DEQ LABORATORY AND WATER QUALITY DIVISIONS

GROUNDWATER QUALITY REPORT FOR THE DESCHUTES BASIN, OREGON

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EXECUTIVE SUMMARY

Preventing groundwater contamination and conserving and restoring this resource are statewide goals in Oregon. Groundwater monitoring and assessment programs provide statewide groundwater quality information.

The Deschutes Basin is located in north-central Oregon, and encompasses all or portions of eleven counties. Major land uses in the basin include forest (65%), rangeland (25%), and agricultural-urban-industrial (10%).

The DEQ and other state and local agencies have collected data and conducted several groundwater quality studies in the Deschutes Basin. This report compiles and summarizes groundwater quality information from the following sources:

- the Oregon Department of Human Services (DHS) Domestic Well Testing for Real Estate Transactions program,
- the Oregon DHS Public Water Systems program, and
- four DEQ studies.

Over the course of these studies, the following constituents were analyzed to assess groundwater quality:

- nitrate
- bacteria
- volatile organic compounds
- physical parameters
- metals
- pesticides

The DEQ studies of private, domestic water wells in the basin show some constituents exceed federal Maximum Contaminant Levels (MCLs). These constituents include nitrate (17 wells), arsenic (3 wells), and VOCs (1 well). VOC concentrations likely reflect localized contamination, due to improper storage and handling of VOC-containing materials. As such, VOC-contaminated groundwater is not a regional, aquifer-wide problem.

The Department of Human Resources, Drinking Water Program database shows numerous constituents have exceeded MCLs in some Public Water Systems (PWS). These constituents include nitrate (10 PWS), bacteria (58 PWS), lead (4 PWS), thallium (6 PWS), arsenic (4 PWS), antimony (1 PWS), and VOCs (2 PWS).

Potential sources for Deschutes Basin groundwater nitrate contamination include high densities of on-site septic systems in areas where permeable, sandy soils overlie shallow, unconfined aquifers. Poor well construction and maintenance activities increase wells' vulnerabilities to this contamination.

Based on existing data, further investigations and monitoring are warranted in the Prineville area, where sampling should be repeated for nitrates, heavy metals, pesticides, and VOCs.

In the La Pine area, DEQ and Deschutes County should consider steps to better protect the shallow drinking water aquifer from nitrate contamination, due to septic systems. The county and/or state should establish a program to measure nitrate groundwater trends over time.

The DEQ should also conduct an initial ambient groundwater sampling event in the Redmond area.

INTRODUCTION

In 1989, the Oregon Legislative Assembly passed a comprehensive set of laws known as the Groundwater Protection Act. These laws established the state goal to prevent groundwater contamination:

> "... it is the goal of the people of the State of Oregon to prevent contamination of Oregon's groundwater resource while striving to conserve and restore this resource and to maintain the high quality of Oregon's groundwater resource for present and future uses." (Oregon Revised Statutes 468B.155)

As part of the Act, the Department of Environmental Quality (DEQ), the Water Resources Department, and Oregon State University are directed to:

> "… conduct an ongoing statewide monitoring and assessment program of the quality of the groundwater resource of this state." (Oregon Revised Statutes 468B.190)

Other state agencies, including the Department of Human Services and local agencies, also conduct groundwater monitoring and assessment programs.

This report presents the following for the Deschutes Basin:

- background information on the Deschutes' environmental setting,
- general information about basin geology and hydrogeology,
- groundwater use information,
- a compilation of groundwater quality data from the DEQ, and other state and local agency studies,
- summary information with references to other reports when available,
- links to data repositories or on-line information and data sources,
- status updates for local studies in the Deschutes Basin,
- a discussion of potential pollutant sources in the basin,
- an evaluation of the Deschutes' overall groundwater quality status, and
- recommendations for potential actions that could be taken.

ENVIRONMENTAL SETTING

Geography

The Deschutes Basin is one of the state's 18 major river drainage basins. The basin occupies about 10,850 square miles in north-central Oregon (Figure 1). The Oregon Water Resources Department (OWRD) defines the Deschutes Basin for water management purposes OAR 690-505.

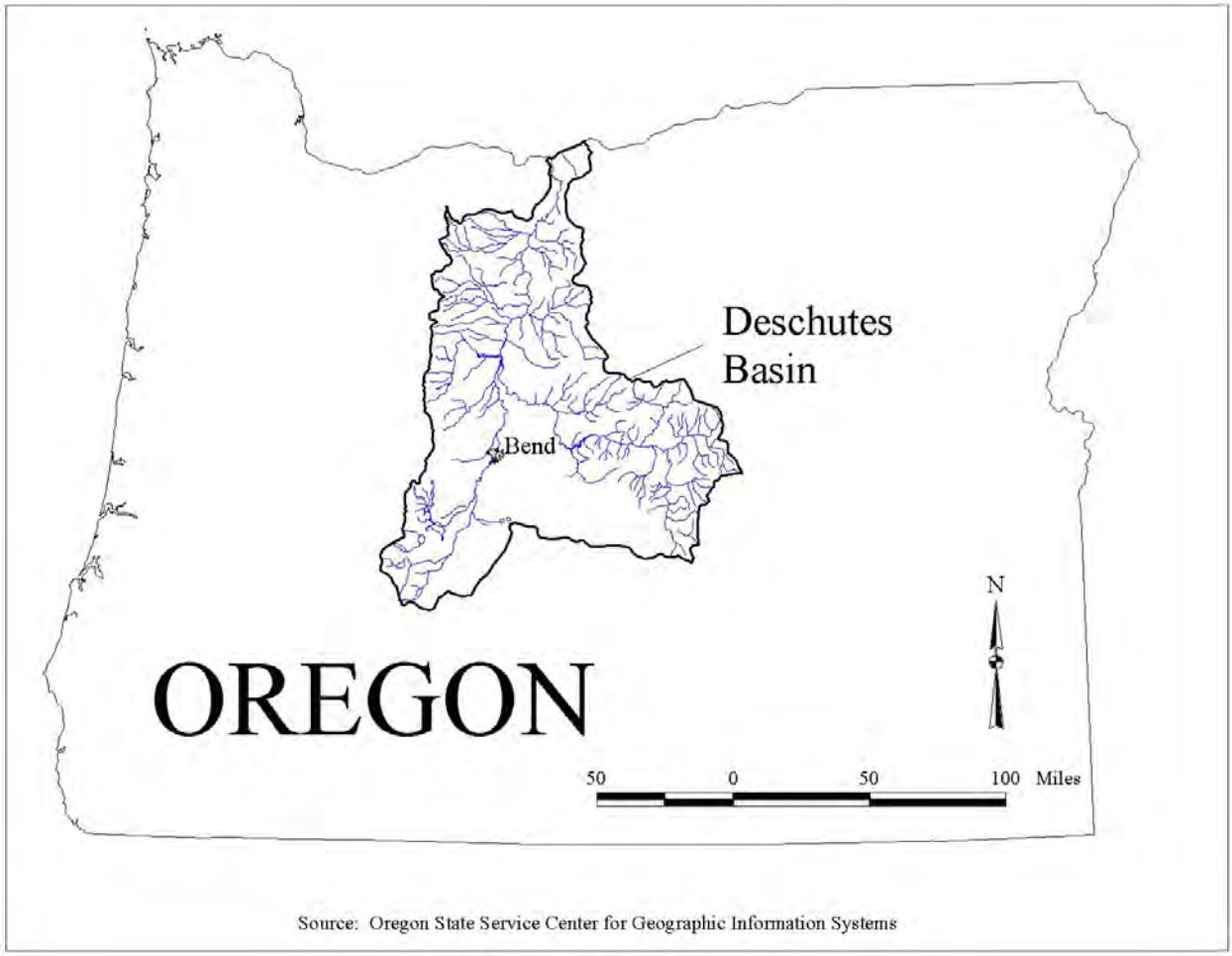


Figure 1. Location of Deschutes Basin in Oregon.

The Deschutes Basin encompasses all or portions of the following eleven counties: Crook, Deschutes, Grant, Harney, Hood River, Jefferson, Klamath, Lake, Sherman, Wasco, and Wheeler.

Figure 2 shows the Deschutes Basin's major geographic features.

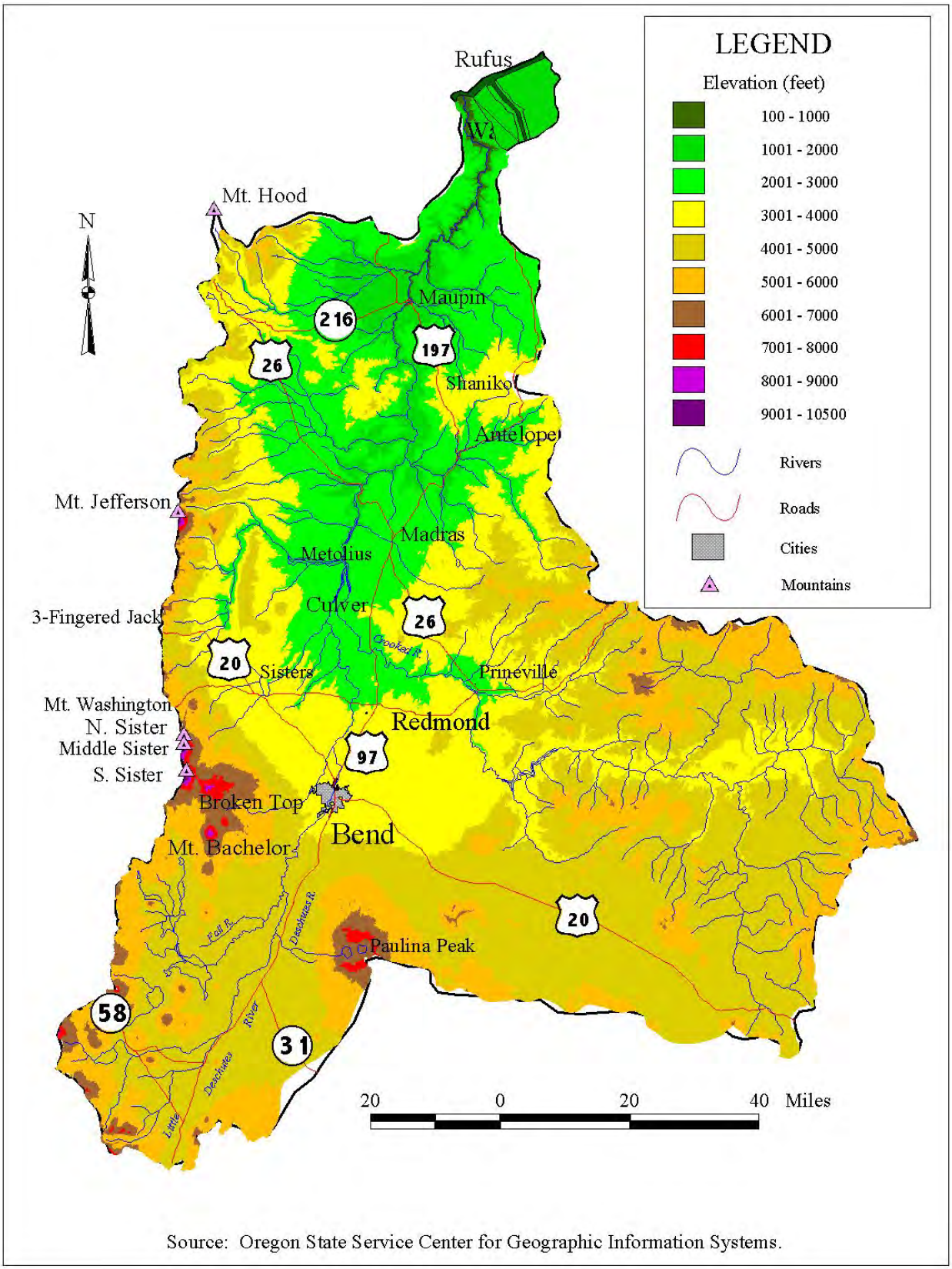


Figure 2. Map of Deschutes Basin, showing major geographic features.

Land Use and Population

Land use in the Deschutes Basin consists primarily of forest land (65%), rangeland (25%), and agricultural and urban (10%), with minor amounts in barren land, wetland, and snow and ice (Figure 3).

The resident population within the Deschutes Basin is about 90,000 (U.S. Census Bureau, 2003). Central Oregon, which includes the Deschutes Basin, is well known for its recreational activities. As a result, the Deschutes Basin has many tourist attractions. The Oregon Travel Commission statistics for 1997 indicated over 3.5 million pleasure day trips occurred in Central Oregon (http://otc.traveloregon.com).

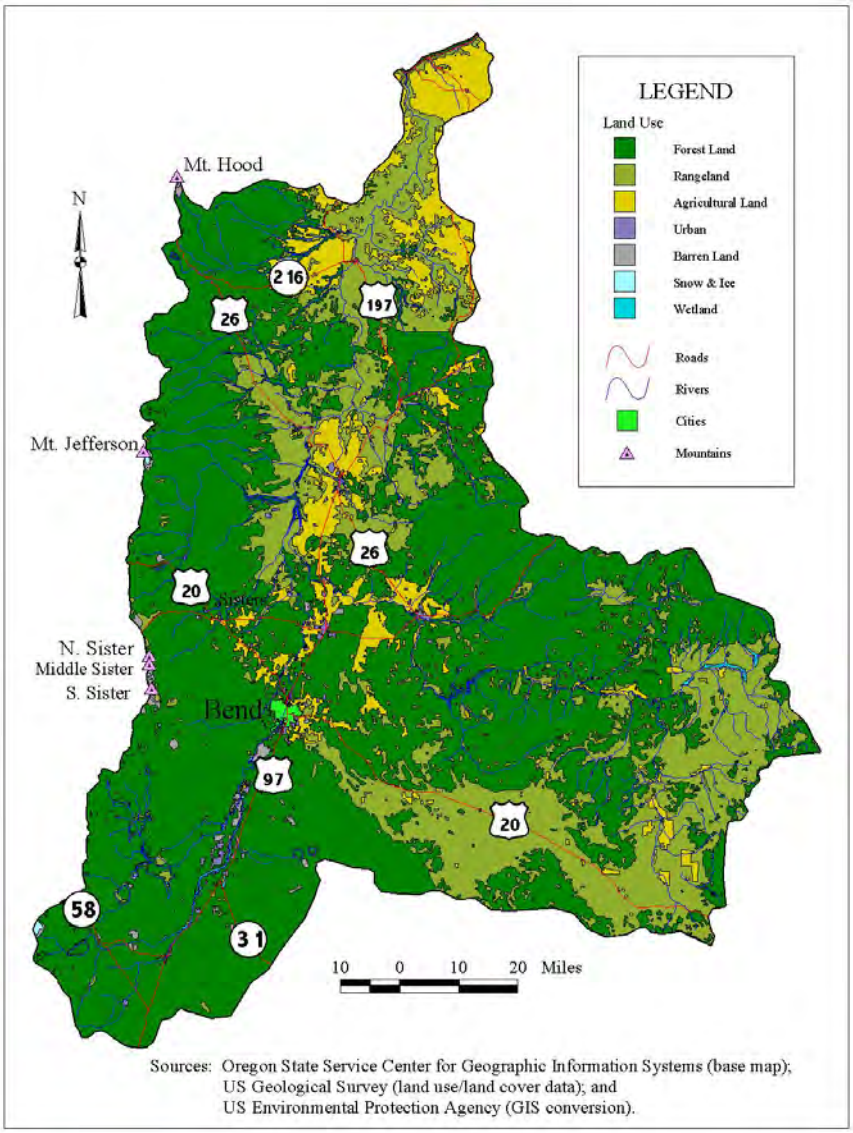


Figure 3. Land Use and Land Cover, Deschutes Basin, Oregon.

Climate and Precipitation

The climate in the Deschutes Basin ranges from cold, alpine conditions along the basin's high western border, to dry, desert-like conditions in the basin's lower, central areas. In the high mountain passes, along the basin's western border, temperatures range from an average wintertime low of about 20°F, to an average summertime high of about 72°F. Over the period of record (1971 – 2000), this area has seen an extreme low temperature of -16°F, and an extreme high temperature of 89°F. In this part of the basin the average annual precipitation is about 84-inches, and an average annual snowfall of about 420-inches (http://www.ocs.orst.edu/).

In the drier, lower part of the basin, near Prineville, the average wintertime low is about 21°F, and the average summertime high is about 86°F. Over the same period of record, the extreme low and high temperatures were -34°F, and 107°F, respectively. This part of the basin receives an annual precipitation of about 10.5-inches, with about 9-inches of average annual snowfall.

Figure 4 shows the average annual precipitation distribution in the Deschutes Basin.

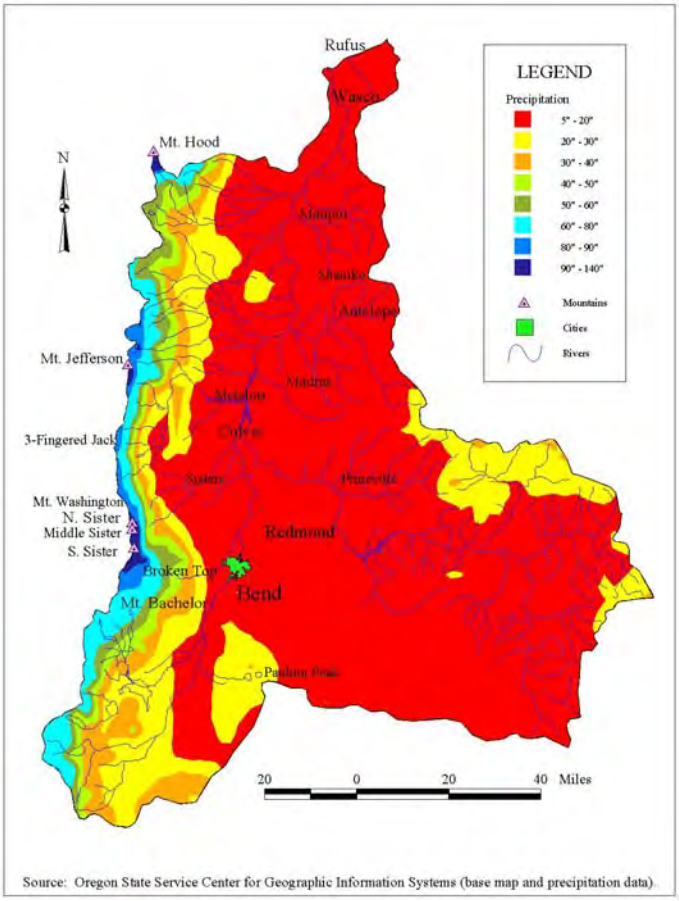


Figure 4. Annual precipitation distribution in the Deschutes Basin.

Geology

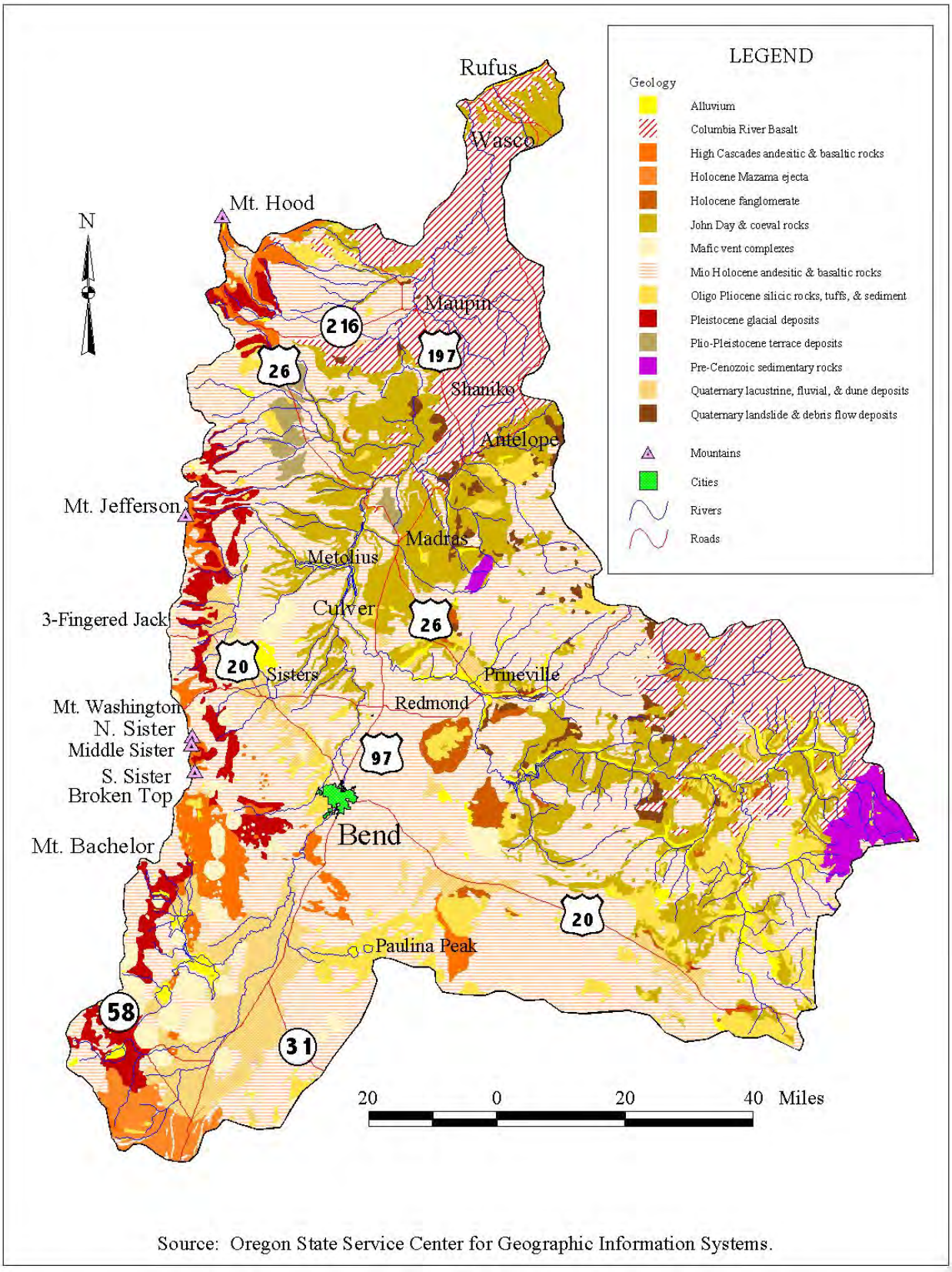
The Deschutes Basin geology is composed predominantly of volcanic rocks (Figure 5). However, at the basin's southeast corner, in the headwaters of the Crooked River, Cretaceous age (65 – 70 million years ago) marine sedimentary rocks occur. As the region underwent tectonic uplift, the seas retreated westward, and a period of erosion took place. Before the Columbia River Basalts began to erupt in Miocene time, volcanoes of the Clarno and John Day periods covered the area with widespread, thick deposits of lava and ash. Fossil bearing deposits in the Clarno and John Day Formations testify to the tropical climatic conditions prevalent during those ancient times. A wide range of fossil fauna and flora have been found in these deposits, including specimens of avocado, cinnamon, palm, and fig plants, as well as tapirs, rhinoceros, titanothere, and oreodons.

Near the basin's southern border is Newberry Caldera. This eruptive center lies near the convergence of three fault zones. These fault zones are known as the Brothers, Green Ridge and Sisters, and Walker Rim fault zones. At this fault zone convergence, rocks at the Newberry volcano formed younger than and separate from, the High Cascade vents along the basin's western border. Due to its wide variety of striking volcanic features, this area was dedicated in 1991 as Newberry Volcanoes National Monument.

Many of the basin's volcanic rocks are mineralogically bi-modal. That is, the rocks have strikingly different compositions, ranging from dark-colored basalt, to light-colored rhyolite. Other volcanic rocks in the basin are the result of ash fall accumulations. Magnificent examples of the latter, known as tuff, are displayed in the towering cliffs of Smith Rock State Park, seven miles northeast of Redmond.

Along the Deschutes river, some 6 miles west of Terrebonne, diatomite, or diatomaceous earth, is exposed. This material is composed of microscopic, single-celled glassy aquatic plants. These organisms inhabited a late Miocene to early Pliocene age lake. This material can absorb up to 300 percent of its own weight in water. It is also fireproof, resists chemicals, and is mined for use as cat box litter, drinking water filters, and in chemical laboratories.

South of Bend, just east of U.S. Highway 97, is Lava River Cave. This is one of Oregon's longest, uncollapsed lava tubes (5,040 feet long). The formation is the result of a lava flow where the central part of the flow remained molten, while the sides and roof cooled and hardened. When the eruption stopped it left numerous interesting features. These features include flow lines, benches, vertically stacked lava tubes, keyhole-shaped tunnel sides, and sand castles. The latter is the result of surface water percolating through the tube ceiling, carving out tunnel floor sands into miniature badlands formations.



Source: Oregon State Service Center for Geographic Information Systems.

Figure 5. Generalized geologic map of the Deschutes Basin.

Hydrogeology

Groundwater use in the Deschutes Basin taps both shallow and deep aquifers. The host materials for these aquifers include both volcanic rock and unconsolidated sediments. Information on some of these aquifers' hydrogeological characteristics comes from various investigations, summarized below.

In June 1991 David S. Morgan, Dwight Q. Tanner, and Milo D. Crumrine of the U.S. Geological Survey (USGS), began a hydrological and water quality investigation in the vicinity of Newberry Caldera (USGS WRIR 97-4088). Cooperating with the USGS in this investigation were the Bonneville Power Administration, U.S. Forest Service (USFS), and Bureau of Land Management. The purpose of the investigation was to characterize hydrologic and water-quality conditions at the volcano, principally within the volcanic center's caldera, prior to developing potential geothermal resources.

Beginning in 1999, the USGS, in cooperation with the DEQ, and Deschutes County Community Development Department, began a nitrate study in the La Pine area (USGS OR 186). Much of the area surrounding La Pine has been subdivided into lots as small as ½ acre in size. Virtually all of the lots developed to date use groundwater from shallow, unconfined aquifers. Most of the wells on these lots are less than 50 feet deep. These lots also use on-site septic systems to dispose of waste water. The high density of the on-site septic systems has led to elevated nitrate levels in the shallow aquifers. One of the project's objectives has been to develop a groundwater model, capable of predicting groundwater nitrate levels, under various water use and septic system scenarios.

The Oregon Water Resources Department (OWRD), in cooperation with the USGS, is currently conducting research on the Deschutes Basin's groundwater resources. The basin's surface water resources have been fully appropriated for many years, and stream flows are locally below legally set minimums at certain times of the year. Because surface water rights are no longer available, virtually all new development relies on groundwater. Groundwater is abundant in parts of the basin, and with the high level of development in the area, concerns exist about causing seasonal and long-term aquifer water level declines. This could cause further stream flow depletion. A secondary issue is the potential effect of lining irrigation canals. Hundreds of miles of leaking irrigation canals traverse the basin. Lining these canals to prevent leakage is being considered to conserve water. Leakage from these canals may be providing significant recharge to the groundwater system, so the overall effects of eliminating this recharge are unknown. This study has produced four reports to date. More information on this project is available at the following OWRD web site: OWRD OR161.

Sweet and others (1980) produced a statewide map of aquifers sensitive to contamination. Figure 6 shows the sensitive aquifers identified in the Deschutes Basin.

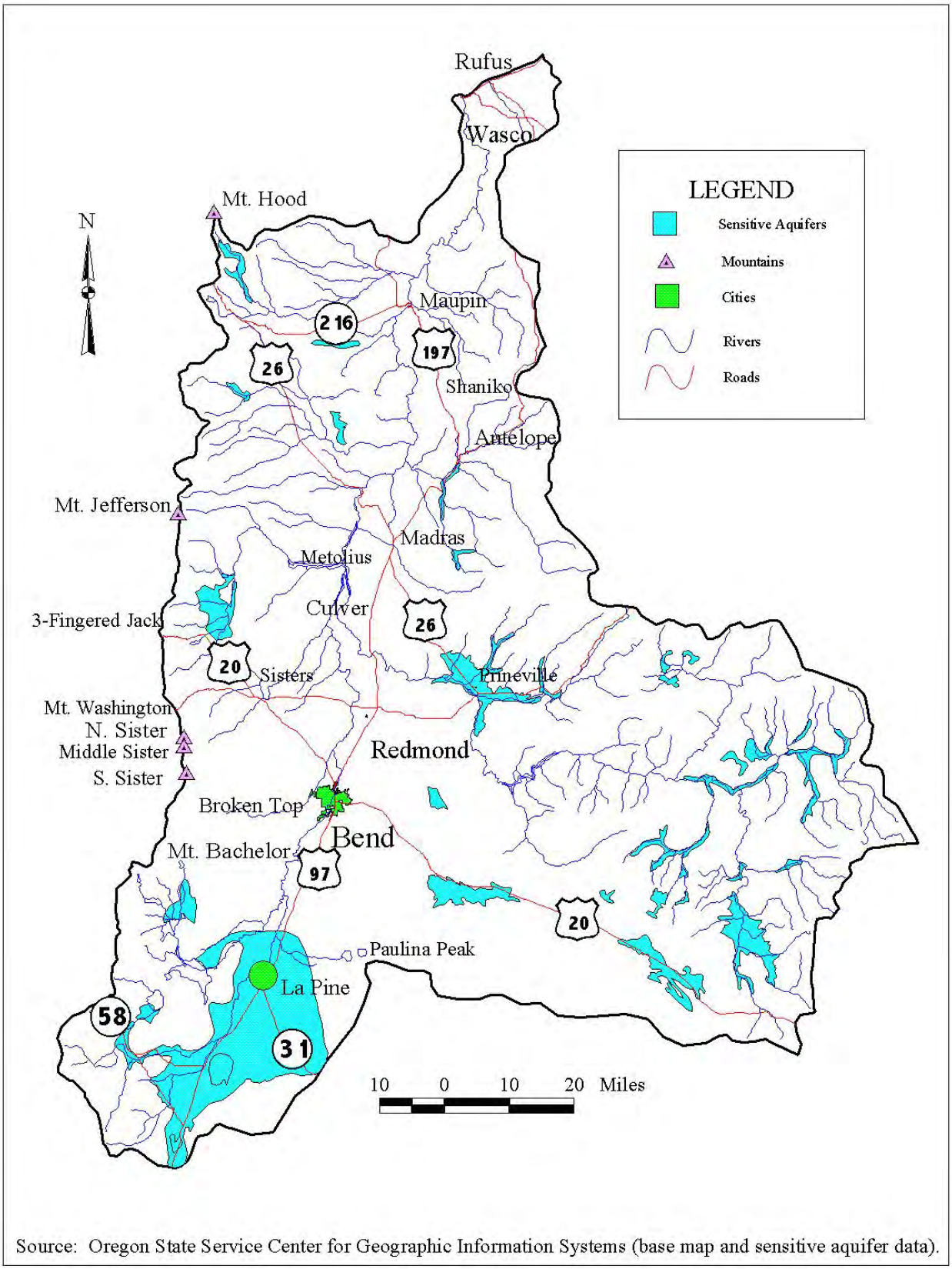


Figure 6. Sensitive aquifers in the Deschutes Basin.

GROUNDWATER USE

Overview

The Oregon Water Resources Department (OWRD) manages statewide groundwater use through water rights applications, permits, certificates, transfers, and leases. Groundwater in the Deschutes Basin is available for the following beneficial uses: domestic water use, livestock, municipal water use, irrigation, power development, industrial uses, mining, recreation, wildlife, and fish (OAR 690-410). Exempt uses do not require a permit. Exempt uses (ORS 537.545) include the following:

- domestic use under 15,000 gallons a day,
- stock watering,
- small lawn or garden watering,
- school grounds watering,
- down-hole heat exchange,
- industrial or commercial operations using less than 5,000 gallons a day, and
- land application associated with permitted uses.

Deschutes Basin groundwater use is discussed in the next three sections on Groundwater Rights, Domestic and Other Exempt Uses, and Public Water Systems. Specific water right information can be accessed through the OWRD website at: OWRD Water Rights.

Groundwater Rights

OWRD information shows a total of 9,043 water rights on record in the Deschutes Basin. Of these, 5,710 are points of diversion (POD), 1,481 of which use groundwater, or a combination of surface water and groundwater, for campground, domestic, fish, irrigation, manufacturing, municipal, stock, and wildlife (Figure 7). Of the total number of water rights, 3,333 are points of use, 786 of which use groundwater as their source. Details on water rights can be obtained through the following link to the OWRD web site: OWRD Water Rights.

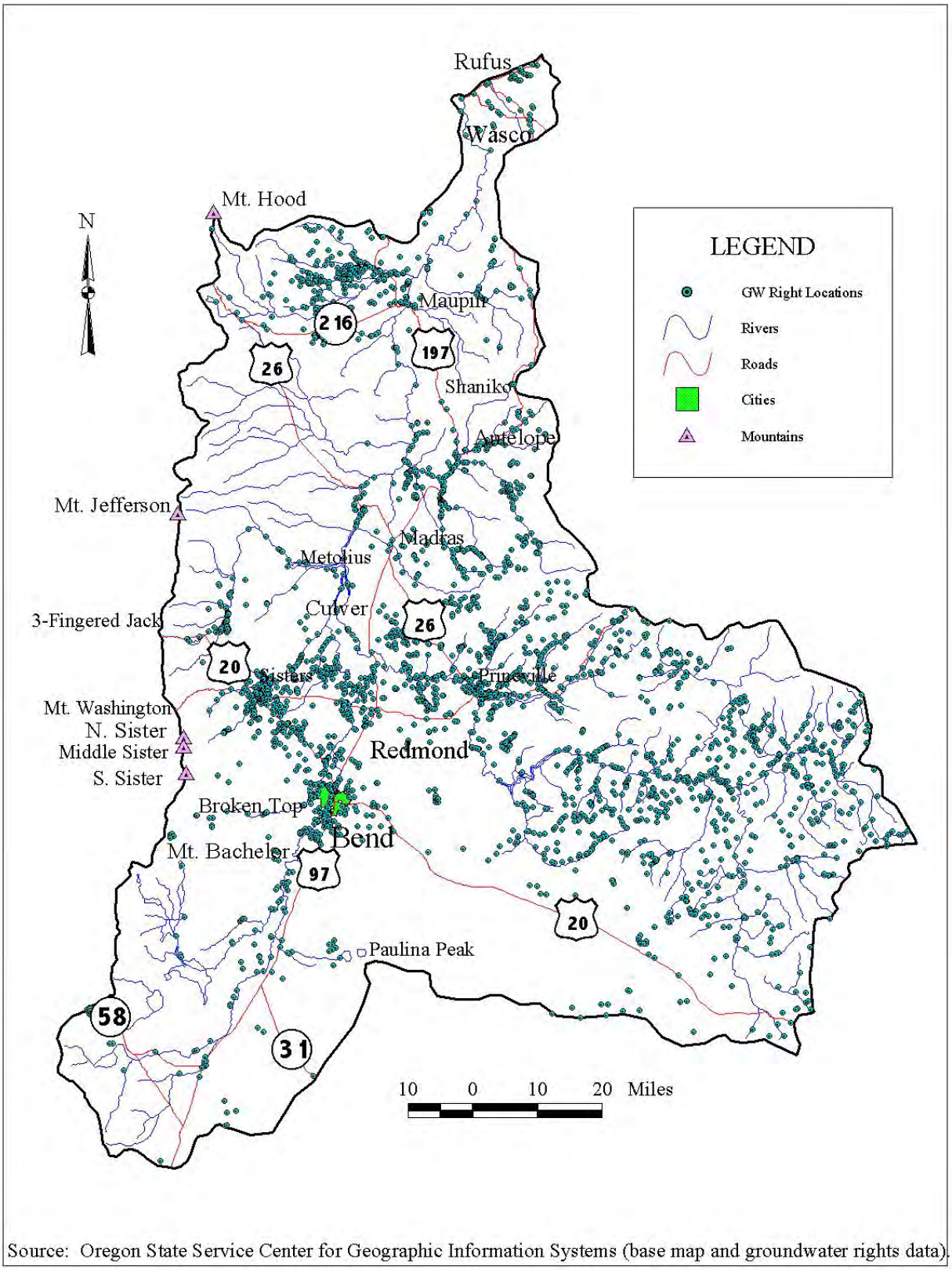


Figure 7. Locations of groundwater rights points of diversion in the Deschutes Basin.

Domestic and Other Exempt Uses

No permit is required to use groundwater for domestic purposes. This means there are no records on the amount of groundwater used to provide drinking water to Deschutes Basin households. Current statutes (ORS 537.765) and administrative rules (OAR 690-205-0210) require well logs to be filed with OWRD upon well completion. The number of private, domestic water wells constructed and reported to OWRD estimates the potential domestic water users.

The OWRD database (OWRD Groundwater) contains 17,504 domestic water well logs on file for the Deschutes Basin (B. Devyldere, personal communication, 8/5/04). The number of water wells in the basin is probably higher since, prior to 1955, state law did not require water well owners to file well logs for wells drilled and completed on their property (T. Eichenlaub, OWRD, personal communication, 8/11/03).

Public Water Systems

The Deschutes Basin has 373 groundwater-based Public Water Systems (PWS) (Figure 8). These systems are designed to provide water to over 145,500 people. The PWS shown on Figure 8 use groundwater exclusively, or use a combination of groundwater and surface water, to supply various public uses, including municipal drinking water.

Water quality information for individual PWS is available through the Oregon Department of Human Services Drinking Water Program (http://www.ohd.hr.state.or.us/dwp/about.cfm), and can be accessed on-line at: http://170.104.158.16/.

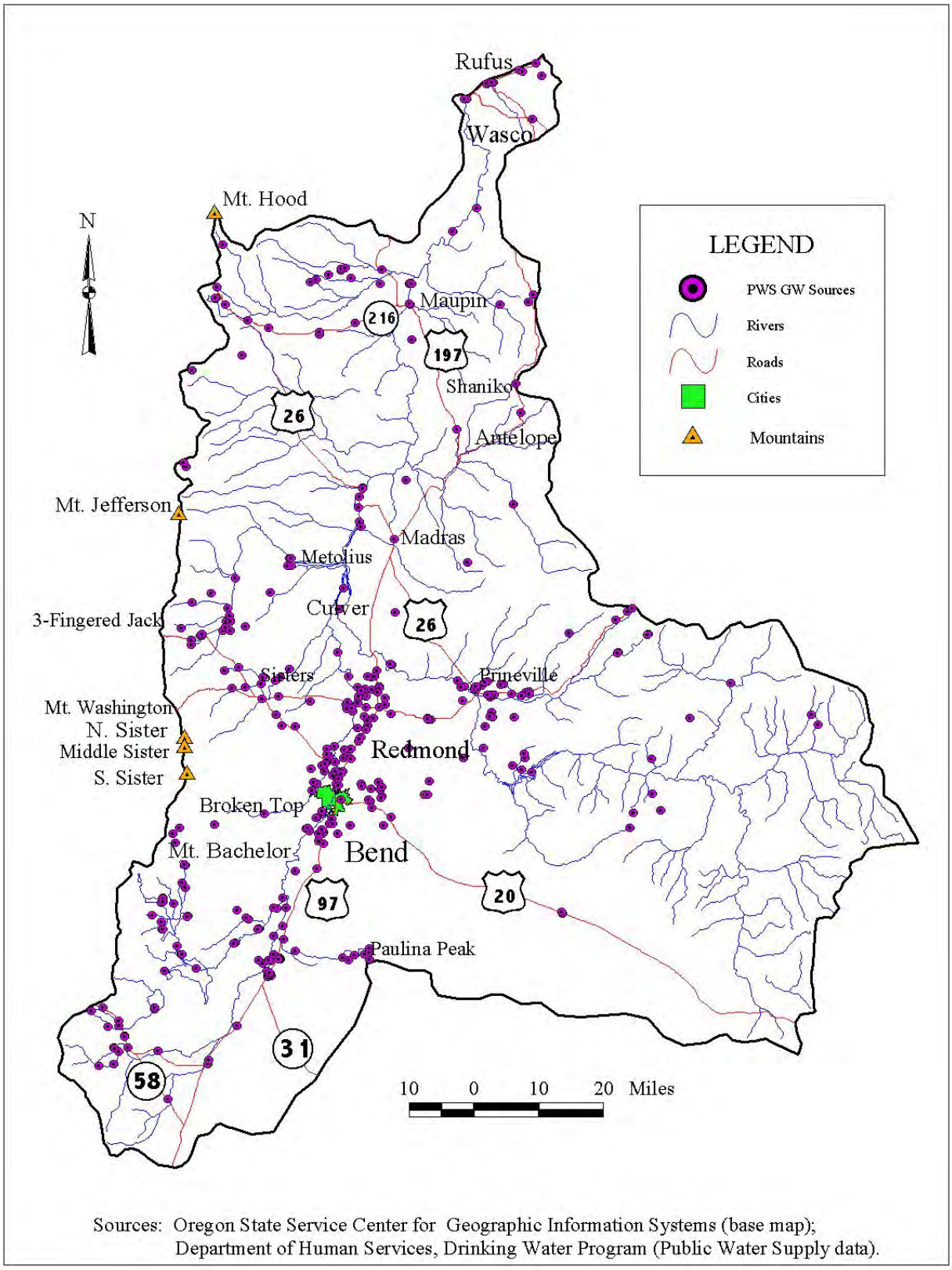


Figure 8. Locations of groundwater-based Public Water Systems in the Deschutes Basin.

GROUNDWATER QUALITY CONCERNS AND STUDIES

Overview

The Groundwater Quality Protection Act mandates the DEQ and other state agencies to conduct on-going statewide monitoring and assessment of statewide groundwater quality (ORS 468B.190). The DEQ and other local and state agencies have collected data and conducted several groundwater quality studies in the Deschutes Basin. Statewide and regional assessments conducted in the early 1980s provided initial groundwater quality information. The DEQ and other agencies have conducted additional, local scale assessments, in response to specific local concerns.

Throughout this report, references are made to drinking water standards, maximum contaminant levels (MCLs), and action levels. According to the U.S. Environmental Protection Agency (EPA), the MCL for a given constituent is the concentration above which the EPA considers the levels to be unsafe for human consumption. The EPA requires that public water supplies use treatment techniques to control their water's corrosiveness. The action levels referred to in this report apply to copper and lead. The action levels for these constituents are 1.3 mg/L (copper), and 0.015 mg/L (lead).

Another area of concern in the Deschutes Basin is the sensitive La Pine groundwater aquifer. The DEQ performed initial sampling of domestic wells in 1978 and 1979 to determine whether there was shallow aquifer contamination. Positive test results led the DEQ to authorize Century West Engineering Corporation to conduct further studies in the area. The 1982 Century West study found nitrates as high as 41 mg/L, well above the Federal Drinking Water Standard of 10 mg/L. The results of this study formed the basis for an administrative rule requiring a community sewage collection, treatment, and disposal system for La Pine's core business area.

In 1993 the DEQ developed a Master Plan for a Statewide Ambient Groundwater Monitoring Program (Cole and Pollock, 1993). The DEQ identified the groundwater in and around Prineville as a priority area, based on data collected as part of the DEQ's ambient groundwater quality monitoring program, and conducted a groundwater quality study in late June and early July 1993.

The Plan also identified the La Pine area as needing further assessment. The DEQ conducted a groundwater quality study in the summer of 1993. In 1995 Deschutes County requested the DEQ assess the effect of residential development on groundwater quality in the La Pine area. The DEQ then performed computer modeling to evaluate groundwater flow, and nitrate fate and transport. The results of the modeling created additional interest, and in June 1999, the USGS, in cooperation with the DEQ and Deschutes County Environmental Health Division, began an on-site wastewater treatment and disposal demonstration project.

The DEQ has collected and analyzed groundwater samples at three permitted landfills in the Deschutes Basin. The landfills are Crook County near Prineville, Knott Pit in Bend, and Southwest, between Sunriver and La Pine. The Solid Waste Facilities section of this report

summarizes water quality monitoring results from sampling events at these landfills. Another landfill of concern is the now closed Box Canyon landfill, near Madras. Although the DEQ has not conducted any split sampling at this landfill, the DEQ Cleanup Program and Jefferson County are conducting an investigation to evaluate the nature and extent of groundwater effects from the closed landfill. Constituents of concern include perchloroethylene, trichloroethene, and their degradation products.

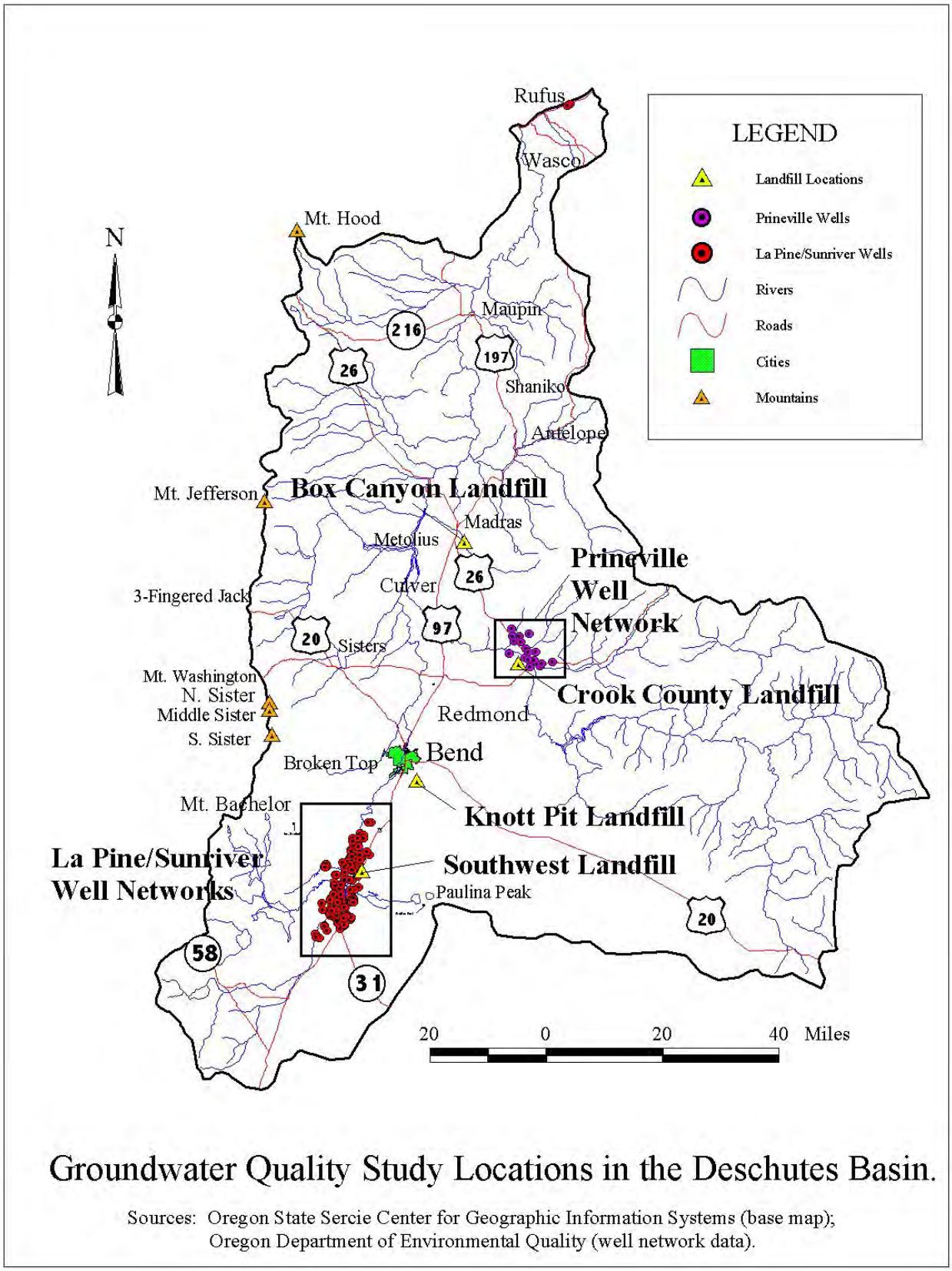
This report summarizes information of the basinwide studies, and specific area studies. Figure 9 shows the study area locations. The following section discusses the results.

Basinwide Studies

- Domestic Well Testing for Real Estate Transactions - Oregon Department of Human Services (DHS).
- Public Water Systems - DHS.

Area Studies

- La Pine Groundwater Quality Study (1978 – 1979) - Oregon Department of Environmental Quality (DEQ).
- La Pine Aquifer management Plan (1982) - Century West Engineering Corporation.
- Prineville Groundwater Quality Study (1993) - DEQ.
- La Pine Groundwater Quality Study (1993) - DEQ.
- La Pine Groundwater Quality and Computer Modeling Study (1995) - DEQ.
- La Pine National On-Site Wastewater Treatment and Disposal Demonstration Project (1999) - DEQ, in cooperation with the U.S. Geological Survey and Deschutes County Environmental Health Division.



Groundwater Quality Study Locations in the Deschutes Basin.

Sources: Oregon State Sercie Center for Geographic Information Systems (base map);
Oregon Department of Environmental Quality (well network data).

Figure 9. Groundwater Quality Studies, Deschutes Basin, Oregon

Basinwide Studies

Domestic Well Testing for Real Estate Transactions - Oregon Department of Human Services

Summary

In 1989, Oregon established a program to monitor the quality of groundwater used for domestic purposes (ORS 448.271). As part of this program, for any real estate transaction involving a domestic water supply well, the seller must test the well water for nitrate and total coliform bacteria. The seller must complete and submit a Water Systems Data Sheet, including the laboratory test results, to the Oregon Department of Human Services (DHS).

Results

The DHS database shows 7,137 tests have been performed in the Deschutes Basin. The results include data compiled between 1989 and 2003 for both nitrate and bacteria. Because some wells were involved in more than one transaction, the database does not include the actual total of individual wells tested. The results include the following:

- 2,903 samples were analyzed for nitrate, of which 47 (2%) exceeded the drinking water standard of 10 mg/L.
- 655 of the nitrate tests (23%) had levels between 2 mg/L and 10 mg/L (2 mg/L is the approximate cutoff point, above which the DHS considers anthropogenic influences to be present (DHS Nitrate Facts).
- 2,203 of the nitrate tests (75%) had levels less than 2 mg/L.
- 190 of the 4,235 bacteria tests (4%) were positive.

Information about the Real Estate Transaction Domestic Well Testing Program is available on-line at http://www.dhs.state.or.us/publichealth/dwp/dwt.cfm. Data can be obtained from the DHS or the DEQ. Figure 10 shows the locations of the wells tested as part of the DHS Real Estate Transaction Program.

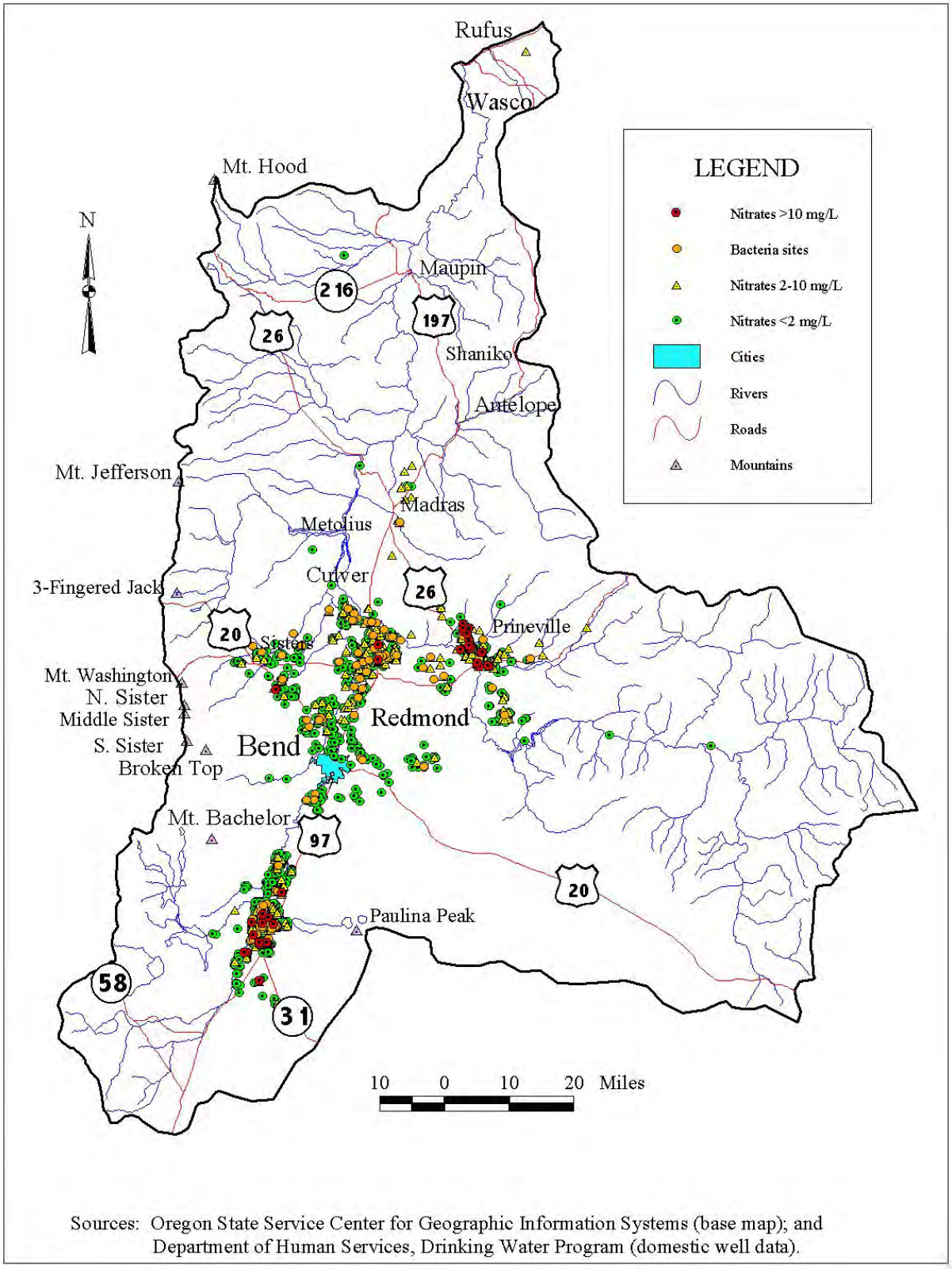


Figure 10. Well Locations for Department of Human Services, Drinking Water Program, Real Estate Transaction Program Testing for Nitrates and Bacteria.

Public Water Systems - Oregon Department of Human Services

Summary

The Oregon Department of Human Services Drinking Water Program (DHSDWP) database shows 373 groundwater-based public water systems (PWS) provide drinking water to Deschutes Basin residents. The DHSDWP Program maintains water quality information on these systems. Water quality information for individual systems is available through the DHSDWP (http://www.ohd.hr.state.or.us/dwp/about.cfm), and can be accessed on-line at: (http://170.104.158.16/).

Results

Table 1 summarizes testing results for groundwater-based PWS. Not all PWS have the same period of record for testing results, nor did they all test for the same constituents during their period of record. The results include the following:

- Nitrate was detected in 360 PWS, and exceeded the 10 mg/L federal drinking water Maximum Contaminant Level (MCL) in 10 systems. Two-hundred thirty-two PWS had nitrate levels equal to or greater than 2 mg/L, indicative of anthropogenic influences.
- Bacteria were detected in 58 PWS.
- Lead was detected in 4 wells, and exceeded the federal EPA Action Level of 0.015 mg/L in all four wells.
- Thallium was detected in 7wells, and exceeded the MCL (0.002 mg/L) in 6 wells.
- Arsenic was detected in 4 wells, and exceeded the MCL (0.01 mg/L) in all wells.
- Tetrachloroethylene was detected, and exceeded the MCL (0.005 mg/L), in one well.
- Dichloromethane was detected, and exceeded the MCLs (0.005 mg/L), in one well.
- Toluene was detected in three wells, but did not exceed the MCL (1 mg/L).
- Eighteen other PWS reported detections of VOCs, but the records did not specify the compounds or their concentrations.
- One PWS reported a pesticide detection, but did not specify the compound or its concentration.
- Antimony was detected in two wells, and exceeded the MCL (0.006 mg/L) in one of the wells.
- Cadmium and chromium were each detected in one well, but did not exceed the MCLs (0.005 mg/L and 0.1 mg/L respectively).
- Mercury was detected in 4 wells, but did not exceed the MCL (0.002 mg/L).

Table 1. Deschutes Basin Public Water Systems

Contaminant	# of systems detected	# of Wells Over MCL	Maximum Value Detected	NPDW MCL* (mg/L)
Nitrate	360	10	12.1 mg/L	10
Bacteria	58	58	N.A.	5% positive/per month
Lead	4	4	0.0461	0.015 (Action Level)
Cadmium	1	0	0.0030	0.005
Thallium	7	6	1.000	0.002
Arsenic	4	4	0.160	0.01
Antimony	2	1	0.0060	0.006
Volatile Organic Compounds	23	2	3.5	0.005
Chromium	1	0	0.0550	0.1
Mercury	4	0	0.0017	0.002

*NPDW MCL = National Primary Drinking Water Maximum Contaminant Level (mg/L = milligrams per liter = parts per million)

Figure 11 shows the distribution of nitrates in Deschutes Basin groundwater-based PWS. The nitrate distribution uses 2 mg/L as an approximate indicator of anthropogenic influence (Department of Human Services, Drinking Water Program, Nitrate Fact Sheet, DHS Nitrate Facts).

Figure 12 shows the locations of groundwater-based PWS with total coliform bacteria detections. The DHSDWP database for these systems generally covers the testing period from the present, back approximately two-and-a-half years. Some PWS have a more limited period of record, and some have no test data. The systems with no test data are not shown on the figure.

Figure 13 shows the locations of the PWS in the Deschutes Basin with other exceedances (i.e., antimony, arsenic, lead, thallium, and VOCs).

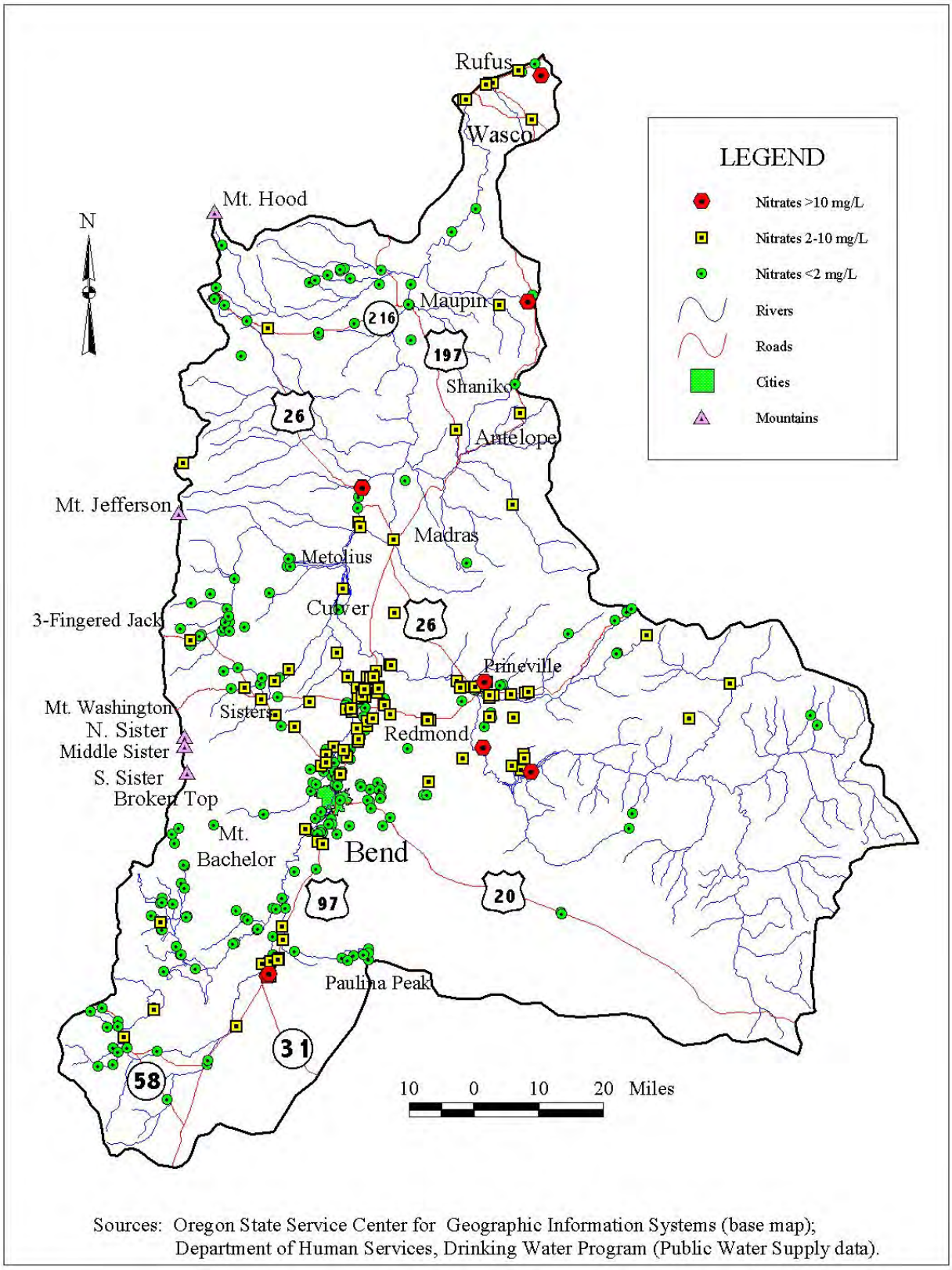


Figure 11. Nitrate levels in Deschutes Basin Groundwater-based Public Water Systems.

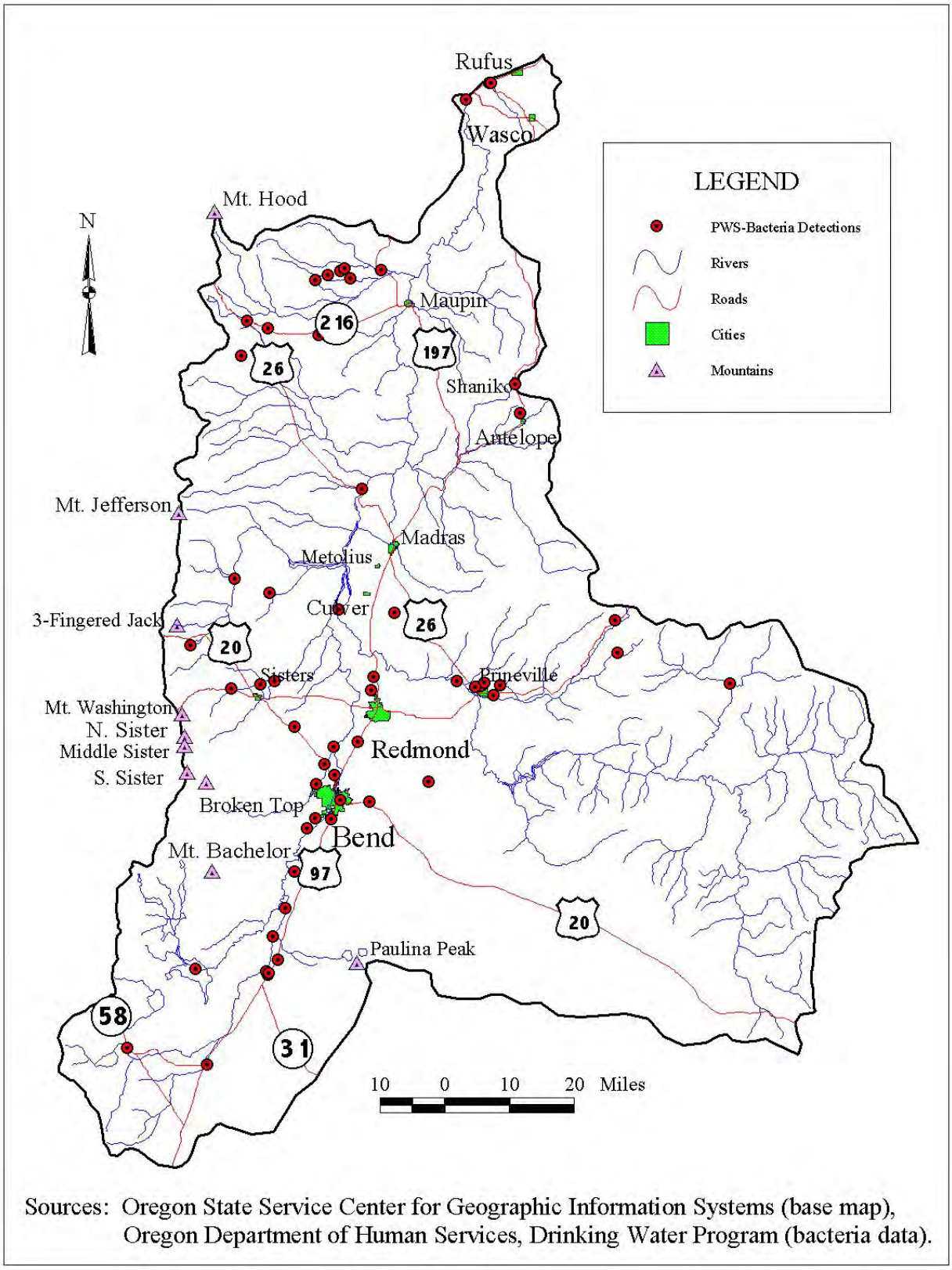


Figure 12. Locations of Groundwater-based Public Water Systems with bacteria detections.

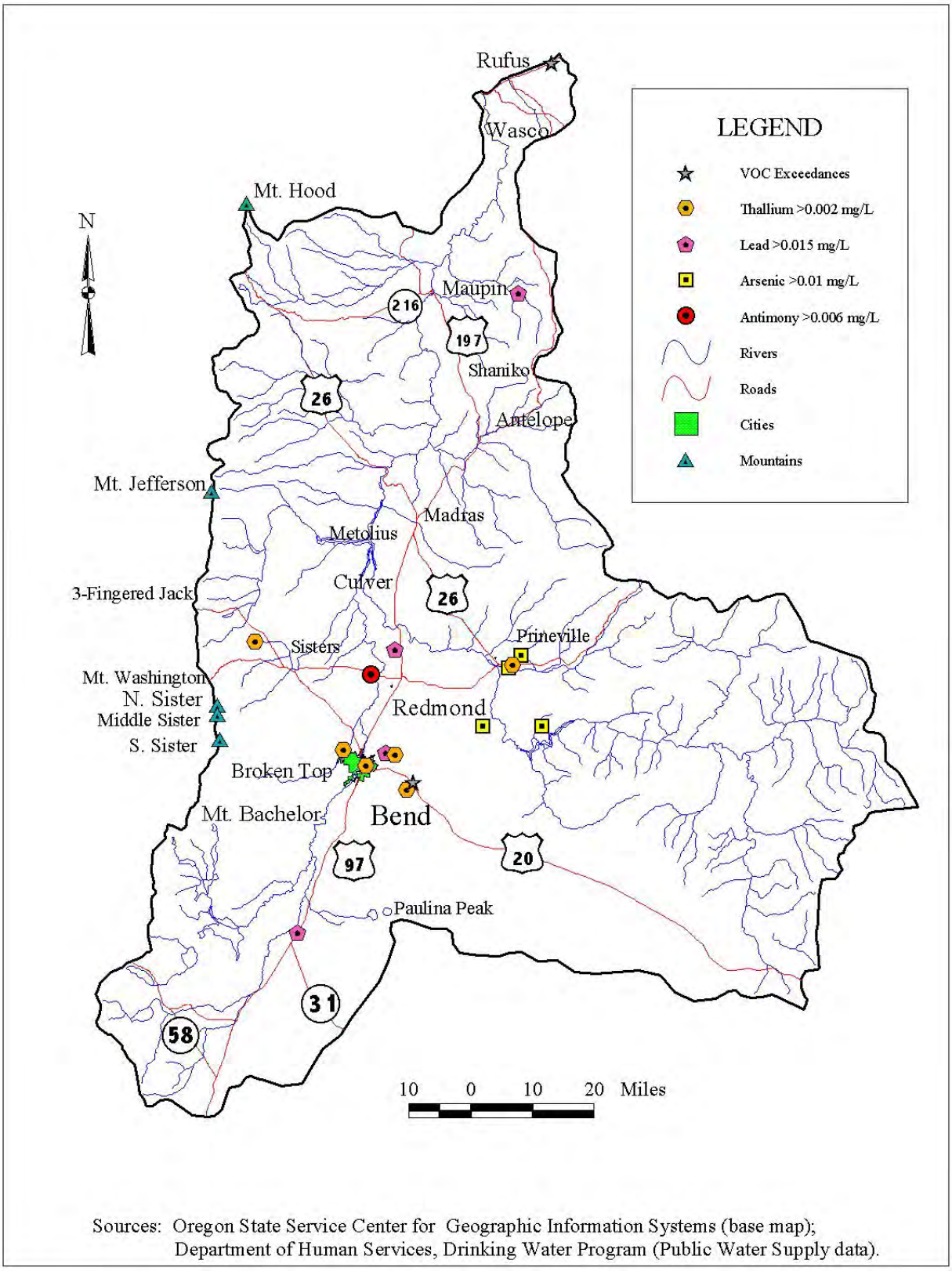


Figure 13. Deschutes Basin Public Water System Exceedances other than Nitrates and Bacteria.

Area Studies

La Pine Groundwater Quality Study (1978 – 1979) - Oregon Department of Environmental Quality

Summary

Between August 1978 and January 1979, the DEQ collected groundwater samples from 46 domestic wells in the La Pine core area to determine whether there was shallow aquifer contamination in the area. Personnel from Deschutes County and the Oregon Water Resources Department assisted the DEQ with this initial sampling effort.

Forty-six wells were sampled in this study. Forty of the 46 wells were sampled once for nitrates. Three of the wells were sampled twice; once for nitrates, and once for bacteria. One well was sampled twice; both times for nitrates only. Two wells were sampled three times; both twice for nitrates, and once for bacteria.

Results

The results include the following:

- Eight of the 46 wells had nitrate levels over the drinking water standard of 10 mg/L.
- Two of these wells exceeding the standard were sampled twice for nitrates, and exceeded the standard both times.
- The maximum nitrate concentration was 25.8 mg/L, about two-and-a-half times higher than the drinking water standard.

These results led the DEQ to authorize Century West Engineering Corporation to conduct an in-depth study and analysis of the aquifer contamination problem in the La Pine area.

Table 1, Appendix 1, summarizes the sampling results from the 1978 – 1979 DEQ La Pine study.

La Pine Aquifer Management Plan (1982) - Century West Engineering Corporation

Summary

In 1978 and 1979, the DEQ collected groundwater samples from 46 domestic wells in the La Pine core area. The DEQ Laboratory analyzed these samples for nitrate and bacteria. The DEQ performed this sampling to determine whether shallow aquifer contamination was taking place. The results of the sampling showed eight of the wells had nitrate levels exceeding the drinking water standard of 10 mg/L. This led the DEQ to authorize Century West Engineering Corporation to conduct an in-depth water quality sampling and analysis of the aquifer in the La Pine area.

The EPA provided grant money and Deschutes County contributed money to fund the project. The DEQ authorized the work in an interagency agreement with Deschutes County, and in August of 1980 Century West initiated the work.

The DEQ identified 10 beneficial uses of groundwater in the study area. The highest of these beneficial uses was domestic water supplies. The DEQ recommended a 5 mg/L nitrate concentration planning limit in undeveloped areas, to be used in determining suitable waste system densities for new subdivisions. As a condition of approval for some on-site waste disposal systems, the DEQ required proof that a 5 mg/L nitrate concentration in the aquifer would not be exceeded.

As part of the aquifer study, Century West installed monitoring wells in 1981. Century West also used monitoring wells that Sweet, Edwards & Associates installed in 1980. This sampling addressed the following three primary goals:

1. To define baseline shallow aquifer quality,
2. To observe what additional contaminants might exist in concentrations which could jeopardize water supplies, and
3. To check whether or not sewage indicators, such as chloride and sulfate, showed the same geographic trends as the nitrates.

The initial Century West sampling took place in the winter of 1981. Century West conducted resampling in April of 1982, when the depth to the water table below ground level had risen about three feet from the previous wintertime sampling.

Results

- Century West resampled selected wells from the initial 1978 – 1979 DEQ survey, and the results showed no significant change. The wells with low nitrate levels showed continued low levels, and the wells with high nitrate levels showed continued high levels. This confirmed the continued presence of high nitrate groundwater in the La Pine core area.
- The results of April 1982 showed no presence of bacteria, and lower nitrate levels. This was possibly due to increased dilution in the aquifer, resulting from the rising water table.
- Nitrate levels tended to be high in areas with a high density of on-site septic systems, and low in areas where no development had taken place. This supported the theory that the main source of nitrates was domestic sewage.
- The data did not show the presence of a continuously expanding plume of groundwater contamination in the core area.
- During this study Century West also conducted surface water sampling. This sampling showed no evidence of surface water contamination from contaminated groundwater.

Century West based their study on a 20 year projected growth need for the area. They concluded that present and future nitrate loading was not expected to negatively affect the aquifer or aquifer discharge areas.

Although the domestic water supply in the La Pine area is primarily from a shallow, alluvial aquifer, domestic water is also derived from deeper wells in the area. This water comes from deep sediments or basalt. Century West included water quality information from several deep wells in the area. Various private laboratories performed the testing. The water quality data from the deep wells is from the Bend office of the Oregon Department of Human Services. Table 2, Appendix 1, summarizes the sampling results from the 1982 La Pine study.

Located about 7 miles south of the La Pine study area is the Shields Septic Disposal site. La Pine residents were concerned that activities at this site were affecting La Pine area groundwater. DEQ data indicates local impacts, but at low levels, suggesting no regional influence on the shallow La Pine aquifer. Table 3, Appendix 1, summarizes this data.

A major product of Century West's Aquifer Management Plan for the area was a set of management alternatives and recommendations designed to protect the beneficial uses of the groundwater. A full discussion and description of these recommendations can be found in the Aquifer Management Plan (Century West Engineering, 1982).

Prineville Groundwater Study (1993) - *Oregon Department of Environmental Quality*

Summary

As part of its ambient groundwater quality monitoring program, the DEQ collected water quality samples from 17 private, domestic wells in the Prineville area in the summer of 1993. The DEQ analyzed the samples for a full suite of constituents, including VOCs, pesticides, metals, common ions, nutrients, and physical parameters. The Oregon Department of Agriculture (ODA) laboratory conducted the pesticide analyses, while the DEQ Lab analyzed all remaining constituents.

Appendix 2 lists the method detection limits and applicable drinking water standards for VOCs (Table 1), individual pesticides (Table 2), and metals, nutrients, and physical parameters (Table 3). The pesticides included in the five screening analyses and their method detection limits are in Table 4 of the same appendix.

To minimize health risks, the DEQ notified owners of drinking water wells of any drinking water standard exceedances as soon as the data was available.

Figure 14 shows the Prineville well network location in the Deschutes Basin, and a close-up of the well sample sites.

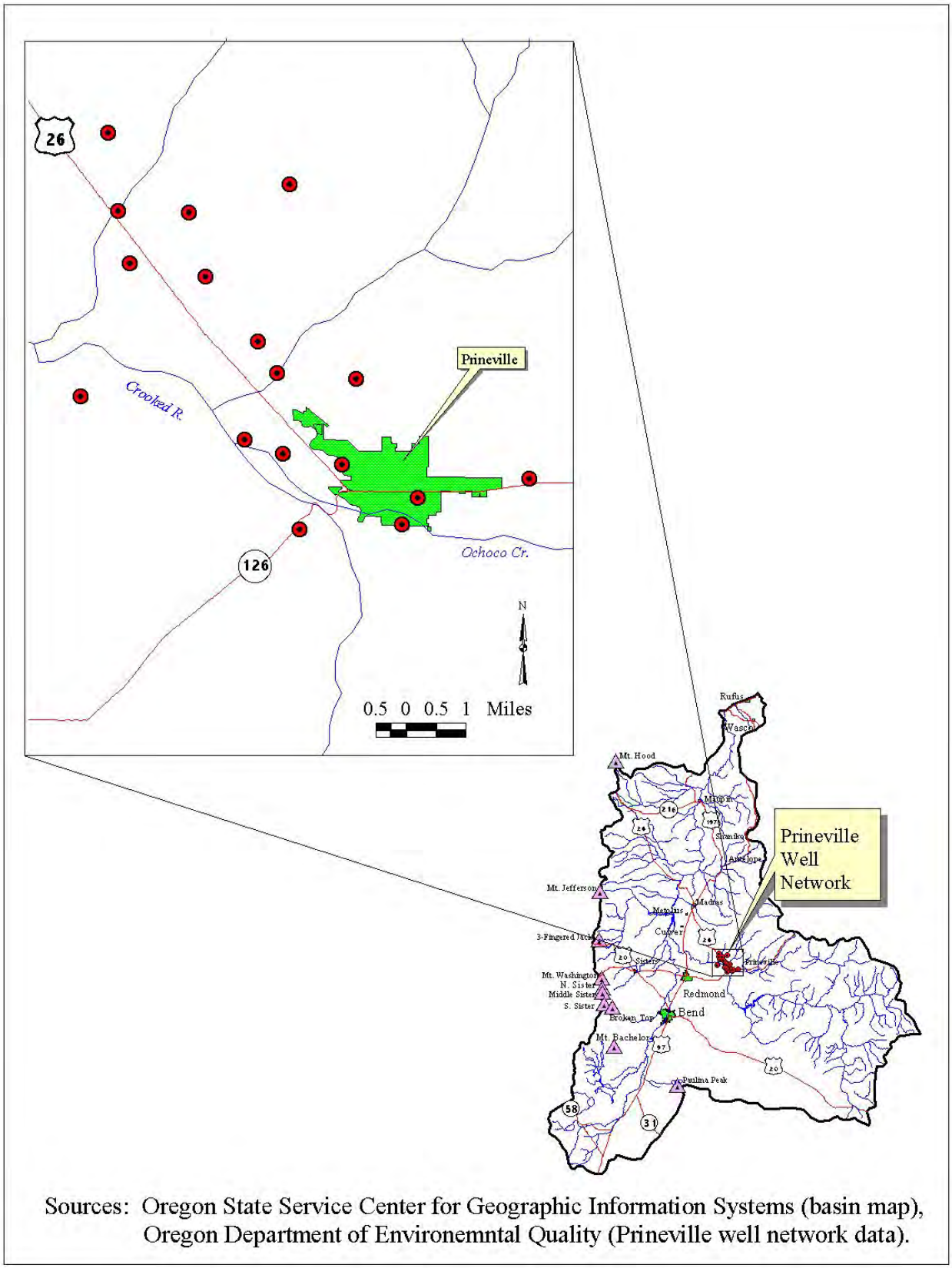


Figure 14. Location of the Prineville Well Network in the Deschutes Basin.

Results

Table 2 summarizes the results from the 1993 sampling event. Table 4, Appendix 1, presents all analytical data from the testing.

The results include the following:

- Nitrate[1] was detected in all 17 wells. Five wells (29%) exceeded the 10 mg/L Maximum Contaminant Level (MCL), while 11 of the 17 wells had nitrate levels at or above 2 mg/L, indicative of anthropogenic influences.
- Atrazine was detected in one well, at a concentration below the drinking water standard (0.003 mg/L).
- Toluene was detected in one well below the MCL of 1 mg/L.
- Barium was detected in 12 wells, all below the drinking water standard of 2 mg/L.
- Arsenic was detected in four wells, three of which were at or slightly above the drinking water standard of 0.01 mg/L.
- Copper was detected in five wells, all of which were below the drinking water Action Level of 1.3 mg/L.

Figure 15 shows the distribution of nitrate detections throughout the study area.

Data from DEQ's sampling are available in LASAR through the internet at: DEQ Lab LASAR, and can be retrieved using Prineville Groundwater as the sampling event name.

Table 2. Prineville Groundwater Study (1993).

Contaminant	No. of wells detected out of 17 wells	Average* Concentration (mg/L)	Maximum Concentration (mg/L)	Detection Limit (mg/L)	NPDW MCL** (mg/L)	Number of Wells Over MCL
Nitrate	17	7.34	23	0.02	10	5
Atrazine	1	0.0001	0.0001	0.0001	0.003	0
Toluene	1	0.0035	0.0035	0.0005	1	0
Arsenic	4	0.010	0.014	0.006	0.01	3
Copper	5	0.06	0.09	0.02	1.3 (Action Limit)	0
Barium	12	0.04	0.05	0.03	2	0

*Average concentration calculated for wells with detectable contaminant levels and may include multiple samples.

**NPDW MCL = National Primary Drinking Water Maximum Contaminant Level (mg/L = milligrams per liter = parts per million)

[1] Nitrate was analyzed as nitrate plus nitrite as nitrogen, and is assumed to be primarily in the form of nitrate.

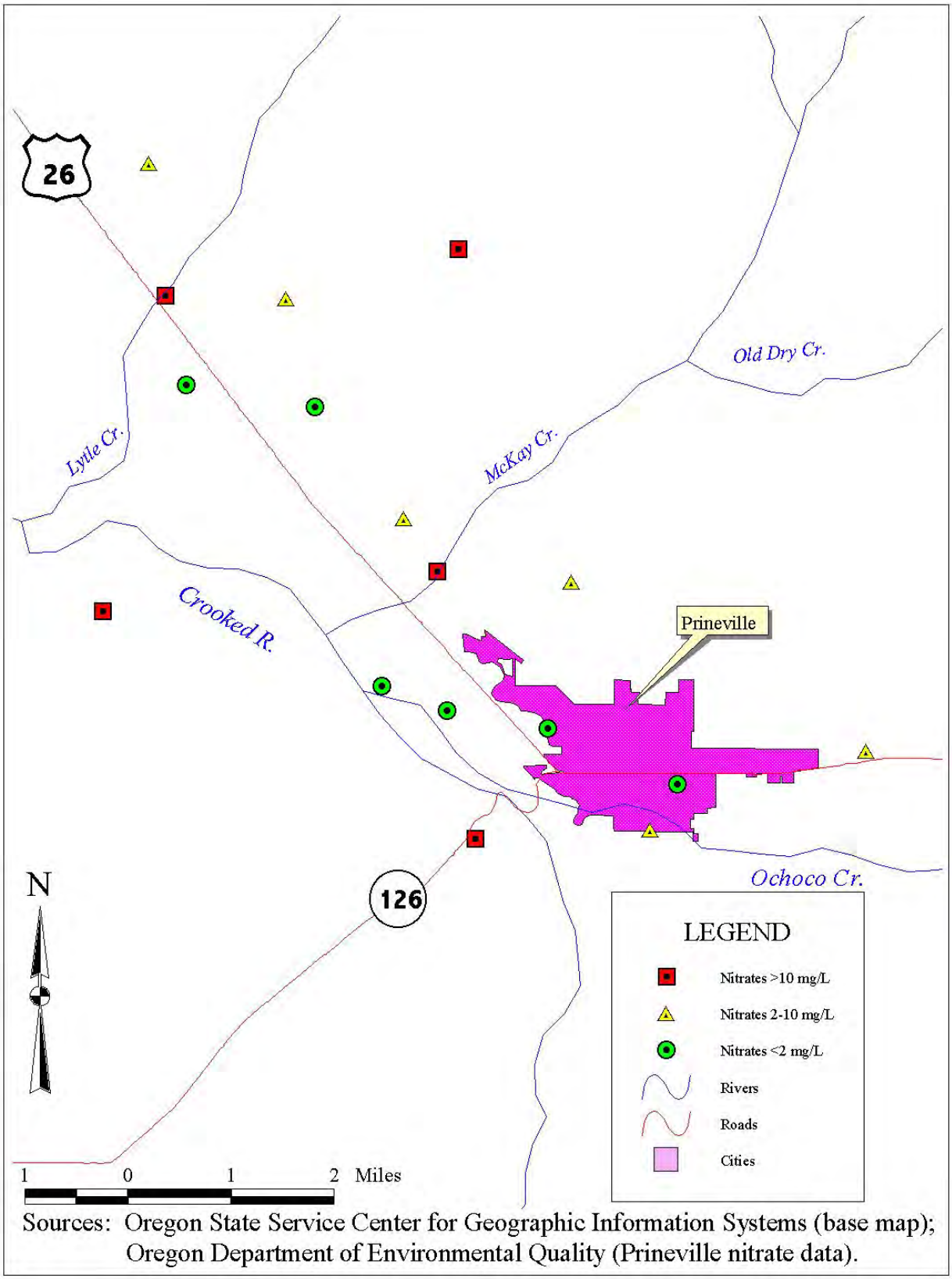


Figure 15. Nitrate distribution, from the Prineville Groundwater Study (1993).

La Pine Groundwater Study (1993) - Oregon Department of Environmental Quality

Summary

In May and July of 1993, as part of its Ambient Groundwater Quality Monitoring Program, the DEQ conducted a sampling event in the La Pine area. This sampling event collected and tested the groundwater quality from 39 drinking water wells. The DEQ analyzed the samples for a full suite of constituents, including volatile organic compounds (VOCs), pesticides, metals, common ions, nutrients, and physical parameters. The Oregon Department of Agriculture (ODA) laboratory analyzed the pesticide samples, while the DEQ Lab analyzed all remaining constituents.

The method detection limits and applicable drinking water standards are listed in Appendix 2 for VOCs (Table 5), individual pesticide (Table 6), and metals, nutrients, and physical parameters (Table 7). The pesticides included in the five screening analyses and the method detection limits are also listed in Appendix 2 (Table 4).

To minimize human health issues due to contaminated wells, the DEQ notified owners of drinking water wells of any drinking water standard exceedances as soon as the data was released.

Figure 16 shows the locations of the La Pine well network in the Deschutes Basin, and a close-up of the well locations.

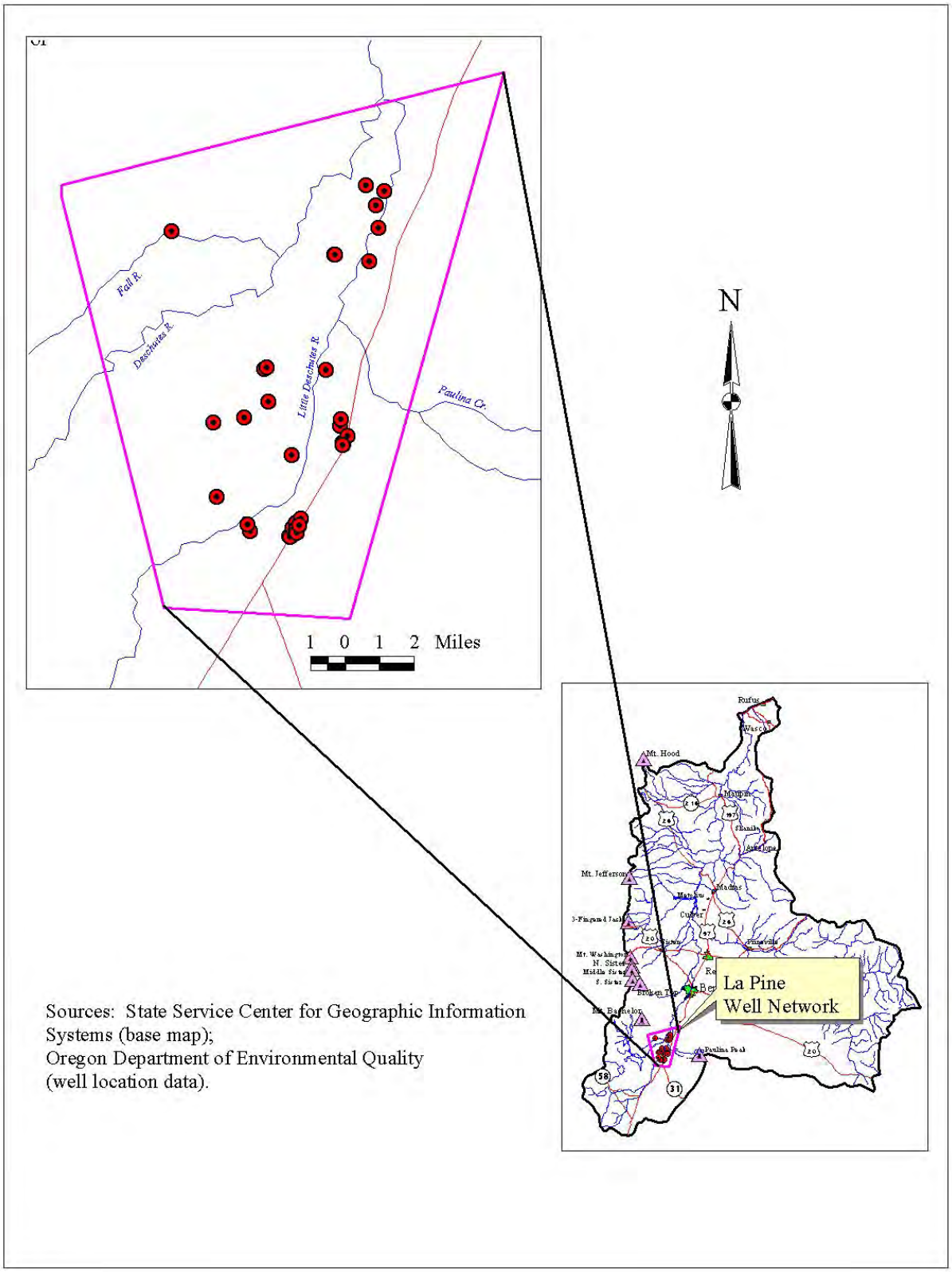


Figure 16. Location of the 1993 La Pine Well Network in the Deschutes Basin.

Results

The results include the following:

- Nitrate[2] was detected in 36 wells. Four wells (10%) exceeded the 10 mg/L MCL, while 19 wells out of a 39 well network (49%) had nitrate levels at or above 2 mg/L, indicating anthropogenic influences.
- Atrazine was detected in four wells; however all the detections were below the drinking water standard (0.003 mg/L).
- Dicamba was detected in one well at 0.0035 mg/L. No MCL exists for Dicamba.
- 1-2,Dichloroethane was detected in one well at 0.0318, above the MCL of 0.005 mg/L.
- Barium was detected in one well, below the drinking water standard of 2 mg/L..
- Lead was detected in one well, below the Action Level of 0.015 mg/L.
- Copper was detected in 10 wells, all of which were below the Action Level of 1.3 mg/L.
- Various VOCs were detected in seven wells. No MCLs exist for the particular VOCs detected.

Table 3 summarizes the results from the 1993 sampling event. Table 5, Appendix 1, details all analytical results from the testing.

Table 3. La Pine Groundwater Study (1993).

Contaminant	No. of Wells Detected out of 39 Wells	Maximum Concentration (mg/L)	Detection Limit (mg/L)	NPDW MCL* (mg/L)	Number of Wells Over MCL
Nitrate	36	16	0.02	10	4
Atrazine	4	0.00108	0.0001	0.003	0
Dicamba	1	0.0035	0.0002	N.A.	N.E.
Lead	1	0.009	0.0030	0.015	0
1-2,Dichloromethane	1	0.0318	0.0005	0.005	1
Various VOCs	7	various	various	N.A.	N.E.
Barium	1	0.05	0.00010	2	0
Copper	10	0.17	0.00030	1.3	0

*Average concentration calculated for wells with detectable contaminant levels and may include multiple samples.
**NPDW MCL = National Primary Drinking Water Maximum Contaminant Level (mg/L = milligrams per liter = parts per million).
N.E. = Not Established.

[2] Nitrate was analyzed as nitrate plus nitrite as nitrogen, and is assumed to be primarily in the form of nitrate.

La Pine Groundwater Quality and Modeling Study (1994-1995) - Oregon Department of Environmental Quality

Summary

In 1994/1995 the DEQ conducted another groundwater study in the La Pine area. Deschutes County then requested the DEQ assess residential development effects on groundwater quality. With the data, the DEQ performed computer modeling to evaluate groundwater flow and nitrate fate and transport. The model was a 2-D numerical cross-sectional nitrate fate and transport model (Flow-MODFLOW, Transport- MT3D96). The model focused on two build-out scenarios:

1. Existing conditions, as of 1994, and
2. Full build-out of all platted lots.

For conceptual model development, various estimates of inputs, such as aquifer hydraulic conductivity and recharge, were required. Best estimates were made using the following available data:

- Well log pumping data using TGUESS,
- 1982 Century West Engineering Corporation pump test data, and
- USGS pump test and conductivity estimates for the Upper Deschutes Basin.

A recharge rate of 5 - 7 in/year was assumed for the aquifer. The model assumed the following nitrate loadings:

- 40 mg/L for a standard on-site distribution system,
- 29 mg/L for a sand filter distribution system, and
- 40 mg/l for a pressure distribution system.

Results

Figure 17 shows the nitrate concentration contours, based on the DEQ 1994 - 1995 sampling data from 120 wells. This figure is from the Work Plan (see the following web site for more details: http://www.deq.state.or.us/wq/onsite/lapine.htm).

Model predictions underline progressive groundwater contamination from nitrate, with development of the existing lots. Moreover, the model predicts that nitrate-nitrogen concentration will likely exceed the drinking water standard of 10 mg/l within the next 10 to 20 years under the full build-out scenario.

The field work performed prior to model development included water levels, physical parameters, and field nitrate determinations. Table 6, Appendix 1, details all analytical results from the testing.

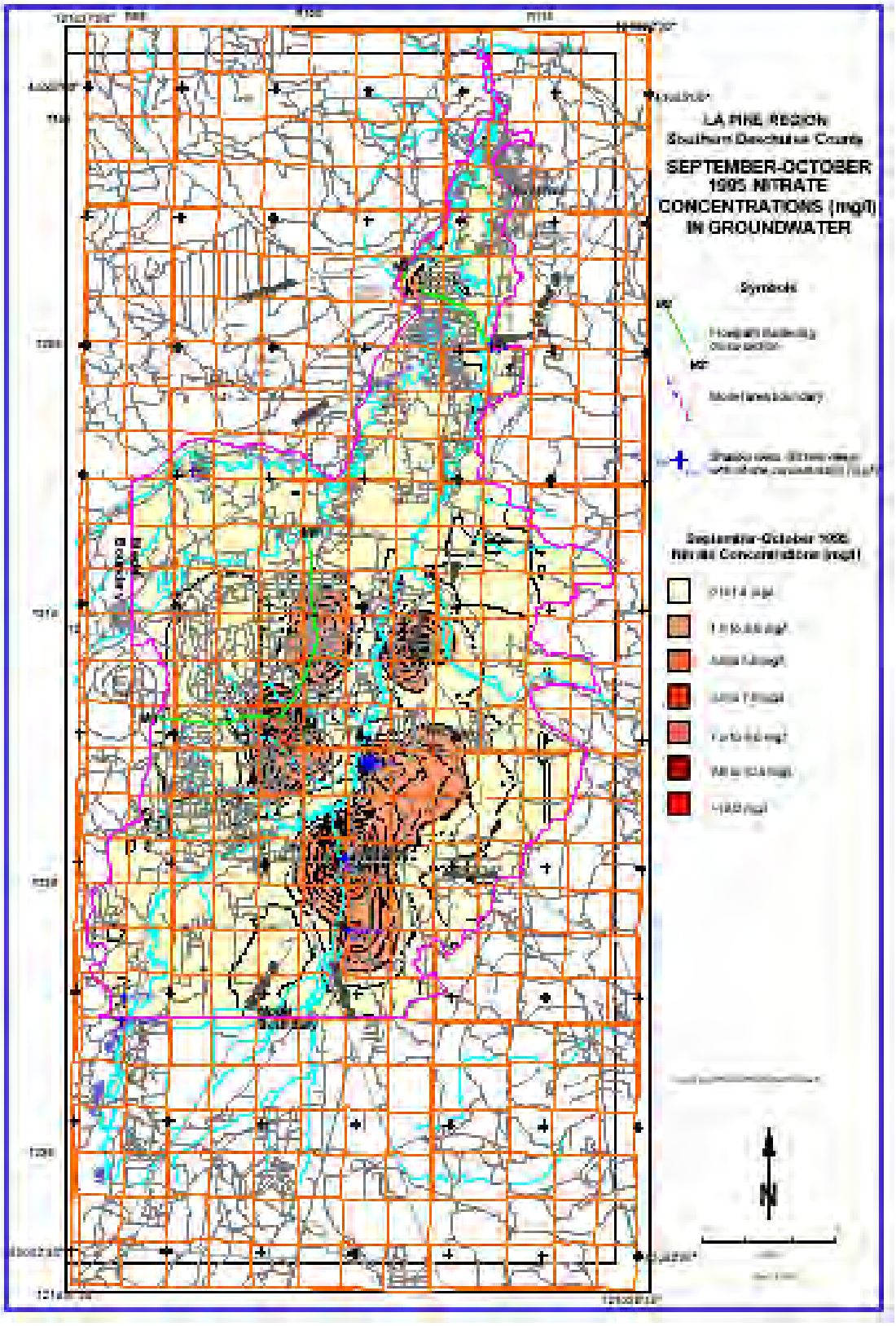


Figure 17. Nitrate concentration contours (1995 DEQ data).

La Pine On-Site Demonstration Project (1999) – Oregon Department of Environmental Quality

Summary

Previous groundwater quality studies in the La Pine area had shown the sole source aquifer was vulnerable to contamination. The studies had also shown some parts of the aquifer were already contaminated with nitrates. The modeling work the DEQ did in 1995 showed that if nothing was done to change development practices in the area, then aquifer nitrate levels would exceed the federal safe drinking water standard.

With a grant from the EPA, the DEQ, in cooperation with the US Geological Survey and Deschutes County Environmental Health Division, began a five-year on-site demonstration project, beginning in 1999. The project's objective was to protect the La Pine sub-basin aquifer water quality, while allowing development to occur. This is to be accomplished through a holistic approach, incorporating the following factors:

- Implement innovative denitrification technologies.
- Apply groundwater flow, and nitrate fate and transport knowledge.
- Determine appropriate development density through lot size optimization modeling, based on denitrification system study results.

The project management established the following eight tasks to achieve the project objective:

1. Establish 200 or more on-site systems.
2. Establish 130 monitoring wells.
3. Establish an on-site maintenance structure.
4. Develop funding for on-site system repair and/or replacement.
5. Collect and analyze data from on-site systems and the groundwater monitoring network.
6. Analyze system effluent and groundwater samples.
7. Conduct 3-D groundwater flow and nitrate fate and transport modeling, and lot size optimization modeling for nitrate loading reduction.
8. Prepare progress and final reports.

The project tested 15 different types of systems, using three control systems (standard, pressure, and sand filter). Each system had a "drain" monitoring well located in proximity to the system's discharge point. Each system had between one and five monitoring wells, located some distance from the drain monitoring well. The systems were typically sampled between monthly, bimonthly, and quarterly. Table 7, Appendix 1 details the sampling frequency and testing results data from the monitoring wells used for computing statistics.

Figure 18 shows the study area location. This figure is from the Work Plan (see the following web site for more details: http://www.deq.state.or.us/wq/onsite/lapine.htm).

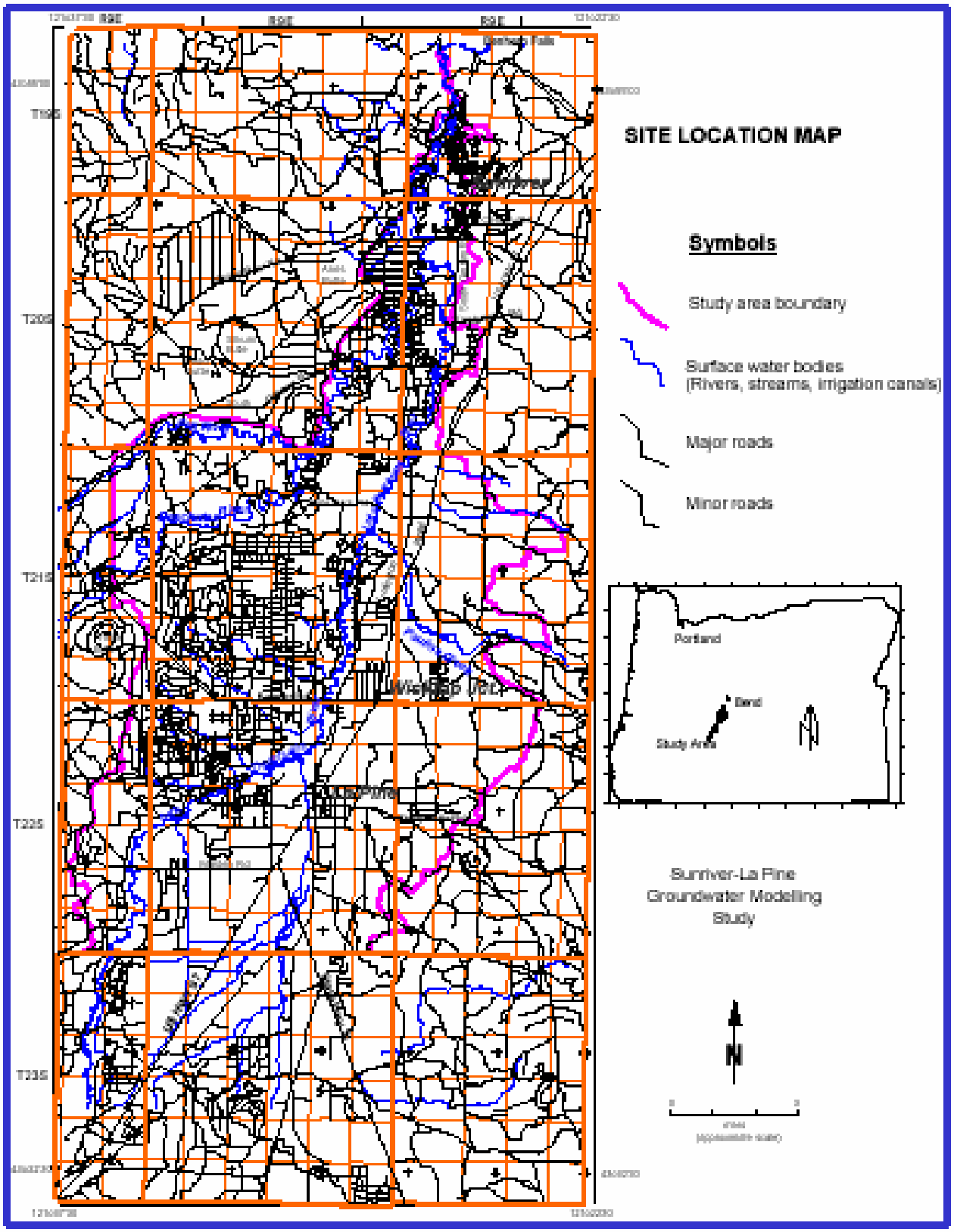


Figure 18. Location of 1999 La Pine On-Site Demonstration Study Area.

Results

Water level measurements yielded horizontal and vertical groundwater flow information. Using this information, the groundwater flow and nitrate transport model showed if nitrogen loading to the aquifer remained at present (1999) levels, peak nitrate concentrations in the aquifer would not occur for 30 years. However, the population forecast shows a doubling of the nitrate loading by the year 2020. The modeling predicts that this will result in groundwater nitrate concentrations exceeding the drinking water standard over large areas.

These predictions are unsettling to many people and entities, not the least of which is Deschutes County. The County is pursuing the following two main options to manage groundwater quality in the area:

1. Reduce housing density, and
2. Reduce nitrate loading, using Decentralized Wastewater Treatment Systems (DWTS).

Deschutes County contracted with foreign and domestic sources to provide innovative DWTS for testing. After five years of testing, the County found the DWTS are capable of reducing nitrate concentrations by as much as 96 percent. The County designed numerous scenarios incorporating denitrifying DWTS and transferable development credits (TDC). The best scenario used a system with a 2 mg/L performance level. This scenario predicted no areas with nitrate concentrations exceeding the drinking water standard. All scenario simulations showed groundwater nitrate concentrations would peak within 20 to 50 years, and then decline to equilibrium levels within 100 years.

Maintaining a healthy economy with these water quality issues poses a complex decentralized wastewater management and land-use planning problem for Deschutes County. To help the County solve these problems, a Nitrate Loading Management Model (NLMM) was developed. This model uses optimization techniques designed to predict the aquifer system's sustainable maximum nitrate loading capacity, while groundwater nitrate concentrations and nitrate discharge to streams are maintained at desired levels. The optimization method used to solve the NLMM is based on the response-matrix technique. This technique requires calculating many response functions, based on many simulations.

The optimization approach requires decision-makers and stakeholders to quantify goals and objectives. The management objective of the NLMM reflects the following goals:

1. Allow as many existing lots to be developed as possible, and
2. Minimize the number of existing DWTS that need to be upgraded.

Since costs are associated with reducing loading through prohibiting lot development, or replacing existing DWTS, the management objective becomes minimizing the cost of meeting water quality goals. The management objective also requires decision-makers and stakeholders to incorporate the following concepts:

1. Set values on water quality constraints reflecting regulatory requirements, and

2. Agree on desirable economic and community conditions.

The County can use the management model to support decisions quantifying the relationship between water quality constraints and optimal solutions. The model included a cost variable to account for differences in reducing nitrate loading from existing and future homes.

A potentially cost effective alternative to constraining nitrate concentrations in the aquifer system's shallow part involves deepening wells or developing local community water systems.

With these tools Deschutes County now has options from which to choose an optimal management strategy.

Overall Status of Deschutes Basin Groundwater

Nitrate

Deschutes Basin studies have found areas with nitrate in the groundwater. Nitrate levels above 2 mg/L indicate anthropogenic activities (DHS Fact sheet), and have adversely affected the groundwater. Nitrate sources include dispersed non-point sources such as agricultural activities and on-site septic systems, and point sources generating nutrient rich waste products.

Some Public Water Systems (PWS) in the region have reported nitrate levels between 2 and 10 mg/L. Ten PWS in the Deschutes Basin have reported nitrate levels above the Maximum Contaminant Level (MCL, 10 mg/L). For domestic wells sampled as part of real estate transactions, two percent of the tests exceeded the MCL.

In local area studies, elevated nitrate was found in the Prineville area. Nitrate was above the MCL in five wells out of a network of 17 wells (29%).

In the La Pine area, four wells of a 39 well network (10%) exceeded the MCL. Nineteen of the wells (49%) had nitrate levels at or above 2 mg/L. This indicates anthropogenic activities have adversely affected the groundwater quality.

Bacteria

Positive groundwater bacteria detections may indicate contamination from non-point sources, including on-site septic systems, or point sources, including facilities handling or disposing of septage or manure. Bacteria from well water can also be due to poor well construction and maintenance practices.

On a regional scale, the domestic well real estate transaction data collected throughout the Deschutes Basin counties showed 190 tests out of 4,235 were positive for bacteria. Fifty-eight PWS also reported positive tests for bacteria.

Toxics – Pesticides

No PWS reported any pesticide detections. One well in the Prineville area had the pesticide Atrazine in it. However, the concentration was below the drinking water standard. Four wells in the La Pine area had Atrazine detected in them, none of which exceeded the drinking water standard. One La Pine well had the pesticide Dicamba detected in it at a concentration of 0.0035 mg/L (no standard exists for Dicamba).

Toxics – Volatile Organic Compounds

Twenty-three PWS in the region reported detections of VOCs. Only two PWS detected VOCs above their individual Maximum Contaminant Level (MCL). One well in the Prineville area had Toluene in it, but below the MCL. Finally, seven wells in the La Pine area had VOCs detected in them, one of which, 1-2,Dichloromethane, exceeded the MCL.

Toxics - Metals

Four PWS reported lead exceeding the Federal Action Level of 0.015 mg/L. Seven PWS reported thallium, including six exceedances of the MCL (0.002 mg/L). Four PWS reported arsenic above the MCL of 0.01 mg/L. Antimony was detected in two PWS, and exceeded the MCL (0.006 mg/L) in one of those wells. Cadmium and chromium were detected in one PWS, but did not exceed the MCLs. Four PWS detected mercury, none of which exceeded the MCL.

Arsenic was detected in four Prineville area wells, three of which exceeded the MCL. Twelve Prineville area wells had barium in them, all of which were below the MCL. Copper was detected in five Prineville area wells, none of which exceeded the MCL.

One La Pine area well had lead in it, below the Action Level. One well had barium in it, below the MCL. Ten wells had copper in them, none of which exceeded the Action Level.

POLLUTANT SOURCES

Overview

Various state and federal programs regulate pollution sources in Oregon. Point sources are confined or discrete pollution sources where contaminants can enter into public waters (OAR 340-040-0010(14)). Nonpoint sources are diffuse or unconfined pollution sources (OAR 340-040-0010(12)). The state and federal regulatory goal is to prevent or minimize adverse effects on groundwater quality from surface activities. Several types of point sources in the Deschutes Basin are discussed below.

Waste Dischargers

The DEQ regulates waste discharges through permits. Permit types include the following:

- National Pollutant Discharge Elimination System (NPDES) - These permits must meet Federal Water Pollution Control Act requirements and procedures (OAR 340-045-0010(9)). NPDES permits generally cover all discharges, whether direct or indirect, to surface waters of the United States. NPDES permits cover direct discharges into a river or stream, or indirect discharges into a drain or ditch conveying wastewater to a river or stream, and also covers discharges to land.

- Water Pollution Control Facilities (WPCF) - These permits regulate disposal system construction and operation with no discharge to navigable waters (340-045-0010(12)). State requirements and procedures (OAR 340-045 or OAR 340-071) distinguish these facilities from those discharging to navigable waters. The DEQ issues WPCF permits for discharges not covered by an NPDES permit. WPCF permitted facilities may discharge wastewater onto land through irrigation, into drain fields, or into lagoons and holding ponds.

NPDES and WPCF permitted facilities discharge a variety of wastewater including sewage, pulp and paper waste, food processing waste, smelting/refining waste, cooling water, industrial storm water, mining waste, and municipal wastewater.

The DEQ has regional offices in various locations around the state. Eastern Region offices in The Dalles and Bend manage permits within the Deschutes Basin. Information on NPDES and WPCF permits is available on-line at the following web site:

http://www.deq.state.or.us/wq/SISData/FacilityHomenew.asp.

Figure 19 on the next page shows the locations of 239 facilities with active permits in the Deschutes Basin. Three of these facilities are major permits handling potentially high pollutant loads or serving a large number of people. For example, the facility in Bend is a sewage treatment plant, permitted to process between 5 and 10 million gallons of effluent per day.

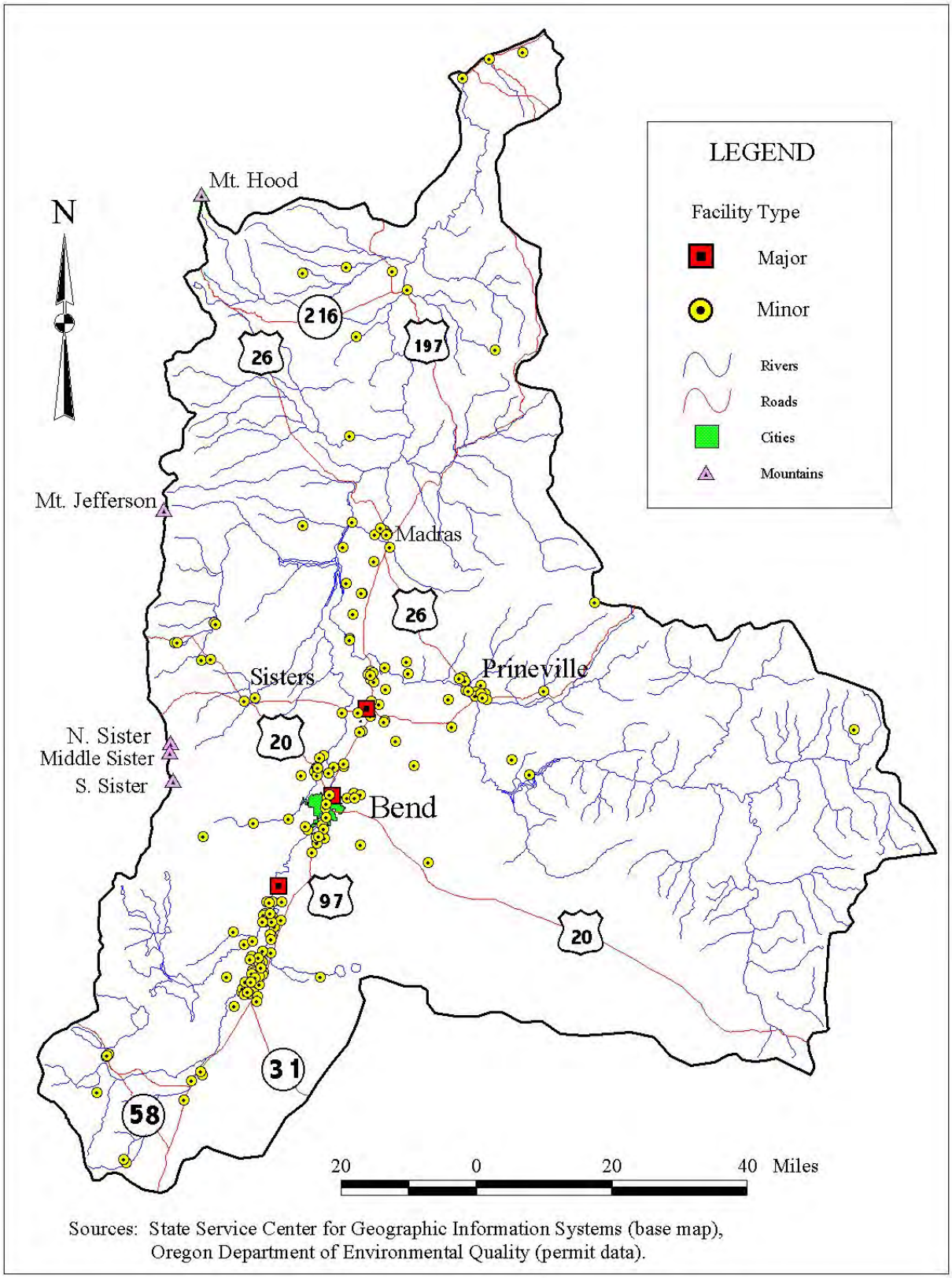


Figure 19. Locations of Permitted Waste Discharge Facilities, Deschutes Basin, Oregon.

Underground Injection Control (UIC)

The DEQ Underground Injection Control (UIC) program regulates subsurface waste injection to protect groundwater quality. A UIC is any system, structure, or activity that is created to place fluid below the ground or sub-surface. Common underground injection systems or activities in Oregon include the following:

- Stormwater systems: typical designs include but are not limited to sumps, infiltration galleries, drywells, trench drains, and drill holes.
- Domestic onsite septic systems and cesspools that serve more than 20 people or have a design capacity of 2,500 gallons per day or more.
- All sewage drill holes.
- Industrial/commercial process and wastewater disposal (includes drainfields of any size).
- Cooling water return flows.
- Aquifer storage and recharge.
- Aquifer remediation systems.
- Geothermal heat pump re-injection systems.
- Motor vehicle waste (floor drains, auto drains).
- Agricultural drainage.

Until the 1980s, virtually all residences and businesses discharged their sewage into waste disposal wells. These systems were composed of a septic tank and a drilled well. The well depth was usually shallow, and was drilled downward until a cavern or other void was encountered. In 1969, due to concern for groundwater quality effects from sewage disposal, the Environmental Quality Commission adopted certain rules to force central Oregon cities to install centralized sewerage facilities to replace the waste disposal wells. Some waste disposal wells are still in operation outside sewer service boundaries, but their numbers are believed to be relatively small. Current administrative rules prohibit constructing new sewage disposal wells.

Most developed areas of central Oregon discharge stormwater into the ground through older drill holes and dry wells. These are currently common stormwater disposal methods. The potential threat to groundwater quality from current stormwater disposal practices remains a concern. However, no evidence exists to show these practices have negatively impacted water wells.

Disposal practices releasing wastewater directly into the ground can pollute groundwater and surface water if not properly designed, sited, and operated. This is one reason the DEQ monitors underground injection and requires registration of all Oregon injection systems.

The DEQ maintains a database of known UIC systems. This database is available at http://www.deq.state.or.us/wq/groundwa/UIChome.htm. The current database shows 4002 injection systems at 201 facilities in the Deschutes Basin. Figure 20 is a map of the Deschutes Basin showing the locations of all individual UIC injection systems having available latitude/longitude coordinate information.

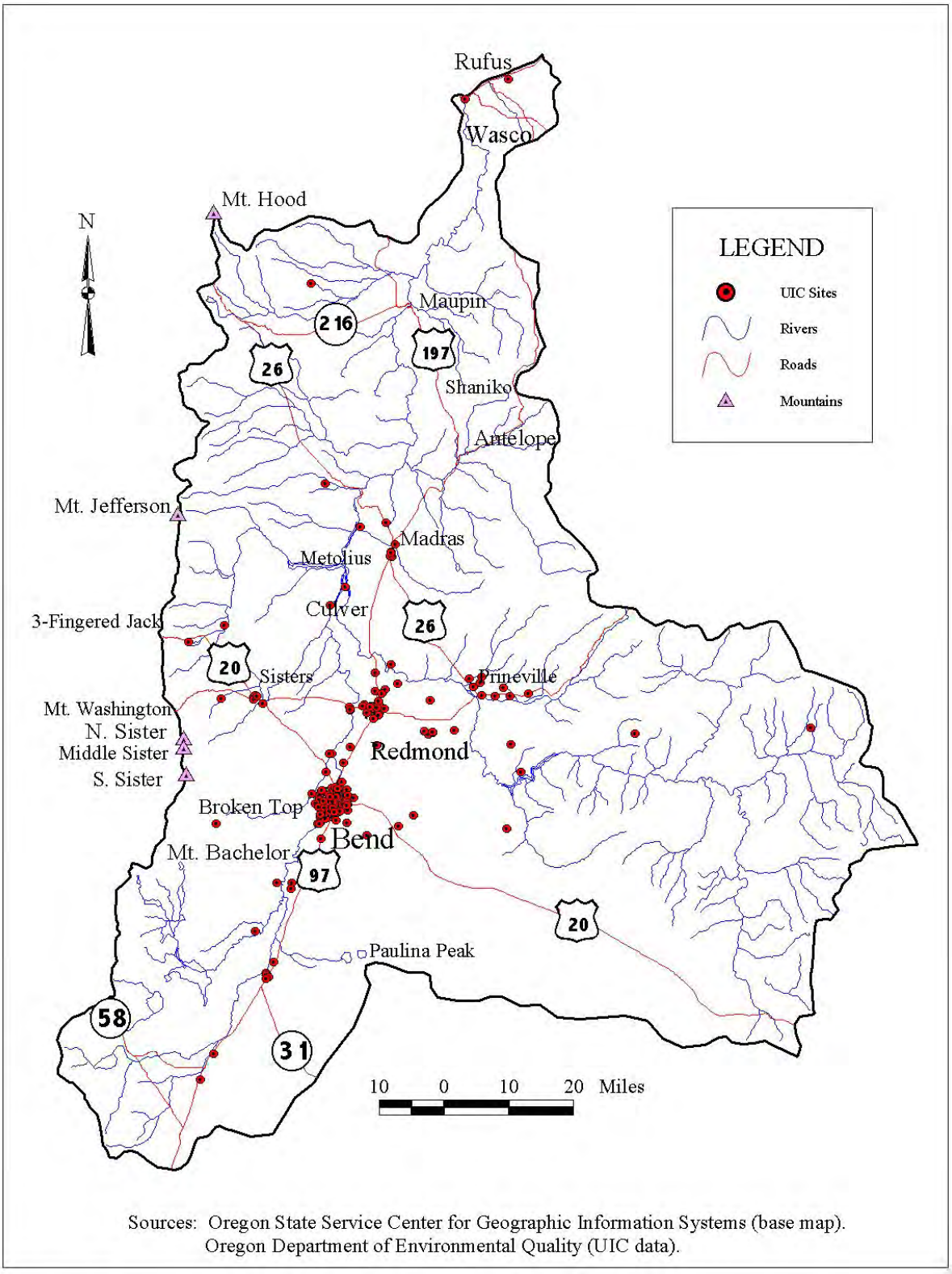


Figure 20. Underground Injection Systems in the Deschutes Basin.

Confined Animal Feeding Operations (CAFOs)

The Oregon Department of Agriculture (ODA), in conjunction with the DEQ, reviews applications and issues wastewater permits for Confined Animal Feeding Operations (CAFOs). This includes reviewing animal waste management system plans and specifications for animal waste control facilities. The types of CAFO facilities include the following:

- Production areas such as animal confinement areas;
- Manure storage areas such as lagoons, runoff ponds, storage sheds, stockpiles, and liquid impoundments; and
- Waste containment areas such as settling basins.

The waste management systems may also include land application areas. Without proper waste containment and processing systems, CAFOs can concentrate and introduce nitrate and bacterial contamination into underlying groundwater aquifers. Figure 21 shows the locations of the 34 permitted CAFOs in the Deschutes Basin.

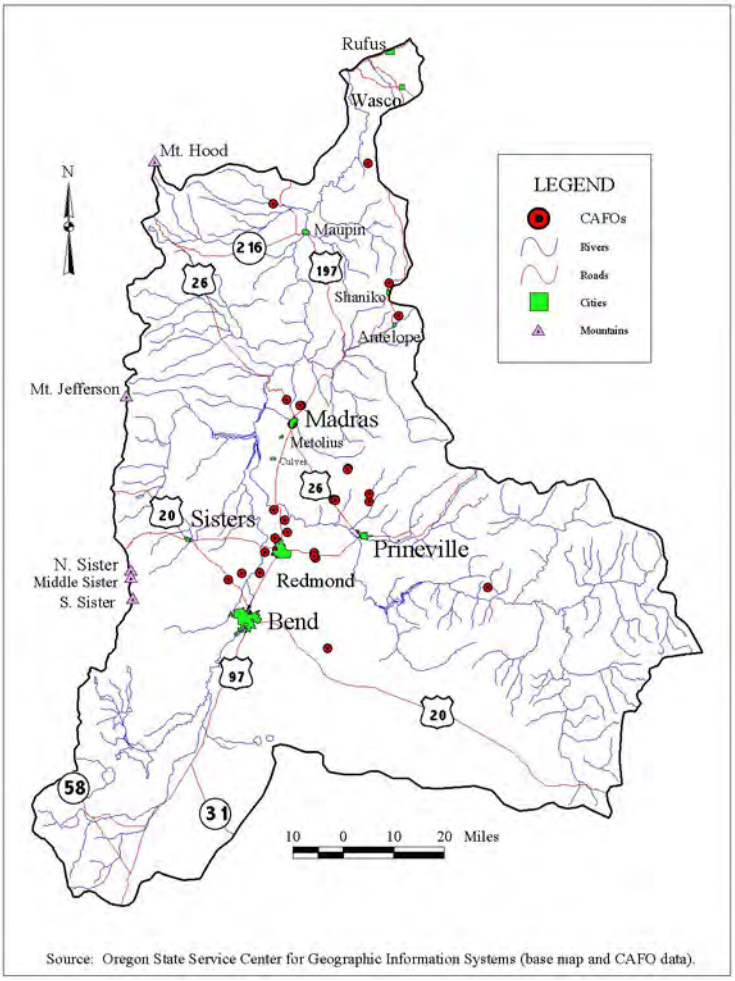


Figure 21. Confined Animal Feeding Operations in the Deschutes Basin.

Hazardous Substance Release Sites

The DEQ maintains a list of known hazardous substance release sites in the Environmental Cleanup Site Information (ECSI) database. Information on specific sites is available through on-line queries at http://www.deq.state.or.us/wmc/ECSI/ecsiquery.htm. As of February 2004, the database shows 200 sites in the Deschutes Basin. Figure 22 shows the site locations, and distinguishes them, according to the following five site types:

1. Administrative action (27 sites).
2. Operation and Maintenance (4 sites).
3. Cleanup underway (17 sites).
4. No further action (48 sites).
5. Further investigation or cleanup recommended (104 sites).

Some of the sites are very close to each other, causing some symbols to overlap and hide others.

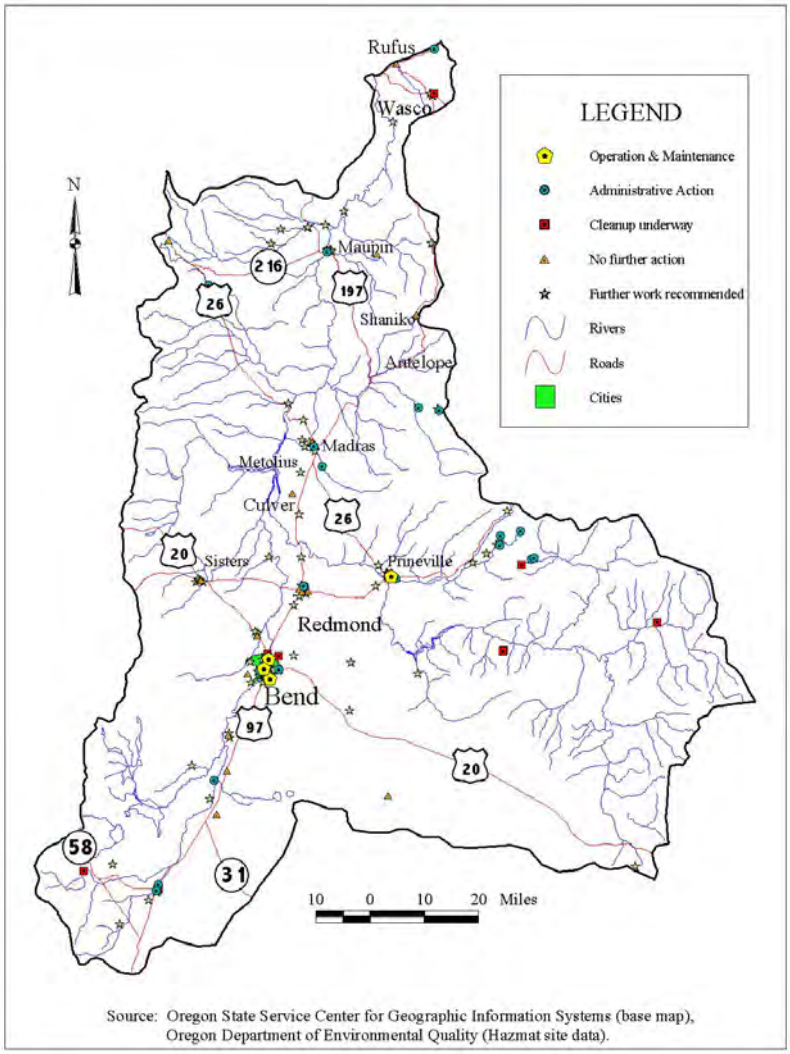


Figure 22. Hazardous substance release sites in the Deschutes Basin.

Underground Storage Tanks (USTs) and Leaking Underground Storage Tanks (LUSTs)

The DEQ Underground Storage Tank (UST) program regulates tanks storing petroleum or certain hazardous substances, and regulates tank release cleanups, including home heating oil tanks. The DEQ maintains the UST List for regulated underground storage tank facilities in Oregon. This list is available on-line at: http://www.deq.state.or.us/wmc/tank/ustfaclist.htm. The UST program also maintains a database of Leaking Underground Storage Tanks (LUST) where releases from tanks have been reported. This database is available on-line at: http://www.deq.state.or.us/wmc/tank/LustPublicLookup.asp.

The database, updated 10/23/01, has 350 records on file for LUST sites in the Deschutes Basin. Active sites account for 29 of these sites, 90 sites have an unknown status, and the remaining 231 sites are closed.

The Prineville area has seen major LUST activity in recent years due to a large concentration of LUSTS in downtown Prineville. The DEQ began an area-wide investigation of petroleum sources in 1997. The investigation showed several leaky underground storage tanks were contributing to shallow groundwater contamination and indoor air exceedances. Benzene was the primary constituent of concern. DEQ's Orphan Site Program installed a soil vapor and groundwater remediation system in 1998. This system was designed to clean up and control the contamination from one of the major sources. The City of Prineville conducted additional removal actions, using an EPA Brownfields Cleanup grant in 2003 – 2004.

Figure 23 on the next page shows the site locations in the Deschutes Basin.

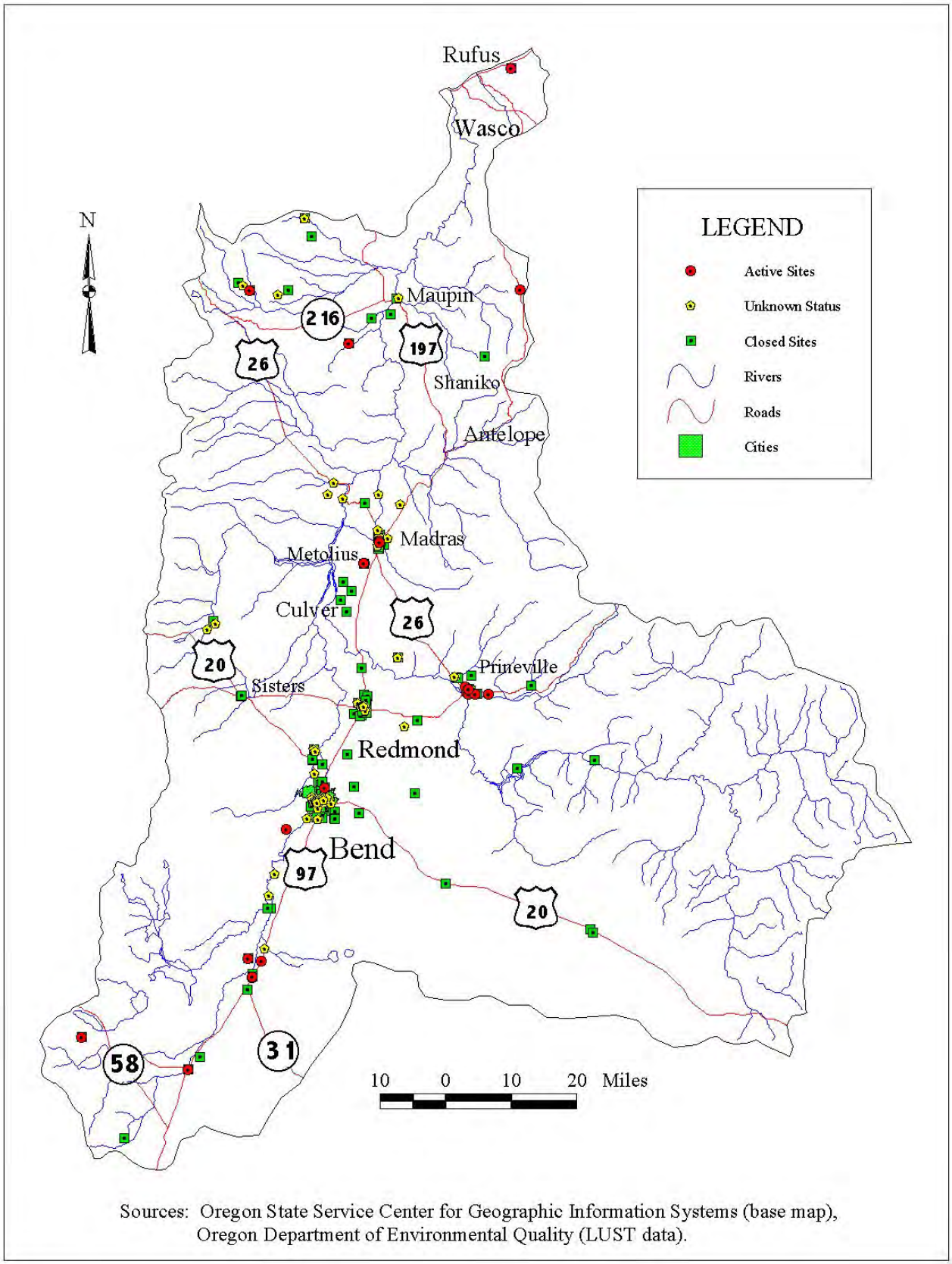


Figure 23. Locations of LUST sites in the Deschutes Basin.

Solid Waste Facilities

The DEQ has collected groundwater and leachate monitoring data at three landfills in the Deschutes Basin. These landfills are Crook County near Prineville, Knott Pit in Bend, and Southwest, between Sunriver and La Pine. Figure 9 shows the landfill locations. Crook County and Knott Pit landfills continue to accept waste through operating permits. Southwest landfill is now a transfer station. The DEQ Eastern Region office in The Dalles maintains information about the landfill status, monitoring results, and annual reports.

Crook County Landfill
Summary

Solid Waste Permit Number 74 regulates activities at the Crook County Landfill. The DEQ has collected and analyzed groundwater and leachate samples at the Crook County Landfill in 2001 and 2004.

The Crook County Landfill is located in volcaniclastic sediments overlying basalt flows of the Deschutes Formation. The aquifer underlying the landfill is confined, and depth to water is approximately 370 feet below ground surface.

Data from the DEQ's sampling are available in LASAR through the internet at: DEQ Lab LASAR, and can be retrieved using Crook County Landfill as the sampling event name.

Results

All three monitoring wells and the leachate site had detectable amounts of nitrates, barium, beryllium, chromium, and copper. However, all detections were below drinking water standards.

Knott Pit Landfill
Summary

Solid Waste Permit number 6 regulates activities at the Knott Pit landfill. The DEQ has collected and analyzed groundwater samples from the landfill's monitoring wells in 1995, 1999, 2002, and 2004.

The Knott Pit landfill is located within the down-thrown block of a normal fault. This graben, or basin, is filled with alluvial sediments that are mineralogically similar to the rocks of the Newberry Volcano, south of Bend and east of La Pine. Prior to use as a landfill, the location was the site of a gravel mine. The aquifer underlying the landfill is composed of Holocene age basalt and cinder interflow rocks. Depth to groundwater is approximately 670 feet below ground surface.

Data from DEQ's sampling events are available in LASAR through the internet at: DEQ Lab LASAR, and can be retrieved using Knott Landfill as the sampling event name.

Results

All five monitoring wells had generally low levels of nitrates, barium, chromium, cadmium, copper, and lead. One well had chromium and lead levels over the drinking water standards, and another well had chromium over the standard.

Southwest Landfill
Summary

Solid Waste Permit number 259 regulates activities at the Southwest landfill. The DEQ has collected and analyzed groundwater samples from the landfill numerous times since 1976.

Data from DEQ's sampling are available in LASAR through the internet at: DEQ Lab LASAR, and can be retrieved using Southwest Landfill as the sampling event name.

Results

The following constituents were detected in many of the wells over the years:

- antimony
- arsenic
- barium
- beryllium
- cadmium
- chromium
- copper
- lead
- mercury
- nitrates
- volatile organic compounds

One well had arsenic levels over the drinking water standard and another had antimony levels over the standard. All remaining detections were below drinking water standards.

The DEQ Solid Waste Program referred the site to the Cleanup Program to evaluate the nature and extent of groundwater contamination. The Cleanup Program issued a Record of Decision (ROD) in September 2000 which specified risk-based concentrations for groundwater constituent compliance levels. The DEQ plans to present the landfill's closure permit renewal for public review sometime in 2006. DEQ intends to incorporate the ROD's risk-based concentrations in the permit.

Box Canyon Landfill
Summary

The DEQ Lab has never conducted a split sampling event at the Box Canyon landfill. The Solid Waste Program referred the site to the Cleanup Program. Jefferson County is currently conducting an investigation to evaluate the nature and extent of groundwater contamination from the closed landfill. Constituents of concern include perchloroethylene, trichloroethene, and their degradation products.

CONCLUSIONS

The Deschutes Basin in central Oregon includes the headwaters of several rivers, and a vulnerable, sole-source groundwater aquifer. While much of the basin area is forest land, groundwater studies have focused on the areas with the highest population and commercial and agricultural activity. The La Pine aquifer is present in an area that has been the focus of growth and development in the basin. Other productive basin aquifers occur in shallow alluvial sediments. These aquifers are vulnerable to pollution from human activities.

Groundwater in the Deschutes Basin is a significant natural resource. There are 2,267 water rights for groundwater use in the basin. Over 370 public water systems, serving over 145,500 people in the basin, use groundwater, either exclusively, or in combination with surface water. Approximately 17,500 domestic water wells provide drinking water to residents without access to public water systems.

Groundwater quality studies in the Deschutes Basin have shown the presence of contaminants over established drinking water standards or Federal Action Levels. These contaminants include the following:

- nitrates
- bacteria
- lead
- thallium
- arsenic
- tetrachloroethylene
- dichloromethane
- 1,2-dichloroethane
- antimony
- chromium

Nitrate contamination is present in the Deschutes Basin, particularly in the Prineville and La Pine areas. In the Prineville area, 65% of the wells had nitrate levels at or above 2 mg/L, which indicates anthropogenic influences. Five of the wells (29%) had nitrate levels exceeding the drinking water standard of 10 mg/L. In the La Pine area, 49% of the wells had nitrate levels at or above 2 mg/L, and four of the wells (10%) had nitrate levels exceeding the drinking water standard. Public Water Systems and Real Estate Transaction testing programs have also reported nitrate detections.

The Oregon Department of Human Services, Drinking Water Program has conducted over 7,000 tests of water quality from private, domestic water wells in the Deschutes Basin. About 3% of these tests were positive for bacteria. Nitrate was detected in 2,905 of these tests, 47 (or less than one percent) of which exceeded the drinking water standard. The bacteria detections are likely due to poor well construction and maintenance activities, rather than a region-wide groundwater problem. Some of these bacteria detections may be due to sampling practices and sample handling procedures. Potential sources for the nitrate and bacteria contamination in areas within the Deschutes Basin include high densities of on-site septic systems in areas with permeable, sandy soils.

DEQ testing of 17 wells in the Prineville area detected one pesticide and one volatile organic compound (VOC), both of which were below drinking water standards. Similar testing of 39 wells in the La Pine area detected pesticides in five wells and VOCs in eight wells. One La

Pine well had a VOC over the drinking water standard. These detections probably represent localized spills or improper handling practices, rather than area-wide contamination problems.

RECOMMENDATIONS

Additional investigation and action are warranted in parts of the Deschutes Basin where nitrate, heavy metal, pesticide, and volatile organic compound (VOC) contamination occurs. Specific recommendations are as follows:

- In the Prineville area, conduct repeat sampling for nitrates, heavy metals, pesticides, and VOCs to determine trends in groundwater concentrations of these constituents.

- In the La Pine area, the DEQ should continue to work with Deschutes County to upgrade existing septic systems, and install new systems that have proven effective at reducing nitrate contamination. This collaborative work should establish a trending network to measure the septic management plan's effectiveness.

- In central Oregon, the DEQ, through its UIC program, should identify and control or eliminate contaminated stormwater discharge into drywells and other underground injection systems.

- Due to sensitive aquifers in the region, the groundwater resource in the Redmond area is vulnerable to contamination from anthropogenic activities. No assessment has been done here, so the DEQ should conduct an initial ambient groundwater sampling event in this area.

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APPENDIX 1

DATA TABLES

TABLE 1
Sampling Results from 1978 – 1979 DEQ La Pine Study

Site	Date	Nitrate	Bacteria
Carter	8/23/1978	6.38	Not App.
16387 4th St.	8/23/1978	8.32	Not App.
Al's Bakery	8/23/1978 9/20/1978 12/4/1978	19.0 19.98 N.A.	Not App. Not App. 2.2
Dr. Dunscombe, D.D.S.	8/23/1978 9/20/1978 12/4/1978	13.6 12.21 N.A.	Not App. Not App. 2.2
Pacific NW Bell Office	8/23/1978	0.57	Not App.
Campbell Well - CL&D	8/23/1978	0.61	Not App.
Kaplan Well - CL&D	8/23/1978	3.19	Not App.
Engburg Well - CL&D	8/23/1978	6.15	Not App.
Dwinnell Well - CL&D	8/23/1978	2.65	Not App.
Lohner Well - CL&D	8/23/1978	0.30	Not App.
Sugar Pine Cafe	9/20/1978 12/4/1978	6.22 N.A.	Not App. 2.2
LaPine Inn	12/4/1978	7.23	Not App.
Highlander Motel	12/4/1978	3.02	Not App.
Frank Williams	12/4/1978	9.09	Not App.
Joseph Burden	9/20/1978 12/4/1978	10.3 N.A.	Not App. 2.2
Claude River	9/20/1978 12/4/1978	12.35 N.A.	Not App. 2.2
Larson	12/4/1978	6.90	Not App.
Grade School	12/4/1978	5.67	Not App.
Donna Reed	12/4/1978	1.25	Not App.
Shields	9/20/1978 12/4/1978	0.21 2.34	Not App. Not App.
Well G (Roan Park)	12/4/1978	0.26	Not App.
Well H (Roan Park)	12/4/1978	0.03	Not App.
Westview Cafe	12/4/1978	0.75	Not App.
Howard Seed	12/4/1978	0.75	Not App.
LaPine Reality	12/4/1978	3.95	Not App.
Russell Industries	12/4/1978	6.97	Not App.
LaPine Bldg. Supply	12/4/1978	4.67	Not App.
Ardeth Reynolds	12/4/1978	13.50	Not App.

Lee Kennel	12/4/1978	0.25	Not App.
Midstate Electric	12/4/1978	0.87	Not App.
LaPine Hwy. Center (Well 1)	1/17/1979	9.23	Not App.
LaPine Hwy. Center (Well 2)	1/17/1979	12.30	Not App.
Aspen Alley (Hair Nook)	1/17/1979	1.30	Not App.
LaPine Texaco	1/17/1979	25.80	Not App.
First National Bank	1/17/1979	5.64	Not App.
LaPine Trailer Park	1/17/1979	4.25	Not App.
Rapp Clinic	1/17/1979	3.57	Not App.
Borden	1/17/1979	8.69	Not App.
Bob Nash	1/17/1979	2.11	Not App.
Alpine Foods	1/17/1979	3.82	Not App.
Highlander Trailer Park	1/17/1979	5.41	Not App.
Frontier Deli	1/17/1979	12.90	Not App.
Cascade Realty	1/17/1979	8.49	Not App.
Arthur Skidgel	1/17/1979	6.71	Not App.
Mike Lambert	1/17/1979	8.14	Not App.
Simpson	1/17/1979	6.90	Not App.
NOTES:			
Nitrate values in mg/L			
Bacteria values in number of colonies per 100 ml			
Not App. = Not Applicable			

Table 2.
Sampling Results from 1982 La Pine Study

Ponderosa Pines Well #2				
3/19/1979				
Constituent	**Concentration (mg/L)**			
Alkalinity as $CaCO_3$	48			
Arsenic	<0.005			
Calcium	4.7			
Chloride	5.5			
Coliform, Total (#/100 ml)	0			
Fluoride	0.72			
Hardness as $CaCO_3$	30			

Iron	0.08			
Manganese	0.002			
Magnesium	4.5			
Nitrate Nitrogen	0.28			
pH (S.U.)	7.6			
Silica	17			
Sodium	7.8			
Total Solids	166			
Volatile Solids	61			
Sulfate	2.5			
Turbidity (FTU)	2.0			
Color (Color Units)	5			
Sunriver Properties Well #2				
Constituent	**Mean (mg/L)**	**Max. (mg/L)**	**Min. (mg/L)**	**# of samples**
Turbidity (JTU)	1	1	1	3
Total Solids	99	106	93	3
Volatile Solids	27	30	24	3
Carbon Dioxide	1.8	3	1	3
pH (S.U.)	7.8	8	7.7	3
Alkalinity as $CaCO_3$	47	47	47	3
Hardness as $CaCO_3$	29.2	29.5	29	3
Calcium	5.3	5.8	4.4	3
Magnesium	4.0	4.6	3.6	3
Iron	-	<0.05		3
Manganese	-	0.05	<0.05	3
Arsenic	-	0.006	<0.005	3
Conductance (uMhos/cm)	121	126	114	3
Chloride	3.2	4.8	1.6	3
Sodium	11.1	12.4	9	3
Potassium	1.6	2.0	1.0	3
Fluoride	0.2	0.42	0.06	3
Ortho Phosphate	0.57	0.73	0.45	3
Sulfate	2.6	3.7	0.6	3
Silica	31.2	32.5	29	3
Aluminum	-	0.03	<0.01	3
Ammonia Nitrogen	-	0.10	<0.01	3

Nitrite Nitrogen	-	0.03	<0.01	3
Nitrate Nitrogen	0.05	0.08	0.03	3
Color (color units)	1.7	5	0	3
La Pine School				
10/13/1978				
Constituent	**Concentration (mg/L)**			
Alkalinity as $CaCO_3$	992			
Arsenic	0.009			
Calcium	172			
Chloride	5.5			
Coliform, Total (#/100 mg/L)	0			
Fluoride	0.56			
Hardness as $CaCO_3$	8.19			
Iron	3.9			
Manganese	0.29			
Magnesium	95			
Nitrate Nitrogen	0.13			
pH (S.U.)	7.8			
Silica	18			
Sodium	170			
Total Solids	1488			
Volatile Solids	640			
Sulfate	31			
Turbidity (FTU)	68			
Color (Color Units)	50			
Glenwood Land & Water Company				
8/2/1978				
Constituent	**Concentration (mg/L)***			
Alkalinity as $CaCO_3$	596			
Arsenic	<0.005			
Calcium	45			
Conductance (uMhos/cm)	1074			
Fluoride	0.2			
Hardness as $CaCO_3$	329			

Iron	5.3			
Manganese	0.18			
Magnesium	40			
Nitrate Nitrogen	0.04			
Ammonia Nitrogen	31.9			
pH (S.U.)	7.4			
Sodium	92			
Total Solids	571			
Sulfate	2.0			
Turbidity (FTU)	46			
Color (Color Units)	40			
Potassium	5.4			
Phosphate - as P	0.137			
* Unfiltered				
Glenwood Land & Water Company				
8/2/1978				
Constituent	**Concentration (mg/L)***			
Alkalinity as $CaCO_3$	644			
Arsenic	<0.005			
Calcium	43.6			
Chloride	18			
Conductance (uMhos/cm)	1127			
Fluoride	0.3			
Hardness as $CaCO_3$	353			
Iron	5.9			
Manganese	0.19			
Magnesium	40			
Nitrate Nitrogen	0.03			
Ammonia Nitrogen	31.9			
pH (S.U.)	7.7			
Sodium	101			
Total Solids	630			
Sulfate	1.7			
Turbidity (FTU)	12			
Color (Color Units)	30			
Potassium	5.5			

Phosphate - as P	0.961			
* After Fiber Filter				
Glenwood Land & Water Company				
8/2/1978				
Constituent	**Concentration (mg/L)***			
Alkalinity (Bicarbonate) as $CaCO_3$	608			
Arsenic	<0.005			
Calcium	43.6			
Chloride	18.7			
Conductance (uMhos/cm)	1100			
Fluoride	0.2			
Hardness as $CaCO_3$	330			
Iron	3.5			
Manganese	0.18			
Magnesium	40			
Nitrate Nitrogen	0.14			
Ammonia Nitrogen	32.7			
pH (S.U.)	7.6			
Sodium	104			
Total Solids	615			
Sulfate	1.7			
Turbidity (FTU)	8			
Color (Color Units)	30			
Potassium	5.5			
Phosphate - as P	0.603			
* After Charcoal Filter				
Oregon Water Wonderland Unit 1				
11/14/1969				
Constituent	**Concentration (mg/L)***			
Alkalinity (Bicarbonate) as $CaCO_3$	143			
Arsenic	0.009			
Calcium	8.3			
Chloride	2.5			

Fluoride	0.29			
Hardness as $CaCO_3$	60			
Iron	2.4			
Manganese	0.16			
Magnesium	9.6			
Nitrate Nitrogen	0.38			
Silica	13.1			
Sodium	40.0			
Total Solids	170			
Sulfate	2.2			
Aluminum	1.0			
Potassium	2.8			
* water from 6 wells, 65' to 686' deep				
Ponderosa Pines Well #1				
4/16/1971				
Constituent	**Concentration (mg/L)**			
Alkalinity (Carbonate) as $CaCO_3$	86			
Arsenic	0.01			
Calcium	26			
Chloride	4.2			
Fluoride	0.17			
Hardness as $CaCO_3$	70			
Iron	0.2			
Manganese	0.01			
Magnesium	1.0			
Nitrate Nitrogen	0.45			
Nitrite Nitrogen	0.03			
pH (S.U.)	10.0			
Silica	45			
Sodium	8.1			
Total Solids	134			
Volatile Solids	36			
Sulfate	1.6			
Potassium	2.0			
Aluminum	0.04			

Stage Stop				
12/26/1973				
Constituent	**Concentration (mg/L)**			
Alkalinity as $CaCO_3$	58.8			
Arsenic	-			
Calcium	9.0			
Chloride	3.7			
Fluoride	0.24			
Hardness as $CaCO_3$	55.0			
Iron	0.40			
Manganese	<0.01			
Magnesium	6.0			
Nitrate Nitrogen	0.70			
pH (S.U.)	6.7			
Silica	43.0			
Sodium	9.0			
Total Solids	106.0			
Volatile Solids	68.0			
Sulfate	<0.01			
Turbidity (FTU)	8.0			
Potassium	0.70			

Table 3.
Sampling Results from Shields Disposal Site

Shields Septic Disposal Site (Well 1)				
Constituent (mg/L, unless shown)	**Mean**	**Max.**	**Min.**	**# of samples**
Ammonia Nitrogen	0.12	0.27	0.02	3
Nitrate Nitrogen	0.59	1.5	0.10	3
Chloride	2.2	3.0	1.7	3
Conductance (uMhos/cm)	-	234	217	2
Total coliform (#/100 ml)	-	2200	<100	3
Fecal coliform (#/100 ml)	-	<10	-	3
Yeserinia enterocolitica - present				
Entero agglomerulans - present				

Shields Septic Disposal Site (Well 2)				
Constituent (mg/L, unless shown)	**Mean**	**Max.**	**Min.**	**# of samples**
Ammonia Nitrogen	-	0.12	0.08	2
Nitrate Nitrogen	-	0.17	0.16	2
Chloride	-	4.2	2.0	2
Conductance (uMhos/cm)	-	207	160	2
Total coliform (#/100 ml)	-	140,000	<100	2
Fecal coliform (#/100 ml)	-	<100	<10	2
Yeserinia enterocolitica - absent				
Entero agglomerulans - present				
Shields Septic Disposal Site (Well 3)				
Constituent (mg/L, unless shown)	**Mean**	**Max.**	**Min.**	**# of samples**
Ammonia Nitrogen	-	0.24	0.16	2
Nitrate Nitrogen	-	4.2	0.09	2
Chloride	-	6.0	5.4	2
Conductance (uMhos/cm)	-	246	-	1
Total coliform (#/100 ml)	-	140,000	<100	2
Fecal coliform (#/100 ml)	-	<100	<10	2
Yeserinia enterocolitica - present				
Entero agglomerulans - present				
Shields Septic Disposal Site (Well 4)				
Constituent (mg/L, unless shown)	**Mean**	**Max.**	**Min.**	**# of samples**
Ammonia Nitrogen	0.13	0.25	0.04	3
Nitrate Nitrogen	1.12	3.2	0.06	3
Chloride	6.0	7.0	5.0	3
Conductance (uMhos/cm)	-	218	192	2
Total coliform (#/100 ml)	-	88,000	<100	3
Fecal coliform (#/100 ml)	-	<100	<10	3
Yeserinia enterocolitica - absent				
Entero agglomerulans - present				

Analyte (1)	Well I.D. (LASAR No.)												
	14687	14688	14689	14690 (3)	14691	14692	14693	14694	14695	14696	14697	14698	14699
Sample Date	6/29/1993	6/29/1993	6/29/1993	6/29/1993	6/29/1993	6/29/1993	6/30/1993	6/30/1993	6/30/1993	6/30/1993	6/30/1993	6/30/1993	6/30/1993
Physical/Chemical Properties													
Alkalinity	304	272	293	298	372	572	250	262	237	325	218	221	333
COD	<5	<5	<5	<5	8	10	<5	<5	<5	<5	5	<5	<5
Conductivity (umhos/cm)	640	643	590	643	794	1386	595	800	562	774	614	484	643
Hardness	230	260	160	250	290	250	220	310	210	340	140	190	240
pH (S.U.)	7.8	7.4	8	7.6	7.9	7.8	7.8	7.7	7.7	8.0	8.1	7.9	7.6
Temperature	12.0	14.0	13.0	12.5	13.0	13.5	13.3	14.0	14.3	12.5	13.0	13.0	14.0
Total Dissolved Solids	430	420	390	440	500	930	390	540	330	520	420	310	420
Total Organic Carbon	2	1	2	2	4	6	2	2	1	2	2	1	2
Turbidity (NTU)	1	<1	2	3	1	<1	<1	<1	<1	<1	3	8	2
Common Ions													
Calcium, Total	56	64	36	61	64	55	60	78	49	77	33	43	54
Chloride	12	19	10.0	26	19	59	14	16	5.9	9.3	14	13	10
Fluoride	0.3	0.3	0.4	0.3	0.4	0.2	0.6	0.5	0.3	0.4	0.6	0.2	0.2
Magnesium, Total	23	24	16	24	31	27	17	27	22	36	14	21	26
Manganese, Total	<0.01	<0.01	0.18	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.03	0.63	1.3
Potassium, Total	2.8	2.4	3.6	2.7	4.2	8.1	0.9	3.6	3.4	3.2	3.0	5.1	5.5
Sodium, Total	66	48	92	71	86	250	58.0	68	40	56	92	34	65
Sulfate	40.0	52	33	49	38	70.0	35	65	27	39	39	29	25
Metals													
Aluminum, Total	<0.1	<0.1	<0.1	<0.1	<0.1	5.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, Total	<0.005	<0.005	<0.005	<0.005	<0.005	0.014	0.009	<0.005	<0.005	<0.005	0.010	<0.005	<0.005
Barium, Total	0.03	0.03	0.03	<0.03	0.04	0.04	<0.03	0.03	<0.03	0.05	<0.03	0.04	0.03
Beryllium, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	<0.03	0.09	0.04	0.04	0.07	0.45	<0.03	<0.03	<0.03	<0.03	0.08	<0.03	<0.03
Cadmium, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium, Total	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Cobalt, Total	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Copper, Total	<0.02	<0.02	<0.02	<0.02	0.09	<0.02	<0.02	0.04	0.04	<0.02	0.08	<0.02	<0.02
Iron, Total	0.06	<0.04	0.45	0.29	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	0.38	1.6	0.17
Lanthanum, Total	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lithium, Total	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Molybdenum, Total	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel, Total	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Selenium, Total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silicon as Silica (SiO2)	49	47	47	45	51	48	53	51	48	50	50	55	49
Silver, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, Total	<0.03	<0.03	<0.03	<0.03	0.09	0.13	<0.03	0.03	<0.03	0.04	0.10	<0.03	<0.03
Zinc, Total	<0.02	0.03	0.06	<0.02	0.03	0.04	<0.02	0.08	<0.02	<0.02	1.3	<0.02	1.2
Nutrients													
Ammonia as N	<0.02	0.02	0.26	0.02	0.03	<0.02	0.03	0.02	<0.02	<0.02	0.02	1.41	0.05
Nitrate & Nitrite as N	4.1	3.7	0.19	0.35	4.2	22	3.6	23	3.9	20	15	0.03	1.6
Phosphate, Total	0.14	0.17	0.15	0.10	0.11	1.8	0.13	0.09	0.17	0.12	0.27	0.25	0.28
Total Kjeldahl Nitrogen	0.2	0.2	0.3	<0.2	0.4	0.6	0.2	0.2	<0.2	0.3	0.3	1.4	0.2
Pesticides													
Aldicarb	<0.0036	<0.0036	<0.0036	0.0001	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036	<0.0036
Carbofuran	<0.0074	<0.0074	<0.0074	<0.0074	<0.0074	<0.0074	<0.0074	<0.0074	<0.0074	<0.0074	<0.0074	<0.0074	<0.0074
Oxamyl	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064	<0.0064
Atrazine	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Bromacil	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
Carboxin	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006	<0.006
Metribuzin	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Simazine	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Diuron	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
2,4-D	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Dicamba	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Dinoseb	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Volatile Organic Compounds													
EPA 8260 VOCs	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	Toluene 0.0035	N.D.	N.D.	N.D.
NOTES:													
(1) Values are in mg/L (parts per million).													
(2) N.D. = None Detected.													
(3) Results from duplicate samples (i.e., two samples from one well) were averaged into one number for inclusion in this table.													

Table 4. Sampling Results from 1993 DEQ Prineville Study

Table 5. Sampling Results from 1993 La Pine Study

Analyte (1)					**Well I.D. (LASAR No.)**				
LASAR #	14675	14521	14522	14523	14524	14525	14526	14527	14528
Sample Date	5/24/1993	5/24/1993	5/24/1993	5/24/1993	5/25/1993	5/25/1993	5/25/1993	5/25/1993	5/25/1993
Physical/Chemical Properties									
Alkalinity	120	74	43	42	39	57	51	51	37
COD	5	<5	<5	<5	<5	7	5	<5	<5
Conductivity (umhos/cm)	324	322	153	85	214	254	261	121	176
Hardness	140	120	54	31	74	79	85	44	49
pH (S.U.)	7.2	6.8	7.4	7.5	7.0	7.1	6.7	7.4	6.5
Temperature	11.0	8.5	9.0	9.0	12.0	12.0	11.0	12.5	12.0
Total Dissolved Solids	250	280	150	100	180	210	220	120	160
Total Organic Carbon	2	1	<1	<1	1	2	2	<1	1
Turbidity (NTU)	4	<1	<1	<1	<1	<1	<1	<1	<1
Common Ions									
Calcium, Total	24	20	9.3	5.0	14	15	16	7.8	9.3
Chloride	36	27	9.2	1.6	13	27	21	2.9	3.5
Magnesium, Total	20	16	7.6	4.4	9.4	10	11	6.0	6.2
Manganese, Total	0.86	<0.01	0.01	<0.01	<0.01	0.02	<0.01	0.02	<0.01
Potassium, Total	1.9	4.8	1.4	1.9	4.1	4.5	5.0	2.7	6.0
Sodium, Total	15	18	10	7.8	12	16	15	8.3	11
Sulfate	7.3	7.7	5.2	2.5	15.0	6.5	16	3.5	8.6
Metals									
Aluminum, Total	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Arsenic, Total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Barium, Total	<0.03	<0.03	0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Beryllium, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Boron	<0.03	<0.03	<0.03	<0.03	<0.03	0.04	<0.03	<0.03	<0.03
Cadmium, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Chromium, Total	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Cobalt, Total	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
Copper, Total	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.17	<0.02	<0.02
Iron, Total	3.5	<0.04	<0.04	0.05	0.04	<0.04	<0.04	0.07	0.08
Lanthanum, Total	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Lead, Total	<0.005	0.009	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Lithium, Total	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Mercury, Total	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Molybdenum, Total	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Nickel, Total	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
Selenium, Total	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Silicon as Silica (SiO2)	49	54	56	54	58	62	66	60	60
Silver, Total	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Vanadium, Total	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
Zinc, Total	<0.02	<0.02	0.09	<0.02	0.07	<0.02	0.03	<0.02	<0.02
Nutrients									
Ammonia as N	0.02	<0.02	<0.02	<0.02	0.02	0.02	0.06	0.02	0.02
Nitrate & Nitrite as N	<0.02	11	4.4	0.78	8.0	4.9	6.5	1.6	1.6
Phosphate, Total	0.21	0.09	0.25	0.19	0.08	0.14	0.12	0.23	0.23
Total Kjeldahl Nitrogen	<0.2	0.2	<0.2	<0.2	<0.2	0.5	1.4	<0.2	<0.2
Pesticides									
Atrazine	<0.0001	<0.0001	<0.0001	<0.0001	0.0004	<0.0001	<0.0001	<0.0001	<0.0001
Bromacil	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022
Diuron	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Diclobenil	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006
2,4-D	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Dicamba	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Picloram	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Volatile Organic Compounds									
EPA 8260 VOCs	1,2-Dichloroethane 0.019, 1,2-Dimethlybenzene 0.038, 1,2,4-Trimethylbenzene 0.008	1,4/1,3-Dimethylbenzene 0.0006	N.D.	N.D.	1,1,1-Trichloroethane 0.001	Benzene 0.090, Ethyl Benzene 0.0013, 1,4/1,3-Dimethylbenzene 0.0017, 1,2-Dimethlybenzene 0.0034, 1,2,4-Trimethlybenzene 0.0018	N.D.	N.D.	N.D.
NOTES:									
(1) Values are in mg/L (parts per million).									
(2) N.D. = None Detected.									
(3) Results from duplicate samples (i.e., two samples from one well) were averaged into one number for inclusion in this table.									

14570	14580	14591	14602	14613 (3)	14624	14633	14642	14524	14652	14521	14522	14523 (3)	14658	14659
5/25/1993	5/26/1993	5/26/1993	5/26/1993	5/26/1993	5/26/1993	5/26/1993	5/26/1993	7/12/1993	7/12/1993	7/12/1993	7/12/1993	7/12/1993	7/13/1993	7/13/1993
89	61	70	34	43	34	103	74	38	38	75	43	42	27	49
<5	<5	<5	<5	<5	<5	5	<5	<5	<5	5	3	<5	8	6
371	212	270	97	111	195	344	237	215	236	315	126	89	321	92
120	68	94	31	37	58	130	87	74	79	120	45	31	84	33
6.9	6.7	6.8	7.3	7.4	6.8	7.5	7.2	7.0	7.0	6.8	7.3	7.3	6.7	7.5
10.5	12.0	9.0	9.5	10.0	9.0	9.0	10.0	10.0	10.0	7.5	8.5	9.0	8.5	8.5
260	160	200	110	120	170	250	180	200	210	260	110	99	250	91
2	1	1	<1	<1	1	1	<1	1	1	1	<1	<1	2	<1
<1	<1	<1	<1	<1	<1	20	<1	<1	<1	<1	<1	<1	<1	1
22	13	18	5.6	6.6	11	21	15	14	15	21	7.7	5.2	14	5.3
18	11	14	3.3	5.0	9.5	46	12	14	16	29	5.5	1.5	33	1.0
15	8.6	12	4.2	5.0	7.3	20	12	9.6	10	17	6.3	4.6	12	4.8
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.76	0.04	<0.01	<0.01	<0.01	0.01	<0.01	<0.01	0.20
6.0	4.3	4.8	2.1	2.1	4.1	1.4	1.4	4.1	4.6	4.9	1.5	1.6	5.3	1.8
26	11	14	6.9	7.6	14	14	14.0	12	14	18	9	7.8	27	6.9
22	11	16	4.6	5.5	22	6.2	6.3	16	19	9.4	4.1	2.8	13	2.7
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.3	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.09	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
<0.04	<0.04	<0.04	0.06	<0.04	<0.04	5.1	0.06	<0.04	0.04	<0.04	<0.04	<0.04	<0.04	1.0
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
58	60	59	55	52	61	48	60	56	56	54	46	51	60	44
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.15	<0.02	<0.02	0.38	0.03	0.09	<0.02	0.02	<0.02
0.03	<0.02	<0.02	0.02	0.03	<0.02	0.25	0.02	0.02	0.02	0.02	0.03	0.02	0.02	0.36
14	3.8	6.2	1.4	0.91	4.8	0.0	6.8	8.7	8.3	10	2.8	0.80	16	0.03
0.11	0.16	0.12	0.23	0.26	0.37	0.34	0.10	0.09	0.09	0.09	0.26	0.19	0.07	0.38
0.2	<0.2	0.2	<0.2	0.2	0.2	0.3	<0.2	<0.2	0.2	0.2	0.2	<0.2	0.2	0.4
<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.00019	0.0002	0.00011	<0.0001	<0.0001	0.00108	<0.0001
<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0022	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0006	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007
<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	0.0002	0.0007	<0.0001	<0.0001	<0.0001	0.0035	<0.0001
<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.	1,4/1,3-Dimethylbenzene 0.008	1,1,1-Trichloroethane 0.0009	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

14664	14665 (3)	14666	14667	14668	14675	14633	14669	14670	14671	14673	14672 (3)	14674
7/13/1993	7/13/1993	7/13/1993	7/13/1993	7/13/1993	7/14/1993	7/14/1993	7/14/1993	7/14/1993	7/14/1993	7/14/1993	7/14/1993	7/14/1993
42	39	41	41	37	116	143	35	59	70	83	53	61
<5	<5	<5	<5	<5	8	11	<5	<5	19	8	10	<5
113	83	82	90	81	331	547	104	119	128	159	108	123
37	30	30	33	22	150	240	36	45	70	40	43	46
7.3	7.4	7.1	7.4	8.5	7.4	7.4	7.1	7.5	7.0	7.4	7.3	7.5
8.5	8.5	8.0	8.0	8.5	11.0	11.0	7.5	9.0	8.0	8.0	8.0	8.5
120	93	89	100	72	220	300	110	110	160	110	100	100
<1	<1	<1	<1	<1	1	2	<1	<1	6	2	4	1
<1	<1	1	1	1	1	31	<1	1	<1	6	<1	<1
7.3	5.6	5.3	6.6	4.3	23	37	7.0	7.0	9.6	8.3	7.3	6.7
3.4	1.1	1.0	0.7	1.4	34	96	3.7	1.1	11	1.6	1.7	1.1
4.6	3.9	4.0	4.0	2.8	22	35	4.5	6.7	11	4.8	5.0	7.1
<0.01	<0.01	<0.01	<0.01	<0.01	0.71	1.3	<0.01	0.14	<0.01	0.36	<0.01	<0.01
2.9	2.4	2.4	2.5	1.1	1.7	1.7	2.7	1.6	3.1	1.5	2.2	1.7
8.2	6.6	6.8	6.4	9.7	15	18	7.3	9.5	16	16	8.7	10
3.2	1.8	0.8	0.6	1.0	8.2	9.9	4.2	4.7	5.7	4.7	1.5	1.4
<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06
<0.02	<0.02	0.02	<0.02	<0.02	0.03	0.03	0.03	0.03	<0.02	<0.02	<0.02	<0.02
<0.04	<0.04	0.10	0.07	0.11	0.62	6.2	0.04	0.81	<0.04	2.9	2.9	0.09
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04
<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
50	48	52	48	26	50	47	51	48	50	44	44	45
<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03
0.03	<0.02	0.06	0.03	<0.02	<0.02	0.16	<0.02	<0.02	<0.02	0.03	<0.02	<0.02
0.02	0.02	0.02	0.02	0.06	0.19	0.24	0.02	0.09	0.02	3.1	0.09	<0.02
1.8	0.68	0.15	1.2	0.59	0.02	0.04	2.2	<0.02	2.6	<0.02	0.14	0.36
0.20	0.23	0.20	0.11	0.22	0.04	0.21	0.16	0.46	0.12	1.1	0.22	0.27
<0.2	<0.2	<0.2	<0.2	<0.2	0.2	0.3	<0.2	<0.2	0.3	2.9	0.2	<0.2
0.00024	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015	<0.0015
<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004	<0.0004
<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007	<0.0007
<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
N.D.	N.D.	N.D.	N.D.	N.D.	Toluene 0.038, Ethyl Benzene 0.048, 1,2-Dimethlybenzene 0.036, 1,2,4-Trimethylbenzene 0.016	1,2-Dichloroethane 0.0318, Ethyl Benzene 0.0046, 1,4/1,3-Dimethylbenzene 0.01025	N.D.	N.D.	N.D.	N.D.	N.D.	N.D.

Table 6. Sampling Results from 1994-1995 Study					
Well I.D.	**Date**	**Conductivity (umhos/cm)**	**Depth to Water (ft)**	**Temp. (^{o}C)**	**Nitrate as N (mg/L)**
14718	9/20/1994	324	N.A.	8.0	1.3
14719	9/20/1994	85	42.54	7.0	<0.1
14720	9/20/1994	83	34.35	7.8	1.0
14627	9/20/1994	77	44.39	7.9	1.9
14721	9/21/1994	342	13.23	11.6	5.1
14722	9/21/1994	351	11.95	15.0	4.6
14723	9/21/1994	169	N.A.	10.5	4.6
14724	9/21/1994	207	10.39	12.5	3.2
14724	9/27/1994	209	10.42	15.0	3.5
14725	9/21/1994	182	7.49	8.5	1.1
14716	9/19/1994	117	41.62	8.0	0.3
14717	9/19/1994	94	31.18	8.3	<0.1
14728	9/22/1994	96	37.13	9.9	1.8
14729	9/22/1994	85	38.42	10.0	1.0
14730	9/22/1994	66	49.67	11.9	1.4
14731	9/22/1994	103	26.04	12.5	1.7
14530	9/22/1994	129	25.97	12.2	2.7
14531	9/22/1994	97	12.72	10.8	1.4
14532	9/22/1994	96	17.92	12.2	0.7
N.A.	9/22/1994	N.A.	15.61	N.A.	N.A.
N.A.	9/22/1994	143	12.68	8.0	1.0
N.A.	9/22/1994	608	N.A.	7.0	1.1
N.A.	9/22/1994	177	14.54	8.0	1.2
N.A.	9/22/1994	244	52.03	9.0	0.9
N.A.	9/22/1994	174	14.79	7.0	0.8
N.A.	9/22/1994	231	17.11	8.0	1.0
N.A.	9/22/1994	497	3.10	8.0	0.70
N.A.	9/22/1994	541	6.80	7.5	1.3
N.A.	9/22/1994	122	5.12	8.0	1.5
N.A.	9/21/1994	527	19.46	9.0	0.9
N.A.	9/21/1994	452	30.50	9.0	0.7
N.A.	9/21/1994	124	23.50	9.0	2.0
N.A.	9/21/1994	135	41.07	8.0	0.7
N.A.	9/21/1994	292	9.63	8.0	1.4
N.A.	9/21/1994	186	13.72	7.0	1.2
N.A.	9/21/1994	158	14.20	7.5	0.9
N.A.	9/21/1994	103	13.56	8.0	1.6
N.A.	9/19/1994	96	194.78	9	0.7
N.A.	9/20/1994	130	105.65	10.0	0.5
N.A.	9/20/1994	106	N.A.	9.5	0.3
N.A.	9/20/1994	N.A.	9.00	N.A.	N.A.
N.A.	9/20/1994	120	N.A.	9.5	1.1
N.A.	9/20/1994	104	1.57	8.0	0.0
14716	9/25/1995	118	N.A.	7.1	0.03
14719	9/25/1995	89	N.A.	7.1	0.16
14717	9/25/1995	93	N.A.	7.1	<0.02
14718	9/25/1995	88	N.A.	7.3	0.29
14603	9/29/1994	87	119.73	7	1.1
14603	9/26/1995	96	N.A.	7.9	0.11
23440	9/26/1995	95	N.A.	8.1	0.13
14604	9/29/1994	232	8.14	6.0	1.1
14604	9/26/1995	252	N.A.	7.6	<0.02
23443	9/26/1995	108	N.A.	8.6	0.06
14596	9/30/1994	96	28.03	8.0	1.0
14596	9/26/1995	101	N.A.	8.2	0.06
14598	9/30/1994	200	19.19	9.0	3.8
14598	9/26/1995	230	N.A.	8.8	4.4
14605	9/29/1994	145	16.04	7.0	0.9
14605	9/27/1995	154	6.68	7.5	<0.02

14595	9/30/1994	99	11.07	7.0	0.6
14595	9/27/1995	110	11.49	7.6	<0.02
14597	9/30/1994	96	16.56	7.0	0.5
14597	9/27/1995	106	N.A.	7.6	<0.02
10000	9/27/1995	113	1.95	7.9	<0.02
14546	9/27/1995	189	16.73	7.7	<0.02
14547	9/27/1995	253	17.06	8.1	<0.02
14550	9/27/1995	574	6.70	7.8	<0.02
14549	9/27/1995	550	2.72	7.3	<0.02
14551	9/27/1995	115	4.79	11.1	0.07
14726	9/25/1995	132	N.A.	9.0	0.06
14533	9/25/1995	497	N.A.	17.1	8.6
14615	9/27/1994	90	4.24	8.0	1.2
14615	9/25/1995	97	N.A.	8.6	0.06
14727	9/25/1995	164	N.A.	8.0	<0.02
14608	9/28/1994	96	1.42	8.0	1.1
14608	9/25/1995	101	N.A.	8.3	0.06
14609	9/28/1994	95	7.60	8.0	1.1
14609	9/25/1995	110	N.A.	7.1	<0.02
14610	9/28/1994	107	11.56	8.0	1.5
14611	9/28/1994	252	8.15	8.0	0.4
14610	9/25/1995	115	N.A.	8.4	0.07
14534	9/25/1995	427	N.A.	8.3	<0.02
14535	9/25/1995	601	N.A.	12.4	2.6
14614	9/27/1994	391	22.45	7.5	1.5
14614	9/25/1995	470	N.A.	7.6	<0.02
14606	9/28/1994	92	12.75	7.0	1.2
14606	9/25/1995	108	N.A.	13.2	<0.02
14607	9/28/1994	N.A.	11.18	N.A.	N.A.
14607	9/25/1995	105	N.A.	8.7	0.04
14579	9/29/194	81	80.06	11.2	0.9
14581	9/29/1994	54	23.84	10.9	0.3
14579	9/25/1995	87	N.A.	8.6	0.08
14578	9/29/1994	84	N.A.	13.2	0.1
14578	9/25/1995	86	N.A.	8.3	0.08
14568	9/28/1994	108	39.20	10.9	1.3
14568	9/25/1995	124	N.A.	22.0	<0.02
14625	9/29/1994	412	14.77	7.0	0.6
14625	9/27/1995	481	15.21	9.1	<0.02
14620	9/26/1994	410	25.01	7.5	1.4
14620	9/27/1995	445	15.29	7.7	<0.02
14621	9/29/1994	245	14.21	8.0	1.0
14621	9/27/1995	274	14.68	7.6	<0.02
14622	9/29/1994	139	4.97	8.0	0.0
14622	9/27/1995	151	4.61	9.6	0.07
14623	9/29/1994	74	17.11	8.0	0.7
14623	9/28/1995	77	19.87	7.5	0.19
14618	9/27/1994	1256	26.24	7.5	N.A.
14618	9/28/1995	1300	24.00	7.9	N.A.
14617	9/27/1994	330	12.71	7.5	1.9
14617	9/28/1995	362	12.57	7.5	<0.02
14601	9/29/1994	231	9.12	8.0	0.7
14601	9/28/1995	277	9.13	7.5	<0.02
14612	9/28/1994	85	35.81	7.0	0.6
14612	9/28/1995	90	36.03	7.2	0.30
14542	9/28/1995	160	14.90	7.9	<0.02
14543	9/28/1995	156	11.35	7.9	<0.02
14536	9/28/1995	122	24.35	8.6	<0.02
14544	9/28/1995	678	23.08	7.5	0.02
14545	9/28/1995	191	13.65	7.8	<0.02
14537	9/28/1995	145	41.44	8.2	0.30
14538	9/28/1995	317	10.17	7.7	<0.02
14540	9/28/1995	190	14.32	7.3	0.54

14541	9/28/1995	173	14.22	7.5	0.59
14619	9/27/1994	404	66.45	10.0	1.5
14619	9/27/1995	400	62.10	12.0	0.81
14599	9/29/1994	88	24.86	7.0	0.4
14599	9/27/1995	95	26.12	8.0	0.16
14600	9/29/1994	85	48.41	6.0	1.1
14600	9/27/1995	93	49.95	6.9	0.10
14730	9/27/1995	74	56.66	7.6	0.20
14731	9/27/1995	127	28.02	8.1	2.8
14627	9/27/1995	88	46.51	7.6	0.13
14729	9/27/1995	92	35.18	7.6	<0.02
14530	9/27/1995	138	28.19	7.9	3.0
14720	9/27/1995	86	38.21	7.4	0.13
14728	9/27/1995	100	39.19	7.7	0.06
14585	9/30/1994	95	30.55	11.9	1.3
14585	9/29/1995	106	30.46	8.0	0.15
14586	9/30/1994	132	21.83	12.0	1.9
14586	9/27/1995	138	23.24	8.0	2.8
14567	9/28/1994	132	17.40	10.1	2.3
14567	9/27/1995	143	18.61	8.2	3.0
14532	9/29/1995	113	19.11	8.6	<0.02
14630	9/29/1995	147	18.72	8.9	1.9
14582	9/29/1994	222	24.53	10.0	6.0
14582	9/27/1995	223	25.30	8.2	5.9
14566	9/28/1994	88	27.95	10.9	2.4
14566	9/27/1995	93	22.72	8.4	0.03
14572	9/28/1994	114	15.55	10.2	1.6
14572	9/29/1995	121	16.38	7.7	0.11
14592	9/30/1994	123	23.45	13.0	2.9
14592	9/28/1995	167	N.A.	8.8	7.4
14593	9/30/1994	108	27.81	11.5	3.3
14593	9/29/1995	109	27.51	8.3	2.5
14576	9/29/1994	95	22.73	10.9	0.9
14577	9/29/1994	100	14.88	10.1	1.1
14576	9/29/1995	105	23.97	6.8	<0.02
14631	9/29/1995	139	31.03	7.4	1.2
14594	9/30/1994	235	18.21	11.0	3.5
14594	9/29/1995	326	12.96	8.6	4.8
14587	9/30/1994	257	56.66	10.1	0.6
14587	9/28/1995	259	59.72	7.8	<0.02
14588	9/30/1994	162	25.57	11.0	0.9
14589	9/30/1994	N.A.	N.A.	N.A.	N.A.
14588	9/28/1995	206	26.84	9.8	0.25
14590	9/30/1994	N.A.	12.22	N.A.	N.A.
14573	9/29/1994	202	12.00	10.0	1.9
14573	9/28/1995	190	11.77	8.7	1.1
14571	9/28/1994	174	9.44	10	2.8
14571	9/28/1995	199	16.31	9.0	3.8
14561	9/27/1994	114	5.30	10.1	1.3
14561	9/28/1995	106	4.62	7.8	<0.02
14552	9/26/1994	97	N.A.	10.8	0.6
14552	9/28/1995	103	N.A.	7.5	<0.02
14553	9/26/1994	96	5.63	10.2	0.1
14553	9/28/1995	90	5.38	7.9	0.12
14560	9/27/1994	69	7.44	10.5	0.9
14560	9/28/1995	67	3.65	8.8	0.04
14558	9/27/1994	115	15.53	10.9	0.7
14558	9/28/1995	123	14.83	7.8	<0.02
14557	9/27/1994	81	14.11	10.8	0.8
14557	9/28/1995	90	14.80	8.7	0.13
14554	9/26/1994	82	15.90	10.2	1.2
14555	9/26/1994	263	5.95	10.2	1.0
14554	9/28/1995	80	15.60	7.6	0.03

14569	9/28/1994	97	16.32	10.0	0.5
14569	9/28/1995	105	15.78	7.7	<0.02
14556	9/27/1994	97	18.00	9.4	1.2
14556	9/28/1995	105	17.58	8.2	0.46
14632	9/28/1995	80	16.51	7.6	0.26
14626	9/29/1994	204	6.50	7.5	0.8
14626	9/27/1995	65	48.40	8.1	0.26
14632	9/27/1995	219	7.15	8.6	0.07
N.A.	10/3/1995	N.A.	35.22	N.A.	N.A.
N.A.	10/3/1995	105	16.07	8.0	0.05
N.A.	10/3/1995	146	N.A.	8.9	1.5
N.A.	10/4/1995	189	12.39	8.1	0.16
N.A.	10/4/1995	120	N.A.	7.6	0.04
N.A.	10/4/1995	122	16.89	8.3	0.88
N.A.	10/4/1995	169	24.75	10.2	4.6
N.A.	10/4/1995	N.A.	14.55	N.A.	N.A.
N.A.	10/4/1995	250	23.82	7.6	1.0
N.A.	10/4/1995	150	14.89	8.8	1.4
N.A.	10/4/1995	108	12.49	8.4	<0.02
N.A.	10/4/1995	94	21.21	7.7	<0.02
N.A.	10/4/1995	118	41.33	7.3	<0.02
N.A.	10/3/1995	75	72.43	8.1	0.4
N.A.	10/3/1995	N.A.	90.40	N.A.	N.A.
N.A.	10/3/1995	N.A.	N.A.	N.A.	<0.02
N.A.	10/3/1995	N.A.	N.A.	N.A.	3.0
14616	9/27/1994	149	11.46	9.0	0.3
14616	10/2/1995	159	25.28	9.3	0.04
14592	10/2/1995	163	22.52	9.6	7.3
14575	9/29/1994	110	20.11	10.0	0.6
14575	10/3/1995	107	21.51	7.4	0.02
14574	9/29/194	N.A.	20.42	N.A.	N.A.
14574	10/3/1995	N.A.	21.24	N.A.	N.A.
14564	9/27/1994	101	23.64	10.0	1.3
14564	10/3/1995	102	24.50	7.1	0.05
14565	9/27/1994	149	17.95	10.9	0.6
14565	10/2/1995	155	17.90	11.1	N.A.
14563	9/27/1994	1229	11.26	10.0	N.A.
14563	10/2/1995	1348	13.93	7.1	0.02
14562	9/27/1994	122	7.14	10.1	0.9
14562	10/3/1995	114	8.37	8.3	0.38
14584	9/30/1994	176	15.5	11.0	0.7
14584	10/3/1995	179	16.07	8.6	<0.02
14583	9/30/1994	95	6.03	10.0	1.6
14583	10/2/1995	100	10.26	8.0	<0.02
14724	10/3/1995	223	10.80	12.3	4.5
14722	10/2/1995	323	10.50	15.4	5.4
14721	10/3/1995	349	14.22	10.4	7.2
14725	10/3/1995	185	8.00	7.6	<0.02
Note: N.A. = Not Available					

Table 7. Results from La Pine On-Site Monitoring Well Testing

Site ID	Well ID	Date	NH4 As N (mg/L)	Nitrate-Nitrite As N (mg/L)	TKN (mg/L)	TN (mg/L)	Chloride (mg/L)	Fecal Coliform	Notes
17348-G	1206	6/5/2001	0.02	4.15	0.5	4.65	9.8	2	
17348-G	1206	9/5/2001	0.02	15.3	0.3	15.6	22	1	
17348-G	1206	11/30/2001	0.03	12.1	0.2	12.3	19	1	TKN is est.
17348-G	1206	3/4/2002	0.1	8.7	0.1	8.8	16	1	TKN <0.2
17348-G	1206	6/3/2002	0.01	21.5	0.2	21.7	25	1	Ammonia <0.02
17348-G	1206	9/4/2002	0.01	20.6	0.2	20.8	24	1	Ammonia <0.02
17348-G	1206	11/18/2002	0.01	21.8	0.1	21.9	23	1	Ammonia <0.02, TKN <0.2
17348-G	1206	3/4/2003	0.01	15.9	0.3	16.2	16	1	NH4AsN <0.02
17348-G	1206	6/2/2003	0.01	20.7	0.1	20.8	20	1	NH4<0.02, TKN<0.2
17348-G	1206	9/16/2003	0.01	19.6	0.3	19.9	19	1	NH4AsN<0.02
17348-G	2004	11/30/2001	0.16	0.18	0.5	0.68	9.5	1	TKN est - sample analysis exceeded holding time
17348-G	2004	3/4/2002	0.2	0.3	0.7	1	11	1	
17348-G	2005	3/7/2001	0	0.02	0.1	0.12	1.8	0	BOD5 is estimate; TKN <0.2
17348-G	2005	3/7/2001	0.02	0.02	0.1	0.12	2	0	BOD5 dilution 3 not run due to insufficient sample. duplicate QA reading; T <0.2
17348-G	2005	6/5/2001	0.06	0.15	0.1	0.25	2	2	TKN <0.2
17348-G	2005	9/5/2001	0.02	0.24	0.1	0.34	1.8	1	TKN <0.2
17348-G	2005	11/28/2001	0.03	0.46	0.1	0.56	1.8	1	TKN <0.2
17348-G	2005	3/4/2002	0	0.1	0.1	0.2	2	1	TKN <0.2
17348-G	2005	6/3/2002	0.01	1.07	0.1	1.17	2.8	1	Ammonia <0.02; TKN <0.2
17348-G	2005	9/4/2002	0.01	0.8	0.1	0.9	3.4	1	Ammonia <0.02, TKN<0.2
17348-G	2005	11/18/2002	0.01	0.41	0.1	0.51	2.8	1	Ammonia <0.02, TKN <0.2

17348-G	2005	3/4/2003	0.01	0.59	0.1	0.69	3.5	1	NH4AsN <0.02, TKN <0.2
17348-G	2005	6/2/2003	0.01	1.57	0.1	1.67	4	1	NH4<0.02, TKN<0.2
17348-G	2005	9/16/2003	0.01	5.05	0.1	5.15	9.7		NH4AsN<0.02, TKN<0.2
17348-G	2005	9/30/2003						2	Bacteria Re-sample
17348-G	2005	9/30/2003						2	QA Duplicate; Bacteria Re-sample
55344-H	2007	9/26/2001	0	0.0056	0.1	0.1	3.9	1	TKN <0.2
55344-H	2007	12/17/2001	0.05	0	0.1	0.1	3.6	1	TKN <0.2
55344-H	2007	3/27/2002	0.1	0	0.1	0.1	4.3	1	TKN <0.2
55344-H	2007	5/21/2002							
55344-H	2007	6/25/2002	0.02	0.01	0.4	0.41	4.8		
55344-H	2007	8/28/2002							
55344-H	2007	9/24/2002	0.03	0.01	0.1	0.11	3.9	1	TKN < 0.2
55344-H	2007	12/18/2002	0.01	0.0088	0.3	0.3088	3.8	1	NH4<0.02, pH is est.
55344-H	2007	3/25/2003	0.02	0.0126	0.1	0.1126	3.9	1	TKN <0.2
55344-H	2007	6/25/2003	0.02	0.0303	0.1	0.1303	3.9	1	TKN<0.2
55344-H	2007	9/2/2003	0.01	0.0075	0.1	0.1075	4	1	NH4AsN<0.02, TKN<0.2
55344-H	2008	9/26/2001	0	0.33	0.2	0.53	4		
55344-H	2008	10/3/2001						2	Bacteria Re-sample
55344-H	2008	10/3/2001						2	Bacteria Re-sample; QA Duplicate
55344-H	2008	12/17/2001	0	0.24	0.3	0.54	3.7	1	
55344-H	2008	3/27/2002	0	0.2	0.1	0.3	4.4	2	TKN <0.2
55344-H	2008	5/21/2002							
55344-H	2008	6/25/2002	0.02	0.15	0.2	0.35	4.5	1	

55344-H	2008	8/28/2002							
55344-H	2008	9/24/2002	0.03	0.12	0.1	0.22	8.9	1	TKN < 0.2
55344-H	2008	12/18/2002	0.01	0.0985	0.2	0.2985	3.1	1	NH4<0.02, pH is est.
55344-H	2008	3/25/2003	0.04	0.106	0.1	0.206	3.2	1	TKN <0.2
55344-H	2008	6/25/2003	0.01	0.0955	0.1	0.1955	3.2	1	Ammonia<0.02, TKN<0.2
55344-H	2008	9/2/2003	0.01	0.0583	0.1	0.1583	3.3	1	NH4AsN<0.02, TKN<0.2
55344-H	2009	9/26/2001	0	4.32	0.3	4.62	14		BOD5 is estimate.
55344-H	2009	10/3/2001						2	Bacteria Re-sample
55344-H	2009	12/17/2001	0	4.16	0.3	4.46	12	2	
55344-H	2009	3/27/2002	23	65.9	32	97.9	37	400	
55344-H	2009	3/27/2002	0	3.6	0.3	3.9	10	2	
55344-H	2009	5/21/2002							
55344-H	2009	6/25/2002	0.03	3.42	0.4	3.82		1	chloride test void
55344-H	2009	8/28/2002							
55344-H	2009	9/24/2002	0.03	3.22	0.3	3.52	14	1	
55344-H	2009	12/18/2002	0.02	2.99	0.3	3.29	11	1	pH is est.
55344-H	2009	3/25/2003	0.01	2.94	0.3	3.24	10	1	NH4AsN <0.02
55344-H	2009	6/24/2003	0.03	2.61	0.1	2.71	12	1	TKN<0.2
55344-H	2009	9/2/2003	0.01	2.63	0.1	2.73	14	1	NH4AsN<0.02, TKN<0.2
54858-R	2011	3/14/2001	0.03	0.04	0.1	0.14	17	2	TKN <0.2
54858-R	2011	6/13/2001	0	0.04	0.1	0.14	15	2	TKN <0.2
54858-R	2011	9/11/2001	0	0.04	0.1	0.14	16	1	TKN <0.2
54858-	2011	12/3/2001	0	0	0.1	0.1	14	1	TKN <0.2 est.

R									
54858-R	2011	3/13/2002	0	0	0.1	0.1	16	1	TKN <0.2
54858-R	2011	6/12/2002	0.01	0.04	0.1	0.14	16	1	TKN <0.2, ammonia <0.02
54858-R	2011	9/11/2002	0.01	0.06	0.1	0.16	16	1	Ammonia <0.02, TKN<0.2
54858-R	2011	12/2/2002	0.01	0.4	0.1	0.5	14	1	Ammonia <0.02, TKN <0.2
54858-R	2011	3/11/2003	0.02	2.89	0.1	2.99	19	1	TKN <0.2
54858-R	2011	6/11/2003	0.01	2.96	0.1	2.96	17	1	Ammonia<0.02, TKN<0.2
54858-R	2011	9/2/2003	0.01	3.05	0.4	3.45	18	1	NH4AsN<0.02
54858-R	2012	6/13/2001	0	0.03	0.1	0.13	6.3	2	TKN <0.2
54858-R	2012	9/11/2001	0	0.05	0.1	0.15	8	1	TKN <0.2
54858-R	2012	3/13/2002	0	0.1	0.1	0.2	23	1	TKN <0.2
54858-R	2012	6/12/2002	0.01	0.53	0.1	0.63	6.9	1	TKN <0.2, ammonia <0.02
54858-R	2012	9/11/2002	0.03	0.71	0.1	0.81	5.2	1	TKN<0.2
54858-R	2012	12/2/2002							
54858-R	2012	3/11/2003	0.01	1.47	0.1	1.57	5.7	1	NH4AsN <0.02, TKN <0.2
54858-R	2012	6/11/2003	0.01	1.61	0.1	1.61	5.6	1	Ammonia<0.02, TKN<0.2
54858-R	2013	6/13/2001	0.03	0.11	0	0.11	7.5	2	
54858-R	2013	9/11/2001	0	0.19	0.1	0.29	7.6	1	TKN <0.2
54858-R	2013	12/5/2001	0	0.09	0.1	0.19	6.9	1	TKN <0.2 est.
54858-R	2013	3/13/2002	0	0.2	0.1	0.3	7.1	1	TKN <0.2
54858-R	2013	6/12/2002	0.01	0.15	0.1	0.25	8	1	TKN <0.2, ammonia <0.02
54858-R	2013	9/11/2002	0.01	0.51	0.1	0.61	9.2	1	Ammonia <0.02, TKN<0.2
54858-R	2013	12/2/2002	0.01	0.04	0.1	0.14	8.9	1	Ammonia <0.02, TKN <0.2

54858-R	2013	3/11/2003	0.01	0.0856	0.1	0.1856	10	1	NH4AsN <0.02, TKN <0.2
54858-R	2013	6/11/2003	0.01	0.104	0.1	0.104	12	1	Ammonia<0.02, TKN<0.2
54858-R	2013	9/2/2003	0.01	0.345	0.1	0.445	12	1	NH4AsN<0.02, TKN<0.2
17299-H	2015	3/4/2002	0.1	0.1	0.4	0.5	1.6	1	
17299-H	2015	6/5/2002	0.01	0.03	0.4	0.43	1.7	1	ammonia <0.02
17299-H	2015	9/4/2002	0.02	0.18	0.3	0.48	1.7	1	
17299-H	2015	11/18/2002	0.04	0.06	0.3	0.36	1.8	1	
17299-H	2015	3/4/2003	0.03	0.067	0.4	0.467	1.7	1	
17299-H	2015	6/2/2003	0.01	0.0215	0.3	0.3215	2	1	NH4<0.02
17299-H	2015	9/10/2003	0.01	0.0589	0.2	0.2589	2.6	1	NH4AsN<0.02
17299-H	2016	9/6/2001	0	0.04	0.1	0.14	0	1	TKN <0.2
17299-H	2016	6/5/2002	0.01	0.01	0.1	0.11	0.7	1	TKN <0.2, ammonia <0.02
17299-H	2016	9/4/2002	0.01	0.05	0.1	0.15	0.5		Ammonia <0.02, TKN<0.2
17299-H	2016	9/11/2002						2	
17299-H	2016	11/18/2002							Well dry, depth >7.02
17299-H	2016	3/4/2003	0.03	0.133	0.1	0.233	1.2		TKN <0.2
17299-H	2016	3/11/2003						2	bacteria re-sample
17299-H	2016	3/11/2003						2	QA Duplicate; bacteria resample
17299-H	2016	6/2/2003	0.01	0.0584	0.1	0.1584	1	2	NH4<0.02
17299-H	2016	9/10/2003	0.01	0.0291	0.1	0.1291	0.6	2	TKN<0.2, NH4AsN<0.02
17299-H	2017	3/8/2001	0.05	3.13	0.3	3.43	11	2	
17299-H	2017	6/7/2001	0.03	3.51	0.2	3.71	12	2	QA Duplicate
17299-	2017	6/7/2001	0.03	3.55	0.1	3.65	12	2	TKN <0.2

H									
17299-H	2017	9/6/2001	0.03	2.1	0.2	2.3	13	1	
17299-H	2017	3/4/2002	0	4.9	0.3	5.2	15	1	
17299-H	2017	6/5/2002	0.04	3.42	0.1	3.52	12	1	QA duplicate - TKN <0.2
17299-H	2017	6/5/2002	0.03	3.41	0.1	3.51	12	1	TKN <0.2
17299-H	2017	9/4/2002	0.01	0.52	0.1	0.62	7.5	1	Ammonia <0.02, TKN<0.2
17299-H	2017	11/18/2002	0.02	0.18	0.1	0.28	5.4	1	TKN <0.2
17299-H	2017	3/4/2003	0.01	6.57	0.3	6.87	13	1	NH4AsN <0.02
17299-H	2017	6/2/2003	0.01	5.35	0.3	5.65	6.8	1	NH4<0.02
17299-H	2017	9/10/2003	0.01	0.0989	0.1	0.1989	4	1	TKN<0.2, NH4AsN<0.02
53110-A	2027	3/20/2001	0	0.87	0.1	0.97	3.9	2	QA duplicate; TKN <0.2
53110-A	2027	3/20/2001	0.02	0.87	0.1	0.97	3.9	2	TKN <0.2
53110-A	2027	6/19/2001	0.02	0.09	0.1	0.19	3.7	2	TKN <0.2
53110-A	2027	9/18/2001	0.02	0.97	0.1	1.07	3.6	1	TKN <0.2
53110-A	2027	12/10/2001	0	0.98	0.5	1.48	8.6	1	TKN is est.
53110-A	2027	3/19/2002	0	1.8	0.1	1.9	2.8	1	TKN <0.2
53110-A	2027	6/18/2002	0.01	2.2	0.1	2.3	2.9	1	TKN <0.2, ammonia <0.02
53110-A	2027	9/18/2002	0.01	2.29	0.1	2.39	3.2	1	Ammonia <0.02, TKN<0.2
53110-A	2027	12/10/2002	0.01	2.33	0.1	2.43	3.8	1	Ammonia <0.02, TKN <0.2
53110-A	2027	3/18/2003	0.01	2.21	0.3	2.51	3.3	1	NH4AsN <0.02
53110-A	2027	6/17/2003	0.02	2.91	0.1	3.01	3.2	1	TKN<0.2
53110-A	2027	9/16/2003	0.01	2.94	0.1	3.04	2.9	1	NH4AsN<0.02, TKN<0.2
53110-A	2028	3/20/2001	0	0.7	0.1	0.8	1.9	2	TKN <0.2

53110-A	2028	3/19/2002	0	0.9	0.3	1.2	10	1	
53110-A	2029	12/10/2001	0	0.87	0.1	0.97	2.6	1	TKN is est.
53110-A	2029	3/19/2002	0	0.7	0.1	0.8	1.8	1	TKN <0.2
53110-A	2029	6/18/2002	0.03	1.09	0.1	1.19	2.8	1	TKN <0.2
53110-A	2029	9/18/2002	0.01	0.98	0.1	1.08	2.6	1	Ammonia <0.02, TKN<0.2
53110-A	2029	12/10/2002	0.01	0.654	0.1	0.754	2.4	1	Ammonia <0.02, TKN <0.2
53110-A	2029	3/18/2003	0.02	0.513	0.2	0.713	2.4	1	
53110-A	2029	6/17/2003	0.03	0.462	0.1	0.562	4.4	1	TKN<0.2
53110-A	2029	9/16/2003	0.01	0.631	0.1	0.731	4.6	1	NH4AsN<0.02, TKN<0.2
53110-A	2029	9/23/2003						2	Bacteria Re-sample
53110-A	2029	9/23/2003						2	QA Duplicate
17186-H3	2033	3/13/2001	0	2.41	0.1	2.51	2.9	2	TKN <0.2
17186-H3	2033	6/12/2001	0.02	0.58	0.1	0.68	2.2	2	TKN <0.2
17186-H3	2033	9/11/2001	0	0.67	0.1	0.77	2.3	1	TKN <0.2
17186-H3	2033	12/3/2001	0.02	1.42	0.1	1.52	2.6	1	TKN <0.2 est.
17186-H3	2033	3/13/2002	0	2.4	0.1	2.5	13	1	TKN <0.2
17186-H3	2033	6/11/2002	0.01	2.82	0.1	2.92	7.6	1	TKN <0.2, ammonia <0.02
17186-H3	2033	9/10/2002	0.01	2.79	0.1	2.89	5.5	1	Ammonia <0.02, TKN<0.2
17186-H3	2033	12/2/2002	0.01	3.96	0.1	4.06	5.3	1	Ammonia <0.02, TKN <0.2
17186-H3	2033	3/11/2003	0.01	3.01	0.1	3.11	9.6	1	NH4AsN <0.02, TKN <0.2
17186-H3	2033	6/10/2003	0.01	4.28	0.1	4.38	10	1	NH4<0.02, TKN<0.2
17186-H3	2033	9/17/2003	0.01	3.81	0.1	3.91	6.7	1	NH4AsN<0.02, TKN<0.2
52386-	2055	3/20/2001	0.03	7.02	0.1	7.12	9.5	2	TKN <0.2

M									
52386-M	2055	9/18/2001	0	3.52	0.1	3.62	5.2	1	TKN <0.2
52386-M	2055	12/11/2001	0	3.93	0.1	4.03	5.3	1	TKN <0.2 est
52386-M	2055	3/18/2002	0	6.9	0.1	7	9.2	1	TKN <0.2
52386-M	2055	6/17/2002	0.01	6.49	0.4	6.89	9.2	1	ammonia <0.02
52386-M	2055	9/17/2002	0.01	6.78	0.3	7.08	7.6	1	Ammonia <0.02, pH is est.
52386-M	2055	12/9/2002	0.01	6.67	0.7	7.37	6.8	1	Ammonia <0.02
52386-M	2055	3/17/2003	0.02	9.24	0.1	9.34	9.2	1	TKN <0.2
52386-M	2055	6/16/2003	0.04	8.78	0.1	8.88	9.5	1	TKN<0.2
52386-M	2055	9/15/2003	0.01	7.77	0.1	7.87	8	1	TKN<0.2, NH4AsN<0.02
52386-M	2056	3/20/2001	0	3.38	0.2	3.58	15	2	
52386-M	2056	3/18/2002	0	2.5	0.1	2.6	12	1	TKN <0.2
52386-M	2057	3/20/2001	0.05	0.33	0.1	0.43	3.2	2	TKN <0.2
52386-M	2057	6/19/2001	0.02	0.73	0.1	0.83	2.8	2	QA duplicate; TKN <0.2
52386-M	2057	6/19/2001	0	0.73	0.4	1.13	2.9	2	
52386-M	2057	9/18/2001	0.04	0.53	0.1	0.63	2.2	1	TKN <0.2
52386-M	2057	12/11/2001	0.02	0.5	0.1	0.6	2.1	1	TKN <0.2 est.
52386-M	2057	12/11/2001	0.03	0.5	0.1	0.6	1.9	1	QA duplicate; (TKN <0.2 est.)
52386-M	2057	3/18/2002	0	0.5	0.1	0.6	1.9	1	TKN <0.2
52386-M	2057	6/17/2002	0.01	0.17	0.1	0.27	1.8	1	TKN <0.2, ammonia <0.02
52386-M	2057	9/17/2002	0.01	0.99	0.1	1.09	2.6	1	Ammonia <0.02, TKN<0.2, pH is est.
52386-M	2057	12/9/2002	0.01	1.09	0.1	1.19	3.5	1	Ammonia <0.02, TKN <0.2
52386-M	2057	3/17/2003	0.01	0.834	0.1	0.934	3	1	Ammonia <0.02, TKN <0.2

52386-M	2057	6/16/2003	0.01	0.2	0.1	0.3	1.9	1	Ammonia<0.02, TKN<0.2
52386-M	2057	9/15/2003	0.01	0.146	0.1	0.246	1.9	1	TKN<0.2, NH4AsN<0.02
50663-F	2063	3/27/2001	0	2.39	0.1	2.49	22	2	
50663-F	2063	6/26/2001	0.02	2.29	0.1	2.39	24	2	
50663-F	2063	9/25/2001	0	1.88	0.1	1.98	20	1	
50663-F	2063	9/25/2001	0	1.86	0.1	1.96	20	1	
50663-F	2063	12/19/2001	0	5.47	0.1	5.57	24	1	
50663-F	2063	12/19/2001	0	5.4	0.1	5.5	23	1	
50663-F	2063	3/25/2002	0	5	0.1	5.1	23	1	
50663-F	2063	6/24/2002	0.01	4.12	0.1	4.22	23	1	
50663-F	2063	9/23/2002	0.02	4.49	0.1	4.59	27	1	
50663-F	2063	12/16/2002	0.01	4.65	0.1	4.75	31	1	
50663-F	2063	3/24/2003	0.01	5.14	0.1	5.24	26	1	
50663-F	2063	6/23/2003	0.01	3.53	0.1	3.63	21	1	
50663-F	2063	11/18/2003	0.02	5.16	0.1	5.26	21	1	
50663-F	2064	3/27/2001	0.04	0.8	0.1	0.9	12	2	
50663-F	2064	6/26/2001	0.02	1.18	0.1	1.28	12	2	
50663-F	2064	9/25/2001	0	4.12	0.1	4.22	12	1	
50663-F	2064	12/19/2001	0	4.8	0.1	4.9	16	1	
50663-F	2064	3/25/2002	0	5	0.1	5.1	17	1	
50663-F	2064	6/24/2002	0.01	5.11	0.1	5.21	18	1	
50663-F	2064	9/23/2002	0.04	4.77	0.1	4.87	18	1	
50663-F	2064	12/16/2002	0.01	3.8	0.1	3.9	18	1	

50663-F	2064	3/24/2003	0.01	3.28	0.1	3.38	15	1
50663-F	2064	6/23/2003	0.01	2.27	0.1	2.37	13	1
50663-F	2064	9/22/2003	0.03	1.69	0.1	1.79	12	1
50663-F	2064	11/18/2003	0.01	1.49	0.1	1.59	11	1
50663-F	2065	3/27/2001	0.02	0.35	0.1	0.45	4.1	2
50663-F	2065	6/26/2001	0.03	0.49	0.1	0.59	4.3	2
50663-F	2065	9/25/2001	0	0.78	0.1	0.88	5	
50663-F	2065	10/3/2001						2
50663-F	2065	12/19/2001	0	1.37	0.1	1.47	7.4	1
50663-F	2065	3/25/2002	0	1	0.1	1.1	6.7	2
50663-F	2065	6/24/2002	0.01	1.18	0.1	1.28	7.8	1
50663-F	2065	9/23/2002	0.01	1.45	0.1	1.55	7.5	
50663-F	2065	9/25/2002						2
50663-F	2065	12/16/2002	0.01	2.88	0.1	2.98	13	2
50663-F	2065	3/24/2003	0.01	3.35	0.1	3.45	18	1
50663-F	2065	6/23/2003	0.01	2.5	0.1	2.6	14	2
50663-F	2065	9/22/2003	0.01	2.86	0.3	3.16	13	2
50663-F	2065	11/17/2003						
52330-S	2067	3/27/2001	0.03	2.25	0.1	2.35	4.5	2
52330-S	2067	6/26/2001	0.02	2.16	0.1	2.26	4.4	2
52330-S	2067	9/26/2001	0	2.18	0.2	2.38	4.3	1
52330-S	2067	12/19/2001	0	2.22	0.1	2.32	4.3	1
52330-S	2067	3/26/2002	0	2.3	0.1	2.4	4.4	1

52330-S	2067	6/25/2002	0.01	2.41	0.1	2.51	5.5	1
52330-S	2067	9/25/2002	0.01	2.66	0.1	2.76	4.8	1
52330-S	2067	12/17/2002	0.01	2.6	0.1	2.7	5	1
52330-S	2067	3/24/2003	0.01	2.77	0.1	2.87	5.1	1
52330-S	2067	6/24/2003	0.01	2.81	0.1	2.91	5.4	1
52330-S	2067	9/23/2003	0.01	2.88	0.1	2.98	5.5	1
52330-S	2067	11/18/2003	0.01	2.98	0.1	3.08	5.8	1
52330-S	2068	3/27/2001	0.02	3.73	0.1	3.83	7.8	2
52330-S	2068	6/26/2001	0	4	0.1	4.1	9.4	2
52330-S	2068	9/26/2001	0	3.9	0.1	4	9.2	1
52330-S	2068	9/26/2001	0	4	0.3	4.3	9.2	1
52330-S	2068	12/19/2001	0	3.33	0.1	3.43	8.3	1
52330-S	2068	3/26/2002	0	3.7	0.1	3.8	8.4	1
52330-S	2068	6/25/2002	0.04	4.44	0.1	4.54	12	1
52330-S	2068	9/25/2002	0.01	3.78	0.1	3.88	9.9	1
52330-S	2068	12/17/2002	0.01	3.27	0.1	3.37	8.9	1
52330-S	2068	3/24/2003	0.02	3.15	0.3	3.45	8.8	1
52330-S	2068	6/24/2003	0.01	3.03	0.1	3.13	10	1
52330-S	2068	9/23/2003	0.01	6.47	0.1	6.57	12	1
52330-S	2068	11/18/2003	0.01	9.62	0.1	9.72	13	1
52330-S	2069	3/27/2001	0.03	0.74	0.1	0.84	2.1	2
52330-S	2069	3/27/2001	0.02	0.74	0.1	0.84	2.5	2
52330-S	2069	6/26/2001	0	0.7	0.1	0.8	1.9	2

52330-S	2069	6/26/2001	0	0.7	0.1	0.8	1.9	2	
52330-S	2069	9/26/2001	0	0.96	0.1	1.06	1.5	1	
52330-S	2069	12/19/2001	0	0.97	0.1	1.07	2	1	
52330-S	2069	3/26/2002	0	0.9	0.1	1	2.3	1	
52330-S	2069	6/25/2002	0.01	0.95	0.1	1.05	2.5	1	
52330-S	2069	9/25/2002	0.01	1.06	0.1	1.16	1.5	1	
52330-S	2069	12/17/2002	0.01	1.06	0.1	1.16	1.6	1	
52330-S	2069	3/24/2003	0.03	0.974	0.1	1.074	2	1	
52330-S	2069	6/24/2003	0.01	0.955	0.1	1.055	2	1	
52330-S	2069	9/23/2003	0.01	0.962	0.1	1.062	1.4	1	
52330-S	2069	11/18/2003	0.01	1.04	0.1	0	1.5	1	
52509-P	2071	3/21/2001	0	0.62	0.1	0.72	0.9	2	TKN <0.2
52509-P	2071	9/19/2001	0.04	0.56	0.1	0.66	1	2	TKN <0.2
52509-P	2071	12/12/2001	0	0.58	0.1	0.68	20	1	
52509-P	2071	3/18/2002	0	0.6	0.1	0.7	0.8	1	TKN <0.2
52509-P	2071	6/18/2002	0.01	0.68	0.1	0.78	1	1	TKN <0.2, ammonia <0.02
52509-P	2071	9/16/2002	0.01	0.63	0.1	0.73	1	2	Ammonia <0.02, TKN<0.2
52509-P	2071	12/9/2002	0.01	0.706	0.1	0.806	1	1	Ammonia <0.02, TKN <0.2
52509-P	2071	3/17/2003	0.01	0.726	0.1	0.826	1	1	Ammonia <0.02, TKN <0.2
52509-P	2071	6/17/2003	0.03	0.746	0.1	0.846	1.4	1	TKN<0.2
52509-P	2071	9/9/2003	0.01	0.798	0.1	0.898	1.4	1	TKN<0.2, NH4AsN<0.02
52509-P	2072	3/21/2001	0	0.9	0.1	1	0.7	2	TKN<0.2
52509-P	2072	12/12/2001	0	1	0.1	1.1	21	1	TKN <0.2 est.

52509-P	2072	3/18/2002	0	1.1	0.1	1.2	0.7	1	TKN <0.2
52509-P	2073	3/21/2001	0.03	2.5	0.1	2.6	6.9	2	TKN <0.2
52509-P	2073	6/19/2001	0.03	2.57	0.2	2.77	9.2	2	
52509-P	2073	9/19/2001	0.03	3.57	1	4.57	14	1	QA Duplicate; TKN <0.2
52509-P	2073	9/19/2001	0	3.53	0.1	3.63	14	1	TKN <0.2
52509-P	2073	12/11/2001	0	4.6	0.1	4.7	17	1	NH4-N <.02, TKN <0.2 est.
52509-P	2073	3/18/2002	0	2.8	0.1	2.9	8.3	1	TKN <0.2
52509-P	2073	6/18/2002	0.02	2.96	0.1	3.06	8.2	1	TKN <0.2
52509-P	2073	9/16/2002	0.01	5.19	0.1	5.29	14	1	Ammonia <0.02, TKN<0.2
52509-P	2073	12/10/2002	0.01	6.07	0.3	6.37	14	1	Ammonia <0.02
52509-P	2073	3/17/2003	0.02	5.38	0.1	5.48	14	1	TKN <0.2
52509-P	2073	6/17/2003	0.02	6.13	0.1	6.23	16	1	TKN<0.2
52509-P	2073	9/9/2003	0.01	6.81	0.1	6.91	13	1	TKN<0.2, NH4AsN<0.02
52724-R	2079	12/12/2001	0	6.9	0.1	7	11		TKN <0.2 est.
52724-R	2079	12/18/2001						2	Bacteria Re-sample
52724-R	2079	3/19/2002	0	7.1	0.1	7.2	21	2	TKN <0.2
52724-R	2079	6/18/2002	0.01	7.2	0.1	7.3	10	2	TKN <0.2, ammonia <0.02
52724-R	2079	9/17/2002	0.01	7.33	0.1	7.43	11	2	Ammonia <0.02, TKN<0.2, pH is est.
52724-R	2079	12/10/2002	0.01	7.36	0.2	7.56	11	1	Ammonia <0.02
52724-R	2079	3/17/2003	0.03	7.64	0.4	8.04	12	1	
52724-R	2079	6/18/2003	0.03	8.1	0.1	8.2	12	1	TKN<0.2
52724-R	2079	9/9/2003	0.05	8.29	0.1	8.39	12	1	TKN<0.2
52724-R	2080	3/21/2001	0	2.8	0.1	2.9	7.8	2	TKN <0.2

52724-R	2080	6/20/2001	0.02	2.95	0.1	3.05	7.7	2	TSS void; TKN <0.2
52724-R	2080	6/20/2001	0	2.97	0.1	3.07	7.7	2	QA Duplicate; TKN <0.2
52724-R	2080	9/19/2001	0	3.61	0.2	3.81	7.3	1	
52724-R	2080	12/18/2001	0	4.8	0.2	5	7.9	1	
52724-R	2080	3/19/2002	0	5.5	0.1	5.6	8.4	1	TKN <0.2
52724-R	2080	6/18/2002	0.01	5.26	0.1	5.36	7.6	1	TKN <0.2, ammonia <0.02
52724-R	2080	9/17/2002	0.01	5.18	0.1	5.28	8	1	Ammonia <0.02, TKN<0.2, pH is est.
52724-R	2080	12/10/2002	0.01	6.06	0.2	6.26	8.7	1	Ammonia <0.02
52724-R	2080	3/17/2003	0.01	5.49	0.8	6.29	7.4	1	Ammonia <0.02
52724-R	2080	6/17/2003	0.04	4.98	0.1	5.08	6.5	1	TKN<0.2
52724-R	2080	9/9/2003							all tests cancelled, DRY, depth >23.22
52724-R	2081	3/21/2001	0	4.25	0.1	4.35	4.7	2	TKN <0.2
52724-R	2081	6/20/2001	0	4.03	0.1	4.13	4.4	2	TSS void; TKN <0.2
52724-R	2081	9/19/2001	0	3.43	0.1	3.53	4.6	1	TKN <0.2
52724-R	2081	12/14/2001	0	2.9	0.1	3	4.8	1	QA dupl - TKN <.2 est.
52724-R	2081	12/14/2001	0.02	2.9	0.1	3	4.9	1	TKN <0.2 est.
52724-R	2081	3/19/2002	0	2.5	0.1	2.6	3.9	1	TKN <0.2
52724-R	2081	6/18/2002	0.01	2.43	0.1	2.53	3.1	1	TKN <0.2, ammonia <0.02
52724-R	2081	9/17/2002	0.01	2.3	0.1	2.4	3	1	Ammonia <0.02, TKN<0.2, pH is est.
52724-R	2081	12/10/2002	0.01	2.18	0.1	2.28	2.9	1	Ammonia <0.02, TKN <0.2
52724-R	2081	3/17/2003	0.01	2.58	0.1	2.68	3	1	Ammonia <0.02, TKN <0.2
52724-R	2081	6/17/2003	0.01	3.24	0.1	3.34	3.1	1	NH4<0.02, TKN<0.2
52724-	2081	9/9/2003							all tests cancelled, DRY, depth >23.47

R									
17346-B	2083	12/5/2001	0.61	0	0.7	0.7	1	1	TKN is estimate.
17346-B	2083	3/13/2002	0.6	0	0.8	0.8	2	1	
17346-B	2085	3/14/2001	0	4.23	0.1	4.33	4.3	2	TKN <0.2
17346-B	2085	6/13/2001	0.02	3.09	0.2	3.29	2	2	
17346-B	2085	9/11/2001	0.03	2.67	0.1	2.77	1.8	1	TKN <0.2
17346-B	2085	12/5/2001	0	3.73	0.1	3.83	1.6	1	TKN < 0.2
17346-B	2085	3/13/2002	0	5	0.1	5.1	1.4	1	TKN <0.2
17346-B	2085	6/11/2002	0.01	4.36	0.2	4.56	2.4	1	ammonia <0.02
17346-B	2085	9/11/2002	0.01	8.54	0.2	8.74	2.1	1	Ammonia <0.02
17346-B	2085	12/2/2002	0.01	5.05	0.2	5.25	63	1	Ammonia <0.02
17346-B	2085	3/10/2003	0.01	11.9	0.4	12.3	15	1	NH4AsN <0.02
17346-B	2085	6/3/2003	0.01	7.78	0.1	7.88	3.9	1	NH4<0.02, TKN<0.2
17346-B	2085	9/17/2003	0.01	6.5	0.1	6.6	5.1	1	NH4AsN<0.02, TKN<0.2
17346-B	2086	3/14/2001	0.02	0.01	0.1	0.11	3.1	2	TKN <0.2
17346-B	2086	3/14/2001	0.03	0.01	0.1	0.11	3.1	2	QA Duplicate; TKN <0.2
17346-B	2086	6/13/2001	0	0	0.2	0.2	1.9	2	
17346-B	2086	6/13/2001	0.02	0	0.2	0.2	1.9	2	(QA reading duplicate)
17346-B	2086	9/12/2001	0	0	0.1	0.1	1.3	1	TKN <0.2
17346-B	2086	9/12/2001	0	0	0.1	0.1	1.3	1	QA duplicate; TKN <0.2
17346-B	2086	12/5/2001	0	0	0.1	0.1	1.3	1	TKN <0.2
17346-B	2086	12/5/2001	0	0	0.1	0.1	1.3	1	QA Duplicate; TKN < 0.2 est.
17346-B	2086	3/13/2002	0	0	0.1	0.1	3	1	TKN <0.2

17346-B	2086	3/13/2002	0	0	0.1	0.1	3.2	1	QA Duplicate - TKN <0.2
17346-B	2086	6/11/2002	0.01	0.01	0.3	0.31	4.2	1	ammonia <0.02
17346-B	2086	9/9/2002	0.01	0	0.2	0.2	3.2	1	Ammonia <0.02, Nitrate<0.005
17346-B	2086	12/2/2002	0.01	0.03	0.1	0.13	2.2	1	Ammonia <0.02, TKN <0.2
17346-B	2086	3/10/2003	0.01	0.0109	0.1	0.1109	3.6	1	NH4AsN <0.02, TKN <0.2
17346-B	2086	6/3/2003	0.01	0.0068	0.1	0.1068	3.9	1	NH4<0.02, TKN<0.2
17346-B	2086	9/17/2003	0.01	0.0831	0.1	0.1831	1.6	1	NH4AsN<0.02, TKN<0.2
50880-M	2098	9/22/2003	0.01	0.0025	0.2	0.2025	7.6	1	NH4AsN<0.02, Nitrate/nitrite<0.005
50880-M	2099	5/29/2001	0.02	0.02			2.9		Well development; No result reported for TKN
50880-M	2099	5/29/2001	0.03	0.02			2.8		QA Duplicate; No result reported for TKN
50880-M	2099	9/25/2001	0	0.03	0.1	0.13	3.2	1	TKN <0.2
50880-M	2099	12/18/2001	0	0.03	0.1	0.13	4	1	TKN <.2
50880-M	2099	3/25/2002	0	0.28	0.1	0.38	2	1	TKN <0.2, DO <0.1
50880-M	2099	5/21/2002							
50880-M	2099	6/24/2002	0.01	0.51	0.1	0.61	3.1	1	TKN <0.2, NH4<0.02
50880-M	2099	8/27/2002							
50880-M	2099	9/24/2002	0.01	0.61	0.1	0.71	3	1	ammonia < 0.02; TKN < 0.2
50880-M	2099	12/16/2002	0.01	0.372	0.1	0.472	2.5	1	NH4<0.02, TKN<0.2
50880-M	2099	3/24/2003	0.02	0.381	0.1	0.481	2.4	1	TKN <0.2, D.O. <0.1
50880-M	2099	6/23/2003	0.01	0.495	0.1	0.595	2.8	1	Ammonia<0.02, TKN<0.2
50880-M	2099	9/22/2003	0.01	0.525	0.1	0.625	2.5	1	NH4AsN<0.02, TKN<0.2
17271-P	2131	9/21/2001	0.01	0.77	0.1	0.87	140		NH4 <0.02; TKN <0.2
17271-	2131	2/19/2002	0	3.5	0.4	3.9	35	1	

P									
17271-P	2131	5/14/2002	0.01	2.38	0.1	2.48	69	1	TKN <0.2, ammonia <0.02
17271-P	2131	6/19/2002							
17271-P	2131	7/15/2002							
17271-P	2131	8/20/2002	0.01	1.45	0.3	1.75	24	1	ammonia <0.02
17271-P	2131	9/18/2002							
17271-P	2131	10/15/2002							
17271-P	2131	11/6/2002	0.02	0.63	0.1	0.73	19	1	TKN <0.2
17271-P	2131	12/10/2002							
17271-P	2131	1/14/2003							
17271-P	2131	2/10/2003	0.03	0.483	0.1	0.583	18	1	TKN <0.2
17271-P	2131	5/20/2003	0.01	0.881	0.1	0.981	15	1	NH4<0.02, TKN<0.2
17271-P	2131	8/25/2003	0.03	0.494	0.3	0.794	30	1	
17271-P	2131	11/3/2003	0.08	1.28	0.1	1.38	31	1	TKN<0.2
17271-P	2132	9/21/2001	0.01	0.63	0.1	0.73	30		NH4<0.02, TKN <0.2
17271-P	2132	2/19/2002	0	11.6	0.3	11.9	15	1	
17271-P	2132	5/14/2002	0.01	6.05	0.6	6.65	18	1	ammonia <0.02
17271-P	2132	6/19/2002							
17271-P	2132	7/15/2002							
17271-P	2132	8/20/2002	0.01	3.4	0.1	3.5	25	1	TKN <0.2, ammonia <0.02
17271-P	2132	9/18/2002							
17271-P	2132	10/15/2002							
17271-P	2132	11/6/2002	0.02	2.85	0.1	2.95	35	1	TKN <0.2

17271-P	2132	12/10/2002							
17271-P	2132	1/14/2003							
17271-P	2132	2/10/2003	0.01	3.66	0.1	3.76	34	1	NH4AsN <0.02, TKN <0.2
17271-P	2132	5/20/2003	0.01	7.04	0.1	7.14	32	1	NH4<0.02, TKN<0.2
17271-P	2132	8/25/2003	0.01	5.91	0.1	6.01	46	1	NH4AsN<0.02, TKN<0.2
17271-P	2132	11/3/2003	0.01	6.34	0.1	6.44	62	1	NH4AsN<0.02, TKN<0.2
17271-P	2133	9/21/2001	0.04	4.14	0.1	4.24	22		TKN <0.2
17271-P	2133	2/19/2002	0	3.3	0.3	3.6	23	1	
17271-P	2133	5/14/2002	0.06	2.63	0.1	2.73	25	1	TKN <0.2
17271-P	2133	6/19/2002							
17271-P	2133	7/15/2002							
17271-P	2133	8/20/2002	0.01	2.12	0.1	2.22	25	1	TKN <0.2, ammonia <0.02
17271-P	2133	9/18/2002							
17271-P	2133	10/15/2002							
17271-P	2133	11/6/2002	0.01	1.3	0.1	1.4	22	1	Ammonia <0.02, TKN <0.2
17271-P	2133	12/10/2002							
17271-P	2133	1/14/2003							
17271-P	2133	2/10/2003	0.01	1.21	0.1	1.31	150	1	NH4AsN <0.02, TKN <0.2
17271-P	2133	5/20/2003	0.01	2.3	0.1	2.4	85	1	NH4<0.02, TKN<0.2
17271-P	2133	8/25/2003	0.01	1.9	0.1	2	64	1	NH4AsN<0.02, TKN<0.2
17271-P	2133	11/3/2003	0.03	2.3	0.1	2.4	48	1	TKN<0.2
55583-T	2138	9/27/2001							Background/well development; Unable to establish flow for samples.
55583-T	2138	2/26/2002	0.2	9.2	0.9	10.1	28	1	

55583-T	2138	5/22/2002	0.04	18.4	0.5	18.9	170	1	
55583-T	2138	6/25/2002							
55583-T	2138	7/29/2002							
55583-T	2138	8/26/2002	0.15	24.2	0.7	24.9	98		
55583-T	2138	8/28/2002						2	Bacteria Re-sample
55583-T	2138	9/25/2002							
55583-T	2138	10/21/2002							
55583-T	2138	11/12/2002							
55583-T	2138	2/25/2003	0.05	5.34	0.5	5.84	20	2	
55583-T	2138	5/21/2003	0.05	55.5	1.1	56.6	400	2	
55583-T	2138	8/27/2003	0.05	35.4	0.1	35.5	120	1	TKN<0.2
55583-T	2138	11/5/2003							
55583-T	2139	9/27/2001	0.14	9.27			29		Background/well development; No result reported for TKN
55583-T	2139	2/26/2002	0.1	26.6	0.7	27.3	37	1	
55583-T	2139	5/22/2002	0.18	25.6	0.1	25.7	29	1	TKN <0.2
55583-T	2139	6/25/2002							
55583-T	2139	7/29/2002							
55583-T	2139	8/26/2002	0.16	13	0.6	13.6	35	1	
55583-T	2139	9/25/2002							
55583-T	2139	10/21/2002							
55583-T	2139	11/12/2002	0.1	29	0.3	29.3	42	1	
55583-T	2139	2/25/2003	0.07	36	0.1	36.1	40	1	TKN <0.2
55583-T	2139	5/19/2003	0.02	31.1	0.1	31.2	33	1	TKN<0.2

55583-T	2139	8/27/2003	0.13	20.9	0.1	21	39	1	TKN<0.2
55583-T	2139	11/5/2003	0.07	32.3	0.1	32.4	57	1	TKN<0.2
55583-T	2140	9/27/2001	0.04	26.8			70		D.O. <0.1; Background/well development; No result reported for TKN
55583-T	2140	9/27/2001	0.04	26.9			69		QA Duplicate; Background/well development; DO<0.1; No result reported f TKN
55583-T	2140	2/26/2002	0.05	207	1.5	208.5	280	1	
55583-T	2140	5/22/2002	0.04	7.09	0.3	7.39	23	1	
55583-T	2140	6/25/2002							
55583-T	2140	7/29/2002							
55583-T	2140	8/26/2002	0.09	87.7	1.6	89.3	160	1	
55583-T	2140	9/25/2002							
55583-T	2140	10/21/2002							
55583-T	2140	11/12/2002	0.08	94.4	1.31	95.71	160	1	
55583-T	2140	2/25/2003	0.08	67.5	0.1	67.6	100	1	TKN <0.2
55583-T	2140	5/19/2003	0.04	8.12	0.1	8.22	24	1	TKN<0.2
55583-T	2140	8/27/2003	0.09	71.6	1.4	73	130	1	TKN is est.
55583-T	2140	11/5/2003	0.04	59.4	0.1	59.5	120	1	TKN<0.2
52081-Y	2142	10/10/2001	0.01	0.33			2.8		well development; NH4 <0.02; No TKN result reported
52081-Y	2142	10/10/2001	0.01	0.33			2.9		QA Duplicate; Background/well development; NH4 <0.02; No TKN result reported
52081-Y	2142	2/11/2002	0.02	0.4	0.1	0.5	2.7	1	TKN <0.2
52081-Y	2142	5/6/2002	0.01	0.79	0.6	1.39	2.2	1	Ammonia <0.02
52081-Y	2142	7/22/2002							
52081-Y	2142	8/12/2002	0.01	1.45	0.1	1.55	2.6	1	TKN is <0.2 est., ammonia <0.02
52081-	2142	9/9/2002							

Y									
52081-Y	2142	11/4/2002	0.01	1.18	0.4	1.58	2.5	1	Ammonia <0.02
52081-Y	2142	12/3/2002							
52081-Y	2142	2/3/2003	0.01	0.954	0.4	1.354	2.6	1	NH4 <0.02
52081-Y	2142	5/20/2003	0.03	1.13	0.1	1.23	2.4	1	TKN<0.2
52081-Y	2142	8/26/2003	0.01	1.61	0.3	1.91	3.9	1	NH4AsN<0.02
52081-Y	2143	10/10/2001	0.01	0.78			15		Background/well development; NH4 <0.02; No TKN result reported
52081-Y	2143	2/11/2002	0	0.9	0.1	1	23	1	TKN <0.2; TKN < 0.2
52081-Y	2143	5/6/2002	0.01	0.8	0.1	0.9	33	1	Ammonia <0.02, TKN <0.2
52081-Y	2143	7/22/2002							
52081-Y	2143	8/12/2002	0.01	0.87	1	1.87	48	1	TKN is est., ammonia <0.02
52081-Y	2143	9/9/2002							
52081-Y	2143	11/4/2002	0.02	0.93	0.1	1.03	52	1	TKN <0.2
52081-Y	2143	12/3/2002							
52081-Y	2143	2/3/2003	0.01	0.993	0.1	1.093	47	1	NH4 <0.02, TKN <0.2
52081-Y	2143	5/20/2003	0.01	1.08	0.1	1.18	53	1	NH4<0.02, TKN<0.2
52081-Y	2143	8/26/2003	0.01	1.19	0.3	1.49	47	1	NH4AsN<0.02
52081-Y	2144	10/10/2001	0.02	1.35			31		Background/well development; No TKN result reported
52081-Y	2144	2/11/2002	0	1.25	0.1	1.35	39	1	TKN < 0.2
52081-Y	2144	5/6/2002	0.01	1.07	0.1	1.17	75	1	Ammonia <0.02, TKN <0.2
52081-Y	2144	7/22/2002							
52081-Y	2144	8/12/2002	0.03	1.28	0.3	1.58	97	1	TKN is est.
52081-Y	2144	9/9/2002							

52081-Y	2144	11/4/2002	0.01	1.35	0.1	1.45	89	1	Ammonia <0.02, TKN <0.2
52081-Y	2144	12/3/2002							
52081-Y	2144	2/3/2003	0.01	1.44	0.4	1.84	77	1	NH4 <0.02
52081-Y	2144	5/20/2003	0.03	1.55	0.1	1.65	67	1	TKN<0.2
52081-Y	2144	8/26/2003	0.01	1.37	0.1	1.47	29	1	NH4AsN<0.02, TKN<0.2
53444-L	2170	11/15/2001	0.06	0.01		0.01	4.8		Background/well development; No TKN result reported.
53444-L	2170	2/5/2002	0	0	0.4	0.4	5.8		
53444-L	2170	2/11/2002						2	Bacteria Re-sample
53444-L	2170	4/30/2002	0.02	0	0.3	0.3	5.2	2	
53444-L	2170	8/5/2002	0.05	0.01	0.3	0.31	5.1	2	D.O. <0.1
53444-L	2170	9/4/2002							
53444-L	2170	10/2/2002							
53444-L	2170	10/29/2002	0.05	0.01	0.2	0.21	5.7	2	
53444-L	2170	11/19/2002							
53444-L	2170	2/5/2003	0.04	0.0147	0.1	0.1147	5.3	1	TKN<0.2
53444-L	2170	5/5/2003	0.05	0.0124	0.2	0.2124	5.3	1	
53444-L	2170	8/5/2003	0.03	0.0096	0.3	0.3096	5.4	1	
53444-L	2170	10/28/2003	0.03	0.0181	0.3	0.3181	5.4	1	
53444-L	2171	11/15/2001	0.04	0.01			6.6		Background/well development; No TKN result reported.
53444-L	2171	2/5/2002	0	0	0.1	0.1	7	1	
53444-L	2171	4/30/2002	0.04	0.01	0.7	0.71	6.9	1	
53444-L	2171	8/5/2002	0.07	0.01	0.2	0.21	6.2	1	
53444-	2171	9/4/2002							

L									
53444-L	2171	10/2/2002							
53444-L	2171	10/29/2002	0.03	0.02	0.2	0.22	6.4	1	
53444-L	2171	11/19/2002							
53444-L	2171	2/5/2003	0.02	0.02	0.7	0.72	6.4	1	
53444-L	2171	5/5/2003	0.01	0.0084	0.3	0.3084	6	1	Ammonia <0.02
53444-L	2171	8/5/2003	0.01	0.0582	0.2	0.2582	6.2	1	Ammonia<0.02
53444-L	2171	10/28/2003	0.01	0.137	0.1	0.237	6.2	1	NH4AsN<0.02, TKN<0.2
53444-L	2172	11/16/2001	0.01	0.06			1.8		Background/well development; NH4 <0.02; No TKN result reported
53444-L	2172	2/5/2002	0	0.1	0.3	0.4	2.6	1	
53444-L	2172	4/30/2002	0.01	0.07	0.1	0.17	2.3	1	Ammonia <0.02; TKN <0.2
53444-L	2172	8/5/2002	0.03	0.06	0.1	0.16	2	1	TKN <0.2
53444-L	2172	9/4/2002							
53444-L	2172	10/2/2002							
53444-L	2172	10/29/2002	0.01	0.09	0.1	0.19	2	1	Ammonia <0.02, TKN <0.2
53444-L	2172	11/19/2002							
53444-L	2172	2/5/2003	0.02	0.906	0.3	1.206	3	1	
53444-L	2172	5/5/2003	0.01	0.812	0.1	0.912	5.9	1	Ammonia <0.02, TKN <0.2
53444-L	2172	8/5/2003	0.01	0.757	0.1	0.857	10	1	Ammonia<0.02, TKN<0.2
53444-L	2172	10/28/2003	0.01	3.83	0.2	4.03	15		NH4AsN<0.02
53444-L	2172	10/29/2003						2	Bacteria Re-sample
55726-H2	2202	3/13/2001	0.03	3.72	0.1	3.82	6.7	2	TKN <0.2
55726-H2	2202	3/13/2001	0.03	3.76	0.1	3.86	6.5	2	duplicate; TKN <0.2

55726-H2	2202	6/12/2001	0	2.48	0.1	2.58	5.6	2	TKN <0.2
55726-H2	2202	9/11/2001	0	1.81	0.1	1.91	3.9	1	TKN <0.2
55726-H2	2202	12/3/2001	0.02	1.59	0.1	1.69	3	1	BOD5 <0.2 est; TKN <0.2
55726-H2	2202	3/12/2002	0	2.8	0.3	3.1	6	1	
55726-H2	2202	6/11/2002	0.01	3.36	0.1	3.46	5.9	1	TKN <0.2, ammonia <0.02
55726-H2	2202	9/10/2002	0.02	5.87	0.1	5.97	6.3	1	TKN<0.2
55726-H2	2202	12/2/2002	0.01	4.29	0.1	4.39	5.2	1	Ammonia <0.02, TKN <0.2
55726-H2	2202	3/11/2003	0.01	6.19	0.1	6.29	8.2	1	NH4AsN <0.02, TKN <0.2
55726-H2	2202	6/10/2003	0.01	5.17	0.4	5.57	6.7	1	NH4<0.02
55726-H2	2202	9/10/2003	0.1	5.63	0.3	5.93	7	1	
55726-H2	2203	6/12/2001	0	5.91	0.1	6.01	14	2	TKN <0.2
55726-H2	2203	9/11/2001	0.03	5.84	0.3	6.14	20	1	
55726-H2	2203	12/3/2001	0.02	3.31	0.1	3.41	8.1	1	TKN <0.2 est.
55726-H2	2203	12/3/2001	0.03	3.32	0.1	3.42	7.7	1	QA duplicate
55726-H2	2203	3/12/2002	0	8.4	0.3	8.7	24	1	
55726-H2	2203	6/11/2002	0.01	6.48	0.3	6.78	27	1	ammonia <0.02
55726-H2	2203	9/10/2002	0.01	4.22	0.1	4.32	9.8	1	Ammonia <0.02, TKN<0.2
55726-H2	2203	12/2/2002	0.01	3.84	0.1	3.94	7.2	1	Ammonia <0.02, TKN <0.2
55726-H2	2203	3/11/2003	0.01	5.67	0.2	5.87	21	1	NH4AsN <0.02
55726-H2	2203	6/10/2003	0.01	4.1	0.1	4.2	18	1	NH4<0.02, TKN<0.2
55726-H2	2203	9/10/2003	0.01	4.81	0.1	4.91	15	1	TKN<0.2, NH4AsN<0.02
55726-H2	2204	11/2/1999	0.06	5.11	0.2	5.31		2	
55726-H2	2204	1/5/2000	0.02	9.07	0.4	9.47		2	

55726-H2	2204	3/1/2000	0.07	23.1	0.8	23.9		2	can't find data sheet.
55726-H2	2204	5/4/2000	0	5.12	0.3	5.42	12	2	not in data files.
55726-H2	2204	7/10/2000	0	18.3	0.3	18.6	18	600	not in data files.
55726-H2	2204	9/6/2000							Dry to bottom of screen, no samples
55726-H2	2204	11/15/2000							Unable to sample; insufficient recharge
55726-H2	2204	3/13/2001	0.02	15.7	0.4	16.1	39	2	
55726-H2	2204	4/10/2001	0	12.1	0.8	12.9	34	2	
55726-H2	2204	4/10/2001	0	12.1	0.8	12.9	34	2	QA dupl.
55726-H2	2204	5/8/2001	0	10.9	0.4	11.3	35	2	
55726-H2	2204	6/12/2001	0	7.24	0.4	7.64	23	2	QA duplicate
55726-H2	2204	6/12/2001	0	7.25	0.3	7.55	23	2	
55726-H2	2204	7/17/2001	0	10.7	0.3	11	25	1	QA duplicate
55726-H2	2204	7/17/2001	0	10.8	0.3	11.1	25	1	
55726-H2	2204	8/14/2001	0	8.09	0.3	8.39	27	1	
55726-H2	2204	8/14/2001	0	8.08	0.4	8.48	28	1	QA Duplicate
55726-H2	2204	9/11/2001	0	8.09	0.4	8.49	34		
55726-H2	2204	9/18/2001						2	Bacteria Re-Sample
55726-H2	2204	10/9/2001	0	6.1	0.3	6.4	32	2	
55726-H2	2204	10/9/2001	0	6.1	0.3	6.4	32	2	QA Duplicate
55726-H2	2204	1/14/2002	0	4.6	0.4	5	46	2	BOD <1; TSS <1
55726-H2	2204	3/12/2002	0	6.9	0.5	7.4	58	2	BOD5 <1.0; TSS <1
55726-H2	2204	5/7/2002	0.01	7.74	0.5	8.24	41	2	NH4 <0.02
55726-H2	2204	6/11/2002	0.01	6.92	0.5	7.42	38	2	TSS <1, BOD5<1.0, ammonia <0.02

55726-H2	2204	7/15/2002	0.02	5.07	0.4	5.47	31	1	TSS <1, BOD5<1.0
55726-H2	2204	7/15/2002	0.01	5.07	0.5	5.57	31	1	QA duplicate, TSS <1, ammonia <0.02, BOD5<1.0
55726-H2	2204	9/10/2002	0.03	5.94	0.4	6.34	28	1	BOD5<1.0, TSS<1
55726-H2	2204	11/5/2002	0.03	6.75	0.4	7.15	36	1	BOD5 <1.0, TSS<1
55726-H2	2204	12/2/2002	0.01	6.71	0.4	7.11	31	1	BOD5 <1.0, TSS<1 Ammonia <0.02
55726-H2	2204	12/2/2002	0.01	6.69	0.4	7.09	31	1	QA Duplicate; BOD5 <1.0, TSS<1 Ammonia <0.02
55726-H2	2204	1/13/2003	0.03	5.64	0.5	6.14	38	1	BOD5 <1.0, TSS <1
55726-H2	2204	3/11/2003	0.03	6.92	0.7	7.62	59	1	BOD5<1.0, TSS<1
55726-H2	2204	5/13/2003	0.01	4.94	0.1	5.04	27	1	BOD5<1.0, TSS <1 Ammonia <0.02, TKN <0.2
55726-H2	2204	5/13/2003	0.02	4.91	0.1	5.01	27	1	QA Duplicate; BOD5<1.0, TSS <1, TKN <0.2
55726-H2	2204	6/10/2003	0.01	4.71	0.3	5.01	20	1	BOD5<1.0, TSS<1, NH4<0.02
55726-H2	2204	6/10/2003	0.01	4.72	0.2	4.92	21	1	QA Duplicate; BOD5<1.0, TSS<1, NH4<0.02
55726-H2	2204	7/15/2003	0.01	4.5	0.1	4.6	14	1	BOD5<1.0, TSS<1, Ammonia<0.02, TKN<0.2
55726-H2	2204	7/15/2003	0.01	4.49	0.2	4.69	15	1	QA Duplicate; BOD5<1.0, TSS<1, Ammonia<0.02
55726-H2	2204	9/10/2003	0.01	4.96	0.1	5.06	14	1	BOD5 is est., TKN<0.2, NH4AsN<0.02, TSS<1
55726-H2	2204	9/10/2003	0.01	4.96	0.1	5.06	14	1	TKN<0.2, NH4AsN<0.02, TSS<1, BOD5<1
17186-H3	2205	3/13/2001	0.03	1.64	0.1	1.74	3.1	2	TKN <0.2
17186-H3	2205	6/12/2001	0	1.07	0.1	1.17	2.8	2	TKN <0.2
17186-H3	2205	12/3/2001	0.02	3.24	0.1	3.34	4	1	TKN is est.
17186-H3	2205	3/13/2002	0	3.1	0.1	3.2	4.1	1	TKN <0.2
17186-H3	2205	6/11/2002	0.01	1.98	0.1	2.08	4.5	1	TKN <0.2, ammonia <0.02
17186-H3	2205	9/10/2002	0.06	2.87	0.1	2.97	16	1	TKN<0.2
17186-H3	2205	3/11/2003	0.05	4.41	0.1	4.51	8.3	1	TKN <0.2

17186-H3	2205	6/10/2003	0.01	2.8	0.1	2.9	7.4	1	NH4<0.02, TKN<0.2
17186-H3	2205	9/17/2003	0.01	1.71	0.1	1.81	8.5	1	NH4AsN<0.02, TKN<0.2
17186-H3	2206	3/13/2001	0.04	0.59	0.1	0.69	2.2	2	TKN <0.2
17186-H3	2206	6/12/2001	0	0.97	0	0.97	3.4	2	
17186-H3	2206	9/11/2001	0	1.61	0.1	1.71	3.3	1	TKN <0.2
17186-H3	2206	12/3/2001	0	1.16	0.1	1.26	2.5	1	TKN is est.
17186-H3	2206	3/13/2002	0	2.5	0.1	2.6	5.4	1	TKN <0.2
17186-H3	2206	6/11/2002	0.01	1.6	0.1	1.7	6.1	1	TKN <0.2, ammonia <0.02
17186-H3	2206	9/10/2002	0.01	2.9	0.1	3	9.3	1	Ammonia <0.02, TKN<0.2
17186-H3	2206	12/2/2002	0.01	2.55	0.1	2.65	6.2	1	Ammonia <0.02, TKN <0.2
17186-H3	2206	3/11/2003	0.01	1.3	0.1	1.4	6.4	1	NH4AsN <0.02, TKN <0.2
17186-H3	2206	6/10/2003	0.01	2.11	0.1	2.21	8.1	1	NH4<0.02, TKN<0.2
17186-H3	2206	9/17/2003	0.01	1.58	0.1	1.68	7.1	1	NH4AsN<0.02, TKN<0.2
53110-A	2212	5/1/2002	0.04	0.38	0.6	0.98	5.6		Background/well development
53110-A	2212	6/18/2002	0.04	1.07	0.1	1.17	4.8	1	TKN <0.2
53110-A	2212	9/18/2002	0.03	1.24	0.1	1.34	4.4	1	TKN<0.2
53110-A	2212	12/10/2002	0.03	0.948	0.3	1.248	4.5	1	
53110-A	2212	3/18/2003	0.03	1.45	0.5	1.95	4.3	1	
53110-A	2212	6/17/2003	0.06	1.56	0.1	1.66	4.1	1	TKN<0.2
53110-A	2212	9/16/2003	0.01	1.3	0.1	1.4	4.1	1	NH4AsN<0.02, TKN<0.2
17346-B	2213	5/16/2002	0.47	0.01			12		No TKN reported.
17346-B	2213	6/11/2002	0.56	0.01	1.1	1.11	6.2	1	
17346-B	2213	9/11/2002	0.71	0.01	1	1.01	1.7		

17346-B	2213	12/3/2002	0.76	0.01	1	1.01	2		No bacteria sample due to extreme slow flow.
17346-B	2213	3/10/2003	0.66	0.0158	0.8	0.8158	2.3	1	
17346-B	2213	6/3/2003	0.67	0.0317	0.8	0.8317	3	1	
17346-B	2213	9/17/2003	0.7	1.4	0.7	2.1	1.9	1	
17348-G	2214	5/2/2002	0.02	11	0.3	11.3	15		Well Development
17348-G	2214	5/2/2002	0.03	11	0.2	11.2	15		Well Development; QA DUPLICATE
17348-G	2214	6/3/2002	0.04	14.1	0.3	14.4	16	1	
17348-G	2214	9/4/2002	0.01	11.8	0.3	12.1	16	1	Ammonia <0.02
17348-G	2214	11/18/2002	0.04	16.3	0.1	16.4	19	1	TKN <0.2
17348-G	2214	3/4/2003	0.01	18.3	0.1	18.4	21	1	NH4AsN <0.02, TKN <0.2
17348-G	2214	6/2/2003	0.01	16.6	0.1	16.7	20	1	NH4<0.02, TKN<0.2
17348-G	2214	9/16/2003	0.01	15.6	0.2	15.8	20	1	NH4AsN<0.02
52386-M	2217	5/9/2002	0.02	0.71	0.2	0.91	4.2		Well development
52386-M	2217	6/17/2002	0.01	1.37	0.1	1.47	4.9		TKN <0.2, ammonia <0.02
52386-M	2217	9/17/2002	0.01	2.46	0.2	2.66	8.8	2	Ammonia <0.02, pH is est.
52386-M	2217	12/9/2002	0.02	3.17	0.2	3.37	10	2	
52386-M	2217	3/17/2003	0.02	2.24	0.1	2.34	6.6	1	TKN <0.2
52386-M	2217	6/16/2003	0.02	2.32	0.1	2.42	7.5	1	TKN<0.2
52386-M	2217	9/15/2003	0.01	2.96	0.3	3.26	10	1	NH4AsN<0.02
52509-P	2220	5/2/2002	0.04	1.03	0.3	1.33	3.4		Well Development
52509-P	2220	6/18/2002	0.03	0.7	0.3	1		1	chloride test void
52509-P	2220	9/16/2002	0.01	0.98	0.1	1.08	0.9	1	Ammonia <0.02, TKN<0.2
52509-P	2220	12/9/2002	0.02	1.1	0.4	1.5	3.6	1	

52509-P	2220	3/17/2003	0.01	1.36	0.2	1.56	1.1	1	Ammonia <0.02
52509-P	2220	6/17/2003	0.02	1.52	0.1	1.62	0.8	1	TKN<0.2
52509-P	2220	9/9/2003	0.01	1.45	0.1	1.55	0.9	1	TKN<0.2, NH4AsN<0.02
15766-K	2003	9/28/2001	0.01	1.43			12		Background/well development; NH4 <0.02; No result reported for TKN
15766-K	2003	7/15/2002	0.01	3.67	0.1	3.77	28	1	KN <0.2, N<0.02
15766-K	2003	8/6/2002							
15766-K	2003	9/9/2002							
15766-K	2003	10/7/2002	0.02	7.62	0.1	7.72	67	1	chloride is estimate, TKN < 0.2
15766-K	2003	11/4/2002							
15766-K	2003	12/3/2002							
15766-K	2003	1/21/2003	0.01	3.81	0.2	4.01	19	1	Ammonia <0.02
15766-K	2003	2/11/2003							
15766-K	2003	3/10/2003							
15766-K	2003	4/21/2003	0.01	85.2	0.1	85.3	120	1	Ammonia <0.02, TKN <0.2
15766-K	2003	6/17/2003							
15766-K	2003	7/14/2003	0.04	5.48	0.1	5.58	63	1	TKN<0.2
15766-K	2003	10/7/2003	0.01	3.78	0.1	3.88	45	1	NH4AsN<0.02, TKN<0.2
15766-K	2003	2/9/2004							
15766-K	2003	5/17/2004							
52375-H	2019	3/28/2001	0.06	98.2	0.6	98.8	80	2	
52375-H	2019	3/28/2001	0.1	98.8	0.6	99.4	80	2	QA duplicate;
52375-H	2019	9/26/2001	0	100	0.5	100.5	87	1	BOD5 is estimate; TSS "void"
52375-H	2019	12/18/2001	0	91.8	0.6	92.4	75	1	

52375-H	2019	3/26/2002	0	109	0.1	109.1	79	1	TKN <0.2
52375-H	2019	6/24/2002	0.03	109	0.4	109.4	79	1	
52375-H	2019	9/25/2002	0.01	108	0.4	108.4	83	1	ammonia <0.02
52375-H	2019	12/17/2002	0.01	110	0.1	110.1	77	1	NH4<0.02, TKN<0.2
52375-H	2019	3/25/2003	0.03	101	0.1	101.1	76	1	TKN <0.2
52375-H	2019	6/24/2003	0.01	103	0.1	103.1	75	1	NH4<0.02, TKN<0.2
52375-H	2019	9/8/2003	0.01	97.2	0.1	97.3	77	1	TKN<0.2, NH4AsN<0.02
52375-H	2019	1/26/2004							
52375-H	2019	4/12/2004							
52375-H	2020	3/28/2001	0	0.04	0.1	0.14	1.2	2	TKN <0.2
52375-H	2020	6/26/2001	0.03	0.02	0.1	0.12	1.1	2	TKN <0.2
52375-H	2020	3/26/2002	0	0	0.1	0.1	1.1	1	TKN <0.2
52375-H	2020	6/24/2002	0.02	0.04	0.1	0.14	1.4	1	TKN <0.2
52375-H	2020	9/25/2002	0.01	0.04	0.1	0.14	1.5	1	ammonia < 0.02; TKN <0.2
52375-H	2020	12/17/2002							
52375-H	2020	3/25/2003	0.02	0.0365	0.1	0.1365	1.5	1	TKN <0.2
52375-H	2020	6/24/2003	0.03	0.0522	0.1	0.1522	1.4	1	TKN<0.2
52375-H	2020	9/8/2003	0.01	0.0442	0.1	0.1442	1.3	1	TKN<0.2, NH4AsN<0.02
52375-H	2020	1/26/2004							
52375-H	2020	4/12/2004							
52375-H	2021	3/28/2001	0.1	0.5	0.1	0.6	1.8	2	TKN <0.2
52375-H	2021	4/24/2001	0.05	0.5	0.1	0.6	1.7	2	alkalinity is estimate; TKN <0.2
52375-H	2021	5/22/2001	0	0.51	0.1	0.61	1.7	2	TKN <0.2

52375-H	2021	7/31/2001	0	0.56	0.1	0.66	1.7	1	TKN <0.2
52375-H	2021	8/28/2001	0.02	0.54	0.1	0.64	1.7	1	BOD5 <1.0 - TKN <0.2
52375-H	2021	8/28/2001	0	0.55	0.1	0.65	1.7	1	QA dupl reading; BOD5 <1.0, TKN <0.2
52375-H	2021	10/23/2001	0	0.65	0.1	0.75	1.5	1	BOD is <1.0; TKN is <0.2
52375-H	2021	11/19/2001	0	0.65	0.1	0.75	1.4	1	TKN <0.2
52375-H	2021	3/26/2002	0	1	0.1	1.1	1	1	TKN <0.2, TSS <1; BOD <1.0
52375-H	2021	4/22/2002	0.01	1.01	0.6	1.61	1.3	1	Ammonia <0.02; BOD <1
52375-H	2021	6/24/2002	0.03	1	0.1	1.1	1.3		TKN <0.2
52375-H	2021	9/25/2002	0.01	1.21	0.1	1.31	1.2	1	ammonia <0.02; TKN <0.2
52375-H	2021	12/17/2002	0.01	1.5	0.1	1.6	1.1	1	NH4<0.02, TKN<0.2
52375-H	2021	3/25/2003	0.03	1.63	0.1	1.73	1.6	1	TKN <0.2
52375-H	2021	6/24/2003	0.01	1.78	0.1	1.88	1	1	NH4<0.02, TKN<0.2
52375-H	2021	9/8/2003	0.01	1.83	0.1	1.93	0.9	1	TKN<0.2, NH4AsN<0.02
52375-H	2021	1/26/2004							
52375-H	2021	4/12/2004							
55635-I	2022	1/2/2002							Background/well development; No recharge, unable to obtain samples.
55635-I	2022	2/20/2002	0	0.1	0.2	0.3	2.4	1	
55635-I	2022	5/14/2002	0.01	0.28	0.1	0.38	5.4	1	TKN <0.2, ammonia <0.02
55635-I	2022	6/19/2002							
55635-I	2022	7/22/2002							
55635-I	2022	8/21/2002	0.03	0.06	0.1	0.16	1.7	1	TKN <0.2
55635-I	2022	9/18/2002							
55635-I	2022	10/14/2002							
55635-I	2022	11/5/2002							
55635-I	2022	12/10/2002							
55635-I	2022	2/11/2003	0.02	0.0622	0.1	0.1622	1.7	1	TKN <0.2
55635-I	2022	5/21/2003	0.01	0.135	0.1	0.235	5.3	1	NH4<0.02, TKN<0.2

55635-I	2022	8/11/2003	0.01	0.059	0.1	0.159	4.8	1	NH4AsN<0.02, TKN<0.2
55635-I	2022	11/3/2003							No Flow; no samples collected
55635-I	2022	3/29/2004							
55635-I	2022	6/21/2004							
55730-P	2032	10/30/2002							
55730-P	2032	11/19/2002							
55730-P	2032	1/7/2003	0.01	0.674	0.1	0.774	3	1	NH4<0.02, TKN<0.2
55730-P	2032	2/4/2003							
55730-P	2032	3/4/2003							
55730-P	2032	3/31/2003	0.01	0.614	0.1	0.714	2.6	1	Ammonia <0.02, TKN <0.2
55730-P	2032	6/11/2003							
55730-P	2032	7/15/2003	0.01	0.525	0.1	0.625	2.3	1	Ammonia<0.02, TKN<0.2
55730-P	2032	8/19/2003							
55730-P	2032	10/7/2003	0.01	0.556	0.1	0.656	1.9	1	NH4AsN<0.02, TKN<0.2
55730-P	2032	2/4/2004							
55730-P	2032	5/17/2004							
52655-C	2035	3/6/2001	0	0.01	0.1	0.11	7.3	2	BOD5 estimate due to insufficient depletion; TKN <0.2
52655-C	2035	6/5/2001	0.03	0	0.1	0.1	7.1	2	TKN <0.2
52655-C	2035	9/5/2001	0.02	0.0025	0.1	0.1025	7.4	1	Nitrate <0.005; TKN < 0.2
52655-C	2035	12/12/2001	0	0	0.1	0.1	5.7	1	TKN is <0.2 estimate
52655-C	2035	3/5/2002	0	0.01	0.1	0.11	5.5	1	TKN <0.2; D.O. <0.1
52655-C	2035	6/3/2002	0.06	0	0.4	0.4	4.4	1	
52655-C	2035	9/3/2002	0.04	0.01	0.1	0.11	5	1	TKN<0.2, D.O.<0.1
52655-C	2035	12/16/2002	0.03	0.0131	0.1	0.1131	6.1	1	TKN<0.2, D.O. <0.1
52655-	2035	3/3/2003	0.04	0.0059	0.1	0.1059	7.3	1	TKN <0.2, D.O. <0.1

52655-C	2035	6/9/2003	0.02	0.007	0.1	0.107	6.5	1	TKN<0.2,D.O.<0.1
52655-C	2035	9/8/2003	0.03	0.0025	0.1	0.1025	6.5	1	TKN<0.2 Nitrate/Nitrite<.005
52655-C	2035	1/26/2004							
52655-C	2035	4/12/2004							
52655-C	2035	7/12/2004							
52655-C	2036	3/6/2001	0	0.95	0.1	1.05	1.5	2	TKN <0.2
52655-C	2036	6/5/2001	0	1.04	0.1	1.14	2	2	TKN <0.2
52655-C	2036	9/5/2001	0	0.55	0.1	0.65	1.7	1	TKN <0.2
52655-C	2036	12/12/2001	0.01	0.72	0.1	0.82	1.8	1	TKN is <0.2 Estimate
52655-C	2036	3/5/2002	0	0.84	0.1	0.94	2.6	1	TKN <0.2
52655-C	2036	6/3/2002	0.01	0.56	0.1	0.66	2.6	1	Ammonia <0.02; TKN <0.2
52655-C	2036	9/3/2002	0.01	0.64	0.1	0.74	2.7	1	Ammonia <0.02, TKN<0.2
52655-C	2036	12/16/2002	0.01	0.853	0.1	0.953	2.7	1	NH4<0.02, TKN<0.2
52655-C	2036	3/3/2003	0.02	0.793	0.1	0.893	3.2	1	TKN <0.2
52655-C	2036	6/9/2003	0.01	0.79	0.1	0.89	3.4	1	Ammonia<0.02, TKN<0.2
52655-C	2036	9/8/2003	0.02	1.57	0.1	1.67	3.1	1	TKN<0.2
52655-C	2036	1/26/2004							
52655-C	2036	4/12/2004							
52655-C	2036	7/12/2004				199998			
52655-C	2037	3/6/2001	0	2.93	0.3	3.23	10	2	
52655-C	2037	6/5/2001	0	2.39	0.2	2.59	8.7	2	
52655-C	2037	6/5/2001	0	2.37	0.3	2.67	8.6	2	QA duplicate
52655-	2037	9/5/2001	0	2.09	0.2	2.29	7.7	1	

52655-C	2037	9/5/2001	0	2.07	0.3	2.37	7.7	1	QA Duplicate;
52655-C	2037	12/12/2001	0.02	1.96	0.4	2.36	7.6	1	TKN is est.
52655-C	2037	3/5/2002	0	1.9	0.3	2.2	8.1	1	
52655-C	2037	6/3/2002	0.01	1.59	0.1	1.69	7.8	1	Ammonia <0.02; TKN<0.2
52655-C	2037	9/3/2002	0.01	1.71	0.2	1.91	9.1	1	Ammonia <0.02
52655-C	2037	12/16/2002	0.01	2.27	0.3	2.57	8.5	1	NH4<0.02
52655-C	2037	3/3/2003	0.01	2.4	0.1	2.5	7.7	1	NH4AsN <0.02, TKN <0.2
52655-C	2037	6/9/2003	0.01	2.09	0.1	2.19	7	1	Ammonia<0.02, TKN<0.2
52655-C	2037	9/8/2003	0.01	1.97	0.2	2.17	7.7	1	NH4AsN<0.02
52655-C	2037	1/26/2004							
52655-C	2037	4/12/2004							
52655-C	2037	7/12/2004							
52588-P	2039	3/6/2001	0	0.92	0.1	1.02	4.1	2	TKN <0.2
52588-P	2039	6/5/2001	0	1.24	0.1	1.34	3.5	2	TKN <0.2
52588-P	2039	9/5/2001	0	1.06	0.1	1.16	3	1	TKN <0.2
52588-P	2039	12/12/2001	0	1.56	0.1	1.66	4.2	1	TKN is <0.2 estimate
52588-P	2039	3/5/2002	0	2.1	0.1	2.2	4.9	1	TKN <0.2
52588-P	2039	6/3/2002	0.04	1.58	1.4	2.98	3.2	1	
52588-P	2039	7/15/2002							
52588-P	2039	9/9/2002	0.05	1.4	0.3	1.7	3.3	1	
52588-P	2039	11/19/2002	0.01	2.03	0.1	2.13	4.9		Ammonia <0.02, TKN <0.2
52588-P	2039	12/9/2002						2	Bacteria Re-sample
52588-	2039	3/3/2003	0.01	2.03	0.1	2.13	5.7	2	NH4AsN <0.02, TKN <0.2

P									
52588-P	2039	6/2/2003	0.01	1.11	0.3	1.41	3.6	2	NH4<0.02
52588-P	2039	9/8/2003							all tests cancelled, DRY, depth >15.59
52588-P	2039	1/26/2004							Dry; depth >15.58
52588-P	2039	4/12/2004							
52588-P	2039	7/12/2004							
52588-P	2041	3/6/2001	0	0.01	0.1	0.11	2.3	2	TKN <0.2
52588-P	2041	6/5/2001	0.02	0.11	0.1	0.21	1.8	2	TKN <0.2
52588-P	2041	9/5/2001	0	0.43	0.2	0.63	1.4	1	BOD5 is <1
52588-P	2041	3/5/2002	0	0.7	0.1	0.8	1.6	1	TKN <0.2
52588-P	2041	6/3/2002	0.03	0.49	0.3	0.79	1.1	1	
52588-P	2041	7/15/2002							
52588-P	2041	9/9/2002							DRY - WaterDepth >15.18
52588-P	2041	11/19/2002							Well dry, depth >15.17
52588-P	2041	3/3/2003							depth >15.15
52588-P	2041	6/2/2003							depth >15.20
52588-P	2041	9/8/2003							all tests cancelled, DRY, depth >15.12
52588-P	2041	1/26/2004							Dry; depth >15.12
52588-P	2041	4/12/2004							DRY; depth >15.09
52588-P	2041	7/12/2004							dry, depth >14.75
16444-L	2043	11/30/2001	0.02	0.98	0.1	1.08	0.6	1	TKN is <0.2
16444-L	2043	3/11/2002	0	1.4	0.1	1.5	1.8	1	TKN <0.2
16444-L	2043	6/11/2002	0.01	1.01	0.1	1.11	0.9	1	TKN <0.2, ammonia <0.02
16444-	2043	8/12/2002							

16444-L	2043	9/9/2002	0.01	1.18	0.1	1.28	2.4	1	Ammonia <0.02, TKN<0.2
16444-L	2043	12/3/2002	0.01	1.2	0.1	1.3	1.4	1	Ammonia <0.02, TKN <0.2
16444-L	2043	3/10/2003	0.01	1.15	0.1	1.25	1.3	1	NH4AsN <0.02
16444-L	2043	6/9/2003	0.01	1.25	0.1	1.35	1.4	1	Ammonia<0.02, TKN<0.2
16444-L	2043	9/24/2003	0.01	1.43	0.1	1.53	1.6	1	NH4AsN<0.02, TKN<0.2
16444-L	2043	1/26/2004							
16444-L	2043	7/12/2004	0.01	1.4	0.1	1.5	3.4	1	ammonia<0.02, TKN<0.2
16444-L	2044	11/30/2001	0.02	7.47	0.1	7.57	18	1	TKN is <0.2 est
16444-L	2044	3/11/2002	0	5.2	0.2	5.4	13	1	
16444-L	2044	6/11/2002	0.01	5.28	1.6	6.88	12	1	ammonia <0.02
16444-L	2044	8/12/2002							
16444-L	2044	9/9/2002	0.01	4.94	0.4	5.34	13	1	Ammonia <0.02
16444-L	2044	12/3/2002	0.01	5.6	0.1	5.7	19	1	Ammonia <0.02, TKN <0.2
16444-L	2044	3/10/2003	0.01	5.41	0.3	5.71	22	1	NH4AsN <0.02
16444-L	2044	6/9/2003	0.01	4.85	0.1	4.95	21	1	Ammonia<0.02, TKN<0.2
16444-L	2044	9/24/2003	0.01	5.9	0.1	6	24	1	NH4AsN<0.02, TKN<0.2
16444-L	2044	1/26/2004							
16444-L	2044	7/12/2004	0.01	4.93	0.1	5.03	13	1	ammonia<0.02, TKN<0.2
56083-M	2046	2/12/2002	0	10.8	0.1	10.9	22	1	TKN <0.2
56083-M	2046	5/7/2002	0.01	7.64	0.1	7.74	20	1	Ammonia <0.02; TKN <0.2
56083-M	2046	6/11/2002							
56083-M	2046	7/16/2002							
56083-	2046	8/13/2002	0.01	5.28	0.1	5.38	44	1	TKN <0.2 est., ammonia <0.02

56083-M	2046	9/10/2002							
56083-M	2046	10/7/2002							
56083-M	2046	11/6/2002	0.01	6.47	0.1	6.57	19	1	Ammonia <0.02, TKN <0.2
56083-M	2046	2/10/2003	0.01	4.02	0.1	4.12	16	1	NH4AsN <0.02, TKN <0.2
56083-M	2046	5/6/2003	0.01	4.45	0.1	4.55	13	1	Ammonia <0.02, TKN <0.2
56083-M	2046	8/12/2003	0.01	6.38	0.1	6.48	11	1	Ammonia<0.02, TKN<0.2
56083-M	2046	10/28/2003	0.01	2.17	0.1	2.27	11	1	NH4AsN<0.02, TKN<0.2
56083-M	2046	5/24/2004							
55635-I	2050	1/2/2002							Background/well development; No re-charge, unable to obtain samples.
55635-I	2050	2/20/2002	0	0.2	0.1	0.3	1.5	1	TKN <0.2
55635-I	2050	5/14/2002	0.02	0.63	0.4	1.03	2.6	1	
55635-I	2050	6/19/2002							
55635-I	2050	7/22/2002							
55635-I	2050	8/21/2002	0.05	0.24	0.1	0.34	3.3	1	TKN <0.2
55635-I	2050	9/18/2002							
55635-I	2050	10/14/2002							
55635-I	2050	11/5/2002							
55635-I	2050	12/10/2002							
55635-I	2050	2/11/2003	0.01	0.0654	0.1	0.1654	2	1	NH4AsN <0.02, TKN <0.2
55635-I	2050	5/21/2003	0.02	0.078	0.1	0.178	1.8	1	TKN<0.2
55635-I	2050	8/11/2003	0.01	0.291	0.1	0.391	3.2	1	NH4AsN<0.02, TKN<0.2
55635-I	2050	11/3/2003							No Flow; no samples collected
55635-I	2050	3/29/2004							
55635-I	2050	6/21/2004							
17276-C	2087	2/4/2002	0	4.2	0.1	4.3	6.8	1	TKN <0.2
17276-C	2087	5/13/2002	0.01	0.96	0.1	1.06	11	1	TKN <0.2, ammonia <0.02
17276-C	2087	6/25/2002							
17276-	2087	7/22/2002							

17276-C	2087	8/21/2002	0.07	0.67	0.1	0.77	32	1	TKN <0.2, BOD5 <1
17276-C	2087	9/17/2002							
17276-C	2087	10/1/2002							
17276-C	2087	10/29/2002	0.01	0.61	0.1	0.71	32	1	Ammonia <0.02, TKN <0.2
17276-C	2087	12/9/2002							
17276-C	2087	2/19/2003	0.04	3.83	0.1	3.93	20	1	TKN <0.2
17276-C	2087	5/12/2003	0.01	0.973	0.1	1.073	18	1	Ammonia <0.02, TKN <0.2
17276-C	2087	8/19/2003	0.01	1.71	0.1	1.81	23	1	NH4AsN<0.02, TKN<0.2
17276-C	2087	11/12/2003	0.01	2.2	0.1	2.3	22	1	Ammonia<0.02, TKN<0.2
17276-C	2087	6/7/2004							
16444-L	2089	5/30/2001	0.08	2			4.1		QA Duplicate; Well development; No result reported for TKN
16444-L	2089	5/30/2001	0.08	2.02			4		Well development; No result reported for TKN
16444-L	2089	11/30/2001	0.02	0.49	0.1	0.59	4	1	TKN is <0.2 est
16444-L	2089	3/11/2002	0	1	0.1	1.1	6.1	1	TKN <0.2
16444-L	2089	6/11/2002	0.01	1.94	0.1	2.04	7	1	TKN <0.2, ammonia <0.02
16444-L	2089	8/12/2002							
16444-L	2089	9/9/2002	0.01	3.58	0.3	3.88	8.5	1	Ammonia <0.02
16444-L	2089	12/3/2002	0.01	4.78	0.1	4.88	9.1	1	Ammonia <0.02, TKN <0.2
16444-L	2089	3/10/2003	0.01	4.83	0.2	5.03	8.7	1	NH4AsN <0.02
16444-L	2089	6/9/2003	0.01	4.39	0.1	4.49	7.7	1	Ammonia<0.02, TKN<0.2
16444-L	2089	9/24/2003	0.05	7.45	0.1	7.55	10	1	TKN<0.2
16444-L	2089	1/26/2004							
16444-	2089	7/12/2004	0.01	10	0.1	10.1	14	1	ammonia<0.02, TKN<0.2

L									
51309-N	2092	5/29/2001	0.01	0.6			5.2		Well development; NH4 <0.02; No result reported for TKN.
51309-N	2092	2/19/2002	0	0.6	0.1	0.7	6	1	TKN <0.2
51309-N	2092	5/13/2002	0.01	0.51	0.3	0.81	6.5	1	Ammonia <0.02
51309-N	2092	6/17/2002							
51309-N	2092	7/22/2002							
51309-N	2092	8/19/2002	0.01	0.42	0.1	0.52	7	1	TKN <0.2, ammonia <0.02
51309-N	2092	9/16/2002							
51309-N	2092	10/14/2002							
51309-N	2092	11/4/2002	0.01	0.34	0.1	0.44	7.1	1	Ammonia <0.02, TKN <0.2
51309-N	2092	2/18/2003	0.04	0.228	0.1	0.328	7.3	1	TKN <0.2
51309-N	2092	5/12/2003	0.01	0.192	0.1	0.292	7.6	1	Ammonia <0.02, TKN <0.2
51309-N	2092	8/18/2003	0.01	0.146	0.1	0.246	7.9	1	NH4AsN<0.02, TKN<0.2
51309-N	2092	11/18/2003	0.01	0.165	0.1	0.265	7.5	1	NH4AsN<0.02, TKN<0.2
51309-N	2092	11/18/2003	0.01	0.168	0.1	0.268	7.3	1	QA Duplicate; NH4AsN<0.02, TKN<0.2
51309-N	2092	3/1/2004							
51309-N	2092	6/21/2004							
51309-N	2093	5/29/2001	0.01	1.31			3.5		Well development; NH4 <0.02; No result reported for TKN
51309-N	2093	2/19/2002	0	2.6	0.1	2.7	2.7	1	TKN <0.2
51309-N	2093	5/13/2002	0.01	9.58	0.3	9.88	7.7	1	Ammonia <0.02
51309-N	2093	6/17/2002							
51309-N	2093	7/22/2002							
51309-N	2093	8/19/2002	0.01	5.89	0.1	5.99	4.6	1	TKN <0.2, ammonia <0.02
51309-	2093	9/16/2002							

N									
51309-N	2093	10/14/2002							
51309-N	2093	11/4/2002	0.05	2.78	0.1	2.88	3	1	TKN <0.2
51309-N	2093	2/18/2003	0.03	2.51	0.2	2.71	3.4	1	
51309-N	2093	5/12/2003	0.01	4.28	0.1	4.38	3.8	1	Ammonia <0.02, TKN <0.2
51309-N	2093	8/18/2003	0.01	2.09	0.1	2.19	2.9	1	NH4AsN<0.02, TKN<0.2
51309-N	2093	11/18/2003	0.01	1.61	0.1	1.71	2.6	1	NH4AsN<0.02, TKN<0.2
51309-N	2093	3/1/2004							
51309-N	2093	6/21/2004							
51309-N	2094	5/29/2001	0.04	4.74			8.4		Well development; No result reported for TKN
51309-N	2094	2/19/2002	0	1.1	0.1	1.2	3	1	TKN <0.2; D.O. <0.1
51309-N	2094	5/13/2002	0.01	1.68	0.1	1.78	4.1	1	TKN <0.2, ammonia <0.02
51309-N	2094	6/17/2002							
51309-N	2094	7/22/2002							
51309-N	2094	8/19/2002	0.01	2.13	0.1	2.23	4.4	1	TKN <0.2, ammonia <0.02
51309-N	2094	9/16/2002							
51309-N	2094	10/14/2002							
51309-N	2094	11/4/2002	0.02	3.81	0.2	4.01	5.9	1	
51309-N	2094	2/18/2003	0.06	3.53	0.1	3.63	5.4	1	TKN <0.2
51309-N	2094	5/12/2003	0.01	4.39	0.1	4.49	5.5	1	Ammonia <0.02, TKN <0.2
51309-N	2094	8/18/2003	0.01	4.45	0.1	4.55	5.8	1	NH4AsN<0.02, TKN<0.2
51309-N	2094	11/18/2003	0.01	6.67	0.1	6.77	7.5	1	NH4AsN<0.02, TKN<0.2
51309-N	2094	3/1/2004							
51309-	2094	6/21/2004							

N 56103-B	2102	5/30/2001	0.03	9.19			11		Background/well development; No result reported for TKN
56103-B	2102	2/12/2002	0	2.3	0.1	2.4	3.9	1	TKN <0.2
56103-B	2102	5/7/2002	0.01	6.1	0.1	6.2	11	1	Ammonia <0.02; TKN <0.2
56103-B	2102	6/11/2002							
56103-B	2102	7/16/2002							
56103-B	2102	8/13/2002	0.01	3.4	0.1	3.5	4.6	1	TKN <0.2 est., ammonia <0.02
56103-B	2102	9/10/2002							
56103-B	2102	10/7/2002							
56103-B	2102	11/6/2002	0.01	4.24	0.1	4.34	3.6	1	Ammonia <0.02, TKN <0.2
56103-B	2102	2/10/2003	0.01	1.43	0.3	1.73	4.7	1	NH4AsN <0.02
56103-B	2102	5/6/2003	0.01	9.55	0.1	9.65	15	1	Ammonia <0.02, TKN <0.2
56103-B	2102	8/12/2003	0.01	4.19	0.1	4.29	11	1	Ammonia<0.02, TKN<0.2
56103-B	2102	11/19/2003	0.01	3.99	0.1	4.09	9.5	1	Ammonia<0.02, TKN<0.2
56103-B	2102	3/29/2004							
56103-B	2102	5/24/2004							
56103-B	2103	5/30/2001	0.03	2.63			2.3		Background/well development; No result reported for TKN
56103-B	2103	2/12/2002	0	2.4	0.1	2.5	3.1	1	TKN <0.2
56103-B	2103	5/7/2002	0.01	1.68	0.1	1.78	3.8	1	Ammonia <0.02; TKN <0.2
56103-B	2103	6/11/2002							
56103-B	2103	7/16/2002							
56103-B	2103	8/13/2002	0.01	1.08	0.1	1.18	4.9	1	TKN <0.2 est., ammonia <0.02
56103-B	2103	9/10/2002							
56103-	2103	10/7/2002							

56103-B	2103	11/6/2002	0.02	2.91	0.1	3.01	6	1	TKN <0.2
56103-B	2103	2/10/2003	0.01	3.42	0.3	3.72	6.9	1	NH4AsN <0.02
56103-B	2103	5/6/2003	0.01	2.52	0.1	2.62	5.9	1	Ammonia <0.02, TKN <0.2
56103-B	2103	8/12/2003	0.02	2.28	0.1	2.38	8.3	1	TKN<0.2
56103-B	2103	11/19/2003	0.01	1.19	0.1	1.29	10	1	Ammonia<0.02, TKN<0.2
56103-B	2103	3/29/2004							
56103-B	2103	5/24/2004							
56103-B	2104	5/30/2001	0.02	1.8			2.2		Background/well development; No result reported for TKN
56103-B	2104	2/12/2002	0	1.9	0.1	2	4.2	1	TKN <0.2
56103-B	2104	5/6/2002	0.01	1.38	0.1	1.48	2.1	1	Ammonia <0.02, TKN <0.2
56103-B	2104	7/16/2002							
56103-B	2104	8/13/2002	0.01	5.15	0.1	5.25	2.4	1	TKN <0.2 est., ammonia <0.02
56103-B	2104	9/10/2002							
56103-B	2104	10/7/2002							
56103-B	2104	11/6/2002	0.03	2.11	0.1	2.21	3.6	1	TKN <0.2
56103-B	2104	2/10/2003	0.01	5.81	0.1	5.91	4.8	1	NH4AsN <0.02, TKN <0.2
56103-B	2104	5/6/2003	0.01	4.63	0.1	4.73	3.9	1	Ammonia <0.02, TKN <0.2
56103-B	2104	8/12/2003	0.01	7.51	0.1	7.61	9.1	1	Ammonia<0.02, TKN<0.2
56103-B	2104	11/19/2003	0.02	1.32	0.1	1.42	5.9	1	TKN<0.2
56103-B	2104	3/29/2004							
56103-B	2104	5/24/2004							
17276-C	2107	5/30/2001	0.02	0.06			2.7		Background/well development, No result reported for TKN
17276-	2107	2/4/2002	0	0.1	0.1	0.2	4.8	1	TKN <0.2

17276-C	2107	5/14/2002	0.01	0.33	0.1	0.43	18	1	TKN <0.2, ammonia <0.02
17276-C	2107	6/25/2002							
17276-C	2107	7/22/2002							
17276-C	2107	8/21/2002	0.01	0.13	0.1	0.23	26	1	TKN <0.2, ammonia <0.02
17276-C	2107	9/17/2002							
17276-C	2107	10/1/2002							
17276-C	2107	10/29/2002	0.01	0.08	0.1	0.18	14	1	Ammonia <0.02, TKN <0.2
17276-C	2107	12/9/2002							
17276-C	2107	2/19/2003	0.04	0.185	0.1	0.285	9.3	1	TKN <0.2
17276-C	2107	5/12/2003	0.01	0.367	0.1	0.467	15	1	Ammonia <0.02, TKN <0.2
17276-C	2107	8/19/2003	0.02	0.439	0.1	0.539	30	1	TKN<0.2
17276-C	2107	11/12/2003	0.01	0.532	0.1	0.632	40	1	Ammonia<0.02, TKN<0.2
17276-C	2107	6/7/2004							
52356-A	2109	9/28/2001	0.01	2.38			11		
52356-A	2109	8/28/2002							
52356-A	2109	9/24/2002							
52356-A	2109	10/23/2002	0.01	1.8	0.1	1.9	13		
52356-A	2109	11/13/2002							
52356-A	2109	12/3/2002							
52356-A	2109	1/14/2003	0.03	1.17	0.2	1.37	13		
52356-A	2109	2/24/2003							
52356-A	2109	3/3/2003							
52356-	2109	4/21/2003	0.01	1.61	0.1	1.71	12		

A							
52356-A	2109	6/16/2003					
52356-A	2109	7/28/2003	0.01	1.26	0.1	1.36	13
52356-A	2109	10/20/2003	0.01	1.44	0.1	1.54	13
52356-A	2110	9/28/2001	0.03	2.16			13
52356-A	2110	8/28/2002					
52356-A	2110	9/24/2002					
52356-A	2110	10/23/2002	0.01	2.83	0.1	2.93	13
52356-A	2110	11/13/2002					
52356-A	2110	12/3/2002					
52356-A	2110	1/14/2003	0.02	2.55	0.1	2.65	13
52356-A	2110	2/24/2003					
52356-A	2110	3/3/2003					
52356-A	2110	4/21/2003	0.01	1.63	0.1	1.73	10
52356-A	2110	6/16/2003					
52356-A	2110	7/28/2003	0.01	1.92	0.2	2.12	12
52356-A	2110	10/20/2003	0.01	1.86	0.1	1.96	12
52356-A	2111	9/28/2001	0.02	3.28			9.6
52356-A	2111	8/28/2002					
52356-A	2111	9/24/2002					
52356-A	2111	10/23/2002	0.01	2.26	0.1	2.36	9.4
52356-A	2111	11/13/2002					
52356-A	2111	12/3/2002					
52356-	2111	1/14/2003	0.06	1.6	0.1	1.7	9.2

52356-A	2111	2/24/2003							
52356-A	2111	3/3/2003							
52356-A	2111	4/21/2003	0.01	1.9	0.1	2	8.4		
52356-A	2111	6/16/2003							
52356-A	2111	7/28/2003	0.01	2.12	0.1	2.22	8.5		
52356-A	2111	10/20/2003	0.01	1.76	0.1	1.86	8.3		
16211-B	2113	10/5/2001	0.03	0			3.2		Background/well development; No result reported for TKN; Nitrate <0.005
16211-B	2113	10/5/2001	0.03	0.0025		0.0025	3.3		QA Duplicate; Well development; No TKN result reported; Nitrate <0.005
16211-B	2113	9/3/2002							
16211-B	2113	9/30/2002	0.1	0.02	0.1	0.12	3.4	1	TKN <0.2
16211-B	2113	10/28/2002							
16211-B	2113	11/19/2002							
16211-B	2113	1/7/2003	0.05	0.0025	0.1	0.1025	3.6	1	Nitrate<0.0050, TKN<0.2
16211-B	2113	2/3/2003							
16211-B	2113	3/3/2003							
16211-B	2113	3/31/2003	0.05	0.0262	0.1	0.1262	3.3	1	TKN <0.2
16211-B	2113	6/23/2003							
16211-B	2113	7/7/2003	0.09	0.0118	0.1	0.1118	4.2	1	TKN<0.2,D.O.<0.1
16211-B	2113	8/19/2003							
16211-B	2113	9/29/2003	0.07	0.0157	0.1	0.1157	4.5	1	TKN<0.2, D.O.<0.1
16211-B	2113	2/9/2004							
16211-B	2114	10/5/2001	0.04	0.0025			7.7		Background/well development; No TKN result reported; Nitrate <0.005
16211-	2114	9/3/2002							

B									
16211-B	2114	9/30/2002	0.04	0.02	0.1	0.12	7.5	1	D.O. <0.1; TKN <0.2
16211-B	2114	10/28/2002							
16211-B	2114	11/19/2002							
16211-B	2114	1/7/2003	0.03	0.0025	0.1	0.1025	8.4	1	Nitrate<0.0050, TKN<0.2
16211-B	2114	2/3/2003							
16211-B	2114	3/3/2003							
16211-B	2114	3/31/2003	0.03	0.0236	0.1	0.1236	8.5	1	TKN <0.2, D.O. <0.1
16211-B	2114	6/23/2003							
16211-B	2114	7/7/2003	0.04	0.0224	0.1	0.1224	8.6	1	TKN<0.2
16211-B	2114	8/19/2003							
16211-B	2114	9/29/2003	0.04	0.0165	0.1	0.1165	7.9	1	TKN<0.2, D.O.<0.1
16211-B	2114	2/9/2004							
16211-B	2115	10/5/2001	0.04	0.0025			2.1		Background/well development; No TKN result reported; Nitrate <0.005
16211-B	2115	9/3/2002							
16211-B	2115	9/30/2002	0.07	0.02	0.1	0.12	3.4	1	TKN < 0.2
16211-B	2115	10/28/2002							
16211-B	2115	11/19/2002							
16211-B	2115	1/7/2003	0.06	0.0025	0.1	0.1025	3.3	1	Nitrate<0.0050, TKN<0.2
16211-B	2115	2/3/2003							
16211-B	2115	3/3/2003							
16211-B	2115	3/31/2003	0.04	0.0769	0.1	0.1769	3.6	1	TKN <0.2
16211-B	2115	6/23/2003							
16211-	2115	7/7/2003	0.05	0.0196	0.1	0.1196	3.5	1	TKN<0.2; Bubbly flow

16211-B	2115	8/19/2003							
16211-B	2115	9/29/2003	0.04	0.0204	0.1	0.1204	3.6	1	TKN<0.2
16211-B	2115	2/9/2004							
51475-D	2117	10/4/2001	0.01	0.23			3.5		Background/well development; No result reported for TKN; NH4 <0.02
51475-D	2117	11/27/2001	0	0.17	0.1	0.27	3.4	1	TKN <0.2
51475-D	2117	2/13/2002	0	0.2	0.1	0.3	3.4	1	TKN <0.2
51475-D	2117	5/6/2002	0.01	0.13	0.1	0.23	3.2	1	Ammonia <0.02, TKN <0.2
51475-D	2117	5/10/2002							
51475-D	2117	6/10/2002							
51475-D	2117	7/15/2002							
51475-D	2117	8/19/2002	0.01	0.13	0.1	0.23	2.6	1	TKN <0.2, ammonia <0.02
51475-D	2117	9/16/2002							
51475-D	2117	10/30/2002	0.01	0.1	0.1	0.2	2.8	1	Ammonia <0.02, TKN <0.2
51475-D	2117	2/18/2003	0.03	0.0808	0.1	0.1808	3.1	1	TKN <0.2
51475-D	2117	5/12/2003	0.01	0.0798	0.1	0.1798	3	1	Ammonia <0.02, TKN <0.2
51475-D	2117	8/18/2003	0.01	0.0709	0.1	0.1709	4.2	1	NH4AsN<0.02, TKN<0.2
51475-D	2117	10/27/2003	0.01	0.131	0.1	0.231	7	1	NH4AsN<0.02, TKN<0.2
51475-D	2117	6/7/2004							
51475-D	2118	10/4/2001	0.08	0.01			2		Background/well development; No result reported for TKN; DO<0.1
51475-D	2118	11/27/2001	0.09	0.0025	0.1	0.1025		1	nitrate <0.005; TKN <0.2
51475-D	2118	2/13/2002	0.1	0	0.2	0.2	1.7	1	D.O. <0.1
51475-D	2118	5/6/2002	0.06	0.01	0.1	0.11	1.8	1	TKN <0.2, D.O. <0.1
51475-	2118	5/10/2002							

51475-D	2118	6/10/2002							
51475-D	2118	7/15/2002							
51475-D	2118	8/19/2002	0.07	0.02	0.1	0.12	1.8	1	TKN <0.2
51475-D	2118	9/16/2002							
51475-D	2118	10/30/2002	0.07	0.01	0.1	0.11	2.2	1	TKN <0.2
51475-D	2118	2/18/2003	0.13	0.00025	0.1	0.1003	2	1	Nitrate-Nitrite <0.0050, TKN <0.2
51475-D	2118	5/12/2003	0.12	0.0025	0.1	0.1025	1.9	1	Nitrate <0.005, TKN <0.2, D.O. <0.1
51475-D	2118	8/18/2003	0.08	0.0025	0.1	0.1025	2.1	1	Nitrate<0.005, TKN<0.2, D.O.<0.1
51475-D	2118	10/27/2003	0.07	0.0025	0.1	0.1025	2.2	1	Nitrate <0.050, TKN<0.2
51475-D	2118	6/7/2004							
51475-D	2119	10/4/2001	0.01	0.16			1.9		Background/well development; NH4<0.02; No result reported for TKN
51475-D	2119	10/4/2001	0.01	0.16			1.9		QA Duplicate; NH4 <0.02; No result reported for TKN
51475-D	2119	11/27/2001	0	0.2	0.1	0.3	1.6	1	TKN <0.2
51475-D	2119	2/13/2002	0	0.13	0.2	0.33	2	1	
51475-D	2119	5/6/2002	0.01	0.15	0.1	0.25	2.1	1	Ammonia <0.02, , TKN <0.2
51475-D	2119	5/10/2002							
51475-D	2119	6/10/2002							
51475-D	2119	7/15/2002							
51475-D	2119	8/19/2002	0.01	0.26	0.1	0.36	1.7	1	TKN <0.2, ammonia <0.02
51475-D	2119	9/16/2002							
51475-D	2119	10/30/2002	0.01	0.27	0.1	0.37	1.9	1	Ammonia <0.02, TKN <0.2
51475-D	2119	2/18/2003	0.05	0.16	0.1	0.26	1.9	1	TKN <0.2
51475-	2119	5/12/2003	0.01	0.198	0.1	0.298	3.1	1	Ammonia <0.02, TKN <0.2

51475-D	2119	8/18/2003	0.01	0.258	0.1	0.358	1.8	1	NH4AsN<0.02, TKN<0.2
51475-D	2119	10/27/2003	0.01	0.304	0.1	0.404	1.9	1	NH4AsN<0.02, TKN<0.2
51475-D	2119	6/7/2004							
15766-K	2121	9/28/2001	0.01	9.84			150		Background/well development; NH4 <0.02; No result reported for TKN
15766-K	2121	9/28/2001	0.01	9.85			150		QA Duplicate; NH4<0.02; No result reported for TKN; Well Development
15766-K	2121	7/15/2002	0.01	13.6	0.3	13.9	160	1	NH4 <0.02
15766-K	2121	8/6/2002							
15766-K	2121	9/9/2002							
15766-K	2121	10/7/2002	0.01	11.3	0.4	11.7	49	1	ammonia < 0.2
15766-K	2121	11/4/2002							
15766-K	2121	12/3/2002							
15766-K	2121	1/21/2003	0.01	3.46	0.1	3.56	57	1	Ammonia <0.02, TKN <0.2
15766-K	2121	2/11/2003							
15766-K	2121	3/10/2003							
15766-K	2121	4/21/2003	0.01	0.576	0.1	0.676	24	1	Ammonia <0.02, TKN <0.2
15766-K	2121	6/17/2003							
15766-K	2121	7/14/2003	0.02	0.428	0.1	0.528	23	1	TKN<0.2
15766-K	2121	10/7/2003	0.02	0.875	0.1	0.975	26	1	TKN<0.2
15766-K	2121	2/9/2004							
15766-K	2121	5/17/2004							
15766-K	2122	9/28/2001							Background/well development; Unable to establish flow to obtain samples
15766-K	2122	10/24/2001	0.06	0.04			1.3		Background/well development; slow, intermittent flow; No TKN result repor
15766-	2122	7/15/2002	0.01	0.1	0.1	0.2	4		TKN <0.2, N<0.02

15766-K	2122	7/24/2002						2	
15766-K	2122	8/6/2002							
15766-K	2122	9/9/2002							DRY - Water Depth >19.32
15766-K	2122	10/7/2002							DRY - water level >18.96
15766-K	2122	11/4/2002							depth >19.32
15766-K	2122	12/3/2002							
15766-K	2122	1/21/2003							Dry; Depth >19.31
15766-K	2122	2/11/2003							depth >19.32
15766-K	2122	3/10/2003							depth >19.34
15766-K	2122	4/21/2003							Dry to well screen: depth >19.27 - No samples.
15766-K	2122	6/17/2003							depth >19.34'
15766-K	2122	7/14/2003							Dry; depth >19.26
15766-K	2122	10/7/2003							DRY, depth >19.26, all tests cancelled
15766-K	2122	2/9/2004							DRY; depth to water >19.26
15766-K	2122	5/17/2004							depth to water>19.24
56083-M	2124	9/27/2001	0.08	1.05	0	1.05	25		Background/well development; No result reported for TKN
56083-M	2124	2/12/2002	0.06	0.8	0.2	1	11	1	
56083-M	2124	5/7/2002	0.02	0.5	0.3	0.8	6.7	1	
56083-M	2124	6/11/2002							
56083-M	2124	7/16/2002							
56083-M	2124	8/13/2002	0.03	1.09	0.1	1.19	7.4	1	TKN <0.2 est.
56083-M	2124	9/10/2002							
56083-	2124	10/7/2002							

M									
56083-M	2124	11/6/2002	0.02	2.04	0.1	2.14	8.8	1	TKN <0.2
56083-M	2124	2/10/2003	0.02	5.15	0.1	5.25	9.9	1	TKN <0.2
56083-M	2124	5/6/2003	0.01	3.72	0.1	3.82	12	1	Ammonia <0.02, TKN <0.2
56083-M	2124	8/12/2003	0.01	1.62	0.1	1.72	18	1	Ammonia<0.02, TKN<0.2
56083-M	2124	10/29/2003	0.01	5.86	0.1	5.96	20	1	NH4AsN<0.02, TKN<0.2
56083-M	2124	5/24/2004							
56083-M	2125	9/27/2001	0.05	1.97	0	1.97	3.6		Background/well development; No result reported for TKN
56083-M	2125	2/12/2002	0	3.82	0.1	3.92	7.3	1	TKN <0.2
56083-M	2125	5/7/2002	0.01	4.43	0.1	4.53	8.8	1	Ammonia <0.02; TKN <0.2
56083-M	2125	6/11/2002							
56083-M	2125	7/16/2002							
56083-M	2125	8/13/2002	0.01	4.05	0.1	4.15	7.2	1	TKN <0.2 est., ammonia <0.02
56083-M	2125	9/10/2002							
56083-M	2125	10/7/2002							
56083-M	2125	11/6/2002	0.01	3.67	0.1	3.77	7.8	1	Ammonia <0.02, TKN <0.2
56083-M	2125	2/10/2003	0.02	3.08	0.1	3.18	9.6	1	TKN <0.2
56083-M	2125	5/6/2003	0.01	1.61	0.6	2.21	13	1	Ammonia <0.02
56083-M	2125	8/12/2003	0.01	0.836	0.1	0.936	12	1	Ammonia<0.02, TKN<0.2
56083-M	2125	10/29/2003	0.01	0.676	0.1	0.776	11	1	NH4AsN<0.02, TKN<0.2
56083-M	2125	5/24/2004							
51468-P	2127	10/10/2001	0.03	7.16			13		
51468-P	2127	7/29/2002	0.01	7.68	0.2	7.88	13		
51468-	2127	8/27/2002							

51468-P	2127	9/16/2002					
51468-P	2127	10/14/2002	0.02	8.45	0.2	8.65	12
51468-P	2127	11/4/2002					
51468-P	2127	12/9/2002					
51468-P	2127	1/14/2003	0.01	8.22	0.1	8.32	13
51468-P	2127	2/11/2003					
51468-P	2127	4/21/2003	0.01	7.45	0.1	7.55	9.6
51468-P	2127	6/23/2003					
51468-P	2127	7/21/2003	0.01	6.37	0.3	6.67	7.9
51468-P	2127	10/15/2003	0.01	9.42	0.1	9.52	9.4
51468-P	2127	3/1/2004					
51468-P	2128	10/10/2001	0.01	4.15			7.2
51468-P	2128	7/29/2002	0.01	5.95	0.1	6.05	10
51468-P	2128	8/27/2002					
51468-P	2128	9/16/2002					
51468-P	2128	10/14/2002	0.02	4.92	0.1	5.02	11
51468-P	2128	11/4/2002					
51468-P	2128	12/9/2002					
51468-P	2128	1/14/2003	0.01	4.45	0.1	4.55	7.5
51468-P	2128	2/11/2003					
51468-P	2128	4/21/2003	0.01	4.4	0.2	4.6	6.7
51468-P	2128	6/23/2003					
51468-	2128	7/21/2003	0.01	3.88	0.1	3.98	7.5

P									
51468-P	2128	10/15/2003	0.01	2.62	0.1	2.72	8.5		
51468-P	2128	3/1/2004							
51468-P	2129	10/10/2001	0.03	0.35			5.4		
51468-P	2129	7/29/2002	0.01	4.32	0.1	4.42	11		
51468-P	2129	8/27/2002							
51468-P	2129	9/16/2002							
51468-P	2129	10/14/2002	0.01	3.76	0.3	4.06	9.2		
51468-P	2129	11/4/2002							
51468-P	2129	12/9/2002							
51468-P	2129	1/14/2003	0.03	3.02	0.1	3.12	8.5		
51468-P	2129	2/11/2003							
51468-P	2129	4/21/2003	0.01	2.71	0.1	2.81	8		
51468-P	2129	6/23/2003							
51468-P	2129	7/21/2003	0.03	1.96	0.1	2.06	7.4		
51468-P	2129	10/15/2003	0.01	3.48	0.1	3.58	11		
51468-P	2129	3/1/2004							
55730-P	2135	9/21/2001	0.01	0.04	0.1	0.14	1.1		NH4 <0.02; TKN <0.2
55730-P	2135	9/21/2001	0.01	0.04	0.3	0.34	1		QA Duplicate; NH4 <0.02
55730-P	2135	10/30/2002							
55730-P	2135	11/19/2002							
55730-P	2135	1/7/2003	0.05	0.0408	0.1	0.1408	0.9	1	TKN<0.2
55730-P	2135	2/4/2003							
55730-	2135	3/4/2003							

P									
55730-P	2135	3/31/2003	0.01	0.111	0.1	0.211	0.8	1	Ammonia <0.02, TKN <0.2
55730-P	2135	6/11/2003							
55730-P	2135	7/15/2003	0.01	0.203	0.2	0.403	0.8	1	Ammonia<0.02
55730-P	2135	8/19/2003							
55730-P	2135	10/7/2003	0.01	0.15	0.1	0.25	0.9	1	NH4AsN<0.02, TKN<0.2
55730-P	2135	2/4/2004							
55730-P	2135	5/17/2004							
55730-P	2136	10/24/2001	0.04	0.02			0.9		Background/well development; slow, intermittent flow; No TKN result repor
55730-P	2136	10/30/2002							
55730-P	2136	11/19/2002							
55730-P	2136	1/7/2003	0.03	0.0112	0.1	0.1112	1.2	1	TKN<0.2
55730-P	2136	2/4/2003							
55730-P	2136	3/4/2003							
55730-P	2136	3/31/2003	0.04	0.0386	0.1	0.1386			Field Tests "NR", TKN <0.2
55730-P	2136	6/11/2003							
55730-P	2136	7/15/2003	0.05	0.0122	0.1	0.1122	10	1	Extreme slow flow; not enough sample volume to check field parameters; T<0.2
55730-P	2136	8/19/2003							
55730-P	2136	10/6/2003	0.05	0.0292	0.3	0.3292	8.5		
55730-P	2136	2/4/2004							
55730-P	2136	5/17/2004							
51451-F	2146	1/3/2002	0.01	0.05			6		Background/well development; No TKN result reported; NH4 <0.02.
51451-F	2146	2/11/2002	0	0	0.1	0.1	6	1	TKN <.2
51451-	2146	5/13/2002	0.04	0.07	0.1	0.17	6.5		TKN <0.2

51451-F	2146	6/17/2002							
51451-F	2146	7/22/2002							
51451-F	2146	8/19/2002	0.01	0.06	0.1	0.16	6.5	1	TKN <0.2, ammonia <0.02
51451-F	2146	9/16/2002							
51451-F	2146	10/14/2002							
51451-F	2146	11/4/2002	0.01	0.04	0.1	0.14	6.9	1	Ammonia <0.02, TKN <0.2
51451-F	2146	2/18/2003	0.04	0.0367	0.7	0.7367	7.1	1	
51451-F	2146	5/20/2003	0.01	0.0609	0.1	0.1609	7.5	1	NH4<0.02, TKN<0.2
51451-F	2146	8/18/2003	0.02	0.0623	0.1	0.1623	7.6	1	TKN<0.2
51451-F	2146	11/18/2003	0.01	0.0333	0.1	0.1333	7.5	1	NH4AsN<0.02, TKN<0.2
51451-F	2146	3/1/2004							
51451-F	2146	6/21/2004							
51451-F	2147	1/3/2002	0.21	0.01			5.1		Background/well development; No TKN result reported; Nitrate is estimate
51451-F	2147	2/11/2002	0.2	0	0.2	0.2	4.9	1	
51451-F	2147	5/13/2002	0.21	0	0.3	0.3	5.4	1	Nitrate/nitrite <0.005
51451-F	2147	6/17/2002							
51451-F	2147	7/22/2002							
51451-F	2147	8/19/2002	0.18	0.01	0.3	0.31	5.2	1	D.O. <0.1
51451-F	2147	9/16/2002							
51451-F	2147	10/14/2002							
51451-F	2147	11/4/2002	0.21	0.01	0.1	0.11	5.6	1	TKN <0.2, D.O. <0.1
51451-F	2147	2/18/2003	0.27	0.00025	0.3	0.3003	5.6	1	Nitrate-Nitrite <0.0050
51451-	2147	5/20/2003	0.2	0.0061	0.1	0.1061	5.4	1	TKN<0.2

F									
51451-F	2147	8/18/2003	0.02	0.0025	0.3	0.3025	6.3	1	Nitrate<0.005, D.O.<0.1
51451-F	2147	11/18/2003	0.19	0.0025	0.1	0.1025	5.3	1	Nitrate <0.050, TKN<0.2
51451-F	2147	3/1/2004							
51451-F	2147	6/21/2004							
51451-F	2148	1/3/2002	0.04	0.9			68		Background/well development; No TKN result reported.
51451-F	2148	2/11/2002	0	1.4	0.2	1.6	75	1	
51451-F	2148	5/13/2002	0.01	1.83	0.1	1.93	100	1	TKN <0.2, ammonia <0.02
51451-F	2148	6/17/2002							
51451-F	2148	7/22/2002							
51451-F	2148	8/19/2002	0.01	1.1	0.1	1.2	85	1	TKN <0.2, ammonia <0.02
51451-F	2148	9/16/2002							
51451-F	2148	10/14/2002							
51451-F	2148	11/4/2002	0.02	0.68	0.1	0.78	55	1	TKN <0.2
51451-F	2148	2/18/2003	0.05	1	0.1	1.1	86	1	TKN <0.2
51451-F	2148	5/20/2003	0.01	0.832	0.1	0.932	71	1	NH4<0.02, TKN<0.2
51451-F	2148	8/18/2003	0.01	0.909	0.2	1.109	76	1	NH4AsN<0.02
51451-F	2148	11/18/2003	0.01	0.709	0.1	0.809	63	1	NH4AsN<0.02, TKN<0.2
51451-F	2148	3/1/2004							
51451-F	2148	6/21/2004							
15910-E	2154	1/4/2002	0.21	0.01		0.01	1.9		Well development; No TKN result reported; DO <1.0
15910-E	2154	2/25/2002	0.2	0	0.2	0.2	2	1	
15910-E	2154	5/20/2002	0.2	0.01	0.3	0.31	2.3	1	
15910-	2154	6/25/2002							

15910-E	2154	7/29/2002							
15910-E	2154	8/26/2002	0.18	0.01	0.3	0.31	2	1	
15910-E	2154	9/25/2002							
15910-E	2154	10/23/2002							
15910-E	2154	11/12/2002	0.2	0.0025	0.3	0.3025	1.9	1	Nitrate/nitrite <0.0050
15910-E	2154	2/24/2003	0.24	0.0169	0.2	0.2169	2	1	
15910-E	2154	5/5/2003	0.18	0.0025	0.1	0.1025	2.6	1	Nitrate <0.005, TKN <0.2
15910-E	2154	8/26/2003	0.18	0.0025	0.2	0.2025	2.3	1	Nitrate<0.005
15910-E	2154	11/12/2003	0.18	0.0025	0.1	0.1025	2.4	1	Nitrate<0.005, TKN<0.2
15910-E	2154	6/7/2004							
15910-E	2155	1/4/2002	0.56	0.01			28		Background/well development; No TKN result reported.
15910-E	2155	2/25/2002	0.5	0	0.6	0.6	23	1	
15910-E	2155	5/20/2002	0.48	0.01	0.6	0.61	19	1	QA duplicate
15910-E	2155	5/20/2002	0.46	0.01	0.6	0.61	18	1	
15910-E	2155	6/25/2002							
15910-E	2155	7/29/2002							
15910-E	2155	8/26/2002	0.47	0.01	0.6	0.61	26	1	
15910-E	2155	9/25/2002							
15910-E	2155	10/23/2002							
15910-E	2155	11/12/2002	0.48	0.0053	0.5	0.5053	26	1	
15910-E	2155	2/24/2003	0.48	0.0225	0.5	0.5225	20	1	
15910-E	2155	5/5/2003	0.45	0.0067	0.5	0.5067	18	1	
15910-	2155	8/26/2003	0.44	0.0025	0.5	0.5025	15	1	Nitrate<0.005

15910-E	2155	11/12/2003	0.43	0.0025	0.4	0.4025	13	1	Nitrate<0.005
15910-E	2155	6/7/2004							
15910-E	2156	1/4/2002	0.01	0.01			2.8		Background/well development; No TKN result reported; NH4 <0.02.
15910-E	2156	2/25/2002	0	0	0.1	0.1	3.1	1	TKN <0.2
15910-E	2156	5/20/2002	0.01	0.01	0.1	0.11	3.4	1	TKN <0.2, ammonia <0.02
15910-E	2156	6/25/2002							
15910-E	2156	7/29/2002							
15910-E	2156	8/26/2002	0.01	0.02	0.1	0.12	3.7	1	TKN <0.2, ammonia <0.02
15910-E	2156	9/25/2002							
15910-E	2156	10/23/2002							
15910-E	2156	11/12/2002	0.04	0.0259	0.1	0.1259	4.9	1	TKN <0.2
15910-E	2156	2/24/2003	0.03	0.0638	0.1	0.1638	4.1	1	TKN <0.2
15910-E	2156	5/5/2003	0.01	0.0658	0.1	0.1658	4	1	Ammonia <0.02, TKN <0.2
15910-E	2156	8/26/2003	0.01	0.0619	0.1	0.1619	4	1	NH4AsN<0.02, TKN<0.2
15910-E	2156	11/12/2003	0.01	0.0666	0.1	0.1666	4.1	1	Ammonia<0.02, TKN<0.2
15910-E	2156	6/7/2004							
52631-A	2158	1/3/2002	0.02	2.31			8.8		
52631-A	2158	8/12/2002							
52631-A	2158	10/8/2002	0.02	2.8	0.1	2.9	8.4		
52631-A	2158	11/5/2002							
52631-A	2158	12/3/2002							
52631-A	2158	1/14/2003	0.01	2.94	0.2	3.14	9		
52631-	2158	2/18/2003							

52631-A	2158	3/3/2003					
52631-A	2158	4/21/2003	0.01	3.07	0.1	3.17	9.1
52631-A	2158	6/16/2003					
52631-A	2158	7/28/2003	0.01	3.72	2	5.72	12
52631-A	2158	10/7/2003	0.01	4.4	0.1	4.5	13
52631-A	2158	2/4/2004					
52631-A	2158	7/12/2004					
52631-A	2159	1/3/2002	0.01	3.3			8.2
52631-A	2159	8/12/2002					
52631-A	2159	10/8/2002	0.03	3.93	0.1	4.03	8
52631-A	2159	11/5/2002					
52631-A	2159	12/3/2002					
52631-A	2159	1/14/2003	0.03	3.34	0.1	3.44	8
52631-A	2159	2/18/2003					
52631-A	2159	3/3/2003					
52631-A	2159	4/21/2003	0.01	4.07	0.1	4.17	7.9
52631-A	2159	6/16/2003					
52631-A	2159	7/28/2003	0.01	3.22	0.2	3.42	7.6
52631-A	2159	10/7/2003	0.01	3.02	0.1	3.12	7.1
52631-A	2159	2/4/2004					
52631-A	2159	7/12/2004					
52631-A	2160	1/3/2002	0.31	13.1			18
52631-	2160	8/12/2002					

52631-A	2160	10/8/2002	0.01	7.02	0.1	7.12	15
52631-A	2160	10/15/2002					
52631-A	2160	10/15/2002					
52631-A	2160	10/15/2002					
52631-A	2160	11/5/2002					
52631-A	2160	12/3/2002					
52631-A	2160	1/14/2003	0.02	8.14	0.1	8.24	21
52631-A	2160	2/18/2003					
52631-A	2160	3/3/2003					
52631-A	2160	4/21/2003	0.03	11.7	0.1	11.8	21
52631-A	2160	6/16/2003					
52631-A	2160	7/28/2003	0.01	8.12	0.1	8.22	21
52631-A	2160	10/7/2003	0.01	7.15	0.1	7.25	20
52631-A	2160	2/4/2004					
52631-A	2160	7/12/2004					
16320-J	2162	1/4/2002	0.04	0.01			2.2
16320-J	2162	1/4/2002	0.04	0.01			2
16320-J	2162	9/3/2002					
16320-J	2162	10/1/2002	0.04	0.02	0.1	0.12	1.9
16320-J	2162	10/30/2002					
16320-J	2162	11/19/2002					
16320-J	2162	1/7/2003	0.01	0.0154	0.1	0.1154	2
16320-	2162	2/11/2003					

J							
16320-J	2162	3/3/2003					
16320-J	2162	4/14/2003	0.03	0.0112	0.1	0.1112	2
16320-J	2162	6/9/2003					
16320-J	2162	7/7/2003	0.03	0.0161	0.1	0.1161	2
16320-J	2162	9/29/2003	0.03	0.0186	0.1	0.1186	1.8
16320-J	2162	2/4/2004					
16320-J	2162	5/17/2004					
16320-J	2163	1/4/2002	0.03	0.9			5.3
16320-J	2163	9/3/2002					
16320-J	2163	10/1/2002	0.07	0.83	0.1	0.93	5.6
16320-J	2163	10/30/2002					
16320-J	2163	11/19/2002					
16320-J	2163	1/7/2003					
16320-J	2163	2/11/2003					
16320-J	2163	3/3/2003					
16320-J	2163	4/14/2003	0.02	0.652	0.1	0.752	5.3
16320-J	2163	6/9/2003					
16320-J	2163	7/7/2003	0.02	0.474	0.1	0.574	5.4
16320-J	2163	9/29/2003	0.02	0.754	0.1	0.854	6.9
16320-J	2163	2/4/2004					
16320-J	2163	5/17/2004					
16320-J	2164	1/4/2002	0.18	0.01			4.9
16320-	2164	9/3/2002					

J									
16320-J	2164	10/1/2002	0.17	0.01	0.2	0.21	5.7		
16320-J	2164	10/30/2002							
16320-J	2164	11/19/2002							
16320-J	2164	1/7/2003	0.15	0.0051	0.1	0.1051	2		
16320-J	2164	2/11/2003							
16320-J	2164	3/3/2003							
16320-J	2164	4/14/2003	0.16	0.0025	0.1	0.1025	5.9		
16320-J	2164	6/9/2003							
16320-J	2164	7/7/2003	0.15	0.0092	0.1	0.1092	5.9		
16320-J	2164	9/29/2003	0.17	0.0104	0.1	0.1104	6.2		
16320-J	2164	2/4/2004							
16320-J	2164	5/17/2004							
52922-S	2166	1/3/2002	0.01	2.53			4.1		Background/well development; No TKN result reported; NH4 <0.02.
52922-S	2166	1/3/2002	0.01	2.54			4.1		QA Duplicate; Background/well development; NH4<0.02; No TKN reported
52922-S	2166	5/1/2002	0.01	1.8	0.1	1.9	3.6	1	Ammonia <0.02; TKN <0.2
52922-S	2166	8/5/2002	0.09	2.3	0.3	2.6	4		
52922-S	2166	8/12/2002						2	Bacteria Re-sample
52922-S	2166	9/4/2002							
52922-S	2166	10/2/2002							
52922-S	2166	10/29/2002							Depth >10.72
52922-S	2166	11/19/2002							Well dry, depth >11.10
52922-S	2166	1/7/2003							
52922-	2166	2/4/2003	0.01	1.34	0.1	1.44	3	2	NH4<0.02, TKN<0.2

52922-S	2166	4/28/2003	0.02	2.02	0.2	2.22	3	1	
52922-S	2166	8/4/2003	0.01	2.49	0.1	2.59	4.8	1	Ammonia<0.02, TKN<0.2
52922-S	2166	10/28/2003							All tests cancelled. Depth >11.04; DRY
52922-S	2166	1/12/2004				199998			
52922-S	2166	3/1/2004							
52922-S	2166	5/24/2004							
52922-S	2167	1/3/2002							Unable to sample - dry to bottom of screen.
52922-S	2168	1/3/2002	0.07	0.06			11		Background/well development; No TKN result reported.
52922-S	2168	5/1/2002	0.02	0.03	0.1	0.13	9.6	1	TKN <0.2
52922-S	2168	8/5/2002	0.04	0.04	0.2	0.24	11	1	
52922-S	2168	9/4/2002							
52922-S	2168	10/2/2002							
52922-S	2168	10/29/2002	0.01	0.03	0.1	0.13	9.7	1	Ammonia <0.02, TKN <0.2
52922-S	2168	11/19/2002							
52922-S	2168	1/7/2003							
52922-S	2168	2/4/2003	0.02	0.0192	0.1	0.1192	8.5	1	TKN<0.2
52922-S	2168	4/28/2003	0.01	0.0552	0.1	0.1552	9.4	1	Ammonia <0.02, TKN <0.2
52922-S	2168	8/4/2003	0.01	0.0616	0.1	0.1616	9.3	1	Ammonia<0.02, TKN<0.2
52922-S	2168	10/28/2003	0.01	0.0974	0.1	0.1974	8.8	1	NH4AsN<0.02, TKN<0.2
52922-S	2168	1/12/2004							
52922-S	2168	3/1/2004							
52922-S	2168	5/24/2004							
52922-	2169	5/1/2002	0.01	0.5	0.1	0.6	4.3	1	Ammonia <0.02; TKN <0.2

S									
52922-S	2169	8/5/2002	0.03	4.18	0.5	4.68	13		
52922-S	2169	9/4/2002							
52922-S	2169	10/2/2002							
52922-S	2169	10/29/2002	0.01	2.44	0.1	2.54	8.5	1	Ammonia <0.02, TKN <0.2
52922-S	2169	11/19/2002							
52922-S	2169	1/7/2003							
52922-S	2169	2/4/2003	0.01	1.31	0.1	1.41	6.6	1	NH4<0.02, TKN<0.2
52922-S	2169	4/28/2003	0.01	2.03	0.2	2.23	10	1	Ammonia <0.02
52922-S	2169	8/4/2003	0.01	2.94	0.1	3.04	9.2	1	Ammonia<0.02, TKN<0.2
52922-S	2169	10/28/2003	0.01	3.06	0.1	3.16	9.4	1	NH4AsN<0.02, TKN<0.2
52922-S	2169	1/12/2004							
52922-S	2169	3/1/2004							
52922-S	2169	5/24/2004							
53387-P	2178	1/2/2002	0.01	0.51			2.7		
53387-P	2178	8/27/2002							
53387-P	2178	9/23/2002							
53387-P	2178	10/22/2002	0.01	0.28	0.1	0.38	2.1		
53387-P	2178	11/13/2002							
53387-P	2178	12/17/2002							
53387-P	2178	1/28/2003	0.01	0.272	0.1	0.372	2		
53387-P	2178	2/19/2003							
53387-P	2178	3/19/2003							
53387-	2178	4/15/2003	0.02	0.367	0.1	0.467	2.2		

53387-P	2178	6/17/2003					
53387-P	2178	7/29/2003	0.01	0.428	0.1	0.528	2.6
53387-P	2178	10/14/2003	0.01	0.236	0.1	0.336	2.6
53387-P	2179	1/2/2002	0.04	1.62			15
53387-P	2179	8/27/2002					
53387-P	2179	9/23/2002					
53387-P	2179	10/22/2002	0.01	1.67	0.4	2.07	8.4
53387-P	2179	11/13/2002					
53387-P	2179	12/17/2002					
53387-P	2179	1/28/2003	0.01	2.14	0.4	2.54	8
53387-P	2179	2/19/2003					
53387-P	2179	3/19/2003					
53387-P	2179	4/15/2003	0.01	3.26	0.1	3.36	8.8
53387-P	2179	6/17/2003					
53387-P	2179	7/29/2003	0.01	2.59	0.1	2.69	7.7
53387-P	2179	10/14/2003	0.07	2.25	0.1	2.35	7.3
53387-P	2180	1/2/2002	0.01	0.63			2.6
53387-P	2180	8/27/2002					
53387-P	2180	9/23/2002					
53387-P	2180	10/22/2002	0.01	0.62	0.1	0.72	2.4
53387-P	2180	11/13/2002					
53387-P	2180	12/17/2002					
53387-	2180	1/28/2003	0.01	0.616	0.1	0.716	2.2

53387-P	2180	2/19/2003							
53387-P	2180	3/19/2003							
53387-P	2180	4/15/2003	0.01	0.613	0.2	0.813	2.5		
53387-P	2180	6/17/2003							
53387-P	2180	7/29/2003	0.01	0.509	0.2	0.709	2.9		
53387-P	2180	10/14/2003	0.01	0.651	0.1	0.751	3.1		
16776-M	2182	11/16/2001	0.41	0.01			3.4		Background/well development; No TKN result reported.
16776-M	2182	2/5/2002	0.4	0	0.5	0.5	2.9	1	
16776-M	2182	4/30/2002	0.41	0	0.5	0.5	3.4	1	D.O. <0.1
16776-M	2182	8/6/2002	0.34	0.01	0.6	0.61	2.9	1	
16776-M	2182	9/3/2002							
16776-M	2182	10/2/2002							
16776-M	2182	10/28/2002	0.45	0.02	0.7	0.72	15	1	
16776-M	2182	11/18/2002							
16776-M	2182	2/3/2003	0.56	0.00025	0.9	0.9003	54	1	Nitrate-Nitrite <0.0050
16776-M	2182	4/29/2003	0.46	0.0025	0.5	0.5025	12	1	Nitrate <0.005
16776-M	2182	8/5/2003	0.37	0.0025	0.4	0.4025	4.7	1	Nitrate<0.0050, D.O.<0.1
16776-M	2182	11/4/2003	0.39	0.0194	0.5	0.5194	4.9	1	
16776-M	2182	3/1/2004							
16776-M	2182	5/24/2004							
16776-M	2183	11/16/2001	0.78	0.01			2		Background/well development; No TKN result reported; D.O. <0.1
16776-M	2183	2/5/2002	0.9	0	1	1	2.1	1	
16776-	2183	4/30/2002	0.83	0	0.9	0.9	1.7	1	D.O. <0.1

16776-M	2183	8/6/2002	0.88	0.01	1.1	1.11	5.5		
16776-M	2183	8/12/2002						2	Bacteria Re-sample
16776-M	2183	9/3/2002							
16776-M	2183	10/2/2002							
16776-M	2183	10/28/2002	1.1	0.02	1.1	1.12	3.4	2	D.O. <0.1
16776-M	2183	11/18/2002							
16776-M	2183	2/3/2003	0.95	0.0051	1.3	1.3051	2.3	2	
16776-M	2183	4/29/2003	0.92	0.0108	1	1.0108	2	1	
16776-M	2183	8/5/2003	0.87	0.0078	1	1.0078	2.6	1	D.O. <0.1
16776-M	2183	11/4/2003	0.93	0.0167	1.1	1.1167	2.5	1	
16776-M	2183	3/1/2004							
16776-M	2183	5/24/2004							
16776-M	2184	11/16/2001	1.3	0.03			14		Background/well development; No TKN result reported
16776-M	2184	2/5/2002	1.9	0	2.1	2.1	15	1	
16776-M	2184	4/30/2002	2	0.17	2.1	2.27	20	1	D.O. <0.1
16776-M	2184	8/6/2002	0.97	0.07	2	2.07	17		D.O. <0.1
16776-M	2184	8/12/2002						2	Bacteria re-sample; D.O. <0.1
16776-M	2184	9/3/2002							
16776-M	2184	10/2/2002							
16776-M	2184	10/28/2002	2	0.02	2	2.02	17	2	
16776-M	2184	11/18/2002							
16776-M	2184	2/3/2003	1.9	0.0268	2.3	2.3268	29	2	D.O. <0.1
16776-	2184	4/29/2003	0.99	0.0367	2	2.0367	20	2	D.O. <0.1

M									
16776-M	2184	8/5/2003	1.9	0.0231	2	2.0231	19	1	D.O. <0.1
16776-M	2184	11/4/2003	1.9	0.0245	2	2.0245	18		
16776-M	2184	11/18/2003						2	Bacteria Re-sample
16776-M	2184	11/18/2003						2	QA Duplicate
16776-M	2184	3/1/2004							
16776-M	2184	5/24/2004							
17365-T	2190	12/21/2001	0.03	0.35			1.1		Background/well development; No TKN result reported.
17365-T	2190	2/19/2002	0	0.5	0.5	1	1.1	1	
17365-T	2190	5/14/2002	0.15	0.53	0.1	0.63	1.1	1	TKN <0.2
17365-T	2190	6/19/2002							
17365-T	2190	7/22/2002							
17365-T	2190	8/20/2002	0.01	0.87	0.1	0.97	0.9	1	TKN <0.2, ammonia <0.02
17365-T	2190	9/17/2002							
17365-T	2190	10/14/2002							
17365-T	2190	11/5/2002	0.01	0.95	0.1	1.05	1.3	1	Ammonia <0.02, TKN <0.2
17365-T	2190	12/9/2002							
17365-T	2190	2/11/2003	0.01	1.23	0.2	1.43	1.8	1	NH4AsN <0.02
17365-T	2190	5/6/2003	0.01	1.42	0.1	1.52	1.9	1	Ammonia <0.02, TKN <0.2
17365-T	2190	8/11/2003	0.01	1.58	0.1	1.68	1.9	1	NH4AsN<0.02, TKN<0.2
17365-T	2190	11/4/2003	0.01	1.7	0.1	1.8	2.1	1	NH4AsN<0.02, TKN<0.2
17365-T	2190	6/7/2004							
17365-T	2191	12/21/2001	0.01	4.47			4.7		well development; no TKN result reported; nitrate result is <0.02; NH4 <0.0
17365-	2191	2/19/2002	0	4.2	0.1	4.3	4.4	1	TKN <0.1

T									
17365-T	2191	5/14/2002	0.01	3.87	0.1	3.97	4.4	1	TKN <0.2, ammonia <0.02
17365-T	2191	6/19/2002							
17365-T	2191	7/22/2002							
17365-T	2191	8/20/2002	0.01	4.25	0.1	4.35	4.4	1	TKN <0.2, ammonia <0.02
17365-T	2191	9/17/2002							
17365-T	2191	10/14/2002							
17365-T	2191	11/5/2002	0.03	4.12	0.1	4.22	4.4	1	TKN <0.2
17365-T	2191	12/9/2002							
17365-T	2191	2/11/2003	0.03	3.83	0.1	3.93	4.2	1	TKN <0.2
17365-T	2191	5/6/2003	0.01	3.48	0.1	3.58	3.6	1	Ammonia <0.02, TKN <0.2
17365-T	2191	8/11/2003	0.04	3.21	0.1	3.31	3.6	1	TKN<0.2
17365-T	2191	11/4/2003	0.01	3.3	0.1	3.4	3.5	1	NH4AsN<0.02, TKN<0.2
17365-T	2191	6/7/2004							
17365-T	2192	11/21/2001	0.05	1.14	0.1	1.24	2.8		Background/well development; TKN <0.2
17365-T	2192	2/19/2002	0	1.3	0.3	1.6	2.3	1	
17365-T	2192	5/14/2002	0.01	1.12	0.1	1.22	2.5	1	TKN <0.2, ammonia <0.02
17365-T	2192	6/19/2002							
17365-T	2192	7/22/2002							
17365-T	2192	8/20/2002	0.01	1.2	0.1	1.3	2.1	1	TKN <0.2, ammonia <0.02
17365-T	2192	9/17/2002							
17365-T	2192	10/14/2002							
17365-T	2192	11/5/2002	0.03	1.31	0.1	1.41	2.7	1	TKN <0.2
17365-	2192	12/9/2002							

T									
17365-T	2192	2/11/2003	0.01	1.39	0.1	1.49	2.7	1	NH4AsN <0.02, TKN <0.2
17365-T	2192	5/6/2003	0.01	1.39	0.1	1.49	2.5	1	Ammonia <0.02, TKN <0.2
17365-T	2192	8/11/2003	0.01	1.36	0.1	1.46	2.6	1	NH4AsN<0.02, TKN<0.2
17365-T	2192	11/4/2003	0.01	1.49	0.1	1.59	2.6	1	NH4AsN<0.02, TKN<0.2
17365-T	2192	6/7/2004							
16168-M	2194	1/2/2002	0.03	4.51			9		Well development; No TKN result reported.
16168-M	2194	8/27/2002							
16168-M	2194	9/24/2002							
16168-M	2194	10/21/2002	0.01	3.86	0.4	4.26	12	1	Ammonia <0.02
16168-M	2194	11/13/2002							
16168-M	2194	12/17/2002							
16168-M	2194	1/28/2003	0.01	4.39	0.1	4.49	12	1	Ammonia <0.02, TKN <0.2
16168-M	2194	2/24/2003							
16168-M	2194	3/19/2003							
16168-M	2194	4/15/2003	0.01	4.47	0.1	4.57	12	1	Ammonia <0.02, TKN <0.2
16168-M	2194	6/16/2003							
16168-M	2194	7/29/2003	0.01	3.74	0.1	3.84	9	1	Ammonia<0.02, TKN<0.2
16168-M	2194	10/14/2003	0.01	3.51	0.1	3.61	8.5	1	Ammonia<0.02, TKN<0.2
16168-M	2195	1/2/2002	0.01	9.21			12		Well development; NH4 <0.02; No TKN result reported.
16168-M	2195	1/2/2002	0.01	9.21			12		QA Duplicate; Well development; No TKN result reported; NH4 <0.02
16168-M	2195	8/27/2002							
16168-M	2195	9/24/2002							
16168-	2195	10/21/2002	0.01	8.25	0.1	8.35	12	1	Ammonia <0.02, TKN <0.2

M									
16168-M	2195	11/13/2002							
16168-M	2195	12/17/2002							
16168-M	2195	1/28/2003	0.02	6.21	0.1	6.31	8.4	1	TKN <0.2
16168-M	2195	2/24/2003							
16168-M	2195	3/19/2003							
16168-M	2195	4/15/2003	0.01	5.23	0.1	5.33	7.1	1	Ammonia <0.02, TKN <0.2
16168-M	2195	6/16/2003							
16168-M	2195	7/29/2003	0.01	6.1	0.1	6.2	8.3	1	Ammonia<0.02, TKN<0.2
16168-M	2195	10/14/2003	0.01	3.84	0.1	3.94	5.4	1	Ammonia<0.02, TKN<0.2
16168-M	2196	1/2/2002	0.01	2.72			2.8		Well development; No TKN result reported; NH4<0.02
16168-M	2196	8/27/2002							
16168-M	2196	9/24/2002							
16168-M	2196	10/21/2002	0.01	0.7	0.1	0.8	1.1	1	Ammonia <0.02, TKN <0.2
16168-M	2196	11/13/2002							
16168-M	2196	12/17/2002							
16168-M	2196	1/28/2003	0.03	0.742	0.1	0.842	1	1	TKN <0.2
16168-M	2196	2/24/2003							
16168-M	2196	3/19/2003							
16168-M	2196	4/15/2003	0.02	1.37	0.1	1.47	1.7	1	TKN <0.2
16168-M	2196	6/16/2003							
16168-M	2196	7/29/2003	0.01	2.73	0.1	2.83	3.7	1	Ammonia<0.02, TKN<0.2
16168-M	2196	10/14/2003	0.01	3.48	0.1	3.58	4.3	1	Ammonia<0.02, TKN<0.2
52588-	2218	5/10/2002	0.04	1.9	0.1	2	3.8		Well development; TKN <0.2

P									
52588-P	2218	6/3/2002	0.03	2.04	0.1	2.14	3.6	1	TKN <0.2
52588-P	2218	7/15/2002							
52588-P	2218	9/9/2002	0.01	1.83	0.3	2.13	4.1	1	
52588-P	2218	11/19/2002	0.01	1.57	0.1	1.67	3.4	1	Ammonia <0.02, TKN <0.2
52588-P	2218	3/3/2003	0.01	1.92	0.1	2.02	3.2	1	NH4AsN <0.02, TKN <0.2
52588-P	2218	6/2/2003	0.01	2.11	0.1	2.21	3.4	1	NH4<0.02, TKN<0.2
52588-P	2218	9/8/2003	0.01	2.27	0.1	2.37	3.9	1	TKN<0.2, NH4AsN<0.02
52588-P	2218	1/26/2004							
52588-P	2218	4/12/2004							
52588-P	2218	7/12/2004							
			Average=	**4.38**					
			Maximum=	**207**					

Table 8. Results from La Pine On-Site Monitoring Well Drain Testing

APPENDIX 2
SAMPLE PARAMETER TABLES

Each table in this appendix provides sample parameter information for the groundwater studies discussed in this report including:

- Sample parameter names.
- Sample parameter CAS Number [in brackets].
- Sample parameter measurement units.
- Sample parameter detection or reporting limits.
- Sample parameter drinking water standard (if applicable).

Table 1
Prineville Groundwater Study (1993)
Volatile Organic Compounds

Notes:

- All measurements in mg/L.
- N.A. = Not Available or Not Applicable.

Constituent	CAS Number	Method Reporting Limit	Drinking Water Standard
Acrolein (2-Propenal)	107-02-8	0.0015	N.A.
Benzene	71-43-2	0.0005	0.005
Bromodichloromethane	75-27-4	0.0005	0.08
Bromoform	75-25-2	0.0005	0.08
Bromomethane	74-83-9	0.0005	N.A.
2-Butanone (MEK)	78-93-3	0.05	N.A.
Carbon Tetrachloride	56-23-5	0.0005	0.005
Chlorobenzene	108-90-7	0.0005	0.1
Chloroethane	75-00-3	0.0005	N.A.
2-Chloroethyl Vinyl Ether	110-75-8	0.005	N.A.
Chloroform	67-66-3	0.0005	0.08
Chloromethane	74-87-3	0.0005	N.A.
Dibromochloromethane	124-48-1	0.0005	0.08
1,2-Dibromoethane (EDB)	106-93-4	0.0005	0.00005
1,2-Dichlorobenzene	95-50-1	0.0005	0.6
1,3-Dichlorobenzene	541-73-1	0.0005	N.A.
1,4-Dichlorobenzene	106-46-7	0.0005	0.075
1,1-Dichloroethane	75-34-3	0.0005	N.A.
1,2-Dichloroethane	107-06-2	0.0005	0.005
cis-1,2-Dichloroethylene	156-59-2	0.0005	N.A.
trans-1,2-Dichloroethylene	156-60-5	0.0005	N.A.
1,1-Dichloroethylene	75-35-4	0.0005	0.007
1,2-Dichloropropane	78-87-5	0.0005	0.005
trans-1,3-Dichloropropene	10061-02-6	0.0005	N.A.
1,2-Dimethylbenzene	95-47-6	0.0005	N.A.
1,3-Dimethylbenzene	108-38-3	0.0005	N.A.
1,4-Dimethylbenzene	106-42-3	0.0005	N.A.
Ethylbenzene	100-41-4	0.0005	0.7
Methylene Chloride	75-09-2	0.0005	0.005
2-Methyl-4-Pentanone (MIBK)	108-10-1	0.005	N.A.
Styrene	100-42-5	0.0005	0.1
1,1,2,2-Tetrachloroethane	79-34-5	0.0005	N.A.
1,1,2,2-Tetrachloroethylene	127-18-4	0.0005	0.005
Toluene	108-88-3	0.0005	1
1,1,1-Trichloroethane	71-55-6	0.0005	0.2
1,1,2-Trichloroethane	79-00-5	0.0005	0.005
Trichloroethylene	79-01-6	0.0005	0.005
Trichlorofluoromethane	75-69-4	0.0005	N.A.
1,2,4-Trimethylbenzene	95-63-6	0.0005	N.A.
Vinyl Chloride	75-01-4	0.0005	0.002

Table 2
Prineville Groundwater Study (1993)
Pesticides

Notes:

- All measurements in mg/L.
- N.A. = Not Available or Not Applicable.

Constituent	CAS Number	Method Reporting Limit	Drinking Water Standard
Aldicarb	116-06-3	0.0036	0.003
Atrazine	1912-24-9	0.0001	0.003
Bromacil	314-40-9	0.0015	N.A.
2,4-D	94-75-7	0.0001	N.A.
Carbofuran	1563-66-2	0.0074	0.04
Dinoseb	88-85-7	0.0001	0.007
Diuron	330-54-1	0.0004	N.A.
Metribuzin	21087-64-9	0.0001	N.A.
Oxamyl	23135-22-0	0.0064	N.A.
Nitrogen/Phosphorus Screen	Various	N.A.	N.A.
OCL Screen	Various	N.A.	N.A.
OP Screen	Various	N.A.	N.A.
Phenoxyherbicide Screen	Various	N.A.	N.A.

Table 3
Prineville Groundwater Study (1993)
Metals, Nutrients, Physical Parameters

Notes:

- All measurements in mg/L.
- N.A. = Not Available or Not Applicable.

Constituent	CAS #	Method Reporting Limit	Drinking Water Standard
Alkalinity	N.A.	1	N.A.
Aluminum	7429-90-5	0.1	N.A.
Ammonia	7664-41-7	0.02	N.A.
Arsenic	7440-38-2	0.005	0.01
Barium	7440-39-3	0.03	2
Beryllium	7440-41-7	0.01	0.004
Boron	7440-42-8	0.03	N.A.
Cadmium	7440-43-9	0.01	0.005
Calcium	7440-70-2	0.1	N.A.
Chemical Oxygen Demand	N.A.	5	N.A.
Chloride	16887-00-6	0.5	N.A.
Chromium	7440-47-3	0.03	0.1
Cobalt	7440-48-4	0.06	N.A.
Conductivity	N.A.	1 µmhos/cm	N.A.
Copper	7440-50-8	0.02	1.3 (Action Level)
Dissolved Oxygen	N.A.	0.1	N.A.
Fluoride	7681-49-4	0.1	4
Hardness	N.A.	3	N.A.
Iron	7439-89-6	0.04	N.A.
Lanthanum	7439-91-0	0.05	N.A.

Lead	7439-92-1	0.005	0.015 (Action Level)
Lithium	7439-93-2	0.05	N.A.
Magnesium	7439-95-4	0.5	N.A.
Manganese	7439-96-5	0.01	N.A.
Nickel	7440-02-2	0.04	N.A.
Nitrate/Nitrite-N	N.A.	0.02	10
pH	N.A.	0.1 S.U.	6.5-8.5
Potassium	7440-09-7	0.5	N.A.
Selenium	7782-49-2	0.005	0.05
Silica	7631-86-9	0.3	N.A.
Silver	7440-22-4	0.01	N.A.
Sodium	7440-23-5	0.5	N.A.
Sulfate	14808-79-8	0.2	N.A.
Temperature	N.A.	0.1^{o}C	N.A.
Total Dissolved Solids	N.A.	1	N.A.
Total Organic Carbon	N.A.	1	N.A.
Vanadium	7440-62-2	0.03	N.A.
Zinc	7440-66-6	0.02	N.A.

Table 4
Statewide Ambient Monitoring Program
Oregon Department of Agriculture Pesticide Screens

Notes:

- Reporting limits in ug/L; Drinking water standards in mg/L.
- N.A. = Not Available or Not Applicable.

Constituent	CAS #	Reporting Limit (ug/L)	Drinking Water Standard (mg/L)
Nitrogen-Phosphorus & Organo Phosphate Screens*			
Alachlor	15972-60-8	0.5	0.002
Atrazine	1912-24-9	0.1	0.003
Bromacil	314-40-9	2.2	N.A
Butachlor	23184-66-9	1.5	N.A
Butylate	2008-41-5	2.0	N.A
Carboxin	5234-68-4	3.0	N.A
Chlorpropham	101-21-3	1.0	N.A
Cycloate	1134-23-2	10.0	N.A
Diphenamid *	957-51-7	2.0	N.A
EPTC (Eptam)	759-94-4	1.0	N.A
Ethoprop *	13194-48-4	0.2	N.A
Fenamiphos *	22224-92-6	0.2	N.A
Hexazinone	51235-04-2	1.0	N.A
Mevinphos *	7786-34-7	0.3	N.A
Metolachlor	51218-45-2	1.0	N.A
Metribuzin	21087-64-9	1.0	N.A
Napropamide	15299-99-7	0.5	N.A
Prometon	1610-18-0	2.0	N.A
Prometryn	7287-19-6	0.2	N.A
Propazine	139-40-2	0.2	N.A
Simazine	122-34-9	0.2	0.004
Tebuthiuron	34014-18-1	0.45	N.A
OCL/Organo Chlorides Screen			
4,4-DDD	72-54-8	0.50	N.A

4,4-DDE	72-55-9	0.50	N.A
4,4-DDT	50-29-3	0.50	N.A
Aldrin	309-00-2	0.50	N.A
Alpha-Chlordane	5103-71-9	0.30	0.002
Alpha-HCH	319-84-6	0.12	N.A
Beta-HCH	319-85-7	0.12	N.A
Chlorothalonil	1897-45-6	0.20	N.A
cis-Permethrin	54774-45-7	1.80	N.A
Dieldrin	60-57-1	0.50	N.A
Endosulfan Sulfate	1031-07-8	0.50	N.A
Endrin	72-20-8	0.10	0.002
Gamma-Chlordane	12789-03-6	0.30	0.002
Gamma-HCH	58-89-9	0.09	N.A
Heptachlor	76-44-8	0.10	0.0004
Heptachlor-epoxide	1024-57-3	0.10	0.0002
Hexachlorobenzene	118-74-1	0.10	0.001
Methoxychlor	72-43-5	0.10	0.04
Propachlor	1918-16-7	1.30	N.A
trans-Permethrin	51877-74-8	1.00	N.A
Trifluralin	1582-09-8	0.50	N.A
Phenoxy Herbicide Screen			
2,4,5-T	93-76-5	0.20	N.A
2,4,5-TP	93-72-1	0.20	N.A
2,4-D	94-75-7	0.30	0.07
2,4-DB	94-82-6	1.00	N.A
DCPA Acid (Dacthal)	1861-32-1	0.10	N.A
Dicamba	1918-00-9	1.00	N.A
Dichlorprop	120-36-5	0.50	N.A
Dinoseb	88-85-7	1.00	0.007
PCP	87-86-5	0.10	0.001
Picloram	1918-02-1	2.00	0.5
HPLC/UV Screen			
Diuron	330-54-1	3	N.A
PCNB (Terachlor)	82-68-8	3.6	N.A
Demeton	8065-48-3	0.2	N.A
Other Pesticides Tested			
Garlon (Triclopyr)	55335-06-3	N.A	N.A
MCPA	94-74-6	N.A	N.A
Terbacil	5902-51-2	N.A	N.A
Triademefon	N.A.	N.A	N.A
Chlordane	12789-03-6	N.A	0.002
Diazinon	333-41-5	N.A	N.A
Captan	133-06-2	N.A	N.A
Silvex	93-72-1	N.A	N.A
Glyphosate	1071-83-6	N.A	0.7
Phorate	298-02-2	N.A	N.A
Dimethoate	60-51-5	N.A	N.A
Dichlobenil	1194-65-6	N.A	N.A
Iprodione	36734-19-7	N.A	N.A
Bladex/Cyanazine	21725-46-2	N.A	N.A
Chlorpyrifos	2921-88-2	N.A	N.A
Norflurazon	27314-13-2	N.A	N.A
Disulfotan	298-04-4	N.A	N.A
Dyfonate/Fonofos	944-22-9	N.A	N.A
AMPA (Glyphosate by product)	N.A.	N.A.	N.A.

Carbamate Screen			
3-Hydroxycarbofuran	16655-82-6	5	N.A
Aldicarb	116-06-3	1	N.A
Aldicarb Sulfone	1646-88-4	1	N.A
Aldicarb Sulfoxide	1646-87-3	1	N.A
Baygon	114-26-1	1	N.A
Carbaryl	63-25-2	1	N.A
Carbofuran	1563-66-2	1	0.04
Methiocarb	2032-65-7	1	N.A
Methomyl	16752-77-5	1	N.A
Oxamyl	23135-22-0	1	0.2

Table 5
La Pine Groundwater Study (1993)
Volatile Organic Compounds

Notes:

- All measurements in mg/L.
- N.A. = Not Available or Not Applicable.

Constituent	CAS Number	Method Reporting Limit	Drinking Water Standard
Acrolein (2-Propenal)	107-02-8	0.0015	N.A.
Benzene	71-43-2	0.0005	0.005
Bromodichloromethane	75-27-4	0.0005	0.08
Bromoform	75-25-2	0.0005	0.08
Bromomethane	74-83-9	0.0005	N.A.
2-Butanone (MEK)	78-93-3	0.05	N.A.
Carbon Tetrachloride	56-23-5	0.0005	0.005
Chlorobenzene	108-90-7	0.0005	0.1
Chloroethane	75-00-3	0.0005	N.A.
2-Chloroethyl Vinyl Ether	110-75-8	0.005	N.A.
Chloroform	67-66-3	0.0005	0.08
Chloromethane	74-87-3	0.0005	N.A.
Dibromochloromethane	124-48-1	0.0005	0.08
1,2-Dibromoethane (EDB)	106-93-4	0.0005	0.00005
1,2-Dichlorobenzene	95-50-1	0.0005	0.6
1,3-Dichlorobenzene	541-73-1	0.0005	N.A.
1,4-Dichlorobenzene	106-46-7	0.0005	0.075
1,1-Dichloroethane	75-34-3	0.0005	N.A.
1,2-Dichloroethane	107-06-2	0.0005	0.005
cis-1,2-Dichloroethylene	156-59-2	0.0005	N.A.
trans-1,2-Dichloroethylene	156-60-5	0.0005	N.A.
1,1-Dichloroethylene	75-35-4	0.0005	0.007
1,2-Dichloropropane	78-87-5	0.0005	0.005
cis-1,3-Dichloropropene	10061015	0.0005	N.A.
trans-1,3-Dichloropropene	10061-02-6	0.0005	N.A.
1,2-Dimethylbenzene	95-47-6	0.0005	N.A.
1,3-Dimethylbenzene	108-38-3	0.0005	N.A.
1,4-Dimethylbenzene	106-42-3	0.0005	N.A.
Ethylbenzene	100-41-4	0.0005	0.7
Methylene Chloride	75-09-2	0.0005	0.005
2-Methyl-4-Pentanone (MIBK)	108-10-1	0.005	N.A.
Styrene	100-42-5	0.0005	0.1

1,1,2,2-Tetrachloroethane	79-34-5	0.0005	N.A.
1,1,2,2-Tetrachloroethylene	127-18-4	0.0005	0.005
Toluene	108-88-3	0.0005	1
1,1,1-Trichloroethane	71-55-6	0.0005	0.2
1,1,2-Trichloroethane	79-00-5	0.0005	0.005
Trichloroethylene	79-01-6	0.0005	0.005
Trichlorofluoromethane	75-69-4	0.0005	N.A.
1,2,4-Trimethylbenzene	95-63-6	0.0005	N.A.
Vinyl Chloride	75-01-4	0.0005	0.002

Table 6
La Pine Groundwater Study (1993)
Pesticides

Notes:

- All measurements in mg/L.
- N.A. = Not Available or Not Applicable.

Constituent	CAS Number	Method Reporting Limit	Drinking Water Standard
Atrazine	1912-24-9	0.0001	0.003
Bromacil	314-40-9	0.0022	N.A.
2,4-D	94-75-7	0.0005	N.A.
Diuron	330-54-1	0.0005	N.A.
Diclobenil	1194-65-6	0.0006	N.A.
Dicamba	1918-00-9	0.0002	N.A.
Picloram	1918-02-1	0.0002	0.5

Table 7
La Pine Groundwater Study (1993)
Metals, Nutrients, Physical Parameters

Notes:

- All measurements in mg/L.
- N.A. = Not Available or Not Applicable.

Constituent	CAS #	Method Reporting Limit	Drinking Water Standard
Alkalinity	N.A.	1	N.A.
Aluminum	7429-90-5	0.1	N.A.
Ammonia	7664-41-7	0.02	N.A.
Arsenic	7440-38-2	0.005	0.01
Barium	7440-39-3	0.03	2
Beryllium	7440-41-7	0.01	0.004
Boron	7440-42-8	0.03	N.A.
Cadmium	7440-43-9	0.01	0.005
Calcium	7440-70-2	0.1	N.A.
Chemical Oxygen Demand	N.A.	5	N.A.
Chloride	16887-00-6	0.5	N.A.
Chromium	7440-47-3	0.03	0.1
Cobalt	7440-48-4	0.06	N.A.
Conductivity	N.A.	1 µmhos/cm	N.A.

Copper	7440-50-8	0.02	1.3 (Action Level)
Hardness	N.A.	3	N.A.
Iron	7439-89-6	0.04	N.A.
Lanthanum	7439-91-0	0.05	N.A.
Lead	7439-92-1	0.005	0.015 (Action Level)
Lithium	7439-93-2	0.05	N.A.
Magnesium	7439-95-4	0.5	N.A.
Manganese	7439-96-5	0.01	N.A.
Mercury	7439-97-6	0.0005	0.002
Molybdenum	7439-98-7	0.05	N.A.
Nickel	7440-02-2	0.04	N.A.
Nitrate/Nitrite-N	N.A.	0.02	10
pH	N.A.	0.1 S.U.	6.5-8.5
Potassium	7440-09-7	0.5	N.A.
Selenium	7782-49-2	0.005	0.05
Silica	7631-86-9	0.3	N.A.
Silver	7440-22-4	0.01	N.A.
Sodium	7440-23-5	0.5	N.A.
Sulfate	14808-79-8	0.2	N.A.
Temperature	N.A.	0.1^{o}C	N.A.
Total Dissolved Solids	N.A.	1	N.A.
Total Kjeldahl Nitrogen	N.A.	0.2	N.A.
Total Organic Carbon	N.A.	1	N.A.
Total Phosphate	N.A.	0.01	N.A.
Turbidity	N.A.	1 NTU	N.A.
Vanadium	7440-62-2	0.03	N.A.
Zinc	7440-66-6	0.02	N.A.