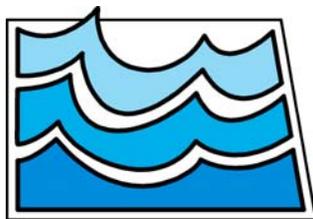

EVALUATION OF THE POTENTIAL FOR EXPANSION
OF THE TRAILL RURAL WATER DISTRICT'S
GROUND-WATER SUPPLY
IN THE NORTHERN PART
OF THE PAGE/GALESBURG AQUIFER,

PHASE II & III - EXPLORATION, MONITORING,
AND AQUIFER TEST ANALYSIS

By
Rex P. Honeyman



North Dakota Ground-Water Studies
Number 116
North Dakota State Water Commission
Dale L. Frink, State Engineer

Prepared by the
North Dakota State Water Commission
In cooperation with the Trill Rural Water District

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INTRODUCTION

Trail Rural Water District (TRWD) currently obtains rural water from the northeast portion of the Page/Galesburg aquifer. The well field is located in Section 29 and Section 32 in Township 146 North, Range 053 West in Traill County (Figure 1). TRWD currently holds two water permits which are approved to appropriate a total of 644 acre-feet from ground water with a maximum withdrawal rate of 1,070 gallons per minute. TRWD is planning to expand their existing ground-water supply which would include serving the cities of Mayville and Hillsboro. Mayville currently has an allocation of 640 acre-feet from the Goose River and Hillsboro has an allocation of 430 acre-feet from the Hillsboro aquifer. The projected water requirements for the proposed expansion are an additional 1,016 acre-feet with an additional pumping rate of 905 gallons per minute for a total appropriation of 1,660 acre-feet at a pumping rate of 1,975 gallons per minute.

In a February 3, 2004 meeting, TRWD requested the State Water Commission provide a cost estimate and time table to complete a feasibility study for the proposed ground-water supply expansion. TRWD identified potential point of diversion areas where production wells could be installed. Based on the locations of these potential points of diversion, a study area was defined which covers approximately 138 square miles (Figure 1).

The water supply study was conducted in three phases. Phase I, consisted of compiling and evaluating existing hydrogeologic data to describe the hydrogeologic setting in the northern part of the Page/Galesburg aquifer system and determine

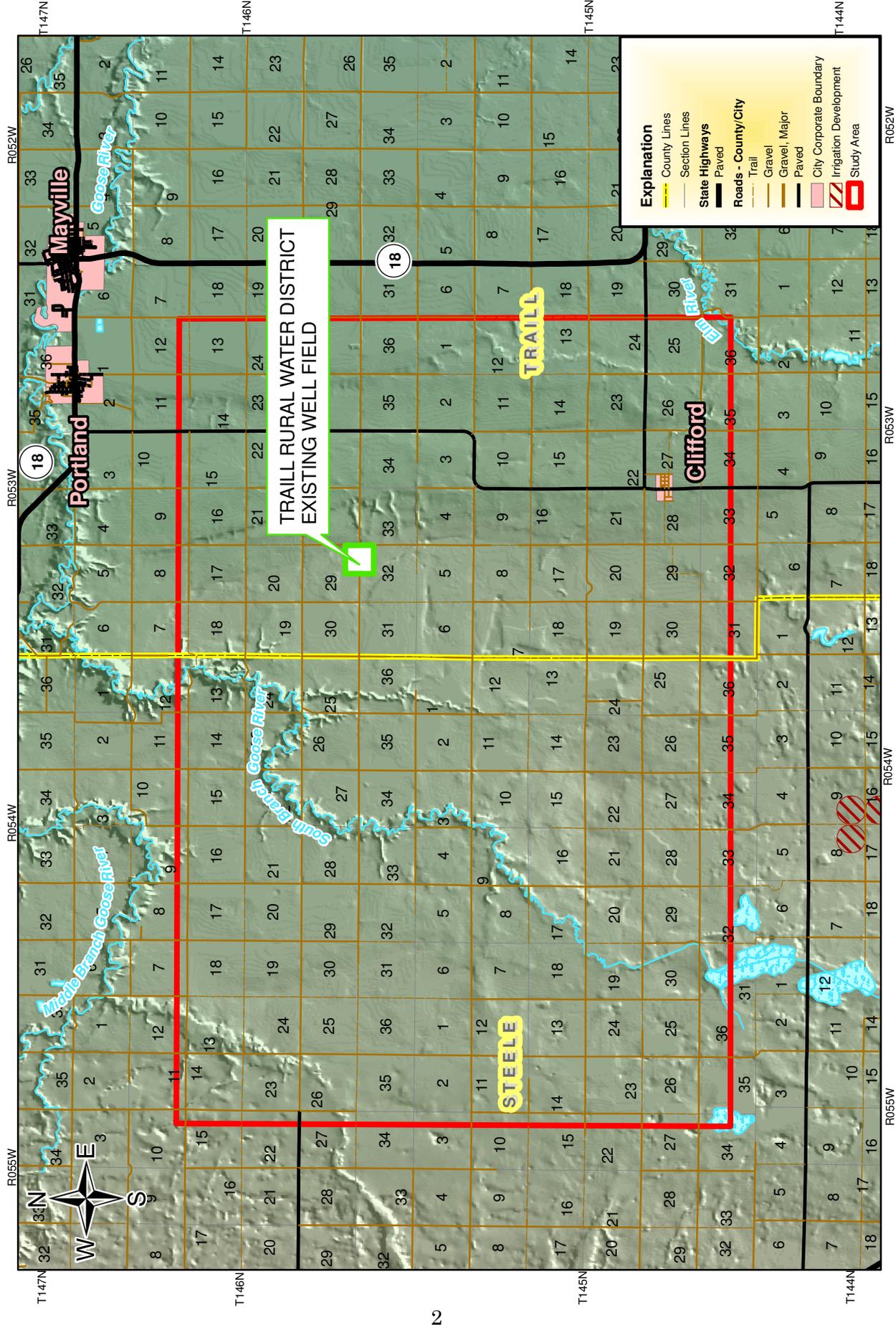


Figure 1. -- Location of study area and Trail Rural Water District existing well field

the areas where the potential exists for development of the proposed ground-water supply expansion.

The Phase I Investigation identified areas suitable for the proposed water-supply expansion and recommended a Phase II Investigation. The Phase II Investigation describes the local hydrogeologic settings with particular emphasis on estimating maximum well yields and evaluating water quality. The Phase II Investigation involved test drilling, observation well construction, water-chemistry analysis and water-level monitoring.

It was determined that the estimated well yields and water quality were suitable for the water supply expansion, and as a result, a Phase III Investigation was recommended. The Phase III Investigation involved the construction of a test-production well to conduct an aquifer test for the purpose of determining aquifer hydraulic properties, estimating sustained well yields, and providing a basis for well-field design.

Purpose and Objectives

The purpose of the Phase II and Phase III Investigations is to assess the capability of the Page/Galesburg Aquifer to support the future water supply needs for TRWD.

The objectives of the Phase II Investigation are to:

- 1) Further define the occurrence and movement of ground water in the northern part of the Page/Galesburg Aquifer System
- 2) Better define the geometry (thickness and areal extent) of the aquifer(s)

- 3) Estimate aquifer hydraulic properties (transmissivity, hydraulic conductivity and storativity) and potential well yields
- 4) Further evaluate the water quality of the aquifer system

The objectives of the Phase III Investigation are to:

- 1) Determine the local occurrence and movement of ground water in the Page/Galesburg aquifer
- 2) Determine the local geometry of the Page/Galesburg aquifer
- 3) Evaluate local aquifer hydraulic properties (transmissivity, hydraulic conductivity and storativity) by conducting an aquifer test
- 4) Estimate sustainable well yields
- 5) Provide a basis for well-field design
- 6) Further evaluate the water quality of the aquifer system

Acknowledgements

I would like to thank the following North Dakota State Water Commission personnel. Appreciation is expressed to Robert Shaver for sharing his breadth of knowledge in hydrogeology, for his assistance and guidance in the completion of this study, and for his critical review of this report. I would like to thank Dave Ripley for his direction and guidance throughout this study. This report was built on a foundation created by many years of work in the Page/Galesburg Aquifer by Dave Ripley. I would like to thank Jon Patch for sharing his knowledge of hydrogeology, for his overall support throughout this study, and for his critical review of this

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Thanks are extended to Randy Heiraas and other staff members of LTP Enterprises, Inc. for their dedication, expertise, and cooperation during the installation of the test-production well.

A special thank you is extended to the staff of Traill Rural Water District, especially Jerome Olson, Manager, Erin Bjerke, Office Secretary, and Lauren Sparrow, Assistant Manager. Their aid in contacting landowners of proposed drilling sites, timely assistance, hospitality, patience, and their overall cooperation with the ND State Water Commission should be commended.

I would like to thank my wife Melissa, son McKeon, and daughter Delaney for their understanding and support during the extended time periods spent away from home.

Location-Numbering System

Wells and test holes referred to in this report are numbered according to public land classification of the United States Bureau of Land Management. The system is illustrated in Figure 2. The first numeral denotes the township north of a

base line, the second denotes the range west of the fifth principal meridian, and the third numeral denotes the section in which the well or test hole is located. The subsequent letters A, B, C, and D designate, the northeast, northwest, southwest, and southeast quarter-section (160-acre tract), quarter-quarter-section (40-acre tract), quarter-quarter-quarter section (10-acre tract). For example, well 14505315ADD is located in the SE1/4 of the SE1/4 of the NE1/4 of Section 15, Township 145 North, Range 053 West. Consecutive terminal numerals are added if more than one well or test hole is located within a 10-acre tract.

Previous Work

Simpson (1929) briefly describes the geology and ground-water resources of Steele and Traill Counties. Abbott and Voedisch (1938) assembled water-quality data from selected municipal wells throughout the state, including wells within Steele and Traill counties. Dennis and Akin (1950) completed a progress report in association with the county ground water studies in an area near the city of Portland, ND. This report includes some water-quality information from wells within the study area.

The geology and ground-water resources of Traill, Steele, and Cass Counties are described in a three-part report for each county. Part I describes the geology of the respective county (Bluemle, 1967 ; Bluemle, 1975; and Klausing, 1968), Part II presents the ground-water data (Jensen, 1967; Downey, 1973, and Klausing, 1966), and Part III (Jensen and Klausing, 1971; Downey and Armstrong, 1977; and Klausing, 1968) describes the ground-water resources.

The soils of Traill and Steele Counties, including the study area are described in the county soil survey by Prochnow (1977) and Murphy and others (1997) respectively. In 1973 and 1974, C. A. Simpson & Son Drilling completed several wells and test holes in the Page/Galesburg aquifer near the TRWD well field. Two pumping tests for which data are available, were completed in this area during the winter of 1974. A compilation and evaluation of existing ground-water data to determine the potential for expanding Traill Rural Water District's water supply in the Page/Galesburg (Phase I Investigation) was completed by Honeyman (2005).

Methods

The Phase II and Phase III investigations were accomplished by the following tasks:

Phase II - Field Data Collection

Test drilling was accomplished using a hydraulic forward mud rotary drill rig. Samples of the sediments were collected during drilling and described by the onsite ground-water hydrologist. Field data was collected from the existing and new observation wells which included water-level monitoring, water-chemistry analysis, and horizontal and vertical global positioning surveying.

Water levels from existing and new observation wells within the study area were monitored on a monthly basis. Water samples for chemical analysis were collected from each observation well within the study area. The samples were transported to the North Dakota Department of Health Laboratory where they were analyzed for the major cations and anions and selected trace elements. Global

positioning surveys were completed on all existing and new wells within the study area. Elevations were established to the third order of accuracy. Surveying was accomplished by personnel of the State Water Commission and Advanced Engineering and Environmental Services, Inc.

Phase III - Aquifer Test

An 8-inch diameter test-production well was installed in the south-central portion of the study area by LTP Enterprises, Inc. A 100-hour aquifer test was conducted on the test-production well to determine the hydraulic properties of aquifer subunit A1. Real-time monitoring of water levels in the test-production well, nearby observation wells, and a large diameter domestic well was accomplished utilizing water-level dataloggers which were connected to wireless transreceivers and directional antennas. The real-time data was gathered by a Dell notebook computer and an Apple notebook computer in a portable field office. Weather conditions were logged utilizing a La Crosse Technologies digital weather station. The flow rate was measured utilizing a Panametrics Model PT868 sonic flowmeter and was continuously monitored throughout the aquifer test. The discharge water was conveyed by a pipeline into a natural surface water drain approximately 1,000 feet northeast of the test-production well site. Water samples for chemical analysis were collected each day during the aquifer test. The samples were transported to the North Dakota Department of Health Laboratory where they were analyzed for the major cations and anions and selected trace elements. Global positioning surveys were completed on a large diameter domestic well, newly

installed observation wells, and the test-production well. Elevations were established to the third order of accuracy. Surveying was accomplished by personnel of Advanced Engineering and Environmental Services, Inc.

DESCRIPTION OF THE STUDY AREA

Physiography

The study area is located in the east-central part of North Dakota. The eastern two-thirds of the study area are within the Lake Agassiz Plain district and the western third of the study area is within the Drift Prairie district of the Central Lowland physiographic province (Figure 3). The study area can be divided into five landforms, which include a lake plain, beach ridges, a delta plain, a stream valley, and a till plain. The eastern part of the study area consists of a broad, flat, and fertile lake plain, associated with Glacial Lake Agassiz. The elevation of this plain ranges from 970 feet (in the northeast of the study area) to 1,000 feet (in the southeast of the study area) above sea level.

Beach ridges exist near the western boundary of the lake plain. These ridges reach several feet to nearly 35 feet above the surrounding lake plain and are nearly level to gently rolling. They generally trend north to south and represent the former shorelines of Glacial Lake Agassiz.

The delta plain rises approximately 30 to 100 feet above the lake plain and makes up approximately 60 percent of the study area. The delta plain is gently undulating and consists mostly of the sands and silts that were deposited by rivers entering Glacial Lake Agassiz.

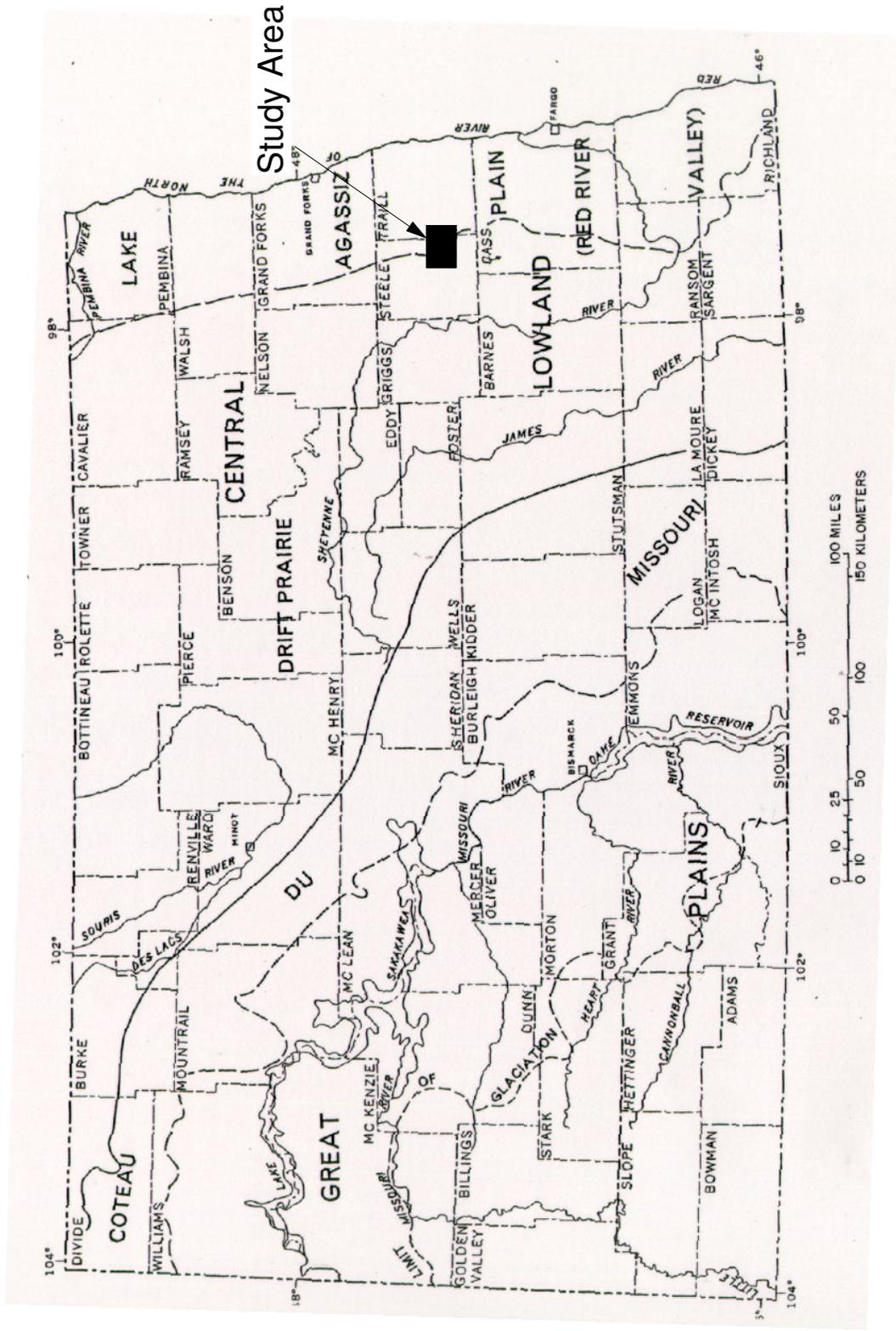


Figure 3. -- Physiographic divisions in North Dakota and location of study area

The South Branch of the Goose River dissects the delta plain from the southwest to the north central portion of the study area. The South Branch of the Goose River is an underfit stream located in a valley that was originally formed by glacial melt-water.

The till plain in the southwest corner of the study area consists of a nearly level to gently rolling ground moraine. The elevation of the till plain ranges from approximately 1130 feet to 1155 feet above sea level.

Climate

The climate of the study area is subhumid. The mean annual precipitation at Mayville from 1911-1987 was 19.11 inches and at Colgate from 1949-2001 was 18.07 inches (Hydrosphere, 2003). Annual precipitation and the five-year moving average at Mayville for 1911-1987 and at Colgate from 1949-2001 are illustrated in Figures 4 and 5. The driest period of record occurred during the 1930s and the wettest period of record occurred during the mid-1990s. Precipitation falls mainly during the growing season and is normally heaviest in late spring and early summer (Murphy et. al, 1997).

The mean annual temperature at Mayville from 1911-1987 was 40.5°F. Over the period of record, temperatures at Mayville ranged from -41°F to 114°F (Hydrosphere, 2003).

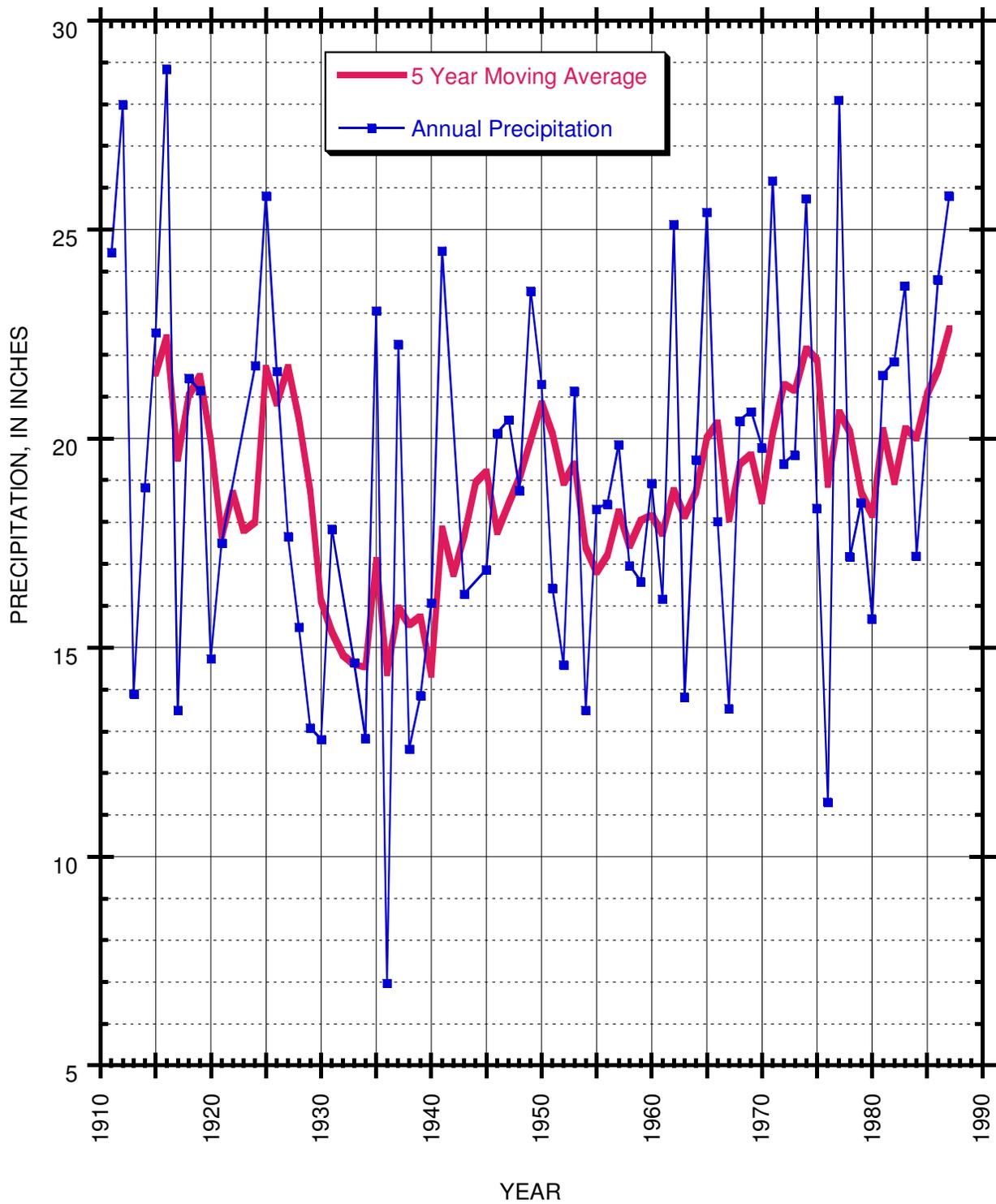


Figure 4. -- Annual precipitation and 5-year moving average at Mayville from 1911-1987

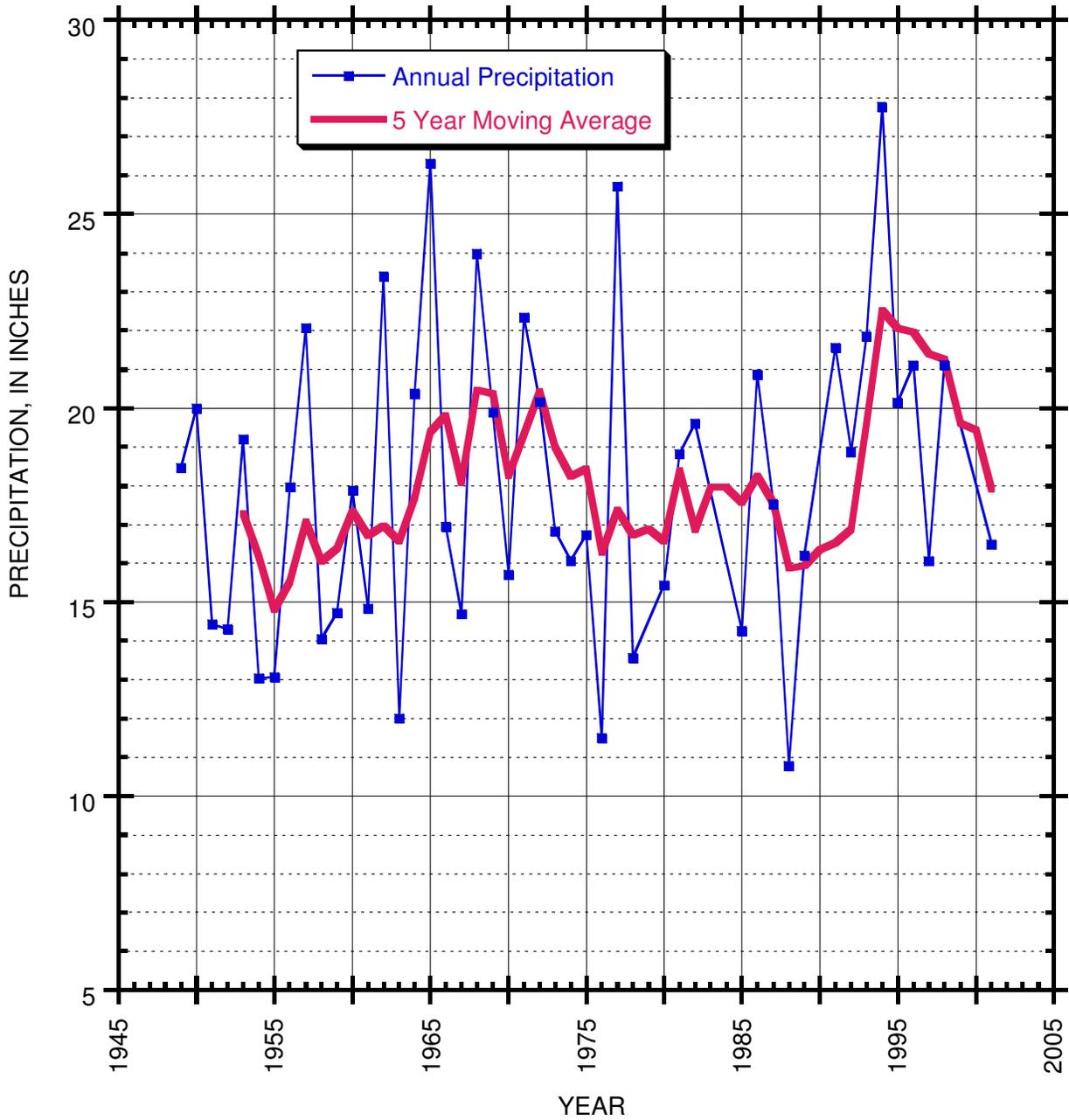


Figure 5. -- Annual precipitation and 5-year moving average at Colgate from 1949-2001

Geology of the TRWD Study Area

The surface geology of the study area is characterized by the Pleistocene Coleharbor Formation (Bluemle, 1975). The Coleharbor Formation is comprised of a till facies, a sand and gravel facies, and a silt and clay facies.

The till facies is a non-stratified mixture of sand, gravel, and boulders in a silty clay matrix. The coarser fraction of the till consists of shales, carbonates, granitics and basal igneous rocks. The shale was derived from the local bedrock formations. The carbonate was derived from a Paleozoic carbonate sequence from southern Canada and the granitics and the basal igneous rocks from the Canadian Shield (Bluemle, 1975).

The sand and gravel facies consist primarily of deltaic sediments which were deposited by glaciofluvial processes during the Pleistocene. Rivers of glacial melt-water entered Glacial Lake Agassiz from the west forming deltas along its shoreline. These sediments consist of lenticular deposits of sand and gravel interbedded with clay and silt (Downey and Armstrong, 1977). These deposits form what is referred to as the Galesburg aquifer by Bluemle (1967) in Traill County, and Downey and Armstrong (1977) in Steele County, and includes the deposits assigned to the Page aquifer by Klausning (1968) in Cass County. To avoid confusion, this report will refer to this aquifer complex as the Page/Galesburg aquifer. The Page/Galesburg aquifer extends from northwestern Cass County to southeastern Steele County and into southwest Traill County (Figure 6).

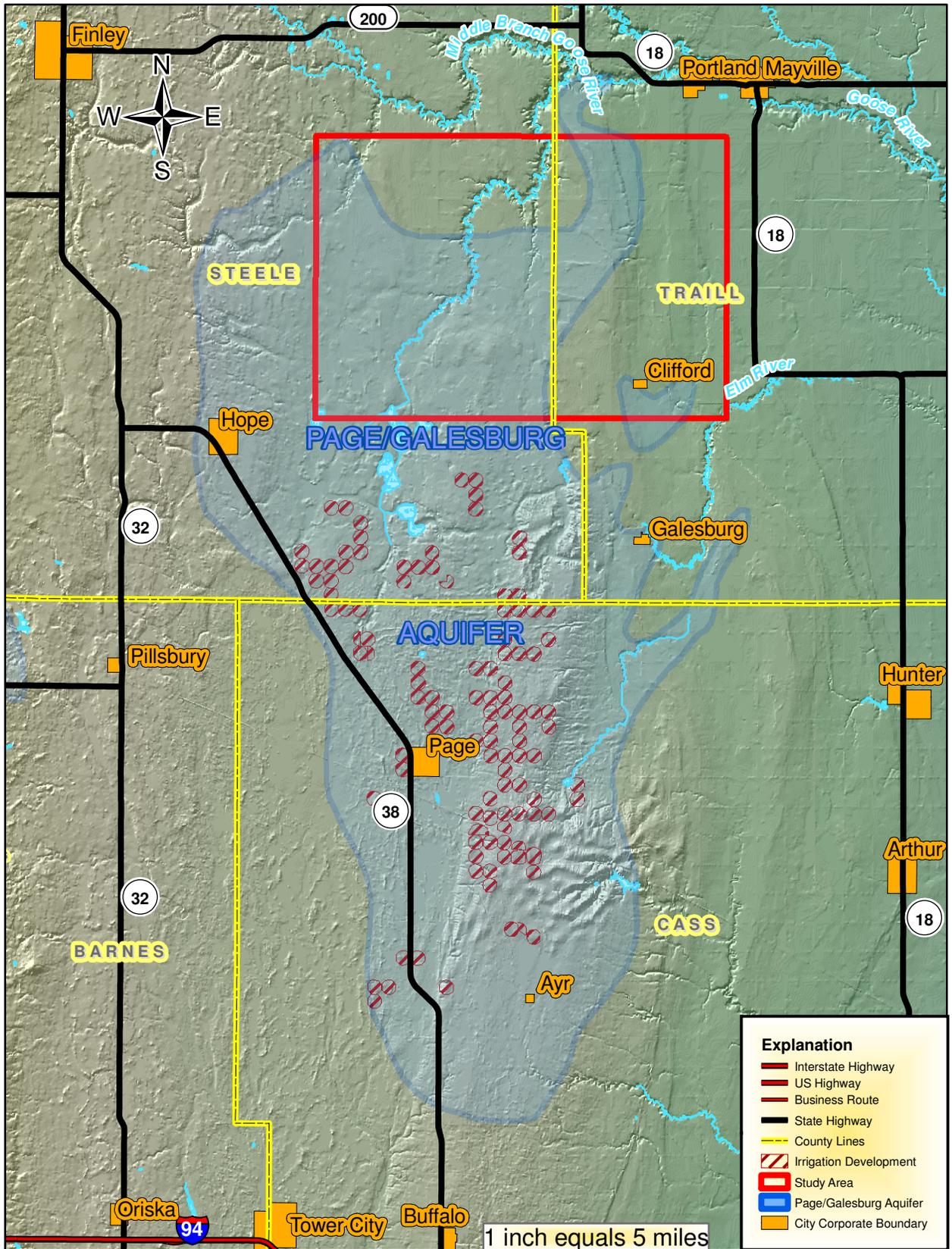


Figure 6. -- Page/Galesburg aquifer boundary and study area

Silty clay and clayey silt facies of the Coleharbor Formation occur throughout the study area. These sediments were deposited by proglacial lakes. These lake deposits are, for the most part associated with Glacial Lake Agassiz.

In the study area the Coleharbor Formation is unconformably underlain by the Greenhorn Formation. The Greenhorn Formation consists of marine shale deposited during the Cretaceous Period. The bedrock in eastern North Dakota makes up the eastern edge of the Williston Basin and the northwest flank of the Transcontinental arch. All the bedrock formations have a westerly dip and become thicker westward (Bluemle, 1967).

GROUND-WATER HYDROLOGY OF THE STUDY AREA

Description of Aquifer Units and Occurrence and Movement of Ground-Water

In the summer and fall of 2004, the State Water Commission completed a total of 7,532 feet of test drilling at 27 sites within the study area and two sites south of the study area (Figure 7). At 18 of the 29 sites, observation wells were installed. Nineteen of the 29 sites were completed to bedrock.

In the Phase I report, the Page/Galesburg aquifer complex was divided into three units referred to as aquifer unit A, B, and C within the study area (Figure 7). The aquifer units were differentiated based on texture (grain size) of the aquifer matrix, saturated thickness, stratigraphic position, and whether the aquifer is confined or unconfined. Based on additional data collected during the Phase II Investigation, modifications were made to the aquifer unit boundaries outlined in

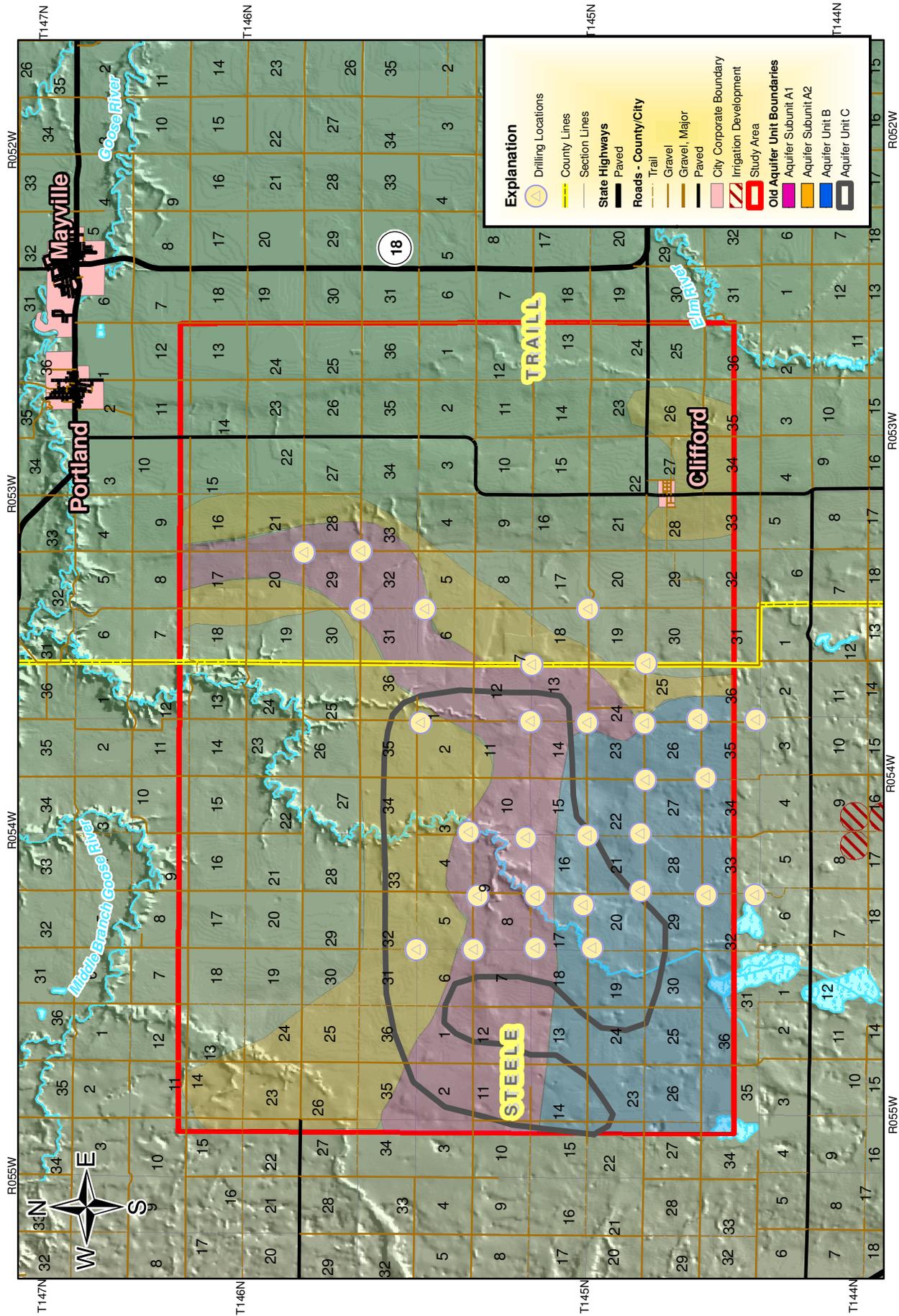


Figure 7. -- Aquifer units outlined in the Phase I Report and the drilling locations completed during the Phase II Investigation

the Phase I report (Figure 8). Cross-sectional views of the aquifer units can be seen in eight geohydrologic sections shown in Figures 9-16.

The Phase I report recommended test drilling to further define the occurrence and movement of ground water, further define the geometry, and further evaluate the water quality of aquifer unit A1 and aquifer unit C.

As indicated in the Phase I report, Aquifer unit A was separated into two aquifer subunits. Aquifer subunit A1 was reduced from 23 square miles to 8 square miles and is located in the south-central portion of the study area (Figures 7 and 8). It is an unconfined aquifer and has a saturated thickness ranging from 44 to 77 feet and the texture ranges from very fine to coarse grained sand consisting mostly of fine to medium grained sand (Figure 17). Saturated thickness is based on the lowest water level measured for the period of record or if there is not sufficient water-level data for a given well, 20 feet was arbitrarily selected as the lowest water-level. Given that aquifer subunit A1 is a surficial, unconfined aquifer it follows that the water table will be a subdued replica of the land-surface topography. Higher water-level elevations are associated with land-surface uplands and lower water-level elevations are associated with land surface lowlands. The valley of the South Branch of the Goose River represents the lowest land-surface elevation in the study area. Over a large part of the study area, the direction of ground-water flow in aquifer unit A is toward the South Branch of the Goose River (Figure 18). The South Branch of the Goose River is an effluent (gaining) river, that is, the aquifer discharges ground water into the river.

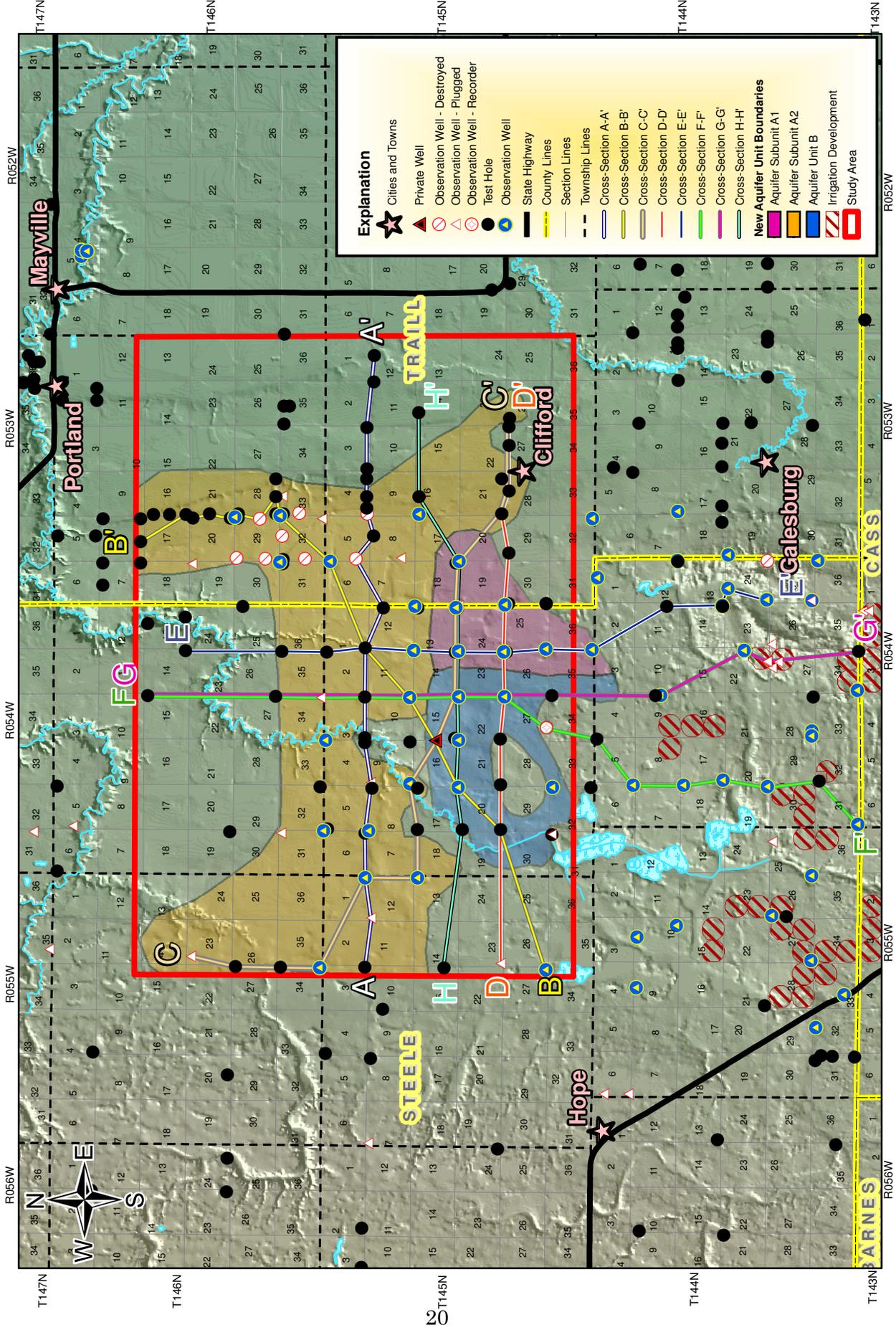


Figure 8. -- Updated aquifer unit boundaries, geohydrologic cross-section traces, and well and test hole locations

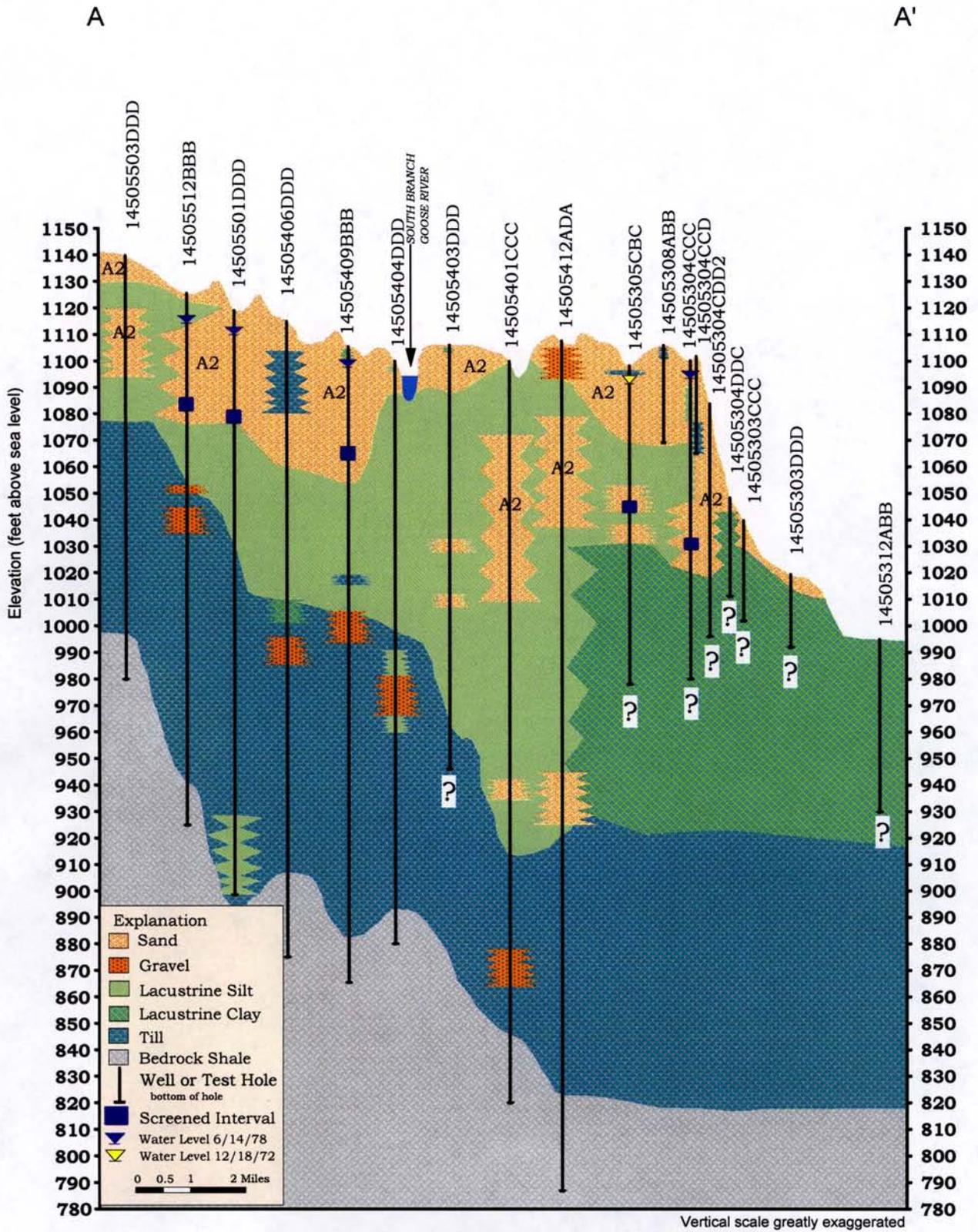


Figure 9. -- Geohydrologic Section A-A' Showing Aquifer Subunit A2

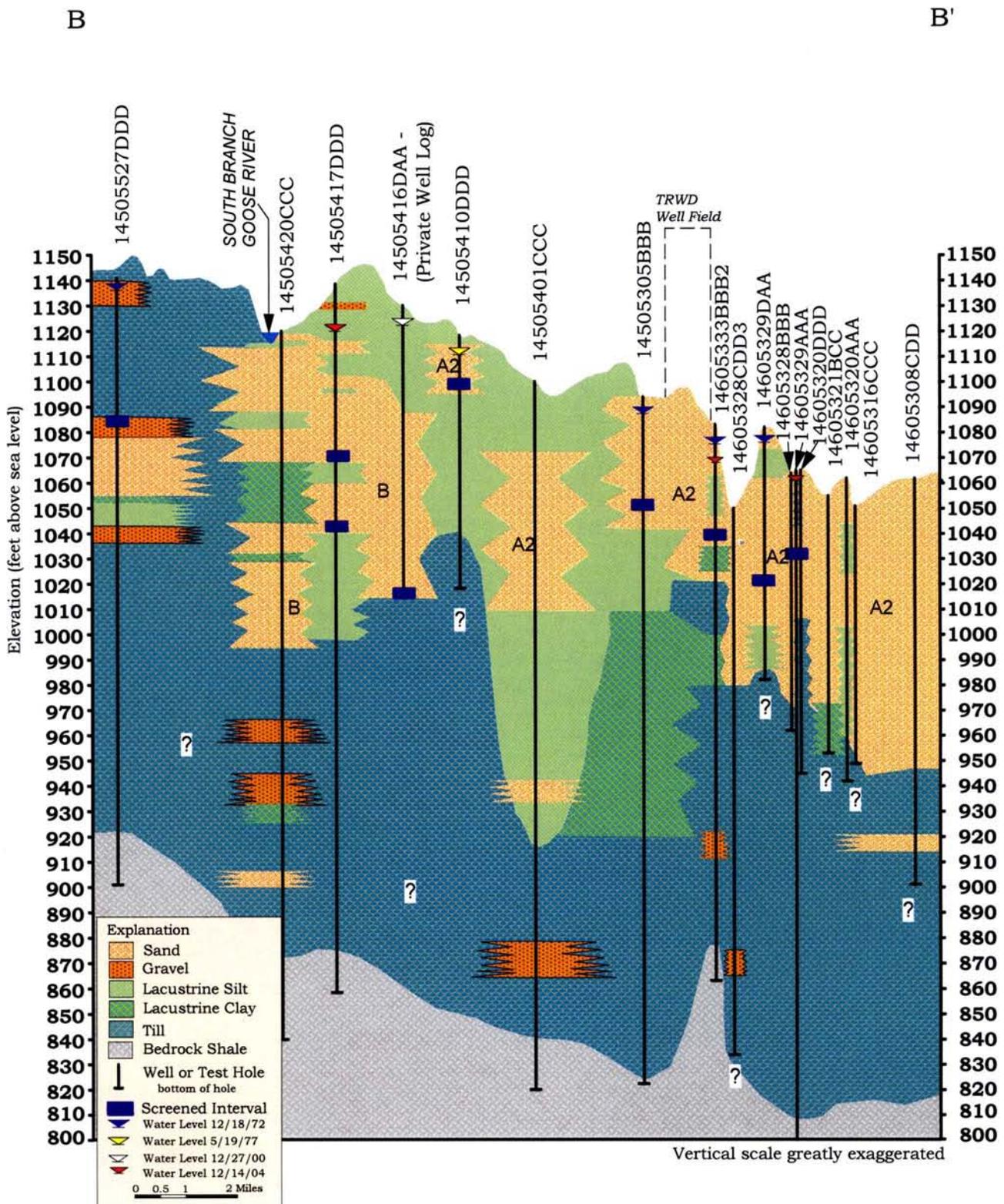


Figure 10. -- Geohydrologic Section B-B' Showing Aquifer Subunit A2 and Aquifer Unit B

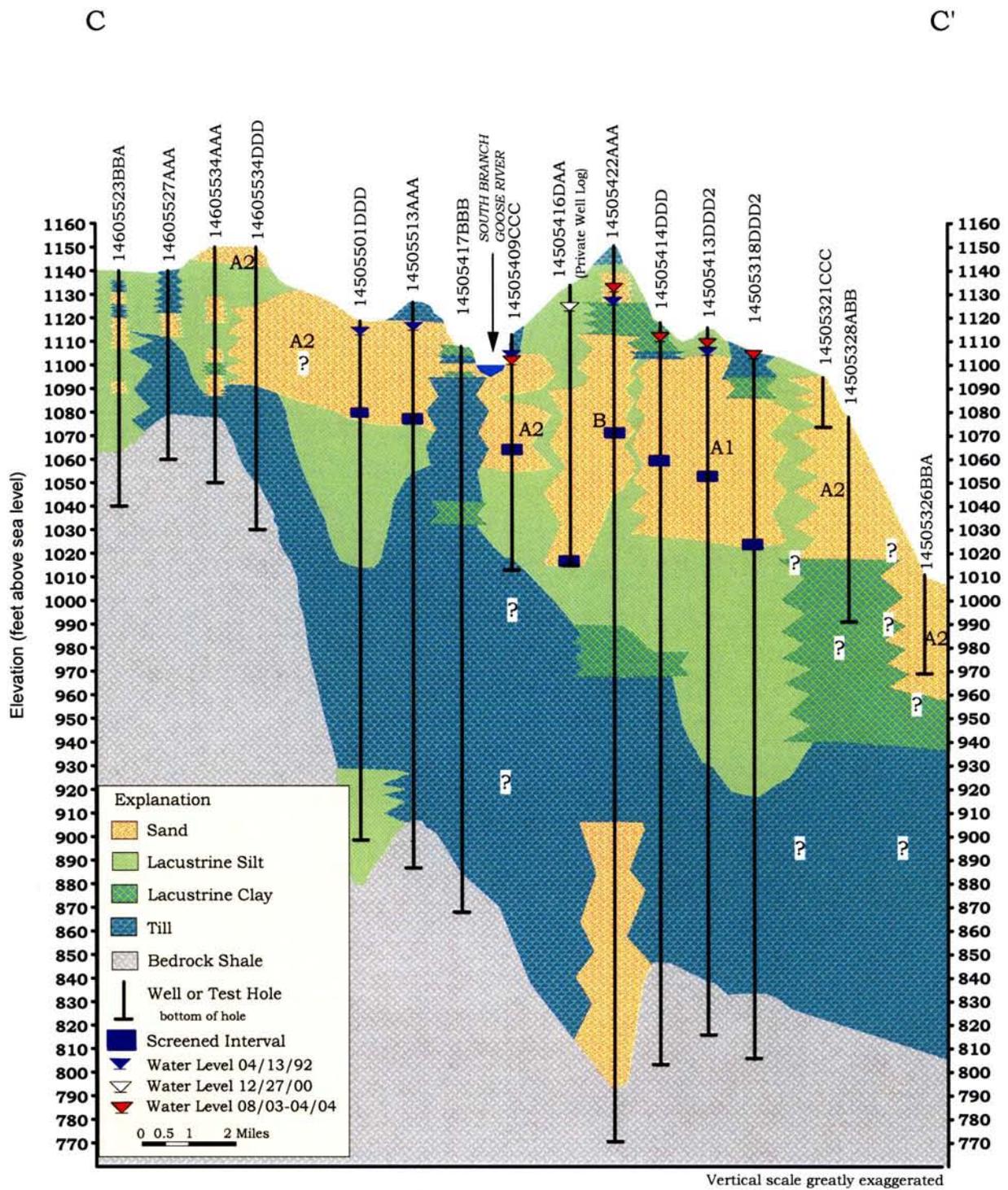


Figure 11. -- Geohydrologic Section C-C' Showing Aquifer Subunits A1 and A2, and Aquifer Unit B

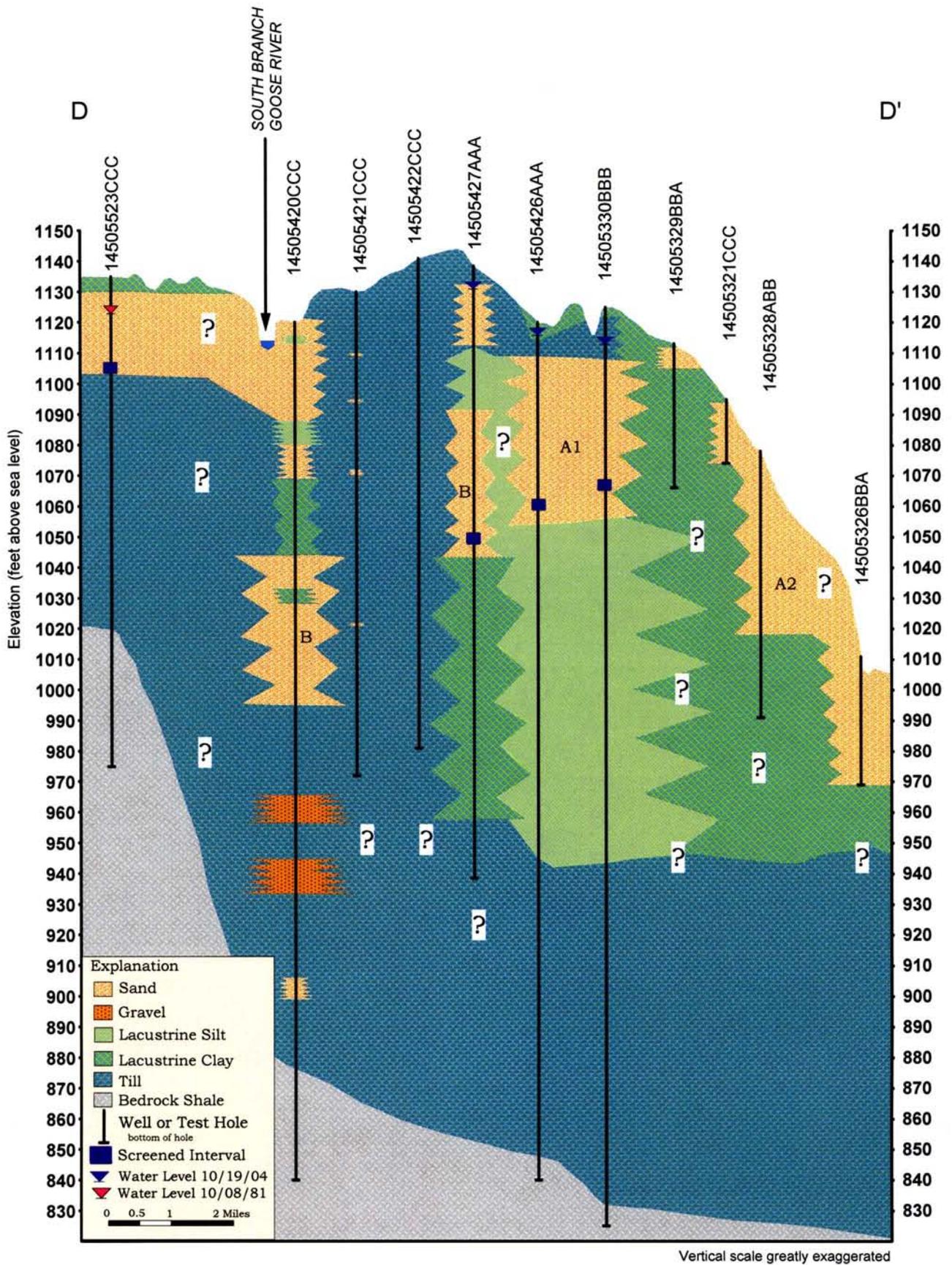


Figure 12. -- Geohydrologic Section D-D' Showing Aquifer Subunits A1 and A2, and Aquifer Unit B

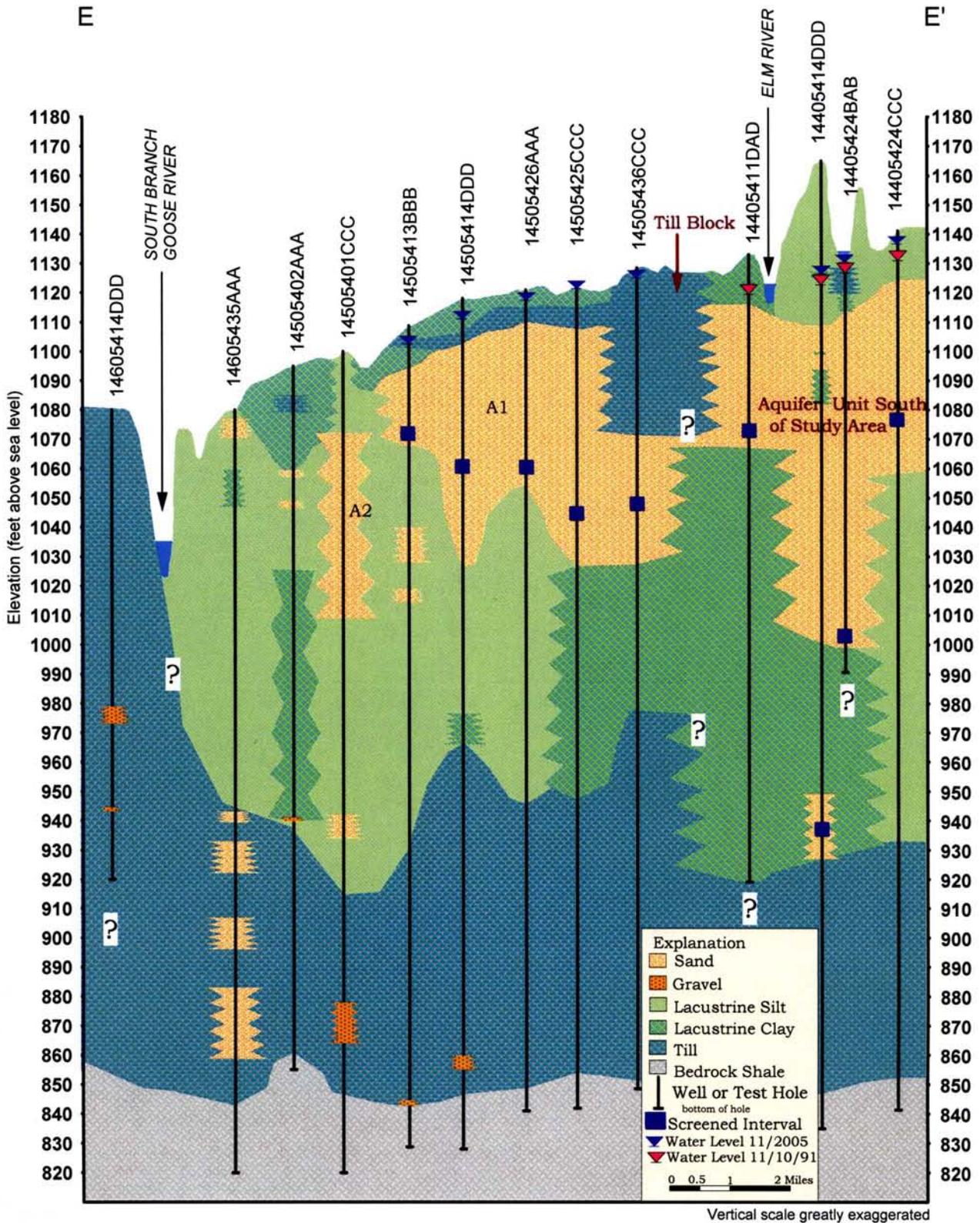


Figure 13. -- Geohydrologic Section E-E' Showing Aquifer Subunits A1 and A2 and Aquifer Unit South of Study Area

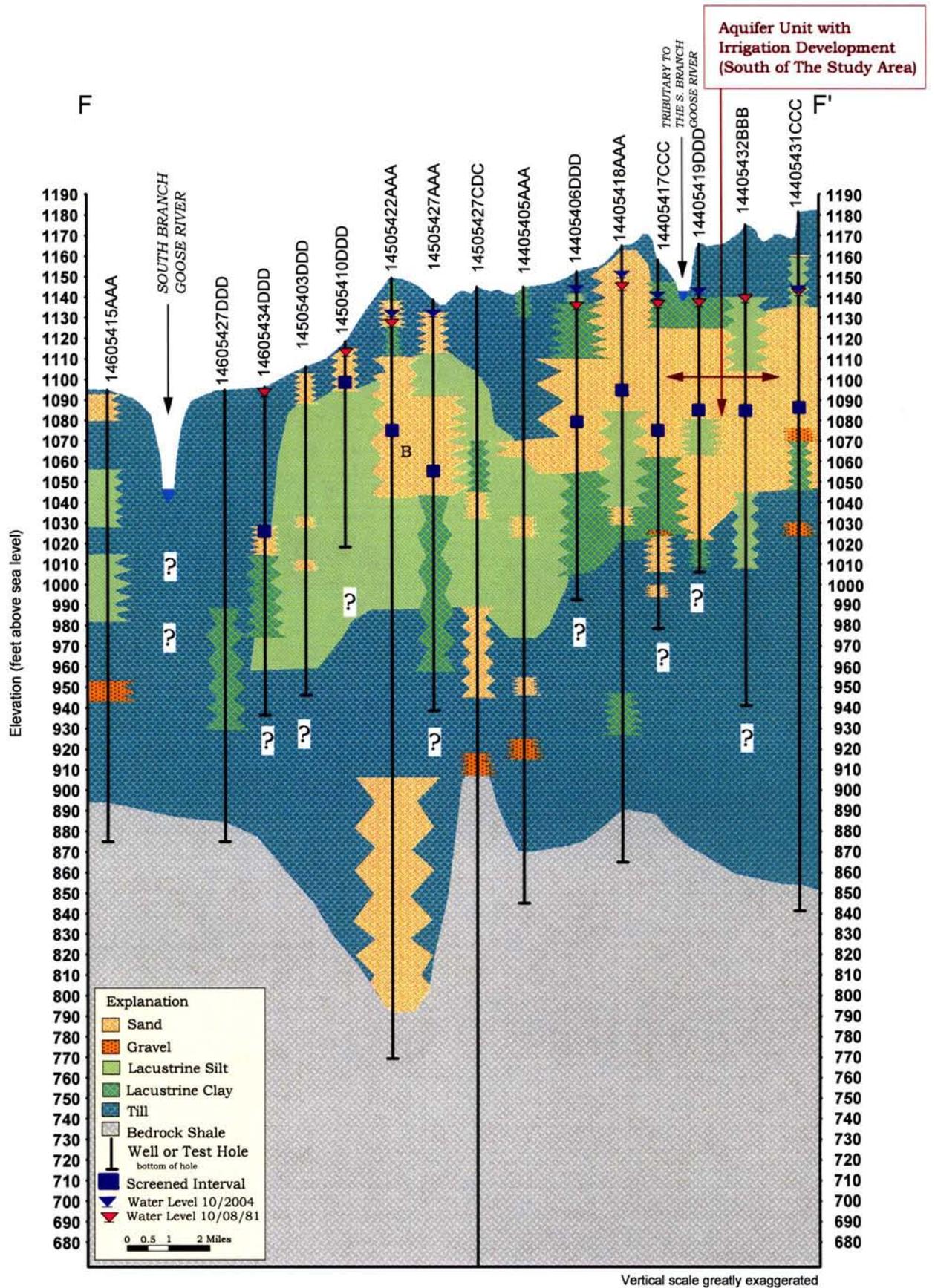


Figure 14. -- Geohydrologic Section F-F' Showing Aquifer Unit B and Aquifer Unit with Irrigation Development South of the Study Area

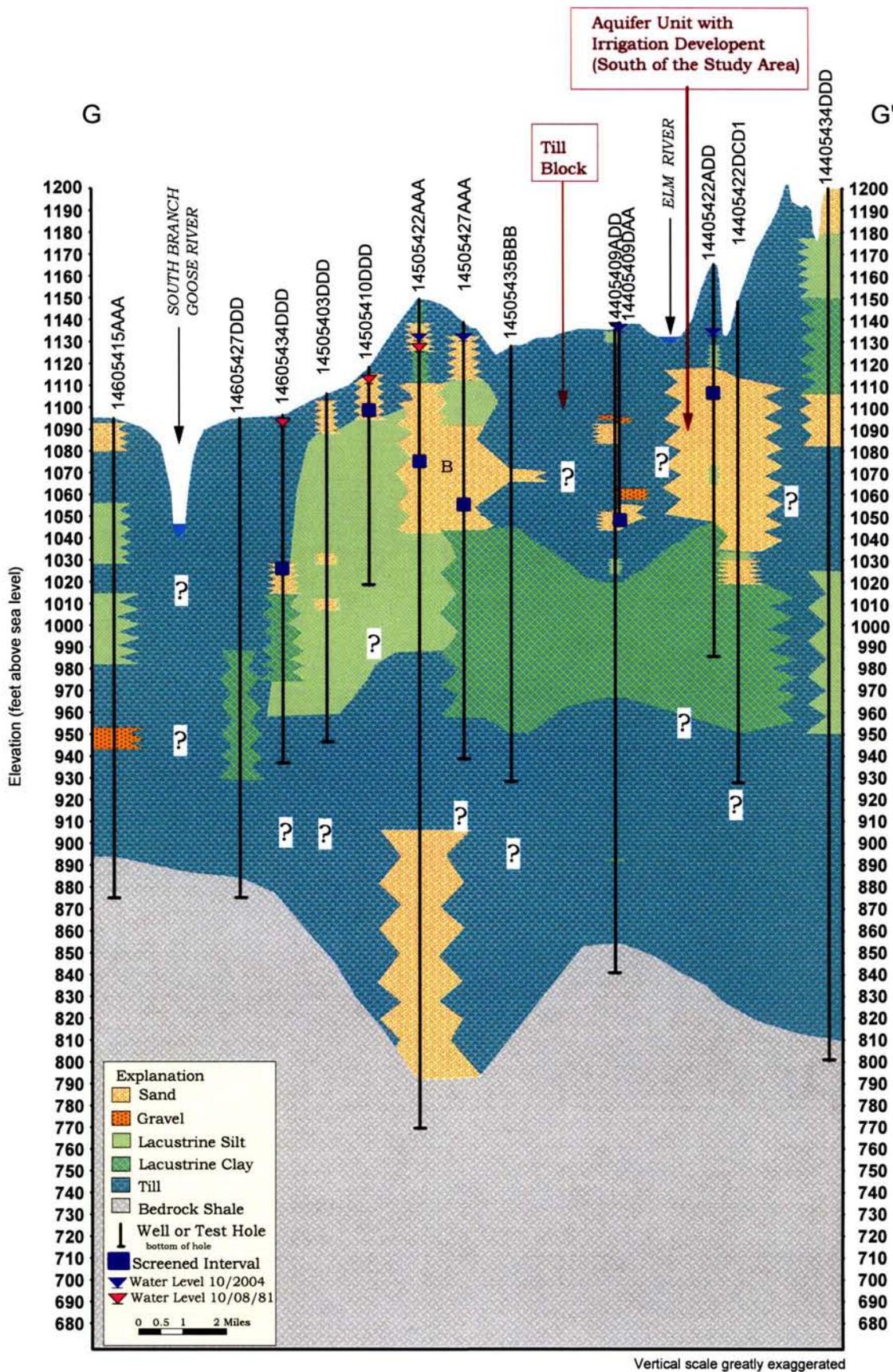


Figure 15. -- Geohydrologic Section G-G' Showing Aquifer Unit B and Aquifer Unit with Irrigation Development South of the Study Area

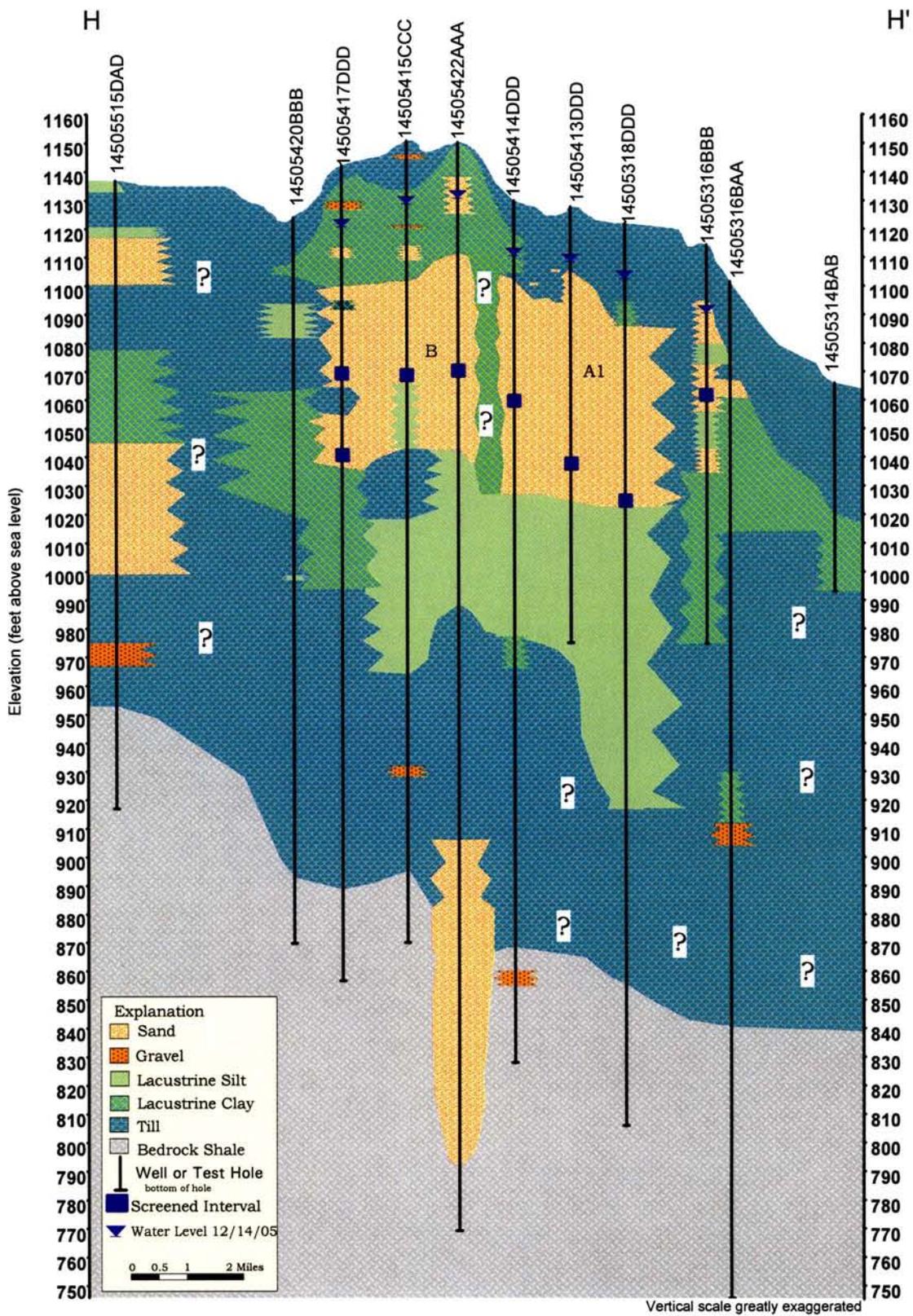


Figure 16. -- Geohydrologic Section H-H' Showing Aquifer Subunit A1 and Aquifer Unit B

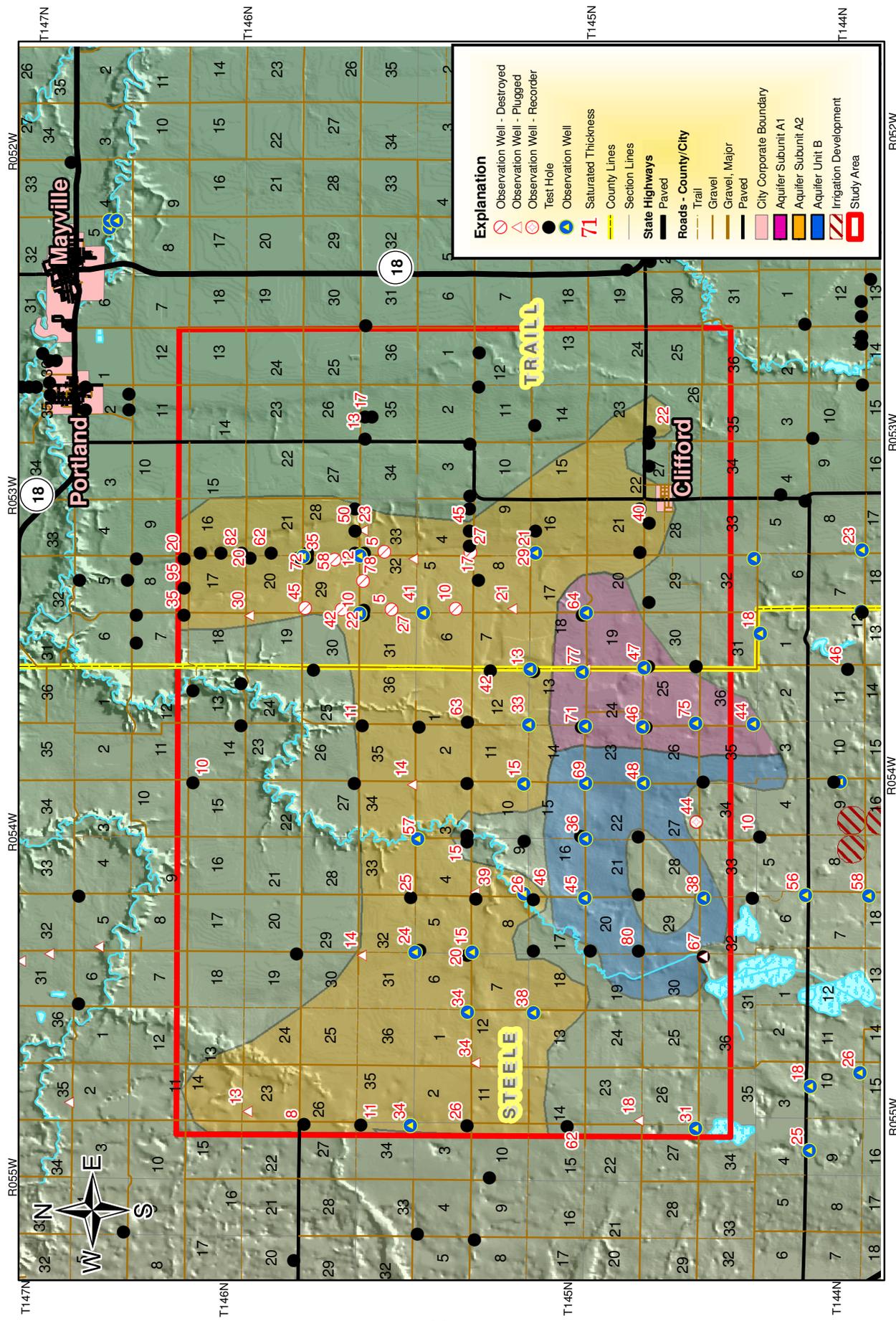


Figure 17. -- Saturated thickness in observation wells and test holes within and south of the study area

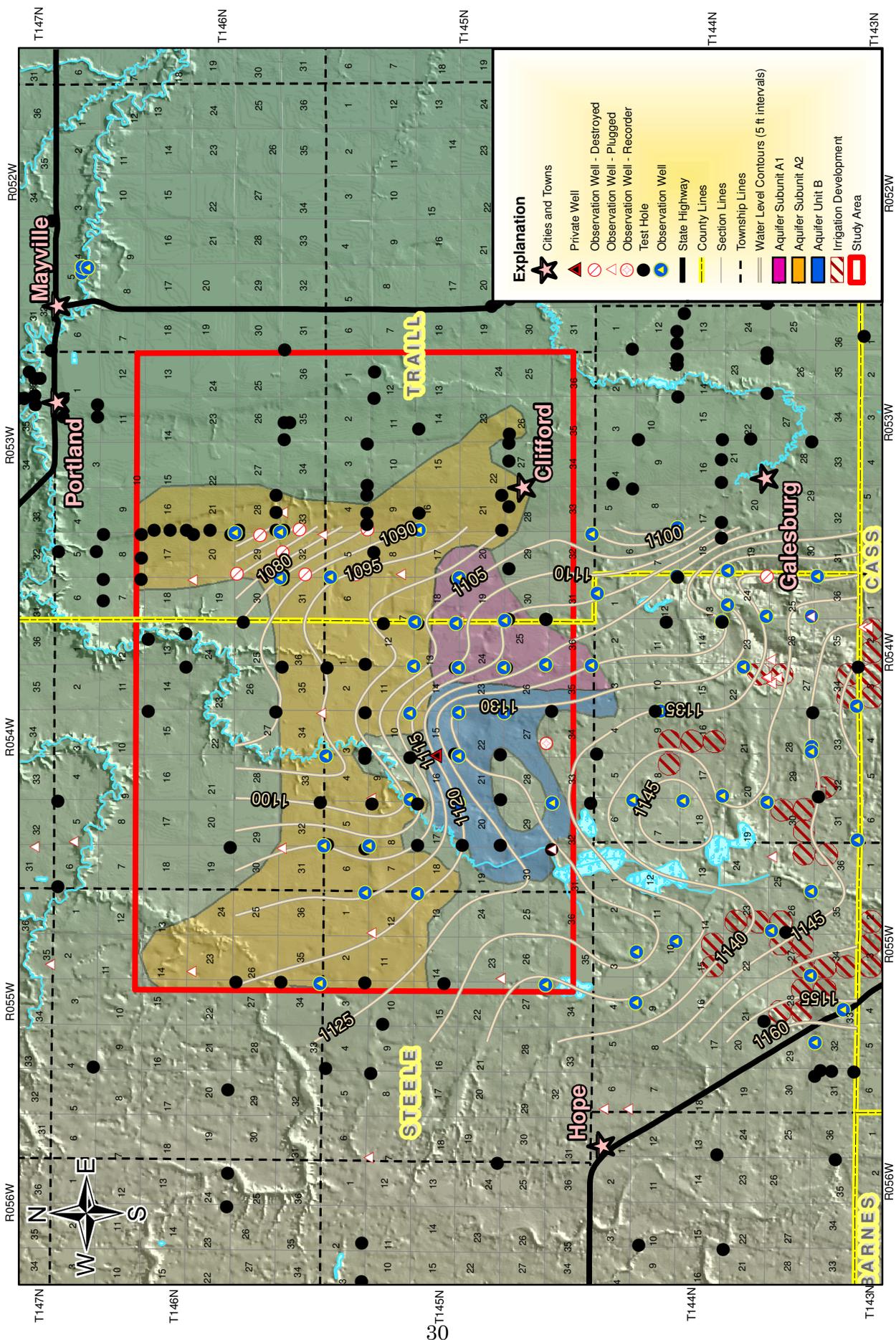


Figure 18. -- Water-Level contour map of the northern portion of the Page/Galesburg aquifer October-December, 2004

The Phase I Report defined aquifer unit C as a deeper confined aquifer consisting of buried sands and gravels throughout the study area. The test drilling determined that aquifer unit C is composed of discontinuous sand and gravel lenses of limited areal extent. Therefore, these lenses are not considered an aquifer unit.

Several drilling sites proposed in the Phase I Investigation were abandoned when it was determined that aquifer subunit A1 did not have sufficient areal extent and aquifer unit C did not exist. The proposed drilling locations were moved to aquifer unit B to evaluate aquifer geometry and its potential as a productive aquifer unit. Initially, aquifer unit B was not considered for the TRWD water supply expansion, because of perceived complex boundary conditions. However, when a till boundary was discovered near the southern portion of aquifer unit B that would restrict the hydraulic connection to the aquifer unit south of the study area, additional drilling was warranted to better define this boundary. In October of 2004, the ND State Water Commission completed five additional test drilling locations in aquifer unit B. These drilling locations were completed outside the scope of this investigation to define the boundary between aquifers within the study area and the aquifer units south of the study area where irrigation development occurs.

Aquifer unit B is a confined aquifer unit located in the southwest portion of the study area. It was reduced from 23 square miles to 10 square miles, based on drilling completed during the Phase II Investigation (Figures 7 and 8). Aquifer unit B is bound on the north and east by a large hydraulic head discontinuity and by till on the south and west. Aquifer unit B is differentiated from aquifer unit A based on

water-level data. There is a 14 foot water-level differential between observation well 14505427AAA and 14505426AAA3 (Figure 12), a 20 foot water-level differential between observation well 14505422AAA and 14505414DDD2 (Figure 11), and a 19 foot water-level differential between observation well 14505409CCC2 and 14505417DDD (Figure 11, 12, 16, and 18). Test drilling in and around aquifer unit B established there is a till block separating Aquifer unit B from the aquifer units to the south of study area. Aquifer unit B has an average saturated thickness of 52 feet (Figure 17). The texture consists of very fine to coarse sand, primarily medium sand.

Aquifer subunit A2 was expanded from 29 square miles, its original boundary defined in the Phase I report, to 54 square miles (Figures 7 and 8). The expansion of aquifer subunit A2 was based on the minimal saturated thickness and/or finer textured sediments discovered within the aquifer unit A. Based on the very fine to fine texture and relatively small saturated thickness of aquifer subunit A2, estimated individual well yields are too small for the proposed TRWD water supply expansion. Therefore, it was important to delineate aquifer subunit A2 to omit this area from further investigation.

There are also some discontinuous buried units of sand of limited areal extent just above the bedrock in observation wells 14505422AAA (Figure 11, 14, 15, and 16) and 14505427CDC (Figure 14). Due to the limited areal extent, these buried sand units have been omitted as aquifer units. Due to a lack of data, the sand facies in the southwest portion of the study area have not been defined as an aquifer unit. Other aquifer units may exist within the Page/Galesburg aquifer, but

due to the limited data in parts of the study area, they have not been defined in this investigation.

After the completion of several geohydrologic cross-sections and lithofacies maps, it was determined that there is limited hydraulic connection between the aquifer units within the study area and the aquifer units to the south of the study area (Figures 13, 14, and 15). During early development of the Page/Galesburg Aquifer complex, glaciers which covered most the area were receding. Sediment laden melt-water began flowing off the glaciers and into a large lake (possibly Glacial Lake Agassiz). As it reached the lake, the melt water slowed and dumped its sediment load near the shore of the lake to form a series of the deltas. These deltas overlap with each other to form a somewhat continuous mass of sand deposits which we now refer to as the Page/Galesburg Aquifer. In a location south of the study area near the Traill/Steele County correction line, a deposit of till splits most but not all of these sand deposits. It is believed during the early development of the Page/Galesburg Aquifer a small lobe of ice advanced severing the fluvial connection between the aquifer units within the study area and the aquifer units to the south of the study area. The deposition of these aquifer units continued on either side of the ice block. Due to the ice block that deposited till, there is a poor hydraulic connection between the aquifer units in the study area and those to the south.

Evidence of this ice block can be seen on the USGS topographic map and the 2003 aerial photograph south of the aquifer subunit A1 and aquifer unit B (Figures 19 and 20). The landscape created by this glacial feature is characterized by a

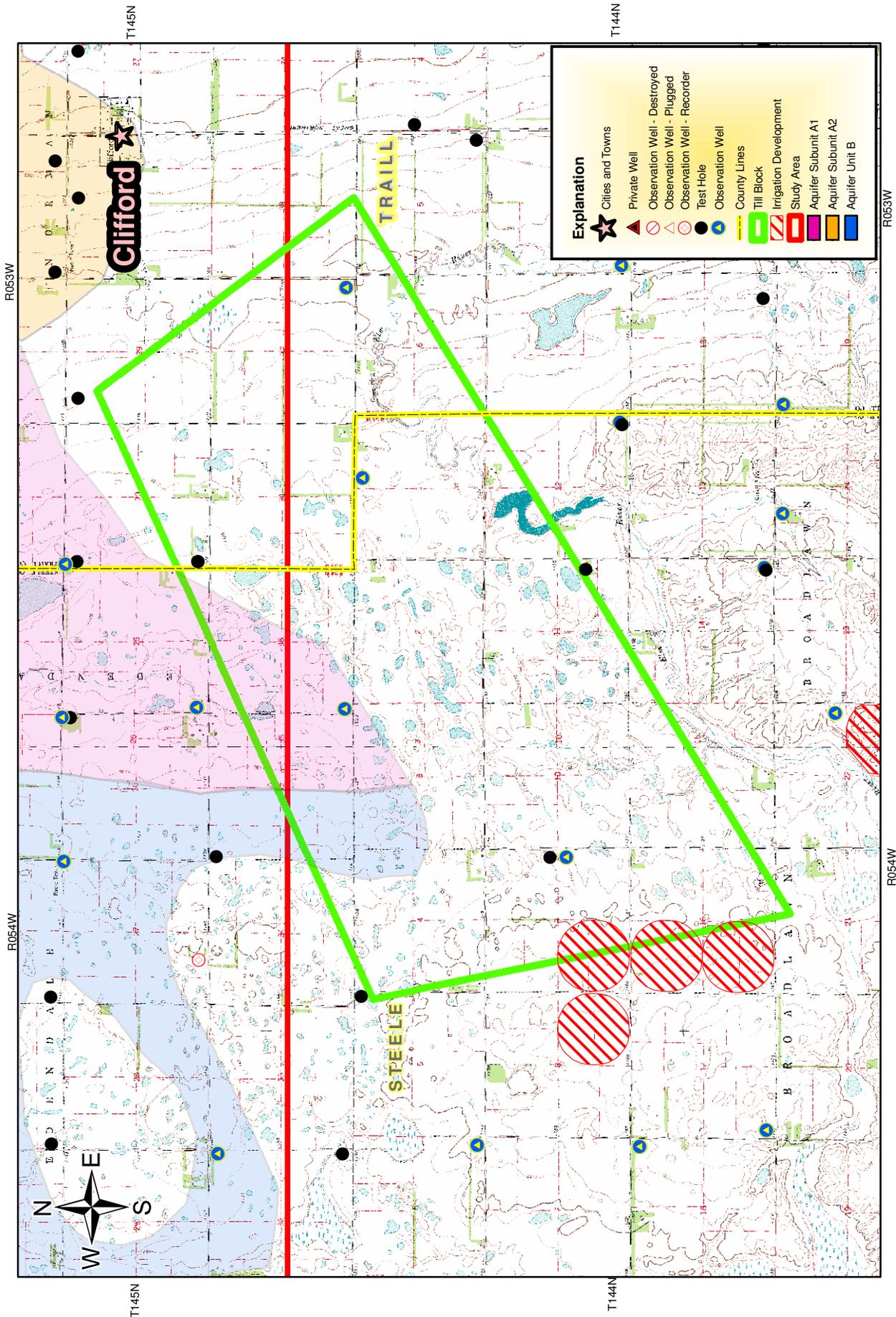


Figure 19. -- USGS topographic map showing the location of glacial deposits left by an ice block

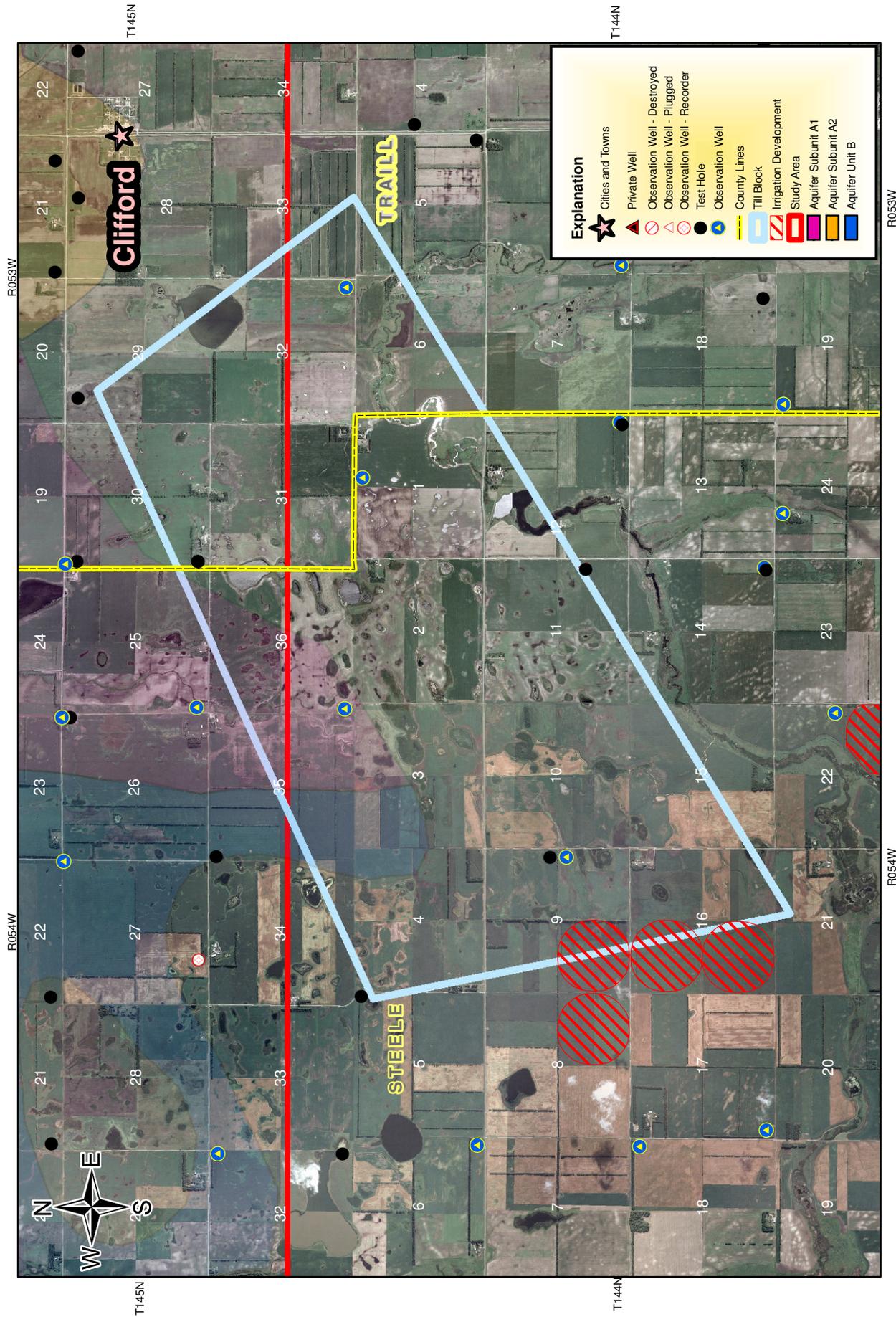


Figure 20. -- 2003 aerial photograph showing the location of glacial deposits left by an ice block

pattern of elongated wetlands and landforms trending from the southwest to the northeast. Deposits associated with the ice block consist predominantly of till and are illustrated in geohydrologic sections E-E' and G-G' (Figures 13 and 15).

Recharge and Discharge

Recharge to the Page/Galesburg aquifer occurs primarily by relatively direct infiltration of precipitation and snowmelt. The land surface in the study area is characterized by numerous subtle depressions. To a great extent recharge to the Page/Galesburg aquifer is depression focused (Lissey, 1968). During the winter, a frost zone develops at or near the water table. Snow accumulates in depressions and on adjacent topographic-high areas. In the spring, snow melts before the frost zone dissipates. Snowmelt originating in the upland areas is redistributed to the depressions as surface runoff because of the inability to infiltrate through the frost zone. Pondered water in depressions infiltrates downward to the saturated zone after the frost zone dissipates.

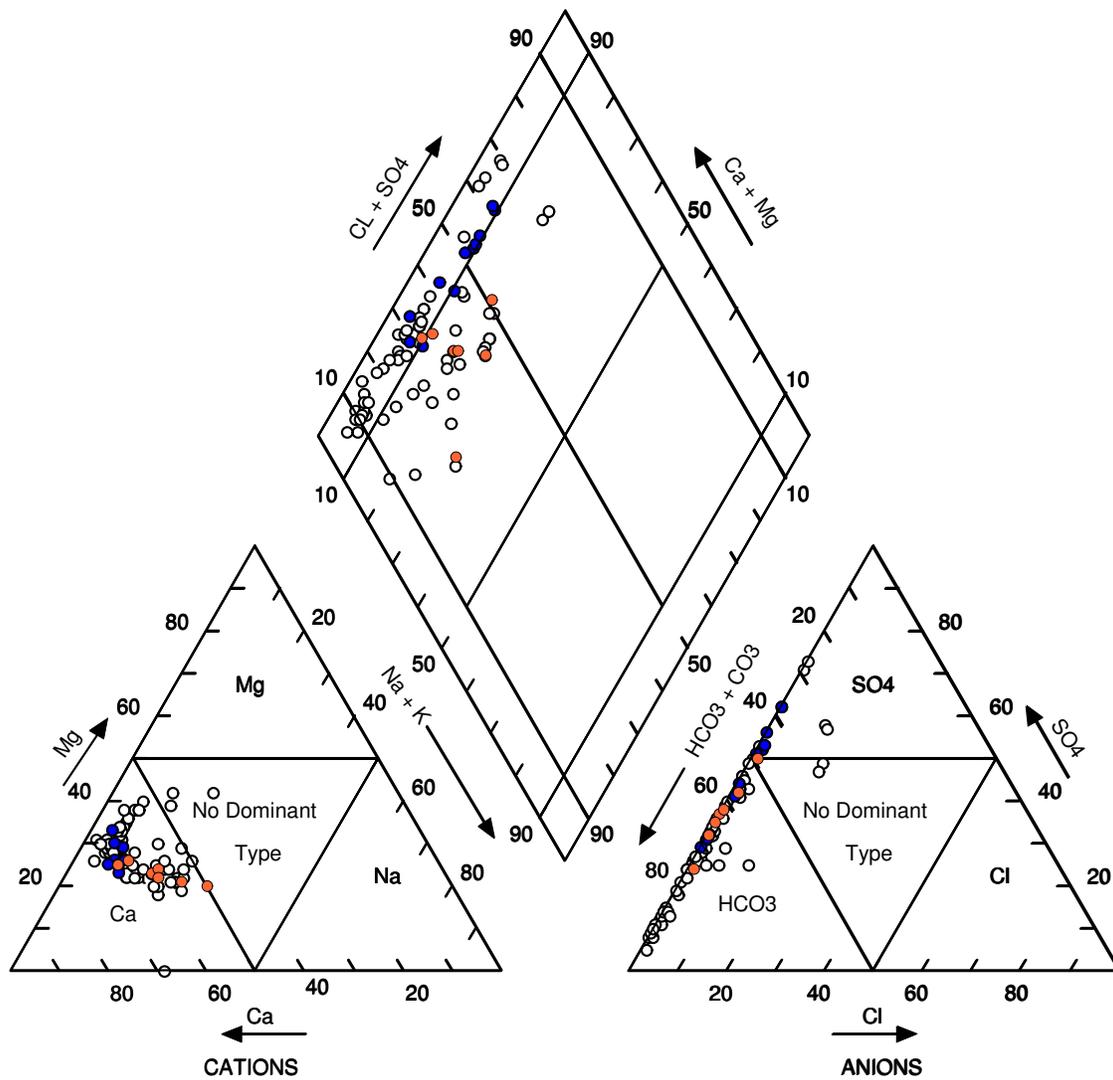
Recharge to the Page/Galesburg aquifer occurs primarily during the spring. Although soil-moisture-holding capacities are relatively small and permeabilities are relatively large, recharge, for the most part, is significantly less during the summer months because potential evapotranspiration exceeds precipitation. At times, summer precipitation events are of sufficient intensity and duration to overcome soil-moisture deficits and generate recharge, particularly in local depression areas. During the fall, potential evapotranspiration decreases significantly and precipitation events can be large enough to generate recharge.

Even when recharge does not occur during the fall, soil-moisture deficits can be reduced significantly, affecting an increase in the magnitude of the following spring recharge event(s).

Discharge in the aquifer within the study area occurs as outflow to the South Branch of the Goose River, evapotranspiration, springs, pumping from the TRWD well field, and small capacity domestic/stock wells.

Water Quality

The groundwater in the Page/Galesburg aquifer is predominantly a calcium-bicarbonate to calcium-sulfate type (Figure 21). This was determined based on the chemical analysis of 125 ground-water samples collected from 59 wells in the Page/Galesburg aquifer within the study area (Appendix I). The samples were collected and analyzed over the period from 1970 through 2004. Of the 125 ground-water samples, 39 of them were gathered during the 2004 field season. Prior to 2004, no ground-water samples from the study area were analyzed for trace elements. Trace element analysis was completed on 32 of the 39 samples collected in 2004. The trace element of most concern is arsenic. Arsenic is a naturally occurring element and it is commonly found in glacial drift aquifers of North Dakota. Elevated levels of arsenic can cause skin damage or problems with circulatory systems, and has been linked to numerous types of cancer. The new USEPA maximum contaminant level (MCL) standard for arsenic became effective on January 23, 2006. The arsenic MCL standard was lowered from 50 µg/L to 10 µg/L. Water suppliers are required to provide water that meets the MCL standards



PERCENTAGE REACTING VALUES

- Aquifer Subunit A1
- Aquifer Subunit A2
- Aquifer Unit B

Figure 21-- Relative Distribution of major ions in Aquifer Subunits A1 and A2 and Aquifer Unit B

(Table 1). The mean concentration of arsenic from the aquifer units within the study area exceeds the MCL by 3 to 4 times. Regardless of the location of the water supply expansion within the study area, water treatment for arsenic will be a necessity.

Table 1 -- Relationship of mean concentrations of TDS, major ions, hardness, and arsenic between the aquifer units

	Arsenic (mean µg/L)	TDS (mean mg/L)	Hardness as CaCO ₃ (mean mg/L)	Sulfate (mean mg/L)	Chloride (mean mg/L)	Iron (mean mg/L)	Manganese (mean mg/L)	Fluoride (mean mg/L)
Aquifer Subunit A1	45.7	627	441	211	4.4	0.31	1.0	0.15
Aquifer Subunit A2	30.5	688	434	232	3.3	1.9	0.8	0.1
Aquifer Unit B	51.0	653	494	245	3.1	1.3	1.0	0.2
MCL	10.0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
SMCL	N/A	500	N/A	250	250	0.3	0.05	2.0

The mean values of selected ions, dissolved solids, hardness, arsenic, USEPA MCL, and USEPA secondary maximum contaminant levels (SMCL) for each aquifer unit are shown in Table 1. The SCMLs are non-enforceable recommended standards. Values exceeding SMCL are not considered a health hazard. Ground water in the Page/Galesburg aquifer commonly exceeds SMCL for iron and manganese and dissolved solids. Although there is no federal limit for the SMCL for hardness, ground water in the Page/Galesburg aquifer would be considered very hard (Table 1).

As shown in the Piper diagram, there are many similarities in the relative distribution of ions within the three aquifer units (Figure 21). However, aquifer subunit A1 can be differentiated from aquifer unit B, based on the plotted points on

the Piper diagram. On the left side of the diagram, all the points from aquifer subunit A1 plot to the lower right of the points from aquifer unit B, with exception to points from observation wells 14505414DDD and 14505426AAA that are within the cluster of points from aquifer unit B. These two wells are located near the boundary of the two aquifer units and the similar water chemistries may reflect a local hydraulic connection.

The distribution of total dissolved solids (TDS), sulfate (SO_4), hardness, and arsenic concentrations determined from the most recent sampling period are shown in Figures 22, 23, 24, and 25, respectively. The mean total dissolved solids for aquifer subunit A1, aquifer subunit A2, and aquifer unit B are 627 mg/L, 688 mg/L, and 653 mg/L, respectively.

Options for TRWD Expansion

Aquifer subunit A1 has sufficient saturated thickness and is comprised of predominately fine to medium grained sand which should provide sufficient individual well yields. Individual well yields from aquifer subunit A1, are estimated to range from 75 to 200 gallons per minute.

There are no water-quality limitations associated with major ion chemistry of the ground water in aquifer subunit A1. However, the trace element analysis completed during the Phase II Investigation determined that much of the ground water within the study area has elevated levels of arsenic. The maximum contaminant level (MCL) for arsenic defined by the USEPA is 10 $\mu\text{g/l}$. The mean concentration of arsenic within aquifer subunit A1 is 45.7 $\mu\text{g/l}$.

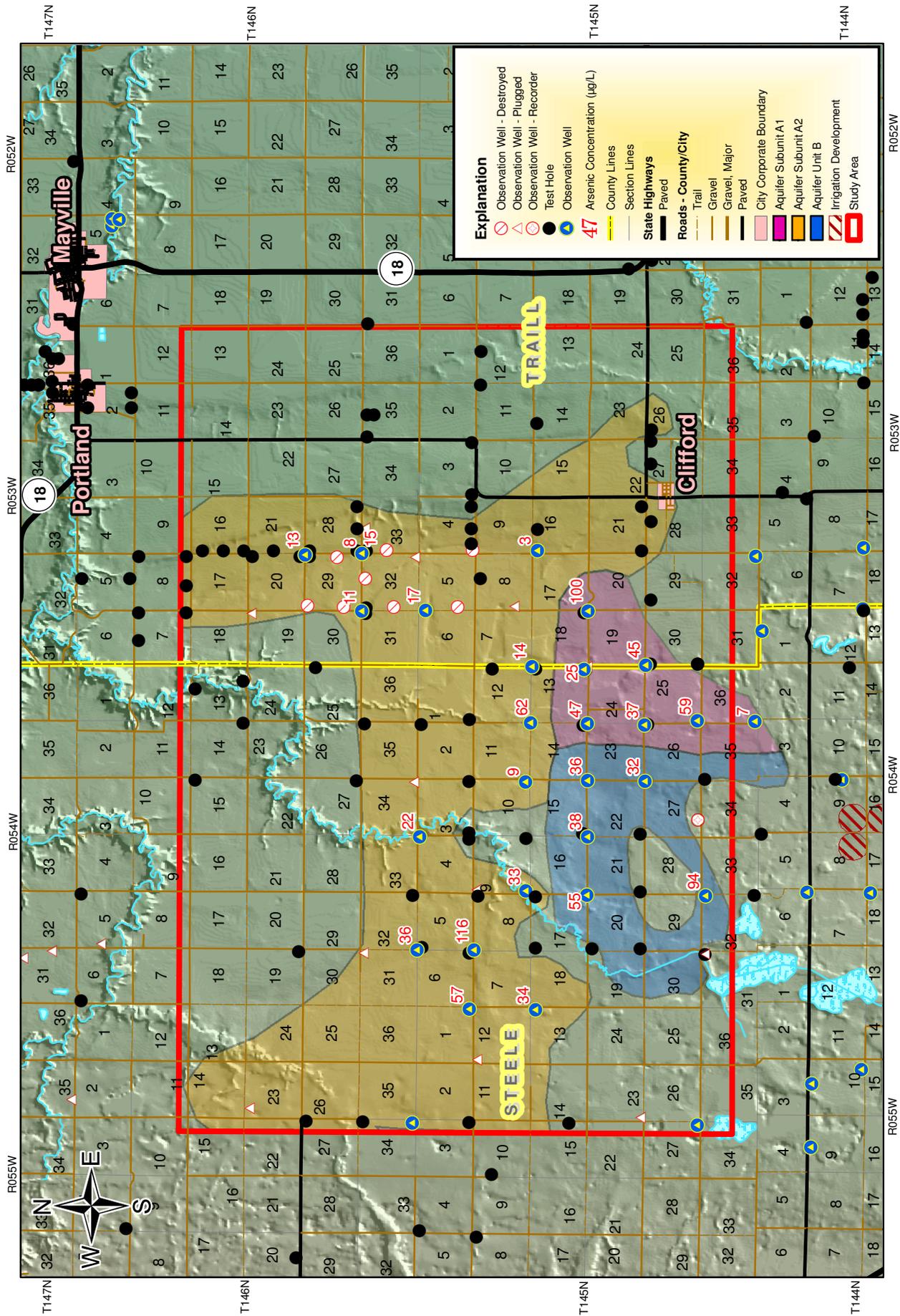


Figure 25. -- Distribution of Arsenic concentrations within and south of the study area

Aquifer unit B has an average saturated thickness of 50 feet (Figure 17). The texture consists of very fine to coarse sand, primarily medium sand. Individual well yields from aquifer unit B are estimated to range from 125 to 250 gallons per minute. Initially, aquifer unit B was not considered for the TRWD water supply expansion, because of a perceived hydraulic connection to aquifer units to the south where irrigation development occurs. However, when a till boundary was discovered near the southern portion of aquifer unit B, additional drilling was warranted to better define this boundary. Test drilling in and around aquifer unit B established the existence of a till block separating aquifer unit B from the aquifer units to the south of study area. Aquifer unit B is bound on the north and east by a large hydraulic head discontinuity and by till on the south and west. There are no water-quality limitations associated with major ion chemistry. However, the mean concentration for arsenic is 51 $\mu\text{g/l}$.

After compilation and evaluation of the test drilling, water-level, and water quality data completed in the summer and fall of 2004, the ND State Water Commission presented TRWD three options to choose from to further investigate for their water supply expansion. The options are numbered from largest well-yield potential to the smallest. Option 1 has the highest yielding capacity, but the worst water quality in relation to major ion chemistry and Option 3 has the lowest yielding capacity, but the best water quality in relation to major ion chemistry. Option 1 included conducting an aquifer test in the east-central part of aquifer unit B. If feasible, a well field would be completed that would extend from the northeast part to the east-central part of aquifer unit B (Figure 26). Option 2 included

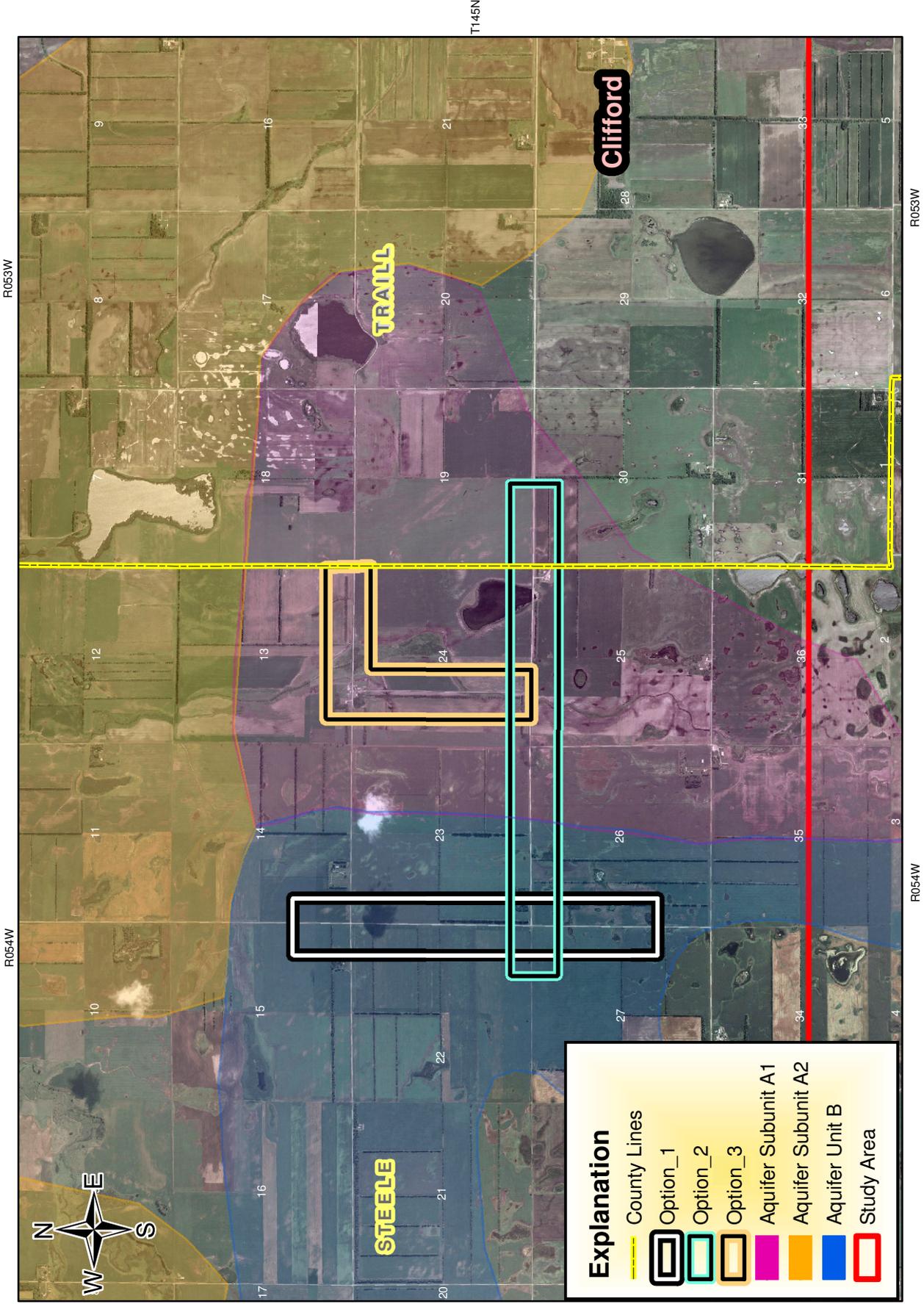


Figure 26. -- Trail Rural Water District options to further investigate the water supply expansion

conducting an aquifer test in the east-central part of aquifer unit B and conducting a second aquifer test in the west-central part of aquifer subunit A1. If feasible one well would be constructed in the east-central part of aquifer unit B, and the rest of the wells would extend into the central part of aquifer subunit A1 (Figure 26).

Option 3 included conducting an aquifer test in the northwest part of subunit A1. If feasible a well field would be constructed that would extend from the northwest part to the west-central part of aquifer subunit A1 (Figure 26).

TRWD chose Option 3, because it is the option furthest from the irrigation development to the south and is less likely to adversely impact prior appropriators. In addition, the water quality in relation to major ion chemistry is better in Option 3 than the other options. Finally, the location of Option 3 is the most cost effective in relation to construction of conveyance facilities.

AQUIFER TEST

Site Description

A 100-hour aquifer test was conducted July 11-15, 2005. Seven observation wells were installed in the S1/2 Section 13 and the W1/2 of Section 24 all in Township 145N, Range 054W to determine the best location for the test-production well (Figure 27). It was determined 14505413CDC was the best location for the test-production well. The test-production well was installed in a field northeast of the quonset on the Daniel Motter Farmstead (Figure 28).

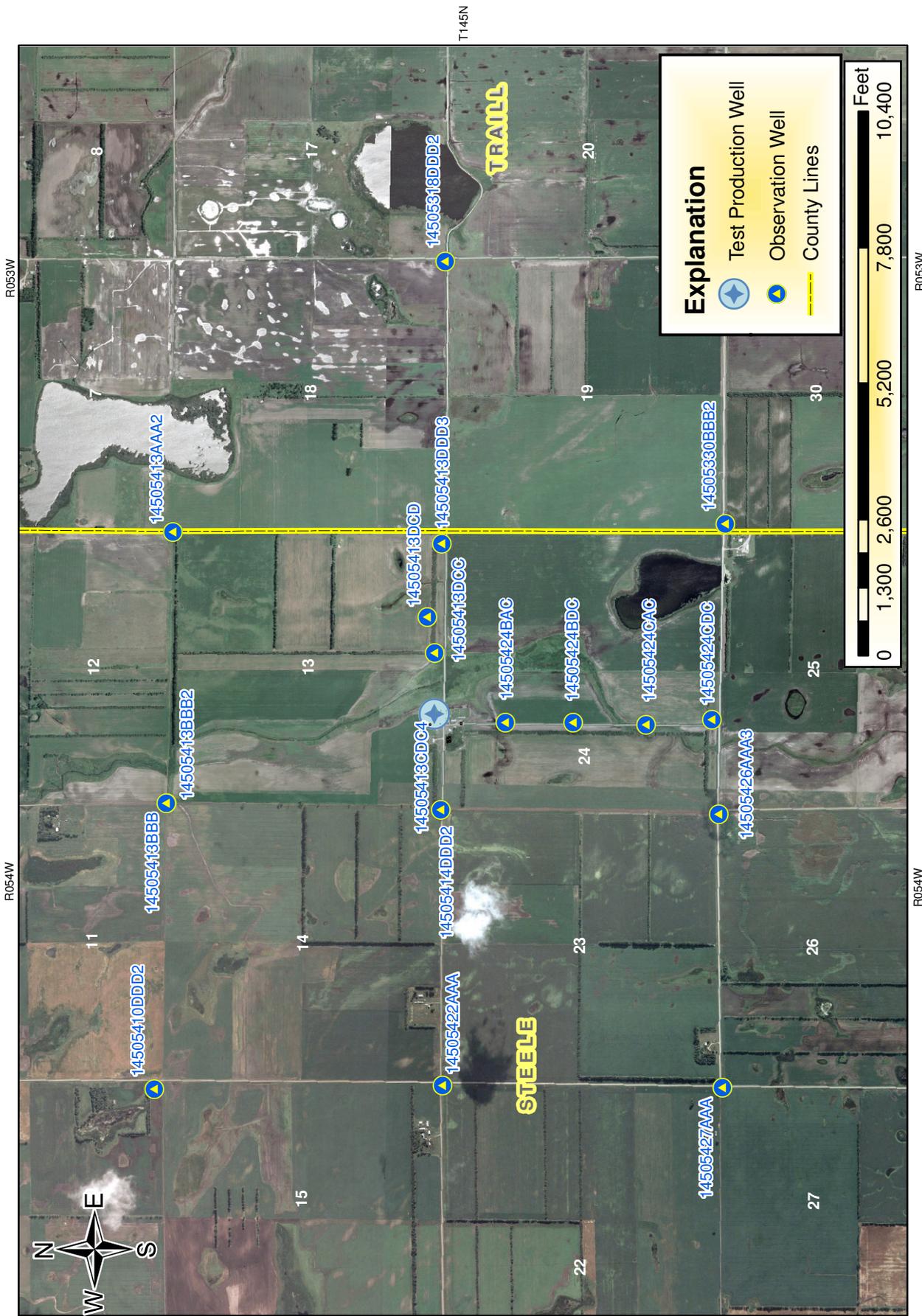


Figure 27. -- Location of the test-production well and observation wells monitored during the aquifer test

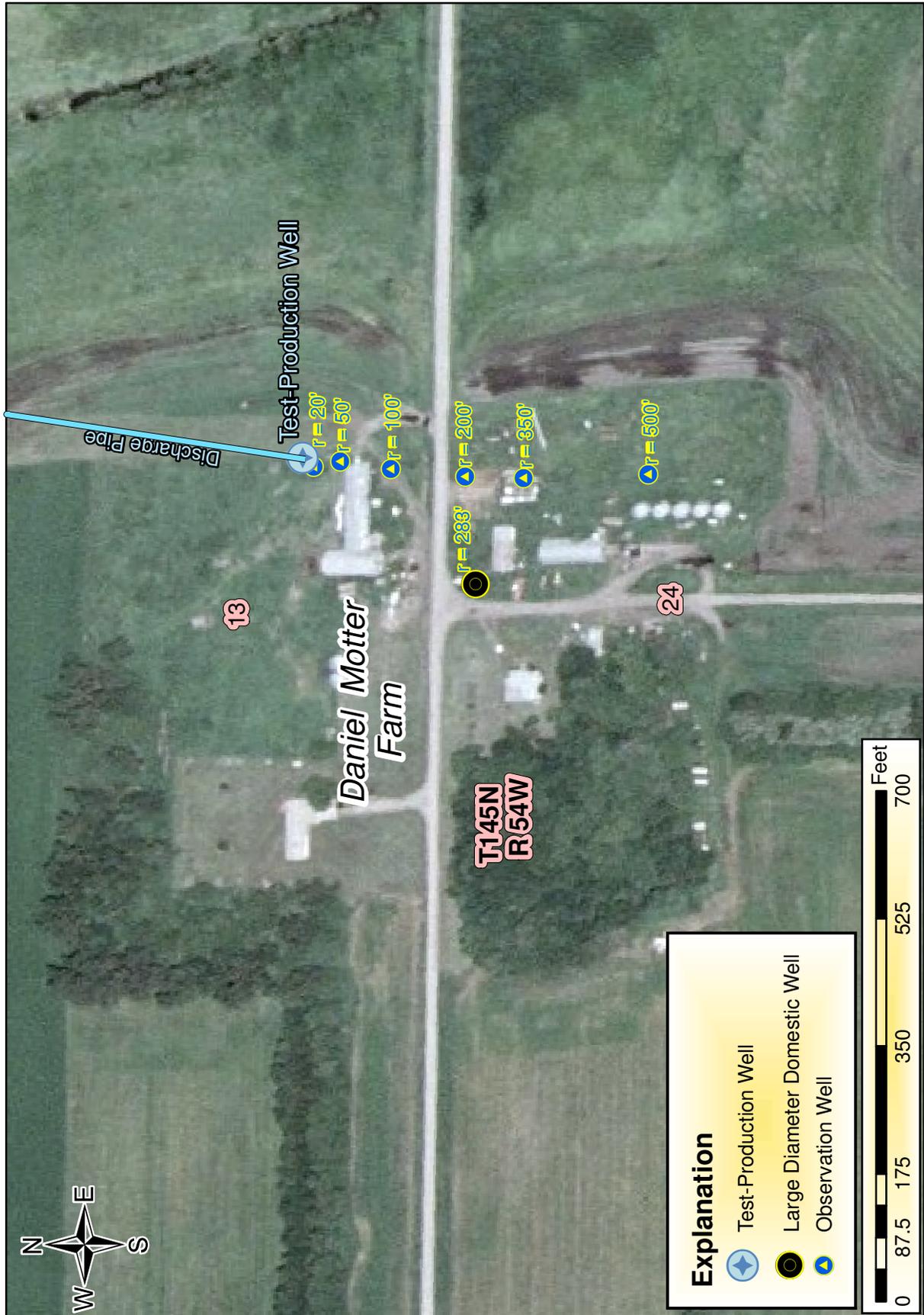


Figure 28. -- Location of the test-production well, large diameter domestic well and close-in observation wells

Test-Production Well

LTP Enterprises, Inc. completed an 8-inch diameter test-production well at location 14505413CDC in aquifer subunit A1. The well was screened from 59 to 79 feet. Lacustrine clay was encountered from 1 to 11 feet, oxidized very fine to fine sand from 11 to 15 feet, unoxidized fine sand from 15 to 79 feet, and lacustrine clay from 79 to 85 feet. Lithologic logs for this well and all other wells and test holes can be found in Appendix B.

Observation Wells

Five close-in wells were installed specifically for the aquifer test. These wells were located at 14505413CDC2 (r=50'), 14505413CDC3 (r=100'), 14505424BAB (r=200'), 14505424BAB2 (r=300'), 14505424BAB3 (r=500'). Several other observation wells within 2 miles of the test-production well were monitored daily during the test. Figures 27 and 28 illustrate the location of these observation wells. Observation well completion information can be found in Table 2.

Operation of Test

The aquifer test commenced on July 11, 2005 at 11:08 am and the well was pumped continuously for 100 hours at an average rate of 194 gallons per minute. The pump was shut down at 3:08 pm on July 15, 2005 and recovery of the aquifer was completed for the next 100 hours. During the aquifer test, real-time monitoring was completed on the test-production well, 6 observation wells and on an old 36" diameter domestic well (r=283'). This was accomplished utilizing water-level

dataloggers which were connected to wireless transceivers and directional antennas. All real-time data was gathered by a Dell notebook computer and an Apple notebook computer in a portable field office. Weather conditions were logged utilizing a La Crosse Technologies digital weather station. The flow rate was

Table 2 -- Completion information for wells monitored during the aquifer test.

Location	Casing Type	Type	Screened Interval (ft)	Distance	Direction	Data Collection Method
14505330BBB2	2" PVC	Obs. Well	55-60	6640'	148°	Steel Tape (measurement daily)
14505410DDD2	2" PVC	Obs. Well	15-20	9005'	306°	Steel Tape (measurement daily)
14505413AAA	2" PVC	Obs. Well	27-32	6075'	34°	Steel Tape (measurement daily)
14505413BBB	2" PVC	Obs. Well	75-80	5404'	341°	Steel Tape (measurement daily)
14505413BBB2	2" PVC	Obs. Well	35-40	5406'	341°	Steel Tape (measurement daily)
14505413CDC (r=20')	2" PVC	Obs. Well	73-78	20'	217°	Datalogger (continious readings)
14505413CDC2 (r=50')	2" PVC	Obs. Well	63-68	50'	184°	Datalogger (continious readings)
14505413CDC3 (r=100')	2" PVC	Obs. Well	63-68	100'	184°	Datalogger (continious readings)
14505413CDC4 (TPW)	8" PVC	Test Production Well	59-79	0	0°	Datalogger (continious readings)
14505413DCC	2" PVC	Obs. Well	55-60	1177'	92°	Steel Tape (measurement daily)
14505413DCD	2" PVC	Obs. Well	45-50	1847'	89°	Steel Tape (measurement daily)
14505413DDD3	2" PVC	Obs. Well	62-68	3240'	93°	Steel Tape (measurement daily)
14505414DDD2	2" PVC	Obs. Well	55-60	1883'	267°	Steel Tape (measurement daily)
14505418DDD2	2" PVC	Obs. Well	78-83	8631'	91°	Steel Tape (measurement daily)
14505422AAA	1.25" ABS	Obs. Well	78-81	7181'	269°	Steel Tape (measurement daily)
14505424BAB (r=200')	2" PVC	Obs. Well	63-68	197'	184°	Steel Tape (measurement daily)
14505424BAB2 (r=350')	2" PVC	Obs. Well	63-68	338'	185°	Steel Tape (measurement daily)
14505424BAB3 (r=500')	2" PVC	Obs. Well	63-68	494'	188°	Steel Tape (measurement daily)
14505424BAB4 (r=283')	36" Cement	Old Domestic Well	NA	283'	216°	Datalogger (continious readings)
14505424BAC	2" PVC	Obs. Well	47-53	1376'	184°	Steel Tape (measurement daily)
14505424BDC	2" PVC	Obs. Well	48-53	2669'	183°	Steel Tape (measurement daily)
14505424CAC	2" PVC	Obs. Well	53-58	4048'	183°	Steel Tape (measurement daily)
14505424CDC	2" PVC	Obs. Well	55-60	5335'	181°	Steel Tape (measurement daily)
14505426AAA3	2" PVC	Obs. Well	58-63	5820'	200°	Steel Tape (measurement daily)
14505427AAA	2" PVC	Obs. Well	87-91	9055'	233°	Steel Tape (measurement daily)

measured utilizing a Panametrics Model PT868 sonic flowmeter and was continuously logged throughout the aquifer test. Discharge water was piped approximately 1,000 feet into a natural drainage northeast of the test-production

well site. Water samples were collected once daily during the aquifer test.

Chemical analysis consisted of major ions, and trace elements.

Barometric conditions at the test site were monitored utilizing a mechanical Belfort micro barograph and a La Crosse Technologies digital weather station before, during, and after the aquifer test. The barometric fluctuations of an unconfined aquifer cannot be explained using a simple barometric efficiency correction as in confined aquifers. In an unconfined aquifer, the barometrically induced water level fluctuations result from the resistance to soil gas flow imposed by the materials comprising the unsaturated zone and to the compressibility of the soil gas within the air-filled pores (Weeks, 1979). There is a lag in the pressure in the aquifer, however, because of the time required for the barometric pressure wave to propagate down through the open pores in the unsaturated zone (Weeks, 1979). The water level in a well will respond instantaneously to the increase in barometric pressure by first falling and then gradually rising back to the initial water level and vice versa with a decrease in barometric pressure (Weeks, 1979). Frequent precipitation events and associated aquifer recharge prevented the determination of water-level fluctuations due to changes in barometric pressure (Figure 29). Therefore, a barometric correction was not applied to the water-level data.

Analysis of Aquifer-Test Data

Total drawdown in the test-production well was 22.38 feet after the 100 hours of pumping. Based on an average discharge rate of 194 gallons per minute, the specific capacity after 100 hours of pumping was 8.7 gallons per minute per foot.

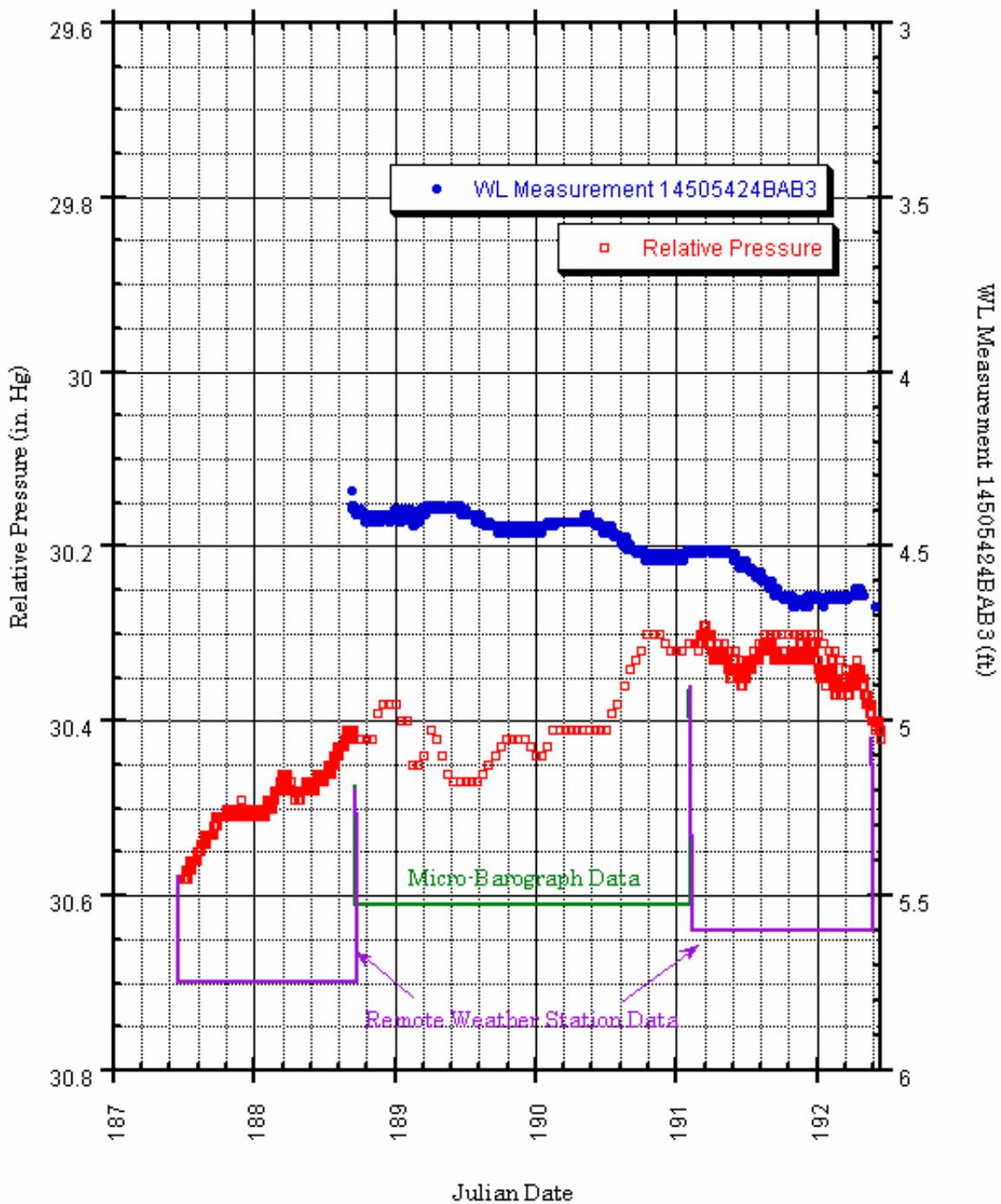


Figure 29. -- Relationship of the barometric effects and water levels from observation well 14505424BAB3 (r=500') from July 6 through July 13, 2005

Prior to any pumping, a water-level logger was installed in observation well 14505424BAB3 (r=500') on June 6th to measure natural water-level trends, if any, and effects on water levels due to changes in barometric pressure and precipitation. Substantial precipitation occurred in the area in the weeks preceding the aquifer test. From June 1st to July 11th (beginning of aquifer test) a rain gage at Galesburg, ND recorded over seven inches of precipitation (NDAWN, 2005). Rapid water-level response in observation well 14505424BAB3 during these precipitation events, indicates the aquifer has a direct connection to the surface (Figure 29). From June 6th through June 12th the water levels rose 1.3 feet during the wettest portion of the background monitoring. From June 14th through June 29th the water levels in observation well 14505424BAB3 declined 1.5 feet during the driest portion of the background monitoring. It is believed that the seasonably wet conditions leading up to the aquifer test increased aquifer storage to near full capacity. This is suggested based on the rapid water-level decline in the aquifer following the precipitation events (Figure 30). The removal of water from the aquifer was predominately discharged by surface runoff as indicated by increased flow in the natural drainage 600 feet east of the aquifer test site. During the dryer period of the background monitoring, the aquifer continued to discharge into the drain at a significant rate.

The plots of time versus drawdown display the effects of delayed yield by gravity drainage, typical of unconfined aquifers. Delayed yield is caused by slow drainage of soil water from pores above the water table. The analysis of early

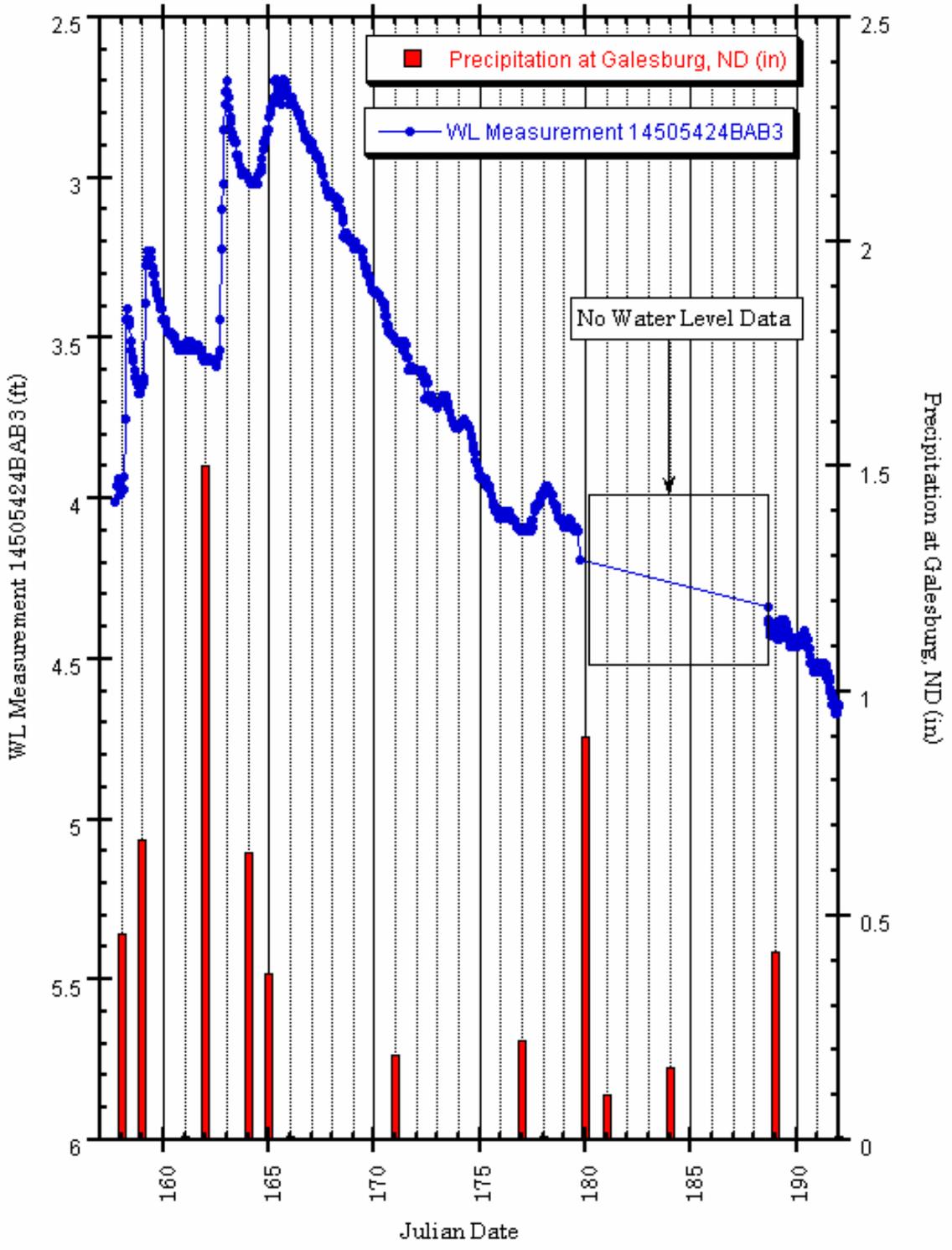


Figure 30. -- Precipitation at Galesburg, ND vs. water levels from observation well 14505424BAB3 from June 7 through July 11, 2005

time versus drawdown data resulted in the calculation of an erroneously large transmissivity because the effects of delayed yield had not fully dissipated. The effects of delayed yield began to dissipate after 1,600 minutes of pumping.

Various analytical methods were used to evaluate the aquifer-test data and determine aquifer hydraulic properties. Due to the effects of delayed yield observed during the aquifer test, the methods for calculating transmissivity were limited. The composite t/r^2 plot for calculating transmissivity is generally the most dependable method for calculating transmissivity and storativity. Using the composite t/r^2 plot, later time data is used to calculate the transmissivity after the effects of delayed yield have dissipated. A transmissivity of 4,503 ft²/day was calculated using the composite t/r^2 plot (Figure 31). Transmissivity was also calculated utilizing distance versus drawdown plots for selected times after pumping was initiated (Figure 32). A transmissivity of 3,671 ft²/day was calculated using the 6,000 minute distance versus drawdown plot where two points were valid for an acceptance criteria of $u < 0.02$. Based on the two calculated values above, the average transmissivity is 4,087 ft²/day.

Analysis of the distance versus drawdown plots indicates the effects of delayed yield had not fully dissipated by the end of the 6,000 minute pumping period (Figure 32). As a result, calculated storativities will be smaller than the actual using distance versus drawdown analysis. Note that the values of storativity increase with increased time in Figure 32 as the effects of delayed yield dissipate. A typical storativity for an unconfined aquifer composed of unconsolidated fine to

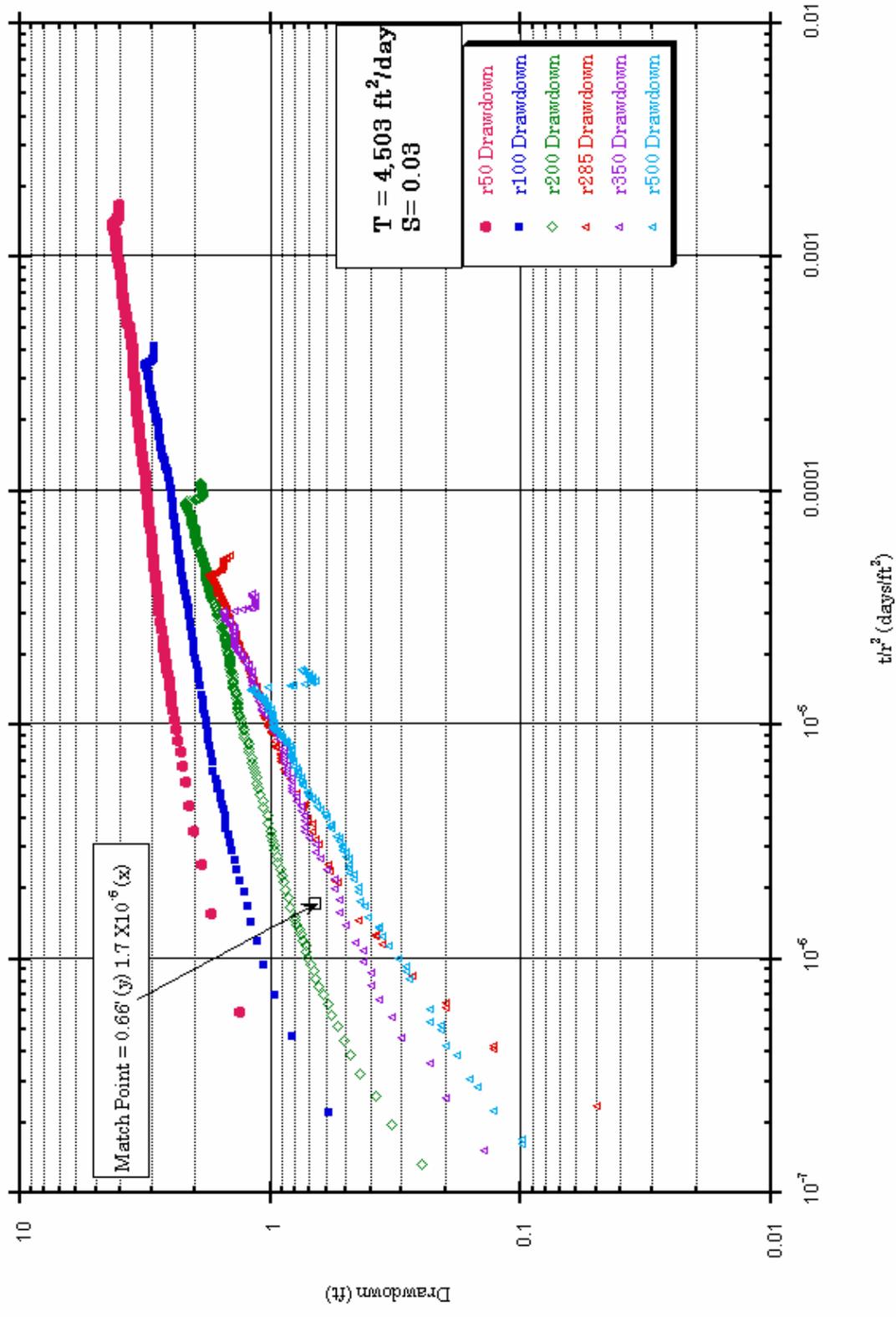


Figure 31. -- Composite log of time divided by distance squared versus log drawdown in the six closer-in wells

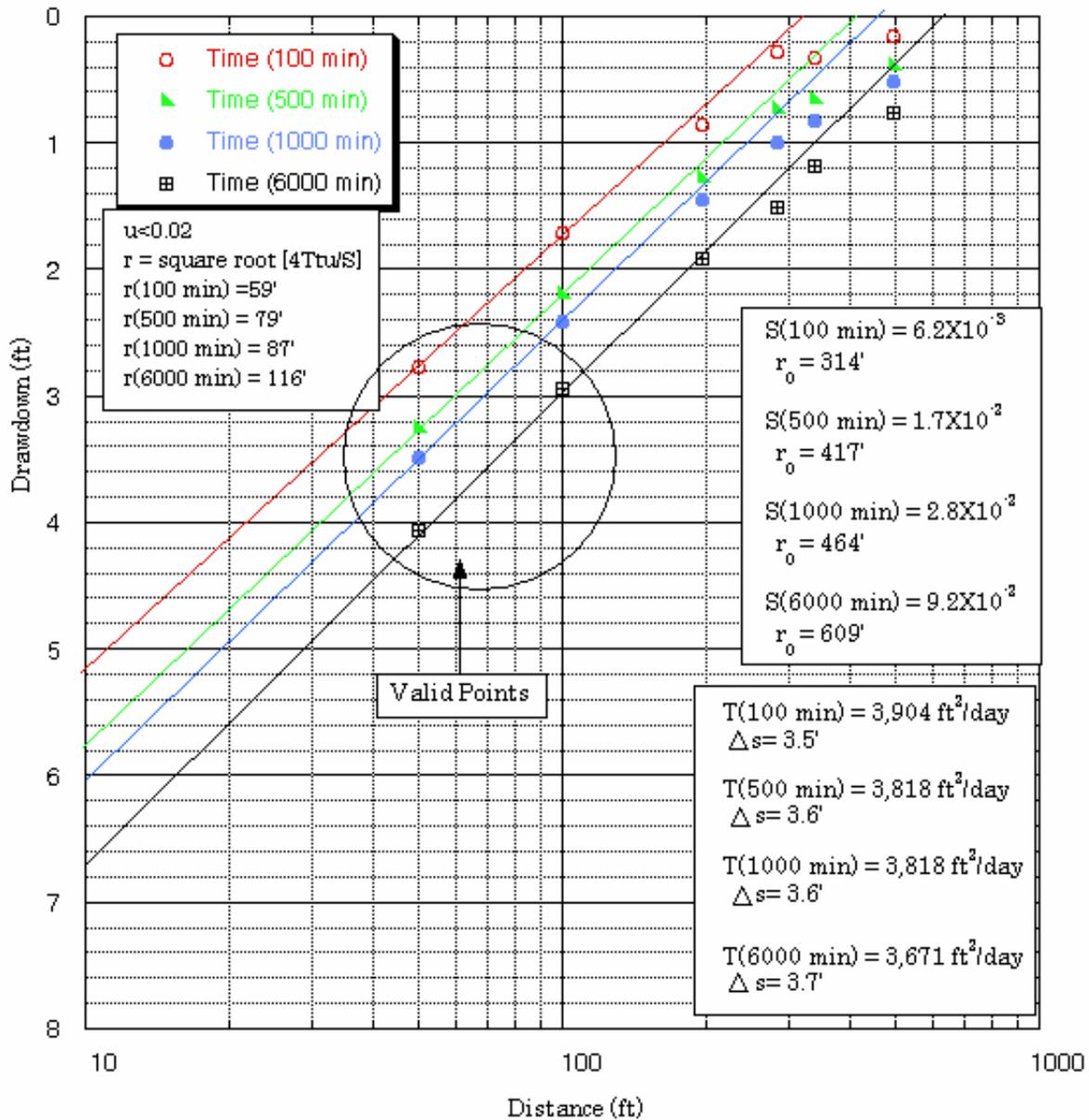


Figure 32. -- Plot log of distance versus arithmetic drawdown in the six close-in wells

medium sand would be in the range of 0.1 to 0.2. For planning purposes a storativity of 0.2 is recommended.

Chemical analyses were performed on six water samples collected during and after the aquifer test. There were no significant changes in water chemistry throughout the aquifer test. Five of the six samples were collected from the discharge line while pumping the test-production well and indicated arsenic, total dissolved solids, and sulfate decreased from 12.3 to 11.9 $\mu\text{g/L}$, 447 to 434 mg/L , and 114 to 106 mg/L , respectively (Table 3). Hardness as CaCO_3 concentrations increased from 367 to 372 mg/L (Table 3). Proper sampling protocol was followed for all constituents with exception to the trace element sampling, most importantly arsenic. It is not possible to meet the proper sampling protocol for trace elements when a well is being pumped. However, relationships can be made between arsenic levels throughout the 100-hour test that are useful, especially since there was minimal change in arsenic concentrations through the duration of the test. Five days after the aquifer test an additional sample was taken utilizing proper sampling procedures for trace element analysis. A suction lift pump was used to evacuate the casing storage, and then a bailer was used to collect a sample below the potentially oxygenated zone. Aeration of the water can cause dissolved arsenic and other trace elements to oxidize, allowing them to precipitate from solution. This analysis showed a decrease in arsenic to 8.44 $\mu\text{g/L}$ (Table 3). Concentrations of arsenic in the test-production well are significantly less than the concentrations found in the rest of the aquifer unit. However, five of the six samples were still above the maximum contaminant level (MCL) of 10 $\mu\text{g/L}$ allowed by the USEPA for

drinking water (Table 1). The average concentration of arsenic in subunit A1 outside the test-production well site is 48 µg/L.

Table 3 -- Chemical analysis from the test-production well during and after the aquifer test.

Date	milligrams per liter															micrograms per liter							Lab	Spec.	
	SiO ₂	Ca	Mg	K	Na	F	HCO ₃	CO ₃	SO ₄	Cl	NO ₃	B	Fe	Mn	TDS	Hrdnss	Alk	NCH	Se	Pb	As	SAR			% Na
7/11/2005	27.9	107	24.2	5	11.7	0.162	366	<1	114	2.82	0.09	135	0.215	0.893	447	367	300	66	1.81	<1	12.3	0.27	6.4	7.56	749
7/12/2005	28.7	106	24.6	4.8	10.5	0.185	354	<1	106	3.08	<0.09	123	0.177	0.937	431	366	290	75	1.66	<1	12.9	0.24	5.8	7.57	730
7/13/2005	28.3	104	24.7	4.7	10.1	0.173	353	<1	105	3.9	<0.09	92	0.156	0.887	428	362	289	71	1.65	<1	12.2	0.23	5.6	7.6	731
7/14/2005	28.6	105	25.2	4.9	10.5	0.19	354	<1	105	4.21	<0.09	106	0.162	0.909	431	366	290	75	1.3	<1	11.8	0.24	5.8	7.62	729
7/15/2005	28.7	106	25.9	4.7	10.1	0.19	355	<1	106	4.83	<0.09	127	0.147	0.917	434	372	291	79	<1	<1	11.9	0.23	5.5	7.6	735
7/20/2005	27.3	104	25.7	4.7	10.4	0.086	346	<1	105	5.3	<0.09	124	1.41	0.952	428	366	283	81	<1	<1	8.44	0.24	5.7	7.34	726

SUMMARY AND CONCLUSIONS

The purpose of the investigation is to assess the capability of the Page/Galesburg Aquifer to support the future water supply needs for Traill Rural Water District (TRWD). The investigation was conducted in three phases. Phase I was primarily a compilation and evaluation of existing data, Phase II consisted of 7,532 feet of test drilling and monitoring well installation, water-level data collection, and water-quality analysis and Phase III consisted of designing, conducting, and evaluating a 100-hour aquifer test to estimate the hydraulic properties of the aquifer.

The Phase I Investigation divided the Page/Galesburg aquifer within the study area into three aquifer units (A, B, and C). Further exploration of aquifer subunit A1 and C was recommended. Aquifer subunit A1 was reduced from 23 to 8 square miles, because of the limited saturated thickness and finer grained material discovered within aquifer unit A. There are minimal water quality limitations

associated with the major ion chemistry of the ground water in aquifer subunit A1. However, the trace element analysis completed during the Phase II Investigation determined most of the ground water within the study area has elevated levels of arsenic. The maximum contaminant level (MCL) for arsenic defined by the Environmental Protection Agency (EPA) is 10 µg/l. The mean concentration of arsenic within the aquifer subunit A1 is 48 µg/l. Based on the saturated thickness and texture, aquifer subunit A1 should provide individual well yields in the range of 75 to 200 gallons per minute.

It was determined that aquifer unit C consisted of isolated lenses of sand and gravel with no areal extent and should not be considered an aquifer unit. Many sites to be drilled were abandoned, because aquifer unit C did not exist and aquifer subunit A1 was smaller than initially estimated.

The drilling sites were moved to the southern portion of the study area to better define aquifer unit B. After some additional drilling it was determined that a till block separates aquifer unit B from the aquifer units to the south where irrigation development occurs. It was determined that aquifer unit B could be reconsidered as a potential source for the water supply expansion, because the potential of impacting prior appropriators (irrigators to the south) was minimal. Also, there are minimal limitations associated with the major ion chemistry of the water in aquifer unit B. However, the mean concentration for arsenic is 46.5 µg/l, nearly 5 times the MCL. Aquifer unit B is bound on the north and east by a large hydraulic-head discontinuity and by till on the south and west. Based on the

saturated thickness and texture, aquifer unit B could provide individual well yields in the range of 125 to 250 gallons per minute.

TRWD was presented three viable options to further investigate for their water supply expansion. Option 1 consisted of developing a water supply from aquifer unit B, Option 2 consisted of developing a water supply from both aquifer unit B and aquifer subunit A1, and Option 3 consisted of developing a water supply from aquifer subunit A1. Based on estimated well yields, water quality, reduced costs for conveyance facilities and the minimal impact of development on prior appropriators, TRWD chose Option 3.

After completing several observation wells in the western portion of aquifer subunit A1, it was determined 14505413CDC would be the best location to conduct the aquifer test. An 8-inch diameter well was constructed at this location and was pumped for 100 hours. Total drawdown in the test-production well was 22.38 feet after 100 hours of pumping. Based on an average discharge rate of 194 gallons per minute, the specific capacity after 100 hours of pumping was 8.7 gallons per minute per foot. An average transmissivity of 4,087 ft²/day was calculated. Due to the effects of delayed yield from gravity drainage, an accurate measurement of the storativity could not be calculated. However, it was possible to verify the aquifer at the test-production well is unconfined, because the values of storativity more closely relate to an unconfined aquifer. For planning purposes a storativity of 0.2 is recommended.

It is concluded from this study that aquifer subunit A1 within the study area will meet TRWD water supply expansion needs of 1,016 acre-feet and a pumping rate of 905 gallons per minute. There are minimal limitations associated with the major ion chemistry of the water. However, there are elevated levels of arsenic throughout the study area. Aquifer subunit A1 has an average arsenic concentration that is nearly 5 times the maximum contaminant level (MCL) defined by the Environmental Protection Agency (EPA). As a result, TRWD will need to treat the water to reduce concentrations of arsenic.

Currently, there are no large capacity prior appropriators obtaining water supplies in aquifer subunit A1. Prior to the appropriation of water, an application for a water use permit will need to be submitted by TRWD and approved by the State Engineer. Suggested locations for a well field include the West 1/2 and the South 1/2 of Section 24, Township 145N, Range 054W. If additional wells are needed, other locations within aquifer subunit A1 should be suitable. Regardless of the location, additional test drilling will be required to identify the best sites to install production wells.

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APPENDIX I
Water-Quality Analyses

APPENDIX II

Lithologic Logs of Wells and Test Holes

144-053-01CCC
NDSWC 212

Date Completed: 1960
L.S. Elevation (ft): 1042
Depth Drilled (ft): 32
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	
1-15	CLAY	Sandy, gray with fine and medium gravel, oxidized (Till)
15-27	SAND	Very fine to fine, clayey, brown
27-32	SAND	Very fine to fine, clayey, gray

144-053-04BCC
NDSWC 2370

Date Completed: 07/20/1965
L.S. Elevation (ft): 1075
Depth Drilled (ft): 336
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-4	TOPSOIL	Sand, dusty yellowish brown, moderately well-sorted, angular to rounded, quartz mostly, predominant size 1/2 mm
4-9	TILL	Very pale orange to grayish orange, clayey, soft, moderately cohesive, igneous, quartz, dolomite, non-calcareous, oxidized
9-14	SAND	Well sorted, subangular to rounded, quartz, dolomite, limestone, igneous, lignite, oxidized
14-19	TILL	Sandy, moderately yellow brown to dark yellow orange, moderately soft, cohesive, brittle, quartz, shale, lignite, dolomite, calcareous, oxidized
19-40	SAND	Moderately well to well sorted, subangular to rounded, quartz, shale, lignite, igneous, dolomite, limestone, predominant size about 1/2 mm (note all sand is very much alike) takes up water

40-44	TILL	Very clayey, olive gray, moderately soft, cohesive, silty, shale, igneous, great variation in fragments, size very calcareous, unoxidized, interbedded with sand
44-47	SAND	As above, becomes gravelly, shale, dolomite
47-58	TILL	As above sand, with no sand, in places till becomes silty clay with no sand fragments, it is soft and moderately cohesive, slightly sandy
58-166	CLAY	Silty, olive gray, soft, moderately cohesive, calcareous, unoxidized, lignite flakes, sandy, in places it is very clayey, becomes slightly harder and more cohesive downwards
166-214	TILL	Olive gray to dark greenish gray, moderately hard, cohesive, sandy, shale, lignite, dolomite, mostly angular cobbles and gravel present
214-217	ROCK	Granite and dolomite
217-224	TILL	As above boulders
224-225	ROCK	Granite
225-234	TILL	Silty, sandy, olive gray, moderately hard, cohesive, shale, dolomite, igneous, quartz, lignite, gravelly, rough drilling in places, very calcareous, unoxidized
234-235	ROCK	Granite
235-241	TILL	Same as above, with pyrite flakes
241-273	TILL	As above with no gravel
273-277	GRAVEL	Poorly sorted, poor sample return, angular to rounded, quartz, shale, dolomite, limestone, igneous, great variation in grain size
277-325	TILL	As above gravel
325-336	SHALE	Olive black, moderately soft, cohesive, plastic, slightly silty, slightly calcareous (Bedrock)

144-053-05DDDD
NDSWC 210

Date Completed: 1960
L.S. Elevation (ft): 1074
Depth Drilled (ft): 17
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-5	SAND	Very fine to fine, brown
5-12	SAND	Very fine to fine, clayey, gray
12-17	CLAY	Sandy, dark-gray with fine and medium gravel (till)

144-053-08CCCC
NDSWC 9885A

Date Completed: 06/02/1977
L.S. Elevation (ft): 1102.9
Depth Drilled (ft): 243
Screen Int. (ft.): 28-34
Purpose: Observation Well
Well Type: 1.25 in. - ABS
Page: 2
Data Source: NDSWC

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-9	SAND	Very fine to medium, predominantly fine, subangular to rounded, good sorting, 50-60% quartz, 5-10% carbonates, 5-10% shale, yellow stained, oxidized
9-36	SAND	Same as above, gray, unoxidized, with a cohesive, thin, dark greenish-gray, clay bed at 18 to 19 feet
36-128	SILT	Slightly clayey, olive gray, cohesive, with little recovery after 60 feet
128-193	SILT	More clayey than above, tighter, more cohesive, olive gray with light gray laminations, calcareous
193-194	SAND & GRAVEL	Lens with predominantly carbonate fragments
194-209	CLAY	Silty, slightly sandy, pebbly, olive gray, cohesive, with thin interbedded sand and gravel lenses (till)
209-232	CLAY	Silty, more sand than above, less cohesive, darker olive gray (till)
232-243	CLAY	Silty, sandy, pebbly, light brown, sand content higher, moderately cohesive. At 243' boulder, terminated drilling

144-053-10BBBB
NDSWC 211

Date Completed: 1960
L.S. Elevation (ft): 1048
Depth Drilled (ft): 32
Purpose: Test Hole
Data Source: NDSWC

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy, brown
1-15	SAND	Very fine to fine, silty, buff to yellow
15-20	CLAY	Sandy, brown, oxidized
20-32	CLAY	Smooth, gray

144-053-10DDDD
NDSWC 9886

Date Completed: 06/02/1977
L.S. Elevation (ft): 1048
Depth Drilled (ft): 320
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-18	CLAY	Medium to light brown, oxidized
18-20	CLAY	Gray, silty
20-40	CLAY	Gray, silty
40-152	CLAY	Same as above
152-160	TILL	Gray with mixed subangular limestone fragments, some sand <10%
160-180	TILL	Gray till continuing with limestone fragments increasing in size (1/2")
180-187	TILL	Becoming more gravelly

144-053-11BBA
Reitben Rud

Date Completed: 12/18/2001
L.S. Elevation (ft): 1041
Depth Drilled (ft): 70
Screen Int. (ft.): 50-70

Purpose: Domestic Well
Well Type: 4 in. - PVC
Aquifer: Page
Data Source: Lako Drilling

Lithologic Log

Completion Info:
Remarks:

Depth (ft)	Unit	Description
0-3	SAND	brown
3-18	CLAY	yellow
18-38	CLAY	gray
38-70	SAND	fine, gray

144-053-11DCD
NDSWC177

Date Completed: 1960
L.S. Elevation (ft): 1054
Depth Drilled (ft): 12

Purpose: Test Hole
Data Source:

Lithologic Log

Completion Info:
Remarks:

Depth (ft)	Unit	Description
0-7	GRAVEL	Poortly sorted, sand, fine to medium, light-brown, oxidized
7-12	CLAY	Sandy, light-brown to gray

187-189 TILL Same as above with some sand

189-200 TILL Gray to light gray color change; till becoming sandy and less gravelly

200-205 TILL Light gray till continuous; gravel 10-20%

205-232 TILL Sandy, with gravel and cobbles; some lignite

232-245 TILL Light gray to light brown, sandy

245-254 TILL Same as above; gravel content

254-255 TILL With cobbles

255-257 TILL Sandy, no cobbles

257-259 TILL With cobbles

259-260 TILL No cobbles

260-274 TILL Sandy gravelly, some cobbles

274-276 TILL With cobbles

276-285 TILL Light gray sandy, gravelly till

285-286 TILL Same as above; few cobbles

286-300 TILL Light medium gray, sandy and gravelly

300-308 TILL Same as above

308-320 SHALE Black, greasy

144-053-11DDC
NDSWC 176

Date Completed: 1960
L.S. Elevation (ft): 1057
Depth Drilled (ft): 42
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-10	SAND	Fine to medium, clayey and much gravel oxidized
10-35	CLAY	Sandy, light-brown to gray
35-42	CLAY	Gray

144-053-12CCD
NDSWC 175

Date Completed: 06/07/1960
L.S. Elevation (ft): 1050
Depth Drilled (ft): 27
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy, black
1-3	CLAY	Gray
3-5	GRAVEL	With sand and clay
5-12	CLAY	Very sandy, gray to brown
12-27	CLAY	Very sandy, blue-gray and gray

144-053-12CDD
NDSWC 174

Date Completed: 06/07/1960
L.S. Elevation (ft): 1041
Depth Drilled (ft): 42
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-9	SAND	Very fine, light-brown and some fine gravel
9-20	SAND	Very fine, clayey, olive-gray
20-42	SAND	Very fine, silty and clayey, light-gray to gray

144-053-13AAB
NDSWC 173

Date Completed: 06/07/1960
L.S. Elevation (ft): 1040
Depth Drilled (ft): 17
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Very sandy, black
1-15	SAND	Fine, well sorted, light-brown
15-17	SAND	Fine, and boulders, abandoned hole

144-053-15CCCI
NDSWC 169

Date Completed: 1960
L.S. Elevation (ft): 1048
Depth Drilled (ft): 75
Purpose: Test Hole
Data Source: NDSWC

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-10	SAND	very fine, light brown, oxidized
10-47	SAND	very fine, very silty, clayey, blue-gray
47-75	CLAY	smooth, plastic, blue-gray

144-053-16CCC
NDSWC 166

Date Completed: 01/01/1960
L.S. Elevation (ft): 1060
Depth Drilled (ft): 27
Purpose: Test Hole
Data Source: NDSWC

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	sandy, black
1-4	CLAY	smooth, with some sand and gravel, light brown, oxidized
4-21	CLAY	smooth, with some sand and gravel, gray
21-27	SAND	very fine, silty and clayey (quicksand)

144-053-16DCC
NDSWC 170

Date Completed: 1960
L.S. Elevation (ft): 1059
Depth Drilled (ft): 37
Purpose: Test Hole
Data Source: NDSWC

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	sandy, black
1-3	SAND	fine, light brown to buff, oxidized
3-15	SAND	fine to medium, silty, tan
15-37	SAND	fine, gray-green, silty, and clayey

144-053-17CCD
NDSWC 165

Date Completed: 06/06/1960
L.S. Elevation (ft): 1087
Depth Drilled (ft): 22
Purpose: Test Hole
Data Source: NDSWC

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	black
1-12	CLAY	light-brown, oxidized, with sand and gravel (till)
12-22	SAND	very fine, gray to dark gray, very silty

144-053-18DDC
NDSWC 164

Date Completed: 1960
L.S. Elevation (ft): 1110
Depth Drilled (ft): 87
Purpose: Test Hole
Data Source: NDSWC

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	sandy, black
1-3	SAND	fine to medium, brown, clayey and oxidized
3-13	CLAY	gray, with some sand and gravel
13-32	SAND	fine to medium, gray, silty, (quicksand)
32-87	SAND	very fine to fine, gray, more silty and clayey

144-053-19BBB1
NDSWC 12288

Date Completed: 06/14/1989
L.S. Elevation (ft): 1171.58
Depth Drilled (ft): 260
Screen Int. (ft.): 238-243
Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Unnamed
Data Source:

Completion Info:

Remarks: EAST WELL

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	No description
1-56	SAND	Fine to medium, yellow brown gravel layer at 6'-7', sand drills easily
56-121	SAND	Gray, fine to medium, occasional silt and clay layers (a few inches) silt and clay interspersed throughout section
121-238	CLAY	Silty, gray, light gray streaks soft, plastic, fine very small specks of mica after 200
238-249	GRAVEL	Coarse with lignite and shale fragments
249-260	CLAY	Gravelly, gray, silty, layers of gravel brownish tint to gray, stiff (Till)

144-053-19BBB2
NDSWC 12289

Date Completed: 06/15/1989
L.S. Elevation (ft): 1171.86
Depth Drilled (ft): 120
Screen Int. (ft.): 116-121
Purpose: Well Type: Observation Well
Aquifer: 2 in. - PVC
Data Source:

Completion Info:

Remarks: west well

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	No description
2-58	SAND	Fine, gray, some silty, clayey layers
58-63	SAND	Fine, gray, some silty, clayey layers
63-120	SAND	Fine, gray, fairly well sorted

144-053-21CCD
NDSWC 167

Date Completed: 01/01/1960
L.S. Elevation (ft): 1065
Depth Drilled (ft): 47
Purpose: Test Hole
Data Source: NDSWC

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-15	SAND	fine to medium, light-brown, clean, oxidized
15-47	SAND	fine, gray, silty (quicksand)

144-053-22CBB
NDSWC 168

Date Completed: 1960
L.S. Elevation (ft): 1049
Depth Drilled (ft): 27
Purpose: Test Hole
Data Source: NDSWC

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-8	SAND	fine, light-brown, well sorted, oxidized
8-15	SAND	fine, gray, silty (quicksand)
15-27	CLAY	smooth, blue-gray

144-053-23CCC
NDSWC 214

Date Completed: 06/29/1960
L.S. Elevation (ft): 1031
Depth Drilled (ft): 27
Purpose: Test Hole
Data Source: NDSWC

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	sandy, black
1-10	SAND	very fine, brown to orange, oxidized
10-15	CLAY	smooth, light brown
15-22	CLAY	light gray with fine and coarse sand and gravel (till)
22-27	CLAY	gray, with fine sand

144-053-23DDC
NDSWC 216

Date Completed: 06/29/1960
L.S. Elevation (ft): 1059
Depth Drilled (ft): 87
Purpose: Test Hole
Data Source: NDSWC

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	sandy, black
1-4	GRAVEL	fine to medium, and fine to coarse sand
4-15	SAND	fine to coarse, silty
15-17	SAND	fine to medium, gray, clayey (till?)
17-25	CLAY	sandy, gray, with fine and medium gravel (till)
25-87	SAND	very fine to fine, gray, silty, (quicksand)

144-053-23DDD
NDSWC 215

Date Completed: 1960
L.S. Elevation (ft): 1056
Depth Drilled (ft): 42
Purpose: Test Hole
Data Source: NDSWC

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	sandy, black
1-5	SAND	very fine to fine, medium-brown to orange
5-8	CLAY	sandy, brown, oxidized
8-12	CLAY	sandy, olive-gray
12-42	SAND	very fine to fine, gray, silty

144-053-28DDD
NDSWC 2369

Date Completed: 07/19/1965 Purpose: Test Hole
L.S. Elevation (ft): 1060
Depth Drilled (ft): 326
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Sandy, black
1-10	Very clayey, moderately soft, cohesive, fragments are less than 1/16mm, lignite, dolomite, mostly angular, calcareous, oxidized
10-41	Dark greenish gray, slightly sandy, shale fragments, soft, moderately cohesive, calcareous, unoxidized, plastic
41-55	Silty, dark greenish gray, moderately soft, cohesive, brittle, calcareous, unoxidized, slightly sandy, shale, dolomite, fragments limited, gravel size fragments
55-61	Silty, moderately poorly sorted, fragment size mostly below 1/4 mm, quartz, lignite, igneous, shale, dolomite, limestone, angular to rounded
61-72	Sandy, dark greenish gray, moderately soft to moderately hard, cohesive, quartz, lignite, dolomite, igneous fragments less than 1/2 mm in size, angular to rounded, calcareous to slightly calcareous, unoxidized
72-83	Silty clay with occasional medium sand size fragments mostly consisting of shale, dark greenish gray, lignite, cohesive, brittle medium hard, calcareous, unoxidized, sand layers, sand is fine
83-111	As above, slightly more sticky and becomes laminated
111-112	Probably also dolomite
112-149	Silty, dark greenish gray, moderately hard, cohesive to moderately cohesive, slightly sandy, laminated, calcareous, unoxidized, contains brown spots, occasional gravel size fragments of shale, dolomite, igneous
149-170	Clayey, dark greenish gray, moderately hard, cohesive, fragments consist of mostly shale, some igneous, some limestone, and unidentified grayish pockets of unidentifed material, fragments vary in size mostly less than 1 mm to 1 1/2 mm, most subangular to subrounded, calcareous, unoxidized fragments become larger downward to gravel size
170-171	Sandy, poorly sorted, mostly angular, mostly shale, some dolomite, and limestone, grain size up to 5 mm or so
171-176	Sandy, dark greenish gray, moderately hard, cohesive, mostly shale, some dolomite, great variation in fragment size, mostly below 1 1/2 mm to 2 mm, mostly subangular

to subrounded, calcareous, unoxidized, becomes cobbly and gravelly, dolomite and igneous

176-204 TILL With gravel layers, poorly sorted, mostly angular some sand, shale and dolomite with some igneous, grain size up to about 8 mm. Till is olive gray, moderately hard, cohesive sand and in places gravelly, quartz (some well rounded), dolomite lignite, limestone, igneous, fragment size is mostly less than 1 mm, but gravel is also present, highly calcareous, unoxidized

204-206 ROCK Dolomite granite, and other unidentified igneous

206-306 TILL Exactly as above boulders, slightly darker in color, interbedded with gravel, poorly sorted, mostly dolomite some igneous and pyrite, shale, mostly angular, hard drilling, some cobbles, till becomes silty downwards

306-325.5 SHALE Olive gray to dark greenish gray, moderately hard, cohesive, small inclusions of light colored material in lens-like shape about 2 mm in size, calcareous, unoxidized

144-054-01A BB
NDSWC

Date Completed: 06/22/1972 Purpose: Observation Well
L.S. Elevation (ft): 1117.53 Well Type: 1.25 in. - PVC
Depth Drilled (ft): 300 Acquirer: Page
Screen Int. (ft.): 122-128 Data Source:

Completion Info:

Remarks: 100 ft EAST OF APPROARCH

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Silty, clay loam, grayish-black
1-15	CLAY Silty, moderately sandy, pebbly, moderately yellowish-brown, moderate cohesive, crumbly, oxidized (till)
15-43	CLAY Silty, moderately sandy to sandy, pebbly, occasional thin gravel layers, olive gray, cohesive, moderately plastic, calcareous (till)
43-47	SAND Fine- to coarse-grained, subangular to rounded, moderately well sorted, shaley
47-74	CLAY Silty, moderately sandy to sandy, pebbly, gravelly, olive gray, cohesive, moderately plastic, calcareous (Till)
74-113	SILT Moderately clayey, olive gray to medium gray, slightly cohesive, crumbly, highly calcareous
113-131	SAND Clayey, very fine- to coarse-grained, (mostly medium), subangular to rounded, moderately well sorted, shaley, lignitic, clay layers are very sandy
131-193	SILT Slightly to moderately clayey, medium gray with light olive gray laminae, slightly cohesive, crumbly, highly calcareous, occasional lignite fragments, a few limestone pebbles

220-230 GRAVEL With cobbles, clayey, sandy, poorly sorted, fine to coarse, mostly limestone and dolostone, some granites, rough drilling

230-242 CLAY Silty, moderately sandy, pebbly, olive gray with light olive gray mottling, cohesive, crumbly (till)

242-275 CLAY Silty, moderately sandy, slightly pebbly, brownish-gray to medium dark gray, moderately indurated, hard, crumbles easily, highly calcareous (older till)

275-300 SHALE Clayey, brownish-black, moderately indurated, numerous thin (a few inches thick) limestone (white to light gray) layers, very highly calcareous, slightly oil residue on drilling mud, talc like feel when dry (cretaceous undiff.)

144-054-06DDDD
NDSWC 11713

Date Completed: 09/03/1981 Purpose: Observation Well
 L.S. Elevation (ft): 1152.26 Well Type: 1.25 in. - PVC
 Depth Drilled (ft): 160 Aquifer: Page
 Screen Int. (ft.): 70-75 Data Source:

Completion Info:

Remarks: 570 ft NORTH Motters

Lithologic Log

Depth (ft)	Unit	Description
0-11	CLAY	Moderate olive brown, weathered, silty sandy gravelly unsorted soft (Till)
11-15	SILT	Moderate olive brown, weathered, clayey sandy, soft to friable
15-42	CLAY	Moderate olive brown and weathered 15-17, silty, olive gray, compact to soft
42-84	SAND	Very fine to very coarse, predominantly fine to medium, subrounded to rounded coal gravel, composition, shale, quartz tan carbonate, olive gray and speckled
84-98	SAND	Olive gray very fine- to fine-grained interbedded with sandy silt, poor returns
98-147	CLAY	Olive gray, compact, silty
147-160	CLAY	Olive gray, compact, silty, sandy, very gravelly and rocky, unsorted (Till)

193-215 CLAY Sandy, pebbly, gravelly, occasional cobbles and boulders, olive gray, cohesive, slightly plastic, calcareous (till) rough drilling

215-225 CLAY Very silty, sandy, medium dark gray, very cohesive, slightly indurated, highly calcareous, drills hard

225-295 CLAY Silty, moderately sandy, pebbly, occasional cobbles and boulders, olive gray, cohesive, slightly plastic, calcareous (till), rough drilling, a few gravel layers

295-300 SHALE Grayish-brown to brownish-black, moderately well indurated, a few small white specks, highly calcareous (cret. undiff)

144-054-05AAAA
NDSWC 8357

Date Completed: 06/22/1972 Purpose: Test Hole
 L.S. Elevation (ft): 1145
 Depth Drilled (ft): 300 Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, clay loam, grayish-black
1-15	CLAY	Silty, moderately sandy, pebbly, a few cobbles, moderately yellowish-brown with dusky yellow mottling, cohesive, crumbly, oxidized (Till)
15-75	CLAY	Very silty, sandy, pebbly, a few cobbles, olive gray, moderately cohesive, slightly plastic, calcareous (Till)
75-83	SAND	Slightly clayey, very fine- to medium-grained, subangular to rounded, moderately well sorted, shaley lignitic
83-112	SILT	Slightly clayey, a few pebbles and lignite chips, medium gray, slightly cohesive, crumbly, highly calcareous
112-122	SAND	Clayey, silty, very fine- to medium-grained, subrounded, moderately well sorted, lignitic, shaley
122-171	SILT	Slightly to moderately clayey, medium gray, slightly cohesive, crumbly, highly calcareous
171-190	CLAY	Very silty, sandy, gravelly, numerous cobbles and boulders, olive gray with some light olive gray mottling, moderately cohesive, slightly plastic, calcareous (Till) rough drilling
190-199	SAND	Clayey, very fine- to medium-grained, subrounded, fair sorting, dirty-looking samples
199-220	CLAY	Silty, sandy, pebbly, olive gray, cohesive, moderately plastic, calcareous (Till) numerous cobbles and boulders, rough drilling

281-295 SHALE Silty, dark gray with light bentonitic layers; some indurated shale, hard drilling, difficult with worn out rock bit

144-054-09DAA
NDSWC 12293

Date Completed: 06/21/1989 Purpose: Well Type: Observation Well
L.S. Elevation (ft): 1134.71 Acquirer: 2 in. - PVC
Depth Drilled (ft): 92 Data Source: Page
Screen Int. (ft.): 84-89

Completion Info:

Remarks: MAYNARDS

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	No description
1-18	CLAY	Sandy, very silty, some pebbles, yellow brown (oxidized till)
18-43	CLAY	Sandy, silty, pebbly, gray (till)
43-46	GRAVEL	Sandy, clayey, very dirty
46-75	CLAY	Sandy, silty, pebbly, gray (till) very sandy till
75-76	ROCK	Dolomite
76-81	GRAVEL	Shale with lots of clay, very dirty
81-83	CLAY	Sandy, silty, gray (till)
83-89	SAND & GRAVEL	Coarse shale fragments, poorly sorted, dark gray
89-92	CLAY	Sandy, silty, gray (till)

144-054-09ADD
NDSWC 12292

Date Completed: 06/20/1989 Purpose: Test Hole
L.S. Elevation (ft): 1138
Depth Drilled (ft): 295
Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	No description
1-6	SILT	Clayey, yellow brown (lacustrine?)
6-17	CLAY	Yellow brown, sandy, silty (oxidized till)
17-39	CLAY	Gray, sandy, silty (till)
39-41	GRAVEL	Dark gray, shale predominantly angular to subangular
41-43	CLAY	Dark gray, sandy silty (till)
43-52	SAND & GRAVEL	Dark gray, predominantly shale, angular to subrounded
52-83	CLAY	Gray, sandy, silty, some pebbles (till) rocks at 72'-73'
83-92	SAND	Fine to medium, some coarse shale fragments
92-105	CLAY	Gray, sandy, silty, some pebbles, lighter gray and siltier
105-112	SILT	Clayey, layered
112-116	CLAY	Light gray, silty, sandy, very silty (till)
116-121	CLAY	Gray, very, very sandy, some pebbles (till) drills really easy
121-152	CLAY	Gray, sandy, silty, gravel layer from 141' to 144'
152-160	SILT	Clayey, occasional pebble but predominantly a fluvial sediment, slightly stiff, slightly plastic
160-169	CLAY	Silty, gray, plastic (fluvial?)
169-191	CLAY	Very sandy, gravelly, almost drilled like gravel from 172'-175', but no gravel returns to speak of (till?) rocks at 188'
191-243	CLAY	Sandy, silty with pebbles, gray stiff, plastic, rocks at 211', 224', 242' came out at 242' to put on rock bit
243-244	CLAY	White, plastic
244-281	CLAY	Gray, sandy, silty, with pebbles, stiff, plastic, rocks at 251', 262', 265', thinned mud at 280'

144-054-11DAD
NDSWC 12284

Date Completed: 06/13/1989 Purpose: Test Hole
L.S. Elevation (ft): 1133
Depth Drilled (ft): 214

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	No description
2-11	CLAY	Yellow brown, very silty, some sand, soft, slightly plastic (till)
11-17	CLAY	Yellow brown silty, sandy stiff, plastic (till)
17-21	SAND	Yellow brown, fine, medium, coarse, poorly sorted
21-66	SAND	Gray, medium to coarse shale, coarse grains throughout
66-188	CLAY	Gray, soft, silty to lenses of lignite at 71'. mostly clay with only small amount of fine silt, 1' sand layer at 99'
188-214	CLAY	Light gray, bentonitic, silty sand grains, soft, plastic sandy layer at 195' becoming darker gray with numerous very thin gravel lenses (till)

Date Completed: 06/13/1989 Purpose: Observation Well - Plugged
L.S. Elevation (ft): 1132.92 Well Type: 2 in. - PVC
Depth Drilled (ft): 70 Aquifer: Page
Screen Int. (ft.): 58-63 Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	No description
1-19	CLAY	Yellow brown, sandy, silty oxidized
19-26	SAND	Yellow brown, fine to medium to coarse, oxidized
26-65	SAND	Gray, fine to coarse
65-70	CLAY	Silty, light gray

144-054-12DDDI
NDSWC 12286

Date Completed: 06/14/1989 Purpose: Test Hole
L.S. Elevation (ft): 1159
Depth Drilled (ft): 300

Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-21	SILT	Brown, reddish brown, sandy clayey, very slight plasticity
21-46	SAND	Brown, silty, fine to medium, mostly fine, fairly well sorted
46-51	SILT	Clayey with fine sand, yellow brown
51-77	SILT	Clayey with fine sand, gray, very slight plasticity, soft
77-96	SAND	Very fine to fine, dark gray
96-116	CLAY	Silty, gray, a little stiff slightly plastic
116-134	SILT	Gray, soft, slightly plastic, mostly washing out until about 125' slightly stiffer, more clayey after 125'
134-143	CLAY	Gray, silty, slightly plastic, subtle change from silt above
143-212	SILT	Gray, stiff, clayey, slightly plastic
212-222	CLAY	Silty, very soft, not much return, numerous very small lenses of gravel
222-227	CLAY	As above with some shale gravel
227-242	SILT	Gray, slightly stiff, slightly plastic, clayey, turns more clayey with some bentonite with depth
242-243	ROCK	
243-255	CLAY	Sandy, silty, medium gray fairly soft with gravel layers (till?)
255-290	CLAY	Sandy, silty, fairly stiff, dark brown, (till) rock at 277' trip out for rock bit, color turns gray at about 270', very silty till with lots of fine sand, another rock at 289'
290-300	CLAY	Dark gray, stiff, plastic has tiny micaceous material bedrock

144-054-12DDDD2
NDSWC 12287

Date Completed: 06/14/1989
L.S. Elevation (ft): 1155.59
Depth Drilled (ft): 118
Screen Int. (ft.): 105-110

Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Page

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	No description
1-46	SILT	Clayey, yellow brown, soft
46-78	SILT	Clayey, gray, soft, some micaceous flakes (tiny), lenses of clay and sand, sand layer at 72'
78-101	SAND	Very fine to fine, frequent silt and clay layers
101-118	SILT	Sandy, clayey, numerous layers of sand and clay

144-054-14DDDD
NDSWC 12281

Date Completed: 06/07/1989
L.S. Elevation (ft): 1165
Depth Drilled (ft): 330

Purpose: Test Hole

Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-4	TOPSOIL	No description
4-11	SILT	Very slightly sandy (very fine sand), slightly clayey, soft, oxidized, dark yellow orange
11-26	SILT	Slightly sandy, slightly clayey, unoxidized, olive gray, soft, stays suspended in mud, few cuttings
26-38	SILT	Clayey interbedded silty clay, soft, plastic, oxidized, dark yellow orange, no sand (lacustrine?)
38-40	CLAY	Silty, soft, plastic, some interbedded clayey silt unoxidized olive gray (lacustrine?)
40-56	SILT	Clayey, soft, plastic to crumbly, unoxidized, a few interbedded very fine sand lenses (fluvial?)
56-65	SAND	Very fine to very grainy, angular to rounded predominantly angular to subrounded predominantly quartz with some dark minerals at 15%
65-66	CLAY	Very firm
66-71	SAND	Very fine to coarse 60% fine to medium angular to rounded, 40% quartz, 40% shale, 20% carbonates and feldspar
71-83	CLAY	Slightly silty, firm, plastic
83-91	SAND	As above, predominantly medium to coarse sand, more carbonates and shale
91-103	SAND	As above, interbedded with detrital lignite, shale gravel, and very sandy clay
103-127	SAND	Very fine to medium angular to round; quartz and shale, no clay or gravel
127-160	SAND	Very fine to very coarse, predominantly medium to coarse, predominantly subrounded to rounded, more round shale and carbonates, gravel 155'-156'
160-200	CLAY	Silty, soft to slightly firm, plastic, olive gray grades into soft slightly clayey silt (lacustrine)
200-216	CLAY	Very slightly silty, slightly firm, very plastic, light gray stringers of silt (lacustrine)
216-238	SAND	Very fine sand to fine pebbles, predominantly medium to very coarse sand lenses of round gravel and lignite

144-054-17CCC
NDSWC 11711

Date Completed: 09/03/1981
L.S. Elevation (ft): 1158.01
Depth Drilled (ft): 180
Screen Int. (ft.): 80-85
Purpose: Well Type: Observation Well
Well Type: 1.25 in. - PVC
Acquifer: Page
Data Source: 80-85

144-054-14DDD2
NDSWC 12282

Date Completed: 06/13/1989
L.S. Elevation (ft): 1164.57
Depth Drilled (ft): 240
Screen Int. (ft.): 230-235
Purpose: Well Type: Observation Well
Well Type: 2 in. - PVC
Acquifer: Undefined
Data Source: 230-235

238-318 TILL Rock at 242', silty, sand, pebbly, clay, soft, plastic, olive gray gravelly from 255' rock at 264'

318-330 SHALE Non-silty, firm, waxy, dark brownish gray to black (Kp)

144-054-14DDD2
NDSWC 12282

Date Completed: 06/13/1989
L.S. Elevation (ft): 1164.57
Depth Drilled (ft): 240
Screen Int. (ft.): 230-235
Purpose: Well Type: Observation Well
Well Type: 2 in. - PVC
Acquifer: Undefined
Data Source: 230-235

Completion Info: BOTTOM 120 IS 1 1/4

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	No description
1-18	CLAY	Silty, yellow brown, some silty layers, slightly plastic oxidized
18-38	SILT	Clayey, occasionally sandy yellow brown, some washes but some layers cohesive
38-55	CLAY	Gray, silty, slightly plastic no sand, slightly stiff many silt layers
55-69	SAND	Very fine, silty, becoming fine sand at 60', silt layer at 61' more clay and silt to 69'
69-84	CLAY	Gray, little silt, no sand plastic, stiff, cohesive
84-101	SAND	Medium, some coarse material which is predominantly shale fragment, 30% shale
101-132	SAND	Medium, with some coarser lignite fragments, occasional clay or silt layers, some fine sands
132-170	SAND	Medium to coarse, more shale fragments 40-50% shale, some lignite, numerous small clay and/or silt layers some fine sand, some silt
170-216	CLAY	Gray, plastic yet no cohesiveness, very silty clay, or very clayey silt more clayey with depth, silty clay from 200' to 216'
216-237	SAND	Coarse to 224', fine to medium to 226', very coarse to 228' fine at 229', medium to coarse to 237', 40% carbonates, 30% shale
237-240	CLAY	Sandy, silty, light gray till

Lithologic Log

Depth (ft)	Unit	Description
0-11	CLAY	Moderate olive brown and weathered, silty sandy gravelly, unsorted, soft (till)
11-22	CLAY	Moderate olive brown, weathered, silty soft to compact
22-33	CLAY	Olive gray, silty, soft to compact
33-72	SAND	Very fine to coarse, predominantly fine to medium grained, rounded to subrounded, speckled olive gray, composition, quartz, carbonate shale including coal gravel
72-96	SAND	Medium to very coarse, granule to coarse pebble 25%, predominantly coarse to very coarse, rounded to subangular, composition, shale, carbonate, quartz, crystalline, coal
96-132	CLAY	Olive gray, silty, soft to compact
132-134	GRAVEL	Granule to fine pebble, sandy, clayey silty (ice contact deposit) grains mostly composed of shale
134-152	SAND	Dark olive gray, clayey, silty, pebbly, appears to be poorly sorted (ice contact deposit or sandy till), soft
152-158	CLAY	Olive gray, silty, sandy, gravelly unsorted, soft (till)
158-164	SAND	Interbedded, pebbly, and silty clays
164-180	CLAY	Olive gray, silty, sandy, gravelly unsorted, soft to compact, compact towards base (till) rocky in parts

144-054-18AAA
NDSWC 3987

Date Completed: 06/09/1970
L.S. Elevation (ft): 1164.9
Depth Drilled (ft): 300
Screen Int. (ft.): 68-74

Purpose: Observation Well
Well Type: 1.25 in. - ABS
Aquifer: Page
Data Source:

Completion Info:

Remarks: Jon Dahl's
New phone line installed in 1998 is 3 feet east of well. Old line is only 10 inches from casing.

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Sandy loam, black
2-25	SAND	Very fine, fine, and medium, moderately sorted, generally subrounded, predominantly shale with carbonates and some quartz and other granitic derivatives, reddish brown, oxidized and heavily iron-stained
25-80	SAND	Very fine to coarse, interbedded, lenses with light gray silty clay and silt, sorted in lenses, dirty very shaley
80-127	SILT	Clayey to sandy (very fine to fine), light olive to olive gray, soft, slightly cohesive to crumbly
127-136	SAND	Medium, moderately well sorted, subangular and subrounded, yellowish gray, loose, predominantly carbonates (limestone) with some shale and granites
136-144	CLAY	Olive gray, soft, cohesive, plastic, sticky
144-178	CLAY	Very sandy (very fine) with occasional coarse sand grains and pebbles but frequent cobbles and boulders, light olive gray, moderately soft to slightly hard, chunky, crumbles easily under pressure, highly calcareous (Till)
178-186	CLAY	Silty with numerous shale pebbles, dark olive gray, moderately soft, cohesive, tightly compacted (Till)
186-200	CLAY	Very sandy with occasional pebbles, light olive gray, moderately soft, crumbly, gritty, highly calcareous (Till)
200-217	CLAY	Silty with many shale pebbles, dark olive gray, moderately soft, cohesive (Till)
217-238	CLAY	Very sandy (very fine) numerous gravel stringers, gravel mostly subangular limestone, light olive gray, moderately soft, gritty, highly calcareous
238-245	CLAY	Silty with shale and limestone pebbles, olive to dark olive gray, moderately soft, cohesive, tightly compacted (Till)
245-274	CLAY	Silty to very sandy with pebbles and sharp limestone gravel, light olive gray, moderately soft, chunky, milky, highly calcareous (Till)
274-300	SHALE	Silty, dark brownish black to black, smooth, waxy, slightly hard and brittle to moderately soft and plastic, includes highly calcareous crystals and possible fossils, carbonaceous and organic material, calcareous, includes thin siltstone beds

144-054-19DDDD
NDSWC 11710

Date Completed: 09/03/1981
L.S. Elevation (ft): 1165.82
Depth Drilled (ft): 160
Screen Int. (ft.): 79-84

Purpose: Observation Well
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks: ONE MILE SOUTH OF OLSTADS

Lithologic Log

Depth (ft)	Unit	Description
0-26	CLAY	Moderate olive brown and weathered 0-18, silty sandy gravelly unsorted rocky in parts, olive gray in color (till) soft to compact
26-41	CLAY	Olive gray, silty to very silty, compact, slightly friable in siltier parts, flaky in part
41-76	SAND	Very fine to very coarse, predominantly fine to medium, coal gravel subrounded to rounded, composition, quartz, carbonate, shale
76-85	SAND	Medium to very coarse, granule to medium pebble 25%, rounded to subrounded, composition, shale, carbonate, quartz with crystalline some coarser gravels
85-103	SILT	Sandy silts, silty clays with lignite gravels; includes some pebbly shale sands and sandy shale gravels
103-144	SAND	Dark olive gray, very poorly sorted, silty, clayey and pebbly, most of sand and pebbles of shale composition (ice-contact deposit), soft to friable, may be sandy till (?)
144-157	CLAY	Olive gray soft, silty to very silty
157-160	CLAY	Olive gray, soft, silty sandy gravelly, unsorted (Till)

144-054-22ADD
NDSWC 11709

Date Completed: 09/03/1981
L.S. Elevation (ft): 1166.04
Depth Drilled (ft): 180
Screen Int. (ft.): 59-65

Purpose: Observation Well
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-21	CLAY	Moderate olive brown and weathered, silty, sandy gravelly unsorted soft (Till)
21-37	CLAY	Moderate olive brown and weathered, silty to very silty, slightly sandy and pebbly, sorted, massive to flaky, soft to compact
37-47	SILT	Olive gray, compact, sandy, clayey
47-92	SAND	Fine to very coarse, predominantly medium grained, rounded to subangular composition; quartz, carbonate, shale with pebble-size coal, speckled olive gray
92-101	SILT	And silty clays
101-118	SAND	Dark, olive gray, speckled, poorly sorted very fine-grained to fine pebble, very silty and clayey, composition, very high in shale (ice-contact deposit)
118-144	CLAY	Olive gray, silty, soft
144-180	CLAY	Olive gray, silty and soft with some dark olive gray sandy silts, sand is very high in shale (ice-contact deposit in lacustrine clay)

144-054-22DCDI
NDSWC 8064

Date Completed: 08/03/1971
L.S. Elevation (ft): 1148
Depth Drilled (ft): 220
Screen Int. (ft.): 97-103

Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks: field checked 4/28/93 by M Skaley; could not find. checked again in 10/13/1994 could not locate. Well was destroyed. reported, 5/26/93 & 10/13/94.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, sandy, brownish-black
1-20	CLAY	Very silty, moderately sandy, pebbly, a few cobbles, moderately yellowish-brown, cohesive, slightly plastic, oxidized (Till)
20-33	CLAY	Same as above, only olive gray (Till)
33-50	SAND	Clayey, silty very fine- to medium-grained, subangular, moderately well-sorted, mostly quartz, some shale, lignitic, taking some water
50-114	SAND	Fine- to very coarse-grained (mostly medium-grained), subangular to subrounded, well-sorted, mostly quartz and shale, some carbonates, lignitic, taking some water, no caving in
114-119	SILT	Very sandy, clayey, olive gray, very slightly cohesive, plastic, calcareous, (Glaciofluvial sediment)
119-130	SAND	Fine- to coarse-grained, subangular to subrounded, well sorted, mostly quartz and shale, lignitic, taking some water
130-197	CLAY	Very silty, sandy, olive gray, slightly cohesive, highly plastic, calcareous, (Glaciofluvial sediment) (occasional thin sand layers)
197-220	CLAY	Very silty, moderately sandy, pebbly, occasional cobbles, olive gray, cohesive, slightly plastic, hard, calcareous (Till)

144-054-24BAB
NDSWC 12283

Date Completed: 06/13/1989
L.S. Elevation (ft): 1130.59
Depth Drilled (ft): 140
Screen Int. (ft.): 126-131

Purpose: Observation Well
Well Type: 2 in. -PVC
Aquifer: Page

144-054-24DDDD
NDSWC 8355

Date Completed: 06/21/1972
L.S. Elevation (ft): 1180
Depth Drilled (ft): 340
Screen Int. (ft.): 117-123

Purpose: Observation Well - Destroyed
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks: OATBAYS

Completion Info:

Remarks: Field checked on 5/16/89 by D Ripley, well not found

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	No description
2-11	CLAY	Yellow, some sand and clay till
11-17	CLAY	Medium gray, soft, slightly plastic some silt
17-133	SAND	Fine, medium, coarse, poorly sorted, some coarse material predominantly fine to medium, some shale clay layer at 35', lignite layer at 51', clay layer at 69' & 76'
133-140	CLAY	Sandy, Silty, Till

144-054-24CCC
NDSWC 9881A

Date Completed: 05/26/1977
L.S. Elevation (ft): 1141.2
Depth Drilled (ft): 300
Screen Int. (ft.): 62-68

Purpose: Observation Well
Well Type: 1.25 in. - ABS
Aquifer: Page

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-17	SILT	Clayey, yellow-stringers, oxidized at 14' sand and gravel lens
17-38	SAND	Very fine to fine, subangular to rounded, good sorting, 40-50% quartz, 5-10% carbonates, 5-10% shale, calcareous
38-82	SAND & GRAVEL	Poor to fair sorting, subangular to rounded, 50-60% gravel, 40-50% sand, 20-30% igneous metamorphic fragments, 20-30% carbonates, 20-30% carbonates, 20-30% shale. After 60' becomes a sand, same as above but fine to coarse, predominantly medium
82-208	SILT	Silts, clays, minor sands, silts and clays are calcareous, greenish gray, with gray laminations
208-288	CLAY	Silty, sandy, pebbly, slightly to moderately plastic, olive gray (Till)
288-300	SHALE	Black with numerous white specks, calcareous, carbonaceous, very plastic, greasy (Greenhorn Formation)

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Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, pebbly, clay loam grayish-black
1-36	CLAY	Very silty, slightly sandy, a few pebbles, moderate yellowish-brown to dusty yellow, slightly cohesive, crumbly, oxidized (till)
36-54	SILT	Clayey, olive gray to medium gray, cohesive, crumbly, a few light olive gray laminations
54-114	SAND	Very slightly clayey to clayey, very fine- to coarse-grained (mostly medium), subangular to rounded, moderately well sorted, quartzose, some shale and a few lignite chips- taking a little water, slightly gravelly lower 40 feet of section
114-126	SAND	Slightly clayey, silty, fine to medium, moderately well sorted
126-144	SILT	Slightly clayey, olive gray to medium gray, cohesive, crumbly, highly calcareous
144-159	SAND	Slightly clayey, very fine- to medium-grained, subangular to rounded, moderately well sorted
159-165	SILT	Clayey, sandy, olive gray, slightly cohesive, slightly plastic, highly calcareous
165-175	CLAY	Silty, very sandy to sandy, pebbly, olive gray, slightly cohesive, crumbly, moderately calcareous (Till)
175-249	SILT	Slightly clayey, slightly sandy, an occasional pebbly, medium gray with some thin, light olive gray laminations, slightly cohesive, crumbly, highly calcareous
249-323	CLAY	Silty, moderately sandy to sandy, pebbly, numerous cobbles and boulders, olive gray with some light olive gray mottling, moderately cohesive, moderately plastic, calcareous (Till) rough drilling
323-340	SHALE	Medium dark gray, moderately well indurated, highly calcareous (cret. undiff)

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144-054-25CCC1
NDSWC 4299

Date Completed: 11/08/1970
L.S. Elevation (ft): 1187
Depth Drilled (ft): 410
Screen Int. (ft.): 328-331

Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks: destroyed 28SEP83

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Very sandy silt loam, black
1-11	SAND	Fine and medium, silty with layers of clay and fine gravel, yellowish gray and dusky yellow with reddish brown iron stains, soft, crumbly, loose to slightly cohesive, laminated and stratified. (washed or reworked till) oxidized
11-19	CLAY	Very silty and clayey silt with occasional sand grains and pebbles, dusky yellow to light olive brown with red oxidation stains, soft, slightly to moderately cohesive, laminated, slightly sticky (stratified till)
19-27	SILT	Very fine and fine sand, light olive gray, soft, very slightly cohesive, crumbly, laminated, calcareous
27-33	SILT	Clayey, light olive gray, soft, slightly cohesive, chunky, laminated
33-78	CLAY	Silty, clayey silt and clayey very fine to fine sand, lenticular, soft, cohesive, plastic and sticky to slightly cohesive and crumbly, light olive to olive gray, thinly interbedded (lacustrine), organic streaks
78-110	SAND	Medium varies from fine to coarse but generally well sorted, uniform and clean, subangular to subrounded, predominantly quartz with granitic derivatives and carbonates, loose; taking water, general lammish gray color, nice
110-115	CLAY	Silty, olive gray, soft, moderately cohesive, moderately plastic, slightly sticky
115-164	SAND	Very fine to medium, silty, lenticular, well sorted individual layers, dark gray, generally subrounded, mostly quartz with carbonates, some shale and a little lignite; drills soft and easy; taking water
164-175	SILT	Very sandy, light olive gray, soft, very slightly cohesive, crumbly, chunky, laminated
175-183	SAND	Medium, dark gray, well sorted, loose, subrounded, clean, quartzose
183-191	SILT	As above, very sandy, light olive gray, laminated
191-203	SILT	Light olive gray, soft, chunky, slightly cohesive, crumbly
203-246	CLAY	Silty, and clayey silt, light olive to olive gray, soft, thinly interbedded laminated; smooth easy drilling, fairly large cuttings
246-251	CLAY	Very silty and sandy with numerous pebbles, olive gray, moderately soft, cohesive, slightly plastic, stiff (Till)

251-256	SAND	Coarse, gravelly, moderately sorted, generally subrounded, predominantly carbonates and granites, loose, slightly rough drilling
256-268	SAND	Medium, light olive gray, fairly well sorted and uniform, loose, quartzose with carbonates
268-298	CLAY	Very silty and sandy with numerous pebbles and occasional rocks, frequent sand and gravel lenses, olive gray, moderately soft cohesive, slightly plastic, stiff (Till) very erratic drilling
298-308	GRAVEL	Fine and medium, sandy, assorted or poorly sorted, subangular and subrounded, mostly granites and carbonates; rocky drilling
308-318	CLAY	Silty with sand grains, pebbles and cobbles; dark olive gray, slightly hard, very cohesive, tightly compacted (Till) very rocky in lower 4'
318-366	SAND	Fine and medium, light olive gray, loose to very slightly cohesive, sorted and uniform, (occasional clayey or gravelly streak), predominantly quartz, generally subrounded, compacted, drills like consolidated sand
366-398	SAND	As above, clayey and silty with occasional coarse sand grains and rocks, light olive gray, soft and crumbly, milky, highly calcareous (Till?)
398-410	SHALE	Very dark brown, hard, very tight, carbonaceous, also dark gray to black waxy shale and soft, black to dark greenish gray, micaceous, highly carbonaceous, very fine, silty sandstone; drills very tight, oily

144-054-26BBB
NDSWC 3986

Date Completed: 06/08/1970
L.S. Elevation (ft): 1180
Depth Drilled (ft): 360
Screen Int. (ft.): 98-104

Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks: Well had been destroyed, reported on 10/13/94.

Lithologic Log

Depth (ft) Unit	Description
0-2 TOPSOIL	Fine sandy loam, black
2-21 SAND	Very fine to fine, silty, interbedded, reddish yellowish brown, soft, loose to slightly cohesive, mainly quartz grains, carbonates and siliceous shale, oxidized, heavily iron stained
21-27 CLAY	Light olive to olive gray, soft, cohesive, plastic, smooth, sticky
27-78 SILT	Clayey to sandy, interbedded, light olive to olive gray, soft, slightly to moderately cohesive, non to slightly plastic, calcareous, smooth, easy drilling
78-120 SAND	Fine to coarse, interbedded, thin clayey streaks, generally loose, sorted in lenses, subangular to subrounded, predominantly siliceous shale with carbonates and quartz grains; taking water
120-219 SILT	Clayey to sandy, generally olive gray, olive gray with lighter highly calcareous laminations, soft, slightly to moderately cohesive, slightly plastic, thinly interbedded, smooth, easy, fast drilling
219-244 SILT & SAND	Very fine, light olive gray, soft, friable to crumbly, porous
244-287 CLAY	Silty to sandy with pebbles, olive gray, moderately soft, cohesive, tightly compacted, stiff (till), contains lenses of gravel, cobbles and boulders, rough drilling
287-332 CLAY	Extremely sandy (very fine) with occasional coarse sand grains and pebbles but frequent cobbles and boulders, light buffish olive gray, moderately soft, slightly crumbly, highly calcareous (till)
332-351 SILTSTONE	Dark brown to brownish black, soft to moderately soft, moderately cohesive, calcareous with highly calcareous inclusions, oily, drills tight, oily seum on drilling fluid
351-360 SHALE	Silty, dark brownish gray to brownish black, smooth, moderately soft, cohesive, moderately plastic, sticky, oily, calcareous, contains layers of siltstone

144-054-27ABA
NDSWC 8064-E

Date Completed: 08/04/1971
L.S. Elevation (ft): 1154
Depth Drilled (ft): 320

Purpose: Test Hole

Data Source: Knutson

Completion Info:

Remarks:

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Silty, black
1-19 CLAY	Sandy, silty, till, yellowish brown
19-33 CLAY	Silty, till, olive gray
33-56 SAND	Fine to medium
56-85 SAND	Fine medium to coarse with a little clay
85-98 SAND	Fine medium to coarse, about 1/2 clay
98-116 CLAY	Sandy, silty, olive gray
116-119 SAND	Fine medium to coarse with a little clay
119-128 CLAY	Sandy, silty olive gray with sand layers
128-184 CLAY	Sandy, silty, olive gray with lots of coal
184-197 CLAY	Sandy, silty, olive gray with sand layers and coal
197-280 CLAY	Silty, till, olive gray with a few rocks
280-312 CLAY	Silty, till, olive gray
312-320 CLAY	Sandy, silty, brownish gray, bedrock

144-054-27ABB
NDSWC 8064C

Date Completed: 08/03/1971
L.S. Elevation (ft): 1150
Depth Drilled (ft): 140
Screen Int. (ft.): 77-83

Purpose: Well Type:
Well Type: ABS
Aquifer: Undefined
Data Source:

Observation Well - Plugged
1.25 in. - ABS
Undefined

Completion Info:

Remarks: Well was destroyed, reported on 10/13/94.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, black
1-21	CLAY	Sandy, silty, till yellowish brown
21-30	CLAY	Silty, till, olive gray
30-60	SAND	Fine to medium
60-94	SAND	Fine medium to coarse with clay layers and a little coal
94-114	CLAY	Silty, olive gray
114-136	SAND	Fine medium to coarse with clay layers
136-140	CLAY	Sandy, silty, olive gray

144-054-27ABD
NDSWC 8064-D

Date Completed: 8/1971
L.S. Elevation (ft): 1150
Depth Drilled (ft): 140
Screen Int. (ft.): 77-83

Purpose: Well Type:
Well Type: PVC
Aquifer:
Data Source:

Observation Well - Plugged
1.25 in. - PVC
Page

Completion Info:

Remarks: field checked by M. Skaley on 4/28/93, well not found

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, black
1-22	CLAY	Sandy, silty, till, yellowish brown
22-48	CLAY	Sandy, silty, olive gray
48-60	SAND	Fine to medium
60-100	SAND	Fine medium to coarse with clay layers and a little coal
100-120	SAND	Fine medium to coarse about 1/2 clay sandy silty
120-130	CLAY	Sandy, silty, olive gray with sand layers
130-140	CLAY	Sandy, silty, olive gray,

144-054-28CCC
NDSWC 12863

Date Completed: 08/21/1991
L.S. Elevation (ft): 1157.43
Depth Drilled (ft): 180
Screen Int. (ft.): 93-98

Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	no description
1-21	CLAY	Sandy, silty, pebbly, yellow-brown oxidized (Till)
21-31	CLAY	As above, except gray
31-44	SILT	Clayey, light gray, soft, crumbly
44-82	SAND	Fine to coarse, some lignitic layers
82-103	SILT	Clayey, very sandy, gray, slightly plastic (fluvial)
103-104	GRAVEL	Medium to coarse, subangular to subrounded, predominantly shale with carbonates
104-172	SILT	Clayey, gray, very soft
172-180	CLAY	Very, very, silty, sandy and pebbly gray, crumbly (Till)

144-054-28CCD
NDSWC 3985

Date Completed: 06/08/1970
L.S. Elevation (ft): 1160
Depth Drilled (ft): 340
Screen Int. (ft.): 98-101

Purpose: Observation Well
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty loam, black
1-5	CLAY	Silty and sandy, yellowish gray, soft, slightly cohesive, slightly plastic, oxidized and leached
5-26	CLAY	Silty with sand grains and pebbles, moderate olive reddish brown, moderately soft, cohesive, moderately plastic, oxidized (till)
26-44	CLAY	Silty with sand grains and pebbles, olive gray, moderately soft, cohesive, moderately plastic (till) contains thin lenses of fine gravel (shale and limestone)
44-74	SAND	Fine to coarse, yellowish gray, loose, sorted in lenses, possible clayey or silty stringers, subangular to subrounded, mostly quartz, siliceous shale, and carbonates, drills easy, taking some water
74-84	CLAY	Silty, light olive gray, soft, moderately cohesive, slightly plastic, calcareous, laminated
84-116	SAND	Fine to coarse, possibly better sorted than sand above, but still lenticular, predominantly quartz, shale and carbonates, taking water, stands up in hole fairly good
116-169	CLAY & SILT	Some very fine sand, generally olive gray, interbedded, laminated, soft, slightly to very cohesive, nonplastic to plastic; smooth easy drilling
169-192	CLAY	Silty and sandy with pebbles, olive gray, moderately soft, cohesive, stiff, tough, (till) contains lenses of sandy fine gravel and occasional boulders
192-214	CLAY	Very sandy (very fine) with coarse sand grains and occasional pebbles and boulders, light olive gray, soft to moderately soft, moderately cohesive, slightly plastic, highly calcareous (till)
214-261	CLAY	Silty with sand grains and numerous shale pebbles, dark olive gray, moderately soft to slightly hard, cohesive, stiff, tough, tight (till) very rocky in lower 5'
261-297	CLAY	(Shale) black and brownish black with light gray, slightly calcareous laminations, soft to moderately soft, occasional indurated shale pebbles (till) reworked bedrock
297-310	CLAY	Very sandy with coarse sand grains, pebbles, and occasional rock, light olive gray, soft, moderately cohesive, slightly plastic, gritty (till)

330-330 SHALE Very silty, very dark brown, moderately soft, cohesive, smooth, oily, drills very tight, contains thin layers of dry siltstone

330-340 SILTSTONE Hard, no cuttings

Date Completed: 05/28/1977 Purpose: Test Hole
 L.S. Elevation (ft): 1164
 Depth Drilled (ft): 340

Completion Info:
 Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-13	CLAY	Silty, sandy, pebbly, red-yellow-brown stringers, moderately cohesive (Till)
13-92	CLAY	Silty, sandy, pebbly, olive gray, moderately cohesive (till) at 65'-67' sand and gravel lens (shale and carbonate)
92-119	SILT	Clayey, greenish gray
119-125	SAND & GRAVEL	Predominantly gravel, 60-70% shale, 10% carbonates, sub-angular to rounded, fair sorting
125-145	SILT	Sandy, very fine sand, greenish gray
145-200	SILT	Clayey, greenish gray
200-320	CLAY	Silty, sandy, pebbly, olive gray, slightly cohesive, more sand than above (Till)
320-340	SHALE	Clay, black, cohesive, greasy, ((Greenhorn Formation))

144-054-31CCCC
 NDSWC 8353

Date Completed: 06/20/1972 Purpose: Observation Well
 L.S. Elevation (ft): 1181.5 Well Type: 1.25 in. - PVC
 Depth Drilled (ft): 340 Aquifer:
 Screen Int. (ft.): 97-103 Data Source:

Completion Info:
 Remarks: 4-BS PUMPED OVER 1 HOUR, WELL WON'T CLEAN UP

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, slightly sandy, grayish-black
1-21	CLAY	Silty, moderately sandy, moderate yellowish-brown, slightly cohesive, crumbly, oxidized (Till)
21-22	SAND	Slightly gravelly, fine to very coarse, well oxidized
22-31	SILT	Slightly clayey, moderate yellowish-brown, cohesive, slightly plastic, oxidized
31-36	SILT	Slightly clayey, olive gray, slightly plastic, highly calcareous, slightly indurated in places
36-46	SILT	Very sandy, olive gray, slightly cohesive, slightly plastic
46-55	SAND	Silty, very fine to fine, subangular to rounded, moderately well sorted, shaley
55-60	SILT	Slightly clayey, olive gray, slightly cohesive, slightly plastic, highly calcareous
60-105	SAND	Fine- to very coarse-grained (mostly medium to coarse) subangular to rounded, well sorted, about 15% shale, remainder quartz and feldspar clean-looking, taking some water
105-112	GRAVEL	Sandy, fine to very coarse, subangular to rounded, fair sorting, mostly carbonates and shale, taking some water, caving slightly
112-136	CLAY	Silty, sandy, olive gray with a few light olive gray laminations, slightly cohesive, slightly plastic, calcareous
136-151	CLAY	Silty, slightly sandy, pebbly, occasional cobbles, a few boulders, olive gray, cohesive, moderately plastic, calcareous (Till)
151-158	GRAVEL	Clayey, fine to coarse, angular to rounded, moderately well sorted, mostly carbonates and granitics, some metamorphics
158-252	CLAY	Silty, pebbly, occasional cobbles and boulders, olive gray, moderately cohesive, plastic, calcareous (Till), a few thin gravel lenses, rough drilling
252-292	CLAY	Sandy, pebbly, light olive gray, cohesive, crumbly (Till)
292-298	GRAVEL	Sandy, fine to coarse, angular to subrounded, fair sorting, mostly carbonates, some shale

298-328 CLAY Silty, moderately sandy, pebbly, a few cobbles, olive gray, cohesive, slightly plastic, calcareous (Till)

328-340 SHALE Brownish-black with occasional small white specks, indurated, highly calcareous (Greenhorn Formation)

Date Completed: 06/01/1977 Purpose: Observation Well - Plugged
L.S. Elevation (ft): 1175.1 Well Type: 1.25 in. - PVC
Depth Drilled (ft): 234 Aquifer: Page
Screen Int. (ft.): 88-94 Data Source:

Completion Info: missing SNOV81; field checked, area dug up by D Ripley and M Satrom; still no obs well found 17MAY89

Lithologic Log

Depth (ft)	Unit	Description
0-24	CLAY	Silty, sandy, pebbly, dusty yellow with reddish brown stringers, oxidized, cohesive (Till)
24-35	CLAY	Silty, sandy, pebbly, olive gray, cohesive, (Till)
35-71	SILT	Clayey, greenish gray, cohesive at 52'-54' bit slipped, poor sample recovery, possible fine sand lens
71-78	SAND	Fine to very coarse, predominantly medium, very coarse fraction predominantly shale, 40% quartz, 25% shale, 5-10% carbonates, subangular-rounded, fair to good sorting
78-86	SILT	Clayey ?? very poor sample recovery
86-130	SAND	70% - gravel (30%); subangular rounded, fair sorting, 20% shale, 25% quartz, 15% carbonates, fines are predominantly quartz, coarse predominantly shale. Between 95'-105' appears to be a silty, sandy, clay; possible reworked till.
130-167	SILT	Clayey, olive gray, cohesive at 145' becomes a silty clay, at 162'-164' sand and gravel lens
167-234	CLAY	Silty, sandy, pebbly, olive gray, not as cohesive as above, more sand, lots of angular carbonate fragments. At 234' tripped out due to rock

Date Completed: 10/17/1978 Purpose: Observation Well
L.S. Elevation (ft): 1151.1 Well Type: 1.25 in. - PVC
Depth Drilled (ft): 215 Aquifer: Page
Screen Int. (ft.): 138-141 Data Source:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	no description
1-17	CLAY	Silty, sandy, pebbly, cohesive, compact, gray (Till)
17-22	GRAVEL	Sandy very coarse sand to coarse gravel, predominantly fine gravel, poorly sorted, subangular to subrounded 50% shale, 25% carbonates, 2% pink granite
22-43	CLAY	Silty, sandy, pebbly, cohesive, compact, olive gray
43-161	GRAVEL	Sandy very coarse sand to coarse gravel, predominantly fine gravel, poorly sorted, angular to subrounded, 20% carbonates, 25% silicates, 50% shale gravel, some shale gravel well rounded. Two bags of mud needed 100l taking lots of water, caving badly at 120l-140l
161-215	CLAY	Silty poor recovery, boulder at 195'

144-054-34DDD
NDSWC 8354

Date Completed: 06/21/1972
L.S. Elevation (ft): 1200
Depth Drilled (ft): 400
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy, silty, pebbly, grayish-brown
1-20	SAND	Silty, very fine to medium, subangular to rounded, moderately well sorted, well oxidized, quartzose, taking water rapidly mixed 3 bags mud
20-50	SILT	Sandy, clayey, moderate yellowish-brown, slightly cohesive, crumbly, oxidized
50-94	CLAY	Very silty, medium dark gray, cohesive, slightly plastic, slightly indurated, highly calcareous
94-118	SAND	Interbedded with clay layers, very fine- to medium-grained, subangular to subrounded, moderately well sorted, lignitic, shaley, dirty-looking samples
118-175	CLAY	Very sandy to sandy, medium dark gray, slightly cohesive, crumbly, moderately calcareous (Till)
175-250	SILT	Slightly clayey, light olive gray to olive gray, slightly cohesive, slightly plastic, laminated, highly calcareous
250-390	CLAY	Silty, moderately sandy, pebbly, numerous cobbles and boulders, olive gray, slightly cohesive, crumbly, moderately calcareous, rough drilling
390-400	SHALE	Brownish-gray, occasional small white specks, highly calcareous, moderately well indurated, (Greenhorn Formation ?)

144-054-36AAA
NDSWC 9887

Date Completed: 06/03/1977
L.S. Elevation (ft): 1162.5
Depth Drilled (ft): 350
Screen Int. (ft.): 88-94
Purpose: Observation Well
Well Type: 1.25 in. - ABS
Acquirer: Page
Data Source:

Completion Info:
Remarks:

STEVE ERICKSON

Lithologic Log

Depth (ft)	Unit	Description
0-28	SILT	Brown, clayey silt with some gravel lenses
28-31	SILT	Brown, light gray, medium sandy
31-48	SILT	Same as above, gravel lenses absent
48-121	SAND	Medium, light gray to brown; some shale fragments
121-122	LIMESTONE	Cobble
122-209	SILT	Gray, very fine grain alternating to fine sand, laminations present
209-216	SILT	Gray fine sandy
216-227	CLAY	Gray silty with sand stringers
227-237	CLAY	Same as above with fine to medium sand stringers
237-240	SAND	Fine to medium with shale fragments
240-246	SILT	Gray sandy with some cobbles
246-290	TILL	Gray, gravelly, gravel fragments, quite angular
290-305	TILL	Gravel content, increase gravel predominantly limestone with granite fragments
305-347	TILL	Same as above with many cobbles

144-055-06CCC
NDSWC 5617-A

Date Completed: 12/09/1969
L.S. Elevation (ft): 1205.9
Depth Drilled (ft): 150
Screen Int. (ft.): 16-19
Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer: Undefined
Data Source:

Completion Info:

Remarks: Plugged with rig: WEST OF HWY

TWISTED OFF AT 150', ABANDONED HOLE PULLED AHEAD 10-15' & DRILLED 20' HOLE & INSTALLED 18' OF 1.25 PVC PIPE WITH 3 #12 SLOT SDPT.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, sandy, clayey, grayish-black
1-6	CLAY	Silty, moderately sandy, pebbly, dusky yellow to moderate yellowish-brown, slightly to moderately cohesive, slightly plastic, oxidized (Till)
6-18	SAND	Very slightly gravelly (fine gravel), very fine to very coarse-grained (angular to subrounded), moderately well sorted, approximately 50-60% shale, 10-15% carbonates, remainder quartz, not taking much water, not caving, slightly oxidized
18-51	CLAY	Silty, moderately sandy, pebbly, occasional cobbles and boulders, olive gray, moderately cohesive, moderately plastic, calcareous (Till)
51-52	ROCK	Granite hard
52-97	CLAY	Silty, slightly to moderately sandy, gravelly, pebbly, occasional cobbles and boulders, olive gray, moderately cohesive, moderately plastic, a few detrital lignite chips, calcareous (Till)
97-150	CLAY	Silty, slightly sandy, pebbly, occasional cobbles, occasional boulders (grayish-brown calcareous shale bedrock reworked), olive gray to medium dark gray, cohesive, moderately plastic, calcareous (Till) (twisted off drill stem at 150', abandoned hole)

144-055-06BCB2
NDSWC 3981

Date Completed: 06/06/1970
L.S. Elevation (ft): 1214
Depth Drilled (ft): 200
Screen Int. (ft.): 118-138
Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer: Till
Data Source:

Completion Info:

Remarks: Plugged with rig

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty loam, black
1-7	CLAY	Silty to sandy with occasional pebbles, yellowish gray, soft, very slightly cohesive, oxidized (Till)
7-19	CLAY	Silty to sandy with iron-stained limestone and shale pebbles, dusky yellow to moderate olive brown with reddish iron stains, soft to moderately soft, cohesive, moderately plastic, oxidized (Till), contains thin sand stringers
19-36	SAND	Predominantly medium, varies from fine to coarse with a little fine gravel, assorted to poorly sorted, angular to subrounded, iron-stained, mostly shale and heavily iron-strained carbonates; dirty, loose
36-42	CLAY	Silty to sandy with pebbles, dusky yellowish brown, soft to moderately soft, cohesive, oxidized (Till)
42-72	CLAY	Silty and sandy with pebbles, olive gray, moderately soft, moderately cohesive, slightly plastic, gritty, fairly tight (till) contains lenses or stringers of sand and fine iron-stained gravel
72-122.5	CLAY	Very silty with sand grains, pebbles, cobbles and boulders, olive gray, moderately soft, cohesive, tightly compacted (Till) rough drilling due to boulders
122.5-124	ROCK	Granite hard
124-140	TILL	As above, very gravelly and rocky, rough drilling, put on rock bit at 132'
140-163	CLAY	Silty and sandy with pebbles and sandy stringers, olive gray, moderately soft, cohesive, compacted, stiff (Till)
163-181	SHALE	Very silty, very soft to soft, generally brownish black but contains slight gray (bentonitic ?) clay, non-calcareous, drills smooth, tight and sticky still using rock bit
181-200	SHALE	Silty, brownish black, soft, smooth, waxy, tight, oily carbonaceous, non-calcareous

144-055-09BAA
NDSWC 3982

Date Completed: 06/06/1970
L.S. Elevation (ft): 1141.1
Depth Drilled (ft): 300
Screen Int. (ft.): 20-40

Purpose: Observation Well
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks: IN APPROACH SOUTH OF GAME MANAGEMENT SIGN

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy loam, dark brown
1-39	SAND & GRAVEL	With cobbles, and occasional boulders, assorted, subangular and subrounded, oxidized to about 5', partially oxidized to about 10', predominantly carbonates and black siliceous shale with some quantities, rough drilling, taking water, mixed mud, rock bit about 30'
39-48	CLAY	Silty and sandy with pebbles, olive gray, moderately soft, moderately cohesive, chunky, stiff (Till); contains numerous lenses of sand and fine gravel, gravel mostly carbonates, sand mainly carbonates, shale and quartz
48-58	CLAY	Silty with sand grains and pebbles, greenish gray to dark greenish gray, slightly hard and brittle, tightly compacted (Till)
58-84	CLAY	Very sandy with occasional pebbles, light olive gray to olive gray, moderately soft, slightly cohesive, gritty, highly calcareous (Till); contains numerous lenses of fine and medium, sorted, subrounded sand
84-126	CLAY	Silty to moderately sandy with pebbles and occasional cobbles, olive gray to dark olive gray, moderately soft, cohesive, chunky or blocky, tight (Till); cobbles and boulders mostly carbonates (limestone and dolostone)
126-133	SAND	Medium, varies slightly from fine to coarse, sorted, subrounded, mostly shale and carbonates; loose, washed out pretty bad
133-182	CLAY	Silty to sandy with pebbles, olive gray, moderately soft, cohesive, stiff (Till); contains numerous lenses of coarse sand and fine gravel
182-222	CLAY	Silty to slightly sandy, dark olive gray, moderately soft to slightly hard, cohesive, stiff, (Till); drills very tight, lots of sand and gravel leaving in from above, still using rock bit
222-265	SHALE	Brownish black, smooth, oily, carbonaceous, possibly fossiliferous, tight, stiff, varies from soft and plastic to slightly hard and brittle, drills very tight, poor samples, oily seum on drilling fluid
265-274	SILT	No samples, mud getting very thick
274-300	SHALE	Black, moderately hard, brittle, smooth, very tight, oily

144-055-10ABB
NDSWC 5618A

Date Completed: 12/10/1969
L.S. Elevation (ft): 1129.7
Depth Drilled (ft): 260
Screen Int. (ft.): 20-23
Completion Info:

Purpose: Observation Well
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Remarks: 75 ft EAST OF APPROACH, VISBYSS

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, clayey, sandy, grayish-black
1-7	CLAY	Very silty, sandy, pebbly, dusky yellow to moderate yellowish-brown, slightly cohesive, slightly plastic, oxidized (Till)
7-25	SAND	Fine to coarse-grained (mostly fine to medium), moderately well sorted, angular to subrounded, approximately 60-70% quartz, 10-20% shale and lignite, micaceous, small % carbonates, taking some water, not caving in
25-238	CLAY	Silty, moderately sandy, pebbly, gravelly, olive gray, moderately cohesive, moderately plastic, calcareous (Till) rough drilling (occasional cobbles and boulders)
238-260	SHALE	Slightly clayey, medium gray to brownish-gray, non-calcareous, moderately indurated, bedded, occasional pyrite ? fragments (Cretaceous undifferentiated) (Carlisle Formation ?)

144-055-10DDC
NDSWC 11712

Date Completed: 09/03/1981
L.S. Elevation (ft): 1141.6
Depth Drilled (ft): 100
Screen Int. (ft.): 40-46
Completion Info:

Purpose: Observation Well
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Remarks: GUBBERS

Lithologic Log

Depth (ft)	Unit	Description
0-10	CLAY	Moderate olive brown, weathered, silty, sandy, gravelly, unsorted, soft (Till)
10-16	CLAY	Moderate olive brown, weathered, silty, soft to slightly compact
16-21	CLAY	Olive gray, silty, soft to slightly compact
21-47	SAND	Very fine to very coarse, predominantly fine to medium grained, rounded to subrounded, composition; quartz, shale, carbonate with coal gravel
47-100	CLAY	Olive gray, silty, sandy, gravelly, unsorted, compact (Till) very rocky at top of interval; rocky and gravelly in parts; lens of sandy gravel 78-80'

144-055-25ABA
NDSWC 8063

Date Completed: 08/02/1971 Purpose: Observation Well - Plugged
L.S. Elevation (ft): 1165 Well Type: 1.25 in. - ABS
Depth Drilled (ft): 120 Aquifer: Page
Screen Int. (ft.): 87-93 Data Source:

Completion Info:

Remarks: well not found on 16MAY89. Well reported destroyed on 10/13/94.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, sandy, brownish-black
1-21	CLAY	Very silty, sandy, moderate yellowish-brown, slightly to moderately cohesive, moderately plastic, well oxidized (Glaciofluvial sediment)
21-30	CLAY	Same as above, only olive gray, (Glaciofluvial sediment)
30-40	SILT	Moderately clayey, very sandy, olive gray, very slightly cohesive, plastic, highly calcareous (Glaciofluvial sediment) (occasional very fine-grained sand layers)
40-77	SAND	A few thin silty clay layers (becomes more coarse with depth), very fine to coarse grained) (mostly medium grained), subangular to subrounded, moderately well sorted, mostly quartz, some shale and carbonates, taking some water, not caving in
77-109	GRAVEL	Moderately sandy, fine to coarse (some cobble-sized material), mostly fine to medium, subangular to rounded, moderately well sorted, approximately 40% carbonates, 30% shale, 30% siliceous rocks granites and metamorphics, taking water, caving in, mixed 2 bags bentonite
109-120	CLAY	Very silty, moderately sandy, pebbly, a few cobbles, olive gray, moderately cohesive, moderately plastic, calcareous (fill)

144-055-21CCC
NDSWC 12291

Date Completed: 06/19/1989 Purpose: Test Hole
L.S. Elevation (ft): 1168
Depth Drilled (ft): 270 Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	No description
1-7	SILT	Yellow brown, soft, slightly clayey
7-16	CLAY	Silty, sandy, yellow brown, oxidized till
16-17	CLAY	Silty, yellow brown, soft plastic lacustrine or fluvial
17-21	CLAY	Silty, as above, only gray
21-23	SAND & GRAVEL	Poorly sorted
23-36	SILT	Clayey, slightly stiff, gray
36-45	GRAVEL	Dark gray, lots of shale 1/8' to 1/2' diameter, angular to subrounded
45-46	ROCKS	Coarse gravel layer
46-260	CLAY	Sandy, silty, some small pebbles, gray (fill), periodic thin gravel layers until 66'; layers of sand and gravel start again at 91', 93', 97' rocks at 126' and 187', also at 208'-210' trip out to put on rock bit at 210', rocks at 213', 221', 232'
260-270	CLAY	Slightly silty, dark gray, stiff shiny, plastic (bedrock)

144-055-26BBB
NDSWC 3983

Date Completed: 06/07/1970
L.S. Elevation (ft): 1158.4
Depth Drilled (ft): 300
Screen Int. (ft.): 53-68

Purpose: Observation Well
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source: NDSWC

Completion Info:

Remarks: ONE MILE SOUTH OF FISCHERS

Lithologic Log

Depth (ft)	Unit	Description
0-4	CLAY	silty and sandy, with pebbles, yellowish-gray, soft, slightly to moderately cohesive, slightly plastic, oxidized and leached (till)
4-23	SILT	slightly clayey to slightly sandy (very fine), limonitic yellowish reddish brown, soft, slightly cohesive, nonplastic, laminated, oxidized and heavily iron-stained
23-35	SAND	very fine to fine, clayey to silty, olive gray, soft, slightly cohesive, nonplastic, gritty
35-61	SAND	medium to coarse, varies from fine to very coarse, sorted in lenses, generally subrounded, predominantly black siliceous shale and carbonates
61-74	GRAVEL	fine and medium, sandy, some cobbles, assorted, subrounded, mostly carbonates, some shale and granitics, rough drilling
74-127	CLAY	silty, very sandy, contains pebbles and frequent cobbles or boulders, light olive gray to olive gray, medium soft, moderately cohesive, slightly plastic, gritty, chunky, calcareous, loose sandy lenses (till)
127-246	CLAY	silty and sandy, with pebbles and occasional cobbles, olive gray, moderately soft to slightly hard, cohesive, stiff and tough, large cuttings (till)
246-268	CLAY	sandy with numerous pebbles and lenses of fine carbonate gravel, light olive to olive gray, slightly hard, lightly compacted, chunky, gritty (till)
268-300	SHALE	black to brownish-black, extremely silty, with interbedded layers of indurated limestone, varies from soft and smooth to moderately hard and brittle, generally noncalcareous, very oily, heavy scum on the drilling fluid, might possibly be gaseous

144-055-26HCCB
NDSWC 12862

Date Completed: 08/21/1991
L.S. Elevation (ft): 1182
Depth Drilled (ft): 120

Purpose: Test Hole
Data Source: NDSWC

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	no description
1-8	GRAVEL	very coarse, angular to subrounded, about 1/2 to 1 inch in diameter
8-16	SILT	very clayey, soft, light tan
16-21	CLAY	sandy, silty, pebbly, yellow-brown, oxidized (oxidized till)
21-24	CLAY	as above, except gray (unoxidized till)
24-31	CLAY	Silty, yellow-brown, (oxidized)
31-43	CLAY	Silty, yellow-brown, (oxidized) w/ fine sand
43-46	CLAY	sandy, silty, pebbly, gray (till)
46-49	SAND	medium to fine, gray, clayey
49-80	SAND	medium to coarse, layers of clayey material about 64 feet, lignitic layer at 70 feet, some gravel after 70 feet, becoming coarser with depth
80-112	GRAVEL	medium, clean, well sorted, quartz with carbonates, lignite layer at 87 feet, rock at 112 feet
112-114	ROCK	no description
114-117	GRAVEL	as above, in the 80 to 112 foot layer
117-120	CLAY	very sandy, silty, gray (till)

144-055-26DDDD
NDSWC 8062

Date Completed: 08/02/1971
L.S. Elevation (ft): 1150.5
Depth Drilled (ft): 260
Screen Int. (ft.): 67-73

Purpose: Observation Well
Well Type: 1.25 in. - PVC
Aquifer: NDSWC
Data Source:

Completion Info:
Remarks: slow pumpier well should be replaced. MIS

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	silty, clayey, sandy, brownish-black
1-8	CLAY	very silty, sandy, moderate yellowish-brown, slightly cohesive, highly plastic, well oxidized (glaciofluvial sediment)
8-31	SAND	a few thin clay layers, very fine to medium grained (mostly fine-grained) subangular to subrounded, well sorted, oxidized
31-35	SILT	very clayey, sandy, olive gray, non-cohesive, samples washing out
35-60	SAND	very fine to very coarse grained (mostly medium to coarse grained), subangular to subrounded, moderately well sorted, mostly quartz, some shale and carbonates
60-77	GRAVEL	moderately sandy, fine to medium, (occasional cobbles in the lower 3 feet), mostly fine, angular to subrounded, well sorted, approximately 40% carbonates, 30% granitics and metamorphics
77-198	CLAY	very silty, to silty, pebbly, gravelly, occasional cobbles, and boulders, medium dark gray, moderately cohesive, slightly plastic, crumbles easily, moderately calcareous (till)
198-252	CLAY	silty, moderately sandy, pebbly, (a few cobbles), medium dark gray, very cohesive, non plastic, hard, calcareous (till)
252-260	SHALE	clayey, brownish-black, well indurated, a few small white specks, slightly calcareous, poor sample return, (Greenhorn Formation?)

144-055-27CCCC
NDSWC 3984

Date Completed: 06/08/1970
L.S. Elevation (ft): 1182.5
Depth Drilled (ft): 320
Screen Int. (ft.): 78-81

Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer:
Data Source:

Completion Info:
Remarks: destroyed 16JUN89

Lithologic Log

Depth (ft)	Unit	Description
0-11	CLAY	Silty to very sandy with pebbles, moderately olive brown, soft, cohesive, moderately plastic, oxidized (till)
11-27	SAND	Medium, varies from very fine to coarse, reddish brown, loose, sorted in lenses, subangular to subrounded, oxidized and heavily iron-stained
27-78	SAND	Mostly medium and coarse, sorted in lenses, loose, thinly interbedded, mostly siliceous shale and carbonates, some quartz but little other granitic derivatives, taking water
78-85	GRAVEL & COBBLES	Rough drilling
85-115	CLAY	Silty and sandy with pebbles, olive gray, moderately soft, cohesive (till) possible thin, sandy stringers
115-249	CLAY	Silty to sandy with numerous coarse sand grains and pebbles, occasional cobbles, olive gray, moderately soft, cohesive, stiff, tough (till)
249-256	SAND	With fine gravel, assorted, generally subrounded, loose, no noticeable loss of drilling fluid, probably dirty, mostly shale with carbonates
256-269	CLAY	Very sandy (very fine and fine) with occasional coarse sand grains or pebbles, light olive gray, soft, slightly to moderately cohesive, very slightly plastic, gritty (till)
269-278	CLAY	Silty, dark olive gray with bluish light gray, non-calcareous bentonitic clay (till) mostly slightly reworked bedrock
278-292	CLAY	Very sandy (very fine to fine), light olive gray, soft, nearly friable, gritty, calcareous (till)
292-320	SHALE	Silty, medium gray to brownish black, smooth, moderately soft to slightly hard, non-calcareous, fossiliferous (?), contains gypsum or aragonite xls, oily, contains interbedded thin limestone or concretions

144-055-27CCC2
NDSWC 12290

Date Completed: 06/16/1989
L.S. Elevation (ft): 1182.39
Depth Drilled (ft): 80
Screen Int. (ft.): 74-79

Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Page
Data Source: NDSWC

Completion Info:

Remarks: WHITE BARN SHED

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	no description
2-20	CLAY	sandy, silty, yellow brown, oxidized till
20-44	SILT	clayey, yellow brown, soft, slightly plastic, oxidized fluvial clay
44-79	SAND	fine to medium, some coarse shale fragments, very dark gray, medium to coarse from 78 to 79 feet
79-80	ROCK	no description

144-055-30AAA
Daniel Thomas

Date Completed: 09/22/1999
L.S. Elevation (ft): 1178
Depth Drilled (ft): 80
Screen Int. (ft.): 70-80

Purpose: Domestic Well
Well Type: 4 in. - PVC
Aquifer: Page
Data Source: Lako Drilling

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	no description
2-45	SAND	silty, fine
45-80	SAND	nic

144-055-31AAB
NDSWC 12857

Date Completed: 08/20/1991
L.S. Elevation (ft): 1188
Depth Drilled (ft): 300

Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-14	CLAY	Sandy, silty, some pebbles, yellow-brown, oxidized till
14-19	SILT	Clayey, slightly sandy, brown occasional darker brown layers, some sand (fine) washing up, moderately plastic
19-23	SILT	Gray, non-plastic
23-25	SILT	Clayey, yellow brown, slightly plastic
25-36	SILT	Clayey, slightly plastic, gray
36-36.5	GRAVEL	Dolomitic
36.5-40	SILT	Clayey, gray, moderately plastic
40-50	CLAY	Very sandy, silty, gray (Till)
50-52	GRAVEL	Fine to coarse, dirty, up to 1/2 gravel, clayey
52-62	CLAY	Sandy, silty, very sandy till medium gray, some light gray spots
62-130	CLAY	Sandy, silty, dark gray, some shale pebbles, very stiff, slightly plastic becoming medium gray and very sandy (sand fine grained) (Till) rocks at 72' and 107'
130-138	GRAVEL	Sandy, silty, clayey, very poorly sorted, dirty, gravel predominantly carbonates
138-153	CLAY	Sandy, silty, gray, stiff (Till) rocks at 153'
153-154	ROCKS	
154-207	CLAY	Sandy, silty, gray, soft, very plastic (Till), rocks at 172', 186' changed to rock bit @ 186', more rocks at 188' and 195', replace rock bit with drag bit at 200'
207-212	CLAY	Silty, soft, gray, returns not good, drilled very easily, fluvial or lacustrine ?
212-278	CLAY	Sandy, silty, pebbly, gray, stiff, moderately plastic (Till), rocks at 216', thinned mud at 220' voluminous sand washed out added one bag bentonite 220'-230'
278-300	CLAY	Silty, dark gray, shiny, smooth moderately stiff, moderately plastic very slightly micaceous in places (bedrock) Carlisle

144-055-31ADD
NDSWC 12858

Date Completed: 08/20/1991 Purpose: Test Hole
L.S. Elevation (ft): 1186
Depth Drilled (ft): 200 Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	No description
2-18	CLAY	Sandy, silty, pebbly, yellow brown soft, plastic, oxidized (Till)
18-21	SILT	Clayey, slightly plastic, soft yellow brown, oxidized
21-36	SILT	As above, except gray, becoming more clayey and plastic with depth
36-84	CLAY	Very sandy, silty, light to medium gray, rocks at 40' and 46', rock bit on at 46' drag bit at 60'
84-88	SAND	Medium, moderately sorted, lots of lignite
88-102	CLAY	Very sandy, very silty, slightly plastic, light gray, stiff (Till)
102-142	CLAY	Sandy, silty, gray, soft (Till)
142-165	CLAY	Slightly silty, stiff, dark gray, shirny, moderately plastic (fluvial ?)
165-168	CLAY	Sandy, silty, gray, firm (Till)
168-176	SAND	Fine to coarse, poorly sorted, angular to subrounded, predominantly carbonates with some shale pebbles
176-200	CLAY	Sandy, silty, pebbly, gray

144-055-31AAD
NDSWC 12859

Date Completed: 08/20/1991 Purpose: Test Hole
L.S. Elevation (ft): 1184
Depth Drilled (ft): 140 Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	No description
2-9	CLAY	Silty, sandy, pebbly yellow-brown; oxidized (Till)
9-11	SILT	Sandy, Very fine sand, yellow brown, no plasticity
11-24	SILT	As above, gray
24-31	SAND	Fine to medium, lignitic
31-32	GRAVEL	Medium to coarse, subrounded to rounded, predominantly carbonates
32-38	CLAY	Very sandy, silty, light gray soft (Till)
38-40	SAND	Mostly washed out
40-74	CLAY	Sandy, silty, medium to light gray, soft, rock @ 42', rock bit at 42' clay bit at 46' (Till)
74-75	ROCKS	

144-055-31DDD
NDSWC 12860

Date Completed: 08/21/1991
L.S. Elevation (ft): 1185
Depth Drilled (ft): 160
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	No description
1-8	CLAY	Sandy, very silty, pebbly, yellow brown, oxidized (Till)
8-16	SILT	Some very fine sand, yellow brown, soft, slightly plastic
16-21	SILT	As above, except gray
21-23	SAND	Fine grained
23-43	SILT	As above
43-46	GRAVEL	Medium to coarse, dirty, carbonates
46-160	CLAY	Very sandy, silty, pebbly, moderately soft, gray, becoming a little stiffer with depth

144-055-32ABBZ
NDSWC 12861

Date Completed: 08/21/1991
L.S. Elevation (ft): 1190.42
Depth Drilled (ft): 200
Screen Int. (ft.): 178-183
Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer:
Data Source:

Completion Info:
Remarks:

WEST END OF QUANSET

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	No description
1-5	CLAY	Sandy, silty, pebbly, yellow-brown, oxidized, (Till)
5-33	SILT	Clayey, very soft, not much cohesion, yellow-brown
33-62	SILT	As above, except gray plus occasional lignitic lenses, becoming sandier with depth, less sample return most returns washing out
62-83	SAND	Fine to medium with some clay and silt
83-102	SAND	Medium to coarse, well sorted, clean
102-128	SAND & GRAVEL	Medium to coarse sand, fine to medium gravel, angular to subrounded, shale, lignite, carbonates
128-140	CLAY	Very, very sandy, silty, washes out easily, almost drills like sand
140-162	SAND	Medium, well sorted, clean more layered after 160'
162-187	GRAVEL	Medium to coarse, subangular to rounded, shales, carbonates, quartz
187-188	ROCK	Carbonate
188-200	CLAY	Very sandy, silty, pebbly, gray, moderately stiff

144-055-33CAC
NDSWC 5619

Date Completed: 12/10/1969
L.S. Elevation (ft): 1175.11
Depth Drilled (ft): 300
Screen Int. (ft.): 237-243

Purpose: Observation Well
Well Type: 1.25 in. - PVC
Aquifer: Unnamed
Data Source:

Completion Info:

Remarks: Man Hole 18 feet west of propane tank East of RR tracks in Colgate

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, sandy, clayey, grayish-black
1-10	CLAY	Silty, moderately sandy (occasional cobbles and boulders), pebbly, dusky yellow to moderate yellowish-brown, moderately cohesive, lightly plastic, oxidized (Till)
10-50	CLAY	Extremely silty (probably layered or stratified), very sandy (very fine to medium sand), moderate yellowish-brown, slightly cohesive, slightly plastic to non-plastic, occasional laminations in samples, well oxidized (Lacustrine sediment?)
50-62	CLAY	Same as above, only olive gray, very sandy, very silty (Lacustrine sediment?)
62-224	CLAY	Silty, slightly sandy, pebbly, occasional cobbles and boulders, olive gray, cohesive, moderately plastic, moderately calcareous (Till) rough drilling, drills hard in places
224-263	GRAVEL	Sandy, probably silty, occasional thin silty clay lenses, fine to medium (mostly fine), angular to subrounded, fair sorting, samples very poor, samples indicate a predominantly carbonate (limestone and dolomite) composition, some granites, metamorphics and shale, drills like it is cemented (calcium carbonate cement?) not caving probably some matrix clay

263-282 CLAY

282-300 SHALE

Silty, slightly to moderately sandy, pebbly, gravelly, occasional cobbles and boulders, olive gray, cohesive, slightly plastic, calcareous (Till)
Moderately clayey, brownish-gray to medium dark gray, moderately indurated, non-calcareous, bedded, a few pyrite? Fragments or small concretions (Carille formation?) (Cretaceous undifferentiated)

145-053-03CCC
NDSWC 152

Date Completed: 1960
L.S. Elevation (ft): 1039
Depth Drilled (ft): 37

Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Sandy, gray
2-10	SAND	Fine
10-15	CLAY	Sandy, brown
15-30	CLAY	Silty and sandy, gray
30-37	CLAY	Smooth, gray

145-053-03DDD
NDSWC 156

Date Completed: 06/01/1960
L.S. Elevation (ft): 1019
Depth Drilled (ft): 27

Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy, gray
1-5	SAND	Fine, light-brown
5-18	CLAY	Smooth, light-brown
18-25	CLAY	Gray, with fine and medium sand and gravel
25-27	CLAY	Smooth, gray

145-053-04CCC
NDSWC 8383

Date Completed: 07/10/1972
L.S. Elevation (ft): 1100
Depth Drilled (ft): 120
Screen Int. (ft.): 67-70
Purpose: Observation Well - Destroyed
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:
Remarks: destroyed 12DEC78

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, sandy, clay loam grayish-black
1-10	SAND	Silty, very fine to medium-grained, subrounded, well sorted, oxidized throughout
10-12	SILT	Clayey, moderate yellowish-brown, slightly cohesive, oxidized, crumbly
12-23	SILT	Slightly sandy, clayey, medium gray, slightly cohesive, crumbly, highly calcareous
23-31	SAND	Very fine to medium-grained, subrounded, well sorted, subrounded, shaley
31-53	SILT	Slightly clayey, medium gray, slightly cohesive, slightly plastic
53-80	SAND	A few silty clay layers, slightly clayey, silty, very fine to medium-grained (mostly fine), subangular to rounded, well sorted, shaley, lignitic, no water loss
80-120	CLAY	Silty, medium gray to olive gray, moderately cohesive, highly plastic, highly calcareous, a few lignite fragments

Date Completed: 05/31/1960
L.S. Elevation (ft): 1102
Depth Drilled (ft): 37
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy, black
1-10	SAND	Fine, light-brown, clayey
10-25	SAND	Very fine, gray, clayey
25-37	CLAY	Smooth, gray

145-053-04CDD2
NDSWC 150

Date Completed: 05/31/1960
L.S. Elevation (ft): 1083
Depth Drilled (ft): 87
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-3	TOPSOIL	Sandy, black and fine sand and gravel
3-25	SAND	Fine, light-brown
25-65	SAND	Very fine, gray, silty and clayey
65-87	CLAY	Smooth, gray

145-053-04DDC
NDSWC 151

Date Completed: 05/31/1960
L.S. Elevation (ft): 1048
Depth Drilled (ft): 37
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-3	TOPSOIL	Sandy, black
3-5	SAND	Fine
5-10	CLAY	Sandy, brown to orange
10-25	CLAY	Smooth, brown to orange
25-37	CLAY	Smooth, gray

145-053-05BBB
NDSWC 8381

Date Completed: 6/1972
L.S. Elevation (ft): 1094
Depth Drilled (ft): 120
Screen Int. (ft.): 42-45

Observation Well - Plugged
1.25 in. - PVC
Page

Purpose: Well Type:
Well Type: 2 in. - PVC
Aquifer: Rex Honeyman
Data Source:

Completion Info:

Drilled 4.75 inch diameter hole, installed 31 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. After completion of the well, it was pumped with air for approximately 3 hours, pumped very well. Surveyed by NDSWC on 08/31/04.

Well plugged by SWC drill rig, on 9/29/1994.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, sandy, clay loam grayish-black
1-5	SILT	Clayey, sandy, moderate yellowish-brown, slightly cohesive, crumbly, oxidized
5-50	SAND	Very slightly clayey, silty, very fine to coarse-grained (mostly fine to medium), subrounded, well sorted, shaley, lignitic, taking some water "clean-looking sand"
50-55	SILT	Clayey, sandy, olive gray, very slightly cohesive, slightly plastic, highly calcareous
55-61	SAND	Silty, slightly clayey, very fine to fine-grained, subrounded, moderately well sorted, lignitic, shaley
61-112	CLAY	Very silty, olive gray with some light olive gray laminae, slightly cohesive, plastic, calcareous
112-120	CLAY	Silty, moderately sandy, pebbly, olive gray, cohesive, crumbly, calcareous (till)

145-053-05BBB2
NDSWC 15153

Date Completed: 07/22/2004
L.S. Elevation (ft): 1099
Depth Drilled (ft): 272
Screen Int. (ft.): 29-34

Purpose: Well Type:
Well Type: 2 in. - PVC
Aquifer: Rex Honeyman
Data Source:

Completion Info:
Drilled 4.75 inch diameter hole, installed 31 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. After completion of the well, it was pumped with air for approximately 3 hours, pumped very well. Surveyed by NDSWC on 08/31/04.

Remarks: Changed Location from 14605332CCC to 14505305BBB2 when discovered the location was incorrect based on GPS survey location

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-16	SAND	Very fine to medium, predominantly very fine to fine, brown, well sorted, cohesive, taking water, contains detrital lignites (oxidized)
16-34	SAND	Very fine to medium, predominantly very fine to fine, gray, well sorted, cohesive, taking water, contains detrital lignites (unoxidized)
34-41	SILT	Slightly clayey, minimal returns, gray, taking water (Lacustrine)
41-52	SAND	Very fine to medium, predominantly very fine to fine, gray, well sorted, cohesive, taking water, contains detrital lignites (unoxidized)
52-85	SILT	Slightly clayey, minimal returns, gray, taking water (Lacustrine)
85-174	CLAY	Silty, brown to gray, massive, moderately plastic to plastic, firm (Lacustrine)
174-177	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, moderately plastic, gray
177-180	GRAVEL	Fine to coarse, predominantly shale and silicate minerals
180-270	CLAY	Silty, sandy, pebbly, cobbly inclusions in a clay matrix, moderately plastic, sand and gravel from 188'-191', cobbles and boulders from 191'-198', boulder at 208'-209' (granitic), more sandy from 220'-272' (Till)
270-272	SHALE	Clay, silty, gray to black, soft, greasy, very plastic, layers of bentonite

145-053-05CBC
NDSWC 8382

Date Completed: 7/1972
L.S. Elevation (ft): 1098
Depth Drilled (ft): 120
Screen Int. (ft.): 52-55
Purpose: Observation Well - Destroyed
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks: Well field checked 4/28/93, could not find. Checked again 10/4/1994, reported destroyed.

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Silty, clay loam, grayish-black
1-3 CLAY	Very silty, dusky yellow, slightly cohesive, crumbly (oxidized)
3-29 SAND	Slightly clayey, silty, very fine to medium-grained (mostly fine), subrounded, moderately well sorted, shaley, lignitic
29-45 SILT	Slightly clayey, medium gray, slightly cohesive, highly calcareous, moderately cohesive
45-55 SAND	Very slightly clayey, very fine to coarse-grained (mostly fine), subangular to rounded, well sorted, shaley, lignitic
55-59 SILT	Clayey, medium gray, slightly cohesive, slightly plastic, calcareous
59-67 SAND	Slightly silty, slightly clayey, very fine to medium-grained, subrounded, well sorted, shaley lignitic
67-120 CLAY	Very silty to silty, medium gray to olive gray, moderately cohesive, plastic, highly calcareous

145-053-08ABB
NDSWC 148

Date Completed: 05/31/1960
L.S. Elevation (ft): 1106
Depth Drilled (ft): 37
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Sandy, black
1-5 CLAY	Light-brown with fine sand and gravel
5-20 SAND	Fine, light-brown, clayey
20-37 SAND	Fine, gray, clayey and silty

145-053-08CBC
NDSWC 8387

Date Completed: 07/11/1972
L.S. Elevation (ft): 1100
Depth Drilled (ft): 120
Screen Int. (ft.): 37-40
Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks: Well plugged by SWC drill rig, on 10/5/1994.

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Sandy, silty, clay loam, grayish-black
1-6 SILT	Clayey, sandy, moderate yellowish-brown, slightly cohesive, slightly plastic, oxidized
6-41 SAND	Slightly clayey, very fine to medium-grained, subangular to rounded, well sorted, lignitic, shaley, taking water
41-60 SILT	Moderately clayey, a few thin sand layers, gray to medium gray, slightly cohesive
60-120 CLAY	Silty, olive gray, plastic, moderately cohesive, highly calcareous

145-053-12ABB
NDSWC 153

Date Completed: 06/01/1960
L.S. Elevation (ft): 995
Depth Drilled (ft): 65
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Black
1-10 CLAY	Dark-brown
10-30 CLAY	Smooth, brown to orange
30-65 CLAY	Light-gray

145-053-14BAB
NDSWC 155

Date Completed: 6/1960
L.S. Elevation (ft): 1020
Depth Drilled (ft): 27
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-20	CLAY	Smooth, light-brown with thin stringer of gravel
20-25	CLAY	Sandy, gray
25-27	CLAY	Smooth, gray

145-053-16BAA
NDSWC 2371

Date Completed: 7/1965
L.S. Elevation (ft): 1075
Depth Drilled (ft): 525
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-8	TOPSOIL	Sand, moderately well sorted, angular to rounded, quartz, lignite, dolomite, igneous, average size 1/4 to 1/3 mm, oxidized
8-10	SAND	As above unoxidized
10-14	SILTY CLAY	Sandy, dark greenish gray, moderately soft, moderately cohesive, lignite flakes, shale(?), calcareous, unoxidized, occasional layers of more cohesive clay, and less sandy
14-61	CLAY	Dark greenish gray, soft, moderately cohesive, lignite flakes, calcareous, unoxidized, silty plastic, sticky
61-123	TILL	Sandy, olive gray to dark greenish gray, soft, moderately cohesive, mostly dolomite, some lignite flakes, quartz, shale, igneous, mostly angular mostly less than 1/2 mm, plastic, becomes moderately hard downwards
123-145	TILL	Above interbedded with sandy gravel layers or lenses, poorly sorted, angular to rounded, dolomite, shale, quartz, igneous, size up to about 6 mm
145-163	CLAY	Olive gray with a shade of dark greenish gray, moderately hard, cohesive, calcareous, unoxidized
163-171	GRAVEL	Poorly sorted, subrounded (mostly) to angular, mostly shale fragments, dolomite, lignite, quartz, igneous, grain size up to cobbles, clay layer in gravel, clay as above
171-182	TILL	Olive gray to dark greenish gray, slightly silty, moderately soft, cohesive, somewhat plastic, dolomite, shale, quartz, igneous, calcareous, unoxidized
182-212	TILL	Olive gray to dark greenish gray, hard, cohesive, compact, predominantly shale, some quartz, igneous, dolomite, calcareous unoxidized becomes sandy downwards
212-237	TILL	Gravelly, light olive gray, silty, moderately soft, cohesive, quartz, igneous, lignite flakes, shale, dolomite fragments are mostly less than 1/2 mm, very calcareous, unoxidized, shale boulders
237-238	DOLOMITE	Boulder
238-250	TILL	As above boulder
250-263	TILL	Dark greenish gray to olive gray, silty, moderately hard, cohesive, gravelly contains much shale, some dolomite, occasional fragments of igneous, calcareous unoxidized

263-370 BEDROCK

Olive gray, silty, moderately hard, cohesive, contains dolomite fragments and mica flakes, calcareous, unoxidized, fossiliferous, sandy in places, laminated in places. One cutting of clay bentonitic, medium bluish gray to dark greenish gray, moderately hard cohesive, non-calcareous dark colored flakes present

370-397 SILT

Clayey, light olive, moderately soft, cohesive, slightly sandy, mica, slightly calcareous

397-399 SILT

As above becomes cemented, olive gray in places, highly calcareous (limestone cement)

399-504 SAND

Clayey, olive gray, moderately soft, cohesive crumbly, quartz and other unidentified, non-calcareous, fragment size less than 1/2 mm

504-525 CLAY

Sandy, silt, olive gray to gray laminated, contains numerous lignite flakes, mica, quartz present, grain size less than 1/4 mm, downward becomes dark yellowish brown

145-053-16BBB
NDSWC 8386

Date Completed: 07/11/1972
L.S. Elevation (ft): 1094.7
Depth Drilled (ft): 120
Screen Int. (ft.): 32-35

Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks: SHOULD BE REPLACED VERY POOR PUMPER 1999. Well replaced by 145-053-16BBB2. Old plastic pipe and screen drilled out, and replaced by 16BBB2 constructed in the same hole.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy, silty, brownish-black
1-15	SAND	Silty, slightly clayey, very fine to medium-grained, moderately well sorted, oxidized, taking water
15-22	SILT	Moderately clayey, medium gray, slightly cohesive, slightly plastic, calcareous
22-39	SAND	A few thin clay layers, very fine to coarse-grained (mostly medium), subangular to rounded, moderately well sorted, lignitic, shaley, taking some water
39-52	SILT	Moderately clayey, medium gray with light olive gray laminae, slightly cohesive, slightly plastic, calcareous
52-60	SAND	Very clayey, very fine to fine-grained, subrounded, dirty
60-120	CLAY	Moderately silty to silty, olive gray to medium gray, moderately cohesive, plastic, highly calcareous

145-053-16BBB2
NDSWC 14452

Date Completed: 12/11/1999
L.S. Elevation (ft): 1094.58
Depth Drilled (ft): 43
Screen Int. (ft.): 30-35

Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Page
Data Source: NDSWC

Completion Info: Well constructed with 4 bags of #10 sand around screen (30-35), 3 bags of grout pumped down 1 1/4" plastic, and finished with 5 bags of hole plug.

Remarks: This well replaces 145-053-16BBB. The well was established in the same drill hole.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silt, black clay
1-15	SAND	Fine to medium
15-22	CLAY	Gray silt
22-39	SAND	Fine to medium sand.
39-43	SAND	Fine gray.

145-053-18DDD
NDSWC 15156

Date Completed: 07/26/2004 Purpose: Test Hole
L.S. Elevation (ft): 1106
Depth Drilled (ft): 300 Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-8	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
8-11	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, unoxidized (Till)
11-20	CLAY	Clay very sandy, gray, moderately plastic, gritty (Lacustrine)
20-82	SAND	Very fine to medium, predominantly fine to medium sand, moderately to well sorted, gray, consisting of quartz and shales mostly, appears to become more medium grained with depth
82-91	SILT	Slightly clayey, gray minimal returns, layers of fine sand
91-104	SILT	Clayey, gray, minimal returns
104-122	SILT	Slightly clayey, gray minimal returns, layers of fine sand
122-189	SILT	Slightly clayey, no returns
189-275	CLAY	Sandy, silty, pebbly inclusions in a clay matrix, gritty, gray from 189-236', brown from 236'-273', rocks from 273'-275'
275-300	SHALE	Clay, silty, black, very plastic, soft, layers of bentonite and sandstone

145-053-18DDD2
NDSWC 15157

Date Completed: 07/27/2004 Purpose: Observation Well
L.S. Elevation (ft): 1106 Well Type: 2 in. - PVC
Depth Drilled (ft): 100 Aquifer: Page
Screen Int. (ft.): 78-83 Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, installed 80 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. After completion of the well, it was pumped with air for approximately 6 hours, pumped very well. Surveyed by the NDSWC on 08/31/2004.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-10	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
10-20	CLAY	Sandy, gray, moderately plastic, gritty, unoxidized (Lacustrine)
20-84	SAND	Very fine to medium, predominantly fine to medium sand, moderately to well sorted, gray, consisting mostly of quartz and shales with detrital lignites
84-100	SILT	Slightly, clayey, gray, minimal returns, layers of sand

145-053-21CCC
NDSWC 158

Date Completed: 01/01/1960 Purpose: Test Hole
L.S. Elevation (ft): 1095
Depth Drilled (ft): 21

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy, black
1-20	SAND	Very fine, light-brown, oxidized
20-21	SAND	Very fine, gray, silty and clayey

145-053-27AAA
NDSWC 162

Date Completed: 06/03/1960
L.S. Elevation (ft): 1038
Depth Drilled (ft): 37
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	SAND	Very fine to fine, dark-brown, clayey with some gravel
2-10	CLAY	Sandy, brown to gray
10-12	GRAVEL	No description
12-16	CLAY	Very sandy, gray
16-18	SAND	Very fine to fine, gray
18-37	CLAY	Sandy, gray

145-053-27ABB
NDSWC 161

Date Completed: 6/1960
L.S. Elevation (ft): 1035
Depth Drilled (ft): 22
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-9	CLAY	Brown, slightly gravelly
9-13	CLAY	Gray

145-053-21DDC
NDSWC 160

Date Completed: 01/01/1960
L.S. Elevation (ft): 1062
Depth Drilled (ft): 22
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy, black
1-3	SAND	Very fine to fine
3-10	SAND	Very fine to fine, tan to buff, very clayey
10-20	CLAY	Sandy, gray to dark-gray with some gravel
20-22	SAND	Very fine to fine, gray, very clayey and silty

145-053-26BBA
NDSWC 163

Date Completed: 1960
L.S. Elevation (ft): 1011
Depth Drilled (ft): 42
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-15	SAND	Fine to very fine, brown, very silty, with some gravel
15-20	SAND	Very fine, dark-brown, very silty
20-42	SAND	Very fine to fine, gray

145-053-28A BB
NDSWC 159

Date Completed: 6/1960
L.S. Elevation (ft): 1078
Depth Drilled (ft): 87
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Black
1-5 SAND	Very fine to medium, brown and dark-brown with some gravel
5-10 SAND	Very fine to fine, brown, clayey
10-60 SAND	Very fine to fine, gray to dark-gray
60-87 CLAY	Smooth, light-gray to gray

145-053-29BBA
NDSWC 157

Date Completed: 06/03/1960
L.S. Elevation (ft): 1113
Depth Drilled (ft): 47
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Sandy, black
1-8 SAND	Very fine, light to dark-brown
8-15 CLAY	Sandy, light to dark-brown, oxidized
15-35 CLAY	Olive-gray to gray, with fine sand and fine to medium gravel
35-47 CLAY	Olive and blue-gray

145-053-30BBB
NDSWC 15158

Date Completed: 07/27/2004
L.S. Elevation (ft): 1125
Depth Drilled (ft): 300
Purpose: Test Hole
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Black
1-3 CLAY	Silty, brown, moderately plastic oxidized (Lacustrine)
3-17 CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
17-22 SAND	Very fine to medium, predominantly, medium, brown, well sorted, oxidized
22-69 SAND	Very fine to medium, predominantly fine to medium, gray, moderate sorting, unoxidized, consisting mostly of shale & quartz with detrital lignites
69-130 SILT	Slightly clayey, gray, minimal returns
130-182 SILT	Clayey, gray, more returns than silt above, non plastic, non cohesive
182-203 CLAY	Sandy, silty, pebbly inclusions in a clay matrix, brown, moderately plastic (Till)
203-241 CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, moderately plastic, more pebble inclusions (consisting of shale) (Till)
241-248 CLAY	Sandy, silty, pebbly inclusions in a clay matrix, brown, moderately plastic (Till)
248-293 CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, moderately plastic, more pebble inclusions (consisting of shale), rock at 255'-256' (Till)
293-300 SHALE	Clay, slightly silty, gray to black, very plastic, greasy, calcareous (Bedrock)

145-053-30BBB2
NDSWC 15159

Date Completed: 07/27/2004
L.S. Elevation (ft): 1124
Depth Drilled (ft): 80
Screen Int. (ft.): 55-60
Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Rex Honeyman
Data Source: Rex Honeyman
Completion Info: Drilled 4.75 inch diameter hole, installed 57 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. After completion of the well, it was pumped with air for approximately 1 hour, pumped very well. Surveyed by the NDSWC on 08/31/2004.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-3	CLAY	Silty, brown, moderately plastic, oxidized (Lacustrine)
3-17	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
17-64	SAND	Very fine to medium, predominantly fine to medium, moderate sorting, consisting mostly of shales and quartz with detrital lignites, oxidized brown from 17-22; unoxidized gray 22-64'
64-80	SILT	Slightly clayey, gray, minimal returns (Lacustrine)

Date Completed: 01/01/1961
L.S. Elevation (ft): 1126
Depth Drilled (ft): 27

145-053-30CCC1
NDSWC 223

Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Black
2-17	CLAY	Yellow-brown, mottled, with some gravel, oxidized (till)
17-27	CLAY	Olive-gray (till)

145-053-30CCC2
NDSWC 224

Date Completed: 01/01/1961
L.S. Elevation (ft): 1126
Depth Drilled (ft): 27
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy, black
1-3	CLAY	Sandy, olive-gray (till)
3-7	CLAY	Yellow-brown, oxidized (till)
7-27	CLAY	Sandy, olive-gray

145-054-02AAA
NDSWC 15152

Date Completed: 07/22/2004 Purpose: Test Hole
L.S. Elevation (ft): 1095
Depth Drilled (ft): 240 Data Source:

Completion Info: Drilled 4.75 inch diameter hole and sealed with bentonite chips.
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-10	CLAY	Silty to sandy, brown, moderately plastic to plastic, oxidized, (Lacustrine)
10-16	CLAY	Silty, sandy, pebbly inclusions within a clay matrix, moderately plastic, oxidized (Till)
16-36	CLAY	Silty, sandy, gray, moderately plastic (Lacustrine)
36-38	SAND	Very fine to fine, well sorted
38-46	SILT	Clayey to silty clay, very silty, gray, non plastic to slightly plastic (Lacustrine)
46-48	SAND	Very fine to fine, well sorted, gray
48-69	SILT	Clayey to silty clay, very silty, gray, non plastic to slightly plastic (Lacustrine)
69-154	CLAY	Slightly silty, gray, massive, moderately to very plastic (Lacustrine)
154-155	GRAVEL	Fine to coarse
155-192	CLAY	Silty, sandy, pebbly, cobbly inclusions in a clay matrix, gray, moderately plastic, rock at 176'-177', 179'-180', 184'-185', 187'-189' (Till)
192-193	SHALE	Block within the Till, clay, silty, dark gray to black, very plastic
193-234	CLAY	Silty, sandy, pebbly, cobbly inclusions in a clay matrix, gray, moderately plastic
234-240	SHALE	Clay, silty, dark gray to black, very plastic, layers of bentonite (Bedrock)

145-054-01CCCC
NDSWC 3989

Date Completed: 06/09/1970 Purpose: Test Hole
L.S. Elevation (ft): 1100
Depth Drilled (ft): 280 Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Fine sandy loam, black
2-28	SILT	Clayey to slightly sandy, reddish brown, soft, slightly cohesive, crumbly, oxidized, heavily iron-stained
28-54	SAND	Very fine to fine, silty, sorted, lensed, loose to slightly cohesive, light olive gray, generally subrounded, predominantly quartz with siliceous shale and carbonates, sugary
54-91	SAND	Fine, varies from silt to medium sand, clayey, dirty, gray, thinly interbedded, drills easy, no noticeable loss of water
91-158	SILT	Clayey to sandy, interbedded, olive gray, moderately soft and crumbly to soft and moderately plastic, smooth easy drilling
158-166	SAND	Fine and medium, shaley, poorly sorted, subangular to subrounded, dirty
166-185	SILT	As above, olive gray
185-201	CLAY	Very sandy with pebbles and cobbles, light olive gray, moderately soft, crumbles under pressure, gritty, highly calcareous, sandy and fine gravelly lenses (Till)
201-222	CLAY	Silty with pebbles and occasional cobbles and boulders, olive to dark olive gray, slightly hard, stiff, tough (till)
222-236	GRAVEL	Fine, sandy, moderately sorted, generally subangular, mostly carbonates
236-254	CLAY	Very sandy with occasional pebbles, light olive gray, moderately soft, gritty, highly calcareous (Till)
254-280	SHALE	Silty, dark brown and black, moderately soft, plastic, smooth, wavy, tight, calcareous. Siltstone layer at 275'

145-054-03CCC
NDSWC 15149

Date Completed: 07/20/2004
L.S. Elevation (ft): 1095
Depth Drilled (ft): 160
Purpose: Test Hole
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-13	SILT	Clayey to silty clay - very silty, brown, non plastic to moderately plastic, soft to firm, oxidized (Lacustrine)
13-28	SILT	Clayey to silty clay - very silty, gray, non plastic to moderately plastic, soft to firm, unoxidized (Lacustrine)
28-32	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, slightly to moderately plastic (Till)
32-56	CLAY	Slightly silty, gray, massive, moderate to very plastic (Lacustrine)
56-117	SILT	Clayey to silty clay, very silty, gray, non plastic to moderately plastic appears to be more clayey with depth, more massive, clayey plastic from 90-117 (Lacustrine)
117-124	GRAVEL	Fine to very coarse, predominantly medium gravel subrounded to subangular, consisting mostly of shales
124-160	CLAY	Silty sandy, pebbly inclusions in a clay matrix, gray, gravel from 126-127, rock at 148'-149' silicates (Till)

145-054-03DDD
NDSWC 8368

Date Completed: 06/29/1972
L.S. Elevation (ft): 1106
Depth Drilled (ft): 160
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy, pebbly, clay loam brownish-black
1-3	CLAY	Very silty, sandy, pebbly, moderately yellowish-brown, slightly cohesive, plastic, oxidized (Till)
3-18	SAND	Silty, very fine to medium grained, subrounded, well sorted, shaley, a few thin clay layers
18-73	SILT	Clayey, medium gray with light olive gray mottling, slightly cohesive, crumbly, highly calcareous
73-78	SAND	Silty, clayey, very fine to fine grained, subrounded, shaley
78-94	SILT	Clayey, medium gray, slightly cohesive, crumbly, highly calcareous
94-99	SAND	Silty, moderately clayey to clayey, very fine to medium grained, subrounded, moderately well sorted, shaley, lignitic
99-147	SILT	Clayey, a few thin sand layers, medium gray with light olive gray laminae, slightly cohesive, slightly plastic, highly calcareous
147-160	CLAY	Silty, moderately sandy, a few thin gravel layers, olive gray, moderately cohesive, plastic, calcareous (Till)

145-054-04AAA
NDSWC

Date Completed: 06/28/1972
L.S. Elevation (ft): 1097
Depth Drilled (ft): 140
Screen Int. (ft.): 87-90

Purpose: Observation Well
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info: Surveyed by the NDSWC on 08/31/2004.

Remarks: 75 ft SOUTH OF INTERSECTION replace or take off sample list, slow pumper 1 gpm

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, clayey loam, grayish-black
1-15	CLAY	Sandy, silty, pebbly, moderate yellowish-brown, moderately cohesive, crumbly, oxidized (Till)
15-20	CLAY	Silty, moderately sandy, pebbly, olive gray, cohesive, crumbly, calcareous (Till)
20-43	SAND	Occasional thin clay layers, silty, very fine to medium grained, subrounded, shaley
43-47	SILT	Moderately sandy, medium gray with light olive gray laminae, slightly cohesive
47-54	SAND	Clayey, silty, very fine to medium grained, subangular to subrounded, moderately well sorted
54-65	SILT	Clayey, medium gray with light olive gray mottling, slightly to moderately cohesive, slightly plastic, calcareous
65-75	SAND	Silty, clayey, fine to medium grained, subrounded, moderately well sorted, lignitic
75-82	SILT	Sandy, medium gray, slightly cohesive, slightly plastic, calcareous
82-116	SAND	Silty, a few thin clay layers, very fine to medium grained, a few shale pebbles, subangular to rounded, well sorted, taking water lignitic
116-125	SILT	Clayey, medium gray, slightly cohesive, slightly plastic, calcareous
125-140	CLAY	Silty, moderately sandy, pebbly, olive gray, moderately cohesive, moderately plastic, calcareous (Till)

145-054-04DDD
NDSWC 3990

Date Completed: 1970
L.S. Elevation (ft): 1100
Depth Drilled (ft): 220

Purpose: Test Hole

Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Silty loam, black
2-4	SILT	Clayey to sandy, yellowish gray to dusky yellow, soft, slightly cohesive, oxidized
4-12	SAND	Very fine to fine, silty, soft, very slightly cohesive, yellowish reddish brown, "rummy"
12-22	SILT	Dusky yellow, soft, crumbly
22-102	SILT	Clayey to sandy, thinly interbedded, laminated, soft, crumbly to moderately cohesive, non plastic to slightly plastic, light olive to live gray, calcareous, drills smooth and easy
102-109	CLAY	Olive to dark olive gray, moderately soft, cohesive, stiff, smooth, plastic, light
109-119	SILT	As above, clayey to sandy
119-134	GRAVEL	Fine and medium, sandy, sorted in layers, generally subangular to subrounded, mostly carbonates and siliceous shale, some granitics
134-140	SILT	As above
140-152	CLAY	Silty with sand grains and pebbles (mostly shale and limestone, olive gray, slightly hard, stiff, rough, tight (Till)
152-172	TILL	As above, very gravelly and rocky, rock mostly carbonates, gravel quite shaley, rough drilling
172-192	CLAY	Silty with numerous shale pebbles, olive gray, slightly hard, chunky (till)
192-207	TILL	As above, dark brownish gray to black, very shaley, moderately soft, oily
207-215	SHALE	Extremely silty to slightly sandy (very fine), very dark brown, moderately soft, very oily and sticky, contains many thin seams of aragonite; drills almost like gravel, very heavy oil on drilling fluid
215-220	SHALE	Black, moderately soft, smooth, tight, oil, waxy

145-054-05BBB
NDSWC 15150

Date Completed: 07/20/2004
L.S. Elevation (ft): 1114
Depth Drilled (ft): 200
Purpose: Test Hole
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-14	CLAY	Sandy, silty, light brown, gritty, slightly plastic, oxidized (Lacustrine)
14-44	SAND	Very fine to medium, predominantly very fine to fine, moderately sorted, gray
44-86	SILT	Clayey to silty clay - very silty, gray non plastic to slightly plastic (Lacustrine)
86-102	CLAY	Slightly silty, gray, massive, moderately plastic to very plastic, (Lacustrine)
102-132	CLAY	Sandy, silty, pebbly inclusions in a clay matrix, moderately plastic, rock at 121'-122' (Till)
132-136	GRAVEL	Fine to coarse predominantly medium grained, consisting mostly of shales
136-191	CLAY	Sandy, silty, pebbly inclusions in a clay matrix, moderately plastic, (Till)
191-200	SHALE	Clay, slightly silty, gray to black, very plastic (Bedrock)

145-054-05BBB2
NDSWC 15151

Date Completed: 07/20/2004
L.S. Elevation (ft): 1115
Depth Drilled (ft): 60
Screen Int. (ft.): 35-40
Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Page
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, installed 37 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. After completion of the well, it was pumped with air for approximately 6 hours, pumped very well. Surveyed by the NDSWC on 08/31/2004.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-13	CLAY	Sandy, silty, light brown, gritty, slightly plastic oxidized (Lacustrine)
13-44	SAND	Very fine to medium, predominantly very fine to fine, moderately sorted, gray
44-60	SILT	Clayey to silty clay - very silty, gray non plastic to plastic (Lacustrine)

145-054-06DDDD
NDSWC 3994

Date Completed: 06/19/1970 Purpose: Test Hole
L.S. Elevation (ft): 1115
Depth Drilled (ft): 240

Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Silty loam, black
2-11	SAND	Clayey to gravelly, reddish yellowish brown with nearly white marly clay from 2-4'; poorly sorted, angular to rounded, heavily iron-stained, oxidized (Till?)
11-35	CLAY	Silty to sandy with pebbles and occasional cobbles, olive gray, moderately soft, cohesive, stiff, tightly compacted, pebbles mostly carbonates and shale (Till)
35-55	SAND	Medium with fine, light olive gray, loose, fairly well sorted and uniform, subangular and subrounded, mostly quartz with shale, nice
55-105	SILT	Clayey to sandy, interbedded, light olive gray, laminated, soft, crumbly to slightly cohesive, non- to slightly plastic, calcareous; easy drilling
105-114	CLAY	Silty to sandy with numerous coarse sand grains and pebbles, olive gray, moderately soft, cohesive, slightly brittle to slightly plastic, stiff, tightly compacted (Till)
114-119	CLAY	Olive gray, smooth, very stiff and tight, plastic
119-130	GRAVEL	Fine and medium, may be coarse, white, angular to subrounded, assorted, predominantly cream colored carbonates; rough drilling, may contain some till
130-186	CLAY	Silty and very sandy with many coarse sand grains and pebbles, also numerous cobbles, boulders and lenses of gravel made up mostly of carbonates, olive gray, moderately soft to slightly hard, stiff, tough tight (Till); rough rocky drilling
186-208	CLAY	Silty to very sandy with many coarse sand grains and pebbles, (mostly carbonates with rounded black siliceous shale), olive to dark olive gray, also contains blocks of oily bedrock sandy shale (Till)
208-240	SHALE	Extremely silty to very sandy, generally dark brown to brownish black, slightly hard, brittle, tight highly calcareous, oily, contains limestone or calcite layers

145-054-08AAA
NDSWC 15148

Date Completed: 07/20/2004 Purpose: Test Hole
L.S. Elevation (ft): 1105
Depth Drilled (ft): 140

Data Source:

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-6	CLAY	Silty, brown, massive, moderately plastic, oxidized (Lacustrine)
6-11	CLAY	Silty sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
11-27	SILT	Clayey to silty clay more clay with depth, non plastic to moderately plastic (Lacustrine)
27-33	SAND	Very fine to medium, predominantly very fine to fine sand, moderate sorting with detrital lignites
33-106	CLAY	Very silty to clayey silt, gray, becomes more clayey with depth, non plastic to plastic, soft to very firm, interbedded sands from 33'-40'
106-108	GRAVEL	Fine to very coarse, predominantly medium gravel with detrital lignites, consists of shales and silicates predominantly
108-140	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, 108'-127', more clayey, 127'-132' more gravelly, 132'-140' more clayey (Till)

145-054-08BBB
NDSWC 15147

Date Completed: 07/20/2004
L.S. Elevation (ft): 1109
Depth Drilled (ft): 160
Screen Int. (ft.): 55-60

Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Rex Honeyman
Data Source:

Completion Info: Drilled 4.75 inch diameter hole, installed 57 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. After completion of the well, it was pumped with air for approximately 4 hours, pumped very well. Surveyed by the NDSWC on 08/31/2004.

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Black
1-5 CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized
5-11 GRAVEL	Fine sand to coarse gravel, predominantly coarse sand to fine gravel, oxidized
11-23 CLAY	Silty, minimal sand and pebbles, gray, moderately plastic, unoxidized (Till)
23-46 CLAY	Silty, slightly sandy with minimal pebbles moderately to very plastic, gray (Till)
46-61 SAND	Very fine to coarse sand, predominantly very fine to fine sand, poorly to moderate sorting, contained detrital lignites
61-80 SILT	Clayey to silty clay, very silty with interbedded fine sand throughout
80-89 CLAY	Silty, slightly sandy with minimal pebbles moderately to very plastic, gray (Till)
89-96 CLAY	Silty, gray massive, moderately to very plastic (Lacustrine)
96-124 CLAY	Silty, sandy pebbly inclusions in a clay matrix, gray, 96'-117' more clayey, 117'-120' more sandy with interbedded sand and gravel 120'-124' more clayey (Till)
124-125 GRAVEL	Fine to coarse
125-137 CLAY	Sandy, silty, pebbly inclusions in a clay matrix, gray (Till)
137-138 GRAVEL	Fine to coarse
138-160 CLAY	Sandy, silty, pebbly inclusions in a clay matrix, gray (Till)

Remarks:

145-054-09BBB
NDSWC 3993

Date Completed: 06/19/1970
L.S. Elevation (ft): 1105.4
Depth Drilled (ft): 240
Screen Int. (ft.): 38-41

Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer:
Data Source:

Lithologic Log

Completion Info: 100 ft SOUTH OF INTERSECTION: 9/23/99 - KKKUNZ COULDN'T LOCATE WELL. IT'S BELIEVED THIS WELL HAS BEEN DESTROYED BY FARMING.

Depth (ft) Unit	Description
0-1 TOPSOIL	Silty loam, black
1-6 CLAY	Very sandy, reddish yellow, soft, moderately cohesive, slightly plastic, oxidized, iron-stained (yellow and red)
6-22 SAND	Fine and medium, fairly well sorted, subangular and subrounded, predominantly quartz and granitic derivatives with shale and heavily iron-stained carbonates, reddish brown
22-52 SAND	Fine, varies from very fine to medium, gray, moderately well sorted, generally subrounded, mostly quartz, some shale and carbonates, little lignite, loose
52-86 SILT	Clayey to sandy, light olive to olive gray, soft, crumbly to slightly cohesive, non-to slightly plastic, calcareous
86-90 CLAY	Silty, olive gray, soft, smooth, cohesive, plastic, sticky
90-100 SILT	As above
100-112 GRAVEL	Fine, sandy, assorted, angular to subrounded, dirty, mostly granitics and shale with iron-stained carbonates, moderately rough drilling, not really noticeable loss of water
112-196 CLAY	Silty to sandy with numerous coarse sand grains and pebbles with frequent cobbles and occasional boulders, generally olive gray, moderately soft, cohesive, slightly to moderately plastic, tightly compacted (Till)
196-223 TILL	As above with blocks and chunks of shale to sandy bedrock, sandy, oily, tight
223-240 SHALE	Brownish gray to brownish black, very thinly interbedded with gray limestone and yellowish calcite or aragonite seams, tight, rocky, hard drilling, highly calcareous, oil

145-054-09CCC
NDSWC 8365

Date Completed: 06/28/1972
L.S. Elevation (ft): 1113
Depth Drilled (ft): 100
Screen Int. (ft.): 47-50

Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source: 47-50

Completion Info:

Remarks: 75 ft EAST OF INTERSECTION. Well replaced by 145-054-09CCC2. Old plastic pipe and screen drilled out, and replaced by 9CCC2 constructed in the same hole.

Lithologic Log

Depth (ft)	Unit	Description
0-7	CLAY	Silty, pebbly, occasional cobbles, moderate yellowish-brown, slightly cohesive, crumbly, oxidized (Till)
7-25	SAND	Very fine to coarse grained (mostly fine to medium), subangular to rounded, well sorted, shaley, taking some water, occasional thin silty clay layers, oxidized to about 20'
25-29	SILT	Sandy, clayey, medium gray, slightly cohesive, samples washing out
29-58	SAND	Slightly clayey, very fine to medium grained, subrounded, well sorted, shaley, lignitic, taking water
58-70	SILT	Very sandy, clayey, olive gray to medium gray, slightly cohesive, crumbly, highly calcareous
70-95	SILT	Slightly sandy, olive gray with light olive gray laminae, slightly cohesive, slightly plastic, highly calcareous
95-100	CLAY	Silty, moderately sandy, pebbly, olive gray, moderately cohesive, plastic, calcareous (Till)

145-054-09CCC2
NDSWC 14449

Date Completed: 11/30/1999
L.S. Elevation (ft): 1110.4
Depth Drilled (ft): 58
Screen Int. (ft.): 45-50

Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Page
Data Source: NDSWC

Completion Info: Well constructed with 5 bags of #10 sand around screen (30-35), 2 bags of grout pumped down 1 1/4" plastic, and finished with 5 bags of hole plug.

Remarks: This well replaces 145-054-09CCC. The well was established in the same drill hole.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	no description
1-7	CLAY	silty, yellowish, oxidized
7-25	SAND	fine to medium, gray
25-29	CLAY	silty, gray
29-58	SAND	fine to medium, gray

145-054-09DDD
NDSWC 15146

Date Completed: 07/19/2004
L.S. Elevation (ft): 1120
Depth Drilled (ft): 240

Purpose: Test Hole

Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-11	CLAY	Silty, sandy, brown, moderately plastic, oxidized (Lacustrine)
11-22	CLAY	Silty, sandy, gray, moderately plastic, unoxidized (Lacustrine)
22-64	CLAY	Silty, gray, massive, moderately plastic, moderately cohesive (Lacustrine)
64-66	CLAY	Silty, sandy, gray, moderately plastic, unoxidized (Lacustrine)
66-84	CLAY	Silty, gray, massive, moderately plastic, moderately cohesive (Lacustrine)
84-89	CLAY	Silty, sandy, gray, moderately plastic, unoxidized (Lacustrine)
89-150	CLAY	Silty, gray, massive, moderately plastic, moderately cohesive (Lacustrine)

150-227 CLAY Silty, sandy, pebbly inclusions in a clay matrix, moderately plastic, soft to firm, rock and gravel from 170-171', very firm brown till from 202-216', very firm gray till from 216-227' (Till)

227-240 SHALE Very clayey with minimal silt very plastic, soft to firm dark gray to black, layers of bentonite, sandstone, and siltstone

145-054-10DDD
NDSWC 8364

Date Completed: 06/28/1972 Purpose: Observation Well - Plugged
 L.S. Elevation (ft): 1118.2 Well Type: 1.25 in. - PVC
 Depth Drilled (ft): 100 Aquifer: Page
 Screen Int. (ft.): 17-20 Data Source:

Completion Info: Well replaced by 145-054-10DDD. Old plastic pipe and screen drilled out, and replaced by 10DDD2 constructed in the same hole.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, pebbly, clay loam grayish-black
1-3	CLAY	Very silty, moderately sandy, pebbly, moderate yellowish-brown, slightly cohesive, crumbly, oxidized (Till)
3-24	SAND	Very slightly clayey, fine to coarse grained (mostly fine to medium), subangular to rounded, well sorted, shaley, taking some water
24-80	SILT	Moderately sandy, clayey, medium gray with light olive gray laminae, slightly cohesive, samples washing out
80-100	CLAY	Silty, moderately sandy, pebbly, olive gray, moderately cohesive, plastic, calcareous (Till)

145-054-10DDD2
NDSWC 14451

Date Completed: 12/01/1999 Purpose: Observation Well
 L.S. Elevation (ft): 1117.49 Well Type: 2 in. - PVC
 Depth Drilled (ft): 23 Aquifer: Page
 Screen Int. (ft.): 15-20 Data Source: NDSWC

Completion Info: Well constructed with 4 bags of #10 sand around screen (15-20), 1 bag of grout pumped down 1 1/4" plastic, and finished with 3 bags of hole plug.

Remarks: This well replaces 145-054-10DDD. The well was established in the same drill hole.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	silty black clay
1-3	CLAY	silty, yellowish, oxidized
3-23	SAND	fine to medium, gray

145-054-12ADA
NDSWC 3988

Date Completed: 06/09/1970 Purpose: Test Hole
L.S. Elevation (ft): 1107
Depth Drilled (ft): 320 Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Fine sandy loam, black
2-14	GRAVEL	Fine and medium, sandy, assorted, angular to subrounded, heavily iron-stained, mainly carbonates, granites, and shale; drilled fair, no large loss of water, mixed 1 bag of mud
14-28	SILT	Light olive gray, soft, slightly cohesive to crumbly, partially oxidized, highly calcareous
28-70	SAND	Very fine to fine, silty, gray, loose to slightly cohesive, dirty, mostly quartz with shale
70-162	SILT	Clayey to sandy, variegated grays, laminated and interbedded, soft, chunky, loose to slightly cohesive, non- to slightly plastic, calcareous, smooth, easy drilling, drilling fluid very thick
162-182	SAND	Very fine to fine, silty, gray, loose, sorted, fairly uniform, subrounded, mostly quartz and shale
182-284	CLAY	Silty to very sandy with pebbles, cobbles, boulders and lenses of gravel, light olive gray to dark olive gray (Till) light olive gray till generally very sandy with few pebbles but many rock, most pebbles are limestone as well as gravel lenses, porous and highly calcareous, dark olive gray till usually clayey, tight, contains numerous shale pebbles but very few rock, all mixed up
284-320	SHALE	Silty, very dark brown to black, many light specks, moderately soft, plastic to slightly hard and brittle, carbonateous highly calcareous

145-054-13AAA
NDSWC 15154

Date Completed: 07/26/2004 Purpose: Test Hole
L.S. Elevation (ft): 1112
Depth Drilled (ft): 195 Data Source: Rex Honeyman

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-16	CLAY	Very silty, brown, non plastic to slightly plastic, oxidized (Lacustrine)
16-33	SAND	Very fine to medium, predominantly fine to medium sand, moderately sorted, consisting mostly of shales and quartz oxidized from 16'-19' brown, unoxidized from 19'-33', gray
33-70	CLAY	Silty, gray, moderately plastic, very cohesive, soft (Lacustrine)
70-91	SILT	Clayey, non cohesive, non plastic, gray (Lacustrine)
91-103	CLAY	Slightly silty, massive, gray, moderately to very plastic, soft (Lacustrine)
103-188	SILT	Clayey to silty clay - very silty, non- plastic to moderately plastic, gray
188-195	CLAY	Silty, sandy, pebbly, inclusions in a clay matrix, gray, moderately plastic, rock at 195'-196' (Till)

145-054-13AAA2
NDSWC 15155

Date Completed: 07/26/2004 Purpose: Observation Well
L.S. Elevation (ft): 1113 Well Type: 2 in. - PVC
Depth Drilled (ft): 40 Aquifer: Page
Screen Int. (ft.): 27-32 Data Source: Rex Honeyman

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-16	CLAY	Very silty, brown, non plastic to slightly plastic oxidized (Lacustrine)

16-33 SAND Fine to medium, predominantly fine to medium, moderate sorting, consisting mostly of quartz and shales, oxidized from 16'-19' brown, unoxidized from 19'-33', gray

33-40 CLAY Silty, gray moderately plastic, very cohesive, soft (Lacustrine)

145-054-13BBB
NDSWC 15144

Date Completed: 07/19/2004 Purpose: Observation Well
 L.S. Elevation (ft): 1109 Well Type: 2 in. - PVC
 Depth Drilled (ft): 280 Aquifer: Rex Honeyman
 Screen Int. (ft.): 75-80 Data Source:

Completion Info: Drilled 4.75 inch diameter hole, installed 77 feet of 2" PVC with a 5 foot #12 slot pvc screen. After completion of the well, it was pumped with air for approximately 8 hours, pumped very well. The annular space above the screen was sealed with high solids grout. After the grout settled the upper portion of the annular space was sealed with bentonite chips. Surveyed by NDSWC on 08/31/2004.

Remarks: SOUTH EAST WELL

Lithologic Log

Depth (ft)	Unit	Description
0-4	TOPSOIL	Black, silty sandy clay
4-7	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
7-15	CLAY	Silty, brown, no inclusions, moderately plastic, oxidized (Lacustrine)
15-41	SAND	Very fine to coarse, predominantly fine to medium, moderately sorted, subrounded to rounded, consisting mostly of shales and quartz
41-69	SILT	Clayey to silty clay, silty, non plastic to somewhat plastic, gray non cohesive to somewhat cohesive
69-81	SAND	Very fine to coarse, predominantly fine to medium, moderately sorted, subrounded to rounded, consisting mostly of shales and quartz
81-90	SILT	Clayey to silty clay, silty, non plastic to somewhat plastic, gray non cohesive to somewhat cohesive
90-94	SAND	Fine
94-166	SILT	Clayey to silty clay, silty, non plastic to somewhat plastic, gray non cohesive to somewhat cohesive, becomes more clayey with depth
166-264	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, non plastic to moderately plastic, layers of shale sand and gravel from 166'-174', rock from 186'-187', 196'-197', 243'-244', becomes more firm from 244'-264'
264-266	GRAVEL	Fine to very coarse with cobbles
266-280	SHALE	Very clayey with minimal silt, very plastic, soft to firm, dark gray to black, layers of sandstone (Bedrock)

145-054-13BBB2
NDSWC 15145

Date Completed: 07/19/2004 Purpose: Observation Well
 L.S. Elevation (ft): 1109 Well Type: 2 in. - PVC
 Depth Drilled (ft): 50 Aquifer: Rex Honeyman
 Screen Int. (ft.): 35-40 Data Source:

Completion Info: Drilled 4.75 inch diameter hole, installed 37 feet of 2" PVC with a 5 foot #12 slot pvc screen. Screen was sand packed with #10 sand and annular space above the screen was sealed with bentonite chips. After completion of well, it was pumped for approximately 8 hours, pumped very well. Surveyed by the NDSWC on 08/31/2004.

Remarks: NORTH WEST WELL

Lithologic Log

Depth (ft)	Unit	Description
0-4	TOPSOIL	Black, silty, sandy, clay
4-7	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
7-15	CLAY	Silty, brown, no inclusions, moderately plastic, oxidized (Lacustrine)
15-41	SAND	Very fine to coarse, gray, predominantly fine to medium sand, moderately sorted, subrounded to rounded, consisting mostly of shales and quartz, unoxidized
41-50	SILT	Clayey to silty clay, non plastic to somewhat plastic, gray non cohesive to somewhat cohesive

145-054-13CDC
NDSWC 15217

Date Completed: 05/16/2005
L.S. Elevation (ft): 1115
Depth Drilled (ft): 100
Screen Int. (ft.): 73-78
Purpose: Observation Well - Plugged
Well Type: 2 in. - PVC
Aquifer: Rex Honeyman
Data Source:
Completion Info: Drilled 4.75 inch diameter hole, installed 75 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space, it was sealed with bentonite chips.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-10	CLAY	Silty, sandy, pebbly, brown, moderately plastic, oxidized (Till)
10-21	SAND	Very fine to medium, brown, oxidized
21-37	SILT	Clayey to clay, silty, non plastic to somewhat plastic non cohesive to cohesive (Lacustrine)
37-55	SAND	Very fine to medium sand, predominantly very fine to fine, moderate sorting
55-79	SAND	Very fine to medium, predominantly medium sand, moderately sorted, consisting mostly of quartz and shales with a lot of detrital lignites
79-91	SILT	Clayey to clay, silty, non plastic to somewhat plastic, non-cohesive to cohesive, gray (Lacustrine)
91-100	CLAY	Silty, gray, moderately plastic (Lacustrine)

145-054-13CDC
NDSWC 15224

Date Completed: 05/17/2005
L.S. Elevation (ft): 1115
Depth Drilled (ft): 100
Screen Int. (ft.): 63-68
Purpose: Observation Well - Plugged
Well Type: 2 in. - PVC
Aquifer:
Data Source: Gary Calheim - Driller
Completion Info: Drilled 4.75-inch diameter hole, installed 65 feet of 2" PVC with a 5 foot #18 slot pvc screen. The well was sand packed around the screen. The annular space above the screen was sealed with high solids grout. After the grout settled the upper portion of the annular space, it was sealed with bentonite chips.

Remarks: Aquifer Test Well #1 Radius - 50'

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-11	TILL	Oxidized yellow till
11-16	CLAY	Gray, silty
16-78	SAND	Medium to coarse sand and coal
78-100	CLAY	Silty, gray

145-054-13CDC3
NDSWC 15225

Date Completed: 05/18/2005
L.S. Elevation (ft): 1115
Depth Drilled (ft): 80
Screen Int. (ft.): 63-68

Purpose: Observation Well - Plugged
Well Type: 2 in. - PVC
Aquifer: Gary Calheim - Driller
Data Source:

Completion Info:
Drilled 4.75-inch diameter hole, installed 65 feet of 2" PVC with a 5 foot #18 slot pvc screen. The well was sand packed around the screen. The annular space above the screen was sealed with high solids grout. After the grout settled in the upper portion of the annular space, it was sealed with bentonite chips.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-14	CLAY	Oxidized yellowish till
14-15	SAND	Gray
15-20	CLAY	Gray sand till
20-74	SAND	Fine to coarse sand and layers of coal
74-77	CLAY	Gray silty clay and sand
77-80	CLAY	Silty

145-054-13CDC4
Trail Rural Water District

Date Completed: 00/00/00
L.S. Elevation (ft): 1115
Depth Drilled (ft): 85
Screen Int. (ft.): 59-79

Purpose: Production Well - Plugged
Well Type: 8 in. - PVC
Aquifer: Rex Honeyman - NDSWC
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-11	CLAY	Silty, brown, moderately plastic, no inclusions, massive, oxidized (Lacustrine)
11-15	SAND	Very fine to medium, predominantly very fine to fine, brown, oxidized
15-38	SAND	Very fine to medium, predominantly very fine to fine, gray, unoxidized, interbedded silt from 18-38
38-79	SAND	Sand very fine to medium, from 38'-40' predominantly fine sand and consisting mostly of quartz and shales; from 40'-55' predominantly medium sand consisting mostly of shales; from 55'-79' predominantly fine to medium sand consisting mostly of quartz and shales; taking water and moderately sorted from 38'-79'
79-85	CLAY	Silty, gray, minimal returns (Lacustrine)

145-054-13DCC
NDSWC 15220

Date Completed: 05/17/2005
L.S. Elevation (ft): 1110
Depth Drilled (ft): 100
Screen Int. (ft.): 55-60
Purpose: Observation Well - Plugged
Well Type: 2 in. - PVC
Aquifer: Rex Honeyman
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, installed 47 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-10	CLAY	Silty, firm, moderately plastic, brown, no inclusions, oxidized (Lacustrine)
10-14	CLAY	Silty, firm, moderately plastic, gray, no inclusions, unoxidized (Lacustrine)
14-45	SAND	Sand, very fine to coarse, predominantly fine and medium sand, consisting of mostly shales and quartz with detrital lignites, 14'-28' - predominantly medium to coarse sand
45-62	SAND	Very fine to coarse, predominantly fine sand, consisting of mostly shales and quartz with detrital lignites
62-100	CLAY	Silty to silt, clayey, gray, moderately plastic to non-plastic (Lacustrine)

145-054-13DCD
NDSWC 15218

Date Completed: 05/16/2005
L.S. Elevation (ft): 1110
Depth Drilled (ft): 100
Screen Int. (ft.): 45-50
Purpose: Observation Well - Plugged
Well Type: 2 in. - PVC
Aquifer: Rex Honeyman
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, installed 47 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-4	CLAY	Silty, brown, moderately plastic, no inclusions oxidized (Lacustrine)
4-5	SAND	Fine
5-16	CLAY	Silty, sandy, brown, moderately plastic, no inclusions oxidized (Lacustrine)
16-21	SILT	Clayey to clay, silty, gray, unoxidized (Lacustrine)
21-41	SAND	Very fine to medium, predominantly fine to medium sand, consisting mostly of shales and quartz with detrital lignites
41-52	SAND	Very fine to medium, predominantly fine to medium sand, consisting mostly of shales and quartz with detrital lignites, with interbedded silts
52-76	CLAY	Silty to silt, clayey, gray, somewhat plastic to non plastic (Lacustrine)
76-80	SAND	Fine to medium
80-100	CLAY	Silty to silt, clayey, gray, somewhat plastic to non plastic (Lacustrine)

145-054-13DDDD
NDSWC 8358

Date Completed: 6/1972
L.S. Elevation (ft): 1115
Depth Drilled (ft): 140
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, sandy, clay loam, grayish-black
1-10	CLAY	Very sandy, silty, a few pebbles, a few boulders, moderate yellowish-brown, slightly cohesive, crumbly, oxidized (Till)
10-90	SAND	Occasional thin clay layers, becomes more clayey lower 40 feet, very fine to coarse grained (mostly medium), subangular to rounded, lignitic, taking some water, caving slightly, oxidized to about 25' below land surface
90-140	SILT	Slightly clayey, slightly sandy, olive gray with some light olive gray mottling, slightly cohesive, samples washing out in mud

145-054-13DDDD2
NDSWC 8358-A

Date Completed: 06/23/1972
L.S. Elevation (ft): 1115
Depth Drilled (ft): 300
Screen Int. (ft.): 62-68
Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Acquirer: Page
Data Source:
Completion Info: Surveyed by the NDSWC on 08/31/2004.

Remarks: Plugged 10/20/04, Replaced with 14505413DDDD3

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, sandy, clay loam, grayish-black
1-10	CLAY	Very sandy, silty, a few pebbles, a few boulders, moderate yellowish-brown, slightly cohesive, crumbly, oxidized (Till)
10-90	SAND	Occasional thin clay layers, becomes more clayey lower 40 feet, very fine to coarse grained (mostly medium), subangular to rounded, lignitic, taking some water, caving slightly, oxidized to about 25' below land surface
90-185	SILT	Slightly clayey, slightly sandy, olive gray with some light olive gray mottling, slightly cohesive, samples washing out in mud
185-278	CLAY	Silty, moderately sandy to sandy, pebbly, occasional thin gravel layers, some cobbles and boulders, olive gray with brownish-gray mottling, moderately cohesive, slightly plastic, crumbly (Till)
278-300	SHALE	Clayey, brownish-black, highly calcareous, a few small white specks, taic-like feel, slight oily residue on drilling mud, moderately well indurated (Greenhorn Formation?)

145-054-13DDD3
NDSWC 15205

Date Completed: 10/20/2004
L.S. Elevation (ft): 111.6
Depth Drilled (ft): 100
Screen Int. (ft.): 75-80
Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Page
Data Source: Rex Honeyman
Completion Info: Drilled 4.75 inch diameter hole, installed 77 feet of 2" PVC with a 5 foot #12 slot pvc screen. After completion of the well, it was pumped with air for approximately 8 hours, pumped very well. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. Surveyed by Advanced Engineering on 11/24/2004.

Remarks: Replaced 14505413DDD2

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black, silty, clay
1-8	CLAY	Sandy, silty, pebbly inclusions in a clay matrix, brown, slightly plastic, oxidized (Till)
8-28	SAND	Very fine to medium, predominantly fine sand with detrital lignites, brown, taking water (oxidized)
28-92	SAND	Very fine to medium, predominantly fine sand with detrital lignites, gray, (unoxidized)
92-100	SILT	Slightly clayey, gray, non plastic

145-054-14DDD
NDSWC 15139

Date Completed: 07/15/2004
L.S. Elevation (ft): 1118
Depth Drilled (ft): 290
Purpose: Test Hole
Data Source: Rex Honeyman
Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-13	CLAY	Silty, brown, soft, moderately plastic, oxidized (Lacustrine)
13-16	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, moderately plastic, unoxidized (Till)
16-91	SAND	Very fine to coarse, moderately sorted, consisting mostly of shales, with detrital lignites, some interbedded silts, predominantly medium sands from 16'-41', clay, silty from 41'-42', predominantly fine sands from 64'-91'
91-141	SILT	Slightly clayey, gray, becomes more clayey, with depth (Lacustrine)
141-152	CLAY	Slightly silty, massive, very plastic, no inclusions, gray (Lacustrine)
152-258	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, more silty and sandy from 152'-164', more boulders and cobbles from 206'-258' (Till)
258-263	GRAVEL	Fine sand to coarse gravel, predominantly fine to medium gravel, moderate sorting, mixed mineralogy, consisting mostly of shales and carbonates, subangular to rounded
263-271	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, cobbly, gray (Till)
271-290	SHALE	Very clayey, minimal silt content, gray to black, very plastic to moderately plastic, greasy feel, layers of bentonite, soft to moderately firm (Bedrock)

145-054-14DDD2
NDSWC 15140

Date Completed: 07/15/2004
L.S. Elevation (ft): 1118
Depth Drilled (ft): 80
Screen Int. (ft.): 55-60
Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Rex Honeyman
Data Source: Rex Honeyman
Completion Info: Drilled 4.75 inch diameter hole, installed 57 feet of 2" PVC with a 5 foot #12 slot pvc screen. After completion of the well, it was pumped with air for approximately 8 hours, pumped very well. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. Surveyed by the NDSWC on 08/31/2004.

Remarks:

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-16	CLAY	Silty, brown, soft, moderately plastic, oxidized (Lacustrine)
16-17	SAND	Fine sand to coarse gravel, predominantly coarse sand
17-80	SAND	Very fine to coarse, moderately sorted, consisting mostly of shales with detrital lignites, some interbedded silts, predominantly medium sand from 16'-40', gravel from 40'-41', predominantly fine sand with layers of silt from 62'-80'

145-054-15CCC
NDSWC 15142

Date Completed: 07/18/2004
L.S. Elevation (ft): 1150
Depth Drilled (ft): 280
Purpose: Test Hole
Data Source: Rex Honeyman
Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-4	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
4-5	GRAVEL	Fine to coarse
5-16	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
16-29	CLAY	Very silty, brown, moderately cohesive, slightly plastic, oxidized (Lacustrine)
29-30	GRAVEL	Fine to coarse
30-36	CLAY	Very silty as above 16'-29', oxidized from 30'-32' brown, unoxidized from 32'-36', gray
36-41	SAND	Fine to medium, predominantly fine to medium, moderately sorted, gray
41-48	CLAY	Very silty, black, moderately cohesive, slightly plastic
48-84	SAND	Very fine to coarse, predominantly medium sand, consisting mostly of quartz and shales, moderately to well sorted, appears to be more medium sand with increased depth, subrounded to rounded
84-107	SILT	Clayey to silty clay, very silty, gray (Lacustrine)
107-132	CLAY	Very silty, sandy pebbly inclusions in a clay matrix, gray (Till)
132-186	SILT	Clayey to silty clay, very silty, gray (Lacustrine)
186-218	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray moderately plastic to plastic, soft to firm, rock at 200'-201' and 213'-215' (Till)
218-222	GRAVEL	Fine to coarse, predominantly carbonate, subangular to subrounded
222-269	CLAY	Clay, silty, sandy, pebbly inclusions in a clay matrix, rock at 240'-241', becomes more firm and more sandy from 250'-260' gritty, becomes more clayey and very plastic from 260'-269'
269-280	SHALE	Gray to black, soft to firm, moderately to very plastic with layers of sandstone & bentonite

145-054-16DAA
Harry Knodle

Purpose: Domestic Well
Well Type: 4 in. - PVC
Aquifer: Undefined
Data Source:

Date Completed: 07/31/2000
L.S. Elevation (ft): 1130
Depth Drilled (ft): 115
Screen Int. (ft.): 105-115

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	
2-18	CLAY	
18-42	CLAY	and sand layer
42-115	SAND	

145-054-15CCCZ
NDSWC 15143

Purpose: Observation Well
Well Type: 2 in. - PVC
Page: Rex Honeyman
Data Source:

Date Completed: 07/19/2004
L.S. Elevation (ft): 1150
Depth Drilled (ft): 100
Screen Int. (ft.): 78-83

Completion Info: Drilled 4.75 inch diameter hole, installed 80 feet of 2" PVC with a 5 foot #12 slot pvc screen. After completion of the well, it was pumped with air for approximately 8 hours, pumped very well. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. Surveyed by the NDSWC on 08/31/2004.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-4	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
4-5	GRAVEL	Fine to coarse
5-23	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
23-29	CLAY	Very silty, brown, moderately cohesive, slightly plastic, oxidized (Lacustrine)
29-31	SAND	Fine, moderately sorted, oxidized
31-39	CLAY	Very silty, brown, moderately cohesive, slightly plastic, brown, oxidized from 31'-36' gray, unoxidized from 36'-39' (Lacustrine)
39-41	SAND	Fine to medium, predominantly fine, moderate sorting, gray
41-49	CLAY	Very silty, gray moderately cohesive slightly plastic (Lacustrine)
49-61	SAND	Very fine to coarse, predominantly medium sand consisting mostly of quartz and shale, moderately to well sorted, subrounded to rounded
61-69	CLAY	Very silty, gray moderately cohesive, slightly plastic (Lacustrine)
69-86	SAND	Very fine to coarse, predominantly medium sand consisting mostly of quartz and shale, moderately to well sorted, subrounded to rounded, appears to become more medium grained with depth
86-100	SILT	Clayey to silty clay, very silty, gray (Lacustrine)

209-229 CLAY Very silty and sandy, with pebble inclusions, gray very gritty, non plastic, non cohesive, more firm(Till)

229-240 SHALE Gray to black, soft to firm, plastic to brittle, layers of sandstone and bentonite (Bedrock)

145-054-17AAA
NDSWC 15135

Date Completed: 07/14/2004 Purpose: Test Hole
L.S. Elevation (ft): 1108
Depth Drilled (ft): 240
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-4	TOPSOIL	Black, silty clay loam
4-7	CLAY	Very silty, very sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
7-11	SAND	Very fine to fine, predominantly very fine sand, oxidized
11-13	CLAY	Silty, gray, unoxidized (Lacustrine)
13-66	CLAY	Very silty, very sandy, pebbly inclusions in a clay matrix, gritty, gray, non plastic, slow drilling, rock at 13'-14' (Till)
66-76	CLAY	Very silty, non plastic, non cohesive (Lacustrine)
76-224	CLAY	Silty, sandy, pebbly inclusions in a clay matrix; more silty from 87'-94', non plastic; less silty from 94'-106', plastic; rock at 106'-107' - Silicate, 114'-115' - Silicate, 120'-121' - Silicate, 139'-140'; more firm from 126'-224' (Till)
224-240	SHALE	Very clayey, minimal silt, gray to black, very plastic, soft to firm, with layers of bentonite (Bedrock)

145-054-17AAA
NDSWC 15135

Date Completed: 07/12/2004 Purpose: Test Hole
L.S. Elevation (ft): 1100
Depth Drilled (ft): 240
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-5	CLAY	Very silty, brown, soft, non plastic, oxidized (Lacustrine)
5-12	CLAY	Very silty, gray, soft, non plastic, unoxidized (Lacustrine)
12-21	SAND	Very fine to medium, predominantly fine, gray, moderately to well sorted
21-25	SILT	Sandy, clayey, gray (Lacustrine)
25-51	SAND	Very fine to fine, predominantly fine sand, moderately to well sorted, very shaley with detrital lignites, loss of water
51-60	SILT	Very clayey, non cohesive, some sand, (Lacustrine)
60-76	CLAY	Silty, soft, gray, slightly cohesive with interbedded sands (Lacustrine)
76-104	CLAY	Silty, soft, gray, slightly cohesive, no inclusions (Lacustrine)
104-107	SAND	Fine
107-117	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, moderately plastic, moderately cohesive (Till)
117-122	GRAVEL	Fine to coarse, predominantly fine, consisting mostly of platy shales and angular to subrounded carbonates
122-166	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, moderately plastic, moderately cohesive (Till). Rock at 126'-127' - carbonate, Rock at 129'-130' - carbonate, Rock at 146'-148' - Granitic
166-171	SAND	Fine sand to fine gravel, predominantly fine sand, no return
171-173	CLAY	Very silty and sandy, with pebble inclusions, brown, very gritty, non plastic, non cohesive, moderately soft (Till)
173-186	CLAY	Silty, Brown (Lacustrine)
186-209	CLAY	Very silty and sandy, with pebble inclusions, brown, very gritty, non plastic, non cohesive, moderately soft (Till)

145-054-17DDDD
NDSWC 15136

Date Completed: 07/13/2004
L.S. Elevation (ft): 1137
Depth Drilled (ft): 280
Screen Int. (ft.): 93-98

Purpose: Well Type: Observation Well
Aquifer: 2 in. - PVC
Data Source: Rex Honeyman

Completion Info: 95' - 2 inch PVC; 5' - #12 slot screen; Well was sand packed around screen and annular space above the screen was sealed with high solids grout. After the grout settled the upper portion of the annular space was sealed with bentonite chips. After completion of well, it was pumped for approximately 6 hours, pumped very well. Surveyed by the NDSWC on 08/31/2004.

Remarks: NORTH WELL

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-7	CLAY	Silty, sandy, brown oxidized (Lacustrine)
7-10	GRAVEL	Fine to coarse, oxidized
10-23	CLAY	Silty, sandy, brown, oxidized (Lacustrine)
23-27	SAND	Very fine to fine, predominantly fine, moderately to well sorted, very shaley, loss of water, oxidized
27-37	CLAY	Very silty, soft, gray, plastic, massive, no inclusions, unoxidized (Lacustrine)
37-42	SAND	Very fine to medium, predominantly fine, moderately to well sorted, very shaley with detrital lignites
42-45	CLAY	Very silty, soft, gray, plastic, massive, no inclusions, unoxidized (Lacustrine)
45-72	SAND	Very fine to medium, predominantly fine, moderately to well sorted, very shaley with detrital lignites
72-82	CLAY	Very silty, very sandy, gray (Lacustrine)
82-100	SAND	Very fine to medium, predominantly fine to medium, moderately sorted, shaley with detrital lignites
100-123	CLAY	Very silty, very sandy, gray (Lacustrine)
123-143	CLAY	Silty, firm, plastic, massive, no inclusions (Lacustrine)
143-264	CLAY	Sandy, silty, pebbly inclusions in a clay matrix, gray, moderately cohesive, very gritty (Till); gravel from 172'-173'; interbedded with fine sand throughout; rock at 183'-184' & 234'-255'; granitic, more firm from 223'-264'
264-280	SHALE	Gray to black, soft to firm moderately plastic to brittle, layers of sandstone and bentonite (Bedrock)

145-054-17DDDD
NDSWC 15137

Date Completed: 07/14/2004
L.S. Elevation (ft): 1137
Depth Drilled (ft): 80
Screen Int. (ft.): 65-70

Purpose: Well Type: Observation Well
Aquifer: 2 in. - PVC
Data Source: Rex Honeyman

Completion Info: Drilled 4.75-inch diameter hole, installed 67 feet of 2" PVC with a 5 foot #12 slot pvc screen. After completion of well, it was pumped with air for 6 hours, pumped very well. The well was sand packed around screen and the annular space was sealed with bentonite chips. Surveyed by the NDSWC on 08/31/2004.

Remarks: SOUTH WELL

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-7	CLAY	Silty, sandy, brown, oxidized (Lacustrine)
7-8	GRAVEL	Fine to coarse, oxidized
8-21	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
21-29	CLAY	Silty, sandy, brown, oxidized (Lacustrine)
29-34	CLAY	Silty, sandy, gray, unoxidized (Lacustrine)
34-43	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray (Till)
43-80	SAND	Very fine to medium, predominantly fine, gray, moderately sorted to well sorted, very shaley with detrital lignites

145-054-20BBB
NDSWC 15141

Date Completed: 07/15/2004
L.S. Elevation (ft): 1110
Depth Drilled (ft): 240
Purpose: Test Hole
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-6	CLAY	Silty, brown, plastic, cohesive, soft, oxidized (Lacustrine)
6-10	CLAY	Silty, sandy, pebbly inclusion in a clay matrix, brown, oxidized (Till)
10-16	CLAY	Silty, sandy, pebbly inclusion in a clay matrix, gray, unoxidized (Till)
16-28	SILT	Very clayey to clayey, gray, soft to firm, minimal loss of water, easy drilling (Lacustrine)
28-46	CLAY	Very sandy and pebbly, minimal silt, gray, non plastic, non cohesive, soft to firm (Till)
46-87	CLAY	Very silty, to silty, very clayey, gray, non plastic, non cohesive, soft to firm (Lacustrine)
87-111	CLAY	Silty, sandy, pebbly, moderately plastic, gray, moderately cohesive, soft to firm, rock at 87'-88' - granitic and 108'-109' - carbonate (Till)
111-113	SILT	Clayey
113-232	CLAY	Silty, sandy, pebbly, moderately plastic, gray, moderately cohesive, soft to firm, more firm from 146'-232' with more carbonate pebbles, lighter gray than above slightly plastic to brittle. Rocks at 116'-117', 168'-169', 226'-227' (Till)
232-240	SHALE	Very clayey, minimal silt content, gray to black, very plastic to moderately plastic, soft to moderately firm, with layers of bentonite

121

145-054-20CCC
NDSWC 4298

Date Completed: 11/06/1970
L.S. Elevation (ft): 1120
Depth Drilled (ft): 280
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Fine sandy loam, black
1-4	SAND	Fine, yellowish tan, sorted, subrounded, loose, oxidized
4-7	SILT	Slightly clayey, yellowish gray, soft, slightly cohesive, laminated, oxidized
7-14	SAND	Fine, tan, sorted, loose, subrounded, quartzose with carbonates, oxidized
14-19	SAND	Very fine, silty, light olive gray, soft, slightly cohesive, laminated
19-32	SAND	Very fine and fine, dark gray, loose, well sorted and uniform, subrounded, clean, mostly quartz with some shale and lignite
32-40	SILT	Slightly clayey to sandy, light olive to olive gray, soft, slightly cohesive, laminated calcareous
40-51	SAND	Very fine to medium, silty, interbedded, loose to slightly cohesive, dark gray, lignitic
51-76	CLAY	Silt and very fine sand in all combinations, interbedded and very lenticular, predominantly light olive gray, soft, drills easy, not much for accurate samples, thin organic streaks
76-87	SAND	Fine to medium dark gray, sorted, subrounded, quartzose, clean
87-92	CLAY	Very dark gray, smooth, waxy, flakey, crumbly
92-125	SAND	Very fine to very coarse, interbedded with clay and silty clay, lenticular, sorted in layers, finer sand mostly quartz, coarser sand mainly carbonates and granitics with shale, rocky in spots
125-151	CLAY	Very silty with sand grains and occasional pebbles, olive to dark olive gray, moderately soft to slightly hard, very cohesive, stiff, tough (washed? Till)
151-154	ROCK	Feldspathic granite (rock bit)
154-163	GRAVEL	Sandy, assorted, subangular and subrounded "dirty"
163-175	CLAY	Silty and sandy with pebbles and occasional cobbles, olive gray, moderately soft, cohesive, stiff (Till)
175-187	GRAVEL	Fine, sandy, moderately sorted, subrounded, predominantly carbonates with some granitics and shale

122

145-054-21CCC
NDSWC 15163

Date Completed: 07/28/2004 Purpose: Test Hole
L.S. Elevation (ft): 1130
Depth Drilled (ft): 158 Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-15	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, moderately plastic to plastic, oxidized (Till)
15-20	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, moderately plastic to plastic, unoxidized (Till)
20-21	SAND	Coarse, consisting of platy shales
21-35	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, moderately plastic to plastic, unoxidized (Till)
35-36	SAND	Very fine to fine, gray
36-58	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, moderately plastic to plastic, unoxidized (Till)
58-60	SAND	Very fine to fine, gray, cohesive
60-108	CLAY	Sandy, silty, pebbly inclusions in a clay matrix, gray, moderately plastic, gritty (Till)
108-109	SAND	Very fine to fine, gray
109-120	CLAY	Sandy, silty, pebbly inclusions in a clay matrix, gray, moderately plastic, gritty (Till)
120-158	CLAY	Silty, slightly sandy, slightly pebbly in a clay matrix, moderately plastic to plastic gray, rock from 155'-156' (Till)

187-192 CLAY Silty, olive gray, smooth, moderately soft, cohesive, slightly sticky

192-194 BOULDER Limestone (yellow)

194-214 CLAY Silty to sandy with pebbles, olive gray, moderately soft, cohesive, stiff, quite tight (Till)

214-221 SAND Very fine to fine, clayey with coarse sand grains, very light olive gray, soft, crumbly, highly calcareous (Till)

221-244 CLAY Silty with sand grains and pebbles, dark olive gray, moderately soft to slightly hard, cohesive, tightly compacted very oil and sticky (Till)

244-256 SHALE Silty, very dark brown to black, smooth, massive, very tight, oily and carbonaceous

256-280 SILTSTONE And sandstone, tans, light grays and pinkish, gypsiferous, pyritiferous, carbonaceous, tight

145-054-22AAA
NDSWC 3992

Date Completed: 06/18/1970
L.S. Elevation (ft): 1149
Depth Drilled (ft): 380
Screen Int. (ft.): 78-81

Purpose: Observation Well
Well Type: 1.25 in. - ABS
Aquifer: Page

Completion Info: Surveyed by the NDSWC on 08/31/2004.
Re-surveyed by Advanced Engineering on 11/24/2004.

Remarks: SLOW PUMPER

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Silty loam, black
2-11	CLAY	Silty, grayish yellow, soft, cohesive, moderately plastic, oxidized
11-24	SAND	Medium with fine to coarse, reddish brown, loose, moderately sorted, subangular and subrounded, iron-stained, oxidized
24-38	CLAY	Silty, light olive bluish gray, soft, chunky, slightly to moderately cohesive, crumbly to slightly plastic, calcareous
38-55	SAND	Medium, gray, well sorted and uniform, subangular to subrounded, clean, lignitic
55-107	SAND	Fine and medium, silty, interbedded, gray, lignitic, sorted in lenses, subangular and subrounded, mostly quartz and shale with limestone and lignite; easy drilling, taking water
107-161	SILT	And silty clay, light olive to olive gray, soft, chunky, crumbly to moderately cohesive, non- to slightly plastic, laminated, highly calcareous
161-183	CLAY	Interbedded silt, light olive and olive gray, soft to moderately soft, cohesive, moderately plastic, light, large, chunky cuttings
183-193	CLAY	Sandy with pebbles and much fine to medium gravel, light olive to olive gray, moderately soft to slightly hard, cohesive, slightly brittle; rough drilling (Till)
193-227	CLAY	Silty to sandy with pebbles, olive to dark olive gray, moderately soft to slightly hard, cohesive, gritty, tight (Till); contains thin lenses of fine, carbonate and shale gravel, fairly well rounded
227-243	CLAY	Silty and sandy with occasional coarse sand grain or pebble, dark olive to brownish dark gray, slightly to moderately hard, stiff, chunky, very lightly compacted (Till?)
243-331	SAND	Very fine and fine, very silty, thinly interbedded, sorted in lenses, subangular to rounded, light olive gray, loose to slightly cohesive, predominantly quartz with shale; sample return fairly poor, most of it carrying through in drilling fluid. Occasional lens of coarse sand, mostly rounded carbonates with shale and granitics
331-358	SAND	Very fine to fine, clayey, brownish black, soft, moderately cohesive, slightly plastic, oily and carbonaceous, highly calcareous, angular to subrounded, mostly quartz, drills tight, oily on drilling fluid, possible thin shale seams (bedrock)

358-380 SHALE

Medium gray to brownish black with bluish tent. clay, thinly interbedded with sandstone and argonite layers, oily, tight, slightly plastic to slightly brittle, smooth, sticky, calcareous

145-054-22CCC
NDSWC 15164

Date Completed: 07/28/2004
L.S. Elevation (ft): 1141
Depth Drilled (ft): 160

Purpose: Test Hole

Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Clay loam, black
1-18	CLAY	Very silty, slightly sandy, slightly pebbly inclusions in a clay matrix, brown, moderately plastic to plastic oxidized (Till)
18-63	CLAY	Very silty, slightly sandy, slightly pebbly inclusions in a clay matrix, brown, moderately plastic to plastic oxidized, interbedded sand from 23'-24' - fine, interbedded shale gravel - fine from 76'-77' (Till)
63-77	CLAY	Sandy, silty, pebbly inclusions in a clay matrix, gray, moderately plastic, interbedded shale gravel, fine 76'-77' (Till)
77-142	CLAY	Slightly silty, slightly sandy, slightly pebbly inclusions in clay matrix, gray, plastic to very plastic, pebbles consist predominantly of shales
142-160	CLAY	Sandy, silty, pebbly inclusions in a clay matrix, gray, moderately plastic

145-054-24BAB
NDSWC 15226

Date Completed: 05/18/2005
 L.S. Elevation (ft): 1113
 Depth Drilled (ft): 80
 Screen Int. (ft.): 63-68
 Purpose: Observation Well - Plugged
 Well Type: 2 in. - PVC
 Aquifer: Gary Calheim - Driller
 Data Source: Gary Calheim - Driller
 Completion Info: Drilled 4.75-inch diameter hole, installed 65 feet of 2" PVC with a 5 foot #18 slot pvc screen. The well was sand packed around the screen. The annular space above the screen was sealed with high solids grout. After the grout settled in the upper portion of the annular space, it was sealed with bentonite chips.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-9	CLAY	Yellowish till
9-11	SAND	Oxidized, medium to coarse sand
11-76	SAND	Medium to coarse
76-80	CLAY	Silty, gray

145-054-24BAB2
NDSWC 15227

Date Completed: 05/18/2005
 L.S. Elevation (ft): 1113
 Depth Drilled (ft): 100
 Screen Int. (ft.): 63-68
 Purpose: Observation Well - Plugged
 Well Type: 2 in. - PVC
 Aquifer: Gary Calheim - Driller
 Data Source: Gary Calheim - Driller
 Completion Info: Drilled 4.75-inch diameter hole, installed 65 feet of 2" PVC with a 5 foot #18 slot pvc screen. The well was sand packed around the screen. The annular space above the screen was sealed with high solids grout. After the grout settled in the upper portion of the annular space, it was sealed with bentonite chips.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-4	CLAY	Silty, oxidized
4-11	SAND	Oxidized, fine to coarse
11-92	SAND	Gray, medium to coarse sand
92-100	CLAY	Silty, gray

145-054-24BAB3
NDSWC 15228

Date Completed: 05/19/2005
 L.S. Elevation (ft): 1113
 Depth Drilled (ft): 80
 Screen Int. (ft.): 63-68
 Purpose: Observation Well - Plugged
 Well Type: 2 in. - PVC
 Aquifer: Gary Calheim - Driller
 Data Source: Gary Calheim - Driller
 Completion Info: Drilled 4.75-inch diameter hole, installed 65 feet of 2" PVC with a 5 foot #18 slot pvc screen. The well was sand packed around the screen. The annular space above the screen was sealed with high solids grout. After the grout settled in the upper portion of the annular space, it was sealed with bentonite chips.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-11	CLAY	Silty, oxidized
11-16	SAND	Oxidized, coarse
16-72	SAND	Medium to coarse sand and layers of coal
72-80	CLAY	Silty, gray

145-054-24BAC
NDSWC 15222

Date Completed: 05/17/2005
 L.S. Elevation (ft): 1108
 Depth Drilled (ft): 80
 Screen Int. (ft.): 47-53
 Purpose: Observation Well - Plugged
 Well Type: 2 in. - PVC
 Aquifer: Rex Honeyman
 Data Source: Rex Honeyman
 Completion Info: Drilled 4.75 inch diameter hole, installed 49 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-6	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
6-13	SAND	Very fine to medium, predominantly fine sand, brown, well sorted, oxidized
13-52	SAND	Very fine to medium, predominantly fine sand, well sorted, gray, unoxidized
52-80	CLAY	Silty to silt, clayey, gray, moderately plastic to non-plastic (Lacustrine)

145-054-24BDC
NDSWC 15221

Date Completed: 05/17/2005
L.S. Elevation (ft): 1110
Depth Drilled (ft): 80
Screen Int. (ft.): 48-53
Purpose: Observation Well - Plugged
Well Type: 2 in. - PVC
Aquifer: Page
Data Source: Rex Honeyman
Completion Info: Drilled 4.75 inch diameter hole, installed 50 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-9	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
9-12	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, unoxidized (Till)
12-54	SAND	Very fine to coarse, predominantly medium sand, consisting mostly of quartz and shales with detrital lignites, more lignites from 40'-54'
54-80	CLAY	Silty to silt, clayey, gray, moderately plastic to non-plastic (Lacustrine)

145-054-24CAC
NDSWC 15223

Date Completed: 05/17/2005
L.S. Elevation (ft): 1117
Depth Drilled (ft): 80
Screen Int. (ft.): 53-58
Purpose: Observation Well - Plugged
Well Type: 2 in. - PVC
Aquifer: Page
Data Source: Rex Honeyman
Completion Info: Drilled 4.75 inch diameter hole, installed 50 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-13	CLAY	Silty, sandy, pebbly, inclusions in a clay matrix, brown oxidized (Till)
13-58	SAND	Very fine to medium sand, predominantly fine sand, well sorted, approximately 60% fine sand, non-cohesive, consisting of quartz and shales with detrital lignites.
58-80	CLAY	Silty to silt, clayey, gray moderately plastic to non-plastic (Lacustrine)

145-054-24CDC
NDSWC 15219

Date Completed: 05/16/2005
L.S. Elevation (ft): 1120
Depth Drilled (ft): 100
Screen Int. (ft.): 55-60
Purpose: Observation Well - Plugged
Well Type: 2 in. - PVC
Aquifer: Page
Data Source: Rex Honeyman
Completion Info: Drilled 4.75 inch diameter hole, installed 57 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-7	CLAY	Silty, brown, moderately plastic, no inclusions, oxidized (Lacustrine)
7-11	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, very plastic, oxidized (Till)
11-17	SAND	Fine, brown, oxidized
17-61	SAND	Very fine to medium, predominantly fine sand, approximately 50% fine sand, 25% medium sand, 25% very fine sand, consisting mostly of shales and quartz with detrital lignites
61-100	CLAY	Silty to silt, clayey, gray, cohesive to non-cohesive (Lacustrine)

Date Completed: 10/20/2004
L.S. Elevation (ft): 1130
Depth Drilled (ft): 280
Purpose: Test Hole
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black, silty clay
1-7	CLAY	Silty, brown, moderately plastic oxidized (Lacustrine)
7-11	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
11-15	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, unoxidized (Till)
15-80	SAND	Very fine to medium, predominantly fine to medium sand, gray, consisting mostly of shales, with silicates and detrital lignites
80-95	SAND	Very fine to medium, predominantly fine to medium sand, gray, consisting mostly of shales, with silicates and detrital lignites, interbedded silts and clay throughout
95-172	CLAY	Sandy, silty to silt, clayey, gray (Lacustrine)
172-175	CLAY	Sandy, silty to silt, clayey, gray, with interbedded coarse sand to very fine gravel, consisting mostly of shale, with silicates (Lacustrine)
175-200	CLAY	Very silty, a few pebbles and cobbles, gray (Till)
200-268	CLAY	Silty, sandy, pebbly, cobbly in a clay matrix, moderately plastic to plastic, gray (Till), rock at 208'-209' (granitic), 223'-224' (granitic), 238'-240' (sandstone), 245'-246', (sandstone), 246'-247' (siltstone)
268-269	SHALE	Dark gray, clayey, minimal silt, very plastic, greasy (Bedrock)
269-270	SANDSTONE	Brown, moderately indurated (Bedrock)
270-280	SHALE	Dark gray, clayey, minimal silt, very plastic, greasy (bedrock)

Date Completed: 10/20/2004
L.S. Elevation (ft): 1122
Depth Drilled (ft): 100
Screen Int. (ft.): 75-80
Purpose: Well Type:
Well Type: 2 in. - PVC
Aquifer: Rex Honeyman
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, installed 77 feet of 2" PVC with a 5 foot #12 slot pvc screen. After completion of the well, it was pumped with air for approximately 8 hours, pumped very well. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. Surveyed by Advanced Engineering on 11/24/2004.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black, silty clay
1-8	CLAY	Silty, brown, moderately to very plastic, oxidized (Lacustrine)
8-15	CLAY	Silty, sandy, pebbly, inclusion in a clay matrix, brown, oxidized 8'-11', gray unoxidized 11'-15'
15-92	SAND	Very fine to medium, predominantly fine to medium, gray, consisting mostly of shales with silicates and detrital lignites
92-100	CLAY	Sandy, silty to silt, clayey, gray (Lacustrine)

145-054-26AAA
NDSWC 15160

Date Completed: 07/27/2004
L.S. Elevation (ft): 1121
Depth Drilled (ft): 280
Purpose: Test Hole
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-6	CLAY	Silty, brown, moderately plastic, oxidized (Lacustrine)
6-11	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, moderately plastic, brown, oxidized (Till)
11-19	SAND	Fine to coarse, predominantly medium, moderate sorting, brown, consists mostly of quartz, oxidized
19-66	SAND	Fine to coarse, predominantly medium, moderately sorted, subangular to rounded, consisting mostly of shales and quartz with detrital lignites throughout, gray, unoxidized more lignites and shales from 49'-66'
66-117	SILT	Slightly clayey, gray, minimal returns (Lacustrine)
117-118	ROCK	No description
118-175	SILT	Slightly clayey, gray, minimal returns (Lacustrine)
175-272	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, moderately plastic to very plastic, rock at 202'-203', 210'-211', 214'-215' (Till)
272-280	SHALE	Clay, slightly silty, black, very plastic, greasy, calcareous (Bedrock)

145-054-26AAA
NDSWC 15161

Date Completed: 07/27/2004
L.S. Elevation (ft): 1121
Depth Drilled (ft): 80
Purpose: Test Hole
Data Source: Based on Log from 14505426AAA

Completion Info: Lost Well before completion, had to drill 14505426AAA3. Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-6	CLAY	Silty, brown, moderately plastic, oxidized (Lacustrine)
6-11	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, moderately plastic, brown, oxidized (Till)
11-19	SAND	Fine to coarse, predominantly medium, moderate sorting, brown, consists mostly of quartz, oxidized
19-66	SAND	Fine to coarse, predominantly medium, moderately sorted, subangular to rounded, consisting mostly of shales and quartz, with detrital lignites throughout, gray, unoxidized, more lignites and shales from 49'-66'
66-80	SILT	Slightly clayey, gray, minimal returns (Lacustrine)

145-054-26AAA3
NDSWC 15162

Date Completed: 07/27/2004
L.S. Elevation (ft): 1121
Depth Drilled (ft): 80
Screen Int. (ft.): 58-63

Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Rex Honeyman
Data Source: Rex Honeyman

Completion Info:
Drilled 4.75 inch diameter hole, installed 60 feet of 2" PVC with a 5 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. After completion of the well, it was pumped with air for approximately 1 hour, pumped very well. Surveyed by the NDSWC on 08/31/2004.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-6	CLAY	Silty, brown, moderately plastic, oxidized (Lacustrine)
6-11	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, moderately plastic, brown, oxidized (Till)
11-19	SAND	Fine to coarse, predominantly medium, moderate sorting, brown, consists mostly of quartz, oxidized
19-66	SAND	Fine to coarse, predominantly medium, moderately sorted, subangular to rounded, consisting mostly of rounded quartz and platy shales with detrital lignites, more shales and lignites from 49'-66' (unoxidized)
66-80	SILT	Slightly clayey, gray, minimal returns (Lacustrine)

145-054-27AAA
NDSWC 15165

Date Completed: 07/28/2004
L.S. Elevation (ft): 1139
Depth Drilled (ft): 200
Screen Int. (ft.): 87-91

Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Rex Honeyman
Data Source: Rex Honeyman

Completion Info:
Drilled 4.75 inch diameter hole, installed 89 feet of 2" PVC with a 4 foot #12 slot pvc screen. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. After completion of the well, it was pumped with air for approximately 1 1/2 hours, pumped very well. Surveyed by the NDSWC on 08/31/2004.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Clay loam, black
1-6	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown, oxidized (Till)
6-26	SAND	Very fine to medium, predominantly fine to medium, moderately sorted, consisting mostly of quartz, brown, oxidized
26-32	SILT	Clayey to silty clay - very silty, gray, non cohesive to slightly cohesive, non plastic to slightly plastic (Lacustrine)
32-41	SILT	Clayey to silty clay - very silty, gray, non cohesive to slightly cohesive, non plastic to slightly plastic (Lacustrine), with interbedded sands
41-47	SILT	Clayey to silty clay - very silty, gray, non cohesive to slightly cohesive, non plastic to slightly plastic (Lacustrine)
47-72	SAND	Very fine to medium, predominantly medium, moderately sorted, consisting mostly of quartz, gray
72-95	SAND	Very fine to coarse, predominantly medium, moderately sorted, consisting mostly of shales and quartz, shales in platy form, gray
95-181	CLAY	Silty to silty clayey, gray, non plastic to very plastic (Lacustrine)
181-200	CLAY	Silty, sandy, pebbly inclusions in clay matrix, moderately plastic, gray

145-054-27CDC
NDSWC 3991

Date Completed: 06/10/1970
L.S. Elevation (ft): 1145
Depth Drilled (ft): 820
Screen Int. (ft.): 640-660

Purpose: Observation Well - Recorder
Well Type: 4 in. - Steel
Aquifer: Dakota Group
Data Source:

Completion Info:

Remarks: 4" well with a 1 1/4 pipe down inside the well it doesn't pump, replace or take off sample list,

Lithologic Log

Depth (ft) Unit	Description
0-2 TOPSOIL	Pebbly silt loam, dark brownish black
2-20 CLAY	Silty to very sandy with heavily iron-stained pebbles, dusky yellowish gray to moderate olive brown, soft to moderately soft, slightly to moderately cohesive, oxidized (Till)
20-42 CLAY	Silty to sandy with limestone and shale pebbles, olive gray, moderately soft, cohesive, slightly plastic, fairly stiff (Till)
42-75 SILT	Clayey with very fine sand, light olive to olive gray, laminated, interbedded, soft, loose to moderately cohesive, non- to slightly plastic, calcareous
75-100 CLAY	Silty and clayey silt, olive gray, soft, moderately cohesive, slightly to moderately plastic, smooth, fairly sticky, calcareous, occasional limestone pebble
100-113 SAND	Medium, light olive gray, loose, sorted and uniform, generally subrounded, mostly quartz with shale and carbonates, very brittle lignite
113-156 SILT	Clayey to sandy, interbedded, laminated, olive gray with light olive gray streaks, soft, non- to moderately cohesive, non- to moderately plastic; clayey and tighter with depth
156-200 SAND	Fine to coarse with frequent clay and silt stringers and occasional gravel and cobbles, coarse sand and gravel mostly rounded, shale and limestone, finer sand mainly quartz with shale and carbonates; thinly interbedded; taking some water
200-227 CLAY	Silty with numerous sand grains and pebbles and occasional cobbles and boulders, olive gray, moderately hard, stiff, tightly compacted, chunky (Till) rough drilling
227-238 GRAVEL	Sandy with cobbles, assorted, subangular and subrounded, mostly limestone and shale with granites; rough drilling, put on rock bit at 225
238-276 SHALE	Extremely silty to sandy (very fine), dark brown to black, soft to moderately soft, cohesive to slightly crumbly, highly calcareous oily and carbonaceous, numerous specks, contains thin seams of aragonite; oily film on drilling fluid (Greenhorn?)
276-297 SHALE	Sandy, dark brown, soft to moderately soft, crumbly, oily, calcareous; included numerous lenses of hard pyrriferous sandstone and highly calcareous aragonite or calcite; fairly rough drilling, hydrocarbon odor while burning, burns to a fine white powder, strong (Greenhorn?)

297-460 SHALE	Black, silty to sandy (very fine), slightly hard, brittle, smooth, waxy, oily, tight, highly calcareous, numerous specks and spots, aragonite or calcite seams, soft sandy and silty layers, very hard sandstone at 345', microfossils, blue micaceous bentonitic clay, pyrite crystals, shell fragments, carbonaceous (Belle Fourche?)
460-585 SILTSTONE	Clayey very fine grained sandstone, interbedded with clayey to sandy shale, variegated grays (usually light to medium) brittle to friable to indurated, calcareous, micaceous, dirty, muddy; pyrite crystals, sand fairly sharp or angular, thinly interbedded, drills easy except for indurated or pyritiferous layers (Mowry?)
585-620 SANDSTONE	Very fine to fine, gray dries white, 90% quartz, angular to subrounded, mostly subangular, slightly calcareous, indurated pyritiferous sandstone from 606' to 610' (Newcastle?)
620-665 SANDSTONE	Fine to coarse, predominantly medium, white, quartzose, predominantly subangular, loose, taking water (Skull Creek?)
665-678 SHALE	Very silty, variegated grays and greens, soft, moderately cohesive, smooth, tight, slightly calcareous Skull creek?)
678-692 SANDSTONE	Brownish pinkish gray, very fine to fine loose, subangular, sugary, calcareous
692-754 SANDSTONE	Fine to medium, grayish brown, quartzose, loose to pyritiferous and indurated, interbedded with shale, silty, variegated grays and greens, soft, occasionally oily and carbonaceous, non to slightly calcareous, sometimes chalky or marly, smooth
754-786 SANDSTONE	Loose, fine and medium, some very fine, dark gray, dries white, nearly pure quartz, sharp, sugary
786-812 SHALE (CLAY)	White, gray and bright orange, soft to medium soft, smooth, stains and smears easily, non-calcareous, siliceous powder 10' of fine to medium, brownish gray, sharp sand at bottom
812-820 SHALE	Hard, black, spotted, non-calcareous, very tight, smooth, tough

145-054-32AAA
NDSWC 15209

Date Completed: 10/21/2004
L.S. Elevation (ft): 1135
Depth Drilled (ft): 147
Screen Int. (ft.): 68-73
Purpose: Well Type: Observation Well
Acquirer: Rex Honeyman
Data Source: Rex Honeyman
Completion Info: Drilled 4.75 inch diameter hole, installed 70 feet of 2" PVC with a 5 foot #12 slot pvc screen. After completion of the well, it was pumped with air for approximately 8 hours, pumped very well. The formation was collapsed with air around the screen and the annular space was sealed with bentonite chips. Surveyed by Advanced Engineering on 11/24/2004.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black, silty clay
1-11	CLAY	Silty, sandy, occasional pebble, brown, oxidized, moderately plastic (Till)
11-41	CLAY	Silty, sandy, occasional pebble, gray, unoxidized, moderately plastic (Till)
41-56	SAND	Very fine to medium, predominantly, fine to medium with detrital lignites
56-60	CLAY	Very silty to silty, gray, non plastic to moderately plastic (Lacustrine)
60-79	SAND	Very fine to medium, predominantly, fine to medium with detrital lignites
79-138	CLAY	Very silty to silty, gray, non plastic to moderately plastic (Lacustrine)
138-147	CLAY	Silty, sandy, pebbly in a clay matrix, cobbly, moderately plastic, rock @ 147'-148' (Till)

145-054-31AAA
NDSWC 9884

Date Completed: 06/01/1977
L.S. Elevation (ft): 1121
Depth Drilled (ft): 240
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-9	SAND	Silty, clayey, dusky yellow, reddish brown stringers, oxidized
9-60	SAND	Fine to medium, predominantly medium, subangular to rounded, good sorting, 65-75% quartz, 10% carbonates, lignitic @ 24'-26', 35'-36' sand, silty, clayey, greenish black
60-72	SAND	Silty, clayey, greenish black, slightly cohesive
72-90	SILT	Clayey, pale greenish gray, cohesive
90-166	CLAY	Silty, sandy, pebbly, olive gray, cohesive (Till) @ 126'-131' sand, fine to medium, predominantly medium, as above
166-202	CLAY	Silty, sandy, pebbly, light brown, more sandy than above, slightly cohesive (Till)
202-217	CLAY	Silty, sandy, pebbly, olive gray, less sand than above, cohesive (Till)
217-224	SHALE	Macerated zone, black, greasy with light gray laminations which are calcareous
224-225	ROCK	
225-240	SHALE	As above but not macerated

145-054-32DDD
NDSWC 15210

Date Completed: 10/21/2004
L.S. Elevation (ft): 1132
Depth Drilled (ft): 280
Purpose: Test Hole
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black, silty clay
1-11	CLAY	Silty, sandy, pebbly, brown, moderately plastic, oxidized (Till)
11-261	CLAY	Silty, sandy, pebbly, gray, moderately plastic, unoxidized (Till) from 29'-35' - coarse sand to fine gravel, predominantly shales, angular to subangular, clay is more silty, minimal sand and pebbles from 80'-124'; less plastic, more cobbly from 124'-261'; rocks from 137'-139'
261-280	SHALE	Clay, minimal silt, dark gray to black, very plastic, soft to firm, slow drilling (Bedrock)

145-054-35BBB
NDSWC 15208

Date Completed: 10/21/2004
L.S. Elevation (ft): 1128
Depth Drilled (ft): 0
Purpose: Test Hole
Data Source:

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black, silty clay
1-16	CLAY	Silty, sandy, minimal pebbles, brown, oxidized, moderately plastic (Till)
16-42	CLAY	Silty, sandy, minimal pebbles, gray, unoxidized, moderately plastic (Till)
42-56	CLAY	Sandy, silty, few pebbles, gray, non plastic (Till)
56-62	SAND	Very fine to coarse, predominantly fine to medium with detrital lignites
62-83	CLAY	Sandy, silty, occasional pebbles, becomes more silty with depth, plastic to non plastic
83-178	CLAY	Silty to very silty, gray, plastic to non plastic (Lacustrine)
178-200	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, cobbly, non plastic (Till)

145-054-36CCC
NDSWC 15211

Date Completed: 10/21/2004
L.S. Elevation (ft): 1128
Depth Drilled (ft): 280
Screen Int. (ft.): 78-83
Purpose: Observation Well
Well Type: 2 in. - PVC
Acquirer: Rex Honeyman
Data Source:

Completion Info: Drilled 4.75 inch diameter hole, installed 80 feet of 2" PVC with a 5 foot #12 slot pvc screen. After completion of the well, it was pumped with air for approximately 2 hours, slow pump. Tried collapsing formation around the screen by backwashing and blowing with air, didn't collapse as planned so we backfilled with 7 bags of #10 sand around screen, the annular space was sealed with bentonite chips. Surveyed by Advanced Engineering on 11/24/2004.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black, clay loam
1-57	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, brown oxidized from 1'-18'; gray unoxidized from 18'-57'
57-101	SAND	Very fine to medium, predominantly medium sand, moderately to well sorted predominantly shales with detrital lignites, gray
101-151	CLAY	Silty, gray, no inclusions, non plastic to plastic, less silty with depth
157-277	CLAY	Silty, sandy, pebbly, moderately plastic (Till); light olive gray (SY3/2) from 164'-167'; dark olive gray (SY3/2) from 157'-164' and 167'-277'; Rock at 223'-234' (Granite - tripped out) and 233'-234' (Till)
277-280	SHALE	Clay, minimal silt, gray to black, very plastic, soft to firm, slow drilling (Bedrock)

145-055-01DDDD
NDSWC 3995

Date Completed: 06/19/1970
L.S. Elevation (ft): 1118.6
Depth Drilled (ft): 220
Screen Int. (ft.): 38-41

Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer: Undefined
Data Source:

Completion Info:

Remarks: REPLACED WITH 01DDDD2 IN SAME HOLE

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Very fine sandy loam, black
2-6	SAND	Fine and medium, silty, yellowish gray, loose, lenticular, subangular to subrounded, iron-stained, oxidized
6-20	SAND	As above, gray, lenticular, unoxidized, mostly quartz with shale
20-42	SAND	Medium, well sorted and uniform, generally subrounded, gray, predominantly quartz, with rounded black siliceous shale and some carbonates, little lignite, taking some water
42-63	SILT	Clayey to sandy, light olive gray, soft, crumbly to moderately cohesive, non- to slightly plastic, calcareous; easy drilling
63-105	SILT	Occasional thin, very fine to fine gray sand, loose to slightly cohesive, non-plastic, calcareous
105-144	CLAY	Silt with sand grains, pebbles and occasional cobbles, rock predominantly shale and limestone, few granitics, olive to dark olive gray, moderately soft to slightly hard, stiff, tough, tight (Till)
144-190	CLAY	Very sandy with numerous lenses of sand and fine gravel, rock mostly carbonates, moderately soft, fairly cohesive, gritty highly calcareous (Till), probably would make a decent well, lost some water
190-220	SILT	Shaley to sandy, dark brown to brownish black, soft to moderately soft, moderately cohesive to slightly brittle, oily, carbonaceous, tight, calcareous

145-055-01DDDD2
NDSWC 14448

Date Completed: 11/30/1999
L.S. Elevation (ft): 1118.74
Depth Drilled (ft): 50
Screen Int. (ft.): 36-41

Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Undefined
Data Source:

Completion Info: USED 38' OF 2" PVC, 5' #008 2" WELL SCREEN 1 CHECK VALVE, 4 BAGS OF # 10 SAND, 2 BAGS OF GROUT AND 8 BAGS OF HOLE PLUG.

Remarks: REPLACES 145-055-01DDDD IN SAME HOLE

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Topsoil
2-20	CLAY	Sandy silt yellowish oxidized.
20-42	SAND	Medium to very fine.
42-50	CLAY	Sandy silt, gray

145-055-03DDDD
NDSWC 3997

Date Completed: 06/22/1970
L.S. Elevation (ft): 1140
Depth Drilled (ft): 160
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Sandy loam, black
2-10	SAND	Fine to coarse with fine gravel, reddish brown, assorted, angular to subrounded, iron-stained, oxidized
10-20	SILT	Light olive gray, clayey to sandy (very fine), soft, slightly cohesive, crumbles easily calcareous
20-46	SAND	Very fine to medium, gray, sorted but lenticular, subangular to subrounded, predominantly quartz with shale and some carbonates, little lignite, loose; taking water
46-61	SILT	Clayey, light olive to olive gray, soft, slightly to moderately cohesive, slightly plastic, calcareous
61-143	CLAY	Silty to sandy with numerous coarse sand grains and pebbles (mostly shale and limestone), occasional gravelly streaks and frequent cobbles or boulders, olive gray, moderately soft, cohesive, stiff, light (Till) rough drilling
143-160	SHALE	Silty dark grayish brown with light gray splotches and streaks, slightly hard, brittle, smooth, non-calcareous, tight

145-055-04BBBB
NDSWC 8360

Date Completed: 06/26/1972
L.S. Elevation (ft): 1205
Depth Drilled (ft): 80
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, sandy, clay loam, grayish-black
1-10	SAND	Slightly gravelly, medium to very coarse grained, angular to subrounded, moderately well sorted, well oxidized
10-13	CLAY	Silty, moderately sandy, moderate yellowish-brown, pebbly, slightly cohesive, oxidized (till)
13-25	CLAY	Silty, moderately sandy, slightly gravelly, pebbly, olive gray, moderately cohesive, moderately plastic, calcareous (Till)
25-27	GRAVEL	Sandy, fine to coarse, subangular to rounded, mostly shale and carbonates
27-29	CLAY	Silty, sandy, pebbly, olive gray, cohesive, crumbly (Till)
29-31	GRAVEL	Sandy, fine to coarse, angular to rounded, poorly sorted, mostly shale
31-49	SILT	Slightly clayey, medium gray with light olive gray laminae, slightly cohesive, calcareous
49-80	SHALE	Clayey, medium dark gray, slightly indurated, a few pyrite concretions, non-calcareous, (Carlite Formation?)

145-055-04BBB2
NDSWC 15346

Date Completed: 06/14/2006
L.S. Elevation (ft): N/A
Depth Drilled (ft): 75
Purpose: Test Hole
Data Source: WMS and R. Klapperich

Completion Info:
Remarks: UND Shale Project

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	gravelly coarse sand
2-8	GRAVEL	fine gravel and coarse sand, dark brown, w/detrital shale, subangular
8-17	SAND	med. and coarse sand, dark brown, slight gravel
17-21	CLAY	silty clay, gray
21-31	SAND	coarse, w/fine gravel, shaley, @70 to 80% shale, black
31-41	CLAY	silty, gray
48-49	SHALE	black
49-54	CLAY	silty, gray, some detrital shale
54-75	SHALE	black, soft, silty, calcareous (effervescent in acid), poss. Niobrara, 0.1-0.3 cm chips.

145-055-07BBA
NDSWC 15347

Date Completed: 06/15/2006
L.S. Elevation (ft): 1245
Depth Drilled (ft): 77
Purpose: Test Hole
Data Source: WMS and R. Klapperich

Completion Info:
Remarks: UND shale study

Lithologic Log

Depth (ft)	Unit	Description
0-2	SAND	medium, brown
2-8	TILL	light yellowish brown, @20% clay, some fine sand, detrital shale flecks
8-18	TILL	with gravel lenses, med gravel, brown, fluvially reworked till
18-20	TILL	gray, unoxidized, w/gravel lenses
20-21	COBBLES	granite drill chips
21-26	TILL	dark gray, soft, some fine sand, silty
26-31	SILT	some fine sand, dark gray, @10% clay
31-55	TILL	dark gray, silty, 10-15% clay, some detrital shale, drill chatter at 48'
55-77	SILTSTONE	gray, weathered, soft, calcareous (effervescent in acid) (possible Niobrara). More clay with depth, becomes more firm

145-055-07BBB
NDSWC 4001

Date Completed: 6/1970
L.S. Elevation (ft): 1255.8
Depth Drilled (ft): 80
Screen Int. (ft.): 48-51

Observation Well - Plugged
1.25 in. - PVC
Undefined

Purpose:
Well Type:
Aquifer:
Data Source:

Completion Info:

Remarks: Plugged with rig

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Pebbly silt loam, black
1-16	CLAY	Very silty and very sandy with occasional pebbles, yellowish gray, dusky yellow and reddish brown, soft, non- to moderately cohesive, leached and oxidized, iron-stained, jointed (?) (Till)
16-29	SAND	Fine to coarse, gravelly, assorted, angular to subrounded, dirty, mostly subrounded siliceous shale with heavily iron-stained carbonates and some granites, partially oxidized
29-42	CLAY	Silty and sandy with pebbles and sandy gravel stringers, olive gray, soft to moderately soft, moderately cohesive, slightly plastic (Till)
42-49	GRAVEL	Fine, very sandy, assorted, dirty, shaley
49-53	TILL	Clayey, as above
53-74	SHALE	Very silty, very light gray, chalky, highly calcareous, soft, sticky
74-80	SHALE	Black, hard, smooth, very stiff, moderately calcareous, tight

145-055-08AAA
NDSWC 4000

Date Completed: 06/23/1970
L.S. Elevation (ft): 1188
Depth Drilled (ft): 60

Purpose: Test Hole

Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty loam, black
1-4	CLAY	Silty, nearly white to yellowish gray, occasional pebble, heavily leached (Till)
4-12	CLAY	Silty and very sandy with pebbles, yellowish gray to dusky yellow, soft, slightly cohesive, jointed (?) oxidized (Till)
12-24	SAND	Coarse with fine gravel, moderately sorted but interbedded or lenticular, loose, subangular and subrounded, fairly clean, mostly carbonates and siliceous shale with a few pink granitics
24-33	SILT	Sandy (very fine), light olive gray, soft, chunky, crumbly calcareous
33-40	CLAY	Silty with sand grains, pebbles and cobbles, olive gray, moderately soft and cohesive to slightly hard and brittle, tightly compacted (Till)
40-60	SHALE	Silty, generally brownish black, thinly interbedded with sandy streaks and bentonitic clay, calcareous to non-calcareous; drills tight

145-055-10BCBZ
NDSWC 3999

Date Completed: 06/23/1970
L.S. Elevation (ft): 1165
Depth Drilled (ft): 100
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Sandy silt loam, black
2-18	CLAY	Very silty and very sandy with frequent pebbles, yellowish gray and reddish brown, soft, crumbly to slightly cohesive, non- to slightly plastic, heavily iron-stained, oxidized (Till)
18-28	CLAY	Very silty with sand grains and pebbles, olive gray, slightly hard and brittle, chunky, (Till)
28-32	GRAVEL	Fine, sandy, assorted, angular to subrounded, mostly siliceous shale and very heavily iron-stained limestone, dirty
32-78	CLAY	Very silty to sandy with numerous coarse sand grains and pebbles, frequent cobbles and boulders and occasional blocks or layers of clay and/or silt, olive gray, moderately soft to slightly hard, cohesive, tightly compacted (Till) quite rocky right above bedrock
78-100	SHALE	Very silty, moderately soft to moderately hard, very dark brown to black, smooth, tight, non-calcareous, bentonitic

145-055-12BBB
NDSWC 3996

Date Completed: 6/1970
L.S. Elevation (ft): 1125
Depth Drilled (ft): 200
Screen Int. (ft.): 38-41
Purpose: Plugged
Well Type: 1.25 in. - PVC
Aquifer:
Data Source:

Completion Info:
Remarks:

destroyed by road construction 20CT78

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Fine sandy loam, black
2-12	SILT	Clayey fine sand with occasional pebbles, yellowish and reddish gray, soft, slightly to moderately cohesive, non- to slightly plastic, iron-stained oxidized (washed fill?)
12-49	SAND	Fine to medium with silty streaks, gray, moderately well sorted but interbedded, subangular to subrounded, predominantly quartz with shale, loose
49-72	SILT	Clayey with very fine sand, light olive gray, soft, slightly cohesive, non- to very slightly plastic, highly calcareous
72-75	GRAVEL	Fine, sandy, assorted, angular to subrounded, mostly carbonates with shale and some granitics, appears to have been oxidized at one time
75-80	CLAY	Silty with sand grains and pebbles, olive gray, moderately soft, cohesive, stiff (Till)
80-90	GRAVEL	Fine and medium, some sand, lenticular, subangular and subrounded, predominantly carbonates, few shale and granitics; moderately rough drilling
90-123	CLAY	Silty with sand grains and pebbles, olive to dark olive gray, moderately soft to slightly hard, very stiff and tightly compacted (Till) rocky
123-184	CLAY	Silty and sandy with numerous limestone and shale pebbles, olive gray, moderately soft, cohesive, slightly plastic (Till)
184-200	SHALE	Silty, dark gray, moderately soft, slightly brittle to cohesive, smooth, tight, non-calcareous, limestone stringers?

145-055-13AAA
NDSWC 8359

Date Completed: 6/1972
L.S. Elevation (ft): 1126.7
Depth Drilled (ft): 240
Screen Int. (ft.): 48-51

Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer: Page

Completion Info:

Remarks: Same hole replaced by 13AAA2

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, clayey, pebbly loam grayish-black
1-8	CLAY	Silty, moderately sandy to sandy, pebbly, moderate yellowish-brown, slightly cohesive, crumbly oxidized (Till) gopher holes, taking water mixed 5 mud
8-51	SAND	Slightly clayey, very fine to coarse grained (mostly fine to medium), subangular to rounded, moderately well sorted, oxidized to about 30 feet, lignitic, taking some water
51-72	SILT	Clayey, medium gray with light olive gray laminae, slightly cohesive, highly calcareous
72-220	CLAY	Very silty, sandy, pebbly, numerous cobbles, boulders, olive gray, moderately cohesive, lightly plastic, crumbly (till)
220-240	SHALE	Grayish-brown, occasional small white specks, a few pyrite nodules, moderately indurated, highly calcareous (Greenhorn Formation)

145-055-13AAA2
NDSWC 14450

Date Completed: 11/30/1999
L.S. Elevation (ft): 1126.7
Depth Drilled (ft): 58
Screen Int. (ft.): 46-51

Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Page

Completion Info:

Remarks: 48" 2" PVC PIPE, 5' #008 2" WELL SCREEN, SET 44' OF 1 1/4" TREWMIE LINE, USED 3 BAGS OF #10 SAND 2 BAGS OF GROUT AND 6 BAGS OF HOLE PLUG

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Topsoil
1-8	SAND	Oxidized yellowish sand with silt clay.
8-51	SAND	Gray fine to medium.
51-58	SAND	Gray sand with silty clay.

153

145-055-15DAD
NDSWC 4296

Date Completed: 10/31/1970
L.S. Elevation (ft): 1137
Depth Drilled (ft): 220

Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty loam, black
1-4	SILT	Sandy, yellowish gray, soft, slightly cohesive, laminated, leached
4-16	CLAY	Silty and sandy with occasional coarse sand grains and thin sand and gravel stringers, dusky yellow, soft, loose to moderately cohesive, oxidized (Till)
16-20	SILT	Light olive gray, soft, chunky, crumbly, laminated, light weight
20-24	SAND	Medium to coarse, tannish gray, loose, sorted, subrounded, clean
24-36	SAND	Fine and medium, gray, moderately well sorted, subrounded, quartzose with some shale and occasional lignite, loose, fairly clean, clayey silt, streak from 29'-31'
36-60	CLAY	Very silty to very sandy with pebbles, cobbles and boulders, olive gray, soft to moderately soft, moderately cohesive (Till), very rocky, rough drilling
60-92	CLAY	Silty, olive gray, soft, cohesive, moderately plastic, slightly sticky, fairly large pliable cuttings
92-126	SAND	Medium to very coarse but probably very silty, drills funny sample return poor (not much sand, silt probably carrying over in drilling mud), drills very lenticular
126-138	SAND	Fine, gray, getting progressively more silty and more clayey with depth, drills smooth and easy, practically no sample return
138-162	CLAY	Silty with sand grains, pebbles, cobbles, and occasional boulders, olive gray, moderately soft, cohesive, stiff, tough (Till)
162-170	GRAVEL	Fine and medium, sandy, dirty, generally subrounded, mostly carbonate and shale with granites; didn't drill too bad
170-184	TILL	As above, rocky, silty, clay, olive gray, tough
184-220	SHALE	Silty, very light gray with interbedded dark brown, carbonaceous shale, moderately hard, smooth, very tight, calcareous

154

145-055-23CCC
NDSWC 3998

Date Completed: 06/22/1970
L.S. Elevation (ft): 1135
Depth Drilled (ft): 160
Screen Int. (ft.): 28-31

Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks: plowed up, couldn't find IDEC82. Reported destroyed on 10/13/94.

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Sandy loam, black
2-5	CLAY	Silty and sandy, very light to yellowish gray, soft, very slightly cohesive, nonplastic
5-32	SAND	Medium to coarse with fine gravel, subangular and subrounded, varicolored (nearly white mostly limestone, nearly black-mostly shale), interbedded or lenticular, clean, no clay; taking water, occasional cobblestone
32-58	CLAY	Silty and sandy with numerous pebbles and gravel stringers, occasional cobbles, olive gray, moderately soft, cohesive (Till)
58-115	CLAY	Silty and sandy with pebbles and fine gravel stringers, occasional cobbles and boulders, olive gray, moderately soft, cohesive, stiff (Till) pebbles and cobbles mainly siliceous shale and limestone
115-160	SHALE	Very silty, soft to moderately soft, very cohesive and plastic, sticky, smooth, waxy, very dark brown, non-calcareous, contains layers of light blue, non-calcareous, slightly hard bentonitic clay

145-055-27DDD
NDSWC 4297

Date Completed: 11/1970
L.S. Elevation (ft): 1141
Depth Drilled (ft): 240
Screen Int. (ft.): 57-63

Purpose: Observation Well - Destroyed
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks: replace or take off sample list, slow pumper

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Gravelly silt loam, black
1-10	GRAVEL	Fine, sandy, assorted, subangular and subrounded, predominantly iron-stained carbonates, black, tabular shale and granites, loose, oxidized, dry
10-55	CLAY	Very silty and sandy with occasional coarse sand grains, pebbles and cobbles, contains much clayey very fine sand and lenses of medium to coarse sand and fine shaley gravel, light olive to olive gray, loose to moderately cohesive (Till) small abraded samples
55-63	GRAVEL	Fine, sandy, poorly sorted, generally subrounded, clean, mostly granitics and carbonates with some shale, no large loss of drilling fluid
63-86	SAND	Fine to medium, silty to slightly clayey in spots, generally light olive gray in color, loose to slightly cohesive but crumbly, laminated and interbedded
86-89	CLAY	Dark olive gray, moderately soft, cohesive, stiff, smooth
89-98	SILT	Clayey to sandy, light olive gray soft, chunky, crumbly, laminated
98-105	GRAVEL	Fine, sandy, poorly sorted, generally subrounded, predominantly carbonates and shale with some granitics, loose
105-219	CLAY	Silty too sandy with pebbles and occasional cobbles, olive gray, moderately soft to slightly hard, cohesive, stiff, tough (Till) drills good
219-240	SHALE	Silty, medium dark gray to brownish black, smooth, slightly to moderately hard, very light, waxy, calcareous (Carlyle?)

146-053-02AAD
NDSWC 7

Date Completed: 01/01/1947
L.S. Elevation (ft): 982
Depth Drilled (ft): 335
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Black, sandy
2-20	CLAY	Yellow, pebbly
20-35	CLAY	Blue-gray
35-110	TILL	Light-gray, gravelly and bouldery clay
110-155	TILL	Medium-gray, bouldery clay
155-210	TILL	Dark-gray, bouldery clay
210-227	CLAY	Dark-brown
227-290	CLAY or SHALE	Dark-gray
290-320	SILT or SILTSTONE	Clay or shale
320-335	SILTSTONE	Light-gray, fine, sandy

146-053-02ABC
NDSWC 8

Date Completed: 01/01/1948
L.S. Elevation (ft): 995
Depth Drilled (ft): 427
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Black
2-11	TILL	Gray, pebbly clay
11-40	SILT	Yellow, shell fragments
40-56	CLAY	Gray, compact, fissile
56-70	TILL	Gray, sandy with shale pebbles
70-71	SHALE	Gravel
71-90	TILL	Gray clay with shale and limestone pebbles
90-110	TILL	Dark-gray, sandy, pebbly clay
110-150	TILL	Bouldery clay
150-180	TILL	Gray clay with shale and limestone pebbles
180-210	CLAY	Gray, sandy, gravelly
210-380	SHALE	Siltstone interbedded, gray
380-400	CLAY	White to pink
400-427	CLAY	Light-brown

146-053-02DCC
NDSWC 102

Date Completed: 05/13/1960
L.S. Elevation (ft): 989
Depth Drilled (ft): 87
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Black
2-7	CLAY	Olive-gray
7-10	CLAY	Brownish-gray
10-20	CLAY	Light-brownish-gray, plastic
20-25	CLAY	Smooth, brownish-gray
25-82	CLAY	Clay, silty, olive-gray
82-87	CLAY	Gray, with fine and coarse gravel (till)

146-053-02DDC
NDSWC 101

Date Completed: 05/12/1960
L.S. Elevation (ft): 981
Depth Drilled (ft): 37
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Black
2-22	CLAY	Smooth, yellow to brown, oxidized
22-37	CLAY	Smooth, gray

146-053-05A BB
NDSWC 6

Date Completed: 01/01/1947
L.S. Elevation (ft): 995
Depth Drilled (ft): 117
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-12	TILL	Yellow clay with shale and limestone pebbles
12-21	SAND	Mostly fine, gravelly
21-29	TILL	Yellow gravelly clay
29-89	SILT	Gray, gravelly
89-117	TILL	Bouldery clay

146-053-05DCC
NDSWC 31

Date Completed: 01/01/1948
L.S. Elevation (ft): 1039
Depth Drilled (ft): 37
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Black, gravelly
2-7	SAND	Light-tan, fine to medium
7-32	SAND	Tan to gray, very fine to fine
32-37	CLAY	Olive-gray

146-053-07AAA
NDSWC 32

Date Completed: 01/01/1948
L.S. Elevation (ft): 1059
Depth Drilled (ft): 47
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Black, sandy
2-22	SAND	Tan to gray, very fine to fine
22-42	SAND	Light-tan, very fine, clayey
42-47	CLAY	Light-gray, silty

146-053-07BAA
NDSWC 33

Date Completed: 01/01/1948
L.S. Elevation (ft): 1063
Depth Drilled (ft): 52
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Black, sandy
2-7	SAND	Tan, fine, contains some calcareous cement
7-12	SAND	Light-brown, fine
12-17	SAND	Grayish-tan, very fine to fine
17-27	SAND	Gray, very fine, clayey
27-47	SILT	Very fine sand, gray
47-52	CLAY	Light-gray, silty, compact

146-053-07DDD
NDSWC 3

Date Completed: 01/01/1946
L.S. Elevation (ft): 1080
Depth Drilled (ft): 169
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-10	GRAVEL	Fine to coarse, and sand
10-24	SAND	A little gravel
24-70	TILL	Sandy and gravelly clay
70-105	SAND	Fine, with a very little gravel
105-135	TILL	Sandy clay
135-169	TILL	Sandy, and bouldery clay

146-053-08AAA
NDSWC 30

Date Completed: 01/01/1948
L.S. Elevation (ft): 1026
Depth Drilled (ft): 37
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Black, sandy
2-32	SAND	Light-tan, very fine, silty
32-37	CLAY	Light-gray

146-053-08CDD
NDSWC 4

Date Completed: 01/01/1947
L.S. Elevation (ft): 1062
Depth Drilled (ft): 161
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-5	TILL	Gravelly, gray clay
5-70	SAND	Fine
70-115	SAND	Very fine to fine, silty
115-141	TILL	Clay with shale pebbles and limestone boulders
141-148	SAND	Gravelly and boulders
148-161	TILL	Sandy and gravelly clay

146-053-08DDD
NDSWC 5

Date Completed: 01/01/1947
L.S. Elevation (ft): 1046
Depth Drilled (ft): 156
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-4	SAND	Mostly fine, with a little gravel
4-13	TILL	Yellow gravelly clay
13-20	TILL	Gray gravelly clay
20-35	SAND	Very fine to fine
35-60	TILL	Gray clay with shale and limestone pebbles
60-80	SAND	Fine
80-108	TILL	Sandy and gravelly clay
108-156	TILL	Bouldery clay

146-053-16CBB
NDSWC 22

Date Completed: 01/01/1948
L.S. Elevation (ft): 1048
Depth Drilled (ft): 102
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-12	CLAY	Mottled yellow and gray, silty
12-27	SHALE	Gravel, fine, clayey; lignite flakes

146-053-16CCC
NDSWC 23

Date Completed: 01/01/1948
L.S. Elevation (ft): 1051
Depth Drilled (ft): 102
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	CLAY	Yellow, sandy
2-7	SAND	Light-brown, fine
7-32	SAND	Light-gray, silty
32-37	SAND	Light-tan, very fine
37-72	SAND	Light-gray, very fine
72-102	SAND	Light-brown, very fine, silty

146-053-19AAA
NDSWC 8378

Date Completed: 06/30/1972
L.S. Elevation (ft): 1083
Depth Drilled (ft): 140
Screen Int. (ft.): 77-80

Observation Well - Plugged
1.25 in. - PVC
Page

Purpose: Well Type:
Aquifer:
Data Source:

Completion Info:

Remarks: Well plugged by SWC drill rig, on 9/29/1994.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, sandy, clay loam grayish-black
1-22	CLAY	Very silty, sandy, pebbly, slightly gravelly, moderate yellow-brown, slightly cohesive, crumbly, oxidized (till)
22-63	CLAY	Very silty, sandy, a few pebbles, olive gray, slightly cohesive, crumbly, calcareous (till)
63-90	SAND	Silty, slightly clayey, very fine to fine-grained, subangular to subrounded, moderately well sorted, lignitic
90-120	CLAY	Very silty, olive gray with light olive gray laminae, moderately cohesive, highly plastic, calcareous
120-140	CLAY	Silty, moderately sandy, pebbly, olive gray, moderately cohesive, moderately plastic, calcareous (till)

146-053-20AAA
NDSWC 8379

Date Completed: 06/30/1972
L.S. Elevation (ft): 1062
Depth Drilled (ft): 120

Purpose: Test Hole

Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, slightly sandy, clay loam, grayish-black
1-8	SAND	Silty, slightly clayey, very fine to medium-grained, subrounded, oxidized
8-15	SILT	Slightly clayey, moderate yellowish-brown, slightly cohesive, crumbles easily, oxidized
15-18	SAND	Fine to medium-grained, well sorted, subrounded, lignitic
18-38	SILT	Clayey, sandy, olive gray, slightly cohesive, crumbly, highly calcareous
38-58	SAND	Silty, slightly clayey, very fine to fine-grained, moderately well sorted, subrounded, lignitic, not taking water
58-102	SILT	Clayey, medium gray with light olive gray laminae, slightly to moderately cohesive, slightly plastic, highly calcareous
102-120	CLAY	Silty, sandy, pebbly, olive gray, cohesive, crumbly, calcareous (till)

146-053-20DDDD
NDSWC 8380

Date Completed: 06/30/1972 Purpose: Test Hole
L.S. Elevation (ft): 1065
Depth Drilled (ft): 120 Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-6	SAND	Slightly gravelly, clayey, fine to coarse-grained, subangular to subrounded, moderately well sorted, oxidized
6-39	SILT	Slightly clayey, slightly sandy, medium gray with some light olive gray laminae, slightly cohesive, crumbly, highly calcareous
39-55	SAND	Clayey, very silty, very fine to fine-grained, subrounded, lignitic, very dirty
55-95	CLAY	Very silty, an occasional pebble, olive gray with light olive gray mottling, moderately cohesive, highly plastic, highly calcareous
95-120	CLAY	Silty, moderately sandy to sandy, pebbly, olive gray, cohesive, slightly plastic, calcareous (till)

146-053-21BCC
NDSWC 24

Date Completed: 1948 Purpose: Test Hole
L.S. Elevation (ft): 1055
Depth Drilled (ft): 102 Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Black, sandy
2-7	SAND	Light-tan, fine, silty
7-17	SAND	Light-gray, fine to very fine
17-82	SAND	Light-gray, very fine, silty and clayey
82-102	CLAY	Light-gray, silty and sandy

167

146-053-28BBB
NDSWC 25

Date Completed: 01/01/1948 Purpose: Test Hole
L.S. Elevation (ft): 1064
Depth Drilled (ft): 102 Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Black, sandy
2-12	SAND	Light-tan, fine to very fine
12-22	SAND	Light-gray, clayey
22-52	SAND	Light-gray, fine
52-62	SAND	Light-gray, very fine, clayey
62-92	SAND	Light-gray, fine
92-102	TILL	Sandy and gravelly clay

146-053-28CCC
NDSWC 208

Date Completed: 01/01/1960 Purpose: Test Hole
L.S. Elevation (ft): 1080
Depth Drilled (ft): 32 Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-12	SAND	Very fine to fine, dark-brown, clayey
12-20	SAND	Very fine to fine, olive-brown, silty
20-32	CLAY	Sandy, light-gray

168

146-053-28CDD3
NDSWC 2

Date Completed: 01/01/1947
L.S. Elevation (ft): 1050
Depth Drilled (ft): 216
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-3	TOPSOIL	Black, sandy
3-20	SAND	Fine, with a very little gravel
20-40	SAND	Fine
40-55	SAND	Very fine to fine, silty
55-70	SAND	Fine, silty and clayey
70-105	TILL	Sandy clay with shale pebbles
105-175	TILL	Sandy and bouldery clay
175-185	GRAVEL	Clayey
185-216	TILL	Sandy and bouldery clay

146-053-28DDC3
NDSWC 143

Date Completed: 01/01/1960
L.S. Elevation (ft): 1032
Depth Drilled (ft): 17
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-15	CLAY	Sandy, light-brown to buff, oxidized
15-17	CLAY	Smooth, gray

169

146-053-29AAA
NDSWC 15133

Date Completed: 07/01/2004
L.S. Elevation (ft): 1065
Depth Drilled (ft): 270
Purpose: Test Hole
Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-5	CLAY	Silty, sandy, brown (Lacustrine)
5-7	CLAY	Silty, sandy, pebbly, inclusions in a clay matrix, brown, oxidized (Till)
7-22	CLAY	Silty, sandy, pebbly, inclusions in a clay matrix, gray, unoxidized (Till)
22-26	CLAY	Silty, very clayey, plastic, massive (Lacustrine)
26-42	SAND	Very fine, well sorted
42-92	CLAY	Very silty, no inclusions, gray (Lacustrine)
92-111	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, moderately soft, gray to black (Till)
111-158	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, moderately soft, gray to black, with interbedded sand and gravel throughout, gravels consist mostly of shales and carbonates (Till)

158-160 GRAVEL
Fine to coarse, predominantly carbonates, subangular to subrounded

160-169 CLAY
Silty, sandy, pebbly inclusions in a clay matrix, moderately soft, gray to black, with interbedded sands (Till)

169-171 SAND
Fine to coarse, gray

171-177 CLAY
Silty, sandy, pebbly inclusions in a clay matrix, moderately soft, gray to black, with interbedded sands (Till)

177-178 ROCK
No description

178-181 CLAY
Silty, sandy, pebbly inclusions in a clay matrix, moderately soft, gray to black, with interbedded gravels, consisting mostly of shales and carbonates (Till)

181-182 ROCK
No description

182-204 CLAY
Silty, sandy, pebbly inclusions in a clay matrix, moderately soft, gray to black, with interbedded gravels, consisting mostly of shales and carbonates (Till)

204-220 CLAY
Silty, sandy, pebbly inclusions in a clay matrix, moderately soft, gray to black, very firm with interbedded gravels, consisting mostly of shales and carbonates (Till)

170

146-053-29BBB
NDSWC 8377

Date Completed: 1972
L.S. Elevation (ft): 1082
Depth Drilled (ft): 120
Screen Int. (ft.): 37-40

Purpose: Observation Well - Destroyed
Well Type: 1.25 in. - ABS
Aquifer: Page
Data Source:

Completion Info:
Remarks: 9/23/99 KKKUNZ COULDN'T LOCATE WELL. IT'S BELIEVED THIS WELL HAS BEEN DESTROYED BY FARMING.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, sandy, clay loam grayish-black
1-40	SAND	Slightly clayey, silty, very fine to medium-grain (mostly very fine to fine), subrounded, shaley, lignitic, taking some water, occasional thin silty clay layers, well sorted
40-50	SILT	Sandy, clayey, medium gray, slightly cohesive, samples washing out in mud
50-65	SAND	Silty very fine to fine-grained, subrounded, well sorted, a few thin clay layers, lignitic, shaley
65-102	CLAY	Very silty, olive gray, moderately cohesive, highly plastic, highly calcareous
102-120	CLAY	Silty, moderately sandy, pebbly, olive gray, cohesive, moderately plastic, calcareous (till)

146-053-29CBC
NDSWC 8497

Date Completed: 09/20/1972
L.S. Elevation (ft): 1088
Depth Drilled (ft): 100
Screen Int. (ft.): 37-40

Purpose: Observation Well - Destroyed
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:
Remarks: Well has been destroyed. Reported 10/4/1994.

Lithologic Log

Depth (ft)	Unit	Description
0-9	SILT	Slightly clayey, sandy, moderately yellowish-brown, slightly cohesive, crumbly, oxidized
9-14	SILT	Slightly clayey, medium gray, laminated, crumbly, highly calcareous
14-25	SAND	Slightly silty, very fine to medium, mostly very fine to fine, subangular to rounded, moderately well sorted, lignitic, shaley - taking some water
25-62	SAND	A few thin sandy silt interbeds, very fine to medium, mostly fine to medium, subangular to rounded, moderately well sorted, lignitic taking some water
62-100	SILT	Moderately clayey to clayey, a few thin sand layers from 65'-80', olive gray, slightly cohesive, slightly plastic, becomes more clayey with depth, highly calcareous

220-221 ROCK No description
221-257 CLAY Silty, sandy, pebbly inclusions in a clay matrix, moderately soft, gray to black, very firm with interbedded gravels, consisting mostly of shales and carbonates (Till)
257-270 SHALE Black, soft, very plastic, cohesive (Bedrock)

146-053-29AAA2
NDSWC 15134

Date Completed: 07/01/2004
L.S. Elevation (ft): 1065
Depth Drilled (ft): 40
Screen Int. (ft.): 30-35

Purpose: Observation Well
Well Type: 2 in. - PVC
Aquifer: Page
Data Source: Rex Honeyman

Completion Info:
Remarks: Drilled 4.75 inch diameter hole, installed 32 feet of 2" PVC with a 5 foot #12 slot pvc screen. Screen was sand packed with #10 sand and annular space above the screen was sealed with bentonite chips. After completion of well, it was pumped for approximately 5 hours, pumped very well. Surveyed by the NDSWC on 08/31/2004.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-5	SAND	Very fine, brown, well sorted
5-7	CLAY	Silty, sandy pebbly inclusions in a clay matrix, brown, oxidized (Till)
7-22	CLAY	Silty, sandy pebbly inclusions in a clay matrix, gray, unoxidized (Till)
22-26	CLAY	Silty very clayey, plastic, massive (Lacustrine)
26-40	SAND	Very, fine, well sorted

146-053-29DAA
NDSWC 8500

Date Completed: 9/1972
L.S. Elevation (ft): 1082
Depth Drilled (ft): 100
Screen Int. (ft.): 57-60

Purpose: Observation Well - Destroyed
Well Type: 1.25 in. - ABS
Aquifer: Page
Data Source:

Completion Info:

Remarks: Well reported to have been destroyed 9/4/1994.

Lithologic Log

Depth (ft)	Unit	Description
0-0.5	TOPSOIL	Very silty, sandy loam, brownish black
0.5-4	SILT	Sandy, slightly clayey, dusky yellow, crumbly, well oxidized
4-8	SAND	Silty, very fine to medium, moderately well sorted, subangular, oxidized
8-20	SILT	Slightly sandy, slightly clayey, medium gray, slightly cohesive, crumbly, highly calcareous
20-78	SAND	A few thin sandy silt interbeds, very fine to medium, mostly fine, subangular to rounded, well sorted, some lignite and shale, taking some water
78-96	SILT	Slightly clayey, medium gray with light brownish-gray mottling and laminae, crumbles easily, highly calcareous
96-100	CLAY	Moderately silty, medium dark gray with brownish-gray mottling, slightly sandy, pebbly, moderately cohesive, slightly plastic, calcareous (till)

146-053-31AAA
NDSWC 15131

Date Completed: 07/01/2004
L.S. Elevation (ft): 1095
Depth Drilled (ft): 270

Purpose: Test Hole

Data Source: Rex Honeyman

Completion Info: Drilled 4.75 inch diameter hole, sealed hole with bentonite chips

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-9	SAND	Very fine to fine grained, predominantly very fine, brown, well sorted, subrounded, mixed mineralogy, oxidized
9-10	GRAVEL	Fine to medium grained, mixed mineralogy, oxidized
10-17	SAND	Very fine to fine grained, predominantly very fine, brown, well sorted, subrounded, mixed mineralogy, oxidized
17-22	SAND	Very fine to fine grained, predominantly very fine, gray, well sorted, subrounded, mixed mineralogy, unoxidized
22-29	SILT	Very clayey, gray, slightly cohesive, slightly plastic, soft (Lacustrine)
29-39	SAND	Very fine to fine
39-48	CLAY	Very, silty, sandy, gray, moderately plastic, no inclusions (Lacustrine)
48-68	CLAY	Very, silty, sandy, gray, moderately plastic, no inclusions, with interbedded fine sands (Lacustrine)
68-86	CLAY	Very, silty, sandy, gray, moderately plastic, no inclusions (Lacustrine)
86-87	GRAVEL	Coarse sand to medium gravel, predominantly fine gravel, consisting mostly of shales
87-103	CLAY	Very, silty, sandy, gray, moderately plastic, no inclusions (Lacustrine)
103-147	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, slightly plastic, layers of gravel consisting of angular to subrounded carbonates (Till)
147-148	ROCK	Granitic
148-163	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, slightly plastic, layers of coarse gravel consisting of angular to subrounded carbonates (Till)
163-187	CLAY	Sandy, silty, pebbly inclusions in a clay matrix, very gritty
187-192	GRAVEL	Medium to very coarse with rocks, consisting mostly of carbonates, angular to subrounded

Date Completed: 07/01/2004
 L.S. Elevation (ft): 1092
 Depth Drilled (ft): 40
 Screen Int. (ft.): 31-36
 Purpose: Well Type: Observation Well
 Well Type: 2 in. - PVC
 Acquirer: Rex Honeyman
 Data Source: Rex Honeyman
 Completion Info: Drilled 4.75 inch diameter hole, installed 33 feet of 2" PVC with a 5 foot #12 slot pvc screen. Screen was sand packed with #10 sand and annular space above the screen was sealed with bentonite chips. After completion of well, it was pumped for approximately 1/2 hours, pumped very well. Surveyed by the NDSWC on 08/31/2004.

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-9	SAND	Very fine to fine grained, predominantly fine sand, brown, well sorted, subrounded, mixed mineralogy, oxidized
9-10	GRAVEL	Fine to medium grained, mixed mineralogy, oxidized
10-17	SAND	Very fine to fine grained, predominantly fine, brown, well sorted, subrounded, mixed mineralogy, oxidized
17-22	SAND	Very fine to fine grained, predominantly fine, gray, well sorted, subrounded, mixed mineralogy, unoxidized
22-29	SILT	Very clayey, gray, slightly cohesive, slightly plastic, soft (Lacustrine)
29-39	SAND	Very fine to fine, predominantly fine, gray
39-40	CLAY	Very silty, sandy, gray, moderately plastic, no inclusions (Lacustrine)

192-201 CLAY Sand, silty, pebbly inclusions in a clay matrix, very gritty
 201-210 CLAY Silty, sandy, pebbly inclusions in a clay matrix, slightly plastic, layers of coarse gravel consisting of angular to subrounded carbonates (Till)
 210-228 CLAY Sand, silty, pebbly inclusions in a clay matrix, gritty, brown (Till)
 228-229 ROCK Granitic
 229-234 CLAY Sand, silty, pebbly inclusions in a clay matrix, gritty, brown (Till)
 234-235 ROCK Granitic
 235-246 CLAY Sand, silty, pebbly inclusions in a clay matrix, gritty, brown (Till)
 246-252 CLAY Sand, silty, pebbly inclusions in a clay matrix, gritty, brown, very firm (Till)
 252-253 ROCK Granitic
 253-260 CLAY Sand, silty, pebbly inclusions in a clay matrix, gritty, brown (Till)
 260-263 SANDSTONE Light brown, moderately indurated (Bedrock)
 263-270 SHALE Black, soft, very plastic, cohesive, layers of bentonite (Bedrock)

146-053-32ABB
NDSWC 8496

Date Completed: 09/19/1972
L.S. Elevation (ft): 1096
Depth Drilled (ft): 100
Screen Int. (ft.): 57-60

Purpose: Observation Well - Destroyed
Well Type: 1.25 in. - PVC
Aquifer: Page
Data Source:

Completion Info:

Remarks: Well was destroyed. Reported 10/4/1994.

Lithologic Log

Depth (ft)	Unit	Description
0-24	SAND	Silty, very fine to medium (mostly fine) well sorted, subangular to rounded, oxidized to about 15' below land surface, taking water
24-29	SILT	Interbedded with sand, slightly clayey medium gray, crumbly, samples washing out
29-73	SAND	Very fine to medium (mostly fine) subangular to rounded, moderately well sorted, taking some water, not caving in clean-looking sand a few thin clayey silt interbeds below 40'
73-90	CLAY	Very silty to silty, olive gray, cohesive, highly plastic, highly calcareous
90-100	CLAY	Silty, moderately sandy, pebbly, medium dark gray, cohesive, moderately plastic, calcareous (till)

Date Completed: 1960
L.S. Elevation (ft): 1096
Depth Drilled (ft): 42

Purpose: Test Hole

Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-10	SAND	Very fine to fine
10-20	SAND	Very fine to fine, light-brown, silty
20-42	SAND	Very fine to fine, light-gray, silty

146-053-37CBB
NDSWC 8498

Date Completed: 09/20/1972
L.S. Elevation (ft): 1089
Depth Drilled (ft): 100
Screen Int. (ft.): 32-35

Purpose: Observation Well - Destroyed
Well Type: 1.25 in. - ABS
Aquifer: Page
Data Source:

Completion Info:

Remarks: Well was destroyed. Reported 10/4/1994.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, sandy, clay loam, brownish-black
1-4	SILT	Sandy, slightly clayey, dusky yellow, slightly cohesive, crumbly, oxidized
4-25	SAND	Slightly silty, very fine to medium, mostly fine to medium, subrounded, well sorted, lignitic, some shale, taking some water
25-31	SILT	Slightly clayey, sandy, medium gray, laminated, crumbly, highly calcareous
31-39	SAND	Slightly silty, very fine to medium, mostly fine to medium, subangular to rounded, moderately well sorted, taking some water, lignitic
39-95	SILT	Slightly to moderately clayey, medium gray, some thin light olive gray laminae, becomes more clayey with depth, slightly to moderately cohesive, slightly plastic, highly calcareous
95-100	CLAY	Moderately silty, pebbly, medium dark gray, moderately cohesive, moderately plastic, calcareous (till)

146-053-32DDD
NDSWC 8384

Date Completed: 7/1972
L.S. Elevation (ft): 1095
Depth Drilled (ft): 120
Screen Int. (ft.): 57-60

Purpose: Well Type:
Aquifer:
Data Source:

Observation Well - Plugged
1.25 in. - ABS
Page

Completion Info:

Remarks: Well plugged by SWC drill rig, on 10/5/1994.

Lithologic Log

Depth (ft)	Unit	Description
0-12	TOPSOIL	Very sandy, silty, brown
12-42	SAND	Slightly silty, occasional clay layers, slightly clayey, very fine to medium-grained, subangular to subrounded, well sorted, oxidized to about 15', taking some water
42-46	SILT	Moderately clayey, medium gray, slightly cohesive, calcareous, poor samples
46-80	SAND	Silty, occasional thin clay layers, very fine to medium-grained (mostly fine), subangular to rounded, well-sorted, shaley, lignitic, taking some water
80-120	CLAY	Silty, olive gray to medium gray, moderately cohesive, plastic, highly calcareous

146-053-33BAA
NDSWC 8495

Date Completed: 9/1972
L.S. Elevation (ft): 1056
Depth Drilled (ft): 100
Screen Int. (ft.): 37-40

Purpose: Well Type:
Aquifer:
Data Source:

Observation Well - Plugged
1.25 in. - ABS
Page

Completion Info:

Remarks: Well plugged by SWC drill rig, on 10/5/1994

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy, silty clay loam, brownish-black
1-14	SAND	Silty, very fine to medium, moderately well sorted, oxidized, taking water
14-19	SILT	Slightly sandy clayey, medium gray, light gray laminae, crumbles easily
19-32	SAND	Very fine to medium, mostly fine, subangular to rounded, moderately well sorted, taking some water
32-36	SILT	Moderately clayey, medium gray, laminated, crumbly, highly calcareous
36-43	SAND	Very fine to fine, subrounded, well sorted, shaley
43-76	SILT	Moderately clayey to clayey, medium gray to olive gray, slightly cohesive, crumbly, highly calcareous
76-100	CLAY	Silty, moderately sandy, pebbly, a few cobbles, medium dark gray, cohesive, moderately plastic, calcareous (till)

146-053-33BBB
NDSWC 1

Date Completed: 1947
L.S. Elevation (ft): 1080
Depth Drilled (ft): 172
Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Black, sandy
2-20	SAND	Brown, fine to medium, gravelly
20-25	SAND	Gray, medium, clayey
25-70	SAND	Very fine to fine, silty
70-85	SAND	Fine, some lignite pebbles, silty
85-95	SAND	Very fine, silty
95-107	TILL	Very sandy clay
107-151	TILL	Gray sandy clay with shale pebbles
151-172	TILL	Clay, sand and boulders

146-053-33BBB1
NDSWC 8385

Date Completed: 07/10/1972
L.S. Elevation (ft): 1083
Depth Drilled (ft): 120
Screen Int. (ft.): 42-45
Purpose: Observation Well - Plugged
Well Type: 1.25 in. - ABS
Aquifer:
Data Source:

Completion Info: Surveyed by the NDSWC on 08/31/2004.
Re-surveyed by Advanced Engineering on 11/24/2004.

Remarks: EAST WELL
10/20/04 - Backwashed and got the well to pump much better

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Sandy, silty, brown
1-18	SAND	Silty, very fine to medium-grained, subrounded, well sorted, oxidized to about 15' taking water
18-32	SILT	Clayey, medium gray, cohesive, slightly plastic, highly calcareous
32-36	SAND	Very fine to medium grained, well sorted, rounded, clean, lignitic
36-38	CLAY	Very silty, slightly sandy, medium gray, moderately cohesive, highly plastic calcareous
38-47	SAND	Silty, very fine to fine-grained, subrounded, well sorted, shaley, lignitic
47-97	CLAY	Very silty to silty, dark gray to medium gray, very plastic, cohesive, highly calcareous
97-120	CLAY	Silty, moderately sandy, pebbly, olive gray, cohesive, moderately plastic, calcareous (till)

146-053-33BBB2
NDSWC 15130

Date Completed: 06/30/2004
L.S. Elevation (ft): 1083
Depth Drilled (ft): 220
Screen Int. (ft.): 162-172

Purpose: Observation Well - Plugged
Well Type: 2 in. -PVC
Aquifer: Unnamed
Data Source: Rex Honeyman

Completion Info: 164' - 2 inch PVC, 10' - #18 slot screen; Well was sand packed around screen and annular space above the screen was sealed with high solids grout. After grout settled the upper portion of the annular space was sealed with bentonite chips; After completion of well, it was pumped for several hours, but did not pump very well, tried to further develop well but did not get a better response. May be in a isolated lens of gravel. Surveyed by the NDSWC on 08/31/2004. Re-surveyed by Advanced Engineering on 11/24/2004.

Remarks: WEST WELL

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-17	SAND	Fine grained, brown, well sorted, oxidized
17-20	SAND	Very fine, gray, well sorted, unoxidized with detrital lignites
20-36	SILT	Clayey, gray, slightly cohesive, slightly plastic
36-48	SAND	Fine, gray
48-58	CLAY	Silty, gray, with lenses of fine sand
58-62	SAND	Very fine with lenses of silty clay, gray
62-83	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, very gritty, soft, slightly cohesive (Till)
83-103	CLAY	Slightly silty, very clayey, gray, massive, plastic, somewhat firm (Lacustrine)
103-151	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, gritty, soft, slightly cohesive (Till)
151-153	SAND	Fine
153-161	CLAY	Silty, sandy, pebbly inclusions in a clay matrix, gray, gritty, soft, slightly cohesive (Till)
161-167	GRAVEL	Fine sand to medium gravel predominantly fine gravel, moderately sorted, consisting predominantly of carbonates, subrounded to angular
167-172	GRAVEL	Fine sand to medium gravel predominantly fine gravel, moderately sorted, consisting predominantly of carbonates, subrounded to angular, with rocks
172-175	CLAY	Silty sandy, pebbly inclusions in a clay matrix, gray, gritty, soft to firm, slightly cohesive (Till)
175-176	GRAVEL	Predominantly fine gravel

176-190 CLAY Silty sandy, pebbly inclusions in a clay matrix, gray, gritty, soft to firm, slightly cohesive (Till)

190-191 ROCK No description

191-206 CLAY Silty, sandy, pebbly inclusions, gray, to black, very firm, brittle, fewer pebbles than till above (Till)

206-220 SHALE Black, moderately soft to slightly indurated fairly brittle with layers of sandstone and bentonite (Bedrock)

146-053-33BCC
NDSWC 8499

Date Completed: 9/1972
L.S. Elevation (ft): 1085
Depth Drilled (ft): 100
Screen Int. (ft.): 32-35

Purpose: Observation Well - Destroyed
Well Type: 1.25 in. - ABS
Aquifer: Page
Data Source:

Completion Info:

Remarks: Well has been destroyed. Reported 10/4/1994.

Lithologic Log

Depth (ft)	Unit	Description
0-12	TOPSOIL	Sandy, silty clay loam, brownish black
12-17	SAND	Silty, very fine to medium, subrounded, moderately well sorted, oxidized, taking some water
17-19	SILT	Slightly clayey, medium gray, crumbly, highly calcareous
19-25	SAND	Very fine to medium, subangular to rounded, moderately well sorted, lignitic
25-32	SILT	Moderately clayey, sandy, medium gray to olive gray, crumbly highly calcareous
32-38	SAND	Slightly clayey, silty, very fine to medium, mostly fine to medium, subangular to rounded, moderately well sorted, taking some water
38-80	SILT	Slightly to moderately clayey, medium gray with light olive gray laminae and light brownish-gray mottling (limestone boulder from 47'-48'), crumbly, highly calcareous
80-100	CLAY	Silty, pebbly, moderately sandy, medium dark gray, moderately cohesive, moderately plastic, calcareous (till)

146-053-35BAA
NDSWC 146

Date Completed: 05/27/1960
L.S. Elevation (ft): 1006
Depth Drilled (ft): 37
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-24	CLAY	Dark-brown with fine and medium gravel (till)
24-32	SAND	Very fine to fine, dark-brown, clayey
32-37	SAND	Fine to coarse, gray, clayey

146-053-35BAD
NDSWC 145

Date Completed: 1960
L.S. Elevation (ft): 1006
Depth Drilled (ft): 37
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-20	SAND	Very fine to fine, light-brown, clayey
20-30	SAND	Very fine to fine, dark-brown, very clayey
30-37	SAND	Very fine to fine, gray (all quicksand)

146-053-35BBB
NDSWC 144

Date Completed: 05/27/1960
L.S. Elevation (ft): 1009
Depth Drilled (ft): 87
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Depth (ft)	Unit	Description
0-1	TOPSOIL	Black
1-25	CLAY	Yellow to light-gray, mottled
25-65	CLAY	Very sandy, dark-brown to gray
65-80	CLAY	Sandy, gray
80-87	CLAY	Gray with fine to medium gravel (till)

146-054-05AAA
NDSWC 8369

Date Completed: 06/29/1972
L.S. Elevation (ft): 1088
Depth Drilled (ft): 100
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, pebbly, clay loam, grayish-black
1-12	SILT	Moderately clayey, moderate yellowish-brown to dusky yellow, slightly cohesive, slightly plastic, oxidized
12-45	SILT	Moderately clayey to clayey, a few limestone pebbles, olive gray, moderately cohesive, slightly plastic, calcareous
45-55	CLAY	Silty, moderately sandy, pebbly, olive gray, moderately cohesive, plastic, calcareous (Till)
55-72	SILT	Clayey, medium gray with light olive gray laminae, slightly cohesive, slightly plastic, calcareous
72-77	GRAVEL	Slightly sandy, clayey, fine to coarse, angular to subrounded, poorly sorted, mostly limestone and dolostone, some shale
77-100	CLAY	Sandy, silty, pebbly, slightly gravelly, olive gray, cohesive, moderately plastic, calcareous (Till)

146-054-05BCC
NDSWC 8370

Date Completed: 6/1972
L.S. Elevation (ft): 1097
Depth Drilled (ft): 100
Screen Int. (ft.): 32-35

Purpose: Observation Well - Plugged
Well Type: 1.25 in. - ABS
Aquifer: Not Yet Entered
Data Source:

Completion Info:

Remarks: Well reported destroyed 05/26/1993 & 10/12/1994.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, moderately sandy, clay loam grayish-black
1-8	SAND	Fine to coarse grained, well sorted, subangular to subrounded, mostly quartz and feldspar oxidized
8-14	SILT	Moderately clayey, moderate yellowish-brown, slightly cohesive, moderately plastic, oxidized
14-22	SILT	Moderately clayey to clayey, olive gray with some light gray mottling, a few pebbles, moderately cohesive, moderately plastic, highly calcareous
22-37	SAND	A few thin clay layers, very fine to fine grained, subrounded, well sorted, shaley, lignitic, not taking water
37-44	SILT	Moderately clayey, sandy, olive gray, slightly cohesive, slightly plastic
44-100	CLAY	Silty, moderately sandy to sandy, pebbly, slightly gravelly, a few cobbles and boulders, olive gray, moderately cohesive, slightly plastic, calcareous (TII)

146-054-06BBB
NDSWC 8371

Date Completed: 06/29/1972
L.S. Elevation (ft): 1100
Depth Drilled (ft): 100

Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Very silty, clay loam, grayish-black
1-10	SAND	Silty, moderately clayey, very fine to medium grained, subangular to rounded, shaley, oxidized
10-14	SILT	Clayey, slightly sandy, moderate yellowish-brown, slightly cohesive, crumbly, oxidized
14-72	SILT	Moderately clayey, slightly sandy, a few limestone pebbles, medium gray with some light gray mottling
72-100	CLAY	Silty, moderately sandy, pebbly, a few cobbles, olive gray, cohesive, slightly plastic, calcareous (TII)

146-054-13ABB
NDSWC 8408

Date Completed: 07/14/1972
L.S. Elevation (ft): 1072
Depth Drilled (ft): 120

Purpose: Test Hole
Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, slightly sandy, clay loam, black
1-50	CLAY	Very silty, a few thin gravel layers, moderate yellowish-brown with olive gray mottling and some brownish-black, carbonaceous laminae, cohesive, highly plastic, oxidized
50-91	SILT	Slightly clayey, medium gray, slightly cohesive, slightly plastic, crumbles easily, highly calcareous
91-120	CLAY	Silty, very slightly sandy to sandy, pebbly, a few cobbles, medium gray, cohesive, slightly plastic, crumbly, moderately calcareous (TII)

146-054-13DCD
NDSWC 8407

Date Completed: 07/14/1972
L.S. Elevation (ft): 1075
Depth Drilled (ft): 120
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Silty, slightly sandy, clay loam, black
1-34 CLAY	Very silty, slightly sandy, pebbly, moderate yellowish-brown, moderately cohesive, slightly plastic, oxidized (Till)
34-56 CLAY	Very silty, gravelly, slightly sandy, pebbly, olive gray, slightly cohesive, slightly plastic, calcareous till gravel from 37'-38'
56-58 SAND	Moderately clayey, silty, very fine to medium grained (mostly fine), subangular to subrounded, moderately well sorted, lignitic, dirty-looking
58-80 CLAY	Very silty, sandy, olive gray, slightly cohesive, plastic, calcareous
80-120 CLAY	Very silty, pebbly, medium dark gray to medium gray, moderately cohesive, plastic, highly calcareous (Till)

146-054-14DDD
NDSWC 8406

Date Completed: 07/14/1972
L.S. Elevation (ft): 1080
Depth Drilled (ft): 160
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Silty, moderately sandy, pebbly clay loam, black
1-25 CLAY	Very silty to silty, slightly sandy, a few pebbles, moderate yellowish-brown, moderately cohesive, moderately plastic, oxidized (Till)
25-80 CLAY	Silty, moderately sandy, pebbly, a few cobbles, olive gray, cohesive, moderately plastic, calcareous (Till)
80-82 COBBLES	with gravel, unsorted
82-101 CLAY	Silty, moderately sandy, pebbly, gravelly, olive gray, cohesive, moderately plastic, calcareous (Till)
101-107 GRAVEL	Clayey, cobbles, poorly sorted, mostly carbonates and granitics, some shale very dirty
107-135 CLAY	Silty, moderately sandy to sandy, pebbly, gravelly, a few cobbles, olive gray, moderately cohesive, slightly plastic, calcareous (Till)
135-137 GRAVEL	Fine to coarse, angular to subrounded, poorly sorted, mostly carbonates
137-142 CLAY	Sandy, moderately silty, light olive gray, moderately cohesive, gravelly, some cobbles and boulders, calcareous (older Till?)
142-160 CLAY	Silty, moderately sandy, medium dark gray, cohesive, brittle, crumbles easily, (Till)

146-054-15AAA
NDSWC 4015

Date Completed: 06/26/1970
L.S. Elevation (ft): 1095
Depth Drilled (ft): 220
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Sandy loam, black
2-9	SAND	Fine and medium, yellowish gray, loose, sorted, subrounded, quartzose
9-15	SAND	Fine and medium, gray, well-sorted, subrounded, quartzose and shaley
15-39	CLAY	Silty to sandy with pebbles, olive gray, moderately soft, moderately cohesive, slightly plastic, compacted, stiff (Till)
39-67	SILT	Clayey to sandy, light olive to olive gray, soft, crumbly to friable, quartzose but highly calcareous, laminated, interbedded
67-80	CLAY	Silty and sandy with limestone and shale pebbles, olive gray, moderately soft, cohesive, lightly compacted, chunky (Till)
80-113	SILT	Clayey fine sand, gray, soft, crumbly to slightly cohesive, non-plastic, quartzose, occasionally organic-rich material, calcareous; smooth drilling
113-142	CLAY	Silty to sandy with pebbles and gravel stringers, olive gray, moderately soft to slightly hard, cohesive, stiff, rough (Till) gravel mostly angular to subrounded carbonates
142-152	GRAVEL	Predominantly fine, varies from coarse sand to medium gravel, mostly subrounded black siliceous shale, medium rough drilling, no large loss of water
152-180	CLAY	Silty to sandy with pebbles (Till), as above, not much gravel but numerous cobbles or boulders
180-201	TILL	As above with many lenses of black, angular shale gravel
201-220	SHALE	Silty, medium dark gray to brownish black, smooth, waxy, moderately soft to moderately hard, very tight, speckled, highly calcareous, oily; black clay 201'-202', fractured sandy shale 202'-207', blue bentonite clay 207'-208'

146-054-19DDDD
NDSWC 4293

Date Completed: 10/29/1970
L.S. Elevation (ft): 1105
Depth Drilled (ft): 180
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Very fine silty sand loam, black
1-9	CLAY	Very silty and sandy with occasional pebbles, dusky yellow with yellowish gray and moderate olive brown, laminations, soft, slightly to moderately cohesive, oxidized, (Till)
9-78	SILT	Clayey with lenses of very fine to medium sand, light olive to olive gray, soft, laminated, crumbly to slightly cohesive, non-plastic, light weight
78-84	CLAY	Silty, olive gray; soft, cohesive plastic, sticky
84-94	SILT	Clayey to sandy, light olive to olive gray, laminated, soft, slightly cohesive, chunky, easy drilling
94-116	CLAY	Very silty and very sandy with numerous pebbles and occasional pebbles, olive gray, moderately soft, moderately cohesive (Till)
116-120	SAND	Coarse and very coarse, subangular to subrounded, moderately sorted, predominantly quartz and granitic derivatives
120-122	ROCK	Diorite
122-161	CLAY	Silty to sandy with numerous shale and limestone pebbles, occasional cobbles, olive to dark olive gray, moderately soft, cohesive, tough (Till)
161-180	SHALE	Very dark gray to brownish black, smooth, massive, very tight, non-calcareous

146-054-25AAD
NDSWC 8405

Date Completed: 07/14/1972
L.S. Elevation (ft): 1082
Depth Drilled (ft): 100
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, clayey loam, grayish-black
1-9	CLAY	Silty, pebbly, moderate yellowish-brown, cohesive, plastic, oxidized (Till)
9-15	CLAY	Silty, moderately sandy, pebbly, olive gray, cohesive, moderately plastic, calcareous (Till)
15-18	SAND	Silty, slightly clayey, very fine to medium grained, subrounded, moderately well sorted, lignitic, shaley dirty
18-25	CLAY	Very silty, pebbly, olive gray, slightly to moderately cohesive, crumbly, calcareous (Till)
25-37	SILT	Moderately clayey, medium gray, slightly cohesive, slightly plastic, calcareous
37-40	SAND	Clayey, fine-grained, subrounded, moderately well sorted, lignitic
40-48	SILT	Moderately clayey, olive gray, slightly cohesive, slightly plastic, calcareous
48-52	SAND	Moderately clayey, very fine to fine grained, subrounded, moderately well sorted, lignitic
52-63	SILT	Clayey, olive gray, slightly cohesive, slightly plastic, calcareous
63-69	SAND	Very fine to fine grained, subangular, moderately well sorted, lignitic, shaley
69-88	SILT	Clayey, olive gray, slightly cohesive, slightly plastic calcareous
88-100	CLAY	Moderately sandy, pebbly, olive gray, cohesive, moderately plastic, calcareous (Till)

146-054-27DDD
NDSWC 8362

Date Completed: 06/27/1972
L.S. Elevation (ft): 1095
Depth Drilled (ft): 220
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, clayey, loam grayish-black
1-15	CLAY	Silty, moderately sandy, pebbly, moderate yellowish-brown, cohesive, moderately plastic, oxidized (Till)
15-106	CLAY	Silty, slightly sandy, pebbly, olive gray, moderately cohesive, slightly plastic, calcareous (Till)
106-166	CLAY	Very silty, olive gray with light olive gray mottling, moderately cohesive, plastic, highly calcareous
166-180	CLAY	Silty, moderately sandy, pebbly, a few cobbles, olive gray, moderately cohesive, moderately plastic, calcareous (Till)
180-210	CLAY	Silty, moderately sandy to sandy, pebbly, numerous cobbles and boulders, olive gray, moderately cohesive, moderately plastic, calcareous (Till) rough drilling
210-220	SHALE	Brownish-black, occasional small white specks, highly calcareous, moderately indurated (Cretaceous Greenhorn Formation?)

146-054-31AAA
NDSWC 8361

Date Completed: 06/26/1972
L.S. Elevation (ft): 1130
Depth Drilled (ft): 180
Screen Int. (ft.): 27-30
Purpose: Observation Well - Plugged
Well Type: 1.25 in. - PVC
Aquifer: Undefined
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-3	ROADFILL	Silty, clay
3-34	SAND	Slightly clayey, very fine to coarse grained, (mostly fine to medium), subangular to rounded, well sorted, shaley, taking a little water
34-85	SILT	Moderately clayey, medium gray with light olive gray laminae, slightly cohesive, slightly plastic, highly calcareous
85-170	CLAY	Silty, moderately sandy, pebbly, occasional cobbles, olive gray, moderately cohesive, moderately plastic, calcareous (Till)
170-180	SHALE	Slightly clayey, medium dark gray, a few pyrite grains, very slightly calcareous to non-calcareous, moderately indurated (Cret. Carlile Formation?)

172

146-054-32DDD
NDSWC 8366

Date Completed: 06/28/1972
L.S. Elevation (ft): 1103
Depth Drilled (ft): 100
Purpose: Test Hole
Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, slightly sandy, clayey, loam grayish-black
1-12	CLAY	Very silty, sandy, pebbly, moderate yellowish-brown, slightly cohesive, crumbly, oxidized (Till)
12-45	SAND	Very clayey, very silty, becomes very clayey and silty lower 20', very fine to medium grained, subangular to rounded, shaley, lignitic, taking some water dirty looking samples
45-75	SILT	Moderately clayey, medium gray with light olive gray laminae, slightly cohesive, slightly plastic, calcareous
75-100	CLAY	Very silty, sandy, pebbly, olive gray, moderately cohesive, plastic, calcareous (Till)

195

146-054-34DDD
NDSWC 8363

Date Completed: 6/1972
L.S. Elevation (ft): 1096.4
Depth Drilled (ft): 160
Screen Int. (ft.): 67-70
Purpose: Observation Well - Plugged
Well Type: 1.25 in. - ABS
Aquifer: Not Yet Entered
Data Source:

Completion Info:

Remarks: Well plugged by SWC drill rig on, 9/28/1994.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Silty, clay loam, grayish-black
1-9	CLAY	Very silty, sandy, pebbly, dusky yellow, slightly cohesive, slightly plastic, oxidized (Till)
9-68	CLAY	Silty, moderately sandy, slightly gravelly, more gravelly lower 20', pebbly, olive gray, slightly cohesive, crumbly, calcareous (Till)
68-82	SAND	Slightly, clayey, silty, very fine to medium grained, subangular to rounded, moderately well sorted, shaley dirty-looking samples
82-122	CLAY	Very silty, sandy, olive gray, cohesive, crumbly, highly calcareous
122-138	SILT	Clayey, olive gray, moderately cohesive, slightly plastic, highly calcareous
138-160	CLAY	Silty, moderately sandy, pebbly, a few cobbles, slightly gravelly, olive gray, cohesive, moderately plastic, calcareous (Till)

196

146-054-35AAA
NDSWC 4300

Purpose: Test Hole

Date Completed: 11/10/1970
L.S. Elevation (ft): 1080
Depth Drilled (ft): 260

Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Fine sandy loam, black
1-3 SILT	Clayey to sandy, nearly white, soft, slightly cohesive, very limy
3-10 SAND	Fine to coarse, gravelly, assorted, subangular and subrounded, iron-stained, mostly carbonates and granites, oxidized, dry, 3 bags of mud
10-21 SILT	Clayey and sandy, interbedded, laminated, lenticular, occasional coarse sand grains, dusky yellow to light olive gray, soft, crumbly
21-31 CLAY	Silty, olive gray, soft, cohesive, plastic, slightly sticky, smooth, tight
31-61 SILT	Sandy (very fine), light olive to olive gray, soft, chunky, crumbly, calcareous
61-93 SILT	Clayey, light olive to olive gray, soft, cohesive, moderately plastic, smooth, light weight
93-129 SILT	Sandy (very fine to fine), light olive gray, soft, moderately cohesive, non-plastic, chunky, crumbly, laminated
129-137 CLAY	Very silty to sandy with pebbles, olive gray, moderately soft, cohesive, stiff, pliable (Till)
137-141 SAND	Medium, dark gray, loose, sorted, subrounded, quartzose with shale, carbonates and a little lignite
141-147 SILT	Sandy (very fine to fine) light olive gray, soft, crumbly
147-158 SAND	Very fine to medium, moderately sorted, generally subrounded, dark gray, quartzose and shaley
158-171 CLAY	Silty to sandy with pebbles, olive gray, moderately soft, cohesive, stiff, fairly light, occasional rock (Till)
171-173 ROCK	Limestone
173-184 SAND	Medium to coarse with gravel and cobbles, assorted, subrounded, mostly carbonates and granites
184-197 CLAY	Silty with sand grains and pebbles, dark olive gray, slightly hard, very cohesive and tightly compacted, stiff and tough (till)

197-205 SAND Medium, dark gray, loose, sorted, subrounded, quartzose, lignitic, clean

205-221 SAND Very fine to medium, silty, dark gray, poorly sorted, dirty

221-237 CLAY Silty with sand grains and pebbles, occasional rock, olive to dark olive gray, moderately soft to slightly hard, cohesive, stiff, tightly compacted (Till)

237-245 SHALE Silty, nearly black, moderately hard, very smooth, slippery and oily, very tight (Carlyle)

245-249 SANDSTONE Very fine grained, very light gray, indurated, quartzose but moderately calcareous

249-260 SHALE Silty to sandy, very dark brown, slightly hard, brittle, very oily

146-055-04CCC
NDSWC 4288

Date Completed: 10/28/1970 Purpose: Test Hole
L.S. Elevation (ft): 1210
Depth Drilled (ft): 100

Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft) Unit	Description
0-1 TOPSOIL	Pebbly silt loam, black
1-4 SILT	Clayey to sandy, yellowish gray, soft, dry, very slightly cohesive, leached
4-14 CLAY	Silty with sand grains and occasional pebbles, dusky yellow, soft, cohesive, slightly plastic, oxidized, laminated (Till)
14-74 CLAY	Very silty to very sandy with occasional pebbles and cobbles, also blocks or lenses of silt, clayey sand, shaley sand and gravel, lenticular, poorly stratified (Till)
74-100 SHALE	Silty, dark brownish gray to black, moderately hard, brittle, smooth, oily, speckled, very tight

146-055-20DCC
NDSWC 4291

Date Completed: 10/29/1970 Purpose: Test Hole
L.S. Elevation (ft): 1225
Depth Drilled (ft): 80 Data Source:

Completion Info:
Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Pebbly silt loam, black
1-3	SILT	Clayey to sandy with coarse sand grains and pebbles, yellowish gray, dry, crumbly, leached (Till)
3-6	CLAY	Silty to sandy with pebbles, dusky yellow, soft, cohesive, slightly plastic, oxidized (Till)
6-11	SAND	Medium and coarse with some gravel, moderately sorted, subangular and subrounded, shaley, heavily iron-stained
11-20	CLAY	Silty to sandy with pebbles, moderately olive brown, moderately soft, cohesive, chunky, tightly compacted, oxidized, (Till)
20-56	CLAY	Very silty and sandy with pebbles and numerous thin sand and gravel lenses, olive gray, soft to moderately soft, moderately cohesive to slightly crumbly rocky
56-68	SILTSTONE	Very fine shaley sandstone, variegated medium and dark browns, soft, moderately cohesive, sticky, oily, smelly, very light weight (floury) (Carlyle)
68-80	SHALE	Silty, medium dark gray, moderately hard, very stiff and brittle, smooth, speckled, non-calcareous

146-055-23BBA
NDSWC 4292

Date Completed: 10/29/1970 Purpose: Observation Well - Plugged
L.S. Elevation (ft): 1140 Well Type: 1.25 in. - ABS
Depth Drilled (ft): 100 Aquifer: Undefined
Screen Int. (ft.): 22-25 Data Source:

Completion Info:
Remarks:

Well was destroyed, reported on 10/12/94.

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Very fine silty sand loam, black
1-4	SILT	Clayey to sandy, yellowish gray, very soft, dry, loose to very slightly cohesive, leached, washed till
4-9	CLAY	Very silty to sandy with occasional coarse sand grains, dusky yellow, soft, slightly to moderately cohesive, oxidized (Till)
9-14	SAND	Medium to coarse, dusky yellow, loose sorted, subrounded, shaley, oxidized
14-20	TILL	As above, dusky yellow to moderately olive brown, very silty, oxidized, moderately soft
20-26	SAND	Medium and coarse with gravel-sized detrital lignite, gray, well sorted and uniform, subrounded, mostly quartz
26-33	SAND	Fine, gray, well sorted, subrounded
33-47	SILT	Sandy (very fine), light olive gray, moderately soft, chunky, crumbly, calcareous
47-52	SAND	Fine, gray, well sorted, subrounded
52-77	SILT	Clayey to sandy (very fine) moderately soft, olive gray, chunky, cohesive but crumbles under pressure, laminated, compacted, easy drilling
77-100	SHALE	Silty, medium dark gray, moderately hard, massive, smooth, very tight, non-calcareous

146-055-27AAA
NDSWC 4014

Date Completed: 06/26/1970
L.S. Elevation (ft): 1140
Depth Drilled (ft): 80

Test Hole

Purpose:

Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-3	ROADFILL	
3-12	CLAY	Silty to sandy with pebbles and sand lenses, yellowish gray to reddish brown, soft to moderately soft, moderately cohesive, slightly plastic, oxidized, iron stained (Till)
12-18	CLAY	Silty to sandy with numerous limestone and shale pebbles, olive gray, moderately soft, moderately cohesive, chunky, crumbles under pressure, compacted (Till)
18-28	SAND	Medium, varies from fine to coarse but fairly uniform and sorted, generally subrounded, light olive gray, mostly quartz
28-61	CLAY	Silty to sandy with pebbles and occasional cobbles and gravelly streaks, olive gray, moderately soft to shale hard, chunky, compacted (Till)
61-80	SHALE	Silty, nearly black, smooth, slippery, slightly hard, brittle, tight, non-calcareous

146-055-34AAA
NDSWC 4294

Date Completed: 10/30/1970
L.S. Elevation (ft): 1150
Depth Drilled (ft): 100

Test Hole

Purpose:

Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-1	TOPSOIL	Fine sandy silt loam, black
1-6	SAND	Medium to very coarse with fine gravel, poorly sorted, generally subrounded, mostly granitics and carbonates, heavily iron-stained, loose, dry
6-11	SILT	Clayey to sandy with lenses of sand and gravel, dusky yellow to reddish brown, soft, crumbly to slightly cohesive (washed or stratified till)
11-21	SILT	Clayey, olive gray, moderately soft, slightly brittle, smooth, tightly compacted
21-23	SAND	Medium, dark gray, sorted and uniform, subrounded, quartzose with a little lignite, loose
23-32	SAND	Coarse and very coarse with some gravel, medium sorted, generally subrounded, predominantly quartz and granitic derivatives with carbonates and some shale, loose; taking a little water, grayish tan color
32-43	SILT	Clayey, light olive gray, moderately soft, moderately cohesive, slightly brittle, smooth, compacted, laminated
43-49	SAND	Medium to coarse, well-sorted and uniform, clean, subrounded, mostly quartz and carbonates
49-54	CLAY	Silty, olive gray, smooth, tight, moderately soft, cohesive, slightly plastic
54-58	SAND	Fine to medium, gray, loose, sorted, subrounded, quartzose with a little lignite
58-63	SAND	Very coarse with gravel and possible cobbles, assorted, subrounded, mostly granitics and carbonates, some shale, loose
63-72	CLAY	Silty and sandy with pebbles and cobbles, olive gray, moderately soft, stiff, tough (Till)
72-100	SHALE	Silty, medium dark gray, smooth, moderately hard, brittle, massive, very tight, gypsum bed from 90' to 92'

146-055-34DDD
SWC

Date Completed: 10/1970
 L.S. Elevation (ft): 1150
 Depth Drilled (ft): 120
 Screen Int. (ft.): 48-51

Purpose: Observation Well
 Well Type: 1.25 in. - PVC
 Aquifer: Not Yet Entered
 Data Source:

Completion Info:

Remarks:

Lithologic Log

Depth (ft)	Unit	Description
0-2	TOPSOIL	Sandy loam, black
2-8	SAND	Medium and coarse, well-sorted and uniform, subrounded, yellowish gray and reddish brown, loose, washed (beach sand)
8-16	SILT	Slightly clayey to sandy with occasional pebbles, dusky yellow, soft, slightly cohesive, laminated, oxidized (stratified till)
16-25	SILT	Slightly clayey, light olive gray, soft, compacted but crumbly, laminated
25-41	SAND	Medium to coarse, gray, well-sorted and uniform, subrounded, clean, mostly quartz with some carbonates and shale, little bit of lignite, taking some water
41-59	SAND	Fine and medium, possibly slightly silty, gray, quartzose, uniform
59-99	CLAY	Very silty and sandy with pebbles and lenses or blocks of chunky clayey silt and sandy silt, occasional rocks, olive gray, moderately soft to slightly hard, tough (Till)
99-106	SHALE	Silty, medium dark gray, smooth, massive, moderately hard, non-calcareous (Carlyle)
106-116	SILTSTONE	Clayey, very dark brown, soft to moderately soft, highly carbonaceous, micaceous
116-120	SHALE	Nearly black, massive, hard, smooth, very tight

APPENDIX III

Historical Water-Level Measurements

144-053-08CCC
Page Aquifer

MP Elev (msl, ft)=1,104.90
SI (ft.)=28-34

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/11/77	13.04	1091.86
09/22/77	14.59	1090.31
10/03/78	13.05	1091.85
12/12/78	13.56	1091.34
09/19/79	11.18	1093.72
12/04/79	11.98	1092.92
04/15/80	8.52	1096.38
05/14/80	9.37	1095.53
06/10/80	10.54	1094.36
07/09/80	11.60	1093.30
08/05/80	12.45	1092.45
09/04/80	12.76	1092.14
10/29/80	13.31	1091.59
12/18/80	13.42	1091.48
04/14/81	13.21	1091.69
07/05/81	13.73	1091.17
07/14/81	13.82	1091.08
09/09/81	14.89	1090.21
10/08/81	14.96	1089.52
12/03/81	14.88	1090.02
12/01/82	7.62	1097.28
12/07/83	11.17	1093.73
04/23/84	6.56	1098.34
05/28/84	7.81	1097.09
06/29/84	8.90	1096.00
07/31/84	10.09	1094.81
08/28/84	11.38	1093.52
09/23/84	12.13	1092.77
10/28/84	12.02	1092.88
11/25/84	11.75	1093.15
12/05/84	12.22	1092.68
12/22/84	11.86	1093.04
04/20/85	7.70	1097.20
05/19/85	8.61	1096.29
06/16/85	9.38	1095.52
07/17/85	10.65	1094.25
08/09/85	11.07	1093.83
09/08/85	12.14	1092.76
10/06/85	12.25	1092.65
11/03/85	12.39	1092.51
05/04/86	7.56	1097.54
06/01/86	8.13	1096.75
07/04/86	10.05	1094.85
08/02/86	10.86	1094.04
08/31/86	10.07	1094.83
09/28/86	12.30	1092.60
10/26/86	12.08	1092.82
11/23/86	11.97	1092.93

144-053-08CCC
Page Aquifer

MP Elev (msl, ft)=1,104.90
SI (ft.)=28-34

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/13/87	9.24	1095.66
07/12/87	9.34	1095.56
08/09/87	9.29	1095.61
09/05/87	12.00	1092.90
10/04/87	11.49	1093.41
11/31/87	12.35	1092.55
10/29/87	12.27	1092.63
12/03/87	12.31	1092.59
03/20/88	7.37	1097.53
04/17/88	7.29	1097.61
05/14/88	9.32	1095.58
06/11/88	10.76	1094.14
07/10/88	11.74	1093.16
08/08/88	13.06	1091.84
09/05/88	12.61	1092.29
10/02/88	12.47	1092.43
11/01/88	12.47	1092.43
04/16/89	8.10	1096.80
05/12/89	9.21	1095.89
06/12/89	10.15	1094.75
07/08/89	11.52	1093.38
08/05/89	13.49	1091.41
09/02/89	10.22	1094.68
10/01/89	11.23	1093.72
10/28/89	11.18	1093.72
11/26/89	12.00	1092.90
04/10/90	11.60	1093.30
05/06/90	11.30	1093.60
06/05/90	9.26	1095.64
07/06/90	10.44	1094.46
08/04/90	10.99	1093.91
09/03/90	10.46	1094.44
10/05/90	12.72	1092.18
11/04/90	12.78	1092.12
12/02/90	12.80	1092.10
04/20/91	12.35	1092.55
05/18/91	9.75	1095.15
06/16/91	9.85	1095.05
07/19/91	11.30	1093.60
08/17/91	12.27	1092.63
08/26/91	12.62	1092.28
09/21/91	13.32	1091.58
09/25/91	13.39	1091.51
10/19/91	13.67	1091.23
11/10/91	13.49	1091.41
12/08/91	13.58	1091.32
04/04/92	10.16	1094.74
04/14/92	10.33	1094.57
05/03/92	10.49	1094.41
05/31/92	10.20	1094.70
06/28/92	10.38	1094.52
07/25/92	8.79	1095.11
08/06/92	10.10	1094.80

04/18/87 8.06 1096.84
05/17/87 8.68 1096.22

04/18/87 8.06 1096.84
05/17/87 8.68 1096.22

08/19/92 10.74 1094.16
09/20/92 10.39 1094.51

08/19/92 10.74 1094.16
09/20/92 10.39 1094.51

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/04/98	10.96	1093.94
09/01/98	12.08	1092.82
09/30/98	12.98	1091.92
10/25/98	10.70	1094.20
11/22/98	8.90	1096.00

MP Elev (msl, ft)=1,104.90
SI (ft.)=28-34

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/12/04	8.58	1096.32
07/17/04	8.55	1096.35
08/18/04	9.54	1095.36
09/16/04	9.10	1095.80
10/13/04	8.78	1096.12

144-053-08CCC
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/07/04	8.76	1096.14
12/08/04	9.05	1095.85
04/20/05	8.65	1096.25
06/01/05	8.63	1096.27
06/24/05	8.43	1096.45
07/29/05	9.96	1094.94
08/23/05	9.48	1095.42

MP Elev (msl, ft)=1,173.66
SI (ft.)=238-243

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/10/90	53.98	1119.68
05/06/90	53.84	1119.82
06/03/90	53.62	1120.04
07/06/90	53.73	1119.93
08/04/90	53.85	1119.81
09/03/90	53.75	1119.86
10/03/90	53.80	1119.86
11/04/90	53.78	1119.88
12/02/90	53.70	1119.96
04/20/91	53.84	1119.82
05/18/91	53.64	1120.02
06/16/91	53.53	1120.13
07/19/91	53.62	1120.04
08/17/91	53.65	1120.01
09/21/91	53.79	1119.87
10/19/91	53.94	1119.72
11/10/91	52.96	1120.70
12/08/91	53.72	1119.94
04/04/92	53.78	1119.88
04/14/92	53.77	1119.89
05/03/92	53.74	1119.92
05/31/92	53.65	1120.01
06/28/92	53.47	1120.19
07/25/92	53.47	1120.19
08/06/92	53.60	1120.06
08/19/92	54.00	1119.66
09/20/92	53.03	1120.63
10/18/92	53.52	1120.14
11/15/92	53.29	1120.37
04/17/93	53.05	1120.61
05/16/93	52.99	1120.67
06/12/93	52.82	1120.64
07/09/93	52.75	1120.91

144-053-19BBB1
Unnamed Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/07/93	52.47	1121.19
09/04/93	52.46	1121.20
10/03/93	52.38	1121.28
10/30/93	52.29	1121.37
11/26/93	52.26	1121.40
04/23/94	52.28	1121.38
05/21/94	52.11	1121.55
06/18/94	52.04	1121.62
07/16/94	51.70	1121.96
08/10/94	51.54	1122.12
09/11/94	51.51	1122.15
10/08/94	50.98	1122.68
11/06/94	50.71	1122.95
12/03/94	50.43	1123.23
04/21/95	50.18	1123.48
05/27/95	50.02	1123.64
06/28/95	50.10	1123.56
07/23/95	49.85	1123.81
08/18/95	50.03	1123.63
09/23/95	50.00	1123.66
10/21/95	49.82	1123.84
11/18/95	49.82	1123.84

144-053-19BBB1
Unnamed Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/07/01	50.16	1123.50
08/07/01	50.12	1123.54
09/01/01	50.28	1123.38
09/26/01	50.42	1123.24
10/22/01	50.43	1123.23
10/29/01	50.57	1123.09
11/21/01	50.49	1123.17
04/17/02	51.00	1122.66
05/14/02	50.86	1122.80
06/07/02	51.00	1122.66
07/02/02	51.10	1122.56
07/30/02	50.97	1122.69
08/15/02	50.90	1122.76
08/26/02	51.03	1122.63
09/05/02	50.92	1122.74
09/20/02	50.96	1122.70
10/16/02	51.01	1122.65
11/10/02	50.94	1122.72
04/16/03	51.38	1122.28
05/17/03	51.14	1122.52
06/15/03	51.02	1122.64
07/09/03	50.92	1122.74
09/01/98	50.41	1123.25
09/30/98	50.73	1122.93
10/25/98	50.52	1123.14
11/22/98	50.29	1123.37
11/30/98	39.55	1134.11
12/16/98	50.42	1123.24
04/14/99	50.23	1123.43
05/17/99	49.77	1123.89

MP Elev (msl, ft)=1,173.66
SI (ft.)=238-243

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/16/03	50.93	1122.73
11/09/03	50.93	1122.73
04/14/04	51.12	1122.54
05/08/04	51.05	1122.61
06/12/04	50.72	1122.94
07/17/04	50.63	1123.03
08/18/04	50.50	1123.16
09/16/04	50.34	1123.32
10/13/04	50.35	1123.31
10/25/04	50.34	1123.32
11/07/04	50.18	1123.48
12/08/04	50.03	1123.63
04/20/05	50.20	1123.46
06/01/05	49.96	1123.70
06/24/05	49.68	1123.98
07/29/05	49.68	1123.98
08/23/05	49.58	1124.08
09/24/05	49.71	1123.95
10/25/05	49.76	1123.90
11/24/05	49.84	1123.82
12/24/05	49.78	1123.88
04/22/06	49.91	1123.75
05/20/06	49.87	1123.79

144-053-19BBB2
Page Aquifer

MP Elev (msl, ft)=1,172.97
SI (ft.)=116-121

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/10/90	44.49	1128.48
05/06/90	44.45	1128.52
06/05/90	44.43	1128.54
07/06/90	44.36	1128.54
08/04/90	44.36	1128.61
09/03/90	44.25	1128.72
10/05/90	44.25	1128.68
11/04/90	44.24	1128.73
12/02/90	44.26	1128.71
04/20/91	44.39	1128.58
05/18/91	44.45	1128.52
06/16/91	44.34	1128.63
07/15/91	44.20	1128.77
08/17/91	44.12	1128.85
09/21/91	43.98	1128.99
10/19/91	44.14	1128.83
11/10/91	44.07	1128.90
12/08/91	44.17	1128.80
04/04/92	44.28	1128.69
04/14/92	44.32	1128.65
05/03/92	44.33	1128.64
06/31/92	44.27	1128.70
06/28/92	44.26	1128.71
07/25/92	44.23	1128.74
08/06/92	42.95	1130.02
08/15/92	44.13	1128.84
09/20/92	44.04	1128.93
10/18/92	44.13	1128.84
11/15/92	42.06	1130.91
04/17/93	43.92	1129.05
05/16/93	43.96	1129.01
06/12/93	43.88	1129.09
07/09/93	43.46	1129.51
08/07/93	43.74	1129.23
09/04/93	43.67	1129.30
10/03/93	43.54	1129.43
10/30/93	43.49	1129.48
11/26/93	43.38	1129.59
04/23/94	43.25	1129.72
05/21/94	43.21	1129.76
06/18/94	43.18	1129.79
07/16/94	43.07	1129.90
08/10/94	42.99	1129.98
09/11/94	42.89	1130.08
10/08/94	42.84	1130.43
11/06/94	42.22	1130.75
12/03/94	41.95	1131.02
04/21/95	41.17	1131.80
05/27/95	40.99	1131.98
06/28/95	40.79	1132.18
07/23/95	40.62	1132.35
08/18/95	40.45	1132.52
09/23/95	40.28	1132.69
10/21/95	40.23	1132.74
11/18/95	40.08	1132.89

144-053-19BBB2
Page Aquifer

MP Elev (msl, ft)=1,172.97
SI (ft.)=116-121

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/19/95	40.03	1132.94
04/17/96	39.80	1133.17
05/21/96	39.80	1133.17
06/22/96	39.72	1133.25
07/20/96	39.69	1133.28
08/16/96	39.67	1133.30
09/15/96	39.70	1133.27
10/12/96	39.78	1133.19
11/09/96	39.90	1133.07
05/10/97	39.38	1133.59
06/04/97	39.13	1133.84
06/27/97	38.94	1134.03
07/30/97	38.93	1134.04
08/03/97	38.90	1134.07
08/30/97	38.84	1134.13
09/27/97	38.83	1134.14
10/22/97	38.97	1134.00
11/16/97	39.12	1133.85
12/11/97	39.15	1133.82
04/25/98	39.32	1133.65
05/30/98	39.28	1133.69
06/09/98	39.32	1133.65
06/25/98	39.24	1133.73
08/04/98	37.24	1135.73
09/01/98	39.29	1133.68
09/30/98	39.49	1133.48
10/25/98	39.54	1133.43
11/22/98	39.48	1133.49
11/30/98	50.34	1122.63
12/16/98	39.62	1133.35
04/14/99	39.59	1133.38
05/17/99	39.28	1133.69
06/16/99	38.96	1134.01
07/21/99	38.53	1134.44
08/17/99	38.34	1134.63
09/15/99	38.27	1134.70
10/13/99	38.28	1134.69
10/20/99	38.21	1134.76
11/07/99	38.27	1134.70
12/02/99	38.33	1134.64
04/04/00	38.74	1134.23
05/02/00	38.94	1134.03
05/31/00	39.12	1133.85
06/25/00	39.23	1133.82
07/27/00	39.23	1133.74
08/01/00	39.28	1133.69
08/29/00	39.29	1133.68
09/26/00	39.47	1133.50
10/19/00	39.45	1133.52
10/23/00	39.45	1133.52
11/23/00	39.56	1133.41
04/20/01	39.57	1133.40
05/16/01	39.59	1133.38
06/12/01	39.44	1133.53

144-054-01ABB
Page Aquifer

MP Elev (msl, ft)=1,119.98
SI (ft.)=122-128

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/09/77	13.96	1105.34
06/21/77	13.58	1105.72
07/11/77	13.22	1106.08
09/22/77	14.08	1105.22
03/15/78	13.35	1105.95
06/14/78	11.75	1107.55
10/03/78	13.53	1105.77
12/12/78	14.60	1104.70
09/19/79	10.85	1108.45
12/04/79	11.98	1107.32
07/09/80	13.28	1106.02
10/29/80	14.20	1105.10
12/18/80	14.19	1105.11
04/14/81	15.71	1103.59
07/09/81	15.06	1104.24
07/14/81	14.84	1104.46
10/08/81	15.44	1103.86
12/03/81	15.39	1103.91
12/05/81	15.39	1103.91

144-054-01ABB
Page Aquifer

MP Elev (msl, ft)=1,172.97
SI (ft.)=116-121

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/16/03	40.50	1132.47
11/09/03	40.52	1132.45
04/14/04	40.89	1132.08
05/08/04	40.86	1132.11
06/12/04	40.88	1132.09
07/17/04	40.80	1132.17
08/18/04	40.50	1132.47
09/16/04	40.40	1132.57
10/13/04	40.38	1132.59
10/23/04	40.40	1132.57
11/07/04	40.39	1132.58
12/08/04	40.26	1132.71
04/20/05	40.27	1132.70
06/01/05	40.16	1132.81
06/24/05	40.20	1132.77
07/29/05	39.82	1133.15
08/23/05	39.58	1133.39
09/24/05	39.41	1133.56
10/25/05	39.40	1133.57
11/24/05	39.47	1133.50
12/24/05	39.43	1133.54
04/22/06	39.52	1133.45
05/20/06	39.53	1133.44

144-054-01ABB
Page Aquifer

MP Elev (msl, ft)=1,119.98
SI (ft.)=122-128

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/12/87	9.90	1109.40
08/09/87	9.46	1109.84
09/05/87	10.24	1109.06
10/04/87	10.02	1109.28
10/31/87	10.38	1108.92
11/29/87	10.46	1108.84
12/03/87	11.40	1107.90
03/20/88	11.43	1107.87
04/17/88	10.68	1108.62
05/14/88	10.96	1108.34
06/11/88	11.18	1108.12
07/10/88	11.21	1108.09
08/08/88	11.98	1107.32
09/05/88	12.71	1106.59
10/02/88	12.79	1106.51
11/01/88	12.79	1106.51
04/16/89	14.50	1104.80
05/12/89	14.48	1104.82
06/12/89	13.44	1105.86
07/08/89	13.27	1106.03
08/05/89	13.70	1105.60

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/01/82	10.69	1108.61
12/07/83	10.45	1108.85
04/23/84	11.17	1108.13
05/28/84	10.05	1109.25
06/29/84	8.78	1110.52
07/31/84	9.47	1109.83
08/28/84	9.94	1109.36
09/23/84	11.59	1107.71
10/28/84	12.10	1107.20
11/25/84	12.00	1107.30
12/05/84	12.13	1107.17
12/22/84	11.78	1107.52
04/20/85	13.38	1105.92
05/19/85	13.09	1106.21
06/16/85	12.32	1106.98
07/17/85	12.22	1107.08
08/09/85	12.58	1106.72
09/08/85	13.16	1106.14
10/06/85	13.21	1106.09
11/03/85	13.84	1105.46
05/04/86	11.99	1107.31
06/01/86	13.08	1106.22
07/04/86	10.33	1108.97
08/02/86	11.11	1108.19
09/31/86	10.91	1108.39
09/28/86	11.89	1107.41
10/26/86	11.58	1107.72
11/23/86	11.68	1107.62
04/18/87	11.99	1107.31
05/17/87	12.96	1106.34
06/13/87	10.28	1109.02
11/15/92	11.24	1108.06
04/17/93	11.58	1107.72
05/16/93	10.90	1108.40
06/12/93	9.84	1109.46
07/09/93	8.64	1110.66
08/07/93	6.92	1112.38
09/04/93	7.13	1112.17
10/03/93	7.75	1111.55
10/30/93	7.73	1111.57
11/26/93	8.39	1110.91
04/23/94	8.27	1111.03
05/21/94	7.78	1111.52
06/18/94	7.50	1111.80
07/16/94	6.86	1112.44
08/10/94	6.26	1113.04
09/11/94	6.18	1113.12
10/08/94	4.32	1114.98
11/06/94	3.68	1115.62
09/02/89	14.00	1105.30
10/01/89	13.77	1105.53
10/26/89	13.99	1105.31
11/28/89	14.05	1105.25
04/10/90	15.76	1103.54
05/06/90	15.54	1103.76
06/05/90	15.01	1104.29
07/06/90	13.65	1105.65
08/04/90	13.18	1106.12
09/03/90	13.04	1106.26
10/05/90	13.51	1105.79
11/04/90	13.39	1105.91
12/02/90	13.99	1105.31
04/20/91	15.30	1104.00
05/18/91	15.70	1103.60
06/16/91	13.21	1106.09
07/19/91	12.28	1107.02
08/17/91	12.36	1106.94
08/26/91	12.59	1106.71
09/21/91	12.00	1107.30
09/25/91	13.18	1106.12
10/19/91	13.63	1105.67
11/10/91	13.32	1105.98
12/08/91	13.92	1105.38
04/04/92	14.39	1104.91
04/14/92	14.37	1104.93
05/03/92	14.22	1105.08
05/31/92	13.86	1105.44
06/28/92	13.74	1105.56
07/25/92	12.43	1106.87
08/06/92	13.45	1105.85
08/19/92	12.48	1106.82
09/20/92	11.89	1107.41
10/18/92	11.63	1107.67
09/02/89	14.00	1105.30
10/01/89	13.77	1105.53
10/26/89	13.99	1105.31
11/28/89	14.05	1105.25
04/10/90	15.76	1103.54
05/06/90	15.54	1103.76
06/05/90	15.01	1104.29
07/06/90	13.65	1105.65
08/04/90	13.18	1106.12
09/03/90	13.04	1106.26
10/05/90	13.51	1105.79
11/04/90	13.39	1105.91
12/02/90	13.99	1105.31
04/20/91	15.30	1104.00
05/18/91	15.70	1103.60
06/16/91	13.21	1106.09
07/19/91	12.28	1107.02
08/17/91	12.36	1106.94
08/26/91	12.59	1106.71
09/21/91	12.00	1107.30
09/25/91	13.18	1106.12
10/19/91	13.63	1105.67
11/10/91	13.32	1105.98
12/08/91	13.92	1105.38
04/04/92	14.39	1104.91
04/14/92	14.37	1104.93
05/03/92	14.22	1105.08
05/31/92	13.86	1105.44
06/28/92	13.74	1105.56
07/25/92	12.43	1106.87
08/06/92	13.45	1105.85
08/19/92	12.48	1106.82
09/20/92	11.89	1107.41
10/18/92	11.63	1107.67

MP Elev (msl, ft)=1,119.98
SI (ft.)=122-128

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/15/92	11.24	1108.06
04/17/93	11.58	1107.72
05/16/93	10.90	1108.40
06/12/93	9.84	1109.46
07/09/93	8.64	1110.66
08/07/93	6.92	1112.38
09/04/93	7.13	1112.17
10/03/93	7.75	1111.55
10/30/93	7.73	1111.57
11/26/93	8.39	1110.91
04/23/94	8.27	1111.03
05/21/94	7.78	1111.52
06/18/94	7.50	1111.80
07/16/94	6.86	1112.44
08/10/94	6.26	1113.04
09/11/94	6.18	1113.12
10/08/94	4.32	1114.98
11/06/94	3.68	1115.62

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Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/03/94	3.74	1115.56
04/21/95	6.46	1112.84
05/27/95	4.84	1114.91
06/28/95	4.84	1114.56
07/23/95	3.79	1115.51
08/18/95	5.62	1113.68
09/19/95	5.90	1113.40
09/23/95	5.99	1113.31
10/21/95	5.37	1113.93
11/18/95	5.29	1114.01
12/19/95	6.18	1113.12
04/17/96	8.88	1110.42
05/21/96	7.86	1111.44
06/22/96	7.93	1111.37
07/20/96	6.48	1112.82
08/16/96	6.65	1112.65
09/15/96	7.23	1112.07
10/12/96	6.72	1112.58
11/09/96	6.49	1112.81
05/10/97	6.07	1113.23
06/04/97	5.84	1113.46
06/27/97	5.80	1113.50
08/03/97	6.44	1112.86
08/30/97	7.56	1111.74
09/27/97	8.38	1110.92
10/22/97	8.34	1110.96
11/16/97	7.89	1111.41
12/11/97	7.88	1111.42
06/25/98	6.75	1113.23
08/04/98	8.28	1111.70
09/01/98	9.89	1110.09
09/30/98	11.18	1108.80
10/25/98	10.56	1109.42
11/22/98	9.45	1110.53
11/30/98	9.29	1110.69
12/16/98	9.04	1110.94

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Page Aquifer

MP Elev (msl, ft)=1,119.98
SI (ft.)=122-128

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/17/04	6.38	1113.60
08/18/04	6.97	1113.01
09/16/04	6.92	1113.06
10/13/04	6.68	1113.30
10/25/04	6.74	1113.24
11/07/04	6.90	1113.08
12/08/04	5.99	1113.99
04/20/05	8.97	1111.01
06/01/05	6.29	1113.69

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/24/05	4.94	1115.04
07/29/05	6.42	1113.56
08/23/05	7.30	1112.68
09/24/05	7.04	1112.94
10/25/05	8.37	1111.61
11/24/05	8.46	1111.52
12/24/05	8.67	1111.31
04/22/06	8.60	1111.38
05/20/06	7.80	1112.18

144-054-06DDDD
Paga Aquifer

MP Elev (msl,ft)=1,154.33
SI (ft.)=70-75

Date	Depth to Water (ft)	WL Elev (msl, ft)
09/11/81	20.60	1133.62
09/25/81	20.85	1133.57
10/08/81	20.58	1133.64
11/05/81	20.63	1133.59
12/03/81	20.46	1133.76
03/31/82	20.66	1133.56
04/21/82	19.97	1134.25
05/12/82	19.28	1134.94
06/09/82	18.69	1135.53
07/07/82	18.50	1135.72
08/04/82	18.55	1135.67
09/01/82	18.87	1134.85
09/30/82	18.32	1135.90
10/27/82	18.32	1136.70
12/01/82	17.52	1137.62
05/03/83	16.60	1137.62
06/01/83	16.13	1138.09
12/07/83	17.16	1137.06
05/16/84	14.46	1139.76
05/28/84	14.97	1139.25
06/29/84	14.93	1139.29
07/31/84	16.11	1138.11
08/28/84	17.14	1137.08
09/23/84	17.96	1136.26
10/28/84	17.94	1136.28
11/25/84	17.85	1136.37
12/05/84	18.21	1136.01
12/22/84	17.21	1137.01
04/20/85	18.22	1136.00
05/19/85	18.00	1136.22
06/16/85	17.75	1136.47
07/17/85	18.04	1136.18
08/09/85	18.46	1135.76
09/08/85	18.80	1135.42
10/06/85	18.79	1135.43
11/03/85	18.93	1135.29
05/04/86	15.86	1138.36
06/01/86	14.48	1139.74
07/04/86	14.72	1139.50
08/02/86	15.04	1139.18
08/31/86	14.88	1139.34
09/28/86	14.42	1139.80
10/26/86	13.85	1140.37
11/23/86	13.99	1140.23
04/18/87	12.89	1141.33
05/17/87	13.08	1141.14
06/13/87	11.86	1142.36
07/12/87	13.29	1140.93
08/09/87	13.48	1140.74
09/05/87	13.59	1140.63
10/04/87	13.84	1140.38
10/31/87	14.43	1139.79
11/29/87	14.48	1139.74
12/02/87	14.41	1139.81

144-054-06DDDD
Paga Aquifer

MP Elev (msl,ft)=1,154.33
SI (ft.)=70-75

Date	Depth to Water (ft)	WL Elev (msl, ft)
03/20/88	15.27	1138.95
04/17/88	14.37	1139.85
05/14/88	14.27	1139.95
06/11/88	14.87	1139.35
07/10/88	15.77	1138.45
08/08/88	16.88	1137.34
09/05/88	17.71	1136.51
10/02/88	18.14	1136.06
11/01/88	18.34	1135.88
04/16/89	18.38	1135.84
05/12/89	17.55	1136.67
06/12/89	17.20	1137.02
07/08/89	17.46	1136.76
08/05/89	18.31	1135.91
09/02/89	18.70	1135.52
10/01/89	18.03	1136.19
11/28/89	18.33	1135.89
11/26/89	18.42	1135.80
04/10/90	19.58	1134.64
05/06/90	19.44	1134.78
06/04/90	18.99	1135.23
07/06/90	17.73	1136.49
08/04/90	18.03	1136.19
09/03/90	18.56	1135.66
10/05/90	19.02	1135.20
11/04/90	19.02	1135.20
12/02/90	19.35	1134.87
04/20/91	20.03	1134.19
05/18/91	19.70	1134.52
06/16/91	18.08	1136.14
07/19/91	17.64	1136.58
08/17/91	19.48	1134.74
09/21/91	18.54	1135.68
10/19/91	18.76	1135.46
11/10/91	18.94	1135.28
12/08/91	18.97	1135.25
04/04/92	18.91	1135.31
04/13/92	18.78	1135.44
05/03/92	18.74	1135.48
05/31/92	18.56	1135.66
06/28/92	18.25	1135.97
07/01/92	18.30	1135.92
07/25/92	17.71	1136.51
08/19/92	17.95	1136.27
09/20/92	17.12	1137.10
10/18/92	17.04	1137.18
11/15/92	17.02	1137.20
04/17/93	16.72	1137.50
05/16/93	15.69	1138.53
06/12/93	14.90	1139.32
07/09/93	14.73	1139.49
08/07/93	12.60	1141.62
09/04/93	13.88	1140.34
10/03/93	13.29	1140.93

144-054-06DDDD
Paga Aquifer

MP Elev (msl,ft)=1,154.33
SI (ft.)=70-75

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/30/93	13.85	1140.37
11/26/93	13.89	1140.33
04/23/94	13.39	1140.83
05/21/94	12.76	1141.46
06/18/94	12.29	1141.93
07/16/94	12.94	1143.28
08/10/94	10.53	1143.69
09/11/94	10.38	1143.84
10/08/94	9.29	1144.93
11/06/94	9.50	1144.72
12/03/94	9.42	1144.80
05/27/95	9.12	1145.10
06/28/95	10.26	1143.96
07/23/95	9.43	1144.79
08/18/95	11.12	1143.10
09/23/95	11.19	1143.03
10/21/95	10.79	1143.43
11/18/95	11.18	1143.04
12/19/95	11.95	1142.27
04/17/96	11.36	1142.86
05/21/96	10.50	1143.72
06/22/96	11.36	1142.86
07/20/96	10.89	1143.33
08/16/96	11.89	1142.33
09/20/96	12.08	1142.14
10/12/96	12.62	1141.60
09/15/96	12.79	1141.43
10/12/96	12.89	1141.33
11/09/96	12.90	1141.32
11/13/96	12.90	1141.32
05/10/97	9.04	1145.18
06/04/97	9.95	1144.27
06/27/97	9.86	1144.36
08/03/97	11.49	1142.73
08/30/97	12.44	1141.78
09/27/97	13.12	1141.10
10/22/97	12.92	1141.30
11/16/97	13.39	1140.83
12/11/97	13.58	1140.64
04/25/98	11.74	1142.48
05/30/98	11.67	1142.55
06/24/98	11.65	1142.57
08/04/98	13.58	1140.64
09/01/98	14.35	1139.87
09/30/98	15.21	1139.01
10/25/98	13.78	1140.44
11/22/98	13.29	1140.93
12/16/98	13.20	1141.02
04/14/99	10.65	1143.57
05/17/99	9.27	1144.95
06/16/99	10.28	1143.94
07/21/99	10.90	1143.32
08/17/99	11.16	1143.06

08/23/05 11.53 1142.80
09/24/05 12.41 1141.92

MP Elev (msl,ft)=1,154.33
SI (ft.)=70-75

Date Depth to WL Elev
Water (ft) (msl, ft)

04/22/06 11.54 1142.79
05/20/06 11.62 1142.71

MP Elev (msl,ft)=1,136.44
SI (ft.)=84-89

Date Depth to WL Elev
Water (ft) (msl, ft)

10/12/96 2.48 1133.96
11/09/96 2.37 1134.07

05/10/97 0.00 1136.43
06/04/97 0.44 1136.00

06/27/97 0.81 1135.63
07/30/97 1.28 1135.16

08/03/97 1.56 1134.88
08/30/97 2.60 1133.84

09/27/97 3.36 1133.08
10/22/97 3.27 1133.17

11/16/97 3.12 1133.32
12/11/97 3.10 1133.34

04/25/98 2.22 1134.22
05/30/98 1.81 1134.63

06/09/98 1.91 1134.53
06/25/98 1.73 1134.71

08/04/98 3.34 1133.10
09/01/98 4.53 1131.91

09/30/98 5.28 1131.16
10/25/98 4.43 1132.01

11/22/98 3.65 1132.79
12/16/98 3.38 1133.06

04/14/99 2.39 1134.05
05/17/99 0.00 1136.43

06/16/99 0.00 1136.43
07/21/99 0.50 1135.94

08/17/99 1.75 1134.69
09/15/99 0.66 1135.78

10/13/99 2.09 1134.35
11/07/99 2.28 1134.16

12/02/99 2.47 1133.97

09/15/99 11.99 1142.23
10/13/99 12.53 1141.69

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Page Aquifer

Date Depth to WL Elev
Water (ft) (msl, ft)

10/25/05 12.72 1141.61
11/24/05 13.02 1141.31

12/24/05 13.35 1140.98

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Date Depth to WL Elev
Water (ft) (msl, ft)

04/10/90 8.36 1128.08
05/06/90 8.17 1128.27

06/05/90 7.63 1128.81
07/06/90 7.44 1129.00

08/04/90 7.83 1128.61
09/03/90 7.07 1129.37

10/05/90 8.19 1128.25
11/04/90 8.19 1128.25

12/02/90 8.29 1128.15

04/20/91 8.70 1127.74
05/18/91 7.93 1128.51

06/16/91 7.44 1129.00
07/19/91 7.69 1128.75

08/17/91 8.13 1128.31
09/21/91 8.23 1128.21

10/19/91 8.26 1128.18
11/10/91 8.19 1128.25

12/08/91 8.17 1128.27

04/04/92 8.20 1128.24
04/13/92 8.23 1128.21

05/03/92 8.14 1128.30
06/28/92 7.78 1128.66

07/25/92 7.43 1129.01
08/06/92 7.65 1128.79

08/19/92 7.94 1128.50
09/20/92 7.05 1129.39

10/18/92 7.09 1129.35
11/15/92 6.88 1129.56

04/17/93 6.45 1129.99
05/16/93 6.34 1130.10

06/12/93 5.84 1130.60
07/03/93 5.46 1130.98

04/20/01 2.94 1133.50
05/16/01 1.82 1134.96

06/12/01 1.13 1135.31
07/07/01 1.60 1134.84

08/07/01 2.31 1134.13
09/01/01 3.18 1133.26

09/26/01 3.89 1132.55
10/22/01 4.06 1132.38

11/21/01 4.03 1132.41

MP Elev (msl,ft)=1,136.44
SI (ft.)=84-89

Date Depth to WL Elev
Water (ft) (msl, ft)

04/17/02 5.47 1130.97
05/14/02 4.82 1131.62

06/07/02 4.54 1131.90
07/02/02 4.42 1132.02

07/30/02 3.13 1133.31

MP Elev (msl,ft)=1,135.06
SI (ft.)=58-63

Date Depth to WL Elev
Water (ft) (msl, ft)

12/19/95 13.99 1121.07

04/17/96 12.14 1122.92
05/21/96 11.51 1123.55

06/22/96 13.00 1122.06
07/20/96 13.72 1121.34

08/16/96 14.44 1120.62
09/15/96 13.66 1121.40

10/12/96 13.95 1121.11
11/09/96 13.85 1121.21

05/10/97 6.88 1126.18
06/04/97 10.95 1124.11

06/27/97 11.94 1123.12
07/30/97 13.20 1121.86

08/03/97 13.53 1121.53
08/30/97 14.39 1120.67

09/27/97 14.73 1120.33
10/22/97 14.27 1120.79

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Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/21/01	37.70	1120.47
04/17/02	38.57	1119.60
05/14/02	38.54	1119.63
06/07/02	38.63	1119.54
07/02/02	38.64	1119.53
07/30/02	38.52	1119.65
08/15/02	38.45	1119.72
08/26/02	38.42	1119.75
09/20/02	38.42	1119.72
10/16/02	38.67	1119.50
11/10/02	38.73	1119.44
04/16/03	39.29	1118.88
05/17/03	39.31	1118.86
06/15/03	39.03	1119.14
07/09/03	38.70	1119.47
07/30/03	38.52	1119.65
08/26/03	38.40	1119.77
09/23/03	38.42	1119.75
10/16/03	38.55	1119.62
11/09/03	38.55	1119.62

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Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/17/89	9.74	1129.26

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Undefined Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/10/90	44.27	1123.02
05/06/90	44.04	1123.25
06/05/90	43.83	1123.46
07/06/90	43.89	1123.40
08/04/90	44.20	1123.09
09/03/90	44.38	1122.91
10/05/90	44.42	1122.87
11/04/90	44.37	1122.92
12/02/90	44.34	1122.95
04/20/91	44.18	1123.11
05/18/91	43.89	1123.40
06/16/91	43.80	1123.49
07/19/91	44.09	1123.20
08/17/91	44.44	1122.85
09/21/91	44.74	1122.55
10/19/91	44.78	1122.51
11/10/91	44.59	1122.70
12/08/91	44.40	1122.89

MP Elev (msl, ft)=1,158.17
SI (ft.)=103-110

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/14/04	38.80	1119.37
05/08/04	38.69	1119.48
06/12/04	38.55	1119.62
07/17/04	38.28	1119.89
08/18/04	37.74	1120.43
09/16/04	37.56	1120.61
10/13/04	37.60	1120.57
11/07/04	37.69	1120.48
12/08/04	37.38	1120.79
04/20/05	37.75	1120.42
06/01/05	37.52	1120.65
06/24/05	37.26	1120.91
07/29/05	36.35	1121.82
08/23/05	36.32	1121.85
09/24/05	36.60	1121.57
10/25/05	36.95	1121.22
11/24/05	37.20	1120.97
12/24/05	37.34	1120.83
04/22/06	35.97	1122.20
05/20/06	37.55	1120.82

MP Elev (msl, ft)=1,139.00
SI (ft.)=0-26

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/23/89	9.76	1129.24

MP Elev (msl, ft)=1,167.29
SI (ft.)=230-235

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/19/95	40.73	1126.56
04/17/96	40.56	1126.73
05/21/96	40.69	1126.60
06/22/96	40.78	1126.51
07/20/96	39.88	1127.41
08/16/96	41.08	1126.21
09/15/96	41.18	1126.11
10/12/96	41.22	1126.07
11/09/96	41.23	1126.06
05/10/97	40.15	1127.14
06/04/97	40.39	1126.90
06/27/97	40.39	1126.90
07/30/97	40.67	1126.62
08/03/97	40.65	1126.64
08/30/97	40.96	1126.33
09/27/97	41.14	1126.15
10/16/97	41.25	1126.04

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/22/97	41.19	1126.10
11/16/97	41.20	1126.09
12/11/97	41.24	1126.05
04/25/98	40.98	1126.31
05/30/98	40.93	1126.36
06/09/98	41.05	1126.24
06/25/98	40.92	1126.37
08/04/98	41.55	1125.74
09/01/98	41.84	1125.45
09/30/98	42.17	1125.12
10/25/98	41.75	1125.54
11/22/98	41.47	1125.82
12/16/98	41.52	1125.77
04/14/99	40.76	1126.53
05/17/99	40.46	1126.83
06/16/99	40.64	1126.65
07/21/99	40.68	1126.61
08/17/99	40.83	1126.46
09/15/99	40.78	1126.51
10/13/99	40.87	1126.42
11/07/99	40.87	1126.42
12/02/99	40.90	1126.39
04/04/00	40.95	1126.34
05/02/00	41.05	1126.24
05/31/00	41.16	1126.13
06/25/00	41.12	1126.17
08/01/00	41.35	1125.94
08/29/00	41.38	1125.91
09/26/00	41.49	1125.80
10/23/00	41.40	1125.89
11/23/00	41.09	1126.20
04/20/01	40.83	1126.46
05/16/01	40.82	1126.47
06/12/01	40.83	1126.46
07/07/01	41.09	1126.20
08/07/01	41.16	1126.13
09/01/01	41.39	1125.90

MP Elev (msl, ft)=1,167.29
SI (ft.)=230-235

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/09/03	41.36	1125.93
07/30/03	41.39	1125.90
08/26/03	41.66	1125.63
09/23/03	41.61	1125.68
10/16/03	41.70	1125.59
11/09/03	41.67	1125.62
04/14/04	41.59	1125.70
05/08/04	41.56	1125.73
06/12/04	41.26	1126.03
07/17/04	41.10	1126.19
08/18/04	41.07	1126.22
09/16/04	41.00	1126.29
10/13/04	41.03	1126.26
11/07/04	40.84	1126.45
12/08/04	42.70	1124.59
08/03/05	40.38	1126.91

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Date	Depth to Water (ft)	WL Elev (msl, ft)
04/13/92	14.63	1141.31

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Date	Depth to Water (ft)	WL Elev (msl, ft)
07/25/91	21.11	1135.62

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Date	Depth to Water (ft)	WL Elev (msl, ft)
09/11/81	25.61	1134.38
09/25/81	25.39	1134.40
10/08/81	25.22	1134.77
11/05/81	25.09	1134.90
12/03/81	25.00	1134.99
03/31/82	25.15	1134.84
04/21/82	24.56	1135.43
05/12/82	24.28	1135.71
06/09/82	24.11	1135.88
07/07/82	24.36	1135.43
08/04/82	25.10	1134.89
09/01/82	25.40	1134.59
09/30/82	25.56	1134.43
10/27/82	24.67	1135.32
12/01/82	24.32	1135.47
05/03/83	23.96	1136.03
06/01/83	23.76	1136.23
12/07/83	24.02	1135.97
01/11/84	24.09	1135.90
04/24/84	23.26	1136.73
05/16/84	23.18	1136.81
05/28/84	23.40	1136.59
06/25/84	23.51	1136.48
07/31/84	24.42	1135.57
08/25/84	24.96	1135.03
09/23/84	25.26	1134.73
10/26/84	24.74	1135.25
11/25/84	24.59	1135.40
12/05/84	24.74	1135.25
12/22/84	24.79	1135.20
04/20/85	24.47	1135.52
05/19/85	24.12	1135.87
06/16/85	24.25	1135.74
07/17/85	24.69	1135.30
08/09/85	24.76	1135.23
09/08/85	25.76	1134.23

MP Elev (msl,ft)=1,155.94
SI (ft.)=90-110

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/04/86	24.07	1135.32
06/01/86	24.18	1135.81
07/04/86	24.50	1135.49
08/02/86	24.36	1135.63
08/31/86	24.16	1135.83
09/28/86	24.01	1135.98
10/26/86	23.78	1136.21
11/23/86	23.75	1136.24
04/18/87	23.05	1136.94
05/17/87	23.47	1136.52
06/13/87	23.11	1136.88
07/12/87	23.60	1136.39
08/09/87	23.49	1136.50
09/05/87	23.32	1136.67
10/04/87	23.14	1136.85
10/31/87	23.26	1136.73

MP Elev (msl,ft)=1,156.73
SI (ft.)=93-113

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/13/92	21.60	1135.13

MP Elev (msl,ft)=1,159.99
SI (ft.)=80-85

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/29/87	23.11	1136.88
12/02/87	23.05	1136.94
03/20/88	23.04	1136.95
04/17/88	22.80	1137.19
05/14/88	22.93	1137.06
06/11/88	23.68	1136.31
07/10/88	24.36	1135.63
08/08/88	25.12	1134.87
09/05/88	25.41	1134.58
10/02/88	25.37	1134.62
11/01/88	24.60	1135.39
04/16/89	24.68	1135.31
05/12/89	24.45	1135.54
06/12/89	24.58	1135.41
07/08/89	25.10	1134.89
08/05/89	26.01	1133.98
09/02/89	25.77	1134.22
10/01/89	25.36	1134.63
10/28/89	25.42	1134.57
11/26/89	25.31	1134.68
04/10/90	25.43	1134.56
05/07/90	25.06	1134.93
06/05/90	24.71	1135.28
07/06/90	24.64	1135.35
08/04/90	25.21	1134.78
09/03/90	25.94	1134.05
10/05/90	25.82	1134.07
11/04/90	25.81	1134.18
12/02/90	25.62	1134.17
04/20/91	25.55	1134.44
05/18/91	25.00	1134.99
06/16/91	24.75	1135.24
07/19/91	25.25	1134.74
08/17/91	25.85	1134.14
09/22/91	26.05	1133.94
10/19/91	26.00	1133.99

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/10/91	25.87	1134.12
12/08/91	25.78	1134.21
04/04/92	25.08	1134.91
04/14/92	24.97	1135.02
05/03/92	24.90	1135.09
05/31/92	24.78	1135.21
06/28/92	24.63	1135.36
07/01/92	24.68	1135.31
07/25/92	24.65	1135.34
08/19/92	25.46	1134.53
09/20/92	25.04	1134.95
10/18/92	25.30	1134.69
11/15/92	25.26	1134.73
04/17/93	24.33	1135.66
05/16/93	24.23	1135.76
06/12/93	24.00	1135.99
07/03/93	24.03	1135.96
08/07/93	23.63	1136.36

MP Elev (msl,ft)=1,159.99
SI (ft.)=80-85

Date	Depth to Water (ft)	WL Elev (msl, ft)
09/15/99	21.10	1138.89
10/13/99	21.36	1138.63
11/07/99	21.29	1138.70
12/02/99	21.28	1138.71
04/04/00	21.20	1138.79
05/02/00	21.40	1138.59
05/31/00	21.70	1138.29
06/25/00	21.63	1138.36
08/01/00	22.14	1137.85
08/29/00	22.06	1137.93
09/26/00	22.21	1137.78
10/23/00	21.99	1138.00
11/23/00	21.71	1138.28
04/20/01	21.18	1138.81
05/17/01	21.19	1138.80
06/12/01	21.15	1138.84
07/07/01	21.57	1138.42
08/02/01	21.70	1138.29
08/07/01	21.65	1138.34
09/01/01	21.79	1138.20
09/26/01	21.88	1138.11
10/22/01	24.75	1135.24
11/21/01	21.78	1138.21
04/17/02	22.02	1137.97
05/14/02	21.63	1138.36
06/07/02	22.10	1137.89
07/02/02	22.24	1137.75
07/30/02	21.92	1138.07
08/26/02	22.06	1137.93
09/20/02	22.10	1137.89
10/16/02	22.02	1137.97
11/10/02	21.94	1138.05
04/16/03	22.00	1137.99

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/27/97	20.40	1139.59
08/03/97	20.84	1139.15
09/30/97	21.17	1138.82
09/27/97	21.23	1138.76
10/22/97	21.14	1138.85
11/16/97	21.46	1138.53
12/11/97	21.47	1138.52
04/25/98	21.29	1138.70
05/30/98	21.30	1138.69
06/24/98	21.35	1138.64
08/04/98	22.35	1137.64
09/01/98	22.60	1137.39
09/30/98	22.84	1137.15
10/25/98	22.32	1137.67
11/22/98	22.10	1137.89
12/16/98	22.17	1137.82
04/14/99	21.53	1138.46
05/18/99	20.93	1139.06
06/16/99	20.77	1139.22
07/21/99	20.93	1139.06
08/17/99	21.14	1138.85

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MP Elev (msl, ft)=1,159.99
SI (ft.)=80-85

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/23/05	20.05	1139.94
09/24/05	20.39	1139.60
10/25/05	20.47	1139.52
11/24/05	20.65	1139.34

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MP Elev (msl, ft)=1,166.90
SI (ft.)=68-74

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/27/70	21.70	1145.20
07/09/70	21.53	1145.37
08/05/70	21.64	1145.26
09/03/70	21.67	1145.23
10/01/70	21.78	1145.12
11/04/70	22.02	1144.88
12/03/70	22.01	1144.89
01/20/71	22.14	1144.76
02/17/71	22.36	1144.54
03/20/71	22.33	1144.57
04/14/71	21.73	1145.17
05/05/71	21.75	1145.15
06/16/71	21.95	1144.95
07/22/71	22.21	1144.69
09/18/71	21.94	1144.96
10/04/71	22.53	1144.37
10/05/71	22.75	1144.33
10/29/71	22.75	1144.33
12/03/71	22.57	1144.33
03/08/72	22.90	1144.00

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/20/72	22.07	1144.83
06/08/72	22.07	1144.83
10/20/72	22.38	1144.52
11/29/72	22.58	1144.32
12/07/73	22.86	1144.04
03/27/74	23.29	1143.61
06/04/74	22.06	1144.84
09/04/74	21.93	1144.97
12/05/74	22.24	1144.66
03/06/75	22.74	1144.16
06/04/75	21.15	1145.75
09/10/75	21.54	1145.36
12/02/75	21.99	1144.91
02/27/76	22.39	1144.51
06/03/76	21.77	1145.13
09/07/76	22.56	1144.54
11/29/76	22.77	1144.13
03/01/77	23.09	1143.81
05/31/77	23.17	1143.73
06/02/77	23.12	1143.78
06/21/77	23.18	1143.72
07/12/77	23.21	1143.69
08/30/77	23.33	1143.57
09/22/77	23.44	1143.46
11/30/77	23.46	1143.44
02/27/78	23.73	1143.17
03/16/78	23.73	1143.17
06/09/78	21.92	1144.98
06/14/78	22.05	1144.85
07/12/78	22.05	1144.85
08/10/78	22.37	1144.53
10/03/78	22.89	1144.01

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MP Elev (msl, ft)=1,166.90
SI (ft.)=68-74

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/03/85	23.03	1143.87
05/04/86	22.08	1144.82
06/01/86	21.86	1145.04
07/04/86	21.67	1145.23
08/02/86	21.57	1145.33
08/31/86	21.49	1145.41
09/28/86	20.97	1145.93
10/26/86	21.71	1145.19
11/23/86	21.92	1144.98
04/18/87	20.42	1146.48
05/17/87	20.84	1146.06
06/13/87	20.08	1146.82
07/12/87	21.97	1145.90
08/09/87	20.90	1145.93
09/05/87	21.09	1145.81
10/04/87	21.10	1145.80
10/31/87	21.36	1145.54

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MP Elev (msl, ft)=1,166.90
SI (ft.)=68-74

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/08/91	23.88	1143.02
04/04/92	23.69	1143.21
04/14/92	23.77	1143.13
05/03/92	23.98	1142.92
05/31/92	24.12	1142.78
06/28/92	24.22	1142.68
07/01/92	24.41	1142.49
07/25/92	24.29	1142.61
08/19/92	24.32	1142.58
09/20/92	24.31	1142.59
10/18/92	24.47	1142.43
11/15/92	24.50	1142.40
04/17/93	23.53	1143.37
05/16/93	23.73	1143.17
06/12/93	23.82	1143.08
07/09/93	23.92	1142.98
08/07/93	23.72	1143.18

Date	MP Elev (msl, ft)	SI (ft.)	Depth to Water (ft)	WL Elev (msl, ft)
11/29/87	1145.57	21.33	23.50	1143.40
12/02/87	1145.73	21.17	23.39	1143.51
			23.46	1143.44
			23.35	1143.55
03/20/88	1145.62	21.28	23.03	1143.87
04/17/88	1145.80	21.10	22.95	1143.95
05/14/88	1145.62	21.28	22.81	1144.09
06/11/88	1145.44	21.46	22.34	1144.56
07/10/88	1145.22	21.68	21.62	1145.28
08/08/88	1144.07	22.83	20.89	1146.01
09/05/88	1144.95	21.95	18.86	1146.04
10/02/88	1144.81	22.09	19.00	1147.90
11/01/88	1144.44	22.46	19.85	1147.05
04/16/89	1144.44	22.46		
05/12/89	1145.39	21.51	18.06	1148.84
06/12/89	1145.07	21.83	17.65	1149.25
07/08/89	1144.95	21.95	17.36	1149.54
08/05/89	1144.65	22.25	17.30	1149.60
09/02/89	1144.58	22.32	17.32	1149.58
10/01/89	1144.66	22.24	17.30	1149.60
09/05/89	1144.45	22.45	17.20	1149.70
10/28/89	1144.45	22.45	17.10	1149.80
11/26/89	1144.42	22.48	17.15	1149.75
04/10/90	1143.88	23.02	14.88	1152.02
05/07/90	1143.92	22.98	15.58	1151.32
06/05/90	1143.92	22.98	15.86	1151.04
07/06/90	1143.90	23.00	15.86	1151.07
08/04/90	1143.81	23.09	15.83	1151.12
09/03/90	1143.76	23.14	15.78	1151.12
10/05/90	1143.69	23.21	15.82	1151.08
11/04/90	1143.62	23.28	16.00	1150.90
12/02/90	1143.54	23.36	16.39	1150.51
			16.39	1150.51
04/20/91	1143.21	23.69	16.69	1150.21
05/18/91	1143.12	23.78	12.64	1154.26
06/16/91	1143.28	23.62	13.72	1153.18
07/19/91	1143.40	23.50	14.19	1152.71
08/17/91	1143.48	23.42	14.93	1151.97
09/21/91	1143.36	23.54	15.39	1151.51
10/19/91	1143.18	23.72	15.60	1151.30
11/10/91	1143.15	23.75		

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Date	MP Elev (msl, ft)	SI (ft.)	Depth to Water (ft)	WL Elev (msl, ft)
09/04/83	1143.40	23.50	1143.40	
10/03/83	1143.51	23.39	1143.51	
10/30/83	1143.44	23.46	1143.44	
11/26/83	1143.55	23.35	1143.55	
04/23/84	1143.87	23.03	1143.87	
05/21/84	1143.95	22.95	1143.95	
06/18/84	1144.09	22.81	1144.09	
07/16/84	1144.56	22.34	1144.56	
08/10/84	1145.28	21.62	1145.28	
09/11/84	1146.01	20.89	1146.01	
10/08/84	1146.04	18.86	1146.04	
11/06/84	1147.90	19.00	1147.90	
12/03/84	1147.05	19.85	1147.05	
04/21/85	1148.84	18.06	1148.84	
05/27/85	1149.25	17.65	1149.25	
06/28/85	1149.54	17.36	1149.54	
07/23/85	1149.60	17.30	1149.60	
08/18/85	1149.58	17.32	1149.58	
09/23/85	1149.60	17.30	1149.60	
10/21/85	1149.70	17.20	1149.70	
11/18/85	1149.80	17.10	1149.80	
12/19/85	1149.75	17.15	1149.75	
04/17/86	1152.02	14.88	1152.02	
05/21/86	1151.32	15.58	1151.32	
06/22/86	1151.04	15.86	1151.04	
07/20/86	1151.07	15.83	1151.07	
08/16/86	1151.12	15.78	1151.12	
09/20/86	1151.08	15.82	1151.08	
09/15/86	1150.90	16.00	1150.90	
10/12/86	1150.51	16.39	1150.51	
11/09/86	1150.21	16.69	1150.21	
05/10/87	1154.26	12.64	1154.26	
06/04/87	1153.18	13.72	1153.18	
06/27/87	1152.71	14.19	1152.71	
08/03/87	1151.97	14.93	1151.97	
08/30/87	1151.51	15.39	1151.51	
09/27/87	1151.30	15.60	1151.30	

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Date	MP Elev (msl, ft)	SI (ft.)	Depth to Water (ft)	WL Elev (msl, ft)
09/09/81	1135.27	32.65	1135.27	
09/11/81	1135.27	32.65	1135.27	
09/25/81	1135.51	32.41	1135.51	
10/08/81	1135.88	32.04	1135.88	
10/22/81	1136.02	31.90	1136.02	
11/05/81	1136.12	31.80	1136.12	
12/03/81	1136.29	31.63	1136.29	
03/31/82	1136.31	31.61	1136.31	
04/21/82	1136.79	31.13	1136.79	
05/12/82	1137.10	30.82	1137.10	
06/09/82	1137.33	30.59	1137.33	
07/07/82	1136.63	31.29	1136.63	
08/04/82	1134.94	32.98	1134.94	
09/01/82	1134.78	33.14	1134.78	
09/30/82	1135.22	32.70	1135.22	
10/27/82	1136.70	31.22	1136.70	
12/01/82	1136.92	31.00	1136.92	
05/03/83	1137.56	30.36	1137.56	
06/01/83	1137.71	30.21	1137.71	
12/07/83	1137.44	30.48	1137.44	
01/11/84	1137.34	30.56	1137.34	
04/23/84	1138.28	29.64	1138.28	
05/16/84	1138.37	29.55	1138.37	
05/28/84	1138.06	29.86	1138.06	
06/29/84	1137.15	30.77	1137.15	
07/31/84	1136.48	31.44	1136.48	

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Date	MP Elev (msl, ft)	SI (ft.)	Depth to Water (ft)	WL Elev (msl, ft)
05/17/99	1152.72	14.18	1152.72	
06/16/99	1152.92	13.98	1152.92	
07/21/99	1152.24	14.66	1152.24	
08/17/99	1151.72	15.18	1151.72	
09/15/99	1151.24	15.66	1151.24	
10/13/99	1151.17	15.73	1151.17	
11/07/99	1151.10	15.80	1151.10	
12/02/99	1151.98	15.92	1151.98	
04/04/00	1150.13	16.77	1150.13	
05/02/00	1150.00	16.90	1150.00	
05/31/00	1149.75	17.15	1149.75	
06/25/00	1150.03	16.87	1150.03	
08/01/00	1150.46	16.44	1150.46	
08/29/00	1150.28	16.62	1150.28	
09/26/00	1149.85	17.05	1149.85	
10/23/00	1149.82	17.08	1149.82	
11/23/00	1149.66	17.24	1149.66	
04/20/01	1150.21	16.69	1150.21	
05/17/01	1150.08	16.82	1150.08	
06/12/01	1150.31	16.59	1150.31	
07/07/01	1150.10	16.80	1150.10	
08/02/01	1149.82	17.08	1149.82	
08/07/01	1149.83	17.07	1149.83	
09/01/01	1149.58	17.32	1149.58	
09/26/01	1149.30	17.60	1149.30	
10/22/01	1149.32	17.58	1149.32	

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Date	MP Elev (msl, ft)	SI (ft.)	Depth to Water (ft)	WL Elev (msl, ft)
10/31/87	1138.33	29.59	1138.33	
11/29/87	1138.49	29.43	1138.49	
12/02/87	1138.53	29.39	1138.53	
03/20/88	1138.53	29.39	1138.53	
04/17/88	1138.73	29.19	1138.73	
05/14/88	1138.39	29.53	1138.39	
06/11/88	1136.62	31.30	1136.62	
07/10/88	1134.93	33.49	1134.93	
08/08/88	1135.33	32.59	1135.33	
09/05/88	1135.69	32.23	1135.69	
10/02/88	1135.90	32.02	1135.90	
11/01/88	1136.72	31.20	1136.72	
04/16/89	1136.84	31.08	1136.84	
05/12/89	1136.02	31.90	1136.02	
06/12/89	1134.35	33.57	1134.35	
07/08/89	1133.35	34.57	1133.35	
08/05/89	1134.90	33.02	1134.90	
09/02/89	1135.72	32.20	1135.72	
10/01/89	1135.72	32.20	1135.72	
10/28/89	1135.96	32.00	1135.96	
11/26/89	1135.89	32.03	1135.89	
04/10/90	1136.27	31.65	1136.27	
05/07/90	1136.70	31.22	1136.70	
06/05/90	1136.63	31.29	1136.63	
07/06/90	1136.70	31.22	1136.70	
08/04/90	1134.23	33.69	1134.23	

Date	Depth to Water (ft)	WL Elev (msl, ft)	MP Elev (msl, ft)=1,167.92	SI (ft.)=79-84
08/28/84	33.05	1134.87	1134.91	
09/23/84	32.16	1135.76	1135.10	
10/28/84	31.24	1136.68	1135.42	
11/23/84	31.10	1136.82	1135.38	
12/05/84	31.28	1136.64	1135.92	
12/22/84	31.36	1136.56	1136.49	
04/20/85	30.74	1137.18	1136.49	
05/19/85	30.56	1137.36	1136.82	
06/16/85	30.81	1137.11	1136.30	
07/17/85	32.47	1135.45	1134.03	
08/09/85	33.50	1134.42	1134.98	
09/08/85	33.79	1134.13	1135.39	
10/06/85	32.43	1135.72	1135.64	
11/03/85	32.20	1135.51	1136.46	
05/04/86	30.41	1137.51	1136.53	
06/01/86	30.52	1137.40	1136.59	
07/04/86	31.84	1136.08	1136.52	
08/02/86	30.11	1137.81	1136.83	
08/31/86	29.96	1137.96	1136.81	
09/28/86	30.33	1137.59	1136.49	
10/26/86	30.12	1137.80	1134.04	
11/23/86	30.06	1137.86	1136.22	
05/17/87	30.79	1137.13	1136.10	
06/13/87	29.43	1138.49	1136.42	
07/12/87	30.49	1137.43	1137.26	
08/09/87	30.69	1137.27	1137.35	
09/05/87	29.69	1138.23	1137.57	
10/04/87	29.47	1138.45	1137.43	

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Date	Depth to Water (ft)	WL Elev (msl, ft)	MP Elev (msl, ft)=1,167.92	SI (ft.)=79-84
08/07/93	29.64	1138.28	1140.79	
09/04/93	29.92	1138.00	1140.80	
10/03/93	29.79	1138.13	1140.70	
10/30/93	29.88	1138.04	1140.52	
11/26/93	29.72	1138.20	1140.26	
04/23/94	29.22	1138.70	1140.40	
05/21/94	29.26	1138.66	1138.58	
06/18/94	29.12	1138.80	1135.58	
07/16/94	28.48	1139.44	1139.69	
08/10/94	28.48	1139.44	1139.95	
09/11/94	27.92	1140.00	1140.40	
10/08/94	26.09	1141.83	1140.87	
11/06/94	25.46	1142.46	1140.94	
12/03/94	25.34	1142.58	1141.12	
04/21/95	26.36	1141.56	1139.96	
05/27/95	25.62	1142.30	1140.24	
06/28/95	25.72	1142.20	1140.31	
07/23/95	25.02	1142.90	1140.05	
08/18/95	26.65	1141.27	1140.09	
09/23/95	26.10	1141.82	1140.22	
10/21/95	25.53	1142.39	1140.14	
11/18/95	25.59	1142.33	1139.94	
12/19/95	25.85	1142.07	1140.25	

Date	Depth to Water (ft)	WL Elev (msl, ft)	MP Elev (msl, ft)=1,167.92	SI (ft.)=79-84
05/21/96	26.40	1141.52	1141.52	
06/22/96	26.61	1141.31	1141.31	
07/20/96	26.49	1141.43	1141.43	
08/16/96	27.92	1140.00	1140.00	
09/20/96	28.46	1139.46	1139.46	
10/16/96	27.44	1140.48	1140.48	
11/10/96	27.19	1140.73	1140.73	
11/09/96	27.30	1140.62	1140.62	
06/04/97	26.00	1141.92	1141.92	
06/27/97	26.07	1141.85	1141.85	
08/03/97	26.82	1141.10	1141.10	
08/30/97	27.37	1140.55	1139.46	
09/27/97	26.75	1141.17	1139.18	
10/22/97	27.20	1140.72	1139.83	
11/16/97	27.36	1140.56	1139.75	
12/11/97	27.38	1140.54	1139.83	
04/25/98	27.23	1140.69	1140.15	
05/30/98	27.17	1140.75	1140.15	
06/24/98	27.08	1140.84	1140.05	
08/04/98	29.12	1138.80	1141.21	
09/01/98	29.07	1138.85	1141.10	
09/30/98	29.00	1138.92	1141.00	
10/25/98	28.33	1139.59	1140.94	
12/16/98	28.10	1139.82	1141.12	
04/14/99	27.38	1140.54	1141.39	
05/18/99	26.18	1141.74	1141.06	
06/16/99	25.90	1142.02	1141.85	
07/21/99	27.54	1140.38	1143.21	
08/17/99	27.05	1140.87	1142.68	
09/15/99	27.09	1140.83	1142.44	
10/13/99	27.14	1140.78	1142.84	

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Date	Depth to Water (ft)	WL Elev (msl, ft)	MP Elev (msl, ft)=1,167.92	SI (ft.)=79-84
10/25/05	26.10	1141.82	1141.82	
11/24/05	26.32	1141.60	1141.53	
12/24/05	26.35	1141.57	1141.39	

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Date	Depth to Water (ft)	WL Elev (msl, ft)	MP Elev (msl, ft)=1,168.06	SI (ft.)=59-65
09/25/81	42.36	1125.70	1125.70	
10/08/81	40.28	1127.78	1127.78	
10/21/81	39.82	1128.24	1128.24	
11/05/81	39.74	1128.32	1128.32	
12/03/81	39.56	1128.48	1128.48	
03/30/82	38.55	1129.51	1129.51	
04/21/82	38.06	1130.00	1130.00	
05/12/82	38.46	1129.60	1129.60	
06/09/82	38.52	1129.54	1129.54	
07/07/82	39.06	1129.00	1129.00	
08/04/82	41.74	1126.32	1126.32	

Date	Depth to Water (ft)	WL Elev (msl, ft)
09/01/82	41.79	1126.27
10/01/82	41.04	1127.02
10/27/82	39.10	1128.96
12/01/82	38.32	1129.14
05/03/83	38.26	1129.80
06/01/83	38.35	1129.71
12/07/83	38.83	1129.23
04/23/84	38.00	1130.06
05/28/84	38.58	1129.48
06/29/84	38.41	1129.65
07/31/84	42.38	1125.68
08/28/84	43.32	1124.74
09/23/84	40.00	1128.06
10/28/84	39.71	1128.35
11/25/84	39.32	1128.74
12/05/84	39.38	1128.68
12/22/84	37.71	1130.35
04/20/85	38.59	1129.47
05/19/85	38.57	1129.49
06/16/85	38.95	1129.11
07/17/85	41.80	1126.26
08/09/85	42.97	1125.09
09/08/85	40.30	1127.76
10/05/85	39.98	1128.08
11/03/85	39.75	1128.31
05/04/86	40.05	1128.01
06/01/86	38.32	1129.74
07/04/86	40.34	1127.72
08/02/86	37.49	1130.57
08/31/86	38.80	1129.26
09/28/86	38.68	1129.68
10/26/86	38.34	1129.72
11/23/86	38.29	1129.77
04/18/87	37.98	1130.08
05/17/87	38.08	1129.98
06/13/87	37.27	1130.79
07/12/87	38.47	1129.59
08/09/87	38.99	1129.07
09/05/87	38.59	1129.47
10/04/87	38.49	1129.57
10/31/87	38.62	1129.44
11/25/87	38.41	1129.65
12/02/87	38.41	1129.65

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Date	Depth to Water (ft)	WL Elev (msl, ft)
10/03/93	38.32	1129.74
10/30/93	38.32	1129.74
11/26/93	38.23	1129.83
04/23/94	37.87	1130.19
05/21/94	37.79	1130.27
06/18/94	37.49	1130.57
07/16/94	37.42	1130.64
08/10/94	37.28	1130.78

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/12/89	38.13	1129.93
06/12/89	38.87	1129.19
06/14/89	38.66	1129.38
07/08/89	41.98	1126.08
08/05/89	44.01	1124.05
09/02/89	39.02	1129.04
10/01/89	39.06	1129.00
10/28/89	39.05	1129.01
11/26/89	38.94	1129.12
04/10/90	38.45	1129.61
05/06/90	38.47	1129.59
06/05/90	38.21	1129.85
07/06/90	38.70	1129.36
08/04/90	41.96	1126.10
09/03/90	41.88	1126.18
10/05/90	39.42	1128.64
11/04/90	39.14	1128.92
12/02/90	39.27	1128.79
04/20/91	38.43	1129.63
05/18/91	38.39	1129.67
06/16/91	38.47	1129.59
07/19/91	41.15	1126.91
08/17/91	41.98	1126.08
09/21/91	40.43	1127.63
10/19/91	39.93	1128.13
11/10/91	39.59	1128.47
12/08/91	39.25	1128.81
04/04/92	38.53	1129.53
04/14/92	38.58	1129.48
05/03/92	38.57	1129.49
05/31/92	38.72	1129.34
06/28/92	38.46	1129.60
07/25/92	40.25	1127.81
08/06/92	41.73	1126.33
08/19/92	42.03	1126.03
09/20/92	41.89	1126.17
10/18/92	38.95	1129.11
11/15/92	38.68	1129.38
04/17/93	38.65	1129.41
05/16/93	38.58	1129.48
06/12/93	38.08	1129.98
07/09/93	38.17	1129.89
08/07/93	37.83	1130.23
09/04/93	38.29	1129.77

MP Elev (msl,ft)=1,168.06
SI (ft.)=59-65

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/17/99	37.77	1130.29
09/15/99	37.45	1130.61
10/13/99	36.44	1131.62
10/20/99	36.43	1131.63
11/07/99	36.49	1131.57
12/02/99	36.47	1131.59
04/04/00	36.14	1131.92
05/02/00	36.32	1131.74

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/31/00	36.46	1131.60
06/25/00	36.38	1131.68
07/27/00	36.59	1129.07
08/01/00	39.58	1128.48
08/29/00	37.07	1130.99
09/26/00	37.00	1131.06
10/13/00	36.84	1131.22
10/23/00	36.79	1131.27
11/23/00	36.38	1131.68
04/20/01	35.82	1132.24
05/16/01	36.00	1132.06
06/12/01	36.20	1131.86
07/07/01	38.47	1129.59
08/07/01	38.23	1129.83
09/01/01	37.29	1130.77
09/26/01	37.00	1131.06
10/22/01	36.85	1131.21
10/29/01	36.86	1131.20
11/21/01	36.77	1131.29
04/17/02	36.70	1131.36
05/14/02	36.50	1131.56
06/07/02	36.77	1131.29
07/02/02	37.23	1130.83
07/30/02	36.59	1131.47
08/15/02	36.65	1131.41
08/26/02	36.90	1131.16
09/05/02	36.89	1131.17
09/20/02	37.11	1130.95
10/16/02	36.84	1131.22
11/10/02	36.75	1131.31
04/16/03	36.78	1131.28
05/17/03	36.14	1131.92
06/15/03	36.23	1131.83
07/09/03	36.38	1131.68
07/30/03	37.85	1130.21
08/26/03	39.17	1128.89
09/23/03	36.99	1131.07
10/16/03	37.00	1131.06
11/09/03	36.70	1131.36
11/20/03	36.83	1131.23
04/14/04	36.29	1131.77
05/08/04	36.49	1131.57
06/12/04	36.08	1131.98
07/17/04	35.83	1132.23
08/18/04	36.42	1131.64
09/16/04	36.30	1131.76
10/13/04	36.21	1131.85

MP Elev (msl,ft)=1,168.06
SI (ft.)=59-65

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/05	37.03	1131.03

Date	Depth to Water (ft)	WL Elev (msl, ft)
09/11/94	37.25	1130.81
10/08/94	36.59	1131.47
11/06/94	36.62	1131.44
12/03/94	36.65	1131.41
04/21/95	36.35	1131.71
05/27/95	36.23	1131.83
06/28/95	36.95	1131.11
07/23/95	36.41	1131.65
08/18/95	39.82	1128.24
09/23/95	36.82	1131.24
10/21/95	36.51	1131.53
11/18/95	36.44	1131.62
12/19/95	36.44	1131.62
04/17/96	35.60	1132.46
05/21/96	35.89	1132.17
06/22/96	36.20	1131.86
07/20/96	36.38	1131.68
08/16/96	36.80	1131.26
09/15/96	36.90	1131.16
10/12/96	36.64	1131.42
11/09/96	36.62	1131.44
05/10/97	35.30	1132.76
06/04/97	36.10	1131.96
06/27/97	36.03	1132.03
07/30/97	38.00	1130.06
08/03/97	37.28	1130.78
08/30/97	38.36	1129.70
09/27/97	37.00	1131.06
10/16/97	36.88	1131.38
10/16/97	36.69	1131.37
11/16/97	36.59	1131.37
12/11/97	36.69	1131.37
04/25/98	36.23	1131.83
05/30/98	36.38	1131.68
06/25/98	36.25	1131.81
08/04/98	37.98	1130.08
09/01/98	37.87	1130.19
09/30/98	37.69	1130.37
10/25/98	36.87	1131.19
11/22/98	36.74	1131.32
11/30/98	36.57	1131.39
12/16/98	36.74	1131.32
04/14/99	35.43	1132.63
05/17/99	35.42	1132.64
06/16/99	37.06	1131.00
07/21/99	37.45	1130.61

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Date	Depth to Water (ft)	WL Elev (msl, ft)
10/25/04	36.29	1131.77
11/07/04	35.90	1132.16
12/08/04	36.06	1132.00

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Date	Depth to Water (ft)	WL Elev (msl, ft)
06/16/81	32.72	1131.88
07/16/81	34.26	1130.34
09/09/81	36.27	1128.33
09/25/81	34.83	1129.77
10/08/81	33.23	1131.37
11/05/81	33.60	1131.00
12/03/81	32.08	1132.52
03/31/82	33.44	1131.16
04/21/82	32.58	1132.02
05/12/82	32.85	1131.75
06/09/82	31.96	1132.64
07/07/82	32.83	1131.77
08/04/82	33.78	1130.82

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Date	Depth to Water (ft)	WL Elev (msl, ft)
05/16/89	27.12	1131.26
05/23/89	27.13	1131.25

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Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/10/90	5.58	1127.21
05/06/90	5.00	1127.79
06/03/90	4.43	1128.36
07/06/90	5.13	1127.64
08/04/90	6.07	1126.72
09/03/90	5.98	1126.81
10/05/90	6.24	1126.55
11/04/90	5.89	1126.90
12/02/90	6.01	1126.78
04/20/91	5.20	1127.59
05/18/91	4.72	1128.07
06/16/91	5.10	1127.69
07/19/91	5.89	1126.90
08/17/91	6.32	1126.47
09/21/91	6.05	1126.74
10/19/91	6.40	1126.39
11/10/91	6.06	1126.73
12/08/91	6.21	1126.58
04/04/92	5.06	1127.73
04/14/92	4.97	1127.82
05/03/92	4.97	1127.82
05/31/92	4.14	1128.65
06/28/92	4.79	1128.00
07/25/92	4.96	1127.83
08/06/92	5.30	1127.49

MP Elev (msl,ft)=1,164.60
SI (ft.)=73-108

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/19/92	6.14	1126.65
09/20/92	5.08	1127.71
10/18/92	5.66	1127.13
11/15/92	5.29	1127.50
04/17/93	4.35	1128.44
05/16/93	4.58	1128.21
06/12/93	4.50	1128.29
07/09/93	4.66	1128.13
08/07/93	4.52	1128.27
09/04/93	5.04	1127.75
10/03/93	5.19	1127.60
10/30/93	4.89	1127.90
11/26/93	5.03	1127.76
04/23/94	4.22	1128.57
05/21/94	4.11	1128.68
06/18/94	4.00	1128.79
07/16/94	3.33	1129.46
08/10/94	3.45	1129.34
09/11/94	3.39	1129.40
10/08/94	3.11	1129.68
11/06/94	3.18	1129.61
12/03/94	6.17	1126.62
05/27/95	2.57	1130.22
06/28/95	3.20	1129.59
07/23/95	2.92	1129.87
08/18/95	3.96	1128.83
09/23/95	3.22	1129.57
10/21/95	2.74	1130.05
11/18/95	2.75	1130.04
12/19/95	3.00	1129.79

MP Elev (msl,ft)=1,158.38
SI (ft.)=0-55

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/14/92	27.45	1130.93
08/31/99	24.70	1133.68

MP Elev (msl,ft)=1,132.79
SI (ft.)=126-131

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/21/96	2.10	1130.69
06/22/96	2.31	1130.48
07/20/96	2.55	1130.24
08/16/96	3.38	1128.41
09/15/96	3.29	1129.50
10/12/96	3.00	1129.79
11/09/96	3.08	1129.71
05/10/97	1.46	1131.33
06/04/97	2.09	1130.70
06/27/97	2.09	1130.70
07/30/97	2.74	1130.05
08/03/97	2.69	1130.10
08/30/97	3.04	1129.75
09/27/97	3.09	1129.70
10/22/97	2.69	1130.10
11/16/97	2.76	1130.03
12/11/97	2.75	1130.04
04/25/98	2.30	1130.49
05/30/98	2.29	1130.50
06/09/98	2.62	1130.17
06/25/98	2.27	1130.52
08/04/98	3.69	1129.10
09/01/98	3.88	1128.91
09/30/98	4.00	1128.79

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Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/14/02	2.27	1130.52
06/07/02	3.03	1129.76
07/02/02	3.43	1129.36
07/30/02	3.19	1129.60
08/26/02	3.62	1129.17
09/20/02	3.62	1128.97
10/16/02	3.34	1129.45
11/10/02	3.12	1129.67
04/16/03	2.95	1129.84
05/17/03	2.18	1130.61
06/15/03	2.68	1130.11
07/09/03	2.52	1130.27
07/30/03	3.49	1129.30
07/31/03	3.52	1129.27
08/26/03	4.28	1128.51

MP Elev (msl,ft)=1,132.79
SI (ft.)=126-131

Date	Depth to Water (ft)	WL Elev (msl, ft)
09/23/03	3.56	1129.23
10/16/03	3.60	1129.19
11/09/03	3.50	1129.29
04/14/04	2.35	1130.44
05/08/04	2.93	1129.86
06/12/04	2.67	1130.12
07/17/04	2.43	1130.36
08/18/04	3.14	1129.65
09/16/04	2.85	1129.94
10/13/04	2.97	1129.82
11/07/04	2.47	1130.32
12/08/04	2.55	1130.24
08/03/05	2.89	1129.90

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MP Elev (msl,ft.)=1,143.10
SI (ft.)=62-68

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/02/77	10.97	1132.13
06/21/77	12.25	1130.85
07/11/77	12.60	1130.50
09/22/77	11.97	1131.13
12/12/77	11.20	1131.90
03/15/78	11.90	1131.20
06/14/78	10.37	1132.73
07/12/78	11.02	1132.08
08/10/78	11.86	1131.24
08/29/78	12.19	1130.93
10/03/78	12.17	1130.93
12/12/78	12.12	1130.98
04/27/79	9.38	1133.72
05/23/79	9.25	1133.85
06/19/79	9.45	1133.65
07/17/79	9.65	1133.45
08/22/79	10.89	1132.21
09/19/79	11.35	1131.95
10/16/79	11.32	1131.78
12/04/79	11.05	1132.05
04/15/80	10.59	1132.51
05/14/80	10.59	1132.51
06/10/80	10.94	1132.16
07/09/80	11.79	1131.31
08/05/80	12.50	1130.60
09/04/80	11.63	1131.47
09/29/80	11.60	1131.50
10/29/80	11.58	1131.52
11/25/80	11.74	1131.36
12/18/80	11.93	1131.17
04/14/81	12.10	1131.00
05/20/81	11.90	1131.21
06/16/81	11.90	1131.20
07/09/81	12.55	1130.55
07/14/81	12.72	1130.38
08/11/81	10.23	1132.87
09/09/81	13.73	1129.37
09/25/81	13.55	1129.55
10/08/81	13.33	1129.77
11/05/81	13.05	1130.05
12/03/81	12.89	1130.21
03/30/82	12.71	1130.39
04/21/82	10.83	1132.27
05/12/82	10.81	1132.29
06/09/82	10.58	1132.52
07/07/82	11.26	1131.84
08/04/82	12.42	1130.68
09/01/82	13.22	1129.88
10/01/82	13.27	1129.83
10/27/82	11.64	1131.46
12/01/82	11.66	1131.44
05/03/83	10.88	1132.22
06/01/83	10.94	1132.16
12/07/83	11.73	1131.37

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Page Aquifer

MP Elev (msl,ft.)=1,143.10
SI (ft.)=62-68

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/10/90	11.70	1131.40
05/06/90	11.39	1131.71
06/05/90	10.57	1132.53
07/06/90	10.50	1132.60
08/04/90	11.67	1131.43
09/03/90	11.70	1131.40
10/05/90	11.63	1131.47
11/04/90	11.62	1131.48
12/02/90	11.68	1131.42
04/20/91	11.47	1131.63
05/19/91	10.57	1132.53
06/16/91	10.49	1132.61
07/19/91	11.74	1131.36
08/17/91	11.56	1131.54
09/21/91	12.54	1130.56
10/19/91	12.42	1130.68
11/10/91	12.82	1130.92
12/08/91	12.05	1131.05
04/04/92	10.78	1132.32
04/14/92	10.75	1132.35
05/30/92	10.84	1132.26
06/25/92	10.86	1132.24
07/28/92	10.97	1132.40
08/25/92	10.70	1132.13
09/06/92	11.75	1131.35
08/19/92	12.32	1130.78
09/20/92	11.27	1131.83
10/18/92	11.43	1131.67
11/15/92	11.34	1131.76
04/17/93	9.93	1133.17
05/16/93	9.85	1133.25
06/12/93	9.74	1133.36
07/09/93	10.01	1133.09
08/07/93	9.60	1133.50
09/04/93	10.23	1132.87
10/03/93	10.40	1132.70
10/30/93	10.52	1132.58
11/26/93	10.49	1132.61
04/23/94	9.75	1133.35
05/21/94	9.40	1133.70
06/18/94	9.24	1133.86
07/16/94	8.39	1134.71
08/10/94	7.83	1135.27
09/11/94	7.81	1135.29
10/08/94	6.92	1136.18
11/06/94	6.91	1136.19
12/03/94	7.11	1135.99
04/21/95	6.59	1136.51
05/27/95	6.18	1136.92
06/28/95	7.40	1135.70
07/23/95	6.98	1136.12
08/18/95	8.79	1134.31
09/23/95	7.55	1135.55
10/21/95	6.83	1136.27

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Date	Depth to Water (ft)	WL Elev (msl, ft)
11/21/01	7.80	1135.30
04/17/02	8.10	1135.00
05/14/02	6.94	1136.16
06/07/02	7.63	1135.47
07/02/02	7.98	1135.12
07/30/02	7.10	1136.00
08/15/02	7.15	1135.95
08/26/02	7.60	1135.50
09/20/02	8.03	1135.07
10/16/02	7.82	1135.28
11/10/02	7.79	1135.31
04/16/03	8.05	1135.05
05/17/03	6.34	1136.76
06/15/03	6.58	1136.52
07/09/03	7.14	1135.96

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Date	Depth to Water (ft)	WL Elev (msl, ft)
05/18/77	52.31	1136.24
06/02/77	52.38	1136.17
06/21/77	52.57	1135.98
07/11/77	52.73	1135.82
09/22/77	53.04	1135.51
12/12/77	52.51	1136.04
03/15/78	52.91	1135.64
06/14/78	51.82	1136.73
07/12/78	53.60	1134.95
08/10/78	53.07	1133.48
08/29/78	53.32	1133.23
10/03/78	53.42	1135.13
12/12/78	53.10	1135.45
04/27/79	51.75	1136.80
05/23/79	51.28	1137.27
06/18/79	51.53	1137.02
06/19/79	51.55	1137.00
07/17/79	51.94	1136.61
08/22/79	52.48	1136.07
09/19/79	53.29	1135.26
10/16/79	52.59	1135.96
12/04/79	52.08	1136.47
04/15/80	52.05	1136.50
05/14/80	52.48	1136.07
06/10/80	52.65	1135.90
07/09/80	55.47	1133.08
08/05/80	56.29	1132.26
09/04/80	54.07	1134.48
09/29/80	53.56	1134.99
10/29/80	53.43	1135.12

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Date	Depth to Water (ft)	WL Elev (msl, ft)
11/26/80	53.32	1135.23
12/18/80	53.38	1135.17
04/14/81	53.43	1135.12
05/20/81	54.24	1134.31
06/16/81	53.55	1135.00
07/09/81	55.69	1132.86
07/14/81	55.85	1132.70
08/11/81	55.95	1132.60
09/09/81	56.55	1132.00
09/25/81	55.45	1133.10
10/08/81	55.07	1133.48
11/05/81	54.69	1133.86
12/03/81	54.44	1134.11
04/21/82	53.47	1135.08
05/12/82	53.24	1135.31
06/09/82	53.02	1135.53
07/07/82	53.56	1134.99
08/04/82	56.68	1131.87
09/01/82	57.69	1130.86
10/01/82	55.62	1132.93
10/27/82	54.23	1134.32
12/01/82	53.85	1134.70
05/03/83	53.05	1135.50
06/01/83	53.04	1135.51

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Date	Depth to Water (ft)	WL Elev (msl, ft)
05/06/90	52.51	1136.04
06/05/90	52.11	1136.44
07/06/90	51.93	1136.62
08/04/90	54.55	1134.00
09/03/90	53.11	1135.44
10/05/90	52.60	1135.95
11/04/90	52.41	1136.14
12/02/90	52.31	1136.24
04/20/91	52.18	1136.37
05/18/91	52.22	1136.33
06/16/91	51.75	1136.80
07/19/91	53.80	1134.75
08/17/91	55.84	1132.71
09/21/91	53.04	1135.51
10/19/91	51.34	1137.21
11/10/91	51.06	1137.49
12/08/91	49.93	1138.62
04/04/92	51.98	1136.57
04/14/92	51.96	1136.59
05/03/92	50.81	1137.74
05/31/92	52.03	1136.52
06/28/92	51.77	1136.78
07/25/92	52.03	1136.52
08/06/92	55.58	1134.97
08/19/92	55.23	1133.32
09/20/92	55.28	1136.27
10/18/92	51.58	1136.92
11/15/92	51.60	1136.75

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/04/87	51.88	1136.67
10/31/87	51.89	1136.66
11/29/87	51.96	1136.59
12/02/87	51.78	1136.77
03/20/88	51.58	1136.97
04/17/88	51.47	1137.08
05/14/88	51.95	1136.60
06/11/88	60.28	1128.27
07/10/88	56.35	1132.20
08/08/88	56.05	1132.50
09/05/88	53.89	1134.66
10/02/88	53.17	1135.38
11/01/88	53.05	1135.50
04/16/89	52.22	1136.33
05/12/89	52.11	1136.44
06/12/89	52.16	1136.39
06/14/89	51.78	1136.77
07/08/89	54.85	1133.70
08/05/89	56.45	1132.10
09/02/89	53.81	1134.74
10/01/89	52.73	1135.82
10/28/89	52.73	1135.82
11/26/89	52.62	1135.93
04/10/90	52.69	1135.86

MP Elev (msl, ft)=1,188.45
SI (ft.)=123-126

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/17/96	46.22	1142.33
05/21/96	46.34	1142.21
06/22/96	46.09	1142.46
07/20/96	46.80	1141.75
08/16/96	48.04	1140.51
09/15/96	47.72	1140.83
10/12/96	47.20	1141.35
11/09/96	47.44	1141.11
05/10/97	45.88	1142.67
06/04/97	45.86	1142.69
06/27/97	45.77	1142.78
07/30/97	46.61	1141.94
08/03/97	47.27	1141.28
08/30/97	48.45	1140.10
09/27/97	47.03	1141.52
10/22/97	46.84	1141.71
11/16/97	46.90	1141.65
12/11/97	47.00	1141.55
04/25/98	46.29	1142.26
05/30/98	46.30	1142.25
06/25/98	46.12	1142.43
08/04/98	49.88	1138.67
09/01/98	48.85	1139.70
09/30/98	48.44	1140.11
10/25/98	47.73	1140.62
11/22/98	47.42	1141.13
12/16/98	47.40	1141.15

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MP Elev (msl,ft)=1,159.76
SI (ft.)=93-98

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/15/03	16.18	1143.60
07/09/03	15.72	1144.06
07/30/03	17.74	1142.04
07/31/03	18.70	1141.08
08/26/03	19.24	1140.54
09/23/03	17.63	1142.15
10/16/03	17.34	1142.44
11/09/03	17.30	1142.48
04/14/04	17.12	1142.66

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MP Elev (msl,ft)=1,175.00
SI (ft.)=120-150

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/05/79	37.87	1137.13
04/16/80	36.69	1138.31
05/15/80	40.49	1134.51
07/10/80	41.80	1133.20
10/30/80	37.64	1137.36
11/25/80	37.63	1137.37
12/17/80	37.68	1137.32
04/15/81	37.82	1137.18
05/21/81	39.00	1136.00
06/16/81	38.08	1136.92

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MP Elev (msl,ft)=1,183.50
SI (ft.)=97-103

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/18/77	41.19	1142.31
06/02/77	41.20	1142.30
06/21/77	41.14	1142.36
07/12/77	41.20	1142.30
08/08/77	41.66	1141.84
09/22/77	41.72	1141.78
12/12/77	41.10	1142.40
03/16/78	41.55	1141.95
06/14/78	40.07	1143.43
07/12/78	40.14	1143.36
08/16/78	40.94	1142.56
08/29/78	41.32	1142.18
10/03/78	41.33	1142.17
12/11/78	41.33	1142.17
04/27/79	41.08	1142.42
05/24/79	40.54	1143.06
06/19/79	40.03	1143.47
07/17/79	41.25	1142.25

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MP Elev (msl,ft)=1,183.50
SI (ft.)=97-103

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/06/83	41.54	1141.96
01/11/84	41.55	1141.95
04/23/84	40.86	1142.64
05/28/84	41.11	1142.39
06/29/84	41.50	1142.00
07/31/84	43.10	1140.40
08/28/84	43.80	1139.70
09/23/84	43.49	1140.01
10/28/84	42.88	1140.62
11/25/84	42.28	1141.22
12/04/84	42.60	1140.90
12/22/84	42.60	1140.90
04/20/85	42.08	1141.42
05/19/85	42.13	1141.37
06/16/85	42.17	1141.33
07/17/85	43.94	1138.56
08/09/85	45.19	1138.31
09/08/85	45.59	1137.91

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MP Elev (msl,ft)=1,183.50
SI (ft.)=97-103

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/23/79	41.05	1142.45
09/21/79	41.24	1142.26
10/16/79	41.30	1142.20
12/05/79	40.65	1142.85
04/16/80	41.05	1142.45
05/15/80	42.21	1141.29
06/10/80	41.51	1141.99
07/10/80	43.37	1140.13
08/06/80	44.01	1139.49
09/05/80	42.77	1140.73
09/30/80	42.14	1141.36
10/30/80	42.01	1141.49
11/25/80	42.10	1141.40
12/18/80	42.08	1141.42
04/15/81	42.24	1141.26
05/21/81	42.48	1141.02
06/16/81	42.45	1141.05
07/09/81	43.98	1139.32
07/16/81	43.16	1140.34
08/12/81	43.38	1140.12
09/11/81	43.99	1139.51
10/08/81	43.27	1140.23
11/05/81	43.26	1140.24
12/03/81	43.18	1140.32
03/31/82	43.28	1140.22
04/21/82	42.90	1140.60
05/12/82	42.51	1140.99
06/09/82	42.16	1141.34
07/07/82	42.68	1140.82
08/04/82	43.59	1139.51
09/01/82	44.63	1138.87
09/29/82	44.16	1139.34
10/26/82	43.13	1140.37
11/30/82	42.59	1140.91
05/03/83	41.95	1141.55
06/01/83	41.69	1141.81

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Page Aquifer

MP Elev (msl,ft)=1,159.76
SI (ft.)=93-98

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/06/85	44.71	1138.79
11/03/85	43.70	1139.80
05/04/86	42.12	1141.38
06/01/86	42.09	1141.41
07/04/86	43.09	1140.41
08/02/86	43.25	1140.25
08/31/86	42.39	1141.11
09/28/86	42.22	1141.26
10/26/86	41.76	1141.74
11/23/86	41.82	1141.68
04/18/87	40.93	1142.57
05/17/87	42.25	1141.25
06/13/87	40.95	1142.55
07/12/87	42.46	1141.04
08/05/87	41.71	1141.79
09/05/87	41.15	1142.35
10/04/87	40.70	1142.80
10/31/87	40.90	1142.60
11/23/87	40.62	1142.88
12/03/87	40.77	1142.73
03/20/88	40.59	1142.91
04/17/88	40.24	1143.26
05/14/88	40.78	1142.72
06/11/88	42.71	1140.79
07/10/88	44.37	1139.13
08/08/88	45.09	1138.41
09/05/88	44.08	1139.42
10/02/88	43.79	1139.71
11/01/88	43.44	1140.06
04/16/89	42.68	1140.82
05/12/89	42.60	1140.90
06/12/89	42.86	1140.64
07/08/89	44.90	1138.60
08/05/89	46.76	1136.74
09/02/89	45.36	1138.14
10/01/89	43.90	1139.60

144-054-30DACC
Page Aquifer

MP Elev (msl,ft)=1,175.00
SI (ft.)=120-150

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/23/79	41.05	1142.45
09/21/79	41.24	1142.26
10/16/79	41.30	1142.20
12/05/79	40.65	1142.85
04/16/80	41.05	1142.45
05/15/80	42.21	1141.29
06/10/80	41.51	1141.99
07/10/80	43.37	1140.13
08/06/80	44.01	1139.49
09/05/80	42.77	1140.73
09/30/80	42.14	1141.36
10/30/80	42.01	1141.49
11/25/80	42.10	1141.40
12/18/80	42.08	1141.42
04/15/81	42.24	1141.26
05/21/81	42.48	1141.02
06/16/81	42.45	1141.05
07/09/81	43.98	1139.32
07/16/81	43.16	1140.34
08/12/81	43.38	1140.12
09/11/81	43.99	1139.51
10/08/81	43.27	1140.23
11/05/81	43.26	1140.24
12/03/81	43.18	1140.32
03/31/82	43.28	1140.22
04/21/82	42.90	1140.60
05/12/82	42.51	1140.99
06/09/82	42.16	1141.34
07/07/82	42.68	1140.82
08/04/82	43.59	1139.51
09/01/82	44.63	1138.87
09/29/82	44.16	1139.34
10/26/82	43.13	1140.37
11/30/82	42.59	1140.91
05/03/83	41.95	1141.55
06/01/83	41.69	1141.81

144-054-31CCC
Page Aquifer

MP Elev (msl,ft)=1,183.50
SI (ft.)=97-103

Date	Depth to Water (ft)	WL Elev (msl, ft)
09/23/95	34.60	1148.90
10/21/95	33.85	1149.65
11/18/95	33.70	1149.80
12/19/95	34.17	1149.33
04/17/96	35.34	1148.16
05/21/96	35.70	1147.80
06/22/96	35.33	1148.17
07/20/96	35.39	1148.11
08/16/96	36.74	1146.76
09/15/96	36.97	1146.53
10/12/96	36.78	1146.72
11/09/96	37.00	1146.50
11/13/96	36.99	1146.51
04/20/97	35.36	1148.14
05/18/97	35.13	1148.37
06/16/97	35.13	1148.37
07/19/97	35.13	1148.37

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Page Aquifer

MP Elev (msl,ft)=1,183.50
SI (ft.)=97-103

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/18/77	41.19	1142.31
06/02/77	41.20	1142.30
06/21/77	41.14	1142.36
07/12/77	41.20	1142.30
08/08/77	41.66	1141.84
09/22/77	41.72	1141.78
12/12/77	41.10	1142.40
03/16/78	41.55	1141.95
06/14/78	40.07	1143.43
07/12/78	40.14	1143.36
08/16/78	40.94	1142.56
08/29/78	41.32	1142.18
10/03/78	41.33	1142.17
12/11/78	41.33	1142.17
04/27/79	41.08	1142.42
05/24/79	40.54	1143.06
06/19/79	40.03	1143.47
07/17/79	41.25	1142.25

07/29/03 37.84 1145.66 08/03/05 33.13 1150.37
 07/30/03 38.20 1145.30
 08/26/03 39.00 1144.50

MP Elev (msl,ft)=1,177.50
 SI (ft.)=88-94

144-054-32BBB
 Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)	Date	Depth to Water (ft)	WL Elev (msl, ft)
06/21/77	38.08	1139.42	05/15/80	39.09	1138.41
07/12/77	38.28	1139.22	06/10/80	38.42	1139.08
09/22/77	38.78	1138.72	07/10/80	42.00	1135.50
06/14/78	37.07	1140.43	08/06/80	43.09	1134.41
07/12/78	37.45	1140.05	09/05/80	39.84	1137.66
08/10/78	38.41	1139.09	09/30/80	44.20	1133.30
08/29/78	38.76	1138.74	10/30/80	39.04	1138.46
10/03/78	38.60	1138.90	11/25/80	39.00	1138.50
12/11/78	38.17	1139.33	12/18/80	38.96	1138.52
04/27/79	37.78	1139.72	04/15/81	39.20	1138.30
05/24/79	37.20	1140.30	05/21/81	40.10	1137.40
06/19/79	36.95	1140.55	06/16/81	39.30	1138.20
07/17/79	39.28	1138.22	07/09/81	44.19	1133.31
08/23/79	38.34	1139.16	07/14/81	40.37	1137.13
09/21/79	38.28	1139.22	07/16/81	40.37	1137.13
10/16/79	40.15	1137.35	08/12/81	40.59	1136.91
12/05/79	37.75	1139.75	09/11/81	41.18	1136.32
04/16/80	38.00	1139.50	09/25/81	40.67	1136.83
			10/08/81	40.28	1137.22

MP Elev (msl,ft)=1,172.80
 SI (ft.)=89-114

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 Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)	Date	Depth to Water (ft)	WL Elev (msl, ft)
04/15/81	34.73	1138.07	11/05/81	35.65	1137.15
05/21/81	35.18	1137.62	12/03/81	34.44	1138.36
06/16/81	34.14	1138.66			
08/12/81	36.34	1136.48	12/01/82	34.82	1137.98
09/11/81	36.95	1135.85			
10/08/81	36.62	1136.16	04/14/92	34.20	1138.60

MP Elev (msl,ft)=1,153.40
 SI (ft.)=138-141

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 Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)	Date	Depth to Water (ft)	WL Elev (msl, ft)
10/27/78	9.16	1144.24	04/20/85	9.69	1143.71
12/12/78	8.92	1144.48	05/19/85	9.78	1143.62
04/27/79	8.60	1144.80	06/16/85	9.57	1143.83
07/23/79	8.00	1145.40	07/17/85	15.60	1137.80
06/18/79	8.60	1144.80	08/09/85	17.34	1136.06
08/22/79	11.42	1141.98	09/08/85	12.85	1140.55
09/19/79	9.41	1143.99	10/06/85	11.58	1141.82
10/16/79	8.74	1144.66	11/03/85	11.14	1142.26
12/04/79	8.27	1145.13	05/04/86	11.59	1141.81

1148.46 35.04 06/27/97 1148.46 35.04
 1147.66 35.84 07/29/97 1147.66 35.84
 1147.21 36.29 08/03/97 1147.21 36.29
 1146.36 37.14 08/30/97 1146.36 37.14
 1146.85 36.65 09/27/97 1146.85 36.65
 1146.63 36.87 10/22/97 1146.63 36.87
 1146.41 37.09 11/16/97 1146.41 37.09
 1146.38 37.12 12/11/97 1146.38 37.12

1149.06 34.44 06/16/99 1149.06 34.44
 1147.80 35.70 07/21/99 1147.80 35.70
 1147.49 36.01 08/17/99 1147.49 36.01
 1147.00 36.50 09/15/99 1147.00 36.50
 1147.07 36.43 10/13/99 1147.07 36.43
 1147.17 36.33 10/20/99 1147.17 36.33
 1147.01 36.49 11/07/99 1147.01 36.49
 1147.08 36.42 12/02/99 1147.08 36.42
 1146.87 36.63 12/08/99 1146.87 36.63

1141.25 42.25 04/17/93 1141.25 42.25
 1141.32 42.18 05/16/93 1141.32 42.18
 1141.32 41.90 06/12/93 1141.32 41.90
 1141.72 41.78 07/09/93 1141.72 41.78
 1142.50 41.00 08/07/93 1142.50 41.00
 1142.30 41.20 09/04/93 1142.30 41.20
 1142.80 40.70 10/03/93 1142.80 40.70
 1142.63 40.87 10/30/93 1142.63 40.87
 1143.04 40.46 11/26/93 1143.04 40.46

Date	Depth to Water (ft)	WL Elev (msl, ft)	Date	Depth to Water (ft)	WL Elev (msl, ft)
04/04/00	36.81	1146.69	04/20/01	36.78	1146.72
05/02/00	37.14	1146.36	05/17/01	36.65	1146.85
05/31/00	37.54	1145.96	06/12/01	36.18	1147.32
06/25/00	37.40	1146.10	07/07/01	37.46	1146.04
07/21/00	37.95	1145.55	08/07/01	37.28	1146.22
08/01/00	38.80	1144.70	09/01/01	37.78	1145.72
08/29/00	38.57	1145.24	09/26/01	37.63	1145.87
09/26/00	38.26	1145.24	10/22/01	37.33	1146.17
10/19/00	37.90	1145.60	10/29/01	37.62	1145.88
10/23/00	38.02	1145.48	11/21/01	37.44	1146.06
11/23/00	37.54	1145.96	04/17/02	37.83	1145.67

1146.72 36.78 04/20/01 1146.72 36.78
 1146.85 36.65 05/17/01 1146.85 36.65
 1147.32 36.18 06/12/01 1147.32 36.18
 1146.04 37.46 07/07/01 1146.04 37.46
 1146.22 37.28 08/07/01 1146.22 37.28
 1145.72 37.78 09/01/01 1145.72 37.78
 1145.87 37.63 09/26/01 1145.87 37.63
 1146.17 37.33 10/22/01 1146.17 37.33
 1145.88 37.62 10/29/01 1145.88 37.62
 1146.06 37.44 11/21/01 1146.06 37.44
 1145.67 37.83 04/17/02 1145.67 37.83

1145.50 38.00 05/14/02 1145.50 38.00
 1145.07 38.43 06/07/02 1145.07 38.43
 1144.83 38.67 07/02/02 1144.83 38.67
 1145.34 38.16 07/30/02 1145.34 38.16
 1145.88 37.62 08/26/02 1145.88 37.62
 1145.92 37.58 09/05/02 1145.92 37.58
 1146.15 37.35 09/20/02 1146.15 37.35
 1146.20 37.30 10/16/02 1146.20 37.30
 1146.49 37.01 11/10/02 1146.49 37.01

1144.67 38.83 04/16/03 1144.67 38.83
 1145.63 37.87 05/17/03 1145.63 37.87
 1146.28 37.22 06/15/03 1146.28 37.22
 1146.86 36.64 07/09/03 1146.86 36.64

MP Elev (msl,ft)=1,183.50
 SI (ft.)=97-103

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 Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)	Date	Depth to Water (ft)	WL Elev (msl, ft)
05/14/02	38.00	1145.50	09/23/03	38.25	1145.25
06/07/02	38.43	1145.07	10/16/03	38.17	1145.33
07/02/02	38.67	1144.83	11/09/03	38.00	1145.50
07/30/02	38.16	1145.34	04/14/04	38.03	1145.47
08/26/02	37.62	1145.88	05/08/04	37.92	1145.56
09/05/02	37.58	1145.92	06/12/04	37.32	1146.18
09/20/02	37.35	1146.15	07/17/04	36.72	1146.78
10/16/02	37.30	1146.20	08/18/04	36.01	1147.49
11/10/02	37.01	1146.49	09/16/04	36.39	1147.11
04/16/03	38.83	1144.67	10/13/04	36.29	1147.21
05/17/03	37.87	1145.63	10/25/04	36.32	1147.18
06/15/03	37.22	1146.28	11/07/04	36.22	1147.28
07/09/03	36.64	1146.86	12/08/04	35.85	1147.65

04/15/80	8.34	1145.06	06/01/86	9.38	1144.02	11/10/91	11.25	1142.15	10/22/97	1150.88
05/14/80	10.05	1143.35	07/04/86	12.48	1140.92	12/08/91	10.86	1142.54	11/16/97	1152.08
06/10/80	9.46	1143.94	08/02/86	12.42	1140.98				12/11/97	1152.11
07/09/80	15.12	1138.28	08/31/86	12.06	1141.32	04/04/92	9.79	1143.61	04/25/98	1151.63
08/05/80	15.51	1137.89	09/28/86	9.38	1144.02	06/14/92	9.77	1143.63	05/30/98	1151.65
09/04/80	12.52	1140.88	10/26/86	8.63	1144.77	05/03/92	9.69	1143.71	06/09/98	1151.63
10/29/80	10.74	1142.66	11/23/86	8.76	1144.64	05/31/92	9.61	1143.79	06/23/98	1151.94
11/26/80	9.67	1143.53	04/18/87	8.12	1145.28	06/28/92	9.33	1144.07	08/04/98	1142.82
12/17/80	9.76	1143.64	05/17/87	11.41	1141.99	07/25/92	9.43	1143.97	09/01/98	1146.92
04/14/81	9.30	1144.10	06/13/87	9.19	1144.21	08/06/92	17.00	1136.40	09/30/98	1148.63
05/20/81	12.00	1141.40	07/12/87	11.82	1141.58	08/19/92	17.07	1136.33	10/25/98	1149.26
06/16/81	10.19	1143.21	08/09/87	10.62	1142.78	10/22/98	10.11	1143.29	11/22/98	1150.10
07/14/81	15.18	1138.22	09/06/87	8.53	1144.67	10/18/92	10.11	1143.62	12/16/98	1150.15
08/11/81	15.52	1137.88	10/04/87	8.47	1144.93	11/15/92	9.78	1143.62		
09/09/81	16.05	1137.35	10/31/87	7.99	1145.41	04/17/93	8.92	1144.48	04/14/99	1150.88
09/25/81	13.32	1140.31	11/29/87	7.70	1145.70	05/16/93	8.74	1144.66	05/11/99	1152.36
10/08/81	11.58	1141.82	12/02/87	7.59	1145.81	05/16/93	8.49	1144.91	06/16/99	1152.43
11/05/81	11.09	1142.31	03/20/88	7.69	1145.71	06/12/93	8.30	1145.10	07/21/99	1152.36
12/03/81	10.67	1142.73	04/17/88	7.54	1145.86	07/09/93	8.30	1145.16	08/11/99	1151.27
03/31/82	10.49	1142.91	05/14/88	8.98	1144.42	08/07/93	8.43	1144.97	09/17/99	1151.43
04/21/82	10.13	1143.27	06/11/88	9.75	1143.65	10/03/93	7.40	1146.00	10/13/99	1151.30
05/12/82	9.80	1143.60	07/10/88	17.21	1136.19	10/30/93	7.43	1145.97	11/07/99	1152.06
06/09/82	9.80	1143.60	08/08/88	17.94	1135.46	11/27/93	7.22	1146.18	12/02/99	1152.07
07/07/82	17.04	1136.36	09/05/88	12.97	1140.43	04/23/94	7.18	1146.22	04/04/00	1151.60
08/04/82	18.24	1135.16	10/02/88	11.38	1142.02	05/21/94	6.70	1146.70	05/02/00	1151.48
09/01/82	13.80	1139.60	11/01/88	10.11	1143.29	06/18/94	6.50	1146.90	05/31/00	1151.30
10/01/82	11.80	1141.60	04/16/89	9.50	1143.90	07/16/94	5.89	1147.51	06/25/00	1151.46
10/27/82	10.80	1142.60	05/12/89	9.33	1144.07	08/10/94	9.49	1143.91	08/01/00	1146.42
12/01/82	10.83	1142.57	06/12/89	9.41	1143.99	09/11/94	9.38	1144.02	08/29/00	6.31
05/03/83	9.70	1143.70	07/08/89	15.75	1137.65	10/08/94	3.56	1149.84	09/26/00	1149.93
06/01/83	9.48	1143.92	08/05/89	19.00	1134.40	11/06/94	2.37	1151.03	10/23/00	1150.41
12/07/83	9.43	1143.97	09/02/89	14.40	1139.00	12/03/94	1.89	1151.51	11/23/00	1150.84
04/23/84	8.65	1144.75	10/01/89	13.90	1139.50	04/21/95	2.86	1150.54	04/20/01	1151.35
05/29/84	8.90	1144.50	11/26/89	10.44	1142.96	05/27/95	1.61	1151.79	05/16/01	1151.66
06/23/84	8.56	1144.84	04/10/90	10.03	1143.37	06/28/95	4.54	1148.86	06/12/01	1152.13
07/31/84	16.48	1136.92	05/07/90	9.80	1143.60	07/23/95	0.74	1152.66	07/07/01	1149.58
08/28/84	16.44	1136.96	06/05/90	9.49	1143.91	08/18/95	7.54	1145.86	08/07/01	1150.32
09/23/84	13.07	1140.33	07/06/90	9.23	1144.17	09/23/95	2.18	1151.22	09/01/01	1148.92
10/28/84	11.60	1141.80	08/04/90	15.90	1137.50	10/21/95	1.00	1152.40	09/26/01	1150.13
11/25/84	10.43	1142.97	09/03/90	16.06	1137.54	11/18/95	0.56	1152.84	10/22/01	1150.55
12/05/84	10.48	1142.92	10/05/90	10.67	1142.73	04/17/96	1.75	1151.65	11/21/01	1150.61
12/22/84	10.23	1143.17	11/04/90	10.33	1143.07	05/21/96	1.63	1151.77	04/17/02	1150.15
			12/02/90	10.03	1143.37	06/22/96	1.17	1152.23	05/14/02	1150.10

MP Elev (msl, ft)=1,153.40
SI (ft.)=138-141

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/10/97	1.47	1151.93
06/04/97	1.04	1152.36
06/27/97	0.94	1152.46
07/30/97	2.54	1150.86
08/03/97	3.97	1149.43
08/30/97	5.79	1147.61
09/27/97	2.67	1150.73

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Date	Depth to Water (ft)	WL Elev (msl, ft)
04/20/91	9.67	1143.73
05/18/91	9.43	1143.97
06/16/91	9.18	1144.22
07/19/91	15.50	1137.90
08/17/91	19.54	1133.86
09/21/91	14.45	1138.95
10/19/91	12.00	1141.40

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Date	Depth to Water (ft)	WL Elev (msl, ft)
09/20/02	3.74	1149.66
10/16/02	3.38	1150.02
11/10/02	3.05	1150.35
04/16/03	3.64	1149.76
05/17/03	3.35	1150.05
06/15/03	2.63	1150.77
07/09/03	2.20	1151.20
07/30/03	7.82	1145.58
08/26/03	10.60	1142.80
09/23/03	4.98	1148.42
10/16/03	4.23	1149.17
11/09/03	3.94	1149.46

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Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/13/78	33.20	1146.90
08/10/78	64.00	1116.10
08/29/78	41.31	1138.79
10/03/78	35.14	1144.96
04/27/79	33.98	1146.12
05/23/79	33.50	1146.60
07/17/79	34.20	1145.90
08/22/79	37.38	1142.72
09/19/79	35.19	1144.91
10/16/79	34.28	1145.82
12/04/79	33.76	1146.34
04/15/80	33.77	1146.33
05/14/80	35.76	1144.34
06/10/80	34.35	1145.75
09/04/80	37.72	1142.38
09/29/80	35.78	1144.32
10/29/80	35.18	1144.92
11/26/80	34.80	1145.30

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Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/21/77	35.19	1129.01
07/11/77	34.30	1129.90
09/22/77	34.24	1129.96
06/14/78	34.07	1130.13
07/12/78	34.77	1129.43
08/10/78	35.89	1128.31
08/29/78	35.91	1128.29
10/03/78	35.24	1128.96
12/12/78	34.90	1129.30

MP Elev (msl,ft)=1,153.40
SI (ft.)=138-141

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/14/04	3.56	1149.84
05/06/04	3.43	1149.97
06/12/04	3.30	1150.10
07/17/04	2.79	1150.61
08/18/04	3.15	1150.25
09/16/04	2.14	1151.26
10/13/04	1.77	1151.63
11/07/04	1.52	1151.88
12/08/04	0.97	1152.43
08/03/05	0.94	1152.46

MP Elev (msl,ft)=1,180.10
SI (ft.)=116-189

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/80	34.74	1145.36
05/20/81	38.51	1141.59
06/16/81	35.19	1144.91
07/15/81	38.80	1141.30
09/09/81	41.40	1138.70
10/08/81	40.17	1139.93
11/05/81	36.57	1143.53
12/03/81	36.03	1144.07
12/01/82	35.73	1144.37
12/07/83	35.61	1144.49
12/05/84	35.33	1144.77
12/02/87	32.16	1147.94
04/14/92	34.10	1146.00

MP Elev (msl,ft)=1,164.20
SI (ft.)=88-94

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/31/84	35.97	1128.23
08/28/84	37.00	1127.20
09/23/84	36.08	1128.12
10/28/84	35.00	1129.20
11/25/84	34.91	1129.29
12/05/84	35.05	1129.15
12/22/84	38.06	1126.14
04/20/85	34.29	1129.91
05/19/85	34.33	1129.87

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/16/85	34.67	1129.53
07/17/85	36.02	1128.18
08/09/85	36.70	1127.50
09/08/85	35.82	1128.38
10/06/85	35.56	1128.64
11/03/85	35.38	1128.82
05/04/86	33.80	1130.40
06/01/86	34.20	1130.00
07/04/86	35.01	1129.19
08/02/86	34.70	1129.50
08/31/86	34.56	1129.64
09/28/86	34.19	1130.01
10/26/86	34.00	1130.20
11/23/86	34.00	1130.20
04/18/87	33.39	1130.81
05/17/87	34.07	1130.13
06/13/87	33.96	1130.24
07/12/87	34.30	1129.90
08/09/87	34.29	1129.91
09/06/87	34.00	1130.20
10/04/87	33.83	1130.37
10/31/87	33.85	1130.35
11/29/87	33.75	1130.45
12/02/87	33.73	1130.47
03/20/88	33.44	1130.76
04/17/88	33.41	1130.79
05/14/88	33.72	1130.48
06/11/88	35.10	1129.10
07/10/88	36.07	1128.13
08/08/88	36.48	1127.72
09/05/88	35.61	1128.59
10/02/88	34.65	1129.55
11/01/88	34.57	1129.63
04/16/89	33.90	1130.30
05/12/89	34.05	1130.15
06/12/89	34.27	1129.93
07/08/89	35.50	1128.70
08/05/89	36.79	1127.41
09/02/89	34.75	1129.45
10/01/89	34.50	1129.70
10/28/89	34.49	1129.71
11/26/89	34.38	1129.82
04/10/90	35.19	1129.01
05/06/90	33.90	1130.30
06/05/90	33.66	1130.54

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Page Aquifer

MP Elev (msl, ft.)=1,164.20
SI (ft.)=88-94

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/06/90	34.04	1130.16
08/04/90	35.16	1129.04
09/03/90	34.70	1129.50
10/05/90	34.58	1129.62
11/04/90	34.38	1129.82
12/02/90	34.46	1129.74
04/20/91	33.99	1130.21
05/16/91	33.80	1130.40
06/16/91	33.63	1130.57
07/19/91	34.88	1129.32
08/17/91	35.84	1128.36
08/28/91	36.07	1128.13
09/21/91	35.49	1128.71
09/25/91	35.45	1128.75
10/19/91	35.24	1128.96
11/10/91	34.78	1129.42
12/08/91	34.76	1129.44
04/04/92	34.05	1130.15
04/14/92	33.98	1130.22
05/03/92	34.01	1130.19
05/31/92	34.28	1129.92
06/28/92	34.00	1130.20
07/25/92	34.10	1130.10
08/06/92	35.30	1128.90
08/15/92	35.83	1128.37
09/20/92	34.44	1129.76
10/18/92	34.54	1129.66
11/15/92	34.49	1129.71
04/17/93	33.58	1130.62
05/16/93	33.70	1130.50
06/12/93	33.29	1130.91
07/09/93	33.54	1130.66
08/07/93	33.29	1130.91
09/04/93	33.53	1130.67
10/03/93	33.56	1130.64
10/30/93	33.47	1130.73
11/26/93	33.38	1130.82
04/23/94	32.93	1131.27
05/21/94	32.99	1131.21
06/18/94	32.86	1131.34
07/16/94	32.22	1131.98
08/10/94	32.38	1131.82
09/11/94	32.29	1131.91
10/08/94	31.14	1133.06
11/06/94	30.94	1133.26
12/03/94	30.93	1133.27
04/21/95	33.68	1130.52
05/27/95	30.29	1133.91
06/28/95	30.89	1133.31
07/23/95	30.28	1133.92
08/18/95	37.73	1126.47
09/19/95	30.84	1133.36
09/23/95	30.80	1133.40
10/21/95	30.29	1133.91
11/18/95	30.25	1133.95

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Page Aquifer

MP Elev (msl, ft.)=1,164.20
SI (ft.)=88-94

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/19/95	29.37	1134.83
04/17/96	30.16	1134.04
05/21/96	30.05	1134.15
06/22/96	29.98	1134.22
07/20/96	30.36	1133.84
08/16/96	31.09	1133.11
09/15/96	31.12	1133.08
10/12/96	30.79	1133.41
11/09/96	30.85	1133.35
05/10/97	29.87	1134.33
06/04/97	29.96	1134.24
06/27/97	29.82	1134.38
08/03/97	30.51	1133.69
08/30/97	31.02	1133.18
10/22/97	30.54	1133.66
11/16/97	30.62	1133.58
12/11/97	30.55	1133.65
04/25/98	30.28	1133.92
05/30/98	30.23	1133.97
06/25/98	30.09	1134.11
08/04/98	32.07	1132.13
09/01/98	31.78	1132.42
09/30/98	31.80	1132.40
10/25/98	31.09	1133.11
11/22/98	30.86	1133.34
12/16/98	30.56	1133.64
04/14/99	30.30	1133.90
05/17/99	29.60	1134.60
06/16/99	29.91	1134.29
07/21/99	30.47	1133.73
08/17/99	30.36	1133.84
09/15/99	30.21	1133.99
10/13/99	30.22	1133.98
11/07/99	30.22	1133.98
12/02/99	30.27	1133.93
04/04/00	30.11	1134.09
05/02/00	30.43	1133.77
05/31/00	30.52	1133.68
06/25/00	30.39	1133.81
08/01/00	31.67	1132.53
08/29/00	31.14	1133.06
09/26/00	31.07	1133.13
10/23/00	30.93	1133.27
11/23/00	30.50	1133.70
04/20/01	30.24	1133.96
05/16/01	30.13	1134.07
06/12/01	30.20	1134.00
07/07/01	31.26	1132.94
08/01/01	30.70	1133.50
08/27/01	30.90	1133.30
09/01/01	31.33	1132.87
09/26/01	31.05	1133.15
10/22/01	30.98	1133.22
11/21/01	30.94	1133.26

144-055-06BQB2
Till Aquifer

MP Elev (msl, ft.)=1,216.00
SI (ft.)=118-138

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/27/70	8.38	1207.62
07/09/70	8.29	1207.71
08/05/70	8.32	1207.68
09/03/70	8.43	1207.57
10/01/70	8.47	1207.53
11/04/70	8.49	1207.51
12/03/70	8.40	1207.60
01/20/71	8.41	1207.59
02/17/71	8.41	1207.59
03/31/71	8.34	1207.66
04/14/71	8.65	1207.35
05/05/71	8.64	1207.36
06/16/71	8.40	1207.60
07/22/71	8.35	1207.65
10/06/71	8.62	1207.38
11/04/71	8.30	1207.70
12/10/71	8.59	1207.41
12/31/71	8.47	1207.53
03/08/72	8.52	1207.48
04/20/72	8.42	1207.58
06/08/72	8.17	1207.83
10/20/72	8.25	1207.75
11/29/72	8.26	1207.74
08/27/73	9.79	1206.21
12/07/73	8.37	1207.63

Date	WL Elev (msl, ft)	Depth to Water (ft)	WL Elev (msl, ft)
08/26/83	1201.95	5.75	1201.95
12/06/83	1202.02	5.68	1202.02
12/04/84	1200.51	7.19	1200.51
12/02/87	1201.55	6.15	1201.55
05/16/89	1200.46	7.24	1200.46
04/13/92	1201.44	6.26	1201.44
07/01/92	1201.34	6.36	1201.34

MP Elev (msl, ft)=1,143.10
SI (ft.)=20-40

Date	WL Elev (msl, ft)	Depth to Water (ft)	WL Elev (msl, ft)
12/11/78	1198.56	9.14	1198.56
08/23/79	1199.21	8.49	1199.21
09/21/79	1200.24	7.46	1200.24
12/05/79	1200.10	7.60	1200.10
04/16/80	1200.23	7.47	1200.23
05/14/80	1200.03	7.67	1200.03
06/10/80	1200.29	7.41	1200.29
07/10/80	1199.50	8.20	1199.50
08/06/80	1198.55	9.15	1198.55
09/05/80	1200.21	7.49	1200.21

144-055-09BAA
Pave Aquifer

Date	WL Elev (msl, ft)	Depth to Water (ft)	WL Elev (msl, ft)
03/03/86	1206.92	9.08	1206.92
06/25/86	1206.95	9.05	1206.95
08/19/86	1207.00	9.00	1207.00
09/19/86	1206.78	9.22	1206.78
12/10/86	1207.22	8.78	1207.22
03/24/87	1207.22	8.78	1207.22
06/17/87	1207.48	8.52	1207.48
09/11/87	1207.20	8.79	1207.20
11/30/87	1207.21	8.79	1207.21
03/04/88	1207.28	8.72	1207.28
05/25/88	1207.33	8.67	1207.33
08/19/88	1206.93	9.07	1206.93
11/28/88	1206.67	9.33	1206.67
05/08/89	1206.57	9.43	1206.57
05/16/89	1206.51	9.49	1206.51
06/13/89	1206.58	9.42	1206.58
08/10/89	1206.15	9.85	1206.15
09/05/89	1206.46	9.54	1206.46
11/24/89	1206.51	9.49	1206.51
03/07/90	1206.22	9.78	1206.22
06/13/90	1206.41	9.59	1206.41
08/23/90	1206.17	9.83	1206.17
11/07/90	1206.11	9.89	1206.11
03/05/91	1206.26	9.74	1206.26
09/20/91	1206.22	9.78	1206.22
11/13/91	1206.04	9.96	1206.04

MP Elev (msl, ft)=1,216.00
SI (ft.)=118-138

Date	WL Elev (msl, ft)	Depth to Water (ft)	WL Elev (msl, ft)
04/13/92	1206.51	9.49	1206.51
06/19/92	1206.60	11.40	1206.60
09/16/92	1206.66	9.34	1206.66
11/17/92	1206.66	9.34	1206.66
02/24/93	1206.76	9.24	1206.76
06/18/93	1207.03	8.97	1207.03

144-055-06BCC
Till Aquifer

Date	WL Elev (msl, ft)	Depth to Water (ft)	WL Elev (msl, ft)
05/19/77	1198.53	9.17	1198.53
06/02/77	1197.54	10.16	1197.54
06/21/77	1199.04	8.66	1199.04
07/12/77	1198.58	9.12	1198.58
09/22/77	1197.52	10.18	1197.52
03/16/78	1197.63	10.07	1197.63
06/14/78	1201.31	6.39	1201.31
07/12/78	1200.65	7.05	1200.65
08/10/78	1199.24	8.46	1199.24
10/03/78	1199.00	8.70	1199.00

144-055-06CCC
Undefined Aquifer

Date	WL Elev (msl, ft)	Depth to Water (ft)	WL Elev (msl, ft)
09/30/80	1200.09	7.61	1200.09
10/30/80	1199.61	7.89	1199.61
12/18/80	1199.22	8.48	1199.22
04/15/81	1198.42	9.28	1198.42
07/16/81	1199.87	7.83	1199.87
10/08/81	1199.45	8.25	1199.45
12/03/81	1199.59	8.11	1199.59
12/01/82	1203.15	4.55	1203.15

MP Elev (msl, ft)=1,207.70
SI (ft.)=16-19

Date	WL Elev (msl, ft)	Depth to Water (ft)	WL Elev (msl, ft)
04/18/87	1135.50	7.60	1135.50
05/17/87	1134.29	8.81	1134.29
06/13/87	1134.89	8.21	1134.89
07/12/87	1133.92	9.18	1133.92
08/09/87	1134.29	8.81	1134.29
09/03/87	1134.37	8.73	1134.37
10/04/87	1134.05	9.05	1134.05
10/31/87	1133.48	9.62	1133.48
12/02/87	1133.46	9.64	1133.46
03/20/88	1133.20	9.90	1133.20
04/17/88	1134.21	8.89	1134.21
05/14/88	1133.96	9.14	1133.96
06/11/88	1132.62	10.48	1132.62
07/10/88	1131.51	11.59	1131.51
08/08/88	1130.33	12.77	1130.33
09/05/88	1129.50	13.60	1129.50
10/02/88	1129.36	13.74	1129.36
11/01/88	1129.08	14.02	1129.08
04/16/89	1131.08	12.02	1131.08
05/12/89	1131.62	11.48	1131.62
06/12/89	1131.56	11.54	1131.56
07/08/89	1130.74	12.36	1130.74

MP Elev (msl, ft)=1,143.10
SI (ft.)=20-40

Date	WL Elev (msl, ft)	Depth to Water (ft)	WL Elev (msl, ft)
12/22/84	1130.21	12.89	1130.21
04/20/85	1130.10	13.00	1130.10
05/19/85	1132.19	10.91	1132.19
06/16/85	1131.64	11.46	1131.64
07/17/85	1130.70	12.40	1130.70
08/09/85	1129.82	13.28	1129.82
09/08/85	1130.06	13.04	1130.06
10/06/85	1134.08	13.48	1134.08
11/03/85	1129.94	13.16	1129.94
05/04/86	1134.75	8.35	1134.75
06/01/86	1133.71	9.39	1133.71
07/04/86	1132.24	10.86	1132.24
08/02/86	1132.94	10.16	1132.94
08/31/86	1133.11	9.99	1133.11
09/28/86	1133.08	10.32	1133.08
10/26/86	1132.76	10.54	1132.76
11/23/86	1133.04	10.06	1133.04
04/18/87	1135.50	7.60	1135.50
05/17/87	1134.29	8.81	1134.29
06/13/87	1134.89	8.21	1134.89
07/12/87	1133.92	9.18	1133.92
08/09/87	1134.29	8.81	1134.29
09/03/87	1134.37	8.73	1134.37
10/04/87	1134.05	9.05	1134.05
10/31/87	1133.48	9.62	1133.48
12/02/87	1133.46	9.64	1133.46
03/20/88	1133.20	9.90	1133.20
04/17/88	1134.21	8.89	1134.21
05/14/88	1133.96	9.14	1133.96
06/11/88	1132.62	10.48	1132.62
07/10/88	1131.51	11.59	1131.51
08/08/88	1130.33	12.77	1130.33
09/05/88	1129.50	13.60	1129.50
10/02/88	1129.36	13.74	1129.36
11/01/88	1129.08	14.02	1129.08
04/16/89	1131.08	12.02	1131.08
05/12/89	1131.62	11.48	1131.62
06/12/89	1131.56	11.54	1131.56
07/08/89	1130.74	12.36	1130.74

MP Elev (msl, ft)=1,143.10
SI (ft.)=20-40

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/03/83	8.87	1134.23
06/01/83	9.30	1133.80
12/06/83	11.18	1131.92
01/11/84	12.13	1130.97
04/23/84	8.07	1135.03
05/28/84	8.61	1134.49
06/29/84	8.82	1134.28
07/31/84	11.00	1132.10
08/28/84	12.48	1130.62
09/23/84	13.31	1129.79
10/28/84	12.34	1130.76
11/25/84	12.36	1130.74
12/04/84	12.43	1130.67

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Page Aquifer

MP Elev (msl,ft)=1,143.10
SI (ft.)=20-40

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/05/89	13.87	1129.23
09/02/89	13.40	1129.70
10/01/89	13.18	1129.92
10/28/89	13.65	1129.45
11/26/89	12.96	1130.14
04/10/90	14.89	1128.21
05/06/90	14.29	1128.81
06/05/90	12.52	1131.39
07/06/90	11.71	1131.58
08/04/90	13.33	1129.77
09/03/90	14.08	1129.02
10/05/90	14.55	1128.55
11/04/90	14.66	1128.42
12/02/90	14.86	1128.24

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Page Aquifer

MP Elev (msl,ft)=1,143.10
SI (ft.)=20-40

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/09/96	8.99	1134.11
05/10/97	6.63	1136.47
06/04/97	7.29	1135.81
06/27/97	7.62	1135.48
07/29/97	8.50	1134.60
08/03/97	7.83	1135.27
08/30/97	9.34	1133.76
09/27/97	10.12	1132.98
10/22/97	9.59	1133.51
11/16/97	9.89	1133.21
12/11/97	9.98	1133.12
04/25/98	7.60	1135.50
05/30/98	7.58	1135.52
06/25/98	7.72	1135.38
08/04/98	10.54	1132.56
09/01/98	11.04	1132.06
09/30/98	11.90	1131.20
10/25/98	9.16	1133.94
11/22/98	9.08	1134.02
12/16/98	8.79	1134.31

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Page Aquifer

MP Elev (msl,ft)=1,131.50
SI (ft.)=20-23

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/14/99	6.64	1136.46
05/17/99	6.22	1136.88
06/16/99	7.36	1135.74
07/21/99	6.91	1136.19
08/17/99	8.65	1134.45
09/15/99	8.25	1134.85
10/13/99	8.74	1134.36
11/07/99	8.90	1134.20
12/02/99	9.09	1134.01
04/04/00	8.22	1134.88
05/02/00	8.08	1135.02
05/31/00	7.74	1135.36
06/25/00	7.09	1136.01
08/01/00	9.16	1133.43
08/29/00	8.77	1134.33
09/26/00	9.40	1133.70
10/23/00	10.22	1132.88
11/23/00	7.75	1135.35

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/20/91	15.30	1127.80
05/18/91	12.05	1131.05
06/16/91	11.32	1131.58
07/19/91	11.50	1131.60
08/17/91	13.45	1129.65
09/21/91	14.29	1128.81
10/19/91	14.54	1128.56
11/10/91	14.16	1128.94
12/08/91	14.23	1128.87
04/04/92	11.63	1131.47
04/13/92	11.45	1131.65
05/03/92	11.27	1131.83
05/31/92	11.38	1131.72
06/28/92	11.69	1131.41
07/01/92	11.76	1131.34
07/25/92	12.19	1130.91
08/19/92	13.24	1129.86
09/20/92	12.19	1130.91
10/18/92	12.98	1130.12
11/15/92	12.88	1130.22

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Page Aquifer

MP Elev (msl,ft)=1,143.10
SI (ft.)=20-40

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/18/04	8.20	1134.90
09/16/04	7.62	1135.48
10/13/04	7.86	1135.24
11/07/04	6.93	1136.17
12/08/04	7.32	1135.78
04/20/05	6.97	1136.13
06/01/05	6.63	1136.47
06/24/05	6.80	1136.30
07/29/05	7.32	1135.78
08/23/05	7.43	1135.67
09/24/05	7.79	1135.31
10/25/05	8.07	1135.03
11/24/05	8.04	1135.06
12/24/05	8.48	1134.62
04/22/06	6.48	1136.62
05/20/06	7.12	1135.98

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Page Aquifer

MP Elev (msl,ft)=1,131.50
SI (ft.)=20-23

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/22/84	6.36	1125.14
04/20/85	5.00	1126.50
05/19/85	4.45	1127.05
06/16/85	5.19	1126.31
07/17/85	6.34	1125.16
08/09/85	7.36	1124.14
09/08/85	7.37	1124.13
10/06/85	7.03	1124.47
11/03/85	6.48	1125.02
05/04/86	2.19	1129.31
06/01/86	2.69	1128.81

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/21/79	2.21	1129.29
08/23/79	5.65	1125.85
09/21/79	6.52	1124.98
12/05/79	5.93	1125.57
04/16/80	5.04	1126.46
05/14/80	4.92	1126.58
06/10/80	5.18	1126.32
07/10/80	6.52	1124.66
08/06/80	7.84	1123.66
09/05/80	5.60	1125.90
09/30/80	5.58	1125.92
10/30/80	5.46	1126.04
12/16/80	6.33	1125.17
04/15/81	6.62	1124.88
07/09/81	6.39	1125.11
07/14/81	4.56	1126.94
07/16/81	5.35	1126.15
10/08/81	6.39	1125.11
12/03/81	6.04	1125.46
03/31/82	5.08	1126.42
04/21/82	3.55	1127.95
05/12/82	3.60	1127.90
06/09/82	3.95	1127.65
07/07/82	5.12	1126.38
08/04/82	6.02	1125.48
09/01/82	6.82	1124.88
09/29/82	7.09	1124.41
10/26/82	3.48	1128.51
12/01/82	3.99	1127.51
05/03/83	3.15	1128.35
06/01/83	3.77	1127.73
12/06/83	5.00	1126.50
01/11/84	5.77	1125.73
04/23/84	2.69	1128.81
05/28/84	3.69	1127.81
06/29/84	4.08	1127.42
07/31/84	5.85	1125.65
08/28/84	6.86	1124.64
09/23/84	7.28	1124.22
10/28/84	5.69	1125.81
11/25/84	5.82	1125.68
12/04/84	5.91	1125.59
07/04/86	4.28	1127.22
08/02/86	3.70	1127.80
08/31/86	3.66	1127.84
09/28/86	2.58	1128.92
10/26/86	3.54	1127.96
11/23/86	3.47	1128.03
05/17/87	2.74	1128.76
06/13/87	2.97	1128.53
07/12/87	3.89	1127.61
08/09/87	3.68	1127.82
09/05/87	3.59	1127.91
10/04/87	3.77	1127.73
10/31/87	4.09	1127.41
11/29/87	4.00	1127.50
12/02/87	3.98	1127.52
03/20/88	4.10	1127.40
05/14/88	3.71	1127.79
06/11/88	5.25	1126.25
07/10/88	6.24	1125.26
08/08/88	7.40	1124.10
09/05/88	7.96	1123.54
10/02/88	7.58	1123.92
11/01/88	7.40	1124.10
04/16/89	4.39	1127.11
05/12/89	4.77	1126.73
06/12/89	5.19	1126.31
07/08/89	6.27	1125.23
08/04/89	7.58	1123.92
09/02/89	5.71	1125.29
10/01/89	6.21	1124.97
11/26/89	6.56	1124.94
04/10/90	7.55	1123.95
05/07/90	6.29	1125.21
06/05/90	4.86	1126.64
07/06/90	4.66	1126.84
08/04/90	6.56	1124.94
09/03/90	7.06	1124.44
10/05/90	7.34	1124.16
11/04/90	7.26	1124.24
12/02/90	7.45	1124.05
04/20/91	7.10	1124.40

MP Elev (msl,ft)=1,131.50
SI (ft.)=20-23

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/27/97	3.43	1128.07
08/03/97	3.43	1128.07
08/30/97	5.15	1126.35
09/27/97	5.84	1125.66
10/16/97	5.10	1126.40
10/22/97	5.05	1126.45
11/16/97	5.12	1126.38
12/11/97	4.99	1126.51
04/25/98	3.45	1128.05

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Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/13/92	4.20	1127.30
05/03/92	4.25	1127.25
05/31/92	4.76	1126.74
06/28/92	4.78	1126.72
07/01/92	4.51	1126.99
07/25/92	5.00	1126.50
08/19/92	6.58	1124.92
09/20/92	4.70	1126.80
10/18/92	5.52	1125.98
11/15/92	5.08	1126.42
04/17/93	3.72	1127.78
05/16/93	3.69	1127.81
06/12/93	3.39	1128.11
07/09/93	3.23	1128.27
08/07/93	1.95	1129.55
09/04/93	1.83	1129.67
10/03/93	2.71	1128.79
10/30/93	3.22	1128.28
11/26/93	2.42	1129.08
04/23/94	2.77	1128.73
05/21/94	2.47	1129.03
06/18/94	2.32	1129.18
07/16/94	1.39	1130.11
08/10/94	0.84	1130.66
09/11/94	2.35	1129.15
10/08/94	0.40	1131.10
11/06/94	1.00	1130.50
04/21/95	1.60	1129.90
05/27/95	1.84	1130.36
06/28/95	1.73	1129.51
07/23/95	1.79	1129.77
08/18/95	3.53	1127.97
09/23/95	3.85	1127.65
10/21/95	3.15	1128.35
11/18/95	3.33	1128.17
12/19/95	3.78	1127.72
05/21/96	1.82	1129.68
06/22/96	3.12	1128.38
07/20/96	2.48	1129.02
08/20/96	4.54	1126.96
09/15/96	5.15	1126.35
10/12/96	4.66	1126.84
11/09/96	4.59	1126.91
05/10/97	2.09	1129.41
06/04/97	2.83	1128.67

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Date	Depth to Water (ft)	WL Elev (msl, ft)
04/16/03	4.73	1126.77
05/17/03	2.38	1129.12
06/15/03	2.69	1128.81
07/09/03	2.52	1128.98
07/30/03	4.15	1127.35
08/26/03	5.25	1126.25
09/23/03	4.19	1127.31

MP Elev (msl,ft)=1,131.50
SI (ft.)=20-23

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/30/98	3.65	1127.85
06/25/98	3.73	1127.77
08/04/98	6.34	1125.16
09/01/98	6.56	1124.94
09/30/98	7.25	1124.25
10/25/98	4.60	1126.70
11/22/98	4.27	1127.23
12/16/98	4.17	1127.33
04/14/99	2.30	1129.20
05/17/99	1.18	1130.32
06/16/99	2.48	1129.02
07/21/99	3.24	1128.26
08/17/99	4.33	1127.17
09/15/99	3.96	1127.54
10/13/99	4.49	1127.01
11/07/99	4.45	1127.05
12/02/99	4.47	1127.03
04/04/00	3.44	1128.06
05/02/00	3.55	1127.95
05/31/00	3.49	1128.01
06/25/00	2.77	1128.73
08/01/00	4.77	1126.73
08/29/00	4.49	1127.01
09/26/00	4.90	1126.60
10/23/00	4.47	1127.03
11/23/00	3.33	1128.17
04/20/01	2.64	1128.86
05/17/01	2.03	1129.47
06/12/01	2.76	1128.74
07/07/01	4.08	1127.42
07/26/01	4.23	1127.25
08/07/01	3.86	1127.64
09/01/01	4.46	1127.04
09/26/01	4.48	1127.02
10/22/01	4.49	1127.01
11/21/01	4.17	1127.33
04/17/02	3.85	1127.65
05/14/02	3.15	1128.35
06/07/02	4.20	1127.30
07/02/02	4.28	1127.22
07/30/02	3.85	1127.65
08/26/02	4.57	1126.93
09/20/02	4.26	1127.24
10/16/02	3.84	1127.66
11/10/02	3.85	1127.65

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/16/03	4.56	1126.94
11/09/03	4.59	1126.91
04/14/04	2.91	1128.59
05/08/04	3.24	1128.26
06/12/04	2.14	1129.36
07/17/04	2.60	1128.90
08/18/04	3.99	1127.51
09/16/04	3.82	1127.68

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MP Elev (msl, ft)=1,143.70
SI (ft.)=40-46

Date	Depth to Water (ft)	WL Elev (msl, ft)
09/11/81	16.20	1127.50
09/24/81	16.48	1127.22
10/08/81	15.99	1127.71
11/05/81	15.44	1128.26
12/03/81	15.39	1128.31
03/31/82	15.60	1128.10
04/21/82	13.08	1130.62
05/12/82	13.00	1130.70
06/05/82	13.21	1130.49
07/07/82	13.33	1130.37
08/04/82	15.30	1128.20
09/01/82	15.99	1127.71
09/29/82	16.44	1127.26
10/26/82	12.62	1131.08
12/01/82	13.29	1130.41
05/03/83	12.46	1131.24
06/01/83	12.72	1130.98
12/06/83	14.56	1129.14
01/11/84	15.24	1128.46
04/23/84	12.02	1131.68
05/28/84	12.66	1131.04
06/29/84	12.95	1130.75
07/31/84	15.36	1128.34
08/28/84	16.57	1127.13
09/23/84	16.21	1127.49
10/28/84	15.92	1127.78
11/25/84	15.66	1128.04
12/04/84	15.69	1128.01
12/22/84	15.96	1127.74
04/20/85	14.89	1128.81
05/19/85	14.44	1129.26
06/16/85	14.69	1129.01
07/17/85	16.00	1127.70
08/05/85	17.00	1126.70
09/06/85	17.00	1126.70
10/06/85	16.77	1126.93
11/03/85	16.25	1127.45
05/04/86	10.69	1133.01
06/01/86	11.60	1132.10
07/04/86	13.56	1130.14
08/02/86	13.11	1130.59
08/31/86	13.04	1130.66
09/28/86	12.81	1130.89

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/26/86	12.69	1131.01
11/23/86	12.86	1130.84
04/18/87	11.37	1132.33
05/17/87	12.58	1131.42
06/13/87	11.34	1132.36
07/12/87	13.40	1130.30
08/09/87	12.98	1130.72
09/05/87	13.12	1130.58
10/04/87	13.19	1130.51
10/31/87	13.68	1130.02
11/29/87	13.66	1130.04

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Page Aquifer

MP Elev (msl, ft)=1,143.70
SI (ft.)=40-46

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/07/93	9.04	1134.66
09/04/93	10.22	1133.48
10/03/93	11.57	1132.13
10/30/93	12.48	1131.22
11/26/93	12.76	1130.94
04/23/94	11.85	1131.85
05/21/94	10.95	1132.75
06/18/94	10.82	1132.88
07/16/94	9.53	1134.17
08/10/94	1134.32	
09/11/94	11.06	1132.64
10/08/94	7.23	1136.41
11/06/94	8.30	1135.40
12/03/94	9.19	1134.51
04/21/95	10.45	1133.25
05/27/95	8.90	1134.80
06/28/95	10.92	1132.78
07/23/95	9.09	1134.61
08/18/95	12.18	1131.52
09/20/95	12.50	1131.20
10/21/95	12.52	1131.18
11/18/95	11.90	1131.80
12/19/95	12.16	1131.54
04/17/96	11.28	1132.42
05/21/96	10.18	1133.52
06/22/96	11.12	1132.58
07/20/96	11.81	1131.89
08/16/96	12.89	1130.81
09/15/96	13.80	1129.90
10/12/96	13.56	1130.14
11/09/96	13.47	1130.23
05/10/97	9.24	1134.46
06/04/97	10.46	1133.24
06/27/97	11.24	1132.46
08/03/97	13.15	1130.55
08/30/97	14.33	1129.37
09/27/97	14.75	1128.95
10/22/97	14.27	1129.43
11/16/97	14.34	1129.36
12/11/97	14.23	1129.47

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Page Aquifer

MP Elev (msl,ft)=1,153.70
SI (ft.)=58-78

MP Elev (msl,ft)=1,143.70
SI (ft.)=40-46

MP Elev (msl,ft)=1,154.60
SI (ft.)=56-76

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Page Aquifer

MP Elev (msl,ft)=1,149.70
SI (ft.)=58-78

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/14/04	11.26	1132.44
05/08/04	11.49	1132.21
06/12/04	9.24	1134.46
07/17/04	9.85	1133.85
08/19/04	12.14	1131.56
09/16/04	12.66	1131.04
10/13/04	12.38	1131.32
11/07/04	11.18	1132.52
12/08/04	11.35	1132.35
04/20/05	12.05	1131.65
06/01/05	9.05	1134.65
06/24/05	8.44	1135.26
07/29/05	11.22	1132.48
08/23/05	12.26	1131.44

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/22/06	11.07	1132.63
05/20/06	11.50	1132.20

Date	Depth to Water (ft)	WL Elev (msl, ft)
09/24/05	13.31	1130.39
10/25/05	12.95	1130.75
11/24/05	13.07	1130.63
12/24/05	13.12	1130.58

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/14/78	23.34	1131.26
08/10/78	35.85	1118.75
08/29/78	26.87	1127.73
10/03/78	25.75	1128.85
05/24/79	21.74	1132.86
06/19/79	23.77	1130.83
07/17/79	24.87	1129.73
08/23/79	24.83	1129.77
09/21/79	34.34	1120.26
10/16/79	25.18	1129.42
12/05/79	24.78	1129.82
04/16/80	24.30	1130.30
06/10/80	22.02	1132.58
09/05/80	23.53	1131.07
09/30/80	22.36	1132.24
10/30/80	22.08	1132.52
11/25/80	23.60	1131.00
12/18/80	22.27	1132.33

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/15/81	22.46	1132.14
06/16/81	22.20	1132.40
07/16/81	22.57	1132.03
08/12/81	22.68	1131.92
09/10/81	23.23	1131.37
10/08/81	22.95	1131.65
11/05/81	21.52	1133.08
12/03/81	22.47	1132.13
12/01/82	22.25	1132.35
05/26/83	20.64	1133.96
12/06/83	21.74	1132.86
12/04/84	22.28	1132.32
12/03/87	20.84	1133.76
04/14/92	21.65	1132.95

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/14/78	20.57	1129.13
10/03/78	16.92	1132.78
05/24/79	13.68	1136.02
06/19/79	15.40	1134.30
07/17/79	26.98	1122.72
08/23/79	16.79	1130.95
09/21/79	16.23	1133.45
10/16/79	16.33	1133.37
12/05/79	15.95	1133.75
04/16/80	15.68	1134.02
06/10/80	14.87	1134.83
10/29/80	15.02	1134.68
10/30/80	16.12	1133.58
11/25/80	15.00	1134.70
12/17/80	15.05	1134.65

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/15/81	15.20	1134.50
06/16/81	14.85	1134.85
07/16/81	15.91	1133.79
08/12/81	16.00	1133.70
10/08/81	15.87	1133.83
11/05/81	15.52	1134.18
12/03/81	15.41	1134.29
09/29/82	17.34	1132.36
12/01/82	14.29	1135.41
12/06/83	14.60	1135.10
12/04/84	16.06	1133.64
12/03/87	14.79	1134.91
04/14/92	15.97	1133.73

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/25/98	11.77	1131.93
05/30/98	12.28	1131.42
06/24/98	12.62	1131.08
08/04/98	15.09	1128.61
09/01/98	15.54	1128.16
09/30/98	16.00	1127.70
10/25/98	13.90	1129.80
04/14/99	10.10	1133.60
05/18/99	7.04	1136.66
06/16/99	9.41	1134.29
07/21/99	11.34	1132.36
08/17/99	13.06	1130.64
09/15/99	13.15	1130.55

Date	Depth to Water (ft)	WL Elev (msl, ft)
09/24/05	13.31	1130.39
10/25/05	12.95	1130.75
11/24/05	13.07	1130.63
12/24/05	13.12	1130.58

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/14/78	23.34	1131.26
08/10/78	35.85	1118.75
08/29/78	26.87	1127.73
10/03/78	25.75	1128.85
05/24/79	21.74	1132.86
06/19/79	23.77	1130.83
07/17/79	24.87	1129.73
08/23/79	24.83	1129.77
09/21/79	34.34	1120.26
10/16/79	25.18	1129.42
12/05/79	24.78	1129.82
04/16/80	24.30	1130.30
06/10/80	22.02	1132.58
09/05/80	23.53	1131.07
09/30/80	22.36	1132.24
10/30/80	22.08	1132.52
11/25/80	23.60	1131.00
12/18/80	22.27	1132.33

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/15/81	22.46	1132.14
06/16/81	22.20	1132.40
07/16/81	22.57	1132.03
08/12/81	22.68	1131.92
09/10/81	23.23	1131.37
10/08/81	22.95	1131.65
11/05/81	21.52	1133.08
12/03/81	22.47	1132.13
12/01/82	22.25	1132.35
05/26/83	20.64	1133.96
12/06/83	21.74	1132.86
12/04/84	22.28	1132.32
12/03/87	20.84	1133.76
04/14/92	21.65	1132.95

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/14/78	20.57	1129.13
10/03/78	16.92	1132.78
05/24/79	13.68	1136.02
06/19/79	15.40	1134.30
07/17/79	26.98	1122.72
08/23/79	16.79	1130.95
09/21/79	16.23	1133.45
10/16/79	16.33	1133.37
12/05/79	15.95	1133.75
04/16/80	15.68	1134.02
06/10/80	14.87	1134.83
10/29/80	15.02	1134.68
10/30/80	16.12	1133.58
11/25/80	15.00	1134.70
12/17/80	15.05	1134.65

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/15/81	15.20	1134.50
06/16/81	14.85	1134.85
07/16/81	15.91	1133.79
08/12/81	16.00	1133.70
10/08/81	15.87	1133.83
11/05/81	15.52	1134.18
12/03/81	15.41	1134.29
09/29/82	17.34	1132.36
12/01/82	14.29	1135.41
12/06/83	14.60	1135.10
12/04/84	16.06	1133.64
12/03/87	14.79	1134.91
04/14/92	15.97	1133.73

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Page Aquifer

MP Elev (msl,ft)=1,157.00
SI (ft.)=47-67

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/14/78	15.90	1141.10
06/15/81	21.83	1135.17
06/16/81	22.02	1134.98
07/16/81	22.21	1134.79
08/12/81	22.73	1134.27
10/08/81	22.51	1134.49
11/05/81	22.20	1134.80
12/03/81	22.12	1134.88
12/01/82	21.07	1135.93
12/06/83	21.22	1135.78
12/04/84	21.81	1135.19
12/03/87	19.50	1137.50
04/14/92	21.87	1135.13

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Page Aquifer

MP Elev (msl,ft)=1,160.20
SI (ft.)=53-68

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/09/70	19.61	1140.59
06/27/70	19.23	1140.97
07/09/70	19.48	1140.72
08/05/70	20.20	1140.00
09/03/70	20.61	1139.59
10/01/70	20.83	1139.37
10/04/70	21.13	1139.07
12/03/70	21.13	1139.07
01/20/71	21.30	1138.90
02/17/71	21.73	1138.47
03/20/71	21.43	1138.77
04/14/71	21.04	1139.16
05/05/71	20.93	1139.27
06/15/71	20.78	1139.42
07/23/71	20.70	1139.50
09/18/71	21.50	1138.70
10/04/71	21.38	1138.82
10/05/71	21.41	1138.79
10/29/71	21.16	1139.04
12/10/71	20.46	1139.74
12/31/71	20.52	1139.68
03/08/72	21.74	1138.46
04/20/72	20.93	1139.27
06/08/72	20.29	1139.91
10/20/72	20.94	1139.26
11/29/72	21.05	1139.15
12/07/73	21.12	1139.08
12/05/74	20.99	1139.21
04/15/81	23.04	1137.16
05/21/81	23.31	1136.89

11/24/76

23.05 1137.15

Date	Depth to Water (ft)	WL Elev (msl, ft)
03/01/77	22.97	1137.23
05/19/77	22.52	1137.88
05/31/77	22.15	1138.05
06/02/77	23.35	1137.95
06/12/77	23.23	1136.87
06/21/77	22.32	1137.88
07/12/77	23.33	1136.87
08/30/77	23.63	1136.53
09/22/77	23.34	1136.86
11/30/77	22.52	1137.68
12/12/77	22.70	1137.50
02/27/78	23.03	1137.17
03/16/78	21.03	1139.17
06/09/78	21.37	1138.83
06/14/78	22.80	1137.40
07/12/78	23.88	1136.32
08/10/78	24.02	1136.18
08/29/78	23.59	1136.61
09/08/78	23.30	1136.90
10/03/78	22.81	1137.39
11/22/78	22.81	1137.39
12/11/78	23.06	1137.14

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Page Aquifer

MP Elev (msl,ft)=1,160.20
SI (ft.)=53-68

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/16/84	21.18	1139.02
05/28/84	21.35	1138.85
06/29/84	21.21	1138.99
07/31/84	23.60	1136.60
08/28/84	24.04	1136.16
09/23/84	23.19	1137.01
10/28/84	23.55	1136.65
11/25/84	22.18	1138.02
12/04/84	23.21	1136.99
12/22/84	23.30	1136.90
04/20/85	23.11	1137.09
05/19/85	23.99	1136.81
06/16/85	22.89	1137.31
07/17/85	24.88	1135.32
08/09/85	25.04	1135.16
09/08/85	24.87	1135.33
10/06/85	24.35	1135.85
11/03/85	24.22	1135.98
05/04/86	22.06	1138.14
06/01/86	21.78	1138.42
06/11/86	21.78	1138.42
07/04/86	23.66	1136.54
08/02/86	22.54	1137.66
08/31/86	22.38	1137.82
09/28/86	22.00	1138.20
10/26/86	21.72	1138.48
11/23/86	21.83	1138.37
12/09/86	22.70	1137.50

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/12/81	22.71	1137.49
06/16/81	22.88	1137.32
07/09/81	24.30	1135.90
07/15/81	25.20	1135.00
08/12/81	23.97	1136.23
08/13/81	23.63	1136.57
09/10/81	23.95	1136.25
10/08/81	23.70	1136.50
11/05/81	23.53	1136.67
12/01/81	23.02	1137.18
12/03/81	22.48	1137.72
03/31/82	23.69	1136.51
04/21/82	22.90	1137.30
05/12/82	22.42	1137.78
06/09/82	22.20	1138.00
07/07/82	22.82	1137.38
08/04/82	24.78	1135.42
09/01/82	24.96	1135.24
09/23/82	24.17	1136.03
10/26/82	22.97	1137.23
11/30/82	22.37	1137.83
05/03/83	22.10	1138.10
06/01/83	21.88	1138.32
12/06/83	22.37	1137.83

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/18/87	21.11	1139.09
05/17/87	22.69	1137.51
06/13/87	20.76	1139.44
07/12/87	23.24	1136.96
08/09/87	21.75	1138.45
09/05/87	21.56	1138.64
10/04/87	21.48	1138.72
10/31/87	21.82	1138.38
11/29/87	21.77	1138.43
12/03/87	21.91	1138.23
03/20/88	21.77	1138.43
04/17/88	21.35	1138.85
05/14/88	21.63	1138.37
06/11/88	23.98	1136.22
07/10/88	25.37	1134.83
08/08/88	25.19	1135.01
09/05/88	24.97	1135.23
10/02/88	24.70	1135.50
11/01/88	24.43	1135.77
12/09/88	24.03	1136.17
04/16/89	23.70	1136.50
05/12/89	23.22	1136.98
06/12/89	23.41	1136.79
06/18/89	23.41	1136.79
07/08/89	25.36	1134.84
08/04/89	27.12	1133.08

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Page Aquifer

MP Elev (msl,ft)=1,160.20
SI (ft.)=53-68

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/16/94	18.59	1141.61
08/10/94	17.09	1142.31
09/11/94	19.17	1141.03
10/08/94	14.82	1145.38
11/06/94	15.22	1144.98
11/22/94	15.73	1144.47
12/03/94	16.29	1143.91
04/21/95	18.66	1141.54
05/27/95	16.82	1143.38
06/28/95	17.81	1142.39
07/23/95	15.27	1144.93
08/18/95	19.64	1140.36
09/23/95	18.31	1141.89
10/21/95	18.09	1142.11
11/16/95	18.21	1141.99
12/19/95	18.59	1141.61
04/17/96	18.29	1141.91
05/21/96	18.46	1141.74
06/22/96	18.35	1141.85
07/20/96	18.19	1142.01
08/16/96	20.35	1139.85
09/21/96	20.84	1139.36
10/15/96	19.54	1140.66
10/12/96	19.56	1140.64
11/09/96	19.78	1140.42

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/10/97	17.00	1143.20
06/04/97	17.97	1142.23
06/27/97	18.19	1142.01
08/03/97	19.75	1140.45
08/30/97	20.60	1139.60
09/27/97	20.03	1140.17
10/22/97	20.14	1140.06
11/16/97	20.39	1139.81
12/11/97	20.37	1139.83
04/25/98	19.20	1141.00
05/30/98	19.30	1140.90
06/24/98	19.37	1140.83
08/04/98	22.79	1137.41
09/01/98	22.08	1138.12
09/30/98	21.74	1138.46
10/23/98	21.23	1138.97
11/22/98	20.48	1139.72
11/30/98	20.64	1139.56
12/16/98	20.47	1139.73
04/14/99	19.13	1141.07
05/17/99	15.65	1144.55
06/16/99	16.78	1143.42
07/21/99	20.39	1139.81
08/17/99	19.45	1140.75
09/15/99	19.89	1140.31
10/13/99	19.72	1140.48
10/20/99	19.50	1140.70
11/07/99	19.67	1140.53
12/02/99	19.63	1140.57

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Page Aquifer

MP Elev (msl,ft)=1,160.20
SI (ft.)=53-68

Date	Depth to Water (ft)	WL Elev (msl, ft)
09/24/05	18.35	1141.85
10/25/05	18.68	1141.52
11/24/05	19.03	1141.17
12/24/05	18.89	1141.31
04/16/80	21.70	1140.00
05/15/80	23.28	1138.42
06/10/80	22.12	1139.58
11/25/80	22.37	1139.33
12/18/80	22.37	1139.33
04/15/81	22.45	1139.25
05/21/81	22.55	1139.15
06/16/81	22.33	1139.37
07/16/81	23.07	1138.63
09/24/81	23.39	1138.31
10/08/81	23.23	1138.47

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Page Aquifer

MP Elev (msl,ft)=1,161.70
SI (ft.)=72-92

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/22/06	18.42	1141.78
05/20/06	18.60	1141.60
11/05/81	23.03	1138.67
12/03/81	22.83	1138.87
11/30/82	22.02	1139.68
05/26/83	21.41	1140.29
12/06/83	21.77	1139.93
12/04/84	22.83	1138.87
12/03/87	21.56	1140.14
04/14/92	23.52	1138.18

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Page Aquifer

MP Elev (msl, ft)=1,152.50
SI (ft.)=67-73

11/30/82 13.49 1139.01

05/03/83 12.57 1139.93
06/01/83 12.58 1139.92

08/05/89 16.15 1136.35
09/02/89 14.25 1138.25
10/01/89 14.55 1137.95
10/28/89 14.63 1137.87

MP Elev (msl, ft)=1,152.50
SI (ft.)=67-73

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Page Aquifer

MP Elev (msl, ft)=1,152.50
SI (ft.)=67-73

11/30/82 13.49 1139.01

05/03/83 12.57 1139.93
06/01/83 12.58 1139.92

08/05/89 16.15 1136.35
09/02/89 14.25 1138.25
10/01/89 14.55 1137.95
10/28/89 14.63 1137.87

MP Elev (msl, ft)=1,152.50
SI (ft.)=67-73

Date	Depth to Water (ft)	WL Elev (msl, ft)	Depth to Water (ft)	WL Elev (msl, ft)
12/06/83	12.84	1139.66	14.43	1138.07
04/23/84	11.68	1140.82	14.39	1138.11
05/28/84	12.09	1140.41	14.09	1138.41
06/29/84	12.18	1140.32	13.77	1138.73
07/31/84	13.55	1138.95	14.09	1138.41
08/28/84	14.46	1138.04	13.03	1137.47
09/23/84	14.48	1138.02	15.59	1136.91
10/28/84	13.72	1138.78	15.59	1136.91
11/25/84	13.60	1138.90	15.29	1137.21
12/04/84	13.77	1138.73	15.24	1137.26
12/22/84	13.82	1138.68		
04/20/85	13.01	1139.49		
05/19/85	12.95	1139.55		
06/16/85	13.27	1139.23		
07/17/85	14.27	1138.23		
08/09/85	15.22	1137.28		
09/08/85	15.15	1137.35		
10/06/85	14.84	1137.66		
11/03/85	14.69	1137.81		
05/04/86	12.45	1140.05		
06/01/86	12.85	1139.65		
07/04/86	13.41	1139.09		
08/02/86	13.68	1138.82		
08/31/86	13.37	1139.13		
09/28/86	12.98	1139.52		
10/26/86	12.80	1139.70		
11/23/86	12.66	1139.84		
04/18/87	11.74	1140.76		
05/17/87	12.56	1139.94		
06/13/87	12.04	1140.46		
07/12/87	12.84	1139.66		
08/09/87	12.74	1139.76		
09/05/87	12.43	1140.07		
10/04/87	12.29	1140.21		
10/31/87	12.34	1140.16		
11/29/87	12.19	1140.31		
12/03/87	12.24	1140.26		
03/20/88	4.17	1148.33		
04/17/88	4.65	1147.85		
05/14/88	5.36	1147.14		
06/11/88	5.50	1147.00		
07/10/88	14.57	1137.93		
08/08/88	15.38	1137.12		
09/05/88	15.44	1137.06		
10/02/88	15.00	1137.50		
11/01/88	14.78	1137.72		
04/16/89	13.40	1139.10		
05/12/89	13.54	1138.96		
06/12/89	13.78	1138.72		
07/08/89	14.83	1137.67		

Date	Depth to Water (ft)	WL Elev (msl, ft)	Depth to Water (ft)	WL Elev (msl, ft)
11/26/89	14.43	1138.07		
04/10/90	14.39	1138.11		
05/07/90	14.09	1138.41		
06/05/90	13.77	1138.73		
07/06/90	14.09	1138.41		
08/04/90	13.03	1137.47		
09/03/90	15.59	1136.91		
10/05/90	15.59	1136.91		
11/04/90	15.29	1137.21		
12/02/90	15.24	1137.26		
04/20/91	14.69	1137.81		
05/18/91	14.13	1138.37		
06/16/91	13.73	1138.77		
07/19/91	14.65	1137.85		
08/17/91	15.75	1136.75		
09/21/91	15.74	1136.76		
10/19/91	15.63	1136.87		
11/10/91	15.39	1137.11		
12/08/91	15.19	1137.31		
04/04/92	13.93	1138.57		
04/14/92	14.00	1138.50		
05/03/92	14.06	1138.44		
05/31/92	14.16	1138.34		
06/28/92	14.00	1138.50		
07/01/92	13.82	1138.68		
07/25/92	14.02	1138.48		
08/19/92	15.27	1137.23		
09/20/92	14.67	1137.83		
10/18/92	14.74	1137.76		
11/15/92	14.40	1138.10		
04/17/93	12.92	1139.58		
05/16/93	13.25	1139.25		
06/12/93	13.07	1139.43		
07/09/93	13.03	1139.47		
08/07/93	12.43	1140.07		
09/04/93	12.52	1139.98		
10/03/93	12.44	1140.06		
10/30/93	12.49	1140.01		
11/26/93	12.33	1140.17		
04/23/94	11.63	1140.87		
05/21/94	11.73	1140.77		
06/16/94	11.57	1140.93		
07/16/94	11.08	1141.42		
08/10/94	10.84	1141.66		
09/11/94	10.62	1141.88		
10/08/94	9.43	1143.07		
11/06/94	8.33	1144.17		
12/03/94	9.30	1143.20		

Date	Depth to Water (ft)	WL Elev (msl, ft)	Depth to Water (ft)	WL Elev (msl, ft)
10/21/95	9.61	1142.89		
11/18/95	9.49	1143.01		
12/19/95	9.21	1143.29		
04/17/96	8.94	1143.56		
05/21/96	9.85	1142.65		
06/22/96	10.04	1142.46		
07/20/96	9.94	1142.56		
08/16/96	10.39	1142.11		
09/15/96	10.53	1141.95		
10/12/96	10.52	1141.98		
11/09/96	10.31	1142.19		
11/09/96	10.44	1142.06		
05/10/97	9.38	1143.12		
06/04/97	9.66	1142.84		
06/21/97	9.77	1142.73		
08/03/97	10.22	1142.28		
08/30/97	10.42	1142.08		
09/21/97	10.35	1142.15		
10/16/97	10.47	1142.03		
10/22/97	10.35	1142.15		
11/16/97	10.47	1142.03		
12/11/97	10.45	1142.05		
04/25/98	10.16	1142.34		
05/30/98	10.20	1142.30		
06/24/98	10.22	1142.28		
08/04/98	11.58	1140.92		
09/01/98	11.60	1140.90		
09/30/98	11.53	1140.97		
10/25/98	11.00	1141.50		
11/22/98	10.80	1141.70		
12/16/98	10.79	1141.71		
04/14/99	10.16	1142.34		
05/18/99	9.15	1143.35		
06/16/99	9.43	1143.07		
07/21/99	9.94	1142.56		
08/17/99	10.00	1142.50		
09/15/99	10.10	1142.40		
10/13/99	10.00	1142.50		
11/07/99	10.00	1142.50		
12/02/99	10.10	1142.40		
04/04/00	9.90	1142.60		
05/02/00	10.14	1142.36		
05/31/00	10.41	1142.09		
06/25/00	10.10	1142.40		
06/01/00	10.59	1141.91		
08/29/00	10.53	1141.97		
09/26/00	10.53	1141.97		
10/23/00	10.33	1142.17		

Date	Depth to Water (ft)	WL Elev (msl, ft)	Depth to Water (ft)	WL Elev (msl, ft)
05/18/77	12.26	1140.24		
06/02/77	12.27	1140.23		
06/21/77	11.49	1139.90		
07/12/77	12.94	1138.87		
08/08/77	13.63	1138.21		
09/22/77	13.29	1139.27		
12/12/77	12.78	1139.72		
03/16/78	13.14	1139.36		
06/14/78	12.15	1140.35		
07/12/78	12.30	1140.20		
08/10/78	13.12	1139.38		
08/29/78	13.34	1139.16		
10/03/78	13.39	1139.11		
12/11/78	13.29	1139.21		
04/27/79	11.30	1141.20		
05/24/79	11.49	1141.01		
06/19/79	11.55	1140.95		
07/17/79	12.10	1140.40		
08/23/79	12.79	1139.71		
09/21/79	12.83	1139.67		
10/16/79	12.80	1139.70		
12/05/79	12.38	1140.12		
04/16/80	12.27	1140.23		
05/15/80	12.63	1139.87		
06/10/80	12.69	1139.81		
07/10/80	13.94	1138.56		
08/06/80	14.71	1137.79		
09/05/80	13.11	1139.39		
09/30/80	13.34	1139.16		
10/30/80	13.26	1139.24		
11/25/80	13.34	1139.16		
12/18/80	13.39	1139.11		
04/15/81	13.45	1139.05		
05/21/81	13.33	1139.17		
06/16/81	13.28	1139.22		
07/09/81	14.02	1138.48		
07/16/81	13.75	1138.75		
08/12/81	14.40	1138.10		
09/11/81	14.73	1137.77		
10/08/81	14.30	1138.20		
11/05/81	14.15	1138.35		
12/03/81	14.08	1138.42		
03/31/82	13.59	1138.91		
04/21/82	12.63	1139.87		
05/12/82	12.75	1139.75		
06/09/82	12.80	1139.70		
07/07/82	13.43	1139.07		
08/04/82	14.42	1138.08		
09/01/82	15.03	1137.47		
09/29/82	14.89	1137.61		
10/26/82	13.64	1138.86		

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/21/95	10.00	1142.50
05/27/95	9.66	1142.84
06/28/95	9.79	1142.71
07/23/95	9.20	1143.30
08/18/95	10.18	1142.32
09/23/95	9.73	1142.77

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Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/07/01	10.04	1142.46
09/01/01	10.21	1142.29
09/26/01	10.26	1142.24
10/22/01	10.03	1142.47
11/21/01	10.25	1142.25

MP Elev (msl,ft)=1,152.50
SI (ft.)=67-73

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/09/03	9.63	1142.87
07/30/03	9.87	1142.63
08/26/03	10.24	1142.26
09/23/03	10.15	1142.35
10/16/03	10.09	1142.41
11/09/03	10.24	1142.26

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/23/00	9.93	1142.57
04/20/01	9.69	1142.81
05/17/01	9.74	1142.76
06/12/01	9.55	1142.95
07/07/01	10.18	1142.32
07/26/01	10.30	1142.20

MP Elev (msl,ft)=1,184.22
SI (ft.)=108-148

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/14/04	9.98	1142.52
05/08/04	9.90	1142.60
06/12/04	9.55	1142.95
07/17/04	9.25	1143.25
08/18/04	9.39	1143.11
09/16/04	9.41	1143.09
10/13/04	9.49	1143.01
11/07/04	9.37	1143.13
12/08/04	9.49	1143.01
08/03/05	8.64	1143.86

144-055-27CBB
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/14/92	41.74	1142.48

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Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/14/78	8.18	1176.32
07/12/78	9.53	1174.97
08/16/78	10.80	1173.70
08/23/78	11.73	1172.77
10/03/78	13.05	1171.45
12/11/78	15.50	1169.00

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/11/83	5.25	1179.25
11/11/83	7.11	1177.39
12/06/83	8.50	1176.00
04/23/84	5.03	1179.47
05/28/84	6.27	1178.23
06/29/84	7.35	1177.15
07/31/84	8.46	1176.04
08/28/84	9.35	1175.15
09/23/84	10.18	1174.32
10/28/84	11.19	1173.31
11/25/84	12.02	1172.48
12/04/84	12.27	1172.23
12/22/84	12.77	1171.73

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/16/80	4.59	1179.91
05/15/80	5.87	1178.63
06/10/80	6.97	1177.53
07/10/80	8.14	1176.36
08/06/80	9.16	1175.34
09/05/80	4.46	1180.04
09/30/80	5.53	1178.97
10/30/80	6.74	1177.76
11/25/80	7.75	1176.75
12/18/80	8.61	1175.89

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Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/15/81	12.61	1171.89
05/21/81	13.78	1170.72
06/16/81	14.54	1169.96
07/16/81	15.39	1169.11
08/12/81	16.11	1168.39
09/11/81	16.95	1167.55
10/08/81	17.64	1166.86
11/05/81	18.33	1166.17
12/03/81	18.96	1165.54
03/31/82	2.35	1182.15
04/21/82	4.95	1179.55
05/12/82	5.79	1178.71
06/09/82	6.90	1177.60
07/07/82	7.95	1176.55
08/04/82	8.94	1175.56
09/01/82	9.84	1174.66
09/29/82	10.80	1173.70
10/26/82	11.69	1172.81
11/30/82	12.66	1171.84
05/03/83	5.09	1179.41
06/01/83	6.24	1178.26
07/12/83	4.73	1179.77
08/15/83	5.76	1178.74
09/14/83	5.48	1179.02

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/20/85	15.91	1168.59
05/19/85	16.60	1167.90
06/16/85	17.29	1167.21
07/17/85	17.91	1166.59
08/09/85	18.50	1166.00
09/08/85	19.15	1165.35
10/06/85	19.74	1164.76
11/03/85	20.28	1164.22
05/04/86	4.78	1179.72
06/01/86	5.79	1178.71
07/04/86	6.80	1177.70
08/02/86	31.88	1152.62
08/31/86	31.91	1152.59
09/28/86	34.00	1150.50
10/26/86	32.13	1152.37
11/23/86	29.08	1155.42
04/18/87	4.69	1179.81
05/11/87	5.66	1178.84
06/13/87	6.14	1178.36
07/12/87	6.84	1177.66
08/09/87	6.66	1177.84
10/22/87	59.21	1125.29
10/31/87	4.28	1180.22
11/29/87	4.80	1179.70
12/03/87	4.83	1179.67
03/20/88	11.80	1172.70
04/11/88	11.72	1172.78
05/14/88	12.19	1172.31
06/11/88	13.41	1171.09
07/10/88	1126.67	57.83
08/08/88	58.55	1125.95
09/03/88	57.24	1127.26
10/02/88	56.91	1127.59
11/01/88	56.51	1127.99

MP Elev (msl,ft)=1,184.44
SI (ft.)=74-79

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/08/89	39.95	1144.49
08/05/89	41.55	1142.89
09/02/89	41.12	1143.32
10/01/89	40.13	1144.31
10/28/89	40.55	1143.89
11/26/89	40.19	1144.25
04/10/90	40.33	1144.11
05/07/90	39.96	1144.48
06/05/90	39.94	1144.50
07/06/90	40.00	1144.44
08/04/90	42.47	1141.97
09/03/90	41.70	1142.74
10/05/90	41.69	1142.75
11/04/90	41.33	1143.11
12/02/90	41.30	1143.14
04/20/91	40.74	1143.70

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/27/95	33.40	1151.04
06/28/95	34.08	1150.36
07/23/95	32.85	1151.59
08/18/95	34.48	1149.96
09/23/95	32.94	1151.50
10/21/95	31.64	1152.80
11/18/95	32.45	1151.99
12/19/95	32.42	1152.02
04/17/96	32.27	1152.17
05/21/96	32.65	1151.79
06/22/96	32.52	1151.92
07/20/96	32.77	1151.67
08/16/96	33.91	1150.53
09/15/96	33.44	1151.00
10/12/96	33.42	1151.02
11/09/96	33.50	1150.94

MP Elev (msl, ft.)=1,176.51
SI (ft.)=237-243

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/27/95	23.47	1153.23
06/28/95	23.76	1152.94
07/23/95	23.57	1153.13
08/18/95	23.88	1152.82
09/23/95	23.79	1152.91
10/21/95	23.64	1153.06
11/18/95	23.64	1153.06
12/19/95	23.57	1153.13
04/17/96	9.82	1166.88
05/21/96	12.18	1164.52
06/22/96	13.72	1162.98
07/20/96	14.48	1162.22
08/16/96	15.29	1161.41
09/15/96	15.42	1161.28
08/20/96	16.06	1160.64
10/12/96	16.40	1160.30
11/09/96	16.88	1159.82
05/10/97	17.94	1158.76
06/04/97	18.23	1158.47
06/21/97	18.35	1158.35
08/03/97	18.75	1157.95
08/30/97	18.94	1157.76
09/21/97	19.00	1157.70
10/16/97	19.16	1157.54
10/22/97	19.11	1157.59
11/16/97	19.20	1157.50
12/11/97	19.27	1157.43
04/25/98	19.52	1157.18
05/30/98	19.55	1157.15
06/25/98	19.59	1157.11
08/04/98	20.08	1156.62
09/01/98	20.13	1156.57
09/30/98	20.30	1156.40
10/25/98	20.04	1156.66
11/22/98	19.76	1156.94
12/16/98	19.95	1156.75
04/14/99	19.86	1156.84
05/18/99	19.66	1157.04
06/16/99	20.03	1156.67
07/21/99	20.14	1156.56
08/17/99	20.25	1156.45
09/15/99	20.19	1156.51
10/13/99	20.27	1156.43
11/07/99	20.28	1156.42
12/02/99	20.29	1156.41
04/04/00	20.19	1156.51
05/02/00	20.24	1156.46
05/31/00	20.34	1156.36
06/25/00	20.17	1156.53
08/01/00	20.48	1156.22
08/29/00	20.34	1156.36
09/26/00	20.48	1156.22
10/23/00	20.44	1156.26
11/23/00	20.20	1156.50

144-055-33CAC
Unnamed Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/23/89	24.82	1151.88
09/02/89	24.79	1151.91
10/01/89	24.68	1152.02
10/28/89	24.86	1151.84
11/26/89	24.80	1151.90
04/10/90	24.90	1151.80
05/07/90	24.84	1151.86
06/05/90	24.74	1151.96
07/06/90	24.81	1151.89
08/04/90	25.04	1151.66
09/03/90	25.10	1151.60
10/05/90	25.18	1151.52
11/04/90	25.20	1151.50
12/02/90	25.24	1151.46
04/20/91	25.23	1151.47
05/18/91	25.05	1151.65
06/16/91	24.90	1151.80
07/19/91	25.00	1151.70
08/17/91	25.06	1151.64
08/27/91	25.09	1151.61
09/21/91	26.30	1150.40
10/19/91	26.25	1150.45
11/10/91	26.08	1150.62
12/08/91	25.85	1150.85
04/04/92	25.62	1151.08
04/14/92	25.64	1151.06
05/03/92	25.65	1151.05
05/31/92	25.64	1151.06
06/28/92	25.56	1151.14
07/01/92	25.53	1151.17
07/25/92	25.99	1150.71
08/19/92	26.00	1150.70
09/20/92	25.67	1151.03
10/18/92	25.68	1151.02
11/15/92	25.49	1151.21
04/17/93	25.42	1151.28
05/16/93	25.48	1151.22
06/12/93	25.32	1151.38
07/09/93	25.25	1151.45
08/07/93	24.95	1151.75
09/04/93	25.00	1151.70
10/03/93	25.07	1151.63
10/30/93	25.17	1151.53
11/26/93	25.06	1151.64
04/23/94	25.81	1150.89
05/21/94	24.80	1151.90
06/18/94	25.75	1150.95
07/16/94	24.44	1152.26
08/10/94	24.42	1152.28
09/11/94	24.45	1152.25
10/08/94	23.90	1152.80
11/06/94	23.79	1152.80
12/03/94	23.64	1153.06
04/21/95	23.60	1153.10

MP Elev (msl, ft.)=1,192.31
SI (ft.)=178-183

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/04/00	28.38	1163.93
05/02/00	28.69	1163.62
05/31/00	29.08	1163.23
06/25/00	28.90	1163.41
08/01/00	28.82	1163.49
08/29/00	29.17	1163.14
09/26/00	29.38	1162.93
10/23/00	29.27	1163.04
11/23/00	29.22	1163.09
04/20/01	29.17	1163.14
05/17/01	28.89	1163.42
06/12/01	28.61	1163.70
07/07/01	28.93	1163.38
07/26/01	29.30	1163.01
08/07/01	29.08	1163.23
09/01/01	29.22	1163.09
09/26/01	29.26	1163.05
10/22/01	29.06	1163.25
11/21/01	29.17	1163.14
04/17/02	30.00	1162.31
05/14/02	29.51	1162.80
06/07/02	29.98	1162.33
07/02/02	29.92	1162.39
07/30/02	29.50	1162.81
08/26/02	29.27	1163.04
09/20/02	28.97	1163.34
10/16/02	29.20	1163.11
11/10/02	29.25	1163.06
04/16/03	29.92	1162.39

144-055-32ABB2
Pegge Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/17/03	29.90	1162.41
06/15/03	29.54	1162.77
07/09/03	29.22	1163.09
07/30/03	29.59	1162.72
08/26/03	30.32	1161.99
09/23/03	30.06	1162.25
10/16/03	30.07	1162.24
11/09/03	29.89	1162.42
04/14/04	30.02	1162.29
05/08/04	29.60	1162.71
06/12/04	29.29	1163.02
07/17/04	28.70	1163.61
08/18/04	28.25	1164.06
09/16/04	28.23	1164.08
10/13/04	28.29	1164.02

144-055-33CAC
 Unnamed Aquifer
 MP Elev (msl,ft)=1,176.51
 SI (ft.)=237-243

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/20/01	20.13	1156.57
05/17/01	20.04	1156.66
06/12/01	20.14	1156.56
07/07/01	20.40	1156.30
07/26/01	20.39	1156.31
08/07/01	20.89	1155.81
09/01/01	20.92	1155.78
09/26/01	20.98	1155.72
10/22/01	20.89	1155.81
11/21/01	20.85	1155.85
04/17/02	19.93	1156.77
05/14/02	20.72	1155.98
06/07/02	20.89	1155.81
07/02/02	20.90	1155.80
07/30/02	20.62	1156.08
08/28/02	20.71	1155.99
09/20/02	20.68	1156.02
10/16/02	20.72	1155.98
11/10/02	20.62	1156.08
04/16/03	20.72	1155.98

144-055-34DCC2
 Page Aquifer
 MP Elev (msl,ft)=1,180.00
 SI (ft.)=84-90

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/05/82	38.00	1142.00

144-055-36AAC
 Page Aquifer
 MP Elev (msl,ft)=1,174.10
 SI (ft.)=61-111

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/24/79	32.85	1141.25
06/19/79	32.53	1141.57
04/16/80	36.03	1138.07

145-053-04CCC
 Page Aquifer
 MP Elev (msl,ft)=1,102.00
 SI (ft.)=67-70

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	7.90	1094.10
12/13/73	7.61	1094.39
01/08/74	7.91	1094.09
02/12/74	8.24	1093.76
03/27/74	8.50	1093.50

145-053-05BBB
 Page Aquifer
 MP Elev (msl,ft)=1,096.00
 SI (ft.)=42-45

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/16/74	8.32	1093.68
06/04/74	5.55	1096.85
09/04/74	6.93	1093.07
12/05/74	7.04	1094.96
03/18/75	7.77	1094.23
06/04/75	5.19	1096.81
09/10/75	6.98	1095.02
12/02/75	7.66	1094.34
02/27/76	8.05	1093.95
06/01/76	7.46	1094.94
09/13/76	9.07	1092.93
07/11/77	8.84	1093.16
08/23/77	9.49	1092.51
09/23/77	9.80	1092.20
11/23/77	8.35	1093.65
03/01/78	8.75	1093.25
03/15/78	9.17	1092.83
06/09/78	6.70	1095.30
06/14/78	7.15	1094.85
09/08/78	8.27	1093.73
10/03/78	8.67	1093.33
11/22/78	5.90	1096.10

145-053-05BBB2
 Page Aquifer
 MP Elev (msl,ft)=1,100.72
 SI (ft.)=29-34

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	7.70	1088.30
08/03/04	7.10	1092.35
08/16/04	6.30	1093.15
10/19/04	5.88	1093.57
11/22/04	6.28	1094.44
12/14/04	6.77	1093.95
04/20/05	7.05	1093.67
06/01/05	6.27	1094.45
06/24/05	5.33	1095.39
07/29/05	6.22	1094.50
08/23/05	7.03	1093.69
09/24/05	7.66	1093.06
10/25/05	7.76	1092.96
11/24/05	7.77	1092.95
12/24/05	8.29	1092.43
04/22/06	6.93	1093.79
05/20/06	7.36	1093.36

145-053-05CBC
 Page Aquifer
 MP Elev (msl,ft)=1,100.00
 SI (ft.)=52-55

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	7.10	1092.90
03/01/77	9.57	1092.43
05/19/77	8.55	1093.45
05/31/77	8.50	1093.50
06/03/77	8.53	1093.47
06/21/77	8.60	1093.40

145-053-08CBC
 Page Aquifer
 MP Elev (msl,ft)=1,102.00
 SI (ft.)=37-40

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	9.60	1092.40

145-053-16BBB
Page Aquifer

MP Elev (msl,ft)=1,097.00
SI (ft.)=32-35

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	9.40	1087.60
01/08/74	9.65	1087.35
02/12/74	10.43	1086.57
03/21/74	10.10	1086.90
04/16/74	8.88	1088.12
06/04/74	6.32	1090.68
09/04/74	8.95	1088.05
12/05/74	8.85	1088.15
03/18/75	9.48	1087.52
06/04/75	6.44	1090.56
09/10/75	9.39	1087.61
12/02/75	9.87	1087.13
02/27/76	10.35	1086.65
06/01/76	9.18	1087.82
09/13/76	11.65	1085.35
11/29/76	11.99	1085.01
03/01/77	11.95	1085.05
05/19/77	10.76	1086.24
05/31/77	10.56	1086.44
06/03/77	10.68	1086.32

145-053-16BBB2
Page Aquifer

MP Elev (msl,ft)=1,096.28
SI (ft.)=30-35

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/08/99	7.10	1089.18
07/27/00	6.22	1090.06
09/25/01	7.55	1088.73
09/05/02	5.94	1090.34
07/29/03	5.32	1090.96
07/13/04	4.85	1091.43
08/04/04	6.29	1089.99
08/17/04	6.40	1089.88
10/19/04	6.52	1089.76
11/22/04	5.58	1090.70

145-053-18DD2
Page Aquifer

MP Elev (msl,ft)=1,107.41
SI (ft.)=78-83

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/15/05	4.20	1103.21
07/16/05	4.30	1103.11
07/20/05	5.33	1102.08
07/29/05	5.72	1101.69
08/04/05	6.19	1101.22
08/23/05	5.23	1102.16
09/24/05	6.71	1100.70
10/25/05	5.95	1101.46
11/24/05	5.48	1101.93
12/24/05	5.89	1101.52
04/22/06	4.49	1102.92
05/20/06	5.50	1101.91

145-053-30BB2
Page Aquifer

MP Elev (msl,ft)=1,125.28
SI (ft.)=55-60

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	11.02	1114.26
08/16/04	11.82	1113.46
10/19/04	11.98	1113.30
11/22/04	9.39	1115.89
12/14/04	10.09	1115.19
04/20/05	12.89	1112.39
06/01/05	5.98	1119.30
06/24/05	5.56	1119.72
07/11/05	6.68	1118.60
07/12/05	6.90	1118.38
07/13/05	6.95	1118.33
07/14/05	7.01	1118.27

145-054-04AAA
Page Aquifer

MP Elev (msl,ft)=1,099.05
SI (ft.)=87-90

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/03/81	11.82	1087.23
12/01/82	9.77	1089.28
12/07/83	10.46	1088.59
12/05/84	10.88	1088.17
12/03/87	7.91	1091.14
04/13/92	11.36	1087.69
07/29/03	6.32	1092.73
07/13/04	4.80	1094.25
08/04/04	6.12	1092.93
08/16/04	6.08	1092.97

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/29/80	11.58	1087.47
12/18/80	11.62	1087.43
04/15/81	11.87	1087.18
07/14/81	11.69	1087.36
10/08/81	12.73	1086.32

145-054-05BBB2
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	7.98	1108.89
08/16/04	7.80	1109.07
10/19/04	7.47	1109.40
11/22/04	6.12	1110.75

145-054-08BBB
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	5.10	1105.81
08/16/04	5.00	1105.91
10/19/04	4.29	1106.62
11/22/04	2.42	1108.49

145-054-09BBB
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/21/70	4.69	1102.51
07/10/70	6.10	1101.10
08/05/70	8.41	1098.79
09/03/70	10.12	1097.08
10/01/70	10.76	1096.44
11/04/70	11.03	1096.17
12/03/70	10.46	1096.74
02/17/71	11.04	1096.16
03/31/71	11.54	1095.66
04/14/71	11.17	1096.03
05/05/71	10.54	1096.66
06/04/71	8.94	1098.26
07/22/71	9.93	1097.27
10/06/71	12.35	1094.85
04/20/72	11.96	1095.24
06/09/72	10.07	1097.13
10/26/72	11.82	1095.38
12/01/72	11.97	1095.23
12/07/73	12.17	1095.03
12/05/74	10.53	1096.67
12/02/75	11.93	1095.27

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/29/76	14.02	1093.18
06/03/77	13.10	1094.10
06/21/77	12.96	1094.24
07/11/77	12.71	1094.49

145-054-09CCC
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/03/77	13.35	1101.45
06/21/77	13.99	1100.81
07/11/77	14.28	1100.52
09/22/77	14.63	1100.17
03/15/78	14.28	1100.52
06/14/78	13.31	1101.49
10/03/78	14.20	1100.60
12/12/78	14.20	1100.60
04/12/79	13.85	1100.95
09/19/79	13.72	1101.08
12/04/79	13.59	1101.21
04/15/80	13.07	1101.73
07/09/80	13.80	1101.00
10/29/80	13.57	1101.23
12/18/80	13.73	1101.07

145-054-09CCC2
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/08/99	12.75	1099.67
07/27/00	11.62	1100.80
09/25/01	12.27	1100.15
09/05/02	12.54	1099.88
07/29/03	11.40	1101.02
07/13/04	10.90	1101.52
08/04/04	12.20	1100.22
08/17/04	12.26	1100.16
10/19/04	11.56	1100.86
11/22/04	10.73	1101.69

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/19/04	5.83	1093.22
11/22/04	4.73	1094.32
12/14/04	5.06	1093.99
08/04/05	4.43	1094.62

145-054-09CCC
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/14/04	6.85	1110.02
08/04/05	7.48	1109.39

145-054-09CCC2
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/14/04	3.56	1107.35
08/04/05	5.39	1105.52

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/05/84	12.32	1094.88
12/03/87	7.85	1099.35
04/13/92	13.53	1093.67

145-054-09CCC
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/15/81	13.76	1101.04
07/14/81	13.30	1101.50
10/08/81	13.81	1100.99
12/03/81	13.50	1101.30
12/01/82	12.30	1102.50
12/07/83	12.49	1102.31
12/05/84	12.98	1101.82
12/03/87	12.39	1102.41
04/13/92	13.31	1101.49
09/23/99	13.06	1102.24

145-054-09CCC2
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/14/04	11.33	1101.09
04/20/05	11.26	1101.16
06/01/05	10.09	1102.33
06/24/05	9.99	1102.43
07/29/05	11.08	1101.34
08/23/05	11.53	1100.89
09/24/05	12.18	1100.24
10/25/05	11.74	1100.68
11/24/05	11.64	1100.78
12/24/05	12.32	1100.10
04/22/06	10.79	1101.63
05/20/06	11.22	1101.20

145-054-10DDDD
Page Aquifer

MP Elev (msl,ft)=1,120.20
SI (ft.)=17-20

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/19/77	9.70	1110.50
06/03/77	9.44	1110.76
06/21/77	9.62	1110.58
07/11/77	10.15	1110.05
09/22/77	10.32	1109.28
03/15/78	10.39	1109.81
06/14/78	7.50	1112.70
10/03/78	8.43	1111.77
12/12/78	9.16	1111.04
04/12/79	9.47	1110.73
09/19/79	8.59	1111.61
12/04/79	8.25	1111.95
04/15/80	9.32	1110.88
07/05/80	9.50	1110.70
10/29/80	9.54	1110.66

145-054-10DDDD2
Page Aquifer

MP Elev (msl,ft)=1,119.05
SI (ft.)=15-20

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/08/99	7.52	1111.53
07/27/00	6.45	1112.60
09/25/01	8.47	1110.58
09/05/02	7.96	1111.09
07/29/03	6.06	1112.99
07/13/04	5.90	1113.15
08/04/04	7.66	1111.39
08/17/04	7.50	1111.55
10/19/04	6.02	1113.03
11/22/04	4.82	1114.23
12/14/04	5.65	1113.40
04/20/05	6.05	1113.00
06/01/05	4.22	1114.83

145-054-13AAA2
Page Aquifer

MP Elev (msl,ft)=1,114.69
SI (ft.)=27-32

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	11.11	1103.58
08/17/04	11.38	1103.31
10/19/04	11.19	1103.50
11/22/04	10.20	1104.49
12/14/04	10.81	1103.88
04/20/05	11.40	1103.29
06/01/05	9.91	1104.78
06/24/05	9.09	1105.60
07/11/05	10.34	1104.35
07/12/05	10.47	1104.22
07/13/05	10.55	1104.14
07/14/05	10.69	1104.00

145-054-13BBB
Page Aquifer

MP Elev (msl,ft)=1,110.22
SI (ft.)=75-80

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	9.37	1100.85
08/17/04	8.98	1101.24
10/19/04	7.78	1102.44
11/22/04	7.18	1103.04
12/14/04	7.80	1102.42
04/20/05	7.61	1102.61
06/01/05	6.70	1103.52
06/24/05	6.66	1103.56
07/11/05	7.41	1102.81
07/12/05	7.52	1102.70
07/13/05	7.59	1102.63
07/14/05	7.66	1102.56

145-054-13BBB2
Page Aquifer

MP Elev (msl,ft)=1,110.46
SI (ft.)=35-40

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	10.41	1100.05
08/17/04	9.98	1100.48
10/19/04	8.79	1101.67
11/22/04	8.02	1102.44
12/14/04	8.86	1101.60
04/20/05	8.28	1102.18
06/01/05	7.50	1102.96
06/24/05	7.78	1102.68
07/11/05	8.75	1101.71
07/12/05	8.86	1101.58
07/13/05	8.97	1101.49
07/14/05	9.08	1101.38

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/15/05	10.60	1104.09
07/16/05	10.31	1104.18
07/20/05	10.90	1103.79
07/29/05	11.34	1103.35
08/04/05	11.55	1103.14
08/23/05	11.37	1103.32
09/24/05	12.00	1102.69
10/25/05	11.89	1102.80
11/24/05	11.95	1102.74
04/22/06	11.02	1103.67
05/20/06	10.90	1103.79

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/15/05	7.08	1103.14
07/16/05	7.00	1103.22
07/20/05	7.56	1102.66
07/29/05	8.00	1102.22
08/04/05	8.22	1102.00
08/23/05	8.05	1102.17
09/24/05	8.78	1101.44
10/25/05	8.76	1101.46
11/24/05	8.72	1101.50
12/24/05	9.24	1100.98
04/22/06	8.14	1102.08
05/20/06	9.00	1101.22

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/15/05	8.18	1102.28
07/16/05	8.13	1102.33
07/20/05	8.92	1101.54
07/29/05	9.39	1101.07
08/04/05	9.60	1100.86
08/23/05	9.30	1101.16
09/24/05	9.97	1100.49
10/25/05	9.86	1100.60
11/24/05	9.80	1100.66
12/24/05	10.32	1100.14
04/22/06	8.60	1101.86
05/20/06	10.15	1100.31

145-054-13CDC
Page Aquifer

MP Elev (msl,ft)=1,116.90
SI (ft.)=73-76

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/06/05	6.91	1109.99
06/16/05	6.09	1110.81
07/07/05	7.21	1109.69
07/11/05	7.58	1109.32
07/11/05	13.11	1103.79
07/12/05	13.60	1103.30
07/13/05	13.83	1103.07

145-054-13DCC
Page Aquifer

MP Elev (msl,ft)=1,112.00
SI (ft.)=55-60

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/11/05	4.04	1107.96
07/12/05	4.27	1107.73
07/13/05	4.42	1107.58
07/14/05	4.61	1107.39
07/15/05	4.18	1107.82

145-054-13CDC2
Page Aquifer

MP Elev (msl,ft)=1,117.00
SI (ft.)=63-68

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/14/05	11.83	1105.17
07/15/05	11.66	1105.34
07/16/05	8.06	1108.94
07/22/05	8.20	1108.80
08/04/05	8.75	1108.25
09/07/05	9.28	1107.72

145-054-13DCC
Page Aquifer

MP Elev (msl,ft)=1,112.00
SI (ft.)=45-50

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/16/05	4.80	1107.20
07/20/05	5.18	1106.82
08/04/05	6.31	1105.69
09/07/05	7.40	1104.60

145-054-13CDC3
Page Aquifer

MP Elev (msl,ft)=1,117.00
SI (ft.)=63-68

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/28/05	6.41	1110.59
07/07/05	6.55	1110.45
07/11/05	6.92	1110.08
07/11/05	9.17	1107.83
07/12/05	9.61	1107.39
07/13/05	9.86	1107.14

145-054-13DCC2
Page Aquifer

MP Elev (msl,ft)=1,117.67
SI (ft.)=62-68

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/21/77	14.25	1103.42
07/11/77	14.30	1103.37
09/22/77	14.98	1102.69
03/15/78	14.76	1102.91
06/14/78	13.53	1104.14
10/03/78	14.34	1103.33
12/12/78	14.60	1103.07
04/12/79	14.95	1102.72
09/19/79	12.93	1104.74
12/04/79	13.44	1104.23

145-054-13CDC4
Page Aquifer

MP Elev (msl,ft)=0.00
SI (ft.)=59-79

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/07/05	7.43	-7.43
07/11/05	7.79	-7.79
07/11/05	28.88	-28.88
07/12/05	29.54	-29.54
07/13/05	29.76	-29.76
07/14/05	30.08	-30.08

145-054-13DCC
Page Aquifer

MP Elev (msl,ft)=1,117.00
SI (ft.)=59-79

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/15/05	30.07	-30.07
07/16/05	8.34	-8.34
07/20/05	8.39	-8.39
07/22/05	8.48	-8.48
08/04/05	9.03	-9.03

145-054-13DDDD
Page Aquifer

MP Elev (msl,ft)=1,117.18
SI (ft.)=75-80

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/15/04	8.60	1108.58
11/22/04	8.51	1108.67
12/14/04	8.82	1108.36
04/20/05	10.12	1107.06
06/01/05	8.12	1109.06
06/24/05	5.68	1111.50
07/11/05	6.26	1110.92
07/12/05	6.39	1110.79
07/13/05	6.46	1110.72
07/14/05	6.58	1110.60
07/15/05	6.33	1110.85

145-054-14DDDD
Page Aquifer

MP Elev (msl,ft)=1,119.27
SI (ft.)=55-60

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	9.19	1110.08
08/17/04	9.28	1109.99
10/19/04	9.07	1110.20
11/22/04	8.40	1110.87
12/14/04	8.61	1110.66
04/20/05	8.76	1110.51
06/01/05	7.92	1111.35
06/24/05	6.69	1112.58
07/11/05	6.75	1112.52
07/12/05	6.85	1112.42
07/13/05	6.88	1112.39
07/14/05	6.94	1112.33

145-054-15CCCC
Page Aquifer

MP Elev (msl,ft)=1,152.17
SI (ft.)=78-83

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	23.21	1128.96
08/17/04	23.18	1128.99
10/19/04	23.69	1128.48
11/22/04	23.36	1128.81
12/14/04	23.48	1128.69
04/20/05	24.20	1127.97
06/01/05	23.17	1129.00
06/24/05	21.63	1130.54

145-054-17DDDD
Page Aquifer

MP Elev (msl,ft)=1,138.36
SI (ft.)=93-98

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/29/05	16.30	1122.06
08/23/05	16.60	1121.76
09/24/05	17.00	1121.36
10/25/05	17.10	1121.26
11/24/05	17.31	1121.05
12/24/05	17.56	1120.80
04/22/06	17.24	1121.12
05/20/06	17.30	1121.06

145-054-17DDDD
Page Aquifer

MP Elev (msl,ft)=1,138.28
SI (ft.)=65-70

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/29/05	16.13	1122.15
08/23/05	16.40	1121.88
09/24/05	16.82	1121.46
10/25/05	16.97	1121.31
11/24/05	17.12	1121.16
12/24/05	17.39	1120.89
04/22/06	17.07	1121.21
05/20/06	17.13	1121.15

145-054-22AAA
Page Aquifer

MP Elev (msl,ft)=1,151.10
SI (ft.)=78-81

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/19/77	25.83	1125.59
06/03/77	28.45	1125.97
06/21/77	28.77	1125.65
07/11/77	28.69	1125.73
09/22/77	26.15	1125.27
03/15/78	25.23	1125.19
06/14/78	25.12	1126.30
10/03/78	25.27	1126.15
12/12/78	25.57	1125.85
04/12/79	25.85	1125.57
09/19/79	24.25	1127.17
12/04/79	24.36	1127.06
04/15/80	25.22	1126.20
07/09/80	28.24	1126.18
10/29/80	25.56	1125.86
12/18/80	25.76	1125.66
04/15/81	26.04	1125.38
07/14/81	26.22	1125.20
10/08/81	26.31	1125.11
12/03/81	26.49	1124.93

145-054-24BAB4
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/29/05	18.48	1132.62
08/04/05	18.67	1132.43
08/23/05	18.73	1132.37
09/24/05	19.41	1131.69
10/25/05	19.40	1131.70
11/24/05	19.72	1131.38
12/24/05	19.78	1131.32
04/22/06	19.87	1131.23
05/20/06	19.74	1131.36

145-054-24BAB3
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/28/05	4.69	1110.31
07/07/05	4.83	1110.17
07/11/05	5.18	1109.82
07/11/05	6.49	1108.12
07/12/05	6.88	1108.12
07/13/05	7.14	1107.86

145-054-24BAB2
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/28/05	4.07	1110.93
07/07/05	4.22	1110.78
07/11/05	4.53	1110.47
07/11/05	5.24	1109.76
07/12/05	5.59	1109.41
07/13/05	5.84	1109.16

145-054-24BAB3
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/06/05	4.01	1110.99
06/17/05	3.18	1111.82
06/21/05	3.69	1111.31
06/28/05	4.19	1110.81
07/07/05	4.34	1110.66
07/11/05	4.67	1110.33
07/11/05	5.06	1109.94
07/12/05	5.37	1109.63

145-054-24BAB4
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/28/05	8.80	1108.20
07/07/05	8.84	1108.16
07/11/05	9.32	1107.68
07/11/05	10.11	1106.89
07/12/05	10.42	1106.58
07/13/05	10.68	1106.32

145-054-24BAC
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/11/05	5.14	1104.86
07/12/05	5.30	1104.70
07/13/05	5.42	1104.58
07/14/05	5.60	1104.40
07/15/05	5.16	1104.84

145-054-24BDC
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/11/05	4.94	1107.06
07/12/05	5.06	1106.94
07/13/05	5.13	1106.87
07/14/05	5.29	1106.71
07/15/05	4.99	1107.01

145-054-24CDC
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/11/05	4.59	1114.41
07/12/05	4.67	1114.33
07/13/05	4.73	1114.27
07/14/05	4.84	1114.16
07/15/05	4.27	1114.73

145-054-24BAB4
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/14/05	10.84	1106.16
07/15/05	10.79	1106.21
07/16/05	9.82	1107.18
07/22/05	9.97	1107.03
08/04/05	10.55	1106.45

145-054-24BAC
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/16/05	5.19	1104.81
07/20/05	5.74	1104.26
08/04/05	6.47	1103.53
09/07/05	6.73	1103.27

145-054-24BDC
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/16/05	4.99	1107.01
07/20/05	5.49	1106.51
08/04/05	6.18	1105.82
09/07/05	6.30	1105.70

145-054-24CDC
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/16/05	4.37	1114.63
07/20/05	4.86	1114.14
08/04/05	5.28	1113.72
09/07/05	5.56	1113.44

145-054-24CDC
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/11/05	5.63	1116.37
07/12/05	5.74	1116.26
07/13/05	5.79	1116.21
07/14/05	5.90	1116.10
07/15/05	5.29	1116.71

145-054-25CCCC
Page Aquifer

MP Elev (msl, ft)=1,123.79
SI (ft.)=75-80

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/15/04	2.30	1121.49
11/22/04	2.23	1121.56
12/14/04	2.76	1121.03
04/20/05	3.85	1119.94
06/01/05	1.17	1122.62
06/24/05	0.98	1122.81
07/29/05	2.42	1121.37

145-054-26AAA3
Page Aquifer

MP Elev (msl, ft)=1,122.27
SI (ft.)=58-63

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	6.63	1115.64
08/17/04	6.75	1115.52
10/19/04	5.92	1116.35
11/22/04	4.61	1117.66
12/14/04	5.13	1117.14
04/20/05	4.94	1117.33
06/01/05	3.09	1119.18
06/24/05	3.46	1118.81
07/11/05	4.18	1118.09
07/12/05	4.29	1117.98
07/13/05	4.39	1117.88
07/14/05	4.53	1117.74

145-054-27AAA
Page Aquifer

MP Elev (msl, ft)=1,140.60
SI (ft.)=87-91

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	9.74	1130.86
08/17/04	10.00	1130.60
10/19/04	10.04	1130.56
11/22/04	8.98	1131.62
12/14/04	9.21	1131.39
04/20/05	9.49	1131.11
06/01/05	7.20	1133.40
06/24/05	5.49	1135.11
07/11/05	5.93	1134.67
07/12/05	6.10	1134.50
07/13/05	6.14	1134.46
07/14/05	6.19	1134.41

145-054-27CDC
Dakota Group Aquifer

MP Elev (msl, ft)=1,145.50
SI (ft.)=640-660

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/05/70	79.52	1065.98
09/03/70	79.43	1066.07
10/01/70	79.42	1066.08
11/04/70	79.58	1065.92
12/03/70	79.32	1066.18
04/22/71	79.30	1066.20
05/05/71	79.22	1066.28
06/04/71	79.31	1066.19
07/22/71	79.39	1066.11
07/25/71	79.40	1066.10
07/30/71	79.41	1066.09
08/05/71	79.53	1066.00
08/10/71	79.43	1066.07
08/15/71	79.50	1066.00
08/20/71	79.39	1066.11
08/25/71	79.21	1066.29
08/30/71	79.18	1066.32
09/01/71	79.00	1066.50
09/05/71	78.95	1066.55
10/06/71	78.95	1066.35
10/10/71	79.16	1066.34
10/15/71	79.30	1066.20
10/20/71	79.24	1066.26
10/25/71	79.06	1066.44
10/30/71	79.17	1066.33
11/05/71	78.88	1066.62
11/10/71	79.10	1066.40
11/15/71	79.01	1066.49
11/20/71	78.77	1066.73
11/22/71	79.20	1066.30
12/01/71	79.35	1066.15
03/08/72	78.95	1066.55
04/20/72	78.73	1066.77
06/09/72	78.77	1066.73
10/27/72	77.46	1068.04
11/30/72	78.46	1067.04
08/07/73	79.18	1066.32
08/21/73	78.42	1067.08
10/04/73	78.27	1067.23
12/07/73	78.13	1067.37
01/08/74	78.12	1067.38
03/27/74	78.07	1067.43
05/08/74	77.95	1067.55
06/04/74	77.79	1067.71
07/09/74	78.04	1067.46
08/05/74	78.24	1067.26
09/04/74	78.24	1067.26
11/04/74	78.16	1067.34
01/31/75	78.29	1067.21
03/06/75	78.04	1067.46
04/13/75	77.94	1067.56
05/05/75	77.82	1067.68
06/04/75	77.94	1067.56
07/22/75	78.05	1067.45
08/08/75	77.97	1067.53

145-054-27AAA
Page Aquifer

MP Elev (msl, ft)=1,145.50
SI (ft.)=640-660

Date	Depth to Water (ft)	WL Elev (msl, ft)
09/10/75	78.14	1067.36
10/06/75	78.26	1067.24
11/24/75	78.38	1067.12
12/02/75	78.20	1067.30
02/11/76	78.05	1067.45
03/16/76	78.00	1067.50
05/01/76	78.21	1067.29
06/03/76	78.14	1067.36
07/06/76	78.64	1066.86
08/02/76	78.40	1067.10
09/01/76	78.27	1067.23
10/04/76	77.60	1067.90
11/02/76	78.60	1066.90
11/29/76	78.45	1067.05
01/03/77	78.30	1067.20
01/31/77	77.61	1067.89
03/01/77	78.31	1067.19
04/11/77	78.20	1067.30
05/02/77	78.29	1067.21
05/31/77	78.06	1067.44
06/30/77	78.10	1067.40
08/02/77	78.37	1067.13
08/30/77	78.32	1067.18
10/04/77	78.29	1067.21
10/31/77	77.55	1067.95
11/30/77	77.87	1067.63
01/04/78	78.06	1067.44
02/27/78	77.99	1067.51
03/31/78	77.74	1067.76
05/01/78	78.19	1067.31
06/09/78	78.10	1067.40
07/06/78	78.23	1067.27
08/01/78	78.27	1067.23
09/08/78	78.27	1067.23
09/21/78	78.48	1067.02
10/03/78	75.57	1069.93
10/30/78	68.40	1077.10
11/22/78	66.17	1079.33
01/03/79	65.91	1079.59
02/09/79	66.85	1078.65
03/07/79	67.85	1077.65
04/03/79	68.66	1076.84
06/21/79	63.41	1082.09
07/30/79	64.33	1081.17
08/28/79	62.72	1082.78
09/25/79	60.50	1085.00
10/16/79	59.76	1085.74
11/15/79	58.75	1086.75
11/27/79	53.51	1091.99
03/03/80	56.53	1088.97
04/14/80	56.28	1088.82
04/29/80	56.68	1089.22
06/03/80	56.30	1089.20
06/24/80	56.47	1089.03
07/29/80	57.12	1088.38

145-054-27CDC
Dakota Group Aquifer

MP Elev (msl, ft)=1,145.50
SI (ft.)=640-660

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/25/80	58.65	1086.85
10/28/80	59.98	1085.52
12/02/80	60.28	1085.22
01/06/81	60.62	1084.88
02/03/81	61.28	1084.22
03/10/81	63.15	1082.35
04/23/81	64.76	1080.74
06/12/81	63.26	1080.24
07/06/81	76.90	1068.60
08/13/81	70.95	1074.55
09/16/81	70.87	1074.63
10/20/81	73.02	1072.48
12/01/81	73.22	1072.28
03/15/82	74.43	1071.07
11/29/82	70.22	1075.28
07/26/83	66.38	1079.12
11/30/83	64.57	1080.93
11/28/84	64.22	1081.28
12/05/85	63.89	1081.61
12/10/86	66.60	1078.90
11/30/87	77.90	1067.60
11/28/88	78.02	1067.48
05/16/89	76.40	1069.10
11/24/89	67.99	1077.51
11/07/90	78.10	1067.40
11/13/91	77.76	1067.74
04/13/92	76.37	1069.13
11/17/92	77.79	1067.71
11/16/93	77.53	1067.97
11/21/94	77.46	1068.04
10/18/95	77.46	1068.04
05/31/96	70.02	1075.48
08/20/96	69.80	1075.70
10/04/96	77.49	1068.01
05/08/97	77.00	1068.50
06/18/97	77.11	1068.39
08/06/97	77.18	1068.32
10/16/97	77.38	1068.12
12/18/97	77.05	1068.45

145-054-31AAA2
Page Aquifer

MP Elev (msl, ft)=1,117.60
SI (ft.)=38-44

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/11/77	6.28	1111.32
09/22/77	6.50	1111.10
03/15/78	5.72	1111.88
06/14/78	5.40	1112.20
10/03/78	6.04	1111.56
12/12/78	5.93	1111.67
04/12/79	4.28	1113.32
09/19/79	5.41	1112.19
12/04/79	4.86	1112.74
04/15/80	4.38	1113.22
07/09/80	5.98	1111.62
10/29/80	4.51	1113.09
12/18/80	5.15	1112.45
04/15/81	4.58	1113.02

145-054-32AAA
Page Aquifer

MP Elev (msl, ft)=1,137.27
SI (ft.)=68-73

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/15/04	4.22	1133.05
11/22/04	4.14	1133.13
12/14/04	4.59	1132.68
04/20/05	6.18	1131.09
06/01/05	3.15	1134.12
06/24/05	2.48	1134.79
07/29/05	4.43	1132.84

145-054-36CCC
Page Aquifer

MP Elev (msl, ft)=1,130.26
SI (ft.)=78-83

Date	Depth to Water (ft)	WL Elev (msl, ft)
11/15/04	5.45	1124.81
11/22/04	5.22	1125.04
12/14/04	5.34	1124.92
04/20/05	7.82	1122.44
06/01/05	4.30	1125.96
06/24/05	2.59	1127.67
07/29/05	3.89	1126.37

145-055-01DDD
Undefined Aquifer

MP Elev (msl, ft)=1,120.40
SI (ft.)=38-41

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/03/77	8.96	1111.44

145-055-12BBB
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/03/77	13.67	1111.33
06/21/77	13.63	1111.37
07/11/77	13.66	1111.34
09/22/77	14.55	1110.45

145-055-13AAA
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/03/77	14.82	1114.08
06/21/77	14.56	1114.14
07/11/77	14.65	1114.05
09/22/77	15.26	1113.44
03/15/78	15.00	1113.70
06/14/78	13.26	1115.44
10/03/78	14.45	1114.25
12/12/78	14.77	1113.93
09/19/79	13.53	1115.17
12/04/79	13.90	1114.80
04/15/80	14.23	1114.47
07/09/80	14.05	1114.65
10/20/80	14.11	1114.59
10/29/80	14.11	1114.59

145-055-01DDD2
Undefined Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/08/99	7.65	1113.05
07/27/00	7.10	1113.60
09/25/01	7.27	1113.43
09/05/02	8.03	1112.67
07/29/03	6.73	1113.97

145-055-07BBB
Undefined Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/03/77	14.18	1243.52
06/09/77	14.18	1243.52
06/21/77	14.31	1243.39
07/11/77	13.72	1243.98
09/22/77	14.57	1243.13
06/14/78	10.91	1246.79
10/03/78	12.31	1245.39
12/12/78	13.26	1244.44
04/12/79	14.00	1243.70
09/19/79	11.14	1246.56
12/04/79	11.98	1245.72
04/15/80	12.66	1245.04
07/09/80	13.20	1244.50
10/29/80	13.68	1244.02
12/18/80	14.14	1243.56

145-055-12BBB
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/03/77	13.67	1111.33
06/21/77	13.63	1111.37
07/11/77	13.66	1111.34
09/22/77	14.55	1110.45

145-055-13AAA
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/03/77	14.82	1114.08
06/21/77	14.56	1114.14
07/11/77	14.65	1114.05
09/22/77	15.26	1113.44
03/15/78	15.00	1113.70
06/14/78	13.26	1115.44
10/03/78	14.45	1114.25
12/12/78	14.77	1113.93
09/19/79	13.53	1115.17
12/04/79	13.90	1114.80
04/15/80	14.23	1114.47
07/09/80	14.05	1114.65
10/20/80	14.11	1114.59
10/29/80	14.11	1114.59

145-055-01DDD2
Undefined Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/08/99	7.65	1113.05
07/27/00	7.10	1113.60
09/25/01	7.27	1113.43
09/05/02	8.03	1112.67
07/29/03	6.73	1113.97

145-055-07BBB
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/14/81	14.80	1242.90
10/08/81	14.97	1242.73
12/03/81	14.35	1243.35
12/01/82	10.76	1246.94
12/06/83	9.15	1248.55
12/04/84	11.87	1245.83
12/03/87	9.51	1248.19
06/14/89	7.27	1250.43
04/13/92	13.42	1244.28
11/13/96	6.71	1250.99
09/01/99	6.85	1250.85

145-055-12BBB
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/15/81	9.45	1110.95
07/14/81	9.53	1110.87
10/08/81	9.72	1110.68
12/03/81	9.40	1111.00
12/01/82	9.85	1110.55
12/06/83	8.02	1112.38
12/04/84	8.78	1111.62
12/03/87	7.25	1113.15
04/13/92	8.24	1112.16
11/13/96	7.65	1112.75

145-055-13AAA
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/03/77	14.82	1114.08
06/21/77	14.56	1114.14
07/11/77	14.65	1114.05
09/22/77	15.26	1113.44
03/15/78	15.00	1113.70
06/14/78	13.26	1115.44
10/03/78	14.45	1114.25
12/12/78	14.77	1113.93
09/19/79	13.53	1115.17
12/04/79	13.90	1114.80
04/15/80	14.23	1114.47
07/09/80	14.05	1114.65
10/20/80	14.11	1114.59
10/29/80	14.11	1114.59

145-055-01DDD2
Undefined Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/08/99	7.65	1113.05
07/27/00	7.10	1113.60
09/25/01	7.27	1113.43
09/05/02	8.03	1112.67
07/29/03	6.73	1113.97

145-055-07BBB
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/14/81	14.80	1242.90
10/08/81	14.97	1242.73
12/03/81	14.35	1243.35
12/01/82	10.76	1246.94
12/06/83	9.15	1248.55
12/04/84	11.87	1245.83
12/03/87	9.51	1248.19
06/14/89	7.27	1250.43
04/13/92	13.42	1244.28
11/13/96	6.71	1250.99
09/01/99	6.85	1250.85

145-055-12BBB
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/03/77	13.67	1111.33
06/21/77	13.63	1111.37
07/11/77	13.66	1111.34
09/22/77	14.55	1110.45

145-055-13AAA
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/03/77	14.82	1114.08
06/21/77	14.56	1114.14
07/11/77	14.65	1114.05
09/22/77	15.26	1113.44
03/15/78	15.00	1113.70
06/14/78	13.26	1115.44
10/03/78	14.45	1114.25
12/12/78	14.77	1113.93
09/19/79	13.53	1115.17
12/04/79	13.90	1114.80
04/15/80	14.23	1114.47
07/09/80	14.05	1114.65
10/20/80	14.11	1114.59
10/29/80	14.11	1114.59

145-055-01DDD2
Undefined Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/08/99	7.65	1113.05
07/27/00	7.10	1113.60
09/25/01	7.27	1113.43
09/05/02	8.03	1112.67
07/29/03	6.73	1113.97

145-055-07BBB
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/14/81	14.80	1242.90
10/08/81	14.97	1242.73
12/03/81	14.35	1243.35
12/01/82	10.76	1246.94
12/06/83	9.15	1248.55
12/04/84	11.87	1245.83
12/03/87	9.51	1248.19
06/14/89	7.27	1250.43
04/13/92	13.42	1244.28
11/13/96	6.71	1250.99
09/01/99	6.85	1250.85

145-055-23CCC
Page Aquifer

MP Elev (msl, ft)=1,137.00
SI (ft.)=28-31

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/02/77	13.09	1121.91
06/21/77	12.73	1122.27
07/11/77	12.88	1122.12
09/22/77	14.10	1120.90
03/15/78	13.24	1121.76
06/14/78	8.66	1126.14
10/03/78	12.38	1122.62
12/12/78	13.10	1121.90
04/12/79	14.30	1120.70
09/19/79	10.21	1124.79

145-055-27DDD
Page Aquifer

MP Elev (msl, ft)=1,143.00
SI (ft.)=57-63

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/03/70	9.14	1133.86
01/20/71	9.56	1133.44
03/31/71	9.48	1133.52
04/14/71	9.50	1133.50
05/05/71	9.32	1133.68
06/04/71	8.75	1134.25
06/16/71	7.37	1135.63
07/17/71	9.85	1133.15
10/06/71	7.37	1135.63
04/20/72	8.63	1134.37
06/09/72	8.63	1134.37
10/26/72	8.62	1134.38
12/01/72	8.77	1134.23
12/07/73	8.33	1134.67
12/05/74	8.90	1134.10
12/02/75	5.12	1137.88
11/29/76	10.12	1132.88
05/19/77	10.57	1132.43
06/02/77	10.28	1132.72
06/21/77	10.34	1132.66
07/11/77	10.38	1132.62
09/22/77	10.50	1132.50
11/30/77	10.20	1132.80
03/15/78	10.60	1132.40
06/14/78	9.60	1133.40
10/03/78	9.83	1133.17
11/22/78	11.33	1133.48
12/12/78	10.00	1133.00
04/12/79	10.42	1132.58
09/19/79	9.62	1133.38
12/04/79	9.88	1133.12

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Page Aquifer

MP Elev (msl, ft)=1,085.00
SI (ft.)=7-80

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	13.70	1071.30
12/13/73	13.87	1071.13
01/08/74	14.34	1070.66
02/12/74	15.11	1069.89
03/27/74	15.67	1069.33
04/16/74	15.34	1069.66
06/04/74	11.30	1073.70
09/04/74	12.89	1072.01
12/05/74	12.69	1072.31
03/18/75	14.94	1070.06
06/04/75	11.10	1073.90
09/10/75	13.49	1071.51
12/02/75	14.15	1070.85

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Page Aquifer

MP Elev (msl, ft)=1,066.35
SI (ft.)=30-35

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	7.60	1058.75
08/17/04	7.60	1058.75
10/19/04	6.16	1060.19
11/22/04	5.21	1061.14
12/14/04	5.67	1060.68
04/20/05	5.15	1061.20
06/01/05	5.05	1061.30
06/24/05	6.24	1060.11

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Page Aquifer

MP Elev (msl, ft)=1,084.00
SI (ft.)=37-40

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	5.20	1078.80
12/13/73	4.76	1079.24
01/08/74	5.20	1078.80
02/12/74	7.72	1076.28
03/27/74	5.28	1078.72
04/16/74	3.60	1080.40
06/04/74	1.26	1082.74
09/04/74	3.60	1080.20
12/05/74	3.87	1080.13
03/18/75	4.64	1079.36
06/04/75	1.87	1082.13
09/10/75	5.32	1078.68
12/02/75	5.43	1078.57

Date	Depth to Water (ft)	WL Elev (msl, ft)
02/27/76	15.43	1069.57
06/01/76	13.93	1071.07
09/13/76	16.17	1068.83
11/29/76	16.67	1068.33
03/01/77	17.48	1067.52
05/31/77	14.96	1070.04
08/29/77	16.32	1068.68
11/29/77	15.06	1069.94
03/01/78	16.25	1068.75
06/09/78	13.25	1071.75
09/08/78	14.75	1070.25
11/22/78	15.23	1069.77

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/29/05	7.29	1059.06
08/23/05	7.45	1058.90
09/24/05	8.22	1058.13
10/25/05	7.32	1059.03
11/24/05	6.84	1059.51
12/24/05	6.77	1059.58
04/22/06	5.42	1060.93
05/20/06	5.46	1060.89

Date	Depth to Water (ft)	WL Elev (msl, ft)
09/22/77	5.67	1078.33
11/29/77	4.52	1079.48
03/01/78	6.07	1077.93
03/15/78	5.72	1078.28
06/09/78	3.76	1080.24
06/14/78	3.92	1080.08
09/08/78	4.94	1079.06
10/03/78	4.90	1079.10
11/22/78	5.38	1078.62
12/12/78	5.30	1078.70
09/19/79	4.06	1079.94
12/04/79	4.03	1079.97
04/15/80	4.14	1079.86
05/14/80	3.75	1080.25

MP Elev (msl,ft)=1,089.00
SI (ft.)=32-35

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/10/80	4.10	1079.90
07/09/80	4.82	1079.18
10/29/80	5.42	1078.56
12/18/80	5.48	1078.52
04/14/81	5.82	1078.18
07/14/81	4.89	1079.11
10/08/81	4.71	1079.29
12/03/81	4.10	1079.90
12/01/82	12.43	1071.57

146-053-32CBB
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	6.20	N/A

MP Elev (msl,ft)=1,095.00
SI (ft.)=57-60

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	15.90	N/A

146-053-32DDD
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	15.90	N/A

MP Elev (msl,ft)=1,056.00
SI (ft.)=37-40

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	4.15	N/A

146-053-33BBA
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	4.15	N/A

MP Elev (msl,ft)=1,084.97
SI (ft.)=42-45

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/15/80	15.77	1068.43
05/14/80	15.69	1068.51
06/10/80	16.14	1068.06
07/09/80	16.58	1067.62
10/29/80	17.17	1067.03
12/18/80	17.30	1066.90
04/14/81	17.69	1066.51
07/14/81	17.46	1066.74
10/08/81	18.39	1065.81
12/03/81	17.10	1067.10
12/01/82	13.73	1070.47
12/07/83	15.71	1068.49
12/04/84	16.65	1067.55
12/03/87	15.65	1068.55
08/01/01	17.08	1067.95
08/15/02	16.90	1068.13
07/29/03	16.80	1068.23
08/04/04	17.14	1067.89
08/17/04	17.30	1067.73
10/19/04	17.35	1067.66
11/15/04	17.05	1067.92
11/22/04	17.00	1067.97

146-053-33BBB1
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	8.65	1075.55
12/13/73	14.04	1070.16
01/08/74	14.37	1069.83
02/12/74	15.35	1068.85
03/21/74	14.74	1069.46
04/16/74	14.12	1070.08
06/04/74	12.13	1072.07
09/04/74	13.38	1070.82
12/05/74	10.98	1073.22
03/18/75	14.03	1070.17
06/04/75	11.50	1072.70
09/10/75	13.38	1070.82
12/02/75	13.86	1070.34
02/21/76	14.79	1069.41
06/01/76	14.23	1069.97
09/13/76	15.81	1068.39
11/29/76	15.91	1068.29
03/01/77	16.48	1067.72
05/19/77	15.90	1068.30
05/31/77	15.87	1068.33
06/03/77	15.95	1068.25
06/21/77	16.10	1068.10
07/11/77	16.32	1067.88
08/29/77	16.57	1067.63
09/22/77	16.93	1067.27
11/29/77	15.98	1068.22

MP Elev (msl,ft)=1,088.00
SI (ft.)=37-40

Date	Depth to Water (ft)	WL Elev (msl, ft)
06/10/80	4.10	1079.90
07/09/80	4.82	1079.18
10/29/80	5.42	1078.56
12/18/80	5.48	1078.52
04/14/81	5.82	1078.18
07/14/81	4.89	1079.11
10/08/81	4.71	1079.29
12/03/81	4.10	1079.90
12/01/82	12.43	1071.57

146-053-29CBC
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	7.70	N/A

MP Elev (msl,ft)=1,094.05
SI (ft.)=31-36

Date	Depth to Water (ft)	WL Elev (msl, ft)
07/29/05	8.27	1085.78
08/23/05	8.76	1085.29
09/24/05	9.37	1084.68
10/29/05	9.45	1084.60
11/24/05	9.58	1084.47
12/24/05	9.98	1084.07
04/20/06	9.14	1084.91
05/20/06	9.06	1084.99

146-053-31AAA2
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	9.24	1084.81
08/16/04	9.45	1084.60
10/19/04	9.52	1084.53
11/22/04	8.84	1085.21
12/14/04	9.14	1084.91
04/20/05	9.38	1084.67
06/01/05	8.59	1085.46
06/24/05	7.72	1086.33

MP Elev (msl,ft)=1,096.00
SI (ft.)=57-60

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	7.05	N/A

146-053-32ABB
Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	7.05	N/A

MP Elev (msl,ft)=1,392.00
SI (ft.)=22-25

Date	Depth to Water (ft)	WL Elev (msl, ft)
10/03/78	11.99	1380.01
06/28/79	10.68	1381.32
11/27/79	12.47	1379.53
12/02/80	13.74	1378.26
12/01/81	13.20	1378.80
11/29/82	11.26	1380.74
08/10/83	11.20	1380.80
11/30/83	11.70	1380.30
11/28/84	12.44	1379.56
12/05/85	12.99	1379.01
07/28/86	10.39	1381.61
12/10/86	10.84	1381.16
11/30/87	10.00	1382.00
11/28/88	12.59	1379.41
08/10/89	12.23	1379.77
11/24/89	10.98	1381.02
11/09/90	12.01	1379.99
11/13/91	13.23	1378.77
11/17/92	11.41	1380.59
11/16/93	7.30	1384.70

146-056-28BAB
Not Yet Entered Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/10/69	10.45	1381.55
01/06/70	10.65	1381.35
02/03/70	10.93	1381.07
03/04/70	11.45	1380.55
03/31/70	11.64	1380.36
05/06/70	9.01	1382.99
06/06/70	6.44	1385.56
07/10/70	8.12	1383.88
08/05/70	9.39	1382.61
09/04/70	10.57	1381.43
10/01/70	10.67	1381.33
11/05/70	10.93	1381.07
12/02/70	11.14	1380.86
04/22/71	9.33	1382.67
05/06/71	8.44	1382.56
06/03/71	8.92	1383.06
09/18/71	10.43	1381.57
11/04/71	10.25	1381.75
12/10/71	10.07	1381.93
12/31/71	10.30	1381.70
03/08/72	11.81	1380.19
04/19/72	10.39	1381.61
06/08/72	7.12	1384.88
10/20/72	11.34	1380.66
11/29/72	11.50	1380.50
12/06/73	12.24	1379.76
12/05/74	12.07	1379.93
12/02/75	12.59	1379.41
11/29/76	13.83	1378.17

12/14/04 16.91 1068.06

04/20/05	17.24	1067.73
06/01/05	16.86	1068.11
06/24/05	15.92	1069.05
07/29/05	15.70	1069.27
08/23/05	16.09	1068.88

MP Elev (msl,ft)=1,084.93

SI (ft.)=162-172

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/20/05	13.39	1071.54
06/01/05	13.35	1071.58
06/24/05	13.28	1071.65
07/29/05	13.24	1071.69
08/23/05	13.30	1071.63

MP Elev (msl,ft)=1,085.00

SI (ft.)=32-35

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	8.05	N/A

MP Elev (msl,ft)=1,098.40

SI (ft.)=67-70

Date	Depth to Water (ft)	WL Elev (msl, ft)
04/15/80	7.78	1090.62
07/09/80	5.97	1092.43
10/29/80	7.99	1090.41
12/18/80	7.90	1090.50
04/15/81	9.14	1089.26
07/14/81	7.02	1091.38
10/06/81	7.74	1090.66
12/03/81	4.83	1093.57
12/01/82	3.39	1095.01
12/07/83	5.06	1093.34
04/13/92	6.71	1091.69

03/15/78	16.80	1067.40
06/14/78	14.99	1069.21
10/03/78	15.96	1068.22
12/12/78	16.46	1067.72
04/12/79	17.09	1067.11
09/19/79	15.09	1069.11
12/04/79	15.54	1068.66

146-053-33BBB2

Unnamed Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
08/03/04	14.18	1070.75
08/17/04	14.10	1070.83
10/19/04	13.73	1071.20
11/22/04	13.66	1071.27
12/14/04	13.57	1071.36

146-053-33BCC

Page Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
12/18/72	8.05	N/A

146-054-34DDD

Not Yet Entered Aquifer

Date	Depth to Water (ft)	WL Elev (msl, ft)
05/19/77	6.69	1091.71
06/03/77	6.15	1092.25
06/21/77	6.03	1092.37
07/11/77	6.10	1092.30
09/22/77	8.52	1089.88
03/15/78	8.68	1089.72
06/14/78	4.87	1093.53
10/03/78	7.00	1091.40
12/12/78	7.70	1090.70
04/12/79	8.29	1090.11
09/19/79	6.58	1091.82
12/04/79	6.70	1091.70