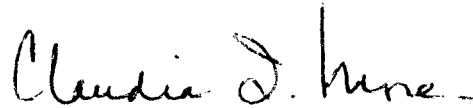


To the Graduate Council:

We are submitting herewith a thesis written by Steven B. Jones entitled "Characterizing the Hydrogeologic System of the Valley and Ridge Province using Natural Seeps and Springs Near Oak Ridge, Tennessee." We have examined the final copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Geology.



Claudia I. Mora, Major Professor

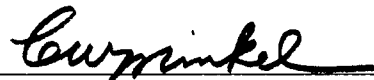


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I have read this thesis and
recommend its acceptance:



Accepted for the Council:



Associate Vice Chancellor
and Dean of the Graduate School

CHARACTERIZING THE HYDROGEOLOGIC SYSTEM OF THE
VALLEY AND RIDGE PROVINCE USING NATURAL SEEPS
AND SPRINGS NEAR OAK RIDGE, TENNESSEE

A Thesis

Presented for the

Master of Science

Degree

The University of Tennessee, Knoxville

Steven B. Jones

August, 1995

DEDICATION

This Thesis is dedicated with love to my wife

Kelley Jones

whose encouragement and support has made my completion of graduate school a reality.

ACKNOWLEDGEMENTS

I would like to express my thanks to my major professor and Co-Chair, Dr. Claudia I. Mora, for all of her guidance and patience throughout the course of my graduate studies. Her support over the past four years have definitely made my efforts and success as a part-time student possible. To Dr. D. Kip Solomon, I give thanks for direction and advise on how to proceed with the thesis research and data evaluation, and for all of his guidance in helium sampling and analysis. I would also like to thank Co-Chair Dr. Robert D. Hatcher, Jr., and committee member Dr. Larry D. McKay for all of their critical assistance and ideas of data analysis, evaluation and writing of this thesis over the past years. I thank Dr. Ronit Nativ for originally approaching me with this research project and providing me with ideas for its development.

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ABSTRACT

Springs are natural monitoring points useful in characterizing hydrogeologic systems because their discharge represents a principal component of flow in the subsurface. An area within the Valley and Ridge province, southeast of Oak Ridge, Tennessee, was studied to determine general spring characteristics, the conditions and processes controlling subsurface flow, and the potential for deep, basinal flow contributions to the shallow groundwater system. During this investigation, 217 springs were located, and a detailed study of 38 of these springs was conducted, including monthly monitoring of temperature, specific conductance, yield, dissolved oxygen, and pH.

Two hydrologically distinct units exist in the study area: the Knox aquifer, consisting of Cambrian to Ordovician carbonates, and the aquitards, consisting of interbedded carbonates and clastics above and below. The Knox aquifer is a mature conduit-controlled karst unit represented primarily by perennial spring discharge water not directly influenced by seasonal effects of precipitation. Groundwater flow processes in this unit include both point and dispersed recharge, low to moderate storage, with rapid flowthrough in the highly conductive, well-connected conduit system; and moderate to high storage in the less conductive diffuse system. Because of the karst nature of the carbonate units, active flow in the Knox aquifer is deeper overall than flow in the aquitards. The aquitard units, characterized by shallow fracture-flow systems, are represented by a large number of perennial and ephemeral springs heavily influenced by the seasonal effects of precipitation. Groundwater flow processes of this unit include dispersed surface recharge, low to moderate storage, and rapid flowthrough in the highly conductive, shallow fracture system. Spring yields from the Knox aquifer account for approximately 70 percent of the total discharge from springs in the study area despite representing only 26 percent of the observed springs. Based on the assumption that all of the spring discharge is coming from

the saturated groundwater zone, simple water budget calculations reveal that approximately 16.8 cm/year and 2.0 cm/year discharge the Knox aquifer and aquitard saturated groundwater zones, respectively. The water budget result for the Knox aquifer indicate that previous estimates of recharge are underestimated by a factor of two, while the results for the aquitards are in agreement with previous estimates.

Major and trace ion geochemical data suggest that most of the springs discharge water that flows through a single lithology, supporting the concept of active, relatively shallow circulation. Geochemical observations indicate that a few springs may receive groundwater contributions from other lithologic units, suggesting a possible contribution from deeper groundwater zones. Analyses of He also indicate that some springs within the aquifers may have deep basinal flow contributions, while quantitative results of H-O stable isotope analyses indicate a subsurface flow system recharged exclusively by meteoric water. Most of the data suggest that groundwater flow paths are all relatively shallow and are probably confined to a local ridge recharge-valley discharge system, although the possibility that of some flow contribution having deep basinal origins cannot be entirely dismissed.

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SECTION 1

INTRODUCTION

BACKGROUND

A growing understanding of the hydrogeologic system of the Department of Energy Oak Ridge Reservation (ORR) has increased interest in adequate groundwater monitoring of fracture flow and conduit-dominated systems. Assessment of natural groundwater discharge is considered an essential element of the hydrologic conceptual model of the ORR recently proposed by Solomon et al. (1992a). Monitoring of natural groundwater discharging from springs and seeps is a powerful tool for groundwater characterization that can supplement the use of wells, the standard method of groundwater monitoring. The use of drilled wells is appropriate for relatively homogeneous geologic settings such as granular deposits and highly fractured rock in which primary flow paths are diffuse and hydraulic gradient and flow direction can be determined, however, the exclusive use of wells may not be suitable for monitoring groundwater flow in a fracture- or conduit-controlled system. These hydrologic systems are highly heterogeneous and anisotropic, because groundwater movement primarily takes place along complex preferential pathways formed by the fractures and other conduits in bedrock. The water flux along these pathways may vary in time and space, making it difficult to isolate the primary flow paths using only groundwater monitoring wells in these systems. The identification of discharge points (i.e., springs and seeps), seasonal variations in discharge, and the correlation between natural outlets and the contributing water-bearing lithologic units is imperative to understanding both the flow regime in each hydrologic unit and solute transport from the subsurface to the shallow groundwater system and to the biosphere.

The characterization of spring water has been shown to be useful in hydrogeologic and geochemical studies of groundwater systems. It is possible to characterize the groundwater system through the evaluation of field parameter and geochemical data of spring discharge water. Field parameter and water quality data from springs have been utilized by Shuster and White (1971); Scanlon (1989); Blavoux et al. (1992); Groves (1992); and Maggiore et al. (1993) to evaluate groundwater systems. To date, only a few surveys of springs and seeps on the ORR and surrounding areas (Pulliam, 1985; Geraghty and Miller, 1990; Davies, 1991; and SAIC, 1995) have been made.

The hydrologic definition of a spring is a location where the saturated zone (water table) intersects the land surface (Freeze and Cherry, 1979); over the centuries, however, springs have been defined and classified in many different ways. During the first quarter of the twentieth century, investigators sought to develop definitions and classification systems for springs. Bryan (1919) divided springs into two categories, gravitational and nongravitational, based on the origin of the discharge water. The first group has a shallow meteoric recharge and is influenced by rates of recharge. The second group includes evolved water from deep basins, or volcanic and plutonic activity, with no influence from precipitation and gravitational forces. Meinzer (1923) defined a spring as a point of natural, unassisted discharge of water from rock or soil, and he classified springs based on their discharge characteristics. Properties such as catchment area of recharge and periodic fluctuations (e.g., seasonal or single storm events) were his primary criteria, employed in the classification. Working exclusively on the classification of karst springs, Bogli (1980) applied three different criteria: outflow, geologic and tectonic conditions, and origin of the discharging groundwater. Each of these classification schemes was considered in the course of this study. Springs are described in terms of Meinzer's (1923) and Bogli's (1980) outflow characteristics and Bryan's (1919) origin of the discharging water.

OBJECTIVES

The objectives of this study were to locate springs in the 20 km² study area near Oak Ridge, Tennessee, and to identify: (1) general spring characteristics; (2) the processes controlling subsurface flow, such as conduit versus diffuse flow for karst systems and shallow fracture flow for aquitard units; (3) the potential for contribution of evolved groundwater in natural discharge points; (4) quality of spring discharge water; and (5) to compile a database of general spring and seep information for use in future hydrogeologic investigations. These objectives were achieved by an evaluation of field data and water chemistry from the springs and seeps.

SECTION 2

HYDROGEOLOGIC SETTING

THE STUDY AREA

The study area (Figure 2.1) is located within the Valley and Ridge geologic and physiographic provinces, southeast of Oak Ridge, Tennessee. The study area is approximately 8 mi² (20 km²), is bounded by Pine Ridge to the northwest and Melton Hill Lake to the southeast. During the course of this study, 217 springs and seeps were identified and monitored (Appendix A).

The area was chosen because of its geologic and structural diversity and well-documented land use. It is possible to see the influences of lithologic and structural features through analysis of hydrologic and geochemical characteristics of spring and seep discharge water. Portions of the study area are within the Y-12 Plant area, and historical land use and groundwater monitoring here are well documented. This information is useful in determining whether any of the data from the springs have been biased by anthropogenic land use, rather than reflecting a pristine setting or natural background.

PHYSIOGRAPHY

The study area is located in the Valley and Ridge geologic and physiographic province of the southern Appalachians, characterized by parallel linear ridges and valleys, generally oriented northeast-southwest in eastern Tennessee. Topography is related to the resistance of stratigraphic units to weathering and erosion in a humid environment. The

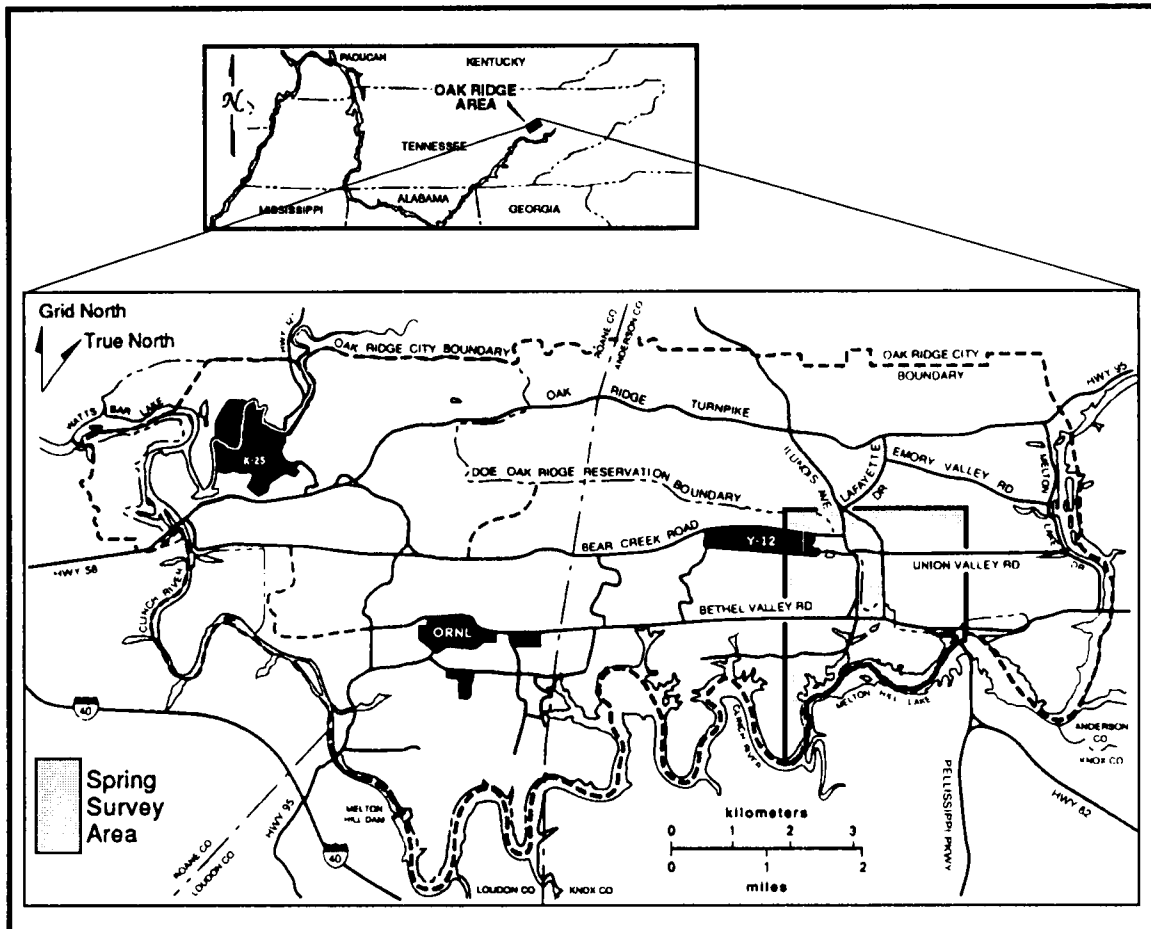


Figure 2.1. Location of the spring and seep study area within the Oak Ridge area (Adapted from Solomon et al., 1992a).

ridges are composed of the more resistant rocks such as sandstone and cherty dolostone, while the valleys are underlain by the less resistant units such as shale and limestone. Weathering and erosion has carved a trellis-like pattern of secondary surface drainage with primary drainage superposed. The Valley and Ridge is bordered to the northwest by the Cumberland Plateau and to the southeast by the Blue Ridge.

GEOLOGIC OVERVIEW

The U.S. DOE Oak Ridge Reservation and surrounding areas are located in the Appalachian foreland fold and thrust belt where early to late Paleozoic sedimentary rocks were thrust during the Permian into a series of imbricate sheets, then subsequently reduced by erosion to form the Valley and Ridge (Rodgers, 1953). Structurally, this province is distinguished by the existence of northwestward-vergent, southeast-dipping imbricate thrust sheets (Figures 2.2 and 2.3). Rock units in the study area have a northeast-southwest strike and dip 17–72 degrees to the southeast (Hatcher et al., 1992). The oldest stratigraphic unit within the study area is the Lower Cambrian Rome Formation, while the youngest is the Middle to Upper Ordovician Chickamauga Group (Figure 2.4). Quaternary colluvium and alluvial terrace deposits are present in the study area.

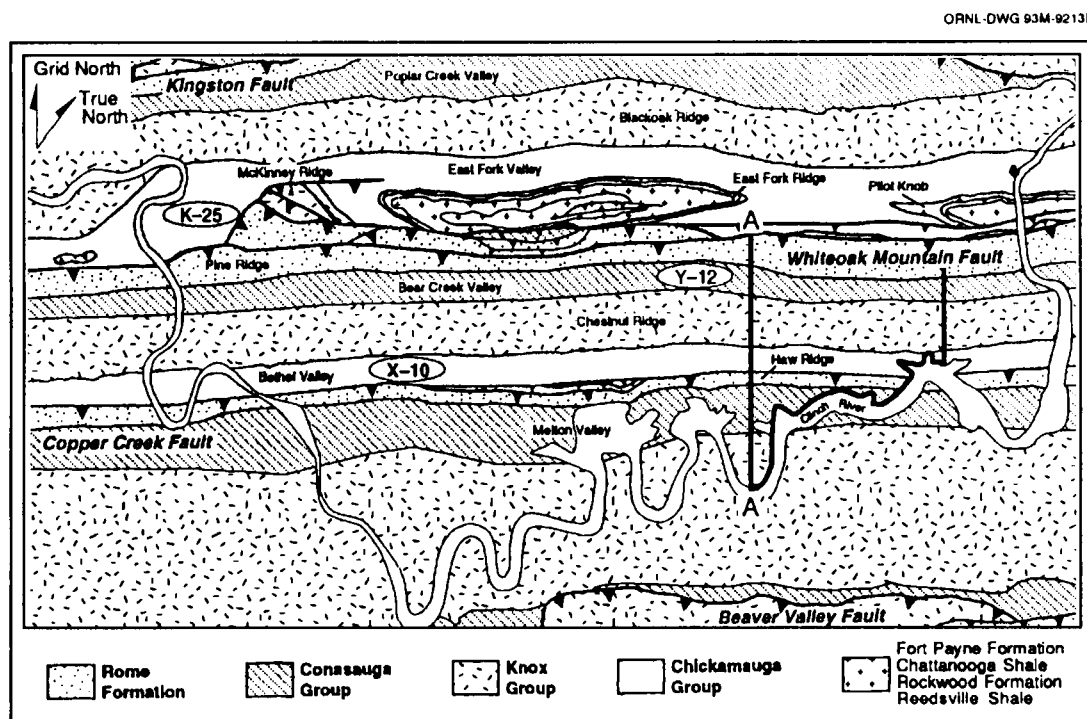
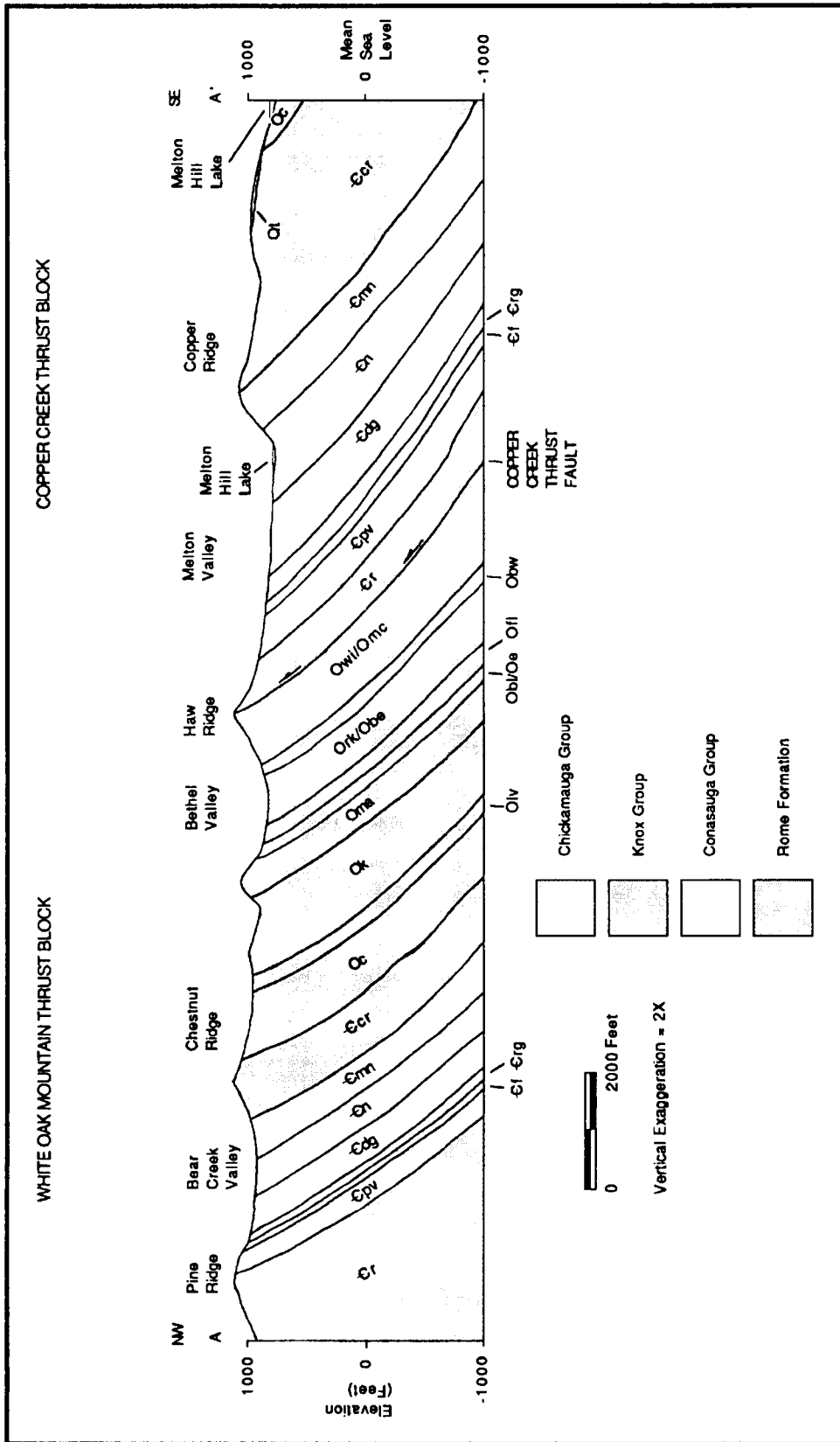


Figure 2.2. Generalized geologic map of the Department of Energy Oak Ridge Reservation and Oak Ridge Area (Adapted from Lemiszki, 1992).



		Lithology	Thickness, m	Formation	Structural Characteristics	Hydrologic Unit
ORDOVICIAN	UPPER		100-170	Omc Moccasin Formation	Weak unit Upper décollement	Aquitard
			105-110	Owi Witten Formation		
			5-10	Obw Bowen Formation		
	MIDDLE		110-115	Obe Benbolt / Wardell Formation		Aquifer
			80-85	Ork Rockdell Formation		
			75-80	Ofl Hogskin Member Fleanor Shale Member		Aquitard
			70-80	Oe Eldson Member Obl Blackford Formation		
	LOWER		75-150	Oma Mascot Dolomite	Strong units Ramp zone	Aquifer
			90-150	Ok Kingsport Formation		
			40-60	Olv Longview Dolomite		
			152-213	Oc Chepultepec Dolomite		
CAMBRIAN	UPPER		244-335	Ccr Copper Ridge Dolomite		
			100-110	Cmn Maynardville Limestone	Weak units Basal décollement	Aquitard
			150-180	Cn Nolichucky Shale		
	MIDDLE		98-125	Cdg Dismal Gap Formation (Formerly Maryville Ls.)		
			25-34	Crg Rogersville Shale		
			31-37	Cf Friendship Formation (Formerly Rutledge Ls.)		
	LOWER		56-70	Cpv Pumpkin Valley Shale		
			122-183	Cr Rome Formation		

Figure 2.4. Stratigraphic column of geologic/hydrostratigraphic units within the study area (Adapted from Hatcher et al., 1992).

Two major thrust faults are traceable through the ORR, the Whiteoak Mountain and Copper Creek faults; only the Copper Creek fault is located within the study area. The fault trace is located high on the northwest slope of Haw Ridge (Hatcher et al., 1992, Plate 1.1), causing a doubling or repeat of the geologic section, perpendicular to strike (Figures 2.2 and 2.3). Lower Cambrian sandstone, siltstone, and shale of the Rome Formation are found at the base of the Copper Creek thrust block, which forms the hanging wall. Middle Ordovician Chickamauga Group limestone at the top of the Whiteoak Mountain thrust block form the footwall. The Copper Creek fault has a fairly consistent geometry,

indicated by consistent bedding orientation in the hanging wall as well as the lack of stratigraphic cutoffs in either the Rome Formation or the Moccasin Formation of the Chickamauga Group (Hatcher et al., 1992).

STRATIGRAPHY

The stratigraphy of the study area depicted in Figures 2.2, 2.3, and 2.4 is briefly described below.

Rome Formation

The Rome Formation is a Lower Cambrian clastic unit composed of shale, sandstone, dolostone, and siltstone. Haase et al. (1985) observed a locally dolomitic, massive sandstone layer with shale stringers near the top of this formation from a corehole on the Copper Creek thrust block. This same layer has never been observed on the Whiteoak Mountain thrust block, although it is present in the Dismal Gap section northeast of the ORR (Hatcher et al., 1992).

Conasauga Group

The Middle to Upper Cambrian Conasauga Group consists of calcareous shale with interlayered shaly to silty limestone (Hasson and Haase, 1988) and has been subdivided into six units in the ORR: the Pumpkin Valley Shale, the Friendship Formation (formerly the Rutledge Limestone), the Rogersville Shale, the Dismal Gap Formation (formerly the Maryville Limestone), the Nolichucky Shale, and the Maynardville Limestone (Hatcher et al., 1992).

Knox Group

The Knox Group consists of Upper Cambrian to Lower Ordovician massive- to thin-bedded dolostone with variable amounts of chert. The Kingsport and Mascot Formations of the Knox Group dolostones in the Lower Ordovician commonly contains numerous interbedded dolomite and limestone layers. This group is subdivided into the following five units: the Copper Ridge Dolomite, the Chepultepec Dolomite, the Longview Dolomite, the Kingsport Formation, and the Mascot Dolomite (Hatcher et al., 1992).

Chickamauga Group

The Middle to Upper Ordovician Chickamauga Group consists mostly of limestone with varying amounts of interlayered dolostone, conglomerate, chert, hematite-rich clastic redbeds, shale, and siltstone. This group is subdivided in the study area into the following units: the Blackford Formation, the Eidson Member, the Fleanor Shale Member (Lincolnshire Formation), the Rockdell Formation, the Benbolt/Wardell Formation, the Bowen Formation, the Witten Formation, and the Moccasin Formation (Hatcher et al., 1992).

THE OAK RIDGE RESERVATION HYDROLOGIC MODEL

A conceptual hydrologic model, intended to spatially and temporally describe the hydrology and geochemistry of groundwater in the Oak Ridge Reservation and surrounding areas of the Valley and Ridge, was developed over the course of numerous previous investigations by Dreier et al. (1987); Haase et al. (1987); Moore (1988); Bailey and Lee (1991); and Lemiszki (1992). The information provided in this section is adapted from these investigations and compiled by Solomon et al. (1992a). Moreover,

investigations by Moore and Toran (1992) and Shevenell et al. (1993) supplemented the conceptual model with additional information on hydrologic and geochemical processes of the subsurface flow system.

Hydrologically, the ORR may be divided into two units with differing attributes: (1) *the Knox aquifer* consisting of the Cambrian-Ordovician Knox Group and the Upper Cambrian Maynardville Limestone of the Conasauga Group, two geologic units consisting of carbonate lithologies with dominantly conduit-type groundwater hydrology; and (2) *the aquitards*, embodying all of the other geologic units in the area and dominated by fracture-flow groundwater hydrology (Figure 2.5). The Knox aquifer represents approximately 40 percent of the stratigraphic sequence of the study area.

Both the aquifer and aquitards have similar subsurface flow systems which, divided vertically from shallowest to deepest, include the stormflow zone, the vadose zone, the groundwater zone, and the aquiclude (Figure 2.6). These hydrologic divisions are based on interpretations of their water flux, lithologic, structural, and geochemical characteristics,

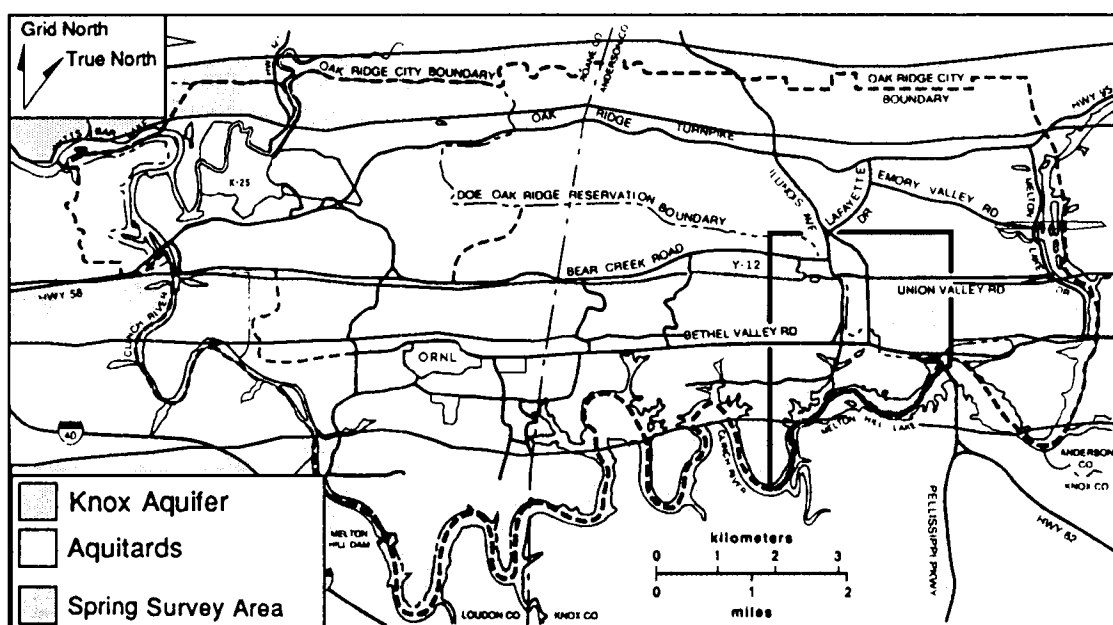


Figure 2.5. The hydrologic units of the Oak Ridge area (adapted from Solomon et al., 1992a).

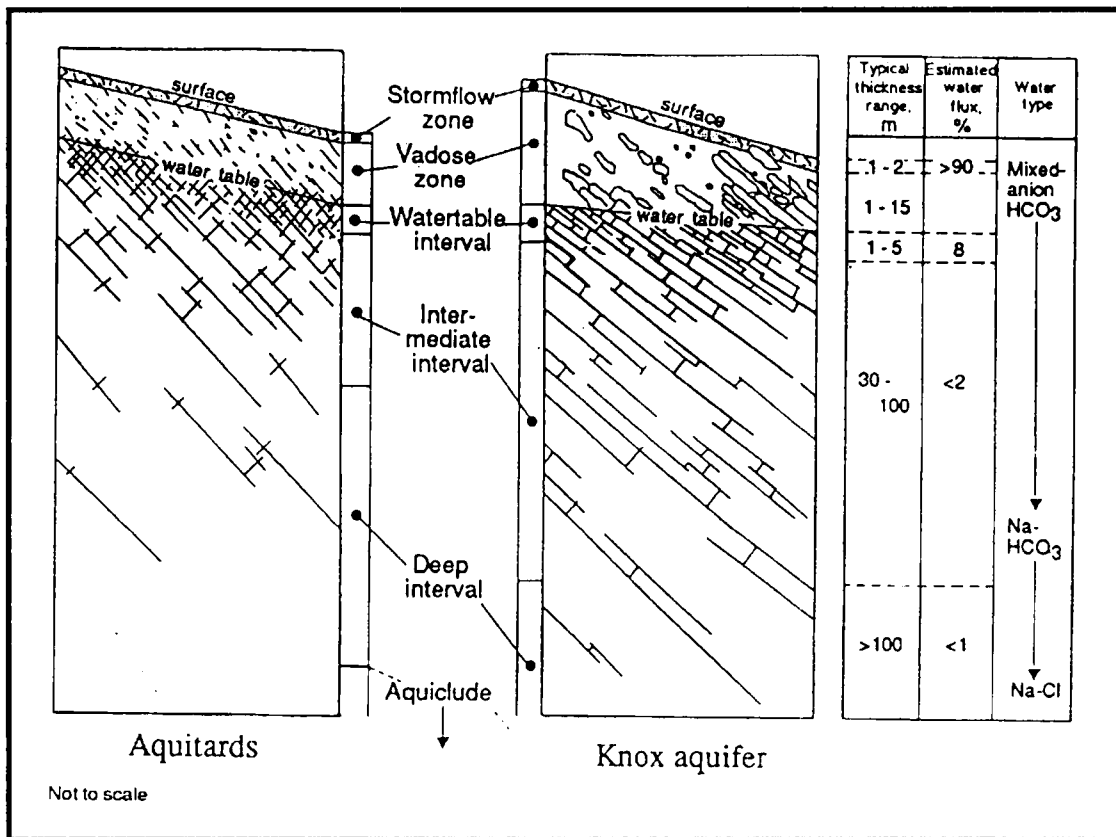


Figure 2.6. Vertical profiles of the two hydrologic units presenting relationships of flow zones, estimated generalized thicknesses, water flux, and water facies (Adapted from Solomon et al., 1992a).

which differ between each zone and decrease with depth. These zones are superimposed on the stratigraphic units and are therefore continuous across the region. They do not have fixed, identifiable boundaries, but are gradational and are influenced by local variations in topography, vegetation, soil cover, geologic structure, and subsurface lithology. A brief description of each flow zone is given below:

Stormflow Zone

The stormflow zone occurs 1–2 m immediately below the ground surface and closely corresponds to the highly permeable (up to 1000 times higher than the underlying

vadose zone) root zone. Large pores such as root channels, burrows, clay aggregates, and preserved weathered residuum fractures establish the transmissive potential of the zone, and approximately 90 percent of active subsurface circulation occurs here (Moore, 1988; Solomon et al., 1992a). Additional field experimental studies by Wilson et al. (1990, 1993) confirmed that much of the flow is occurring in the upper few meters, although some significant flow does occur below 2 m depth, through macropore and mesopore pathways with preferential influence by fracture bedding planes. This zone becomes partially or completely saturated during rain events. Because of the high effective porosity and permeability of this zone, a perched water table occurs during and after storm events, and, in extreme cases, complete saturation and subsequent overland flow will result (Wilson et al., 1991). Water flux through this zone issues laterally to the surface water system (i.e., streamflow).

Vadose Zone

The vadose zone is composed of clay- and silt- soil regolith that originated primarily from weathering of bedrock. This zone is present throughout the area, except where the water table is at land surface, with thickness varying with topographic relief. On the ridges, this layer is thicker, with variability determined by underlying lithology. Ridges underlain by Knox Group dolostones (Chestnut Ridge and Copper Ridge; Figure 2.2) can contain a vadose zone up to 50 m thick, while ridges underlain by the Rome Formation (Pine Ridge and Haw Ridge) typically have a vadose zone less than 20 m thick. The valleys have a thinner vadose zone. Even though the storage capacity of water in this zone is notable, water flux through it is episodic, controlled mainly by rain events, and follows distinct, yet complex, permeable features to the water table. Between precipitation events, water flux abates rapidly.

Weathering of the two hydrologic units is lithologically controlled and leads to different regolith types. The clay residuum of the the Knox aquifer contains chert fragments ranging from sand to boulder sizes, and semicontinuous fractured beds of chert which contain fractures from dessication and settling. Another lithologic heterogeneity of the Knox aquifer residuum consists of bodies of saprolitic silt originating from the weathering of irregular bedrock blocks. In response to storm events, these heterogeneities promote saturated flow through poorly connected openings. Where dip is gentle these heterogeneities often result in perched saturated zones that may discharge ephemerally to springs. The saprolitic regolith of the aquitards of the Conasauga Group retains primary bedrock features, such as texture and fractures, of shale and siltstone, while carbonate-rich units weather more deeply and retain few of the bedrock features. Weathered saprolites and carbonates have a very high porosity and permeability that promotes flow through the vadose zone in response to precipitation.

Groundwater Zone

The saturated groundwater zone has a fluctuating water table related to changing seasonal recharge rates. These fluctuations differ from one unit to another. The Knox aquifer water table has a seasonal fluctuation of about 5 m and a specific discharge through the active zone of about 9 m/year (Solomon et al., 1992a). The aquitards have a seasonal fluctuation in water level of about 1.5 m and an average specific discharge through the active zone of 5 m/year. In Bear Creek Valley, Sanford and Solomon (1995) have observed water level fluctuations within predominantly shale aquitard units of the Conasauga Group of up to 2.3 m in response to a single winter storm event. This significant response was partly attributed to the low evapotranspiration typical of the late winter season, allowing more significant recharge to the groundwater system.

The groundwater zone can be further divided into the water table interval, the intermediate interval, and the deep interval. In the aquitards, most of the water flux occurring in the water table interval is in a zone, 1–5 m thick, of closely spaced and connected fractures. The top of weathered bedrock approximately corresponds to the water table throughout the region.

Below the water table, groundwater flow direction and course is controlled by rock fracture density and orientation. At the bottom of the water table interval the material grades from regolith to bedrock (Figure 2.6). Below is the intermediate interval, where groundwater flow occurs mainly in permeable fractures or conduits that may or may not be well connected horizontally or vertically. In the Knox aquifer, flow is primarily controlled by both fractures and infrequent permeable conduit and cavity systems, and in the aquitards it is controlled mainly by fractures. In both hydrologic units, permeability may be increased by weathering of the parent rock (Solomon et al., 1992a).

There are three dominant sets of fracture orientations in the study area, occurring in both hydrologic units: (1) parallel to lithologic bedding planes and strike, (2) perpendicular to bedding planes and parallel to strike, (3) and perpendicular to lithologic bedding planes and strike (Dreier et al., 1987). Other major fracture and joint sets trend east-west and north-south, but they do not tend to influence groundwater flow (Hatcher et al., 1992). These densely spaced fractures close to the surface become less abundant with depth. Characteristic groundwater movement in the region is dominantly strike-parallel, because of fracture orientations and converging flow paths in and near valley floors. The presence of many springs discharging parallel to strike, within the vicinity of streams which flow perpendicular to strike is further evidence of preferential strike-parallel subsurface flow. Fracture sets and intersections, which are parallel to bedding and strike, are more permeable than the dip-parallel fractures, hence groundwater flows down the length of the valleys to crosscutting surface streams.

The transition from the intermediate interval to the deep interval is distinguished geochemically by a shift from a Ca-Mg-Na-HCO₃ groundwater type to a Na-HCO₃ groundwater type. This phenomenon is postulated to be related to water-rock interaction, such as cation exchange and aluminosilicate (e.g., plagioclase, chlorite, muscovite, glauconite, and kaolinite) alteration, and may be based on the residence time within the groundwater system (Toran and Saunders, 1992).

Small volumes of water move through discrete fractures into and through the deep groundwater interval. There are few of these actively transmissive fractures in the deep interval. They are characteristically shorter in length and have larger spacings but maintain the same orientations found in the intermediate interval. Based on monitoring well data, specific storage of the deep interval is small; consequently, responses to precipitation have been observed, even though the volume of recharging water is small.

Aquiclude

Below the deep interval of the groundwater zone, evolved water having total dissolved solids (TDS) concentrations ranging from 2,000–275,000 mg/l is observed. This zone is believed to be hydrologically and geochemically sluggish, with the water most related to sedimentary basin brines (Solomon et al., 1992a). Depth to the aquiclude is least under the valleys (180–300 m or greater) and greatest under the ridges (>350 m).

TYPES OF NATURAL GROUNDWATER DISCHARGE

Springs in both the aquitards and the Knox aquifer may be classified as perennial, ephemeral, or periodic in outflow (Bryan, 1919; Meinzer, 1923; Bogli, 1980). *Perennial* springs are characterized by groundwater discharge throughout the year that may or may

not be influenced by local storm events or seasonal trends (precipitation and evapotranspiration). *Intermittent* or *temporary (ephemeral)* springs are heavily influenced by seasonal trends and do not flow all year. *Periodic* springs have fluctuating discharge rates that are not closely related to seasonal trends or storm events. This last class of springs develops in karst environments, during high flow conditions when perennial springs cannot sufficiently discharge the system. As groundwater accumulates within the conduit system, it overflows at a periodic spring outlet at a higher elevation (Bryan, 1919).

The classifications of gravitational springs are constrained and controlled by geologic conditions of lithology, stratigraphy, and structure of soil and rock. Bryan (1919) extensively classified gravitational springs with respect to these controls. The four categories he recognized are:

1) *Springs in porous rock (depression springs)*. Springs of this category are formed by the intersection of the water table with the ground surface, due to topographic depression down to the saturated zone. Flow from these springs is usually low and nonturbulent, which can in some cases form seeps or wetlands.

2) *Springs in porous rock overlying impervious rock (contact springs)*. There are springs found in stratigraphic sequences in which a hydrologically permeable rock sequence overlies a less permeable rock sequence. Water accumulating in the more permeable rocks is forced to the surface along the contact with the less permeable rock. This category can apply to soils, as well as ephemeral contact springs emanating from perched watertables.

3) *Springs in porous rock between impervious rock (artesian springs)*. These springs discharge a more permeable unit constrained above and below by less permeable units. The primary conditions controlling this category of springs are: 1) confining conditions between the recharge and discharge regions, and 2) that a more permeable unit outcrops and is recharged in an upland area providing a higher hydraulic head than the spring discharge point.

4) *Springs in impervious rock*. This category accounts for flow through secondary porosity features within a unit having low primary porosity and permeability. Solutionally-enlarged conduit flow through carbonates and fracture-flow systems fall under this classification.

More extensive subcategories related to specific geologic conditions within each category were also described by Bryan (1919), but these are not detailed here. In the Valley and Ridge province, all of these hydrological and geological classifications of springs are common. No attempt to apply these classifications to springs of this investigation was made because of the complexity of the hydrogeologic system and the uncertainty of controlling processes for each spring, however, it is useful to review common spring characteristics and classifications.

The *karst spring* is a subclass of springs occurring on the ORR. A karst spring discharges groundwater from a karst system, in which cavities and conduits develop from the dissolution of carbonate rocks. Because carbonates typically have a very low primary porosity and permeability, this dissolution will most often follow existing faults and fractures to form highly transmissive conduits. The maturity of a karst system can be determined by the number of recharge and discharge points. The initial stage of karst development is characterized by many springs, each having a small catchment area. As the system develops, catchment areas become larger and more interconnected, feeding a decreased number of larger springs (Alfaro and Wallace, 1994). Karst spring is a geologic classification based entirely on the carbonate parent rock through which the discharging groundwater flows. This subclass accounts for the majority of discharge points in the Knox aquifer.

Seeps are another subclass of springs identified on the ORR. A seep is an area where groundwater percolates slowly to the land surface through the pores of soil. These features yield small quantities of groundwater and the area from which water is discharging

the subsurface can be very large. Many marshy or wetland areas are the result of groundwater seepage (Bryan, 1919). This term is often used for natural groundwater discharges considered too small to be classified as springs, although, the terms "seep" and "spring" are often used interchangeably. Additionally, the term seep is an outflow classification describing the physical characteristics of the groundwater discharge area. This subclass accounts for the majority of discharge points in the aquitards.

SECTION 3

METHODOLOGY

DESCRIPTIONS OF PHYSICAL PARAMETERS USED TO EXAMINE SPRINGS

Temperature, specific conductance, dissolved oxygen, yield, and pH have been used in previous spring investigations (Shuster and White, 1971; Scanlon, 1989; Blavoux et al., 1992; Groves, 1992; and Maggiore et al., 1993) and are useful indicators of the physical nature of flow systems.

Temperature

Discharging groundwater will assume a specific temperature based primarily on initial temperature of recharge water and depth of flow, with some influence by travel time, conduit or fracture size, and travel velocity. Seasonal fluctuations in air temperature typically influence groundwater temperature in the upper 10 m of the subsurface. Below this upper zone, temperature begins to equilibrate with the surrounding medium; thus, only very shallow groundwater will exhibit significant variations in temperature in response to surface temperature (Domenico and Schwartz, 1990). Temperature stability through time provides the best indication of seasonal response in springs (Shuster and White, 1971). Two end members of spring temperature characteristics can occur: (1) stable temperatures, indicating water unaffected by natural, seasonal temperature fluctuations, and (2) unstable temperatures, indicating significant seasonal influence, such as lower water temperature during the colder months and higher temperatures during the hotter months. Stable spring water temperatures are related to deeper (typically greater than 10 m) groundwater flow and

longer residence time in the subsurface system and are due to the groundwater recharge thermally equilibrating with the surrounding medium (i.e., soil or rock). Unstable water temperatures are the result of shallow groundwater flow or shorter residence times in the subsurface, inhibiting the thermal equilibration of recharge water with the surrounding medium (Shuster and White, 1971; Davies, 1991). In this study, temperature stability was determined by temperature range and deviation from the mean.

Specific Conductance

Specific conductance is defined by Whitten et al. (1992) as the conduction of electrical current by the motion of ions through a solution or a pure liquid. The inability to transfer this charge is resistance, which is determined by an ion's charge, size, concentration, and the way it interacts with other ions (Hem, 1985). Specific conductance is defined as the reciprocal of the resistance in ohms measured between the opposite faces of a centimeter cube of an aqueous solution at a specified temperature (Hem, 1985). In this study specific conductance was measured in micromhos per centimeter ($\mu\text{mhos/cm}$) at 25° C. In aqueous solutions, a direct relationship exists between specific conductance and hardness or total dissolved solids (TDS). A solution completely devoid of solute ions would theoretically have an infinite resistance or a specific conductance of zero. For example, distilled water has a specific conductance of approximately 0.05 – 1.0 $\mu\text{mhos/cm}$. Precipitation (i.e., rainwater or snow) typically exhibits specific conductance values less than 100 $\mu\text{mhos/cm}$. Groundwater which has a very short residence time in the subsurface tends to have very low values of specific conductance, similar to that of precipitation. On the other hand, very low resistance would be encountered in a concentrated ionic solution, providing an extremely high specific conductance. Deep sedimentary basinal brines may have specific conductance values of as much as 500,000 $\mu\text{mhos/cm}$ (Hem, 1985). Deep evolved groundwater, which has a long residence time that allows for extensive water-rock

interaction, also yields high specific conductance values. For example, water from well GW-135 in Copper Ridge Dolomite at the Y-12 Plant yields values up to 44,000 $\mu\text{mhos/cm}$ at a depth of ~ 365 m (~ 1200 ft.) below ground surface (Dreier et al., 1993).

Dissolved Oxygen

The solubility of oxygen in water at 0°C and 1 bar pressure is 10 mg/l. Dissolved oxygen (DO) concentration is inversely proportional to temperature, so oxygen solubility decreases with increasing temperature. Clean surface water, unhindered by oxidation reactions associated with biota or corrosion, will be in equilibrium with the oxygen solubility concentration for a given pressure and temperature (Driscoll, 1986).

Oxidation processes can account for depletion of DO relative to the equilibrium values. DO typically decreases rapidly in the saturated zone because of oxidation of organic matter and minerals, hence, low DO values often represent "older" groundwater.

Commonly, oxidation effects seen in the spring discharge water in the study area are caused by biological activity or the presence of oxidized organic material and can be influenced by hydrologic characteristics. Higher-order plants and animals (macro- and microorganisms) require oxygen to survive. An overabundance of either will deplete water of DO, especially if discharge from the spring is too low to replenish the DO. Furthermore, DO depletion of subsurface water increases with depth, because organic material is oxidized as the water percolates from the surface downward (Driscoll, 1986). Enrichment of DO is rarely observed and generally only occur if pressure increases. Water-air interaction at the spring discharge point may cause variations in DO content. Rapid, turbid discharge at a spring, causing significant interaction between water and air, could bring about enrichment, producing DO measurements that do not reflect true

discharge values. Because of the many processes, such as biological consumption and water-air interaction that may affect DO values, careful consideration must be given when using this parameter alone as an indicator of deep groundwater contribution.

Yield

Yield is a measure of subsurface discharge, which indicates the response of a spring to the hydraulic characteristics of a hydrologic unit and to seasonal and event specific variations in precipitation. Interpretation of this parameter must account for the topography and geologic conditions of an area. Generally, spring discharge tends to decrease in the dry season and increase in the wet season, although this is not always the case. Factors such as vegetation coverage and subsequent evapotranspiration play a major role in spring response through time. During the hot summer months, when vegetation evapotranspiration is highest, spring yield may decline or even cease because of a deficit in water recharging the subsurface flow system. This decline indicates that the spring is ephemeral and strongly influenced by shallow subsurface hydrologic processes. If a spring's yield does not decline during the dry summer months, it is not influenced by shallow water processes and is termed perennial. Consequently, high variation in yield generally indicates a large contribution of shallow subsurface flow and short residence time. Storm-event response at a spring indicates how fast the subsurface system is affected by precipitation. Hydrograph separation of spring yield through a storm event is commonly used to quantitatively determine what magnitude of flow components, such as stormflow to the unsaturated zone and base groundwater flow, are discharging at a spring (Padilla et al., 1994; Bonacci, 1987 and 1993, Halleran et al., 1994). Gathering detailed yield information from an area provides some indication of discharge rates of a hydrologic unit.

pH

The negative logarithm of the activity of H^+ ions in an aqueous solution is called the pH (Daniels and Alberty, 1959). Water with a pH of 7 has the same activity of H^+ and OH^- and is considered neutral. Values of pH below 7 signify that the H^+ activity is greater than the OH^- activity, and the solution is said to be acidic. Conversely, pH values above 7 indicate that the OH^- activity is greater than the H^+ activity, and the solution is said to be basic or alkaline (Daniels and Alberty, 1959). The pH of precipitation typically ranges from 4.9 to 6.4 and is usually controlled by the concentration of CO_2 in the atmosphere (Hem, 1985). Concentrations of CO_2 in the subsurface are generally an order of magnitude higher than atmospheric concentrations because of the respiration and decay of organic matter (Drever, 1982). Even though there is an inverse relationship between CO_2 and pH, values of pH tend to be higher (6.0–8.5) in the subsurface because other chemical processes cause an increase in pH and alkalinity, such as dissolution of calcite and dolomite, photosynthesis, organic denitrification of soils, and sulfate reduction. Groundwater with pH values outside of the 6.0–8.5 range exists, but it commonly occurs under unusual conditions such as those in geothermal springs and anthropogenically altered systems. Trends of pH in spring water can indicate biological influences or shallow subsurface flow, or residence time by bedrock dissolution. Because pH is dependent on rock mineralogy and residence time and there are many different mechanisms that can influence the pH of subsurface water, this parameter alone is not a reliable indicator of a particular process.

PRELIMINARY SURVEYS

Preliminary surveys of springs and seeps were performed during seasonal dry and wet conditions. For purposes of this study, the dry season is May through October, and wet season is November through April. Appendix A contains a 1:48,000 reference map showing all of the spring locations and an index for the more detailed 1:24,000 maps also located in this appendix. Field measurements of temperature, dissolved oxygen, and specific conductance, estimates of spring yield, and lithologic and general information on each of these springs and seeps were obtained at each visit (Appendix B). The preliminary survey focused on topographic and hydrologic features such as streams, known springs, and other drainage features likely to produce a spring or seep. Additionally, a cursory search of topographic highs and unbroken slopes was performed to locate any potentially ephemeral springs or any other unusual occurrence of natural surface discharge. During the dry season survey in the spring and summer of 1992, 142 springs or seeps were located. During the wet season survey in the winter of 1993, an additional 74 springs and seeps were located.

Field Measurements

Temperature, dissolved oxygen, and specific conductance measurements were gathered using portable instruments that were calibrated on a daily basis. A YSI Model 57 probe was used to measure dissolved oxygen and temperature. This meter has an analog display that provides dissolved oxygen measurements with an accuracy of ± 0.1 mg/l. Temperature measurements obtained with this instrument have an accuracy of $\pm 0.6^\circ$ C. Two types of portable field instruments were used during the preliminary survey of the area to measure specific conductance. During the dry survey, the YSI Model 3000 T-L-C was employed. This instrument provided temperature and specific conductance with and

without internal temperature compensation, an option that standardizes the raw specific conductance values to 25° C. For this instrumentation specific conductance measurements have an accuracy of ± 3.0 percent, while temperature measurements have an accuracy of $\pm 0.4^\circ$ C. During the wet season survey, a YSI Model 33 S-C-T was utilized. This instrument does not provide internal temperature compensation for specific conductance measurements, and specific conductance measurements have an accuracy of ± 2.5 percent, while temperature measurements have an accuracy of $\pm 0.4^\circ$ C. The compensated values were recorded when available, but they were only used to provide a validation of specific conductance values calculated using the temperature compensation equation:

$$SC_{TC} = \frac{SC}{1+0.0191(T-25)} \quad (3-1)$$

where SC_{TC} is the specific conductance value in micromhos per centimeter ($\mu\text{mhos/cm}$) compensated to 25° C, SC is the uncompensated specific conductance value ($\mu\text{mhos/cm}$), and T is the temperature ($^\circ$ C) at which the uncompensated specific conductance value was measured (Greenberg et al., 1992).

Estimates of spring yield were obtained by taking approximate measurements of the cross sectional area (CSA) of a discharging spring and measuring the velocity of flow in the center of the channel. The measurements of the CSA were approximated by assuming a rectangular channel shape (Figure 3.1). The measurements taken in the field are fast and simple and the primary volume of water moving at the velocity measured would be within the perimeter of the rectangle. Errors contributed by the areas outside of the rectangle are considered negligible. Because friction between the water and the channel bed is not accounted for, estimated discharge values may overestimate the true values. Correction for this potential error was attempted using a correction factor provided by Linsley et al. (1975). Errors may be introduced by channel shape irregularities, or underflow. The

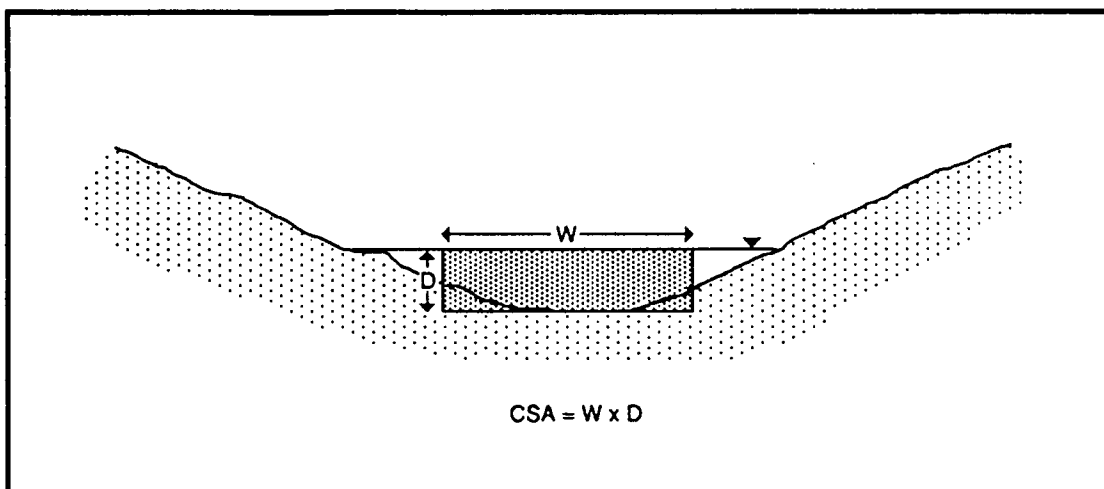


Figure 3.1. Cross-sectional area (CSA) of a spring channel used to estimate values of spring yield, where W = the channel width and D = estimated channel depth.

velocity of flow was estimated using a natural organic float (a twig of uniform size) released in the middle of the channel and timed with a stopwatch as it travelled a measured distance. This distance depends on the average velocity of the stream and obstructions. In many cases, channels were choked with obstructions such as vegetation, rocks, and other debris, these were cleared and an attempt was made to remove irregularities and sources of turbulence. Spring yield was then determined using the following equation:

$$Q = 833.33 A \frac{d}{t} \quad (3-2)$$

where Q is the spring or seep yield in liters/minute (l/min); d is the longitudinal distance in meters (m); t is the time (min); A is the CSA of the discharge channel (m^2). The constant 833.33 is the conversion from cubic meters to liters, and from float velocity, which is commonly 1.2 times the mean stream velocity (Linsley et al., 1975), to mean velocity.

Lithology of the underlying bedrock was determined by outcrop or channel bed sedimentary deposit inspection. In some cases, no distinguishable rock type could be determined. In these instances, the recognized formation lithology from Hatcher et al. (1992) was assigned (Appendix A). In locations outside of detailed groups (e.g., the undifferentiated Conasauga Group), determination of lithology was based on field observations, extrapolations of topographic characteristics and formation boundaries within the differentiated areas of Plate 1 of Hatcher et al. (1992).

Any distinguishing or unusual features were recorded for possible significance. Examples of these features include a structure or basin surrounding the spring, a strong petroliferous odor, a certain type of vegetation, an oily sheen on the surface of the water, high or unusual levels of turbidity, a dry spring, or other anthropogenic disturbances nearby. These features were later examined for potential links to changes in discharge or other trends. For example, SP-054 discharged relatively low turbidity water until the winter of 1994. It was noted that there were surficial clearing and grubbing activities underway nearby and upgradient which might be directly linked to the presence of the high turbidity in the spring.

The position of each spring was based on field approximations pinpointed on an S-16A map of the Oak Ridge Reservation (ORR) and surrounding areas (TVA, 1987). ORR Administrative Grid Coordinates in feet were then scaled from the pinpointed positions. The accuracy of spring locations is ± 100 ft. (± 31 m) horizontal or better, and ± 10 ft (± 3.1 m) vertical. During the dry season survey, no identification marker was placed at each spring. This made subsequent identification difficult, in some cases. During the wet season survey, springs were tagged with blue surveyors' flagging marked with the appropriate spring identification number.

During the wet season survey, some of the springs and seeps that were newly discovered (SP-143 through SP-216) were subjectively evaluated as perennial. These

springs and seeps were not discovered during the dry season survey because of high undergrowth, investigator oversight, or, in some instances, because they were actually ephemeral (e.g., SP-147).

DETAILED SURVEY

After the two preliminary surveys, 30 seeps and springs were selected for sampling and extended monitoring, based on an evaluation of field measurement values and information on lithology and formations. This distribution of springs was selected to include a range of classes observed using the selection criteria detailed below. The 30 springs were then sampled during dry and wet season conditions for geochemical analysis and underwent monthly monitoring of field parameters.

Monitoring Location Selection Criteria

Following the preliminary surveys, the criteria listed below were used to characterize the springs, which were then divided into three categories based primarily on specific conductance and evidence of perennial vs. ephemeral flow:

1. **Specific conductance:** This was the primary parameter employed to quantitatively classify springs in the study area. In general, higher values are expected to denote more extensive water-rock interaction and may therefore indicate longer residence times in the groundwater system, longer flow paths, and possibly deeper (> 10 m) flow origins. Spring discharge with low specific conductance is likely to result from rapid and shallow flow paths. The mean ($\mu = 191 \mu\text{mhos}$) and standard deviation ($\sigma = \pm 160 \mu\text{mhos}$) of

specific conductance values from all springs visited during both preliminary surveys were calculated. These values were used as criteria for identifying the three different classes as shown in Table 3.1.

2. Perennial vs. ephemeral flow: Springs exhibiting flow throughout the year (perennial) were preferentially selected for the subsequent detailed survey to permit monitoring through an entire year. The determination between perennial vs. ephemeral flow was made with some confidence for springs SP-001 through SP-142, which were visited during both surveys. The presence of flow during both seasons was the basis for classifying a spring as perennial, although the influence of recent precipitation events was not discounted as possibly causing an ephemeral spring to flow during both surveys. For those springs discovered during the wet season survey (SP-143 through SP-216), the determination was based on comparison of physical and hydrologic conditions of the candidate spring with other springs known to be perennial such as springs SP-024, SP-056, SP-083, SP-102, SP-199, and SP-207. Springs SP-199 and SP-207 were only visited during the wet season survey, but they are known to be perennial because of evidence of some man-made improvements.

3. Dissolved oxygen: Spring discharge water from systems where precipitation recharges and discharges rapidly are expected to have values of dissolved oxygen closer to

Table 3.1. Ranges of specific conductance for the three classes of springs determined from the preliminary survey data.

CLASS	CRITERION	RANGES OF SPECIFIC CONDUCTANCE ($\mu\text{mhos/cm}$)
I	$< \mu - \sigma$	< 31
II	$\mu \pm \sigma$	31 – 351
III	$> \mu + \sigma$	> 351

μ = mean; σ = standard deviation

that of atmospheric equilibrium. The value of dissolved oxygen at atmospheric equilibrium is temperature dependent and ranges from 12.45 to 7.85 mg/l for the range of temperatures (4.75 – 26.0° C) noted during the preliminary surveys. Conversely, low dissolved oxygen levels are expected to indicate longer residence times in the groundwater system, longer flow paths, and possibly deeper (> 10 m or evolved) flow origins. These two end-members of dissolved oxygen in spring discharge waters are used for classification.

4. Temperature ranges: The seasonal temperature range of a spring, which is related to depth and time in the subsurface, was only evaluated for springs SP-001 through SP-142, which were visited during both surveys. Because only one temperature measurement was obtained for SP-143 through SP-216 this type of determination was not possible.

5. Miscellaneous: Unusual measurements (specific conductance, dissolved oxygen, or temperature) or circumstances (deposits or discolorations around the discharge point, extremely high yield, relation to lithologic or structural feature, etc.) for a spring/seep, compared to others from a similar lithology/formation, were noted.

A summary of the measured parameters for each spring and the resulting classification are shown in Table 3.2. The characteristic of each spring class and how they were defined is given in the following sections:

Class I springs. Class I springs are defined as discharge points that may be heavily influenced by recent precipitation and are characterized by low specific conductance (SC) meeting the following criterion:

$$SC < \mu - \sigma \quad (3-3)$$

Table 3.2. Characteristics of the Springs Selected for Detailed Survey (based on data from the preliminary surveys)

SPRING	HIGH SC	LOW SC	VARIABLE SC	STABLE T	UNSTABLE T	HIGH YIELD	LOW YIELD	CONSISTENT YIELD	VARIABLE YIELD	CLASS	CLOSE TO CONTACT	COMMENTS
76		X			X		X	X		I	X	Dry
105		X			X		X	X		I		Dry
112		X			X		X	X		I	X	
119		X			X			X		I	X	
124		X			X				X	I		
199		X								I		
5		X		X				X		I	X	
19			X		X				X	I	X	
33			X		X				X	I	X	
39			X	X					X	I		
49		X			X				X	I		
54	X			X					X	I		
60	X			X				X		I		
77	X		X		X				X	I	X	Dry
102	X			X		X			X	I		
131			X		X				X	I		
137			X		X				X	I	X	
139		X			X				X	I		
152		X				X				I	X	
16	X		X		X		X	X		III		Dry
18	X		X		X				X	III	X	
24	X			X		X		X		III	X	
53	X		X		X				X	III	X	Dry
56	X								X	III		
81	X		X		X		X	X		III		
83	X		X	X		X			X	III		
91	X		X		X		X	X		III		Dry
129	X					X		X		III	X	
147	X			X			X	X		III		
189	X					X				III		Dry
1		X			X		X	X		I		Replaces SP-118 for sampling
29	X				X		X	X		I	X	Replaces SP-147 for sampling
31			X	X					X	I		Replaces SP-016 for sampling
74		X			X		X		X	I		Replaces SP-076 for sampling
118		X			X		X		X	I		Replaces SP-105 for sampling, Dry
132			X		X		X		X	I		Replaces SP-077 for sampling
207	X			X			X	X		III		Replaces SP-091 for sampling
211			X		X					I	X	Replaces SP-053 for sampling

SC - Specific Conductance
T - Temperature

where μ is the mean specific conductance of the total spring and seep population from the preliminary survey (191 μmhos) , and σ is the standard deviation from μ (± 160 μmhos). The calculated range of Class I spring specific conductance is <31 μmhos (Table 3.1). Other characteristics are dissolved oxygen measurements close to atmospheric equilibrium and a highly variable temperature range between the dry and wet season surveys. Because of the lack of springs that fulfilled all of the criteria previously described, the specific conductance limitation of <31 μmhos was relaxed, and a qualitative determination of low specific conductance was used. The highest specific conductance using this qualitative criterion for Class I springs was 133 μmhos from the dry season measurement at SP-076. The average specific conductance value for the selected Class I springs was 49 μmhos .

Class II springs. Class II springs are discharge points that may have simple to complex groundwater flow patterns. They may show evidence of being influenced by precipitation, or mixing of shallow and deeper (>10 m and/or evolved) groundwater. Class II springs are characterized by intermediate specific conductance meeting the following criterion:

$$\mu - \sigma < SC < \mu + \sigma \quad (3-4)$$

The calculated range of class II spring specific conductance is 31–351 μmhos (Table 3.1). Also, other field measurements from the preliminary surveys were qualitatively evaluated. Dissolved oxygen values, ranging from very low to close to atmospheric equilibrium, and very wide to very narrow temperature ranges between the dry and wet season surveys were observed in class II springs. Because of the lack of springs that fulfilled all of the criteria previously described, the specific conductance limitation of 31 – 351 μmhos was relaxed

for springs SP-029 and SP-077, and a qualitative determination of intermediate specific conductance was utilized. These two springs exhibited high specific conductance during at least one of the two preliminary surveys, but all other criteria for a Class II spring were observed. Because of the large standard deviation of this data, some bias exists towards Class II springs; therefore a larger number of springs selected were from this class.

Class III springs. Class III springs are discharge points that may have deeper (>10 m or evolved), longer, or complex groundwater flow patterns. Deeper flow and longer residence times are suggested by an absence of evidence for the influence of significant amounts of recent precipitation, as indicated by field measurements such as temperature, specific conductance, and discharge. Class III springs are characterized by relatively high specific conductance meeting the following criterion:

$$SC < \mu + \sigma \quad (3-5)$$

The calculated range of class III spring specific conductance is >351 $\mu\text{mhos/cm}$ (Table 3.1). Also, other field measurements from the preliminary surveys were qualitatively evaluated. Very low dissolved oxygen values, and very narrow temperature ranges between the dry and wet surveys were observed in class III springs. The specific conductance limitation of > 351 $\mu\text{mhos/cm}$ was relaxed for spring SP-060, and a qualitative determination of high specific conductance was utilized. This spring exhibited intermediate specific conductance, but all other criteria for a class III spring were observed.

Sampling and Monthly Monitoring

After the selection of the detailed survey locations, dry season sampling and the initiation of the year-long monthly monitoring began at the beginning of August 1993, and

again under wet season conditions in February 1994. During the initial sampling and monitoring event in August 1993, it was discovered that seven springs (SP-016, SP-053, SP-076, SP-077, SP-091, SP-105, and SP-147) were dry. Seven alternate springs were chosen using the same criteria. One of the alternate springs, spring SP-118, was also dry, so spring SP-001 was selected. Table 3.2 displays the springs that were added to the detailed survey. The eight dry springs were visited monthly and when flow was present they were monitored like the perennial springs (Figure 3.2).

Monthly monitoring of field parameters. Monthly monitoring of the detailed survey springs began in August, 1993, and continued through July, 1994. The measurements made each month were similar to those collected during the preliminary surveys. Measurements of pH were added and performed using color code indicator pH strips during the first seven monitoring events. Because the pH strips have very poor accuracy (± 1.0 pH units), a YSI 3500 Water Quality Monitor was used during the last five months of this phase of the study. Along with pH (± 0.01 pH units accuracy), this instrument provided measurements of temperature ($\pm 0.4^\circ$ C) and both uncompensated and compensated values for specific conductance (± 3.0 percent). Also, general observations of spring characteristics were collected for evaluation of spring performance through time.

Water quality sampling and laboratory analyses. Water samples were collected from springs and seeps to provide characteristic water quality type distinctions, or groundwater facies, and to characterize the quality of water discharging seeps and springs (Appendix C). Water samples were collected for major and selected minor ion constituents (Mg^{2+} , Ca^{2+} , Na^+ , K^+ , Al^{3+} , CO_3^{2-} , HCO_3^- , Cl^- , SO_4^{2-} , and NO_3^-). This information reveals the potential depths of flow, residence time, and origin of groundwater discharging springs and seeps. Consequently, the existing hydrologic conceptual model can be

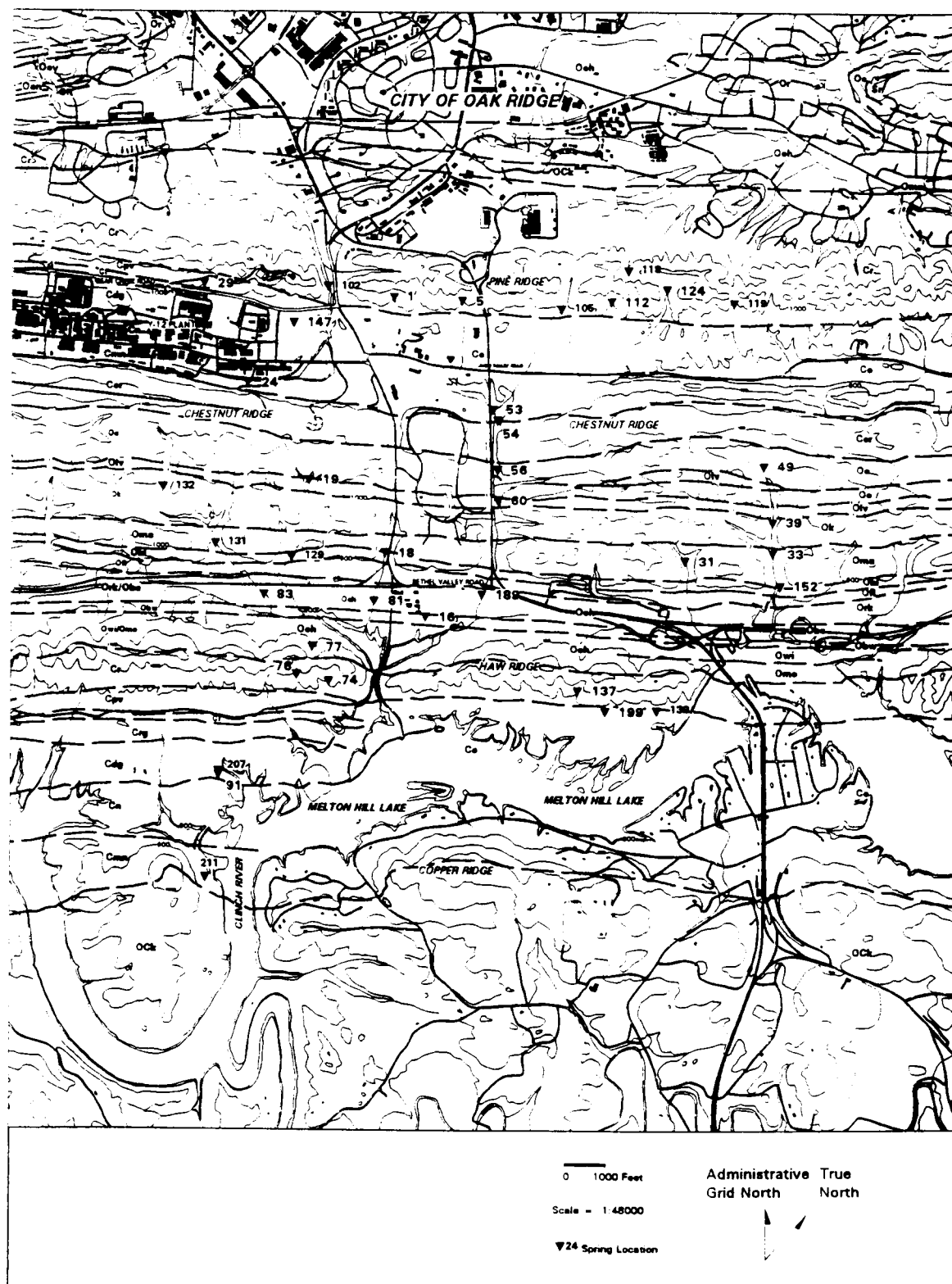


Figure 3.2. Detailed survey monitoring and sampling locations. See Appendix A for an explanation of the geologic symbols.

validated and the potential for springs to discharge water with deep evolved (e.g., aquiclude; Figure 2.5) origins can be evaluated. Additional water quality constituents (trace constituents and gross radionuclides) were analyzed to determine the potential for groundwater contamination and its detectability at springs and seeps. Analyses were performed on both filtered and unfiltered samples to determine the concentrations of dissolved and suspended constituents (Table 3.3). No analyses for volatile organic compounds were obtained.

Dry season sampling was performed using either a grab jar or a hand-held vacuum pump. A glass or plastic grab jar was used to dip water from the discharging springs and then transfer this water to an appropriate sample bottle. This grab jar was blanked before obtaining a sample to remove any signature from a previous spring. Blanking was accomplished by rinsing the jar in the spring and filling it at least three times with the discharge water prior to obtaining the sample. Because of the low flow conditions, in many cases it was necessary to excavate a small sump in the spring channel in order to have room to insert the grab jar. After excavating the sump, time had to be allowed for settling of suspended sediments prior to sample collection. Failure to do this could result in a higher suspended solid content and possibly a higher dissolved solid content in the sample water, which could elevate some of the analytical constituents above their actual dissolved values. A vacuum hand pump was used to obtain grab samples where it was impossible to use a grab jar. Conditions which could prevent the use of a grab jar were a hard rock shallow stream bed with no way of excavating a sump, or such delicate conditions such that any disturbance of the channel bed would induce sediment suspension.

Wet season sampling was performed in February 1994, exclusively accomplished using a grab jar. The same procedures used during the dry season event for grab jar blanking, sump excavation, and sampling were used during the wet season event.

Table 3.3. Water Sample Constituents, and Analytical Procedures and Methods

ANALYTE	PROCEDURE	METHOD
Aluminum	EPA-3010	Inductively Coupled Plasma (ICP)
Antimony	EPA-3010	ICP
Arsenic	EPA-3010	ICP
Barium	EPA-3010	ICP
Beryllium	EPA-3010	ICP
Boron	EPA-3010	ICP
Cadmium	EPA-3010	ICP
Calcium	EPA-3010	ICP
Chromium	EPA-3010	ICP
Cobalt	EPA-3010	ICP
Copper	EPA-3010	ICP
Iron	EPA-3010	ICP
Lead	EPA-3010	ICP
Magnesium	EPA-3010	ICP
Manganese	EPA-3010	ICP
Molybdenum	EPA-3010	ICP
Nickel	EPA-3010	ICP
Potassium	EPA-3010	ICP
Selenium	EPA-3010	ICP
Silver	EPA-3010	ICP
Silicon	EPA-3010	ICP
Sodium	EPA-3010	ICP
Strontium	EPA-3010	ICP
Thorium	EPA-3010	ICP
Vanadium	EPA-3010	ICP
Zinc	EPA-3010	ICP
Alpha Activity	EPA-9310	Scintillation
Beta Activity	EPA-9310	Scintillation
Uranium Fluorometric	EC-1910	Fluorometry
Total dissolved solids (TDS)	EPA-160.1	Gravimetric
Total suspended solids (TSS)	EPA-160.2	Gravimetric
Bromide	EPA-300.0	Ion Chromatography
Chloride	EPA-300.0	Ion Chromatography
Sulfate	EPA-300.0	Ion Chromatography
Fluoride	EPA-340.2	Potentiometric
Nitrate	EPA-352.1	Ion Chromatography
pH	EPA-9040	Electrometric
Conductivity	EPA-9050	Electrometric
Bicarbonate	SM-403	Titration
Carbonate	SM-403	Titration
Helium	See Text	Gas Chromatography (GC)
Oxygen-18	See Text	Mass Spectrometry (MS)
Deuterium	See Text	MS

Helium sampling and laboratory analyses. Decay of radioactive elements such as uranium and thorium produces helium. This process occurs wherever there is uranium and thorium, but deep beneath the earth's surface where contact time between groundwater and He is high, concentrations of dissolved helium accumulate in water. The presence of dissolved helium in spring discharge water in greater concentrations than solubility of helium in the atmosphere, $4.65 \times 10^{-7} \text{ cm}^3 \text{ (STP) He/kg water}$, indicates water flowing from the evolved groundwater or aquiclude zone.

Helium sampling during the dry season was performed using an evacuated glass flask, plastic tubing, and the vacuum hand pump. The tubing and pump were attached to the evacuated flask and all of the air in the tubing was displaced with spring discharge water in order to minimize atmospheric influences. The flask valve was slowly opened to permit discharge water to be drawn into it. When the flask was approximately three-fourths full, the flask valve was closed. The flask was transported to the laboratory where headspace gas samples from the flasks were analyzed by methods described by Sugisaki et al. (1982) using a Varian Star 3400 gas chromatograph for the possible presence of helium which may indicate a deep evolved groundwater origin. During the wet season a copper tube-type of helium sampler, developed at ORNL and described by Sanford et al. (1994), was used. The sampler consists of a copper tube, two inner-tube style check valves, silicone tubing, a rubber end cap, fine silica sand, and fine fiber wadding. The copper tube is closed at one end and threaded at the other end.

After analysis for helium was completed, confirmatory sampling was performed at spring locations with possible helium detection. This was accomplished using the both the copper tube samplers and sealed silicone tubing and a gas syringe for withdrawing the sample and injecting directly into the gas chromatograph.

Stable isotope sampling and laboratory analyses. Vacuum extraction of gases for measurement of D/H and $^{18}\text{O}/^{16}\text{O}$ ratios was conducted in the University of Tennessee Department of Geological Sciences. Hydrogen gas was obtained by combustion of water samples with Indiana zinc at 500° C for 30 minutes (Vennemann and O'Neal, 1993). Oxygen isotopic ratios in water samples were obtained using the CO_2 equilibration method of Epstein and Mayeda (1953). Isotopic ratios were measured on a fully automated, triple collector, VG903 gas ratio mass spectrometer and are reported in standard δ -permil (‰) notation relative to Standard Mean Ocean Water (SMOW). The precision of these analyses is ± 0.5 ‰ for oxygen and ± 2 ‰ for hydrogen (Halleran et al., 1994). Selected D/H gas samples were run on the VG903 mass spectrometer at the Chemical and Analytical Sciences Division, Oak Ridge National Laboratory.

SECTION 4

DATA ANALYSIS AND OBSERVATIONS

The data available for evaluation of spring discharge water consist of field measurements, analyses of major ions, selected trace constituents and gross radionuclides, and stable isotopes. This information reveals useful details on the characteristics of the discharging groundwater from the springs and seeps, which, in turn, provides better understanding of the hydrogeologic system in the study area.

FIELD PARAMETERS

Quantitative and qualitative analyses were made of standard summary statistics of parameters measured in the field. Statistics were calculated for a wide range of populations including lithology, recognized geologic units, hydrologic units, wet (winter and spring) and dry (summer and fall) seasonal conditions, and measurements from individual springs. A comparison of field parameter distributions of lithology, geologic units, and hydrologic units was performed and very little statistical variation between them was observed, therefore, Appendix E presents the summary statistics (mean, standard deviation, ranges, skewness, and coefficient of variation) for only hydrologic units, wet and dry seasonal conditions, and measurements from individual springs. The field measurements taken at the 217 springs located in the study area are: temperature, specific conductance, dissolved oxygen, and yield rate. Evaluation of these parameters from the preliminary and the detailed studies was performed. Evaluation of detailed study monthly measurements of pH from March to July, 1994, was also performed.

Temperature

The temperature of seep and spring discharge water measured for all springs in the study area are normally distributed (Figure 4.1). The values measured in the Knox aquifer springs and the aquitard springs have essentially the same mean (13.8° C) but differ in the degree of variation from the mean. Furthermore, the difference between the measured variance of the Knox aquifer and aquitard springs is statistically significant.

The overall mean temperature for spring discharge from the Knox aquifer is 13.8° C, with a low standard deviation of 2.0 and an interquartile range of 1.8° C (Appendix E). Generally, the Knox aquifer springs discharge groundwater that falls closer to the stable end member and the mean value of the total distribution. Thus, the water flow paths are deep enough (> 10 m) for temperature equilibration to be approached or obtained. Time-series plots and summary statistics of the detailed survey reveal that 67 percent of springs of the Knox aquifer have very small fluctuation (ranges < 5° C) in temperature through time (e.g., SP-024, SP-031, and SP-054; Appendix F, Appendix E, and Table 4.1), probably indicating deeper (> 10 m) flow paths, longer residence time, and longer travel distance through the subsurface. A wider range (> 5° C) of temperature through time (e.g., SP-019 and SP-053; Appendix E, and Table 4.1) were noted in 33 percent of the Knox aquifer springs.

Mean temperature (13.7° C), standard deviation (4.2) and interquartile range (6.2° C) for the aquitards are different than the values for the Knox aquifer (Figure 4.1). Fewer outliers, a high deviation from the mean, and a wider interquartile range indicate that unstable end-member temperatures dominate in the aquitard spring discharge water. Consequently, water residence time in the subsurface is short, preventing temperature equilibration. Time-series plots and summary statistics of aquitard springs included in the detailed survey show that 74 percent exhibit large fluctuation (ranges > 5° C) in temperature

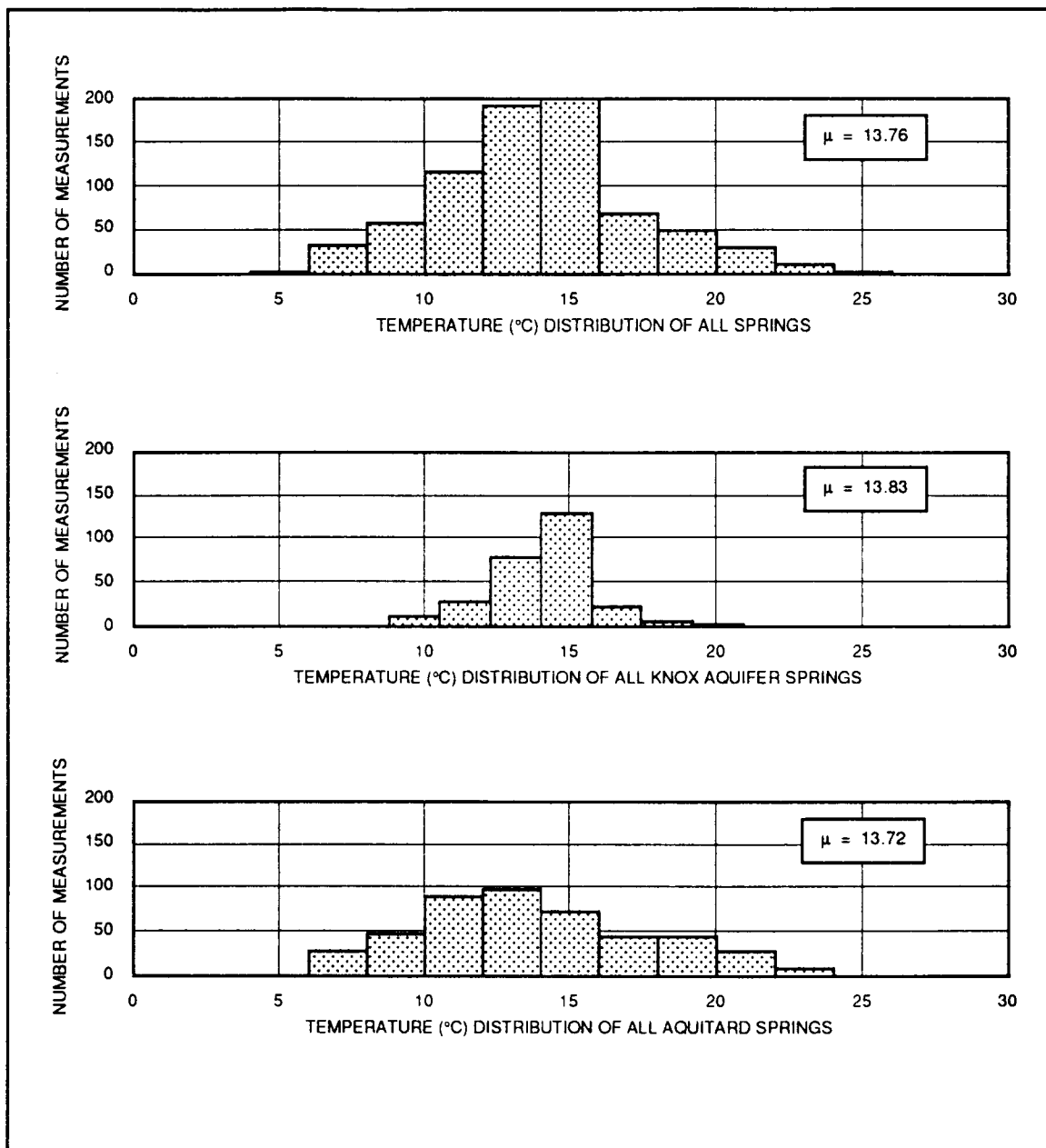


Figure 4.1. Distributions of temperature from seeps and springs within the study area. The population includes measurements from both the dry and wet season preliminary surveys, and the detailed survey.

Table 4.1. Percentages of detailed survey springs discharging water within a narrow or wide temperature range.

TEMPERATURE RANGE	AQUIFER (%)	AQUITARD (%)	ALL (%)
< 5° C	67	26	42
> 5° C	33	74	58

through time (e.g., SP-001, SP-081, and SP-124; Appendix F, Appendix E, and Table 4.1) and 26 percent exhibit smaller fluctuations (ranges < 5° C)(e.g., SP-083, and SP-102; Appendix F, Appendix E, and Table 4.1).

Although the Knox aquifer springs exhibit water temperatures that more closely approach the stable end-member than those of the aquitards, seasonal response is seen in both (Figure 4.2). Using Statgraphics™ statistical software, statistical analysis of variation (ANOVA) reveals that these responses are significant. This indicates that shallow (stormflow and vadose zones) groundwater processes are present and are partly responsible for the unstable thermal effects in discharging water. Mean temperatures for both the dry and wet seasons in Knox aquifer spring discharge water are approximately equivalent, but the wet season distribution has more outliers, and thus a greater tail. This distribution tail above and below the mean during the wet season supports the presence of shallow flow, with significant influence from precipitation masking the more stable thermal responses of Knox aquifer spring discharge water. There is a significant difference in mean temperatures between the dry and wet seasons in aquitard spring discharge water. The higher mean temperature during the hotter dry season and the lower mean temperature during the colder wet season supports the interpretation of the dominantly shallow flow system, influenced significantly by seasonal conditions.

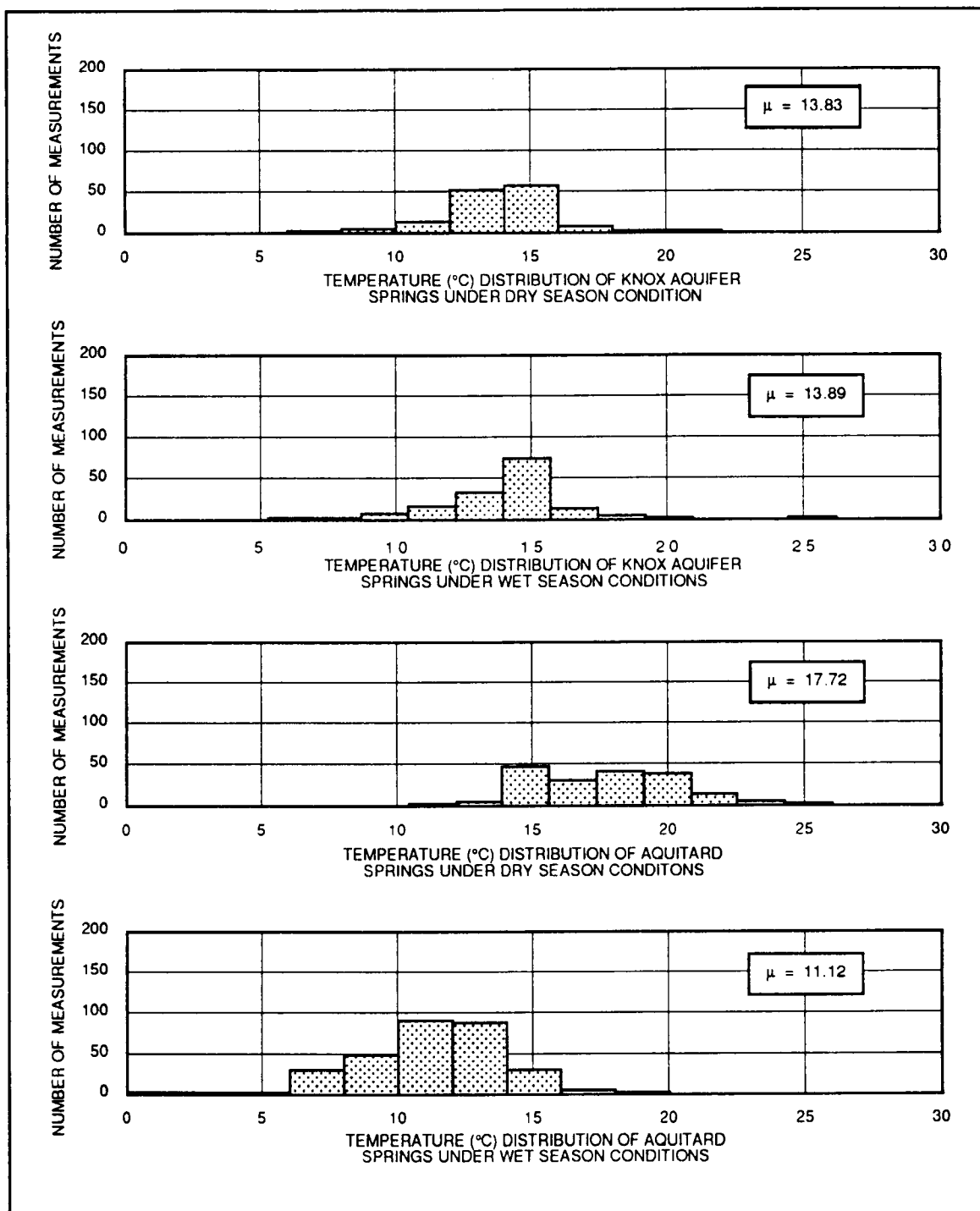


Figure 4.2 Seasonal distributions of temperature from seeps and springs within the study area. The population includes measurements from both the dry and wet season preliminary surveys, and the detailed survey.

Specific Conductance

Of the 217 springs located in this study, the lowest and highest specific conductance values obtained were 14 and 1160 $\mu\text{mhos/cm}$, respectively. There is little difference in the range of values observed in the aquifer and aquitard unit populations (Figure 4.3), but the distributions of specific conductance of the two hydrologic units are very distinct. This difference is observed as an approximately normal distribution for the Knox aquifer spring measurements, and a distribution that is strongly skewed towards lower values for the aquitard spring measurements (Appendix D). As observed for the temperature distributions, the distributions of specific conductance values for spring discharge water of the Knox aquifer has a narrower interquartile range (127.4 $\mu\text{mhos/cm}$), smaller standard deviation (144.9), and a higher mean (312.0 $\mu\text{mhos/cm}$) than those of the aquitards (329.6 $\mu\text{mhos/cm}$, 206.0, and 227.0 $\mu\text{mhos/cm}$, respectively).

Specific conductance of spring discharge water in the Knox aquifer generally falls within a narrow range, indicating a close approach to an equivalent or equilibrium saturation of soluble ions (Ca^{2+} , Mg^{2+} , HCO_3^- , etc.) in most cases. Higher specific conductance values are typically present in carbonate units such as those found in the Dismal Gap Formation (formerly Maryville Limestone), the Maynardville limestone, the Knox Group, and the Benbolt/Rockdell Formations (Figure 2.3), although several notable exceptions are observed. Spring SP-102, discharging from the Rome Formation, a predominantly shaly aquitard unit, has a mean value of 348 $\mu\text{mhos/cm}$, which is more typical for carbonate springs. Time-series plots of field measurements (Appendix F) indicate that spring SP-102 is more similar to carbonate springs with a subdued stable temperature trend, high specific conductance values, and fairly constant discharge. Stiff plots of samples taken during both dry and wet seasons (Appendix G) also yield a 1:1 ratio between Ca^{2+} and Mg^{2+} , similar to springs discharging from dolostone in the Knox

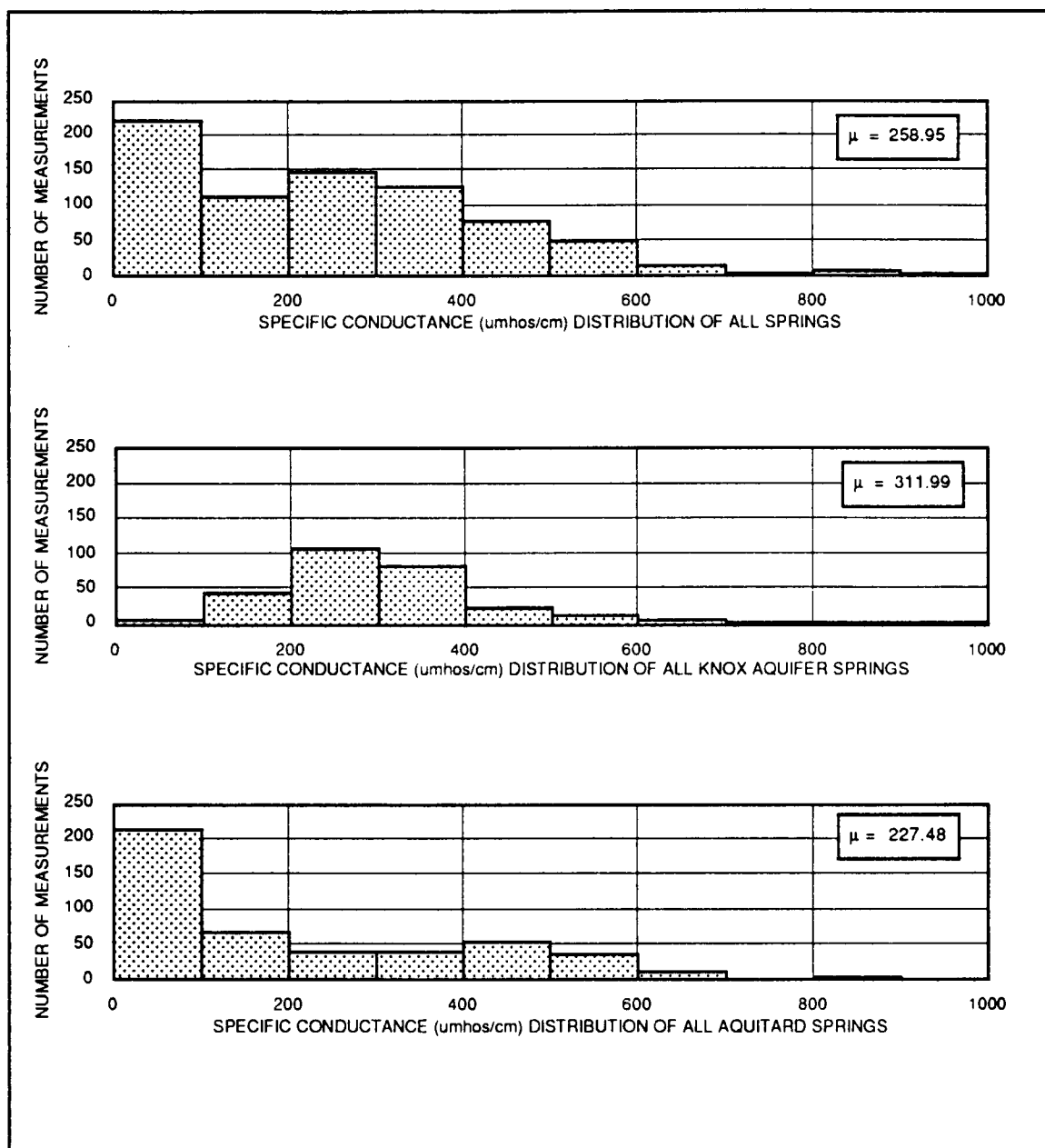


Figure 4.3. Distributions of specific conductance from seeps and springs within the study area. The population includes measurements from both the dry and wet season preliminary surveys, and the detailed survey.

aquifer (Stiff, 1951). Stiff plots for spring SP-137 also show influence of the dolostone layer in the Rome, although greater variability in specific conductance (mean value of 158 $\mu\text{mhos/cm}$) and other field parameters indicates more significant contribution from a shallow flow system typical of the aquitards. Two springs discharging a carbonate lithology, springs SP-020A and SP-211, both had single occurrences of extremely low specific conductance during the wet season. Spring SP-020A was only encountered during wet conditions and is probably ephemeral within a shallow hydrologic system. Spring SP-211 is an open cave in the bottom of a sinkhole in the Maynardville Limestone. All other specific conductance measurements at spring SP-211 were two orders of magnitude higher than the isolated low value observed. Consequently, this measurement may be related to an unusual influx of low conductivity water or an instrument malfunction. The water level of this spring is very close to full pool elevation of Melton Hill Lake (795 ft above mean sea level), and direct connection to the lake may account for the low specific conductance.

Lower values of specific conductance are commonly seen in the clastic units such as the Rome Formation and the shales of the Conasauga Group. Because a large portion of the water moving through the subsurface is in the stormflow zone (Solomon et al., 1992a), the less transmissive aquitards generally reflect a rapid flow-through effect in spring discharge water. In this study, shallow hydrologic systems result in discharge water having low specific conductance and other characteristics (i.e., temperature, yield, stable isotopes, etc.) that closely resemble the recharging precipitation.

High specific conductance measurements were obtained in seeps, which:

- 1) support abundant vegetation;
- 2) sustain a surficial "algal sheen/slick" with an oily appearance possibly due to higher nutrient levels within the water;
- 3) are sluggish in nature with persistent low flow conditions; and
- 4) generally have a low dissolved oxygen content.

Aquitard springs SP-029, SP-112, and SP-147, and Knox aquifer spring SP-053 all meet these criteria. Spring SP-147 was dry during 6 months of the detailed survey field monitoring and is ephemeral.

Specific conductance measurements can also indicate potential contamination. Aquitard spring SP-080 turned out to consist of stormflow discharge from a previously unidentified overflowing sanitary sewer, which accounts for its unusually high specific conductance. The water quality of spring SP-053 may be influenced by the nearby and upgradient old Oak Ridge landfill, but, no data are available to evaluate this assertion.

Precipitation and evapotranspiration effect dissolved ion concentrations of spring discharge water which in turn effect specific conductance values. During the hot summer months when evapotranspiration dominates, specific conductance of spring discharge is higher. As evapotranspiration decreases and precipitation increases with the cooling towards winter, specific conductance values decline (Figure 4.4). Both hydrologic units maintain the general distributions (Figure 4.3), although the range and means of the distribution shift in response to the changes in precipitation and evapotranspiration.

Dissolved Oxygen

Time-series plots (Appendix F) demonstrate an inverse relationship between temperature and DO. Some variability and inconsistency with this relationship are observed, principally related to previously mentioned depletion and enrichment effects. Often, increasing temperature will be accompanied by increasing DO, as can be seen in the time series plots of both the Knox aquifer and aquitard springs (Appendix F). This effect can usually be correlated with recent rain events in which precipitation saturated in DO entered the hydrologic system and temporarily enriches the spring water in DO. The data plots reveal that almost every occurrence of this type takes place during the colder wet season. No attempt was made to determine time lag from recharge to discharge because

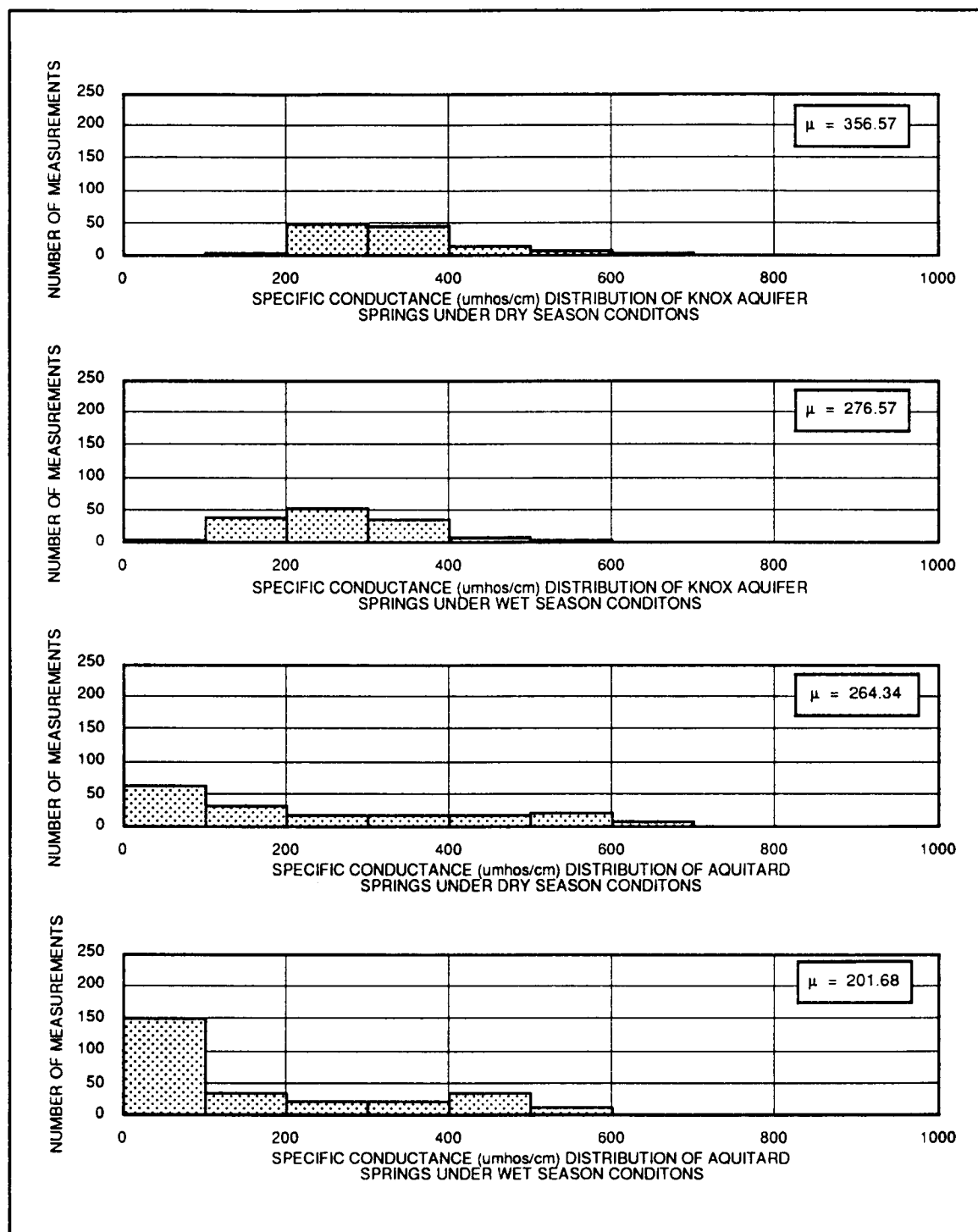


Figure 4.4 Seasonal distributions of specific conductance from seeps and springs within the study area. The population includes measurements from both the dry and wet season preliminary surveys, and the detailed survey.

DO is transient with respect to several possible factors such as oxidation rates, residence time in the subsurface, biological consumption, water-air interaction, and variable spring discharge contribution with respect to varying precipitational intensity.

Except for the larger tail noted in the aquitards DO distribution, little difference was observed between DO distributions in both the Knox aquifer and aquitard spring discharge water (Figure 4.5). DO increases with the decrease in temperature in the colder wet season population (Figure 4.6).

Spring Yield

Spring yield is the volume of water per unit time discharged from a spring, and data from this study are not normally distributed. Distribution fitting, using Statgraphics™ statistical software, was applied to each hydrologic unit and a lognormal distribution best fit both the Knox aquifer and aquitard spring yield data (Figure 4.7). The influences of precipitation and evapotranspiration are observable in Figure 4.8 and in the time series-plots of the detailed survey springs (Appendix F). During the winter months, with the increase in rainfall and decrease in evapotranspiration, overall spring yield rates increase. Because the data were collected monthly, most rainfall events are not well represented in the time-series plots.

During the course of this study, the 56 Knox aquifer springs located had a geometric mean yield of 39.1 liters per minute (l/min) for a total yield of 2,189.6 l/min and the 161 aquitard springs had a geometric mean yield of 2.3 l/min for a total yield of 370.3 l/min. The sum total yield of 2,559.9 l/min from all 217 springs from both hydrologic units provides a total mean yield of 11.8 l/min.

An increase in the yield of springs in response to rainfall provides an indication of the hydraulic storage and transmissivity of a hydrologic system. A storm event will provide an immediate response in a spring or well that is well-connected with the surface

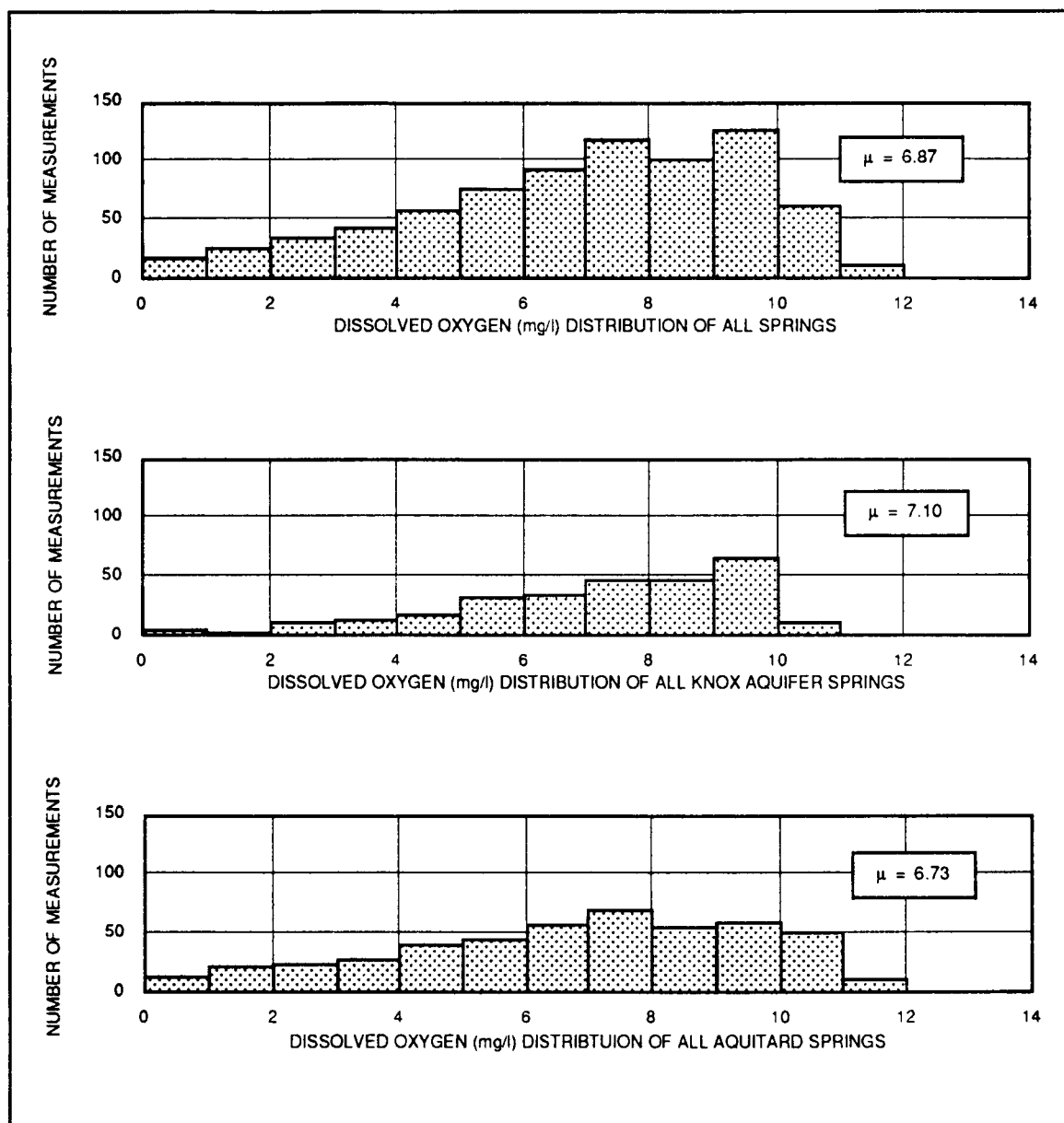


Figure 4.5 Distributions of dissolved oxygen from seeps and springs within the study area. The population includes measurements from both the dry and wet season preliminary surveys, and the detailed survey.

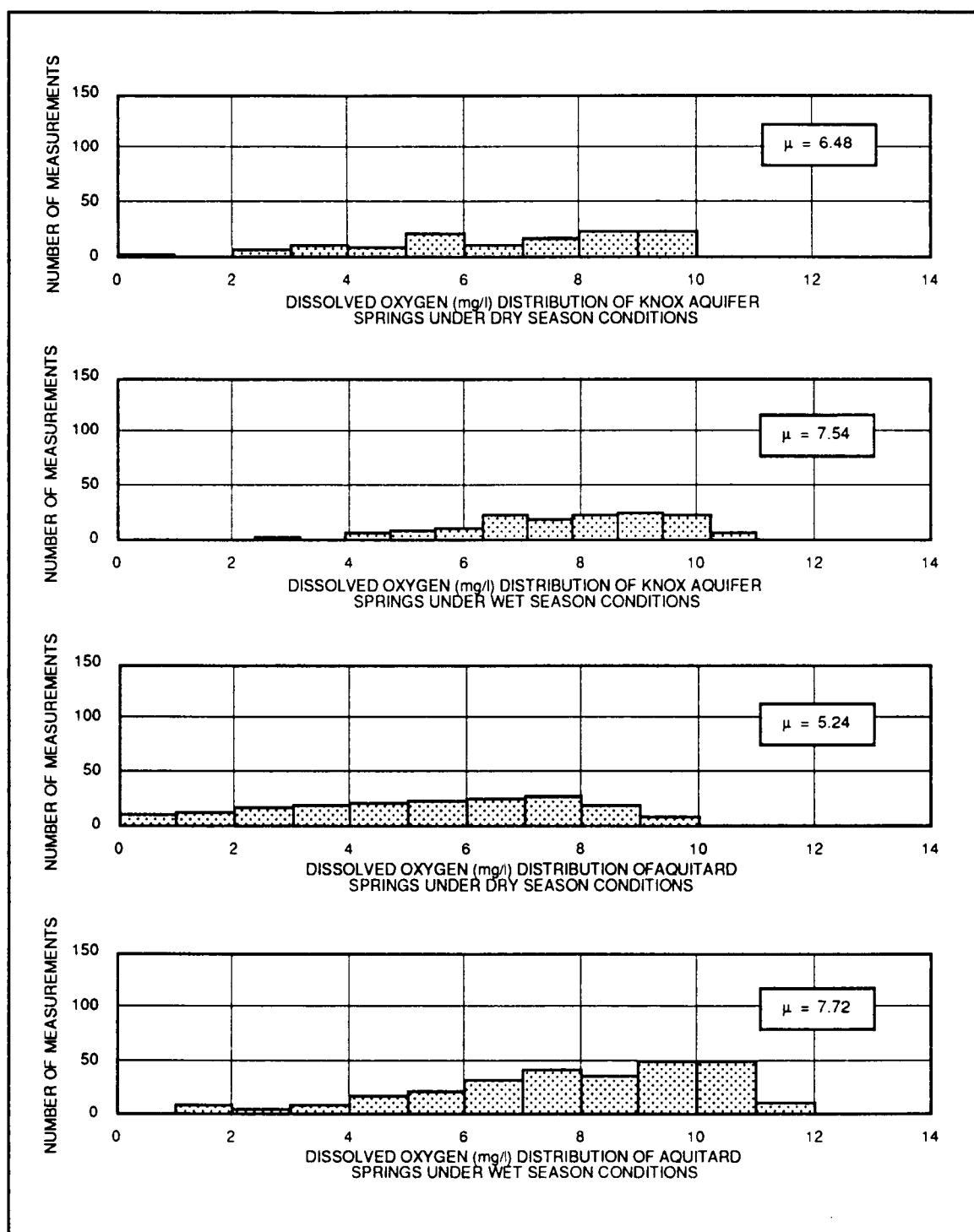


Figure 4.6 Seasonal distributions of dissolved oxygen from seeps and springs within the study area. The population includes measurements from both the dry and wet season preliminary surveys, and the detailed survey.

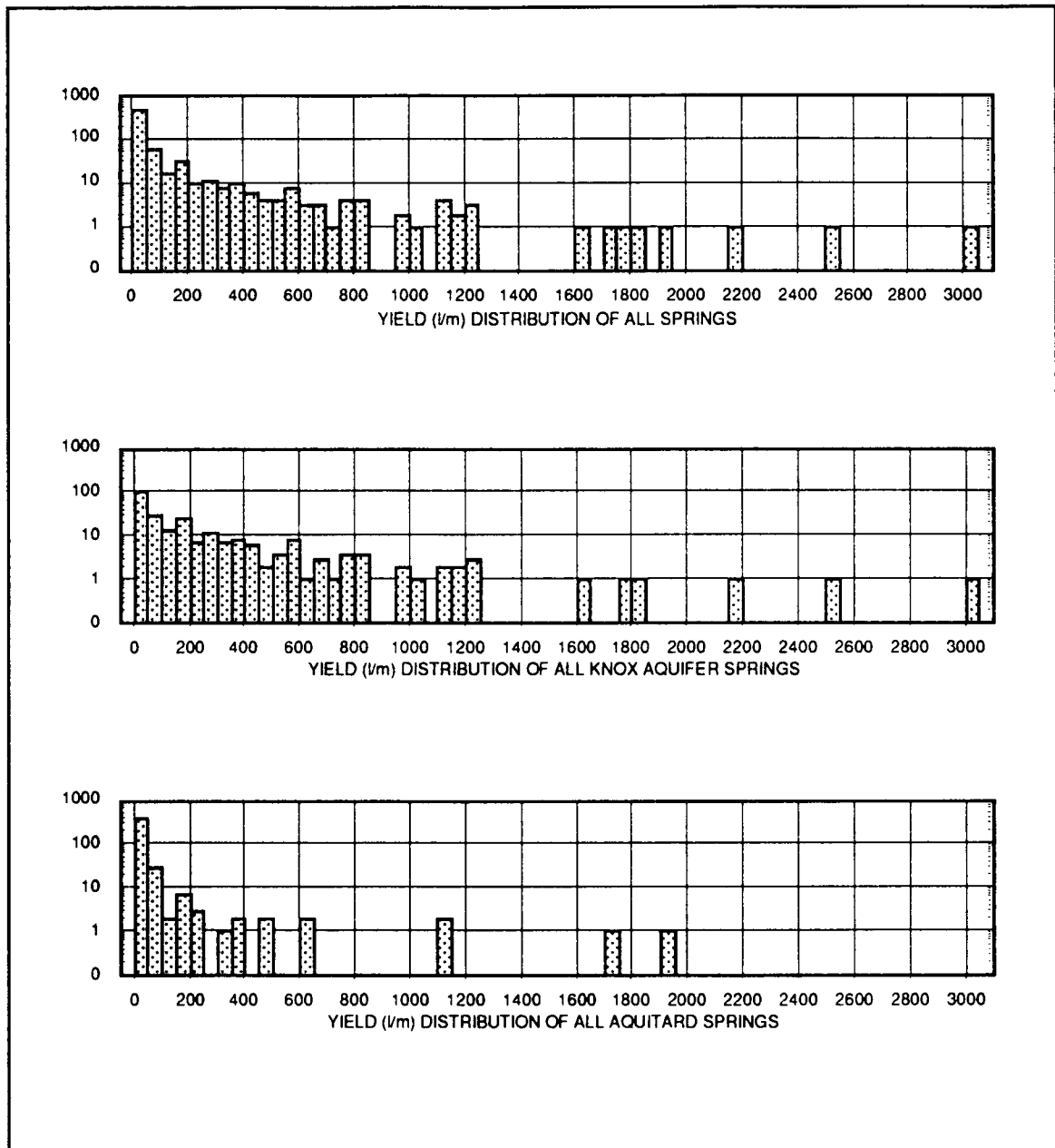


Figure 4.7 Distributions of yield from seeps and springs within the study area. The population includes measurements from both the dry and wet season preliminary surveys, and the detailed survey.

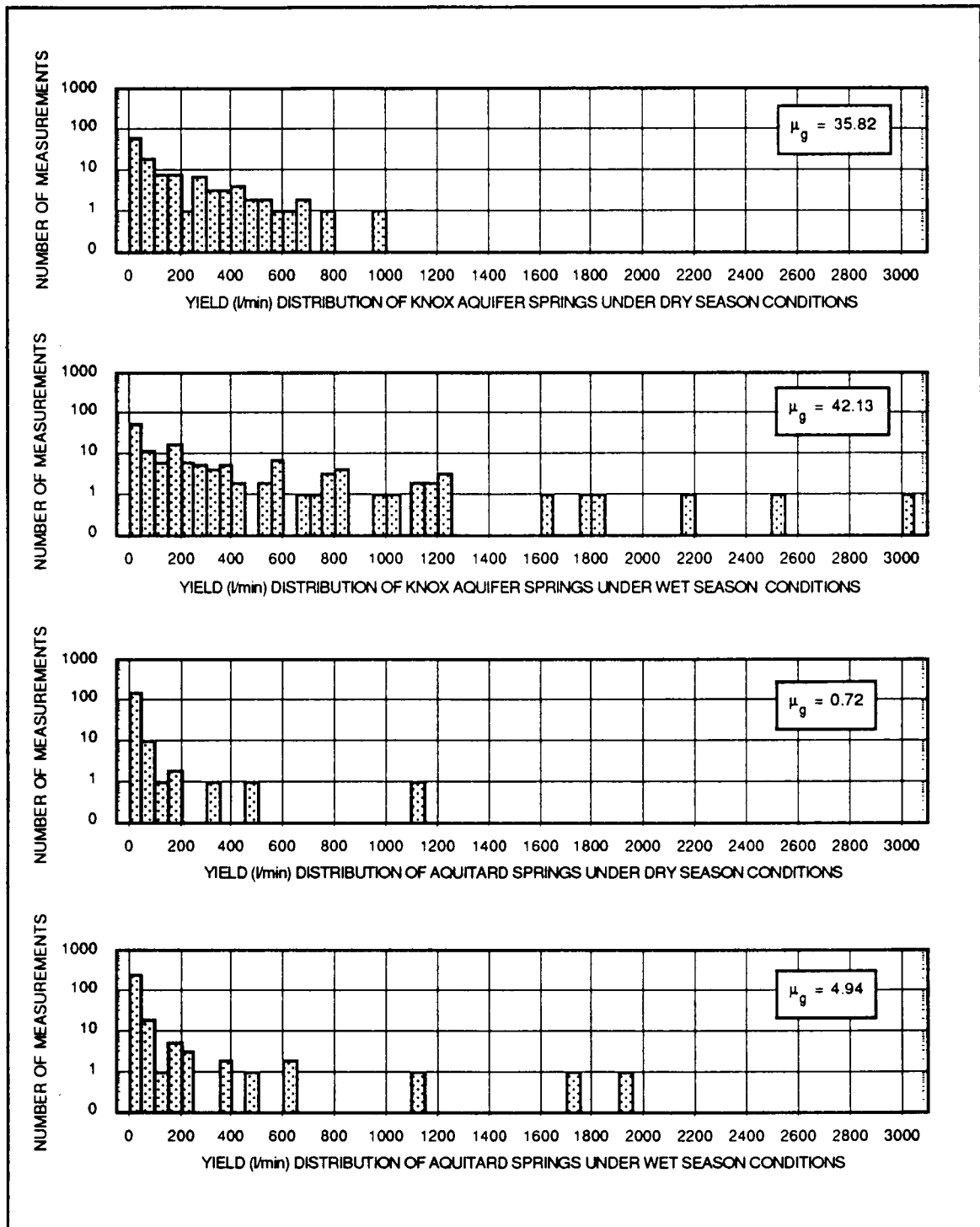


Figure 4.8 Seasonal distributions of yield from seeps and springs within the study area. The population includes measurements from both the dry and wet season preliminary surveys, and the detailed survey.

because of the head increase produced by the recharging infiltrating water, however, seasonal conditions will effect responses. In summer, a heavy rain may have little effect on yield because most of the water is consumed in replenishing soil moisture, but the same type of rain in the winter, when soil is saturated, can cause a large increase in spring yield. Wells and springs that are not well-connected to the ground surface will respond, but the response will be delayed. This delay is commonly referred to as the lag time (Quinlan et al., 1991). Lag time has no direct relationship to residence time of water in the subsurface, and cannot be used to qualitatively evaluate flow-through time, or even hydraulic conductivity. Because of the uncertain nature of subsurface flowpaths in both the Knox aquifer and the aquitards, the only reliable method for determining these characteristics is through the use of tracers (e.g., dyes, isotopes, noble gases, etc.). Since the detailed survey springs were only monitored on a monthly basis, precipitation response and lag times to storm events are not available for analysis.

pH

Values of pH were measured monthly during the detailed survey using both pH color strips and a pH meter. The range of values obtained was 4.0 – 8.09. The field instrument was employed during months 8–12 of monitoring and was considered a much more reliable source of pH values; only these measurements were considered further.

Several trends are apparent during months 8–12 (March through July) of time-series plots of pH for each of the detailed survey springs (Appendix F). The predominant trend observed during the last five months of monitoring was a decrease of pH during rainy months and an increase of pH during drier months with no seasonal decrease or increase. This trend was observed in springs discharging water from carbonate units (e.g., SP-053, SP-054, SP-056, SP-060, SP-081, SP-083, SP-129, SP-189, SP-207, and SP-211). Two other, less prevalent, trends in pH were observed: (1) increasing pH through time

was observed mainly in springs discharging from dominantly clastic units of the Rome Formation or Pumpkin Valley Shale (e.g., SP-074, SP-102, SP-105, SP-112, SP-118, SP-119, SP-124, SP-137, SP-139, and SP-199). Springs SP-019, SP-033, and SP-049 discharging from the Knox Group also exhibited this trend; (2) decreasing pH through time was observed in springs SP-001, SP-005, SP-016, SP-018, and SP-029. No apparent correlation to a lithology can be shown for the latter trend, because these springs discharge a variety of lithologic units within the study area.

LABORATORY ANALYSES

Major Ions and Trace Elements

Thirty of the detailed survey springs were sampled during both the dry and wet seasons (Figures 4.9, 4.10, 4.11, and 4.12; Appendix C). The same analytical methods were used to determine the results during both sampling events, and a major ion charge balance was performed for data quality and reproducibility. For the analytical results from the dry season, 27 (90 percent) of the charge balances deviated less than 10 percent from a balanced stoichiometric value, while 29 (97 percent) of the charge balances from the wet season analytical results deviated less than 10 percent from a balanced stoichiometric value. Therefore, the quality of the analytical chemistry data is considered to be very high.

Helium

Springs SP-031, SP-081, and SP-083 are the only springs where He may be present. These three springs were sampled a second time using the silicone tube and syringe for confirmation of the presence of He, however, only SP-081 indicated a possible

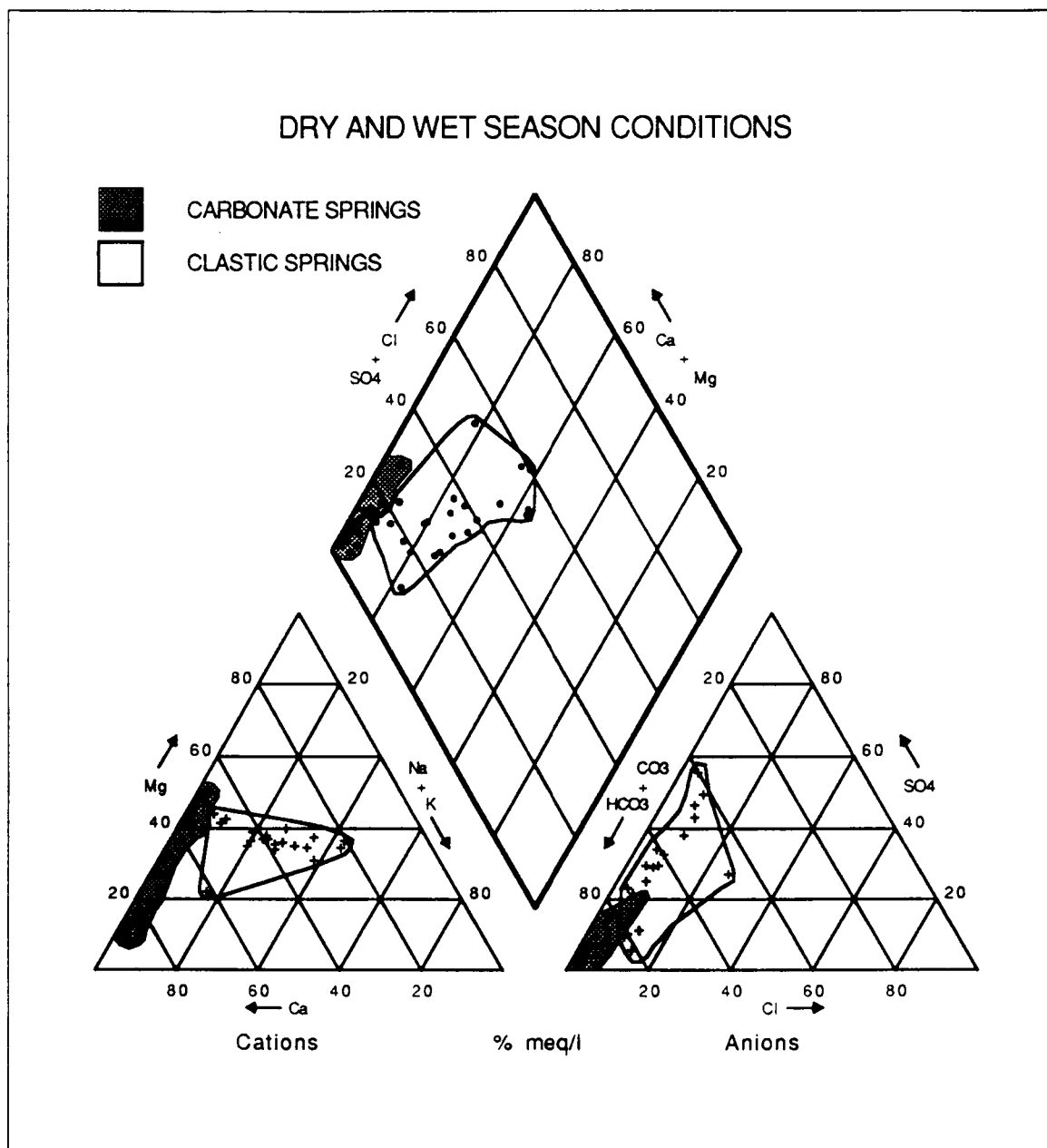


Figure 4.9. Piper diagram exhibiting the groundwater facies distributions of groundwater discharging from springs in both carbonate and clastic lithologies during both the dry and wet seasons. In this and subsequent piper diagrams (Figures 4.11 and 4.12) the •'s are the sum of the +'s.

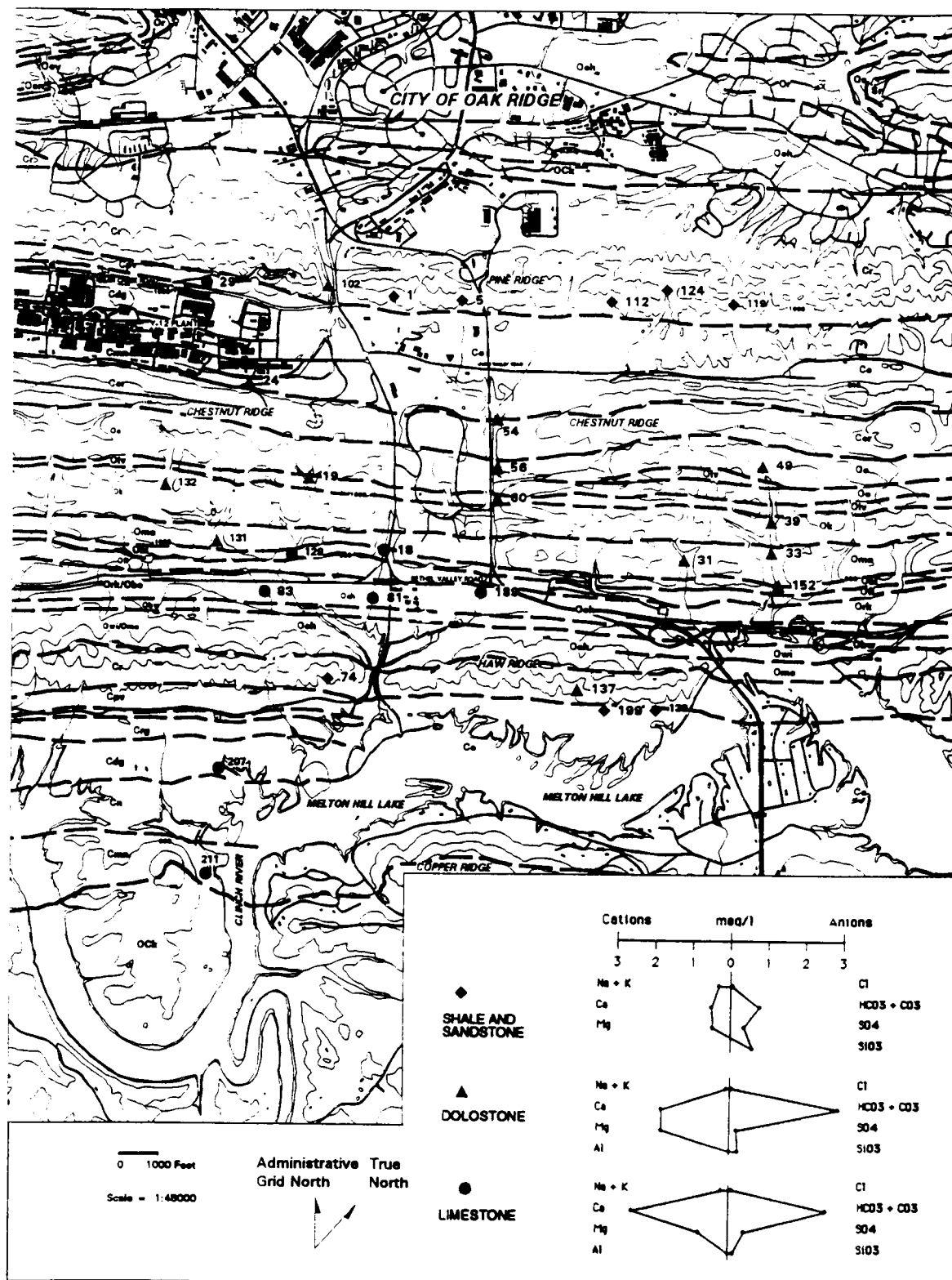


Figure 4.10. Geographic distribution of shale and sandstone, dolostone, and limestone groundwater facies; typical diagrams are shown. See Appendix A for explanations of geologic symbols.

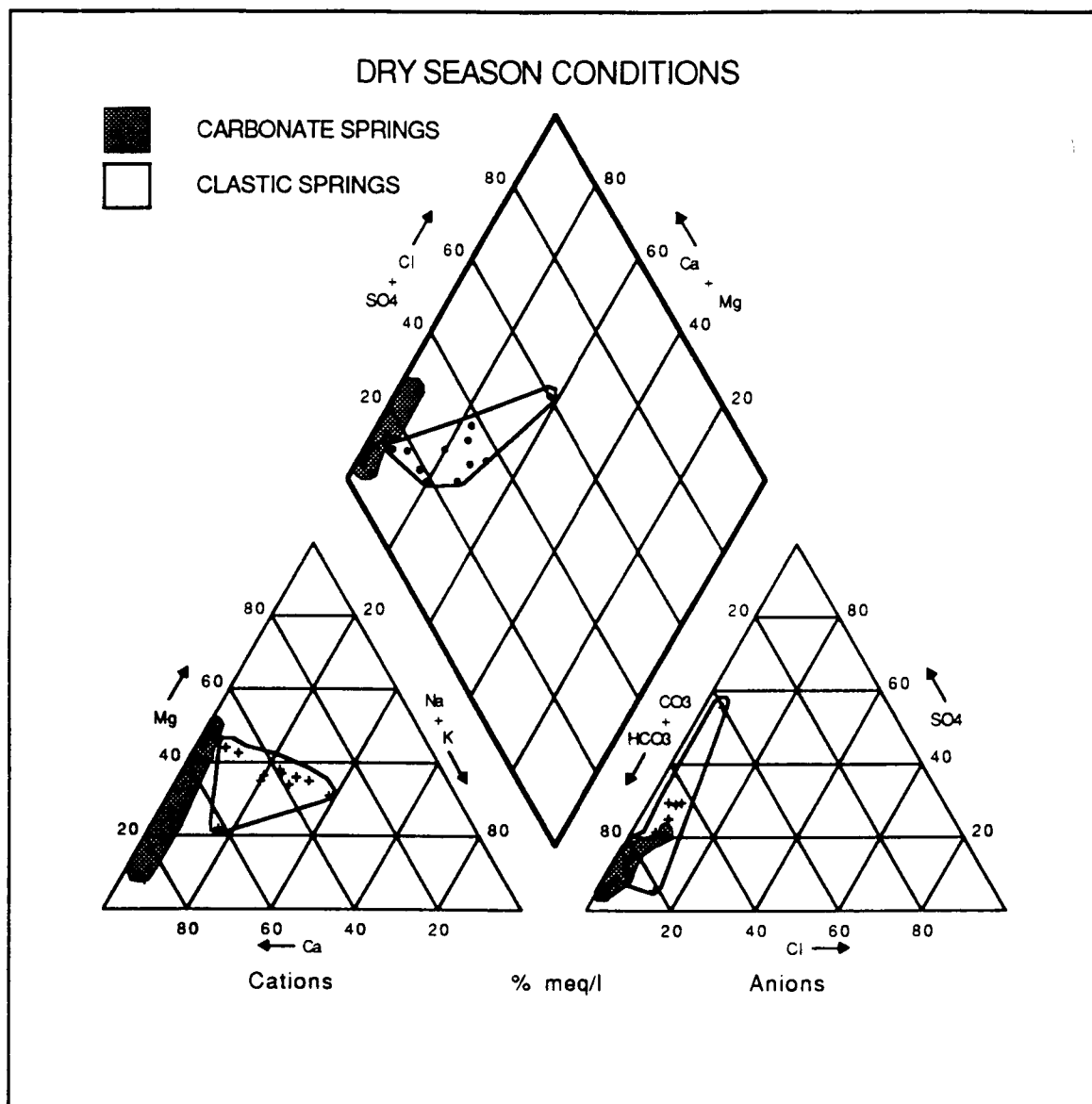


Figure 4.11. Piper diagram exhibiting the groundwater facies distributions of groundwater discharging from springs in both carbonate and clastic lithologies during the dry season (August, 1993).

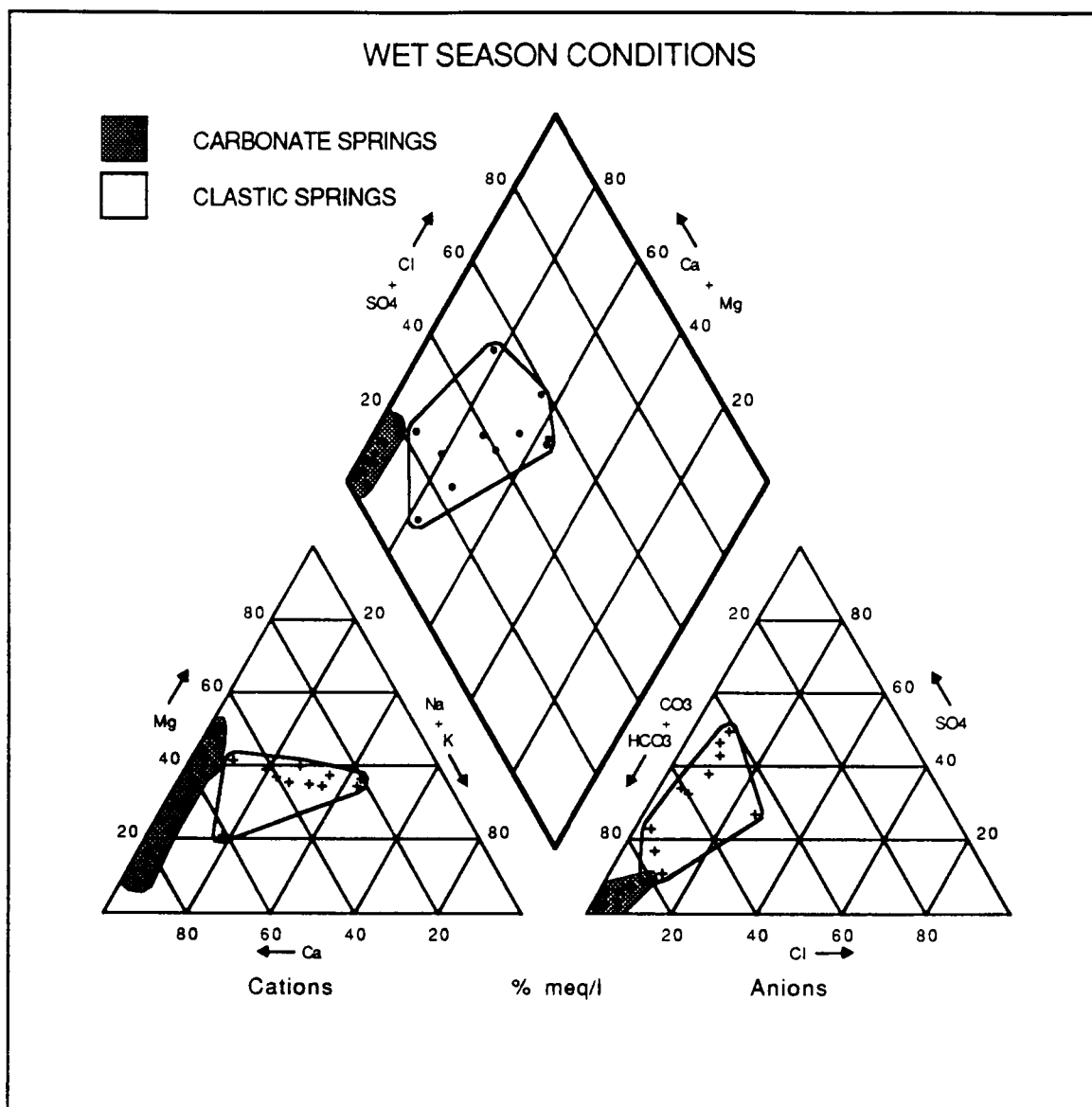


Figure 4.12. Piper diagram exhibiting the groundwater facies distributions of groundwater discharging from springs in both carbonate and clastic lithologies during the wet season (February, 1994).

He peak. Thus the absence of He in most spring discharge water sampling probably indicates non-evolved groundwater flow with recharge from a meteoric source (Table 4.2). However, even if He is present in spring discharge it is easily lost by degassing due to pressure changes and turbulence causing significant water-air interaction, thus the absence of He in samples does not absolutely indicate that there is no evolved deep groundwater contributions discharging at the springs.

Table 4.2. Qualitative detection of He from springs and seeps

Spring	Gas Chromatograph He Peak Observed
SP-001	NO
SP-005	NO
SP-018	NO
SP-019	NO
SP-024	NO
SP-029	NO
SP-031	YES
SP-033	NO
SP-039	NO
SP-049	NO
SP-054	NO
SP-056	NO
SP-060	NO
SP-074	NO
SP-081	YES
SP-083	YES
SP-102	NO
SP-112	NO
SP-119	NO
SP-124	NO
SP-129	NO
SP-131	NO
SP-132	NO
SP-137	NO
SP-139	NO
SP-152	NO
SP-189	NO
SP-199	NO
SP-207	NO
SP-211	NO

Deuterium and Oxygen-18

As conservative tracers, ratios of stable light isotopes (H–O) have applications in determining the origins of spring discharge water. A linear relationship exists between δD and $\delta^{18}O$ that represents the idealized or Global Meteoric Water Line (GMWL; Craig, 1961):

$$\delta D = 8 \delta^{18}O + 10\text{‰} \quad (4-1)$$

A Local Meteoric Water Line (LMWL) for the ORR was determined by Halleran et al. (1994):

$$\delta D = 9.08 \delta^{18}O + 17.5\text{‰} \quad (4-2)$$

The data used to construct this line included 16 months of rainfall sampling in the Walker Branch Watershed on the ORR, approximately two miles southwest of the spring and seep study area. Because of the similarity between the two distributions (GMWL and LMWL) the GMWL is used in this study to describe local precipitation and groundwater recharge (Halleran et al., 1994).

Divergences from the GMWL occur because of enrichment in D and/or ^{18}O by secondary processes such as evaporation, high ($>300^{\circ}C$) and low ($<300^{\circ}C$) temperature water-rock interaction, CO_2 exchange, and H_2S exchange. Examples of water diverging from the GMWL in composition include brines from evaporated sea water, deep sedimentary basins, or hydrothermal solutions (Fritz and Frape, 1982). Divergence of spring discharge water from the GMWL indicates groundwater contributions from a deep evolved system. Water samples were collected in both the dry and wet season sampling event (August, 1993, and February, 1994) for hydrogen and oxygen isotopic analysis

(Appendix D) to determine if divergences from the GMWL occur in the study area spring and seep discharge water.

Analytical results from the isotopic study indicated shallow groundwater flow with recharge from a meteoric source. When plotted against the GMWL and LMWL, the analytical results from the spring water corresponded closely (Figure 4.13). No significant variability in the stable isotope data between the hydrologic units during the dry and wet seasons was observed. Because of insufficient data, the wet season aquitard results of δD and $\delta^{18}O$ could not be evaluated.

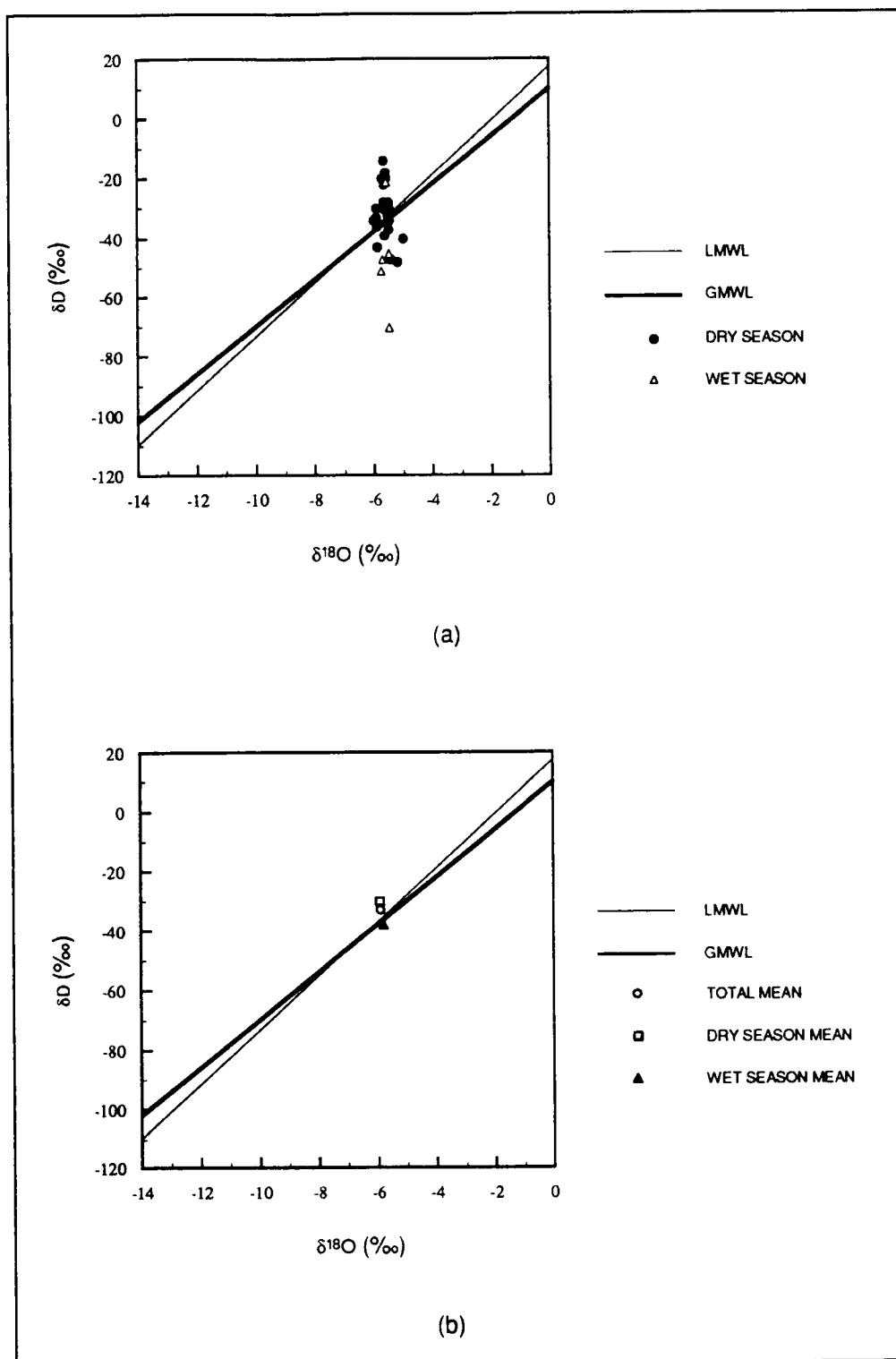


Figure 4.13. δD vs. $\delta^{18}O$ plots from spring water samples during both the wet and dry seasons. (a) represents the plot of values of δD and $\delta^{18}O$ against both the LMWL, determined by Halleran et al. (1994), and the GMWL, (b) represents the plot of mean values of δD and $\delta^{18}O$ against both the LMWL and the GMWL.

SECTION 5

DISCUSSION

SUBSURFACE FLOW

Characterizing Flow Using Measured Physical Parameters

Conduit and diffuse flow are the two end-members of karst aquifer flow and can be estimated by evaluating the variation in geochemical and hydrologic characteristics of springs and seeps that discharge the karst system (Shuster and White, 1971). Conduit flow is identified in a hydrogeologic system by rapid response to rainfall, seen in hydrographs as a prompt increase from baseflow at the onset of a precipitation event and a rapid return to baseflow at the cessation of rainfall. Response to rainfall events is more sluggish in diffuse flow regimes. Quinlan et al. (1991) identified specific conductance, temperature, and yield as useful in the evaluation of end-member flow type. By analyzing individual spring statistics (Appendix E) and trends (Appendix F), a qualitative determination of flow-type can be made.

Temperature variability in spring discharge water has been used in studies by Davies (1991), Blavoux et al. (1992), and Ogden et al. (1993) to determine a system's flow characteristics. The concept behind this technique is established in the range of temperature variability of spring discharge water and lag time response seen following a storm event. Groundwater that flows rapidly and directly from recharge to discharge will not have time to approach the thermal signature of the surrounding bedrock, but will retain the ambient air temperature of precipitation during recharge. Therefore, rapid-flow systems with large passages and conduits or shallow fracture systems have short lag times and display large variability in temperature to reflect ambient air temperature. Groundwater that

flows slowly and follows a complex path from recharge to discharge will acquire the thermal signature of the surrounding bedrock. Therefore slow flow systems, identified by stable temperatures measurements and longer lag times, are characterized as having longer subsurface flowpaths and/or slower diffuse flow.

To evaluate the Knox aquifer and aquitard groundwater systems further, determination of flow category, whether conduit/rapid fracture or diffuse, was made based on analysis of individual springs. Spring yield that is highly variable is considered characteristic of the conduit or rapid fracture flow end-member because the system responds swiftly following a rainfall event. In a karst system, point recharge directly into the conduit system is predominant, with little to no apparent storage, while shallow fracture systems would have short, rapid, dispersed recharge to discharge flowpaths. In contrast, diffuse flow is the result of a karst system that has dispersed recharge, significant storage capability due to geologic conditions, and/or diffuse flow pathways governing the system (Quinlan et al., 1991). Trends of the field parameter time-series data for individual springs were qualitatively analyzed (Appendix F). Data with wide variations are more representative of the conduit or rapid fracture flow end member, while data with narrow variations are more representative of the diffuse flow end member. Simple statistical analyses were performed on the time-series data to determine the coefficient of variation (CV) for individual springs discharging both the karst Knox aquifer and the aquitard units. Typically, this type of evaluation has only been applied to springs of karst systems, but application to the fractured system aquitard springs demonstrates flow that approaches the conduit flow end-member. A spring with a very low CV (< 5 percent) for temperature and/or specific conductance indicates a diffuse flow system and a high CV (> 10 percent) for temperature and/or specific conductance indicates a conduit or rapid fracture flow system (Shuster and White, 1971; Quinlan et al., 1991; Davies, 1991).

Because of limited data available for any spring in the study area (≤ 15 points), statistical significance of variability in each population of parameter data is high, and the determination of conduit/rapid fracture vs. diffuse flow is qualitative at best (Table 5.1). Of the CV's calculated, temperature and yield reveal the lowest and highest variations, respectively. The interpretation of conduit/rapid flow vs. diffuse flow by the temperature CV's along Scarboro Creek can be compared with work performed by Davies (1991). Davies' springs A, B, C, D, E, F, G, H, and K correspond to SP-054, SP-164, SP-055, SP-056, SP-057, SP-058, SP-059, SP-060, and SP-061 in this study. Based on CV's of temperature, 7 (30 percent) of the 23 carbonate springs can be categorized as diffuse flow type springs, 6 (26 percent) indicate mixed flow, and the remaining 10 (44 percent) indicate conduit type flow, while 2 (13 percent) of the 15 noncarbonate springs can be categorized as mixed flow type springs, and the remaining 13 (87 percent) can be categorized as rapid fracture flow type springs. Based on CV's of specific conductance alone, 4 percent (only SP-207) of the carbonate springs can be categorized as diffuse flow type springs, 4 percent (only SP-129) indicate mixed flow, and the remaining 92 percent indicate conduit type flow, while all of the noncarbonate springs could be categorized as rapid fracture flow type springs. If the two parameter CV's are combined, none of the springs can be categorized as diffuse flow type springs, 3 percent (only SP-129) are mixed flow, and the remaining 97 percent are conduit or rapid fracture flow type springs. These results are drastically different than those of Davies (1991) due to the smaller population of temperature values. Therefore, the evaluation of a single parameter with a limited number of data will probably provide a statistically biased interpretation of flow type.

No guidance exists in the literature regarding CV analysis with respect to spring yield, probably because this parameter usually has a very high CV (Table 5.1) due to seasonal rainfall variability. Quinlan et al. (1991) recommend analysis of stormflow-

Table 5.1. Calculated statistical values for detailed survey springs

HYDROLOGIC UNIT	SPRING	TEMPERATURE (°C)			SPECIFIC CONDUCTANCE (umhos/cm)			YIELD (l/min)			GEOLOGIC UNIT	FLOW TYPE THIS STUDY	DAVIES' (1991)
		MEAN	STD DEV	CV	MEAN	STD DEV	CV	MEAN	STD DEV	CV			
KNOX AQUIFER	SP-018	14.05	3.61	25.70	404.62	85.04	21.02	18.84	21.48	113.98	Dolostone	Conduit	-NA-
	SP-019	13.37	1.98	14.83	246.20	90.63	36.81	41.54	37.14	89.41	Dolostone	Conduit	-NA-
	SP-024	14.43	0.45	3.14	750.14	166.12	22.15	121.04	121.37	100.27	Limestone	Conduit	-NA-
	SP-031	13.81	1.13	8.15	260.18	57.10	21.95	39.39	29.69	75.38	Dolostone	Conduit	-NA-
	SP-033	14.06	0.98	6.99	259.65	54.11	20.84	36.52	49.29	134.97	Dolostone	Conduit	-NA-
	SP-039	14.14	0.64	4.54	253.84	55.16	21.73	16.05	39.13	243.82	Dolostone	Conduit	-NA-
	SP-049	13.88	1.22	8.79	227.56	54.34	23.88	85.36	105.83	123.97	Dolostone	Conduit	-NA-
	SP-053	12.98	3.81	29.38	472.98	100.23	21.19	1.01	2.56	253.07	Limestone	Conduit	-NA-
	SP-054	14.51	0.35	2.40	308.52	52.94	17.16	267.45	200.21	74.86	Dolostone	Conduit	Diffuse
	SP-056	14.27	0.61	4.27	310.39	46.42	14.96	132.21	173.35	131.12	Dolostone	Conduit	Diffuse
	SP-060	14.20	0.32	2.22	254.00	46.87	18.45	102.36	49.90	48.75	Dolostone	Conduit	Diffuse
	SP-129	14.33	0.42	2.92	383.56	35.43	9.24	40.94	30.48	74.43	Dolostone	Mixed	-NA-
	SP-131	13.73	1.56	11.38	239.42	78.73	32.88	174.36	165.07	94.67	Dolostone	Conduit	-NA-
	SP-132	14.00	3.43	24.52	159.46	51.71	32.43	2.84	2.51	88.23	Dolostone	Conduit	-NA-
	SP-152	13.40	1.05	7.81	253.12	52.84	20.87	98.62	66.12	67.04	Dolostone	Conduit	-NA-
	SP-211	13.99	1.51	10.80	272.62	72.47	26.58				Limestone	Conduit	-NA-
AQUITARDS	SP-001	15.46	3.24	20.94	84.44	44.59	52.81	10.31	6.52	63.26	SSSH	Rapid Fracture	-NA-
	SP-005	14.64	4.00	27.35	99.03	20.35	20.55	9.33	6.84	73.35	SSSH	Rapid Fracture	-NA-
	SP-016	14.30	5.61	39.21	432.28	73.84	17.08	9.61	15.58	162.21	Limestone	Conduit	-NA-
	SP-029	15.75	6.37	40.46	454.10	104.05	22.91	29.62	26.42	89.22	Shale	Rapid Fracture	-NA-
	SP-074	14.75	3.86	26.16	53.97	9.54	17.67	10.15	7.45	73.40	SSSH	Rapid Fracture	-NA-
	SP-076	12.05	3.55	29.48	78.31	52.81	67.43	0.41	1.09	266.11	SSSH	Rapid Fracture	-NA-
	SP-077	13.29	4.34	32.64	462.83	75.16	16.24	13.81	19.47	140.98	Limestone	Conduit	-NA-
	SP-081	14.53	2.71	18.63	523.02	75.72	14.48	2.01	1.99	99.00	Limestone	Conduit	-NA-
	SP-083	14.53	0.43	2.98	473.11	67.71	14.31	137.68	154.83	112.46	Limestone	Conduit	-NA-
	SP-091	15.60	3.71	23.81	507.87	91.12	17.94	2.33	3.98	170.65	Limestone	Conduit	-NA-
	SP-102	13.68	0.69	5.07	301.38	40.65	13.49	13.07	12.15	92.91	SSSH	Rapid Fracture	-NA-
	SP-105	13.83	4.55	32.89	41.24	16.37	39.69	1.44	1.66	115.21	SSSH	Rapid Fracture	-NA-
	SP-112	14.09	4.46	31.63	63.70	28.01	43.98	4.49	4.24	94.48	SSSH	Rapid Fracture	-NA-
	SP-118	12.64	6.00	47.47	49.21	13.66	27.76	2.16	5.11	236.34	SSSH	Rapid Fracture	-NA-
	SP-119	14.13	3.49	24.67	71.49	25.23	35.29	14.49	7.93	54.69	SSSH	Rapid Fracture	-NA-
	SP-124	13.07	4.25	32.52	80.86	84.89	104.99	15.04	12.20	81.11	SSSH	Rapid Fracture	-NA-
	SP-137	14.81	3.92	26.45	157.58	59.61	37.83	5.73	5.97	104.12	SSSH	Rapid Fracture	-NA-
	SP-139	14.15	1.69	11.95	50.80	12.19	23.95	16.44	8.03	48.86	SSSH	Rapid Fracture	-NA-
	SP-147	10.99	2.21	20.14	769.60	337.81	43.90	6.44	6.04	93.89	Shale	Rapid Fracture	-NA-
	SP-189	15.11	1.47	9.71	437.86	53.39	12.19	11.31	18.99	167.91	Limestone	Conduit	-NA-
	SP-199	14.41	1.24	8.63	62.58	6.67	10.66	44.02	20.01	45.46	SSSH	Rapid Fracture	-NA-
	SP-207	13.57	0.99	7.28	521.63	24.13	4.63	1.44	2.20	152.69	Limestone	Mixed	-NA-

- NA - This notation indicates that the spring was not concurrent to both this and Davies (1991) studies.

baseflow ratio coupled with lag time between storm onset and observable peak increase in spring yield. No lag-time data are available, so only a ratio evaluation is possible. Since no storm event baseflow or stormflow values for yield were determined, minimum values were considered baseflow and maximum values were considered stormflow. Based on this ratio evaluation, all of the 21 carbonate springs are very sensitive discharge points. Sensitivity implies point recharge, medium to high storage, and conduit flow to the karst aquifer. For the carbonate springs the lowest stormflow-baseflow ratio was in spring SP-060 (7:1), and the highest real value ratio was in spring SP-039 (754:1). Ephemeral springs (SP-016, SP-053, SP-076, SP-077, SP-081, SP-091, SP-105, SP-118, SP-147, and SP-189) and SP-211 had a baseflow yield of zero; thus, the stormflow-baseflow ratio for these springs approaches infinity. The noncarbonate springs cannot be fit into the carbonate aquifer classification scheme since they discharge a predominantly much shallower local groundwater system, however, they are characterized by dispersed recharge, low to medium storage, and rapid fracture flow.

The Knox Aquifer

Subsurface flow through the Knox aquifer generally conforms to the conceptual model presented by Moore (1988) and Solomon et al. (1992a). The Knox aquifer is a karst system that can be characterized based on the physical attributes of naturally discharging springs and seeps. The karst system within the study area is characterized by a mix of conduit and diffuse flow properties. This system consists of moderately dipping fractured and faulted mature carbonate rocks, and, rather than stair-stepping parallel to the land surface as seen in horizontal karst, plunges down dip and along strike, solutionally carving a possibly deeper, more mature and much more convoluted flow system. The end result is a mature, dominantly conduit flow karst system consisting of end-member characteristics such as large conduits, flashy point recharge, and low storage.

The high mean value of specific conductance in the Knox aquifer is related to a longer residence time of water in the subsurface and higher content of soluble minerals of the rock (Figure 4.3). Longer residence in the subsurface gives groundwater more opportunity to interact with the carbonate host rock through which it is moving. The soluble nature of the dolostone and limestone beds of the Knox aquifer provide for active water-rock interaction, which result in ever-enlarging cavities and conduits inherent to a karst system. These same dissolution processes operate in the aquitards, but they are generally not as dramatic because of shorter flow paths and lower residence time of recharge water, and/or the lower content of highly soluble minerals of the rock. The variability observed between the dry and wet seasons can be attributed to the dynamics of the flow system. Specific conductance of typical precipitation is extremely low (2 – 42 $\mu\text{mhos/cm}$; Hem, 1985), so during the wet season, when the influence of rainfall is greatest, a lower mean specific conductance is expected and observed (Figure 4.4).

Temperature variability in spring discharge water from the Knox aquifer was low, showing little change during the year (Figure 4.2). Some seasonal effects are observed in the monthly monitoring plots of temperature (Appendix F), but these are fairly subdued overall. This indicates that most of the discharge water measured has been able to thermally equilibrate with the host rocks. Consequently, flowpaths in the Knox aquifer are deeper than 10 m below ground surface where ambient air temperatures are unable to influence water temperature. Influences from the shallower system (<10 m) are observed in some springs discharging the Knox aquifer, indicating that the stormflow and vadose zones are active and do contribute shallow water to spring discharge in this hydrologic unit.

Springs discharging from the Knox aquifer account for 70 percent of the total spring yield, despite representing only 26 percent of the observed springs. This is due to the influence of the deeper (> 10 m) karst groundwater system in the Knox aquifer as compared to the shallow fracture flow system of the aquitards. The hydrologic system of

the Knox aquifer is well connected by fractures and solution conduits. The shallow flow system still plays a major role in the hydrologic system of the Knox aquifer, although a larger percentage of water probably contributes to the saturated zone than estimated during previous studies. Water infiltrates the karst subsurface system through open surface-subsurface connections, such as sinkholes, swallets, losing reaches of tertiary drainages and streams, and less permeable pathways through the soil. The more open and permeable pathways provide the bulk of the recharge to the groundwater zone, which is why subsurface residence of spring discharge water in the Knox aquifer is higher than that of the aquitards. Karst springs with sustained flow from a carbonate rock outcrop account for most of the spring yield from the Knox aquifer. Moreover, the highest values of spring yield in both hydrologic units are all karst springs such as springs SP-054, SP-056, SP-131, and SP-083 (Figure 4.7). It is important to note that spring SP-083, for the purposes of this study, is classified as an aquitard spring because it discharges from a formation of the Chickamauga Group, however, physical and chemical characteristics of this spring are more closely related to those of the Knox aquifer.

A water balance was performed to compare groundwater zone discharge for the portion of the site underlain by the Knox aquifer with discharge values for the portion underlain by the aquitards. The water balance, per unit area, for either the aquifer or the aquitards is given as follows, assuming steady-state flow conditions (which requires that there is not net change in storage of surface water, soil moisture, or groundwater within the system):

$$P = E + Q \quad (5-1)$$

where

P = annual precipitation (cm/year)

E = annual evapotranspiration (cm/year)

Q = annual discharge (cm/year)

The annual discharge, Q, can be subdivided, as follows:

$$Q = Q_{SR} + Q_{SF} + Q_G \quad (5-2)$$

where

Q_{SR} = contribution from surface runoff (cm/year)

Q_{SF} = contribution from the "storm-flow" zone which exists as shallow, perched water table areas during and immediately after many precipitation events (cm/year)

Q_G = contribution from groundwater flow in the saturated zone (cm/year)

If it is assumed that all water discharges from the area of the aquifer or aquitards by evapotranspiration or streamflow (hence, there is no discharge to groundwater systems outside of the boundaries of the geologic units), and groundwater flow from the saturated zone is the source of all water discharging from the springs, then Q_g equals Y_t , the total yield (in m^3/year) from all the springs within a hydrologic unit with surface area, A. Expressing the groundwater discharge as a percentage of the total discharge gives:

$$Q_g = \frac{Y_t}{QA} \times 100 = \frac{Y_t}{A(P-E)} \times 100 \quad (5-3)$$

The results of these calculations are shown on Table 5.2 and Figure 5.1 and are based on the following data or estimates. The total precipitation in the study area during the period

Table 5.2. Components and results of equations 5-1, 5-2, and 5-3 calculations comparing estimated surface and subsurface contribution to total yield of springs within the study area.

	5-1 thru 5-3	Knox aquifer	Aquitards
Yearly precipitation (cm)	P	150	
Yearly evapotranspiration (cm) = $0.57 \times P$	E	85.5	
Yearly surface and subsurface contribution (cm)	$P-E = Q$	64.5	
Total yield (m^3/year)	Y_t	1.15×10^6	2.0×10^5
Estimated unit surface area (m^2)	A	6.97×10^6	1.02×10^7
Estimated surface and subsurface contribution (m^3/year)	$A(P-E)$	4.50×10^6	6.58×10^6
Stream and subsurface contributions that can be attributed to groundwater discharge (%)	Q_g	26	3
Estimated groundwater zone discharge (cm/year)	Q_G	16.8	2.0

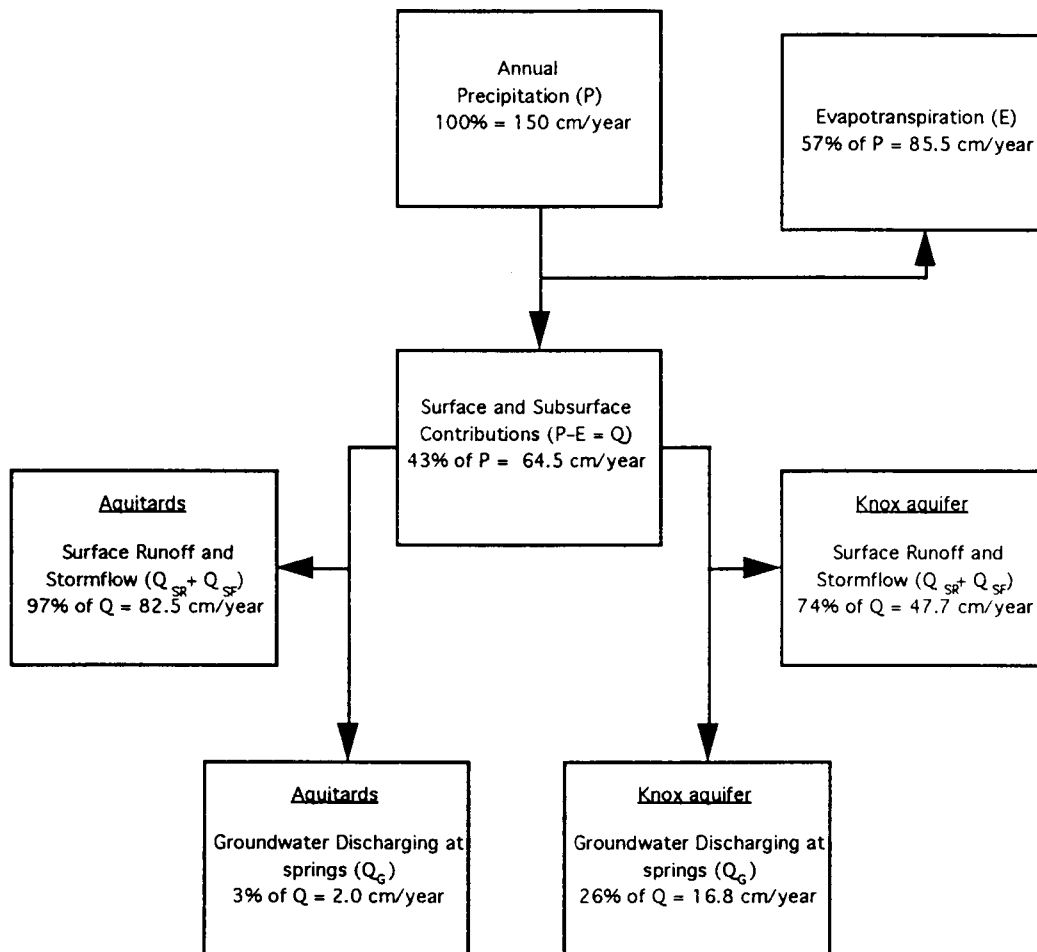


Figure 5.1. Schematic of water budget calculation using precipitation and spring yield data.

of the detailed study, July, 1993 to August, 1994, was 150 cm (NOAA, 1994). An average of 57 percent of precipitation is assumed to be consumed by evapotranspiration with the remaining 43 percent accounting for streamflow (Solomon et al., 1992a).

Some errors may exist, because the values used in these calculations are estimates. Precipitation may not have occurred uniformly over the total area of the hydrologic units potentially causing an overestimate or underestimate in surface and subsurface contribution. Evapotranspiration is very difficult to quantify, therefore, the value of 57 percent may be in error. An overestimation of the yearly spring yield could potentially be another error in these calculations. For example, water may discharge from one spring, flow downstream and recharge the subsurface again and later discharge from another downgradient spring. As a result, some proportion of the yearly spring yield for each of the hydrologic units may be counted more than once. Because springs were monitored on a monthly basis, spring yield measurements may not accurately reflect total yield of the hydrologic unit. Throughout the course of this study, field measurements have a bias towards periods of low precipitation which causes an underestimation of yield values. Some springs within each of the hydrologic units may not have been accounted for due to vegetation coverage, ephemeral discharge, or direct discharge to a stream channel, which could cause an underestimation of yield.

The evaluation of total annual yield with respect to surface and subsurface flow contributions from precipitation revealed that saturated groundwater movement in the Knox aquifer may be greater than earlier estimates predicted. Based on the assumption that all of the spring discharge is coming from the saturated groundwater zone, the results of these simple water budget calculations in Table 5.2 reveal that 26 percent (16.8 cm/year) of the stream and subsurface flow contributions from precipitation is discharging from the groundwater zone (Figure 5.1). Estimates by Moore (1988) and Solomon et al. (1992a) indicate that only about 10 percent (6.5 cm/year) of the stream and subsurface flow

contributions from precipitation recharges the groundwater zone. This is an underestimation of groundwater recharge, based on the calculated groundwater discharge of 16.8 cm/year. There must be at least 16.8 cm/year of recharge in order to balance the water budget, and, because of the bias towards periods of low precipitation, the groundwater zone recharge may be even higher. The higher rates of groundwater discharge observed probably indicates that the population of springs for the Knox aquifer monitored during this study is representative of the system, and no significant groundwater discharge remains unaccounted for. There may be some component of shallow system flow (e.g., stormflow zone) contributing to spring discharge, therefore, the assumption that the springs are the characteristic discharge mechanism of the saturated groundwater flow system of the karst Knox aquifer may be suspect, but field parameter measurements tend to support a predominantly groundwater zone discharging system.

Even though only a subset of pH measurements from the detailed survey monthly monitoring was considered reliable, pH trends observed may be evaluated. An inverse trend between precipitation and pH was consistently seen in spring water discharging carbonate lithologies. This trend could indicate that the Knox aquifer and carbonate units within the aquitards have a component of point recharge-rapid conduit subsurface flow-spring discharge. The pH of precipitation is consistently lower than the pH of subsurface water, as discussed by Hem (1985). Because of this, the pH of subsurface water decreases following storm events, which recharges the subsurface system directly, through point sources such as sinkholes, swallets, and other direct pathways into a conduit system, to rapidly discharge lower pH water at springs. An additional process lowering the pH during storm events is the increase in the partial pressure of CO_2 (P_{CO_2}). As water recharges the subsurface system, the P_{CO_2} increases due to a higher concentration in the soil caused by respiration and decay of organic material, this in turn decreases the pH, potentially as much as 1 pH unit (Drever, 1982). This decrease in pH and increase P_{CO_2}

increases dissolution of carbonate minerals such as CaCO_3 and $\text{CaMg}(\text{CO}_3)_2$. During dryer periods, after the low pH pulse of water has discharged the subsurface rapid-flow conduit system, pH increases as water from more diffuse systems, such as less permeable fractures, is depleted in P_{CO_2} through the dissolution of CaCO_3 and $\text{CaMg}(\text{CO}_3)_2$.

Aquitards

Subsurface flow through the aquitards generally conforms to the conceptual model presented by Moore (1988) and Solomon et al. (1992a). The majority of the springs and seeps in the aquitard units (Rome, Lower Conasauga, and Chickamauga) reveal shallow groundwater flow based upon their discharge water characteristics. This is indicated by highly variable field parameters, strong precipitation and biological influences, and the large number of discharge points over the area of the aquitards, many of which are ephemeral.

Specific conductance values of spring discharge water from the aquitards is generally very low (Figure 4.3). This is due to the predominantly shallow, short flowpath subsurface flow system of these hydrologic aquitards and the relatively lower solubilities of the mineralogies of the shale, mudstone, siltstone, and sandstone lithologies. As observed in the specific conductance distributions of the Knox aquifer, wet season conditions caused a decrease in the mean value (Figure 4.4).

Temperature variation of spring discharge water from the aquitards is high due to climatic and seasonal influences (Figure 4.2). The shallow (<10 m) subsurface flow processes that dominate in the aquitards inhibit the equilibration of subsurface water with the host rock. During the colder wet season, water discharge temperatures were observed to be lower than those of the hotter dry season. The monthly measurement plots of spring discharge water temperature (Appendix F) emphasize this point.

The spring yield distribution of aquitards is lognormal with a geometric mean of 2.26 l/min. (Figure 4.7). The majority of measurement of yield observed were very low and indicates that discharge from the aquitards is dispersed over the entire area. This further supports the conceptual model of a shallow system with short recharge to discharge flowpaths. The evaluation of total yearly yield with respect to surface and subsurface flow contributions from precipitation indicates that the existing conceptual model of predominantly shallow flow of subsurface water of the aquitards is correct. As assumed for the Knox aquifer, all of the spring discharge is coming from the saturated groundwater zone, the results of these simple water budget calculations in Table 4.2 reveal that 3 percent (2.0 cm/year) of the stream and subsurface flow contributions from precipitation is discharging from the groundwater zone. Estimates of recharge by Moore (1988) and Solomon et al. (1992a) correlate well with this observation. The rates of groundwater discharge observed verify that the population of springs for the aquitards monitored during this study is representative of the system. In other words, groundwater discharge from the aquitards, unaccounted for during this study, may not be significant. The dispersed nature of recharge of the subsurface flow system of the aquitards and the dominance of shallow flow could mean that an even higher recharge rate of the saturated groundwater system exists. Discharge from the saturated zone to the stormflow zone and then directly to surface water is highly likely to be an example of a discharge component unaccounted for during this study. Nevertheless, the assumption that the springs are characteristically the discharge mechanism of the shallow saturated groundwater flow system of the aquitards is probably valid.

Two trends in pH of spring water discharging the aquitards were observed. Unlike the trend observed in pH from the Knox aquifer they are more seasonal in nature. One trend in pH measurements is a gentle increase attributed to increasing photosynthetic activity from early spring to mid-summer (Stumm and Morgan, 1981). This trend was

seen predominantly in shallow (< 10 m) aquitard discharge, since photosynthesis influences are greatest in the organic rich shallow subsurface. Knox aquifer springs SP-019, SP-033, and SP-049 also reflected this trend, indicating that some shallow flow component is present in groundwater discharging from these springs. The other trend observed is a gentle decrease in pH attributed to respiration and decomposition of organic matter (Stumm and Morgan, 1981). Again, this is a shallow system process which occurs predominantly in low yielding, highly biota-active springs of the aquitards, but spring SP-018 of the Knox aquifer also reflected this trend. It is uncertain why this trend appears in spring SP-018 discharge since yields during this period were between 20 – 250 l/min. Since this spring is located on the western edge of Scarboro Road, one possible explanation may be an increasing influence of contamination by anthropogenic activities, such as roadside dumping or automobile exhaust emissions, as precipitation decreases and evapotranspiration increases from March to July, 1994.

In general, aquitard springs contain a larger component of shallow stormflow, vadose, or water table groundwater zone flow than aquifer springs, however, a few exceptions were noted. In these cases, the particular geological or structural setting of the spring may influence the physical and chemical characteristics of the discharging water. Spring SP-083 discharges parallel to strike from Chickamauga Group limestone, possibly even from a solutionally enlarged unit contact between the Rockdell Formation and the overlying Benbolt Formation. Thus, deeper (> 10 m) groundwater contributions allow for equilibrated water temperatures within a small range, high specific conductance, high yield, and the inverse relationship between precipitation and pH. Spring SP-102 is a strike-parallel groundwater discharge point. The unusual element of this spring is that it is discharging from the Rome Formation at the base of the Pine Ridge water gap made by Upper East Fork Poplar Creek. Based on the description of the Rome Formation by McReynolds and Driese (1994), this spring discharges the highly transmissive dolomitic

portions of the Rome Formation. Spring SP-129 is discharging from the Blackford Formation of the Chickamauga Group aquitard. Therefore, it is hydrologically downgradient of the Knox aquifer. This setting may help to explain how this spring discharges water that has been able to equilibrate with bedrock, possibly through a karst hydrologic system. Spring SP-199 discharges perpendicular to strike in the lower Conasauga Group, probably the Pumpkin Valley Shale. The channel bed is composed of clastic debris including a fine quartz sand indicative of the Upper Rome Formation quartz arenites, or of surficial winnowing of soils leaving a residuum of quartz sand (Haase et al., 1985). The presence of this quartz sand could suggest a fracture pathway from the groundwater zone of the Rome Formation to the spring. Spring SP-207 discharges parallel to strike from the Dismal Gap Formation (formerly Maryville Limestone). The low flow characteristics and extremely stable specific conductance values obtained from spring SP-207 indicate a very diffuse flow fracture system which permits thermal equilibration of the water with the subsurface medium.

The hydrologic system of the aquitards is more widely distributed with dispersed recharge, whereas the Knox aquifer has a poorly distributed hydrologic system because of point recharge. This is indicated by the larger number of aquitard springs with lower average yield. The shallow system of the aquitards (stormflow, vadose, and water table interval groundwater zones) is well connected by a highly weathered and fractured saprolite with relatively impermeable rock below. The present study indicates rapid spring discharge response to storm events from the aquitards as: 1) precipitation begins and increases in intensity; 2) water infiltrates the unsaturated stormflow and vadose zones; 3) ephemeral springs fed by these transient, saturated zones begin to flow; 4) pore space is rapidly filled (hydraulic head increasing), exerting pressure on the water table interval which feeds perennial springs; 5) an increase in perennial spring yield occurs with the increase in pressure (head); 6) stormflow and vadose zones become saturated and overland flow

occurs; 7) precipitation declines and ceases; 8) overland flow declines and ceases; 9) ephemeral spring yields decline and cease as zone drains; 10) perennial spring yield declines as water pressure (head) returns to baseflow conditions. This sequence of events is typical during colder wet season conditions when evapotranspiration is at its lowest. During the warmer dry season, very little storm response is observed in streams or springs due to a soil water deficit (R. B. Clapp, personal communication, 1995). During the early part of the dry season (March to July, 1994) this deficit is not observed to be as significant. Yield values from springs on the southeast side of Pine (SP-005, SP-112, and SP124) and Haw Ridges (SP-074, SP-137, and SP-139), and from SP-207 potentially exhibited influences from precipitation during this period (Appendix F). During the end of the dry season (August to November, 1993) there is very little direct correlation between spring yield and precipitation.

GROUNDWATER FACIES

Groundwater can be classified based on the major and minor ion concentrations or relative abundances. In this study, differences were noted in the chemistry of spring discharge water with respect to lithology and hydrology (Figure 4.9). Springs that discharge from carbonate (Dismal Gap Formation, Maynardville Limestone, Knox Group and Chickamauga Group) and the clastic (Rome Formation and Conasauga Group) lithologies are revealed in this Piper diagram as distinct groups of ion chemistry (Piper, 1944). Carbonate spring discharges can be classified as Ca-Mg-HCO_3^- type water. Water discharging from clastic lithologies are $\text{Ca-Mg-HCO}_3^- \text{--Cl}^- \text{--SO}_4^{2-}$ type water. These different types of water are logical, considering the chemical compositions of the host rocks. Boggs (1987) and Klein and Hurlbut (1985) indicated that carbonate rocks would

be depleted in potassium, sodium, and sulfur with respect to typical clastic rocks. None of the water quality data indicates any correlation between these water-type differences and residence time.

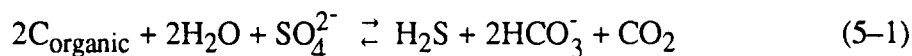
Individual Stiff diagrams (Appendix G) reveal water chemistry signatures of some springs that indicate lithologic contributions (Stiff, 1951). Springs that discharge the Knox Group have a very distinct signature (springs SP-031, SP-033, SP-039, SP-049, SP-054, SP-056, SP-060, and SP-152) with an equivalent proportion of Ca^{2+} and Mg^{2+} and significant concentrations of HCO_3^- . Spring SP-102, which discharges from the dominantly clastic Rome Formation, also has this signature. The most plausible explanation for this signature is that the major contribution of subsurface water discharging from this spring is flowing through and equilibrating with dolomitic layers in the Rome Formation at Pine Ridge similar to such layers observed and described by McReynolds and Driese (1994) at Haw Ridge. Elevated SiO_2 concentration indicates some clastic influence in subsurface flow through the Rome Formation. A more subdued, but similar, response in other Rome Formation springs indicate that these dolomite-rich layers are a primary pathway in the subsurface hydrologic system of this unit.

Spring SP-024 discharges from the Maynardville Limestone of the Conasauga Group and reflects the dolostone signature. This may indicate the primary recharge source for this spring is the upper dolomite layers of the Maynardville Limestone and possibly the Knox Group, indicating that there may be direct hydrologic communication between these two units.

Springs that discharge a limestone unit, possess a distinctly shaped Stiff diagram (e.g., Springs SP-018, SP-081, SP-083, SP-189, SP-207, and SP-211; Appendix G) defined by high calcium and bicarbonate concentrations. Spring SP-029 discharges the Pumpkin Valley Shale and exhibits this limestone signature, which may indicate major flux through the Friendship Formation (formerly Rutledge Limestone) (Figure 4.10).

Water quality signatures for most springs retain the general Stiff diagram shape but exhibit a decrease in the ion concentrations from dry to wet seasons. This is related to an increase in precipitation, and subsequent increasing shallow water contributions occurring during the wet season. Springs that exhibit this phenomenon undergo changing proportions of water contributions. The greater the difference in shallow water contributions between the dry and wet seasons, the more significant the change in the Stiff diagrams. For example, practically no change in the Stiff diagrams is noted between dry and wet season for spring SP-054 due in part to the longer residence time of all water contributions to the spring yield. This longer residence time from precipitation recharge and infiltration to spring discharge indicates that spring SP-054 is not very sensitive to shallow water contributions. The opposite occurs in spring SP-019 where the difference between dry and wet season shallow water contributions markedly decreases the ion concentrations.

Differences in the major ion distributions between the dry and wet season sampling events were observed (Figures 4.11 and 4.12), but were generally not considered significant. In the Rome Formation salt casts have been observed, possibly suggesting the presence of evaporite forming conditions during deposition. Because of the depositional environment, gypsum may have been deposited as well, although there is no substantiating evidence of this. This may account for the presence of SO_4^{2-} observed in spring water discharge from the Rome Formation. Springs discharging perpendicular to strike from the southeast side of Pine Ridge (SP-001, SP-005, SP-029, SP-112, SP-119, and SP-124) displayed an increase in SO_4^{2-} during the wet season sampling event. One plausible explanation for this is the increased activity of aerobic bacteria during warmer seasonally dry conditions (Freeze and Cherry, 1979). The organisms consume organic carbon and SO_4^{2-} in the following simplified equation by Drever (1992):



Carbon in organic matter consumed by bacteria during this process is represented as C_{organic} . This would cause a lower SO_4^{2-} concentration during warmer seasonally dry periods. During the colder wet season the bacteria are less active and have a more abundant supply of dissolved oxygen because of increased precipitation and subsequent spring yields. Furthermore, a petroliferous odor caused by the volatilization of H_2S was occasionally detected during both dry and wet season periods, providing evidence to support this process. Spring SP-029 also has an increased Cl^- concentration which may be explained by the introduction of rock salt from deicing activities on a road upgradient from the spring approximately 30 days prior to the wet season sampling event, as described in a later section.

POTENTIAL DEEP (EVOLVED) GROUNDWATER CONTRIBUTION

This study has provided data that strongly support the dominantly shallow subsurface flow conceptual model proposed by Moore (1988) and Solomon et al. (1992a). However, some qualitative evidence of a deeper, evolved flow system was observed. It is possible that deeper, evolved groundwater is contributing to the spring discharge water in such low amounts that mixing effects by the shallow hydrologic system masks their presence. Chloride (Cl^-), bromide (Br^-), sulfate (SO_4^{2-}), helium (He), and stable H and O isotope compositions were indicators evaluated to determine the presence of this deeper evolved basinal hydrologic system.

Chloride (Cl^-)

Evaluation of Cl^- reveals a concentration range from the dry season of 1.5 – 17.0 mg/l with a mean value of 3.3 mg/l. Hem (1985) indicates that this range of concentrations falls within the typical range of rainfall values. Some springs (Springs SP-018, SP-029, SP-054, SP-081, and SP-083) have elevated Cl^- levels during the wet season, but these can be attributed to road salting and deicing activities on roadways upgradient of these springs.

Bromide (Br^-)

Concentrations of Br^- in both dry and wet seasons spring discharge water are below the analytical detection limit of 1.0 mg/l. Seawater has a typical Br^- concentration of 65 mg/l, and sedimentary basin brines have Br^- concentrations characteristically in the 1000's of mg/l (Nativ and Hunley, 1993). Because typical Br^- concentrations in rainfall and snow range from 0.005 to 0.150 mg/l, the hydrologic system is likely to derive the bulk of its Br^- from precipitation (Hem, 1985). If higher concentrations of this anion (e.g., > 1.0 mg/l) were detected, deep evolved groundwater contributions may be indicated.

Sulfate (SO_4^{2-})

Sulfate-type water is considered to dominate intermediate to deep groundwater intervals. Because of the organic consumption of SO_4^{2-} during the dry season, wet season concentration distributions were evaluated as a baseline. The range of SO_4^{2-} values during the wet season was 0.47 – 40.0 mg/l with a mean of 7.3 mg/l. For spring discharge water from the Knox aquifer, the origin of SO_4^{2-} is primarily precipitation, which typically ranges from 1.0 to greater than 10 mg/l (Hem, 1985). Evaporite mineralogies, such as gypsum, anhydrite, and celestite will produce higher SO_4^{2-} values in groundwater, and these minerals, as well as disseminated sulfides (pyrite and marcasite), have been observed

in the intermediate and deeper groundwater intervals of the Knox aquifer (Shevenell et al., 1992; Saunders and Toran, 1992). For springs discharging from the aquitards, the origin of SO_4^{2-} contributions are uncertain. Shale commonly has a higher SO_4^{2-} proportion than limestone, dolostone, or sandstone (Klein and Hurlbut, 1977). In support of this, minor amounts of sulfides (pyrite and barite) have been observed in the Nolichucky Shale and Pumpkin Valley Shale units of the Conasauga Group (Haase, 1983; Lee et al., 1988; Baxter, 1989 in Toran and Saunders, 1992). Spring SP-029, discharging from the Pumpkin Valley Shale, does have the highest SO_4^{2-} concentrations (40 mg/l) of the 30 springs sampled during the wet season, however, Stiff diagrams (Appendix G) indicate a significant limestone host rock influence. The next two highest concentrations observed are from springs SP-081 (22.0 mg/l) and SP-083 (13.0 mg/l), both discharging from the Benbolt Formation of the Chickamauga Group. These two springs have high values of specific conductance, TDS, thermal stability, and the presence of detectable He suggesting that the spring discharge water may originate from deep evolved groundwater, having a longer flowpath from the recharge source. This observation is reasonable because these springs occur in a topographic low.

Helium (He)

In general, Helium is present in shallow groundwater at concentrations up to 20 percent greater than atmospheric solubility ($46.5 \times 10^{-6} \text{ cm}^3/\text{kg}$ of He in water at STP). The source of this He is primarily atmospheric, with the He dissolved in precipitation and transported to the subsurface hydrologic system (Poreda et al., 1988). Geologically old and deep groundwater contains He as a decay product from radioactive constituents. This radiogenic He is present in deep groundwater basins at concentrations 100 – 100,000 times higher than the atmospheric solubility concentration (Solomon et al., 1992b). Therefore, excessively high He concentrations indicate water from these deep groundwater source

areas. Although He concentrations were not quantitatively determined in this study, chromatograph peaks for He were obtained from springs SP-031, SP-081, and SP-083 (Table 4.3). All of these springs are in a topographic low where discharging groundwater could conceivably be originating from greater distances. Therefore, the data obtained could be indicative of deep basinal groundwater, with longer residence time, contributing to the discharge water.

Oxygen-18 ($\delta^{18}\text{O}$) and Deuterium (δD)

Concentrations of oxygen-18 ($\delta^{18}\text{O}$) and deuterium (δD) indicate recharge influences. Shallow, precipitation influences are indicated by close agreement with the GMWL, while deeper basin water is indicated by divergences away from the GMWL (Fritz and Frape, 1982). Divergence in the latter case would be due to enrichment in D and/or ^{18}O by secondary processes such as evaporation, high and low temperature water-rock interaction, CO_2 exchange, and H_2S exchange (Fritz and Frape, 1982). Because $\delta^{18}\text{O}$ and δD values from both the dry and wet season sampling events plotted close to the GMWL, these isotopes suggest that water discharged from the sampled springs are being recharged by recent precipitation, and are not indicative of deeper evolved groundwater origins. Temperature and evaporation effects are observed in the scatter of the data (Figure 4.13a). The scatter in the δD values can be attributed to temperature effects. Deuterium is very sensitive to changes in temperature, with enrichment occurring during warmer periods and depletion occurring during cooler periods. The very small scatter in the $\delta^{18}\text{O}$ values can be attributed to shallow system evaporation processes. The warmer dry season $\delta^{18}\text{O}$ values show the wider range when the evaporation effect is greatest, whereas, a very narrow range of $\delta^{18}\text{O}$ values is observed during the cooler wet season when the evaporation effect is not as prevalent. No indication of water-rock interaction or gas exchange is apparent.

POTENTIAL GROUNDWATER CONTAMINATION

Because of the known historical land usage of most of the study area, groundwater contamination potential is a concern to both the generators of contamination and the end users of water. Thus, spring analytical data were evaluated against federal Environmental Protection Agency (EPA) primary and secondary maximum contaminant levels (MCLs).

Evaluation of filtered and unfiltered analytical results from both the dry and wet seasons revealed that water quality was very good overall, with concentrations of analytical values predominantly below the MCLs. Springs noted with analyte values above the MCLs are discussed in more detail to attempt to explain the controlling processes on water quality. Furthermore, it is important to note that filtering of samples was only performed for metals analyzed by the ICP and fluorometric techniques (Table 3.3).

The unfiltered water sample from spring SP-112 taken during the dry season exceed the primary MCLs for Cd and Pb, and exceed secondary MCLs for Al and Fe. Although the concentrations of Ba, Be, Cr, Cu, Ni, V, and Zn in this sample were below MCLs, they were higher than those of any of the other springs sampled during both sampling events. These high concentrations can be attributed to colloidal transport related to the highest total suspended solids concentration present in this sample than in any others during either sampling event. The filtered sample for these same constituents are all low and do not exceed the MCLs. Spring SP-112 is located high on the southeastern slope of Pine Ridge in a forested area; therefore, these elevated metal concentrations are considered to be naturally occurring and have a natural source.

The unfiltered water sample from spring SP-029, collected during the dry season, exceeded the primary MCL for Se and exceeded the secondary MCL for Mn. This sample had a total suspended solids concentration of 33.0 mg/l, which can account for these high concentrations, because filtered samples yielded concentrations of these constituents that

were below the MCLs. Spring SP-029 is located on the southeastern slope of Pine Ridge hydrologically upgradient from the Y-12 Plant. Therefore, the presence of these constituents in such high concentrations can also be attributed to colloidal transport.

De-icing activities are a potential groundwater contamination source of chloride and nitrogen, as indicated by analytical results from springs with shallow rapid flow-through contributions within close proximity of maintained roads. Two snowstorms in which road salt may have contributed to the chloride concentrations in six downgradient springs occurred on December 23, 1993, with 12.7 cm (5 in.) of snow accumulated, and on January 17, 1994, with 2.5 cm (1 in.) of snow accumulated (NOAA, 1994). Even though none of the springs exceeded the MCL of 250 mg/l for chloride, a marked increase in chloride concentration was noted during the winter (wet season sampling event) in springs SP-018, SP-024, SP-029, SP-054, SP-081, and SP-083. Spring SP-024 is down gradient from a road which led to a urea ($\text{CO}(\text{NH}_2)_2$) stockpile. This stockpile was used for the non-saline de-icing of road surfaces at the Y-12 Plant before it was removed because it was suspected to be the source of increased concentrations of ammonia (NH_3) in Upper East Fork Poplar Creek. Spring SP-024, identified as UEFPC SP-17 at the Y-12 Plant, was pinpointed as the probable primary discharge point into the creek, but low nitrate (NO_3^-) concentrations found in spring SP-024 during this study do not support this. One plausible explanation for this is that urea, when mixed with the groundwater, speciates the nitrogen component to ammonia. Ammonia is an obviously different compound than nitrate, therefore, it would not be observable by nitrate analysis. Over the last several years, indications that this contamination is present in the groundwater system were supported by high concentrations of ammonia from nitrogen as ammonia analyses performed by Y-12 Plant personnel. Following the removal of the urea stockpile a significant decrease of ammonia concentrations from SP-024 discharge water has been observed. Furthermore, periodic sampling of SP-024 water revealed that ammonia levels

were highest following storm events, indicating that a fairly rapid flow-through component is contributing to discharge of the Knox aquifer at this spring (L. O. Vaughan, personal communication, 1995). This supports the conclusion of contaminant dilution by flushing from storm event recharge and increasing contaminant concentrations between recharge events (Moore and Toran, 1992; Shevenell et al., 1993) Spring SP-029 had the highest Cl^- concentrations during both of the sampling events, and is up gradient of the Y-12 Plant. Therefore, road salt of an up gradient access road is the probable cause of the increased chloride concentration. Springs SP-018, SP-054, SP-081, and SP-083 are all located within close proximity and down gradient from state maintained roads. Springs SP-054, SP-081, and SP-083 have indicated longer, and potentially deeper water contributions by stable field parameters (temperature and specific conductance), and helium analyses. The presence of an increase in chloride during the wet season sampling event indicates the contribution of shallow water mixing with deeper groundwater.

SECTION 6

CONCLUSIONS

Springs are natural monitoring points useful in the characterization of a hydrogeologic system because their discharge represents a principal component of flow in the subsurface. Based on the observation made during this study it is possible to draw the following conclusions:

1. Physical characteristics of springs, measured in the field, can provide valuable information for the evaluation and interpretation of subsurface hydrologic processes. Field parameters proven to be most informative are: specific conductance, temperature, yield, and pH. Variability of specific conductance and temperature measurements from discharging springs defines the relative depth of active subsurface flow. The coefficient of variation of time series measurements of these two parameters, from individual springs, can reveal whether a spring is discharging a predominantly diffuse- or a conduit/fracture-controlled groundwater system. Also, specific conductance measurements provide information about the relative water-rock geochemical interaction occurring in a groundwater system. The magnitude and variability through time of spring yield measurements reveals quantitative hydrologic characteristics of geologic units. Measurements of pH provides useful information on chemical and biological processes occurring during subsurface flow.

2. Two distinctive hydrologic units are present in this study area: 1) the Knox aquifer, and 2) the aquitards. The Knox aquifer is a mature conduit-controlled karst hydrologic unit represented primarily by perennial spring discharge water not directly influenced by

seasonal effects on surface recharge. Groundwater flow processes in this unit include both point and dispersed recharge components with low-moderate storage, and more rapid flowthrough in the highly conductive, well-connected conduit system; and moderate-high storage and slower flowthrough in the less conductive, diffuse system. The aquitard units are characterized as principally shallow groundwater fracture flow systems represented by a large number of perennial and ephemeral springs heavily influenced by seasonal effects of surface recharge. Groundwater flow processes in this unit include dispersed surface recharge with low-moderate storage, and rapid flowthrough in the highly conductive shallow fracture system.

3. Geochemical signatures of all units suggest that most of the springs within the study area discharge water that has moved through a single lithology, supporting the concept of active shallow circulation. Exceptions include springs SP-018, SP-024, SP-029, SP-129, SP-131. These springs may have groundwater contributions from other lithologic units and this cross circulation may be an indication of flow from deeper groundwater zones.

4. Helium analyses indicate that some springs within the aquifers may have deep basinal flow contributions mixing with meteoric recharge water, while stable isotope analyses indicate a subsurface flow system exclusively recharged by meteoric water. Most of the data suggest that groundwater flow paths are all relatively shallow and are probably confined to a local ridge recharge-valley discharge system as proposed by Solomon et al. (1992a), although the possibility some flow contribution with deep basinal origins cannot be entirely dismissed.

5. The water quality in the study area is very high. Although the water quality data evaluated were predominantly below federal Environmental Protection Agency (EPA) primary and secondary maximum contaminant levels (MCLs), only those springs immediately adjacent to a source of contamination revealed any water quality effects in their discharge. The only groundwater contamination discovered was related to road salt and colloidal transport. Discharge water from springs in the Knox aquifer typically have higher concentrations of major and trace ions due to the relatively higher solubility of the host rock and the deeper (> 10 m) and longer flow system. The aquitards generally have lower concentrations of major and trace ions due to the shallower (< 10 m), more rapid flowthrough of subsurface water.

6. Recharge water that infiltrates into the saturated groundwater zone eventually discharges from springs; therefore the monitoring and evaluation of spring discharge water is an effective method for characterizing a hydrogeologic system. Because spring discharge represents the primary discharge mechanism of a hydrologic unit within this study, monitoring spring discharge is likely to be an effective means of detecting groundwater contamination.

SECTION 7

RECOMMENDATIONS FOR FUTURE STUDIES OF SPRINGS AND SEEPS

1. Detailed field parameter time series data collection during dry and wet conditions are essential to spring evaluation. Continuous hydrologic (spring yield) monitoring prior to, during, and after at least one rain event would provide better understanding of spring responses. Temperature, specific conductance, and pH measurements would also aid in understanding the hydrologic system. Dissolved oxygen may provide useful information in other types of investigations, however, it was of limited use in this study.
2. Higher frequency of spring monitoring and more measurements at each spring would provide a distribution of field parameters with more statistical significance for data evaluation.
3. Sampling and analyses for tritium, helium, and chlorofluorocarbons may provide information on groundwater flow system residence times. Very low levels of tritium would be an indication of pre-1952 meteoric water which may also indicate water from an evolved source. With the decrease in Tritium levels in the atmosphere, other methods of groundwater age determination have been investigated. Because chlorofluorocarbons were introduced only recently and are highly insoluble, they are an alternative to tritium analyses. Investigations utilizing chlorofluorocarbons as tracers have met with some success.
4. Detailed evaluation of $\text{Br}^-:\text{Cl}^-$ ratios have been applied by Nativ and Hunley (1993) to investigations of the deep evolved hydrogeologic system. The use of more sensitive analytical methods to determine Br^- concentrations of a lower level would provide the

additional data required to evaluate the potential occurrence of evolved groundwater contributions to a spring.

5. Volatile organic compounds (VOC) are major contaminants of concern in groundwater systems near industrial areas. Analyses for VOCs is useful to more fully evaluate contamination of groundwater and potentially providing information recharge and discharge areas.

6. Because of the large number of factors influencing discharge characteristics of seeps and springs, remote sensing techniques, such as visible light and infrared aerial photographs, and multi-spectral imaging, complete detection of all discharge points within a study area may not be achievable. Ground coverage is the only reliable method of locating a representative number of seeps and springs of an area for evaluation of a hydrogeologic system.

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APPENDIX A

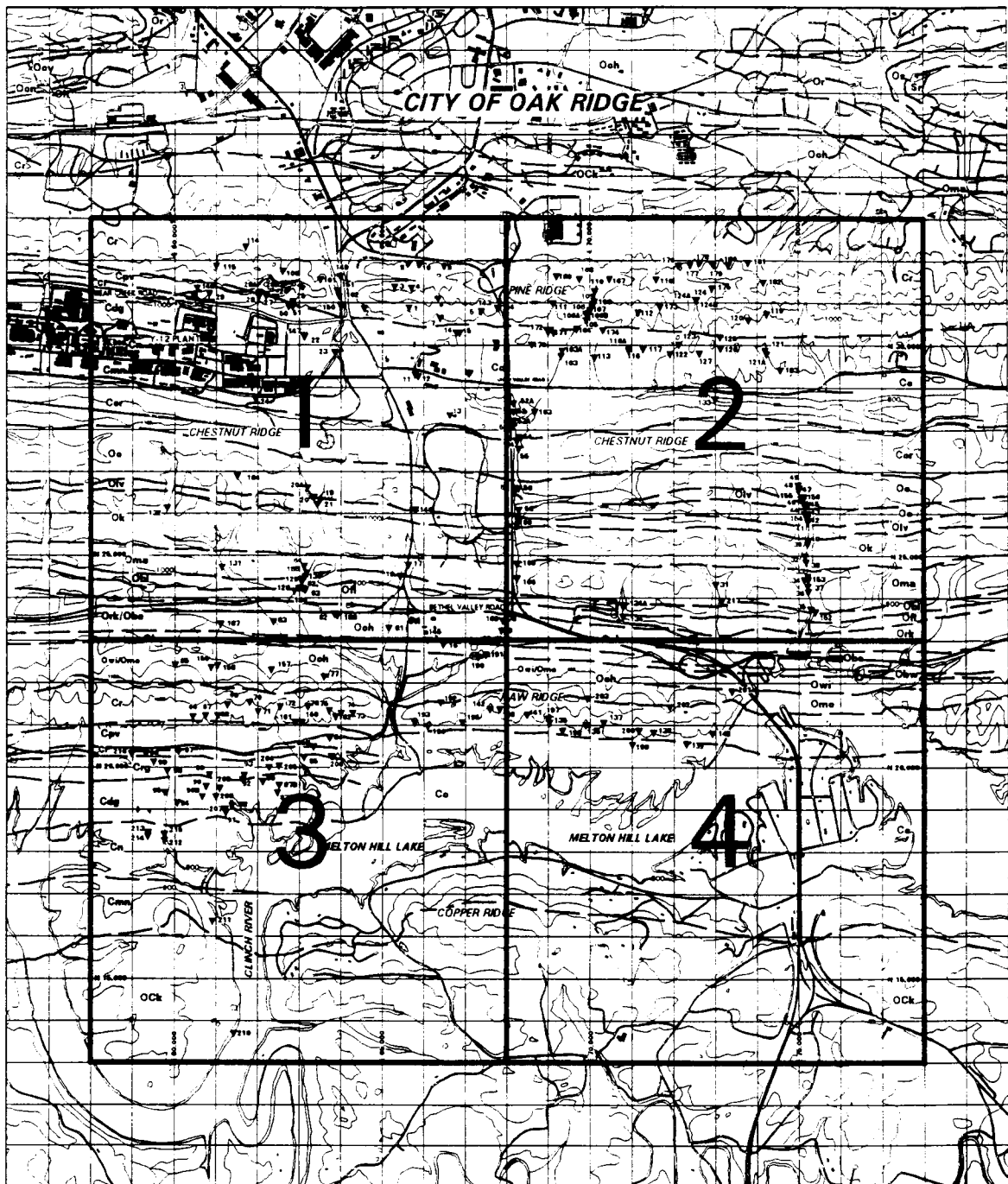
Locations of Seeps and Springs in the Study Area

Locations of Seeps and Springs in the Study Area

Geologic symbols for Group and Formation names on Appendix A maps correspond with those presented in Figure 2.4. Some formations not detailed in Figure 2.4 and those of Cambrian geologic age which are denoted by a capital "C" are detailed below. The formations not detailed in Figure 2.4 are presented here because they appear on one or more of the Appendix A maps, and in Figures 3.2 and 4.10, even though they may not be within the boundaries of the study area.

<u>SYMBOL</u>	<u>FORMATION</u>	<u>GEOLOGIC AGE</u>
Sr	Rockwood Formation	Lower Silurian
Os	Sequatchie Formation	Upper Ordovician
Or	Reedsville Shale	Upper Ordovician
Och	Chickamauga Group (undifferentiated)	Middle to Upper Ordovician
Ocy	Catheys Formation	Upper Ordovician
Ocn	Cannon Limestone	Upper Ordovician
Oh	Hermitage Formation	Upper Ordovician
Owi/Omc	Moccasin/Witten Formations (undifferentiated)	Upper Ordovician
Obw	Bowen Formation	Upper Ordovician
Ork/Obe	Rockdell/Benbolt Formations (undifferentiated)	Middle Ordovician
	Lincolnshire Formation	
Ofl	Fleanor Shale Member	Middle Ordovician
Obl	Blackford Formation	Middle Ordovician
OCk	Knox Group (undifferentiated)	Upper Cambrian to Lower Ordovician
Oma	Mascot Dolomite	Lower Ordovician
Ok	Kingsport Formation	Lower Ordovician
Olv	Longview Dolomite	Lower Ordovician
Oc	Chepultepec Dolomite	Lower Ordovician
Ccr	Copper Ridge Dolomite	Upper Cambrian
Cc	Conasauga Group (undifferentiated)	Middle to Upper Cambrian
Cmn	Maynardville Limestone	Upper Cambrian
Cn	Nolichucky Shale	Upper Cambrian
Cdg	Dismal Gap Formation (Formerly Maryville L.s.)	Middle Cambrian
Crg	Rogersville Shale	Middle Cambrian
Cf	Friendship Formation (Formerly Rutledge L.s.)	Middle Cambrian
Cpv	Pumpkin Valley Shale	Middle Cambrian
Cr	Rome Formation	Lower Cambrian

All geologic contacts are identified by bold dashed lines. Fault traces are not differentiated from contacts. For fault trace locations see Figures 2.2 and 2.3.



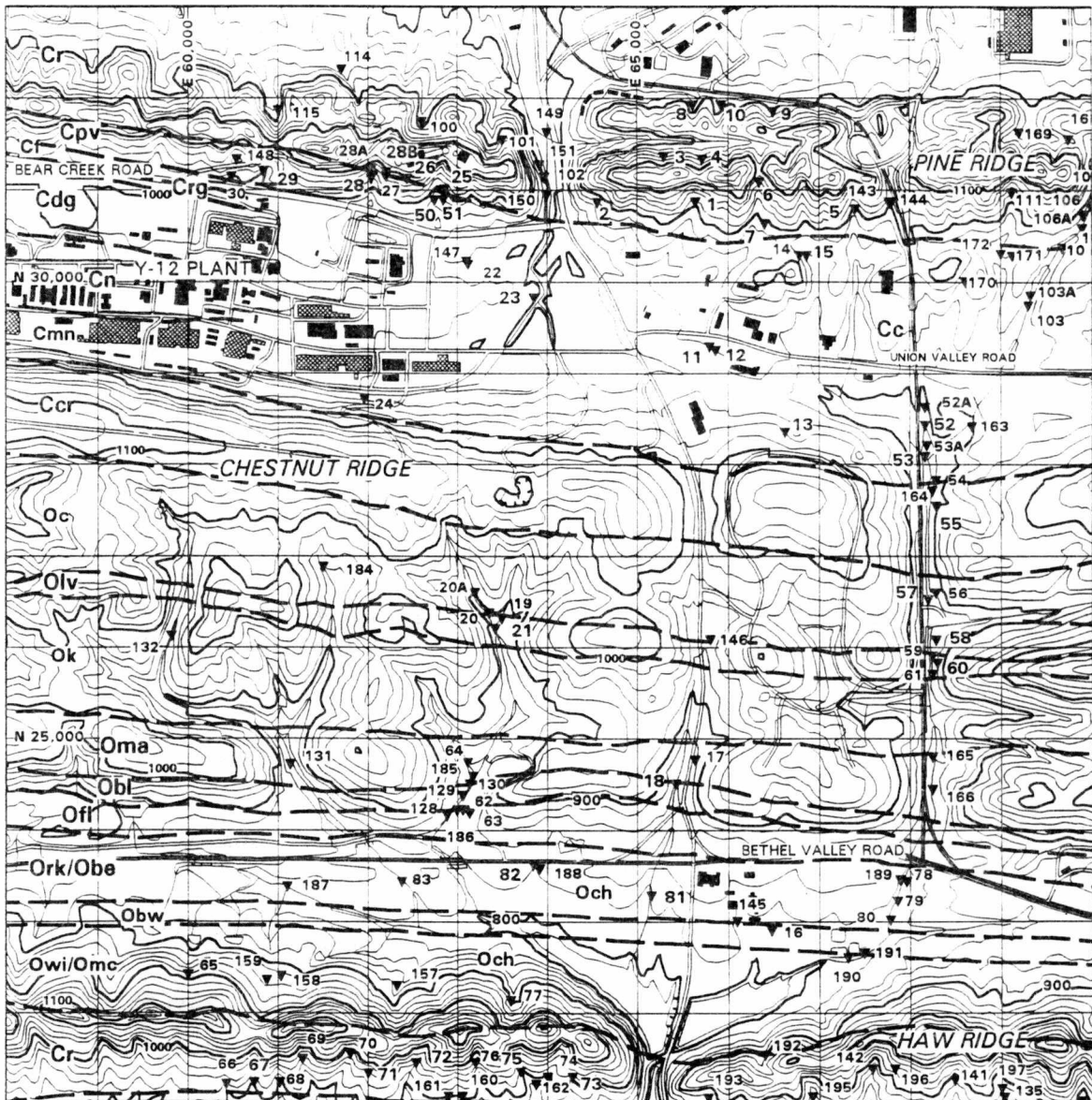
**Spring and Seep Index Map for Maps 1-4
in the
Oak Ridge, Tennessee Area**

0 1000 Feet

Scale = 1:48000

▼24 Spring Location

Administrative True
Grid North North



**MAP 1: Spring and Seep Locations
in the
Oak Ridge, Tennessee Area**

0 1000 Feet

Scale = 1:24000

Administrative
Grid North

True
North

▼ 24 Spring Location



**MAP 3: Spring and Seep Locations
in the
Oak Ridge, Tennessee Area**

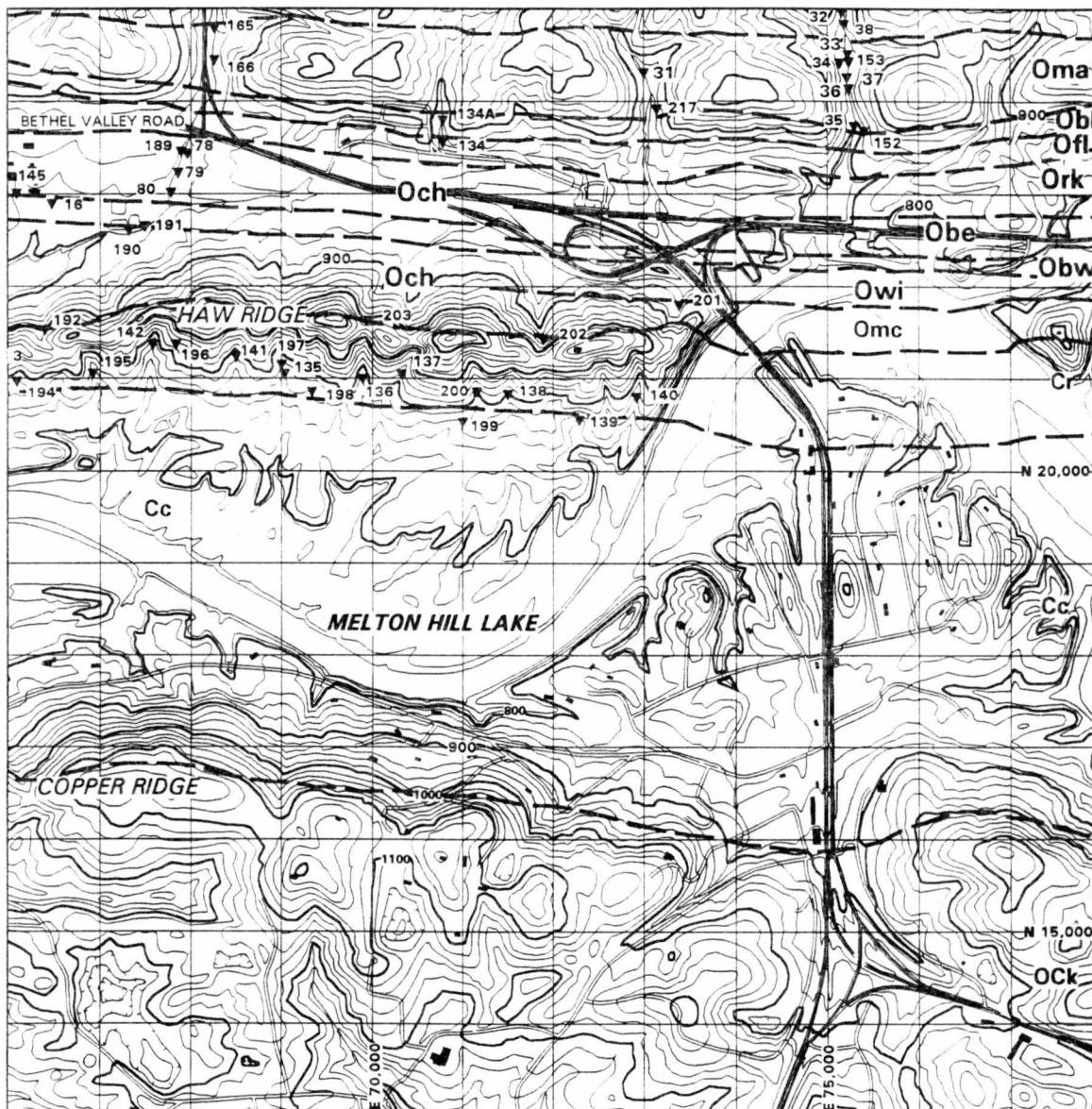
0 1000 Feet

Scale = 1:24000

Administrative
Grid North

True
North

▼ 24 Spring Location



**MAP 4: Spring and Seep Locations
in the
Oak Ridge, Tennessee Area**

0 1000 Feet

Scale = 1:24000

Administrative
Grid North

True
North

▼ 24 Spring Location

APPENDIX B
Field Survey Data Tables

Field Survey Data Tables

NOTE: *Italicized text* indicates a spring which was one of the 38 springs monitored during the Detailed Spring Survey.

SPRING I. D. The number identifications lack the SP-prefix indicated in the text.

ADMINISTRATIVE GRID This grid is used on the Department of Energy Oak Ridge Reservation.

LITHOLOGY (i) indicates that the lithology of the spring was "interpreted" based on location with respect to geologic contacts indicated in Appendix A. (u) indicates that only unconsolidated material at the spring was used to determine lithology. SS represents sandstone, SH represents shale, SS>>SH represents a lithology description in which a higher percentage of the rock is sandstone and the lower percentage of rock is shale.

HYDROLOGIC UNIT Based on Solomon et al. (1992a) classification and Figure 2.4.

Table B.1 Springs and Seeps Geographic, Geologic, and Hydrologic Information

SPRING I.D.	ADMINISTRATIVE GRID NORTHING (feet)	ADMINISTRATIVE GRID EASTING (feet)	LITHOLOGY	FORMATION OR GROUP	HYDROLOGIC UNIT
1	30870	65640	SS>>SH	Rome	Aquitard
2	30860	64560	SS>>SH	Rome	Aquitard
3	31360	65290	SS>>SH	Rome	Aquitard
4	31330	65710	SS>>SH	Rome	Aquitard
5	30790	67390	SS>>SH	Rome	Aquitard
6	31080	66340	SS>>SH	Rome	Aquitard
7	30630	66400	SS>>SH	Rome	Aquitard
8	31920	65610	SH/SS (i)	Rome	Aquitard
9	31850	66490	SH/SS (i)	Rome	Aquitard
10	31920	65920	SH/SS (i)	Rome	Aquitard
11	29290	65790	Shale(i)	Conasauga	Aquitard
12	29250	65860	Shale(i)	Conasauga	Aquitard
13	28340	66620	Limestone(i)	Conasauga	Knox Aquifer
14	30280	66780	Shale	Conasauga	Aquitard
15	30280	66860	Shale	Conasauga	Aquitard
16	22890	66470	Limestone(i)	Chickamauga	Aquitard
17	24760	65630	Limestone	Knox	Knox Aquifer
18	24500	65420	Limestone	Knox	Knox Aquifer
19	26310	63490	Dolomite(i)	Knox	Knox Aquifer
20	26370	63350	Dolomite (u)	Knox	Knox Aquifer
20A	26600	63190	Dolomite(i)	Knox	Knox Aquifer
21	26200	63420	Limestone	Knox	Knox Aquifer
22	30190	63120	Shale	Conasauga	Aquitard
23	29820	63850	Shale(i)	Conasauga	Aquitard
24	28710	61950	Limestone	Conasauga	Knox Aquifer
25	31010	62850	SS>>SH (u)	Rome	Aquitard
26	31120	62430	Shale(i)	Conasauga	Aquitard
27	31190	62200	Shale(i)	Conasauga	Aquitard
28	31120	62030	Shale(i)	Conasauga	Aquitard
28A	31220	62030	Shale(i)	Conasauga	Aquitard
28B	31150	62200	Shale(i)	Conasauga	Aquitard
29	31200	60830	Shale(i)	Conasauga	Aquitard
30	31140	60470	Shale(i)	Conasauga	Aquitard
31	24300	73000	Dolomite (u)	Knox	Knox Aquifer
32	24970	75150	Dolomite	Knox	Knox Aquifer
33	24500	75220	Dolomite (i)	Knox	Knox Aquifer
34	24410	75130	Dolomite (i)	Knox	Knox Aquifer
35	23720	75290	Dolomite	Knox	Knox Aquifer
36	24130	75230	Dolomite	Knox	Knox Aquifer
37	24250	75210	Dolomite	Knox	Knox Aquifer
38	24830	75180	Dolomite	Knox	Knox Aquifer
39	25270	75210	Dolomite	Knox	Knox Aquifer
40	25350	75210	Dolomite	Knox	Knox Aquifer
41	25770	75220	Dolomite	Knox	Knox Aquifer
42	25900	75220	Dolomite (i)	Knox	Knox Aquifer
43	25990	75220	Dolomite (i)	Knox	Knox Aquifer

Table B.1 Springs and Seeps Geographic, Geologic, and Hydrologic Information (Continued)

SPRING I. D.	ADMINISTRATIVE GRID NORTHING (feet)	ADMINISTRATIVE GRID EASTING (feet)	LITHOLOGY	FORMATION OR GROUP	HYDROLOGIC UNIT
44	25990	75130	Dolomite	Knox	Knox Aquifer
45	26200	75220	Dolomite (i)	Knox	Knox Aquifer
46	26200	75130	Dolomite (i)	Knox	Knox Aquifer
47	26550	75000	Dolomite (u)	Knox	Knox Aquifer
48	26590	75010	Dolomite (i)	Knox	Knox Aquifer
49	26670	74990	Dolomite (i)	Knox	Knox Aquifer
50	30890	62740	SS>>SH (u)	Conasauga	Aquitard
51	30890	62840	SS>>SH (u)	Conasauga	Aquitard
52	28420	68170	Limestone(i)	Conasauga	Knox Aquifer
52A	28620	68170	Limestone(i)	Conasauga	Knox Aquifer
53A	28200	68190	Limestone(i)	Conasauga	Knox Aquifer
53	28080	68170	Limestone(i)	Conasauga	Knox Aquifer
54	27820	68290	Dolomite	Knox	Knox Aquifer
55	27540	68290	Dolomite(i)	Knox	Knox Aquifer
56	26590	68290	Dolomite(i)	Knox	Knox Aquifer
57	26520	68200	Dolomite(i)	Knox	Knox Aquifer
58	26070	68290	Dolomite(i)	Knox	Knox Aquifer
59	25900	68250	Dolomite (u)	Knox	Knox Aquifer
60	25820	68300	Dolomite	Knox	Knox Aquifer
61	25700	68250	Dolomite (u)	Knox	Knox Aquifer
62	24220	63060	limestone(i)	Chickamauga	Knox Aquifer
62	24220	63060	limestone(i)	Chickamauga	Knox Aquifer
63	24180	63130	limestone(i)	Chickamauga	Knox Aquifer
64	24730	63110	Dolomite (i)	Knox	Knox Aquifer
65	22410	60000	limestone	Chickamauga	Aquitard
66	21190	60420	SH/SS	Rome	Aquitard
67	21210	60730	SS>>SH (u)	Rome	Aquitard
68	21210	61020	SH/SS	Rome	Aquitard
69	21470	61270	SS>>SH	Rome	Aquitard
70	21530	61800	SS>>SH (u)	Rome	Aquitard
71	21310	62000	SH/SS	Rome	Aquitard
72	21430	62530	SS>>SH (u)	Rome	Aquitard
73	21270	64280	SS>>SH (u)	Rome	Aquitard
74	21270	64000	SH/SS	Rome	Aquitard
75	21340	63700	SS>>SH (u)	Rome	Aquitard
76	21430	63200	SH/SS	Rome	Aquitard
77	22130	63590	Limestone	Chickamauga	Aquitard
78	23430	67960	Limestone(i)	Chickamauga	Aquitard
79	23220	67860	Limestone(i)	Chickamauga	Aquitard
80	23010	67780	Limestone(i)	Chickamauga	Aquitard
81	23280	65150	Limestone(i)	Chickamauga	Aquitard
82	23610	63840	Limestone (u)	Chickamauga	Aquitard
83	23430	62370	Limestone	Chickamauga	Aquitard
84	20680	63720	Shale/SS (u)	Conasauga	Aquitard
85	20230	63100	Shale(i)	Conasauga	Aquitard
85B	20480	63330	Shale(i)	Conasauga	Aquitard

Table B.1 Springs and Seeps Geographic, Geologic, and Hydrologic Information (Continued)

SPRING I. D.	ADMINISTRATIVE GRID NORTHING (feet)	ADMINISTRATIVE GRID EASTING (feet)	LITHOLOGY	FORMATION OR GROUP	HYDROLOGIC UNIT
86	19650	62120	Limestone(i)	Conasauga	Aquitard
87	19380	62470	Limestone(i)	Conasauga	Aquitard
87B	19560	62510	Limestone(i)	Conasauga	Aquitard
88	19080	61370	Limestone(i)	Conasauga	Aquitard
89	19810	60830	Limestone(i)	Conasauga	Aquitard
90	19530	60740	Limestone(i)	Conasauga	Aquitard
90	19530	60740	Limestone(i)	Conasauga	Aquitard
90B	19290	60650	Limestone(i)	Conasauga	Aquitard
91	18900	61230	Limestone	Conasauga	Aquitard
92	19700	61620	Limestone(i)	Conasauga	Aquitard
93	19800	61670	Limestone(i)	Conasauga	Aquitard
94	19150	60050	Limestone(i)	Conasauga	Aquitard
95	19380	59760	Limestone	Conasauga	Aquitard
96	20320	59300	Limestone(i)	Conasauga	Aquitard
97	20380	60080	Limestone(i)	Conasauga	Aquitard
98	19910	59810	Shale(i)	Conasauga	Aquitard
99	20120	59490	Shale(i)	Conasauga	Aquitard
100	31740	62600	SS>>SH (u)	Rome	Aquitard
101	31540	63500	SS>>SH (u)	Rome	Aquitard
102	31200	64080	SS>>SH (u)	Rome	Aquitard
103	29740	69300	Shale(i)	Conasauga	Aquitard
103A	29850	69330	Shale(i)	Conasauga	Aquitard
104	30370	69680	Limestone(i)	Conasauga	Aquitard
105	30580	69900	Shale	Rome	Aquitard
106	30730	69910	SH/SS	Rome	Aquitard
106A	30730	69930	SH/SS	Rome	Aquitard
106B	30730	69910	SH/SS	Rome	Aquitard
107	30820	70000	SS>>SH	Rome	Aquitard
108	30900	70050	SH/SS	Rome	Aquitard
109	31010	70100	SS>>SH (u)	Rome	Aquitard
110	31250	70120	SH/SS	Rome	Aquitard
111	30970	69120	Shale/SS (u)	Rome	Aquitard
112	30760	71140	SH/SS	Rome	Aquitard
113	29700	70110	Shale/SS (u)	Conasauga	Aquitard
114	32310	61700	SH/SS	Rome	Aquitard
115	31860	61000	SH/SS	Rome	Aquitard
116	29850	70920	Shale/SS (u)	Conasauga	Aquitard
116A	29930	70920	Shale/SS (u)	Conasauga	Aquitard
117	29900	71270	Shale/SS (u)	Conasauga	Aquitard
118	31540	71570	SS>>SH	Rome	Aquitard
119	30720	74220	SS>>SH (u)	Rome	Aquitard
120	30570	73780	SS>>SH (u)	Rome	Aquitard
121	29780	74220	Limestone(i)	Conasauga	Aquitard
121A	29860	74190	Limestone(i)	Conasauga	Aquitard
122	29780	71900	Limestone(i)	Conasauga	Aquitard
123	30000	72120	Limestone(i)	Conasauga	Aquitard

Table B.1 Springs and Seeps Geographic, Geologic, and Hydrologic Information (Continued)

SPRING I. D.	ADMINISTRATIVE GRID NORTHING (feet)	ADMINISTRATIVE GRID EASTING (feet)	LITHOLOGY	FORMATION OR GROUP	HYDROLOGIC UNIT
124	31050	72550	SS>>SH	Rome	Aquitard
124A	31050	72540	SH/SS	Rome	Aquitard
124B	31050	72520	SH/SS	Rome	Aquitard
125	30180	73110	Limestone(i)	Conasauga	Aquitard
126	29910	73120	Limestone(i)	Conasauga	Aquitard
127	29790	72610	Limestone(i)	Conasauga	Aquitard
128	24150	62880	Dolomite (u)	Chickamauga	Knox Aquifer
129	24370	63060	Dolomite (u)	Chickamauga	Knox Aquifer
130	24500	63130	Limestone(i)	Chickamauga	Knox Aquifer
131	24710	61130	Dolomite	Knox	Knox Aquifer
132	26120	59810	Limestone (u)	Knox	Knox Aquifer
133	28710	72980	Limestone	Conasauga	Knox Aquifer
134	23550	70780	Limestone(i)	Chickamauga	Aquitard
134A	23790	70780	Limestone(i)	Chickamauga	Aquitard
135	21040	69030	SS>>SH (u)	Rome	Aquitard
136	20990	69890	SS>>SH (u)	Rome	Aquitard
137	21040	70320	SS>>SH	Rome	Aquitard
138	20820	71500	SS>>SH (u)	Rome	Aquitard
139	20540	72290	SS>>SH	Conasauga	Aquitard
140	20790	72920	SS>>SH (u)	Rome	Aquitard
141	21230	68490	SS>>SH (u)	Rome	Aquitard
142	21360	67580	SS>>SH (u)	Rome	Aquitard
143	30870	67770	SS>>SH	Rome	Aquitard
144	30870	67800	SS>>SH	Rome	Aquitard
145	23000	66090	Limestone(i)	Chickamauga	Aquitard
146	26080	65800	Dolomite (u)	Knox	Knox Aquifer
147	30220	63100	Shale	Conasauga	Aquitard
148	31330	60530	Shale	Conasauga	Aquitard
149	31620	63990	SH/SS (i)	Rome	Aquitard
150	30940	63990	SS>>SH	Rome	Aquitard
151	31270	63910	SS>>SH	Rome	Aquitard
152	23670	75400	Dolomite	Knox	Knox Aquifer
153	24420	75230	Dolomite	Knox	Knox Aquifer
154	25810	75230	Dolomite(i)	Knox	Knox Aquifer
155	26340	75050	Dolomite(i)	Knox	Knox Aquifer
156	26390	75130	Dolomite(i)	Knox	Knox Aquifer
157	22290	62320	Limestone (u)	Chickamauga	Aquitard
158	22400	61030	Limestone (u)	Chickamauga	Aquitard
159	22350	60870	Limestone(i)	Chickamauga	Aquitard
160	21060	62890	SH/SS (i)	Rome	Aquitard
161	21060	63050	SH/SS (i)	Rome	Aquitard
162	21190	63870	SH/SS (i)	Rome	Aquitard
163	28410	68680	Limestone(i)	Conasauga	Knox Aquifer
164	27710	68250	Dolomite (u)	Knox	Knox Aquifer
165	24790	68250	Dolomite(i)	Knox	Knox Aquifer
166	24440	68250	Dolomite (u)	Knox	Knox Aquifer

Table B.1 Springs and Seeps Geographic, Geologic, and Hydrologic Information (Continued)

SPRING I. D.	ADMINISTRATIVE GRID NORTHING (feet)	ADMINISTRATIVE GRID EASTING (feet)	LITHOLOGY	FORMATION OR GROUP	HYDROLOGIC UNIT
167	31550	70460	SH/SS (i)	Rome	Aquitard
168	31550	69750	SH/SS (i)	Rome	Aquitard
169	31620	69200	SH/SS (i)	Rome	Aquitard
170	30000	68610	Limestone(i)	Conasauga	Aquitard
171	30280	69130	Limestone(i)	Conasauga	Aquitard
172	30300	69000	Limestone(i)	Conasauga	Aquitard
173	30880	71670	SS>>SH (u)	Rome	Aquitard
174	30340	70310	Limestone(i)	Conasauga	Aquitard
175	31320	72900	SH/SS (i)	Rome	Aquitard
176	31870	72110	SH/SS (i)	Rome	Aquitard
177	31880	72380	SH/SS (i)	Rome	Aquitard
178	31930	72620	Shale/SS (u)	Rome	Aquitard
179	31880	72950	Shale/SS (u)	Rome	Aquitard
180	31880	73310	Shale/SS (u)	Rome	Aquitard
181	31930	73770	SH/SS (i)	Rome	Aquitard
182	31470	74140	SS>>SH (u)	Rome	Aquitard
183	29400	74560	SH/SS (i)	Conasauga	Aquitard
184	26880	61500	Dolomite(i)	Knox	Knox Aquifer
185	24580	63170	Dolomite(i)	Knox	Knox Aquifer
186	24210	62990	Limestone(i)	Chickamauga	Aquitard
187	23380	61100	Limestone(i)	Chickamauga	Aquitard
188	23570	63910	Limestone(i)	Chickamauga	Aquitard
189	23450	67890	Limestone (u)	Chickamauga	Aquitard
190	22650	67490	Limestone(i)	Chickamauga	Aquitard
191	22600	67310	Limestone(i)	Chickamauga	Aquitard
192	21520	66400	Shale/SS (u)	Rome	Aquitard
193	21040	65770	SH/SS (i)	Rome	Aquitard
194	20960	66090	SH/SS (i)	Rome	Aquitard
195	21050	66920	SH/SS (i)	Rome	Aquitard
196	21360	67830	SH/SS (i)	Rome	Aquitard
197	21140	69000	SS>>SH (u)	Rome	Aquitard
198	20850	69330	SS>>SH (u)	Rome	Aquitard
199	20520	71000	SS>>SH (u)	Conasauga	Aquitard
200	20850	71160	SS>>SH (u)	Rome	Aquitard
201	21790	73380	Limestone	Chickamauga	Aquitard
202	21420	71890	Limestone	Chickamauga	Aquitard
203	21620	69930	SS>>SH	Chickamauga	Aquitard
204	19990	62260	Shale(i)	Conasauga	Aquitard
205	20030	62510	Shale(i)	Conasauga	Aquitard
206	20250	63760	Shale(i)	Conasauga	Aquitard
207	19000	61210	Limestone(i)	Conasauga	Aquitard
208	19290	60980	Limestone(i)	Conasauga	Aquitard
209	19490	61080	Limestone(i)	Conasauga	Aquitard
210	13690	61420	Limestone (u)	Knox	Knox Aquifer
211	16350	60900	Limestone	Conasauga	Knox Aquifer
212	18250	59750	Shale(i)	Conasauga	Aquitard

Table B.1 Springs and Seeps Geographic, Geologic, and Hydrologic Information (Continued)

SPRING I. D.	ADMINISTRATIVE GRID NORTHING (feet)	ADMINISTRATIVE GRID EASTING (feet)	LITHOLOGY	FORMATION OR GROUP	HYDROLOGIC UNIT
213	18440	59360	Shale(i)	Conasauga	Aquitard
214	18360	59360	Shale(i)	Conasauga	Aquitard
215	18400	59750	Shale(i)	Conasauga	Aquitard
216	20320	58970	Shale(i)	Conasauga	Aquitard
217	23910	73140	Limestone (u)	Knox	Knox Aquifer

Table B.2. Springs and Seeps Field Parameter Data

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
1	04/11/92	1215	14.35	48.0	60.3	6.90	1.0	3.8		Time not recorded
1	11/21/92		13.00	35.0	45.4	7.80	5.0	18.9		Water sample taken for analysis
1	08/08/93	1030	19.25	65.0	73.0	6.90			7.50	Low flow - discharge is unreliable
1	09/13/93	1945	20.25	85.0	93.5	5.70			7.00	Flow taken ~ 50' downstream
1	10/22/93	1740	15.75	75.0	91.1	5.20	0.6	2.3	6.50	
1	11/19/93	1650	13.25	70.0	90.3	4.95	0.8	3.0	5.50	
1	12/17/93	1650	12.50	60.0	78.8	6.60	1.4	5.3	4.50	
1	01/21/94	1725	11.25	40.0	54.2	9.70	2.7	10.2	5.00	
1	02/18/94	1750	13.25	50.0	64.5	6.20	4.6	17.4	5.00	Water samples taken for analysis
1	03/18/94	1655	12.80	175.0	228.2	10.20	5.6	21.2	6.81	
1	04/22/94	1745	13.35	63.0	81.0	9.10	4.0	15.1	6.72	
1	05/22/94	1750	17.85	52.0	60.2	2.80	3.0	11.4	6.44	
1	06/17/94	1850	19.35	54.0	60.5	6.20	2.1	7.9	6.44	
1	07/15/94	1840	20.25	92.0	101.2	7.40	1.9	7.2	6.24	
2	04/11/92	1300	14.25	77.0	96.9	7.90	5.0	18.9		Time not recorded
2	11/21/92		13.00	40.0	51.9	8.60	1.0	3.8		
3	04/11/92	1345	14.00	86.0	83.6	5.80	0.5	1.9		Time not recorded
3	11/21/92		11.50	60.0	80.8	10.00	1.0	3.8		
4	04/11/92	1420	12.85	68.0	88.5	7.00	1.0	3.8		
4	11/21/92	1130	12.25	40.0	52.9	10.10	0.5	1.9		
5	04/11/92	1335	13.60	107.0	136.8	8.00	5.0	18.9		
5	11/21/92	1205	13.25	80.0	103.1	8.40	5.0	18.9		
5	07/31/93	1345	22.50	110.0	115.5	5.50	0.0	0.0		Water samples taken for analysis
5	09/12/93	2005	19.50	100.0	111.7	6.40	0.6	2.3	7.00	
5	10/22/93	1715	16.25	100.0	120.1	5.90	0.4	1.5	6.50	
5	11/19/93	1630	13.50	90.0	115.3	7.10	0.6	2.3	5.00	
5	12/17/93	1630	11.75	80.0	107.1	8.70	5.5	20.8	5.00	
5	01/21/94	1700	7.75	50.0	74.6	9.70	2.3	8.7	4.00	
5	02/18/94	1655	10.50	60.0	83.0	9.00	3.1	11.7	5.00	Water samples taken for analysis
5	03/18/94	1640	11.40	66.0	89.2	9.90	3.3	12.5	7.20	
5	04/22/94	1725	13.15	47.0	60.7	8.40	2.8	10.6	6.81	
5	05/22/94	1730	14.85	69.0	85.6	8.00	1.1	4.2	6.79	
5	06/17/94	1830	17.95	76.0	87.8	7.40	2.5	9.5	6.48	
5	07/15/94	1815	19.05	85.0	95.9	7.30	2.3	8.7	6.50	
6	04/11/92	1610	12.60	67.0	87.8	6.30	1.0	3.8		
6	11/21/92		13.75	70.0	89.2	6.50	5.0	18.9		Time not recorded
7	04/11/92	1625	14.35	112.0	140.6	1.20	0.5	1.9		
7	11/21/92	0950	12.75	110.0	143.6	6.20	0.0	0.0		
8	04/11/92	1735	15.60	69.0	84.1	6.00	0.5	1.9		
8	11/21/92	1510	12.00	35.0	46.6	10.00	1.0	3.8		
9	04/11/92	1800	14.30	54.0	67.9	7.40	0.5	1.9		Spring is dry
9	11/21/92	1530								
10	04/11/92	1815	15.35	520.0	637.5	1.70	0.5	1.9		
10	11/21/92	1535	12.25	40.0	52.9	9.10	0.5	1.9		

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
11	04/14/92	1745	17.90	532.0	615.5	3.65	0.0	0.0		Time not recorded, measurements not taken
11	11/21/92									
12	04/14/92	1805	15.00	675.0	834.4	0.95	0.5	1.9		Time not recorded, measurements not taken
12	11/21/92									
13	04/14/92	1850	18.00	137.0	158.1	0.30	0.0	0.0		
13	11/21/92	1400	11.75	65.0	87.0	7.60	0.0	0.0		
14	04/14/92	1925	14.95	54.0	54.5	5.75	1.0	3.8		
14	11/21/92	1250	12.25	125.0	165.2	9.70	0.0	0.0		
15	04/14/92	1940	18.25	377.0	432.8	3.75	1.0	3.8		
15	11/21/92	1250	12.25	125.0	165.2	9.70	0.0	0.0		
16	04/20/92	1900	14.35	482.0	605.1	6.30	0.5	1.9		
16	01/02/93	1305	10.50	310.0	428.7	10.30	0.0	0.0		Spring is dry
16	08/05/93									Spring is dry
16	09/11/93	1350								Spring is dry
16	10/22/93	1922								
16	11/19/93	1755	13.00	335.0	434.6	1.80	0.7	2.6	5.50	
16	12/17/93	1745	10.50	300.0	414.9	7.70	6.6	25.0	5.00	
16	01/21/94	1845	6.50	230.0	355.7	10.80	3.1	11.7	5.00	
16	02/19/94	1440	10.00	230.0	350.4	10.20	9.3	35.2	5.50	
16	03/20/94	1110	11.50	307.0	413.7	12.00	12.8	48.4	8.09	
16	04/22/94	1840	14.90	308.0	381.6	9.50	2.5	9.5	7.48	
16	05/22/94	1845	18.75	351.0	398.6	2.55	0.0	0.0	7.25	Extremely low flow (0.01 gpm assumed)
16	06/17/94	2010	22.85	496.0	517.2	2.10	0.0	0.0	7.02	Extremely low flow (0.01 gpm assumed)
16	07/18/94	1440	24.47	450.0	454.6	4.70	0.0	0.0	7.04	Extremely low flow (0.01 gpm assumed)
17	04/20/92	1925	15.95	402.0	486.0	0.05	1.0	3.8		
17	01/02/93	1335	13.00	270.0	350.3	6.00	1.0	3.8		
18	04/20/92	1935	15.20	416.0	511.8	2.80	5.0	18.9		
18	01/02/93	1405	11.25	290.0	393.3	5.00	1.0	3.8		
18	08/05/93	1850	17.00	425.0	501.7	5.30	24.5	92.7	7.00	Water samples taken for analysis
18	09/12/93	1510	17.50	430.0	501.9	3.80	1.3	4.9	7.50	
18	10/22/93	1912	16.50	425.0	507.4	3.05	6.9	26.1	7.50	
18	11/19/93	1740	15.25	380.0	467.0	4.30	0.6	2.3	5.50	
18	12/17/93	1730	11.75	270.0	361.5	5.10	14.8	56.0	5.00	
18	01/21/94	1825	7.50	240.0	360.5	7.90	42.2	159.7	4.50	
18	02/19/94	1525	9.25	220.0	314.7	7.40	9.9	37.5	5.00	Water samples taken for analysis
18	03/18/94	1740	10.20	260.0	362.5	5.90	67.8	256.6	7.15	
18	04/22/94	1825	13.45	194.0	248.9	6.70	56.1	212.3	7.19	
18	05/22/94	1835	14.85	330.0	409.4	2.40	17.0	64.3	7.23	
18	06/17/94	1940	16.90	358.0	423.5	2.85	11.6	43.9	7.06	
18	07/15/94	1900	20.15	273.0	300.9	5.00	5.1	19.3	6.72	
19	04/28/92	1810	14.30	302.0	379.6	5.50	10.0	37.9		
19	01/02/93	1545	11.50	55.0	74.1	6.50	100.0	378.5		
19	08/07/93	1640	15.50	240.0	293.2	8.00	38.9	147.2	7.00	Water samples taken for analysis
19	09/12/93	1650	16.25	240.0	288.2	8.20	46.4	175.6	7.50	

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
19	10/23/93	1532	14.25	250.0	314.6	7.80	8.9	33.7	5.00	
19	11/20/93	0014	14.00	215.0	272.2	7.00	5.4	20.4	5.00	
19	12/18/93	1530	13.50	200.0	256.3	7.20	9.3	35.2	5.00	
19	01/22/94	1808	9.00	50.0	72.0	8.50	33.7	127.6	5.00	
19	02/19/94	1735	11.50	180.0	215.6	8.10	98.2	371.7	5.00	Water samples taken for analysis
19	03/18/94	1810	10.75	168.0	230.8	8.50	50.2	190.0	7.30	
19	04/23/94	1415	13.50	116.0	148.7	7.00	112.1	424.3	6.75	
19	05/22/94	2025	14.30	238.0	299.1	8.50	44.3	167.7	7.68	
19	06/18/94	1125	14.70	246.0	306.2	8.50	13.0	49.2	7.52	
19	07/18/94	1320	14.17	235.0	296.3	8.50	11.1	42.0	7.62	
20	04/28/92	1830	13.80	244.0	310.4	6.70	50.0	189.3		
20	01/02/93	1510	12.75	130.0	169.7	7.00	100.0	378.5		
20A	01/02/93	1450	12.00	30.0	39.9	6.00	3.0	11.4		
21	04/28/92	1845	11.50	112.0	150.9	3.50	1.0	3.8		
21	01/02/93	1525	10.75	170.0	233.6	5.20	1.0	3.8		
22	05/15/92	1810	14.45	683.0	855.4	0.85	10.0	37.9		
22	01/02/93	1700	8.50	480.0	700.9	5.40	0.5	1.9		
23	05/15/92	1840	15.05	451.0	558.8	0.75	0.0	0.0		
23	01/02/93	1715	8.50	260.0	378.6	4.25	0.0	0.0		
24	05/15/92	2020	14.30	760.0	955.2	3.85	200.0	757.0		
24	01/03/93	0945	14.50	775.0	969.4	4.70	300.0	1135.5		
24	08/10/93	1735	14.75	550.0	683.9	3.05	15.2	57.5	7.40	Water samples taken for analysis
24	09/14/93	1700	15.25	650.0	798.7	3.25	11.5	43.5	7.00	He sample taken
24	10/22/93	1850	15.00	700.0	865.3	3.65	17.3	65.5	7.50	
24	11/19/93	1550	15.00	780.0	964.2	4.25	15.9	60.2		No pH obtained
24	12/17/93	1545	14.50	710.0	888.1	5.20	53.8	203.6	5.00	
24	01/21/94	1615	14.50	650.0	813.1	4.80	96.4	364.9	5.00	
24	02/18/94	1605	14.50	600.0	750.5	4.50	320.6	1213.5	5.00	Water samples taken for analysis
24	03/18/94	1600	13.85	448.0	569.2	4.25	220.4	834.2	6.72	
24	04/22/94	1650	13.90	408.0	517.8	8.00	308.6	1168.1	7.07	
24	05/22/94	1645	13.65	427.0	542.5	8.40	67.3	254.7	6.79	
24	06/17/94	1740	14.10	470.0	593.6	8.90	40.5	153.3	6.72	
24	07/15/94	1730	14.05	467.0	590.5	4.40	27.1	102.6	6.71	
25	05/27/92	1930	15.50	242.0	295.6	5.30	1.0	3.8		
25	01/03/93	1340	12.50	170.0	223.3	10.50	5.0	18.9		
26	05/27/92	1945	14.75	268.0	333.2	4.35	1.0	3.8		
26	01/03/93	1210	12.50	190.0	249.6	10.60	50.0	189.3		
27	05/27/92	2005	15.30	245.0	300.7	7.10	1.0	3.8		
27	01/03/93	1200	11.50	165.0	222.3	10.60	5.0	18.9		
28	05/27/92	2020	13.95	251.0	318.1	9.30	50.0	189.3		
28	01/03/93	1125	13.00	90.0	118.8	8.20	5.0	18.9		
28A	01/03/93	1135	12.50	180.0	236.5	10.20	1.0	3.8		
28B	01/03/93	1145	12.50	180.0	236.5	11.20	300.0	1135.5		
29	05/27/92	2040	16.95	517.0	610.9	1.30	1.0	3.8		

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
29	01/03/93	1225	11.50	420.0	565.9	4.95	5.0	18.9		Water samples taken for analysis
29	08/08/93	1410	22.25	480.0	485.5	2.60	14.0	53.0	7.50	Discharge unobtainable due to vegetation
29	09/14/93	1640	20.50	530.0	601.7	0.08		0.0	6.50	Flow taken ~30' downstream
29	10/22/93	1832	14.75	435.0	540.9	0.55	4.6	17.4	7.50	Discharge unobtainable due to vegetation
29	11/19/93	1730	11.25	290.0	393.3	1.90		0.0	5.00	
29	12/17/93	1800	9.00	300.0	432.0	4.60	18.6	70.4	5.00	
29	01/21/94	1905	1.50	220.0	399.2	9.40	7.0	26.5	5.00	
29	02/20/94	1300	13.00	265.0	343.8	5.90	21.9	82.9	5.00	Water samples taken for analysis
29	03/20/94	1315	13.90	321.0	407.4	7.70	10.5	39.7	7.20	
29	04/23/94	1450	17.45	227.0	265.3	6.80	5.2	19.7	6.90	
29	05/22/94	1700	20.55	318.0	347.5	1.10	2.3	8.7	6.76	
29	06/17/94	1800	25.10	523.0	522.0	0.70	0.6	2.3	6.98	
29	07/15/94	1750	22.75	423.0	442.0	0.02	3.2	12.1	6.68	
30	05/27/92	2050	16.40	345.0	412.8	0.20	1.0	3.8		
30	01/03/93	1235	9.75	160.0	225.8	3.00	1.0	3.8		
31	05/30/92	1015	13.50	297.0	380.6		5.0	18.9		
31	01/23/93	1550	13.00	190.0	233.5	6.60	50.0	189.3		
31	08/08/93	1715	15.75	255.0	309.7	5.50	101.1	382.7	7.00	Water samples taken for analysis
31	09/13/93	1915	15.00	295.0	290.5	5.50	21.0	79.5	7.00	
31	10/23/93	1100	14.25	250.0	314.6	5.25	10.5	39.7	6.00	
31	11/20/93	1050	14.00	190.0	240.5	6.40	26.3	99.5	5.00	
31	12/18/93	1207	13.50	180.0	230.7	6.30	43.5	164.6	5.00	
31	01/22/94	1400	12.50	145.0	190.5	7.40	44.7	169.2	5.00	
31	02/19/94	1330	12.50	140.0	183.9	7.00	55.9	211.6	5.00	Water samples taken for analysis
31	03/18/94	1915	11.80	166.0	222.0	6.30	73.2	277.1	7.25	
31	04/23/94	1215	13.75	147.0	187.2	7.00	78.6	297.5	6.82	
31	05/23/94	2100	13.80	221.0	281.1	4.40	11.8	44.7	6.97	
31	06/18/94	1100	15.05	230.0	284.0	5.20	20.0	75.7	7.07	
31	07/14/94	1040	14.90	237.0	293.6	5.30	9.8	37.1	7.11	
32	05/30/92	1210	13.90	326.0	413.7	5.90	10.0	37.9		
32	01/18/93	1255	10.75	180.0	247.3	7.20	1.0	3.8		
33	05/30/92	1230	14.75	289.0	359.4	4.05	20.0	75.7		
33	01/16/93	1230	13.25	170.0	219.2	7.80	200.0	757.0		
33	08/07/93	1025	15.25	225.0	276.5	5.10	49.3	186.6	7.00	Water samples taken for analysis
33	09/13/93	1755	15.50	250.0	305.4	4.90	21.0	79.5	7.00	
33	10/23/93	1015	13.50	235.0	301.1	5.00	10.2	38.6	6.00	
33	11/20/93	1005	14.00	215.0	272.2	6.50	28.6	108.3	5.00	
33	12/18/93	1130	13.75	190.0	242.0	6.80	14.7	55.6	5.00	
33	01/22/94	1307	12.50	150.0	197.0	7.70	19.7	74.6	5.00	
33	02/19/94	1203	13.00	140.0	181.6	7.30	40.8	154.4	5.00	Water samples taken for analysis
33	03/20/94	1025	13.25	172.0	221.8	7.80	8.0	30.3	7.12	
33	04/23/94	1110	13.70	151.0	192.6	7.10	54.9	207.8	6.69	
33	05/23/94	2030	13.90	201.0	255.1	6.70	10.1	38.2	7.60	
33	06/18/94	1000	14.85	270.0	334.9	5.50	12.5	47.3	7.32	

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
33	07/16/94	0950	15.65	227.0	276.4	6.30	21.5	81.4	7.26	
34	05/30/92	1250	14.70	184.0	229.1	3.60	0.5	1.9		
34	01/16/93	1155	11.75	100.0	133.9	7.30	30.0	113.6		
35	06/02/92	1810	15.90	285.0	345.0	6.90	5.0	18.9		
35	01/16/93	1105	11.50	140.0	188.6	10.00	5.0	18.9		
36	06/02/92	1845	14.10	326.0	411.7	7.80	5.0	18.9		
36	01/16/93	1125	13.00	220.0	285.4	10.00	2.0	7.6		
37	06/02/92	1855	13.40	282.0	362.3	8.90	20.0	75.7		
37	01/16/93	1140	13.00	105.0	136.2	9.90	50.0	189.3		
38	06/02/92	1910	15.35	285.0	324.9	5.70	5.0	18.9		
38	01/16/93	1240	14.00	150.0	199.9	9.60	5.0	18.9		
39	06/02/92	1925	14.10	292.0	368.8	8.00	10.0	37.9		
39	01/16/93	1315	13.75	165.0	210.2	10.40	5.0	18.9		
39	08/07/93	1300	15.25	230.0	282.6	9.10	1.9	7.2	7.50	Water samples taken for analysis
39	09/13/93	1810	15.50	230.0	281.0	9.30	0.2	0.8	6.50	
39	10/23/93	1025	14.25	230.0	289.4	9.30	0.2	0.8	5.50	
39	11/20/93	1015	13.25	180.0	232.1	9.30	0.4	1.5	5.00	
39	12/18/93	1140	13.75	190.0	242.0	9.00	12.9	48.8	5.00	
39	01/22/94	1318	14.00	170.0	215.2	9.40	6.6	25.0	5.00	
39	02/19/94	1220	14.00	165.0	208.9	9.40	150.8	570.8	5.00	Water samples taken for analysis
39	03/20/94	1040	13.85	204.0	259.2	9.90	16.1	60.9	7.65	
39	04/23/94	1120	13.25	100.0	128.9	9.70	11.4	43.1	6.62	
39	05/23/94	2015	14.00	217.0	274.7	9.50	6.5	24.6	8.00	
39	06/18/94	1015	14.40	225.0	282.1	9.80	1.9	7.2	7.50	
39	07/16/94	1005	14.55	223.0	278.6	9.80	0.8	3.0	7.37	
40	06/02/92	1930	14.85	278.0	344.9	8.20	10.0	37.9		
40	01/16/93	1335	12.00	140.0	186.2	10.80	5.0	18.9		
41	06/02/92	1945	14.00	321.0	406.4	8.00	20.0	75.7		
41	01/16/93	1350	13.00	220.0	285.4	9.30	10.0	37.9		
42	06/02/92	2005	14.50	335.0	419.0	6.20	10.0	37.9		
42	01/16/93	1415	13.00	220.0	285.4	9.70	1.0	3.8		
43	06/02/92	2015	13.85	283.0	359.6	2.50	10.0	37.9		
43	01/16/93	1430	12.75	160.0	208.9	7.00	50.0	189.3		
44	06/02/92	2025	13.85	279.0	354.5	9.00	10.0	37.9		
44	01/16/93	1450	13.50	190.0	243.5	10.20	10.0	37.9		
45	06/02/92	2035	16.05	228.0	275.0	0.70	0.5	1.9		
45	01/16/93	1510	9.00	130.0	187.2	5.00	0.0	0.0		
46	06/04/92	1950	14.45	262.0	328.1	7.20	10.0	37.9		
46	01/16/93	1520	9.00	80.0	115.2	6.20	15.0	56.8		
47	06/04/92	2010	14.00	257.0	325.4	7.90	10.0	37.9		
47	01/16/93	1545	13.25	120.0	154.7	9.00	30.0	113.6		
48	06/04/92	2015	14.75	248.0	305.9	4.70	5.0	18.9		
48	01/16/93	1555	13.25	120.0	154.7	9.50	5.0	18.9		
49	06/04/92	2025	14.70	186.0	231.6	2.65	5.0	18.9		

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
49	01/16/93	1800	12.00	110.0	146.3	7.90	200.0	757.0		
49	08/07/93	1205	16.00	225.0	271.7	7.60	9.9	37.5	7.00	Water samples taken for analysis
49	09/13/93	1835	16.25	230.0	276.2	6.70	2.1	7.9	7.00	
49	10/23/93	1035	12.75	210.0	274.1	6.90	0.8	3.0	5.50	
49	11/20/93	1028	12.00	190.0	252.8	7.40	1.4	5.3	5.00	
49	12/18/93	1150	13.50	180.0	230.7	7.70	48.7	184.3	5.00	
49	01/22/94	1330	13.75	140.0	178.3	8.60	57.9	219.2	5.00	
49	02/19/94	1255	14.00	85.0	107.6	9.70	316.8	1199.1	5.00	Water samples taken for analysis
49	03/20/94	1055	13.70	173.0	220.6	9.50	213.2	807.0	7.23	
49	04/23/94	1130	13.80	144.0	183.2	9.20	223.5	845.9	6.76	
49	05/23/94	2000	13.90	205.0	260.2	8.80	69.9	264.6	7.61	
49	06/18/94	1030	13.95	217.0	275.1	8.60	27.9	105.6	7.62	
49	07/18/94	1015	13.95	219.0	277.6	8.40	18.0	68.1	7.36	
50	06/06/92	1240	14.95	131.0	162.1	5.50	10.0	37.9		
50	01/03/93	1330	13.00	90.0	116.8	8.00	5.0	18.9		
51	06/06/92	1250	15.80	134.0	162.6	6.20	20.0	75.7		
51	01/03/93	1335	12.50	140.0	183.9	9.00	20.0	75.7		
52	06/16/92	1845	15.80	585.0	709.7	2.45	5.0	18.9		
52A	01/23/93	1030	10.00	220.0	308.3	6.50	1.0	3.8		
53	06/16/92	1905	16.75	532.0	631.5	8.20	10.0	37.9		
53	01/23/93	0955	10.75	325.0	446.5	5.90	1.0	3.8		
53A	01/23/93	1010	9.25	310.0	443.4	2.90	1.0	3.8		Spring is dry
53	08/08/93	0820								
53	09/11/93	1305	18.25	380.0	436.2	1.85	0.1	0.2		
53	10/23/93	0935	13.00	220.0	285.4	0.30	0.0	0.0	6.00	Extremely low flow (0.01 gpm assumed)
53	11/20/93	0905	12.25	380.0	502.3	3.10	0.2	0.8	6.00	
53	12/18/93	1030	10.50	320.0	442.6	7.20	2.3	8.7	5.00	
53	01/22/94	1000	6.00	260.0	408.1	6.00	0.2	0.8	5.00	
53	02/19/94	1025	10.00	250.0	350.4	7.50	0.1	0.4	5.00	
53	03/20/94	0925	10.50	340.0	470.2	6.20	0.0	0.0	7.21	Extremely low flow (0.01 gpm assumed)
53	04/23/94	0955	12.75	339.0	442.5	6.20	0.3	1.1	6.58	
53	05/23/94	1900	16.00	450.0	543.4	3.50	0.0	0.0	7.26	Extremely low flow (0.01 gpm assumed)
53	06/18/94	0915	17.30	486.0	569.8	2.00	0.0	0.0	6.83	Extremely low flow (0.01 gpm assumed)
53	07/16/94	0840	18.45	568.0	649.2	0.50	0.0	0.0	6.81	Extremely low flow (0.01 gpm assumed)
54	06/16/92	1920	14.95	338.0	418.3	7.00	20.0	75.7		
54	01/23/93	1210	14.75	250.0	310.9	9.60	150.0	567.8		
54	07/31/93	1102	14.75	265.0	329.5	9.60	135.4	512.5		Water samples taken for analysis
54	09/11/93	1240	15.00	250.0	309.0	7.70	180.3	682.4		
54	10/23/93	0922	14.50	265.0	331.5	8.75	153.0	579.1	5.50	
54	11/20/93	0918	14.50	260.0	325.2	8.60	156.0	590.5	5.00	
54	12/18/93	1040	14.50	260.0	325.2	9.30	330.2	1249.8	4.50	
54	01/22/94	0950	14.25	230.0	289.4	9.30	271.2	1026.5	5.00	
54	02/19/94	1040	14.00	170.0	215.2	9.10	804.5	3045.0	5.00	Water samples taken for analysis
54	03/20/94	0935	14.10	244.0	308.2	9.90	481.2	1821.3	7.45	

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
54	04/23/94	1015	14.05	240.0	303.5	9.30	465.5	1761.9	7.02	
54	05/23/94	1915	14.40	266.0	333.5	9.20	176.1	666.5	7.42	
54	06/18/94	0905	15.05	158.0	195.1	9.20	251.5	951.9	7.10	
54	07/16/94	0850	14.40	259.0	324.7	9.20	169.4	641.2	7.22	
55	06/16/92	1930	14.40	234.0	293.4	8.70	10.0	37.9		See #164
56	06/16/92	1945	14.80	325.0	403.6	5.40	50.0	189.3		
56	01/23/93	1245	14.00	260.0	329.2	7.90	50.0	189.3		
56	08/08/93	1600	15.50	280.0	342.1	5.90	126.1	477.3		Water samples taken for analysis
56	09/11/93	1225	15.50	250.0	305.4	5.90	28.3	107.1		
56	10/23/93	0915	13.50	270.0	346.0	5.40	20.1	76.1	6.50	
56	11/20/93	0930	14.00	265.0	335.5	5.60	45.3	171.5	5.00	
56	12/18/93	1100	14.25	220.0	276.8	6.70	53.7	203.3	5.50	
56	01/22/94	0935	14.00	220.0	278.5	8.30	25.9	98.0	5.00	
56	02/19/94	1100	13.75	185.0	235.6	7.80	302.5	1145.0	5.00	Water samples taken for analysis
56	03/20/94	0950	14.40	219.0	274.6	8.50	182.3	690.0	7.17	
56	04/23/94	1025	13.75	184.0	234.4	8.20	673.2	2548.1	6.79	
56	05/23/94	1930	13.90	247.0	313.5	7.40	112.4	425.4	7.38	
56	06/18/94	0855	14.15	268.0	338.1	7.00	72.1	272.9	7.02	
56	07/16/94	0900	14.25	264.0	332.2	6.90	109.0	412.6	7.21	
57	06/16/92	1955	14.80	311.0	386.2	9.00	10.0	37.9		
57	01/23/93	1255	14.75	250.0	310.9	9.70	20.0	75.7		
58	06/16/92	2005	16.55	356.0	424.5	4.15	2.0	7.6		
58	01/23/93	1305	11.75	230.0	307.9	4.80	1.0	3.8		
58	06/16/92	2015	14.75	215.0	267.3	4.50	20.0	75.7		
59	01/23/93	1315	14.25	175.0	220.2	1.40	20.0	75.7		
60	06/16/92	2025	14.30	275.0	345.6	9.30	40.0	151.4		
60	01/23/93	1330	14.00	210.0	265.9	9.70	30.0	113.6		
60	07/31/93	0935	14.50	225.0	281.4	9.60	35.9	135.9	7.50	Water samples taken for analysis
60	09/11/93	1325	15.00	170.0	210.1	8.00	95.8	362.6		
60	10/22/93	0950	14.00	230.0	291.2	8.70	89.0	336.9	5.50	
60	11/20/93	0940	14.50	200.0	250.2	9.00	79.7	301.7	5.00	
60	12/18/93	1115	14.00	200.0	253.2	9.30	85.9	325.1	5.50	
60	01/22/94	1220	14.25	180.0	226.5	9.60	84.8	321.0	4.50	
60	02/19/94	1120	14.00	170.0	215.2	9.50	158.4	599.5	5.00	Water samples taken for analysis
60	03/20/94	1000	13.90	115.0	145.9	10.20	154.3	584.0	7.56	
60	04/23/94	1040	13.90	199.0	252.5	9.90	201.8	763.8	6.77	
60	05/23/94	1945	14.00	196.0	248.1	9.50	126.5	478.8	7.56	
60	06/18/94	0840	14.45	224.0	280.5	9.50	133.8	506.4	7.01	
60	07/16/94	0920	14.05	229.0	289.6	9.30	117.1	443.2	7.29	
61	06/16/92	2035	16.65	402.0	478.3	2.35	5.0	18.9		
61	01/23/93	1345	12.50	280.0	367.8	3.50	10.0	37.9		
62	06/19/92	1045	20.00	290.0	320.6	4.10	10.0	37.9		Access unavailable, measurements not taken.
63	08/19/92	1100	20.25	577.0	634.6	1.25	0.5	1.9		

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
63										
64	06/19/92	1140	14.70	354.0	440.7	9.20	10.0	37.9		
64										
65	06/20/92	1045	13.95	532.0	874.3	4.70	5.0	18.9		
65	01/17/93	1400	9.50	120.0	170.5	5.20	0.0	0.0		
66	06/20/92	1130	17.85	87.0	100.8	4.20	1.0	3.8		
66	01/17/93	1430	11.50	40.0	53.9	8.90	1.0	3.8		
67	06/20/92	1200	16.40	184.0	220.2	7.60	1.0	3.8		
67	01/17/93	1445	11.50	80.0	107.8	10.40	1.0	3.8		
68	06/20/92	1220	17.45	175.0	204.5	3.40	1.0	3.8		
68	01/17/93	1500	11.00	70.0	95.6	10.00	20.0	75.7		
69	06/20/92	1230	17.05	93.0	108.6	6.20	1.0	3.8		
69	01/17/93	1515	11.00	40.0	54.6	10.20	1.0	3.8		
70	06/20/92	1250	16.30	136.0	163.1	5.40	1.0	3.8		
70	01/17/93	1530	12.00	70.0	93.1	9.40	5.0	18.9		
71	06/20/92	1315	18.85	293.0	320.7	2.95	1.0	3.8		
71	01/17/93	1545	11.00	65.0	88.7	7.30	1.0	3.8		
72	06/20/92	1350	19.05	216.0	243.7	0.45	0.5	1.9		
72	01/17/93	1350	10.50	40.0	55.3	9.80	5.0	18.9		
73	06/20/92	1620	18.25	143.0	164.2	5.80	0.5	1.9		
73	01/17/93	1745	10.50	40.0	55.3	9.80	5.0	18.9		
74	06/20/92	1635	17.40	54.0	63.2	7.00	0.5	1.9		
74	01/17/93	1735	11.00	35.0	47.8	10.40	5.0	18.9		
74	08/07/93	1800	20.00	55.0	60.8	6.60	4.0	15.1	7.00	Water samples taken for analysis
74	09/12/93	1800	20.25	70.0	77.0	7.50	0.0	0.2	7.50	
74	10/23/93	1353	16.75	50.0	59.4	6.00	0.8	3.0	5.50	
74	11/20/93	1230	14.00	45.0	57.0	6.75	0.9	3.4	5.00	
74	12/18/93	1340	12.00	40.0	53.2	8.90	1.7	6.4	5.00	
74	01/22/94	1600	9.00	30.0	43.2	9.80	4.1	15.5	4.50	
74	02/20/94	1050	10.25	30.0	41.8	10.20	6.1	23.1	4.50	Water samples taken for analysis
74	03/20/94	1140	10.45	35.0	48.5	11.00	3.2	12.1	6.32	
74	04/23/94	1250	13.25	33.0	42.5	10.20	5.5	20.8	6.34	
74	05/24/94	1630	15.25	41.0	50.4	9.00	1.7	6.4	7.35	
74	06/18/94	1230	17.70	47.0	54.6	8.20	2.1	7.9	7.20	
74	07/16/94	1515	19.17	50.0	56.3	7.90	1.9	7.2	6.90	
75	06/20/92	1650	18.10	79.0	91.0	4.80	0.5	1.9		
75	01/17/93	1710	10.50	50.0	69.2	10.10	5.0	18.9		
76	06/20/92	1710	17.35	133.0	155.8	4.00	0.5	1.9		
76	01/17/93	1700	10.75	30.0	41.2	9.00	1.0	3.8		Spring is dry
76	08/07/93	1740								Spring is dry
76	09/12/93	1835								Spring is dry
76	10/23/93	1345								Spring is dry
76	11/20/93	1240								Spring is dry
76	12/18/93	1350								Spring is dry

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
76	01/22/94	1620								Spring is dry
76	02/20/94	1120	10.25	35.0	48.7	7.70	0.0	0.0	4.50	Extremely low flow (0.01 gpm assumed)
76	03/20/94	1155	9.85	48.0	67.5	4.50	0.0	0.0	5.18	Extremely low flow (0.01 gpm assumed)
76	04/23/94	1310								Spring is dry
76	05/24/94	1645								Spring is dry
76	06/18/94	1240								Spring is dry
76	07/16/94	1525								Spring is dry
77	06/20/92	1750	18.15	553.0	636.2	3.35	0.5	1.9		
77	01/17/93	1230	11.50	330.0	444.7	10.20	15.0	56.8		
77	08/07/93	1610								Spring is dry
77	09/12/93	1945								Spring is dry
77	10/23/93	1427								Spring is dry
77	11/20/93	1330	11.00	345.0	470.9	8.50	0.0	0.0	5.00	Extremely low flow (0.01 gpm assumed)
77	12/18/93	1440	11.75	300.0	401.6	8.90	0.5	1.9	5.50	
77	01/22/94	1700	8.50	260.0	379.6	9.90	8.6	32.6	5.00	
77	02/19/94	1835	10.00	285.0	399.4	9.40	6.8	25.7	5.00	
77	03/20/94	1255	10.10	303.0	423.5	9.80	5.1	19.3	7.43	
77	04/22/94	1325	12.00	343.0	456.3	8.10	10.9	41.3	7.17	
77	05/22/94	1930	14.60	412.0	514.1	8.10	0.0	0.0	7.33	
77	06/17/94	2045	20.50	468.0	512.0	9.60	0.0	0.0	7.44	Extremely low flow (0.01 gpm assumed)
77	07/16/94	1350	19.40	450.0	503.9	7.60	0.0	0.0	7.42	Extremely low flow (0.01 gpm assumed)
78	06/22/92	2025	18.90	488.0	552.4	3.50	0.5	1.9		
78	02/14/93	1430	8.50	360.0	525.7	5.20	1.0	3.8		
79	06/22/92	2040	16.80	492.0	583.4	3.25	1.0	3.8		
79	02/14/93	1450	12.00	350.0	465.6	6.50	5.0	18.9		
80	06/22/92	2045	18.80	1023.0	1160.4	2.20	1.0	3.8		
80	02/14/93	1505								Discovered to be runoff from a sewer
81	06/24/92	1800	16.15	591.0	711.2	6.90	1.0	3.8		
81	02/14/93	1335	11.25	370.0	501.8	7.00	1.0	3.8		
81	08/01/93	1535								Spring is Dry!
81	08/08/93	0855	18.00	445.0	513.7	5.40	0.0	0.0	7.00	Water samples taken for analysis
81	09/12/93	1735	19.25	600.0	674.0	0.90	0.0	0.0	7.50	Spring is dry, data and He sample taken from stream
81	10/23/93	1410	17.00	445.0	525.3	4.75	0.8	3.0	5.00	
81	11/20/93	1107	14.25	380.0	478.2	5.50	2.7	10.2	5.00	
81	12/18/93	1225	13.50	405.0	519.0	6.00	3.5	13.2	5.00	
81	01/22/94	1440	11.50	375.0	505.3	6.80	4.0	15.1	5.00	
81	02/19/94	1450	11.50	350.0	471.6	7.00	5.1	19.3	5.00	Water samples taken for analysis
81	03/18/94	1940	11.05	372.0	507.1	7.80	2.4	9.1	7.33	
81	04/23/94	1230	12.75	382.0	498.7	7.00	1.4	5.3	6.86	
81	05/22/94	1915	14.50	367.0	459.1	7.40	0.3	1.1	7.33	
81	06/17/94	2025	16.20	424.0	509.7	6.30	1.5	5.7	7.12	
81	07/16/94	1425	16.50	375.0	447.7	6.50	6.5	24.6	7.20	
82	06/24/92	1830	18.50	580.0	682.2	6.50	5.0	18.9		
82	02/14/93	1400	7.50	270.0	405.6	10.60	1.0	3.8		

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
83	06/24/92	1845	14.80	511.0	634.6	5.10	20.0	75.7		
83	02/14/93	1315	13.75	370.0	471.3	4.70	100.0	378.5		
83	08/01/93	1840	14.75	400.0	497.4	3.25	20.5	77.6	7.00	Water samples taken for analysis
83	09/12/93	1530	14.75	415.0	516.0	2.75	29.2	110.5	8.00	
83	10/23/93	1437	14.50	430.0	537.9	2.75	23.0	87.1	6.00	
83	11/20/93	1345	15.00	405.0	500.6	4.20	59.6	225.6	5.00	
83	12/18/93	1455	15.25	360.0	442.4	5.00	166.7	631.0	5.00	
83	01/22/93	1718	13.75	295.0	375.7	6.30	514.3	1946.6	5.00	
83	02/19/94	1545	14.50	300.0	375.3	6.10	449.7	1702.1	5.00	Water samples taken for analysis
83	03/18/94	1855	14.25	345.0	434.1	5.50	124.9	472.7	7.14	
83	04/23/94	1340	14.35	345.0	433.1	5.60	164.0	620.7	6.98	
83	05/22/94	1945	14.35	386.0	484.6	4.20	49.7	188.1	7.24	
83	06/17/94	2100	14.45	396.0	495.9	3.50	86.2	326.3	7.09	
83	07/16/94	1405	14.93	343.0	424.7	3.30	119.7	453.1	7.05	
84	07/20/92	1910	19.00	120.0	135.5	8.20	0.5	1.9		
84	03/06/93	1045	7.75	90.0	134.2	10.00	3.0	11.4		
85	07/20/92	2020	20.50	531.0	580.9	5.60	1.0	3.8		
85	03/06/93	1005	7.25	60.0	90.8	7.10	10.0	37.9		
85B	03/06/93	1020	6.75	35.0	59.7	8.20	1.0	3.8		
86	07/21/92	1820	22.60	277.0	290.3	0.70	0.0	0.0		
86	03/06/93	1325	8.00	105.0	155.5	5.00	5.0	18.9		
87	07/21/92	1920	21.75	345.0	387.8	5.50	1.3	4.7		Spring is dry
87B	03/06/93	1335	9.75	180.0	254.0	3.90	1.0	3.8		
88	07/23/92	1910	20.10	505.0	557.1	8.90	2.0	7.6		
88	04/03/93	1045	10.00	245.0	343.4	10.00	15.0	56.8		
89	07/23/92	2020	21.85	427.0	454.3	4.05	2.5	9.5		
89	03/06/93	1235	9.00	120.0	172.8	9.70	5.0	18.9		
90	07/23/92	2040	20.75	232.0	252.5	3.60	0.5	1.9		
90	03/06/93	1230	7.75	100.0	149.1	9.20	10.0	37.9		
90B	03/06/93	1220	8.50	85.0	124.1	8.20	1.0	3.8		
91	07/25/92	1240	22.47	592.0	622.1	4.85	1.0	3.8		
91	03/06/93	1135	12.00	295.0	392.4	6.40	1.0	3.8		
91	08/05/93	1745								Spring is dry
91	09/12/93	1915								Spring is dry
91	10/23/93	1330								Spring is dry
91	11/20/93	1253								Spring is dry
91	12/18/93	1420								Spring is dry
91	01/22/94	1830								
91	02/20/94	1130	12.50	330.0	433.5	5.10	0.3	1.1	5.00	
91	03/20/94	1210	13.25	375.0	483.5	6.40	2.9	11.0	7.17	
91	04/22/94	2020	12.90	316.0	411.0	5.80	3.0	11.4	6.96	
91	05/24/94	1700	15.65	456.0	557.6	4.50	0.4	1.5	6.96	
91	06/18/94	1320	16.90	459.0	543.0	4.00	0.0	0.0	6.92	Extremely low flow (0.01 gpm assumed)

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
91	07/16/94	1545	19.10	550.0	619.9	3.20	0.0	0.0	6.92	Extremely low flow (0.01 gpm assumed)
92	07/25/92	1310	23.20	126.0	130.5	2.65	0.0	0.0		
92	03/06/93	1115				6.90	2.0	7.6		Runoff from spring #71
93	07/25/92	1325	20.00	223.0	246.5					
93	03/06/93	1115				6.00	0.0	0.0		Runoff from spring #71
94	07/25/92	1430	21.80	233.0	248.2					Could not locate
94	04/03/93									
95	07/25/92	1445	21.85	344.0	366.0	2.75	0.0	0.0		
95	04/03/93	1555	12.00	140.0	186.2	2.00	1.0	3.8		
96	07/25/92	1505	19.95	144.0	159.4	8.90	3.0	11.4		
96	04/03/93	1530	10.75	50.0	68.7	9.60	25.0	94.6		
97	07/25/92	1525	20.80	220.0	239.2	3.10	1.0	3.8		
97	04/03/93	1545	11.25	60.0	81.4	7.50	10.0	37.9		
98	07/25/92	1535	22.10	400.0	423.5	2.65	0.0	0.0		
98	04/03/93	1610	10.25	180.0	250.6	3.90	0.5	1.9		
99	07/25/92	1550	23.30	229.0	236.7	7.20	1.0	3.8		
99	04/03/93	1505	11.00	75.0	102.4	9.60	40.0	151.4		
100	07/25/92	1830	17.75	321.0	372.6	9.15	300.0	1135.5		
100	01/03/93	1555	10.00	210.0	294.3	11.80	100.0	378.5		
101	07/29/92	1855	21.50	154.0	185.0	6.00	0.0	0.0		
101	01/03/93	1525	10.00	80.0	112.1	8.60	5.0	18.9		
102	07/29/92	1915	14.35	311.0	390.4	7.00	5.0	18.9		
102	01/03/93	1510	14.25	220.0	276.8	7.40	50.0	189.3		
102	08/10/93	1820	14.75	240.0	298.4	7.10	13.4	50.7	7.00	Water samples taken for analysis
102	09/14/93	1815	14.50	255.0	331.5	7.10	5.3	20.1	7.00	He sample taken
102	10/22/93	1807	14.00	260.0	329.2	6.80	2.5	9.5	7.50	
102	11/19/93	1710	14.25	250.0	314.6	7.10	5.7	21.6	5.50	
102	12/17/93	1710	13.00	225.0	291.9	7.30	8.1	30.7	5.00	
102	01/21/94	1800	13.00	180.0	233.5	7.80	8.7	32.9	4.50	
102	02/18/94	1855	13.00	190.0	246.5	7.50	14.3	54.1	5.00	Water samples taken for analysis
102	03/18/94	1725	12.60	212.0	277.8	7.80	22.6	85.5	7.11	
102	04/22/94	1810	12.90	202.0	262.7	7.40	16.1	60.9	7.16	
102	05/22/94	1820	13.45	248.0	318.2	6.80	18.3	69.3	7.03	
102	06/17/94	1825	13.80	258.0	328.2	7.20	7.7	29.1	7.26	
102	07/16/94	1245	13.60	250.0	319.6	7.20	5.3	20.1	7.48	
103	08/01/92	0940	19.75	565.0	628.0	3.50	2.5	9.5		
103A	01/30/93	1040	6.00	80.0	125.6	5.00	1.0	3.8		
104	08/01/92	1010	18.95	40.0	45.2	2.30	0.0	0.0		
104	01/30/93	1405	7.25	35.0	53.0	11.80	10.0	37.9		
105	08/01/92	1025	19.45	66.0	73.8	5.90	0.5	1.9		
105	01/30/93	1430	11.00	25.0	34.1	4.40	1.0	3.8		
105	07/31/93	1555								Spring is Dry!
105	09/11/93	1020								Spring is Dry!
105	10/23/93	0733								Spring is Dry!

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
105	11/20/93	0710								Spring # Dry!
105	12/18/93	0800	12.75	40.0	52.2	5.20	0.3	1.1	4.00	
105	01/22/94	1030	7.00	20.0	30.5		0.9	3.4	4.50	
105	02/19/94	0750	10.00	20.0	28.0	6.60	1.1	4.2	4.50	
105	03/20/94	0730	10.40	28.0	38.8	6.80	0.6	2.3	5.32	
105	04/23/94	0855	12.80	11.0	14.3	6.30	0.9	3.4	5.82	
105	05/23/94	1655	15.50	33.0	40.3	5.50	0.0	0.0	5.40	Extremely low flow (0.01 gpm assumed)
105	06/18/94	0730	19.75	45.0	50.0	2.80	0.0	0.0	6.15	Extremely low flow (0.01 gpm assumed)
105	07/16/94	0720	19.60	45.0	50.2	3.80	0.0	0.0	6.90	
106	08/01/92	1035	20.50	48.0	52.5	2.40	0.5	1.9		
106A	01/30/93	1445	10.00	20.0	28.0	4.40	1.0	3.8		
106B	01/30/93	1445	10.00	25.0	35.0	6.20	1.0	3.8		
107	08/01/92	1045	17.25	117.0	137.3	4.60	3.0	11.4		
107	01/30/93	1455	11.00	70.0	95.8	6.90	5.0	18.9		
108	08/01/92	1055	18.95	38.0	43.0	4.50	0.5	1.9		
108	01/30/93	1510	9.00	20.0	28.8	10.00	1.0	3.8		
109	08/01/92	1115	16.20	115.0	138.2	3.85	10.0	37.9		
109	01/30/93	1520	10.50	75.0	103.7	6.50	10.0	37.9		
110	08/01/92	1130	17.00	66.0	77.9	5.20	10.0	37.9		
110	01/30/93	1530								Spring # 176 replaces it as springhead
111	08/01/92	1245	19.00	82.0	92.6	7.10	2.0	7.6		
111	01/30/93	1345	11.00	45.0	61.4	10.80	1.0	3.8		
112	08/01/92	1420	19.75	53.0	58.9	5.80	0.5	1.9		
112	01/30/93	1640	10.00	30.0	42.0	10.40	1.0	3.8		
112	07/31/93	1620	22.50	110.0	115.5	4.50	0.0	0.0	8.00	Water samples taken for analysis
112	09/11/93	1030	17.50	80.0	93.4	5.20	0.2	0.8		
112	10/23/93	0740	12.75	80.0	104.4	4.60	0.3	1.1	5.50	
112	11/20/93	0720	11.75	65.0	87.0	4.70	2.1	7.9	5.00	
112	12/18/93	0830	11.00	45.0	61.4	8.50	0.5	1.9	4.50	
112	01/22/94	1047	7.00	30.0	45.7	10.40	0.8	3.0	5.00	
112	02/19/94	0810	10.00	20.0	28.0	8.20	3.1	11.7	5.00	Water samples taken for analysis
112	03/20/94	0750	10.95	31.0	42.4	10.00	3.1	11.7	6.68	
112	04/23/94	0830	13.00	26.0	33.7	9.70	2.9	11.0	6.65	
112	05/23/94	1720	14.95	34.0	42.1	8.60	0.8	3.0	6.80	
112	06/18/94	0705	17.90	46.0	53.2	7.20	1.0	3.8	6.65	
112	07/16/94	0700	18.20	73.0	83.9	6.80	0.3	1.1	7.93	
113	08/01/92	1450	20.30	236.0	259.3	5.40	1.0	3.8		
113	01/30/93	1020	5.00	40.0	64.7	11.00	20.0	75.7		
114	08/03/92	1810	20.45	430.0	470.9	4.90	0.0	0.0		
114	01/03/93	1845	10.00	195.0	273.3	7.50	30.0	113.6		
115	08/03/92	1840	18.15	295.0	337.1	7.00	5.0	18.9		
115	01/03/93	1820	12.25	150.0	196.3	3.00	50.0	189.3		
116	08/08/92	0835	18.45	141.0	187.7	8.20	10.0	37.9		
116A	01/30/93	1005	6.00	45.0	70.6	11.20	5.0	18.9		

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
117	08/08/92	0855	19.90	189.0	209.4	3.65	1.0	3.8		
117	01/30/93	0950	8.50	45.0	65.7	7.50	5.0	18.9		
118	08/08/92	0945	20.70	66.0	71.9	1.65	0.5	1.9		
118	01/30/93	1555	7.75	20.0	29.8	10.50	5.0	18.9		
118	08/03/93	1815								Spring is dry
118	09/11/93	1055	17.25	50.0	58.7	1.20	0.0	0.0		Extremely low flow (0.01 gpm assumed)
118	10/23/93	0805	11.00	35.0	47.8	3.15	0.0	0.0	5.00	Extremely low flow (0.01 gpm assumed)
118	11/20/93	0745	9.75	40.0	56.4	1.10	0.0	0.0	4.50	Extremely low flow (0.01 gpm assumed)
118	12/18/93	0850	8.50	25.0	36.5	9.50	0.0	0.0	4.00	Extremely low flow (0.01 gpm assumed)
118	01/22/94	1105	3.25	20.0	34.2	12.40	0.0	0.0	4.00	Extremely low flow (0.01 gpm assumed)
118	02/19/94	0845	7.00	25.0	38.1	10.80	1.4	5.3	4.50	
118	03/20/94	0820	8.50	29.0	42.3	7.60	0.0	0.0	5.37	Extremely low flow (0.01 gpm assumed)
118	04/23/94	0810	11.40	31.0	41.9	6.90	1.0	3.8	6.37	
118	05/23/94	1740	18.30	46.0	52.8	1.60	0.0	0.0	6.70	Extremely low flow (0.01 gpm assumed)
118	06/18/94	0645	20.00	65.0	71.9	1.70	0.0	0.0	7.13	Extremely low flow (0.01 gpm assumed)
118	07/18/94	0635	20.95	53.0	57.4	2.80	0.0	0.0	7.72	Extremely low flow (0.01 gpm assumed)
119	08/08/92	1130	18.40	58.0	66.4	7.80	5.0	18.9		
119	01/31/93	1330	10.75	30.0	41.2	10.60	5.0	18.9		
119	08/03/93	2030	20.50	85.0	93.0	6.80	1.6	6.1		Water samples taken for analysis
119	09/11/93	1150	17.25	85.0	99.8	7.60	0.2	0.8		
119	10/23/93	0855	13.50	95.0	121.7	8.40	7.2	27.3	5.50	
119	11/20/93	0840	12.75	75.0	97.9	8.80	0.7	2.6	5.00	
119	12/18/93	1000	12.00	55.0	73.2	9.00	6.1	23.1	4.00	
119	01/22/94	1155	8.75	40.0	58.0	10.80	5.1	19.3	5.00	
119	02/19/94	0950	10.75	30.0	41.2	10.20	1.6	6.1	5.00	Water samples taken for analysis
119	03/20/94	0900	11.00	35.0	47.8	10.90	4.7	17.8	6.68	
119	04/23/94	0930	12.95	35.0	45.5	10.20	4.7	17.8	6.23	
119	05/23/94	1840	14.75	58.0	72.1	9.10	3.7	14.0	7.40	
119	06/18/94	0815	16.85	47.0	55.7	9.10	3.1	11.7	6.74	
119	07/18/94	0810	17.55	75.0	87.4	8.80	4.9	18.5	7.35	
120	08/08/92	1145	18.95	88.0	99.5	6.50	1.0	3.8		
120	01/31/93	1345	11.00	45.0	61.4	10.00	5.0	18.9		
121	08/08/92	1215	21.20	234.0	252.3	1.15	0.5	1.9		
121A	01/31/93	1405	6.75	55.0	84.4	9.20	1.0	3.8		
122	08/08/92	1350	18.95	270.0	305.3	0.80	0.5	1.9		
122	01/31/93	1000	8.25	100.0	147.0	4.20	1.0	3.8		
123	08/08/92	1410	20.85	177.0	192.2	2.60	1.0	3.8		
123	01/31/93	1010	6.75	80.0	122.8	6.00	1.0	3.8		
124	08/08/92	1435	17.15	69.0	81.2	7.90	5.0	18.9		
124A	01/31/93	1030	6.75	30.0	43.5	8.20	10.0	37.9		
124B	01/31/93	1035	9.75	20.0	28.2	7.40	5.0	18.9		
124B	08/03/93	1900	21.00	110.0	119.1	1.20	0.1	0.4	7.50	Water samples taken for analysis
124B	09/11/93	1115	17.00	60.0	70.8	4.50	1.0	3.8		
124B	10/23/93	0836	12.00	60.0	79.8	1.05	1.4	5.3	5.00	Flow taken ~40' downstream

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
124B	11/20/93	0818	9.50	50.0	71.0	6.30	1.7	6.4	4.50	
124B	12/18/93	0925	10.75	40.0	55.0	6.30	10.3	39.0	4.50	
124B	01/22/94	1135	7.50	250.0	375.5	6.50	2.8	10.6	4.00	
124B	02/19/94	0910	9.50	20.0	28.4	8.50	7.8	29.5	4.50	Water samples taken for analysis
124B	03/20/94	0840	10.20	29.0	40.4	9.10	3.9	14.8	5.95	
124B	04/23/94	0915	11.95	29.0	38.6	7.40	4.7	17.8	6.04	
124B	05/23/94	1810	14.75	41.0	68.0	1.2	4.5	6.50		
124B	06/18/94	0800	17.05	58.0	68.4	5.70	3.3	12.5	6.21	
124B	07/16/94	0745	19.15	55.0	61.9	6.10	1.4	5.3	6.80	
125	08/08/92	1510	18.50	82.0	93.6	3.45	1.0	3.8		
125	01/31/93	1505	11.25	40.0	54.2	7.10	1.0	3.8		
126	08/08/92	1520	19.76	146.0	162.3	5.00	0.5	1.9		
126	01/31/93	1455	10.00	70.0	98.1	4.70	1.0	3.8		
127	08/08/92	1540	18.70	91.0	103.4	4.80	1.0	3.8		
127	01/31/93	1520	10.50	60.0	83.0	5.80	1.0	3.8		
128	08/11/92	1745	15.20	356.0	438.0	4.80	1.0	3.8		
128	02/14/93	1115	10.00	230.0	322.4	9.00	10.0	37.9		
129	08/11/92	1755	14.40	380.0	476.5	7.80	30.0	113.6		
129	02/14/93	1105	13.75	290.0	369.4	9.20	30.0	113.6		
129	08/01/93	1750	15.00	310.0	383.2	8.40	53.3	201.7	7.40	Water samples taken for analysis
129	09/12/93	1720	15.25	320.0	393.2	8.00	10.1	38.2	7.00	
129	10/23/93	1450	14.25	320.0	415.3	7.85	10.2	38.6	5.00	
129	11/20/93	1433	13.75	320.0	407.6	7.95	14.4	54.5	5.00	
129	12/18/93	1545	14.50	285.0	356.5	8.40	43.1	163.1	5.00	
129	01/22/94	1730	14.50	270.0	337.7	8.90	52.7	199.5	5.00	
129	02/20/94	0750	14.00	270.0	341.8	9.50	96.5	365.3	5.00	Water samples taken for analysis
129	03/18/94	1755	14.45	303.0	379.5	9.40	51.7	195.7	7.24	
129	04/23/94	1425	14.25	289.0	363.7	9.00	109.9	416.0	6.96	
129	05/22/94	2040	14.10	284.0	358.7	8.40	30.9	117.0	7.32	
129	06/18/94	1200	14.35	315.0	395.4	8.50	23.3	88.2	7.26	
129	07/14/94	1105	14.10	310.0	391.5	8.60	17.1	64.7	7.23	
130	08/11/92	1805	17.35	318.0	372.4	2.55	30.0	113.6		
130	02/14/93	1055	11.00	215.0	293.5	4.30	50.0	189.3		
131	08/11/92	1900	13.80	278.0	353.7	7.60	50.0	189.3		
131	02/14/93	1155	12.00	150.0	199.5	8.50	150.0	567.8		
131	08/10/93	2000	15.50	225.0	274.9	6.60	72.4	274.0	7.00	Water samples taken for analysis
131	09/12/93	1550	15.50	240.0	293.2	7.30	22.9	86.7	7.00	Helium sample taken
131	10/23/93	1503	15.00	300.0	370.8	6.00	49.6	187.7	5.50	
131	11/20/93	1422	14.50	245.0	306.5	6.60	75.5	285.8	5.00	
131	12/18/93	1510	13.75	150.0	191.1	7.30	140.3	531.0	5.00	
131	01/22/94	1745	12.50	105.0	137.9	8.10	324.1	1226.7	4.50	
131	02/18/94	1855	11.50	120.0	134.7	7.80	575.8	2179.4	5.00	Water samples taken for analysis
131	03/18/94	1840	11.25	100.0	165.6	8.40	262.3	992.8	7.15	
131	04/23/94	1355	12.70	113.0	147.7	6.90	433.3	1640.0	7.38	

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
131	05/22/94	2000	13.95	180.0	228.2	6.20	72.6	274.8	7.23	
131	06/18/94	1215	14.00	215.0	272.2	5.50	118.8	449.7	7.22	
131	07/16/94	1335	16.27	230.0	276.0	5.00	93.5	353.9	7.10	
132	08/11/92	2000	16.90	240.0	283.9	5.90	1.0	3.8		
132	02/14/93	0930	8.50	110.0	160.6	4.70	1.0	3.8		
132	08/08/93	1915	17.75	150.0	174.1	6.20	0.3	1.1	7.00	Water samples taken for analysis
132	09/12/93	1615	18.00	160.0	184.7	7.10	7.1	26.9	7.50	
132	10/23/93	1515	16.00	140.0	169.1	5.90	2.4	9.1	5.00	
132	11/20/93	1412	15.25	100.0	122.9	6.40	4.7	17.8	5.10	
132	12/18/93	1518	14.25	85.0	107.0	6.60	1.7	6.4	5.00	
132	01/22/94	1750	9.00	105.0	151.2	9.10	4.1	15.5	5.00	
132	02/19/94	1715	12.25	80.0	105.8	8.00	6.1	23.1	5.00	Water samples taken for analysis
132	03/18/94	1825	12.10	102.0	135.3	8.80	0.0	0.0	7.07	Extremely low flow (0.01 gpm assumed)
132	04/23/94	1405								Recent const. prevents access
132	05/22/94	2010								Recent const. prevents access
132	06/18/94	1215								Recent const. prevents access
132	07/16/94									Time not recorded
133	09/01/92		26.00	259.0	254.1	6.00	0.0	0.0		
133	01/27/93	1840	12.75	230.0	300.3	9.30	0.0	0.0		
134	09/05/92		23.50	373.0	384.0	3.10	0.5	1.9		Time not recorded
134A	01/23/93	1625	11.50	370.0	498.6	3.80	0.5	1.9		
135	09/12/92	0920	17.75	126.0	146.3	5.70	2.0	7.6		
135	02/27/93	1240	11.50	50.0	67.4	10.20	5.0	18.9		
136	09/12/92	1000	17.70	193.0	224.3	2.30	0.5	1.9		
136	02/27/93	1320	9.00	50.0	72.0	6.90	10.0	37.9		
137	09/12/92	1015	17.50	205.0	239.3	6.60	1.0	3.8		
137	02/27/93	1330	9.75	55.0	77.6	10.10	5.0	18.9		
137	08/04/93	0850	19.00	215.0	242.8	4.60	3.1	11.7	7.20	Water samples taken for analysis
137	09/11/93	1500	19.50	210.0	234.6	1.10	0.8	3.0		
137	10/23/93	1210	15.00	170.0	210.1	4.35	2.5	9.5	5.50	
137	11/20/93	1212	13.75	155.0	197.4	4.95	0.4	1.5	5.00	
137	12/18/93	1325	11.25	100.0	135.6	9.90	0.1	0.4	5.00	
137	01/22/94	1540	9.00	65.0	93.6	11.00	0.3	1.1	5.00	
137	02/20/94	1010	11.00	70.0	95.6	10.40	1.0	3.8	4.50	Water samples taken for analysis
137	03/20/94	1320	12.70	86.0	112.4	10.60	0.8	3.0	7.49	
137	04/22/94	1945	13.15	67.0	86.6	9.40	4.3	16.3	7.40	
137	05/24/94	1800	15.40	126.0	154.3	9.30	0.4	1.5	7.50	
137	06/18/94	1435	20.40	148.0	162.3	8.10	1.1	4.2	7.90	
137	07/16/94	1645	19.93	148.0	163.9	8.50	0.4	1.5	7.81	
138	09/12/92	1100	15.40	60.0	73.5	6.80	5.0	18.9		
138	02/27/93	1430	13.00	40.0	51.9	8.30	10.0	37.9		
138	09/12/92	1120	16.05	66.0	82.0	7.50	2.0	7.6		
138	02/27/93	1445	11.75	35.0	46.9	9.60	5.0	18.9		
139	08/04/93	1015	16.25	40.0	48.0	8.70	3.3	12.5	7.00	Water samples taken for analysis

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
139	09/11/93	1440	17.50	50.0	58.4	7.00	3.6	13.6		
139	10/23/93	1140	14.75	40.0	49.7	8.30	2.1	7.9	6.00	
139	11/20/93	1140	14.25	55.0	69.2	8.00	2.2	8.3	5.00	
139	12/18/93	1300	13.00	40.0	51.9	8.40	6.0	22.7	5.00	
139	01/22/94	1455	12.50	30.0	39.4	9.10	7.3	27.6	4.50	
139	02/20/94	0840	12.50	40.0	52.5	9.30	6.9	26.1	5.00	Water samples taken for analysis
139	03/20/94	1405	12.75	36.0	47.0	9.80	3.3	12.5	6.39	
139	04/22/94	1915	13.00	29.0	37.6	9.30	7.8	29.5	6.91	
139	05/24/94	1840	13.90	34.0	43.1	9.50	2.1	7.9	7.19	
139	06/18/94	1400	14.55	31.0	38.7	9.30	6.2	23.5	7.64	
139	07/16/94	1725	15.40	39.0	47.8	8.60	3.0	11.4	7.20	
140	09/12/92	1145	17.90	46.0	53.2	4.90	0.5	1.9		
140	02/27/93	1500	9.25	50.0	71.5	9.90	5.0	18.9		
141	09/12/92	1425	19.10	92.0	103.7	5.60	0.5	1.9		
141	02/27/93	1220	10.25	40.0	55.7	10.30	50.0	189.3		
142	09/12/92	1450	18.95	174.0	196.7	5.90	0.0	0.0		
142	02/27/93	1155	9.00	60.0	86.4	10.60	1.0	3.8		
143	11/21/92	1220	13.00	260.0	337.3	8.70	10.0	37.9		
144	11/21/92	1230	17.00	270.0	318.7	7.50	10.0	37.9		
145	01/02/93	1320	9.25	525.0	750.9	10.40	1.0	3.8		
146	01/02/93	1355	9.50	250.0	355.1	5.00	0.1	0.2		
147	01/02/93	1650	11.00	650.0	887.3	1.00	1.0	3.8		Spring is dry
147	09/14/93	1600								Spring is dry
147	10/22/93	1825								
147	11/19/93	1610	12.50	700.0	919.5	2.80	1.0	3.8	5.50	
147	12/17/93	1610	12.50	700.0	919.5	1.80	2.7	10.2	6.50	
147	01/21/94	1640	7.25	8500.0	12859.8	2.70	1.5	5.7	5.00	Malfunctioning instrument caused high cond
147	02/18/94	1645	10.00	60.0	84.1	2.60	5.0	18.9	5.00	
147	03/18/94	1620	9.80	680.0	958.2	1.80	2.9	11.0	6.64	
147	04/22/94	1710	13.90	669.0	849.0	0.90	1.2	4.5	6.67	
147	05/22/94	1715								Spring is dry
147	06/17/94	1820								Spring is dry
147	07/15/94									Spring is dry
148	01/03/93	1050	10.50	85.0	117.6	10.80	5.0	18.9		
149	01/03/93	1425	12.00	240.0	319.3	2.80	1.0	3.8		
150	01/03/93	1445	11.00	110.0	150.2	7.80	1.0	3.8		
151	01/03/93	1500								Extremely low flow (0.01 gpm assumed)
152	01/16/93	1045	12.75	140.0	182.8	10.80	150.0	567.8		
152	06/07/93	0930	14.50	225.0	281.4	9.50	75.1	284.3		Water samples taken for analysis
152	09/13/93	1740	15.50	270.0	329.9	9.00	14.2	53.7	7.00	
152	10/23/93	1000	13.75	255.0	324.8	9.00	1.1	4.2	6.50	
152	11/20/93	0955	13.75	240.0	306.7	9.30	9.30	252.1	5.50	Unable to obtain flow, no surface current
152	12/18/93	1125	14.00	200.0	253.2	9.70	66.6	252.1	5.00	
152	01/22/94	1253	12.50	155.0	203.6	10.40	136.0	514.8	5.00	

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
152	02/19/94	1150	12.00	140.0	186.2	10.40	197.0	745.6	5.00	Water samples taken for analysis
152	03/20/94	1015	11.85	189.0	226.8	10.60	89.8	339.9	7.80	
152	04/23/94	1055	13.05	149.0	193.1	10.30	220.1	833.1	6.96	
152	05/23/94	2040	13.05	208.0	269.5	9.80	80.1	303.2	7.50	
152	06/18/94	0945	13.75	184.0	234.4	9.90	79.3	300.2	7.72	
152	07/16/94	0935	13.95	236.0	299.1	9.80	74.1	280.5	7.41	
153	01/16/93	1205	11.00	150.0	204.8	8.30	2.0	7.6		
154	01/16/93	1400	13.50	200.0	256.3	9.60	1.0	3.8		
155	01/16/93	1530	9.50	80.0	113.6	9.20	5.0	18.9		
156	01/16/93	1620	10.75	105.0	126.7	8.20	1.0	3.8		
157	01/17/93	1255	12.75	315.0	411.2	8.50	5.0	18.9		
158	01/17/93	1315	13.00	355.0	480.6	7.50	15.0	56.8		
159	01/17/93	1335	13.00	100.0	129.7	6.60	1.0	3.8		
160	01/17/93	1620	12.00	40.0	53.2	7.10	1.0	3.8		
161	01/17/93	1650	11.00	65.0	88.7	10.60	5.0	18.9		
162	01/17/93	1725	11.25	55.0	74.6	8.20	5.0	18.9		
163	01/23/93	1045	7.50	75.0	112.7	11.80	60.0	227.1		
164	01/23/93	1225	14.00	180.0	227.9	9.10	10.0	37.9		See spring #55
165	01/23/93	1405	14.00	300.0	379.8	7.00	10.0	37.9		
166	01/23/93	1430	13.25	135.0	174.1	8.50	1.0	3.8		
167	01/30/93	1120	10.50	30.0	41.5	8.80	5.0	18.9		
168	01/30/93	1145	7.50	25.0	37.6	9.00	1.0	3.8		
169	01/30/93	1155	10.00	30.0	42.0	9.50	1.0	3.8		
170	01/30/93	1250	8.75	150.0	217.5	4.80	1.0	3.8		
171	01/30/93	1310	7.50	25.0	37.6	7.90	1.0	3.8		
172	01/30/93	1325	9.00	45.0	84.8	7.60	1.0	3.8		
173	01/30/93	1610	10.00	25.0	35.0	10.40	1.0	3.8		
174	01/30/93	1655	8.50	30.0	43.8	6.90	15.0	56.8		
175	01/31/93	1050	9.75	25.0	35.3	6.50	5.0	18.9		
176	01/31/93	1115	6.50	30.0	46.4	7.90	1.0	3.8		
177	01/31/93	1125	6.00	20.0	31.4	10.50	1.0	3.8		
178	01/31/93	1140	6.00	30.0	47.1	8.70	1.0	3.8		
179	01/31/93	1155	7.00	25.0	38.1	11.20	1.0	3.8		
180	01/31/93	1205	8.75	30.0	43.5	9.70	1.0	3.8		
181	01/31/93	1220	8.00	35.0	51.8	10.40	1.0	3.8		
182	01/31/93	1235	9.00	25.0	36.0	9.30	1.0	3.8		
183	01/31/93	1425	8.00	90.0	133.3	10.20	1.0	3.8		
184	02/14/93	0955								Spring is dry, was flowing well 2 wks prior
185	02/14/93	1045	6.50	210.0	324.8	2.60	0.5	1.9		
186	02/14/93	1125	8.75	210.0	304.5	5.40	50.0	189.3		
187	02/14/93	1255	8.00	220.0	325.8	9.10	5.0	18.9		
188	02/14/93	1405	12.00	360.0	478.9	5.50	15.0	56.8		
189	02/14/93	1440	13.50	355.0	454.9	2.90	5.0	18.9		
189	07/31/93	0750	16.50	410.0	468.1	1.30	0.1	0.4	7.50	Water samples taken for analysis

Table B.2. Springs and Seeps Field Parameter Data (Continued)

Springs I.D.	Date Monitored	Time Monitored	Temperature (°C)	Specific Conductance (µmhos/cm)	Specific Conductance Compensated TO 25 °C (µmhos/cm)	Dissolved Oxygen (mg/l)	Yield (gpm)	Yield (l/m)	pH	Comments
189	09/11/93	1355								Spring is dry
189	10/23/93	1118	13.75	410.0	522.2	1.50	7.7	29.1	5.50	
189	11/20/93	1120	14.75	380.0	472.5	1.40	0.0	0.0	5.00	Extremely low flow (0.01 gpm assumed)
189	12/18/93	1238	14.50	340.0	425.3	3.50	15.8	59.8	5.00	
189	01/22/94	1425	14.25	295.0	371.2	5.20	11.2	42.4	5.50	
189	02/19/94	1415	15.00	300.0	370.8	4.65	15.6	59.0	5.00	Water samples taken for analysis
189	03/20/94	1125	14.50	335.0	419.0	4.70		0.0	7.05	
189	04/22/94	1850	14.00	271.0	343.1	4.90	65.6	248.3	6.92	
189	05/22/94	1900	15.30	396.0	486.1	3.00	0.8	3.0	7.08	
189	06/17/94	1955	16.95	394.0	465.6	2.50		0.0	7.03	
189	07/16/94	1450	16.33	380.0	455.4	3.20	2.6	9.8	7.05	
190	02/14/93	1510	11.25	315.0	427.2	7.40	1.0	3.8		
191	02/14/93	1525	13.25	340.0	438.4	5.20	5.0	18.9		
192	02/27/93	1030	9.25	150.0	214.5	9.10	1.0	3.8		
193	02/27/93	1100	9.25	55.0	78.7	10.20	5.0	18.9		
194	02/27/93	1115	9.00	60.0	86.4	9.00	1.0	3.8		
195	02/27/93	1135	9.50	50.0	71.0	8.50	1.0	3.8		
196	02/27/93	1205	6.75	30.0	46.1	11.00	0.5	1.9		
197	02/27/93	1250	8.00	50.0	74.0	10.60	5.0	18.9		
198	02/27/93	1305	7.00	35.0	53.3	10.80	5.0	18.9		
199	02/27/93	1350	13.00	50.0	64.9	9.60	10.0	37.9		
199	08/04/93	0745	15.50	55.0	67.2	8.60	12.0	45.4	7.00	Water samples taken for analysis
199	09/11/93	1415	17.25	50.0	58.7	7.70	15.0	56.8		
199	10/23/93	1155	14.75	45.0	56.0	8.70	3.5	13.2	5.50	
199	11/20/93	1200	14.25	45.0	56.6	8.10	4.1	15.5	4.50	
199	12/18/93	1312	13.25	40.0	51.6	8.40	4.4	16.7	5.00	
199	01/22/94	1520	13.00	50.0	64.9	8.80	7.9	29.9	5.00	
199	02/20/94	0930	13.25	50.0	64.5	8.80	19.4	73.4	4.50	Water samples taken for analysis
199	03/20/94	1350	13.80	55.0	70.0	9.20	17.6	66.6	6.53	
199	04/22/94	1930	13.90	47.0	59.6	9.00	13.4	50.7	7.32	
199	05/24/94	1820	14.70	53.0	66.0	9.30	15.1	57.2	7.55	
199	06/18/94	1420	15.30	62.0	76.1	8.70	12.7	48.1	7.08	
199	07/16/94	1705	15.40	47.0	57.6	8.60	16.1	60.9	7.54	
200	02/27/93	1410	10.25	20.0	27.8	11.10	5.0	18.9		
201	02/27/93	1520	9.50	200.0	284.1	9.90	1.0	3.8		
202	02/27/93	1550	11.75	370.0	485.4	4.10	10.0	37.9		
203	02/27/93	1845	4.75	40.0	65.2	11.40	1.0	3.8		
204	03/06/93	0940	8.00	50.0	74.0	5.60	1.0	3.8		
205	03/06/93	0950	7.00	25.0	38.1	9.60	0.5	1.9		
206	03/06/93	1030	7.25	55.0	83.2	7.30	1.0	3.8		
207	03/06/93	1145	12.50	390.0	512.3	6.10	1.0	3.8		
207	08/05/93	1755	14.25	432.0	543.6	7.30	8.6	32.6	7.20	Water samples taken for analysis
207	09/12/93	1930	15.00	410.0	506.8	6.80	0.9	3.4	7.00	
207	10/23/93	1330	14.50	430.0	537.9	7.40	1.0	3.8	5.50	

Table B.2. Springs and Seeps Field Parameter Data (Continued)

SPRING I.D.	DATE MONITORED	TIME MONITORED	TEMPERATURE (°C)	SPECIFIC CONDUCTANCE (µmhos/cm)	SPECIFIC CONDUCTANCE COMPENSATED TO 25 °C (µmhos/cm)	DISSOLVED OXYGEN (mg/l)	YIELD (gpm)	YIELD (l/m)	pH	COMMENTS
207	11/20/93	1245	14.00	395.0	500.1	6.20	0.1	0.4	5.00	
207	12/18/93	1422	13.50	390.0	499.8	7.10	0.8	3.0	5.00	
207	01/22/94	1825	11.25	350.0	474.7	7.50	0.3	1.1	5.50	
207	02/20/94	1145	13.00	390.0	506.0	6.70	0.4	1.5	5.00	Water samples taken for analysis
207	03/20/94	1220	13.00	425.0	551.4	7.70	0.9	3.4	7.13	
207	04/22/94	2030	13.20	430.0	555.1	6.50	1.9	7.2	6.88	
207	05/24/94	1715	14.25	426.0	536.1	7.70	0.7	2.6	6.93	
207	06/18/94	1335	13.90	425.0	539.3	7.20	1.1	4.2	6.80	
207	07/16/94	1535	14.07	410.0	518.2	8.00	1.0	3.8	6.90	
208	03/06/93	1155	9.25	180.0	257.4	7.70	1.0	3.8		
209	03/06/93	1250	10.00	40.0	56.1	9.70	0.5	1.9		
210	04/03/93	1200	14.50	280.0	325.2	7.60	2.0	7.6		
211	04/03/93	1300	13.00	30.0	38.9	8.60	0.0	0.0		
211	08/10/93	1915	16.00	270.0	326.0	3.45			6.80	Water Samples taken for analyses. Sinkhole
211	09/12/93	1855	16.25	240.0	288.2	5.60			7.00	No discharge obtainable
211	10/23/93	1315	16.25	230.0	276.2	7.30			5.00	-2' drop in water level
211	11/20/93	1305	14.00	210.0	265.9	6.60			5.00	-1' rise in water level
211	12/18/93	1412	12.75	230.0	300.3	6.20			5.00	No discharge obtainable
211	01/22/94	1840	12.00	210.0	279.4	8.30			5.00	No discharge obtainable
211	02/20/94	1220	12.75	225.0	293.7	8.50			5.00	Water samples taken for analysis
211	03/20/94	1235	12.60	239.0	313.2	9.50			7.66	No discharge obtainable
211	04/22/94	2010	12.80	241.0	314.2	9.00			7.23	No discharge obtainable
211	05/24/94	1730	13.60	211.0	268.4	7.90			7.97	No discharge obtainable
211	06/18/94	1300	14.40	232.0	290.9	3.50			7.70	No discharge obtainable
211	07/16/94	1620	15.23	235.0	288.9	3.70			7.67	No discharge obtainable
212	04/03/93	1405	11.00	115.0	157.0	5.20	1.0	3.8		
213	04/03/93	1420	10.50	70.0	96.8	9.00	5.0	18.9		
214	04/03/93	1430	10.75	80.0	109.9	3.30	0.5	1.9		
215	04/03/93	1440	16.25	110.0	132.1	7.90	0.5	1.9		
216	04/03/93	1515	10.00	220.0	308.3	3.60	1.0	3.8		
217	08/08/93	1855	16.00	270.0	326.0	7.00	10.5	39.7	7.30	

APPENDIX C
Analytical Data

Analytical Data

SPRING I.D. - A spring identifier with the suffix "-FM" indicates that the sample was filtered prior to being analyzed for metals.

Results with a "<" in the preceding column indicate that the limit of the laboratory instrument quantitative detection level has been reached. This limit is used as the value of the analyte result even though the analyte may not have been present.

FOOTNOTE - (c) indicates a potential for laboratory contamination of the sample
(d) indicates that dilution of the sample was required in order to obtain determination of the analyte, this also raised the quantitative detection limit.

ERROR - This column indicates the confidence interval ($\pm$) in pCi/L of the Alpha and Beta Activities.

UNITS -	pCi/L	picocuries per liter
	mg/l	milligrams per liter
	umho/cm	micromhos per cm

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event

SPRING I.D.	DATE SAMPLED	ANALYTE	PRERX	RESULT	FOOTNOTE	ERROR	UNITS
SP-001	8-Aug-1993	Alpha Activity		-16.1		10	pCi/L
SP-001	8-Aug-1993	Aluminum		2.6			mg/L
SP-001	8-Aug-1993	Antimony	<	0.05			mg/L
SP-001	8-Aug-1993	Arsenic	<	0.05			mg/L
SP-001	8-Aug-1993	Barium		0.15			mg/L
SP-001	8-Aug-1993	Beryllium	<	0.0003			mg/L
SP-001	8-Aug-1993	Beta Activity		-12.1		12	pCi/L
SP-001	8-Aug-1993	Bicarbonate		28			mg/L
SP-001	8-Aug-1993	Boron		0.0087			mg/L
SP-001	8-Aug-1993	Bromide	<	1			mg/L
SP-001	8-Aug-1993	Cadmium	<	0.003			mg/L
SP-001	8-Aug-1993	Calcium		4.2			mg/L
SP-001	8-Aug-1993	Carbonate	<	1			mg/L
SP-001	8-Aug-1993	Chloride IC		1.9			mg/L
SP-001	8-Aug-1993	Chromium	<	0.01			mg/L
SP-001	8-Aug-1993	Cobalt		0.0061			mg/L
SP-001	8-Aug-1993	Conductivity		68			umho/cm
SP-001	8-Aug-1993	Copper	<	0.004			mg/L
SP-001	8-Aug-1993	Dissolved Solids		80			mg/L
SP-001	8-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-001	8-Aug-1993	Iron		2.4			mg/L
SP-001	8-Aug-1993	Lead	<	0.05			mg/L
SP-001	8-Aug-1993	Magnesium		2.7			mg/L
SP-001	8-Aug-1993	Manganese		0.081			mg/L
SP-001	8-Aug-1993	Molybdenum	<	0.01			mg/L
SP-001	8-Aug-1993	Nickel	<	0.01			mg/L
SP-001	8-Aug-1993	Nitrate Brucine		0.1			mg/L
SP-001	8-Aug-1993	pH		7.2			
SP-001	8-Aug-1993	Potassium		3.1			mg/L
SP-001	8-Aug-1993	Selenium	<	0.05			mg/L
SP-001	8-Aug-1993	Silicon		13			mg/L
SP-001	8-Aug-1993	Silver	<	0.006			mg/L
SP-001	8-Aug-1993	Sodium		4.6			mg/L
SP-001	8-Aug-1993	Strontium		0.022			mg/L
SP-001	8-Aug-1993	Sulfate		33			mg/L
SP-001	8-Aug-1993	Suspended Solids		45			mg/L
SP-001	8-Aug-1993	Thorium	<	0.2			mg/L
SP-001	8-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-001	8-Aug-1993	Vanadium	<	0.005			mg/L
SP-001	8-Aug-1993	Zinc		0.013	c		mg/L
SP-001-FM	8-Aug-1993	Aluminum	<	0.02			mg/L
SP-001-FM	8-Aug-1993	Antimony	<	0.05			mg/L
SP-001-FM	8-Aug-1993	Arsenic	<	0.05			mg/L
SP-001-FM	8-Aug-1993	Barium		0.077			mg/L
SP-001-FM	8-Aug-1993	Beryllium	<	0.0003			mg/L
SP-001-FM	8-Aug-1993	Boron		0.0085			mg/L
SP-001-FM	8-Aug-1993	Cadmium	<	0.003			mg/L
SP-001-FM	8-Aug-1993	Calcium		4.4			mg/L
SP-001-FM	8-Aug-1993	Chromium	<	0.01			mg/L
SP-001-FM	8-Aug-1993	Cobalt	<	0.005			mg/L
SP-001-FM	8-Aug-1993	Copper	<	0.004			mg/L
SP-001-FM	8-Aug-1993	Iron	<	0.005			mg/L
SP-001-FM	8-Aug-1993	Lead	<	0.05			mg/L
SP-001-FM	8-Aug-1993	Magnesium		2.7			mg/L
SP-001-FM	8-Aug-1993	Manganese		0.019			mg/L
SP-001-FM	8-Aug-1993	Molybdenum	<	0.01			mg/L
SP-001-FM	8-Aug-1993	Nickel	<	0.01			mg/L
SP-001-FM	8-Aug-1993	Potassium		2.6			mg/L
SP-001-FM	8-Aug-1993	Selenium	<	0.05			mg/L
SP-001-FM	8-Aug-1993	Silicon		11			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING ID.	DATE SAMPLED	ANALYTE	PREFIX	RESULT	FOOTNOTE	ERROR	UNITS
SP-001-FM	8-Aug-1993	Silver	<	0.006			mg/L
SP-001-FM	8-Aug-1993	Sodium		4.7			mg/L
SP-001-FM	8-Aug-1993	Strontium		0.02			mg/L
SP-001-FM	8-Aug-1993	Thorium	<	0.2			mg/L
SP-001-FM	8-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-001-FM	8-Aug-1993	Vanadium	<	0.005			mg/L
SP-001-FM	8-Aug-1993	Zinc		0.0046	c		mg/L
SP-005	31-Jul-1993	Alpha Activity		4.93		2.8	pCi/L
SP-005	31-Jul-1993	Aluminum		18			mg/L
SP-005	31-Jul-1993	Antimony	<	0.05			mg/L
SP-005	31-Jul-1993	Arsenic	<	0.05			mg/L
SP-005	31-Jul-1993	Barium		0.59			mg/L
SP-005	31-Jul-1993	Beryllium		0.0021			mg/L
SP-005	31-Jul-1993	Beta Activity		8.16		3.2	pCi/L
SP-005	31-Jul-1993	Bicarbonate		46			mg/L
SP-005	31-Jul-1993	Boron		0.028			mg/L
SP-005	31-Jul-1993	Bromide	<	1			mg/L
SP-005	31-Jul-1993	Cadmium	<	0.003			mg/L
SP-005	31-Jul-1993	Calcium		15			mg/L
SP-005	31-Jul-1993	Carbonate	<	1			mg/L
SP-005	31-Jul-1993	Chloride IC		2.1			mg/L
SP-005	31-Jul-1993	Chromium		0.041			mg/L
SP-005	31-Jul-1993	Cobalt		0.025			mg/L
SP-005	31-Jul-1993	Conductivity		127			umho/cm
SP-005	31-Jul-1993	Copper		0.025			mg/L
SP-005	31-Jul-1993	Dissolved Solids		110			mg/L
SP-005	31-Jul-1993	Fluoride SIE	<	0.1			mg/L
SP-005	31-Jul-1993	Iron		20			mg/L
SP-005	31-Jul-1993	Lead	<	0.05			mg/L
SP-005	31-Jul-1993	Magnesium		8.4			mg/L
SP-005	31-Jul-1993	Manganese		0.41			mg/L
SP-005	31-Jul-1993	Molybdenum	<	0.01			mg/L
SP-005	31-Jul-1993	Nickel		0.062			mg/L
SP-005	31-Jul-1993	Nitrate Brucine	<	0.1			mg/L
SP-005	31-Jul-1993	pH		7.2			
SP-005	31-Jul-1993	Potassium		6.8			mg/L
SP-005	31-Jul-1993	Selenium	<	0.05			mg/L
SP-005	31-Jul-1993	Silicon		27			mg/L
SP-005	31-Jul-1993	Silver	<	0.006			mg/L
SP-005	31-Jul-1993	Sodium		5.5			mg/L
SP-005	31-Jul-1993	Strontium		0.066			mg/L
SP-005	31-Jul-1993	Sulfate		17			mg/L
SP-005	31-Jul-1993	Suspended Solids		1040			mg/L
SP-005	31-Jul-1993	Thorium	<	0.2			mg/L
SP-005	31-Jul-1993	Uranium Fluorometric		0.002			mg/L
SP-005	31-Jul-1993	Vanadium		0.027			mg/L
SP-005	31-Jul-1993	Zinc		0.074			mg/L
SP-005-FM	31-Jul-1993	Aluminum	<	0.02			mg/L
SP-005-FM	31-Jul-1993	Antimony	<	0.05			mg/L
SP-005-FM	31-Jul-1993	Arsenic	<	0.05			mg/L
SP-005-FM	31-Jul-1993	Barium		0.11			mg/L
SP-005-FM	31-Jul-1993	Beryllium	<	0.0003			mg/L
SP-005-FM	31-Jul-1993	Boron		0.015			mg/L
SP-005-FM	31-Jul-1993	Cadmium	<	0.003			mg/L
SP-005-FM	31-Jul-1993	Calcium		9.8			mg/L
SP-005-FM	31-Jul-1993	Chromium	<	0.01			mg/L
SP-005-FM	31-Jul-1993	Cobalt	<	0.005			mg/L
SP-005-FM	31-Jul-1993	Copper	<	0.004			mg/L
SP-005-FM	31-Jul-1993	Iron		0.017			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-005-FM	31-Jul-1993	Lead	<	0.05			mg/L
SP-005-FM	31-Jul-1993	Magnesium		5.7			mg/L
SP-005-FM	31-Jul-1993	Manganese		0.0024			mg/L
SP-005-FM	31-Jul-1993	Molybdenum	<	0.01			mg/L
SP-005-FM	31-Jul-1993	Nickel	<	0.01			mg/L
SP-005-FM	31-Jul-1993	Potassium		2.6			mg/L
SP-005-FM	31-Jul-1993	Selenium	<	0.05			mg/L
SP-005-FM	31-Jul-1993	Silicon		11			mg/L
SP-005-FM	31-Jul-1993	Silver	<	0.006			mg/L
SP-005-FM	31-Jul-1993	Sodium		5.5			mg/L
SP-005-FM	31-Jul-1993	Strontium		0.038			mg/L
SP-005-FM	31-Jul-1993	Thorium	<	0.2			mg/L
SP-005-FM	31-Jul-1993	Uranium Fluorometric	<	0.001			mg/L
SP-005-FM	31-Jul-1993	Vanadium	<	0.005			mg/L
SP-005-FM	31-Jul-1993	Zinc		0.0056			mg/L
SP-018	5-Aug-1993	Alpha Activity	-	0.78		1.9	pCi/L
SP-018	5-Aug-1993	Aluminum		0.1			mg/L
SP-018	5-Aug-1993	Antimony	<	0.05			mg/L
SP-018	5-Aug-1993	Arsenic	<	0.05			mg/L
SP-018	5-Aug-1993	Barium		0.081			mg/L
SP-018	5-Aug-1993	Beryllium	<	0.0003			mg/L
SP-018	5-Aug-1993	Beta Activity		0.83		2.5	pCi/L
SP-018	5-Aug-1993	Bicarbonate		251			mg/L
SP-018	5-Aug-1993	Boron		0.02	c		mg/L
SP-018	5-Aug-1993	Bromide	<	1			mg/L
SP-018	5-Aug-1993	Cadmium	<	0.003			mg/L
SP-018	5-Aug-1993	Calcium		7.4			mg/L
SP-018	5-Aug-1993	Carbonate	<	1			mg/L
SP-018	5-Aug-1993	Chloride IC		3.5			mg/L
SP-018	5-Aug-1993	Chromium	<	0.01			mg/L
SP-018	5-Aug-1993	Cobalt	<	0.005			mg/L
SP-018	5-Aug-1993	Conductivity		497			umho/cm
SP-018	5-Aug-1993	Copper	<	0.004			mg/L
SP-018	5-Aug-1993	Dissolved Solids		278			mg/L
SP-018	5-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-018	5-Aug-1993	Iron		0.17			mg/L
SP-018	5-Aug-1993	Lead	<	0.05			mg/L
SP-018	5-Aug-1993	Magnesium		18			mg/L
SP-018	5-Aug-1993	Manganese		0.047			mg/L
SP-018	5-Aug-1993	Molybdenum	<	0.01			mg/L
SP-018	5-Aug-1993	Nickel	<	0.01			mg/L
SP-018	5-Aug-1993	Nitrate Brucine		1.3			mg/L
SP-018	5-Aug-1993	pH		7.2			
SP-018	5-Aug-1993	Potassium		1.4			mg/L
SP-018	5-Aug-1993	Selenium	<	0.05			mg/L
SP-018	5-Aug-1993	Silicon		3.2			mg/L
SP-018	5-Aug-1993	Silver	<	0.006			mg/L
SP-018	5-Aug-1993	Sodium		2.1			mg/L
SP-018	5-Aug-1993	Strontium		0.084			mg/L
SP-018	5-Aug-1993	Sulfate		11			mg/L
SP-018	5-Aug-1993	Suspended Solids		8			mg/L
SP-018	5-Aug-1993	Thorium	<	0.2			mg/L
SP-018	5-Aug-1993	Uranium Fluorometric		0.001			mg/L
SP-018	5-Aug-1993	Vanadium	<	0.005			mg/L
SP-018	5-Aug-1993	Zinc		0.0086	c		mg/L
SP-018-FM	5-Aug-1993	Aluminum	<	0.02			mg/L
SP-018-FM	5-Aug-1993	Antimony	<	0.05			mg/L
SP-018-FM	5-Aug-1993	Arsenic	<	0.05			mg/L
SP-018-FM	5-Aug-1993	Barium		0.091			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-018-FM	5-Aug-1993	Beryllium	<	0.0003			mg/L
SP-018-FM	5-Aug-1993	Boron		0.028	c		mg/L
SP-018-FM	5-Aug-1993	Cadmium	<	0.003			mg/L
SP-018-FM	5-Aug-1993	Calcium		83			mg/L
SP-018-FM	5-Aug-1993	Chromium	<	0.01			mg/L
SP-018-FM	5-Aug-1993	Cobalt	<	0.005			mg/L
SP-018-FM	5-Aug-1993	Copper	<	0.004			mg/L
SP-018-FM	5-Aug-1993	Iron	<	0.005			mg/L
SP-018-FM	5-Aug-1993	Lead	<	0.05			mg/L
SP-018-FM	5-Aug-1993	Magnesium		20			mg/L
SP-018-FM	5-Aug-1993	Manganese		0.025			mg/L
SP-018-FM	5-Aug-1993	Molybdenum	<	0.01			mg/L
SP-018-FM	5-Aug-1993	Nickel	<	0.01			mg/L
SP-018-FM	5-Aug-1993	Potassium		0.85			mg/L
SP-018-FM	5-Aug-1993	Selenium	<	0.05			mg/L
SP-018-FM	5-Aug-1993	Silver	<	0.006			mg/L
SP-018-FM	5-Aug-1993	Sodium		2.5			mg/L
SP-018-FM	5-Aug-1993	Strontium		0.095			mg/L
SP-018-FM	5-Aug-1993	Thorium	<	0.2			mg/L
SP-018-FM	5-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-018-FM	5-Aug-1993	Vanadium	<	0.005			mg/L
SP-018-FM	5-Aug-1993	Zinc		0.0077	c		mg/L
SP-019	7-Aug-1993	Alpha Activity		0.741		2	pCi/L
SP-019	7-Aug-1993	Aluminum		0.034			mg/L
SP-019	7-Aug-1993	Antimony	<	0.05			mg/L
SP-019	7-Aug-1993	Arsenic	<	0.05			mg/L
SP-019	7-Aug-1993	Barium		0.024			mg/L
SP-019	7-Aug-1993	Beryllium	<	0.0003			mg/L
SP-019	7-Aug-1993	Beta Activity		2.72		2.6	pCi/L
SP-019	7-Aug-1993	Bicarbonate		157			mg/L
SP-019	7-Aug-1993	Boron	<	0.004			mg/L
SP-019	7-Aug-1993	Bromide	<	1			mg/L
SP-019	7-Aug-1993	Cadmium	<	0.003			mg/L
SP-019	7-Aug-1993	Calcium		32			mg/L
SP-019	7-Aug-1993	Carbonate	<	1			mg/L
SP-019	7-Aug-1993	Chloride IC		1.9			mg/L
SP-019	7-Aug-1993	Chromium	<	0.01			mg/L
SP-019	7-Aug-1993	Cobalt	<	0.005			mg/L
SP-019	7-Aug-1993	Conductivity		300			umho/cm
SP-019	7-Aug-1993	Copper	<	0.004			mg/L
SP-019	7-Aug-1993	Dissolved Solids		170			mg/L
SP-019	7-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-019	7-Aug-1993	Iron		0.071			mg/L
SP-019	7-Aug-1993	Lead	<	0.05			mg/L
SP-019	7-Aug-1993	Magnesium		19			mg/L
SP-019	7-Aug-1993	Manganese		0.0096			mg/L
SP-019	7-Aug-1993	Molybdenum	<	0.01			mg/L
SP-019	7-Aug-1993	Nickel	<	0.01			mg/L
SP-019	7-Aug-1993	Nitrate Brucine		0.9			mg/L
SP-019	7-Aug-1993	pH		8.1			
SP-019	7-Aug-1993	Potassium		0.94			mg/L
SP-019	7-Aug-1993	Selenium	<	0.05			mg/L
SP-019	7-Aug-1993	Silicon		3.9			mg/L
SP-019	7-Aug-1993	Silver	<	0.006			mg/L
SP-019	7-Aug-1993	Sodium		0.54	c		mg/L
SP-019	7-Aug-1993	Strontium		0.016			mg/L
SP-019	7-Aug-1993	Sulfate		7.6			mg/L
SP-019	7-Aug-1993	Suspended Solids		3			mg/L
SP-019	7-Aug-1993	Thorium	<	0.2			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING ID.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-019	7-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-019	7-Aug-1993	Vanadium	<	0.005			mg/L
SP-019	7-Aug-1993	Zinc	<	0.002			mg/L
SP-019-FM	7-Aug-1993	Aluminum	<	0.02			mg/L
SP-019-FM	7-Aug-1993	Antimony	<	0.05			mg/L
SP-019-FM	7-Aug-1993	Arsenic	<	0.05			mg/L
SP-019-FM	7-Aug-1993	Barium		0.024			mg/L
SP-019-FM	7-Aug-1993	Beryllium	<	0.0003			mg/L
SP-019-FM	7-Aug-1993	Boron		0.02	c		mg/L
SP-019-FM	7-Aug-1993	Cadmium	<	0.003			mg/L
SP-019-FM	7-Aug-1993	Calcium		31			mg/L
SP-019-FM	7-Aug-1993	Chromium	<	0.01			mg/L
SP-019-FM	7-Aug-1993	Cobalt	<	0.005			mg/L
SP-019-FM	7-Aug-1993	Copper	<	0.004			mg/L
SP-019-FM	7-Aug-1993	Iron	<	0.005			mg/L
SP-019-FM	7-Aug-1993	Lead	<	0.05			mg/L
SP-019-FM	7-Aug-1993	Magnesium		19			mg/L
SP-019-FM	7-Aug-1993	Manganese		0.0064			mg/L
SP-019-FM	7-Aug-1993	Molybdenum	<	0.01			mg/L
SP-019-FM	7-Aug-1993	Nickel	<	0.01			mg/L
SP-019-FM	7-Aug-1993	Potassium		0.97			mg/L
SP-019-FM	7-Aug-1993	Selenium	<	0.05			mg/L
SP-019-FM	7-Aug-1993	Silicon		3.9			mg/L
SP-019-FM	7-Aug-1993	Silver	<	0.006			mg/L
SP-019-FM	7-Aug-1993	Sodium		0.56			mg/L
SP-019-FM	7-Aug-1993	Strontium		0.016			mg/L
SP-019-FM	7-Aug-1993	Thorium	<	0.2			mg/L
SP-019-FM	7-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-019-FM	7-Aug-1993	Vanadium	<	0.005			mg/L
SP-019-FM	7-Aug-1993	Zinc		0.0021	c		mg/L
SP-024	10-Aug-1993	Alpha Activity		-15		11	pCi/L
SP-024	10-Aug-1993	Aluminum	<	0.02			mg/L
SP-024	10-Aug-1993	Antimony	<	0.05			mg/L
SP-024	10-Aug-1993	Arsenic	<	0.05			mg/L
SP-024	10-Aug-1993	Barium		0.18			mg/L
SP-024	10-Aug-1993	Beryllium	<	0.0003			mg/L
SP-024	10-Aug-1993	Beta Activity		-18.7		11	pCi/L
SP-024	10-Aug-1993	Bicarbonate		290			mg/L
SP-024	10-Aug-1993	Boron		0.014	c		mg/L
SP-024	10-Aug-1993	Bromide	<	1			mg/L
SP-024	10-Aug-1993	Cadmium	<	0.003			mg/L
SP-024	10-Aug-1993	Calcium		54			mg/L
SP-024	10-Aug-1993	Carbonate	<	1			mg/L
SP-024	10-Aug-1993	Chloride IC		4.1			mg/L
SP-024	10-Aug-1993	Chromium	<	0.01			mg/L
SP-024	10-Aug-1993	Cobalt	<	0.005			mg/L
SP-024	10-Aug-1993	Conductivity		686			umho/cm
SP-024	10-Aug-1993	Copper		0.013			mg/L
SP-024	10-Aug-1993	Dissolved Solids		314			mg/L
SP-024	10-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-024	10-Aug-1993	Iron	<	0.005			mg/L
SP-024	10-Aug-1993	Lead	<	0.05			mg/L
SP-024	10-Aug-1993	Magnesium		31			mg/L
SP-024	10-Aug-1993	Manganese		0.031			mg/L
SP-024	10-Aug-1993	Molybdenum	<	0.01			mg/L
SP-024	10-Aug-1993	Nickel	<	0.01			mg/L
SP-024	10-Aug-1993	Nitrate Brucine		1.8			mg/L
SP-024	10-Aug-1993	pH		7.4			
SP-024	10-Aug-1993	Potassium		1.6			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-024	10-Aug-1993	Selenium	<	0.05			mg/L
SP-024	10-Aug-1993	Silicon		4.1			mg/L
SP-024	10-Aug-1993	Silver	<	0.006			mg/L
SP-024	10-Aug-1993	Sodium		2.1			mg/L
SP-024	10-Aug-1993	Strontium		0.038			mg/L
SP-024	10-Aug-1993	Sulfate		9.5			mg/L
SP-024	10-Aug-1993	Suspended Solids	<	1			mg/L
SP-024	10-Aug-1993	Thorium	<	0.2			mg/L
SP-024	10-Aug-1993	Uranium Fluorometric		0.006			mg/L
SP-024	10-Aug-1993	Vanadium	<	0.005			mg/L
SP-024	10-Aug-1993	Zinc		0.012	c		mg/L
SP-024-FM	10-Aug-1993	Aluminum	<	0.02			mg/L
SP-024-FM	10-Aug-1993	Antimony	<	0.05			mg/L
SP-024-FM	10-Aug-1993	Arsenic	<	0.05			mg/L
SP-024-FM	10-Aug-1993	Barium		0.19			mg/L
SP-024-FM	10-Aug-1993	Beryllium	<	0.0003			mg/L
SP-024-FM	10-Aug-1993	Boron		0.028	c		mg/L
SP-024-FM	10-Aug-1993	Cadmium	<	0.003			mg/L
SP-024-FM	10-Aug-1993	Calcium		55			mg/L
SP-024-FM	10-Aug-1993	Chromium	<	0.01			mg/L
SP-024-FM	10-Aug-1993	Cobalt	<	0.005			mg/L
SP-024-FM	10-Aug-1993	Copper		0.012			mg/L
SP-024-FM	10-Aug-1993	Iron	<	0.005			mg/L
SP-024-FM	10-Aug-1993	Lead	<	0.05			mg/L
SP-024-FM	10-Aug-1993	Magnesium		32			mg/L
SP-024-FM	10-Aug-1993	Manganese		0.029			mg/L
SP-024-FM	10-Aug-1993	Molybdenum	<	0.01			mg/L
SP-024-FM	10-Aug-1993	Nickel	<	0.01			mg/L
SP-024-FM	10-Aug-1993	Potassium		1.2			mg/L
SP-024-FM	10-Aug-1993	Selenium	<	0.05			mg/L
SP-024-FM	10-Aug-1993	Silicon		4.2			mg/L
SP-024-FM	10-Aug-1993	Silver	<	0.006			mg/L
SP-024-FM	10-Aug-1993	Sodium		2.3			mg/L
SP-024-FM	10-Aug-1993	Strontium		0.041			mg/L
SP-024-FM	10-Aug-1993	Thorium	<	0.2			mg/L
SP-024-FM	10-Aug-1993	Uranium Fluorometric		0.006			mg/L
SP-024-FM	10-Aug-1993	Vanadium	<	0.005			mg/L
SP-024-FM	10-Aug-1993	Zinc		0.0091	c		mg/L
SP-029	8-Aug-1993	Alpha Activity		-22.8		10	pCi/L
SP-029	8-Aug-1993	Aluminum		0.88			mg/L
SP-029	8-Aug-1993	Antimony	<	0.05			mg/L
SP-029	8-Aug-1993	Arsenic	<	0.05			mg/L
SP-029	8-Aug-1993	Barium		0.14			mg/L
SP-029	8-Aug-1993	Beryllium	<	0.0003			mg/L
SP-029	8-Aug-1993	Beta Activity		-16		11	pCi/L
SP-029	8-Aug-1993	Bicarbonate		175			mg/L
SP-029	8-Aug-1993	Boron		0.039			mg/L
SP-029	8-Aug-1993	Bromide	<	1			mg/L
SP-029	8-Aug-1993	Cadmium	<	0.003			mg/L
SP-029	8-Aug-1993	Calcium		50			mg/L
SP-029	8-Aug-1993	Carbonate	<	1			mg/L
SP-029	8-Aug-1993	Chloride IC		17			mg/L
SP-029	8-Aug-1993	Chromium	<	0.01			mg/L
SP-029	8-Aug-1993	Cobalt		0.0075			mg/L
SP-029	8-Aug-1993	Conductivity		404			umho/cm
SP-029	8-Aug-1993	Copper		0.0049			mg/L
SP-029	8-Aug-1993	Dissolved Solids		244			mg/L
SP-029	8-Aug-1993	Fluoride SIE		0.1			mg/L
SP-029	8-Aug-1993	Iron		9			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-029	8-Aug-1993	Lead	<	0.05			mg/L
SP-029	8-Aug-1993	Magnesium		10			mg/L
SP-029	8-Aug-1993	Manganese		5.3			mg/L
SP-029	8-Aug-1993	Molybdenum	<	0.01			mg/L
SP-029	8-Aug-1993	Nickel	<	0.01			mg/L
SP-029	8-Aug-1993	Nitrate Brucine		0.18			mg/L
SP-029	8-Aug-1993	pH		7.5			
SP-029	8-Aug-1993	Potassium		5			mg/L
SP-029	8-Aug-1993	Selenium		0.058			mg/L
SP-029	8-Aug-1993	Silicon		5.2			mg/L
SP-029	8-Aug-1993	Silver	<	0.006			mg/L
SP-029	8-Aug-1993	Sodium		13			mg/L
SP-029	8-Aug-1993	Strontium		0.13			mg/L
SP-029	8-Aug-1993	Sulfate		9.3			mg/L
SP-029	8-Aug-1993	Suspended Solids		33			mg/L
SP-029	8-Aug-1993	Thorium	<	0.2			mg/L
SP-029	8-Aug-1993	Uranium Fluorometric		0.002			mg/L
SP-029	8-Aug-1993	Vanadium	<	0.005			mg/L
SP-029	8-Aug-1993	Zinc		0.0039 c			mg/L
SP-029-FM	8-Aug-1993	Aluminum	<	0.02			mg/L
SP-029-FM	8-Aug-1993	Antimony	<	0.05			mg/L
SP-029-FM	8-Aug-1993	Arsenic	<	0.05			mg/L
SP-029-FM	8-Aug-1993	Barium		0.11			mg/L
SP-029-FM	8-Aug-1993	Beryllium	<	0.0003			mg/L
SP-029-FM	8-Aug-1993	Boron		0.021			mg/L
SP-029-FM	8-Aug-1993	Cadmium	<	0.003			mg/L
SP-029-FM	8-Aug-1993	Calcium		51			mg/L
SP-029-FM	8-Aug-1993	Chromium	<	0.01			mg/L
SP-029-FM	8-Aug-1993	Cobalt	<	0.005			mg/L
SP-029-FM	8-Aug-1993	Copper	<	0.004			mg/L
SP-029-FM	8-Aug-1993	Iron		0.029			mg/L
SP-029-FM	8-Aug-1993	Lead	<	0.05			mg/L
SP-029-FM	8-Aug-1993	Magnesium		11			mg/L
SP-029-FM	8-Aug-1993	Manganese		4.9			mg/L
SP-029-FM	8-Aug-1993	Molybdenum	<	0.01			mg/L
SP-029-FM	8-Aug-1993	Nickel	<	0.01			mg/L
SP-029-FM	8-Aug-1993	Potassium		4.6			mg/L
SP-029-FM	8-Aug-1993	Selenium	<	0.05			mg/L
SP-029-FM	8-Aug-1993	Silicon		4			mg/L
SP-029-FM	8-Aug-1993	Silver	<	0.006			mg/L
SP-029-FM	8-Aug-1993	Sodium		13			mg/L
SP-029-FM	8-Aug-1993	Strontium		0.13			mg/L
SP-029-FM	8-Aug-1993	Thorium	<	0.2			mg/L
SP-029-FM	8-Aug-1993	Uranium Fluorometric		0.002			mg/L
SP-029-FM	8-Aug-1993	Vanadium	<	0.005			mg/L
SP-029-FM	8-Aug-1993	Zinc	<	0.002 c			mg/L
SP-031	8-Aug-1993	Alpha Activity		-13		11	pCi/L
SP-031	8-Aug-1993	Aluminum		0.15			mg/L
SP-031	8-Aug-1993	Antimony	<	0.05			mg/L
SP-031	8-Aug-1993	Arsenic	<	0.05			mg/L
SP-031	8-Aug-1993	Barium		0.092			mg/L
SP-031	8-Aug-1993	Beryllium	<	0.0003			mg/L
SP-031	8-Aug-1993	Beta Activity		-11.4		12	pCi/L
SP-031	8-Aug-1993	Bicarbonate		186			mg/L
SP-031	8-Aug-1993	Boron	<	0.004			mg/L
SP-031	8-Aug-1993	Bromide	<	1			mg/L
SP-031	8-Aug-1993	Cadmium	<	0.003			mg/L
SP-031	8-Aug-1993	Calcium		35			mg/L
SP-031	8-Aug-1993	Carbonate	<	1			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-031	8-Aug-1993	Chloride IC		1.5			mg/L
SP-031	8-Aug-1993	Chromium	<	0.01			mg/L
SP-031	8-Aug-1993	Cobalt	<	0.005			mg/L
SP-031	8-Aug-1993	Conductivity		306			umho/cm
SP-031	8-Aug-1993	Copper	<	0.004			mg/L
SP-031	8-Aug-1993	Dissolved Solids		170			mg/L
SP-031	8-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-031	8-Aug-1993	Iron		0.12			mg/L
SP-031	8-Aug-1993	Lead	<	0.05			mg/L
SP-031	8-Aug-1993	Magnesium		19			mg/L
SP-031	8-Aug-1993	Manganese		0.0077			mg/L
SP-031	8-Aug-1993	Molybdenum	<	0.01			mg/L
SP-031	8-Aug-1993	Nickel	<	0.01			mg/L
SP-031	8-Aug-1993	Nitrate Brucine	<	0.1			mg/L
SP-031	8-Aug-1993	pH		7.6			
SP-031	8-Aug-1993	Potassium		0.89			mg/L
SP-031	8-Aug-1993	Selenium	<	0.05			mg/L
SP-031	8-Aug-1993	Silicon		3.7			mg/L
SP-031	8-Aug-1993	Silver	<	0.006			mg/L
SP-031	8-Aug-1993	Sodium		0.45 c			mg/L
SP-031	8-Aug-1993	Strontium		0.03			mg/L
SP-031	8-Aug-1993	Sulfate		6.8			mg/L
SP-031	8-Aug-1993	Suspended Solids		3			mg/L
SP-031	8-Aug-1993	Thorium	<	0.2			mg/L
SP-031	8-Aug-1993	Uranium Fluorometric		0.001			mg/L
SP-031	8-Aug-1993	Vanadium	<	0.005			mg/L
SP-031	8-Aug-1993	Zinc		0.0045 c			mg/L
SP-031-FM	8-Aug-1993	Aluminum	<	0.02			mg/L
SP-031-FM	8-Aug-1993	Antimony	<	0.05			mg/L
SP-031-FM	8-Aug-1993	Arsenic	<	0.05			mg/L
SP-031-FM	8-Aug-1993	Barium		0.085			mg/L
SP-031-FM	8-Aug-1993	Beryllium	<	0.0003			mg/L
SP-031-FM	8-Aug-1993	Boron		0.015 c			mg/L
SP-031-FM	8-Aug-1993	Cadmium	<	0.003			mg/L
SP-031-FM	8-Aug-1993	Calcium		36			mg/L
SP-031-FM	8-Aug-1993	Chromium	<	0.01			mg/L
SP-031-FM	8-Aug-1993	Cobalt	<	0.005			mg/L
SP-031-FM	8-Aug-1993	Copper		0.0042			mg/L
SP-031-FM	8-Aug-1993	Iron	<	0.005			mg/L
SP-031-FM	8-Aug-1993	Lead	<	0.05			mg/L
SP-031-FM	8-Aug-1993	Magnesium		19			mg/L
SP-031-FM	8-Aug-1993	Manganese		0.0014			mg/L
SP-031-FM	8-Aug-1993	Molybdenum	<	0.01			mg/L
SP-031-FM	8-Aug-1993	Nickel	<	0.01			mg/L
SP-031-FM	8-Aug-1993	Potassium		0.71			mg/L
SP-031-FM	8-Aug-1993	Selenium	<	0.05			mg/L
SP-031-FM	8-Aug-1993	Silicon		3.5			mg/L
SP-031-FM	8-Aug-1993	Silver	<	0.006			mg/L
SP-031-FM	8-Aug-1993	Sodium		0.55 c			mg/L
SP-031-FM	8-Aug-1993	Strontium		0.032			mg/L
SP-031-FM	8-Aug-1993	Thorium	<	0.2			mg/L
SP-031-FM	8-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-031-FM	8-Aug-1993	Vanadium	<	0.005			mg/L
SP-031-FM	8-Aug-1993	Zinc		0.0072 c			mg/L
SP-033	7-Aug-1993	Alpha Activity		-1.91		1.6	pCi/L
SP-033	7-Aug-1993	Aluminum		0.18			mg/L
SP-033	7-Aug-1993	Antimony	<	0.05			mg/L
SP-033	7-Aug-1993	Arsenic	<	0.05			mg/L
SP-033	7-Aug-1993	Barium		0.063			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-033	7-Aug-1993	Beryllium	<	0.0003			mg/L
SP-033	7-Aug-1993	Beta Activity		2.71		2.6	pCi/L
SP-033	7-Aug-1993	Bicarbonate		147			mg/L
SP-033	7-Aug-1993	Boron		0.014	c		mg/L
SP-033	7-Aug-1993	Bromide	<	1			mg/L
SP-033	7-Aug-1993	Cadmium	<	0.003			mg/L
SP-033	7-Aug-1993	Calcium		30			mg/L
SP-033	7-Aug-1993	Carbonate	<	1			mg/L
SP-033	7-Aug-1993	Chloride IC		1.5			mg/L
SP-033	7-Aug-1993	Chromium	<	0.01			mg/L
SP-033	7-Aug-1993	Cobalt	<	0.005			mg/L
SP-033	7-Aug-1993	Conductivity		275			umho/cm
SP-033	7-Aug-1993	Copper	<	0.004			mg/L
SP-033	7-Aug-1993	Dissolved Solids		154			mg/L
SP-033	7-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-033	7-Aug-1993	Iron		0.12			mg/L
SP-033	7-Aug-1993	Lead	<	0.05			mg/L
SP-033	7-Aug-1993	Magnesium		17			mg/L
SP-033	7-Aug-1993	Manganese		0.017			mg/L
SP-033	7-Aug-1993	Molybdenum	<	0.01			mg/L
SP-033	7-Aug-1993	Nickel	<	0.01			mg/L
SP-033	7-Aug-1993	Nitrate Brucine		0.12			mg/L
SP-033	7-Aug-1993	pH		7.7			
SP-033	7-Aug-1993	Potassium		1			mg/L
SP-033	7-Aug-1993	Selenium	<	0.05			mg/L
SP-033	7-Aug-1993	Silicon		3.8			mg/L
SP-033	7-Aug-1993	Silver	<	0.006			mg/L
SP-033	7-Aug-1993	Sodium		0.48			mg/L
SP-033	7-Aug-1993	Strontium		0.036			mg/L
SP-033	7-Aug-1993	Sulfate		7.9			mg/L
SP-033	7-Aug-1993	Suspended Solids	<	1			mg/L
SP-033	7-Aug-1993	Thonum	<	0.2			mg/L
SP-033	7-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-033	7-Aug-1993	Vanadium	<	0.005			mg/L
SP-033	7-Aug-1993	Zinc	<	0.002			mg/L
SP-033-FM	7-Aug-1993	Aluminum	<	0.02			mg/L
SP-033-FM	7-Aug-1993	Antimony	<	0.05			mg/L
SP-033-FM	7-Aug-1993	Arsenic	<	0.05			mg/L
SP-033-FM	7-Aug-1993	Barium		0.077			mg/L
SP-033-FM	7-Aug-1993	Beryllium	<	0.0003			mg/L
SP-033-FM	7-Aug-1993	Boron	<	0.004			mg/L
SP-033-FM	7-Aug-1993	Cadmium	<	0.003			mg/L
SP-033-FM	7-Aug-1993	Calcium		31			mg/L
SP-033-FM	7-Aug-1993	Chromium	<	0.01			mg/L
SP-033-FM	7-Aug-1993	Cobalt	<	0.005			mg/L
SP-033-FM	7-Aug-1993	Copper	<	0.004			mg/L
SP-033-FM	7-Aug-1993	Iron	<	0.005			mg/L
SP-033-FM	7-Aug-1993	Lead	<	0.05			mg/L
SP-033-FM	7-Aug-1993	Magnesium		17			mg/L
SP-033-FM	7-Aug-1993	Manganese		0.0097			mg/L
SP-033-FM	7-Aug-1993	Molybdenum	<	0.01			mg/L
SP-033-FM	7-Aug-1993	Nickel	<	0.01			mg/L
SP-033-FM	7-Aug-1993	Potassium		0.98			mg/L
SP-033-FM	7-Aug-1993	Selenium	<	0.05			mg/L
SP-033-FM	7-Aug-1993	Silicon		3.6			mg/L
SP-033-FM	7-Aug-1993	Silver	<	0.006			mg/L
SP-033-FM	7-Aug-1993	Sodium		0.48	c		mg/L
SP-033-FM	7-Aug-1993	Strontium		0.038			mg/L
SP-033-FM	7-Aug-1993	Thorium	<	0.2			mg/L
SP-033-FM	7-Aug-1993	Uranium Fluorometric	<	0.001			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-033-FM	7-Aug-1993	Vanadium	<	0.005			mg/L
SP-033-FM	7-Aug-1993	Zinc		0.0047	c		mg/L
SP-039	7-Aug-1993	Alpha Activity		-1.03		1.7	pCi/L
SP-039	7-Aug-1993	Aluminum		0.088			mg/L
SP-039	7-Aug-1993	Antimony	<	0.05			mg/L
SP-039	7-Aug-1993	Arsenic	<	0.05			mg/L
SP-039	7-Aug-1993	Barium		0.061			mg/L
SP-039	7-Aug-1993	Beryllium	<	0.0003			mg/L
SP-039	7-Aug-1993	Beta Activity		2.88		2.6	pCi/L
SP-039	7-Aug-1993	Bicarbonate		152			mg/L
SP-039	7-Aug-1993	Boron		0.0056			mg/L
SP-039	7-Aug-1993	Bromide	<	1			mg/L
SP-039	7-Aug-1993	Cadmium	<	0.003			mg/L
SP-039	7-Aug-1993	Calcium		35			mg/L
SP-039	7-Aug-1993	Carbonate		1			mg/L
SP-039	7-Aug-1993	Chloride IC		1.5			mg/L
SP-039	7-Aug-1993	Chromium	<	0.01			mg/L
SP-039	7-Aug-1993	Cobalt	<	0.005			mg/L
SP-039	7-Aug-1993	Conductivity		283			umho/cm
SP-039	7-Aug-1993	Copper	<	0.004			mg/L
SP-039	7-Aug-1993	Dissolved Solids		162			mg/L
SP-039	7-Aug-1993	Fluoride SiE	<	0.1			mg/L
SP-039	7-Aug-1993	Iron		0.1			mg/L
SP-039	7-Aug-1993	Lead	<	0.05			mg/L
SP-039	7-Aug-1993	Magnesium		16			mg/L
SP-039	7-Aug-1993	Manganese		0.0063			mg/L
SP-039	7-Aug-1993	Molybdenum	<	0.01			mg/L
SP-039	7-Aug-1993	Nickel	<	0.01			mg/L
SP-039	7-Aug-1993	Nitrate Brucine		0.12			mg/L
SP-039	7-Aug-1993	pH		8			
SP-039	7-Aug-1993	Potassium		0.89			mg/L
SP-039	7-Aug-1993	Selenium	<	0.05			mg/L
SP-039	7-Aug-1993	Silicon		3.9			mg/L
SP-039	7-Aug-1993	Silver	<	0.006			mg/L
SP-039	7-Aug-1993	Sodium		0.52	c		mg/L
SP-039	7-Aug-1993	Strontium		0.024			mg/L
SP-039	7-Aug-1993	Sulfate		7			mg/L
SP-039	7-Aug-1993	Suspended Solids		2			mg/L
SP-039	7-Aug-1993	Thorium	<	0.2			mg/L
SP-039	7-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-039	7-Aug-1993	Vanadium	<	0.005			mg/L
SP-039	7-Aug-1993	Zinc		0.0061	c		mg/L
SP-039-FM	7-Aug-1993	Aluminum	<	0.02			mg/L
SP-039-FM	7-Aug-1993	Antimony	<	0.05			mg/L
SP-039-FM	7-Aug-1993	Arsenic	<	0.05			mg/L
SP-039-FM	7-Aug-1993	Barium		0.06			mg/L
SP-039-FM	7-Aug-1993	Beryllium	<	0.0003			mg/L
SP-039-FM	7-Aug-1993	Boron		0.017			mg/L
SP-039-FM	7-Aug-1993	Cadmium	<	0.003			mg/L
SP-039-FM	7-Aug-1993	Calcium		34			mg/L
SP-039-FM	7-Aug-1993	Chromium	<	0.01			mg/L
SP-039-FM	7-Aug-1993	Cobalt	<	0.005			mg/L
SP-039-FM	7-Aug-1993	Copper	<	0.004			mg/L
SP-039-FM	7-Aug-1993	Iron	<	0.005			mg/L
SP-039-FM	7-Aug-1993	Lead	<	0.05			mg/L
SP-039-FM	7-Aug-1993	Magnesium		15			mg/L
SP-039-FM	7-Aug-1993	Manganese		0.0035			mg/L
SP-039-FM	7-Aug-1993	Molybdenum	<	0.01			mg/L
SP-039-FM	7-Aug-1993	Nickel	<	0.01			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFIX	RESULT	FOOTNOTE	ERROR	UNITS
SP-039-FM	7-Aug-1993	Potassium		1.2			mg/L
SP-039-FM	7-Aug-1993	Selenium	<	0.05			mg/L
SP-039-FM	7-Aug-1993	Silicon		4			mg/L
SP-039-FM	7-Aug-1993	Silver	<	0.006			mg/L
SP-039-FM	7-Aug-1993	Sodium		0.57	c		mg/L
SP-039-FM	7-Aug-1993	Strontium		0.024			mg/L
SP-039-FM	7-Aug-1993	Thorium	<	0.2			mg/L
SP-039-FM	7-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-039-FM	7-Aug-1993	Vanadium	<	0.005			mg/L
SP-039-FM	7-Aug-1993	Zinc		0.0074	c		mg/L
SP-049	7-Aug-1993	Alpha Activity		0.295		2	pCi/L
SP-049	7-Aug-1993	Aluminum		0.36			mg/L
SP-049	7-Aug-1993	Antimony	<	0.05			mg/L
SP-049	7-Aug-1993	Arsenic	<	0.05			mg/L
SP-049	7-Aug-1993	Barium		0.012			mg/L
SP-049	7-Aug-1993	Beryllium	<	0.0003			mg/L
SP-049	7-Aug-1993	Beta Activity		2.55		2.6	pCi/L
SP-049	7-Aug-1993	Bicarbonate		144			mg/L
SP-049	7-Aug-1993	Boron		0.0041	c		mg/L
SP-049	7-Aug-1993	Bromide	<	1			mg/L
SP-049	7-Aug-1993	Cadmium	<	0.003			mg/L
SP-049	7-Aug-1993	Calcium		29			mg/L
SP-049	7-Aug-1993	Carbonate	<	1			mg/L
SP-049	7-Aug-1993	Chloride IC		1.5			mg/L
SP-049	7-Aug-1993	Chromium	<	0.01			mg/L
SP-049	7-Aug-1993	Cobalt	<	0.005			mg/L
SP-049	7-Aug-1993	Conductivity		273			umho/cm
SP-049	7-Aug-1993	Copper	<	0.004			mg/L
SP-049	7-Aug-1993	Dissolved Solids		164			mg/L
SP-049	7-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-049	7-Aug-1993	Iron		0.28			mg/L
SP-049	7-Aug-1993	Lead	<	0.05			mg/L
SP-049	7-Aug-1993	Magnesium		18			mg/L
SP-049	7-Aug-1993	Manganese		0.016			mg/L
SP-049	7-Aug-1993	Molybdenum	<	0.01			mg/L
SP-049	7-Aug-1993	Nickel	<	0.01			mg/L
SP-049	7-Aug-1993	Nitrate Brucine		0.12			mg/L
SP-049	7-Aug-1993	pH		8			
SP-049	7-Aug-1993	Potassium			n		mg/L
SP-049	7-Aug-1993	Selenium	<	0.05			mg/L
SP-049	7-Aug-1993	Silicon		4.3			mg/L
SP-049	7-Aug-1993	Silver	<	0.006			mg/L
SP-049	7-Aug-1993	Sodium		0.4			mg/L
SP-049	7-Aug-1993	Strontium		0.013			mg/L
SP-049	7-Aug-1993	Sulfate		6.9			mg/L
SP-049	7-Aug-1993	Suspended Solids		7			mg/L
SP-049	7-Aug-1993	Thorium	<	0.2			mg/L
SP-049	7-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-049	7-Aug-1993	Vanadium	<	0.005			mg/L
SP-049	7-Aug-1993	Zinc		0.0029	c		mg/L
SP-049-FM	7-Aug-1993	Aluminum	<	0.02			mg/L
SP-049-FM	7-Aug-1993	Antimony	<	0.05			mg/L
SP-049-FM	7-Aug-1993	Arsenic	<	0.05			mg/L
SP-049-FM	7-Aug-1993	Barium		0.012			mg/L
SP-049-FM	7-Aug-1993	Beryllium	<	0.0003			mg/L
SP-049-FM	7-Aug-1993	Boron		0.0043			mg/L
SP-049-FM	7-Aug-1993	Cadmium	<	0.003			mg/L
SP-049-FM	7-Aug-1993	Calcium		30			mg/L
SP-049-FM	7-Aug-1993	Chromium	<	0.01			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFIX	RESULT	FOOTNOTE	ERROR	UNITS
SP-049-FM	7-Aug-1993	Cobalt	<	0.005			mg/L
SP-049-FM	7-Aug-1993	Copper	<	0.004			mg/L
SP-049-FM	7-Aug-1993	Iron	<	0.005			mg/L
SP-049-FM	7-Aug-1993	Lead	<	0.05			mg/L
SP-049-FM	7-Aug-1993	Magnesium		18			mg/L
SP-049-FM	7-Aug-1993	Manganese		0.0025			mg/L
SP-049-FM	7-Aug-1993	Molybdenum	<	0.01			mg/L
SP-049-FM	7-Aug-1993	Nickel	<	0.01			mg/L
SP-049-FM	7-Aug-1993	Potassium		1.3			mg/L
SP-049-FM	7-Aug-1993	Selenium	<	0.05			mg/L
SP-049-FM	7-Aug-1993	Silicon		3.8			mg/L
SP-049-FM	7-Aug-1993	Silver	<	0.006			mg/L
SP-049-FM	7-Aug-1993	Sodium		0.43	c		mg/L
SP-049-FM	7-Aug-1993	Strontium		0.013			mg/L
SP-049-FM	7-Aug-1993	Thorium	<	0.2			mg/L
SP-049-FM	7-Aug-1993	Uranium Fluorometric		0.001			mg/L
SP-049-FM	7-Aug-1993	Vanadium	<	0.005			mg/L
SP-049-FM	7-Aug-1993	Zinc		0.0037	c		mg/L
SP-054	31-Jul-1993	Alpha Activity		-1.21	+	2.1	pCi/L
SP-054	31-Jul-1993	Aluminum		0.49			mg/L
SP-054	31-Jul-1993	Antimony	<	0.05			mg/L
SP-054	31-Jul-1993	Arsenic	<	0.05			mg/L
SP-054	31-Jul-1993	Barium		0.034			mg/L
SP-054	31-Jul-1993	Beryllium	<	0.0003			mg/L
SP-054	31-Jul-1993	Beta Activity		-1.24	+	2.7	pCi/L
SP-054	31-Jul-1993	Bicarbonate		174			mg/L
SP-054	31-Jul-1993	Boron		0.063			mg/L
SP-054	31-Jul-1993	Bromide	<	1			mg/L
SP-054	31-Jul-1993	Cadmium	<	0.003			mg/L
SP-054	31-Jul-1993	Calcium		35			mg/L
SP-054	31-Jul-1993	Carbonate	<	1			mg/L
SP-054	31-Jul-1993	Chloride IC		2.4			mg/L
SP-054	31-Jul-1993	Chromium	<	0.01			mg/L
SP-054	31-Jul-1993	Cobalt	<	0.005			mg/L
SP-054	31-Jul-1993	Conductivity		336			umho/cm
SP-054	31-Jul-1993	Copper	<	0.004			mg/L
SP-054	31-Jul-1993	Dissolved Solids		172			mg/L
SP-054	31-Jul-1993	Fluoride SIE	<	0.1			mg/L
SP-054	31-Jul-1993	Iron		0.7			mg/L
SP-054	31-Jul-1993	Lead	<	0.05			mg/L
SP-054	31-Jul-1993	Magnesium		21			mg/L
SP-054	31-Jul-1993	Manganese		0.026			mg/L
SP-054	31-Jul-1993	Molybdenum	<	0.01			mg/L
SP-054	31-Jul-1993	Nickel	<	0.01			mg/L
SP-054	31-Jul-1993	Nitrate Brucine		0.36			mg/L
SP-054	31-Jul-1993	pH		7.5			
SP-054	31-Jul-1993	Potassium		0.94			mg/L
SP-054	31-Jul-1993	Selenium	<	0.05			mg/L
SP-054	31-Jul-1993	Silicon		4.5			mg/L
SP-054	31-Jul-1993	Silver	<	0.006			mg/L
SP-054	31-Jul-1993	Sodium		0.95			mg/L
SP-054	31-Jul-1993	Strontium		0.023			mg/L
SP-054	31-Jul-1993	Sulfate		9.6			mg/L
SP-054	31-Jul-1993	Suspended Solids		5			mg/L
SP-054	31-Jul-1993	Thorium	<	0.2			mg/L
SP-054	31-Jul-1993	Uranium Fluorometric	<	0.001			mg/L
SP-054	31-Jul-1993	Vanadium	<	0.005			mg/L
SP-054	31-Jul-1993	Zinc		0.011			mg/L
SP-054-FM	31-Jul-1993	Aluminum	<	0.02			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING ID.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-054-FM	31-Jul-1993	Antimony	<	0.05			mg/L
SP-054-FM	31-Jul-1993	Arsenic	<	0.05			mg/L
SP-054-FM	31-Jul-1993	Barium		0.033			mg/L
SP-054-FM	31-Jul-1993	Beryllium	<	0.0003			mg/L
SP-054-FM	31-Jul-1993	Boron		0.0059			mg/L
SP-054-FM	31-Jul-1993	Cadmium	<	0.003			mg/L
SP-054-FM	31-Jul-1993	Calcium		36			mg/L
SP-054-FM	31-Jul-1993	Chromium	<	0.01			mg/L
SP-054-FM	31-Jul-1993	Cobalt	<	0.005			mg/L
SP-054-FM	31-Jul-1993	Copper	<	0.004			mg/L
SP-054-FM	31-Jul-1993	Iron	<	0.005			mg/L
SP-054-FM	31-Jul-1993	Lead	<	0.05			mg/L
SP-054-FM	31-Jul-1993	Magnesium		22			mg/L
SP-054-FM	31-Jul-1993	Manganese		0.0011			mg/L
SP-054-FM	31-Jul-1993	Molybdenum	<	0.01			mg/L
SP-054-FM	31-Jul-1993	Nickel	<	0.01			mg/L
SP-054-FM	31-Jul-1993	Potassium		1.4			mg/L
SP-054-FM	31-Jul-1993	Selenium	<	0.05			mg/L
SP-054-FM	31-Jul-1993	Silicon		4			mg/L
SP-054-FM	31-Jul-1993	Silver	<	0.006			mg/L
SP-054-FM	31-Jul-1993	Sodium		0.83			mg/L
SP-054-FM	31-Jul-1993	Strontium		0.023			mg/L
SP-054-FM	31-Jul-1993	Thorium	<	0.2			mg/L
SP-054-FM	31-Jul-1993	Uranium Fluorometric	<	0.001			mg/L
SP-054-FM	31-Jul-1993	Vanadium	<	0.005			mg/L
SP-054-FM	31-Jul-1993	Zinc		0.014			mg/L
SP-056	8-Aug-1993	Alpha Activity		-19.1		10	pCi/L
SP-056	8-Aug-1993	Aluminum		0.11			mg/L
SP-056	8-Aug-1993	Antimony	<	0.05			mg/L
SP-056	8-Aug-1993	Arsenic	<	0.05			mg/L
SP-056	8-Aug-1993	Barium		0.012			mg/L
SP-056	8-Aug-1993	Beryllium	<	0.0003			mg/L
SP-056	8-Aug-1993	Beta Activity		-10.1		12	pCi/L
SP-056	8-Aug-1993	Bicarbonate		182			mg/L
SP-056	8-Aug-1993	Boron		0.012			mg/L
SP-056	8-Aug-1993	Bromide	<	1			mg/L
SP-056	8-Aug-1993	Cadmium	<	0.003			mg/L
SP-056	8-Aug-1993	Calcium		37			mg/L
SP-056	8-Aug-1993	Carbonate	<	1			mg/L
SP-056	8-Aug-1993	Chloride IC		1.9			mg/L
SP-056	8-Aug-1993	Chromium	<	0.01			mg/L
SP-056	8-Aug-1993	Cobalt	<	0.005			mg/L
SP-056	8-Aug-1993	Conductivity		343			umho/cm
SP-056	8-Aug-1993	Copper	<	0.004			mg/L
SP-056	8-Aug-1993	Dissolved Solids		194			mg/L
SP-056	8-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-056	8-Aug-1993	Iron		0.18			mg/L
SP-056	8-Aug-1993	Lead	<	0.05			mg/L
SP-056	8-Aug-1993	Magnesium		22			mg/L
SP-056	8-Aug-1993	Manganese		0.0096			mg/L
SP-056	8-Aug-1993	Molybdenum	<	0.01			mg/L
SP-056	8-Aug-1993	Nickel	<	0.01			mg/L
SP-056	8-Aug-1993	Nitrate Brucine		1.5			mg/L
SP-056	8-Aug-1993	pH		7.7			
SP-056	8-Aug-1993	Potassium		1.4			mg/L
SP-056	8-Aug-1993	Selenium	<	0.05			mg/L
SP-056	8-Aug-1993	Silicon		4			mg/L
SP-056	8-Aug-1993	Silver	<	0.006			mg/L
SP-056	8-Aug-1993	Sodium		0.67	c		mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-056	8-Aug-1993	Strontium		0.023			mg/L
SP-056	8-Aug-1993	Sulfate		8.3			mg/L
SP-056	8-Aug-1993	Suspended Solids		4			mg/L
SP-056	8-Aug-1993	Thorium	<	0.2			mg/L
SP-056	8-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-056	8-Aug-1993	Vanadium	<	0.005			mg/L
SP-056	8-Aug-1993	Zinc		0.0079	c		mg/L
SP-056-FM	8-Aug-1993	Aluminum	<	0.02			mg/L
SP-056-FM	8-Aug-1993	Antimony	<	0.05			mg/L
SP-056-FM	8-Aug-1993	Arsenic	<	0.05			mg/L
SP-056-FM	8-Aug-1993	Barium		0.013			mg/L
SP-056-FM	8-Aug-1993	Beryllium	<	0.0003			mg/L
SP-056-FM	8-Aug-1993	Boron		0.0071			mg/L
SP-056-FM	8-Aug-1993	Cadmium	<	0.003			mg/L
SP-056-FM	8-Aug-1993	Calcium		38			mg/L
SP-056-FM	8-Aug-1993	Chromium	<	0.01			mg/L
SP-056-FM	8-Aug-1993	Cobalt	<	0.005			mg/L
SP-056-FM	8-Aug-1993	Copper	<	0.004			mg/L
SP-056-FM	8-Aug-1993	Iron	<	0.005			mg/L
SP-056-FM	8-Aug-1993	Lead	<	0.05			mg/L
SP-056-FM	8-Aug-1993	Magnesium		22			mg/L
SP-056-FM	8-Aug-1993	Manganese		0.0026			mg/L
SP-056-FM	8-Aug-1993	Molybdenum	<	0.01			mg/L
SP-056-FM	8-Aug-1993	Nickel	<	0.01			mg/L
SP-056-FM	8-Aug-1993	Potassium		1.2			mg/L
SP-056-FM	8-Aug-1993	Selenium	<	0.05			mg/L
SP-056-FM	8-Aug-1993	Silicon		3.9			mg/L
SP-056-FM	8-Aug-1993	Silver	<	0.006			mg/L
SP-056-FM	8-Aug-1993	Sodium		0.63	c		mg/L
SP-056-FM	8-Aug-1993	Strontium		0.023			mg/L
SP-056-FM	8-Aug-1993	Thorium	<	0.2			mg/L
SP-056-FM	8-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-056-FM	8-Aug-1993	Vanadium	<	0.005			mg/L
SP-056-FM	8-Aug-1993	Zinc		0.007	c		mg/L
SP-060	31-Jul-1993	Alpha Activity		0.449		2.3	pCi/L
SP-060	31-Jul-1993	Aluminum	<	0.02			mg/L
SP-060	31-Jul-1993	Antimony	<	0.05			mg/L
SP-060	31-Jul-1993	Arsenic	<	0.05			mg/L
SP-060	31-Jul-1993	Barium		0.06			mg/L
SP-060	31-Jul-1993	Beryllium	<	0.0003			mg/L
SP-060	31-Jul-1993	Beta Activity		0		2.7	pCi/L
SP-060	31-Jul-1993	Bicarbonate		153			mg/L
SP-060	31-Jul-1993	Boron	<	0.004			mg/L
SP-060	31-Jul-1993	Bromide	<	1			mg/L
SP-060	31-Jul-1993	Cadmium	<	0.003			mg/L
SP-060	31-Jul-1993	Calcium		31			mg/L
SP-060	31-Jul-1993	Carbonate	<	1			mg/L
SP-060	31-Jul-1993	Chloride IC		1.7			mg/L
SP-060	31-Jul-1993	Chromium	<	0.01			mg/L
SP-060	31-Jul-1993	Cobalt	<	0.005			mg/L
SP-060	31-Jul-1993	Conductivity		286			umho/cm
SP-060	31-Jul-1993	Copper	<	0.004			mg/L
SP-060	31-Jul-1993	Dissolved Solids		152			mg/L
SP-060	31-Jul-1993	Fluoride SIE	<	0.1			mg/L
SP-060	31-Jul-1993	Iron	<	0.005			mg/L
SP-060	31-Jul-1993	Lead	<	0.05			mg/L
SP-060	31-Jul-1993	Magnesium		17			mg/L
SP-060	31-Jul-1993	Manganese	<	0.001			mg/L
SP-060	31-Jul-1993	Molybdenum	<	0.01			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-060	31-Jul-1993	Nickel	<	0.01			mg/L
SP-060	31-Jul-1993	Nitrate Brucine	<	0.1			mg/L
SP-060	31-Jul-1993	pH		7.8			
SP-060	31-Jul-1993	Potassium		0.89			mg/L
SP-060	31-Jul-1993	Selenium	<	0.05			mg/L
SP-060	31-Jul-1993	Silicon		4.1			mg/L
SP-060	31-Jul-1993	Silver	<	0.006			mg/L
SP-060	31-Jul-1993	Sodium		0.49			mg/L
SP-060	31-Jul-1993	Strontium		0.021			mg/L
SP-060	31-Jul-1993	Sulfate		8.1			mg/L
SP-060	31-Jul-1993	Suspended Solids		18			mg/L
SP-060	31-Jul-1993	Thorium	<	0.2			mg/L
SP-060	31-Jul-1993	Uranium Fluorometric	<	0.001			mg/L
SP-060	31-Jul-1993	Vanadium	<	0.005			mg/L
SP-060	31-Jul-1993	Zinc		0.011			mg/L
SP-060-FM	31-Jul-1993	Aluminum	<	0.02			mg/L
SP-060-FM	31-Jul-1993	Antimony	<	0.05			mg/L
SP-060-FM	31-Jul-1993	Arsenic	<	0.05			mg/L
SP-060-FM	31-Jul-1993	Barium		0.061			mg/L
SP-060-FM	31-Jul-1993	Beryllium	<	0.0003			mg/L
SP-060-FM	31-Jul-1993	Boron		0.0086			mg/L
SP-060-FM	31-Jul-1993	Cadmium	<	0.003			mg/L
SP-060-FM	31-Jul-1993	Calcium		32			mg/L
SP-060-FM	31-Jul-1993	Chromium	<	0.01			mg/L
SP-060-FM	31-Jul-1993	Cobalt	<	0.005			mg/L
SP-060-FM	31-Jul-1993	Copper	<	0.004			mg/L
SP-060-FM	31-Jul-1993	Iron	<	0.005			mg/L
SP-060-FM	31-Jul-1993	Lead	<	0.05			mg/L
SP-060-FM	31-Jul-1993	Magnesium		18			mg/L
SP-060-FM	31-Jul-1993	Manganese	<	0.001			mg/L
SP-060-FM	31-Jul-1993	Molybdenum	<	0.01			mg/L
SP-060-FM	31-Jul-1993	Nickel	<	0.01			mg/L
SP-060-FM	31-Jul-1993	Potassium		0.99			mg/L
SP-060-FM	31-Jul-1993	Selenium	<	0.05			mg/L
SP-060-FM	31-Jul-1993	Silicon		4.2			mg/L
SP-060-FM	31-Jul-1993	Silver	<	0.006			mg/L
SP-060-FM	31-Jul-1993	Sodium		0.51	c		mg/L
SP-060-FM	31-Jul-1993	Strontium		0.023			mg/L
SP-060-FM	31-Jul-1993	Thorium	<	0.2			mg/L
SP-060-FM	31-Jul-1993	Uranium Fluorometric	<	0.001			mg/L
SP-060-FM	31-Jul-1993	Vanadium	<	0.005			mg/L
SP-060-FM	31-Jul-1993	Zinc		0.013	c		mg/L
SP-074	7-Aug-1993	Alpha Activity		0		1.8	pCi/L
SP-074	7-Aug-1993	Aluminum		0.095			mg/L
SP-074	7-Aug-1993	Antimony	<	0.05			mg/L
SP-074	7-Aug-1993	Arsenic	<	0.05			mg/L
SP-074	7-Aug-1993	Barium		0.056			mg/L
SP-074	7-Aug-1993	Beryllium	<	0.0003			mg/L
SP-074	7-Aug-1993	Beta Activity		3.6		2.6	pCi/L
SP-074	7-Aug-1993	Bicarbonate		27			mg/L
SP-074	7-Aug-1993	Boron		0.0079			mg/L
SP-074	7-Aug-1993	Bromide	<	1			mg/L
SP-074	7-Aug-1993	Cadmium	<	0.003			mg/L
SP-074	7-Aug-1993	Calcium		3.9			mg/L
SP-074	7-Aug-1993	Carbonate	<	1			mg/L
SP-074	7-Aug-1993	Chloride IC		1.7			mg/L
SP-074	7-Aug-1993	Chromium	<	0.01			mg/L
SP-074	7-Aug-1993	Cobalt	<	0.005			mg/L
SP-074	7-Aug-1993	Conductivity		57			umho/cm

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-074	7-Aug-1993	Copper	<	0.004			mg/L
SP-074	7-Aug-1993	Dissolved Solids		62			mg/L
SP-074	7-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-074	7-Aug-1993	Iron		0.12			mg/L
SP-074	7-Aug-1993	Lead	<	0.05			mg/L
SP-074	7-Aug-1993	Magnesium		2.5			mg/L
SP-074	7-Aug-1993	Manganese		0.035			mg/L
SP-074	7-Aug-1993	Molybdenum	<	0.01			mg/L
SP-074	7-Aug-1993	Nickel	<	0.01			mg/L
SP-074	7-Aug-1993	Nitrate Brucine		0.14			mg/L
SP-074	7-Aug-1993	pH		7.4			
SP-074	7-Aug-1993	Potassium		2.6			mg/L
SP-074	7-Aug-1993	Selenium	<	0.05			mg/L
SP-074	7-Aug-1993	Silicon		8.1			mg/L
SP-074	7-Aug-1993	Silver	<	0.006			mg/L
SP-074	7-Aug-1993	Sodium		2.3			mg/L
SP-074	7-Aug-1993	Strontium		0.014			mg/L
SP-074	7-Aug-1993	Sulfate		8.4			mg/L
SP-074	7-Aug-1993	Suspended Solids		53			mg/L
SP-074	7-Aug-1993	Thorium	<	0.2			mg/L
SP-074	7-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-074	7-Aug-1993	Vanadium	<	0.005			mg/L
SP-074	7-Aug-1993	Zinc		0.0083	c		mg/L
SP-074-FM	7-Aug-1993	Aluminum	<	0.02			mg/L
SP-074-FM	7-Aug-1993	Antimony	<	0.05			mg/L
SP-074-FM	7-Aug-1993	Arsenic	<	0.05			mg/L
SP-074-FM	7-Aug-1993	Barium		0.039			mg/L
SP-074-FM	7-Aug-1993	Beryllium	<	0.0003			mg/L
SP-074-FM	7-Aug-1993	Boron		0.015			mg/L
SP-074-FM	7-Aug-1993	Cadmium	<	0.003			mg/L
SP-074-FM	7-Aug-1993	Calcium		4.4			mg/L
SP-074-FM	7-Aug-1993	Chromium	<	0.01			mg/L
SP-074-FM	7-Aug-1993	Cobalt	<	0.005			mg/L
SP-074-FM	7-Aug-1993	Copper	<	0.004			mg/L
SP-074-FM	7-Aug-1993	Iron	<	0.005			mg/L
SP-074-FM	7-Aug-1993	Lead	<	0.05			mg/L
SP-074-FM	7-Aug-1993	Magnesium		2.7			mg/L
SP-074-FM	7-Aug-1993	Manganese		0.02			mg/L
SP-074-FM	7-Aug-1993	Molybdenum	<	0.01			mg/L
SP-074-FM	7-Aug-1993	Nickel	<	0.01			mg/L
SP-074-FM	7-Aug-1993	Potassium		2.8			mg/L
SP-074-FM	7-Aug-1993	Selenium	<	0.05			mg/L
SP-074-FM	7-Aug-1993	Silicon		8.2			mg/L
SP-074-FM	7-Aug-1993	Silver	<	0.006			mg/L
SP-074-FM	7-Aug-1993	Sodium		2.3			mg/L
SP-074-FM	7-Aug-1993	Strontium		0.013			mg/L
SP-074-FM	7-Aug-1993	Thorium	<	0.2			mg/L
SP-074-FM	7-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-074-FM	7-Aug-1993	Vanadium	<	0.005			mg/L
SP-074-FM	7-Aug-1993	Zinc		0.016	c		mg/L
SP-081	8-Aug-1993	Alpha Activity		24	+	10	pCi/L
SP-081	8-Aug-1993	Aluminum		0.22			mg/L
SP-081	8-Aug-1993	Antimony	<	0.05			mg/L
SP-081	8-Aug-1993	Arsenic	<	0.05			mg/L
SP-081	8-Aug-1993	Barium		0.027			mg/L
SP-081	8-Aug-1993	Beryllium	<	0.0003			mg/L
SP-081	8-Aug-1993	Beta Activity		3.94	+	13	pCi/L
SP-081	8-Aug-1993	Bicarbonate		121			mg/L
SP-081	8-Aug-1993	Boron		0.04			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-081	8-Aug-1993	Bromide	<	1			mg/L
SP-081	8-Aug-1993	Cadmium	<	0.003			mg/L
SP-081	8-Aug-1993	Calcium		88			mg/L
SP-081	8-Aug-1993	Carbonate	<	1			mg/L
SP-081	8-Aug-1993	Chloride IC		8.1			mg/L
SP-081	8-Aug-1993	Chromium	<	0.01			mg/L
SP-081	8-Aug-1993	Cobalt	<	0.005			mg/L
SP-081	8-Aug-1993	Conductivity		497			umho/cm
SP-081	8-Aug-1993	Copper	<	0.004			mg/L
SP-081	8-Aug-1993	Dissolved Solids		322			mg/L
SP-081	8-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-081	8-Aug-1993	Iron		0.3			mg/L
SP-081	8-Aug-1993	Lead	<	0.05			mg/L
SP-081	8-Aug-1993	Magnesium		5			mg/L
SP-081	8-Aug-1993	Manganese		0.031			mg/L
SP-081	8-Aug-1993	Molybdenum	<	0.01			mg/L
SP-081	8-Aug-1993	Nickel	<	0.01			mg/L
SP-081	8-Aug-1993	Nitrate Brucine		2			mg/L
SP-081	8-Aug-1993	pH		7.8			
SP-081	8-Aug-1993	Potassium		2.4			mg/L
SP-081	8-Aug-1993	Selenium	<	0.05			mg/L
SP-081	8-Aug-1993	Silicon		4.1			mg/L
SP-081	8-Aug-1993	Silver	<	0.006			mg/L
SP-081	8-Aug-1993	Sodium		5.3			mg/L
SP-081	8-Aug-1993	Strontium		0.14			mg/L
SP-081	8-Aug-1993	Sulfate		29			mg/L
SP-081	8-Aug-1993	Suspended Solids		30			mg/L
SP-081	8-Aug-1993	Thorium	<	0.2			mg/L
SP-081	8-Aug-1993	Uranium Fluorometric		0.001			mg/L
SP-081	8-Aug-1993	Vanadium	<	0.005			mg/L
SP-081	8-Aug-1993	Zinc		0.012	c		mg/L
SP-081-FM	8-Aug-1993	Aluminum	<	0.02			mg/L
SP-081-FM	8-Aug-1993	Antimony	<	0.05			mg/L
SP-081-FM	8-Aug-1993	Arsenic	<	0.05			mg/L
SP-081-FM	8-Aug-1993	Barium		0.048			mg/L
SP-081-FM	8-Aug-1993	Beryllium	<	0.0003			mg/L
SP-081-FM	8-Aug-1993	Boron		0.041			mg/L
SP-081-FM	8-Aug-1993	Cadmium	<	0.003			mg/L
SP-081-FM	8-Aug-1993	Calcium		90			mg/L
SP-081-FM	8-Aug-1993	Chromium	<	0.01			mg/L
SP-081-FM	8-Aug-1993	Cobalt	<	0.005			mg/L
SP-081-FM	8-Aug-1993	Copper	<	0.004			mg/L
SP-081-FM	8-Aug-1993	Iron	<	0.005			mg/L
SP-081-FM	8-Aug-1993	Lead	<	0.05			mg/L
SP-081-FM	8-Aug-1993	Magnesium		5.2			mg/L
SP-081-FM	8-Aug-1993	Manganese		0.0035			mg/L
SP-081-FM	8-Aug-1993	Molybdenum	<	0.01			mg/L
SP-081-FM	8-Aug-1993	Nickel	<	0.01			mg/L
SP-081-FM	8-Aug-1993	Potassium		2.2			mg/L
SP-081-FM	8-Aug-1993	Selenium	<	0.05			mg/L
SP-081-FM	8-Aug-1993	Silicon		4.1			mg/L
SP-081-FM	8-Aug-1993	Silver	<	0.006			mg/L
SP-081-FM	8-Aug-1993	Sodium		5.5			mg/L
SP-081-FM	8-Aug-1993	Strontium		0.15			mg/L
SP-081-FM	8-Aug-1993	Thorium	<	0.2			mg/L
SP-081-FM	8-Aug-1993	Uranium Fluorometric		0.001			mg/L
SP-081-FM	8-Aug-1993	Vanadium	<	0.005			mg/L
SP-081-FM	8-Aug-1993	Zinc		0.0084	c		mg/L
SP-083	1-Aug-1993	Alpha Activity		-2.09		2.1	pCi/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-083	1-Aug-1993	Aluminum		0.15			mg/L
SP-083	1-Aug-1993	Antimony	<	0.05			mg/L
SP-083	1-Aug-1993	Arsenic	<	0.05			mg/L
SP-083	1-Aug-1993	Barium		0.036			mg/L
SP-083	1-Aug-1993	Beryllium	<	0.0003			mg/L
SP-083	1-Aug-1993	Beta Activity	-	0.75		2.7	pCi/L
SP-083	1-Aug-1993	Bicarbonate		239			mg/L
SP-083	1-Aug-1993	Boron		0.027			mg/L
SP-083	1-Aug-1993	Bromide	<	1			mg/L
SP-083	1-Aug-1993	Cadmium	<	0.003			mg/L
SP-083	1-Aug-1993	Calcium		88			mg/L
SP-083	1-Aug-1993	Carbonate	<	1			mg/L
SP-083	1-Aug-1993	Chloride IC		4.7			mg/L
SP-083	1-Aug-1993	Chromium	<	0.01			mg/L
SP-083	1-Aug-1993	Cobalt	<	0.005			mg/L
SP-083	1-Aug-1993	Conductivity		515			umho/cm
SP-083	1-Aug-1993	Copper	<	0.004			mg/L
SP-083	1-Aug-1993	Dissolved Solids		304			mg/L
SP-083	1-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-083	1-Aug-1993	Iron		0.17			mg/L
SP-083	1-Aug-1993	Lead	<	0.05			mg/L
SP-083	1-Aug-1993	Magnesium		11			mg/L
SP-083	1-Aug-1993	Manganese		0.0073			mg/L
SP-083	1-Aug-1993	Molybdenum	<	0.01			mg/L
SP-083	1-Aug-1993	Nickel	<	0.01			mg/L
SP-083	1-Aug-1993	Nitrate Brucine		1.9			mg/L
SP-083	1-Aug-1993	pH		7.4			
SP-083	1-Aug-1993	Potassium		0.76			mg/L
SP-083	1-Aug-1993	Selenium	<	0.05			mg/L
SP-083	1-Aug-1993	Silicon		3.8			mg/L
SP-083	1-Aug-1993	Silver	<	0.006			mg/L
SP-083	1-Aug-1993	Sodium		3.2			mg/L
SP-083	1-Aug-1993	Strontium		0.16			mg/L
SP-083	1-Aug-1993	Sulfate		19			mg/L
SP-083	1-Aug-1993	Suspended Solids		10			mg/L
SP-083	1-Aug-1993	Thorium	<	0.2			mg/L
SP-083	1-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-083	1-Aug-1993	Vanadium	<	0.005			mg/L
SP-083	1-Aug-1993	Zinc		0.0047			mg/L
SP-083-FM	1-Aug-1993	Aluminum		0.027			mg/L
SP-083-FM	1-Aug-1993	Antimony	<	0.05			mg/L
SP-083-FM	1-Aug-1993	Arsenic	<	0.05			mg/L
SP-083-FM	1-Aug-1993	Barium		0.037			mg/L
SP-083-FM	1-Aug-1993	Beryllium	<	0.0003			mg/L
SP-083-FM	1-Aug-1993	Boron		0.031			mg/L
SP-083-FM	1-Aug-1993	Cadmium	<	0.003			mg/L
SP-083-FM	1-Aug-1993	Calcium		88			mg/L
SP-083-FM	1-Aug-1993	Chromium	<	0.01			mg/L
SP-083-FM	1-Aug-1993	Cobalt	<	0.005			mg/L
SP-083-FM	1-Aug-1993	Copper	<	0.004			mg/L
SP-083-FM	1-Aug-1993	Iron	<	0.005			mg/L
SP-083-FM	1-Aug-1993	Lead	<	0.05			mg/L
SP-083-FM	1-Aug-1993	Magnesium		11			mg/L
SP-083-FM	1-Aug-1993	Manganese		0.0018			mg/L
SP-083-FM	1-Aug-1993	Molybdenum	<	0.01			mg/L
SP-083-FM	1-Aug-1993	Nickel	<	0.01			mg/L
SP-083-FM	1-Aug-1993	Potassium		1.2			mg/L
SP-083-FM	1-Aug-1993	Selenium	<	0.05			mg/L
SP-083-FM	1-Aug-1993	Silicon		3.9			mg/L
SP-083-FM	1-Aug-1993	Silver	<	0.006			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFIX	RESULT	FOOTNOTE	ERROR	UNITS
SP-083-FM	1-Aug-1993	Sodium		3.2			mg/L
SP-083-FM	1-Aug-1993	Strontium		0.16			mg/L
SP-083-FM	1-Aug-1993	Thorium	<	0.2			mg/L
SP-083-FM	1-Aug-1993	Uranium Fluorometric		0.001			mg/L
SP-083-FM	1-Aug-1993	Vanadium	<	0.005			mg/L
SP-083-FM	1-Aug-1993	Zinc		0.0055	c		mg/L
SP-102	10-Aug-1993	Alpha Activity		-22.7		10	pCi/L
SP-102	10-Aug-1993	Aluminum		2.7			mg/L
SP-102	10-Aug-1993	Antimony	<	0.05			mg/L
SP-102	10-Aug-1993	Arsenic	<	0.05			mg/L
SP-102	10-Aug-1993	Barium		0.079			mg/L
SP-102	10-Aug-1993	Beryllium	<	0.0003			mg/L
SP-102	10-Aug-1993	Beta Activity		-5.23		12	pCi/L
SP-102	10-Aug-1993	Bicarbonate		148			mg/L
SP-102	10-Aug-1993	Boron		0.016	c		mg/L
SP-102	10-Aug-1993	Bromide	<	1			mg/L
SP-102	10-Aug-1993	Cadmium	<	0.003			mg/L
SP-102	10-Aug-1993	Calcium		34			mg/L
SP-102	10-Aug-1993	Carbonate	<	1			mg/L
SP-102	10-Aug-1993	Chloride IC		5			mg/L
SP-102	10-Aug-1993	Chromium	<	0.01			mg/L
SP-102	10-Aug-1993	Cobalt	<	0.005			mg/L
SP-102	10-Aug-1993	Conductivity		320			umho/cm
SP-102	10-Aug-1993	Copper		0.0062			mg/L
SP-102	10-Aug-1993	Dissolved Solids		208			mg/L
SP-102	10-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-102	10-Aug-1993	Iron		4.6			mg/L
SP-102	10-Aug-1993	Lead	<	0.05			mg/L
SP-102	10-Aug-1993	Magnesium		18			mg/L
SP-102	10-Aug-1993	Manganese		0.32			mg/L
SP-102	10-Aug-1993	Molybdenum	<	0.01			mg/L
SP-102	10-Aug-1993	Nickel		0.016			mg/L
SP-102	10-Aug-1993	Nitrate Brucine		0.83			mg/L
SP-102	10-Aug-1993	pH		7.7			
SP-102	10-Aug-1993	Potassium		3.9			mg/L
SP-102	10-Aug-1993	Selenium	<	0.05			mg/L
SP-102	10-Aug-1993	Silicon		9.5			mg/L
SP-102	10-Aug-1993	Silver	<	0.006			mg/L
SP-102	10-Aug-1993	Sodium		4.1			mg/L
SP-102	10-Aug-1993	Strontium		0.067			mg/L
SP-102	10-Aug-1993	Sulfate		14			mg/L
SP-102	10-Aug-1993	Suspended Solids		47			mg/L
SP-102	10-Aug-1993	Thorium	<	0.2			mg/L
SP-102	10-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-102	10-Aug-1993	Vanadium	<	0.005			mg/L
SP-102	10-Aug-1993	Zinc		0.034	c		mg/L
SP-102-FM	10-Aug-1993	Aluminum	<	0.02			mg/L
SP-102-FM	10-Aug-1993	Antimony	<	0.05			mg/L
SP-102-FM	10-Aug-1993	Arsenic	<	0.05			mg/L
SP-102-FM	10-Aug-1993	Barium		0.047			mg/L
SP-102-FM	10-Aug-1993	Beryllium	<	0.0003			mg/L
SP-102-FM	10-Aug-1993	Boron		0.0059	c		mg/L
SP-102-FM	10-Aug-1993	Cadmium	<	0.003			mg/L
SP-102-FM	10-Aug-1993	Calcium		33			mg/L
SP-102-FM	10-Aug-1993	Chromium	<	0.01			mg/L
SP-102-FM	10-Aug-1993	Cobalt	<	0.005			mg/L
SP-102-FM	10-Aug-1993	Copper	<	0.004			mg/L
SP-102-FM	10-Aug-1993	Iron	<	0.005			mg/L
SP-102-FM	10-Aug-1993	Lead	<	0.05			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-102-FM	10-Aug-1993	Magnesium		18			mg/L
SP-102-FM	10-Aug-1993	Manganese		0.0085			mg/L
SP-102-FM	10-Aug-1993	Molybdenum	<	0.01			mg/L
SP-102-FM	10-Aug-1993	Nickel	<	0.01			mg/L
SP-102-FM	10-Aug-1993	Potassium		2.6			mg/L
SP-102-FM	10-Aug-1993	Selenium	<	0.05			mg/L
SP-102-FM	10-Aug-1993	Silicon		7.6			mg/L
SP-102-FM	10-Aug-1993	Silver	<	0.006			mg/L
SP-102-FM	10-Aug-1993	Sodium		4.1			mg/L
SP-102-FM	10-Aug-1993	Strontium		0.067			mg/L
SP-102-FM	10-Aug-1993	Thorium	<	0.2			mg/L
SP-102-FM	10-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-102-FM	10-Aug-1993	Vanadium	<	0.005			mg/L
SP-102-FM	10-Aug-1993	Zinc		0.0041	c		mg/L
SP-112	31-Jul-1993	Alpha Activity		3.87		2.7	pCi/L
SP-112	31-Jul-1993	Aluminum		26			mg/L
SP-112	31-Jul-1993	Antimony	<	0.05			mg/L
SP-112	31-Jul-1993	Arsenic	<	0.05			mg/L
SP-112	31-Jul-1993	Barium		0.71			mg/L
SP-112	31-Jul-1993	Beryllium		0.0025			mg/L
SP-112	31-Jul-1993	Beta Activity		7.83		3.2	pCi/L
SP-112	31-Jul-1993	Bicarbonate		48			mg/L
SP-112	31-Jul-1993	Boron		0.026			mg/L
SP-112	31-Jul-1993	Bromide	<	1			mg/L
SP-112	31-Jul-1993	Cadmium		0.006			mg/L
SP-112	31-Jul-1993	Calcium		19			mg/L
SP-112	31-Jul-1993	Carbonate	<	1			mg/L
SP-112	31-Jul-1993	Chloride IC		2.3			mg/L
SP-112	31-Jul-1993	Chromium		0.059			mg/L
SP-112	31-Jul-1993	Cobalt		0.018			mg/L
SP-112	31-Jul-1993	Conductivity		110			umho/cm
SP-112	31-Jul-1993	Copper		0.043			mg/L
SP-112	31-Jul-1993	Dissolved Solids		92			mg/L
SP-112	31-Jul-1993	Fluoride SIE	<	0.1			mg/L
SP-112	31-Jul-1993	Iron		29			mg/L
SP-112	31-Jul-1993	Lead		0.079			mg/L
SP-112	31-Jul-1993	Magnesium		9.1			mg/L
SP-112	31-Jul-1993	Manganese		0.43			mg/L
SP-112	31-Jul-1993	Molybdenum	<	0.01			mg/L
SP-112	31-Jul-1993	Nickel		0.067			mg/L
SP-112	31-Jul-1993	Nitrate Brucine	<	0.1			mg/L
SP-112	31-Jul-1993	pH		7.3			
SP-112	31-Jul-1993	Potassium		8.3			mg/L
SP-112	31-Jul-1993	Selenium	<	0.05			mg/L
SP-112	31-Jul-1993	Silicon		33			mg/L
SP-112	31-Jul-1993	Silver	<	0.006			mg/L
SP-112	31-Jul-1993	Sodium		4.8			mg/L
SP-112	31-Jul-1993	Strontium		0.063			mg/L
SP-112	31-Jul-1993	Sulfate		11			mg/L
SP-112	31-Jul-1993	Suspended Solids		1190			mg/L
SP-112	31-Jul-1993	Thorium	<	0.2			mg/L
SP-112	31-Jul-1993	Uranium Fluorometric		0.002			mg/L
SP-112	31-Jul-1993	Vanadium		0.046			mg/L
SP-112	31-Jul-1993	Zinc		0.095			mg/L
SP-112-FM	31-Jul-1993	Aluminum	<	0.02			mg/L
SP-112-FM	31-Jul-1993	Antimony	<	0.05			mg/L
SP-112-FM	31-Jul-1993	Arsenic	<	0.05			mg/L
SP-112-FM	31-Jul-1993	Barium		0.075			mg/L
SP-112-FM	31-Jul-1993	Beryllium	<	0.0003			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFIX	RESULT	FOOTNOTE	ERROR	UNITS
SP-112-FM	31-Jul-1993	Boron		0.011			mg/L
SP-112-FM	31-Jul-1993	Cadmium	<	0.003			mg/L
SP-112-FM	31-Jul-1993	Calcium		8.3			mg/L
SP-112-FM	31-Jul-1993	Chromium	<	0.01			mg/L
SP-112-FM	31-Jul-1993	Cobalt	<	0.005			mg/L
SP-112-FM	31-Jul-1993	Copper	<	0.004			mg/L
SP-112-FM	31-Jul-1993	Iron		0.022			mg/L
SP-112-FM	31-Jul-1993	Lead	<	0.05			mg/L
SP-112-FM	31-Jul-1993	Magnesium		4.4			mg/L
SP-112-FM	31-Jul-1993	Manganese		0.005			mg/L
SP-112-FM	31-Jul-1993	Molybdenum	<	0.01			mg/L
SP-112-FM	31-Jul-1993	Nickel	<	0.01			mg/L
SP-112-FM	31-Jul-1993	Potassium		2.7			mg/L
SP-112-FM	31-Jul-1993	Selenium	<	0.05			mg/L
SP-112-FM	31-Jul-1993	Silicon		10			mg/L
SP-112-FM	31-Jul-1993	Silver	<	0.006			mg/L
SP-112-FM	31-Jul-1993	Sodium		5.1			mg/L
SP-112-FM	31-Jul-1993	Strontium		0.025			mg/L
SP-112-FM	31-Jul-1993	Thorium	<	0.2			mg/L
SP-112-FM	31-Jul-1993	Uranium Fluorometric	<	0.001			mg/L
SP-112-FM	31-Jul-1993	Vanadium	<	0.005			mg/L
SP-112-FM	31-Jul-1993	Zinc		0.0051			mg/L
SP-119	3-Aug-1993	Alpha Activity		-1.17		2	pCi/L
SP-119	3-Aug-1993	Aluminum		0.64			mg/L
SP-119	3-Aug-1993	Antimony	<	0.05			mg/L
SP-119	3-Aug-1993	Arsenic	<	0.05			mg/L
SP-119	3-Aug-1993	Barium		0.072			mg/L
SP-119	3-Aug-1993	Beryllium	<	0.0003			mg/L
SP-119	3-Aug-1993	Beta Activity		3.37		2.9	pCi/L
SP-119	3-Aug-1993	Bicarbonate		34			mg/L
SP-119	3-Aug-1993	Boron		0.018 ^c			mg/L
SP-119	3-Aug-1993	Bromide	<	1			mg/L
SP-119	3-Aug-1993	Cadmium	<	0.003			mg/L
SP-119	3-Aug-1993	Calcium		6			mg/L
SP-119	3-Aug-1993	Carbonate	<	1			mg/L
SP-119	3-Aug-1993	Chloride IC		2.2			mg/L
SP-119	3-Aug-1993	Chromium	<	0.01			mg/L
SP-119	3-Aug-1993	Cobalt	<	0.005			mg/L
SP-119	3-Aug-1993	Conductivity		90			umho/cm
SP-119	3-Aug-1993	Copper	<	0.004			mg/L
SP-119	3-Aug-1993	Dissolved Solids		98			mg/L
SP-119	3-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-119	3-Aug-1993	Iron		0.75			mg/L
SP-119	3-Aug-1993	Lead	<	0.05			mg/L
SP-119	3-Aug-1993	Magnesium		3.9			mg/L
SP-119	3-Aug-1993	Manganese		0.056			mg/L
SP-119	3-Aug-1993	Molybdenum	<	0.01			mg/L
SP-119	3-Aug-1993	Nickel	<	0.01			mg/L
SP-119	3-Aug-1993	Nitrate Brucine		0.2			mg/L
SP-119	3-Aug-1993	pH		6.6			
SP-119	3-Aug-1993	Potassium		3.8			mg/L
SP-119	3-Aug-1993	Selenium	<	0.05			mg/L
SP-119	3-Aug-1993	Silicon		13			mg/L
SP-119	3-Aug-1993	Silver	<	0.006			mg/L
SP-119	3-Aug-1993	Sodium		4.9			mg/L
SP-119	3-Aug-1993	Strontium		0.023			mg/L
SP-119	3-Aug-1993	Sulfate		13			mg/L
SP-119	3-Aug-1993	Suspended Solids		58			mg/L
SP-119	3-Aug-1993	Thorium	<	0.2			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFIX	RESULT	FOOTNOTE	ERROR	UNITS
SP-119	3-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-119	3-Aug-1993	Vanadium	<	0.005			mg/L
SP-119	3-Aug-1993	Zinc		0.0061	c		mg/L
SP-119-FM	4-Aug-1993	Aluminum	<	0.02			mg/L
SP-119-FM	4-Aug-1993	Antimony	<	0.05			mg/L
SP-119-FM	4-Aug-1993	Arsenic	<	0.05			mg/L
SP-119-FM	4-Aug-1993	Barium		0.055			mg/L
SP-119-FM	4-Aug-1993	Beryllium	<	0.0003			mg/L
SP-119-FM	4-Aug-1993	Boron		0.018	c		mg/L
SP-119-FM	4-Aug-1993	Cadmium	<	0.003			mg/L
SP-119-FM	4-Aug-1993	Calcium		6.3			mg/L
SP-119-FM	4-Aug-1993	Chromium	<	0.01			mg/L
SP-119-FM	4-Aug-1993	Cobalt	<	0.005			mg/L
SP-119-FM	4-Aug-1993	Copper	<	0.004			mg/L
SP-119-FM	4-Aug-1993	Iron		0.01			mg/L
SP-119-FM	4-Aug-1993	Lead	<	0.05			mg/L
SP-119-FM	4-Aug-1993	Magnesium		4			mg/L
SP-119-FM	4-Aug-1993	Manganese		0.029			mg/L
SP-119-FM	4-Aug-1993	Molybdenum	<	0.01			mg/L
SP-119-FM	4-Aug-1993	Nickel	<	0.01			mg/L
SP-119-FM	4-Aug-1993	Potassium		3.2			mg/L
SP-119-FM	4-Aug-1993	Selenium	<	0.05			mg/L
SP-119-FM	4-Aug-1993	Silver	<	0.006			mg/L
SP-119-FM	4-Aug-1993	Sodium		4.9			mg/L
SP-119-FM	4-Aug-1993	Strontium		0.022			mg/L
SP-119-FM	4-Aug-1993	Thorium	<	0.2			mg/L
SP-119-FM	4-Aug-1993	Uranium Fluorometric		0.001			mg/L
SP-119-FM	4-Aug-1993	Vanadium	<	0.005			mg/L
SP-119-FM	4-Aug-1993	Zinc		0.0052	c		mg/L
SP-124	3-Aug-1993	Alpha Activity		-1.32		2	pCi/L
SP-124	3-Aug-1993	Aluminum		1.2			mg/L
SP-124	3-Aug-1993	Antimony	<	0.05			mg/L
SP-124	3-Aug-1993	Arsenic	<	0.05			mg/L
SP-124	3-Aug-1993	Barium		0.091			mg/L
SP-124	3-Aug-1993	Beryllium	<	0.0003			mg/L
SP-124	3-Aug-1993	Beta Activity		0.493		2.8	pCi/L
SP-124	3-Aug-1993	Bicarbonate		65			mg/L
SP-124	3-Aug-1993	Boron		0.028	c		mg/L
SP-124	3-Aug-1993	Bromide	<	1			mg/L
SP-124	3-Aug-1993	Cadmium	<	0.003			mg/L
SP-124	3-Aug-1993	Calcium		13			mg/L
SP-124	3-Aug-1993	Carbonate	<	1			mg/L
SP-124	3-Aug-1993	Chloride IC		1.7			mg/L
SP-124	3-Aug-1993	Chromium	<	0.01			mg/L
SP-124	3-Aug-1993	Cobalt	<	0.005			mg/L
SP-124	3-Aug-1993	Conductivity		128			umho/cm
SP-124	3-Aug-1993	Copper	<	0.004			mg/L
SP-124	3-Aug-1993	Dissolved Solids		126			mg/L
SP-124	3-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-124	3-Aug-1993	Iron		1.8			mg/L
SP-124	3-Aug-1993	Lead	<	0.05			mg/L
SP-124	3-Aug-1993	Magnesium		6.7			mg/L
SP-124	3-Aug-1993	Manganese		0.45			mg/L
SP-124	3-Aug-1993	Molybdenum	<	0.01			mg/L
SP-124	3-Aug-1993	Nickel	<	0.01			mg/L
SP-124	3-Aug-1993	Nitrate Brucine		0.3			mg/L
SP-124	3-Aug-1993	pH		6.8			
SP-124	3-Aug-1993	Potassium		3.7			mg/L
SP-124	3-Aug-1993	Selenium	<	0.05			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFIX	RESULT	FOOTNOTE	ERROR	UNITS
SP-124	3-Aug-1993	Silicon		12			mg/L
SP-124	3-Aug-1993	Silver	<	0.006			mg/L
SP-124	3-Aug-1993	Sodium		4.9			mg/L
SP-124	3-Aug-1993	Strontium		0.066			mg/L
SP-124	3-Aug-1993	Sulfate		10			mg/L
SP-124	3-Aug-1993	Suspended Solids		61			mg/L
SP-124	3-Aug-1993	Thorium	<	0.2			mg/L
SP-124	3-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-124	3-Aug-1993	Vanadium	<	0.005			mg/L
SP-124	3-Aug-1993	Zinc		0.0074	c		mg/L
SP-124-FM	4-Aug-1993	Aluminum	<	0.02			mg/L
SP-124-FM	4-Aug-1993	Antimony	<	0.05			mg/L
SP-124-FM	4-Aug-1993	Arsenic	<	0.05			mg/L
SP-124-FM	4-Aug-1993	Barium		0.076			mg/L
SP-124-FM	4-Aug-1993	Beryllium	<	0.0003			mg/L
SP-124-FM	4-Aug-1993	Boron		0.02	c		mg/L
SP-124-FM	4-Aug-1993	Cadmium	<	0.003			mg/L
SP-124-FM	4-Aug-1993	Calcium		13			mg/L
SP-124-FM	4-Aug-1993	Chromium	<	0.01			mg/L
SP-124-FM	4-Aug-1993	Cobalt	<	0.005			mg/L
SP-124-FM	4-Aug-1993	Copper	<	0.004			mg/L
SP-124-FM	4-Aug-1993	Iron		0.042			mg/L
SP-124-FM	4-Aug-1993	Lead	<	0.05			mg/L
SP-124-FM	4-Aug-1993	Magnesium		6.6			mg/L
SP-124-FM	4-Aug-1993	Manganese		0.32			mg/L
SP-124-FM	4-Aug-1993	Molybdenum	<	0.01			mg/L
SP-124-FM	4-Aug-1993	Nickel	<	0.01			mg/L
SP-124-FM	4-Aug-1993	Potassium		3.2			mg/L
SP-124-FM	4-Aug-1993	Selenium	<	0.05			mg/L
SP-124-FM	4-Aug-1993	Silver	<	0.006			mg/L
SP-124-FM	4-Aug-1993	Sodium		4.9			mg/L
SP-124-FM	4-Aug-1993	Strontium		0.062			mg/L
SP-124-FM	4-Aug-1993	Thorium	<	0.2			mg/L
SP-124-FM	4-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-124-FM	4-Aug-1993	Vanadium	<	0.005			mg/L
SP-124-FM	4-Aug-1993	Zinc		0.0086	c		mg/L
SP-129	1-Aug-1993	Alpha Activity		-1.69		2	pCi/L
SP-129	1-Aug-1993	Aluminum		0.09			mg/L
SP-129	1-Aug-1993	Antimony	<	0.05			mg/L
SP-129	1-Aug-1993	Arsenic	<	0.05			mg/L
SP-129	1-Aug-1993	Barium		0.055			mg/L
SP-129	1-Aug-1993	Beryllium	<	0.0003			mg/L
SP-129	1-Aug-1993	Beta Activity		-1.9		2.6	pCi/L
SP-129	1-Aug-1993	Bicarbonate		203			mg/L
SP-129	1-Aug-1993	Boron		0.028			mg/L
SP-129	1-Aug-1993	Bromide	<	1			mg/L
SP-129	1-Aug-1993	Cadmium	<	0.003			mg/L
SP-129	1-Aug-1993	Calcium		57			mg/L
SP-129	1-Aug-1993	Carbonate	<	1			mg/L
SP-129	1-Aug-1993	Chloride IC		2.4			mg/L
SP-129	1-Aug-1993	Chromium	<	0.01			mg/L
SP-129	1-Aug-1993	Cobalt	<	0.005			mg/L
SP-129	1-Aug-1993	Conductivity		405			umho/cm
SP-129	1-Aug-1993	Copper	<	0.004			mg/L
SP-129	1-Aug-1993	Dissolved Solids		222			mg/L
SP-129	1-Aug-1993	Fluoride SIE		0.2			mg/L
SP-129	1-Aug-1993	Iron		0.066			mg/L
SP-129	1-Aug-1993	Lead	<	0.05			mg/L
SP-129	1-Aug-1993	Magnesium		17			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-129	1-Aug-1993	Manganese		0.019			mg/L
SP-129	1-Aug-1993	Molybdenum	<	0.01			mg/L
SP-129	1-Aug-1993	Nickel	<	0.01			mg/L
SP-129	1-Aug-1993	Nitrate Brucine		1.9			mg/L
SP-129	1-Aug-1993	pH		7.7			
SP-129	1-Aug-1993	Potassium		0.89			mg/L
SP-129	1-Aug-1993	Selenium	<	0.05			mg/L
SP-129	1-Aug-1993	Silicon		4.1			mg/L
SP-129	1-Aug-1993	Silver	<	0.006			mg/L
SP-129	1-Aug-1993	Sodium		1.1			mg/L
SP-129	1-Aug-1993	Strontium		0.064			mg/L
SP-129	1-Aug-1993	Sulfate		11			mg/L
SP-129	1-Aug-1993	Suspended Solids		4			mg/L
SP-129	1-Aug-1993	Thorium	<	0.2			mg/L
SP-129	1-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-129	1-Aug-1993	Vanadium	<	0.005			mg/L
SP-129	1-Aug-1993	Zinc		0.004 ^c			mg/L
SP-129-FM	1-Aug-1993	Aluminum	<	0.02			mg/L
SP-129-FM	1-Aug-1993	Antimony	<	0.05			mg/L
SP-129-FM	1-Aug-1993	Arsenic	<	0.05			mg/L
SP-129-FM	1-Aug-1993	Barium		0.052			mg/L
SP-129-FM	1-Aug-1993	Beryllium	<	0.0003			mg/L
SP-129-FM	1-Aug-1993	Boron		0.0044			mg/L
SP-129-FM	1-Aug-1993	Cadmium	<	0.003			mg/L
SP-129-FM	1-Aug-1993	Calcium		57			mg/L
SP-129-FM	1-Aug-1993	Chromium	<	0.01			mg/L
SP-129-FM	1-Aug-1993	Cobalt	<	0.005			mg/L
SP-129-FM	1-Aug-1993	Copper	<	0.004			mg/L
SP-129-FM	1-Aug-1993	Iron	<	0.005			mg/L
SP-129-FM	1-Aug-1993	Lead	<	0.05			mg/L
SP-129-FM	1-Aug-1993	Magnesium		17			mg/L
SP-129-FM	1-Aug-1993	Manganese	<	0.001			mg/L
SP-129-FM	1-Aug-1993	Molybdenum	<	0.01			mg/L
SP-129-FM	1-Aug-1993	Nickel	<	0.01			mg/L
SP-129-FM	1-Aug-1993	Potassium		0.61			mg/L
SP-129-FM	1-Aug-1993	Selenium	<	0.05			mg/L
SP-129-FM	1-Aug-1993	Silicon		3.8			mg/L
SP-129-FM	1-Aug-1993	Silver	<	0.006			mg/L
SP-129-FM	1-Aug-1993	Sodium		1.1			mg/L
SP-129-FM	1-Aug-1993	Strontium		0.065			mg/L
SP-129-FM	1-Aug-1993	Thorium	<	0.2			mg/L
SP-129-FM	1-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-129-FM	1-Aug-1993	Vanadium	<	0.005			mg/L
SP-129-FM	1-Aug-1993	Zinc		0.0043			mg/L
SP-131	10-Aug-1993	Alpha Activity		-20.2		10	pCi/L
SP-131	10-Aug-1993	Aluminum		0.51			mg/L
SP-131	10-Aug-1993	Antimony	<	0.05			mg/L
SP-131	10-Aug-1993	Arsenic	<	0.05			mg/L
SP-131	10-Aug-1993	Barium		0.11			mg/L
SP-131	10-Aug-1993	Beryllium	<	0.0003			mg/L
SP-131	10-Aug-1993	Beta Activity		-14		11	pCi/L
SP-131	10-Aug-1993	Bicarbonate		138			mg/L
SP-131	10-Aug-1993	Boron		0.0091 ^c			mg/L
SP-131	10-Aug-1993	Bromide	<	1			mg/L
SP-131	10-Aug-1993	Cadmium	<	0.003			mg/L
SP-131	10-Aug-1993	Calcium		37			mg/L
SP-131	10-Aug-1993	Carbonate	<	1			mg/L
SP-131	10-Aug-1993	Chloride IC		2.2			mg/L
SP-131	10-Aug-1993	Chromium	<	0.01			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-131	10-Aug-1993	Cobalt	<	0.005			mg/L
SP-131	10-Aug-1993	Conductivity		284			umho/cm
SP-131	10-Aug-1993	Copper	<	0.004			mg/L
SP-131	10-Aug-1993	Dissolved Solids		180			mg/L
SP-131	10-Aug-1993	Fluoride SIE		0.1			mg/L
SP-131	10-Aug-1993	Iron		0.62			mg/L
SP-131	10-Aug-1993	Lead	<	0.05			mg/L
SP-131	10-Aug-1993	Magnesium		14			mg/L
SP-131	10-Aug-1993	Manganese		0.018			mg/L
SP-131	10-Aug-1993	Molybdenum	<	0.01			mg/L
SP-131	10-Aug-1993	Nickel	<	0.01			mg/L
SP-131	10-Aug-1993	Nitrate Brucine		1.3			mg/L
SP-131	10-Aug-1993	pH		7.3			
SP-131	10-Aug-1993	Potassium		1.3			mg/L
SP-131	10-Aug-1993	Selenium	<	0.05			mg/L
SP-131	10-Aug-1993	Silicon		3.8			mg/L
SP-131	10-Aug-1993	Silver	<	0.006			mg/L
SP-131	10-Aug-1993	Sodium		0.69	c		mg/L
SP-131	10-Aug-1993	Strontium		0.066			mg/L
SP-131	10-Aug-1993	Sulfate		9.3			mg/L
SP-131	10-Aug-1993	Suspended Solids		59			mg/L
SP-131	10-Aug-1993	Thorium	<	0.2			mg/L
SP-131	10-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-131	10-Aug-1993	Vanadium	<	0.005			mg/L
SP-131	10-Aug-1993	Zinc		0.0087	c		mg/L
SP-131-FM	10-Aug-1993	Aluminum		0.027			mg/L
SP-131-FM	10-Aug-1993	Antimony	<	0.05			mg/L
SP-131-FM	10-Aug-1993	Arsenic	<	0.05			mg/L
SP-131-FM	10-Aug-1993	Barium		0.11			mg/L
SP-131-FM	10-Aug-1993	Beryllium	<	0.0003			mg/L
SP-131-FM	10-Aug-1993	Boron		0.016	c		mg/L
SP-131-FM	10-Aug-1993	Cadmium	<	0.003			mg/L
SP-131-FM	10-Aug-1993	Calcium		38			mg/L
SP-131-FM	10-Aug-1993	Chromium	<	0.01			mg/L
SP-131-FM	10-Aug-1993	Cobalt	<	0.005			mg/L
SP-131-FM	10-Aug-1993	Copper	<	0.004			mg/L
SP-131-FM	10-Aug-1993	Iron		0.013	c		mg/L
SP-131-FM	10-Aug-1993	Lead	<	0.05			mg/L
SP-131-FM	10-Aug-1993	Magnesium		14			mg/L
SP-131-FM	10-Aug-1993	Manganese		0.0044			mg/L
SP-131-FM	10-Aug-1993	Molybdenum	<	0.01			mg/L
SP-131-FM	10-Aug-1993	Nickel	<	0.01			mg/L
SP-131-FM	10-Aug-1993	Potassium		1.4			mg/L
SP-131-FM	10-Aug-1993	Selenium	<	0.05			mg/L
SP-131-FM	10-Aug-1993	Silicon		3.3			mg/L
SP-131-FM	10-Aug-1993	Silver	<	0.006			mg/L
SP-131-FM	10-Aug-1993	Sodium		0.77	c		mg/L
SP-131-FM	10-Aug-1993	Strontium		0.067			mg/L
SP-131-FM	10-Aug-1993	Thorium	<	0.2			mg/L
SP-131-FM	10-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-131-FM	10-Aug-1993	Vanadium	<	0.005			mg/L
SP-131-FM	10-Aug-1993	Zinc		0.013	c		mg/L
SP-132	8-Aug-1993	Alpha Activity		-22.8		9.8	pCi/L
SP-132	8-Aug-1993	Aluminum		1.1			mg/L
SP-132	8-Aug-1993	Antimony	<	0.05			mg/L
SP-132	8-Aug-1993	Arsenic	<	0.05			mg/L
SP-132	8-Aug-1993	Barium		0.02			mg/L
SP-132	8-Aug-1993	Beryllium	<	0.0003			mg/L
SP-132	8-Aug-1993	Beta Activity		-15.7		11	pCi/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFIX	RESULT	FOOTNOTE	ERROR	UNITS
SP-132	8-Aug-1993	Bicarbonate		69			mg/L
SP-132	8-Aug-1993	Boron		0.023	c		mg/L
SP-132	8-Aug-1993	Bromide	<	1			mg/L
SP-132	8-Aug-1993	Cadmium	<	0.003			mg/L
SP-132	8-Aug-1993	Calcium		19			mg/L
SP-132	8-Aug-1993	Carbonate	<	1			mg/L
SP-132	8-Aug-1993	Chloride IC		2.1			mg/L
SP-132	8-Aug-1993	Chromium	<	0.01			mg/L
SP-132	8-Aug-1993	Cobalt	<	0.005			mg/L
SP-132	8-Aug-1993	Conductivity		152			umho/cm
SP-132	8-Aug-1993	Copper	<	0.004			mg/L
SP-132	8-Aug-1993	Dissolved Solids		122			mg/L
SP-132	8-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-132	8-Aug-1993	Iron		1.6			mg/L
SP-132	8-Aug-1993	Lead	<	0.05			mg/L
SP-132	8-Aug-1993	Magnesium		8.2			mg/L
SP-132	8-Aug-1993	Manganese		0.056			mg/L
SP-132	8-Aug-1993	Molybdenum	<	0.01			mg/L
SP-132	8-Aug-1993	Nickel	<	0.01			mg/L
SP-132	8-Aug-1993	Nitrate Brucine		2.3			mg/L
SP-132	8-Aug-1993	pH		7.3			
SP-132	8-Aug-1993	Potassium		0.94			mg/L
SP-132	8-Aug-1993	Selenium	<	0.05			mg/L
SP-132	8-Aug-1993	Silicon		5.1			mg/L
SP-132	8-Aug-1993	Silver	<	0.006			mg/L
SP-132	8-Aug-1993	Sodium		0.76	c		mg/L
SP-132	8-Aug-1993	Strontium		0.015			mg/L
SP-132	8-Aug-1993	Sulfate		7.7			mg/L
SP-132	8-Aug-1993	Suspended Solids		87			mg/L
SP-132	8-Aug-1993	Thorium	<	0.2			mg/L
SP-132	8-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-132	8-Aug-1993	Vanadium	<	0.005			mg/L
SP-132	8-Aug-1993	Zinc		0.019	c		mg/L
SP-132-FM	8-Aug-1993	Aluminum		0.022			mg/L
SP-132-FM	8-Aug-1993	Antimony	<	0.05			mg/L
SP-132-FM	8-Aug-1993	Arsenic	<	0.05			mg/L
SP-132-FM	8-Aug-1993	Barium		0.021			mg/L
SP-132-FM	8-Aug-1993	Beryllium	<	0.0003			mg/L
SP-132-FM	8-Aug-1993	Boron		0.016	c		mg/L
SP-132-FM	8-Aug-1993	Cadmium	<	0.003			mg/L
SP-132-FM	8-Aug-1993	Calcium		19			mg/L
SP-132-FM	8-Aug-1993	Chromium	<	0.01			mg/L
SP-132-FM	8-Aug-1993	Cobalt	<	0.005			mg/L
SP-132-FM	8-Aug-1993	Copper	<	0.004			mg/L
SP-132-FM	8-Aug-1993	Iron	<	0.005			mg/L
SP-132-FM	8-Aug-1993	Lead	<	0.05			mg/L
SP-132-FM	8-Aug-1993	Magnesium		8.4			mg/L
SP-132-FM	8-Aug-1993	Manganese		0.0015			mg/L
SP-132-FM	8-Aug-1993	Molybdenum	<	0.01			mg/L
SP-132-FM	8-Aug-1993	Nickel	<	0.01			mg/L
SP-132-FM	8-Aug-1993	Potassium		1.5			mg/L
SP-132-FM	8-Aug-1993	Selenium	<	0.05			mg/L
SP-132-FM	8-Aug-1993	Silicon		4.1			mg/L
SP-132-FM	8-Aug-1993	Silver	<	0.006			mg/L
SP-132-FM	8-Aug-1993	Sodium		0.7	c		mg/L
SP-132-FM	8-Aug-1993	Strontium		0.015			mg/L
SP-132-FM	8-Aug-1993	Thorium	<	0.2			mg/L
SP-132-FM	8-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-132-FM	8-Aug-1993	Vanadium	<	0.005			mg/L
SP-132-FM	8-Aug-1993	Zinc		0.0087	c		mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-137	3-Aug-1993	Alpha Activity		0.738		2.3	pCi/L
SP-137	3-Aug-1993	Aluminum		0.6			mg/L
SP-137	3-Aug-1993	Antimony	<	0.05			mg/L
SP-137	3-Aug-1993	Arsenic	<	0.05			mg/L
SP-137	3-Aug-1993	Barium		0.15			mg/L
SP-137	3-Aug-1993	Beryllium	<	0.0003			mg/L
SP-137	3-Aug-1993	Beta Activity		0.576		2.8	pCi/L
SP-137	3-Aug-1993	Bicarbonate		88			mg/L
SP-137	3-Aug-1993	Boron		0.013	c		mg/L
SP-137	3-Aug-1993	Bromide	<	1			mg/L
SP-137	3-Aug-1993	Cadmium	<	0.003			mg/L
SP-137	3-Aug-1993	Calcium		20			mg/L
SP-137	3-Aug-1993	Carbonate	<	1			mg/L
SP-137	3-Aug-1993	Chloride IC		2			mg/L
SP-137	3-Aug-1993	Chromium	<	0.01			mg/L
SP-137	3-Aug-1993	Cobalt	<	0.005			mg/L
SP-137	3-Aug-1993	Conductivity		190			umho/cm
SP-137	3-Aug-1993	Copper	<	0.004			mg/L
SP-137	3-Aug-1993	Dissolved Solids		142			mg/L
SP-137	3-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-137	3-Aug-1993	Iron		0.64			mg/L
SP-137	3-Aug-1993	Lead	<	0.05			mg/L
SP-137	3-Aug-1993	Magnesium		11			mg/L
SP-137	3-Aug-1993	Manganese		0.23			mg/L
SP-137	3-Aug-1993	Molybdenum	<	0.01			mg/L
SP-137	3-Aug-1993	Nickel	<	0.01			mg/L
SP-137	3-Aug-1993	Nitrate Brucine		0.2			mg/L
SP-137	3-Aug-1993	pH		7.3			
SP-137	3-Aug-1993	Potassium		2.6			mg/L
SP-137	3-Aug-1993	Selenium	<	0.05			mg/L
SP-137	3-Aug-1993	Silicon		9.5			mg/L
SP-137	3-Aug-1993	Silver	<	0.006			mg/L
SP-137	3-Aug-1993	Sodium		3.7			mg/L
SP-137	3-Aug-1993	Strontium		0.039			mg/L
SP-137	3-Aug-1993	Sulfate		13			mg/L
SP-137	3-Aug-1993	Suspended Solids		4			mg/L
SP-137	3-Aug-1993	Thorium	<	0.2			mg/L
SP-137	3-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-137	3-Aug-1993	Vanadium	<	0.005			mg/L
SP-137	3-Aug-1993	Zinc		0.0077	c		mg/L
SP-137-FM	4-Aug-1993	Aluminum	<	0.02			mg/L
SP-137-FM	4-Aug-1993	Antimony	<	0.05			mg/L
SP-137-FM	4-Aug-1993	Arsenic	<	0.05			mg/L
SP-137-FM	4-Aug-1993	Barium		0.12			mg/L
SP-137-FM	4-Aug-1993	Beryllium	<	0.0003			mg/L
SP-137-FM	4-Aug-1993	Boron		0.016	c		mg/L
SP-137-FM	4-Aug-1993	Cadmium	<	0.003			mg/L
SP-137-FM	4-Aug-1993	Calcium		20			mg/L
SP-137-FM	4-Aug-1993	Chromium	<	0.01			mg/L
SP-137-FM	4-Aug-1993	Cobalt	<	0.005			mg/L
SP-137-FM	4-Aug-1993	Copper	<	0.004			mg/L
SP-137-FM	4-Aug-1993	Iron		0.044			mg/L
SP-137-FM	4-Aug-1993	Lead	<	0.05			mg/L
SP-137-FM	4-Aug-1993	Magnesium		11			mg/L
SP-137-FM	4-Aug-1993	Manganese		0.089			mg/L
SP-137-FM	4-Aug-1993	Molybdenum	<	0.01			mg/L
SP-137-FM	4-Aug-1993	Nickel	<	0.01			mg/L
SP-137-FM	4-Aug-1993	Potassium		2.6			mg/L
SP-137-FM	4-Aug-1993	Selenium	<	0.05			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-137-FM	4-Aug-1993	Silver	<	0.006			mg/L
SP-137-FM	4-Aug-1993	Sodium		3.8			mg/L
SP-137-FM	4-Aug-1993	Strontium		0.04			mg/L
SP-137-FM	4-Aug-1993	Thorium	<	0.2			mg/L
SP-137-FM	4-Aug-1993	Uranium Fluorometric		0.001			mg/L
SP-137-FM	4-Aug-1993	Vanadium	<	0.005			mg/L
SP-137-FM	4-Aug-1993	Zinc		0.0061	c		mg/L
SP-139	3-Aug-1993	Alpha Activity	-	0.708	+	1.7	pCi/L
SP-139	3-Aug-1993	Aluminum		0.085			mg/L
SP-139	3-Aug-1993	Antimony	<	0.05			mg/L
SP-139	3-Aug-1993	Arsenic	<	0.05			mg/L
SP-139	3-Aug-1993	Barium		0.045			mg/L
SP-139	3-Aug-1993	Beryllium	<	0.0003			mg/L
SP-139	3-Aug-1993	Beta Activity		1.31	+	2.5	pCi/L
SP-139	3-Aug-1993	Bicarbonate		20			mg/L
SP-139	3-Aug-1993	Boron		0.026			mg/L
SP-139	3-Aug-1993	Bromide	<	1			mg/L
SP-139	3-Aug-1993	Cadmium	<	0.003			mg/L
SP-139	3-Aug-1993	Calcium		4.4			mg/L
SP-139	3-Aug-1993	Carbonate	<	1			mg/L
SP-139	3-Aug-1993	Chloride IC		1.6			mg/L
SP-139	3-Aug-1993	Chromium	<	0.01			mg/L
SP-139	3-Aug-1993	Cobalt	<	0.005			mg/L
SP-139	3-Aug-1993	Conductivity		50			umho/cm
SP-139	3-Aug-1993	Copper	<	0.004			mg/L
SP-139	3-Aug-1993	Dissolved Solids		60			mg/L
SP-139	3-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-139	3-Aug-1993	Iron		0.097			mg/L
SP-139	3-Aug-1993	Lead	<	0.05			mg/L
SP-139	3-Aug-1993	Magnesium		2.6			mg/L
SP-139	3-Aug-1993	Manganese		0.029			mg/L
SP-139	3-Aug-1993	Molybdenum	<	0.01			mg/L
SP-139	3-Aug-1993	Nickel	<	0.01			mg/L
SP-139	3-Aug-1993	Nitrate Brucine		0.3			mg/L
SP-139	3-Aug-1993	pH		6.8			
SP-139	3-Aug-1993	Potassium		2			mg/L
SP-139	3-Aug-1993	Selenium	<	0.05			mg/L
SP-139	3-Aug-1993	Silicon		7.5			mg/L
SP-139	3-Aug-1993	Silver	<	0.006			mg/L
SP-139	3-Aug-1993	Sodium		1.7			mg/L
SP-139	3-Aug-1993	Strontium		0.012			mg/L
SP-139	3-Aug-1993	Sulfate		8.1			mg/L
SP-139	3-Aug-1993	Suspended Solids		9			mg/L
SP-139	3-Aug-1993	Thorium	<	0.2			mg/L
SP-139	3-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-139	3-Aug-1993	Vanadium	<	0.005			mg/L
SP-139	3-Aug-1993	Zinc		0.0047	c		mg/L
SP-139-FM	4-Aug-1993	Aluminum	<	0.02			mg/L
SP-139-FM	4-Aug-1993	Antimony	<	0.05			mg/L
SP-139-FM	4-Aug-1993	Arsenic	<	0.05			mg/L
SP-139-FM	4-Aug-1993	Barium		0.036			mg/L
SP-139-FM	4-Aug-1993	Beryllium	<	0.0003			mg/L
SP-139-FM	4-Aug-1993	Boron		0.0068	c		mg/L
SP-139-FM	4-Aug-1993	Cadmium	<	0.003			mg/L
SP-139-FM	4-Aug-1993	Calcium		4.5			mg/L
SP-139-FM	4-Aug-1993	Chromium	<	0.01			mg/L
SP-139-FM	4-Aug-1993	Cobalt	<	0.005			mg/L
SP-139-FM	4-Aug-1993	Copper	<	0.004			mg/L
SP-139-FM	4-Aug-1993	Iron		0.013			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-139-FM	4-Aug-1993	Lead	<	0.05			mg/L
SP-139-FM	4-Aug-1993	Magnesium		2.7			mg/L
SP-139-FM	4-Aug-1993	Manganese		0.031			mg/L
SP-139-FM	4-Aug-1993	Molybdenum	<	0.01			mg/L
SP-139-FM	4-Aug-1993	Nickel	<	0.01			mg/L
SP-139-FM	4-Aug-1993	Potassium		2			mg/L
SP-139-FM	4-Aug-1993	Selenium	<	0.05			mg/L
SP-139-FM	4-Aug-1993	Silver	<	0.006			mg/L
SP-139-FM	4-Aug-1993	Sodium		1.9			mg/L
SP-139-FM	4-Aug-1993	Strontium		0.015			mg/L
SP-139-FM	4-Aug-1993	Thorium	<	0.2			mg/L
SP-139-FM	4-Aug-1993	Uranium Fluorometric		0.001			mg/L
SP-139-FM	4-Aug-1993	Vanadium	<	0.005			mg/L
SP-139-FM	4-Aug-1993	Zinc		0.0057	c		mg/L
SP-152	7-Aug-1993	Alpha Activity		0.148		1.9	pCi/L
SP-152	7-Aug-1993	Aluminum	<	0.02			mg/L
SP-152	7-Aug-1993	Antimony	<	0.05			mg/L
SP-152	7-Aug-1993	Arsenic	<	0.05			mg/L
SP-152	7-Aug-1993	Barium		0.064			mg/L
SP-152	7-Aug-1993	Beryllium	<	0.0003			mg/L
SP-152	7-Aug-1993	Beta Activity		1.15		2.5	pCi/L
SP-152	7-Aug-1993	Bicarbonate		156			mg/L
SP-152	7-Aug-1993	Boron		0.0063			mg/L
SP-152	7-Aug-1993	Bromide	<	1			mg/L
SP-152	7-Aug-1993	Cadmium	<	0.003			mg/L
SP-152	7-Aug-1993	Calcium		34			mg/L
SP-152	7-Aug-1993	Carbonate		1			mg/L
SP-152	7-Aug-1993	Chloride IC		1.6			mg/L
SP-152	7-Aug-1993	Chromium	<	0.01			mg/L
SP-152	7-Aug-1993	Cobalt	<	0.005			mg/L
SP-152	7-Aug-1993	Conductivity		294			umho/cm
SP-152	7-Aug-1993	Copper	<	0.004			mg/L
SP-152	7-Aug-1993	Dissolved Solids		162			mg/L
SP-152	7-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-152	7-Aug-1993	Iron		0.016			mg/L
SP-152	7-Aug-1993	Lead	<	0.05			mg/L
SP-152	7-Aug-1993	Magnesium		17			mg/L
SP-152	7-Aug-1993	Manganese		0.0014			mg/L
SP-152	7-Aug-1993	Molybdenum	<	0.01			mg/L
SP-152	7-Aug-1993	Nickel	<	0.01			mg/L
SP-152	7-Aug-1993	Nitrate Brucine		0.18			mg/L
SP-152	7-Aug-1993	pH		8			
SP-152	7-Aug-1993	Potassium		0.89			mg/L
SP-152	7-Aug-1993	Selenium	<	0.05			mg/L
SP-152	7-Aug-1993	Silicon		3.8			mg/L
SP-152	7-Aug-1993	Silver	<	0.006			mg/L
SP-152	7-Aug-1993	Sodium		0.6	c		mg/L
SP-152	7-Aug-1993	Strontium		0.031			mg/L
SP-152	7-Aug-1993	Sulfate		8.2			mg/L
SP-152	7-Aug-1993	Suspended Solids		2			mg/L
SP-152	7-Aug-1993	Thorium	<	0.2			mg/L
SP-152	7-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-152	7-Aug-1993	Vanadium	<	0.005			mg/L
SP-152	7-Aug-1993	Zinc		0.0042	c		mg/L
SP-152-FM	7-Aug-1993	Aluminum	<	0.02			mg/L
SP-152-FM	7-Aug-1993	Antimony	<	0.05			mg/L
SP-152-FM	7-Aug-1993	Arsenic	<	0.05			mg/L
SP-152-FM	7-Aug-1993	Barium		0.062			mg/L
SP-152-FM	7-Aug-1993	Beryllium	<	0.0003			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-152-FM	7-Aug-1993	Boron		0.0056			mg/L
SP-152-FM	7-Aug-1993	Cadmium	<	0.003			mg/L
SP-152-FM	7-Aug-1993	Calcium		34			mg/L
SP-152-FM	7-Aug-1993	Chromium	<	0.01			mg/L
SP-152-FM	7-Aug-1993	Cobalt	<	0.005			mg/L
SP-152-FM	7-Aug-1993	Copper	<	0.004			mg/L
SP-152-FM	7-Aug-1993	Iron	<	0.005			mg/L
SP-152-FM	7-Aug-1993	Lead	<	0.05			mg/L
SP-152-FM	7-Aug-1993	Magnesium		17			mg/L
SP-152-FM	7-Aug-1993	Manganese		0.0014			mg/L
SP-152-FM	7-Aug-1993	Molybdenum	<	0.01			mg/L
SP-152-FM	7-Aug-1993	Nickel	<	0.01			mg/L
SP-152-FM	7-Aug-1993	Potassium		0.87			mg/L
SP-152-FM	7-Aug-1993	Selenium		0.055			mg/L
SP-152-FM	7-Aug-1993	Silicon		3.7			mg/L
SP-152-FM	7-Aug-1993	Silver	<	0.006			mg/L
SP-152-FM	7-Aug-1993	Sodium		0.62 c			mg/L
SP-152-FM	7-Aug-1993	Strontium		0.03			mg/L
SP-152-FM	7-Aug-1993	Thorium	<	0.2			mg/L
SP-152-FM	7-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-152-FM	7-Aug-1993	Vanadium	<	0.005			mg/L
SP-152-FM	7-Aug-1993	Zinc		0.0074 c			mg/L
SP-189	31-Jul-1993	Alpha Activity		1.3		2.6	pCi/L
SP-189	31-Jul-1993	Aluminum		7.1			mg/L
SP-189	31-Jul-1993	Antimony	<	0.05			mg/L
SP-189	31-Jul-1993	Arsenic	<	0.05			mg/L
SP-189	31-Jul-1993	Barium		0.071			mg/L
SP-189	31-Jul-1993	Beryllium		0.00076			mg/L
SP-189	31-Jul-1993	Beta Activity		2.84		2.9	pCi/L
SP-189	31-Jul-1993	Bicarbonate		234			mg/L
SP-189	31-Jul-1993	Boron		0.019			mg/L
SP-189	31-Jul-1993	Bromide	<	1			mg/L
SP-189	31-Jul-1993	Cadmium	<	0.003			mg/L
SP-189	31-Jul-1993	Calcium		91			mg/L
SP-189	31-Jul-1993	Carbonate	<	1			mg/L
SP-189	31-Jul-1993	Chloride IC		9.2			mg/L
SP-189	31-Jul-1993	Chromium	<	0.01			mg/L
SP-189	31-Jul-1993	Cobalt		0.0075			mg/L
SP-189	31-Jul-1993	Conductivity		494			umho/cm
SP-189	31-Jul-1993	Copper		0.0086			mg/L
SP-189	31-Jul-1993	Dissolved Solids		290			mg/L
SP-189	31-Jul-1993	Fluoride SIE	<	0.1			mg/L
SP-189	31-Jul-1993	Iron		11			mg/L
SP-189	31-Jul-1993	Lead	<	0.05			mg/L
SP-189	31-Jul-1993	Magnesium		6.7			mg/L
SP-189	31-Jul-1993	Manganese		0.53			mg/L
SP-189	31-Jul-1993	Molybdenum	<	0.01			mg/L
SP-189	31-Jul-1993	Nickel		0.011			mg/L
SP-189	31-Jul-1993	Nitrate Brucine		0.24			mg/L
SP-189	31-Jul-1993	pH		7.4			
SP-189	31-Jul-1993	Potassium		1.9			mg/L
SP-189	31-Jul-1993	Selenium	<	0.05			mg/L
SP-189	31-Jul-1993	Silicon		10			mg/L
SP-189	31-Jul-1993	Silver	<	0.006			mg/L
SP-189	31-Jul-1993	Sodium		4.2			mg/L
SP-189	31-Jul-1993	Strontium		0.17			mg/L
SP-189	31-Jul-1993	Sulfate		17			mg/L
SP-189	31-Jul-1993	Suspended Solids		532			mg/L
SP-189	31-Jul-1993	Thorium	<	0.2			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-189	31-Jul-1993	Uranium Fluorometric		0.003			mg/L
SP-189	31-Jul-1993	Vanadium		0.012			mg/L
SP-189	31-Jul-1993	Zinc		0.04			mg/L
SP-189-FM	31-Jul-1993	Aluminum		0.026			mg/L
SP-189-FM	31-Jul-1993	Antimony	<	0.05			mg/L
SP-189-FM	31-Jul-1993	Arsenic	<	0.05			mg/L
SP-189-FM	31-Jul-1993	Barium		0.032			mg/L
SP-189-FM	31-Jul-1993	Beryllium	<	0.0003			mg/L
SP-189-FM	31-Jul-1993	Boron		0.012			mg/L
SP-189-FM	31-Jul-1993	Cadmium	<	0.003			mg/L
SP-189-FM	31-Jul-1993	Calcium		90			mg/L
SP-189-FM	31-Jul-1993	Chromium	<	0.01			mg/L
SP-189-FM	31-Jul-1993	Cobalt	<	0.005			mg/L
SP-189-FM	31-Jul-1993	Copper	<	0.004			mg/L
SP-189-FM	31-Jul-1993	Iron		0.019			mg/L
SP-189-FM	31-Jul-1993	Lead	<	0.05			mg/L
SP-189-FM	31-Jul-1993	Magnesium		6.2			mg/L
SP-189-FM	31-Jul-1993	Manganese		0.17			mg/L
SP-189-FM	31-Jul-1993	Molybdenum	<	0.01			mg/L
SP-189-FM	31-Jul-1993	Nickel	<	0.01			mg/L
SP-189-FM	31-Jul-1993	Potassium		1.1			mg/L
SP-189-FM	31-Jul-1993	Selenium	<	0.05			mg/L
SP-189-FM	31-Jul-1993	Silicon		3.5			mg/L
SP-189-FM	31-Jul-1993	Silver	<	0.006			mg/L
SP-189-FM	31-Jul-1993	Sodium		4.1			mg/L
SP-189-FM	31-Jul-1993	Strontium		0.16			mg/L
SP-189-FM	31-Jul-1993	Thorium	<	0.2			mg/L
SP-189-FM	31-Jul-1993	Uranium Fluorometric		0.001			mg/L
SP-189-FM	31-Jul-1993	Vanadium	<	0.005			mg/L
SP-189-FM	31-Jul-1993	Zinc		0.005			mg/L
SP-199	3-Aug-1993	Alpha Activity		-1.29		1.6	pCi/L
SP-199	3-Aug-1993	Aluminum		0.24			mg/L
SP-199	3-Aug-1993	Antimony	<	0.05			mg/L
SP-199	3-Aug-1993	Arsenic	<	0.05			mg/L
SP-199	3-Aug-1993	Barium		0.063			mg/L
SP-199	3-Aug-1993	Beryllium	<	0.0003			mg/L
SP-199	3-Aug-1993	Beta Activity		2.46		2.6	pCi/L
SP-199	3-Aug-1993	Bicarbonate		33			mg/L
SP-199	3-Aug-1993	Boron	<	0.004			mg/L
SP-199	3-Aug-1993	Bromide	<	1			mg/L
SP-199	3-Aug-1993	Cadmium	<	0.003			mg/L
SP-199	3-Aug-1993	Calcium		5.6			mg/L
SP-199	3-Aug-1993	Carbonate	<	1			mg/L
SP-199	3-Aug-1993	Chloride IC		1.6			mg/L
SP-199	3-Aug-1993	Chromium	<	0.01			mg/L
SP-199	3-Aug-1993	Cobalt	<	0.005			mg/L
SP-199	3-Aug-1993	Conductivity		71			umho/cm
SP-199	3-Aug-1993	Copper	<	0.004			mg/L
SP-199	3-Aug-1993	Dissolved Solids		68			mg/L
SP-199	3-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-199	3-Aug-1993	Iron		0.21			mg/L
SP-199	3-Aug-1993	Lead	<	0.05			mg/L
SP-199	3-Aug-1993	Magnesium		3.4			mg/L
SP-199	3-Aug-1993	Manganese		0.018			mg/L
SP-199	3-Aug-1993	Molybdenum	<	0.01			mg/L
SP-199	3-Aug-1993	Nickel	<	0.01			mg/L
SP-199	3-Aug-1993	Nitrate Brucine		0.16			mg/L
SP-199	3-Aug-1993	pH		6.7			
SP-199	3-Aug-1993	Potassium		1.9			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING ID.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-199	3-Aug-1993	Selenium	<	0.05			mg/L
SP-199	3-Aug-1993	Silicon		10			mg/L
SP-199	3-Aug-1993	Silver	<	0.006			mg/L
SP-199	3-Aug-1993	Sodium		2.5			mg/L
SP-199	3-Aug-1993	Strontium		0.025			mg/L
SP-199	3-Aug-1993	Sulfate		8.2			mg/L
SP-199	3-Aug-1993	Suspended Solids		5			mg/L
SP-199	3-Aug-1993	Thorium	<	0.2			mg/L
SP-199	3-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-199	3-Aug-1993	Vanadium	<	0.005			mg/L
SP-199	3-Aug-1993	Zinc		0.0066	c		mg/L
SP-199-FM	4-Aug-1993	Aluminum	<	0.02			mg/L
SP-199-FM	4-Aug-1993	Antimony	<	0.05			mg/L
SP-199-FM	4-Aug-1993	Arsenic	<	0.05			mg/L
SP-199-FM	4-Aug-1993	Barium		0.039			mg/L
SP-199-FM	4-Aug-1993	Beryllium	<	0.0003			mg/L
SP-199-FM	4-Aug-1993	Boron		0.0095	c		mg/L
SP-199-FM	4-Aug-1993	Cadmium	<	0.003			mg/L
SP-199-FM	4-Aug-1993	Calcium		7.3			mg/L
SP-199-FM	4-Aug-1993	Chromium	<	0.01			mg/L
SP-199-FM	4-Aug-1993	Cobalt	<	0.005			mg/L
SP-199-FM	4-Aug-1993	Copper	<	0.004			mg/L
SP-199-FM	4-Aug-1993	Iron		0.01			mg/L
SP-199-FM	4-Aug-1993	Lead	<	0.05			mg/L
SP-199-FM	4-Aug-1993	Magnesium		3.4			mg/L
SP-199-FM	4-Aug-1993	Manganese		0.0013			mg/L
SP-199-FM	4-Aug-1993	Molybdenum	<	0.01			mg/L
SP-199-FM	4-Aug-1993	Nickel	<	0.01			mg/L
SP-199-FM	4-Aug-1993	Potassium		1.8			mg/L
SP-199-FM	4-Aug-1993	Selenium	<	0.05			mg/L
SP-199-FM	4-Aug-1993	Silver	<	0.006			mg/L
SP-199-FM	4-Aug-1993	Sodium		2.6			mg/L
SP-199-FM	4-Aug-1993	Strontium		0.027			mg/L
SP-199-FM	4-Aug-1993	Thorium	<	0.2			mg/L
SP-199-FM	4-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-199-FM	4-Aug-1993	Vanadium	<	0.005			mg/L
SP-199-FM	4-Aug-1993	Zinc		0.0034	c		mg/L
SP-207	5-Aug-1993	Alpha Activity	-	0.327		2.1	pCi/L
SP-207	5-Aug-1993	Aluminum		0.062			mg/L
SP-207	5-Aug-1993	Antimony	<	0.05			mg/L
SP-207	5-Aug-1993	Arsenic	<	0.05			mg/L
SP-207	5-Aug-1993	Barium		0.12			mg/L
SP-207	5-Aug-1993	Beryllium	<	0.0003			mg/L
SP-207	5-Aug-1993	Beta Activity		2.59		2.6	pCi/L
SP-207	5-Aug-1993	Bicarbonate		279			mg/L
SP-207	5-Aug-1993	Boron		0.0075	c		mg/L
SP-207	5-Aug-1993	Bromide	<	1			mg/L
SP-207	5-Aug-1993	Cadmium	<	0.003			mg/L
SP-207	5-Aug-1993	Calcium		95			mg/L
SP-207	5-Aug-1993	Carbonate	<	1			mg/L
SP-207	5-Aug-1993	Chloride IC		5.2			mg/L
SP-207	5-Aug-1993	Chromium	<	0.01			mg/L
SP-207	5-Aug-1993	Cobalt	<	0.005			mg/L
SP-207	5-Aug-1993	Conductivity		550			umho/cm
SP-207	5-Aug-1993	Copper		0.0041			mg/L
SP-207	5-Aug-1993	Dissolved Solids		346			mg/L
SP-207	5-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-207	5-Aug-1993	Iron		0.043	c		mg/L
SP-207	5-Aug-1993	Lead	<	0.05			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING ID.	DATE SAMPLED	ANALYTE	PREFX	RESULT	FOOTNOTE	ERROR	UNITS
SP-207	5-Aug-1993	Magnesium		6.8			mg/L
SP-207	5-Aug-1993	Manganese		0.0055			mg/L
SP-207	5-Aug-1993	Molybdenum	<	0.01			mg/L
SP-207	5-Aug-1993	Nickel	<	0.01			mg/L
SP-207	5-Aug-1993	Nitrate Brucine		0.2			mg/L
SP-207	5-Aug-1993	pH		7.2			
SP-207	5-Aug-1993	Potassium		1.9			mg/L
SP-207	5-Aug-1993	Selenium	<	0.05			mg/L
SP-207	5-Aug-1993	Silicon		12			mg/L
SP-207	5-Aug-1993	Silver	<	0.006			mg/L
SP-207	5-Aug-1993	Sodium		6.5			mg/L
SP-207	5-Aug-1993	Strontium		0.13			mg/L
SP-207	5-Aug-1993	Sulfate		10			mg/L
SP-207	5-Aug-1993	Suspended Solids		1			mg/L
SP-207	5-Aug-1993	Thorium	<	0.2			mg/L
SP-207	5-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-207	5-Aug-1993	Vanadium	<	0.005			mg/L
SP-207	5-Aug-1993	Zinc		0.0058	c		mg/L
SP-207-FM	5-Aug-1993	Aluminum		0.03			mg/L
SP-207-FM	5-Aug-1993	Antimony	<	0.05			mg/L
SP-207-FM	5-Aug-1993	Arsenic	<	0.05			mg/L
SP-207-FM	5-Aug-1993	Barium		0.14			mg/L
SP-207-FM	5-Aug-1993	Beryllium	<	0.0003			mg/L
SP-207-FM	5-Aug-1993	Boron		0.015	c		mg/L
SP-207-FM	5-Aug-1993	Cadmium	<	0.003			mg/L
SP-207-FM	5-Aug-1993	Calcium		96			mg/L
SP-207-FM	5-Aug-1993	Chromium	<	0.01			mg/L
SP-207-FM	5-Aug-1993	Cobalt	<	0.005			mg/L
SP-207-FM	5-Aug-1993	Copper	<	0.004			mg/L
SP-207-FM	5-Aug-1993	Iron		0.012	c		mg/L
SP-207-FM	5-Aug-1993	Lead	<	0.05			mg/L
SP-207-FM	5-Aug-1993	Magnesium		7.6			mg/L
SP-207-FM	5-Aug-1993	Manganese		0.0096			mg/L
SP-207-FM	5-Aug-1993	Molybdenum	<	0.01			mg/L
SP-207-FM	5-Aug-1993	Nickel	<	0.01			mg/L
SP-207-FM	5-Aug-1993	Potassium		1.6			mg/L
SP-207-FM	5-Aug-1993	Selenium	<	0.05			mg/L
SP-207-FM	5-Aug-1993	Silver	<	0.006			mg/L
SP-207-FM	5-Aug-1993	Sodium		6.7			mg/L
SP-207-FM	5-Aug-1993	Strontium		0.14			mg/L
SP-207-FM	5-Aug-1993	Thorium	<	0.2			mg/L
SP-207-FM	5-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-207-FM	5-Aug-1993	Vanadium	<	0.005			mg/L
SP-207-FM	5-Aug-1993	Zinc		0.0059	c		mg/L
SP-211	10-Aug-1993	Alpha Activity		-20.4		10	pCi/L
SP-211	10-Aug-1993	Aluminum		0.092			mg/L
SP-211	10-Aug-1993	Antimony	<	0.05			mg/L
SP-211	10-Aug-1993	Arsenic	<	0.05			mg/L
SP-211	10-Aug-1993	Barium		0.043			mg/L
SP-211	10-Aug-1993	Beryllium	<	0.0003			mg/L
SP-211	10-Aug-1993	Beta Activity		-15		11	pCi/L
SP-211	10-Aug-1993	Bicarbonate		155			mg/L
SP-211	10-Aug-1993	Boron		0.023	c		mg/L
SP-211	10-Aug-1993	Bromide	<	1			mg/L
SP-211	10-Aug-1993	Cadmium	<	0.003			mg/L
SP-211	10-Aug-1993	Calcium		53			mg/L
SP-211	10-Aug-1993	Carbonate	<	1			mg/L
SP-211	10-Aug-1993	Chloride IC		3.3			mg/L
SP-211	10-Aug-1993	Chromium	<	0.01			mg/L

Table C.1. Spring and Seep Analytical Data From the Dry Season Sampling Event (Continued)

SPRING I.D.	DATE SAMPLED	ANALYTE	PREFIX	RESULT	FOOTNOTE	ERROR	UNITS
SP-211	10-Aug-1993	Cobalt	<	0.005			mg/L
SP-211	10-Aug-1993	Conductivity		339			umho/cm
SP-211	10-Aug-1993	Copper		0.0053			mg/L
SP-211	10-Aug-1993	Dissolved Solids		212			mg/L
SP-211	10-Aug-1993	Fluoride SIE	<	0.1			mg/L
SP-211	10-Aug-1993	Iron		0.096			mg/L
SP-211	10-Aug-1993	Lead	<	0.05			mg/L
SP-211	10-Aug-1993	Magnesium		9.6			mg/L
SP-211	10-Aug-1993	Manganese		0.0085			mg/L
SP-211	10-Aug-1993	Molybdenum	<	0.01			mg/L
SP-211	10-Aug-1993	Nickel	<	0.01			mg/L
SP-211	10-Aug-1993	Nitrate Brucine		0.61			mg/L
SP-211	10-Aug-1993	pH		7.8			
SP-211	10-Aug-1993	Potassium		2			mg/L
SP-211	10-Aug-1993	Selenium	<	0.05			mg/L
SP-211	10-Aug-1993	Silicon		2.8			mg/L
SP-211	10-Aug-1993	Silver	<	0.006			mg/L
SP-211	10-Aug-1993	Sodium		3.6			mg/L
SP-211	10-Aug-1993	Strontium		0.089			mg/L
SP-211	10-Aug-1993	Sulfate		20			mg/L
SP-211	10-Aug-1993	Suspended Solids		12			mg/L
SP-211	10-Aug-1993	Thorium	<	0.2			mg/L
SP-211	10-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-211	10-Aug-1993	Vanadium	<	0.005			mg/L
SP-211	10-Aug-1993	Zinc		0.0068	c		mg/L
SP-211-FM	10-Aug-1993	Aluminum	<	0.02			mg/L
SP-211-FM	10-Aug-1993	Antimony	<	0.05			mg/L
SP-211-FM	10-Aug-1993	Arsenic	<	0.05			mg/L
SP-211-FM	10-Aug-1993	Barium		0.041			mg/L
SP-211-FM	10-Aug-1993	Beryllium	<	0.0003			mg/L
SP-211-FM	10-Aug-1993	Boron		0.013	c		mg/L
SP-211-FM	10-Aug-1993	Cadmium	<	0.003			mg/L
SP-211-FM	10-Aug-1993	Calcium		51			mg/L
SP-211-FM	10-Aug-1993	Chromium	<	0.01			mg/L
SP-211-FM	10-Aug-1993	Cobalt	<	0.005			mg/L
SP-211-FM	10-Aug-1993	Copper	<	0.004			mg/L
SP-211-FM	10-Aug-1993	Iron	<	0.005			mg/L
SP-211-FM	10-Aug-1993	Lead	<	0.05			mg/L
SP-211-FM	10-Aug-1993	Magnesium		9.5			mg/L
SP-211-FM	10-Aug-1993	Manganese	<	0.001			mg/L
SP-211-FM	10-Aug-1993	Molybdenum	<	0.01			mg/L
SP-211-FM	10-Aug-1993	Nickel	<	0.01			mg/L
SP-211-FM	10-Aug-1993	Potassium		1.6			mg/L
SP-211-FM	10-Aug-1993	Selenium	<	0.05			mg/L
SP-211-FM	10-Aug-1993	Silicon		2.8			mg/L
SP-211-FM	10-Aug-1993	Silver	<	0.006			mg/L
SP-211-FM	10-Aug-1993	Sodium		3.6			mg/L
SP-211-FM	10-Aug-1993	Strontium		0.087			mg/L
SP-211-FM	10-Aug-1993	Thorium	<	0.2			mg/L
SP-211-FM	10-Aug-1993	Uranium Fluorometric	<	0.001			mg/L
SP-211-FM	10-Aug-1993	Vanadium	<	0.005			mg/L
SP-211-FM	10-Aug-1993	Zinc		0.0046	c		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-001	18-Feb-1994	Alpha Activity		.48E-1		1.3E0	pCi/L
SP-001	18-Feb-1994	Aluminum		6.9			mg/L
SP-001	18-Feb-1994	Antimony	<	0.056	d		mg/L
SP-001	18-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-001	18-Feb-1994	Barium		0.18			mg/L
SP-001	18-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-001	18-Feb-1994	Beta Activity		4.13E0		3.0E0	pCi/L
SP-001	18-Feb-1994	Bicarbonate		11			mg/L
SP-001	18-Feb-1994	Boron		0.024	c		mg/L
SP-001	18-Feb-1994	Bromide	<	1.0			mg/L
SP-001	18-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-001	18-Feb-1994	Calcium		2.7			mg/L
SP-001	18-Feb-1994	Carbonate	<	1			mg/L
SP-001	18-Feb-1994	Chloride IC		1.4			mg/L
SP-001	18-Feb-1994	Chromium	<	0.011	d		mg/L
SP-001	18-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-001	18-Feb-1994	Conductivity		52			umho/cm
SP-001	18-Feb-1994	Copper	<	0.0044	d		mg/L
SP-001	18-Feb-1994	Dissolved Solids		76			mg/L
SP-001	18-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-001	18-Feb-1994	Iron		2.5			mg/L
SP-001	18-Feb-1994	Lead	<	0.056	d		mg/L
SP-001	18-Feb-1994	Magnesium		2.4			mg/L
SP-001	18-Feb-1994	Manganese		0.13			mg/L
SP-001	18-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-001	18-Feb-1994	Nickel	<	0.011	d		mg/L
SP-001	18-Feb-1994	Nitrate Brucine		0.13			mg/L
SP-001	18-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-001	18-Feb-1994	Potassium		4.9			mg/L
SP-001	18-Feb-1994	Selenium	<	0.056	d		mg/L
SP-001	18-Feb-1994	Silicon		17			mg/L
SP-001	18-Feb-1994	Silver	<	0.0067	d		mg/L
SP-001	18-Feb-1994	Sodium		2.1			mg/L
SP-001	18-Feb-1994	Strontium		0.018			mg/L
SP-001	18-Feb-1994	Sulfate IC		7.5			mg/L
SP-001	18-Feb-1994	Suspended Solids		56			mg/L
SP-001	18-Feb-1994	Thorium	<	0.22	d		mg/L
SP-001	18-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-001	18-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-001	18-Feb-1994	Zinc		0.012			mg/L
SP-001	18-Feb-1994	pH		6.3			
SP-001-FM	18-Feb-1994	Aluminum		0.38			mg/L
SP-001-FM	18-Feb-1994	Antimony	<	0.056	d		mg/L
SP-001-FM	18-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-001-FM	18-Feb-1994	Barium		0.19			mg/L
SP-001-FM	18-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-001-FM	18-Feb-1994	Boron		0.020	c		mg/L
SP-001-FM	18-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-001-FM	18-Feb-1994	Calcium		3.1			mg/L
SP-001-FM	18-Feb-1994	Chromium	<	0.011	d		mg/L
SP-001-FM	18-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-001-FM	18-Feb-1994	Copper	<	0.0044	d		mg/L
SP-001-FM	18-Feb-1994	Iron		0.38			mg/L
SP-001-FM	18-Feb-1994	Lead	<	0.056	d		mg/L
SP-001-FM	18-Feb-1994	Magnesium		2.1			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-001-FM	18-Feb-1994	Manganese		0.18			mg/L
SP-001-FM	18-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-001-FM	18-Feb-1994	Nickel	<	0.011	d		mg/L
SP-001-FM	18-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-001-FM	18-Feb-1994	Potassium		3.3			mg/L
SP-001-FM	18-Feb-1994	Selenium	<	0.056	d		mg/L
SP-001-FM	18-Feb-1994	Silicon		7.5			mg/L
SP-001-FM	18-Feb-1994	Silver	<	0.0067	d		mg/L
SP-001-FM	18-Feb-1994	Sodium		2.1			mg/L
SP-001-FM	18-Feb-1994	Strontium		0.018			mg/L
SP-001-FM	18-Feb-1994	Thorium	<	0.22	d		mg/L
SP-001-FM	18-Feb-1994	Uranium Fluorometric		0.001			mg/L
SP-001-FM	18-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-001-FM	18-Feb-1994	Zinc		0.015			mg/L
SP-005	18-Feb-1994	Alpha Activity		1.57E0		1.6E0	pCi/L
SP-005	18-Feb-1994	Aluminum		1.1			mg/L
SP-005	18-Feb-1994	Antimony	<	0.056	d		mg/L
SP-005	18-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-005	18-Feb-1994	Barium		0.088			mg/L
SP-005	18-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-005	18-Feb-1994	Beta Activity		4.04E0		2.9E0	pCi/L
SP-005	18-Feb-1994	Bicarbonate		22			mg/L
SP-005	18-Feb-1994	Boron		0.013	c		mg/L
SP-005	18-Feb-1994	Bromide	<	1.0			mg/L
SP-005	18-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-005	18-Feb-1994	Calcium		4.5			mg/L
SP-005	18-Feb-1994	Carbonate	<	1			mg/L
SP-005	18-Feb-1994	Chloride IC		1.2			mg/L
SP-005	18-Feb-1994	Chromium	<	0.011	d		mg/L
SP-005	18-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-005	18-Feb-1994	Conductivity		77			umho/cm
SP-005	18-Feb-1994	Copper	<	0.0044	d		mg/L
SP-005	18-Feb-1994	Dissolved Solids		80			mg/L
SP-005	18-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-005	18-Feb-1994	Iron		0.49			mg/L
SP-005	18-Feb-1994	Lead	<	0.056	d		mg/L
SP-005	18-Feb-1994	Magnesium		3.5			mg/L
SP-005	18-Feb-1994	Manganese		0.012			mg/L
SP-005	18-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-005	18-Feb-1994	Nickel	<	0.011	d		mg/L
SP-005	18-Feb-1994	Nitrate Brucine	<	0.1			mg/L
SP-005	18-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-005	18-Feb-1994	Potassium		3.4			mg/L
SP-005	18-Feb-1994	Selenium	<	0.056	d		mg/L
SP-005	18-Feb-1994	Silicon		10			mg/L
SP-005	18-Feb-1994	Silver	<	0.0067	d		mg/L
SP-005	18-Feb-1994	Sodium		2.9			mg/L
SP-005	18-Feb-1994	Strontium		0.023			mg/L
SP-005	18-Feb-1994	Sulfate IC		10.6			mg/L
SP-005	18-Feb-1994	Suspended Solids		47			mg/L
SP-005	18-Feb-1994	Thorium	<	0.22	d		mg/L
SP-005	18-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-005	18-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-005	18-Feb-1994	Zinc		0.0037			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE	RESULT	FOOTNOTE	ERROR	UNITS
SP-005	18-Feb-1994	pH	6.7			
SP-005-FM	18-Feb-1994	Aluminum	0.028			mg/L
SP-005-FM	18-Feb-1994	Antimony	< 0.056	d		mg/L
SP-005-FM	18-Feb-1994	Arsenic	< 0.056	d		mg/L
SP-005-FM	18-Feb-1994	Barium	0.088			mg/L
SP-005-FM	18-Feb-1994	Beryllium	< .00033	d		mg/L
SP-005-FM	18-Feb-1994	Boron	0.016	c		mg/L
SP-005-FM	18-Feb-1994	Cadmium	< 0.0033	d		mg/L
SP-005-FM	18-Feb-1994	Calcium	4.6			mg/L
SP-005-FM	18-Feb-1994	Chromium	< 0.011	d		mg/L
SP-005-FM	18-Feb-1994	Cobalt	< 0.0056	d		mg/L
SP-005-FM	18-Feb-1994	Copper	< 0.0044	d		mg/L
SP-005-FM	18-Feb-1994	Iron	0.088			mg/L
SP-005-FM	18-Feb-1994	Lead	< 0.056	d		mg/L
SP-005-FM	18-Feb-1994	Magnesium	3.4			mg/L
SP-005-FM	18-Feb-1994	Manganese	0.016			mg/L
SP-005-FM	18-Feb-1994	Molybdenum	< 0.011	d		mg/L
SP-005-FM	18-Feb-1994	Nickel	< 0.011	d		mg/L
SP-005-FM	18-Feb-1994	Phosphorus	< 0.22	d		mg/L
SP-005-FM	18-Feb-1994	Potassium	2.0			mg/L
SP-005-FM	18-Feb-1994	Selenium	< 0.056	d		mg/L
SP-005-FM	18-Feb-1994	Silicon	8.9			mg/L
SP-005-FM	18-Feb-1994	Silver	< 0.0067	d		mg/L
SP-005-FM	18-Feb-1994	Sodium	3.1			mg/L
SP-005-FM	18-Feb-1994	Strontium	0.023			mg/L
SP-005-FM	18-Feb-1994	Thorium	< 0.22	d		mg/L
SP-005-FM	18-Feb-1994	Uranium Fluorometric	< 0.001			mg/L
SP-005-FM	18-Feb-1994	Vanadium	< 0.0056	d		mg/L
SP-005-FM	18-Feb-1994	Zinc	0.0059			mg/L
SP-018	19-Feb-1994	Alpha Activity	.18E-1		1.3E0	pCi/L
SP-018	19-Feb-1994	Aluminum	< 0.022	d		mg/L
SP-018	19-Feb-1994	Antimony	< 0.056	d		mg/L
SP-018	19-Feb-1994	Arsenic	< 0.056	d		mg/L
SP-018	19-Feb-1994	Barium	0.046			mg/L
SP-018	19-Feb-1994	Beryllium	< .00033	d		mg/L
SP-018	19-Feb-1994	Beta Activity	1.58E0		2.4E0	pCi/L
SP-018	19-Feb-1994	Bicarbonate	161			mg/L
SP-018	19-Feb-1994	Boron	< 0.0044	d		mg/L
SP-018	19-Feb-1994	Bromide	< 1			mg/L
SP-018	19-Feb-1994	Cadmium	< 0.0033	d		mg/L
SP-018	19-Feb-1994	Calcium	53			mg/L
SP-018	19-Feb-1994	Carbonate	< 1			mg/L
SP-018	19-Feb-1994	Chloride IC	6			mg/L
SP-018	19-Feb-1994	Chromium	< 0.011	d		mg/L
SP-018	19-Feb-1994	Cobalt	< 0.0056	d		mg/L
SP-018	19-Feb-1994	Conductivity	349			umho/cm
SP-018	19-Feb-1994	Copper	< 0.0044	d		mg/L
SP-018	19-Feb-1994	Dissolved Solids	212			mg/L
SP-018	19-Feb-1994	Fluoride SIE	< 0.1			mg/L
SP-018	19-Feb-1994	Iron	0.012			mg/L
SP-018	19-Feb-1994	Lead	< 0.056	d		mg/L
SP-018	19-Feb-1994	Magnesium	10			mg/L
SP-018	19-Feb-1994	Manganese	0.0027			mg/L
SP-018	19-Feb-1994	Molybdenum	< 0.011	d		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-018	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-018	19-Feb-1994	Nitrate Brucine		1.7			mg/L
SP-018	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-018	19-Feb-1994	Potassium		1.1			mg/L
SP-018	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-018	19-Feb-1994	Silicon		2.4			mg/L
SP-018	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-018	19-Feb-1994	Sodium		3.2			mg/L
SP-018	19-Feb-1994	Strontium		0.062			mg/L
SP-018	19-Feb-1994	Sulfate IC		5			mg/L
SP-018	19-Feb-1994	Suspended Solids		5			mg/L
SP-018	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-018	19-Feb-1994	Uranium Fluorometric		0.001			mg/L
SP-018	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-018	19-Feb-1994	Zinc		0.0092	c		mg/L
SP-018	19-Feb-1994	pH		7.9			
SP-018-FM	19-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-018-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-018-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-018-FM	19-Feb-1994	Barium		0.045			mg/L
SP-018-FM	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-018-FM	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-018-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-018-FM	19-Feb-1994	Calcium		54			mg/L
SP-018-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-018-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-018-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-018-FM	19-Feb-1994	Iron		0.032			mg/L
SP-018-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-018-FM	19-Feb-1994	Magnesium		10			mg/L
SP-018-FM	19-Feb-1994	Manganese		0.0064			mg/L
SP-018-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-018-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-018-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-018-FM	19-Feb-1994	Potassium		1.1			mg/L
SP-018-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-018-FM	19-Feb-1994	Silicon		2.5			mg/L
SP-018-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-018-FM	19-Feb-1994	Sodium		3.3			mg/L
SP-018-FM	19-Feb-1994	Strontium		0.063			mg/L
SP-018-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-018-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-018-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-018-FM	19-Feb-1994	Zinc		0.0097	c		mg/L
SP-019	19-Feb-1994	Alpha Activity		.59E-1		8.1E-1	pCi/L
SP-019	19-Feb-1994	Aluminum		0.20			mg/L
SP-019	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-019	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-019	19-Feb-1994	Barium		0.014			mg/L
SP-019	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-019	19-Feb-1994	Beta Activity		4.18E0		2.9E0	pCi/L
SP-019	19-Feb-1994	Bicarbonate		42			mg/L
SP-019	19-Feb-1994	Boron		0.0066			mg/L
SP-019	19-Feb-1994	Bromide	<	1			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-019	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-019	19-Feb-1994	Calcium		10			mg/L
SP-019	19-Feb-1994	Carbonate	<	1			mg/L
SP-019	19-Feb-1994	Chloride IC		3			mg/L
SP-019	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-019	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-019	19-Feb-1994	Conductivity		122			umho/cm
SP-019	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-019	19-Feb-1994	Dissolved Solids		70			mg/L
SP-019	19-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-019	19-Feb-1994	Iron		0.10			mg/L
SP-019	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-019	19-Feb-1994	Magnesium		4.6			mg/L
SP-019	19-Feb-1994	Manganese		0.0060			mg/L
SP-019	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-019	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-019	19-Feb-1994	Nitrate Brucine		0.38			mg/L
SP-019	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-019	19-Feb-1994	Potassium		0.93			mg/L
SP-019	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-019	19-Feb-1994	Silicon		3.1			mg/L
SP-019	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-019	19-Feb-1994	Sodium		0.81			mg/L
SP-019	19-Feb-1994	Strontium		0.015			mg/L
SP-019	19-Feb-1994	Sulfate IC		4			mg/L
SP-019	19-Feb-1994	Suspended Solids		12			mg/L
SP-019	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-019	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-019	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-019	19-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-019	19-Feb-1994	pH		6.8			
SP-019-FM	19-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-019-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-019-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-019-FM	19-Feb-1994	Barium		0.013			mg/L
SP-019-FM	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-019-FM	19-Feb-1994	Boron		0.0085			mg/L
SP-019-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-019-FM	19-Feb-1994	Calcium		10			mg/L
SP-019-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-019-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-019-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-019-FM	19-Feb-1994	Iron		0.0056			mg/L
SP-019-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-019-FM	19-Feb-1994	Magnesium		4.5			mg/L
SP-019-FM	19-Feb-1994	Manganese		0.0053			mg/L
SP-019-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-019-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-019-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-019-FM	19-Feb-1994	Potassium		0.89			mg/L
SP-019-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-019-FM	19-Feb-1994	Silicon		2.6			mg/L
SP-019-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-019-FM	19-Feb-1994	Sodium		0.83			mg/L
SP-019-FM	19-Feb-1994	Strontium		0.015			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-019-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-019-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-019-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-019-FM	19-Feb-1994	Zinc		0.0035	c		mg/L
SP-024	18-Feb-1994	Alpha Activity		7.20E0		2.7E0	pCi/L
SP-024	18-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-024	18-Feb-1994	Antimony	<	0.056	d		mg/L
SP-024	18-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-024	18-Feb-1994	Barium		0.12			mg/L
SP-024	18-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-024	18-Feb-1994	Beta Activity		5.60E0		2.9E0	pCi/L
SP-024	18-Feb-1994	Bicarbonate		306			mg/L
SP-024	18-Feb-1994	Boron		0.011	c		mg/L
SP-024	18-Feb-1994	Bromide	<	1.0			mg/L
SP-024	18-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-024	18-Feb-1994	Calcium		44			mg/L
SP-024	18-Feb-1994	Carbonate	<	1			mg/L
SP-024	18-Feb-1994	Chloride IC		5.8			mg/L
SP-024	18-Feb-1994	Chromium	<	0.011	d		mg/L
SP-024	18-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-024	18-Feb-1994	Conductivity		774			umho/cm
SP-024	18-Feb-1994	Copper		0.012			mg/L
SP-024	18-Feb-1994	Dissolved Solids		254			mg/L
SP-024	18-Feb-1994	Fluoride SIE		0.2			mg/L
SP-024	18-Feb-1994	Iron		0.014	c		mg/L
SP-024	18-Feb-1994	Lead	<	0.056	d		mg/L
SP-024	18-Feb-1994	Magnesium		28			mg/L
SP-024	18-Feb-1994	Manganese		0.036			mg/L
SP-024	18-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-024	18-Feb-1994	Nickel	<	0.011	d		mg/L
SP-024	18-Feb-1994	Nitrate Brucine		1.8			mg/L
SP-024	18-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-024	18-Feb-1994	Potassium		1.4			mg/L
SP-024	18-Feb-1994	Selenium	<	0.056	d		mg/L
SP-024	18-Feb-1994	Silicon		4.0			mg/L
SP-024	18-Feb-1994	Silver	<	0.0067	d		mg/L
SP-024	18-Feb-1994	Sodium		2.3			mg/L
SP-024	18-Feb-1994	Strontium		0.030			mg/L
SP-024	18-Feb-1994	Sulfate IC		6.0			mg/L
SP-024	18-Feb-1994	Suspended Solids		2			mg/L
SP-024	18-Feb-1994	Thorium	<	0.22	d		mg/L
SP-024	18-Feb-1994	Uranium Fluorometric		0.013			mg/L
SP-024	18-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-024	18-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-024	18-Feb-1994	pH		7.9			
SP-024-FM	18-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-024-FM	18-Feb-1994	Antimony	<	0.056	d		mg/L
SP-024-FM	18-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-024-FM	18-Feb-1994	Barium		0.11			mg/L
SP-024-FM	18-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-024-FM	18-Feb-1994	Boron		0.0086	c		mg/L
SP-024-FM	18-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-024-FM	18-Feb-1994	Calcium		43			mg/L
SP-024-FM	18-Feb-1994	Chromium	<	0.011	d		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-024-FM	18-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-024-FM	18-Feb-1994	Copper		0.0098			mg/L
SP-024-FM	18-Feb-1994	Iron	<	0.0056	d		mg/L
SP-024-FM	18-Feb-1994	Lead	<	0.056	d		mg/L
SP-024-FM	18-Feb-1994	Magnesium		28			mg/L
SP-024-FM	18-Feb-1994	Manganese		0.036			mg/L
SP-024-FM	18-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-024-FM	18-Feb-1994	Nickel	<	0.011	d		mg/L
SP-024-FM	18-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-024-FM	18-Feb-1994	Potassium		1.4			mg/L
SP-024-FM	18-Feb-1994	Selenium	<	0.056	d		mg/L
SP-024-FM	18-Feb-1994	Silicon		4.0			mg/L
SP-024-FM	18-Feb-1994	Silver	<	0.0067	d		mg/L
SP-024-FM	18-Feb-1994	Sodium		2.3			mg/L
SP-024-FM	18-Feb-1994	Strontium		0.029			mg/L
SP-024-FM	18-Feb-1994	Thorium	<	0.22	d		mg/L
SP-024-FM	18-Feb-1994	Uranium Fluorometric		0.013			mg/L
SP-024-FM	18-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-024-FM	18-Feb-1994	Zinc		0.0033			mg/L
SP-029	20-Feb-1994	Alpha Activity		2.32E0		1.7E0	pCi/L
SP-029	20-Feb-1994	Aluminum		2.1			mg/L
SP-029	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-029	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-029	20-Feb-1994	Barium		0.12			mg/L
SP-029	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-029	20-Feb-1994	Beta Activity		.15E-2		3.0E0	pCi/L
SP-029	20-Feb-1994	Bicarbonate		85			mg/L
SP-029	20-Feb-1994	Boron		0.014			mg/L
SP-029	20-Feb-1994	Bromide	<	1			mg/L
SP-029	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-029	20-Feb-1994	Calcium		44			mg/L
SP-029	20-Feb-1994	Carbonate	<	1			mg/L
SP-029	20-Feb-1994	Chloride IC		28			mg/L
SP-029	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-029	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-029	20-Feb-1994	Conductivity		362			umho/cm
SP-029	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-029	20-Feb-1994	Dissolved Solids		222			mg/L
SP-029	20-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-029	20-Feb-1994	Iron		4.6			mg/L
SP-029	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-029	20-Feb-1994	Magnesium		9.2			mg/L
SP-029	20-Feb-1994	Manganese		0.33			mg/L
SP-029	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-029	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-029	20-Feb-1994	Nitrate Brucine		1.5			mg/L
SP-029	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-029	20-Feb-1994	Potassium		3.4			mg/L
SP-029	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-029	20-Feb-1994	Silicon		7.5			mg/L
SP-029	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-029	20-Feb-1994	Sodium		13			mg/L
SP-029	20-Feb-1994	Strontium		0.10			mg/L
SP-029	20-Feb-1994	Sulfate IC		40			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-029	20-Feb-1994	Suspended Solids		21			mg/L
SP-029	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-029	20-Feb-1994	Uranium Fluorometric		0.010			mg/L
SP-029	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-029	20-Feb-1994	Zinc		0.0094	c		mg/L
SP-029	20-Feb-1994	pH		7.4			
SP-029-FM	20-Feb-1994	Aluminum		0.046			mg/L
SP-029-FM	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-029-FM	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-029-FM	20-Feb-1994	Barium		0.11			mg/L
SP-029-FM	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-029-FM	20-Feb-1994	Boron		0.012			mg/L
SP-029-FM	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-029-FM	20-Feb-1994	Calcium		44			mg/L
SP-029-FM	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-029-FM	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-029-FM	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-029-FM	20-Feb-1994	Iron		1.7			mg/L
SP-029-FM	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-029-FM	20-Feb-1994	Magnesium		9.1			mg/L
SP-029-FM	20-Feb-1994	Manganese		0.35			mg/L
SP-029-FM	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-029-FM	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-029-FM	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-029-FM	20-Feb-1994	Potassium		2.9			mg/L
SP-029-FM	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-029-FM	20-Feb-1994	Silicon		4.4			mg/L
SP-029-FM	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-029-FM	20-Feb-1994	Sodium		13			mg/L
SP-029-FM	20-Feb-1994	Strontium		0.10			mg/L
SP-029-FM	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-029-FM	20-Feb-1994	Uranium Fluorometric		0.002			mg/L
SP-029-FM	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-029-FM	20-Feb-1994	Zinc		0.0083			mg/L
SP-031	19-Feb-1994	Alpha Activity		.54E-1		1.1E0	pCi/L
SP-031	19-Feb-1994	Aluminum		0.035			mg/L
SP-031	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-031	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-031	19-Feb-1994	Barium		0.041			mg/L
SP-031	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-031	19-Feb-1994	Beta Activity		1.05E0		2.5E0	pCi/L
SP-031	19-Feb-1994	Bicarbonate		101			mg/L
SP-031	19-Feb-1994	Boron		0.0061			mg/L
SP-031	19-Feb-1994	Bromide	<	1			mg/L
SP-031	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-031	19-Feb-1994	Calcium		20			mg/L
SP-031	19-Feb-1994	Carbonate	<	1			mg/L
SP-031	19-Feb-1994	Chloride IC		1			mg/L
SP-031	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-031	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-031	19-Feb-1994	Conductivity		201			umho/cm
SP-031	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-031	19-Feb-1994	Dissolved Solids		118			mg/L
SP-031	19-Feb-1994	Fluoride SIE	<	0.1			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE	RESULT	FOOTNOTE	ERROR	UNITS
SP-031	19-Feb-1994	Iron	0.025			mg/L
SP-031	19-Feb-1994	Lead	< 0.056	d		mg/L
SP-031	19-Feb-1994	Magnesium	12			mg/L
SP-031	19-Feb-1994	Manganese	< 0.0011	d		mg/L
SP-031	19-Feb-1994	Molybdenum	< 0.011	d		mg/L
SP-031	19-Feb-1994	Nickel	< 0.011	d		mg/L
SP-031	19-Feb-1994	Nitrate Brucine	0.12			mg/L
SP-031	19-Feb-1994	Phosphorus	< 0.22	d		mg/L
SP-031	19-Feb-1994	Potassium	< 0.67	d		mg/L
SP-031	19-Feb-1994	Selenium	< 0.056	d		mg/L
SP-031	19-Feb-1994	Silicon	3.3			mg/L
SP-031	19-Feb-1994	Silver	< 0.0067	d		mg/L
SP-031	19-Feb-1994	Sodium	0.41			mg/L
SP-031	19-Feb-1994	Strontium	0.017			mg/L
SP-031	19-Feb-1994	Sulfate IC	2			mg/L
SP-031	19-Feb-1994	Suspended Solids	< 1			mg/L
SP-031	19-Feb-1994	Thorium	< 0.22	d		mg/L
SP-031	19-Feb-1994	Uranium Fluorometric	< 0.001			mg/L
SP-031	19-Feb-1994	Vanadium	< 0.0056	d		mg/L
SP-031	19-Feb-1994	Zinc	< 0.0022	d		mg/L
SP-031	19-Feb-1994	pH	7.2			
SP-031-FM	19-Feb-1994	Aluminum	< 0.022	d		mg/L
SP-031-FM	19-Feb-1994	Antimony	< 0.056	d		mg/L
SP-031-FM	19-Feb-1994	Arsenic	< 0.056	d		mg/L
SP-031-FM	19-Feb-1994	Barium	0.041			mg/L
SP-031-FM	19-Feb-1994	Beryllium	< .00033	d		mg/L
SP-031-FM	19-Feb-1994	Boron	< 0.0044	d		mg/L
SP-031-FM	19-Feb-1994	Cadmium	< 0.0033	d		mg/L
SP-031-FM	19-Feb-1994	Calcium	20			mg/L
SP-031-FM	19-Feb-1994	Chromium	0.054			mg/L
SP-031-FM	19-Feb-1994	Cobalt	< 0.0056	d		mg/L
SP-031-FM	19-Feb-1994	Copper	< 0.0044	d		mg/L
SP-031-FM	19-Feb-1994	Iron	0.49			mg/L
SP-031-FM	19-Feb-1994	Lead	< 0.056	d		mg/L
SP-031-FM	19-Feb-1994	Magnesium	12			mg/L
SP-031-FM	19-Feb-1994	Manganese	0.022			mg/L
SP-031-FM	19-Feb-1994	Molybdenum	< 0.011	d		mg/L
SP-031-FM	19-Feb-1994	Nickel	0.071			mg/L
SP-031-FM	19-Feb-1994	Phosphorus	< 0.22	d		mg/L
SP-031-FM	19-Feb-1994	Potassium	< 0.67	d		mg/L
SP-031-FM	19-Feb-1994	Selenium	< 0.056	d		mg/L
SP-031-FM	19-Feb-1994	Silicon	3.3			mg/L
SP-031-FM	19-Feb-1994	Silver	< 0.0067	d		mg/L
SP-031-FM	19-Feb-1994	Sodium	0.44			mg/L
SP-031-FM	19-Feb-1994	Strontium	0.017			mg/L
SP-031-FM	19-Feb-1994	Thorium	< 0.22	d		mg/L
SP-031-FM	19-Feb-1994	Uranium Fluorometric	< 0.001			mg/L
SP-031-FM	19-Feb-1994	Vanadium	< 0.0056	d		mg/L
SP-031-FM	19-Feb-1994	Zinc	< 0.0022	d		mg/L
SP-033	19-Feb-1994	Alpha Activity	.66E-1		8.1E-1	pCi/L
SP-033	19-Feb-1994	Aluminum	0.13			mg/L
SP-033	19-Feb-1994	Antimony	< 0.056	d		mg/L
SP-033	19-Feb-1994	Arsenic	< 0.056	d		mg/L
SP-033	19-Feb-1994	Barium	0.034			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-033	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-033	19-Feb-1994	Beta Activity		.32E-3		2.5E0	pCi/L
SP-033	19-Feb-1994	Bicarbonate		102			mg/L
SP-033	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-033	19-Feb-1994	Bromide	<	1			mg/L
SP-033	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-033	19-Feb-1994	Calcium		20			mg/L
SP-033	19-Feb-1994	Carbonate	<	1			mg/L
SP-033	19-Feb-1994	Chloride IC		1			mg/L
SP-033	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-033	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-033	19-Feb-1994	Conductivity		201			umho/cm
SP-033	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-033	19-Feb-1994	Dissolved Solids		122			mg/L
SP-033	19-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-033	19-Feb-1994	Iron		0.071			mg/L
SP-033	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-033	19-Feb-1994	Magnesium		12			mg/L
SP-033	19-Feb-1994	Manganese		0.0047			mg/L
SP-033	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-033	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-033	19-Feb-1994	Nitrate Brucine		0.17			mg/L
SP-033	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-033	19-Feb-1994	Potassium	<	0.67	d		mg/L
SP-033	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-033	19-Feb-1994	Silicon		3.6			mg/L
SP-033	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-033	19-Feb-1994	Sodium		0.43			mg/L
SP-033	19-Feb-1994	Strontium		0.025			mg/L
SP-033	19-Feb-1994	Sulfate IC		2			mg/L
SP-033	19-Feb-1994	Suspended Solids		9			mg/L
SP-033	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-033	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-033	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-033	19-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-033	19-Feb-1994	pH		7.2			
SP-033-FM	19-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-033-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-033-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-033-FM	19-Feb-1994	Barium		0.033			mg/L
SP-033-FM	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-033-FM	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-033-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-033-FM	19-Feb-1994	Calcium		20			mg/L
SP-033-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-033-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-033-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-033-FM	19-Feb-1994	Iron	<	0.0056	d		mg/L
SP-033-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-033-FM	19-Feb-1994	Magnesium		12			mg/L
SP-033-FM	19-Feb-1994	Manganese		0.0064			mg/L
SP-033-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-033-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-033-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-033-FM	19-Feb-1994	Potassium	<	0.67	d		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-033-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-033-FM	19-Feb-1994	Silicon		3.4			mg/L
SP-033-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-033-FM	19-Feb-1994	Sodium		0.47			mg/L
SP-033-FM	19-Feb-1994	Strontium		0.024			mg/L
SP-033-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-033-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-033-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-033-FM	19-Feb-1994	Zinc		0.0038	c		mg/L
SP-039	19-Feb-1994	Alpha Activity		.21 E-3		9.9E-1	pCi/L
SP-039	19-Feb-1994	Aluminum		0.15			mg/L
SP-039	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-039	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-039	19-Feb-1994	Barium		0.046			mg/L
SP-039	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-039	19-Feb-1994	Beta Activity		1.92E0		2.7E0	pCi/L
SP-039	19-Feb-1994	Bicarbonate		125			mg/L
SP-039	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-039	19-Feb-1994	Bromide	<	1			mg/L
SP-039	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-039	19-Feb-1994	Calcium		26			mg/L
SP-039	19-Feb-1994	Carbonate	<	1			mg/L
SP-039	19-Feb-1994	Chloride IC		1			mg/L
SP-039	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-039	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-039	19-Feb-1994	Conductivity		240			umho/cm
SP-039	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-039	19-Feb-1994	Dissolved Solids		138			mg/L
SP-039	19-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-039	19-Feb-1994	Iron		0.096			mg/L
SP-039	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-039	19-Feb-1994	Magnesium		12			mg/L
SP-039	19-Feb-1994	Manganese		0.0037			mg/L
SP-039	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-039	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-039	19-Feb-1994	Nitrate Brucine		0.11			mg/L
SP-039	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-039	19-Feb-1994	Potassium		0.91			mg/L
SP-039	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-039	19-Feb-1994	Silicon		4.3			mg/L
SP-039	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-039	19-Feb-1994	Sodium		0.45			mg/L
SP-039	19-Feb-1994	Strontium		0.021			mg/L
SP-039	19-Feb-1994	Sulfate IC		2			mg/L
SP-039	19-Feb-1994	Suspended Solids		1			mg/L
SP-039	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-039	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-039	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-039	19-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-039	19-Feb-1994	pH		7.8			
SP-039-FM	19-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-039-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-039-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-039-FM	19-Feb-1994	Barium		0.045			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-039-FM	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-039-FM	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-039-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-039-FM	19-Feb-1994	Calcium		26			mg/L
SP-039-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-039-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-039-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-039-FM	19-Feb-1994	Iron		0.0075			mg/L
SP-039-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-039-FM	19-Feb-1994	Magnesium		12			mg/L
SP-039-FM	19-Feb-1994	Manganese		0.0037			mg/L
SP-039-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-039-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-039-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-039-FM	19-Feb-1994	Potassium		0.84			mg/L
SP-039-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-039-FM	19-Feb-1994	Silicon		4.0			mg/L
SP-039-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-039-FM	19-Feb-1994	Sodium		0.58			mg/L
SP-039-FM	19-Feb-1994	Strontium		0.020			mg/L
SP-039-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-039-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-039-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-039-FM	19-Feb-1994	Zinc		0.0026	c		mg/L
SP-049	19-Feb-1994	Alpha Activity		.20E-3		9.7E-1	pCi/L
SP-049	19-Feb-1994	Aluminum		0.28			mg/L
SP-049	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-049	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-049	19-Feb-1994	Barium		0.0084			mg/L
SP-049	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-049	19-Feb-1994	Beta Activity		1.21E0		2.5E0	pCi/L
SP-049	19-Feb-1994	Bicarbonate		85			mg/L
SP-049	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-049	19-Feb-1994	Bromide	<	1			mg/L
SP-049	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-049	19-Feb-1994	Calcium		17			mg/L
SP-049	19-Feb-1994	Carbonate	<	1			mg/L
SP-049	19-Feb-1994	Chloride IC		1			mg/L
SP-049	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-049	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-049	19-Feb-1994	Conductivity		182			umho/cm
SP-049	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-049	19-Feb-1994	Dissolved Solids		116			mg/L
SP-049	19-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-049	19-Feb-1994	Iron		0.16			mg/L
SP-049	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-049	19-Feb-1994	Magnesium		11			mg/L
SP-049	19-Feb-1994	Manganese		0.0064			mg/L
SP-049	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-049	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-049	19-Feb-1994	Nitrate Brucine		0.12			mg/L
SP-049	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-049	19-Feb-1994	Potassium	<	0.67	d		mg/L
SP-049	19-Feb-1994	Selenium	<	0.056	d		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-049	19-Feb-1994	Silicon		4.0			mg/L
SP-049	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-049	19-Feb-1994	Sodium		0.41			mg/L
SP-049	19-Feb-1994	Strontium		0.0091			mg/L
SP-049	19-Feb-1994	Sulfate IC		1			mg/L
SP-049	19-Feb-1994	Suspended Solids		17			mg/L
SP-049	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-049	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-049	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-049	19-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-049	19-Feb-1994	pH		7.5			
SP-049-FM	19-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-049-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-049-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-049-FM	19-Feb-1994	Barium		0.0076			mg/L
SP-049-FM	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-049-FM	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-049-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-049-FM	19-Feb-1994	Calcium		17			mg/L
SP-049-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-049-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-049-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-049-FM	19-Feb-1994	Iron		0.022			mg/L
SP-049-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-049-FM	19-Feb-1994	Magnesium		11			mg/L
SP-049-FM	19-Feb-1994	Manganese		0.0064			mg/L
SP-049-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-049-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-049-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-049-FM	19-Feb-1994	Potassium	<	0.67	d		mg/L
SP-049-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-049-FM	19-Feb-1994	Silicon		3.6			mg/L
SP-049-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-049-FM	19-Feb-1994	Sodium		0.48			mg/L
SP-049-FM	19-Feb-1994	Strontium		0.0094			mg/L
SP-049-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-049-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-049-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-049-FM	19-Feb-1994	Zinc		0.0026	c		mg/L
SP-054	19-Feb-1994	Alpha Activity		.61E-1		1.4E0	pCi/L
SP-054	19-Feb-1994	Aluminum		1.9			mg/L
SP-054	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-054	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-054	19-Feb-1994	Barium		0.027			mg/L
SP-054	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-054	19-Feb-1994	Beta Activity		4.32E0		2.8E0	pCi/L
SP-054	19-Feb-1994	Bicarbonate		155			mg/L
SP-054	19-Feb-1994	Boron		0.014	c		mg/L
SP-054	19-Feb-1994	Bromide	<	1.0			mg/L
SP-054	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-054	19-Feb-1994	Calcium		36			mg/L
SP-054	19-Feb-1994	Carbonate	<	1			mg/L
SP-054	19-Feb-1994	Chloride IC		6.5			mg/L
SP-054	19-Feb-1994	Chromium	<	0.011	d		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-054	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-054	19-Feb-1994	Conductivity		311			umho/cm
SP-054	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-054	19-Feb-1994	Dissolved Solids		176			mg/L
SP-054	19-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-054	19-Feb-1994	Iron		1.5			mg/L
SP-054	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-054	19-Feb-1994	Magnesium		21			mg/L
SP-054	19-Feb-1994	Manganese		0.077			mg/L
SP-054	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-054	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-054	19-Feb-1994	Nitrate Brucine		0.57			mg/L
SP-054	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-054	19-Feb-1994	Potassium		1.3			mg/L
SP-054	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-054	19-Feb-1994	Silicon		6.7			mg/L
SP-054	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-054	19-Feb-1994	Sodium		2.6			mg/L
SP-054	19-Feb-1994	Strontium		0.021			mg/L
SP-054	19-Feb-1994	Sulfate IC		2.8			mg/L
SP-054	19-Feb-1994	Suspended Solids		32			mg/L
SP-054	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-054	19-Feb-1994	Uranium Fluorometric		0.001			mg/L
SP-054	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-054	19-Feb-1994	Zinc		0.024			mg/L
SP-054	19-Feb-1994	pH		7.6			
SP-054-FM	19-Feb-1994	Aluminum		0.25			mg/L
SP-054-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-054-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-054-FM	19-Feb-1994	Barium		0.025			mg/L
SP-054-FM	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-054-FM	19-Feb-1994	Boron		0.018	c		mg/L
SP-054-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-054-FM	19-Feb-1994	Calcium		36			mg/L
SP-054-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-054-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-054-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-054-FM	19-Feb-1994	Iron		0.19			mg/L
SP-054-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-054-FM	19-Feb-1994	Magnesium		21			mg/L
SP-054-FM	19-Feb-1994	Manganese		0.049			mg/L
SP-054-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-054-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-054-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-054-FM	19-Feb-1994	Potassium	<	0.67	d		mg/L
SP-054-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-054-FM	19-Feb-1994	Silicon		4.3			mg/L
SP-054-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-054-FM	19-Feb-1994	Sodium		2.6			mg/L
SP-054-FM	19-Feb-1994	Strontium		0.021			mg/L
SP-054-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-054-FM	19-Feb-1994	Uranium Fluorometric		0.001			mg/L
SP-054-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-054-FM	19-Feb-1994	Zinc		0.016			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE	RESULT	FOOTNOTE	ERROR	UNITS
SP-056	19-Feb-1994	Alpha Activity	.97E-1		1.2E0	pCi/L
SP-056	19-Feb-1994	Aluminum	< 0.022	d		mg/L
SP-056	19-Feb-1994	Antimony	< 0.056	d		mg/L
SP-056	19-Feb-1994	Arsenic	< 0.056	d		mg/L
SP-056	19-Feb-1994	Barium	0.010			mg/L
SP-056	19-Feb-1994	Beryllium	< .00033	d		mg/L
SP-056	19-Feb-1994	Beta Activity	.13E-1		2.6E0	pCi/L
SP-056	19-Feb-1994	Bicarbonate	130			mg/L
SP-056	19-Feb-1994	Boron	0.0098	c		mg/L
SP-056	19-Feb-1994	Bromide	< 1.0			mg/L
SP-056	19-Feb-1994	Cadmium	< 0.0033	d		mg/L
SP-056	19-Feb-1994	Calcium	29			mg/L
SP-056	19-Feb-1994	Carbonate	< 1			mg/L
SP-056	19-Feb-1994	Chloride IC	1.2			mg/L
SP-056	19-Feb-1994	Chromium	< 0.011	d		mg/L
SP-056	19-Feb-1994	Cobalt	< 0.0056	d		mg/L
SP-056	19-Feb-1994	Conductivity	251			umho/cm
SP-056	19-Feb-1994	Copper	< 0.0044	d		mg/L
SP-056	19-Feb-1994	Dissolved Solids	142			mg/L
SP-056	19-Feb-1994	Fluoride SIE	< 0.1			mg/L
SP-056	19-Feb-1994	Iron	0.011	c		mg/L
SP-056	19-Feb-1994	Lead	< 0.056	d		mg/L
SP-056	19-Feb-1994	Magnesium	17			mg/L
SP-056	19-Feb-1994	Manganese	< 0.0011	d		mg/L
SP-056	19-Feb-1994	Molybdenum	< 0.011	d		mg/L
SP-056	19-Feb-1994	Nickel	< 0.011	d		mg/L
SP-056	19-Feb-1994	Nitrate Brucine	0.29			mg/L
SP-056	19-Feb-1994	Phosphorus	< 0.22	d		mg/L
SP-056	19-Feb-1994	Potassium	0.77			mg/L
SP-056	19-Feb-1994	Selenium	< 0.056	d		mg/L
SP-056	19-Feb-1994	Silicon	3.8			mg/L
SP-056	19-Feb-1994	Silver	< 0.0067	d		mg/L
SP-056	19-Feb-1994	Sodium	0.45			mg/L
SP-056	19-Feb-1994	Strontium	0.018			mg/L
SP-056	19-Feb-1994	Sulfate IC	2.0			mg/L
SP-056	19-Feb-1994	Suspended Solids	3			mg/L
SP-056	19-Feb-1994	Thorium	< 0.22	d		mg/L
SP-056	19-Feb-1994	Uranium Fluorometric	< 0.001			mg/L
SP-056	19-Feb-1994	Vanadium	< 0.0056	d		mg/L
SP-056	19-Feb-1994	Zinc	< 0.0022	d		mg/L
SP-056	19-Feb-1994	pH	7.3			
SP-056-FM	19-Feb-1994	Aluminum	< 0.023	d		mg/L
SP-056-FM	19-Feb-1994	Antimony	< 0.057	d		mg/L
SP-056-FM	19-Feb-1994	Arsenic	< 0.057	d		mg/L
SP-056-FM	19-Feb-1994	Barium	0.011			mg/L
SP-056-FM	19-Feb-1994	Beryllium	< .00034	d		mg/L
SP-056-FM	19-Feb-1994	Boron	0.011			mg/L
SP-056-FM	19-Feb-1994	Cadmium	< 0.0034	d		mg/L
SP-056-FM	19-Feb-1994	Calcium	30			mg/L
SP-056-FM	19-Feb-1994	Chromium	< 0.011	d		mg/L
SP-056-FM	19-Feb-1994	Cobalt	< 0.0057	d		mg/L
SP-056-FM	19-Feb-1994	Copper	< 0.0046	d		mg/L
SP-056-FM	19-Feb-1994	Iron	< 0.0057	d		mg/L
SP-056-FM	19-Feb-1994	Lead	< 0.057	d		mg/L
SP-056-FM	19-Feb-1994	Magnesium	17			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-056-FM	19-Feb-1994	Manganese	<	0.0011	d		mg/L
SP-056-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-056-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-056-FM	19-Feb-1994	Phosphorus	<	0.23	d		mg/L
SP-056-FM	19-Feb-1994	Potassium		0.88			mg/L
SP-056-FM	19-Feb-1994	Selenium	<	0.057	d		mg/L
SP-056-FM	19-Feb-1994	Silicon		3.9			mg/L
SP-056-FM	19-Feb-1994	Silver	<	0.0068	d		mg/L
SP-056-FM	19-Feb-1994	Sodium		0.57			mg/L
SP-056-FM	19-Feb-1994	Strontium		0.019			mg/L
SP-056-FM	19-Feb-1994	Thorium	<	0.23	d		mg/L
SP-056-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-056-FM	19-Feb-1994	Vanadium	<	0.0057	d		mg/L
SP-056-FM	19-Feb-1994	Zinc		0.0040			mg/L
SP-060	19-Feb-1994	Alpha Activity		.69E-1		1.3E0	pCi/L
SP-060	19-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-060	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-060	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-060	19-Feb-1994	Barium		0.043			mg/L
SP-060	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-060	19-Feb-1994	Beta Activity		.86E-1		2.6E0	pCi/L
SP-060	19-Feb-1994	Bicarbonate		134			mg/L
SP-060	19-Feb-1994	Boron		0.0059			mg/L
SP-060	19-Feb-1994	Bromide	<	1			mg/L
SP-060	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-060	19-Feb-1994	Calcium		26			mg/L
SP-060	19-Feb-1994	Carbonate	<	1			mg/L
SP-060	19-Feb-1994	Chloride IC		1			mg/L
SP-060	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-060	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-060	19-Feb-1994	Conductivity		258			umho/cm
SP-060	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-060	19-Feb-1994	Dissolved Solids		150			mg/L
SP-060	19-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-060	19-Feb-1994	Iron	<	0.0056	d		mg/L
SP-060	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-060	19-Feb-1994	Magnesium		16			mg/L
SP-060	19-Feb-1994	Manganese	<	0.0011	d		mg/L
SP-060	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-060	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-060	19-Feb-1994	Nitrate Brucine		0.22			mg/L
SP-060	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-060	19-Feb-1994	Potassium		1.0			mg/L
SP-060	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-060	19-Feb-1994	Silicon		4.1			mg/L
SP-060	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-060	19-Feb-1994	Sodium		0.49			mg/L
SP-060	19-Feb-1994	Strontium		0.020			mg/L
SP-060	19-Feb-1994	Sulfate IC		2			mg/L
SP-060	19-Feb-1994	Suspended Solids		1			mg/L
SP-060	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-060	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-060	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-060	19-Feb-1994	Zinc		0.0055	c		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-060	19-Feb-1994	pH		7.7			
SP-060-FM	19-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-060-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-060-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-060-FM	19-Feb-1994	Barium		0.041			mg/L
SP-060-FM	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-060-FM	19-Feb-1994	Boron		0.0051			mg/L
SP-060-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-060-FM	19-Feb-1994	Calcium		25			mg/L
SP-060-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-060-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-060-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-060-FM	19-Feb-1994	Iron	<	0.0056	d		mg/L
SP-060-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-060-FM	19-Feb-1994	Magnesium		16			mg/L
SP-060-FM	19-Feb-1994	Manganese		0.0024			mg/L
SP-060-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-060-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-060-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-060-FM	19-Feb-1994	Potassium		0.95			mg/L
SP-060-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-060-FM	19-Feb-1994	Silicon		4.0			mg/L
SP-060-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-060-FM	19-Feb-1994	Sodium		0.47			mg/L
SP-060-FM	19-Feb-1994	Strontium		0.019			mg/L
SP-060-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-060-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-060-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-060-FM	19-Feb-1994	Zinc		0.0066	c		mg/L
SP-074	20-Feb-1994	Alpha Activity		.53E-1		9.1E-1	pCi/L
SP-074	20-Feb-1994	Aluminum		0.28			mg/L
SP-074	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-074	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-074	20-Feb-1994	Barium		0.042			mg/L
SP-074	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-074	20-Feb-1994	Beta Activity		.42E-1		3.1E0	pCi/L
SP-074	20-Feb-1994	Bicarbonate		12			mg/L
SP-074	20-Feb-1994	Boron		0.0060			mg/L
SP-074	20-Feb-1994	Bromide	<	1			mg/L
SP-074	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-074	20-Feb-1994	Calcium		2.5			mg/L
SP-074	20-Feb-1994	Carbonate	<	1			mg/L
SP-074	20-Feb-1994	Chloride IC		1			mg/L
SP-074	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-074	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-074	20-Feb-1994	Conductivity		47			umho/cm
SP-074	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-074	20-Feb-1994	Dissolved Solids		54			mg/L
SP-074	20-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-074	20-Feb-1994	Iron		0.22			mg/L
SP-074	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-074	20-Feb-1994	Magnesium		1.6			mg/L
SP-074	20-Feb-1994	Manganese		0.0040			mg/L
SP-074	20-Feb-1994	Molybdenum	<	0.011	d		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-074	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-074	20-Feb-1994	Nitrate Brucine	<	0.1			mg/L
SP-074	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-074	20-Feb-1994	Potassium		2.2			mg/L
SP-074	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-074	20-Feb-1994	Silicon		6.6			mg/L
SP-074	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-074	20-Feb-1994	Sodium		1.5			mg/L
SP-074	20-Feb-1994	Strontium		0.011			mg/L
SP-074	20-Feb-1994	Sulfate IC		6			mg/L
SP-074	20-Feb-1994	Suspended Solids		2			mg/L
SP-074	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-074	20-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-074	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-074	20-Feb-1994	Zinc		0.0025	c		mg/L
SP-074	20-Feb-1994	pH		6.3			
SP-074-FM	20-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-074-FM	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-074-FM	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-074-FM	20-Feb-1994	Barium		0.042			mg/L
SP-074-FM	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-074-FM	20-Feb-1994	Boron		0.0054			mg/L
SP-074-FM	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-074-FM	20-Feb-1994	Calcium		2.5			mg/L
SP-074-FM	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-074-FM	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-074-FM	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-074-FM	20-Feb-1994	Iron		0.012			mg/L
SP-074-FM	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-074-FM	20-Feb-1994	Magnesium		1.6			mg/L
SP-074-FM	20-Feb-1994	Manganese		0.0036			mg/L
SP-074-FM	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-074-FM	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-074-FM	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-074-FM	20-Feb-1994	Potassium		2.1			mg/L
SP-074-FM	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-074-FM	20-Feb-1994	Silicon		6.6			mg/L
SP-074-FM	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-074-FM	20-Feb-1994	Sodium		1.5			mg/L
SP-074-FM	20-Feb-1994	Strontium		0.011			mg/L
SP-074-FM	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-074-FM	20-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-074-FM	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-074-FM	20-Feb-1994	Zinc		0.0058	c		mg/L
SP-081	19-Feb-1994	Alpha Activity		.78E-3		1.2E0	pCi/L
SP-081	19-Feb-1994	Aluminum		1.3			mg/L
SP-081	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-081	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-081	19-Feb-1994	Barium		0.024			mg/L
SP-081	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-081	19-Feb-1994	Beta Activity		3.75E0		2.7E0	pCi/L
SP-081	19-Feb-1994	Bicarbonate		219			mg/L
SP-081	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-081	19-Feb-1994	Bromide	<	2			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-081	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-081	19-Feb-1994	Calcium		93			mg/L
SP-081	19-Feb-1994	Carbonate	<	1			mg/L
SP-081	19-Feb-1994	Chloride IC		16			mg/L
SP-081	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-081	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-081	19-Feb-1994	Conductivity		519			umho/cm
SP-081	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-081	19-Feb-1994	Dissolved Solids		310			mg/L
SP-081	19-Feb-1994	Fluoride SIE		0.1			mg/L
SP-081	19-Feb-1994	Iron		0.86			mg/L
SP-081	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-081	19-Feb-1994	Magnesium		5.3			mg/L
SP-081	19-Feb-1994	Manganese		0.056			mg/L
SP-081	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-081	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-081	19-Feb-1994	Nitrate Brucine		1.7			mg/L
SP-081	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-081	19-Feb-1994	Potassium		1.9			mg/L
SP-081	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-081	19-Feb-1994	Silicon		4.9			mg/L
SP-081	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-081	19-Feb-1994	Sodium		4.9			mg/L
SP-081	19-Feb-1994	Strontium		0.15			mg/L
SP-081	19-Feb-1994	Sulfate IC		22			mg/L
SP-081	19-Feb-1994	Suspended Solids		10			mg/L
SP-081	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-081	19-Feb-1994	Uranium Fluorometric		0.001			mg/L
SP-081	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-081	19-Feb-1994	Zinc		0.016	c		mg/L
SP-081	19-Feb-1994	pH		7.2			
SP-081-FM	19-Feb-1994	Aluminum		0.070			mg/L
SP-081-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-081-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-081-FM	19-Feb-1994	Barium		0.025			mg/L
SP-081-FM	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-081-FM	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-081-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-081-FM	19-Feb-1994	Calcium		93			mg/L
SP-081-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-081-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-081-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-081-FM	19-Feb-1994	Iron		0.20			mg/L
SP-081-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-081-FM	19-Feb-1994	Magnesium		5.2			mg/L
SP-081-FM	19-Feb-1994	Manganese		0.23			mg/L
SP-081-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-081-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-081-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-081-FM	19-Feb-1994	Potassium		1.7			mg/L
SP-081-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-081-FM	19-Feb-1994	Silicon		3.0			mg/L
SP-081-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-081-FM	19-Feb-1994	Sodium		4.9			mg/L
SP-081-FM	19-Feb-1994	Strontium		0.15			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D.	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-081-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-081-FM	19-Feb-1994	Uranium Fluorometric		0.001			mg/L
SP-081-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-081-FM	19-Feb-1994	Zinc		0.027			mg/L
SP-083	19-Feb-1994	Alpha Activity		.97E-1		1.1E0	pCi/L
SP-083	19-Feb-1994	Aluminum		0.29			mg/L
SP-083	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-083	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-083	19-Feb-1994	Barium		0.021			mg/L
SP-083	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-083	19-Feb-1994	Beta Activity		.86E-1		2.4E0	pCi/L
SP-083	19-Feb-1994	Bicarbonate		192			mg/L
SP-083	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-083	19-Feb-1994	Bromide	<	1			mg/L
SP-083	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-083	19-Feb-1994	Calcium		77			mg/L
SP-083	19-Feb-1994	Carbonate	<	1			mg/L
SP-083	19-Feb-1994	Chloride IC		8			mg/L
SP-083	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-083	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-083	19-Feb-1994	Conductivity		429			umho/cm
SP-083	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-083	19-Feb-1994	Dissolved Solids		268			mg/L
SP-083	19-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-083	19-Feb-1994	Iron		0.15			mg/L
SP-083	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-083	19-Feb-1994	Magnesium		5.0			mg/L
SP-083	19-Feb-1994	Manganese		0.0030			mg/L
SP-083	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-083	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-083	19-Feb-1994	Nitrate Brucine		1.9			mg/L
SP-083	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-083	19-Feb-1994	Potassium		0.76			mg/L
SP-083	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-083	19-Feb-1994	Silicon		3.8			mg/L
SP-083	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-083	19-Feb-1994	Sodium		2.4			mg/L
SP-083	19-Feb-1994	Strontium		0.12			mg/L
SP-083	19-Feb-1994	Sulfate IC		13			mg/L
SP-083	19-Feb-1994	Suspended Solids		8			mg/L
SP-083	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-083	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-083	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-083	19-Feb-1994	Zinc		0.0079	c		mg/L
SP-083	19-Feb-1994	pH		7.3			
SP-083-FM	19-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-083-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-083-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-083-FM	19-Feb-1994	Barium		0.021			mg/L
SP-083-FM	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-083-FM	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-083-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-083-FM	19-Feb-1994	Calcium		77			mg/L
SP-083-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-083-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-083-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-083-FM	19-Feb-1994	Iron		0.0086			mg/L
SP-083-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-083-FM	19-Feb-1994	Magnesium		5.0			mg/L
SP-083-FM	19-Feb-1994	Manganese		0.0053			mg/L
SP-083-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-083-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-083-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-083-FM	19-Feb-1994	Potassium	<	0.67	d		mg/L
SP-083-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-083-FM	19-Feb-1994	Silicon		3.3			mg/L
SP-083-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-083-FM	19-Feb-1994	Sodium		2.5			mg/L
SP-083-FM	19-Feb-1994	Strontium		0.12			mg/L
SP-083-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-083-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-083-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-083-FM	19-Feb-1994	Zinc		0.011	c		mg/L
SP-102	18-Feb-1994	Alpha Activity		.95E-3		1.3E0	pCi/L
SP-102	18-Feb-1994	Aluminum		0.86			mg/L
SP-102	18-Feb-1994	Antimony	<	0.056	d		mg/L
SP-102	18-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-102	18-Feb-1994	Barium		0.050			mg/L
SP-102	18-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-102	18-Feb-1994	Beta Activity		3.94E0		2.8E0	pCi/L
SP-102	18-Feb-1994	Bicarbonate		106			mg/L
SP-102	18-Feb-1994	Boron		0.020	c		mg/L
SP-102	18-Feb-1994	Bromide	<	1.0			mg/L
SP-102	18-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-102	18-Feb-1994	Calcium		28			mg/L
SP-102	18-Feb-1994	Carbonate	<	1			mg/L
SP-102	18-Feb-1994	Chloride IC		9.9			mg/L
SP-102	18-Feb-1994	Chromium	<	0.011	d		mg/L
SP-102	18-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-102	18-Feb-1994	Conductivity		269			umho/cm
SP-102	18-Feb-1994	Copper	<	0.0044	d		mg/L
SP-102	18-Feb-1994	Dissolved Solids		172			mg/L
SP-102	18-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-102	18-Feb-1994	Iron		0.58			mg/L
SP-102	18-Feb-1994	Lead	<	0.056	d		mg/L
SP-102	18-Feb-1994	Magnesium		14			mg/L
SP-102	18-Feb-1994	Manganese		0.028			mg/L
SP-102	18-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-102	18-Feb-1994	Nickel	<	0.011	d		mg/L
SP-102	18-Feb-1994	Nitrate Brucine		1.0			mg/L
SP-102	18-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-102	18-Feb-1994	Potassium		3.2			mg/L
SP-102	18-Feb-1994	Selenium	<	0.056	d		mg/L
SP-102	18-Feb-1994	Silicon		7.7			mg/L
SP-102	18-Feb-1994	Silver	<	0.0067	d		mg/L
SP-102	18-Feb-1994	Sodium		4.6			mg/L
SP-102	18-Feb-1994	Strontium		0.054			mg/L
SP-102	18-Feb-1994	Sulfate IC		12.5			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-102	18-Feb-1994	Suspended Solids		13			mg/L
SP-102	18-Feb-1994	Thorium	<	0.22	d		mg/L
SP-102	18-Feb-1994	Uranium Fluorometric		0.001			mg/L
SP-102	18-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-102	18-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-102	18-Feb-1994	pH		7.6			
SP-102-FM	18-Feb-1994	Aluminum		0.022			mg/L
SP-102-FM	18-Feb-1994	Antimony	<	0.056	d		mg/L
SP-102-FM	18-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-102-FM	18-Feb-1994	Barium		0.051			mg/L
SP-102-FM	18-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-102-FM	18-Feb-1994	Boron		0.028	c		mg/L
SP-102-FM	18-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-102-FM	18-Feb-1994	Calcium		29			mg/L
SP-102-FM	18-Feb-1994	Chromium	<	0.011	d		mg/L
SP-102-FM	18-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-102-FM	18-Feb-1994	Copper	<	0.0044	d		mg/L
SP-102-FM	18-Feb-1994	Iron		0.023	c		mg/L
SP-102-FM	18-Feb-1994	Lead	<	0.056	d		mg/L
SP-102-FM	18-Feb-1994	Magnesium		15			mg/L
SP-102-FM	18-Feb-1994	Manganese		0.023			mg/L
SP-102-FM	18-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-102-FM	18-Feb-1994	Nickel	<	0.011	d		mg/L
SP-102-FM	18-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-102-FM	18-Feb-1994	Potassium		2.9			mg/L
SP-102-FM	18-Feb-1994	Selenium	<	0.056	d		mg/L
SP-102-FM	18-Feb-1994	Silicon		6.8			mg/L
SP-102-FM	18-Feb-1994	Silver	<	0.0067	d		mg/L
SP-102-FM	18-Feb-1994	Sodium		5.2			mg/L
SP-102-FM	18-Feb-1994	Strontium		0.058			mg/L
SP-102-FM	18-Feb-1994	Thorium	<	0.22	d		mg/L
SP-102-FM	18-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-102-FM	18-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-102-FM	18-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-112	19-Feb-1994	Alpha Activity		.32E-1		1.4E0	pCi/L
SP-112	19-Feb-1994	Aluminum		5.2			mg/L
SP-112	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-112	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-112	19-Feb-1994	Barium		0.072			mg/L
SP-112	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-112	19-Feb-1994	Beta Activity		7.65E0		3.2E0	pCi/L
SP-112	19-Feb-1994	Bicarbonate		7			mg/L
SP-112	19-Feb-1994	Boron		0.019	c		mg/L
SP-112	19-Feb-1994	Bromide	<	1.0			mg/L
SP-112	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-112	19-Feb-1994	Calcium		1.5			mg/L
SP-112	19-Feb-1994	Carbonate	<	1			mg/L
SP-112	19-Feb-1994	Chloride IC		1.1			mg/L
SP-112	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-112	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-112	19-Feb-1994	Conductivity		39			umho/cm
SP-112	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-112	19-Feb-1994	Dissolved Solids		70			mg/L
SP-112	19-Feb-1994	Fluoride SIE	<	0.1			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I.D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-112	19-Feb-1994	Iron		2.6			mg/L
SP-112	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-112	19-Feb-1994	Magnesium		1.8			mg/L
SP-112	19-Feb-1994	Manganese		0.017			mg/L
SP-112	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-112	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-112	19-Feb-1994	Nitrate Brucine		0.26			mg/L
SP-112	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-112	19-Feb-1994	Potassium		3.9			mg/L
SP-112	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-112	19-Feb-1994	Silicon		15			mg/L
SP-112	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-112	19-Feb-1994	Sodium		2.5			mg/L
SP-112	19-Feb-1994	Strontium		0.012			mg/L
SP-112	19-Feb-1994	Sulfate IC		6.5			mg/L
SP-112	19-Feb-1994	Suspended Solids		40			mg/L
SP-112	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-112	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-112	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-112	19-Feb-1994	Zinc		0.0096			mg/L
SP-112	19-Feb-1994	pH		6.8			
SP-112-FM	19-Feb-1994	Aluminum		0.25			mg/L
SP-112-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-112-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-112-FM	19-Feb-1994	Barium		0.064			mg/L
SP-112-FM	19-Feb-1994	Beryllium	<	0.0033	d		mg/L
SP-112-FM	19-Feb-1994	Boron		0.013	c		mg/L
SP-112-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-112-FM	19-Feb-1994	Calcium		1.4			mg/L
SP-112-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-112-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-112-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-112-FM	19-Feb-1994	Iron		0.67			mg/L
SP-112-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-112-FM	19-Feb-1994	Magnesium		1.5			mg/L
SP-112-FM	19-Feb-1994	Manganese		0.018			mg/L
SP-112-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-112-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-112-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-112-FM	19-Feb-1994	Potassium		1.8			mg/L
SP-112-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-112-FM	19-Feb-1994	Silicon		7.9			mg/L
SP-112-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-112-FM	19-Feb-1994	Sodium		2.3			mg/L
SP-112-FM	19-Feb-1994	Strontium		0.0096			mg/L
SP-112-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-112-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-112-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-112-FM	19-Feb-1994	Zinc		0.0091			mg/L
SP-119	19-Feb-1994	Alpha Activity		1.19E0		8.5E-1	pCi/L
SP-119	19-Feb-1994	Aluminum		0.13			mg/L
SP-119	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-119	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-119	19-Feb-1994	Barium		0.054			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE	RESULT	FOOTNOTE	ERROR	UNITS
SP-119	19-Feb-1994	Beryllium	< .00033	d		mg/L
SP-119	19-Feb-1994	Beta Activity	3.67E0		3.0E0	pCi/L
SP-119	19-Feb-1994	Bicarbonate	9			mg/L
SP-119	19-Feb-1994	Boron	0.014	c		mg/L
SP-119	19-Feb-1994	Bromide	< 1.0			mg/L
SP-119	19-Feb-1994	Cadmium	< 0.0033	d		mg/L
SP-119	19-Feb-1994	Calcium	1.8			mg/L
SP-119	19-Feb-1994	Carbonate	< 1			mg/L
SP-119	19-Feb-1994	Chloride IC	1.1			mg/L
SP-119	19-Feb-1994	Chromium	< 0.011	d		mg/L
SP-119	19-Feb-1994	Cobalt	< 0.0056	d		mg/L
SP-119	19-Feb-1994	Conductivity	47			umho/cm
SP-119	19-Feb-1994	Copper	< 0.0044	d		mg/L
SP-119	19-Feb-1994	Dissolved Solids	58			mg/L
SP-119	19-Feb-1994	Fluoride SIE	< 0.1			mg/L
SP-119	19-Feb-1994	Iron	0.056	c		mg/L
SP-119	19-Feb-1994	Lead	< 0.056	d		mg/L
SP-119	19-Feb-1994	Magnesium	1.8			mg/L
SP-119	19-Feb-1994	Manganese	< 0.0011	d		mg/L
SP-119	19-Feb-1994	Molybdenum	< 0.011	d		mg/L
SP-119	19-Feb-1994	Nickel	< 0.011	d		mg/L
SP-119	19-Feb-1994	Nitrate Brucine	< 0.1			mg/L
SP-119	19-Feb-1994	Phosphorus	< 0.22	d		mg/L
SP-119	19-Feb-1994	Potassium	2.7			mg/L
SP-119	19-Feb-1994	Selenium	< 0.056	d		mg/L
SP-119	19-Feb-1994	Silicon	8.3			mg/L
SP-119	19-Feb-1994	Silver	< 0.0067	d		mg/L
SP-119	19-Feb-1994	Sodium	2.1			mg/L
SP-119	19-Feb-1994	Strontium	0.011			mg/L
SP-119	19-Feb-1994	Sulfate IC	8.8			mg/L
SP-119	19-Feb-1994	Suspended Solids	14			mg/L
SP-119	19-Feb-1994	Thorium	< 0.22	d		mg/L
SP-119	19-Feb-1994	Uranium Fluorometric	< 0.001			mg/L
SP-119	19-Feb-1994	Vanadium	< 0.0056	d		mg/L
SP-119	19-Feb-1994	Zinc	< 0.0022	d		mg/L
SP-119	19-Feb-1994	pH	6.7			
SP-119-FM	19-Feb-1994	Aluminum	< 0.022	d		mg/L
SP-119-FM	19-Feb-1994	Antimony	< 0.056	d		mg/L
SP-119-FM	19-Feb-1994	Arsenic	< 0.056	d		mg/L
SP-119-FM	19-Feb-1994	Barium	0.055			mg/L
SP-119-FM	19-Feb-1994	Beryllium	< .00033	d		mg/L
SP-119-FM	19-Feb-1994	Boron	0.015	c		mg/L
SP-119-FM	19-Feb-1994	Cadmium	< 0.0033	d		mg/L
SP-119-FM	19-Feb-1994	Calcium	1.9			mg/L
SP-119-FM	19-Feb-1994	Chromium	< 0.011	d		mg/L
SP-119-FM	19-Feb-1994	Cobalt	< 0.0056	d		mg/L
SP-119-FM	19-Feb-1994	Copper	< 0.0044	d		mg/L
SP-119-FM	19-Feb-1994	Iron	0.0065	c		mg/L
SP-119-FM	19-Feb-1994	Lead	< 0.056	d		mg/L
SP-119-FM	19-Feb-1994	Magnesium	1.8			mg/L
SP-119-FM	19-Feb-1994	Manganese	0.0029			mg/L
SP-119-FM	19-Feb-1994	Molybdenum	< 0.011	d		mg/L
SP-119-FM	19-Feb-1994	Nickel	< 0.011	d		mg/L
SP-119-FM	19-Feb-1994	Phosphorus	< 0.22	d		mg/L
SP-119-FM	19-Feb-1994	Potassium	3.4			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-119-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-119-FM	19-Feb-1994	Silicon		8.1			mg/L
SP-119-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-119-FM	19-Feb-1994	Sodium		2.2			mg/L
SP-119-FM	19-Feb-1994	Strontium		0.012			mg/L
SP-119-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-119-FM	19-Feb-1994	Uranium Fluorometric		0.001			mg/L
SP-119-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-119-FM	19-Feb-1994	Zinc		0.0043			mg/L
SP-124	19-Feb-1994	Alpha Activity		.51E-1		1.1E0	pCi/L
SP-124	19-Feb-1994	Aluminum		0.54			mg/L
SP-124	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-124	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-124	19-Feb-1994	Barium		0.041			mg/L
SP-124	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-124	19-Feb-1994	Beta Activity		5.33E0		3.1E0	pCi/L
SP-124	19-Feb-1994	Bicarbonate		6			mg/L
SP-124	19-Feb-1994	Boron		0.016	c		mg/L
SP-124	19-Feb-1994	Bromide	<	1.0			mg/L
SP-124	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-124	19-Feb-1994	Calcium		1.6			mg/L
SP-124	19-Feb-1994	Carbonate	<	1			mg/L
SP-124	19-Feb-1994	Chloride IC	<	1.0			mg/L
SP-124	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-124	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-124	19-Feb-1994	Conductivity		40			umho/cm
SP-124	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-124	19-Feb-1994	Dissolved Solids		46			mg/L
SP-124	19-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-124	19-Feb-1994	Iron		0.32			mg/L
SP-124	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-124	19-Feb-1994	Magnesium		1.4			mg/L
SP-124	19-Feb-1994	Manganese		0.020			mg/L
SP-124	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-124	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-124	19-Feb-1994	Nitrate Brucine	<	0.1			mg/L
SP-124	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-124	19-Feb-1994	Potassium		2.4			mg/L
SP-124	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-124	19-Feb-1994	Silicon		5.0			mg/L
SP-124	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-124	19-Feb-1994	Sodium		1.1			mg/L
SP-124	19-Feb-1994	Strontium		0.013			mg/L
SP-124	19-Feb-1994	Sulfate IC		7.5			mg/L
SP-124	19-Feb-1994	Suspended Solids		4			mg/L
SP-124	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-124	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-124	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-124	19-Feb-1994	Zinc		0.0030			mg/L
SP-124	19-Feb-1994	pH		6.0			
SP-124-FM	19-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-124-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-124-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-124-FM	19-Feb-1994	Barium		0.038			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-124-FM	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-124-FM	19-Feb-1994	Boron		0.016	c		mg/L
SP-124-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-124-FM	19-Feb-1994	Calcium		1.7			mg/L
SP-124-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-124-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-124-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-124-FM	19-Feb-1994	Iron		0.013	c		mg/L
SP-124-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-124-FM	19-Feb-1994	Magnesium		1.4			mg/L
SP-124-FM	19-Feb-1994	Manganese		0.0096			mg/L
SP-124-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-124-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-124-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-124-FM	19-Feb-1994	Potassium		2.2			mg/L
SP-124-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-124-FM	19-Feb-1994	Silicon		4.3			mg/L
SP-124-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-124-FM	19-Feb-1994	Sodium		1.2			mg/L
SP-124-FM	19-Feb-1994	Strontium		0.014			mg/L
SP-124-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-124-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-124-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-124-FM	19-Feb-1994	Zinc		0.0055			mg/L
SP-129	20-Feb-1994	Alpha Activity		.71E-1		1.1E0	pCi/L
SP-129	20-Feb-1994	Aluminum		0.040			mg/L
SP-129	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-129	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-129	20-Feb-1994	Barium		0.029			mg/L
SP-129	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-129	20-Feb-1994	Beta Activity		3.24E0		2.8E0	pCi/L
SP-129	20-Feb-1994	Bicarbonate		169			mg/L
SP-129	20-Feb-1994	Boron		0.0055			mg/L
SP-129	20-Feb-1994	Bromide	<	1			mg/L
SP-129	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-129	20-Feb-1994	Calcium		50			mg/L
SP-129	20-Feb-1994	Carbonate	<	1			mg/L
SP-129	20-Feb-1994	Chloride IC		2			mg/L
SP-129	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-129	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-129	20-Feb-1994	Conductivity		366			umho/cm
SP-129	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-129	20-Feb-1994	Dissolved Solids		220			mg/L
SP-129	20-Feb-1994	Fluoride SIE		0.1			mg/L
SP-129	20-Feb-1994	Iron		0.028			mg/L
SP-129	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-129	20-Feb-1994	Magnesium		14			mg/L
SP-129	20-Feb-1994	Manganese		0.0023			mg/L
SP-129	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-129	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-129	20-Feb-1994	Nitrate Brucine		2.2			mg/L
SP-129	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-129	20-Feb-1994	Potassium	<	0.67	d		mg/L
SP-129	20-Feb-1994	Selenium	<	0.056	d		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-129	20-Feb-1994	Silicon		3.6			mg/L
SP-129	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-129	20-Feb-1994	Sodium		0.81			mg/L
SP-129	20-Feb-1994	Strontium		0.044			mg/L
SP-129	20-Feb-1994	Sulfate IC		7			mg/L
SP-129	20-Feb-1994	Suspended Solids		3			mg/L
SP-129	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-129	20-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-129	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-129	20-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-129	20-Feb-1994	pH		7.5			
SP-129-FM	20-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-129-FM	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-129-FM	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-129-FM	20-Feb-1994	Barium		0.029			mg/L
SP-129-FM	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-129-FM	20-Feb-1994	Boron		0.0070			mg/L
SP-129-FM	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-129-FM	20-Feb-1994	Calcium		50			mg/L
SP-129-FM	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-129-FM	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-129-FM	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-129-FM	20-Feb-1994	Iron	<	0.0056	d		mg/L
SP-129-FM	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-129-FM	20-Feb-1994	Magnesium		14			mg/L
SP-129-FM	20-Feb-1994	Manganese		0.0050			mg/L
SP-129-FM	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-129-FM	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-129-FM	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-129-FM	20-Feb-1994	Potassium		0.67			mg/L
SP-129-FM	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-129-FM	20-Feb-1994	Silicon		3.6			mg/L
SP-129-FM	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-129-FM	20-Feb-1994	Sodium		0.86			mg/L
SP-129-FM	20-Feb-1994	Strontium		0.044			mg/L
SP-129-FM	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-129-FM	20-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-129-FM	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-129-FM	20-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-131	19-Feb-1994	Alpha Activity		.47E-1		1.0E0	pCi/L
SP-131	19-Feb-1994	Aluminum		0.18			mg/L
SP-131	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-131	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-131	19-Feb-1994	Barium		0.052			mg/L
SP-131	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-131	19-Feb-1994	Beta Activity		.68E-1		2.5E0	pCi/L
SP-131	19-Feb-1994	Bicarbonate		70			mg/L
SP-131	19-Feb-1994	Boron		0.0051			mg/L
SP-131	19-Feb-1994	Bromide	<	1			mg/L
SP-131	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-131	19-Feb-1994	Calcium		16			mg/L
SP-131	19-Feb-1994	Carbonate	<	1			mg/L
SP-131	19-Feb-1994	Chloride IC		2			mg/L
SP-131	19-Feb-1994	Chromium	<	0.011	d		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-131	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-131	19-Feb-1994	Conductivity		153			umho/cm
SP-131	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-131	19-Feb-1994	Dissolved Solids		90			mg/L
SP-131	19-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-131	19-Feb-1994	Iron		0.094			mg/L
SP-131	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-131	19-Feb-1994	Magnesium		7.3			mg/L
SP-131	19-Feb-1994	Manganese		0.0017			mg/L
SP-131	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-131	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-131	19-Feb-1994	Nitrate Brucine		1.0			mg/L
SP-131	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-131	19-Feb-1994	Potassium		0.77			mg/L
SP-131	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-131	19-Feb-1994	Silicon		3.3			mg/L
SP-131	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-131	19-Feb-1994	Sodium		0.58			mg/L
SP-131	19-Feb-1994	Strontium		0.029			mg/L
SP-131	19-Feb-1994	Sulfate IC		4			mg/L
SP-131	19-Feb-1994	Suspended Solids		3			mg/L
SP-131	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-131	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-131	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-131	19-Feb-1994	Zinc		0.0041	c		mg/L
SP-131	19-Feb-1994	pH		7.0			
SP-131-FM	19-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-131-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-131-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-131-FM	19-Feb-1994	Barium		0.049			mg/L
SP-131-FM	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-131-FM	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-131-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-131-FM	19-Feb-1994	Calcium		15			mg/L
SP-131-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-131-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-131-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-131-FM	19-Feb-1994	Iron		0.0075			mg/L
SP-131-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-131-FM	19-Feb-1994	Magnesium		7.0			mg/L
SP-131-FM	19-Feb-1994	Manganese		0.0020			mg/L
SP-131-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-131-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-131-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-131-FM	19-Feb-1994	Potassium		0.68			mg/L
SP-131-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-131-FM	19-Feb-1994	Silicon		2.9			mg/L
SP-131-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-131-FM	19-Feb-1994	Sodium		0.60			mg/L
SP-131-FM	19-Feb-1994	Strontium		0.028			mg/L
SP-131-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-131-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-131-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-131-FM	19-Feb-1994	Zinc		0.0047	c		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE	RESULT	FOOTNOTE	ERROR	UNITS
SP-132	19-Feb-1994	Alpha Activity	1.87E0		1.5E0	pCi/L
SP-132	19-Feb-1994	Aluminum	1.8			mg/L
SP-132	19-Feb-1994	Antimony	< 0.056	d		mg/L
SP-132	19-Feb-1994	Arsenic	< 0.056	d		mg/L
SP-132	19-Feb-1994	Barium	0.019			mg/L
SP-132	19-Feb-1994	Beryllium	< .00033	d		mg/L
SP-132	19-Feb-1994	Beta Activity	3.22E0		3.3E0	pCi/L
SP-132	19-Feb-1994	Bicarbonate	55			mg/L
SP-132	19-Feb-1994	Boron	< 0.0044	d		mg/L
SP-132	19-Feb-1994	Bromide	< 1			mg/L
SP-132	19-Feb-1994	Cadmium	< 0.0033	d		mg/L
SP-132	19-Feb-1994	Calcium	12			mg/L
SP-132	19-Feb-1994	Carbonate	< 1			mg/L
SP-132	19-Feb-1994	Chloride IC	2			mg/L
SP-132	19-Feb-1994	Chromium	< 0.011	d		mg/L
SP-132	19-Feb-1994	Cobalt	< 0.0056	d		mg/L
SP-132	19-Feb-1994	Conductivity	127			umho/cm
SP-132	19-Feb-1994	Copper	< 0.0044	d		mg/L
SP-132	19-Feb-1994	Dissolved Solids	80			mg/L
SP-132	19-Feb-1994	Fluoride SIE	< 0.1			mg/L
SP-132	19-Feb-1994	Iron	0.95			mg/L
SP-132	19-Feb-1994	Lead	< 0.056	d		mg/L
SP-132	19-Feb-1994	Magnesium	6.0			mg/L
SP-132	19-Feb-1994	Manganese	0.031			mg/L
SP-132	19-Feb-1994	Molybdenum	< 0.011	d		mg/L
SP-132	19-Feb-1994	Nickel	< 0.011	d		mg/L
SP-132	19-Feb-1994	Nitrate Brucine	0.72			mg/L
SP-132	19-Feb-1994	Phosphorus	< 0.22	d		mg/L
SP-132	19-Feb-1994	Potassium	1.0			mg/L
SP-132	19-Feb-1994	Selenium	< 0.056	d		mg/L
SP-132	19-Feb-1994	Silicon	6.2			mg/L
SP-132	19-Feb-1994	Silver	< 0.0067	d		mg/L
SP-132	19-Feb-1994	Sodium	0.69			mg/L
SP-132	19-Feb-1994	Strontium	0.018			mg/L
SP-132	19-Feb-1994	Sulfate IC	2			mg/L
SP-132	19-Feb-1994	Suspended Solids	93			mg/L
SP-132	19-Feb-1994	Thorium	< 0.22	d		mg/L
SP-132	19-Feb-1994	Uranium Fluorometric	< 0.001			mg/L
SP-132	19-Feb-1994	Vanadium	< 0.0056	d		mg/L
SP-132	19-Feb-1994	Zinc	0.020	c		mg/L
SP-132	19-Feb-1994	pH	6.8			
SP-132-FM	19-Feb-1994	Aluminum	0.29			mg/L
SP-132-FM	19-Feb-1994	Antimony	< 0.056	d		mg/L
SP-132-FM	19-Feb-1994	Arsenic	< 0.056	d		mg/L
SP-132-FM	19-Feb-1994	Barium	0.017			mg/L
SP-132-FM	19-Feb-1994	Beryllium	< .00033	d		mg/L
SP-132-FM	19-Feb-1994	Boron	< 0.0044	d		mg/L
SP-132-FM	19-Feb-1994	Cadmium	< 0.0033	d		mg/L
SP-132-FM	19-Feb-1994	Calcium	14			mg/L
SP-132-FM	19-Feb-1994	Chromium	< 0.011	d		mg/L
SP-132-FM	19-Feb-1994	Cobalt	< 0.0056	d		mg/L
SP-132-FM	19-Feb-1994	Copper	< 0.0044	d		mg/L
SP-132-FM	19-Feb-1994	Iron	0.14			mg/L
SP-132-FM	19-Feb-1994	Lead	< 0.056	d		mg/L
SP-132-FM	19-Feb-1994	Magnesium	5.7			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-132-FM	19-Feb-1994	Manganese		0.022			mg/L
SP-132-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-132-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-132-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-132-FM	19-Feb-1994	Potassium		0.98			mg/L
SP-132-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-132-FM	19-Feb-1994	Silicon		3.8			mg/L
SP-132-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-132-FM	19-Feb-1994	Sodium		0.72			mg/L
SP-132-FM	19-Feb-1994	Strontium		0.018			mg/L
SP-132-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-132-FM	19-Feb-1994	Uranium Fluorometric		0.001			mg/L
SP-132-FM	19-Feb-1994	Vanadium		0.0057			mg/L
SP-132-FM	19-Feb-1994	Zinc		0.014	c		mg/L
SP-137	20-Feb-1994	Alpha Activity		.57E-1		9.4E-1	pCi/L
SP-137	20-Feb-1994	Aluminum		0.12			mg/L
SP-137	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-137	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-137	20-Feb-1994	Barium		0.061			mg/L
SP-137	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-137	20-Feb-1994	Beta Activity		1.79E0		3.0E0	pCi/L
SP-137	20-Feb-1994	Bicarbonate		34			mg/L
SP-137	20-Feb-1994	Boron		0.0072			mg/L
SP-137	20-Feb-1994	Bromide	<	1			mg/L
SP-137	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-137	20-Feb-1994	Calcium		7.9			mg/L
SP-137	20-Feb-1994	Carbonate	<	1			mg/L
SP-137	20-Feb-1994	Chloride IC		1			mg/L
SP-137	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-137	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-137	20-Feb-1994	Conductivity		99			umho/cm
SP-137	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-137	20-Feb-1994	Dissolved Solids		82			mg/L
SP-137	20-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-137	20-Feb-1994	Iron		0.081			mg/L
SP-137	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-137	20-Feb-1994	Magnesium		4.6			mg/L
SP-137	20-Feb-1994	Manganese		0.0030			mg/L
SP-137	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-137	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-137	20-Feb-1994	Nitrate Brucine	<	0.1			mg/L
SP-137	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-137	20-Feb-1994	Potassium		2.5			mg/L
SP-137	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-137	20-Feb-1994	Silicon		7.8			mg/L
SP-137	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-137	20-Feb-1994	Sodium		2.6			mg/L
SP-137	20-Feb-1994	Strontium		0.024			mg/L
SP-137	20-Feb-1994	Sulfate IC		9			mg/L
SP-137	20-Feb-1994	Suspended Solids		4			mg/L
SP-137	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-137	20-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-137	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-137	20-Feb-1994	Zinc	<	0.0022	d		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-137	20-Feb-1994	pH		7.3			
SP-137-FM	20-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-137-FM	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-137-FM	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-137-FM	20-Feb-1994	Barium		0.058			mg/L
SP-137-FM	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-137-FM	20-Feb-1994	Boron		0.0069			mg/L
SP-137-FM	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-137-FM	20-Feb-1994	Calcium		7.8			mg/L
SP-137-FM	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-137-FM	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-137-FM	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-137-FM	20-Feb-1994	Iron		0.023			mg/L
SP-137-FM	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-137-FM	20-Feb-1994	Magnesium		4.4			mg/L
SP-137-FM	20-Feb-1994	Manganese		0.0036			mg/L
SP-137-FM	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-137-FM	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-137-FM	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-137-FM	20-Feb-1994	Potassium		2.6			mg/L
SP-137-FM	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-137-FM	20-Feb-1994	Silicon		7.6			mg/L
SP-137-FM	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-137-FM	20-Feb-1994	Sodium		2.6			mg/L
SP-137-FM	20-Feb-1994	Strontium		0.024			mg/L
SP-137-FM	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-137-FM	20-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-137-FM	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-137-FM	20-Feb-1994	Zinc		0.0067	c		mg/L
SP-139	20-Feb-1994	Alpha Activity		.13E-1		1.1E0	pCi/L
SP-139	20-Feb-1994	Aluminum		0.32			mg/L
SP-139	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-139	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-139	20-Feb-1994	Barium		0.034			mg/L
SP-139	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-139	20-Feb-1994	Beta Activity		4.07E0		3.3E0	pCi/L
SP-139	20-Feb-1994	Bicarbonate		15			mg/L
SP-139	20-Feb-1994	Boron		0.0076			mg/L
SP-139	20-Feb-1994	Bromide	<	1			mg/L
SP-139	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-139	20-Feb-1994	Calcium		2.8			mg/L
SP-139	20-Feb-1994	Carbonate	<	1			mg/L
SP-139	20-Feb-1994	Chloride IC		1			mg/L
SP-139	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-139	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-139	20-Feb-1994	Conductivity		43			umho/cm
SP-139	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-139	20-Feb-1994	Dissolved Solids		48			mg/L
SP-139	20-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-139	20-Feb-1994	Iron		0.19			mg/L
SP-139	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-139	20-Feb-1994	Magnesium		1.7			mg/L
SP-139	20-Feb-1994	Manganese		0.048			mg/L
SP-139	20-Feb-1994	Molybdenum	<	0.011	d		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-139	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-139	20-Feb-1994	Nitrate Brucine	<	0.1			mg/L
SP-139	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-139	20-Feb-1994	Potassium		1.8			mg/L
SP-139	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-139	20-Feb-1994	Silicon		6.8			mg/L
SP-139	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-139	20-Feb-1994	Sodium		1.3			mg/L
SP-139	20-Feb-1994	Strontium		0.0083			mg/L
SP-139	20-Feb-1994	Sulfate IC		3			mg/L
SP-139	20-Feb-1994	Suspended Solids		4			mg/L
SP-139	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-139	20-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-139	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-139	20-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-139	20-Feb-1994	pH		6.5			
SP-139-FM	20-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-139-FM	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-139-FM	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-139-FM	20-Feb-1994	Barium		0.031			mg/L
SP-139-FM	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-139-FM	20-Feb-1994	Boron		0.0051			mg/L
SP-139-FM	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-139-FM	20-Feb-1994	Calcium		2.8			mg/L
SP-139-FM	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-139-FM	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-139-FM	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-139-FM	20-Feb-1994	Iron	<	0.0056	d		mg/L
SP-139-FM	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-139-FM	20-Feb-1994	Magnesium		1.6			mg/L
SP-139-FM	20-Feb-1994	Manganese		0.0063			mg/L
SP-139-FM	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-139-FM	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-139-FM	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-139-FM	20-Feb-1994	Potassium		1.6			mg/L
SP-139-FM	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-139-FM	20-Feb-1994	Silicon		6.4			mg/L
SP-139-FM	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-139-FM	20-Feb-1994	Sodium		1.3			mg/L
SP-139-FM	20-Feb-1994	Strontium		0.0084			mg/L
SP-139-FM	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-139-FM	20-Feb-1994	Uranium Fluorometric		0.001			mg/L
SP-139-FM	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-139-FM	20-Feb-1994	Zinc		0.0038	c		mg/L
SP-152	19-Feb-1994	Alpha Activity		.08E-1		1.1E0	pCi/L
SP-152	19-Feb-1994	Aluminum		0.035			mg/L
SP-152	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-152	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-152	19-Feb-1994	Barium		0.030			mg/L
SP-152	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-152	19-Feb-1994	Beta Activity		1.13E0		2.5E0	pCi/L
SP-152	19-Feb-1994	Bicarbonate		105			mg/L
SP-152	19-Feb-1994	Boron		0.0052			mg/L
SP-152	19-Feb-1994	Bromide	<	1			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-152	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-152	19-Feb-1994	Calcium		22			mg/L
SP-152	19-Feb-1994	Carbonate	<	1			mg/L
SP-152	19-Feb-1994	Chloride IC		1			mg/L
SP-152	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-152	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-152	19-Feb-1994	Conductivity		206			umho/cm
SP-152	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-152	19-Feb-1994	Dissolved Solids		124			mg/L
SP-152	19-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-152	19-Feb-1994	Iron		0.015			mg/L
SP-152	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-152	19-Feb-1994	Magnesium		11			mg/L
SP-152	19-Feb-1994	Manganese	<	0.0011	d		mg/L
SP-152	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-152	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-152	19-Feb-1994	Nitrate Brucine		0.14			mg/L
SP-152	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-152	19-Feb-1994	Potassium	<	0.67	d		mg/L
SP-152	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-152	19-Feb-1994	Silicon		3.4			mg/L
SP-152	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-152	19-Feb-1994	Sodium		0.55			mg/L
SP-152	19-Feb-1994	Strontium		0.018			mg/L
SP-152	19-Feb-1994	Sulfate IC		3			mg/L
SP-152	19-Feb-1994	Suspended Solids		2			mg/L
SP-152	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-152	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-152	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-152	19-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-152	19-Feb-1994	pH		7.8			
SP-152-FM	19-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-152-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-152-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-152-FM	19-Feb-1994	Barium		0.027			mg/L
SP-152-FM	19-Feb-1994	Beryllium	<	0.0033	d		mg/L
SP-152-FM	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-152-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-152-FM	19-Feb-1994	Calcium		22			mg/L
SP-152-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-152-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-152-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-152-FM	19-Feb-1994	Iron	<	0.0056	d		mg/L
SP-152-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-152-FM	19-Feb-1994	Magnesium		11			mg/L
SP-152-FM	19-Feb-1994	Manganese		0.0017			mg/L
SP-152-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-152-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-152-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-152-FM	19-Feb-1994	Potassium	<	0.67	d		mg/L
SP-152-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-152-FM	19-Feb-1994	Silicon		3.4			mg/L
SP-152-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-152-FM	19-Feb-1994	Sodium		0.54			mg/L
SP-152-FM	19-Feb-1994	Strontium		0.018			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-152-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-152-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-152-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-152-FM	19-Feb-1994	Zinc		0.0063	c		mg/L
SP-189	19-Feb-1994	Alpha Activity		.03E-1		1.2E0	pCi/L
SP-189	19-Feb-1994	Aluminum		0.41			mg/L
SP-189	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-189	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-189	19-Feb-1994	Barium		0.023			mg/L
SP-189	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-189	19-Feb-1994	Beta Activity		1.87E0		2.6E0	pCi/L
SP-189	19-Feb-1994	Bicarbonate		186			mg/L
SP-189	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-189	19-Feb-1994	Bromide	<	1			mg/L
SP-189	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-189	19-Feb-1994	Calcium		75			mg/L
SP-189	19-Feb-1994	Carbonate	<	1			mg/L
SP-189	19-Feb-1994	Chloride IC		9			mg/L
SP-189	19-Feb-1994	Chromium	<	0.011	d		mg/L
SP-189	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-189	19-Feb-1994	Conductivity		414			umho/cm
SP-189	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-189	19-Feb-1994	Dissolved Solids		254			mg/L
SP-189	19-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-189	19-Feb-1994	Iron		0.31			mg/L
SP-189	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-189	19-Feb-1994	Magnesium		4.3			mg/L
SP-189	19-Feb-1994	Manganese		0.017			mg/L
SP-189	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-189	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-189	19-Feb-1994	Nitrate Brucine		1.2			mg/L
SP-189	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-189	19-Feb-1994	Potassium		1.6			mg/L
SP-189	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-189	19-Feb-1994	Silicon		3.7			mg/L
SP-189	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-189	19-Feb-1994	Sodium		3.4			mg/L
SP-189	19-Feb-1994	Strontium		0.12			mg/L
SP-189	19-Feb-1994	Sulfate IC		13			mg/L
SP-189	19-Feb-1994	Suspended Solids		2			mg/L
SP-189	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-189	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-189	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-189	19-Feb-1994	Zinc		0.0053	c		mg/L
SP-189	19-Feb-1994	pH		7.2			
SP-189-FM	19-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-189-FM	19-Feb-1994	Antimony	<	0.056	d		mg/L
SP-189-FM	19-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-189-FM	19-Feb-1994	Barium		0.022			mg/L
SP-189-FM	19-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-189-FM	19-Feb-1994	Boron	<	0.0044	d		mg/L
SP-189-FM	19-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-189-FM	19-Feb-1994	Calcium		74			mg/L
SP-189-FM	19-Feb-1994	Chromium	<	0.011	d		mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-189-FM	19-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-189-FM	19-Feb-1994	Copper	<	0.0044	d		mg/L
SP-189-FM	19-Feb-1994	Iron		0.084			mg/L
SP-189-FM	19-Feb-1994	Lead	<	0.056	d		mg/L
SP-189-FM	19-Feb-1994	Magnesium		4.2			mg/L
SP-189-FM	19-Feb-1994	Manganese		0.012			mg/L
SP-189-FM	19-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-189-FM	19-Feb-1994	Nickel	<	0.011	d		mg/L
SP-189-FM	19-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-189-FM	19-Feb-1994	Potassium		1.6			mg/L
SP-189-FM	19-Feb-1994	Selenium	<	0.056	d		mg/L
SP-189-FM	19-Feb-1994	Silicon		3.1			mg/L
SP-189-FM	19-Feb-1994	Silver	<	0.0067	d		mg/L
SP-189-FM	19-Feb-1994	Sodium		3.3			mg/L
SP-189-FM	19-Feb-1994	Strontium		0.12			mg/L
SP-189-FM	19-Feb-1994	Thorium	<	0.22	d		mg/L
SP-189-FM	19-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-189-FM	19-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-189-FM	19-Feb-1994	Zinc		0.0086	c		mg/L
SP-199	20-Feb-1994	Alpha Activity		.52E-1		1.0E0	pCi/L
SP-199	20-Feb-1994	Aluminum		0.20			mg/L
SP-199	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-199	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-199	20-Feb-1994	Barium		0.054			mg/L
SP-199	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-199	20-Feb-1994	Beta Activity		5.35E1		7.5E0	pCi/L
SP-199	20-Feb-1994	Bicarbonate		29			mg/L
SP-199	20-Feb-1994	Boron	<	0.0044	d		mg/L
SP-199	20-Feb-1994	Bromide	<	1			mg/L
SP-199	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-199	20-Feb-1994	Calcium		5.1			mg/L
SP-199	20-Feb-1994	Carbonate	<	1			mg/L
SP-199	20-Feb-1994	Chloride IC	<	1			mg/L
SP-199	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-199	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-199	20-Feb-1994	Conductivity		68			umho/cm
SP-199	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-199	20-Feb-1994	Dissolved Solids		64			mg/L
SP-199	20-Feb-1994	Fluoride SIE	<	0.1			mg/L
SP-199	20-Feb-1994	Iron		0.098			mg/L
SP-199	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-199	20-Feb-1994	Magnesium		2.9			mg/L
SP-199	20-Feb-1994	Manganese		0.0063			mg/L
SP-199	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-199	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-199	20-Feb-1994	Nitrate Brucine	<	0.1			mg/L
SP-199	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-199	20-Feb-1994	Potassium		1.8			mg/L
SP-199	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-199	20-Feb-1994	Silicon		9.8			mg/L
SP-199	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-199	20-Feb-1994	Sodium		2.3			mg/L
SP-199	20-Feb-1994	Strontium		0.024			mg/L
SP-199	20-Feb-1994	Sulfate IC		2			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-199	20-Feb-1994	Suspended Solids		5			mg/L
SP-199	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-199	20-Feb-1994	Uranium Fluorometric		0.001			mg/L
SP-199	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-199	20-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-199	20-Feb-1994	pH		6.7			
SP-199-FM	20-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-199-FM	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-199-FM	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-199-FM	20-Feb-1994	Barium		0.052			mg/L
SP-199-FM	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-199-FM	20-Feb-1994	Boron	<	0.0044	d		mg/L
SP-199-FM	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-199-FM	20-Feb-1994	Calcium		5.2			mg/L
SP-199-FM	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-199-FM	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-199-FM	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-199-FM	20-Feb-1994	Iron		0.10			mg/L
SP-199-FM	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-199-FM	20-Feb-1994	Magnesium		2.9			mg/L
SP-199-FM	20-Feb-1994	Manganese		0.0066			mg/L
SP-199-FM	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-199-FM	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-199-FM	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-199-FM	20-Feb-1994	Potassium		1.8			mg/L
SP-199-FM	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-199-FM	20-Feb-1994	Silicon		9.5			mg/L
SP-199-FM	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-199-FM	20-Feb-1994	Sodium		2.3			mg/L
SP-199-FM	20-Feb-1994	Strontium		0.023			mg/L
SP-199-FM	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-199-FM	20-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-199-FM	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-199-FM	20-Feb-1994	Zinc		0.0082	c		mg/L
SP-207	20-Feb-1994	Alpha Activity		.86E-1		1.2E0	pCi/L
SP-207	20-Feb-1994	Aluminum		0.039	cM		mg/L
SP-207	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-207	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-207	20-Feb-1994	Barium		0.12			mg/L
SP-207	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-207	20-Feb-1994	Beta Activity		1.47E0		2.9E0	pCi/L
SP-207	20-Feb-1994	Bicarbonate		272			mg/L
SP-207	20-Feb-1994	Boron	<	0.0044	d		mg/L
SP-207	20-Feb-1994	Bromide	<	1			mg/L
SP-207	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-207	20-Feb-1994	Calcium		100			mg/L
SP-207	20-Feb-1994	Carbonate	<	1			mg/L
SP-207	20-Feb-1994	Chloride IC		5			mg/L
SP-207	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-207	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-207	20-Feb-1994	Conductivity		532			umho/cm
SP-207	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-207	20-Feb-1994	Dissolved Solids		334			mg/L
SP-207	20-Feb-1994	Fluoride SIE	<	0.1			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-207	20-Feb-1994	Iron		0.034	c		mg/L
SP-207	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-207	20-Feb-1994	Magnesium		7.1			mg/L
SP-207	20-Feb-1994	Manganese		0.0049			mg/L
SP-207	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-207	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-207	20-Feb-1994	Nitrate Brucine		0.28			mg/L
SP-207	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-207	20-Feb-1994	Potassium		1.7			mg/L
SP-207	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-207	20-Feb-1994	Silicon		13			mg/L
SP-207	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-207	20-Feb-1994	Sodium		6.3			mg/L
SP-207	20-Feb-1994	Strontium		0.15			mg/L
SP-207	20-Feb-1994	Sulfate IC		4			mg/L
SP-207	20-Feb-1994	Suspended Solids	<	1			mg/L
SP-207	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-207	20-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-207	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-207	20-Feb-1994	Zinc		0.0053	c		mg/L
SP-207	20-Feb-1994	pH		7.3			
SP-207-FM	20-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-207-FM	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-207-FM	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-207-FM	20-Feb-1994	Barium		0.12			mg/L
SP-207-FM	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-207-FM	20-Feb-1994	Boron	<	0.0044	d		mg/L
SP-207-FM	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-207-FM	20-Feb-1994	Calcium		100			mg/L
SP-207-FM	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-207-FM	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-207-FM	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-207-FM	20-Feb-1994	Iron		0.013	c		mg/L
SP-207-FM	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-207-FM	20-Feb-1994	Magnesium		7.1			mg/L
SP-207-FM	20-Feb-1994	Manganese		0.0065			mg/L
SP-207-FM	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-207-FM	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-207-FM	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-207-FM	20-Feb-1994	Potassium		1.6			mg/L
SP-207-FM	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-207-FM	20-Feb-1994	Silicon		13			mg/L
SP-207-FM	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-207-FM	20-Feb-1994	Sodium		6.2			mg/L
SP-207-FM	20-Feb-1994	Strontium		0.15			mg/L
SP-207-FM	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-207-FM	20-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-207-FM	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-207-FM	20-Feb-1994	Zinc		0.011	c		mg/L
SP-211	20-Feb-1994	Alpha Activity		.12E-1		9.0E-1	pCi/L
SP-211	20-Feb-1994	Aluminum		0.18	cM		mg/L
SP-211	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-211	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-211	20-Feb-1994	Barium		0.028			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-211	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-211	20-Feb-1994	Beta Activity		2.33E0		2.9E0	pCi/L
SP-211	20-Feb-1994	Bicarbonate		149			mg/L
SP-211	20-Feb-1994	Boron	<	0.0044	d		mg/L
SP-211	20-Feb-1994	Bromide	<	1			mg/L
SP-211	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-211	20-Feb-1994	Calcium		55			mg/L
SP-211	20-Feb-1994	Carbonate	<	1			mg/L
SP-211	20-Feb-1994	Chloride IC		1			mg/L
SP-211	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-211	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-211	20-Feb-1994	Conductivity		311			umho/cm
SP-211	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-211	20-Feb-1994	Dissolved Solids		186			mg/L
SP-211	20-Feb-1994	Fluoride SIE		0.2			mg/L
SP-211	20-Feb-1994	Iron		0.099	c		mg/L
SP-211	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-211	20-Feb-1994	Magnesium		6.7			mg/L
SP-211	20-Feb-1994	Manganese		0.0032			mg/L
SP-211	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-211	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-211	20-Feb-1994	Nitrate Brucine		0.61			mg/L
SP-211	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-211	20-Feb-1994	Potassium		1.2			mg/L
SP-211	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-211	20-Feb-1994	Silicon		3.4			mg/L
SP-211	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-211	20-Feb-1994	Sodium		1.1			mg/L
SP-211	20-Feb-1994	Strontium		0.074			mg/L
SP-211	20-Feb-1994	Sulfate IC		9			mg/L
SP-211	20-Feb-1994	Suspended Solids		1			mg/L
SP-211	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-211	20-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-211	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-211	20-Feb-1994	Zinc	<	0.0022	d		mg/L
SP-211	20-Feb-1994	pH		7.7			
SP-211-FM	20-Feb-1994	Aluminum	<	0.022	d		mg/L
SP-211-FM	20-Feb-1994	Antimony	<	0.056	d		mg/L
SP-211-FM	20-Feb-1994	Arsenic	<	0.056	d		mg/L
SP-211-FM	20-Feb-1994	Barium		0.030			mg/L
SP-211-FM	20-Feb-1994	Beryllium	<	.00033	d		mg/L
SP-211-FM	20-Feb-1994	Boron		0.0048			mg/L
SP-211-FM	20-Feb-1994	Cadmium	<	0.0033	d		mg/L
SP-211-FM	20-Feb-1994	Calcium		56			mg/L
SP-211-FM	20-Feb-1994	Chromium	<	0.011	d		mg/L
SP-211-FM	20-Feb-1994	Cobalt	<	0.0056	d		mg/L
SP-211-FM	20-Feb-1994	Copper	<	0.0044	d		mg/L
SP-211-FM	20-Feb-1994	Iron		0.0065	c		mg/L
SP-211-FM	20-Feb-1994	Lead	<	0.056	d		mg/L
SP-211-FM	20-Feb-1994	Magnesium		6.8			mg/L
SP-211-FM	20-Feb-1994	Manganese		0.0074			mg/L
SP-211-FM	20-Feb-1994	Molybdenum	<	0.011	d		mg/L
SP-211-FM	20-Feb-1994	Nickel	<	0.011	d		mg/L
SP-211-FM	20-Feb-1994	Phosphorus	<	0.22	d		mg/L
SP-211-FM	20-Feb-1994	Potassium		1.4			mg/L

Table C.2. Spring and Seep Analytical Data From The Wet Season Sampling Event (Continued)

SPRING I. D	DATE SAMPLED	ANALYTE		RESULT	FOOTNOTE	ERROR	UNITS
SP-211-FM	20-Feb-1994	Selenium	<	0.056	d		mg/L
SP-211-FM	20-Feb-1994	Silicon		3.2			mg/L
SP-211-FM	20-Feb-1994	Silver	<	0.0067	d		mg/L
SP-211-FM	20-Feb-1994	Sodium		1.1			mg/L
SP-211-FM	20-Feb-1994	Strontium		0.074			mg/L
SP-211-FM	20-Feb-1994	Thorium	<	0.22	d		mg/L
SP-211-FM	20-Feb-1994	Uranium Fluorometric	<	0.001			mg/L
SP-211-FM	20-Feb-1994	Vanadium	<	0.0056	d		mg/L
SP-211-FM	20-Feb-1994	Zinc		0.0059	c		mg/L

APPENDIX D
Stable Isotope Analytical Data

Stable Isotope Analytical Data

Stable isotopic ratios $^{18}\text{O}/^{16}\text{O}$ and $^2\text{H}/^1\text{H}$ are expressed in delta units (δ) as per mille or parts per thousand (‰) differences relative SMOW (standard mean ocean water):

$$\delta\text{‰} = \left[\frac{(R - R_{\text{STANDARD}})}{R_{\text{STANDARD}}} \right] \times 1000$$

R = the isotopic ratios $^{18}\text{O}/^{16}\text{O}$ or $^2\text{H}/^1\text{H}$

Table D.1. Stable Isotope Analytical Data

SPRING I.D.	δ OXYGEN-18 DRY SEASON	δ OXYGEN-18 WET SEASON	δ DEUTERIUM DRY SEASON	δ DEUTERIUM WET SEASON
1	-5.93		-26	
5	-6.09		-33	
18	-5.69		-45	-35
19	-5.89		-37	
24	-5.73	-5.73	-28	
29	-5.46		-46	-39
31	-5.91		-18	-27
33	-5.98		-18	-37
39		-6	-54	-49
49		-5.74	-28	-68
54		-5.74	-33	-43
56			-44	-53
60		-5.96	-18	-45
74	-5.86		-16	-28
81		-5.31	-37	
83	-5.26		-38	-48
102	-5.93		-28	
112	-5.93		-12	-47
119	-6.17		-31	-50
124	-6.26		-32	-54
129	-5.79		-30	-22
131	-5.84		-18	-44
132	-5.76		-26	
137	-6.16		-34	-39
139	-6.18	-5.83	-28	-19
152	-5.9		-17	
189	-5.73		-32	-17
199	-5.92		-20	-47
207	-5.75		-35	-1
211	-6.14		-41	-26
MEAN VALUES	-5.89	-5.76	-30	-38
OXYGEN-18 DRY AND WET SEASON MEAN VALUE =				-5.86
DEUTERIUM DRY AND WET SEASON MEAN VALUE =				-33

APPENDIX E
Summary Statistics

Summary Statistics

The summary statistics tabulated in this appendix were calculated using equations from Snedecor and Cochran (1967). Below is a brief description of the statistics followed by the equation. The tables of summary statistics are software output from Statgraphics™ 5.1. The number in parentheses in the title represents the number of springs from which measurements were taken. T = Temperature (°C), SC = specific conductance ($\mu\text{mhos/cm}$), Y = spring yield or discharge (l/min), DO = dissolved oxygen (mg/l), and pH = pH (pH units).

Sample size The number of measurements of the parameter of interest.

Average Also known as the mean (μ), the central value of a normally distributed distribution.

Median The value of the parameter that divides the number of parameter measurements into two equal portions.

Mode The parameter measurement value which occurs most often.

Geometric Mean Measures the central tendency of lognormal distributions. The n^{th} root of the product of n parameter measurements. The logarithm of the geometric mean (μ_g) is the mean of the logarithms of individual parameter measurements.

Variance A measure of spread or dispersion of parameter measurements. the mean-squared deviation of a parameter distribution of measurements from its mean or average.

Standard Deviation the square root of the variance.

Minimum The lowest parameter measurement value of a distribution.

Maximum The highest parameter measurement value of a distribution.

Range The difference between the maximum and the minimum

Lower Quartile Range The range of distribution constituting the lowest 25% of the distribution.

Upper Quartile Range The range of distribution constituting the highest 25% of the distribution.

Interquartile Range The range of distribution constituting the middle 50% of the distribution.

Skewness A measure of symmetry of the distribution of the parameter measurements.

Coefficient of Variation A measure of the variance from the mean.

Sum the simple sum of all of the parameter measurements in a distribution .

Statistical equations:

Average:

$$\bar{x} = \frac{1}{n} \sum_{i=1}^n x_i$$

Geometric Mean:

$$\left(\prod_{i=1}^n x_i \right)^{1/n}$$

Variance:

$$s^2 = \frac{1}{n-1} \sum_{i=1}^n (x_i - \bar{x})^2$$

Standard Deviation:

$$s = \sqrt{s^2}$$

Coefficient of Variations:

$$\frac{s}{\bar{x}} \times 100$$

Sum:

$$\sum_{i=1}^n x_i$$

Lower Quartile:

$$i = \text{floor} \left[\frac{(n+1)}{4} \right]$$

$$j = \text{ceiling} \left[\frac{n}{4} \right]$$

$$\text{Lower Quartile} = \frac{(X_{[i]} + X_{[j]})}{2}$$

Upper Quartile:

$$i = \text{floor} \left[\frac{3(n+1)}{4} \right]$$

$$j = \text{ceiling} \left[\frac{3n}{4} \right]$$

$$\text{Upper Quartile} = \frac{(X_{[i]} + X_{[j]})}{2}$$

Skewness:

(missing if $s=0$ or $n<3$)

$$\frac{n \sum_{i=1}^n (x_i - \bar{x})^3}{(n-1)(n-2)s^3}$$

ALL SPRING MEASUREMENTS (217)

Variable:	T	SC	Y
Sample size	769	768	786
Average	13.7629	258.95	104.619
Median	13.9	241.268	12.869
Mode	14	285.418	3.785
Geometric mean	13.2786	187.532	6.19409
Variance	12.3618	36061.5	79472.5
Standard deviation	3.51594	189.899	281.909
Minimum	1.5	14.342	1E-4
Maximum	26	1160.42	3045.03
Range	24.5	1146.07	3045.03
Lower quartile	11.5	87.6178	3.785
Upper quartile	15.3	369.072	56.018
Interquartile range	3.8	281.454	52.233
Skewness	0.249033	1.04936	5.19335
Coeff. of variation	25.5464	73.3341	269.462
Sum	10583.7	198874	82230.7

Variable:	DO	pH
Sample size	769	400
Average	6.86495	6.20628
Median	7.2	6.66
Mode	9.3	5
Geometric mean	6.01528	6.10475
Variance	6.91017	1.20964
Standard deviation	2.62872	1.09983
Minimum	0.02	4
Maximum	12.4	8.09
Range	12.38	4.09
Lower quartile	5.1	5
Upper quartile	9	7.165
Interquartile range	3.9	2.165
Skewness	-0.542776	-0.22497
Coeff. of variation	38.2919	17.7213
Sum	5279.15	2482.51

ALL KNOX AQUIFER SPRING MEASUREMENTS (56)

Variable:	T	SC	Y
Sample size	286	286	278
Average	13.8335	311.987	232.92
Median	14	289.493	75.1322
Mode	14	285.418	37.85
Geometric mean	13.674	283.442	39.1211
Variance	4.11678	20985.3	160245
Standard deviation	2.02899	144.863	400.306
Minimum	6	38.9206	1E-4
Maximum	26	969.416	3045.03
Range	20	930.496	3045.03
Lower quartile	13	229.064	18.925
Upper quartile	14.75	356.495	274.791
Interquartile range	1.75	127.431	255.866
Skewness	0.089175	1.88533	3.45161
Coeff. of variation	14.6672	46.4325	171.864
Sum	3956.37	89228.2	64751.7

Variable:	DO	pH
Sample size	286	180
Average	7.09526	6.31167
Median	7.6	6.795
Mode	9.3	5
Geometric mean	6.44059	6.21506
Variance	5.23999	1.17492
Standard deviation	2.2891	1.08394
Minimum	0.045	4.5
Maximum	10.8	8
Range	10.755	3.5
Lower quartile	5.6	5
Upper quartile	9	7.23
Interquartile range	3.4	2.23
Skewness	-0.792223	-0.264703
Coeff. of variation	32.2624	17.1736
Sum	2029.25	1136.1

KNOX AQUIFER DRY SEASON SPRING MEASUREMENTS

Variable:	T	SC	Y
Sample size	138	132	127
Average	13.8317	356.566	136.292
Median	13.95	317.607	49.205
Mode	14	288.158	37.85
Geometric mean	13.7088	339.039	35.8236
Variance	3.15773	16691.6	33948.1
Standard deviation	1.777	129.196	184.25
Minimum	7.5	169.062	1E-4
Maximum	20.15	955.218	951.928
Range	12.65	786.156	951.927
Lower quartile	13.25	281.293	18.925
Upper quartile	14.75	392.369	186.6
Interquartile range	1.5	111.076	167.675
Skewness	-0.456327	2.11391	2.01703
Coeff. of variation	12.8473	36.2334	135.187
Sum	1908.77	47066.7	17309.1

Variable:	DO
Sample size	132
Average	6.48258
Median	6.9
Mode	8
Geometric mean	5.78825
Variance	5.83301
Standard deviation	2.41516
Minimum	0.3
Maximum	9.9
Range	9.6
Lower quartile	4.95
Upper quartile	8.5
Interquartile range	3.55
Skewness	-0.549284
Coeff. of variation	37.2562
Sum	855.7

KNOX AQUIFER WET SEASON SPRING MEASUREMENTS

Variable:	T	SC	Y
Sample size	151	157	151
Average	13.8848	276.568	314.189
Median	14	248.911	113.55
Mode	14	215.217	3.785
Geometric mean	13.6718	245.376	42.1284
Variance	5.63544	22045.7	252848
Standard deviation	2.37391	148.478	502.84
Minimum	6	38.9206	1E-4
Maximum	26	969.416	3045.03
Range	20	930.496	3045.03
Lower quartile	12.75	188.641	11.355
Upper quartile	14.75	324.751	371.687
Interquartile range	2	136.11	360.332
Skewness	0.402007	2.25287	2.72873
Coeff. of variation	17.0972	53.6859	160.044
Sum	2096.6	43421.2	47442.6

Variable:	DO
Sample size	157
Average	7.54328
Median	7.9
Mode	9.3
Geometric mean	6.94459
Variance	4.45013
Standard deviation	2.10953
Minimum	0.045
Maximum	10.8
Range	10.755
Lower quartile	6.4
Upper quartile	9.3
Interquartile range	2.9
Skewness	-0.992341
Coeff. of variation	27.9657
Sum	1184.3

ALL AQUITARD SPRING MEASUREMENTS (161)

Variable:	T	SC	Y
Sample size	483	482	508
Average	13.7212	227.48	34.4074
Median	13.25	123.461	3.785
Mode	13	41.2187	3.785
Geometric mean	13.0498	146.769	2.25894
Variance	17.2579	42404.5	21533.9
Standard deviation	4.15427	205.923	146.744
Minimum	1.5	14.342	1E-4
Maximum	25.1	1160.42	1946.63
Range	23.6	1146.07	1946.63
Lower quartile	10.75	61.4251	1.8925
Upper quartile	16.95	390.417	18.925
Interquartile range	6.2	328.992	17.0325
Skewness	0.257866	1.15277	9.41083
Coeff. of variation	30.2763	90.5237	426.491
Sum	6627.33	109645	17479

Variable:	DO	pH
Sample size	483	220
Average	6.72857	6.12005
Median	7.1	6.49
Mode	10.2	5
Geometric mean	5.7768	6.01596
Variance	7.86195	1.22693
Standard deviation	2.80392	1.10767
Minimum	0.02	4
Maximum	12.4	8.09
Range	12.38	4.09
Lower quartile	4.8	5
Upper quartile	9	7.05
Interquartile range	4.2	2.05
Skewness	-0.410801	-0.190581
Coeff. of variation	41.6718	18.0991
Sum	3249.9	1346.41

AQUITARD DRY SEASON SPRING MEASUREMENTS

Variable:	T	SC	Y
Sample size	188	188	207
Average	17.7148	264.342	20.9009
Median	17.725	178.635	3.785
Mode	14.75	53.2167	1E-4
Geometric mean	17.5023	182.534	0.72326
Variance	7.52369	45007.2	8085.37
Standard deviation	2.74293	212.149	89.9187
Minimum	11	38.7304	1E-4
Maximum	25.1	1160.42	1135.5
Range	14.1	1121.69	1135.5
Lower quartile	15.3	77.444	0.03785
Upper quartile	19.75	455.857	11.355
Interquartile range	4.45	378.413	11.3171
Skewness	0.165747	0.901625	10.1419
Coeff. of variation	15.4839	80.2556	430.214
Sum	3330.38	49696.2	4326.49

Variable:	DO
Sample size	189
Average	5.24365
Median	5.5
Mode	6.8
Geometric mean	4.23354
Variance	6.36742
Standard deviation	2.52337
Minimum	0.02
Maximum	9.6
Range	9.58
Lower quartile	3.2
Upper quartile	7.2
Interquartile range	4
Skewness	-0.252279
Coeff. of variation	48.1225
Sum	991.05

AQUITARD WET SPRING MEASUREMENTS

Variable:	T	SC	Y
Sample size	292	291	301
Average	11.1231	201.682	43.6959
Median	11.25	95.5501	9.084
Mode	13	38.0981	3.785
Geometric mean	10.7852	126.185	4.9437
Variance	6.30692	39140.5	30627.9
Standard deviation	2.51136	197.84	175.008
Minimum	1.5	14.342	1E-4
Maximum	18.25	958.178	1946.63
Range	16.75	943.836	1946.63
Lower quartile	9.625	54.2465	3.785
Upper quartile	13	350.385	18.925
Interquartile range	3.375	296.139	15.14
Skewness	-0.342254	1.39162	8.34209
Coeff. of variation	22.5778	98.0948	400.515
Sum	3247.95	58689.5	13152.5

Variable:	DO
Sample size	291
Average	7.72543
Median	8.2
Mode	10.2
Geometric mean	7.11629
Variance	6.37164
Standard deviation	2.52421
Minimum	0.9
Maximum	12.4
Range	11.5
Lower quartile	6.2
Upper quartile	9.8
Interquartile range	3.6
Skewness	-0.706059
Coeff. of variation	32.6741
Sum	2248.1

SP-001

Variable:	T	SC	Y
Sample size	14	14	12
Average	15.4607	84.4416	10.3141
Median	13.85	75.9185	9.084
Mode	20.25	64.4683	7.1915
Geometric mean	15.1577	77.6293	8.23126
Variance	10.4805	1988.32	42.5652
Standard deviation	3.23735	44.5906	6.5242
Minimum	11.25	45.4074	2.271
Maximum	20.25	228.168	21.196
Range	9	182.76	18.925
Lower quartile	13	60.2572	4.542
Upper quartile	19.25	91.094	16.2755
Interquartile range	6.25	30.8368	11.7335
Skewness	0.475798	2.87085	0.409615
Coeff. of variation	20.9392	52.8065	63.255
Sum	216.45	1182.18	123.769

Variable:	DO	pH
Sample size	14	12
Average	6.38929	6.1375
Median	6.4	6.44
Mode	6.9	6.44
Geometric mean	5.78954	6.06976
Variance	5.89776	0.853857
Standard deviation	2.42853	0.924044
Minimum	1.4	4.5
Maximum	10.2	7.5
Range	8.8	3
Lower quartile	5.2	5.25
Upper quartile	7.6	6.765
Interquartile range	2.4	1.515
Skewness	-0.387531	-0.527713
Coeff. of variation	38.0094	15.0557
Sum	89.45	73.65

SP-005

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.6429	99.0335	9.32786
Median	13.55	99.5238	9.084
Mode	13.25	89.1603	2.271
Geometric mean	14.1282	96.9977	4.62414
Variance	16.0334	414.126	46.8162
Standard deviation	4.00417	20.3501	6.84224
Minimum	7.75	60.7498	7.57E-3
Maximum	22.5	136.783	20.8175
Range	14.75	76.0334	20.8099
Lower quartile	11.75	85.5936	2.271
Upper quartile	17.95	115.333	12.4905
Interquartile range	6.2	29.7393	10.2195
Skewness	0.363466	-0.055007	0.337447
Coeff. of variation	27.3456	20.5487	73.3527
Sum	205	1386.47	130.59

Variable:	DO	pH
Sample size	14	11
Average	7.83571	6.02545
Median	8	6.5
Mode	8.4	5
Geometric mean	7.72695	5.93027
Variance	1.75478	1.14435
Standard deviation	1.32468	1.06974
Minimum	5.5	4
Maximum	9.9	7.2
Range	4.4	3.2
Lower quartile	7.1	5
Upper quartile	8.7	6.81
Interquartile range	1.6	1.81
Skewness	-0.220903	-0.774871
Coeff. of variation	16.9057	17.7537
Sum	109.7	66.28

SP-016

Variable:	T	SC	Y
Sample size	11	11	14
Average	14.3018	432.283	9.60579
Median	13	414.909	0.965175
Mode	10.5	413.663	0
Geometric mean	13.3506	427.096	
Variance	31.4436	5452.04	242.797
Standard deviation	5.60746	73.8379	15.5819
Minimum	6.5	350.385	0
Maximum	24.47	505.083	48.448
Range	17.97	254.698	48.448
Lower quartile	10.5	381.618	0
Upper quartile	18.75	454.602	11.7335
Interquartile range	8.25	72.984	11.7335
Skewness	0.745571	1.39817	1.70899
Coeff. of variation	39.208	17.0809	162.214
Sum	157.32	4755.11	134.481

Variable:	DO	pH
Sample size	11	9
Average	7.08636	6.43111
Median	7.7	7.02
Mode	6.3	5.5
Geometric mean	5.86841	6.33345
Variance	14.386	1.38379
Standard deviation	3.79289	1.17634
Minimum	1.8	5
Maximum	12	8.09
Range	10.2	3.09
Lower quartile	2.55	5.5
Upper quartile	10.3	7.25
Interquartile range	7.75	1.75
Skewness	-0.294829	-0.0768498
Coeff. of variation	53.5238	18.2915
Sum	77.95	57.88

SP-018

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.0536	404.623	71.3202
Median	15.025	401.324	40.6888
Mode	13.45	362.46	26.1165
Geometric mean	13.578	395.817	33.1452
Variance	13.0459	7231.19	6608.44
Standard deviation	3.61192	85.0364	81.2923
Minimum	7.5	248.911	2.271
Maximum	20.15	511.798	256.623
Range	12.65	262.887	254.352
Lower quartile	11.25	360.496	18.925
Upper quartile	16.9	501.653	92.7325
Interquartile range	5.65	141.157	73.8075
Skewness	-0.284708	-0.21371	1.41955
Coeff. of variation	25.7011	21.0162	113.982
Sum	196.75	5664.73	998.483

Variable:	DO	pH
Sample size	14	12
Average	4.82143	6.44583
Median	5	7.03
Mode	5	7.5
Geometric mean	4.52104	6.34975
Variance	3.03681	1.22803
Standard deviation	1.74265	1.10816
Minimum	2.4	4.5
Maximum	7.9	7.5
Range	5.5	3
Lower quartile	3.05	5.25
Upper quartile	5.9	7.21
Interquartile range	2.85	1.96
Skewness	0.296151	-0.821643
Coeff. of variation	36.1438	17.1919
Sum	67.5	77.35

SP-019

Variable:	T	SC	Y
Sample size	14	14	14
Average	13.3729	246.204	157.213
Median	14.085	280.172	137.396
Mode	11.5	256.295	49.205
Geometric mean	13.2221	223.042	101.247
Variance	3.93308	8213.7	19757.1
Standard deviation	1.9832	90.6295	140.56
Minimum	9	72.0046	20.439
Maximum	16.25	379.573	424.298
Range	7.25	307.569	403.859
Lower quartile	11.5	215.59	37.85
Upper quartile	14.3	299.134	190.007
Interquartile range	2.8	83.5442	152.157
Skewness	-0.874347	-0.960243	0.937831
Coeff. of variation	14.83	36.8107	89.4074
Sum	187.22	3446.86	2200.98

Variable:	DO	pH
Sample size	14	12
Average	7.7	6.36417
Median	8.05	6.875
Mode	8.5	5
Geometric mean	7.64261	6.25073
Variance	0.863077	1.5153
Standard deviation	0.929019	1.23097
Minimum	5.5	5
Maximum	8.5	7.68
Range	3	2.68
Lower quartile	7	5
Upper quartile	8.5	7.51
Interquartile range	1.5	2.51
Skewness	-1.16514	-0.250946
Coeff. of variation	12.0652	19.3423
Sum	107.8	76.37

SP-024

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.4321	750.142	458.147
Median	14.5	774.631	229.182
Mode	14.5	683.888	153.293
Geometric mean	14.4256	732.56	246.074
Variance	0.205234	27596.9	211016
Standard deviation	0.453027	166.123	459.365
Minimum	13.85	517.773	43.5275
Maximum	15.25	969.416	1213.47
Range	1.4	451.643	1169.94
Lower quartile	14.05	590.5	65.4805
Upper quartile	14.75	888.111	834.214
Interquartile range	0.7	297.61	768.734
Skewness	0.295974	-0.0416443	0.760279
Coeff. of variation	3.13901	22.1456	100.266
Sum	202.05	10502	6414.06

Variable:	DO	pH
Sample size	14	11
Average	5.1	6.44636
Median	4.45	6.72
Mode	4.25	5
Geometric mean	4.82316	6.37469
Variance	3.61885	0.932825
Standard deviation	1.90233	0.965829
Minimum	3.05	5
Maximum	8.9	7.5
Range	5.85	2.5
Lower quartile	3.85	5
Upper quartile	5.2	7.07
Interquartile range	1.35	2.07
Skewness	1.23149	-0.885606
Coeff. of variation	37.3005	14.9825
Sum	71.4	70.91

SP-029

Variable:	T	SC	Y
Sample size	14	14	12
Average	15.7464	454.1	29.6176
Median	15.85	437.011	19.3035
Mode	13.9	407.366	17.411
Geometric mean	13.5953	442.505	18.7713
Variance	40.579	10826.3	698.263
Standard deviation	6.37017	104.05	26.4247
Minimum	1.5	265.25	2.271
Maximum	25.1	610.934	82.8915
Range	23.6	345.684	80.6205
Lower quartile	11.5	393.287	10.4088
Upper quartile	20.55	540.893	46.3663
Interquartile range	9.05	147.606	35.9575
Skewness	-0.601354	-0.0256472	1.04403
Coeff. of variation	40.4547	22.9133	89.2194
Sum	220.45	6357.4	355.411

Variable:	DO	pH
Sample size	14	12
Average	3.4	6.335
Median	2.25	6.72
Mode	1.3	5
Geometric mean	1.49845	6.25374
Variance	9.73783	1.05943
Standard deviation	3.12055	1.02928
Minimum	0.02	5
Maximum	9.4	7.5
Range	9.38	2.5
Lower quartile	0.7	5
Upper quartile	5.9	7.09
Interquartile range	5.2	2.09
Skewness	0.627674	-0.513866
Coeff. of variation	91.7809	16.2476
Sum	47.6	76.02

SP-031

Variable:	T	SC	Y
Sample size	14	14	14
Average	13.8071	260.175	149.075
Median	13.775	260.839	132.097
Mode	13.5	233.524	79.485
Geometric mean	13.7642	254.428	107.139
Variance	1.2661	3260.38	12627.5
Standard deviation	1.12521	57.0997	112.372
Minimum	11.8	183.908	18.925
Maximum	15.75	380.598	382.663
Range	3.95	196.69	363.738
Lower quartile	13	221.961	44.663
Upper quartile	14.9	293.648	211.582
Interquartile range	1.9	71.6868	166.918
Skewness	-0.049558	0.404353	0.728916
Coeff. of variation	8.14948	21.9466	75.3795
Sum	193.3	3642.45	2087.05

Variable:	DO	pH
Sample size	14	12
Average	5.98214	6.26833
Median	5.95	6.895
Mode	5.5	5
Geometric mean	5.92403	6.19307
Variance	0.736003	0.971706
Standard deviation	0.857906	0.985752
Minimum	4.4	5
Maximum	7.4	7.25
Range	3	2.25
Lower quartile	5.3	5
Upper quartile	6.6	7.035
Interquartile range	1.3	2.035
Skewness	-0.013676	-0.549687
Coeff. of variation	14.3411	15.7259
Sum	83.75	75.22

SP-033

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.0607	259.654	138.234
Median	13.825	263.633	77.5925
Mode	13.25	242	74.5645
Geometric mean	14.0291	254.419	89.4745
Variance	0.965838	2927.39	34809.9
Standard deviation	0.982771	54.1053	186.574
Minimum	12.5	181.629	30.28
Maximum	15.65	359.352	757
Range	3.15	177.723	726.72
Lower quartile	13.25	219.192	47.3125
Upper quartile	14.85	301.147	154.428
Interquartile range	1.6	81.9547	107.115
Skewness	0.300543	0.253608	3.2042
Coeff. of variation	6.98948	20.8375	134.97
Sum	196.85	3635.15	1935.27

Variable:	DO	pH
Sample size	14	12
Average	6.325	6.3325
Median	6.6	6.845
Mode	7.8	5
Geometric mean	6.20731	6.2474
Variance	1.48721	1.11762
Standard deviation	1.21951	1.05718
Minimum	4.05	5
Maximum	7.8	7.6
Range	3.75	2.6
Lower quartile	5.1	5
Upper quartile	7.3	7.19
Interquartile range	2.2	2.19
Skewness	-0.436373	-0.422361
Coeff. of variation	19.2808	16.6944
Sum	88.55	75.99

SP-039

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.1357	253.839	60.7493
Median	14	266.959	21.7638
Mode	14	242	7.1915
Geometric mean	14.1224	247.552	13.1
Variance	0.412473	3042.7	21939.7
Standard deviation	0.64224	55.1607	148.121
Minimum	13.25	128.937	0.757
Maximum	15.5	368.775	570.778
Range	2.25	239.839	570.021
Lower quartile	13.75	215.217	3.028
Upper quartile	14.4	282.118	43.149
Interquartile range	0.65	66.9004	40.121
Skewness	0.839686	-0.28765	3.6273
Coeff. of variation	4.54339	21.7306	243.823
Sum	197.9	3553.75	850.49

Variable:	DO	pH
Sample size	14	12
Average	9.42143	6.38667
Median	9.4	6.56
Mode	9.3	5
Geometric mean	9.40604	6.2786
Variance	0.300275	1.47179
Standard deviation	0.547973	1.21317
Minimum	8	5
Maximum	10.4	8
Range	2.4	3
Lower quartile	9.3	5
Upper quartile	9.8	7.5
Interquartile range	0.5	2.5
Skewness	-0.986151	-0.0868764
Coeff. of variation	5.81624	18.9954
Sum	131.9	76.64

SP-049

Variable:	T	SC	Y
Sample size	14	14	14
Average	13.875	227.56	323.104
Median	13.85	242.157	144.966
Mode	13.95	230.666	68.13
Geometric mean	13.8259	220.094	94.1643
Variance	1.48875	2953.01	160445
Standard deviation	1.22014	54.3416	400.556
Minimum	12	107.609	3.028
Maximum	16.25	277.586	1199.09
Range	4.25	169.977	1196.06
Lower quartile	13.5	183.187	18.925
Upper quartile	14	274.142	757
Interquartile range	0.5	90.955	738.075
Skewness	0.439142	-1.05361	1.16122
Coeff. of variation	8.79383	23.8802	123.971
Sum	194.25	3185.83	4523.45

Variable:	DO	pH
Sample size	14	12
Average	7.83214	6.34
Median	8.15	6.88
Mode	8.6	5
Geometric mean	7.54642	6.24422
Variance	3.06523	1.27449
Standard deviation	1.75078	1.12893
Minimum	2.65	5
Maximum	9.7	7.62
Range	7.05	2.62
Lower quartile	7.4	5
Upper quartile	8.8	7.295
Interquartile range	1.4	2.295
Skewness	-2.10389	-0.277223
Coeff. of variation	22.3538	17.8065
Sum	109.65	76.08

SP-053

Variable:	T	SC	Y
Sample size	14	14	15
Average	12.9821	472.977	3.83547
Median	12.5	444.958	0.3785
Mode	10.5	442.57	0.03785
Geometric mean	12.4229	462.839	
Variance	14.5433	10045.5	94.2157
Standard deviation	3.81357	100.227	9.70648
Minimum	6	285.418	0
Maximum	18.45	649.221	37.85
Range	12.45	363.803	37.85
Lower quartile	10.5	436.243	0.03785
Upper quartile	16.75	543.413	3.785
Interquartile range	6.25	107.17	3.74715
Skewness	0.0164062	0.167344	3.51225
Coeff. of variation	29.3755	21.1907	253.072
Sum	181.75	6621.68	57.532

Variable:	DO	pH
Sample size	14	10
Average	4.38214	6.169
Median	4.7	6.29
Mode	6.2	5
Geometric mean	3.1738	6.10644
Variance	7.09293	0.827499
Standard deviation	2.66325	0.90967
Minimum	0.3	5
Maximum	8.2	7.26
Range	7.9	2.26
Lower quartile	2	5
Upper quartile	6.2	6.83
Interquartile range	4.2	1.83
Skewness	-0.162746	-0.323604
Coeff. of variation	60.7752	14.7458
Sum	61.35	61.69

SP-054

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.5143	308.516	1012.3
Median	14.5	317.803	674.487
Mode	14.5	325.224	641.179
Geometric mean	14.5104	303.833	770.97
Variance	0.120934	2802.79	574237
Standard deviation	0.347756	52.9413	757.785
Minimum	14	195.073	75.7
Maximum	15.05	418.294	3045.03
Range	1.05	223.221	2969.33
Lower quartile	14.25	303.469	579.105
Upper quartile	14.75	329.51	1249.81
Interquartile range	0.5	26.0407	670.702
Skewness	0.10367	-0.547724	1.65902
Coeff. of variation	2.39596	17.16	74.8578
Sum	203.2	4319.22	14172.2

Variable:	DO	pH
Sample size	14	10
Average	8.98214	6.121
Median	9.2	6.26
Mode	9.3	5
Geometric mean	8.94795	6.0106
Variance	0.602926	1.46792
Standard deviation	0.776483	1.21158
Minimum	7	4.5
Maximum	9.9	7.45
Range	2.9	2.95
Lower quartile	8.75	5
Upper quartile	9.3	7.22
Interquartile range	0.55	2.22
Skewness	-1.64658	-0.0932
Coeff. of variation	8.64474	19.7938
Sum	125.75	61.21

SP-056

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.2679	310.388	500.404
Median	14.075	321.306	238.077
Mode	14	305.418	189.25
Geometric mean	14.2561	307.085	299.114
Variance	0.371387	2155.12	430516
Standard deviation	0.609416	46.4233	656.137
Minimum	13.5	234.358	76.0785
Maximum	15.5	403.636	2548.06
Range	2	169.279	2471.98
Lower quartile	13.9	276.843	171.46
Upper quartile	14.4	338.057	477.288
Interquartile range	0.5	61.2146	305.828
Skewness	1.21122	-0.0283223	2.70774
Coeff. of variation	4.27125	14.9565	131.121
Sum	199.75	4345.43	7005.66

Variable:	DO	pH
Sample size	14	10
Average	6.92143	6.257
Median	6.95	6.645
Mode	5.9	5
Geometric mean	6.83458	6.18003
Variance	1.26951	1.02682
Standard deviation	1.12672	1.01332
Minimum	5.4	5
Maximum	8.5	7.38
Range	3.1	2.38
Lower quartile	5.9	5
Upper quartile	7.9	7.17
Interquartile range	2	2.17
Skewness	-0.070526	-0.365659
Coeff. of variation	16.2788	16.195
Sum	96.9	62.57

SP-060

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.2036	254.003	387.422
Median	14.025	252.869	349.734
Mode	14	250.172	325.132
Geometric mean	14.2004	249.537	338.396
Variance	0.099794	2196.47	35673.4
Standard deviation	0.315902	46.8666	188.874
Minimum	13.9	145.941	113.55
Maximum	15	345.638	763.813
Range	1.1	199.697	650.263
Lower quartile	14	226.508	301.665
Upper quartile	14.45	281.443	506.433
Interquartile range	0.45	54.9358	204.769
Skewness	1.34216	-0.452419	0.295347
Coeff. of variation	2.2241	18.4512	48.7515
Sum	198.85	3556.05	5423.91

Variable:	DO	pH
Sample size	14	11
Average	9.36429	6.29
Median	9.5	6.77
Mode	9.5	5
Geometric mean	9.34947	6.18277
Variance	0.285549	1.42192
Standard deviation	0.534368	1.19244
Minimum	8	4.5
Maximum	10.2	7.56
Range	2.2	3.06
Lower quartile	9.3	5
Upper quartile	9.6	7.5
Interquartile range	0.3	2.5
Skewness	-1.219	-0.264016
Coeff. of variation	5.70645	18.9578
Sum	131.1	69.19

SP-074

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.7479	53.9659	10.1492
Median	14.625	53.9138	7.57
Mode	13.25	50.3825	6.4345
Geometric mean	14.2628	53.2257	6.36985
Variance	14.8895	90.9273	55.4874
Standard deviation	3.85869	9.53558	7.44899
Minimum	9	41.7667	0.1514
Maximum	20.25	76.9844	23.0885
Range	11.25	35.2177	22.9371
Lower quartile	11	47.775	3.4065
Upper quartile	17.7	59.3525	15.5185
Interquartile range	6.7	11.5774	12.112
Skewness	0.020323	0.878968	0.428633
Coeff. of variation	26.1644	17.6697	73.3948
Sum	206.47	755.522	142.089

Variable:	DO	pH
Sample size	14	12
Average	8.53214	6.0925
Median	8.55	6.33
Mode	10.2	5
Geometric mean	8.38506	5.9912
Variance	2.64216	1.2898
Standard deviation	1.62547	1.13569
Minimum	6	4.5
Maximum	11	7.5
Range	5	3
Lower quartile	7	5
Upper quartile	10.2	7.1
Interquartile range	3.2	2.1
Skewness	-0.0225254	-0.257469
Coeff. of variation	19.0511	18.6409
Sum	119.45	73.11

SP-076

Variable:	T	SC	Y
Sample size	4	4	14
Average	12.05	78.3126	0.410943
Median	10.5	58.1365	0
Mode	9.85	41.2187	0
Geometric mean	11.7143	67.8	
Variance	12.62	2788.35	1.19588
Standard deviation	3.55246	52.8048	1.09356
Minimum	9.85	41.2187	0
Maximum	17.35	155.759	3.785
Range	7.5	114.54	3.785
Lower quartile	10.05	44.9733	0
Upper quartile	14.05	111.652	0.03785
Interquartile range	4	66.6787	0.03785
Skewness	1.93611	1.74923	2.80433
Coeff. of variation	29.481	67.4282	266.11
Sum	48.2	313.25	5.7532

Variable:	DO	pH
Sample size	4	2
Average	6.3	4.84
Median	6.1	4.84
Mode	4	5.18
Geometric mean	5.94294	4.82804
Variance	5.92667	0.2312
Standard deviation	2.43447	0.480833
Minimum	4	4.5
Maximum	9	5.18
Range	5	0.68
Lower quartile	4.25	4.5
Upper quartile	8.35	5.18
Interquartile range	4.1	0.68
Skewness	0.204598	0
Coeff. of variation	38.6425	9.93456
Sum	25.2	9.68

SP-077

Variable:	T	SC	Y
Sample size	10	10	13
Average	13.29	462.829	13.8094
Median	11.625	450.477	1.8925
Mode	11	423.533	0.03785
Geometric mean	12.7159	457.828	
Variance	18.8182	5649.01	379.017
Standard deviation	4.338	75.1599	19.4684
Minimum	8.5	379.645	0
Maximum	20.5	636.243	56.775
Range	12	256.598	56.775
Lower quartile	10.1	401.647	0.03785
Upper quartile	18.15	503.897	25.738
Interquartile range	8.05	102.25	25.7002
Skewness	0.87821	1.39923	1.19213
Coeff. of variation	32.6411	16.2392	140.979
Sum	132.9	4628.29	179.523

Variable:	DO	pH
Sample size	10	8
Average	8.535	6.245
Median	9.15	6.335
Mode	8.5	5
Geometric mean	8.2111	6.14073
Variance	4.02225	1.46766
Standard deviation	2.00555	1.21147
Minimum	3.35	5
Maximum	10.2	7.44
Range	6.85	2.44
Lower quartile	8.1	5
Upper quartile	9.8	7.425
Interquartile range	1.7	2.425
Skewness	-2.2246	-0.0448495
Coeff. of variation	23.498	19.399
Sum	85.35	49.96

SP-081

Variable:	T	SC	Y
Sample size	14	14	15
Average	14.5286	523.018	7.62299
Median	14.375	506.204	5.299
Mode	11.5	501.78	3.785
Geometric mean	14.2943	518.561	
Variance	7.3272	5733.85	56.9541
Standard deviation	2.70688	75.7222	7.54679
Minimum	11.05	447.681	0
Maximum	19.25	711.221	24.6025
Range	8.2	263.54	24.6025
Lower quartile	11.5	478.183	1.1355
Upper quartile	16.5	518.998	13.2475
Interquartile range	5	40.815	12.112
Skewness	0.177124	1.89287	1.01374
Coeff. of variation	18.6314	14.4779	99.0004
Sum	203.4	7322.25	114.345

Variable:	DO	pH
Sample size	14	12
Average	6.08929	6.27833
Median	6.65	6.93
Mode	7	5
Geometric mean	5.58845	6.1794
Variance	2.92776	1.29929
Standard deviation	1.71107	1.13986
Minimum	0.9	5
Maximum	7.8	7.5
Range	6.9	2.5
Lower quartile	5.5	5
Upper quartile	7	7.265
Interquartile range	1.5	2.265
Skewness	-2.36793	-0.319938
Coeff. of variation	28.0997	18.1555
Sum	85.25	75.34

SP-083

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.5271	473.113	521.113
Median	14.5	477.916	352.384
Mode	13.75	442.383	225.586
Geometric mean	14.5211	468.767	311.863
Variance	0.187468	4584.18	343418
Standard deviation	0.432976	67.7066	586.019
Minimum	13.75	375.258	75.7
Maximum	15.25	634.641	1946.63
Range	1.5	259.383	1870.93
Lower quartile	14.35	433.099	110.522
Upper quartile	14.8	500.618	620.74
Interquartile range	0.45	67.5193	510.218
Skewness	-0.420525	0.719143	1.84893
Coeff. of variation	2.98046	14.3109	112.455
Sum	203.38	6623.59	7295.59

Variable:	DO	pH
Sample size	14	12
Average	4.44643	6.375
Median	4.45	6.99
Mode	4.2	5
Geometric mean	4.28794	6.28341
Variance	1.45595	1.21825
Standard deviation	1.20663	1.10374
Minimum	2.75	5
Maximum	6.3	8
Range	3.55	3
Lower quartile	3.3	5
Upper quartile	5.5	7.115
Interquartile range	2.2	2.115
Skewness	0.0101232	-0.318568
Coeff. of variation	27.137	17.3136
Sum	62.25	76.5

SP-091

Variable:	T	SC	Y
Sample size	8	8	14
Average	15.5962	507.866	2.33048
Median	14.45	513.261	0.03785
Mode	12.9	433.498	0
Geometric mean	15.2402	500.643	
Variance	13.7888	8302.77	15.817
Standard deviation	3.71333	91.1195	3.97706
Minimum	12	392.444	0
Maximum	22.47	622.06	11.355
Range	10.47	229.616	11.355
Lower quartile	12.7	422.24	0
Upper quartile	18	588.713	3.785
Interquartile range	5.3	166.473	3.785
Skewness	0.972024	0.0470375	1.83347
Coeff. of variation	23.8091	17.9416	170.654
Sum	124.77	4062.93	32.6267

Variable:	DO	pH
Sample size	8	6
Average	5.03125	6.655
Median	4.975	6.94
Mode	6.4	6.96
Geometric mean	4.91123	6.60673
Variance	1.29638	0.66615
Standard deviation	1.13859	0.81618
Minimum	3.2	5
Maximum	6.4	7.17
Range	3.2	2.17
Lower quartile	4.25	6.92
Upper quartile	6.1	6.96
Interquartile range	1.85	0.04
Skewness	-0.233619	-2.37404
Coeff. of variation	22.6303	12.2642
Sum	40.25	39.93

SP-102

Variable:	T	SC	Y
Sample size	14	14	14
Average	13.675	301.381	49.4754
Median	13.7	306.509	31.794
Mode	13	291.905	20.0605
Geometric mean	13.6586	298.844	36.8708
Variance	0.481058	1652.47	2112.95
Standard deviation	0.693583	40.6506	45.9669
Minimum	12.6	233.524	9.4625
Maximum	14.75	390.417	189.25
Range	2.15	156.893	179.787
Lower quartile	13	276.843	20.0605
Upper quartile	14.25	328.211	60.9385
Interquartile range	1.25	51.3681	40.878
Skewness	-0.0307637	0.297302	2.40446
Coeff. of variation	5.07191	13.4881	92.9086
Sum	191.45	4219.34	692.655

Variable:	DO	pH
Sample size	14	12
Average	7.25	6.46167
Median	7.2	7.015
Mode	7.1	7
Geometric mean	7.24387	6.36472
Variance	0.0965385	1.23718
Standard deviation	0.310706	1.11229
Minimum	6.8	4.5
Maximum	7.8	7.5
Range	1	3
Lower quartile	7.1	5.25
Upper quartile	7.4	7.21
Interquartile range	0.3	1.96
Skewness	0.439815	-0.863373
Coeff. of variation	4.28561	17.2136
Sum	101.5	77.54

SP-105

Variable:	T	SC	Y
Sample size	10	10	14
Average	13.825	41.2353	1.441
Median	12.775	39.5713	0.586675
Mode	11	34.125	0
Geometric mean	13.132	38.0324	
Variance	20.6701	267.809	2.75625
Standard deviation	4.54644	16.3649	1.6602
Minimum	7	14.342	0
Maximum	19.75	73.8259	4.1635
Range	12.75	59.484	4.1635
Lower quartile	10.4	30.4785	0
Upper quartile	19.45	50.1751	3.4065
Interquartile range	9.05	19.6965	3.4065
Skewness	0.213356	0.442408	0.56135
Coeff. of variation	32.8857	39.6866	115.211
Sum	138.25	412.353	20.1741

Variable:	DO	pH
Sample size	10	8
Average	5.38	5.32375
Median	5.7	5.36
Mode	5.2	4.5
Geometric mean	5.17952	5.24723
Variance	1.95511	0.932684
Standard deviation	1.39825	0.965756
Minimum	2.6	4
Maximum	6.8	6.9
Range	4.2	2.9
Lower quartile	4.4	4.5
Upper quartile	6.6	5.985
Interquartile range	2.2	1.485
Skewness	-0.93869	0.246454
Coeff. of variation	25.9898	18.1405
Sum	53.8	42.59

SP-112

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.0893	63.6978	4.49063
Median	12.875	56.0618	3.028
Mode	10	45.7178	1.8925
Geometric mean	13.4315	58.2127	2.3987
Variance	19.8562	784.618	17.9998
Standard deviation	4.45603	28.011	4.24262
Minimum	7	28.0308	0.03785
Maximum	22.5	115.516	11.7335
Range	15.5	87.485	11.6957
Lower quartile	10.95	42.0769	1.1355
Upper quartile	17.9	87.0235	7.9485
Interquartile range	6.95	44.9466	6.813
Skewness	0.376811	0.589999	0.959157
Coeff. of variation	31.6271	43.9749	94.4771
Sum	197.25	891.769	62.8689

Variable:	DO	pH
Sample size	14	11
Average	7.47143	6.15545
Median	7.7	6.65
Mode	10.4	5
Geometric mean	7.14486	6.04553
Variance	4.96989	1.49065
Standard deviation	2.22933	1.22092
Minimum	4.5	4.5
Maximum	10.4	8
Range	5.9	3.5
Lower quartile	5.2	5
Upper quartile	9.7	6.8
Interquartile range	4.5	1.8
Skewness	-0.0609749	0.206276
Coeff. of variation	29.838	19.8348
Sum	104.6	67.71

SP-118

Variable:	T	SC	Y
Sample size	13	13	14
Average	12.6423	49.21	2.16015
Median	11	47.775	0.03785
Mode	8.5	42.345	0.03785
Geometric mean	11.1802	47.4822	
Variance	36.0191	186.592	26.0637
Standard deviation	6.00159	13.6599	5.10526
Minimum	3.25	29.8274	0
Maximum	20.95	71.9056	18.925
Range	17.7	42.0782	18.925
Lower quartile	8.5	38.0981	0.03785
Upper quartile	18.3	57.4435	1.8925
Interquartile range	9.8	19.3454	1.85465
Skewness	0.216772	0.399827	3.13687
Coeff. of variation	47.4723	27.7583	236.338
Sum	164.35	639.73	30.2421

Variable:	DO	pH
Sample size	13	10
Average	5.46923	5.529
Median	3.15	5.185
Mode	2.8	4.5
Geometric mean	3.85151	5.38321
Variance	18.0577	1.83785
Standard deviation	4.24944	1.35567
Minimum	1.1	4
Maximum	12.4	7.72
Range	11.3	3.72
Lower quartile	1.7	4.5
Upper quartile	9.5	6.7
Interquartile range	7.8	2.2
Skewness	0.434089	0.409265
Coeff. of variation	77.6972	24.5194
Sum	71.1	55.29

SP-119

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.125	71.4892	14.4911
Median	13.225	69.2426	17.7895
Mode	10.75	41.2187	6.056
Geometric mean	13.7281	67.4508	10.8382
Variance	12.1418	636.445	62.8024
Standard deviation	3.48451	25.2279	7.9248
Minimum	8.75	41.2187	0.757
Maximum	20.5	121.74	27.252
Range	11.75	80.5215	26.495
Lower quartile	11	47.775	6.056
Upper quartile	17.25	92.9927	18.925
Interquartile range	6.25	45.2177	12.869
Skewness	0.321641	0.497275	-0.421019
Coeff. of variation	24.6691	35.2891	54.6872
Sum	197.75	1000.85	202.876

Variable:	DO	pH
Sample size	14	10
Average	9.13571	5.89
Median	9.05	5.865
Mode	8.8	5
Geometric mean	9.05468	5.78466
Variance	1.54247	1.33049
Standard deviation	1.24196	1.15347
Minimum	6.8	4
Maximum	10.9	7.4
Range	4.1	3.4
Lower quartile	8.4	5
Upper quartile	10.2	6.74
Interquartile range	1.8	1.74
Skewness	-0.236204	-0.110767
Coeff. of variation	13.5946	19.5835
Sum	127.9	58.9

SP-124

Variable:	T	SC	Y
Sample size	15	15	15
Average	13.0667	80.859	15.0391
Median	11.95	61.9185	12.4905
Mode	9.5	54.9583	18.925
Geometric mean	12.4503	62.8443	9.70448
Variance	18.0588	7206.93	148.798
Standard deviation	4.24957	84.8937	12.1983
Minimum	7.5	28.2197	0.3785
Maximum	21	375.516	38.9855
Range	13.5	347.297	38.607
Lower quartile	9.5	40.4283	5.299
Upper quartile	17.05	79.8191	18.925
Interquartile range	7.55	39.3908	13.626
Skewness	0.539752	3.38125	0.928824
Coeff. of variation	32.5222	104.99	81.1105
Sum	196	1212.88	225.586

Variable:	DO	pH
Sample size	15	11
Average	6.46333	5.59091
Median	7.4	5.95
Mode	8.5	4.5
Geometric mean	5.59199	5.48368
Variance	6.2266	1.30973
Standard deviation	2.49531	1.14443
Minimum	1.05	4
Maximum	9.1	7.5
Range	8.05	3.5
Lower quartile	5.7	4.5
Upper quartile	8.3	6.5
Interquartile range	2.6	2
Skewness	-1.38553	0.140516
Coeff. of variation	38.6072	20.4696
Sum	96.95	61.5

SP-129

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.3321	383.564	154.969
Median	14.3	381.326	115.253
Mode	13.75	369.368	113.55
Geometric mean	14.3265	382.126	120.44
Variance	0.174849	1255.37	13305.8
Standard deviation	0.418149	35.4312	115.351
Minimum	13.75	337.732	38.2285
Maximum	15.25	476.465	415.972
Range	1.5	138.733	377.743
Lower quartile	14.1	358.672	64.7235
Upper quartile	14.5	395.438	199.47
Interquartile range	0.4	36.7661	134.746
Skewness	0.767441	1.28223	1.2821
Coeff. of variation	2.91756	9.23737	74.4348
Sum	200.65	5369.89	2169.56

Variable:	DO	pH
Sample size	14	12
Average	8.56429	6.28417
Median	8.45	6.98
Mode	8.4	5
Geometric mean	8.54708	6.18504
Variance	0.31978	1.29937
Standard deviation	0.565491	1.1399
Minimum	7.8	5
Maximum	9.5	7.4
Range	1.7	2.4
Lower quartile	8	5
Upper quartile	9	7.25
Interquartile range	1	2.25
Skewness	0.270247	-0.350855
Coeff. of variation	6.6029	18.1392
Sum	119.9	75.41

SP-131

Variable:	T	SC	Y
Sample size	14	14	14
Average	13.73	239.415	659.969
Median	13.875	250.17	401.778
Mode	15.5	199.548	285.767
Geometric mean	13.6461	226.945	449.717
Variance	2.44152	6197.88	390371
Standard deviation	1.56254	78.7266	624.797
Minimum	11.25	134.744	86.6765
Maximum	16.27	370.828	2179.4
Range	5.02	236.085	2092.73
Lower quartile	12.5	165.452	274.034
Upper quartile	15	293.201	992.806
Interquartile range	2.5	127.75	718.772
Skewness	-0.104935	0.147163	1.4947
Coeff. of variation	11.3805	32.8829	94.6706
Sum	192.22	3351.81	9239.56

Variable:	DO	pH
Sample size	14	12
Average	6.98571	6.25667
Median	7.1	7
Mode	7.3	5
Geometric mean	6.90643	6.15647
Variance	1.13978	1.28615
Standard deviation	1.0676	1.13409
Minimum	5	4.5
Maximum	8.5	7.38
Range	3.5	2.88
Lower quartile	6.2	5
Upper quartile	7.8	7.185
Interquartile range	1.6	2.185
Skewness	-0.305991	-0.481651
Coeff. of variation	15.2827	18.126
Sum	97.8	75.08

SP-132

Variable:	T	SC	Y
Sample size	10	10	10
Average	14	159.457	10.7532
Median	14.75	155.914	7.75925
Mode	12.25	135.349	3.785
Geometric mean	13.5773	153.052	4.77519
Variance	11.78	2673.82	90.0121
Standard deviation	3.4322	51.709	9.48747
Minimum	8.5	105.754	0.03785
Maximum	18	283.926	26.8735
Range	9.5	178.173	26.8357
Lower quartile	12.1	122.884	3.785
Upper quartile	16.9	174.11	17.7895
Interquartile range	4.8	51.2258	14.0045
Skewness	-0.523869	1.59264	0.592121
Coeff. of variation	24.5157	32.4282	88.2294
Sum	140	1594.57	107.532

Variable:	DO	pH
Sample size	10	8
Average	6.87	5.83375
Median	6.5	5.05
Mode	5.9	5
Geometric mean	6.74495	5.74287
Variance	1.929	1.2834
Standard deviation	1.38888	1.13287
Minimum	4.7	5
Maximum	9.1	7.5
Range	4.4	2.5
Lower quartile	5.9	5
Upper quartile	8	7.035
Interquartile range	2.1	2.035
Skewness	0.376661	0.705933
Coeff. of variation	20.2167	19.4193
Sum	68.7	46.67

SP-137

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.8093	157.579	5.73157
Median	14.375	158.273	3.4065
Mode	13.15	135.616	1.514
Geometric mean	14.3158	146.642	3.4027
Variance	15.3474	3553.88	35.6141
Standard deviation	3.91757	59.6144	5.96775
Minimum	9	77.6041	0.3785
Maximum	20.4	242.828	18.925
Range	11.4	165.224	18.5465
Lower quartile	11.25	95.5501	1.514
Upper quartile	19	210.136	9.4625
Interquartile range	7.75	114.586	7.9485
Skewness	0.0962158	0.152056	1.35256
Coeff. of variation	26.4535	37.8314	104.121
Sum	207.33	2206.11	80.242

Variable:	DO	pH
Sample size	14	11
Average	7.77857	6.39091
Median	8.9	7.2
Mode	8.1	5
Geometric mean	6.87294	6.25287
Variance	8.96297	1.85753
Standard deviation	2.99382	1.36291
Minimum	1.1	4.5
Maximum	11	7.9
Range	9.9	3.4
Lower quartile	4.95	5
Upper quartile	10.1	7.5
Interquartile range	5.15	2.5
Skewness	-0.971285	-0.241251
Coeff. of variation	38.4881	21.3258
Sum	108.9	70.3

SP-139

Variable:	T	SC	Y
Sample size	14	14	14
Average	14.1536	50.8797	16.4377
Median	14.075	47.8915	13.0583
Mode	13	46.9959	12.4905
Geometric mean	14.0619	49.708	14.6339
Variance	2.8621	148.517	64.5058
Standard deviation	1.69177	12.1868	8.03155
Minimum	11.75	37.6232	7.57
Maximum	17.5	82.0211	29.523
Range	5.75	44.3978	21.953
Lower quartile	12.75	43.1478	8.327
Upper quartile	15.4	52.5452	23.467
Interquartile range	2.65	9.3974	15.14
Skewness	0.499336	1.51284	0.420571
Coeff. of variation	11.953	23.9521	48.8605
Sum	198.15	712.316	230.128

Variable:	DO	pH
Sample size	14	11
Average	8.74286	6.16636
Median	8.9	6.39
Mode	9.3	5
Geometric mean	8.70439	6.07055
Variance	0.688791	1.24715
Standard deviation	0.829934	1.11676
Minimum	7	4.5
Maximum	9.8	7.64
Range	2.8	3.14
Lower quartile	8.3	5
Upper quartile	9.3	7.19
Interquartile range	1	2.19
Skewness	-0.776216	-0.264411
Coeff. of variation	9.49271	18.1105
Sum	122.4	67.83

SP-147

Variable:	T	SC	Y
Sample size	7	6	9
Average	10.9929	769.6	6.4345
Median	11	903.396	4.542
Mode	12.5	919.54	3.785
Geometric mean	10.7852	609.606	
Variance	4.90202	114118	36.4961
Standard deviation	2.21405	337.814	6.0412
Minimum	7.25	84.0925	0
Maximum	13.9	958.178	18.925
Range	6.65	874.086	18.925
Lower quartile	9.8	848.996	3.785
Upper quartile	12.5	919.54	10.2195
Interquartile range	2.7	70.5447	6.4345
Skewness	-0.509373	-2.3856	1.10752
Coeff. of variation	20.1408	43.8948	93.8876
Sum	76.95	4617.6	57.9105

Variable:	DO	pH
Sample size	7	6
Average	1.94286	5.885
Median	1.8	6
Mode	1.8	5
Geometric mean	1.78313	5.83783
Variance	0.62619	0.65583
Standard deviation	0.791322	0.809833
Minimum	0.9	5
Maximum	2.8	6.67
Range	1.9	1.67
Lower quartile	1	5
Upper quartile	2.7	6.64
Interquartile range	1.7	1.64
Skewness	-0.296947	-0.167569
Coeff. of variation	40.7298	13.761
Sum	13.6	35.31

SP-152

Variable:	T	SC	Y
Sample size	13	13	12
Average	13.4	253.115	373.264
Median	13.75	253.197	301.665
Mode	13.75	234.358	284.253
Geometric mean	13.3623	247.943	232.733
Variance	1.09583	2791.51	62623.6
Standard deviation	1.04682	52.8347	250.247
Minimum	11.65	182.762	4.1635
Maximum	15.5	329.852	833.078
Range	3.85	147.09	828.915
Lower quartile	12.75	203.612	266.275
Upper quartile	13.95	299.134	541.255
Interquartile range	1.2	95.5212	274.98
Skewness	0.164	0.0534916	0.501789
Coeff. of variation	7.81209	20.8738	67.0429
Sum	174.2	3290.5	4479.17

Variable:	DO	pH
Sample size	13	11
Average	9.88462	6.49
Median	9.8	6.96
Mode	9	5
Geometric mean	9.86836	6.39264
Variance	0.34641	1.3217
Standard deviation	0.588566	1.14965
Minimum	9	5
Maximum	10.8	7.8
Range	1.8	2.8
Lower quartile	9.5	5
Upper quartile	10.4	7.5
Interquartile range	0.9	2.5
Skewness	-0.0821626	-0.381245
Coeff. of variation	5.95437	17.7142
Sum	128.5	71.39

SP-189

Variable:	T	SC	Y
Sample size	12	12	11
Average	15.1108	437.856	42.8083
Median	14.625	455.17	18.925
Mode	14.5	425.292	9.841
Geometric mean	15.0494	434.742	
Variance	2.15468	2850.03	5166.64
Standard deviation	1.46788	53.3856	71.8794
Minimum	13.5	343.081	0
Maximum	18.5	522.21	248.296
Range	5	179.128	248.296
Lower quartile	14.125	395.13	0.3785
Upper quartile	15.815	470.311	59.046
Interquartile range	1.69	75.1811	58.6675
Skewness	1.30229	-0.461553	2.74407
Coeff. of variation	9.71411	12.1925	167.91
Sum	181.33	5254.27	470.892

Variable:	DO	pH
Sample size	12	11
Average	3.24583	6.23909
Median	3.1	6.92
Mode	2.9	5
Geometric mean	2.92128	6.16101
Variance	2.02612	1.03999
Standard deviation	1.42342	1.0198
Minimum	1.3	5
Maximum	5.2	7.5
Range	3.9	2.5
Lower quartile	2	5
Upper quartile	4.775	7.05
Interquartile range	2.775	2.05
Skewness	-9.09843E-3	-0.234921
Coeff. of variation	43.8537	16.3453
Sum	38.95	68.63

SP-199

Variable:	T	SC	Y
Sample size	13	13	13
Average	14.4115	62.5757	44.0225
Median	14.25	64.4683	48.0695
Mode	13.25	64.8677	45.42
Geometric mean	14.3637	62.2509	38.5484
Variance	1.5459	44.4742	400.475
Standard deviation	1.24334	6.66889	20.0119
Minimum	13	51.5746	13.2475
Maximum	17.25	76.0988	73.429
Range	4.25	24.5242	60.1815
Lower quartile	13.25	57.5529	29.9015
Upper quartile	15.3	65.9803	57.1535
Interquartile range	2.05	8.42741	27.252
Skewness	0.8589	0.332983	-0.360627
Coeff. of variation	8.6274	10.6573	45.4583
Sum	187.35	813.484	572.292

Variable:	DO	pH
Sample size	13	11
Average	8.73077	6.14727
Median	8.7	6.63
Mode	8.6	5
Geometric mean	8.71741	6.02711
Variance	0.248974	1.55912
Standard deviation	0.498973	1.24865
Minimum	7.7	4.5
Maximum	9.6	7.55
Range	1.9	3.05
Lower quartile	8.6	5
Upper quartile	9	7.32
Interquartile range	0.4	2.32
Skewness	-0.334673	-0.226813
Coeff. of variation	5.71511	20.3122
Sum	113.5	67.62

SP-207

Variable:	T	SC	Y
Sample size	13	13	13
Average	13.5708	521.626	5.44458
Median	13.9	518.176	3.4065
Mode	14.25	512.315	3.785
Geometric mean	13.536	521.106	3.16528
Variance	0.974774	582.376	69.113
Standard deviation	0.987307	24.1325	8.31342
Minimum	11.25	474.657	0.3785
Maximum	15	555.111	32.551
Range	3.75	80.4542	32.1725
Lower quartile	13	505.968	2.6495
Upper quartile	14.25	539.347	3.785
Interquartile range	1.25	33.3791	1.1355
Skewness	-0.978576	-0.312946	3.35659
Coeff. of variation	7.27524	4.62639	152.692
Sum	176.42	6781.14	70.7795

Variable:	DO	pH
Sample size	13	12
Average	7.24615	6.23667
Median	7.3	6.84
Mode	7.7	5
Geometric mean	7.22469	6.16931
Variance	0.331026	0.875824
Standard deviation	0.575348	0.935855
Minimum	6.2	5
Maximum	8.1	7.2
Range	1.9	2.2
Lower quartile	6.8	5.25
Upper quartile	7.7	6.965
Interquartile range	0.9	1.715
Skewness	-0.288176	-0.446074
Coeff. of variation	7.94005	15.0057
Sum	94.2	74.84

SP-211

Variable:	T	SC	Y
Sample size	13	13	1
Average	13.9869	272.623	0
Median	13.8	288.913	0
Mode	16.25	288.158	0
Geometric mean	13.9134	249.717	
Variance	2.28006	5251.33	0
Standard deviation	1.50999	72.4661	0
Minimum	12	38.9206	0
Maximum	16.25	326.048	0
Range	4.25	287.127	0
Lower quartile	12.75	276.152	0
Upper quartile	15.23	300.251	0
Interquartile range	2.48	24.0994	0
Skewness	0.468939	-3.21645	0
Coeff. of variation	10.7957	26.5811	100
Sum	181.83	3544.1	0

Variable:	DO	pH
Sample size	13	12
Average	6.78077	6.41917
Median	7.3	6.9
Mode	6.6	5
Geometric mean	6.40656	6.29575
Variance	4.62731	1.66908
Standard deviation	2.15112	1.29193
Minimum	3.45	5
Maximum	9.5	7.97
Range	6.05	2.97
Lower quartile	5.6	5
Upper quartile	8.5	7.665
Interquartile range	2.9	2.665
Skewness	-0.5557	-0.192667
Coeff. of variation	31.7238	20.1261
Sum	88.15	77.03

APPENDIX F
Time-Series Plots of Monthly Measurements, Detailed Survey

Time-Series Plots of Monthly Measurements, Detailed Survey

The time-series plots of monthly measurements from the detailed survey began in July, 1993, and continued through to July, 1994. Measurements were typically obtained during the third or fourth week of each month. The first letter of each month indicates the month of the measurements across the horizontal (x) axis. The five field parameters measured and monthly rainfall constitute the vertical (y) axes. Note that pH, dissolved oxygen, temperature, and specific conductance are presented as linear plots, while discharge (yield) is presented as a semilog plot. The following y-axis measurement unit abbreviations are defined as follows:

cm = centimeters

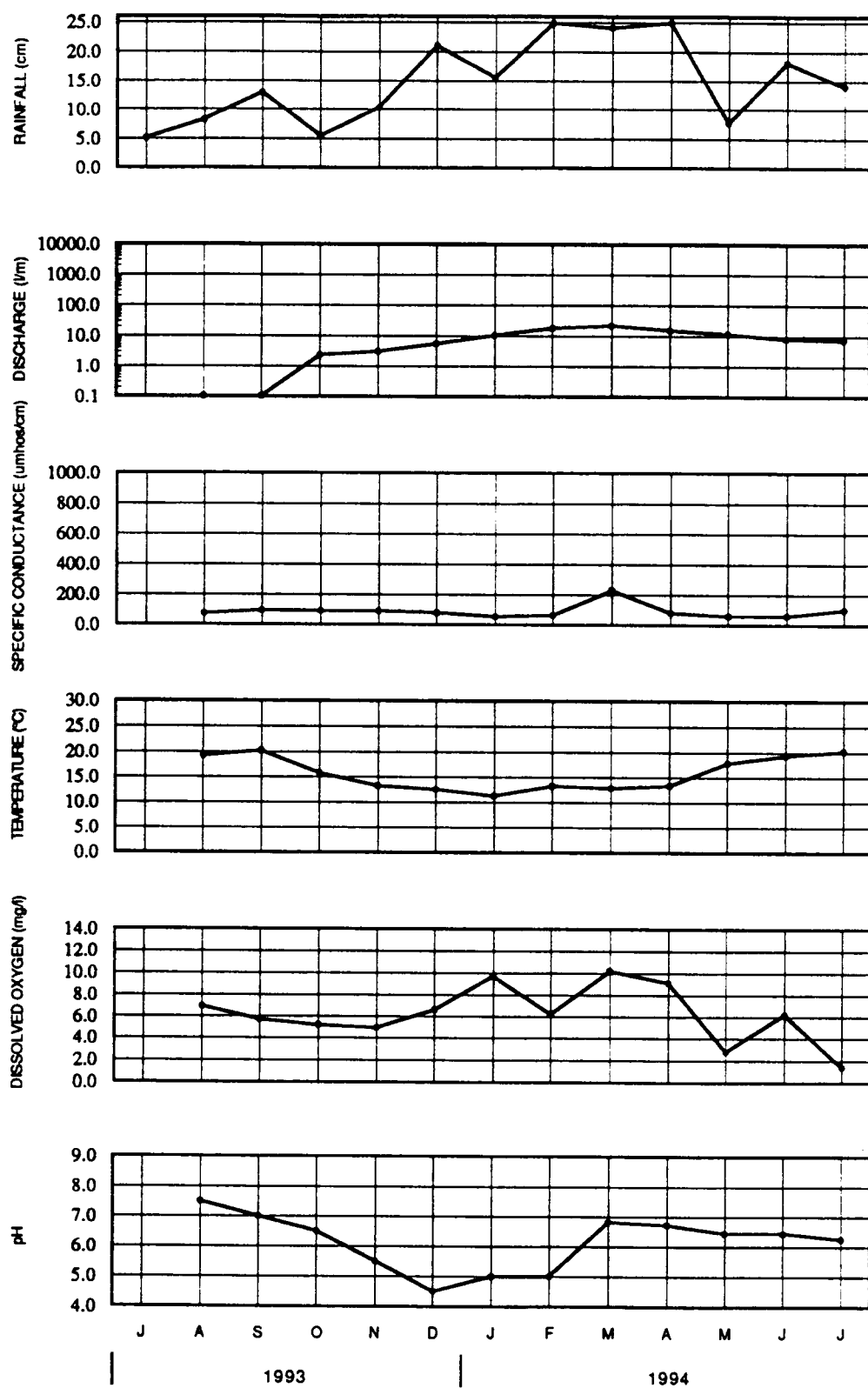
l/m = liters per minute

umhos/cm = micromhos per centimeter

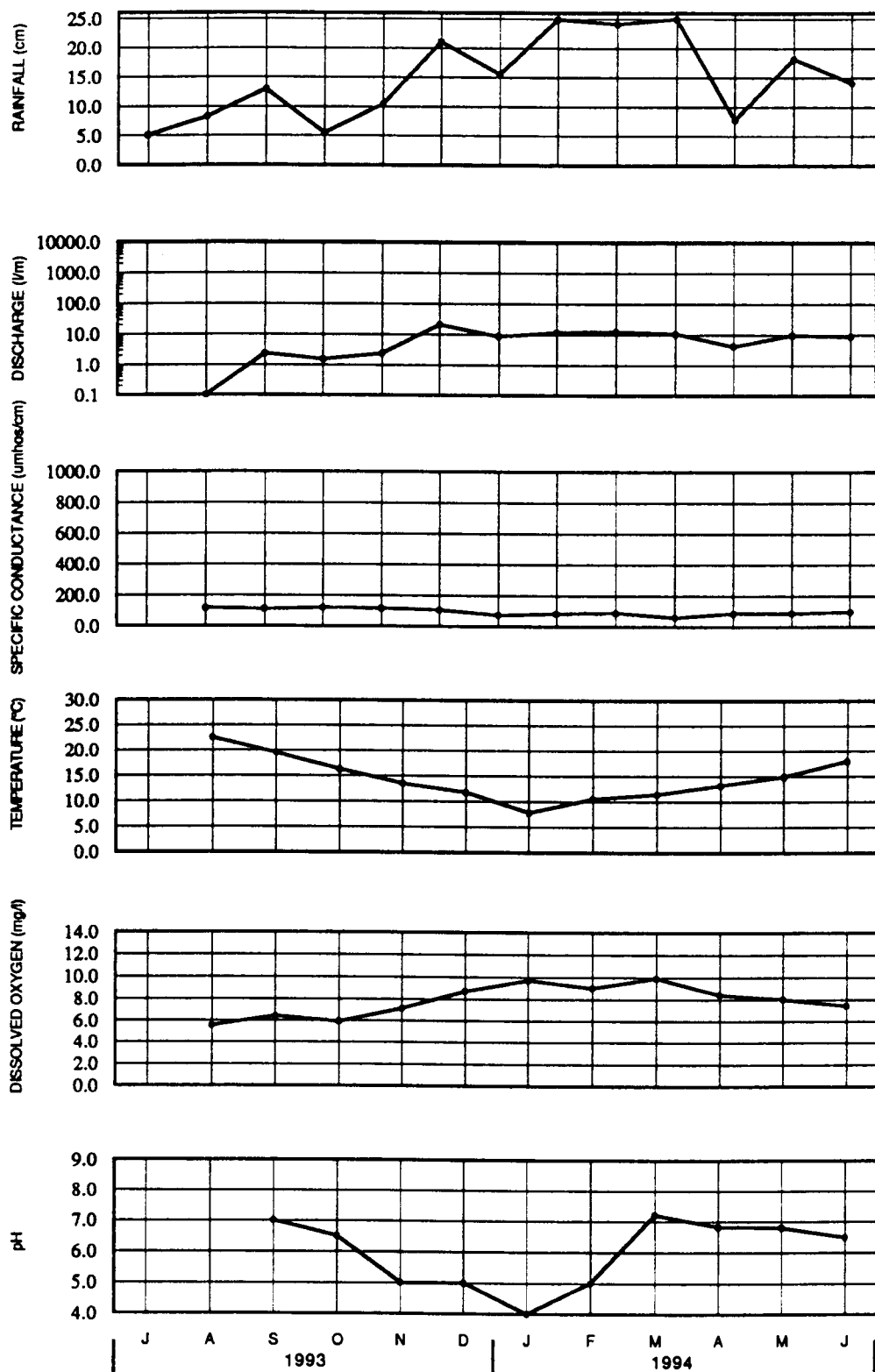
°C = Celsius

mg/l = milligrams per liter

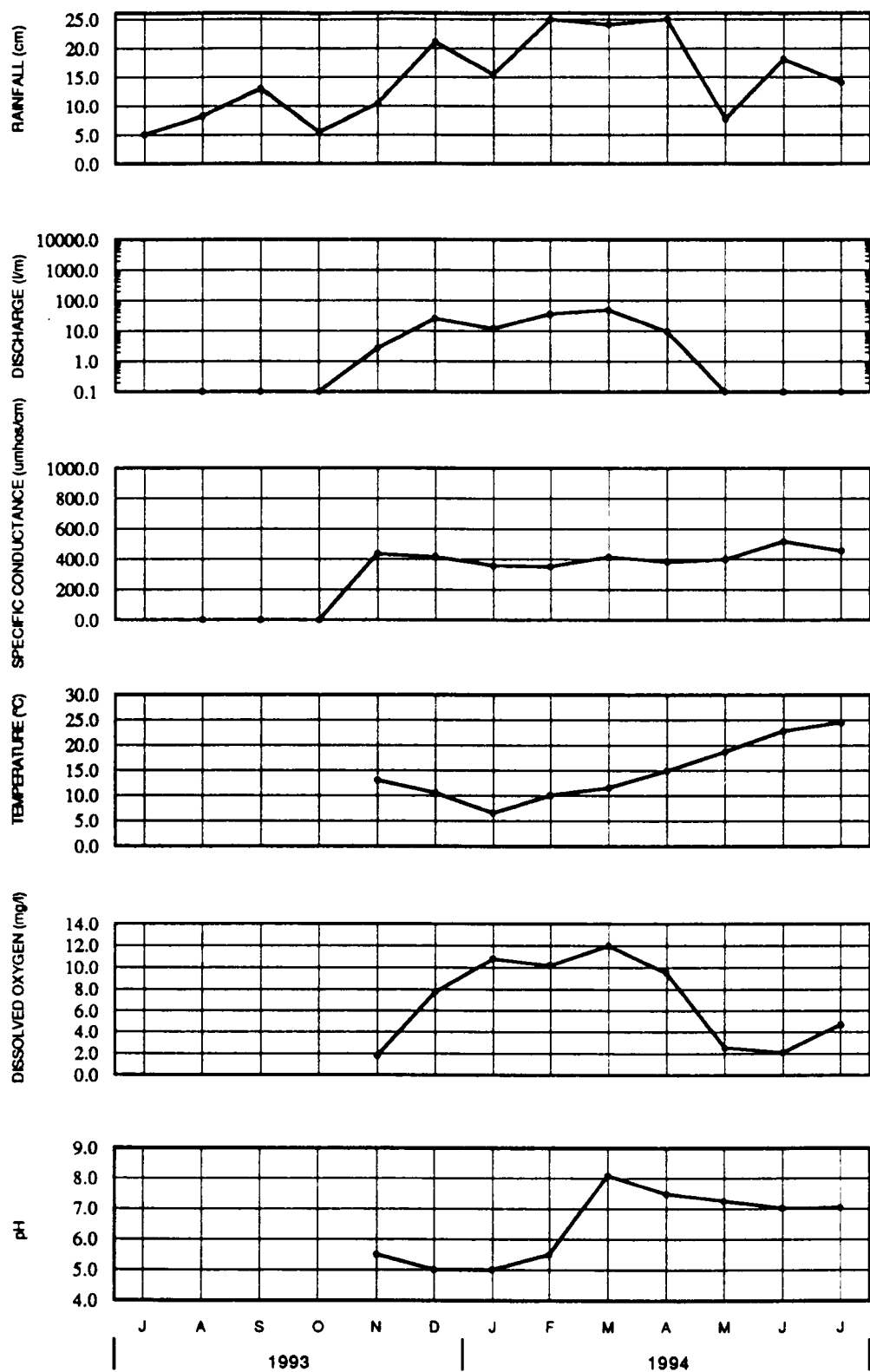
Note: Prior to March, 1994, color strip indicators were used to measure pH. Beginning in March, 1994, a YSI 3000 with a pH meter was used to obtain more reliable pH values.



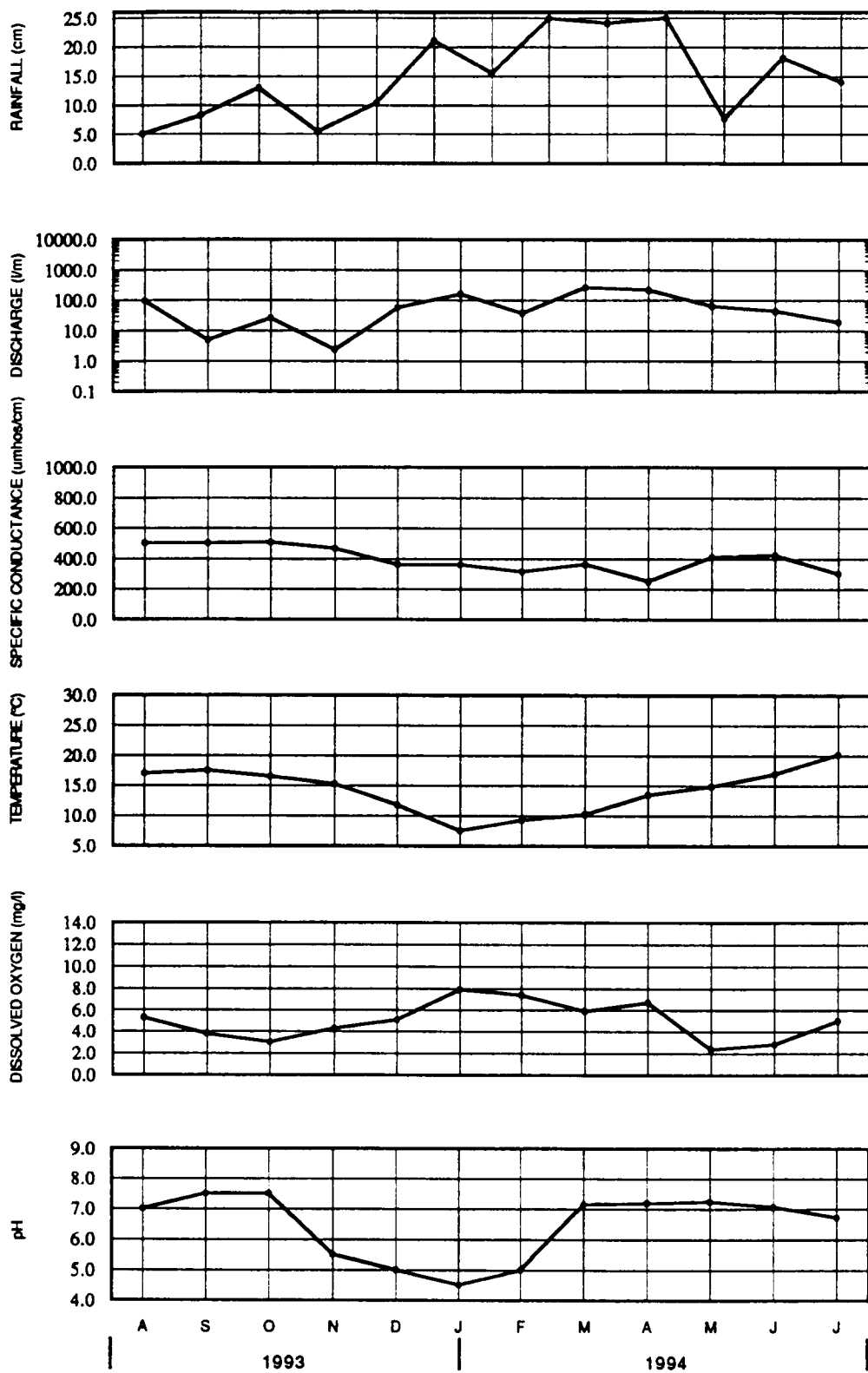
Spring SP-001 Detailed Survey Monthly Field Measurements



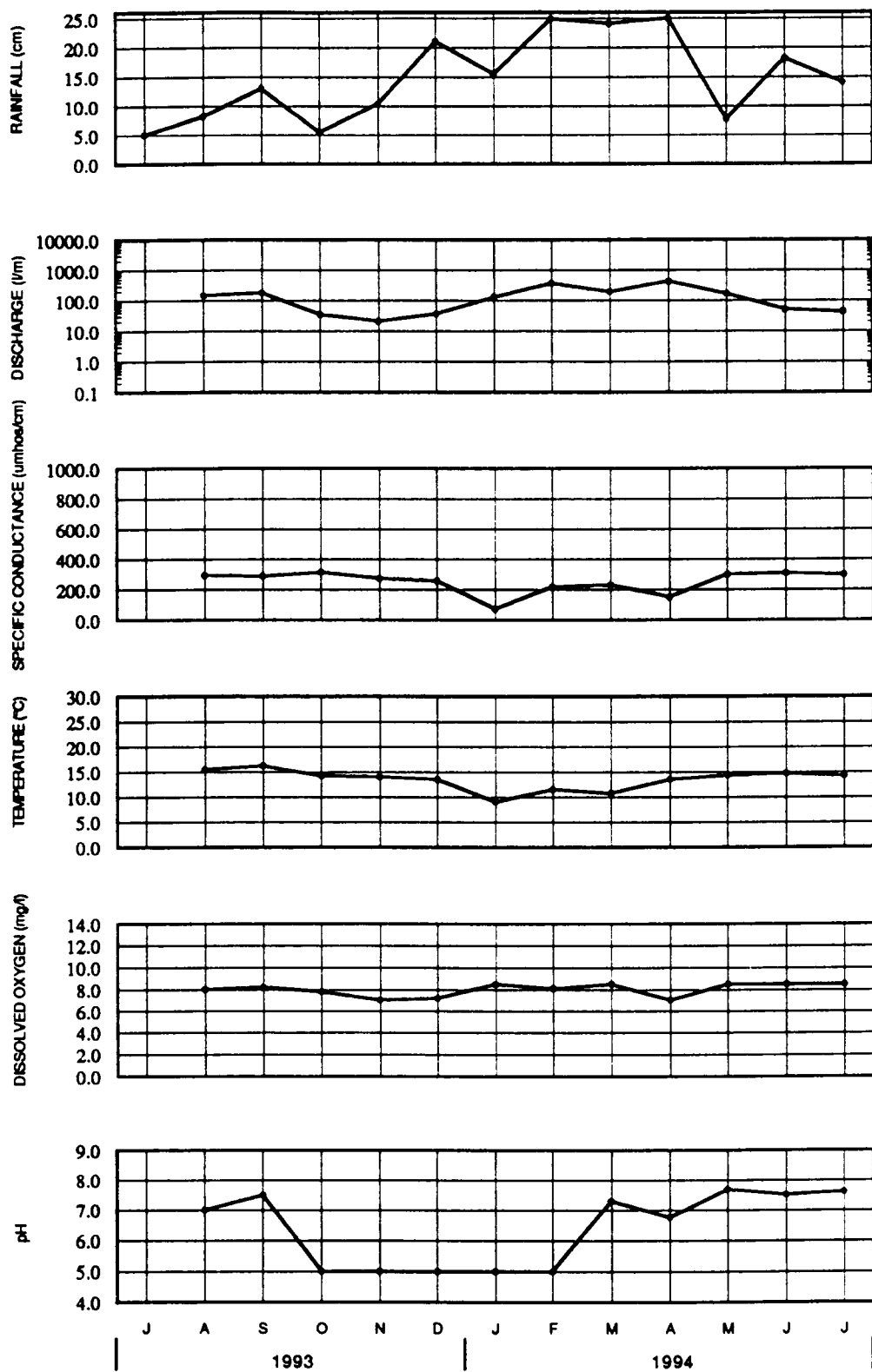
Spring SP-005 Detailed Survey Monthly Field Measurements



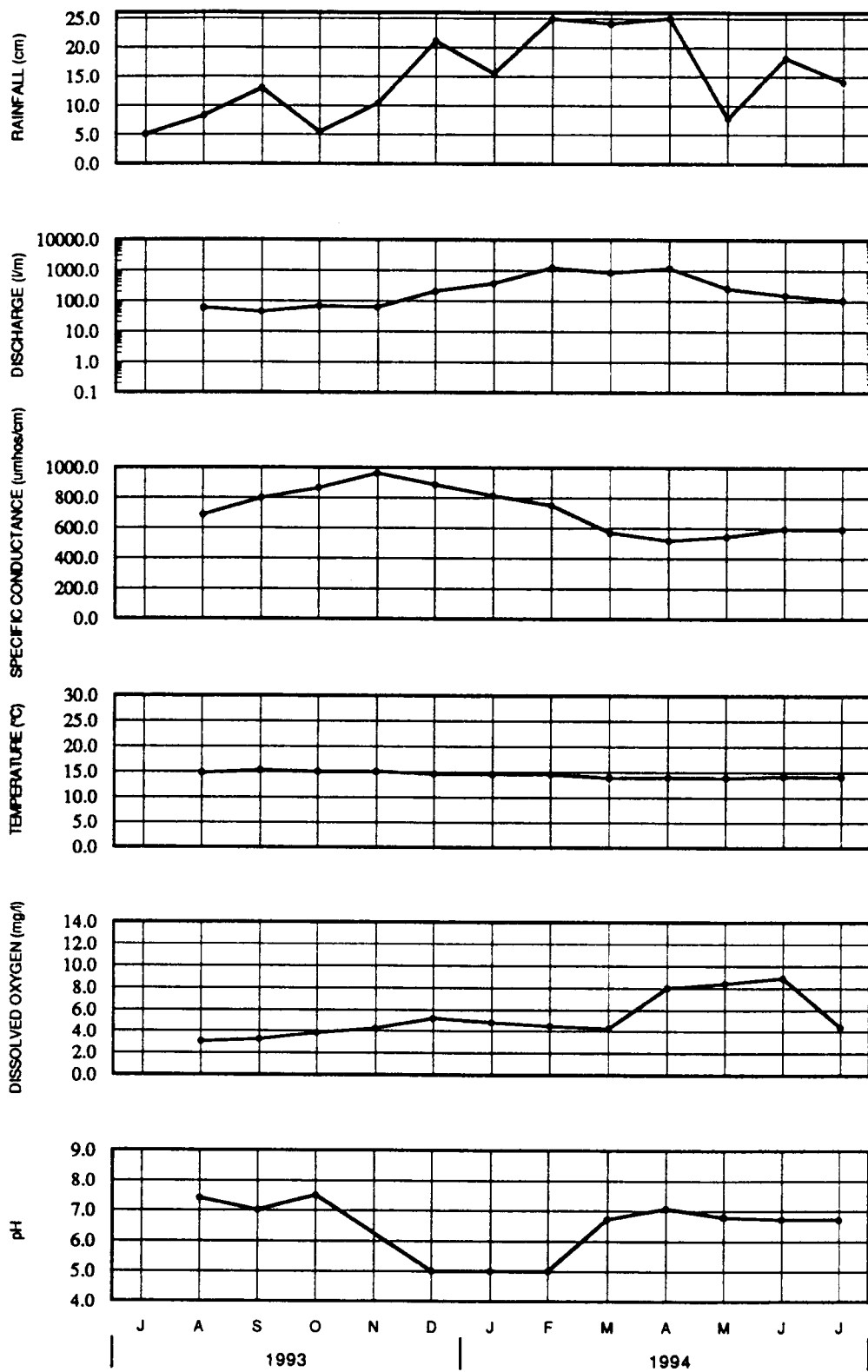
Spring SP-016 Detailed Survey Monthly Field Measurement



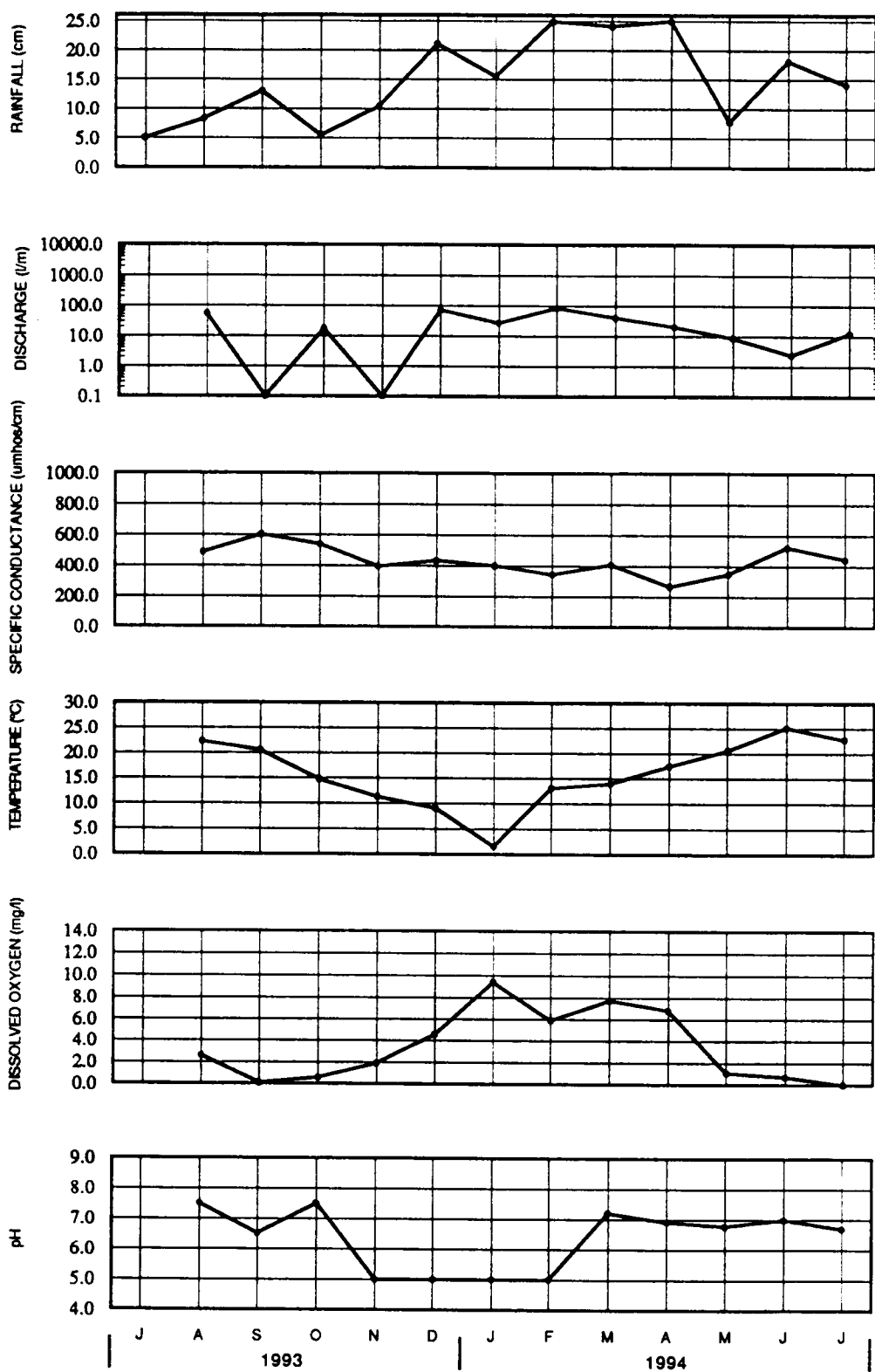
Spring SP-018 Detailed Survey Monthly Field Measurements



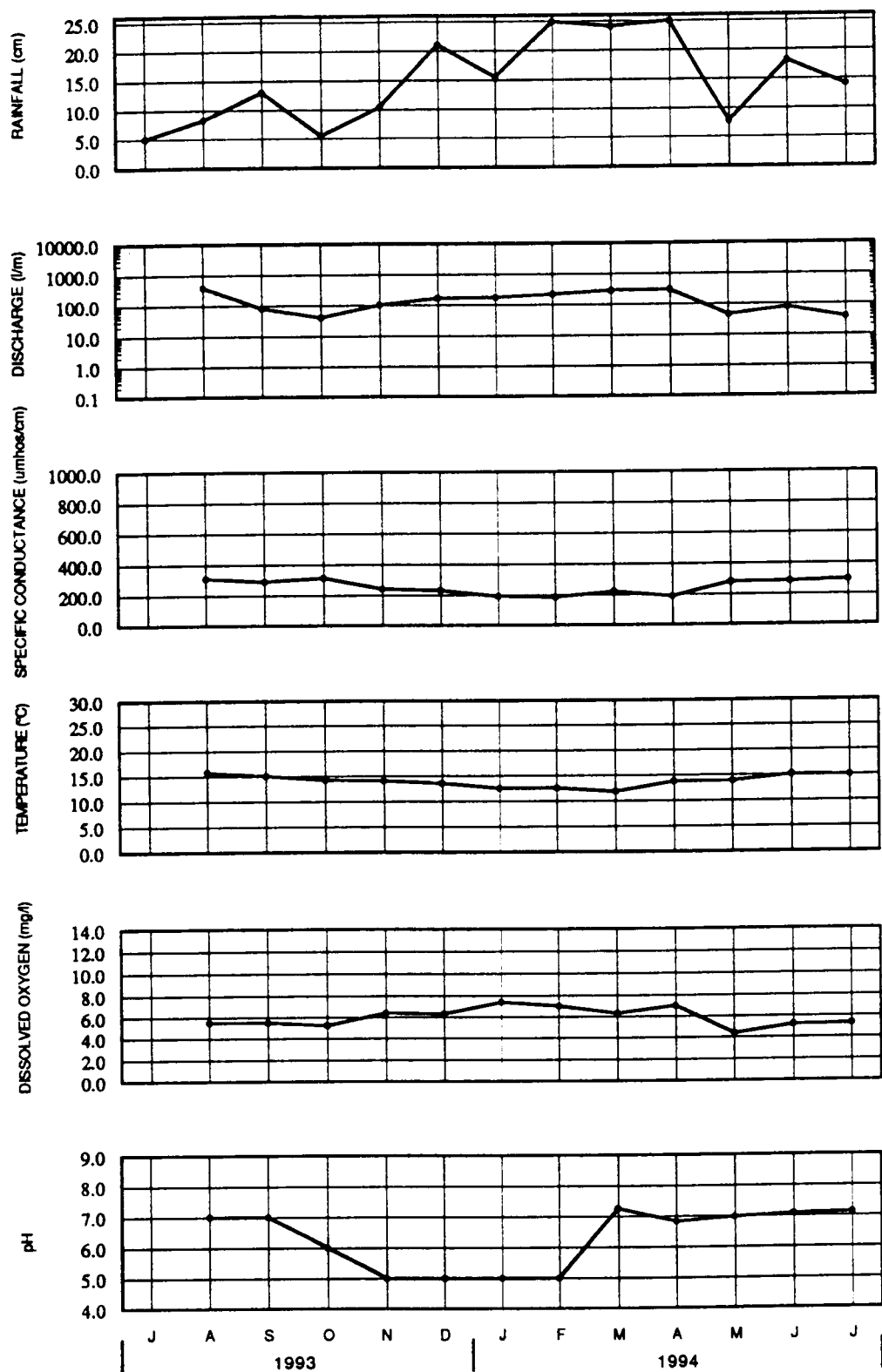
Spring SP-019 Detailed Survey Monthly Field Measurements



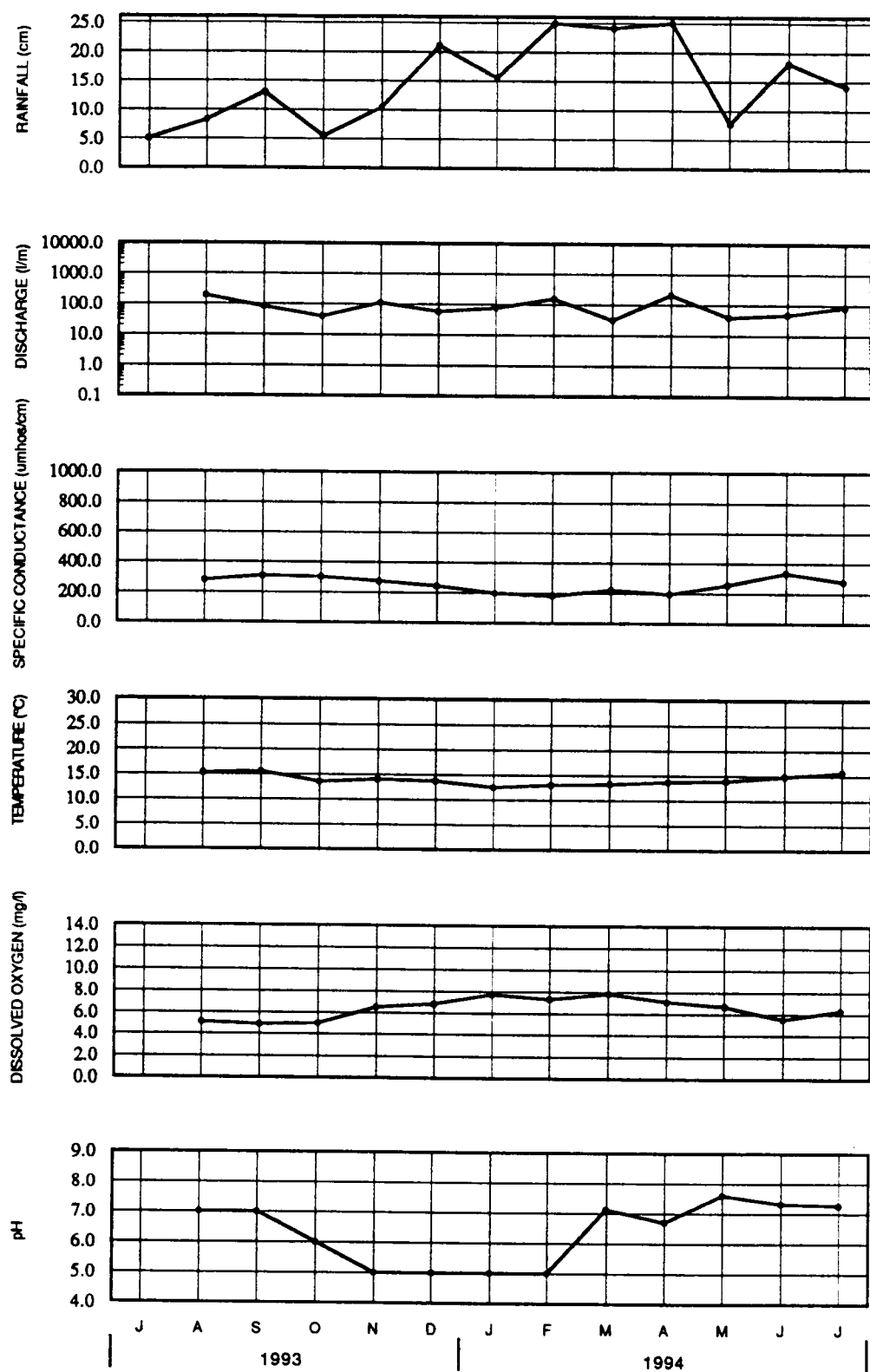
Spring SP-024 Detailed Survey Monthly Field Measurements



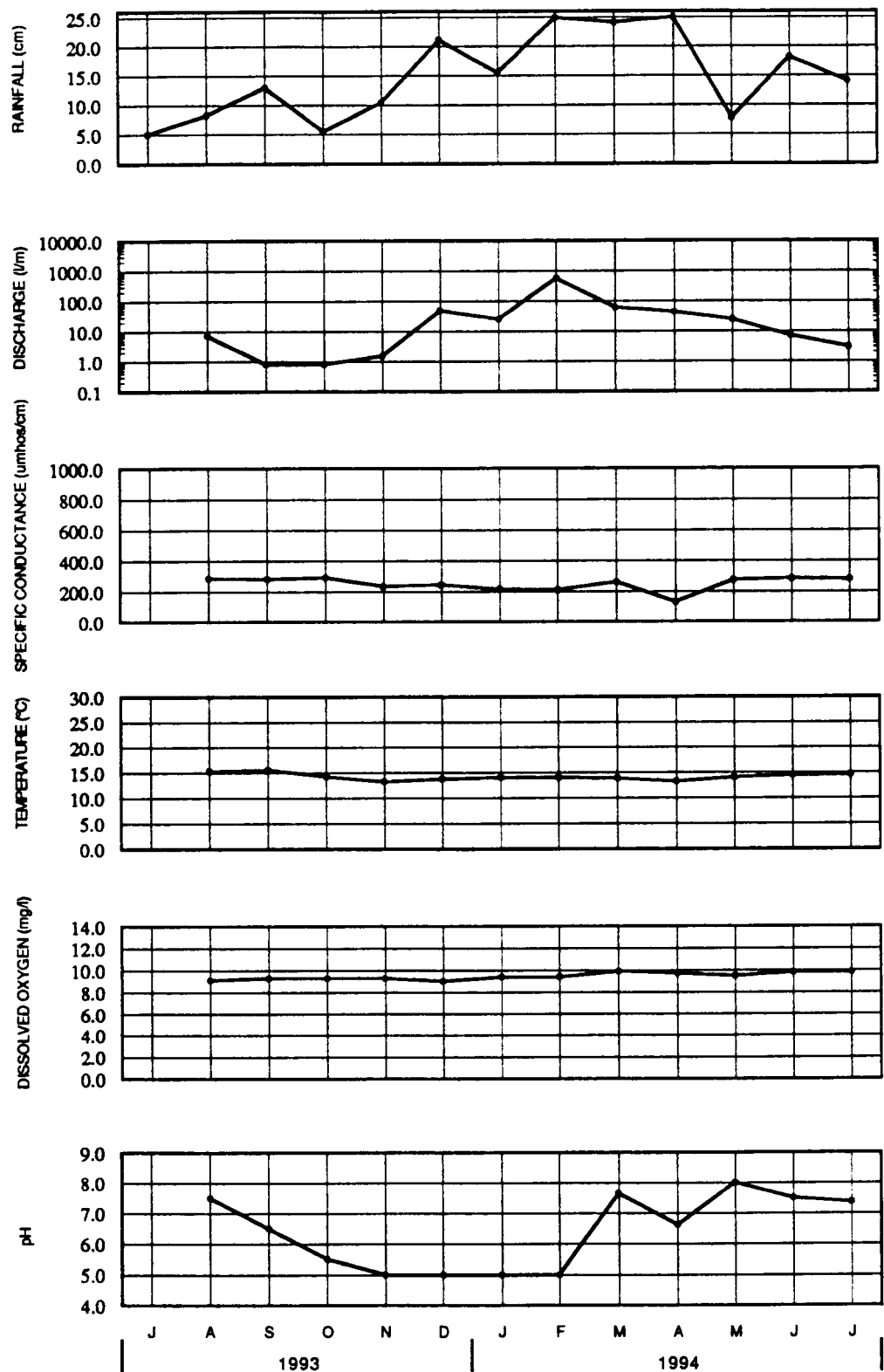
Spring SP-029 Detailed Survey Monthly Field Measurements



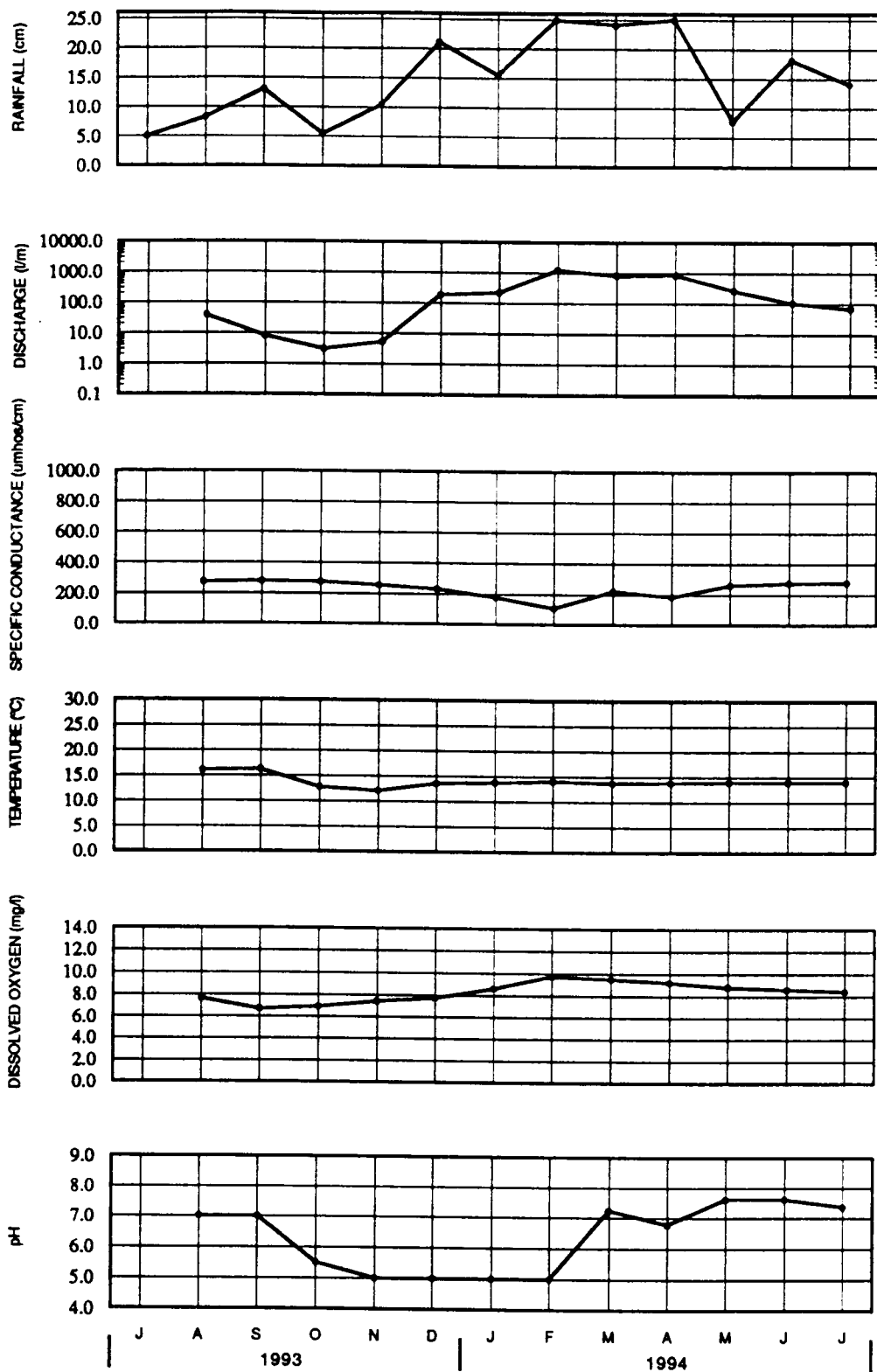
Spring SP-031 Detailed Survey Monthly Field Measurements



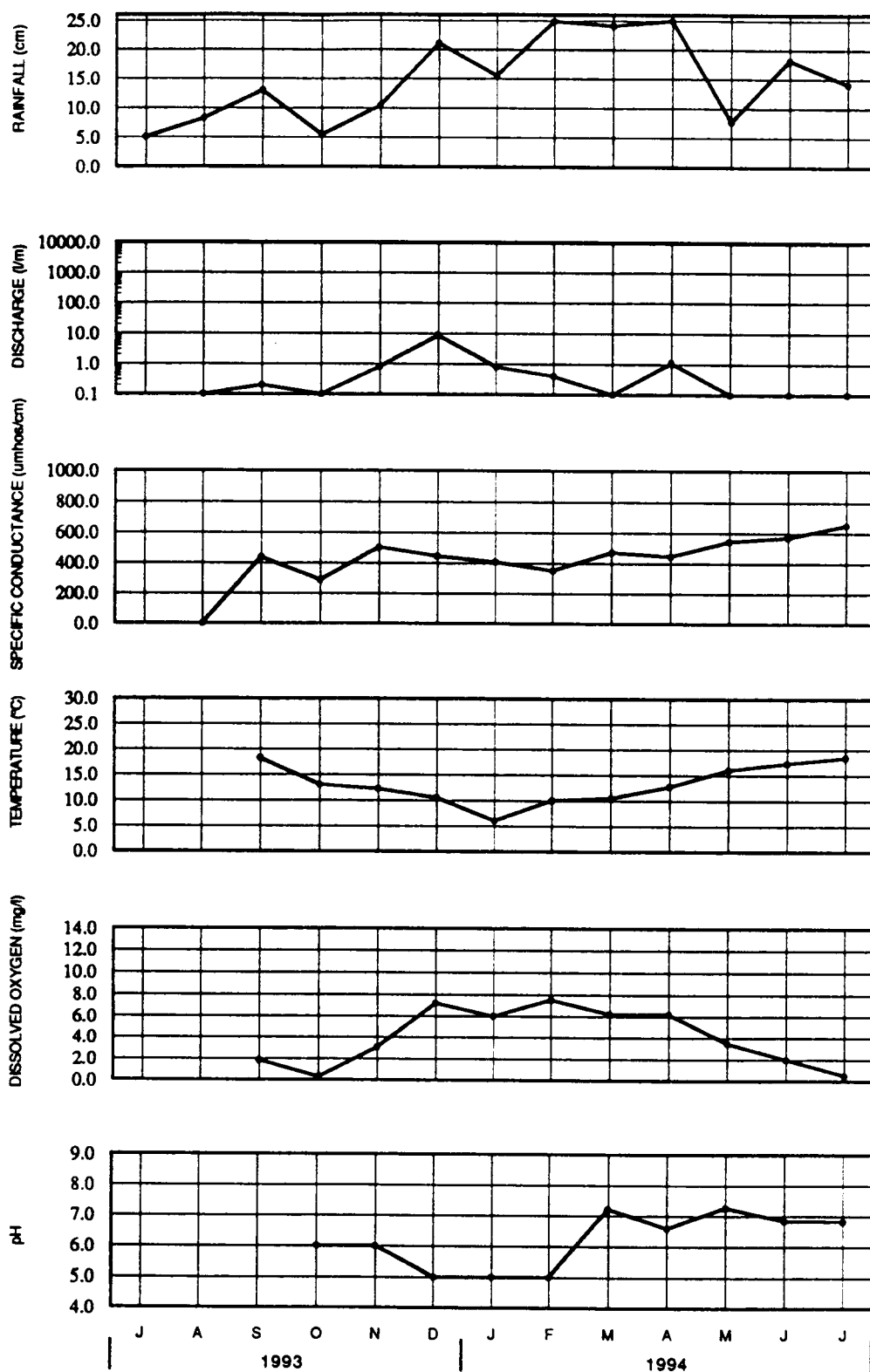
Spring SP-033 Detailed Survey Monthly Field Measurements



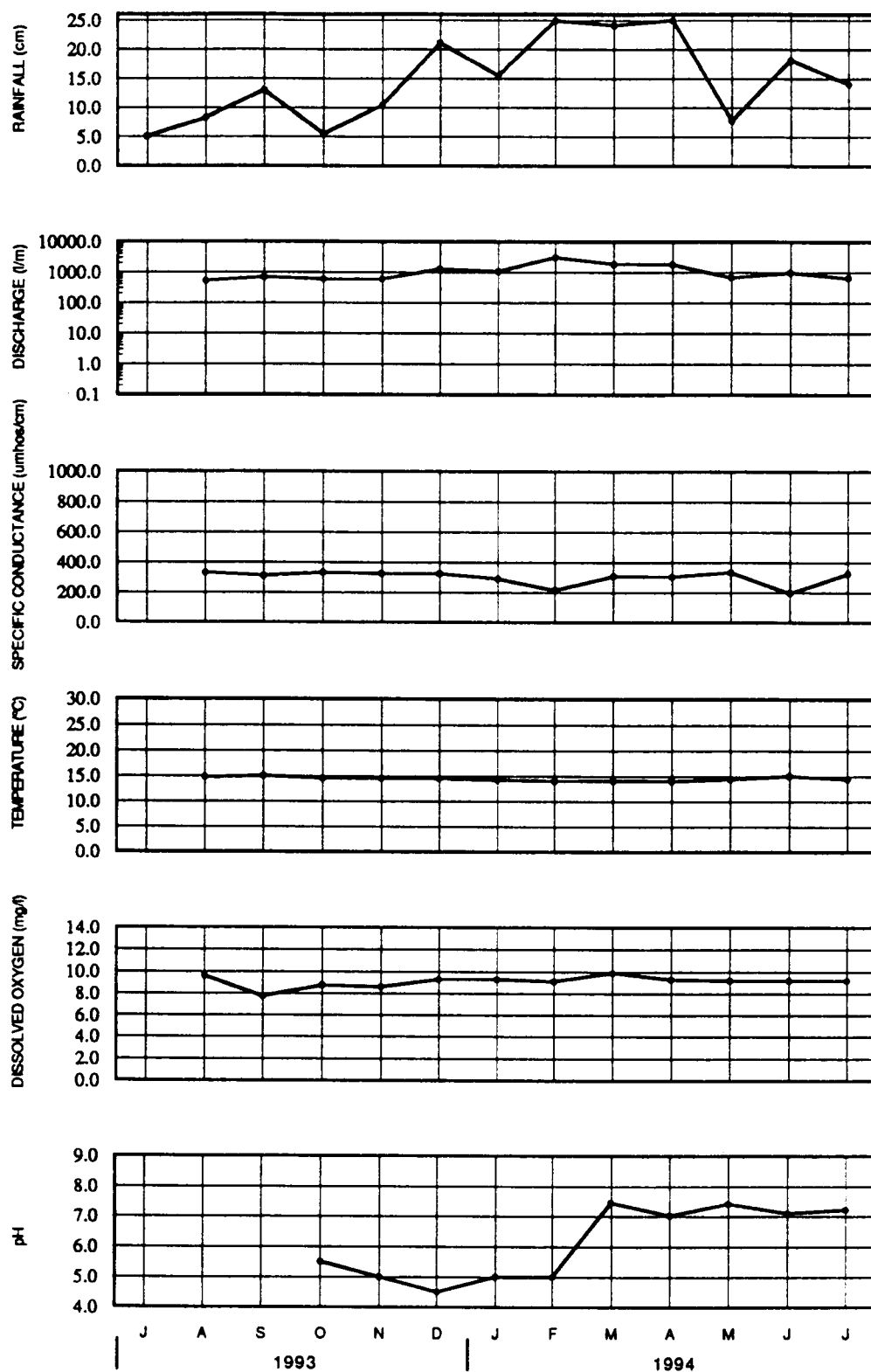
Spring SP-039 Detailed Survey Monthly Field Measurements



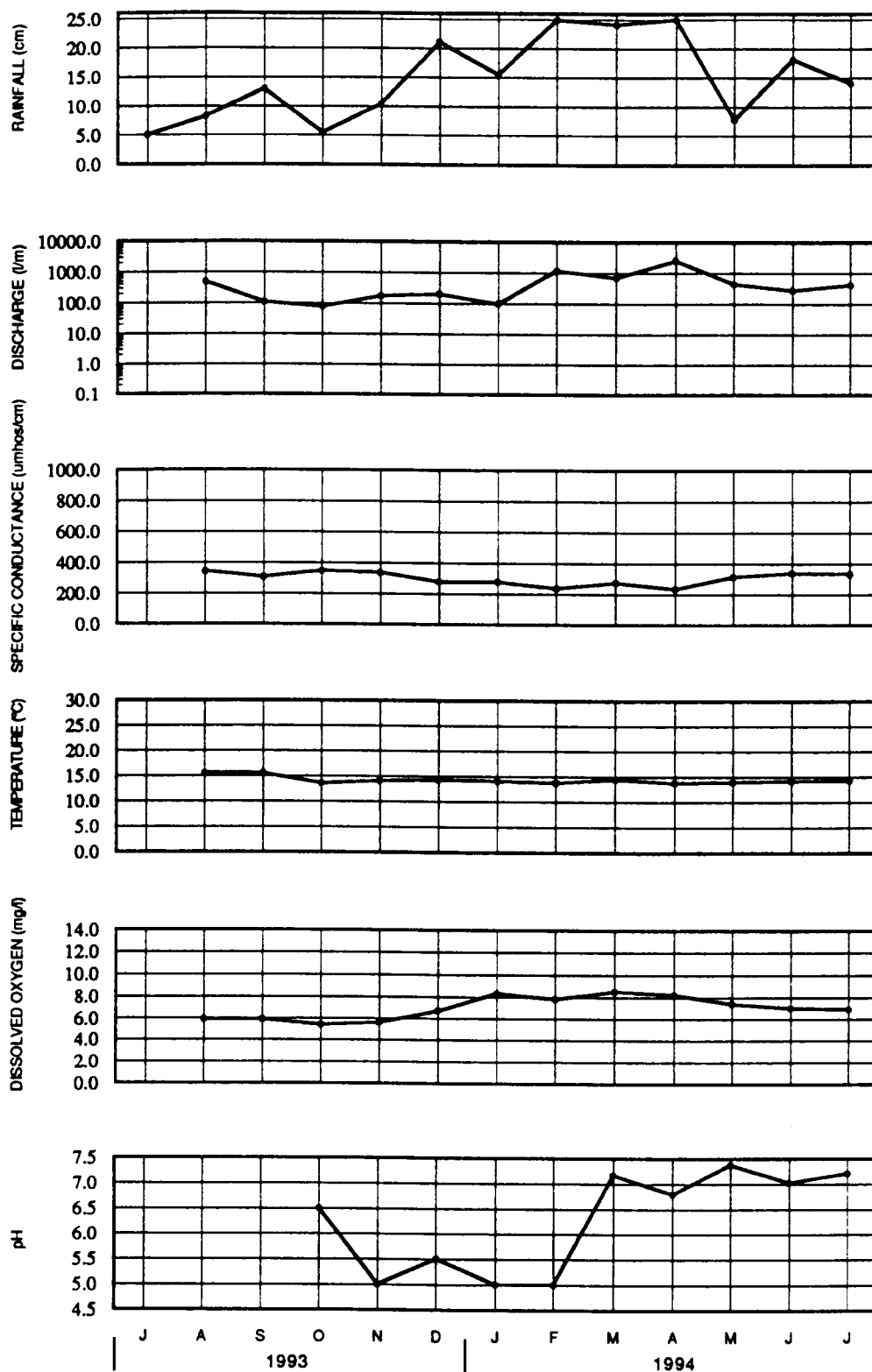
Spring SP-049 Detailed Survey Monthly Field Measurements



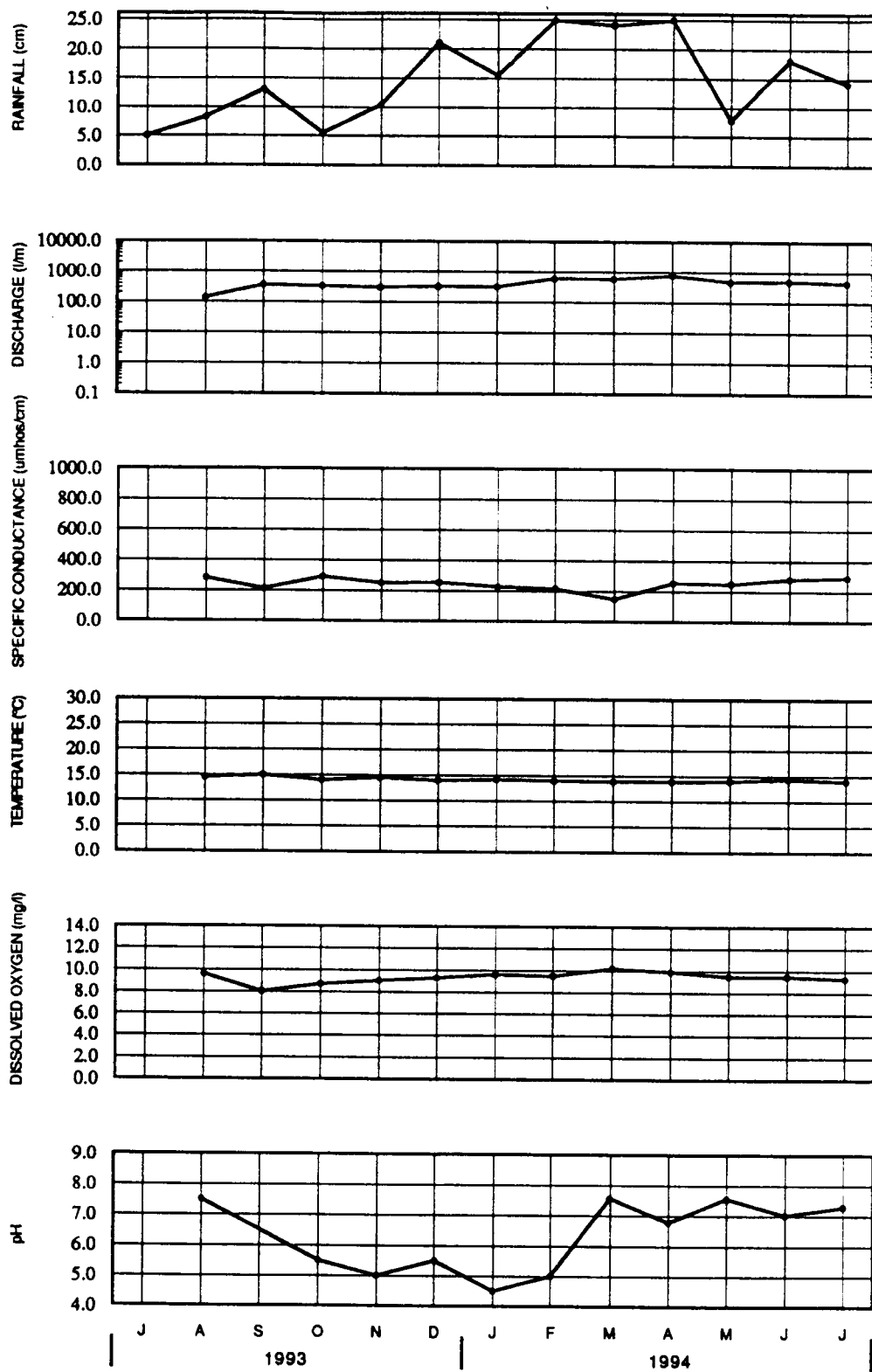
Spring SP-053 Detailed Survey Monthly Field Measurements



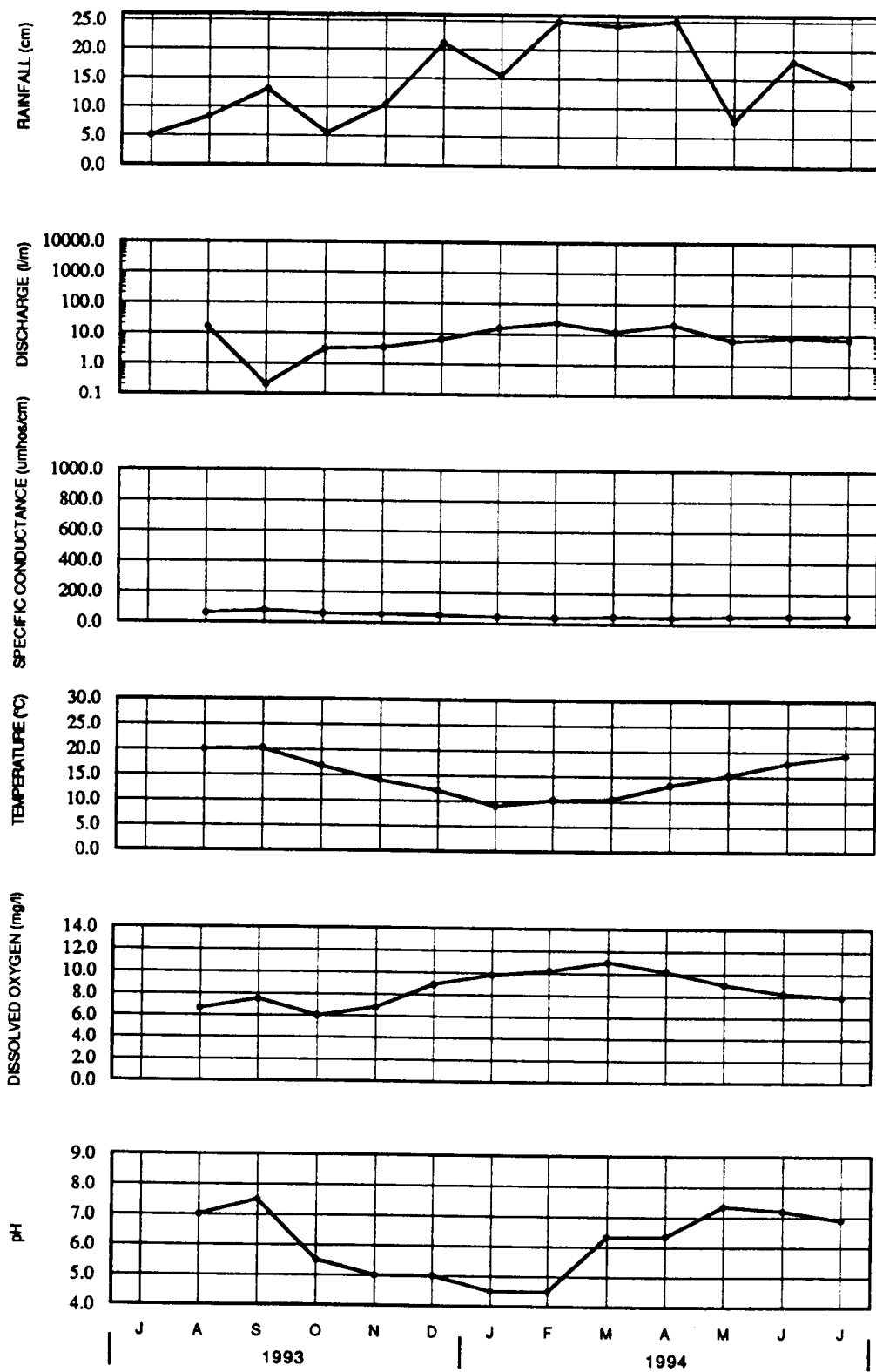
Spring SP-054 Detailed Survey Monthly Field Measurements



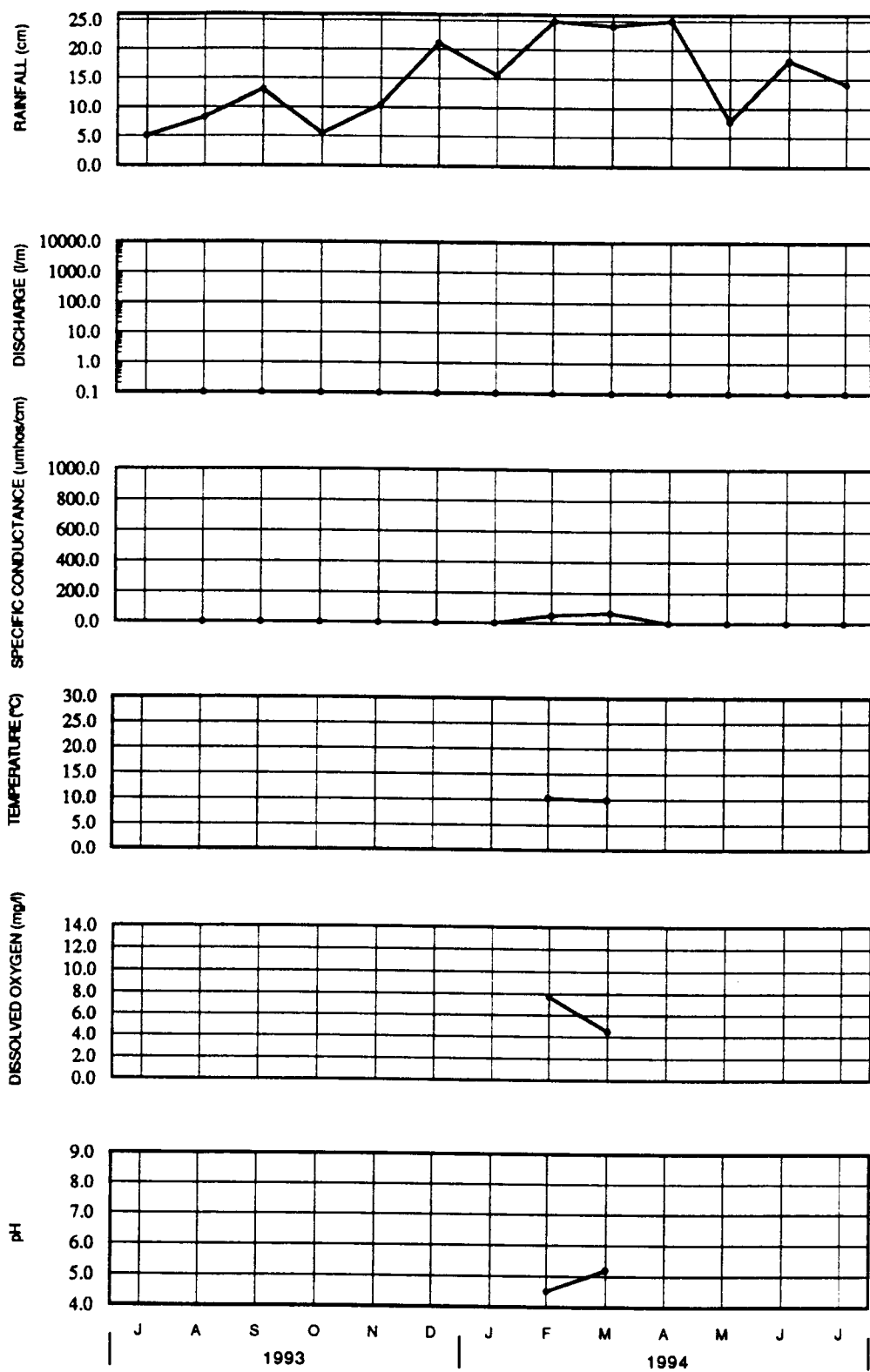
Spring SP-056 Detailed Survey Monthly Field Measurements



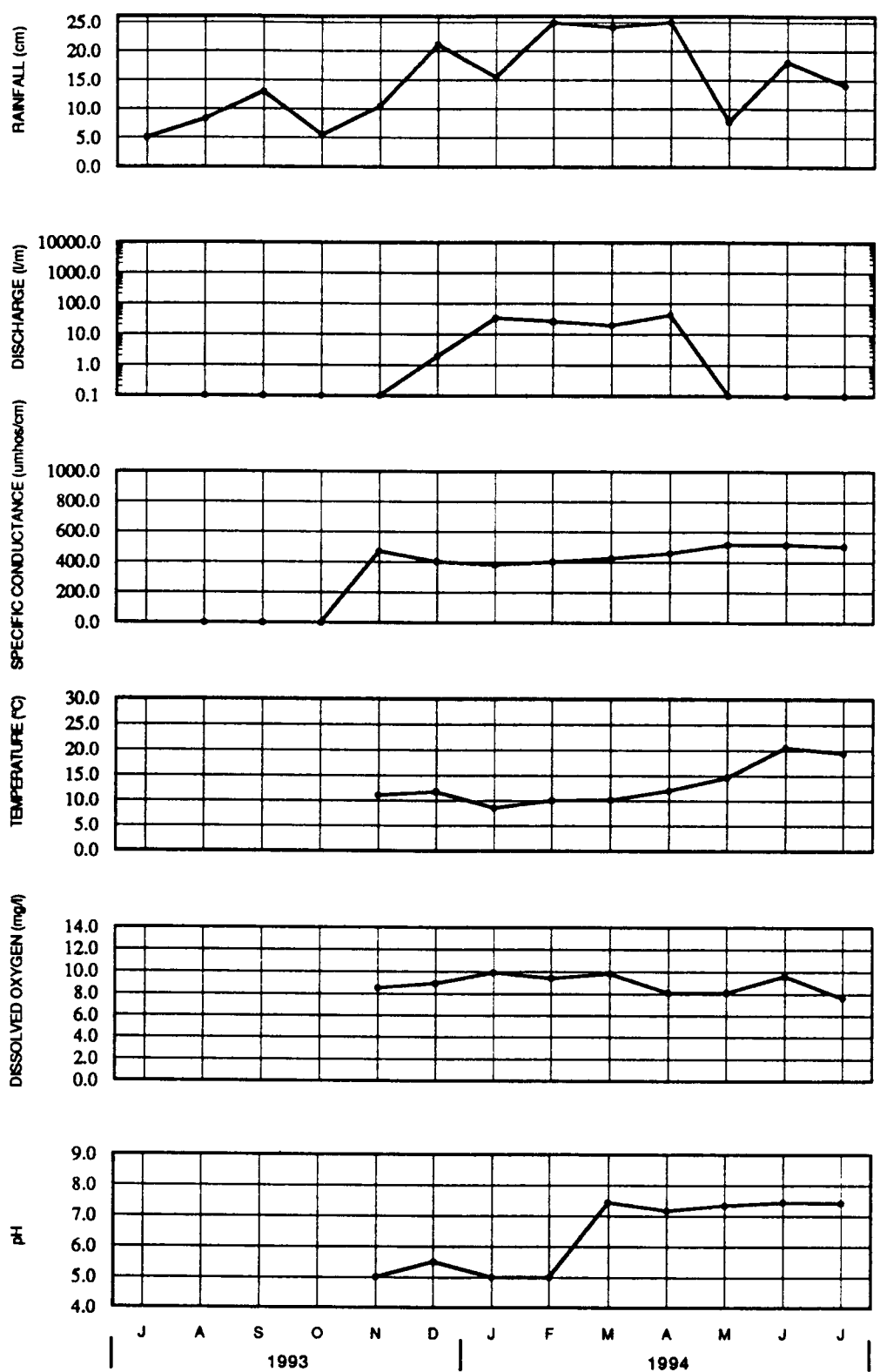
Spring SP-060 Detailed Survey Monthly Field Measurements



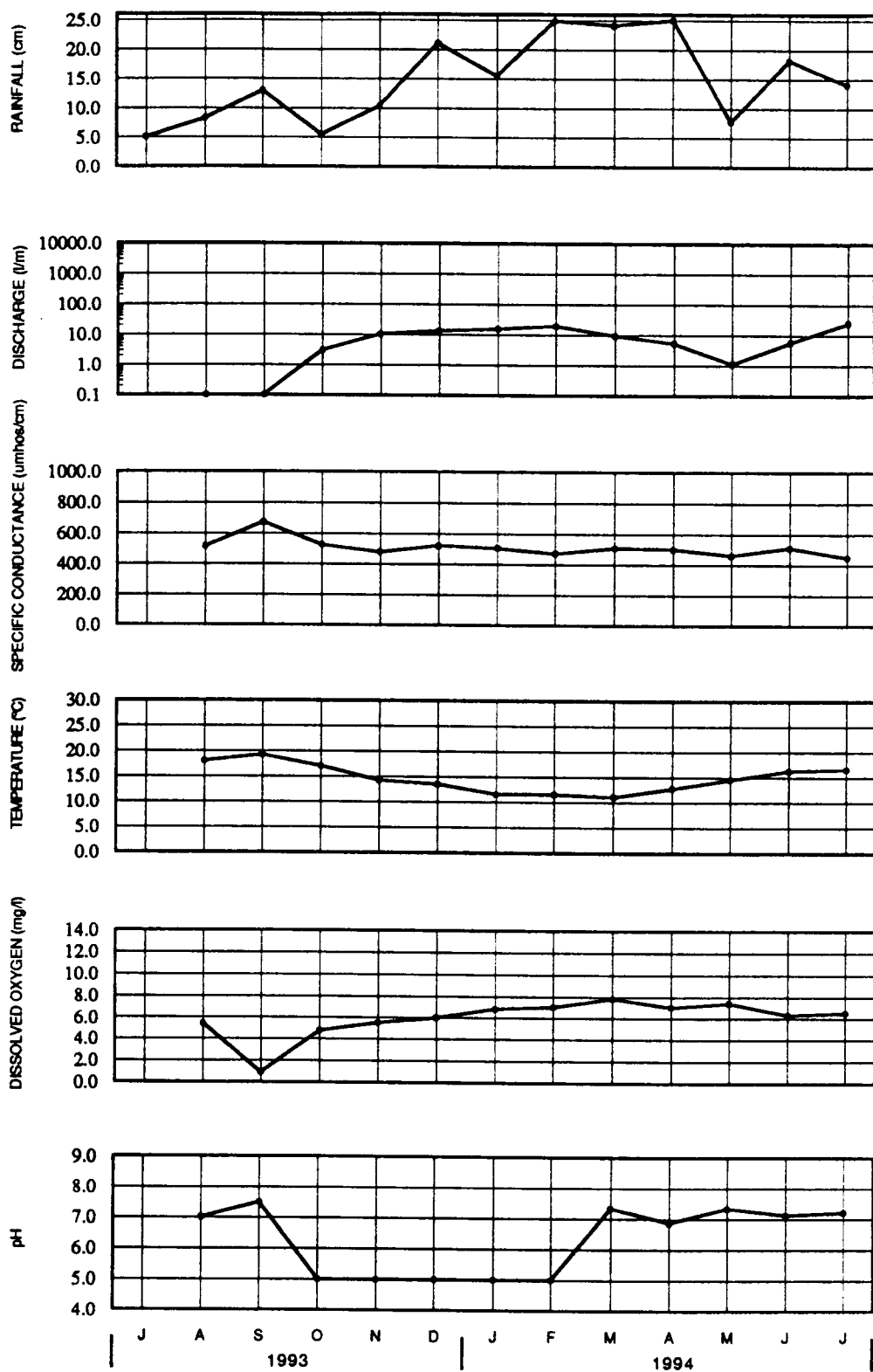
Spring SP-074 Detailed Survey Monthly Field Measurements



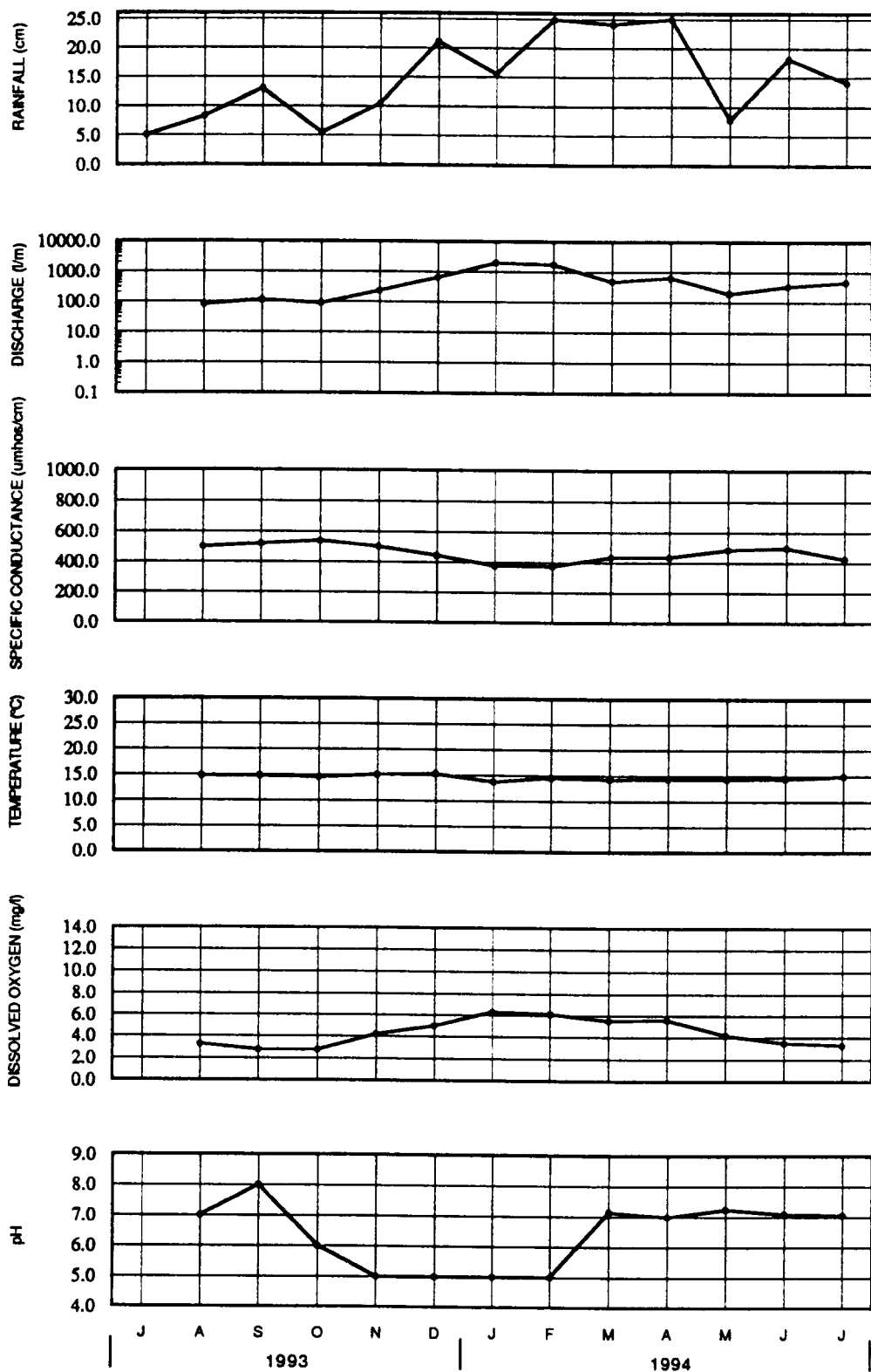
Spring SP-076 Detailed Survey Monthly Field Measurements



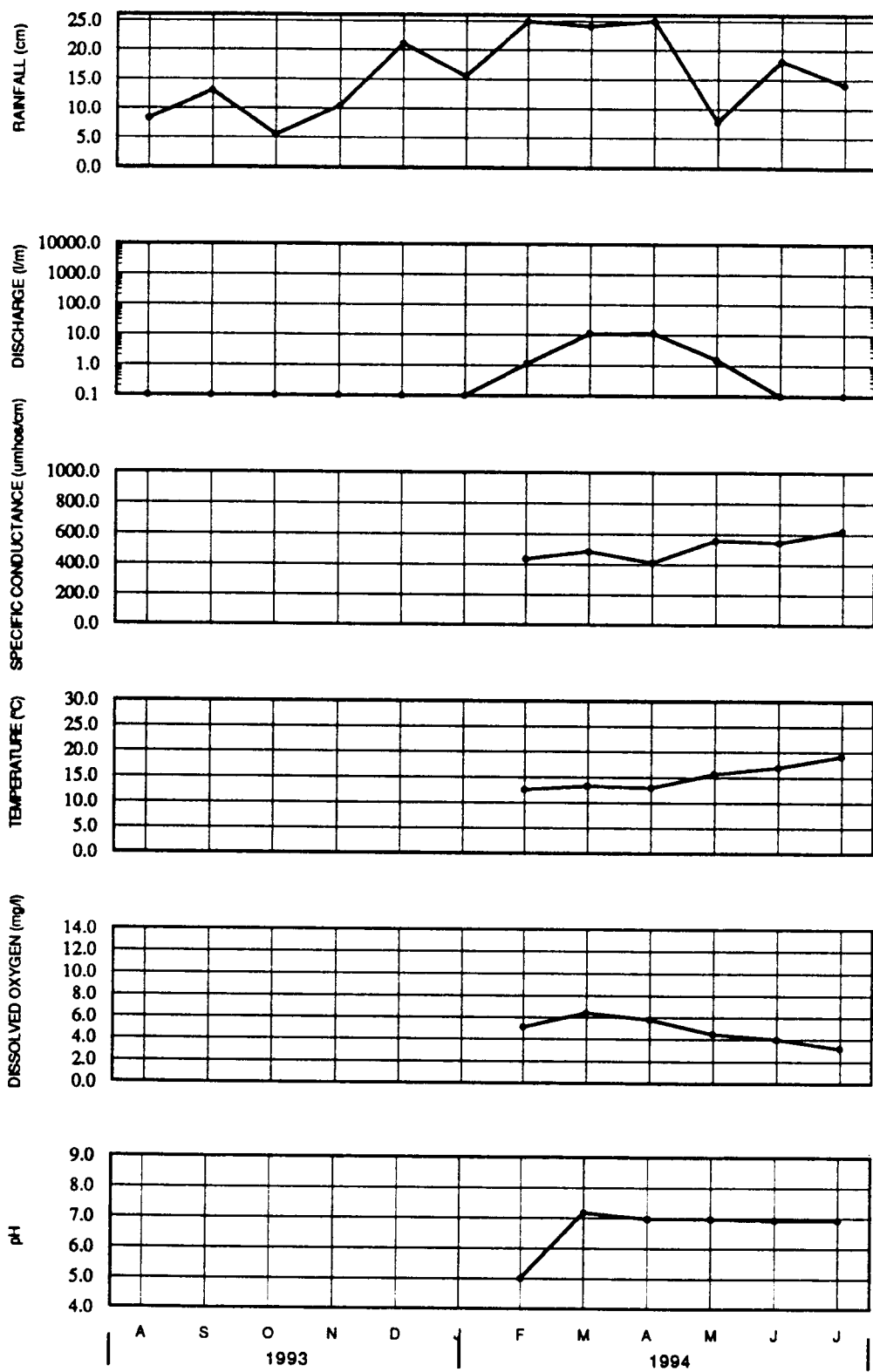
Spring SP-077 Detailed Survey Monthly Field Measurement



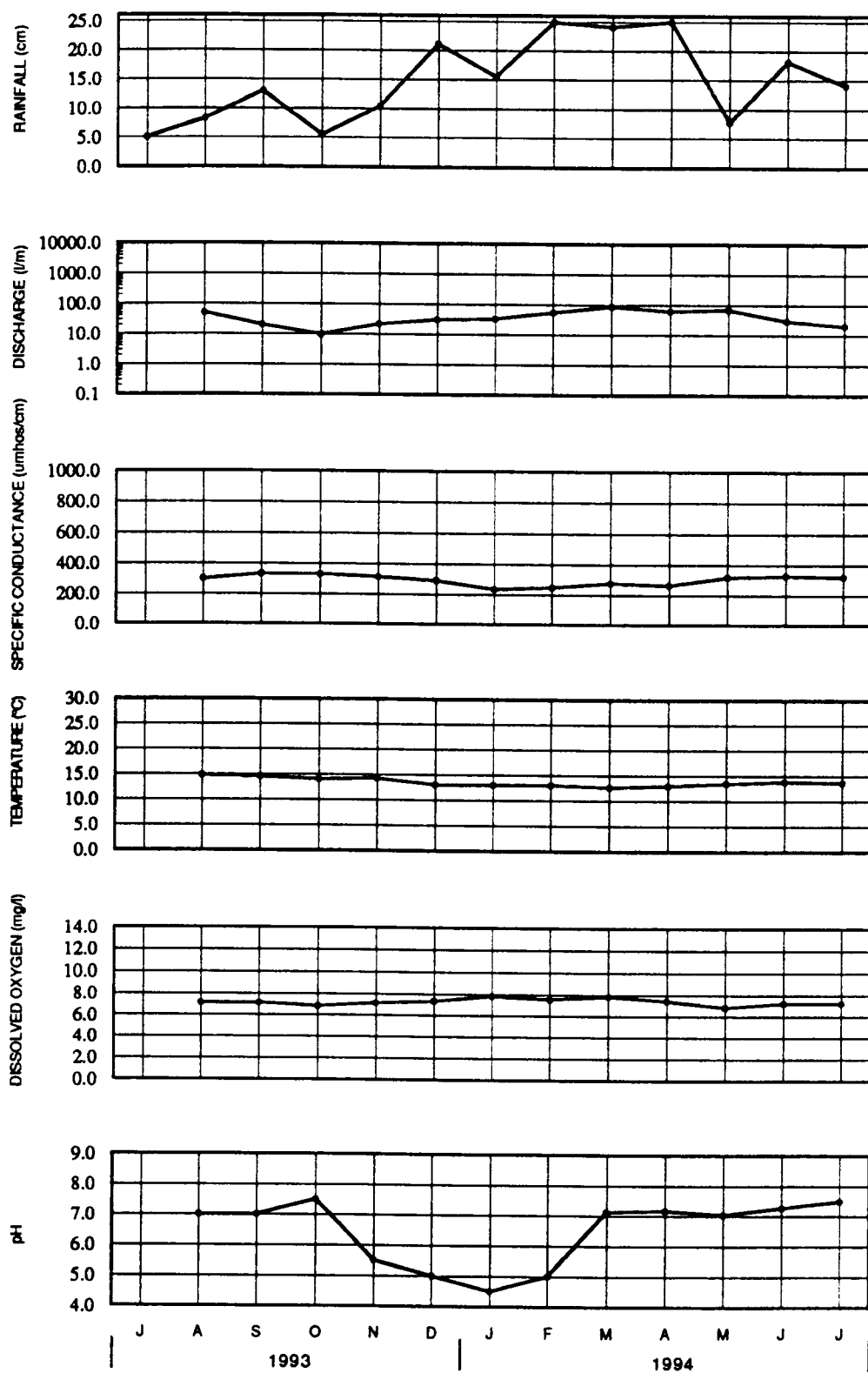
Spring SP-081 Detailed Survey Monthly Field Measurements



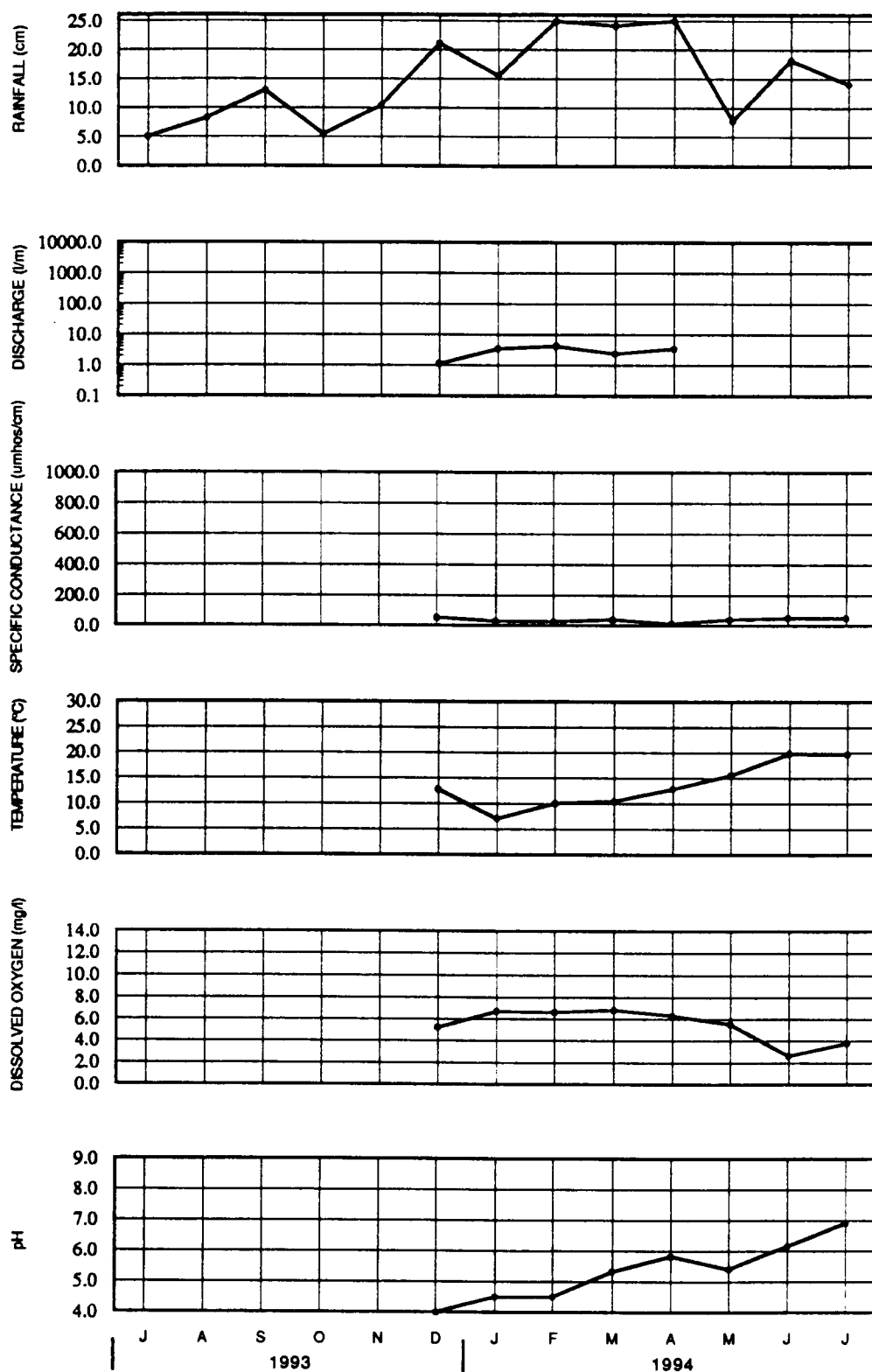
Spring SP-083 Detailed Survey Monthly Field Measurements



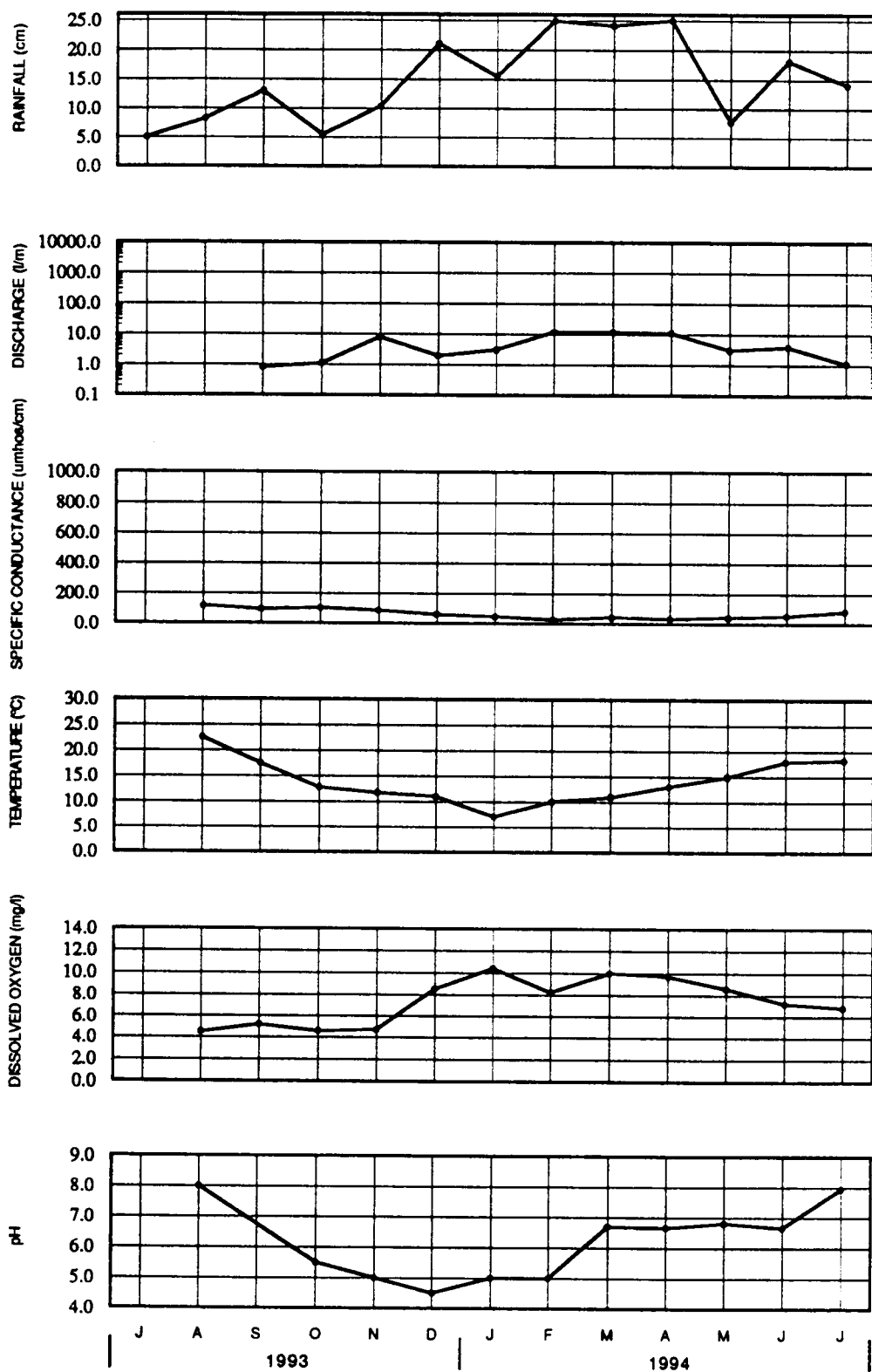
Spring SP-091 Detailed Survey Monthly Field Measurements



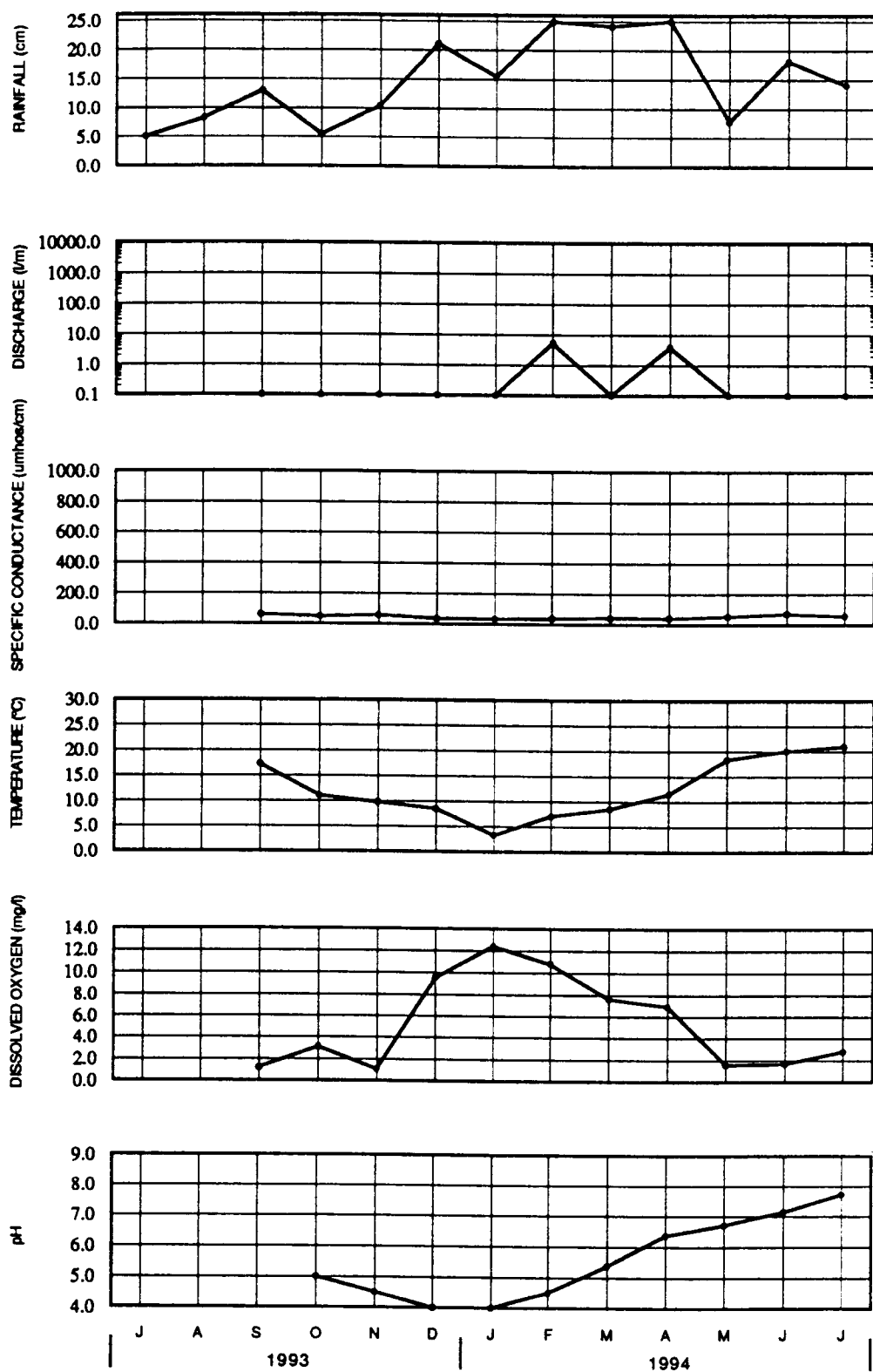
Spring SP-102 Detailed Survey Monthly Field Measurements



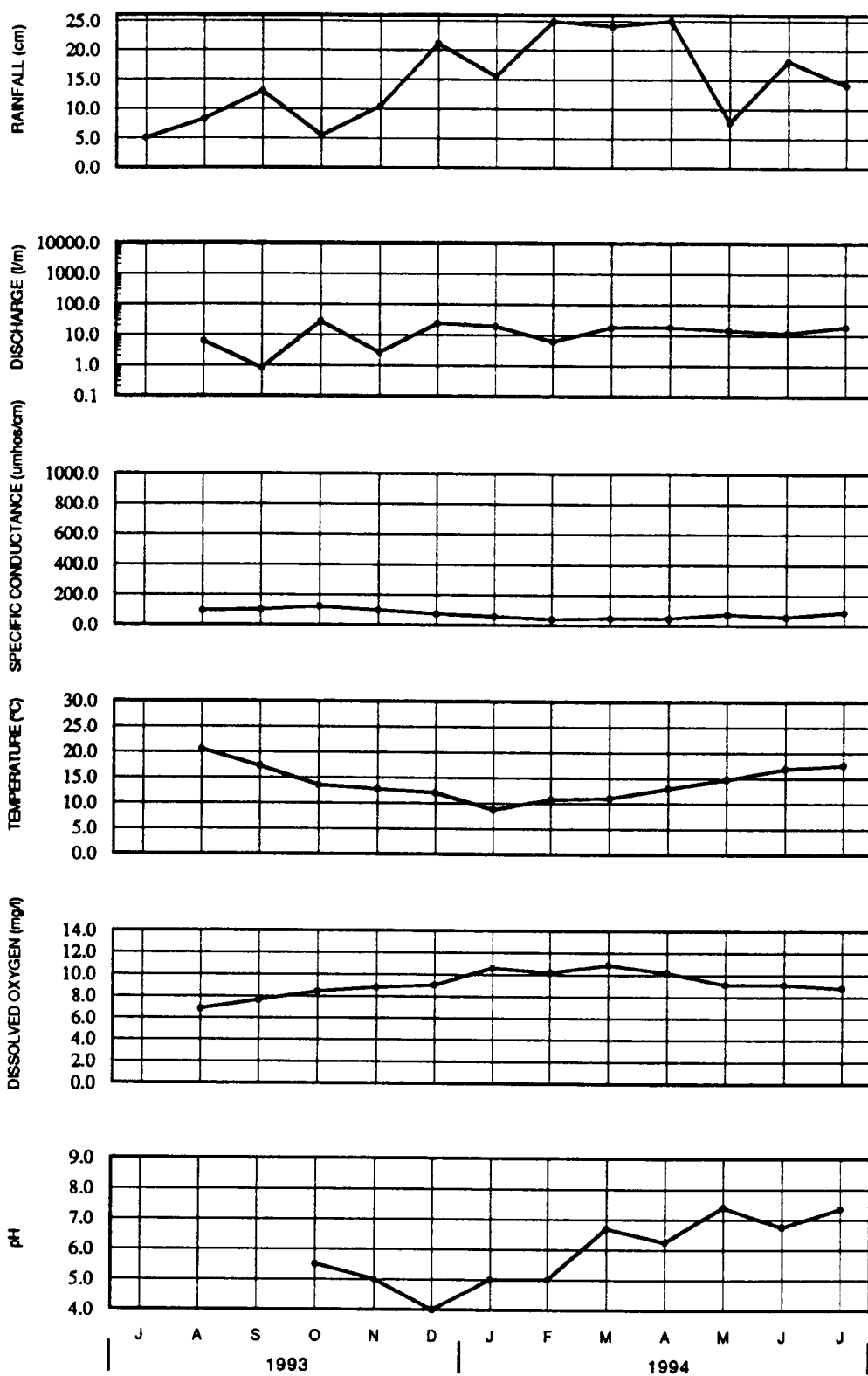
Spring SP-105 Detailed Survey Monthly Field Measurement



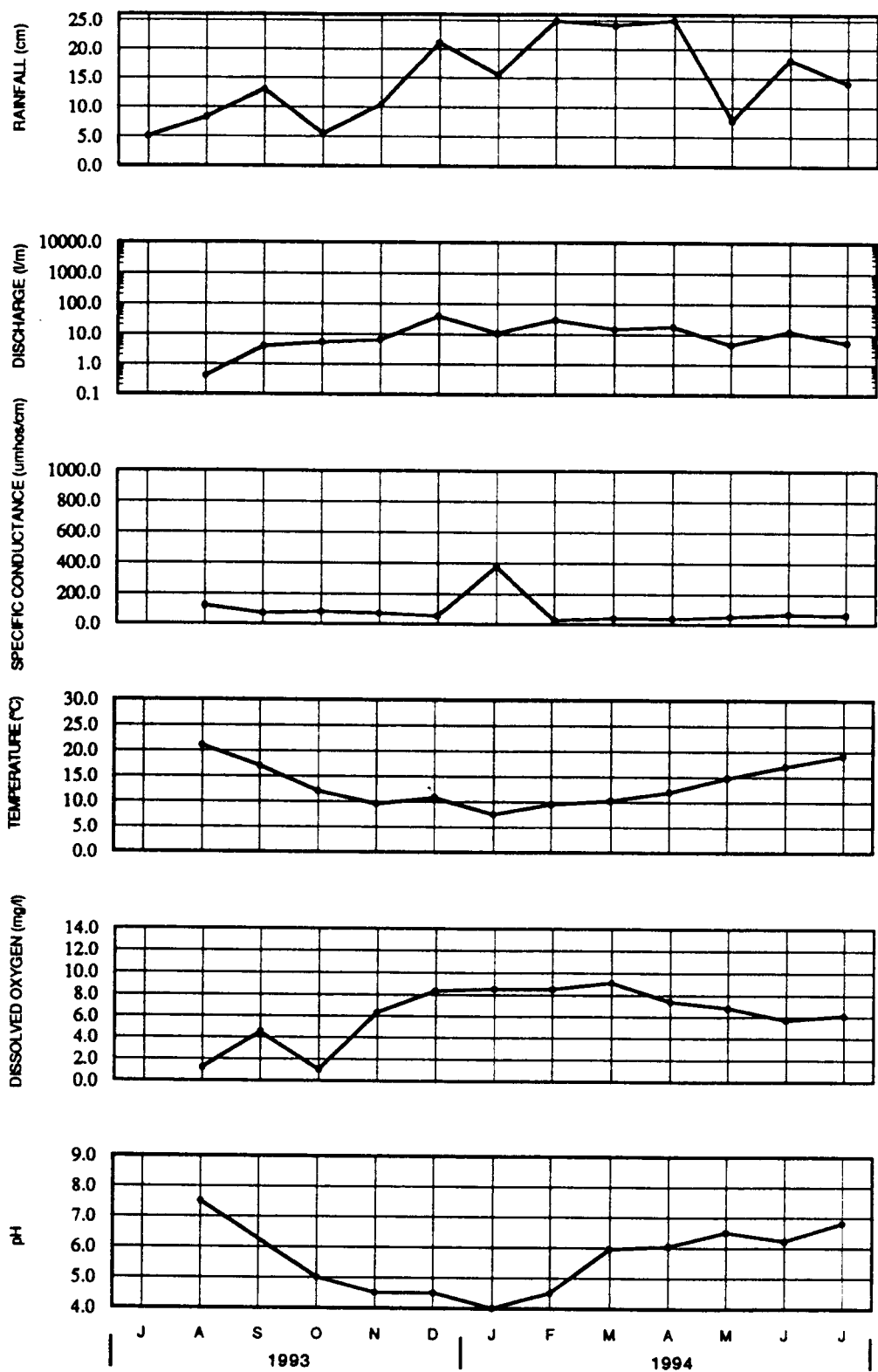
Spring SP-112 Detailed Survey Monthly Field Measurement



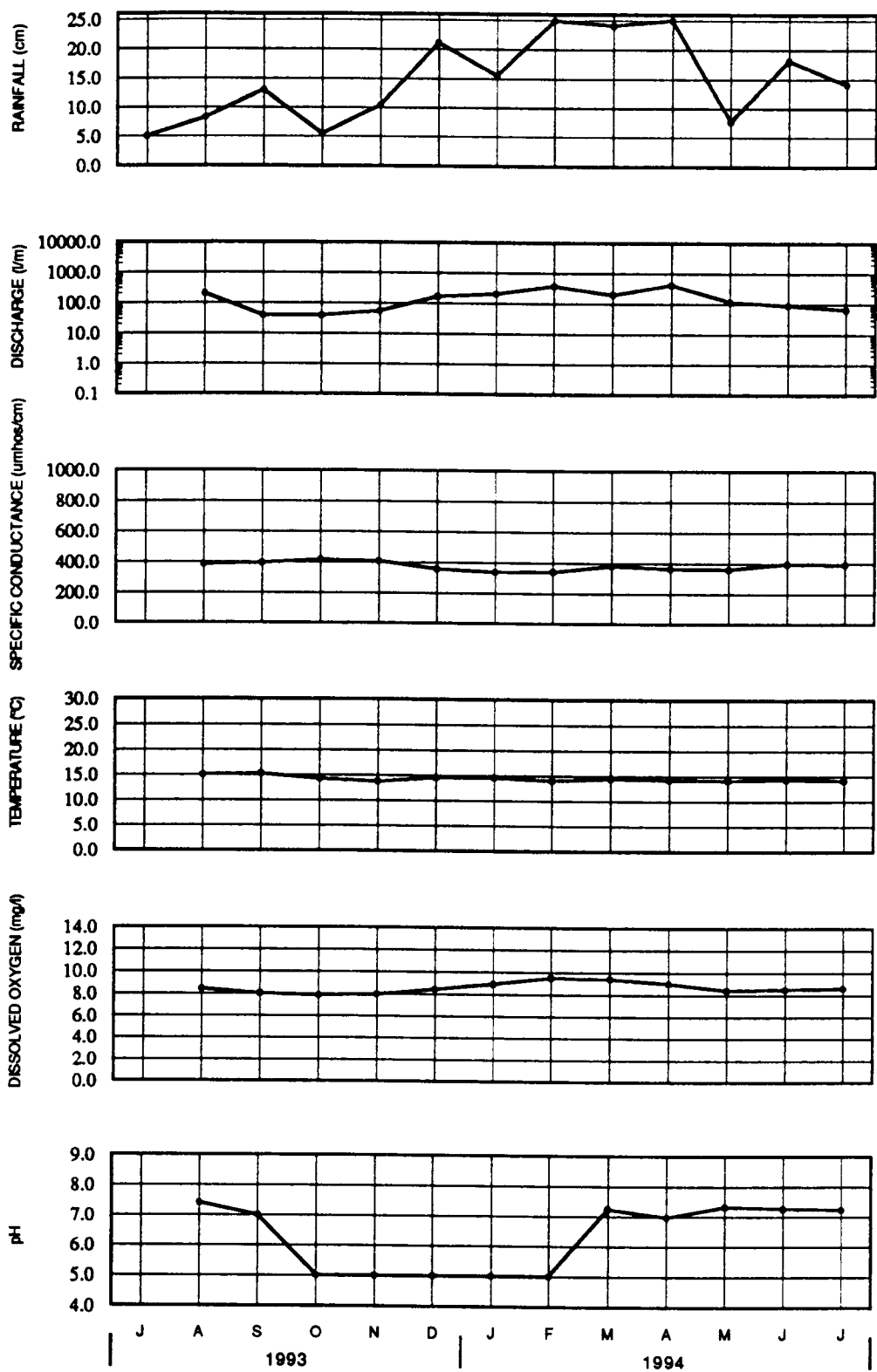
Spring SP-118 Detailed Survey Monthly Field Measurement



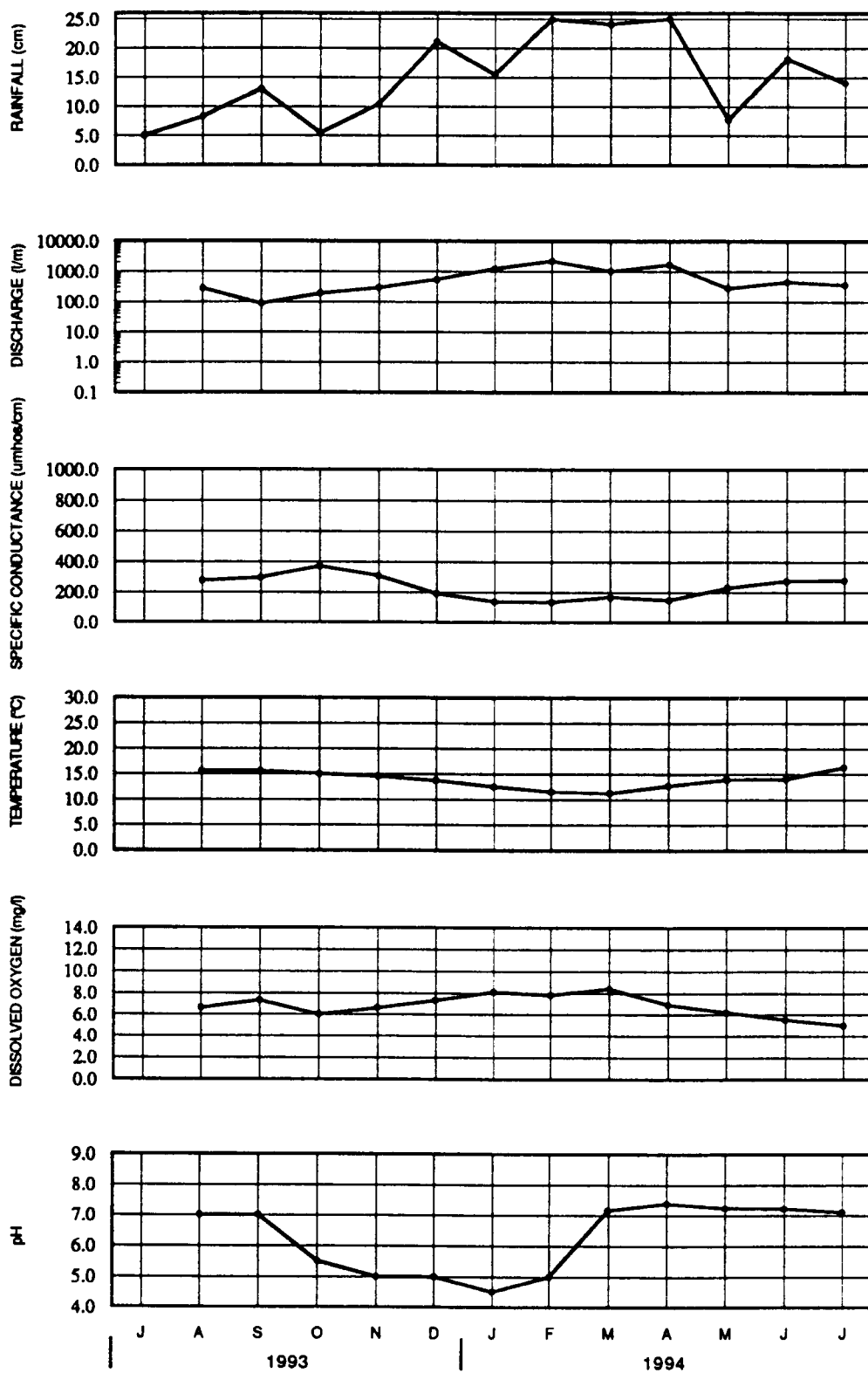
Spring SP-119 Detailed Survey Monthly Field Measurement



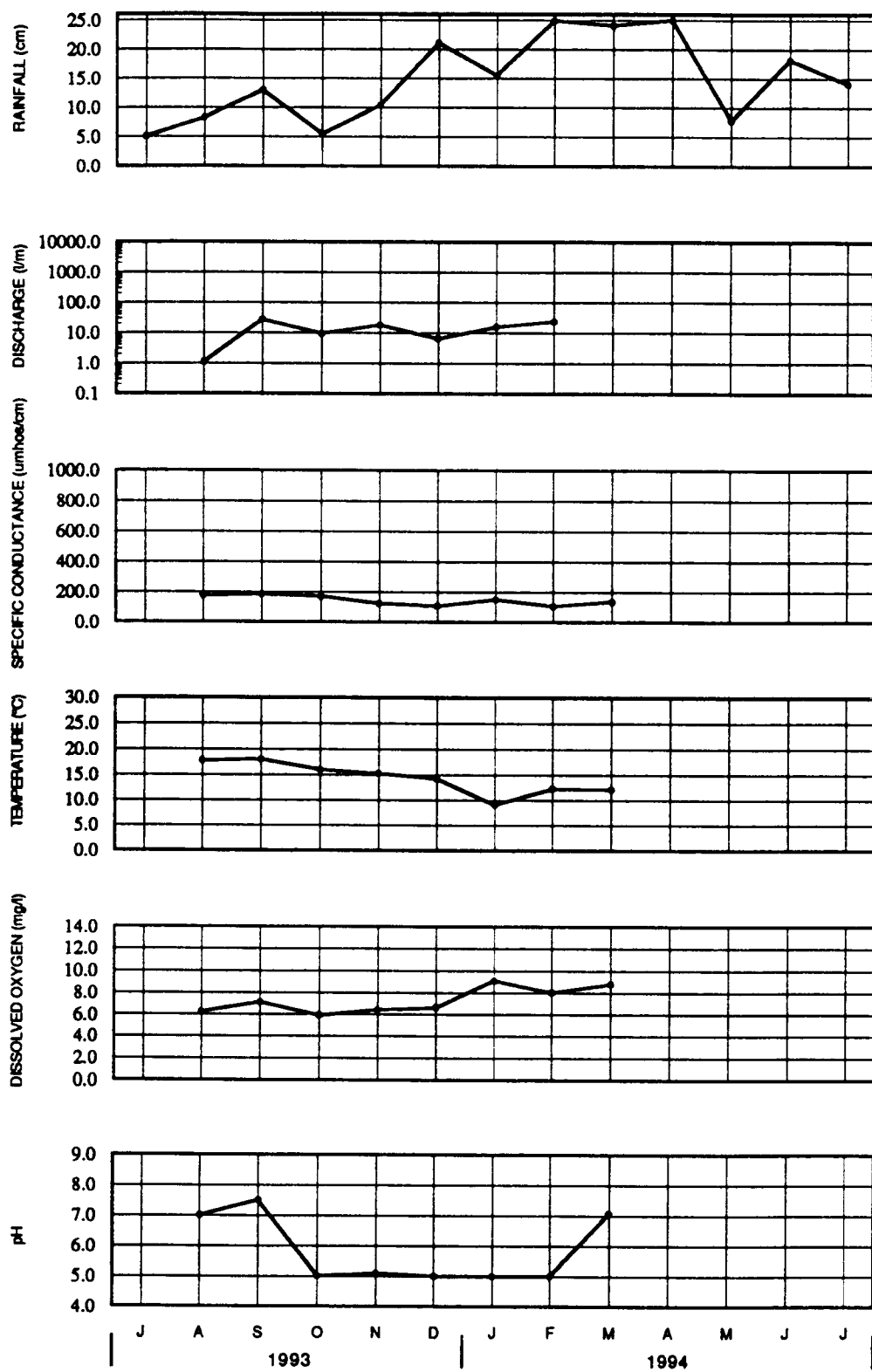
Spring SP-124 Detailed Survey Monthly Field Measurement



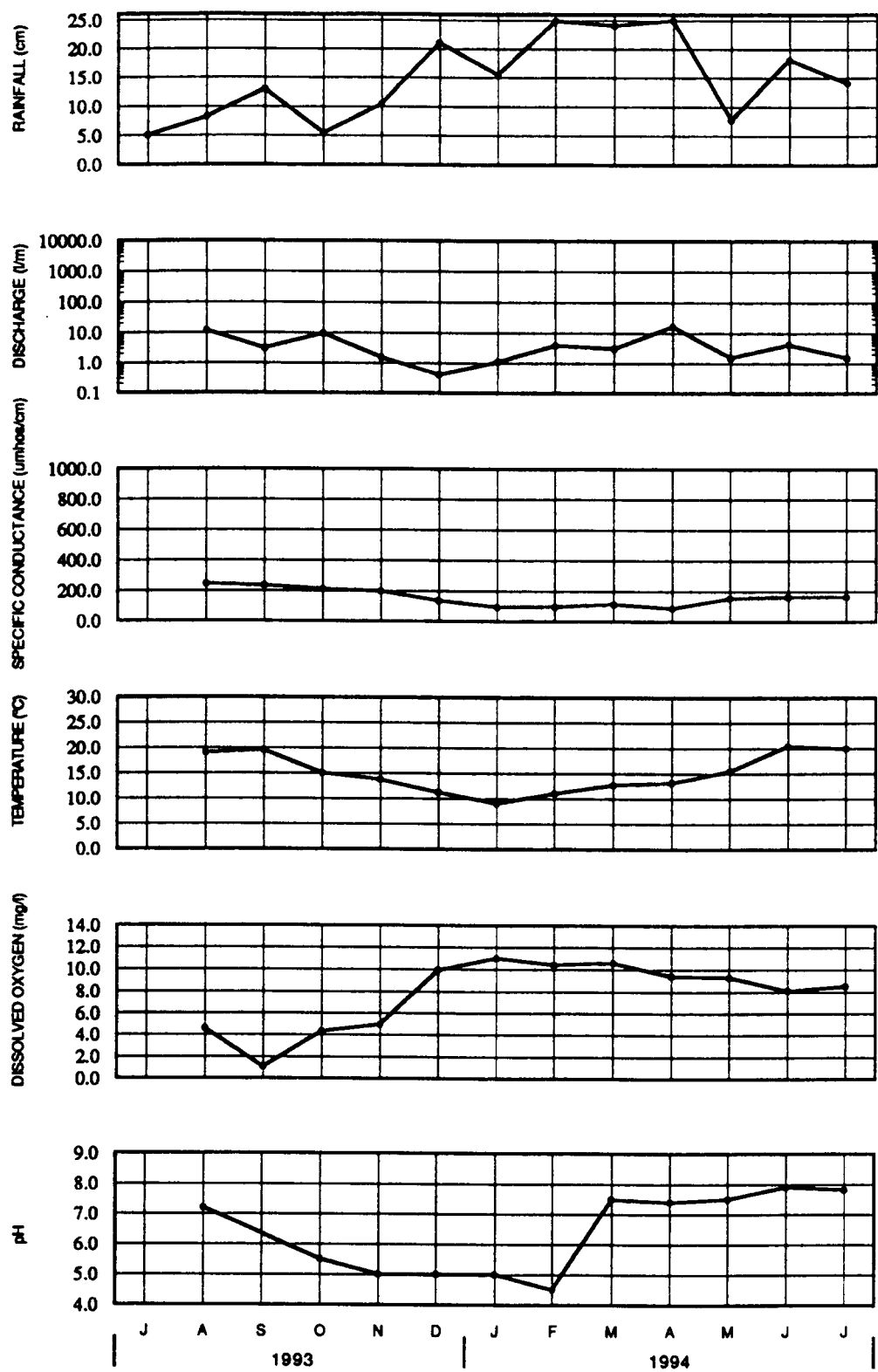
Spring SP-129 Detailed Survey Monthly Field Measurement



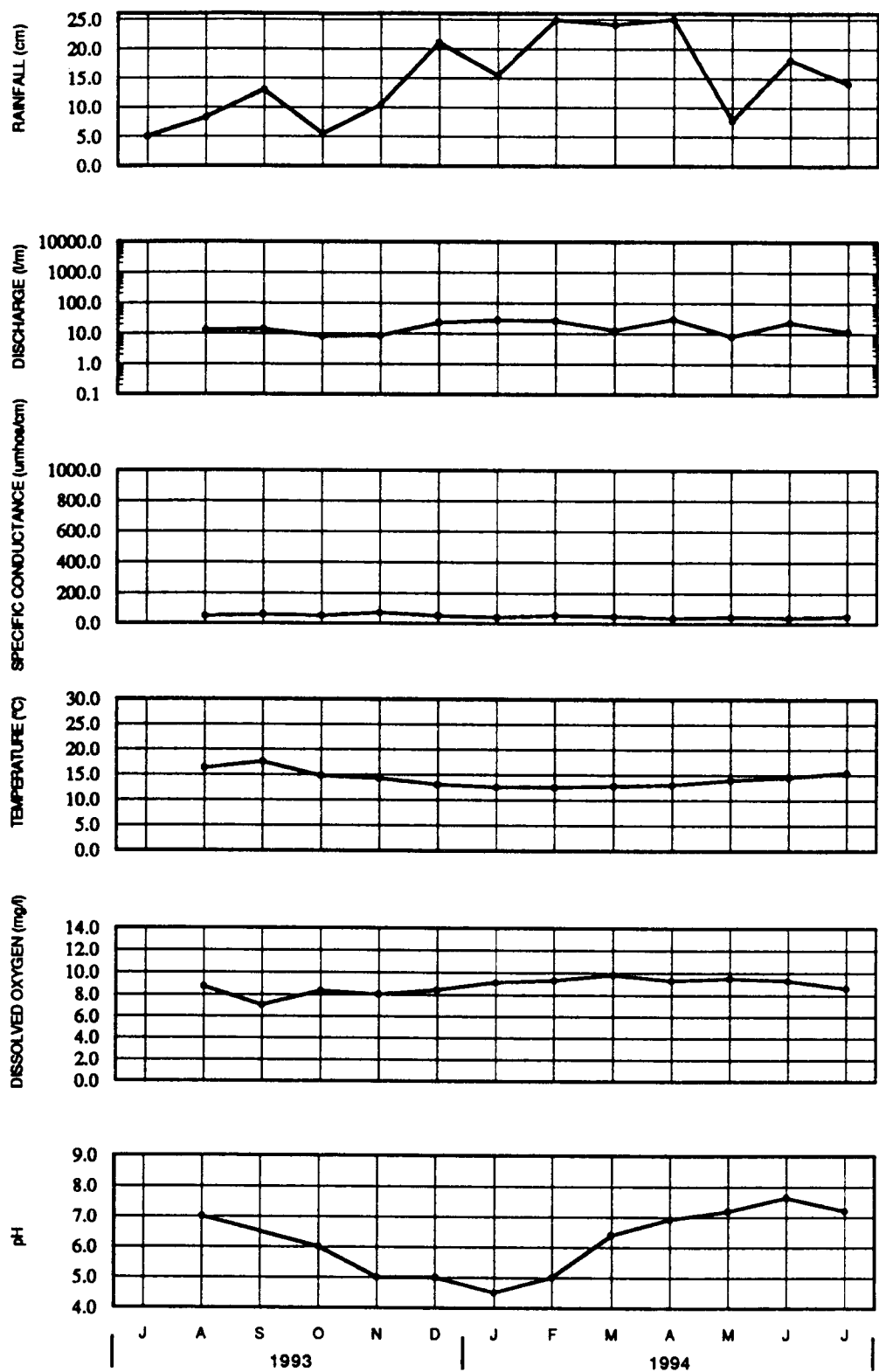
Spring SP-131 Detailed Survey Monthly Field Measurement



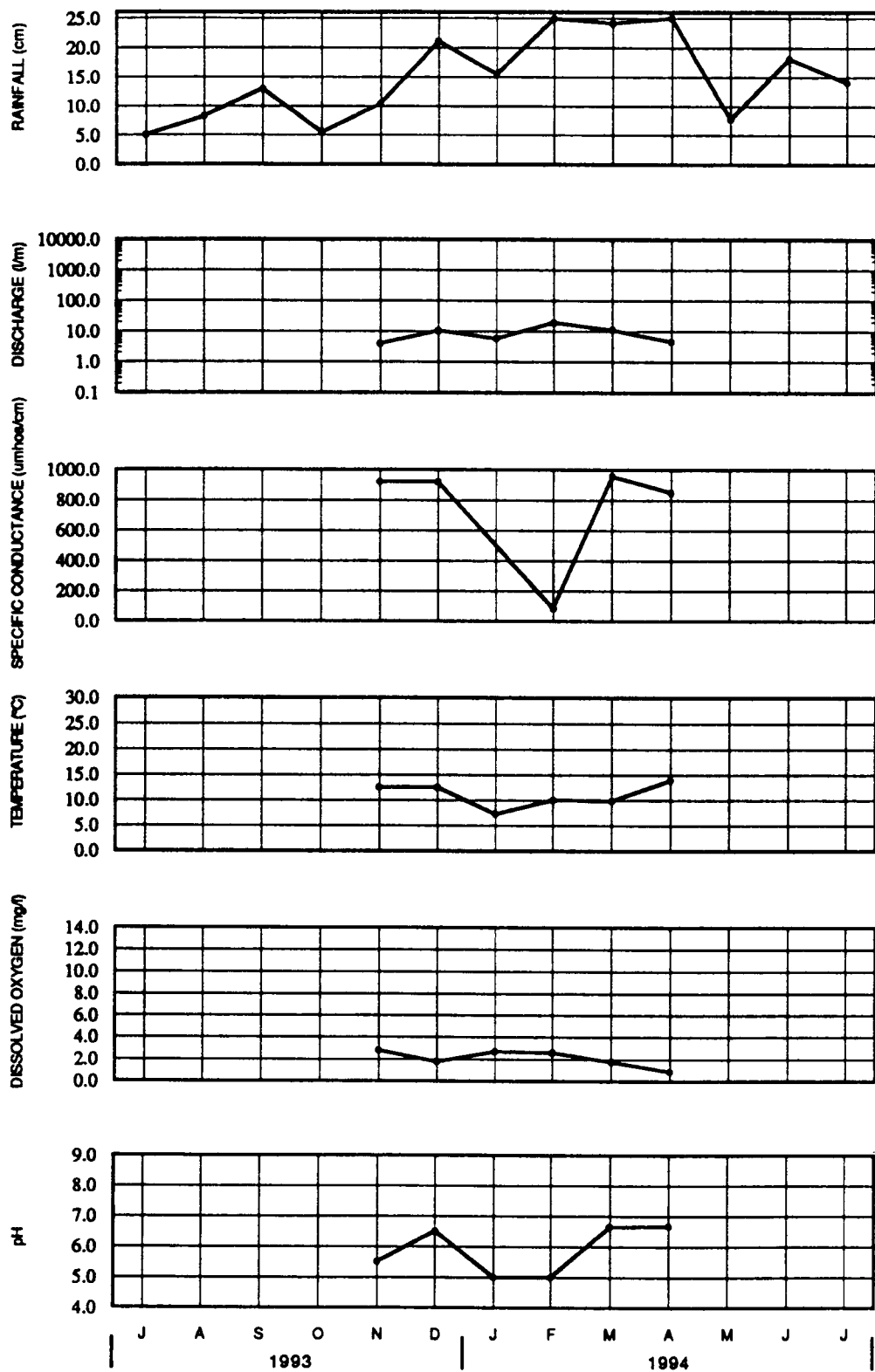
Spring SP-132 Detailed Survey Monthly Field Measurement



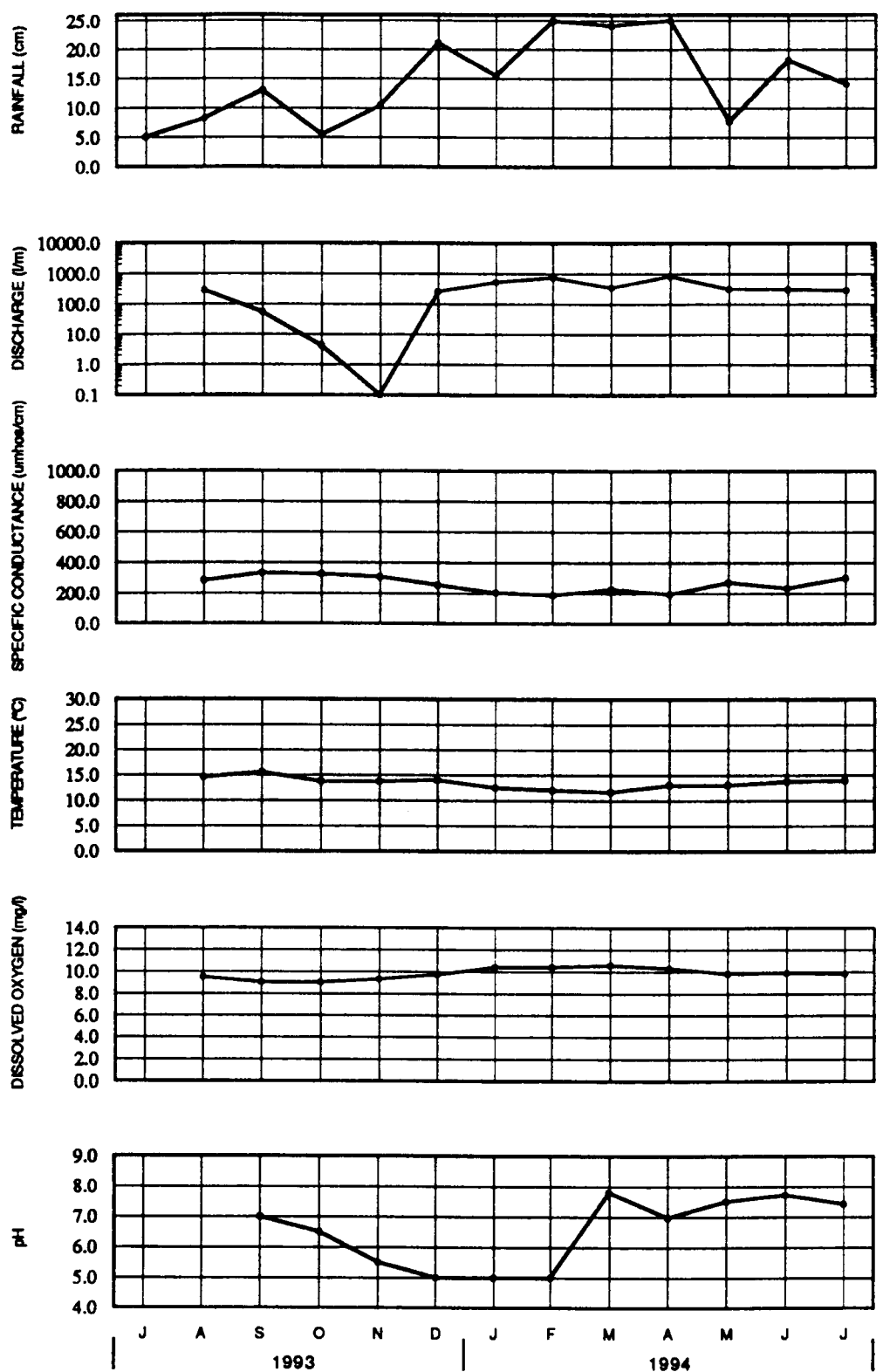
Spring SP-137 Detailed Survey Monthly Field Measurement



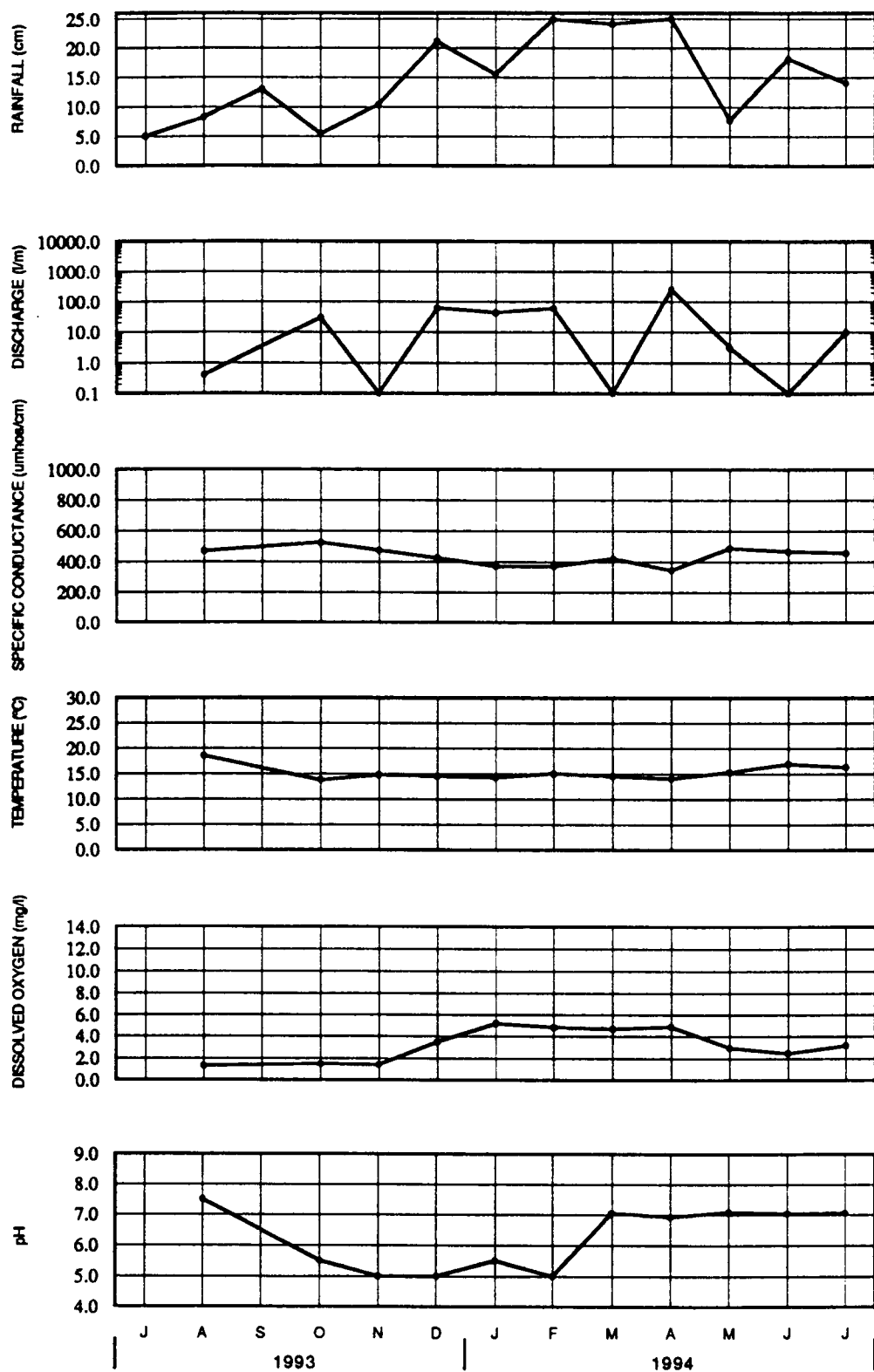
Spring SP-139 Detailed Survey Monthly Field Measurement



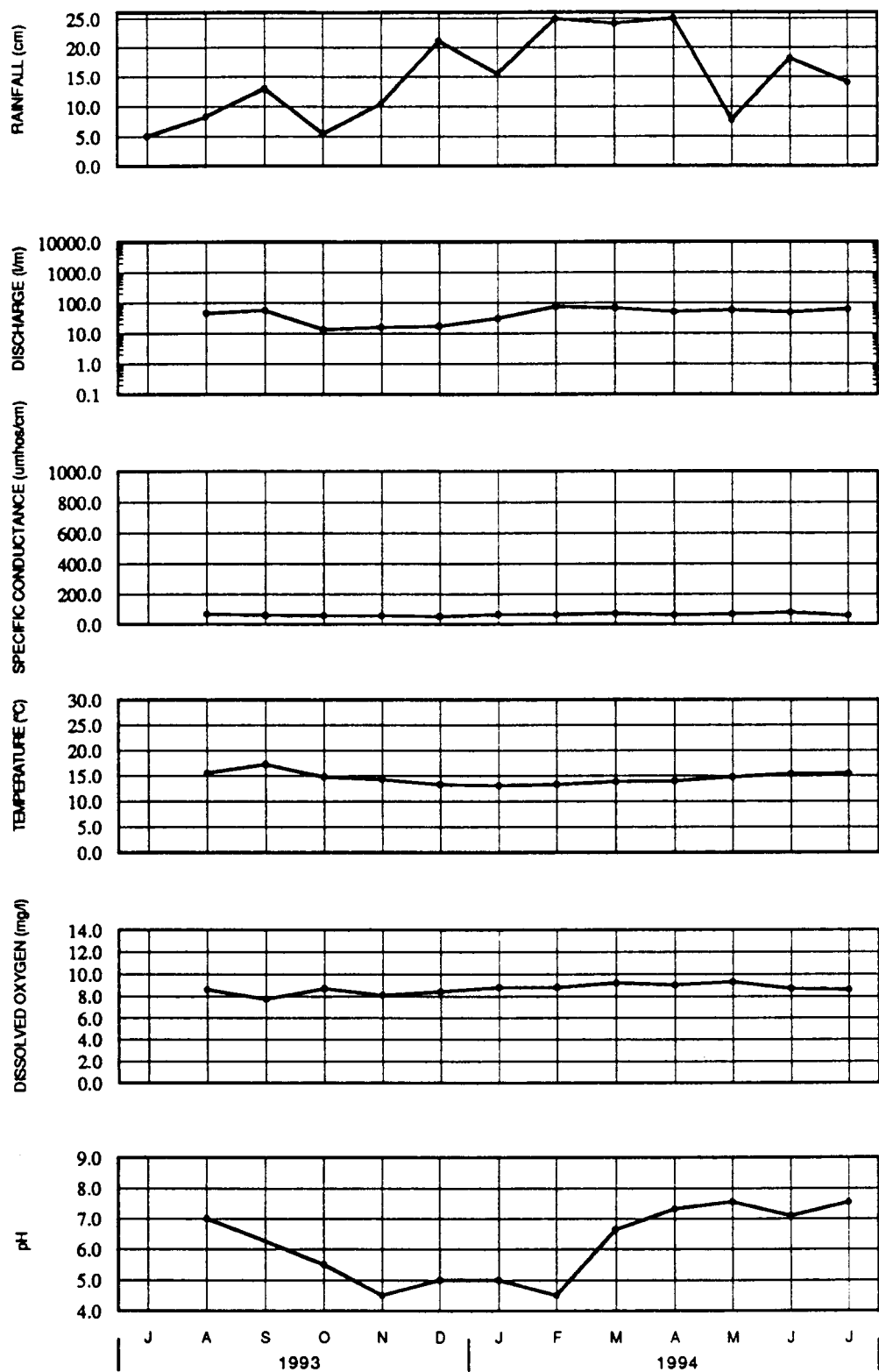
Spring SP-147 Detailed Survey Monthly Field Measurement



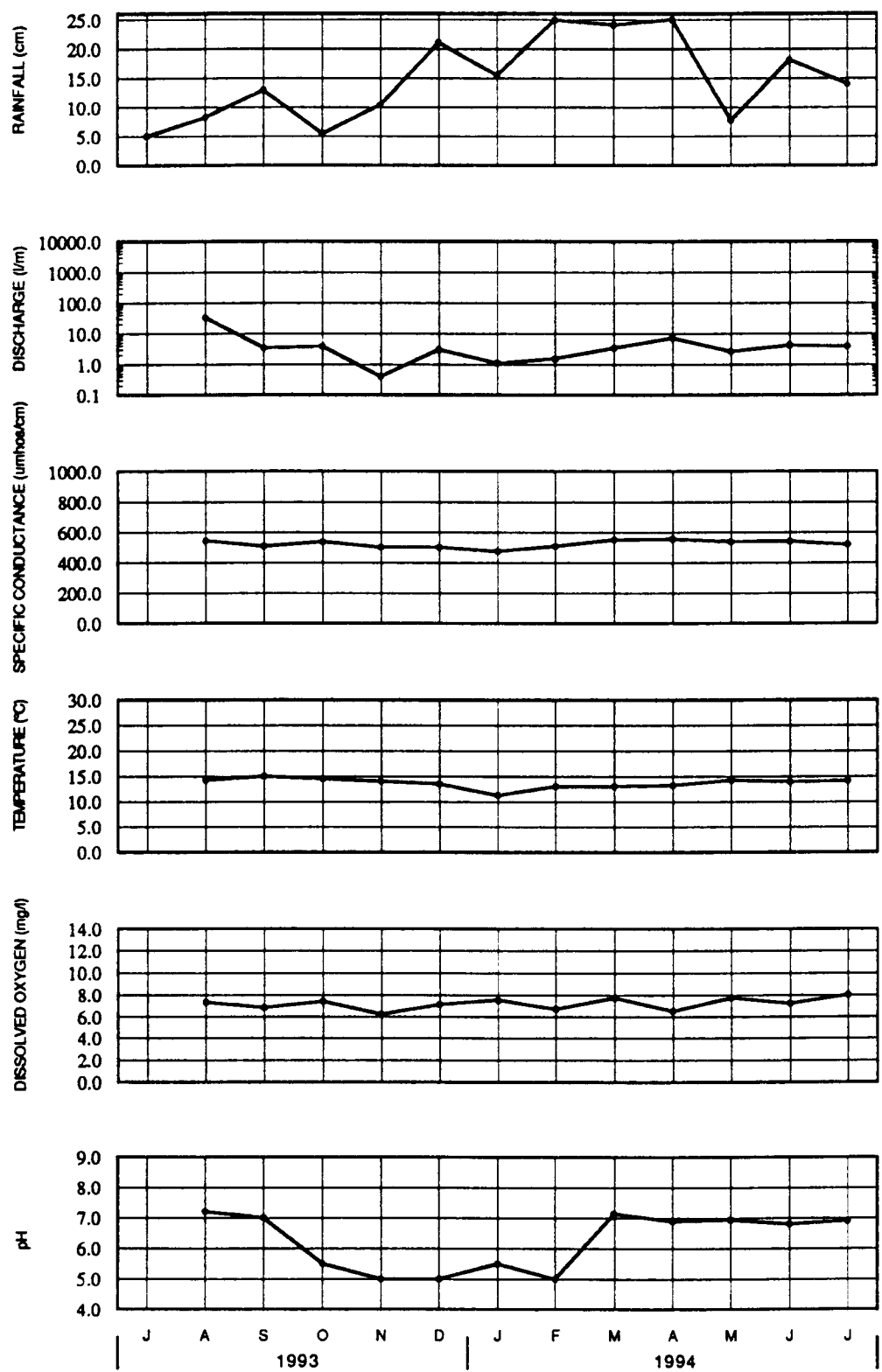
Spring SP-152 Detailed Survey Monthly Field Measurement



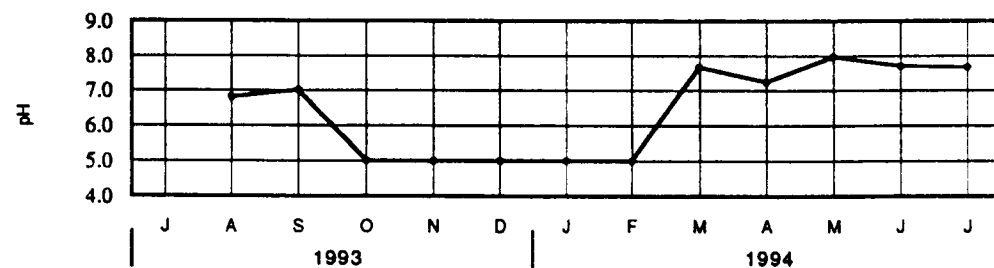
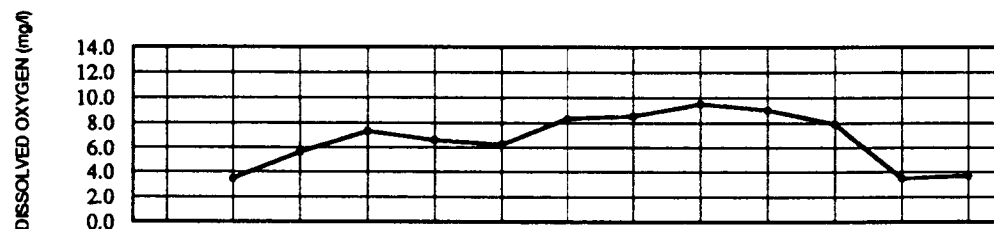
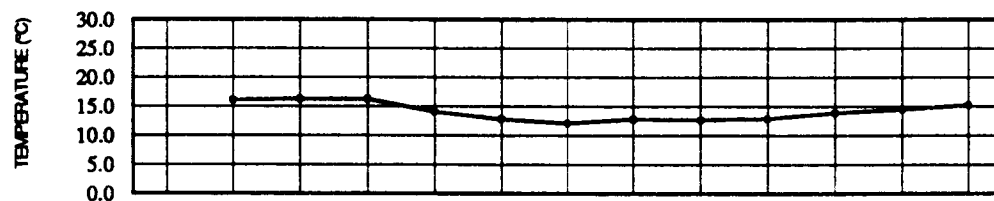
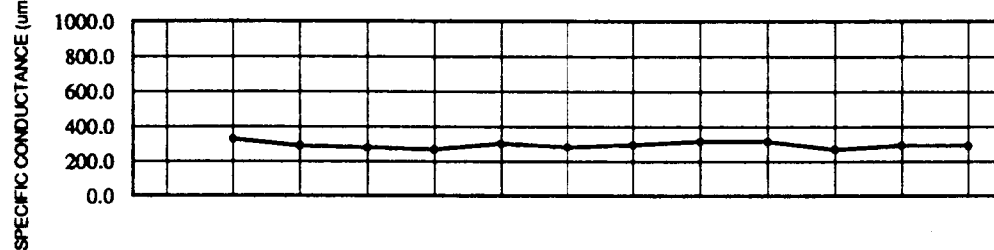
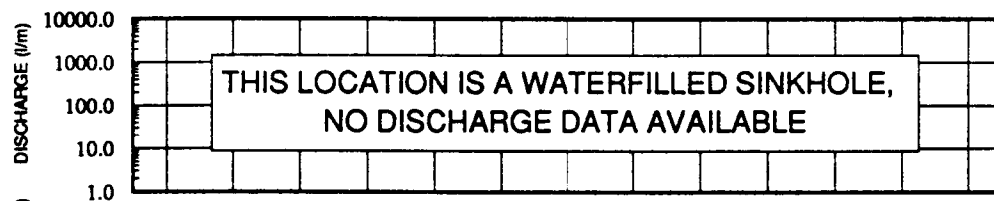
Spring SP-189 Detailed Survey Monthly Field Measurement



Spring SP-199 Detailed Survey Monthly Field Measurement



Spring SP-207 Detailed Survey Monthly Field Measurement



Spring SP-211 Detailed Survey Monthly Field Measurement

APPENDIX G

Stiff Diagrams

Stiff Diagrams

Milliequivalent per liter (meq/l) values were obtained by multiplying the analytical data from Appendix C by the following conversion factors from Greenberg et. al. (1992):

$$\text{Al}^{3+} = 0.11120$$

$$\text{Ca}^{2+} = 0.04990$$

$$\text{Cl}^{-} = 0.02821$$

$$\text{CO}_3^{2-} = 0.03333$$

$$\text{HCO}_3^{-} = 0.01639$$

$$\text{K}^{+} = 0.02558$$

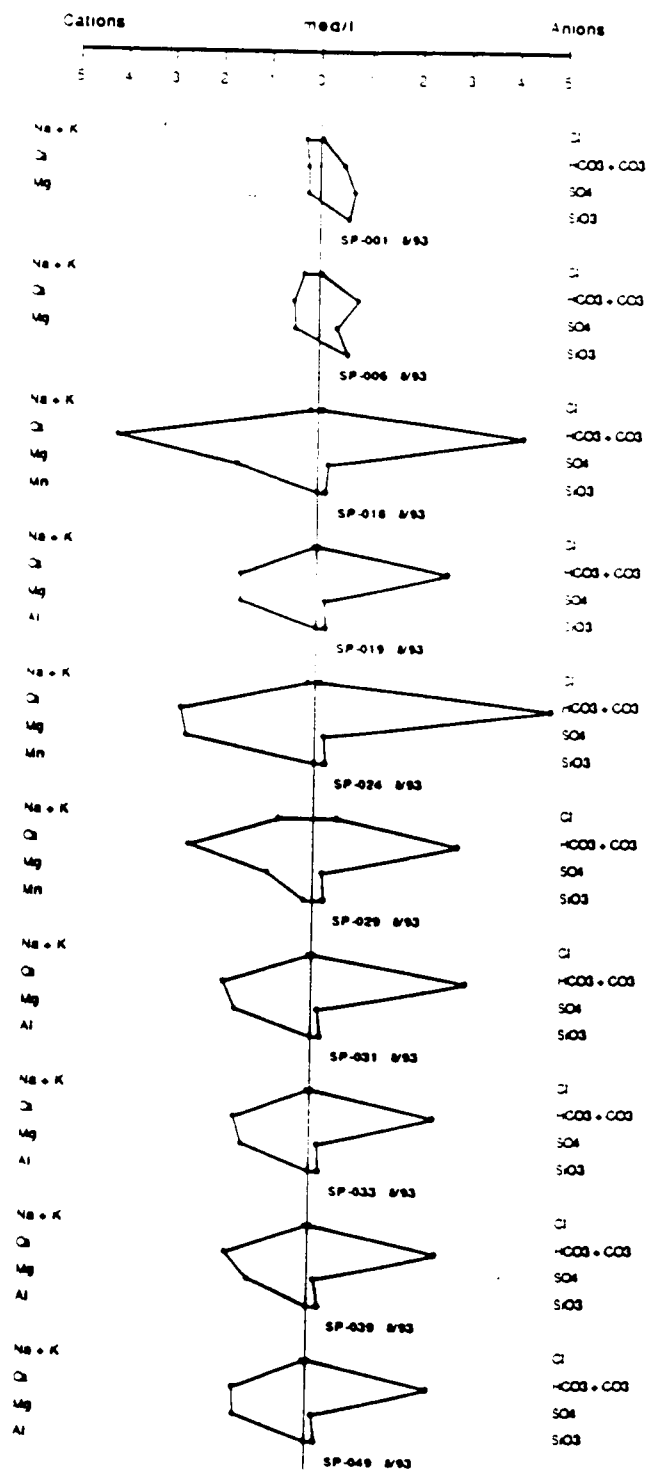
$$\text{Mg}^{2+} = 0.08229$$

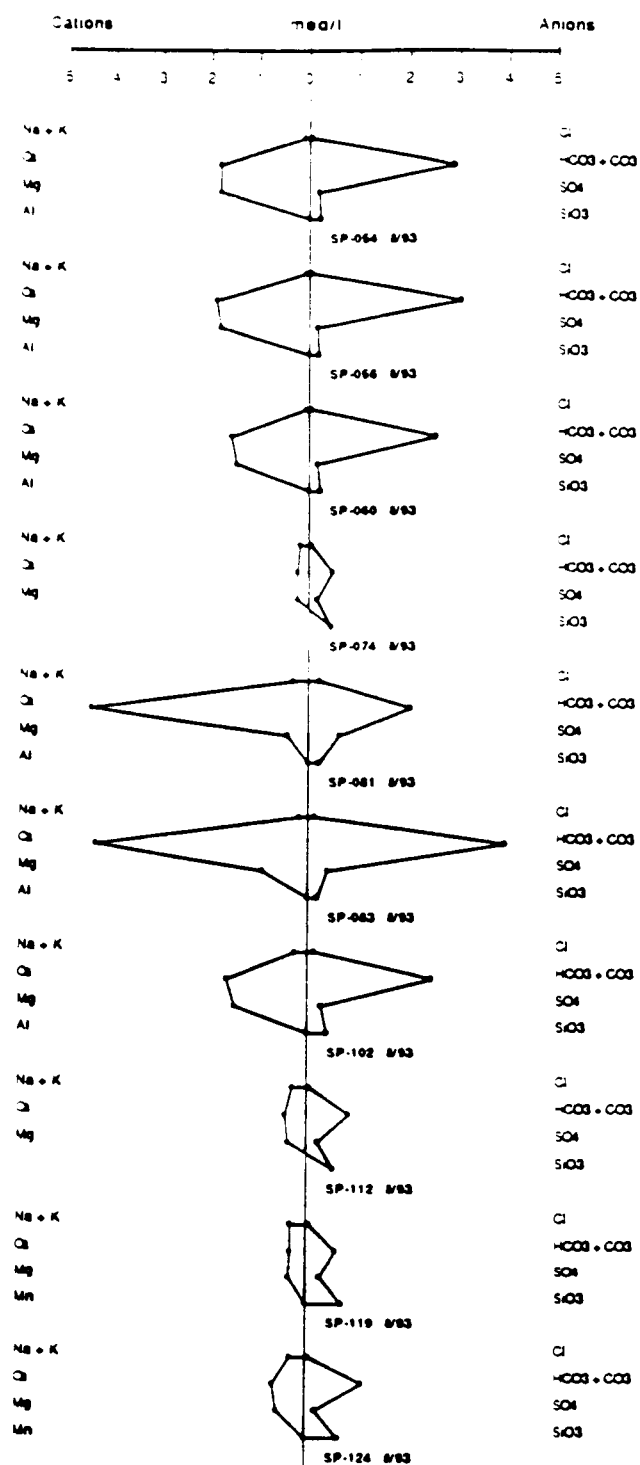
$$\text{Mn}^{2+} = 0.03640$$

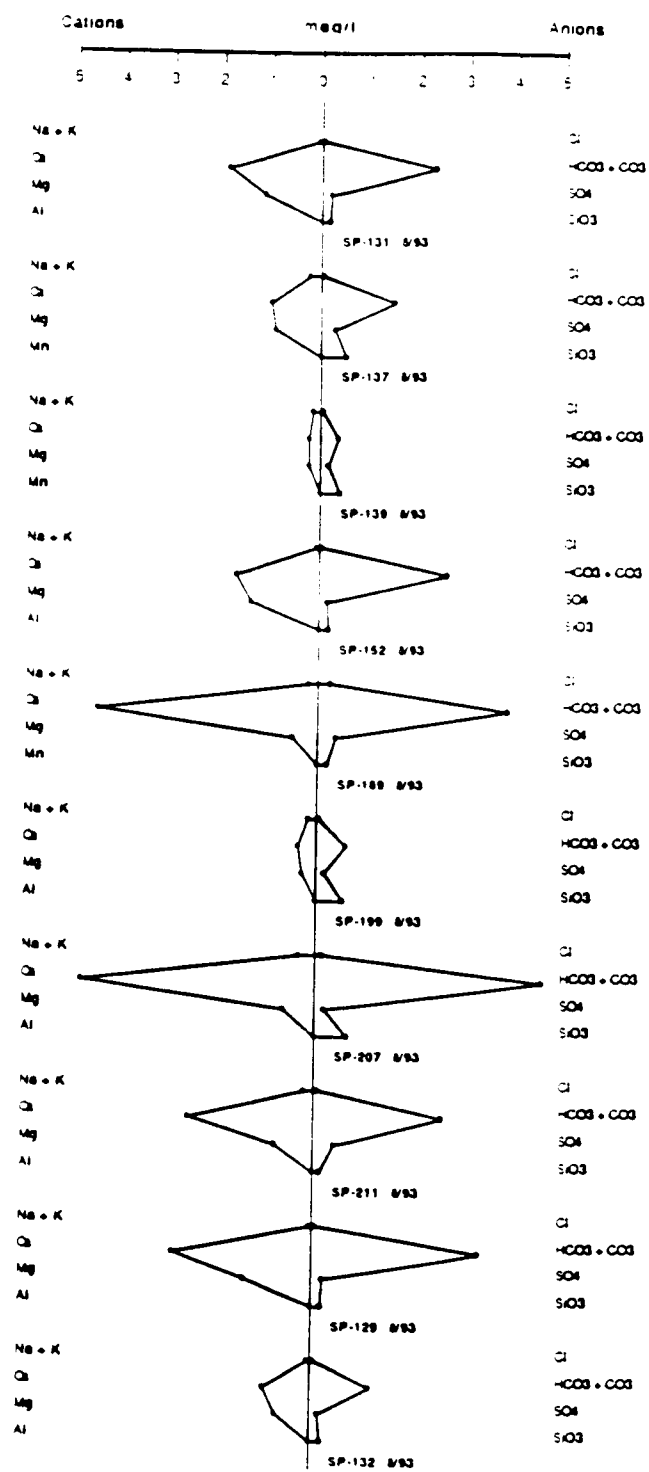
$$\text{Na}^{+} = 0.04350$$

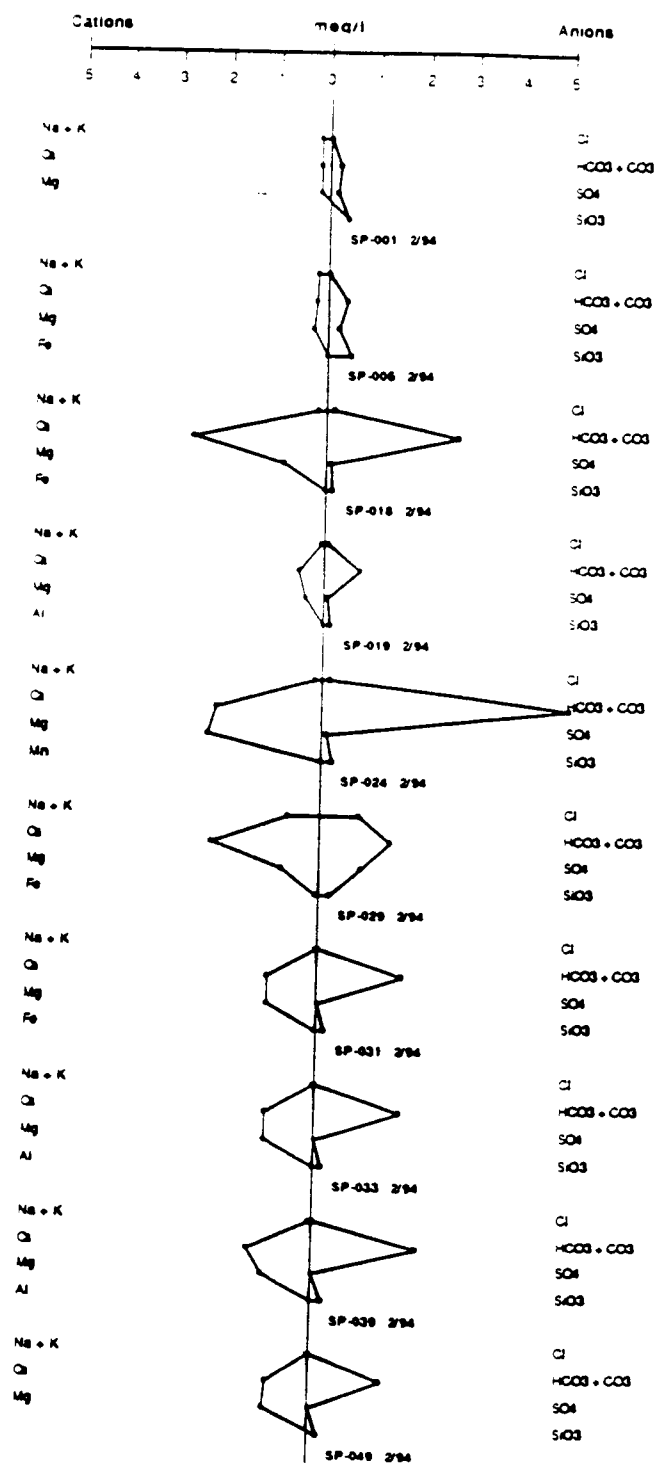
$$\text{SiO}_3^{2-} = 0.02629$$

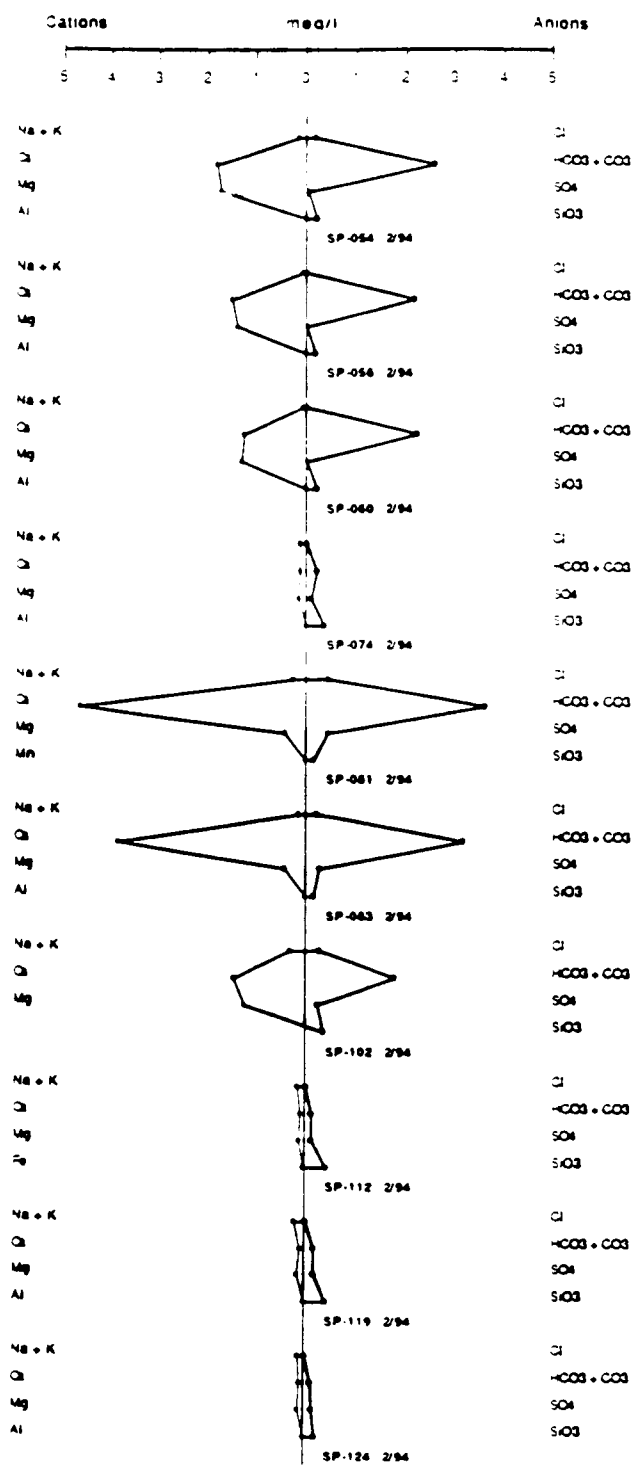
$$\text{SO}_4^{2-} = 0.02082$$

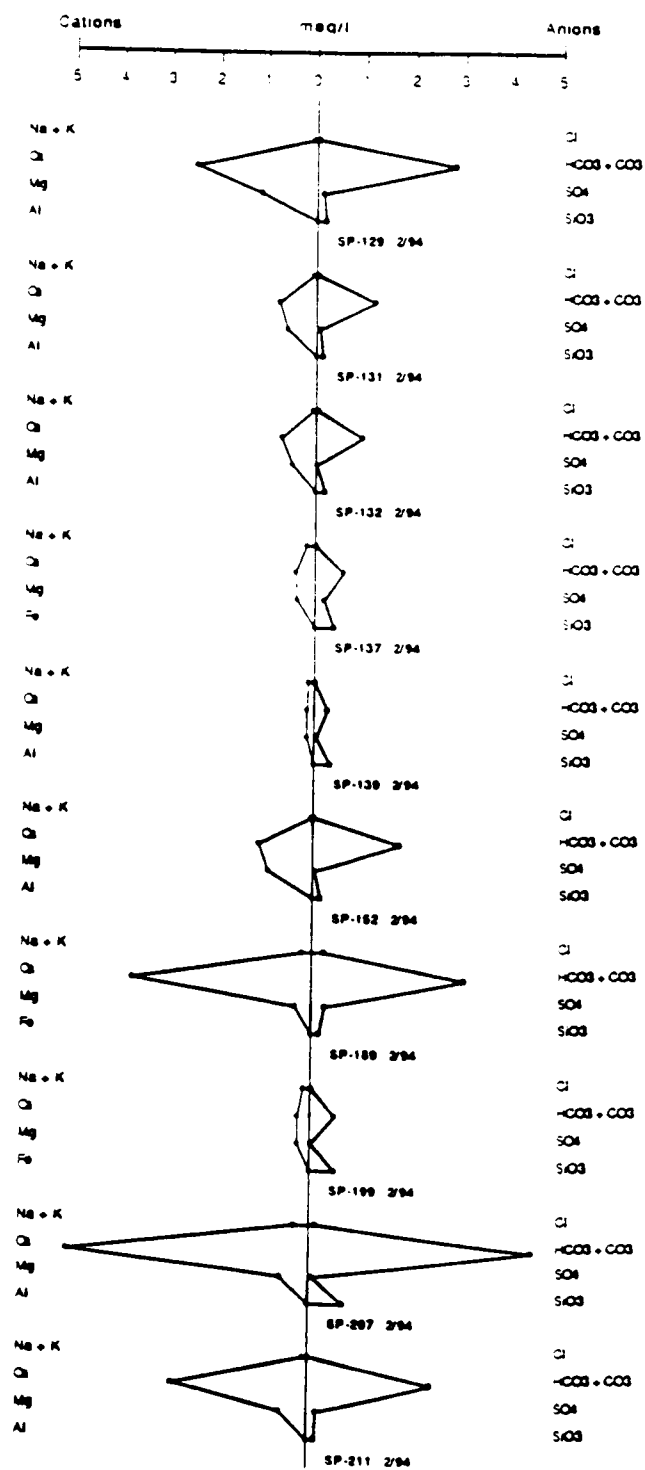












VITA

Steven Bolling Jones, son of Thomas and Rose Marie, was born in Richmond, Virginia on June 16, 1966. He grew up in Roanoke, Virginia and graduated from Cave Spring High School in June, 1984. He attended Virginia Polytechnic Institute and State University from 1984-1988 and graduated with a Bachelor of Science degree in Geological Sciences. He met his future-wife Kelley Spence during his first year at Virginia Tech and they were married during the summer of 1987. He went to work for the Civil Engineering Department of Martin Marietta Energy Systems, Inc. in Oak Ridge Tennessee in June, 1988. In January, 1991 he enrolled in the University of Tennessee-Knoxville as a graduate student and began working towards a Master of Science degree in Geology. The next year he changed positions within Martin Marietta Energy Systems, Inc. and began working for the Y-12 Plant Groundwater Protection Program of the Environmental Management Department. In August, 1994 his son Robert Thomas Jones was born. In August, 1995 he received his Master of Science degree in Geology from the University of Tennessee.