                0.0
    ZN                0         0.0                0.0
    HG                0         0.0                0.0
    F                 0         0.0                0.0
    NO3               0         0.0                0.0
    O2  SAM           0         0.0                0.0
    O2  CAL           0         0.0                0.0
    FILTER            0         0.0                0.0
    TEMP              0         0.1310E 02         0.1310E 02
    REF               0         NMT                NMT
                      0
    THE EXCESS SAMPLE CHARGE IS 0.1303E-02AND THE ANALYTICAL PERCENT ERROR IS  12.044698

    THE EXCESS CHARGE FOR NACL IS-0.3477E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1630E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.49E-01    0.32E-06    0.31E-10    0.54E-02    0.88E-03    0.16E-02    0.14E 00    0.19E 00    0.64E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.38E-08    0.17E-16

                                                    ION STRENGTH          GAMMA 1     GAMMA 2

                                                          0.822E-02        0.690E 00       0.912E 00

C4T          CA          MG           SO4          HCO3         H+           CO3          C1

.0          0.228E-02   0.518E-03    0.218E-03    0.350E-02    0.158E-07    0.916E-05    0.440E-04

    C2           C3           C4           C5           C6           C7           C8           C9
 0.113E-04    0.143E-05    0.394E-04    0.674E-05    0.846E-05    0.591E-07    0.932E-08    0.900E-08
   CA SAT       DOLSAT       GYPSAT       PCO2         SCO2        SATPH
 0.259E 01    0.130E 01    0.967E-02    0.837E-05    0.939E-04    0.735E 01
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```
           SAMPLE DATE 2 75
 A DISCREPANCY EXISTS FOR THE VALUE OF SM 10
 A DISCREPANCY EXISTS FOR THE VALUE OF SM 11
                  SPECIES       CHARGE     MOLARITY         ORIGINAL UNITS
                  --------      ------    ----------        --------------

                  NA+              1      0.2545E-03        0.5850E 01
                  K+               1      0.1662E-04        0.6500E 00
                  CA++             2      0.1672E-03        0.6700E 01
                  MG++             2      0.5347E-03        0.1300E 02
                  H+               1      0.1259E-06        0.6900E 01
                  SO4--           -2      0.3019E-03        0.2900E 02
                  CL-             -1      0.2398E-03        0.8500E 01
                  HCO3-           -1      0.3639E-02        0.2220E 03
                  BA               0      0.2912E-06        0.4000E-01
                  FE               0      0.3581E-06        0.2000E-01
                  CU               0      0.1574E-07        0.1000E-02
                  SR               0      0.1712E-05        0.1500E 00
                  PB               0      0.1448E-07        0.3000E-02
                  CR               0      0.9616E-08        0.5000E-03
                  ZN               0      0.0               0.0
                  HG               0      0.0               0.0
                  F                0      0.1842E-04        0.3500E 00
                  NO3              0      0.4839E-04        0.3000E 01
                  O2 SAM           0      0.0               0.0
                  O2 CAL           0      0.0               0.0
                  FILTER           0      0.0               0.0
                  TEMP             0      0.9000E 01        0.9000E 01
                  REF              0      NMT               NMT
                                   0
                  THE EXCESS SAMPLE CHARGE IS-0.2807E-02AND THE ANALYTICAL PERCENT ERROR IS  45.589676

                  THE EXCESS CHARGE FOR NACL IS 0.1471E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2838E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.56E-01    0.30E-06    0.28E-10    0.56E-02    0.92E-03    0.16E-02    0.16E 00    0.20E 00    0.70E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD

 0.39E-08    0.20E-16


                                                    ION STRENGTH          GAMMA 1     GAMMA 2

                                                           0.399E-02       0.764E 00     0.935E 00

C4I         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.160E-03   0.515E-03   0.285E-03   0.363E-02   0.126E-06   0.985E-06   0.477E-05


     C2          C3          C4          C5          C6          C7          C8          C9
 0.993E-07   0.180E-06   0.279E-05   0.698E-05   0.121E-04   0.943E-07   0.110E-07   0.118E-08

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.232E-01   0.134E-02   0.111E-02   0.860E-04   0.187E-03   0.850E 01
```

```
 LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

16 20 16 2410    0. 4500.          0.          0.     0.                SL        DU       WM         MC'ASHER    0  0

                                                    WINDMILL EAST OF 'FLYING H' WELLS IN SOUTHERN PART OF THE RECHARGE AREA.

           SAMPLE DATE 3 74
                SPECIES        CHARGE     MOLARITY       ORIGINAL UNITS
                --------       ------    ----------     --------------

                NA+              1       0.6960E-03       0.1600E 02
                K+               1       0.2557E-04       0.1000E 01
                CA++             2       0.1821E-02       0.7300E 02
                MG++             2       0.1275E-02       0.3100E 02
                H+               1       0.3981E-07       0.7400E 01
                SO4--           -2       0.2811E-02       0.2700E 03
                CL-             -1       0.5359E-03       0.1900E 02
                HCO3-           -1       0.4769E-02       0.2910E 03
                BA               0       0.0              0.0
                FE               0       0.1432E-03       0.8000E 01
                CU               0       0.1023E-05       0.6500E-01
                SR               0       0.1141E-04       0.1000E 01
                PB               0       0.0              0.0
                CR               0       0.0              0.0
                ZN               0       0.0              0.0
                HG               0       0.0              0.0
                F                0       0.0              0.0
                NO3              0       0.0              0.0
                O2 SAM           0       0.0              0.0
                O2 CAL           0       0.0              0.0
                FILTER           0       0.0              0.0
                TEMP             0       0.1900E 02       0.1900E 02
                REF              0       NMT              NMT
                                 0
                THE EXCESS SAMPLE CHARGE IS-0.4012E-02AND THE ANALYTICAL PERCENT ERROR IS  22.487549

                THE EXCESS CHARGE FOR NACL IS 0.1600E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.4198E-02
AKO2         AK1          AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.41E-01    0.36E-06    0.36E-10    0.51E-02    0.80E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08    0.13E-16

                                                  ION STRENGTH          GAMMA 1     GAMMA 2

                                                         0.128E-01      0.639E 00      0.894E 00

C4I          CA          MG          SO4         HCO3        H+          CO3         C1

.0          0.150E-02   0.107E-02   0.234E-02   0.466E-02   0.398E-07   0.595E-05   0.280E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.455E-05   0.177E-05   0.383E-04   0.196E-04   0.186E-03   0.177E-05   0.116E-06   0.164E-07

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2       SATPH
 0.100E 01   0.704E 00   0.575E-01   0.210E-04   0.116E-03   0.735E 01
```

```
               SAMPLE DATE 2 75
     A DISCREPANCY EXISTS FOR THE VALUE OF SM 13
                    SPECIES        CHARGE      MOLARITY          ORIGINAL UNITS
                    --------       ------     ----------       -------------

                    NA+              1         0.7612E-03         0.1750E 02
                    K+               1         0.3964E-04         0.1550E 01
                    CA++             2         0.3131E-02         0.1255E 03
                    MG++             2         0.1357E-02         0.3300E 02
                    H+               1         0.1585E-06         0.6800E 01
                    SO4--           -2         0.2082E-02         0.2000E 03
                    CL-             -1         0.4795E-03         0.1700E 02
                    HCO3-           -1         0.4114E-02         0.2510E 03
                    BA               0         0.3058E-06         0.4200E-01
                    FE               0         0.9848E-06         0.5500E-01
                    CU               0         0.9443E-07         0.6000E-02
                    SR               0         0.9701E-05         0.8500E 00
                    PB               0         0.3861E-07         0.8000E-02
                    CR               0         0.4808E-08         0.2500E-03
                    ZN               0         0.0                0.0
                    HG               0         0.0                0.0
                    F                0         0.1948E-04         0.3700E 00
                    NO3              0         0.6129E-04         0.3800E 01
                    O2 SAM           0         0.2187E-03         0.7000E 01
                    O2 CAL           0         0.2906E-03         0.9300E 01
                    FILTER           0         0.0                0.0
                    TEMP             0         0.1720E 02         0.1720E 02
                    REF              0         NMT                NMT
                                     0
                    THE EXCESS SAMPLE CHARGE IS 0.1021E-02AND THE ANALYTICAL PERCENT ERROR IS   5.508911

                    THE EXCESS CHARGE FOR NACL IS 0.2817E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.6996E-03
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.43E-01    0.35E-06    0.35E-10    0.52E-02    0.82E-03    0.15E-02    0.12E 00    0.17E 00    0.57E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

0.37E-08    0.15E-16

                                                       ION STRENGTH         GAMMA 1      GAMMA 2

                                                               0.138E-01       0.630E 00      0.891E 00

C4I          CA          MG          SO4          HCO3         H+           CCO3         C1

.0           0.274E-02   0.120E-02   0.161E-02    0.402E-02    0.158E-06    0.125E-05    0.337E-03

    C2          C3          C4          C5           C6           C7           C8           C9
0.164E-05   0.397E-06   0.563E-04   0.180E-04    0.134E-03    0.131E-05    0.122E-06    0.370E-08
   CA SAT      DOLSAT      GYPSAT      PCO2         SCO2         SATPH
0.366E 00   0.556E-01   0.704E-01   0.786E-04    0.165E-03    0.719E 01
```

```
LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

16 20 19 3330     0. 4481.        767.        555.  610.              SL          DU        OW        PVACD        6 56

                                       OBSERVATION WELL #5

          SAMPLE DATE 3 74
              SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
              --------        ------     ----------       -------------

              NA+                1       0.6090E-03         0.1400E 02
              K+                 1       0.2557E-04         0.1000E 01
              CA++               2       0.1796E-02         0.7200E 02
              MG++               2       0.1275E-02         0.3100E 02
              H+                 1       0.6310E-07         0.7200E 01
              SO4--             -2       0.1770E-02         0.1700E 03
              CL-               -1       0.6770E-03         0.2400E 02
              HCO3-             -1       0.4277E-02         0.2610E 03
              BA                 0       0.2912E-06         0.4000E-01
              FE                 0       0.2686E-04         0.1500E 01
              CU                 0       0.3777E-07         0.2400E-02
              SR                 0       0.1027E-04         0.9000E 00
              PB                 0       0.0                0.0
              CR                 0       0.0                0.0
              ZN                 0       0.0                0.0
              HG                 0       0.0                0.0
              F                  0       0.0                0.0
              NO3                0       0.0                0.0
              O2  SAM            0       0.0                0.0
              O2  CAL            0       0.0                0.0
              FILTER             0       0.0                0.0
              TEMP               0       0.1670E 02         0.1670E 02
              REF                0       NMT                NMT
                                 0
              THE EXCESS SAMPLE CHARGE IS-0.1716E-02AND THE ANALYTICAL PERCENT ERROR IS  11.238187
              THE EXCESS CHARGE FOR NACL IS-0.6799E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1674E-02
AKO2        AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09
0.44E-01   0.35E-06   0.34E-10   0.52E-02   0.83E-03   0.15E-02   0.13E 00   0.17E 00   0.58E-02   0.19E 00   0.11E 00   0.54E-01
 AKC        AKD
0.37E-08   0.15E-16

                                        ION STRENGTH        GAMMA 1     GAMMA 2
                                            0.111E-01        0.656E 00    0.900E 00
C4T         CA          MG          SO4         HCO3        H+          CO3         C1
.0          0.157E-02   0.113E-02   0.146E-02   0.420E-02   0.631E-07   0.313E-05   0.189E-03

   C2          C3          C4          C5          C6          C7          C8          C9
0.254E-05   0.101E-05   0.346E-04   0.182E-04   0.122E-03   0.991E-06   0.740E-07   0.774E-08
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.569E 00   0.218E 00   0.397E-01   0.334E-04   0.125E-03   0.740E 01
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LOCATION     RA    ELEVATION     DEPTH    PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

16 26 16 3310 1295.     0.        110.          95.  110.             AL          SU        IW          0000          0  0

                                        ACTUAL RA IS 1295-S  16-26-16-313 IS LISTED AS 1295.

         SAMPLE DATE 1 76
             SPECIES          CHARGE      MOLARITY        ORIGINAL UNITS
             --------         ------      ----------      --------------

             NA+                 1        0.4567E-02       0.1050E 03
             K+                  1        0.7929E-04       0.3100E 01
             CA++                2        0.9481E-02       0.3800E 03
             MG++                2        0.3085E-02       0.7500E 02
             H+                  1        0.1259E-06       0.6900E 01
             SO4--              -2        0.1570E-01       0.1508E 04
             CL-                -1        0.4457E-02       0.1580E 03
             HCO3-              -1        0.3200E-02       0.3200E-02
             BA                  0        0.0              0.0
             FE                  0        0.0              0.0
             CU                  0        0.0              0.0
             SR                  0        0.1198E-03       0.1050E 02
             PB                  0        0.0              0.0
             CR                  0        0.0              0.0
             ZN                  0        0.0              0.0
             HG                  0        0.0              0.0
             F                   0        0.0              0.0
             NO3                 0        0.3145E-03       0.1950E 02
             O2 SAM              0        0.1625E-03       0.5200E 01
             O2 CAL              0        0.2625E-03       0.8400E 01
             FILTER              0        0.0              0.0
             TEMP                0        0.1800E 02       0.1800E 02
             REF                 0        NMT              NMT
                                 0
             THE EXCESS SAMPLE CHARGE IS-0.9275E-02AND THE ANALYTICAL PERCENT ERROR IS  13.474362

             THE EXCESS CHARGE FOR NACL IS 0.1106E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.9465E-02
AKO2        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.42E-01    0.35E-06    0.35E-10    0.52E-02    0.81E-03  . 0.15E-02    0.12E 00    0.17E 00    0.56E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.37E-08    0.14E-16

                                                 ION STRENGTH          GAMMA 1     GAMMA 2

                                                       0.459E-01       0.475E 00      0.830E 00

C4T         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.625E-02   0.209E-02   0.115E-01   0.308E-02   0.126E-06   0.151E-05   0.316E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.263E-05   0.484E-06   0.762E-04   0.185E-04   0.972E-03   0.426E-04   0.132E-05   0.204E-07

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2       SATPH
 0.583E 00   0.109E 00   0.655E 00   0.460E-04   0.111E-03   0.705E 01
```

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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

16 26 2) 4330  553. 3378.        1063.           905. 1063.               SL          DC        1400.       0000          0  0

                                          FIRST WHITE HOUSE ON NORTH SIDE OF ROAD GOING WEST

       SAMPLE DATE 5 75
            SPECIES        CHARGE      MOLARITY       ORIGINAL UNITS
            --------       ------     ----------     --------------

            NA+               1       0.9134E-03       0.2100E 02
            K+                1       0.2762E-04       0.1080E 01
            CA++              2       0.4765E-02       0.1910E 03
            MG++              2       0.3003E-02       0.7300E 02
            H+                1       0.1000E-06       0.7000E 01
            SO4--            -2       0.5267E-02       0.5060E 03
            CL-              -1       0.5641E-03       0.2000E 02
            HCO3-            -1       0.3491E-02       0.2130E 03
            BA                0       0.1893E-06       0.2600E-01
            FE                0       0.3581E-05       0.2000E 00
            CU                0       0.0              0.0
            SR                0       0.2876E-04       0.2520E 01
            PB                0       0.4103E-07       0.8500E-02
            CR                0       0.0              0.0
            ZN                0       0.3365E-06       0.2200E-01
            HG                0       0.0              0.0
            F                 0       0.2632E-04       0.5000E 00
            NO3               0       0.6903E-04       0.4280E 01
            O2 SAM            0       0.1000E-03       0.3200E 01
            O2 CAL            0       0.2156E-03       0.6900E 01
            FILTER            0       0.0              0.0
            TEMP              0       0.2300E 02       0.2300E 02
            REF               0       NMT              NMT
                              0
            THE EXCESS SAMPLE CHARGE IS 0.1888E-02AND THE ANALYTICAL PERCENT ERROR IS   6.075583

            THE EXCESS CHARGE FOR NACL IS 0.3493E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1510E-02
AK02        AK1        AK2        AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.36E-01   0.38E-06   0.40E-10   0.49E-02   0.74E-03   0.14E-02   0.10E 00   0.15E 00   0.49E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.35E-08   0.11E-16

                                                  ION STRENGTH          GAMMA 1      GAMMA 2

                                                        0.223E-01       0.570E 00       0.869E 00

C4I          CA           MG           SO4          HCO3         H+           CCO3         C1

.0           0.377E-02    0.238E-02    0.375E-02    0.336E-02    0.100E-06    0.203E-05    0.927E-03

    C2           C3           C4           C5           C6           C7           C8           C9
 0.336E-05    0.114E-05    0.698E-04    0.308E-04    0.587E-03    0.332E-05    0.179E-06    0.653E-08

    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.718E 00    0.350E 00    0.183E 00    0.320E-04    0.931E-04    0.708E 01
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LOCATION     PA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

16 26 21 3330 1450. 3370.         127.          43.  127.              AL           SU        IW           00000        0  0

                                        IRR. WELL EAST SIDE OF HIGHWAY BETWEEN LAKE ARTHUR AND ARTESIA

        SAMPLE DATE 5 75
            SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
            --------       ------     ----------      --------------

            NA+              1        0.3219E-02        0.7400E 02
            K+               1        0.4808E-04        0.1880E 01
            CA++             2        0.8333E-02        0.3340E 03
            MG++             2        0.4771E-02        0.1160E 03
            H+               1        0.1000E-06        0.7000E 01
            SO4--           -2        0.1479E-01        0.1421E 04
            CL-             -1        0.2567E-02        0.9100E 02
            HCO3-           -1        0.3720E-02        0.2270E 03
            BA               0        0.2257E-06        0.3100E-01
            FE               0        0.1128E-04        0.6300E 00
            CU               0        0.0               0.0
            SR               0        0.4793E-04        0.4200E 01
            PB               0        0.1014E-06        0.2100E-01
            CR               0        0.1154E-07        0.6000E-03
            ZN               0        0.0               0.0
            HG               0        0.0               0.0
            F                0        0.1579E-04        0.3000E 00
            NO3              0        0.5742E-03        0.3560E 02
            O2 SAM           0        0.2625E-03        0.8400E 01
            O2 CAL           0        0.2625E-03        0.8400E 01
            FILTER           0        0.0               0.0
            TEMP             0        0.1800E 02        0.1800E 02
            REF              0        NMT               NMT
                             0
            THE EXCESS SAMPLE CHARGE IS-0.6396E-02AND THE ANALYTICAL PERCENT ERROR IS   9.787452
            THE EXCESS CHARGE FOR NACL IS 0.6520E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.7096E-02
AK02        AK1        AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.42E-01    0.35E-06   0.35E-10    0.52E-02    0.81E-03    0.15E-02    0.12E 00    0.17E 00    0.56E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.37E-08    0.14E-16

                                              ION STRENGTH        GAMMA 1      GAMMA 2
                                                   0.438E-01       0.482E 00      0.833E 00
C41         CA          MG          SO4         HCO3        H+          CCO3        C1
.0          0.558E-02   0.329E-02   0.106E-01   0.357E-02   0.100E-06   0.219E-05   0.267E-02

   C2          C3          C4          C5          C6          C7          C8          C9
 0.348E-05   0.113E-05   0.799E-04   0.341E-04   0.145E-02   0.281E-04   0.747E-06   0.210E-07
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.772E 00   0.338E 00   0.554E 00   0.424E-04   0.117E-03   0.703E 01
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LOCATION    RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

16 26 29 1430 1117. 3389.      1079.          774. 1079.            SL          DC      1300.     00000        0  0

                                        IPR. WELL

          SAMPLE DATE 5 75
              SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
              --------       ------     ----------      --------------

              NA+                 1     0.6525E-03        0.1500E 02
              K+                  1     0.2915E-04        0.1140E 01
              CA++                2     0.4416E-02        0.1770E 03
              MG++                2     0.1892E-02        0.4600E 02
              H+                  1     0.1259E-06        0.6900E 01
              SO4--              -2     0.4320E-02        0.4150E 03
              CL-                -1     0.2821E-03        0.1600E 02
              HCO3-              -1     0.3409E-02        0.2080E 03
              BA                  0     0.1456E-06        0.2000E-01
              FE                  0     0.3581E-05        0.2000E 00
              CU                  0     0.0               0.0
              SR                  0     0.2397E-04        0.2100E 01
              PB                  0     0.0               0.0
              CR                  0     0.1154E-07        0.6000E-03
              ZN                  0     0.7955E-06        0.5200E-01
              HG                  0     0.0               0.0
              F                   0     0.2632E-04        0.5000E 00
              NO3                 0     0.1000E-05        0.6200E-01
              O2 SAM              0     0.1344E-03        0.4300E 01
              O2 CAL              0     0.2125E-03        0.6800E 01
              FILTER              0     0.0               0.0
              TEMP                0     0.2300E 02        0.2300E 02
              REF                 0     NMT               NMT
                                  0
              THE EXCESS SAMPLE CHARGE IS 0.9670E-03AND THE ANALYTICAL PERCENT ERROR IS   3.772980

              THE EXCESS CHARGE FOR NACL IS 0.3704E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5673E-03
AKO2        AK1          AK2          AKO1         AKO2         AKO3         AKO4         AKO5         AKO6         AKO7         AKO8         AKO9

0.36E-01    0.38E-06     0.40E-10     0.49E-02     0.74E-03     0.14E-02     0.10E 00     0.15E 00     0.49E-02     0.19E 00     0.11E 00     0.54E-01
  AKC         AKD
 0.35E-08    0.11E-16

                                                  ION STRENGTH          GAMMA 1      GAMMA 2

                                                        0.187E-01       0.592E 00       0.877E 00

C41           CA          MG           SO4          HCO3          H+           CCO3          C1

.0            0.355E-02   0.153E-02    0.318E-02    0.330E-02     0.126E-06    0.154E-05     0.799E-03

    C2            C3           C4           C5           C6           C7           C8           C9
 0.259E-05    0.600E-06    0.672E-04    0.202E-04    0.344E-03    0.209E-05    0.166E-06    0.367E-08
    CA SAT        DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.554E 00    0.142E 00    0.158E 00    0.396E-04    0.996E-04    0.710E 01
```

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LOCATION     RA    ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

17 20 18 4340 3675. 4512.         801.          680.  800.              SL          DU          OW        PVACD          2 57

                                             OBSERVATION WELL #7

          SAMPLE DATE 4 74
               SPECIES          CHARGE       MOLARITY          ORIGINAL UNITS
               --------         ------      ----------        ---------------

               NA+                 1        0.1870E-02          0.4300E 02
               K+                  1        0.5626E-04          0.2200E 01
               CA++                2        0.1971E-03          0.7900E 01
               MG++                2        0.7404E-03          0.1800E 02
               H+                  1        0.3981E-08          0.8400E 01
               SO4--              -2        0.9369E-04          0.9000E 01
               CL-                -1        0.1523E-02          0.5400E 02
               HCO3-              -1        0.3392E-02          0.2070E 03
               BA                  0        0.3495E-05          0.4800E 00
               FE                  0        0.0                 0.0
               CU                  0        0.1810E-06          0.1150E-01
               SR                  0        0.9130E-05          0.8000E 00
               PB                  0        0.0                 0.0
               CR                  0        0.0                 0.0
               ZN                  0        0.0                 0.0
               HG                  0        0.0                 0.0
               F                   0        0.0                 0.0
               NO3                 0        0.0                 0.0
               O2 SAM              0        0.0                 0.0
               O2 CAL              0        0.0                 0.0
               FILTER              0        0.0                 0.0
               TEMP                0        0.1630E 02          0.1630E 02
               REF                 0        NMT                 NMT
                                   0
               THE EXCESS SAMPLE CHARGE IS-0.1301E-02AND THE ANALYTICAL PERCENT ERROR IS  14.614647
               THE EXCESS CHARGE FOR NACL IS 0.3473E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1705E-02
AKO2        AK1          AK2         AKO1         AKO2         AKO3         AKO4         AKO5         AKO6         AKO7         AKO8         AKO9
0.44E-01    0.34E-06    0.34E-10    0.52E-02    0.84E-03    0.15E-02    0.13E 00    0.17E 00    0.59E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
0.37E-08    0.15E-16

                                                              ION STRENGTH          GAMMA 1       GAMMA 2
                                                                     0.536E-02     0.736E 00     0.926E 00
C4T          CA          MG          SO4          HCO3          H+          CO3          C1
.0          0.188E-03   0.716E-03   0.861E-04   0.328E-02    0.398E-08   0.354E-04   0.167E-05

    C2          C3          C4          C5          C6          C7          C8          C9
0.430E-05   0.904E-05   0.359E-05   0.100E-04   0.568E-05   0.202E-06   0.109E-07   0.301E-06
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.962E 00   0.326E 01   0.353E-03   0.168E-05   0.742E-04    0.839E 01
```

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          SAMPLE DATE12 74
A DISCREPANCY EXISTS FOR THE VALUE OF SM 13
             SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
             --------       ------     ----------      --------------

             NA+              1        0.2740E-02        0.6300E 02
             K+               1        0.4731E-04        0.1850E 01
             CA++             2        0.3318E-02        0.1330E 03
             MG++             2        0.1152E-02        0.2800E 02
             H+               1        0.2512E-08        0.8600E 01
             SO4--           -2        0.1353E-03        0.1300E 02
             CL-             -1        0.1354E-02        0.4800E 02
             HCO3-           -1        0.3245E-02        0.1980E 03
             BA               0        0.1529E-05        0.2100E 00
             FE               0        0.1970E-04        0.1100E 01
             CU               0        0.3305E-07        0.2100E-02
             SR               0        0.1027E-04        0.9000E 00
             PB               0        0.1738E-06        0.3600E-01
             CR               0        0.9616E-08        0.5000E-03
             ZN               0        0.0               0.0
             HG               0        0.0               0.0
             F                0        0.0               0.0
             NO3              0        0.0               0.0
             O2 SAM           0        0.0               0.0
             O2 CAL           0        0.0               0.0
             FILTER           0        0.0               0.0
             TEMP             0        0.1600E 02        0.1600E 02
             REF              0        NMT               NMT
                              0
             THE EXCESS SAMPLE CHARGE IS 0.6858E-02AND THE ANALYTICAL PERCENT ERROR IS  41.321274
             THE EXCESS CHARGE FOR NACL IS 0.1386E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5424E-02
AKO2        AK1       AK2       AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9
0.45E-01    0.34E-06  0.34E-10  0.52E-02   0.84E-03   0.15E-02   0.13E 00   0.17E 00   0.59E-02   0.19E 00   0.11E 00   0.54E-01
 AKC        AKD
 0.37E-08   0.15E-16

                                              ION STRENGTH        GAMMA 1     GAMMA 2
                                                     0.122E-01    0.645E 00    0.896E 00
C4I          CA           MG           SO4          HCO3         H+           CO3          C1
.0           0.317E-02    0.112E-02    0.101E-03    0.247E-02    0.251E-08    0.477E-04    0.256E-04

   C2           C3           C4           C5           C6           C7           C8           C9
 0.772E-04    0.150E-04    0.410E-04    0.106E-04    0.798E-05    0.305E-06    0.938E-08    0.514E-06
   CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.168E 02    0.914E 02    0.542E-02    0.808E-06    0.558E-04    0.734E 01
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

17 23 30 1140 3081. 4085.          600.          498.  558.              SL          OU        DW          HOPE          0  0

                                            HOPE MUNICIPAL WELL.

        SAMPLE DATE 7 73
            SPECIES          CHARGE        MOLARITY          ORIGINAL UNITS
            --------         ------       ----------        --------------

            NA+                 1         0.5872E-02         0.1350E 03
            K+                  1         0.1049E-03         0.4100E 01
            CA++                2         0.3967E-02         0.1590E 03
            MG++                2         0.5193E-02         0.1260E 03
            H+                  1         0.3311E-07         0.7480E 01
            SO4--              -2         0.3977E-02         0.3820E 03
            CL-                -1         0.1128E-02         0.4000E 02
            HCO3-              -1         0.3900E-02         0.3900E-02
            BA                  0         0.1311E-06         0.1800E-01
            FE                  0         0.1791E-05         0.1000E 00
            CU                  0         0.0                0.0
            SR                  0         0.2054E-04         0.1800E 01
            PB                  0         0.0                0.0
            CR                  0         0.0                0.0
            ZN                  0         0.0                0.0
            HG                  0         0.0                0.0
            F                   0         0.0                0.0
            NO3                 0         0.0                0.0
            O2 SAM              0         0.0                0.0
            O2 CAL              0         0.0                0.0
            FILTER              0         0.0                0.0
            TEMP                0         0.2000E 02         0.2000E 02
            REF                 0         NMT                NMT
                                0
            THE EXCESS SAMPLE CHARGE IS 0.1129E-01AND THE ANALYTICAL PERCENT ERROR IS  30.315521
AKO2        AK1 THE EXCESS CHARGE FOR NACL IS 0.4744E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.6446E-02
                         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9
0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.36E-08    0.13E-16

                                                  ION STRENGTH         GAMMA 1      GAMMA 2

                                                        0.265E-01      0.547E 00      0.860E 00
C4I         CA          MG          SO4         HCO3        H+          CO3         C1

.0          0.336E-02   0.444E-02   0.274E-02   0.368E-02   0.331E-07   0.650E-05   0.542E-03

   C2          C3          C4          C5          C6          C7          C8          C9
0.834E-05   0.600E-05   0.599E-04   0.564E-04   0.682E-03   0.150E-04   0.475E-06   0.129E-06
   CA SAT      DOL SAT     GYP SAT     PCO2        SCO2        SATPH
0.182E 01   0.440E 01   0.110E 00   0.132E-04   0.860E-04   0.716E 01
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LOCATION    RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

17 26 10 3320 1331. 3348.      278.         278.  278.              AL        SU       1000.     0000          1 39

                                        EAST OF ARTESIA.  .003 ACFT/MIN  RA 1331

           SAMPLE DATE 7 73
               SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
               --------        ------     ----------      ---------------

               NA+                1       0.1783E-01        0.4100E 03
               K+                 1       0.8951E-04        0.3500E 01
               CA++               2       0.5813E-02        0.2330E 03
               MG++               2       0.3167E-02        0.7700E 02
               H+                 1       0.5012E-07        0.7300E 01
               SO4--             -2       0.7620E-02        0.7320E 03
               CL-               -1       0.4513E-02        0.1600E 03
               HCO3-             -1       0.3700E-02        0.3700E-02
               BA                 0       0.2112E-06        0.2900E-01
               FE                 0       0.8953E-06        0.5000E-01
               CU                 0       0.0               0.0
               SR                 0       0.3766E-04        0.3300E 01
               PB                 0       0.0               0.0
               CR                 0       0.0               0.0
               ZN                 0       0.0               0.0
               HG                 0       0.0               0.0
               F                  0       0.0               0.0
               NO3                0       0.0               0.0
               O2 SAM             0       0.0               0.0
               O2 CAL             0       0.0               0.0
               FILTER             0       0.0               0.0
               TEMP               0       0.2120E 02        0.2120E 02
               REF                0       NMT               NMT
                                  0
               THE EXCESS SAMPLE CHARGE IS 0.1243E-01AND THE ANALYTICAL PERCENT ERROR IS  20.950150

AKO2        AK1 THE EXCESS CHARGE FOR NACL IS 0.1332E-01AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.9792E-03
                     AK2         AK01         AK02         AK03         AK04         AK05         AK06         AK07         AK08         AK09
0.38E-01    0.37E-06    0.38E-10    0.50E-02    0.77E-03    0.14E-02    0.11E 00    0.15E 00    0.52E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.35E-08    0.12E-16


                                                      ION STRENGTH          GAMMA 1     GAMMA 2

                                                              0.382E-01     0.499E 00     0.841E 00
C4T          CA           MG          SO4          HCO3         H+           CCO3         C1

.0          0.448E-02   0.247E-02   0.562E-02   0.353E-02   0.501E-07   0.453E-05   0.125E-02

    C2          C3          C4          C5          C6          C7          C8          C9
0.662E-05   0.198E-05   0.727E-04   0.283E-04   0.668E-03   0.850E-04   0.761E-06   0.249E-06
   CA SAT      DOLSAT      GYPSAT       PCO2        SCO2       SATPH
0.143E 01   0.117E 01   0.251E 00   0.182E-04   0.858E-04   0.707E 01
```

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SAMPLE DATE 4 74
    SPECIES        CHARGE      MOLARITY         ORIGINAL UNITS
    --------       ------     ----------        --------------

    NA+              1        0.1435E-02          0.3200E 02
    K+               1        0.3580E-04          0.1400E 01
    CA++             2        0.3293E-02          0.1320E 03
    MG++             2        0.2221E-02          0.5400E 02
    H+               1        0.3981E-07          0.7400E 01
    SO4--           -2        0.5205E-02          0.5000E 03
    CL-             -1        0.1453E-02          0.5150E 02
    HCO3-           -1        0.3229E-02          0.1970E 03
    BA               0        0.2039E-06          0.2800E-01
    FE               0        0.1791E-08          0.1000E-03
    CU               0        0.9600E-07          0.6100E-02
    SR               0        0.2353E-04          0.2500E 01
    PB               0        0.0                 0.0
    CR               0        0.0                 0.0
    ZN               0        0.0                 0.0
    HG               0        0.0                 0.0
    F                0        0.0                 0.0
    NO3              0        0.0                 0.0
    O2 SAM           0        0.0                 0.0
    O2 CAL           0        0.0                 0.0
    FILTER           0        0.0                 0.0
    TEMP             0        0.2000E 02          0.2000E 02
    REF              0        NMT                 NMT
                     0
    THE EXCESS SAMPLE CHARGE IS-0.2591E-02AND THE ANALYTICAL PERCENT ERROR IS   9.390079

    THE EXCESS CHARGE FOR NACL IS-0.1721E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2609E-02
AKO2        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD

 0.36E-08    0.13E-16


                                               ION STRENGTH           GAMMA 1      GAMMA 2

                                                      0.197E-01        0.585E 00        0.875E 00

C4T          CA          MG          SO4         HCO3        H+          CCO3        C1

.0           0.255E-02   0.175E-02   0.405E-02   0.312E-02   0.398E-07   0.435E-05   0.697E-03

  C2           C3          C4          C5          C6          C7          C8          C9
0.485E-05    0.181E-05   0.412E-04   0.201E-04   0.454E-03   0.579E-05   0.257E-06   0.226E-07
  CA SAT       DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.106E 01    0.771E 00   0.142E 00   0.134E-04   0.752E-04   0.732E 01
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LOCATION      RA    ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

17 26 10 4330  397. 3342.        1995.          607. 1095.               MF        MA      850.      SULLIVAN    0  0


        SAMPLE DATE 7 73
            SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
            --------        ------     ----------      ---------------

            NA+                1       0.2262E-02        0.5200E 02
            K+                 1       0.7672E-04        0.3000E 01
            CA++               2       0.5249E-02        0.2100E 03
            MG++               2       0.5717E-02        0.1390E 03
            H+                 1       0.6310E-07        0.7200E 01
            SO4--             -2       0.6059E-02        0.5820E 03
            CL-               -1       0.4090E-02        0.1450E 03
            HCO3-             -1       0.3700E-02        0.3700E-02
            BA                 0       0.1966E-06        0.2700E-01
            FE                 0       0.1791E-05        0.1000E 00
            CU                 0       0.0               0.0
            SR                 0       0.3196E-04        0.2800E 01
            PB                 0       0.0               0.0
            CR                 0       0.0               0.0
            ZN                 0       0.0               0.0
            HG                 0       0.0               0.0
            F                  0       0.0               0.0
            NO3                0       0.0               0.0
            O2 SAM             0       0.0               0.0
            O2 CAL             0       0.0               0.0
            FILTER             0       0.0               0.0
            TEMP               0       0.2380E 02        0.2380E 02
            REF                0       NMT               NMT
                               0
            THE EXCESS SAMPLE CHARGE IS 0.4345E-02AND THE ANALYTICAL PERCENT ERROR IS   9.839832
            THE EXCESS CHARGE FOR NACL IS-0.1828E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.6096E-02
AK02        AK1        AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.36E-01   0.39E-06   0.40E-10    0.49E-02    0.73E-03    0.14E-02    0.10E 00    0.15E 00    0.48E-02    0.19E 00    0.11E 00    0.54E-01
 AKC        AKD
 0.34E-08   0.11E-16


                                                ION STRENGTH        GAMMA 1      GAMMA 2
                                                       0.307E-01     0.528E 00     0.853E 00
C4I          CA          MG          SO4         HCO3         H+          CCO3        C1
.0          0.420E-02   0.459E-02   0.403E-02   0.350E-02   0.631E-07   0.361E-05   0.959E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.583E-05   0.342E-05   0.771E-04   0.584E-04   0.106E-02   0.819E-05   0.494E-06   0.266E-07
   CA SAT      DOLSAT      GYPSAT       PCO2        SCO2       SATPH
 0.124E 01   0.183E 01   0.189E 00   0.203E-04   0.826E-04   0.704E 01
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SAMPLE DATE 4 74
   SPECIES          CHARGE       MOLARITY        ORIGINAL UNITS
   --------         ------      ----------       --------------

   NA+                 1        0.9569E-03         0.2200E 02
   K+                  1        0.3836E-04         0.1500E 01
   CA++                2        0.3069E-02         0.1230E 03
   MG++                2        0.2468E-02         0.6000E 02
   H+                  1        0.6310E-07         0.7200E 01
   SO4--              -2        0.5517E-02         0.5300E 03
   CL-                -1        0.1392E-02         0.4900E 02
   HCO3-              -1        0.3638E-02         0.2220E 03
   BA                  0        0.2476E-06         0.3400E-01
   FE                  0        0.8953E-06         0.5000E-01
   CU                  0        0.9443E-06         0.6000E-01
   SR                  0        0.3196E-04         0.2800E 01
   PB                  0        0.0                0.0
   CR                  0        0.0                0.0
   ZN                  0        0.0                0.0
   HG                  0        0.0                0.0
   F                   0        0.0                0.0
   NO3                 0        0.0                0.0
   O2 SAM              0        0.0                0.0
   O2 CAL              0        0.0                0.0
   FILTER              0        0.0                0.0
   TEMP                0        0.2320E 02         0.2320E 02
   REF                 0        NMT                NMT
                       0
   THE EXCESS SAMPLE CHARGE IS-0.3986E-02AND THE ANALYTICAL PERCENT ERROR IS  14.173269
   THE EXCESS CHARGE FOR NACL IS-0.4252E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3599E-02
AKO2      AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9
0.36E-01  0.38E-06   0.40E-10   0.49E-02   0.73E-03   0.14E-02   0.10E 00   0.15E 00   0.49E-02   0.19E 00   0.11E 00   0.54E-01
 AKC       AKD
 0.34E-08  0.11E-16


                                                ION STRENGTH        GAMMA 1     GAMMA 2
                                                       0.200E-01     0.584E 00     0.874E 00
C4T          CA          MG          SO4         HCO3        H+          CO3         C1
.0           0.233E-02   0.188E-02   0.427E-02   0.353E-02   0.631E-07   0.333E-05   0.687E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.360E-05   0.156E-05   0.469E-04   0.263E-04   0.557E-03   0.406E-05   0.289E-06   0.115E-07
   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.769E 00   0.514E 00   0.136E 00   0.210E-04   0.849E-04   0.726E 01
```

```
LOCATION      RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER      DATE DRILLED

17 26 10 4330  397. 3342.          1095.           607. 1095.            MF        MA        850.       SULLIVAN     0  0


             SAMPLE DATE 3 75
A DISCREPANCY EXISTS FOR THE VALUE OF SM  9
A DISCREPANCY EXISTS FOR THE VALUE OF SM 14
                     SPECIES        CHARGE       MOLARITY          ORIGINAL UNITS
                     --------       ------      ----------         --------------

                     NA+               1        0.1196E-02          0.2750E 02
                     K+                1        0.3836E-04          0.1500E 01
                     CA++              2        0.1297E-01          0.5200E 03
                     MG++              2        0.2674E-02          0.6500E 02
                     H+                1        0.5012E-07          0.7300E 01
                     SO4--            -2        0.5725E-02          0.5500E 03
                     CL-              -1        0.0                 0.0
                     HCO3-            -1        0.3409E-02          0.2080E 03
                     BA                0        0.2184E-06          0.3000E-01
                     FE                0        0.1612E-05          0.9000E-01
                     CU                0        0.1574E-07          0.1000E-02
                     SR                0        0.2967E-04          0.2600E 01
                     PB                0        0.9170E-07          0.1900E-01
                     CR                0        0.1346E-07          0.7000E-03
                     ZN                0        0.0                 0.0
                     HG                0        0.0                 0.0
                     F                 0        0.0                 0.0
                     NO3               0        0.0                 0.0
                     O2 SAM            0        0.1750E-03          0.5600E 01
                     O2 CAL            0        0.3062E-03          0.9800E 01
                     FILTER            0        0.0                 0.0
                     TEMP              0        0.2300E 02          0.2300E 02
                     REF               0        NMT                 NMT
                     THE EXCESS SAMPLE CHARGE IS 0.1767E-01AND THE ANALYTICAL PERCENT ERROR IS  37.286560

                     THE EXCESS CHARGE FOR NACL IS-0.4252E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3599E-02
```

```
SAMPLE DATE 5 75
    SPECIES          CHARGE       MOLARITY         ORIGINAL UNITS
    --------         ------       ----------       --------------

    NA+                 1         0.8265E-03        0.1900E 02
    K+                  1         0.3222E-04        0.1260E 01
    CA++                2         0.5165E-02        0.2070E 03
    MG++                2         0.2057E-02        0.5000E 02
    H+                  1         0.2512E-06        0.6600E 01
    SO4--              -2         0.5871E-02        0.5640E 03
    CL-                -1         0.6770E-03        0.2400E 02
    HCO3-              -1         0.3327E-02        0.2030E 03
    BA                  0         0.1383E-06        0.1900E-01
    FE                  0         0.1970E-05        0.1100E 00
    CU                  0         0.0               0.0
    SR                  0         0.3002E-04        0.2630E 01
    PB                  0         0.5309E-07        0.1100E-01
    CR                  0         0.2789E-07        0.1450E-02
    ZN                  0         0.4283E-07        0.2800E-02
    HG                  0         0.0               0.0
    F                   0         0.1579E-04        0.3000E 00
    NO3                 0         0.3306E-04        0.2050E 01
    O2 SAM              0         0.1125E-03        0.3600E 01
    O2 CAL              0         0.2594E-03        0.8300E 01
    FILTER              0         0.0               0.0
    TEMP                0         0.2360E 02        0.2360E 02
    REF                 0         NMT               NMT
                        0
    THE EXCESS SAMPLE CHARGE IS-0.4449E-03AND THE ANALYTICAL PERCENT ERROR IS   1.432882

    THE EXCESS CHARGE FOR NACL IS 0.1495E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.6269E-03
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.36E-01    0.39E-06    0.40E-10    0.49E-02    0.73E-03    0.14E-02    0.10E 00    0.15E 00    0.49E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.34E-08    0.11E-16


                                                 ION STRENGTH          GAMMA 1     GAMMA 2

                                                        0.221E-01       0.571E 00      0.869E 00
C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.397E-02   0.158E-02   0.429E-02   0.322E-02   0.251E-06   0.784E-06   0.113E-02

   C2          C3          C4          C5          C6          C7          C8          C9
 0.139E-05   0.297E-06   0.720E-04   0.199E-04   0.454E-03   0.344E-05   0.239E-06   0.229E-08

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.296E 00   0.379E-01   0.222E 00   0.753E-04   0.133E-03   0.707E 01
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

17 26 10 4330  397. 2342.       1095.          607. 1095.              MF          MA       850.       SULLIVAN    0  0


     SAMPLE DATE 3 75
          SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
          --------        ------     ----------       --------------

          NA+                1       0.1196E-02         0.2750E 02
          K+                 1       0.3836E-04         0.1500E 01
          CA++               2       0.4990E-02         0.2000E 03
          MG++               2       0.2674E-02         0.6500E 02
          H+                 1       0.5012E-07         0.7300E 01
          SO4--             -2       0.5725E-02         0.5500E 03
          CL-               -1       0.0                0.0
          HCO3-             -1       0.3409E-02         0.2080E 03
          BA                 0       0.2184E-06         0.3000E-01
          FE                 0       0.1791E-05         0.1000E 00
          CU                 0       0.1574E-07         0.1000E-02
          SR                 0       0.2967E-04         0.2600E 01
          PB                 0       0.9170E-07         0.1900E-01
          CR                 0       0.2500E-07         0.1300E-02
          ZN                 0       0.0                0.0
          HG                 0       0.0                0.0
          F                  0       0.0                0.0
          NO3                0       0.0                0.0
          O2 SAM             0       0.1750E-03         0.5600E 01
          O2 CAL             0       0.3062E-03         0.9800E 01
          FILTER             0       0.0                0.0
          TEMP               0       0.2300E 02         0.2300E 02
          REF                0       NMT                NMT
                             0
          THE EXCESS SAMPLE CHARGE IS 0.1702E-02AND THE ANALYTICAL PERCENT ERROR IS    5.416403
          THE EXCESS CHARGE FOR NACL IS 0.1495E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.6269E-03
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

17 26 11 4330  777. 3314.        1034.          643. 1034.             SL          DC        IW         HANES       0  0


        SAMPLE DATE 7 73
            SPECIES        CHARGE      MOLARITY       ORIGINAL UNITS
            --------       ------     ----------      -------------

            NA +              1       0.4785E-02        0.1100E 03
            K+                1       0.5882E-04        0.2300E 01
            CA++              2       0.5639E-02        0.2260E 03
            MG++              2       0.3208E-02        0.7800E 02
            H+                1       0.5012E-07        0.7300E 01
            SO4--            -2       0.5944E-02        0.5710E 03
            CL-              -1       0.2257E-02        0.8000E 02
            HCO3-            -1       0.3600E-02        0.3600E-02
            BA                0       0.2112E-06        0.2900E-01
            FE                0       0.2686E-05        0.1500E 00
            CU                0       0.0               0.0
            SR                0       0.3538E-04        0.3100E 01
            PB                0       0.0               0.0
            CR                0       0.0               0.0
            ZN                0       0.0               0.0
            HG                0       0.0               0.0
            F                 0       0.0               0.0
            NO3               0       0.0               0.0
            O2 SAM            0       0.0               0.0
            O2 CAL            0       0.0               0.0
            FILTER            0       0.0               0.0
            TEMP              0       0.2300E 02        0.2300E 02
            REF               0       NMT               NMT
                              0
            THE EXCESS SAMPLE CHARGE IS 0.4793E-02AND THE ANALYTICAL PERCENT ERROR IS  11.898279
            THE EXCESS CHARGE FOR NACL IS 0.2528E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2206E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.36E-01    0.38E-06    0.40E-10    0.49E-02    0.74E-03    0.14E-02    0.10E 00    0.15E 00    0.49E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD

 0.35E-08    0.11E-16


                                                 ION STRENGTH          GAMMA 1     GAMMA 2

                                                        0.277E-01     0.542E 00     0.858E 00

C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0           0.445E-02   0.254E-02   0.419E-02   0.341E-02   0.501E-07   0.428E-05   0.110E-02


     C2          C3          C4          C5          C6          C7          C8          C9
 0.758E-05   0.233E-05   0.799E-04   0.318E-04   0.632E-03   0.185E-04   0.404E-06   0.686E-07

   CA SAT      DOLSAT      GYPSAT       PCO2        SCO2       SATPH
 0.162E 01   0.161E 01   0.219E 00   0.163E-04   0.784E-04   0.703E 01
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          SAMPLE DATE 3 75
A DISCREPANCY EXISTS FOR THE VALUE OF SM  9
A DISCREPANCY EXISTS FOR THE VALUE OF SM 10
A DISCREPANCY EXISTS FOR THE VALUE OF SM 14
              SPECIES      CHARGE     MOLARITY      ORIGINAL UNITS
              --------     ------    -----------    --------------

              NA+             1      0.1348E-02      0.3100E 02
              K+              1      0.3836E-04      0.1500E 01
              CA++            2      0.1322E-01      0.5300E 03
              MG++            2      0.2591E-02      0.6300E 02
              H+              1      0.7943E-07      0.7100E 01
              SO4--          -2      0.5205E-02      0.5000E 03
              CL-            -1      0.1608E-02      0.5700E 02
              HCO3-          -1      0.3278E-02      0.2000E 03
              BA              0      0.2184E-06      0.3000E-01
              FE              0      0.8953E-06      0.5000E-01
              CU              0      0.1574E-07      0.1000E-02
              SR              0      0.9130E-05      0.8000E 00
              PB              0      0.6757E-07      0.1400E-01
              CR              0      0.1346E-07      0.7000E-03
              ZN              0      0.0             0.0
              HG              0      0.0             0.0
              F               0      0.4527E-04      0.8600E 00
              NO3             0      0.4032E-04      0.2500E 01
              O2 SAM          0      0.1812E-03      0.5800E 01
              O2 CAL          0      0.3281E-03      0.1050E 02
              FILTER          0      0.0             0.0
              TEMP            0      0.2270E 02      0.2270E 02
              REF             0      NMT             NMT
                              0
              THE EXCESS SAMPLE CHARGE IS 0.1772E-01AND THE ANALYTICAL PERCENT ERROR IS  36.680405

              THE EXCESS CHARGE FOR NACL IS-0.2593E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1794E-01
AKO2      AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9

0.37E-01  0.38E-06   0.39E-10   0.50E-02   0.74E-03   0.14E-02   0.10E 00   0.15E 00   0.50E-02   0.19E 00   0.11E 00   0.54E-01
  AKC       AKD

 0.35E-08  0.11E-16


                                                ION STRENGTH        GAMMA 1     GAMMA 2
                                                      0.362E-01      0.507E 00     0.844E 00
C4I         CA         MG         SO4        HCO3       H+         CCO3       C1

.0         0.113E-01  0.222E-02  0.307E-02  0.301E-02  0.794E-07  0.249E-05  0.179E-02


    C2         C3         C4         C5         C6         C7         C8         C9
 0.970E-05  0.103E-05  0.165E-03  0.228E-04  0.350E-03  0.356E-05  0.180E-06  0.105E-07
   CA SAT     DOLSAT     GYPSAT     PCO2       SCO2       SATPH
 0.208E 01  0.906E 00  0.355E 00  0.231E-04  0.783E-04  0.671E 01
```

```
          SAMPLE DATE 3 75
              SPECIES         CHARGE       MOLARITY         ORIGINAL UNITS
              --------        ------      ----------       --------------

              NA+                1        0.1348E-02         0.3100E 02
              K+                 1        0.3836E-04         0.1500E 01
              CA++               2        0.5240E-02         0.2100E 03
              MG++               2        0.2591E-02         0.6300E 02
              H+                 1        0.7943E-07         0.7100E 01
              SO4--             -2        0.5205E-02         0.5000E 03
              CL-               -1        0.1608E-02         0.5700E 02
              HCO3-             -1        0.3278E-02         0.2000E 03
              BA                 0        0.2184E-06         0.3000E-01
              FE                 0        0.1791E-05         0.1000E 00
              CU                 0        0.1574E-07         0.1000E-02
              SR                 0        0.9130E-05         0.8000E 00
              PB                 0        0.6757E-07         0.1400E-01
              CR                 0        0.2308E-07         0.1200E-02
              ZN                 0        0.0                0.0
              HG                 0        0.0                0.0
              F                  0        0.4527E 00         0.8600E 04
              NO3                0        0.4032E-04         0.2500E 01
              O2 SAM             0        0.1687E-03         0.5400E 01
              O2 CAL             0        0.3281E-03         0.1050E 02
              FILTER             0        0.0                0.0
              TEMP               0        0.2270E 02         0.2270E 02
              REF                0        NMT                NMT
                                 0
              THE EXCESS SAMPLE CHARGE IS 0.1753E-02AND THE ANALYTICAL PERCENT ERROR IS    5.419909

              THE EXCESS CHARGE FOR NACL IS-0.2593E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1974E-02
AKO2         AK1          AK2          AKO1         AKO2         AKO3         AKO4         AKO5         AKO6         AKO7         AKO8         AKO9

0.37E-01     0.38E-06     0.39E-10     0.50E-02     0.74E-03     0.14E-02     0.10E 00     0.15E 00     0.50E-02     0.19E 00     0.11E 00     0.54E-01
  AKC          AKD

 0.35E-08     0.11E-16


                                                                ION STRENGTH         GAMMA 1      GAMMA 2

                                                                         0.230E-01      0.566E 00      0.867E 00
C4I           CA            MG            SO4           HCO3          H+            CCO3          C1

.0            0.417E-02     0.207E-02     0.371E-02     0.314E-02     0.794E-07     0.239E-05     0.997E-03

     C2            C3            C4            C5            C6            C7            C8            C9
 0.429E-05     0.115E-05     0.712E-04     0.247E-04     0.493E-03     0.482E-05     0.244E-06     0.113E-07
     CA SAT        DOLSAT        GYPSAT        PCO2          SCO2          SATPH
 0.919E 00     0.447E 00     0.198E 00     0.241E-04     0.817E-04     0.708E 01
```

```
         SAMPLE DATE 5 75
            SPECIES          CHARGE      MOLARITY       ORIGINAL UNITS
            --------         ------     ----------      --------------

            NA+                 1       0.1453E-02       0.3340E 02
            K+                  1       0.2813E-04       0.1100E 01
            CA++                2       0.4990E-02       0.2000E 03
            MG++                2       0.2744E-02       0.6670E 02
            H+                  1       0.1000E-06       0.7000E 01
            SO4--              -2       0.5465E-02       0.5250E 03
            CL-                -1       0.1721E-02       0.6100E 02
            HCO3-              -1       0.3409E-02       0.2080E 03
            BA                  0       0.2039E-06       0.2800E-01
            FE                  0       0.2543E-05       0.1420E 00
            CU                  0       0.0              0.0
            SR                  0       0.3310E-04       0.2900E 01
            PB                  0       0.4006E-07       0.8300E-02
            CR                  0       0.1923E-07       0.1000E-02
            ZN                  0       0.5813E-07       0.3800E-02
            HG                  0       0.0              0.0
            F                   0       0.5264E-05       0.1000E 00
            NO3                 0       0.6806E-04       0.4220E 01
            O2 SAM              0       0.1000E-03       0.3200E 01
            O2 CAL              0       0.2500E-03       0.8000E 01
            FILTER              0       0.0              0.0
            TEMP                0       0.2300E 02       0.2300E 02
            REF                 0       NMT              NMT
                                0
            THE EXCESS SAMPLE CHARGE IS 0.8881E-03AND THE ANALYTICAL PERCENT ERROR IS   2.690679

            THE EXCESS CHARGE FOR NACL IS-0.2678E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1128E-02
AKO2       AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9

0.36E-01   0.38E-06   0.40E-10   0.49E-02   0.74E-03   0.14E-02   0.10E 00   0.15E 00   0.49E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.35E-08   0.11E-16


                                            ION STRENGTH        GAMMA 1     GAMMA 2

                                                 0.233E-01      0.564E 00     0.867E 00

C4I         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.393E-02   0.217E-02   0.392E-02   0.328E-02   0.100E-06   0.200E-05   0.990E-03

    C2          C3          C4          C5          C6          C7          C8          C9
 0.338E-05   0.100E-05   0.704E-04   0.271E-04   0.547E-03   0.547E-05   0.188E-06   0.101E-07

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.722E 00   0.309E 00   0.196E 00   0.312E-04   0.909E-04   0.708E 01
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

17 26 14 2112  895. 3313.       1013.           806.  979.              SL         DC        600.        SHARP        0 52

                                         EAST OF ARTESIA.  .0017 ACFT/MIN  RA 895

          SAMPLE DATE 7 73
               SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
               --------       ------     ----------       --------------

               NA+              1        0.3784E-02        0.8700E 02
               K+               1        0.9462E-04        0.3700E 01
               CA++             2        0.6088E-02        0.2440E 03
               MG++             2        0.4771E-02        0.1160E 03
               H+               1        0.5012E-07        0.7300E 01
               SO4--           -2        0.6860E-02        0.6590E 03
               CL-             -1        0.4513E-02        0.1600E 03
               HCO3-           -1        0.3600E-02        0.3600E-02
               BA               0        0.2694E-06        0.3700E-01
               FE               0        0.2686E-05        0.1500E 00
               CU               0        0.0               0.0
               SR               0        0.4109E-04        0.3600E 01
               PB               0        0.0               0.0
               CR               0        0.0               0.0
               ZN               0        0.0               0.0
               HG               0        0.0               0.0
               F                0        0.0               0.0
               NO3              0        0.0               0.0
               O2 SAM           0        0.0               0.0
               O2 CAL           0        0.0               0.0
               FILTER           0        0.0               0.0
               TEMP             0        0.2360E 02        0.2360E 02
               REF              0        NMT               NMT
                                0
               THE EXCESS SAMPLE CHARGE IS 0.3764E-02AND THE ANALYTICAL PERCENT ERROR IS    7.935458

               THE EXCESS CHARGE FOR NACL IS-0.7287E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.4398E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.36E-01    0.39E-06    0.40E-10    0.49E-02    0.73E-03    0.14E-02    0.10E 00    0.15E 00    0.49E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.34E-08    0.11E-16

                                                    ION STRENGTH         GAMMA 1      GAMMA 2
                                                          0.323E-01     0.521E 00     0.850E 00
C4I          CA          MG          SO4          HCO3         H+           CC03         C1
.0           0.477E-02   0.375E-02   0.465E-02    0.339E-02    0.501E-07    0.443E-05    0.122E-02

    C2           C3          C4          C5           C6           C7           C8           C9
 0.790E-05   0.333E-05   0.834E-04   0.455E-04    0.973E-03    0.156E-04    0.694E-06    0.540E-07
     CA SAT       DOLSAT      GYPSAT       PCO2         SCO2         SATPH
 0.168E 01   0.240E 01   0.241E 00   0.158E-04    0.764E-04    0.701E 01
```

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SAMPLE DATE 4 74
    SPECIES         CHARCE       MOLARITY        ORIGINAL UNITS
    --------        ------      ----------       --------------

    NA+               1         0.2479E-02         0.5700E 02
    K+                1         0.4092E-04         0.1600E 01
    CA++              2         0.3743E-02         0.1500E 03
    MG++              2         0.2797E-02         0.6800E 02
    H+                1         0.7943E-07         0.7100E 01
    SO4--            -2         0.6246E-02         0.6000E 03
    CL-              -1         0.4372E-02         0.1550E 03
    HCO3-            -1         0.3409E-02         0.2080E 03
    BA                0         0.1675E-06         0.2300E-01
    FE                0         0.8953E-06         0.5000E-01
    CU                0         0.9758E-06         0.6200E-01
    SR                0         0.3424E-04         0.3000E 01
    PB                0         0.0                0.0
    CR                0         0.0                0.0
    ZN                0         0.0                0.0
    HG                0         0.0                0.0
    F                 0         0.0                0.0
    NO3               0         0.0                0.0
    O2 SAM            0         0.0                0.0
    O2 CAL            0         0.0                0.0
    FILTER            0         0.0                0.0
    TEMP              0         0.2300E 02         0.2300E 02
    REF               0         NMT                NMT
                      0
    THE EXCESS SAMPLE CHARGE IS-0.4674E-02AND THE ANALYTICAL PERCENT ERRCP IS  13.028222

    THE EXCESS CHARGE FOR NACL IS-0.1893E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2822E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.36E-01    0.38E-06    0.40E-10    0.49E-02    0.74E-03    0.14E-02    0.10E 00    0.15E 00    0.49E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.35E-08    0.11E-16

                                                    ION STRENGTH          GAMMA 1     GAMMA 2

                                                           0.246E-01       0.557E 00      0.864E 00

C4I         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.284E-02   0.213E-02   0.475E-02   0.330E-02   0.794E-07   0.255E-05   0.847E-03

     C2          C3          C4          C5          C6          C7          C8          C9
 0.305E-05   0.123E-05   0.507E-04   0.265E-04   0.636E-03   0.112E-04   0.328E-06   0.218E-07

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.652E 00   0.342E 00   0.168E 00   0.250E-04   0.850E-04   0.722E 01
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SAMPLE DATE 5 75
    SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
    --------       ------     ----------       -------------

    NA+              1        0.3219E-02         0.7400E 02
    K+               1        0.3376E-04         0.1320E 01
    CA++             2        0.6387E-02         0.2560E 03
    MG++             2        0.4401E-02         0.1070E 03
    H+               1        0.1259E-06         0.6900E 01
    SO4--           -2        0.6964E-02         0.6690E 03
    CL-             -1        0.5641E-02         0.2000E 03
    HCO3-           -1        0.3409E-02         0.2080E 03
    BA               0        0.2621E-06         0.3600E-01
    FE               0        0.4118E-05         0.2300E 00
    CU               0        0.0                0.0
    SR               0        0.3949E-04         0.3460E 01
    PB               0        0.1221E-06         0.2530E-01
    CR               0        0.1923E-07         0.1000E-02
    ZN               0        0.5660E-07         0.3700E-02
    HG               0        0.0                0.0
    F                0        0.5264E-05         0.1000E 00
    NO3              0        0.4097E-04         0.2540E 01
    O2 SAM           0        0.1156E-03         0.3700E 01
    O2 CAL           0        0.2594E-03         0.8300E 01
    FILTER           0        0.0                0.0
    TEMP             0        0.2350E 02         0.2350E 02
    REF              0        NMT                NMT
                     0
    THE EXCESS SAMPLE CHARGE IS 0.1851E-02AND THE ANALYTICAL PERCENT ERROR IS   3.871078
    THE EXCESS CHARGE FOR NACL IS-0.2422E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.4239E-02
AKO2       AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9

0.36E-01   0.38E-06   0.40E-10   0.49E-02   0.73E-03   0.14E-02   0.10E 00   0.15E 00   0.49E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.34E-08   0.11E-16


                                                ION STRENGTH        GAMMA 1     GAMMA 2

                                                       0.325E-01     0.521E 00     0.849E 00
C4I         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.500E-02   0.345E-02   0.474E-02   0.325E-02   0.126E-06   0.169E-05   0.130E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.313E-05   0.116E-05   0.833E-04   0.400E-04   0.908E-03   0.135E-04   0.252E-06   0.175E-07

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.667E 00   0.333E 00   0.257E 00   0.382E-04   0.966E-04   0.701E 01
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

17 26 15 1130 1227. 3340.        240.           94.  240.              AL          SU        600.       JOY          0  0

                                                  IRR. WELL

          SAMPLE DATE 5 75
              SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
              --------       ------     ----------       --------------

              NA+               1       0.7177E-02        0.1650E 03
              K+                1       0.5064E-04        0.1980E 01
              CA++              2       0.8633E-02        0.3460E 03
              MG++              2       0.9460E-03        0.2300E 02
              H+                1       0.1585E-06        0.6800E 01
              SO4--            -2       0.1323E-01        0.1271E 04
              CL-              -1       0.4090E-02        0.1450E 03
              HCO3-            -1       0.4343E-02        0.2650E 03
              BA                0       0.2039E-06        0.2800E-01
              FE                0       0.1791E-05        0.1000E 00
              CU                0       0.1495E-06        0.9500E-02
              SR                0       0.4793E-04        0.4200E 01
              PB                0       0.2896E-07        0.6000E-02
              CR                0       0.2116E-07        0.1100E-02
              ZN                0       0.1530E-06        0.1000E-01
              HG                0       0.0               0.0
              F                 0       0.0               0.0
              NO3               0       0.8016E-03        0.4970E 02
              O2 SAM            0       0.1969E-03        0.6300E 01
              O2 CAL            0       0.2500E-03        0.8000E 01
              FILTER            0       0.0               0.0
              TEMP              0       0.1850E 02        0.1850E 02
              REF               0       NMT               NMT
                                0
              THE EXCESS SAMPLE CHARGE IS-0.8510E-02AND THE ANALYTICAL PERCENT ERROR IS  13.886487
              THE EXCESS CHARGE FOR NACL IS 0.3087E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1165E-01
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.41E-01    0.36E-06    0.36E-10    0.51E-02    0.81E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.36E-08    0.14E-16

                                              ION STRENGTH         GAMMA 1      GAMMA 2
                                                   0.410E-01       0.490E 00      0.837E 00
C4I          CA          MG          SO4          HCO3         H+           CCO3         C1
.0           0.578E-02   0.651E-03   0.101E-01    0.421E-02    0.158E-06    0.163E-05    0.274E-02

    C2           C3          C4          C5           C6           C7           C8           C9
 0.280E-05   0.173E-06   0.101E-03   0.820E-05    0.286E-03    0.607E-04    0.763E-06    0.354E-07
   CA SAT       DOLSAT      GYPSAT       PCO2         SCO2        SATPH
 0.619E 00   0.419E-01   0.566E 00   0.774E-04    0.165E-03    0.693E 01
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LOCATION    RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

17 26 15 1330 1503. 3350.       240.          180.  240.              AL          SU        900.       JACKSON    11 44


      SAMPLE DATE 7 73
          SPECIES        CHARGE      MOLARITY       ORIGINAL UNITS
          --------       ------     ----------      -------------

          NA+              1        0.1174E-01       0.2700E 03
          K+               1        0.6649E-04       0.2600E 01
          CA++             2        0.9356E-02       0.3750E 03
          MG++             2        0.5717E-02       0.1390E 03
          H+               1        0.1175E-06       0.6930E 01
          SO4--           -2        0.1447E-01       0.1390E 04
          CL-             -1        0.6064E-02       0.2150E 03
          HCO3-           -1        0.4800E-02       0.4800E-02
          BA               0        0.2112E-06       0.2900E-01
          FE               0        0.1791E-05       0.1000E 00
          CU               0        0.0              0.0
          SR               0        0.5935E-04       0.5200E 01
          PB               0        0.0              0.0
          CR               0        0.0              0.0
          ZN               0        0.0              0.0
          HG               0        0.0              0.0
          F                0        0.0              0.0
          NO3              0        0.0              0.0
          O2 SAM           0        0.0              0.0
          O2 CAL           0        0.0              0.0
          FILTER           0        0.0              0.0
          TEMP             0        0.1860E 02       0.1860E 02
          REF              0        NMT              NMT
                           0
          THE EXCESS SAMPLE CHARGE IS 0.2154E-02AND THE ANALYTICAL PERCENT ERROR IS   2.634554
          THE EXCESS CHARGE FOR NACL IS 0.5680E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.3593E-02
AKO2        AK1         AK2         AKO1        AKO2        AKO3        AKO4        AKO5        AKO6        AKO7        AKO8        AKO9

0.41E-01    0.36E-06    0.36E-10    0.51E-02    0.80E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.36E-08    0.14E-16

                                                      ION STRENGTH         GAMMA 1      GAMMA 2
                                                              0.529E-01       0.457E 00       0.822E 00
C4I          CA           MG           SO4          HCO3         H+           CCO3         C1

.0           0.654E-02    0.410E-02    0.101E-01    0.459E-02    0.117E-06    0.252E-05    0.269E-02

    C2           C3           C4           C5           C6           C7           C8           C9
 0.429E-05    0.147E-05    0.116E-03    0.525E-04    0.157E-02    0.924E-04    0.932E-06    0.838E-07
    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.946E 00    0.546E 00    0.555E 00    0.622E-04    0.157E-03    0.687E 01
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          SAMPLE DATE 4 74
               SPECIES          CHARGE       MOLARITY           ORIGINAL UNITS
               --------         ------      ----------          --------------

               NA+                   1       0.4350E-02           0.1000E 03
               K+                    1       0.5626E-04           0.2200E 01
               CA++                  2       0.6312E-02           0.2530E 03
               MG++                  2       0.4936E-02           0.1200E 03
               H+                    1       0.1585E-06           0.6800E 01
               SO4--                -2       0.1770E-01           0.1700E 04
               CL-                  -1       0.4090E-02           0.1450E 03
               HCO3-                -1       0.4638E-02           0.2830E 03
               BA                    0       0.2330E-06           0.3200E-01
               FE                    0       0.2686E-05           0.1500E 00
               CU                    0       0.1180E-06           0.7500E-02
               SR                    0       0.5821E-04           0.5100E 01
               PB                    0       0.0                  0.0
               CR                    0       0.0                  0.0
               ZN                    0       0.0                  0.0
               HG                    0       0.0                  0.0
               F                     0       0.0                  0.0
               NO3                   0       0.0                  0.0
               O2 SAM                0       0.0                  0.0
               O2 CAL                0       0.0                  0.0
               FILTER                0       0.0                  0.0
               TEMP                  0       0.1800E 02           0.1800E 02
               REF                   0       NMT                  NMT
                                     0
               THE EXCESS SAMPLE CHARGE IS-0.1722E-01AND THE ANALYTICAL PERCENT ERROR IS  24.244217

               THE EXCESS CHARGE FOR NACL IS 0.2598E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1754E-01
AK02       AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.42E-01   0.35E-06    0.35E-10    0.52E-02    0.81E-03    0.15E-02    0.12E 00    0.17E 00    0.56E-02    0.19E 00    0.11E 00    0.54E-01
  AKC        AKD

 0.37E-08   0.14E-16


                                              ION STRENGTH          GAMMA 1     GAMMA 2

                                                     0.481E-01       0.469E 00     0.828E 00

C4I        CA          MG          SO4         HCO3        H+          CC03        C1

.0         0.394E-02   0.319E-02   0.136E-01   0.451E-02   0.158E-06   0.178E-05   0.230E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.189E-05   0.841E-06   0.692E-04   0.406E-04   0.171E-02   0.469E-04   0.108E-05   0.223E-07
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.421E 00   0.138E 00   0.477E 00   0.849E-04   0.180E-03    0.709E 01
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LOCATION    RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

17 26 15 1330 2050. 3350.      1231.         586. 1231.             MF       MA      800.      JACKSON     4 55


       SAMPLE DATE 4 74
           SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
           --------        ------     ----------      --------------

           NA+               1        0.1044E-01        0.2400E 03
           K+                1        0.6394E-04        0.2500E 01
           CA++              2        0.1377E-01        0.5520E 03
           MG++              2        0.7815E-02        0.1900E 03
           H+                1        0.1000E-06        0.7000E 01
           SO4--            -2        0.1874E-01        0.1800E 04
           CL-              -1        0.8180E-02        0.2900E 03
           HCO3-            -1        0.3999E-02        0.2440E 03
           BA                0        0.3058E-06        0.4200E-01
           FE                0        0.3760E-05        0.2100E 00
           CU                0        0.1574E-06        0.1000E-01
           SR                0        0.6619E-04        0.5800E 01
           PB                0        0.0               0.0
           CR                0        0.0               0.0
           ZN                0        0.0               0.0
           HG                0        0.0               0.0
           F                 0        0.0               0.0
           NO3               0        0.0               0.0
           O2 SAM            0        0.0               0.0
           O2 CAL            0        0.0               0.0
           FILTER            0        0.0               0.0
           TEMP              0        0.1800E 02        0.1800E 02
           REF               0        NMT               NMT
                             0
           THE EXCESS SAMPLE CHARGE IS 0.4024E-02AND THE ANALYTICAL PERCENT ERROR IS   3.894046
           THE EXCESS CHARGE FOR NACL IS 0.2260E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1700E-02
AK02       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.42E-01   0.35E-06   0.35E-10   0.52E-02   0.81E-03   0.15E-02   0.12E 00   0.17E 00   0.56E-02   0.19E 00   0.11E 00   0.54E-01
 AKC        AKD
 0.37E-08   0.14E-16

                                              ION STRENGTH        GAMMA 1     GAMMA 2
                                                    0.660E-01      0.429E 00     0.809E 00
C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0           0.949E-02   0.554E-02   0.123E-01   0.376E-02   0.100E-06   0.252E-05   0.415E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.540E-05   0.173E-05   0.127E-03   0.539E-04   0.222E-02   0.934E-04   0.102E-05   0.697E-07
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.120E 01   0.803E 00   0.860E 00   0.447E-04   0.124E-03   0.683E 01
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              SAMPLE DATE 3 75
A DISCREPANCY EXISTS FOR THE VALUE OF SM 10
A DISCREPANCY EXISTS FOR THE VALUE OF SM 14
                   SPECIES       CHARGE      MOLARITY         ORIGINAL UNITS
                   --------      ------     ----------        --------------

                   NA+             1        0.1261E-01        0.2900E 03
                   K+              1        0.5371E-04        0.2100E 01
                   CA++            2        0.1996E-01        0.8000E 03
                   MG++            2        0.6992E-02        0.1700E 03
                   H+              1        0.1995E-06        0.6700E 01
                   SO4--          -2        0.2707E-01        0.2600E 04
                   CL-            -1        0.9590E-02        0.3400E 03
                   HCO3-          -1        0.4032E-02        0.2460E 03
                   BA              0        0.2257E-06        0.3100E-01
                   FE              0        0.3760E-06        0.2100E-01
                   CU              0        0.1102E-06        0.7000E-02
                   SR              0        0.7647E-04        0.6700E 01
                   PB              0        0.2172E-06        0.4500E-01
                   CR              0        0.1923E-07        0.1000E-02
                   ZN              0        0.0               0.0
                   HG              0        0.0               0.0
                   F               0        0.2632E-04        0.5000E 00
                   NO3             0        0.1597E-03        0.9900E 01
                   O2 SAM          0        0.3062E-03        0.9800E 01
                   O2 CAL          0        0.3250E-03        0.1040E 02
                   FILTER          0        0.0               0.0
                   TEMP            0        0.1800E 02        0.1800E 02
                   REF             0        NMT               NMT
                                   0
                   THE EXCESS SAMPLE CHARGE IS-0.1181E-02AND THE ANALYTICAL PERCENT ERROR IS   0.878879

                   THE EXCESS CHARGE FOR NACL IS 0.3024E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.4259E-02
AKO2         AK1         AK2          AKO1         AKO2         AKO3         AKO4         AKO5         AKO6         AKO7         AKO8         AKO9

0.42E-01     0.35E-06    0.35E-10     0.52E-02     0.81E-03     0.15E-02     0.12E 00     0.17E 00     0.56E-02     0.19E 00     0.11E 00     0.54E-01
 AKC          AKD
 0.37E-08    0.14E-16

                                                       ION STRENGTH         GAMMA 1      GAMMA 2
                                                                0.833E-01    0.399E 00    0.795E 00

C4I          CA           MG           SO4          HCO3         H+           CCO3         C1
.0           0.128E-01    0.463E-02    0.176E-01    0.380E-02    0.200E-06    0.134E-05    0.698E-02

    C2           C3           C4           C5           C6           C7           C8           C9
0.337E-05    0.669E-06    0.162E-03    0.423E-04    0.232E-02    0.151E-03    0.114E-05    0.418E-07
    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
0.747E 00    0.194E 00    0.145E 01    0.899E-04    0.170E-03    0.673E 01
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        SAMPLE DATE 7 73
           SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
           --------        ------     ----------       -------------

           NA+                1       0.2349E-01        0.5400E 03
           K+                 1       0.6649E-04        0.2600E 01
           CA++               2       0.6811E-02        0.2730E 03
           MG++               2       0.3949E-02        0.9600E 02
           H+                 1       0.7943E-07        0.7100E 01
           SO4--             -2       0.8557E-02        0.8220E 03
           CL-               -1       0.1128E-01        0.4000E 03
           HCO3-             -1       0.3800E-02        0.3800E-02
           BA                 0       0.2548E-06        0.3500E-01
           FE                 0       0.3760E-05        0.2100E 00
           CU                 0       0.0               0.0
           SR                 0       0.4679E-04        0.4100E 01
           PB                 0       0.0               0.0
           CR                 0       0.0               0.0
           ZN                 0       0.0               0.0
           HG                 0       0.0               0.0
           F                  0       0.0               0.0
           NO3                0       0.0               0.0
           O2 SAM             0       0.0               0.0
           O2 CAL             0       0.0               0.0
           FILTER             0       0.0               0.0
           TEMP               0       0.2400E 02        0.2400E 02
           REF                0       NMT               NMT
                              0
           THE EXCESS SAMPLE CHARGE IS 0.1288E-01AND THE ANALYTICAL PERCENT ERROR IS  16.666809

           THE EXCESS CHARGE FOR NACL IS 0.1221E-01AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.6061E-03
AK02       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.35E-01   0.39E-06   0.40E-10   0.49E-02   0.72E-03   0.13E-02   0.10E 00   0.14E 00   0.48E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.34E-08   0.11E-16

                                              ION STRENGTH         GAMMA 1     GAMMA 2

                                                    0.483E-01       0.469E 00       0.827E 00

C4I         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.527E-02   0.306E-02   0.614E-02   0.362E-02   0.794E-07   0.326E-05   0.145E-02

     C2          C3          C4          C5          C6          C7          C8          C9
 0.522E-05   0.163E-05   0.895E-04   0.359E-04   0.855E-03   0.115E-03   0.580E-06   0.222E-06

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2       SATPH
 0.111E 01   0.780E 00   0.285E 00   0.263E-04   0.904E-04   0.697E 01
```

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SAMPLE DATE 3 75
     SPECIES          CHARGE      MOLARITY        ORIGINAL UNITS
     --------         ------     -----------      --------------

     NA+                 1       0.1261E-01         0.2900E 03
     K+                  1       0.5371E-04         0.2100E 01
     CA++                2       0.1248E-01         0.5000E 03
     MG++                2       0.6992E-02         0.1700E 03
     H+                  1       0.1995E-06         0.6700E 01
     SO4--              -2       0.2707E-01         0.2600E 04
     CL-                -1       0.9590E-02         0.3400E 03
     HCO3-              -1       0.4032E-02         0.2460E 03
     BA                  0       0.2184E-06         0.3000E-01
     FE                  0       0.1791E-05         0.1000E 00
     CU                  0       0.1102E-06         0.7000E-02
     SR                  0       0.7647E-04         0.6700E 01
     PB                  0       0.2172E-06         0.4500E-01
     CR                  0       0.4423E-07         0.2300E-02
     ZN                  0       0.0                0.0
     HG                  0       0.0                0.0
     F                   0       0.2632E 00         0.5000E 04
     NO3                 0       0.1597E-03         0.9900E 01
     O2 SAM              0       0.3062E-03         0.9800E 01
     O2 CAL              0       0.3250E-03         0.1040E 02
     FILTER              0       0.0                0.0
     TEMP                0       0.1800E 02         0.1800E 02
     REF                 0       NMT                NMT
                         0
     THE EXCESS SAMPLE CHARGE IS-0.1615E-01AND THE ANALYTICAL PERCENT ERROR IS  13.531344

     THE EXCESS CHARGE FOR NACL IS 0.3024E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1923E-01
AK02      AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.42E-01  0.35E-06   0.35E-10   0.52E-02   0.81E-03   0.15E-02   0.12E 00   0.17E 00   0.56E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.37E-08  0.14E-16


                                                  ION STRENGTH        GAMMA 1     GAMMA 2

                                                        0.761E-01     0.410E 00    0.800E 00

C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.756E-02   0.438E-02   0.195E-01   0.387E-02   0.200E-06   0.134E-05   0.482E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.210E-05   0.667E-06   0.998E-04   0.419E-04   0.257E-02   0.172E-03   0.130E-05   0.429E-07
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.465E 00   0.120E 00   0.999E 00   0.916E-04   0.173E-03   0.694E 01
```

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LOCATION   RA   ELEVATION   DEPTH   PRODUCTION INTERVAL   FORMATION   TYPE   YIELD   OWNER   DATE DRILLED

17 26 15 2110 1183. 3343.    225.        220.  225.           AL        SC     970..    000        0  0


      SAMPLE DATE 7 73
          SPECIES       CHARGE    MOLARITY      ORIGINAL UNITS
          --------      ------   ----------     --------------

          NA+              1     0.5872E-02      0.1350E 03
          K+               1     0.7416E-04      0.2900E 01
          CA++             2     0.6936E-02      0.2780E 03
          MG++             2     0.3743E-02      0.9100E 02
          H+               1     0.4467E-07      0.7350E 01
          SO4--           -2     0.8349E-02      0.8020E 03
          CL-             -1     0.5359E-02      0.1900E 03
          HCO3-           -1     0.3600E-02      0.3600E-02
          BA               0     0.2700E-01      0.2700E-01
          FE               0     0.1791E-05      0.1000E 00
          CU               0     0.0             0.0
          SR               0     0.4109E-04      0.3600E 01
          PB               0     0.0             0.0
          CR               0     0.0             0.0
          ZN               0     0.0             0.0
          HG               0     0.0             0.0
          F                0     0.0             0.0
          NO3              0     0.0             0.0
          O2 SAM           0     0.0             0.0
          O2 CAL           0     0.0             0.0
          FILTER           0     0.0             0.0
          TEMP             0     0.1880E 02      0.1880E 02
          REF              0     NMT             NMT
                           0
          THE EXCESS SAMPLE CHARGE IS 0.1648E-02AND THE ANALYTICAL PERCENT ERROR IS   3.111336

          THE EXCESS CHARGE FOR NACL IS 0.5130E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1061E-02
AKO2       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.41E-01   0.36E-06   0.36E-10   0.51E-02   0.80E-03   0.15E-02   0.12E 00   0.16E 00   0.55E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.36E-08   0.14E-16

                                              ION STRENGTH        GAMMA 1     GAMMA 2

                                                    0.356E-01     0.509E 00     0.844E 00

C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.527E-02   0.290E-02   0.593E-02   0.341E-02   0.447E-07   0.459E-05   0.158E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.782E-05   0.235E-05   0.782E-04   0.310E-04   0.809E-03   0.301E-04   0.677E-06   0.847E-07
     CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.172E 01   0.160E 01   0.325E 00   0.174E-04   0.875E-04   0.704E 01
```

```
          SAMPLE DATE 3 75
A DISCREPANCY EXISTS FOR THE VALUE OF SM  9
A DISCREPANCY EXISTS FOR THE VALUE OF SM 10
A DISCREPANCY EXISTS FOR THE VALUE OF SM 14
                SPECIES       CHARGE      MOLARITY        ORIGINAL UNITS
                --------      ------     ----------       --------------

                NA+              1       0.4306E-02         0.9900E 02
                K+               1       0.4603E-04         0.1800E 01
                CA++             2       0.1522E-01         0.6100E 03
                MG++             2       0.3702E-02         0.9000E 02
                H+               1       0.6310E-07         0.7200E 01
                SO4--           -2       0.8432E-02         0.8100E 03
                CL-             -1       0.5359E-02         0.1900E 03
                HCO3-           -1       0.3278E-02         0.2000E 03
                BA               0       0.2184E-06         0.3000E-01
                FE               0       0.1253E-05         0.7000E-01
                CU               0       0.5508E-07         0.3500E-02
                SR               0       0.4109E-04         0.3600E 01
                PB               0       0.9653E-07         0.2000E-01
                CR               0       0.1442E-07         0.7500E-03
                ZN               0       0.0                0.0
                HG               0       0.0                0.0
                F                0       0.2474E-04         0.4700E 00
                NO3              0       0.3065E-04         0.1900E 01
                O2 SAM           0       0.2125E-03         0.6800E 01
                O2 CAL           0       0.3281E-03         0.1050E 02
                FILTER           0       0.0                0.0
                TEMP             0       0.1880E 02         0.1880E 02
                REF              0       NMT                NMT
                                 0
                THE EXCESS SAMPLE CHARGE IS 0.1669E-01AND THE ANALYTICAL PERCENT ERROR IS  24.660248

                THE EXCESS CHARGE FOR NACL IS-0.1053E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1770E-01
AKO2       AK1        AK2        AKO1       AKO2       AKO3       AKO4       AKO5       AKO6       AKO7       AKO8       AKO9

0.41E-01   0.36E-06   0.36E-10   0.51E-02   0.80E-03   0.15E-02   0.12E 00   0.16E 00   0.55E-02   0.19E 00   0.11E 00   0.54E-01
 AKC        AKD

 0.36E-08   0.14E-16


                                                ION STRENGTH        GAMMA 1     GAMMA 2

                                                      0.474E-01      0.471E 00     0.829E 00

C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0         0.123E-01   0.305E-02   0.507E-02   0.301E-02   0.631E-07   0.304E-05   0.272E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.104E-04   0.141E-05   0.150E-03   0.266E-04   0.625E-03   0.175E-04   0.333E-06   0.381E-07
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.229E 01   0.127E 01   0.559E 00   0.217E-04   0.836E-04   0.676E 01
```

```
        SAMPLE DATE 3 75
            SPECIFS        CHARGE       MOLARITY         ORIGINAL UNITS
            -------        ------      ----------        --------------

            NA+               1       0.4306E-02          0.9900E 02
            K+                1       0.4603E-04          0.1800E 01
            CA++              2       0.4990E-02          0.2000E 03
            MG++              2       0.3702E-02          0.9000E 02
            H+                1       0.6310E-07          0.7200E 01
            SO4--            -2       0.8432E-02          0.8100E 03
            CL-              -1       0.5359E-02          0.1900E 03
            HCO3-            -1       0.3278E-02          0.2000E 03
            BA                0       0.2184E-06          0.3000E-01
            FE                0       0.1343E-05          0.7500E-01
            CU                0       0.5508E-07          0.3500E-02
            SR                0       0.4109E-04          0.3600E 01
            PB                0       0.9653E-07          0.2000E-01
            CR                0       0.2308E-07          0.1200E-02
            ZN                0       0.0                 0.0
            HG                0       0.0                 0.0
            F                 0       0.2474E 00          0.4700E 04
            NO3               0       0.3065E-04          0.1900E 01
            O2 SAM            0       0.2125E-03          0.6800E 01
            O2 CAL            0       0.3281E-03          0.1050E 02
            FILTER            0       0.0                 0.0
            TEMP              0       0.1880E 02          0.1880E 02
            REF               0       NMT                 NMT
                              0
            THE EXCESS SAMPLE CHARGE IS-0.3765E-02AND THE ANALYTICAL PERCENT ERROR IS   7.970422

            THE EXCESS CHARGE FOR NACL IS-0.1053E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2758E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.41E-01    0.36E-06    0.36E-10    0.51E-02    0.80E-03    0.15E-02    0.12E 00    0.16E 00    0.55E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08   0.14E-16

                                                        ION STRENGTH          GAMMA 1     GAMMA 2

                                                              0.321E-01        0.522E 00     0.850E 00

C4I          CA           MG           SO4          HCO3         H+           CCO3         C1

.0           0.370E-02    0.280E-02    0.629E-02    0.316E-02    0.631E-07    0.294E-05    0.124E-02

    C2           C3           C4           C5           C6           C7           C8           C9
 0.370E-05    0.153E-05    0.520E-04    0.283E-04    0.874E-03    0.241E-04    0.458E-06    0.409E-07

   CA SAT       DOLSAT       GYPSAT       PCO2         SCO2        SATPH
 0.816E 00    0.493E 00    0.255E 00    0.228E-04    0.876E-04    0.722E 01
```

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 LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

17 26 29 1110 1925. 3400.         1130.           700. 1150.              SL         OC        IW          MENEFEE      0 51

                                                IRR. WELL          ON THE WAY TO VANDIVERS

          SAMPLE DATE 5 75
              SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
              --------       ------     ----------       --------------

              NA+               1       0.5655E-03         0.1300E 02
              K+                1       0.2506E-04         0.9800F 00
              CA++              2       0.4192F-02         0.1680E 03
              MG++              2       0.1645F-02         0.4000E 02
              H+                1       0.6310E-07         0.7200E 01
              SO4--            -2       0.4476E-02         0.4300E 03
              CL-              -1       0.0                0.0
              HCO3-            -1       0.3409E-02         0.2080E 03
              BA                0       0.1820E-06         0.2500E-01
              FE                0       0.1450E-05         0.8100E-01
              CU                0       0.0                0.0
              SR                0       0.2397E-04         0.2100E 01
              PB                0       0.1689E-06         0.3500E-01
              CR                0       0.2558E-07         0.1330E-02
              ZN                0       0.1377E-06         0.9000E-02
              HG                0       0.0                0.0
              F                 0       0.2105E-04         0.4000E 00
              NO3               0       0.3694E-04         0.2290E 01
              O2 SAM            0       0.1219E-03         0.3900E 01
              O2 CAL            0       0.2406E-03         0.7700E 01
              FILTER            0       0.0                0.0
              TEMP              0       0.2200E 02         0.2200E 02
              REF               0       NMT                NMT
                                0
              THE EXCESS SAMPLE CHARGE IS-0.9708E-04AND THE ANALYTICAL PERCENT ERROR IS   0.394208
              THE EXCESS CHARGE FOR NACL IS-0.1053E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2758E-02
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

18 26 10 1330 1029. 3350.        1100.           0.     0.              SL          DC       1500.      00000        0  9

                                               PERMIT FOR WELL WAS FOR 1100 FEET.

          SAMPLE DATE 1 76
                 SPECIES       CHARGE      MOLARITY       ORIGINAL UNITS
                 --------      ------     ----------     -------------

                 NA+              1       0.1218E-02      0.2800E 02
                 K+               1       0.1534E-04      0.6000E 00
                 CA++             2       0.6986E-02      0.2800E 03
                 MG++             2       0.1686E-02      0.4100E 02
                 H+               1       0.1585E-06      0.6800E 01
                 SO4--           -2       0.9994E-02      0.9600E 03
                 CL-             -1       0.7841E-03      0.2780E 02
                 HCO3-           -1       0.0             0.0
                 BA               0       0.0             0.0
                 FE               0       0.0             0.0
                 CU               0       0.0             0.0
                 SR               0       0.7932E-04      0.6950E 01
                 PB               0       0.0             0.0
                 CR               0       0.0             0.0
                 ZN               0       0.0             0.0
                 HG               0       0.0             0.0
                 F                0       0.0             0.0
                 NO3              0       0.7581E-04      0.4700E 01
                 O2 SAM           0       0.8125E-04      0.2600E 01
                 O2 CAL           0       0.2531E-03      0.8100E 01
                 FILTER           0       0.0             0.0
                 TEMP             0       0.2220E 02      0.2220E 02
                 REF              0       NMT             NMT
                                  0
                 THE EXCESS SAMPLE CHARGE IS-0.2193E-02AND THE ANALYTICAL PERCENT ERROR IS    5.573129
                 THE EXCESS CHARGE FOR NACL IS-0.1053E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2758E-02
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LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

18 26 17 3220 3181. 3400.         240.             90.  240.              AL          SU        310.        VANDIVER     0  0


        SAMPLE DATE 7 75
            SPECIES          CHARGE       MOLARITY        ORIGINAL UNITS
            --------         ------      ----------       --------------

            NA+                1         0.1614E-02         0.3710E 02
            K+                 1         0.3325E-04         0.1300E 01
            CA++               2         0.6257E-02         0.2508E 03
            MG++               2         0.3311E-02         0.8050E 02
            H+                 1         0.7943E-07         0.7100E 01
            SO4--             -2         0.7412E-02         0.7120E 03
            CL-               -1         0.1608E-02         0.5700E 02
            HCO3-             -1         0.3753E-02         0.2290E 03
            BA                 0         0.1820E-06         0.2500E-01
            FE                 0         0.3760E-05         0.2100E 00
            CU                 0         0.0                0.0
            SR                 0         0.3880E-04         0.3400E 01
            PB                 0         0.1255E-06         0.2600E-01
            CR                 0         0.1154E-07         0.6000E-03
            ZN                 0         0.7343E-07         0.4800E-02
            HG                 0         0.0                0.0
            F                  0         0.3790E 00         0.7200E 04
            NO3                0         0.3952E-03         0.2450E 02
            O2 SAM             0         0.2062E-03         0.6600E 01
            O2 CAL             0         0.2187E-03         0.7000E 01
            FILTER             0         0.0                0.0
            TEMP               0         0.2000E 02         0.2000E 02
            REF                0         NMT                NMT
                               0
            THE EXCESS SAMPLE CHARGE IS 0.5997E-03AND THE ANALYTICAL PERCENT ERROR IS   1.463723

            THE EXCESS CHARGE FOR NACL IS 0.5997E-05AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5604E-03
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.40E-01    0.37E-06    0.37E-10    0.51E-02    0.78E-03    0.14E-02    0.11E 00    0.16E 00    0.53E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.36E-08    0.13E-16

                                              ION STRENGTH         GAMMA 1     GAMMA 2

                                                    0.286E-01      0.537E 00      0.856E 00

C4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0           0.475E-02   0.255E-02   0.526E-02   0.360E-02   0.794E-07   0.268E-05   0.142E-02

     C2          C3          C4          C5          C6          C7          C8          C9
 0.468E-05   0.137E-05   0.812E-04   0.311E-04   0.726E-03   0.776E-05   0.284E-06   0.144E-07

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.102E 01   0.567E 00   0.289E 00   0.309E-04   0.102E-03   0.702E 01
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 LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

18 26 18 2210 3181. 3404.          258.          257.  258.               AL          SU        IW          VANDIVER    0  0


         SAMPLE DATE 5 75
             SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
             --------        ------     ----------       --------------

             NA+                 1      0.7395E-03        0.1700E 02
             K+                  1      0.2711E-04        0.1060E 01
             CA++                2      0.3992E-02        0.1600E 03
             MG++                2      0.2345E-02        0.5700E 02
             H+                  1      0.1259E-06        0.6900E 01
             SO4--              -2      0.4081E-02        0.3920E 03
             CL-                -1      0.5641E-03        0.2000E 02
             HCO3-              -1      0.3409E-02        0.2080E 03
             BA                  0      0.1893E-06        0.2600E-01
             FE                  0      0.1343E-05        0.7500E-01
             CU                  0      0.0               0.0
             SR                  0      0.2248E-04        0.1970E 01
             PB                  0      0.4103E-07        0.8500E-02
             CR                  0      0.2558E-07        0.1330E-02
             ZN                  0      0.3060E-07        0.2000E-02
             HG                  0      0.0               0.0
             F                   0      0.1053E-04        0.2000E 00
             NO3                 0      0.1250E-03        0.7750E 01
             O2 SAM              0      0.2656E-03        0.8500E 01
             O2 CAL              0      0.2437E-03        0.7800E 01
             FILTER              0      0.0               0.0
             TEMP                0      0.1980E 02        0.1980E 02
             REF                 0      NMT               NMT
                                 0
             THE FXCESS SAMPLE CHARGE IS 0.1305E-02AND THE ANALYTICAL PERCENT ERROR IS   5.104114

             THE EXCESS CHARGE FOR NACL IS 0.1753E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1103E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.40E-01    0.36E-06    0.37E-10    0.51E-02    0.79E-03    0.14E-02    0.11E 00    0.16E 00    0.54E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD
 0.36E-08    0.13E-16

                                                 ION STRENGTH          GAMMA 1     GAMMA 2
                                                       0.188E-01     0.591E 00     0.877E 00
C4I          CA          MG          SO4          HCO3          H+          CCO3          C1
.0         0.326E-02   0.194E-02   0.302E-02   0.331E-02    0.126E-06    0.144E-05    0.677E-03

     C2          C3          C4          C5          C6          C7          C8          C9
 0.208E-05   0.675E-06   0.560E-04   0.238E-04   0.382E-03   0.225E-05   0.147E-06   0.389E-08
     CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.456E 00   0.124E 00   0.138E 00   0.455E-04   0.111E-03    0.718E 01
```

```
LOCATION     RA     ELEVATION      DEPTH     PRODUCTION INTERVAL      FORMATION     TYPE     YIELD     OWNER      DATE DRILLED

18 26 18 3320 1469. 3428.         1167.            0.     0.              SL         DC       1200.      VANDIVER    0  0


        SAMPLE DATE 7 75
            SPECIES        CHARGE       MOLARITY        ORIGINAL UNITS
            --------       ------      ----------       --------------

            NA+               1        0.9439E-03         0.2170E 02
            K+                1        0.3069E-04         0.1200E 01
            CA++              2        0.5399E-02         0.2164E 03
            MG++              2        0.3031E-02         0.7370E 02
            H+                1        0.7943E-07         0.7100E 01
            SO4--            -2        0.6506E-02         0.6250E 03
            CL-              -1        0.4231E-03         0.1500E 02
            HCO3-            -1        0.4064E-02         0.2480E 03
            BA                0        0.2002E-06         0.2750E-01
            FE                0        0.4297E-05         0.2400E 00
            CU                0        0.0                0.0
            SR                0        0.3652E-04         0.3200E 01
            PB                0        0.1110E-06         0.2300E-01
            CR                0        0.2308E-07         0.1200E-02
            ZN                0        0.1163E-06         0.7600E-02
            HG                0        0.0                0.0
            F                 0        0.4527E 00         0.8600E 04
            NO3               0        0.2806E-04         0.1740E 01
            O2 SAM            0        0.1594E-03         0.5100E 01
            O2 CAL            0        0.2219E-03         0.7100E 01
            FILTER            0        0.0                0.0
            TEMP              0        0.2360E 02         0.2360E 02
            REF               0        NMT                NMT
                              0
            THE EXCESS SAMPLE CHARGE IS 0.3359E-03AND THE ANALYTICAL PERCENT ERROR IS    0.950629
            THE EXCESS CHARGE FOR NACL IS 0.5208E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2157E-03
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.36E-01    0.39E-06    0.40E-10    0.49E-02    0.73E-03    0.14E-02    0.10E 00    0.15E 00    0.49E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD

 0.34E-08    0.11E-16

                                                  ION STRENGTH          GAMMA 1     GAMMA 2

                                                         0.248E-01       0.556E 00       0.863E 00

C4I          CA          MG          SO4          HCO3         H+           CCO3         C1

.0           0.411E-02   0.232E-02   0.463E-02    0.389E-02    0.794E-07    0.306E-05    0.119E-02

    C2           C3           C4           C5           C6           C7           C8           C9
 0.533E-05    0.161E-05    0.879E-04    0.343E-04    0.680E-03    0.413E-05    0.239E-06    0.991E-08

   CA SAT       DOLSAT       GYPSAT       PCO2         SCO2        SATPH
 0.113E 01    0.786E 00    0.235E 00    0.287E-04    0.984E-04    0.698E 01
```

```
LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

18 26 18 4110    0. 3414.         0.           0.     0.             SL          DC      1000.      VANDIVER    0  0

                                         THIS WELL WAS SAID TO BE DEEP BY VANDIVERS FORMAN AT THE FARM:NO RA FOUND

         SAMPLE DATE 5 75
             SPECIES        CHARGE     MOLARITY        ORIGINAL UNITS
             --------       ------    ----------      -------------

             NA+               1      0.1870E-02       0.4300E 02
             K+                1      0.2864E-04       0.1120E 01
             CA++              2      0.5140F-02       0.2060E 03
             MG++              2      0.2427E-02       0.5900E 02
             H+                1      0.1000F-06       0.7000E 01
             SO4--            -2      0.6600F-02       0.6340E 03
             CL-              -1      0.1326E-02       0.4700E 02
             HCO3-            -1      0.3950E-02       0.2410E 03
             BA                0      0.1747E-06       0.2400E-01
             FE                0      0.4656E-05       0.2600E 00
             CU                0      0.0              0.0
             SR                0      0.3310E-04       0.2900E 01
             PB                0      0.4006E-07       0.8300E-02
             CR                0      0.0              0.0
             ZN                0      0.4742E-07       0.3100E-02
             HG                0      0.0              0.0
             F                 0      0.2105E-04       0.4000F 00
             NO3               0      0.3694F-04       0.2290E 01
             O2 SAM            0      0.1094F-03       0.3500E 01
             O2 CAL            0      0.2344E-03       0.7500E 01
             FILTER            0      0.0              0.0
             TEMP              0      0.2400F 02       0.2400E 02
             REF               0      NMT              NMT
                               0
             THE EXCESS SAMPLE CHARGE IS-0.1443E-02AND THE ANALYTICAL PERCENT ERROR IS   4.064278
             THE EXCESS CHARGE FOR NACL IS 0.5447E-03AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2017E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09
0.35E-01    0.39E-06    0.40E-10    0.49E-02    0.72E-03    0.13E-02    0.10E 00    0.14E 00    0.48E-02    0.19E 00    0.11E 00    0.54E-01
 AKC         AKD
 0.34E-08    0.11E-16

                                              ION STRENGTH         GAMMA 1      GAMMA 2
                                                    0.247E-01       0.557E 00      0.864E 00
C4I         CA          MG          SO4         HCO3        H+          CCO3        C1
.0          0.387E-02   0.183E-02   0.484E-02   0.380E-02   0.100E-06   0.239E-05   0.118E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.396E-05   0.101E-05   0.820E-04   0.268E-04   0.569E-03   0.858E-05   0.234E-06   0.154E-07
    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.841E 00   0.367E 00   0.232E 00   0.348E-04   0.102E-03   0.701E 01
  STOP       0
```

APPENDIX C

SOIL SAMPLES

APPENDIX C

SOIL SAMPLES

Soil samples collected from the surface in the recharge area and from the surface and two different depths in the confined area were leached with approximately 1 liter of distilled water. Leaching was carried out in cylindrical plastic columns 10 cm in diameter and 80 cm long. The leachant was collected and analysed for H^+, HCO_3^-, Ca^{+2}, and SO_4^{-2}.

Surface soil samples were taken from gully bottoms and hill tops in the southern recharge area (R in Fig. C-1) and from irrigated and unirrigated fields in the northern alluvium (A in Fig. C-1) above the confined section of the Roswell Limestone Aquifer. Subsurface samples were taken from 1 and 3 meters beneath an unirrigated field in the northern alluvium.

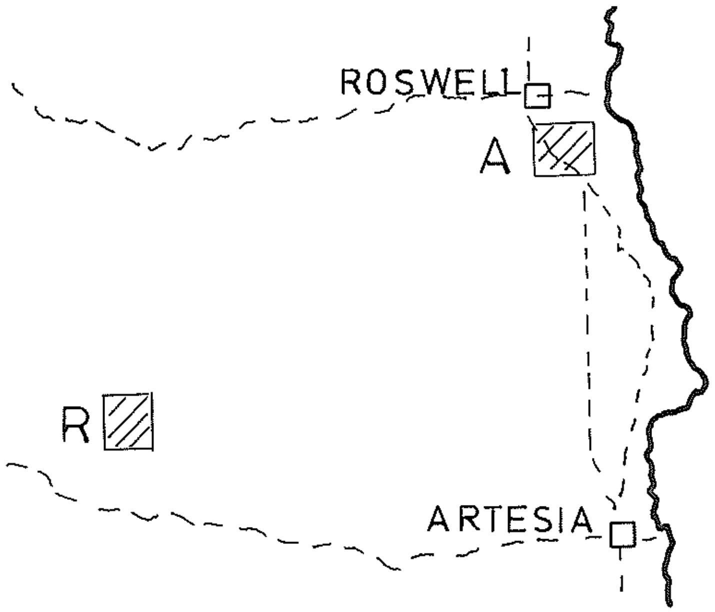

Figure C-1. Location of soil sampling sites.

The analytical results are listed in table C-1 using the same formula that was employed in Appendix B. Immediately above the chemical data (vertical columns) in the listing are given the type of sample site and the depth from which the soil sample was abstracted. The usual location numbers (Appendix B) are not used in this listing. To mimic the ionic strengths typical of water samples taken from these areas, fictitious concentrations of Mg^{+2}, Na^{+1}, and Cl^{-} were supplied. The assigned Mg^{+2} and Na^{+1} concentrations were average values for the area from which the soil sample was taken. The Cl^{-} concentration was adjusted to achieve charge balance.

Two listings are given for each soil sample. The first listing characterizes the chemical composition of the initial leachant while the final composition of the leachant after the passage of approximately one liter of water is given by the second listing.

```
 LOCATION     RA    ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

4+ 44 44 4444    0.     0.          0.              0.     0.                                                       0  0

                                              ALLUVIUM-IRRIGATED FIELD

          SAMPLE DATE 5 76
               SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
               --------       ------     ----------       --------------

               NA+               1        0.8700E-02        0.2000E 03
               K+                1        0.0               0.0
               CA++              2        0.2495E-02        0.1000E 03
               MG++              2        0.2460E-02        0.5960E 02
               H+                1        0.1000E-07        0.8000E 01
               SO4--            -2        0.2051E-02        0.1970E 03
               CL-              -1        0.1199E-01        0.4250E 03
               HCO3-            -1        0.2491E-02        0.1520E 03
               BA                0        0.0               0.0
               FE                0        0.0               0.0
               CU                0        0.0               0.0
               SR                0        0.0               0.0
               PB                0        0.0               0.0
               CR                0        0.0               0.0
               ZN                0        0.0               0.0
               HG                0        0.0               0.0
               F                 0        0.0               0.0
               NO3               0        0.0               0.0
               O2 SAM            0        0.0               0.0
               O2 CAL            0        0.0               0.0
               FILTER            0        0.0               0.0
               TEMP              0        0.0               0.0
               REF               0
                                 0
               THE EXCESS SAMPLE CHARGE IS 0.2856E-04AND THE ANALYTICAL PERCENT ERROR IS    0.076848

               THE EXCESS CHARGE FOR NACL IS-0.3288E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.3317E-02
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.77E-01    0.24E-06    0.21E-10    0.60E-02    0.97E-03    0.17E-02    0.21E 00    0.25E 00    0.89E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.40E-08    0.28E-16

                                                   ION STRENGTH          GAMMA 1      GAMMA 2

                                                          0.241E-01       0.559E 00       0.865E 00

.41           CA          MG          SO4         HCO3        H+          CO03        C1

.0          0.227E-02   0.231E-02   0.170E-02   0.241E-02   0.100E-07   0.785E-05   0.202E-03

      C2          C3          C4          C5          C6          C7          C8          C9
 0.572E-05   0.329E-05   0.147E-04   0.123E-04   0.138E-03   0.143E-04   0.0          0.239E-06

    CA SAT      DOLSAT       GYPSAT       PCO2        SCO2        SATPH
 0.138E 01   0.114E 01   0.544E-01   0.792E-05   0.101E-03   0.780E 01
```

```
SAMPLE DATE 5 76
    SPECIES          CHARGE        MOLARITY          ORIGINAL UNITS
    --------         ------       ----------        --------------

    NA+                 1         0.8700E-02         0.2000E 03
    K+                  1         0.0                0.0
    CA++                2         0.1248E-02         0.5000E 02
    MG++                2         0.2460E-02         0.5980E 02
    H+                  1         0.3981E-08         0.6400E 01
    SO4--              -2         0.1145E-02         0.1100E 03
    CL-                -1         0.1021E-01         0.3620E 03
    HCO3-              -1         0.3638E-02         0.2220E 03
    BA                  0         0.0                0.0
    FE                  0         0.0                0.0
    CU                  0         0.0                0.0
    SR                  0         0.0                0.0
    PB                  0         0.0                0.0
    CR                  0         0.0                0.0
    ZN                  0         0.0                0.0
    HG                  0         0.0                0.0
    F                   0         0.0                0.0
    NO3                 0         0.0                0.0
    O2 SAM              0         0.0                0.0
    O2 CAL              0         0.0                0.0
    FILTER              0         0.0                0.0
    TEMP                0         0.0                0.0
    REF                 0
                        0
    THE EXCESS SAMPLE CHARGE IS-0.2531E-04AND THE ANALYTICAL PERCENT ERROR IS    0.078477

    THE EXCESS CHARGE FOR NACL IS-0.1511E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1486E-02
AK02        AK1        AK2        AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.77E-01    0.24E-06   0.21E-10   0.60E-02    0.97E-03    0.17E-02    0.21E 00    0.25E 00    0.89E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.40E-03   0.28E-16

                                               ION STRENGTH          GAMMA 1     GAMMA 2

                                                     0.202E-01       0.582E 00      0.874E 00
C4I          CA          MG          SO4          HCO3         H+           CO3          C1

.0          0.116E-02   0.234E-02   0.964E-03   0.345E-02   0.398E-08   0.275E-04   0.646E-04

     C2          C3          C4          C5          C6          C7         C8            C9
 0.111E-04   0.127E-04   0.112E-04   0.187E-04   0.380E-04   0.861E-05   0.0          0.871E-06

     CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.268E 01   0.357E 01   0.174E-01   0.452E-05   0.138E-03    0.792E 01
```

```
LOCATION     RA     ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

73 63 08 8683     0.     0.          0.          0.     0.                                                          0  0

                                        RECHARGE-CREEK BOTTOM

      SAMPLE DATE 5 76
          SPECIES       CHARGE     MOLARITY        ORIGINAL UNITS
          -------       ------     ----------      -------------

          NA+              1       0.7395E-02       0.1700E 03
          K+               1       0.0              0.0
          CA++             2       0.2944E-02       0.1180E 03
          MG++             2       0.1440E-02       0.3520E 02
          H+               1       0.1585E-07       0.7600E 01
          SO4--           -2       0.1780E-02       0.1710E 03
          CL-             -1       0.1021E-01       0.3620E 03
          HCO3-           -1       0.2393E-02       0.1460E 03
          BA               0       0.0              0.0
          FE               0       0.0              0.0
          CU               0       0.0              0.0
          SR               0       0.0              0.0
          PB               0       0.0              0.0
          CR               0       0.0              0.0
          ZN               0       0.0              0.0
          HG               0       0.0              0.0
          F                0       0.0              0.0
          NO3              0       0.0              0.0
          O2 SAM           0       0.0              0.0
          O2 CAL           0       0.0              0.0
          FILTER           0       0.0              0.0
          TEMP             0       0.0              0.0
          REF              0
                           0
          THE EXCESS SAMPLE CHARGE IS 0.1483E-04AND THE ANALYTICAL PERCENT ERROR IS   0.045839

          THE EXCESS CHARGE FOR NACL IS-0.2816E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2831E-02
AK02       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.77E-01   0.24E-06   0.21E-10   0.60E-02   0.97E-03   0.17E-02   0.21E 00   0.25E 00   0.89E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.40E-08   0.28E-16

                                        ION STRENGTH       GAMMA 1     GAMMA 2
                                              0.223E-01      0.569E 00.     0.869E 00

.41         CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.279E-02   0.140E-02   0.158E-02   0.238E-02   0.158E-07   0.484E-05   0.141E-03

    C2          C3          C4          C5          C6          C7          C8           C9
 0.237E-05   0.661E-06   0.960E-05   0.390E-05   0.433E-04   0.172E-04   0.0          0.189E-06

    CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.108E 01   0.348E 00   0.643E-01   0.124E-04   0.104E-03    0.771E 01
```

```
            SAMPLE DATE 5 76
                SPECIES         CHARGE      MOLARITY        ORIGINAL UNITS
                --------        ------     ----------       -------------

                NA+                1       0.7595E-02         0.1700E 03
                K+                 1       0.0                0.0
                CA++               2       0.5489E-03         0.2200E 02
                MG++               2       0.1448E-02         0.3520E 02
                H+                 1       0.1000E-07         0.8000E 01
                SO4--             -2       0.0                0.0
                CL-               -1       0.9082E-02         0.3220E 03
                HCO3-             -1       0.2294E-02         0.1400E 03
                BA                 0       0.0                0.0
                FE                 0       0.0                0.0
                CU                 0       0.0                0.0
                SR                 0       0.0                0.0
                PB                 0       0.0                0.0
                CR                 0       0.0                0.0
                ZN                 0       0.0                0.0
                HG                 0       0.0                0.0
                F                  0       0.0                0.0
                NO3                0       0.0                0.0
                O2 SAM             0       0.0                0.0
                O2 CAL             0       0.0                0.0
                FILTER             0       0.0                0.0
                TEMP               0       0.0                0.0
                REF                0
                                   0
                THE EXCESS SAMPLE CHARGE IS 0.1120E-04AND THE ANALYTICAL PERCENT ERROR IS   0.049203

                THE EXCESS CHARGE FOR NACL IS-0.1688E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.1699E-02
AKP2        AK1          AK2          AK01         AK02         AK03         AK04         AK05         AK06         AK07         AK08         AK09

0.77E-01    0.24E-06     0.21E-10     0.60E-02     0.97E-03     0.17E-02     0.21E 00     0.25E 00     0.89E-02     0.19E 00     0.11E 00     0.54F-01
  AKC         AKD

 0.40E-08    0.28E-16

                                                            ION STRENGTH          GAMMA 1     GAMMA 2

                                                                   0.134E-01      0.634E 00      0.892E 00

C4I          CA          MG          SO4          HCO3        H+           CCO3         C1

.0           0.546E-03   0.144E-02   0.0          0.229E-02   0.100E-07    0.679E-05    0.0

   C2           C3          C4          C5          C6           C7           C8           C9
 0.768E-06    0.115E-05   0.191E-05   0.418E-05   0.0          0.0          0.0          0.296E-06

   CA SAT       DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.538E 00    0.212E 00   0.0         0.752E-05   0.959E-04    0.839E 01
```

```
LOCATION     RA    ELEVATION     DEPTH     PRODUCTION INTERVAL     FORMATION     TYPE     YIELD     OWNER     DATE DRILLED

77 77 77 7777     0.     0.          0.             0.     0.                                                      0  0

                                     ALLUVIUM-UNIRRIGATED FIELD***DEPTH=3 METERS

        SAMPLE DATE 5 76
            SPECIES        CHARGE     MOLARITY       ORIGINAL UNITS
            --------       ------    ----------      --------------

            NA+               1      0.3254E-01       0.7400E 03
            K+                1      0.0              0.0
            CA++              2      0.8234E-02       0.3300E 03
            MG++              2      0.2460E-02       0.5980E 02
            H+                1      0.1995E-07       0.7700E 01
            SO4--            -2      0.2082E-01       0.2000E 04
            CL-              -1      0.0              0.0
            HCO3-            -1      0.8358E-03       0.5100E 02
            BA                0      0.0              0.0
            FE                0      0.0              0.0
            CU                0      0.0              0.0
            SR                0      0.0              0.0
            PB                0      0.0              0.0
            CR                0      0.0              0.0
            ZN                0      0.0              0.0
            HG                0      0.0              0.0
            F                 0      0.0              0.0
            NO3               0      0.0              0.0
            O2 SAM            0      0.0              0.0
            O2 CAL            0      0.0              0.0
            FILTER            0      0.0              0.0
            TEMP              0      0.0              0.0
            REF               0
                              0
            THE EXCESS SAMPLE CHARGE IS 0.1145E-01AND THE ANALYTICAL PERCENT ERROR IS  11.874538

            THE EXCESS CHARGE FOR NACL IS 0.3254E-01AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2109E-01
AKO2       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.77E-01   0.24E-06   0.21E-10   0.60E-02   0.97E-03   0.17E-02   0.21E 00   0.25E 00   0.89E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.40E-08   0.28E-16

                                                   ION STRENGTH          GAMMA 1     GAMMA 2

                                                        0.652E-01       0.430E 00     0.810E 00

 41         CA          MG          SO4         HCO3        H+          CO3         C1

.0         0.540E-02   0.182E-02   0.170E-01   0.812E-03   0.200E-07   0.162E-05   0.282E-02

    C2          C3          C4          C5          C6          C7          C8          C9
 0.165E-05   0.316E-06   0.903E-05   0.253E-05   0.642E-05   0.397E-03   0.0         0.159E-06

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.399E 00   0.316E-01   0.762E 00   0.533E-05   0.366E-04   0.801E 01
```

```
SAMPLE DATE 5 76
    SPECIES       CHARGE      MOLARITY        ORIGINAL UNITS
    --------      ------     ----------      --------------

    NA+              1       0.3080E-01        0.7080E 03
    K+               1       0.0               0.0
    CA++             2       0.5234E-02        0.2100E 03
    MG++             2       0.2460E-02        0.5980E 02
    H+               1       0.1000E-07        0.8000E 01
    SO4--           -2       0.2082E-01        0.2000E 04
    CL-             -1       0.0               0.0
    HCO3-           -1       0.7211E-03        0.4400E 02
    BA               0       0.0               0.0
    FE               0       0.0               0.0
    CU               0       0.0               0.0
    SR               0       0.0               0.0
    PB               0       0.0               0.0
    CR               0       0.0               0.0
    ZN               0       0.0               0.0
    HG               0       0.0               0.0
    F                0       0.0               0.0
    NO3              0       0.0               0.0
    O2 SAM           0       0.0               0.0
    O2 CAL           0       0.0               0.0
    FILTER           0       0.0               0.0
    TEMP             0       0.0               0.0
    REF              0
                     0
    THE EXCESS SAMPLE CHARGE IS 0.9822E-02AND THE ANALYTICAL PERCENT ERROR IS  10.386487

    THE EXCESS CHARGE FOR NACL IS 0.3080E-01AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.2097E-01
AK02        AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.77E-01   0.24E-06   0.21E-10   0.60E-02   0.97E-03   0.17E-02   0.21E 00   0.25E 00   0.89E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.40E-08   0.28E-16


                                                ION STRENGTH        GAMMA 1     GAMMA 2

                                                      0.642E-01      0.432E 00    0.811E 00

C41          CA         MG          SO4         HCO3        H+          CCO3        C1

.0          0.538E-02  0.181E-02   0.170E-01   0.691E-03   0.100E-07   0.274E-05   0.284E-02


    C2          C3          C4          C5          C6          C7           C8          C9
 0.282E-05   0.540E-06   0.771E-05   0.216E-05   0.646E-03   0.377E-03   0.0          0.224E-06

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
 0.681E 00   0.921E-01   0.767E 00   0.227E-05   0.290E-04   0.808E 01
```

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LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

56 22 06 0666    0.     0.          0.              0.    0.                                               0  0

                              ALLUVIUM-UNIDENTIFIED FIELD**DEPTH=1 METER

     SAMPLE DATE 5 76
          SPECIES        CHARGE      MOLARITY       ORIGINAL UNITS
          --------       ------     ----------     --------------

          NA+               1       0.3080E-01       0.7080E 03
          K+                1       0.0              0.0
          CA++              2       0.3733E-02       0.3500E 03
          MG++              2       0.2460E-02       0.5980E 02
          H+                1       0.2512E-07       0.7600E 01
          SO4--            -2       0.2082E-01       0.2000E 04
          CL-              -1       0.0              0.0
          HCO3-            -1       0.7211E-03       0.4400E 02
          BA                0       0.0              0.0
          FE                0       0.0              0.0
          CU                0       0.0              0.0
          SR                0       0.0              0.0
          PB                0       0.0              0.0
          CR                0       0.0              0.0
          ZN                0       0.0              0.0
          HG                0       0.0              0.0
          F                 0       0.0              0.0
          NO3               0       0.0              0.0
          O2 SAM            0       0.0              0.0
          O2 CAL            0       0.0              0.0
          FILTER            0       0.0              0.0
          TEMP              0       0.0              0.0
          REF               0
                            0
          THE EXCESS SAMPLE CHARGE IS 0.1082E-01AND THE ANALYTICAL PERCENT ERROR IS  11.324560

          THE EXCESS CHARGE FOR NACL IS 0.3080E-01AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1998E-01
AKO2       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.77E-01   0.24E-06   0.21E-10   0.60E-02   0.97E-03   0.17E-02   0.21E 00   0.25E 00   0.89E-02   0.19E 00   0.11E 00   0.54E-01
 AKC        AKD

0.40E-08   0.28E-16

                                        ION STRENGTH        GAMMA 1     GAMMA 2
                                              0.646E-01      0.431E 00      0.610E 00

.41         CA          MG          SO4         HCO3        H+          CO3         C1

.0          0.573E-02   0.182E-02   0.168E-01   0.702E-03   0.251E-07   0.111E-05   0.299E-02

    C2          C3          C4          C5          C6          C7          C8          C9
0.121E-05   0.217E-06   0.830E-05   0.219E-05   0.640E-03   0.374E-03   0.0         0.903E-07

   CA SAT      DOLSAT      GYPSAT      PCO2        SCO2        SATPH
0.292E 00   0.159E-01   0.807E 00   0.580E-05   0.330E-04   0.804E 01
```

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SAMPLE DATE 5 76
    SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
    --------       ------     ----------      --------------

    NA+              1        0.3060E-01        0.7080E 03
    K+               1        0.0               0.0
    CA++             2        0.8733E-02        0.3500E 03
    MG++             2        0.2460E-02.       0.5980E 02
    H+               1        0.2512E-07        0.7600E 01
    SO4--           -2        0.2082E-01        0.2000E 04
    CL-             -1        0.0               0.0
    HCO3-           -1        0.7211E-03        0.4400E 02
    BA               0        0.0               0.0
    FE               0        0.0               0.0
    CU               0        0.0               0.0
    SR               0        0.0               0.0
    PB               0        0.0               0.0
    CR               0        0.0               0.0
    ZN               0        0.0               0.0
    HG               0        0.0               0.0
    F                0        0.0               0.0
    NO3              0        0.0               0.0
    O2 SAM           0        0.0               0.0
    O2 CAL           0        0.0               0.0
    FILTER           0        0.0               0.0
    TEMP             0        0.0               0.0
    REF              0
                     0
    THE EXCESS SAMPLE CHARGE IS 0.1082E-01AND THE ANALYTICAL PERCENT ERROR IS  11.324560

    THE EXCESS CHARGE FOR NACL IS 0.3060E-01AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.1998E-01
AK02        AK1         AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.77E-01    0.24E-06    0.21E-10    0.60E-02    0.97E-03    0.17E-02    0.21E 00    0.25E 00    0.89E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.40E-08    0.23E-16

                                                ION STRENGTH         GAMMA 1     GAMMA 2

                                                    0.646E-01        0.431E 00        0.810E 00

C41          CA            MG           SO4          HCO3         H+           CO3          C1

.0           0.573E-02    0.182E-02    0.166E-01    0.702E-03    0.251E-07    0.111E-05    0.299E-02

    C2           C3           C4           C5           C6           C7          C8            C9
0.121E-05    0.217E-06    0.830E-05    0.219E-05    0.640E-03    0.374E-03    0.0           0.903E-07

   CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
0.292E 00    0.159E-01    0.807E 00    0.530E-05    0.530E-04    0.804E 01
```

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LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

75 35 35 5555    0.     0.         0.            .      0.                                                  0  0

                                   ALLUVIUM-UNIRRIGATED FIELD

       SAMPLE DATE 5 76
           SPECIES        CHARGE      MOLARITY       ORIGINAL UNITS
           --------       ------     ----------      --------------

           NA+               1       0.8700E-02        0.2000E 03
           K+                1       0.0               0.0
           CA++              2       0.8109E-02        0.3250E 03
           MG++              2       0.2460E-02        0.5980E 02
           H+                1       0.1995E-07        0.7700E 01
           SO4--            -2       0.6975E-02        0.6700E 03
           CL-              -1       0.1399E-01        0.4960E 03
           HCO3-            -1       0.1901E-02        0.1160E 03
           BA                0       0.0               0.0
           FE                0       0.0               0.0
           CU                0       0.0               0.0
           SR                0       0.0               0.0
           PB                0       0.0               0.0
           CR                0       0.0               0.0
           ZN                0       0.0               0.0
           HG                0       0.0               0.0
           F                 0       0.0               0.0
           NO3               0       0.0               0.0
           O2 SAM            0       0.0               0.0
           O2 CAL            0       0.0               0.0
           FILTER            0       0.0               0.0
           TEMP              0       0.0               0.0
           REF               0
                             0
           THE EXCESS SAMPLE CHARGE IS-0.4367E-05AND THE ANALYTICAL PERCENT ERROR IS    0.007318
           THE EXCESS CHARGE FOR NACL IS-0.5291E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.5286E-02
AK02      AK1       AK2       AK01      AK02      AK03      AK04      AK05      AK06      AK07      AK08      AK09
0.77E-01  0.24E-06  0.21E-10  0.60E-02  0.97E-03  0.17E-02  0.21E 00  0.25E 00  0.89E-02  0.19E 00  0.11E 00  0.54E-01
  AKC       AKD
 0.40E-08  0.28E-16

                                      ION STRENGTH        GAMMA 1     GAMMA 2
                                           0.404E-01      0.492E 00     0.838E 00
 4I        CA         MG         SO4        HCO3        H+         CO3        C1
.0       0.667E-02  0.215E-02  0.522E-02  0.182E-02  0.200E-07  0.328E-05  0.141E-02

    C2         C3         C4         C5         C6         C7          C8          C9
0.543E-05  0.991E-06  0.287E-04  0.766E-05  0.306E-03  0.386E-04  0.0         0.877E-07
    CA SAT     DOLSAT     GYPSAT     PCO2       SCO2       SATPH
0.131E 01  0.327E 00  0.380E 00  0.120E-04  0.825E-04  0.751E 01
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```
        SAMPLE DATE 5 76
            SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
            --------       ------     ----------      --------------

            NA+               1       0.8700E-02       0.2000E 03
            K+                1       0.0              0.0
            CA++              2       0.2495E-03       0.1000E 02
            MG++              2       0.2460E-02       0.5980E 02
            H+                1       0.3981E-08       0.8400E 01
            SO4--            -2       0.1145E-03       0.1100E 02
            CL-              -1       0.1286E-01       0.4560E 03
            HCO3-            -1       0.2999E-02       0.1830E 03
            BA                0       0.0              0.0
            FE                0       0.0              0.0
            CU                0       0.0              0.0
            SR                0       0.0              0.0
            PB                0       0.0              0.0
            CR                0       0.0              0.0
            ZN                0       0.0              0.0
            HG                0       0.0              0.0
            F                 0       0.0              0.0
            NO3               0       0.0              0.0
            O2 SAT            0       0.0              0.0
            O2 CAL            0       0.0              0.0
            FILTER            0       0.0              0.0
            TEMP              0       0.0              0.0
            REF               0
                              0
            THE EXCESS SAMPLE CHARGE IS-0.1972E-02AND THE ANALYTICAL PERCENT ERROR IS    6.529284

            THE EXCESS CHARGE FOR NACL IS-0.4165E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2190E-02
AK02        AK1       AK2         AK01        AK02        AK03        AK04        AK05        AK06        AK07        AK08        AK09

0.77E-01    0.24E-06    0.21E-10    0.60E-02    0.97E-05    0.17E-02    0.21E 00    0.25E 00    0.89E-02    0.19E 00    0.11E 00    0.54E-01
  AKC         AKD

 0.40E-08    0.28E-16
.

                                                        ION STRENGTH          GAMMA 1       GAMMA 2

                                                              0.178E-01      0.598E 00      0.880E 00

C41          CA           MG           SO4          HCO3         H+           CO3          C1

.0           0.244E-03    0.242E-02    0.102E-03    0.289E-02    0.398E-08    0.226E-04    0.149E-05

    C2           C3           C4           C5           C6           C7          C8          C9
 0.202E-05    0.114E-04    0.203E-05    0.167E-04    0.997E-05    0.918E-06    0.0          0.734E-06
    CA SAT       DOLSAT       GYPSAT       PCO2         SCO2         SATPH
 0.488E 00    0.139E 01    0.402E-03    0.379E-05    0.116E-03    0.866E 01
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 LOCATION     RA    ELEVATION    DEPTH    PRODUCTION INTERVAL    FORMATION    TYPE    YIELD    OWNER    DATE DRILLED

99 99 99 9999    0.     0.          0.         0.    0.                                                   0  0

                                          RECHARGE-HILLTOP

            SAMPLE DATE 5 76
                 SPECIES        CHARGE     MOLARITY       ORIGINAL UNITS
                 --------       ------    -----------    --------------

                 NA+               1      0.7395E-02      0.1700E 03
                 K+                1      0.0             0.0
                 CA++              2      0.2794E-02      0.1120E 03
                 MG++              2      0.1448E-02      0.3520E 02
                 H+                1      0.1585E-07      0.7300E 01
                 SO4--            -2      0.1614E-02      0.1550E 03
                 CL-              -1      0.9449E-02      0.3350E 03
                 HCO3-            -1      0.3196E-02      0.1950E 03
                 BA                0      0.0             0.0
                 FE                0      0.0             0.0
                 CU                0      0.0             0.0
                 SR                0      0.0             0.0
                 PB                0      0.0             0.0
                 CR                0      0.0             0.0
                 ZN                0      0.0             0.0
                 HG                0      0.0             0.0
                 F                 0      0.0             0.0
                 NO3               0      0.0             0.0
                 O2 SAM            0      0.0             0.0
                 O2 CAL            0      0.0             0.0
                 FILTER            0      0.0             0.0
                 TEMP              0      0.0             0.0
                 REF               0
                                   0
                 THE EXCESS SAMPLE CHARGE IS 0.7065E-05AND THE ANALYTICAL PERCENT ERROR IS   0.022251

                 THE EXCESS CHARGE FOR NACL IS-0.2055E-02AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS  0.2062E-02
AK02       AK1        AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.77E-01   0.24E-06   0.21E-10   0.60E-02   0.97E-03   0.17E-02   0.21E 00   0.25E 00   0.89E-02   0.19E 00   0.11E 00   0.54E-01
  AKC        AKD

 0.40E-08   0.28E-16

                                                    ION STRENGTH        GAMMA 1      GAMMA 2

                                                          0.206E-01       0.580E 00      0.873E 00

 4I          CA          MG          SO4         HCO3        H+          CCO3        C1

.0          0.257E-02   0.137E-02   0.134E-02   0.312E-02   0.158E-07   0.624E-05   0.194E-03

    C2          C3          C4          C5          C6          C7          C8           C9
 0.552E-05   0.166E-05   0.225E-04   0.931E-05   0.694E-04   0.993E-05   0.0         0.167E-06

   CA SAT      DOLSAT      GYPSAT       PCO2        SCO2       SATPH
 0.134E 01   0.560E 00   0.522E-01   0.163E-04   0.137E-03   0.732E 01
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SAMPLE DATE 5 76
    SPECIES        CHARGE      MOLARITY        ORIGINAL UNITS
    --------       ------     ----------       --------------

    NA+               1       0.7395E-02        0.1700E 03
    K+                1       0.0               0.0
    CA++              2       0.7735E-03        0.3100E 02
    MG++              2       0.1448E-02        0.3520E 02
    H+                1       0.5012E-08        0.8300E 01
    SO4--            -2       0.7391E-03        0.7100E 02
    CL-              -1       0.7334E-02        0.2600E 03
    HCO3-            -1       0.3016E-02        0.1840E 03
    BA                0       0.0               0.0
    FE                0       0.0               0.0
    CU                0       0.0               0.0
    SR                0       0.0               0.0
    PB                0       0.0               0.0
    CR                0       0.0               0.0
    ZN                0       0.0               0.0
    HG                0       0.0               0.0
    F                 0       0.0               0.0
    NO3               0       0.0               0.0
    O2 SAM            0       0.0               0.0
    O2 CAL            0       0.0               0.0
    FILTER            0       0.0               0.0
    TEMP              0       0.0               0.0
    REF               0
                      0
    THE EXCESS SAMPLE CHARGE IS 0.9771E-05AND THE ANALYTICAL PERCENT ERROR IS   0.041290

    THE EXCESS CHARGE FOR NACL IS 0.6093E-04AND FOR THE COMBINATION CA, MG, SO4, AND HCO3 IS -0.5116E-04
AKO2       AK1       AK2        AK01       AK02       AK03       AK04       AK05       AK06       AK07       AK08       AK09

0.77E-01   0.24E-06  0.21E-10   0.60E-02   0.97E-05   0.17E-02   0.21E 00   0.25E 00   0.89E-02   0.19E 00   0.11E 00   0.54E-01
 AKC        AK0

 0.40E-08   0.28E-16

                                             ION STRENGTH         GAMMA 1     GAMMA 2

                                                   0.144E-01      0.625E 00      0.889E 00

C41         CA         MG          SO4        HCO3       H+         CCO3       C1

.0         0.731E-03  0.139E-02  0.662E-03  0.293E-02  0.501E-08  0.176E-04  0.314E-04

   C2          C3          C4          C5         C6         C7           C8           C9
 0.512E-05   0.553E-05   0.541E-05   0.101E-04  0.404E-04  0.528E-05  0.0          0.507E-06

   CA SAT       DOLSAT       GYPSAT      PCO2       SCO2       SATPH
 0.124E 01   0.172E 01   0.647E-02   0.483E-05  0.118E-03   0.816E 01
 IAL17I END OF FILE REACHED ON INPUT OR END OF EXTENT ON OUTPUT (UNIT 005)

/&         IN ROUTINE MAIN44     AT LOC. 00E52C            ** EXECUTION TRACE **
                                                                       00:00:29
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