IDAHO SUPREME (PWS 6060034)
SOURCE WATER ASSESSMENT FINAL REPORT

April 16, 2002

State of Idaho
Department of Environmental Quality

Disclaimer: This publication has been developed as part of an informational service for the source water assessments of public water systems in Idaho and is based on the data available at the time and the professional judgement of the staff. Although reasonable efforts have been made to present accurate information, no guarantees, including expressed or implied warranties of any kind, are made with respect to this publication by the State of Idaho or any of its agencies, employees, or agents, who also assume no legal responsibility for the accuracy of presentations, comments, or other information in this publication. The assessment is subject to modification if new data is produced.

Executive Summary

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency to assess every source of public drinking water for its relative sensitivity to contaminants regulated by the act. This assessment is based on a land use inventory of the designated assessment area and sensitivity factors associated with the wells and aquifer characteristics.

This report, *Source Water Assessment for Idaho Supreme, Firth, Idaho* describes the public drinking water system, the boundaries of the zones of water contribution, and the associated potential contaminant sources located within these boundaries. This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. **The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the public water system (PWS).**

The Idaho Supreme (PWS #6060034) is a non-community, non-transient water system. The drinking water system consists of two well sources, Well #1 and Well #2. The wells serve approximately 250 persons and are located on the facility's property.

The potential contaminant sources within the delineation capture zones include underground fuel storage tanks, dairies, leaking underground storage tanks, gravel pits, and wastewater land application sites. Also found were sites regulated under the Superfund Amendments and Reauthorization Act (SARA), Resource Conservation Recovery Act (RCRA), and the Toxic Release Inventory (TRI). Additionally, Highway 91 and a railroad are transportation corridors that cross the delineations. If an accidental spill occurred from any of these corridors, inorganic chemical contaminants, volatile organic chemical contaminants, synthetic organic chemical contaminants, or microbial contaminants could be added to the aquifer system. Other sources identified that may contribute to the overall vulnerability of the water source were business within the delineated areas that may be considered potential contaminants sources. A complete list of potential contaminant sources is provided with this assessment.

For the assessment, a review of laboratory tests was conducted using the Idaho Drinking Water Information Management System (DWIMS) and the State Drinking Water Information System (SDWIS). Total coliform bacteria were detected at various sample locations in the distribution system. The inorganic chemicals barium, fluoride, and nitrate have been detected in the drinking water, but at levels below the maximum contaminant level for each chemical. No volatile organic chemicals or synthetic organic chemicals have been detected in the drinking water.

The susceptibility ratings for the Idaho Supreme drinking water system were based upon available information relating to soil drainage characteristics, agricultural land use, system construction, and potential contaminant sources identified within the wells' zones of contribution. The final susceptibility rankings for the wells are high for inorganic, volatile organic, synthetic organic and microbial contaminants.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

For Idaho Supreme, drinking water protection activities should continue efforts aimed at keeping the distribution system free of microbial contaminants that may affect the drinking water quality. At the present time, the nitrate levels in the drinking water wells are well below the maximum contaminant level of 10 milligrams per liter. However, if nitrate concentrations or other chemicals tested approach or exceed the maximum contaminant level, the system should take appropriate measures to treat the water source. Treatments, such as disinfectant and filtration for microbials and reverse osmosis for inorganic chemical contaminants should be investigated to remedy these problems. In addition, drinking water protection activities should focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity). The wells should maintain sanitary standards regarding wellhead protection. Also, any new sources that could be considered potential contaminant sources in the wells' zones of contribution should also be investigated and monitored to prevent future contamination. No potential contaminants (pesticides, paint, fuel, cleaning supplies, etc.) should be stored or applied within 50 feet of the wells. Land uses within most of the source water assessment area are outside the direct jurisdiction of Idaho Supreme. Therefore partnerships with state and local agencies, industrial and commercial groups should be established to ensure future land uses are protective of ground water quality. Educating employees and the public about source water will further assist the system in its monitoring and protection efforts.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan. Public education topics could include household hazardous waste disposal methods, proper lawn and garden care, and the importance of water conservation to name but a few. There are multiple resources available to help water systems implement protection programs, including the Drinking Water Academy of the U.S. Environmental Protection Agency. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture and the Bingham County Soil and Water Conservation District. As major transportation corridors intersect the delineation (such as Highway 91), the Idaho Department of Transportation should be involved in protection efforts.

A system must incorporate a variety of strategies in order to develop a comprehensive drinking water protection plan, be they regulatory in nature (i.e. zoning, permitting) or non-regulatory in nature (i.e. good housekeeping, public education, specific best management practices). For assistance in developing protection strategies please contact the Pocatello Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR
IDAHO SUPREME, FIRTH, IDAHO

Section 1. Introduction - Basis for Assessment

The following sections contain information necessary to understand how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** A map showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are contained in this report. The list of significant potential contaminant source categories and their rankings used to develop this assessment is also attached.

Level of Accuracy and Purpose of the Assessment

The Idaho Department of Environmental Quality (DEQ) is required by the U.S. Environmental Protection Agency (EPA) to assess over 2,900 public drinking water sources in Idaho for their relative susceptibility to contaminants regulated by the Safe Drinking Water Act. This assessment is based on a land use inventory of the delineated assessment area, sensitivity factors associated with the wells, and aquifer characteristics. All assessments must be completed by May of 2003. The resources and time available to accomplish assessments are limited. Therefore, an in-depth, site-specific investigation to identify each significant potential source of contamination for every public water system is not possible. **This assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

The ultimate goal of the assessment is to provide data to local communities to develop a protection strategy for their drinking water supply system. DEQ recognizes that pollution prevention activities generally require less time and money to implement than treatment of a public water supply system once it has been contaminated. DEQ encourages communities to balance resource protection with economic growth and development. The decision as to the amount and types of information necessary to develop a drinking water protection program should be determined by the local community based on its own needs and limitations. Wellhead or drinking water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

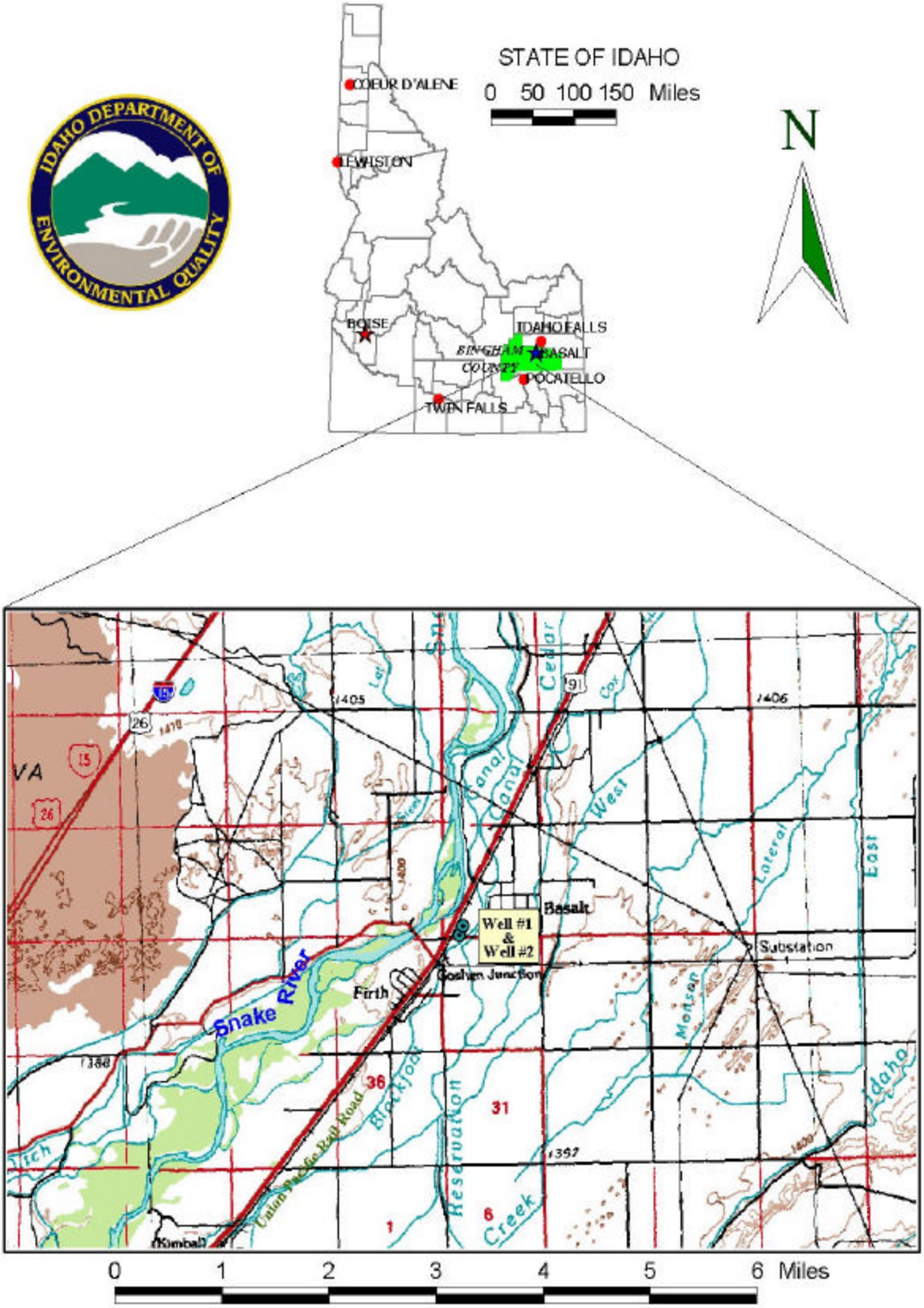
Section 2. Conducting the Assessment

General Description of the Source Water Quality

Idaho Supreme is a non-community, non-transient public drinking water system located in northern Bingham County (Figure 1). This system consists of two well sources that provide drinking water to approximately 250 persons. At this time, there appears to be no primary water quality issues associated with the system.

The inorganic chemicals (IOCs) barium, fluoride, and nitrate represent the main water chemistry constituents recorded in the public water system, although the reported concentrations of these chemicals were below the maximum contaminant level (MCL) for each chemical, as set by the EPA. Total coliform bacteria were detected at various sample locations in the distribution system.

FIGURE 1 - Geographic Location of the Idaho Supreme Wells #1 & #2



Water chemistry tests have not detected volatile organic contaminants (VOCs) or synthetic organic contaminants (SOCs) in the drinking water.

Defining the Zones of Contribution--Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel zones (zones indicating the number of years necessary for a particle of water to reach a pumping well) for water in the aquifer. Washington Group International (WGI) was contracted by DEQ to define the public water system's zones of contribution. WGI used a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) Time-of-Travel (TOT) for water associated with the East Margin Area of the Eastern Snake River Plain (ESRP) hydrologic province in the vicinity of Idaho Supreme. The computer model used site specific data, assimilated by WGI from a variety of sources including operator records and hydrogeologic reports. A summary of the hydrogeologic information from the WGI report is provided below.

The East Margin Area encompasses 821 square miles, representing approximately 8 percent of the total area of the ESRP hydrologic province. The majority of the East Margin Area is within Bingham County, with small areas occurring in Bannock, Bonneville, and Power counties.

The regional ESRP aquifer is the most significant aquifer in the East Margin Area and consists primarily of basalt of the Quaternary-aged Snake River Group. However, additional water-bearing units are used for water supply along the margin of the ESRP. In order of decreasing age, the most significant aquifers in the Michaud Flats area are bedded rhyolite (volcanic rock) of the Tertiary-aged Starlight Formation and Quaternary-aged gravels of a low relief plain formed by running water (pediment), basalt of the Big Hole Formation, and stream deposits of the Sunbeam Formation (see Jacobson, 1982, p. 7, and Corbett, et al., 1980, pp. 6-10). A few shallow domestic wells in the central Michaud Flats area also are completed in Michaud Gravel, which is the shallow water-table aquifer. The American Falls Lake Beds Formation (AFLB) confines the deeper aquifers and averages 80 feet in thickness in the central Michaud Flats area (Jacobson, 1984, p. 6). The AFLB pinches out in the eastern Michaud Flats area near the Portneuf River, effectively combining the shallow and deep stream deposits into a single water table aquifer (Bechtel, 1994, p. 2-2). Other aquifers in the East Margin Area include fractured quartzite that has been developed near Blackfoot, stream deposits near the cities of Firth and Basalt, and pediment gravels in the Gibson Terrace area near Tyhee and Chubbuck.

PWS wells in the East Margin Area of the ESRP province produce water from five different aquifers: the Regional Eastern Snake River Plain aquifer, three alluvial (or stream deposited) aquifers (Eastern Michaud Flats, Firth/Basalt, and Gibson Terrace/Pocatello Bench) and a quartzite aquifer (Blackfoot).

The Idaho Supreme wells produce water from the alluvial aquifer near the communities of Basalt and Firth. The wells are completed within sand and gravel deposits overlying the regional basalt aquifer. (WGI, 2001, p.4). Interpretation of well logs for wells within the East Margin Area of the ESRP hydrologic province indicates a 105-foot-thick layer of sediment overlying fractured basalt in the Firth/Basalt area. There is no information available regarding ground water flow direction or hydraulic properties (WGI, 2001, p. 9). Sources of ground water recharge are primarily from the extensive network of irrigation canals in the area and precipitation.

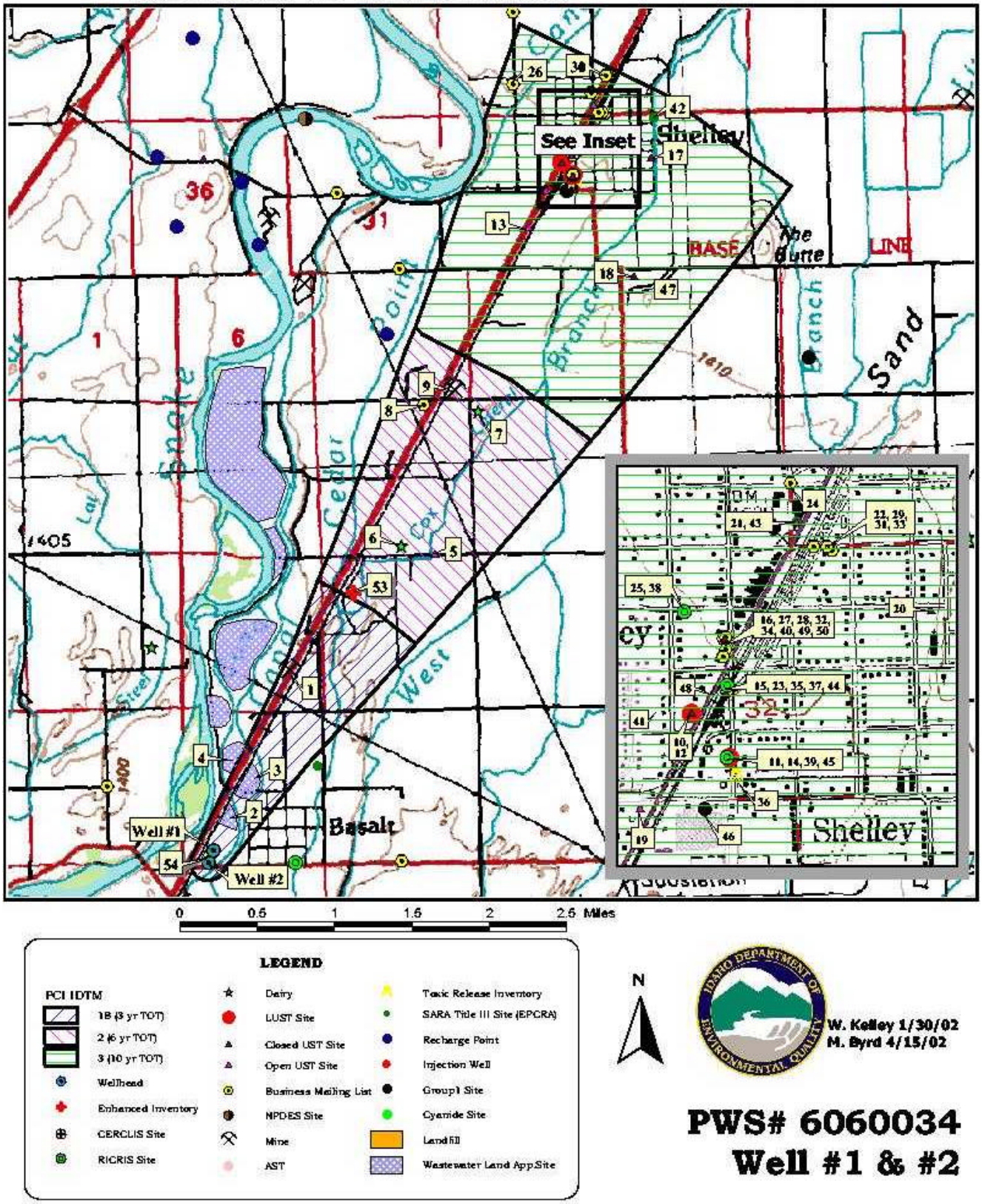
The delineated source water assessment area for the Idaho Supreme wells trend in a northeast direction and are elongated and conical in shape. The length of the delineation extends approximately 6 miles and extends into the City of Shelley (Figure 2). The actual data used by WGI in determining the source water assessment delineation areas are available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act. Furthermore, these sources have a sufficient likelihood of releasing such contaminants into the environment at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of ground water contamination. Field surveys conducted by DEQ and reviews of available databases identified potential contaminant sources within the delineation areas. Some of these sources include underground fuel storage tanks, dairies, leaking underground storage tanks, gravel pits, and wastewater land application sites.

It is important to understand that a release may never occur from a potential source of contamination provided best management practices are used at the facility. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the <u>potential</u> for contamination exists due to the nature of the business, industry, or operation. There are a number of methods that water systems can use to work cooperatively with potential sources of contamination, such as educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

FIGURE 2 - Idaho Supreme Delineation Map and Potential Contaminant Source Locations



Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted during January of 2002. The first phase involved identifying and documenting potential contaminant sources within the Idaho Supreme source water assessment area through the use of computer databases and Geographic Information System (GIS) maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to validate the sources identified in phase one and to add any additional potential sources in the area. This task was undertaken with the assistance of Mr. Gilbert Dayley. At the time of the enhanced inventory, additional potential contaminant sources were found within the delineated source water area. Maps with well locations, delineated areas and potential contaminant sources are provided with this report (Figure 2). Each potential contaminant source has been given a unique site number that references tabular information associated with the public water wells (Table 1).

Table 1. Idaho Supreme. Potential Contaminant Inventory for Well #1 and Well #2

Site #	Source Description[1]	TOT Zone (years)[2]	Source of Information	Potential Contaminants[3]
1	Mine	0-3	Database Inventory	VOC, SOC
2	Wastewater Land Application Site	0-3	Database Inventory	IOC, Microbials
3	Wastewater Land Application Site	0-3	Database Inventory	IOC, Microbials
4	Wastewater Land Application Site	0-3	Database Inventory	IOC, Microbials
5	UST Site-Open	3-6	Database Inventory	VOC, SOC
6	Dairy	3-6	Database Inventory	IOC
7	Dairy	3-6	Database Inventory	IOC
8	Foundries-Steel	3-6	Database Inventory	IOC, VOC, SOC
9	Mine	3-6	Database Inventory	VOC, SOC
10	LUST Site-Cleanup Incomplete	6-10	Database Inventory	VOC, SOC
11	LUST Site-Cleanup Incomplete	6-10	Database Inventory	VOC, SOC
12	UST Site-Closed	6-10	Database Inventory	VOC, SOC
13	UST Site-Open	6-10	Database Inventory	VOC, SOC
14	UST Site-Closed	6-10	Database Inventory	VOC, SOC
15	UST Site-Closed	6-10	Database Inventory	VOC, SOC
16	UST Site-Closed	6-10	Database Inventory	VOC, SOC
17	UST Site-Closed	6-10	Database Inventory	VOC, SOC
18	UST Site-Closed	6-10	Database Inventory	VOC, SOC
19	UST Site-Open	6-10	Database Inventory	VOC, SOC
20	UST Site-Closed	6-10	Database Inventory	VOC, SOC
21	UST Site-Open	6-10	Database Inventory	VOC, SOC
22	Auto Repair & Service	6-10	Database Inventory	IOC, VOC, SOC
23	Grading Contractors	6-10	Database Inventory	IOC, VOC, SOC
24	Home Improvements	6-10	Database Inventory	VOC, SOC
25	Cleaners	6-10	Database Inventory	VOC
26	Janitor Service	6-10	Database Inventory	VOC
27	Garbage Collection	6-10	Database Inventory	IOC, VOC, SOC
28	Welding	6-10	Database Inventory	IOC, VOC, SOC
29	Printers	6-10	Database Inventory	IOC, VOC
30	Funeral Directors	6-10	Database Inventory	IOC, VOC
31	Printers	6-10	Database Inventory	IOC, VOC
33	Newspapers (Publishers)	6-10	Database Inventory	IOC, VOC

Site #	Source Description[1]	TOT Zone (years)[2]	Source of Information	Potential Contaminants[3]
34	Trailer-Manufacturers	6-10	Database Inventory	VOC, SOC
35	Truck Renting & Leasing	6-10	Database Inventory	VOC, SOC
36	Toxic Release Inventory Site	6-10	Database Inventory	VOC, SOC
37	RCRA Site	6-10	Database Inventory	IOC, VOC, SOC
38	RCRA Site	6-10	Database Inventory	VOC
39	RCRA Site	6-10	Database Inventory	VOC, SOC
40	SARA Site	6-10	Database Inventory	VOC, SOC
41	SARA Site	6-10	Database Inventory	VOC, SOC
42	SARA Site	6-10	Database Inventory	VOC, SOC
43	SARA Site	6-10	Database Inventory	VOC, SOC
44	SARA Site	6-10	Database Inventory	IOC, VOC, SOC
45	SARA Site	6-10	Database Inventory	IOC
46	Group 1 Site (Tetrachloroethylene)	6-10	Database Inventory	
47	Wastewater Land Application Site	6-10	Database Inventory	IOC
50	Major Transportation Corridor	0-3	GIS Map	IOC, VOC, SOC, Microbials
51	Major Transportation Corridor	3-6	GIS Map	IOC, VOC, SOC
52	Major Transportation Corridor	6-10	GIS Map	IOC, VOC, SOC
53	Dairy Pit	6-10	Enhanced Inventory	IOC
54	Dried/Dehydrated Fruits Co.	0-3	Database Inventory	IOC

Site #'s are non-sequential
SARA = Superfund Amendments and Reauthorization Act, RCRA = Resource Conservation Recovery Act,
UST = underground storage tank, LUST = leaking underground storage tank,
[2]TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

The susceptibility of the wells to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the wells, land use characteristics, and potentially significant contaminant sources. The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. Therefore, a high susceptibility rating relative to one potential contaminant does not mean that the water system is at the same risk for all other potential contaminants. The relative ranking that is derived for the wells is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Appendix A contains the susceptibility analysis worksheet. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors. These factors are surface soil composition, the material in the vadose zone (between the land surface and the water table), the depth to first ground water, and the presence of a 50-foot thick fine-grained zone above the water producing zone of the well. Slowly draining soils such as silt and clay typically are more protective of ground water than coarse-grained soils such as sand and gravel. Similarly, fine-grained sediments in the subsurface and a water depth of more than 300 feet from the surface protect the ground water from contamination.

Hydrologic sensitivity was rated high for both wells (Table 2). This is based upon moderate to well drained soil classes defined by the National Resource Conservation Service (NRCS). Soils that have poor to moderate drainage characteristics have better filtration capabilities than faster draining soils. There was also insufficient well log information to evaluate the vadose zone composition, the first depth to ground water, and whether there is at least 50 feet of cumulative thickness of low permeability material that could reduce the downward movement of contaminants.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system that can better protect the water. If the casing and annular seal both extend into a low permeability unit then the possibility of cross contamination from other aquifer layers is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capabilities. When information was adequate, a determination was made as to whether the casing and annular seals extend into low permeability units and whether current public water system (PWS) construction standards are met.

For Well #1, the system construction score was rated moderate for the well. The sanitary survey states the wellhead has an acceptable well vent and the surface seal is in good condition. There was insufficient well log information available to determine whether the annular seal extends into a low permeable geologic formation, an important aspect of proper well construction. The well casing extends 12-inches above the ground level and is located outside of a 100-year floodplain, decreasing the chance of contaminants being drawn into the drinking water source by surface water flooding.

For Well #2, the system construction score was rated high. The sanitary survey states there is no well vent on the wellhead. The purpose of the vent is to vent the space between the casing and the column and prevent a vacuum from forming when the well turns on and draws down the water table. A vacuum could draw in contamination through joints or leaks in the casing or cause the well to slough. The survey also states the surface seal is in good condition. No well log information was available to determine whether the well casing and annular seal extend into a low permeable geologic formation, two important aspects of proper well construction. The well casing does not extend 12-inches above the ground level and is located outside of a 100-year floodplain.

The Idaho Department of Water Resources (IDWR) *Well Construction Standards Rules (1993)* require all public water systems (PWSs) to follow DEQ standards. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works (1997)* during construction. Under current standards, all PWS wells are required to have a 50-foot buffer around the wellhead and if the well is designed to yield greater than 50 gallons per minute (gpm) a minimum of a 6-hour pump test is required. These standards are used to rate the system construction for the well by evaluating items such as condition of wellhead and surface seal, whether the casing and annular space is within consolidated material or 18 feet below the surface, the thickness of the casing, etc. If all criteria are not met, the public water source does not meet the IDWR Well Construction Standards. In this case, there was insufficient information available to determine if the wells meet all the criteria outlined in the IDWR Well Construction Standards.

Potential Contaminant Source and Land Use

The potential contaminant sources and land use within the delineated zones of water contribution are assessed to determine the wells' susceptibility. When agriculture is the predominant land use in the area, this may increase the likelihood of agricultural wastewater infiltrating the ground water system. Agricultural land is counted as a source of leachable contaminants and points are assigned to this rating based on the percentage of agricultural land. The predominant land use within the delineated capture zones of Idaho Supreme is irrigated agricultural land.

In terms of potential contaminant sources and land use susceptibility the ratings are as follows. Both wells rated high for IOCs (i.e., nitrates) and SOCs (i.e., pesticides), and moderate for VOCs (i.e. petroleum related products) and microbial contaminants (i.e., fecal coliform).

Most of the potential contaminant sources fall within the 6-10 year time of travel zone. These sources include underground fuel storage tanks, dairies, gravel pits, leaking underground storage tanks, wastewater land application sites and transportation corridors, such as roads and railways. The locations of potential contaminant sources and delineated TOT zones for the wells are shown on Figure 2.

Final Susceptibility Rating

A detection above a drinking water standard (MCL), any detection of a VOC or SOC, or having potential contaminant sources within 50 feet of the wellhead will automatically give a high susceptibility rating to the final well ranking despite the land use of the area because a pathway for contamination already exists. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and a large percentage of agricultural land contribute greatly to the overall ranking. The final susceptibility ranking for both wells was high for IOC, VOC, SOC, and microbial contaminants. These ratings reflect the hydrologic sensitivity, system construction, and potential contaminants inventory and land use within the delineated source water assessment areas for the well.

Table 2. Summary of Idaho Supreme Susceptibility Evaluation

Drinking Water Sources	Susceptibility Scores									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	Final Susceptibility Ranking			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	H	H	M	H	M	M	H	H	H	H
Well #2	H	H	M	H	M	H	H	H	H	H

H = High Susceptibility, M = Moderate Susceptibility, L = Low Susceptibility
IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Susceptibility Summary

The IOCs barium, fluoride, and nitrate represent the main water chemistry recorded in the public water system, although the reported concentrations of these chemicals were below the MCL for each chemical. Water chemistry tests have not detected VOCs or SOCs in the drinking water.

The county level agriculture-chemical use is considered high in this area due to a significant amount of agricultural land. Although there may only be a small portion of agriculture land in the direct vicinity of the well, it is useful as a tool in determining the overall chemical usage such as pesticides and how it may impact ground water through infiltration and surface water runoff. In addition, there were potential sources of contamination found within the wells' delineated TOT zones (Figure 2).

Section 4. Options for Drinking Water Protection

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. If the system should need to expand in the future, new well sites should be located in areas with as few potential sources of contamination as possible, and the site should be reserved and protected for this specific use.

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For Idaho Supreme, drinking water protection activities should continue efforts aimed at keeping the distribution system free of microbial contaminants that may affect the drinking water quality. At the present time, the nitrate levels in the drinking water wells are well below the MCL. However, if nitrate concentrations or other chemicals tested approach or exceed the MCL, the system should take appropriate measures to treat the water source. Treatments, such as disinfectant and filtration for microbials and reverse osmosis for IOCs should be investigated to remedy these problems. In addition, drinking water protection activities should focus on correcting any deficiencies outlined in the sanitary survey. The wells should maintain sanitary standards regarding wellhead protection. Also, any new sources that could be considered potential contaminant sources in the wells' zones of contribution should also be investigated and monitored to prevent future contamination. No potential contaminants (pesticides, paint, fuel, cleaning supplies, etc.) should be stored or applied within 50 feet of the wells. Land uses within most of the source water assessment area are outside the direct jurisdiction of Idaho Supreme. Therefore partnerships with state and local agencies, industrial and commercial groups should be established to ensure future land uses are protective of ground water quality. Educating employees and the public about source water will further assist the system in its monitoring and protection efforts.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan. Public education topics could include household hazardous waste disposal methods, proper lawn and garden care, and the importance of water conservation to name but a few. There are multiple resources available to help water systems implement protection programs, including the Drinking Water Academy of the EPA. Drinking water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture and the Bingham County Soil and Water Conservation District. Any major transportation corridors that intersect the delineation (such as Highway 39), the Idaho Department of Transportation should be involved in protection efforts.

Assistance

Public water supplies and others may call the following DEQ offices with questions about this assessment and to request assistance with developing and implementing a local protection plan. In addition, draft protection plans may be submitted to the DEQ office for preliminary review and comments.

DEQ Pocatello Regional Office	(208) 236-6160
DEQ State Office	(208) 373-0502

Website: http://www.deq.state.id.us

Water suppliers serving fewer than 10,000 persons may contact Ms. Melinda Harper (208) 343-7001 or email her at mlharper@idahoruralwater.com. Idaho Rural Water Association, for assistance with drinking water protection (formerly wellhead protection) strategies.

References Cited

Bechtel Environmental, Inc., 1994, Remedial Investigation/Feasibility Study, Groundwater Flow Monitoring Report, 95 p.

Corbett, M.K., J.E. Anderson, and J.C. Mitchell, 1980, An Evaluation of Thermal Water Occurrences in the Tyhee Area, Bannock County, Idaho, Idaho Department of Water Resources, Water Information Bulletin, No. 30, 67 p.

Drinking Water Information Management System (DWIMS). Idaho Department of Environmental Quality

Great Lakes-Upper Mississippi River Board of State and Provincial Public Health and Environment Managers, 1997. "Recommended Standards for Water Works."

Idaho Division of Environmental Quality Ground Water Program, October 1999. Idaho Source Water Assessment Plan.

Idaho Department of Environmental Quality. 2000. Design Standards for Public Drinking Water Systems. IDAPA 58.01.08.550.01.

Idaho Department of Water Resources, 1993. Administrative Rules of the Idaho Water Resource Board: Well Construction Standards Rules. IDAPA 37.03.09.

Jacobson, N.D., 1982, Ground-Water Conditions in the Eastern Part of Michaud Flats, Fort Hall Indian Reservation, Idaho, U.S. Geological Survey Open-File Report 82-570, 35 p.

Jacobson, N.D., 1984, Hydrogeology of Eastern Michaud Flats, Fort Hall Indian Reservation, Idaho, U.S. Geological Survey Water-Resources Investigations Report 84-4201, 42 p

Safe Drinking Water Information System (SDWIS). Idaho Department of Environmental Quality.

Southeastern District Health Department. 1999. Sanitary Survey of Idaho Supreme: PWS #6060034, Bingham County

Washington Group International, Inc, October 2001. Source Area Delineation Report for the East Margin Area of the Eastern Snake River Plain Hydrologic Province.

POTENTIAL CONTAMINANT INVENTORY LIST OF ACRONYMS AND DEFINITIONS

AST (Aboveground Storage Tanks) – Sites with aboveground storage tanks

Business Mailing List – This list contains potential contaminant sites identified through a yellow pages database search of standard industry codes (SIC).

CERCLIS – This includes sites considered for listing under the **Comprehensive Environmental Response Compensation and Liability Act (CERCLA)**. CERCLA, more commonly known as Superfund is designed to clean up hazardous waste sites that are on the national priority list (NPL).

Cyanide Site – DEQ permitted and known historical sites/facilities using cyanide.

Dairy – Sites included in the primary contaminant source inventory represent those facilities regulated by Idaho State Department of Agriculture (ISDA) and may range from a few head to several thousand head of milking cows.

Deep Injection Well – Injection wells regulated under the Idaho Department of Water Resources generally for the disposal of stormwater runoff or agricultural field drainage.

Enhanced Inventory – Enhanced inventory locations are potential contaminant source sites added by the water system. These can include new sites not captured during the primary contaminant inventory, or corrected locations for sites not properly located during the primary contaminant inventory. Enhanced inventory sites can also include miscellaneous sites added by the Idaho Department of Environmental Quality (DEQ) during the primary contaminant inventory.

Floodplain – This is a coverage of the 100-year floodplains.

Group 1 Sites – These are sites that show elevated levels of contaminants and are not within the priority one areas.

Inorganic Priority Area – Priority one areas where greater than 25% of the wells/springs show constituents higher than primary standards or other health standards.

Landfill – Areas of open and closed municipal and non-municipal landfills.

LUST (Leaking Underground Storage Tank) – Potential contaminant source sites associated with leaking underground storage tanks as regulated under RCRA.

Mines and Quarries – Mines and quarries permitted through the Idaho Department of Lands.)

Nitrate Priority Area – Area where greater than 25% of wells/springs show nitrate values above 5 mg/l.

NPDES (National Pollutant Discharge Elimination System) – Sites with NPDES permits. The Clean Water Act requires that any discharge of a pollutant to waters of the United States from a point source must be authorized by an NPDES permit.

Organic Priority Areas – These are any areas where greater than 25% of wells/springs show levels greater than 1% of the primary standard or other health standards.

Recharge Point – This includes active, proposed, and possible recharge sites on the Snake River Plain.

RCRA – Site regulated under **Resource Conservation Recovery Act (RCRA)**. RCRA is commonly associated with the cradle to grave management approach for generation, storage, and disposal of hazardous wastes.

SARA Tier II (Superfund Amendments and Reauthorization Act Tier II Facilities) – These sites store certain types and amounts of hazardous materials and must be identified under the Community Right to Know Act.

Toxic Release Inventory (TRI) – The toxic release inventory list was developed as part of the Emergency Planning and Community Right to Know (Community Right to Know) Act passed in 1986. The Community Right to Know Act requires the reporting of any release of a chemical found on the TRI list.

UST (Underground Storage Tank) – Potential contaminant source sites associated with underground storage tanks regulated as regulated under RCRA.

Wastewater Land Applications Sites – These are areas where the land application of municipal or industrial wastewater is permitted by DEQ.

Wellheads – These are drinking water well locations regulated under the Safe Drinking Water Act. They are not treated as potential contaminant sources.

NOTE: Many of the potential contaminant sources were located using a geocoding program where mailing addresses are used to locate a facility. Field verification of potential contaminant sources is an important element of an enhanced inventory.

Appendix A

Idaho Supreme
Susceptibility Analysis Worksheet

The final scores for the susceptibility analysis were determined using the following formulas:

1) VOC/SOC/IOC Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.2)

2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.375)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name :IDAHO SUPREME Public Water System Number 6060034 WELL #1

1. System Construction		SCORE
Drill Date	6/6/66	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1999
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	YES	0
Total System Construction Score		4

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	4	2	2	4
(Score = # Sources X 2) 8 Points Maximum		8	4	4	8
Sources of Class II or III leacheable contaminants or	YES	8	2	1	
4 Points Maximum		4	2	1	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	10	9	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		28	20	21	14

4. Final Susceptibility Source Score	16	14	14	15
5. Final Well Ranking	High	High	High	High

Ground Water Susceptibility Report Public Water System Name :IDAHO SUPREME Public Water System Number 6060034 WELL #2

1. System Construction		SCORE
Drill Date	unknown	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1999
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	NO	1
Casing and annular seal extend to low permeability unit	NO	2
Highest production 100 feet below static water level	NO	1
Well located outside the 100 year flood plain	NO	1
Total System Construction Score		6

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	NO	2
Vadose zone composed of gravel, fractured rock or unknown	YES	1
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	NO	2
Total Hydrologic Score		6

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	YES	2	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		4	2	4	2
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	4	2	2	4
(Score = # Sources X 2) 8 Points Maximum		8	4	4	8
Sources of Class II or III leacheable contaminants or	YES	8	2	1	
4 Points Maximum		4	2	1	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		16	10	9	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		28	20	21	14

4. Final Susceptibility Source Score	18	16	16	17
5. Final Well Ranking	High	High	High	High