USFS SLATE CREEK RANGER STATION (PWS 2250105)
SOURCE WATER ASSESSMENT FINAL REPORT

November 29, 2001

State of Idaho
Department of Environmental Quality

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 source water assessment area and sensitivity factors associated with the well and aquifer characteristics.

This report, *Source Water Assessment for USFS Slate Creek Ranger Station, 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 not be used as an absolute measure of risk and they should not be used to undermine public confidence in the water system.**

The United States Forest Service (USFS) Slate Creek Ranger Station drinking water system consists of two wells. The North Well and South Well have a moderate susceptibility rating to inorganic, volatile organic, synthetic organic, and microbial contaminants. Though the wells had moderate ratings for hydrologic sensitivity and high ratings for system construction, a general lack of potential contaminant sources kept the overall score in the moderate category.

There are no significant water chemistry issues in the tested water. No synthetic organic contaminants or microbial contaminants have ever been detected. The volatile organic contaminants bromodichloromethane and chloroform were detected in August 1993, but these constituents are by-products of the chlorinating disinfection system and are not associated with the source water. The inorganic contaminants fluoride, cadmium, and nitrate have been detected, but at levels below the current Maximum Contaminant Levels as set by the Environmental Protection Agency. It has been observed that water pools in basements when the Salmon River rises, implying that the USFS Slate Creek Ranger Station wells are subject to contamination of the Salmon River. Though there have not been chemical problems with the system water, USFS Slate Creek Ranger Station should be aware that the potential for contamination from the aquifer still exists.

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.

For the USFS Slate Creek Ranger Station system drinking water protection activities should first 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). Also, disinfection practices should be maintained and observed so volatile disinfection by-products do not enter the drinking water system. No chemicals should be stored or applied within the 50-foot radius of the wellheads. A contingency plan should be established to deal with any contamination of the Salmon River and possible spills from Highway 95. As much of the designated protection areas are outside the direct jurisdiction of the USFS Slate Creek Ranger Station, collaboration and partnerships with state and local agencies, and industry groups should be established

and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead protection.

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 as the delineations encompass much public land uses. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the U.S. Environmental Protection Agency. As there is a major transportation corridor through the delineations, the Idaho Department of Transportation should be involved in protection activities.

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 Lewiston Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR USFS SLATE CREEK RANGER STATION, 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 assessment means.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

Background

Under the Safe Drinking Water Act Amendments of 1996, all states are required by the U.S. Environmental Protection Agency (EPA) to assess every source of public drinking water for its 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 and sensitivity factors associated with the wells and aquifer characteristics.

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, 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. The Idaho Department of Environmental Quality (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 local community, based on its own needs and limitations, should determine the decision as to the amount and types of information necessary to develop a drinking water protection program. 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

The public drinking water system for the USFS Slate Creek Ranger Station is comprised of two ground water wells that serves approximately 45 people through approximately 15 connections. The wells are located in Idaho County, to the south of the City of White Bird, just off of Highway 95 (Figure 1).

There are no current significant water problems currently affecting the USFS Slate Creek Ranger Station source water. The inorganic contaminants (IOCs) fluoride, cadmium, and nitrate have been detected, but at levels below the Maximum Contaminant Levels (MCLs) as set by the EPA. No synthetic organic contaminants (SOCs) or microbial contaminants have been detected in the well water. In August 1993, the volatile organic contaminants (VOCs) bromodichloromethane and chloroform were detected, but these chemicals are by-products of a chlorine disinfection system.

Defining the Zones of Contribution – Delineation

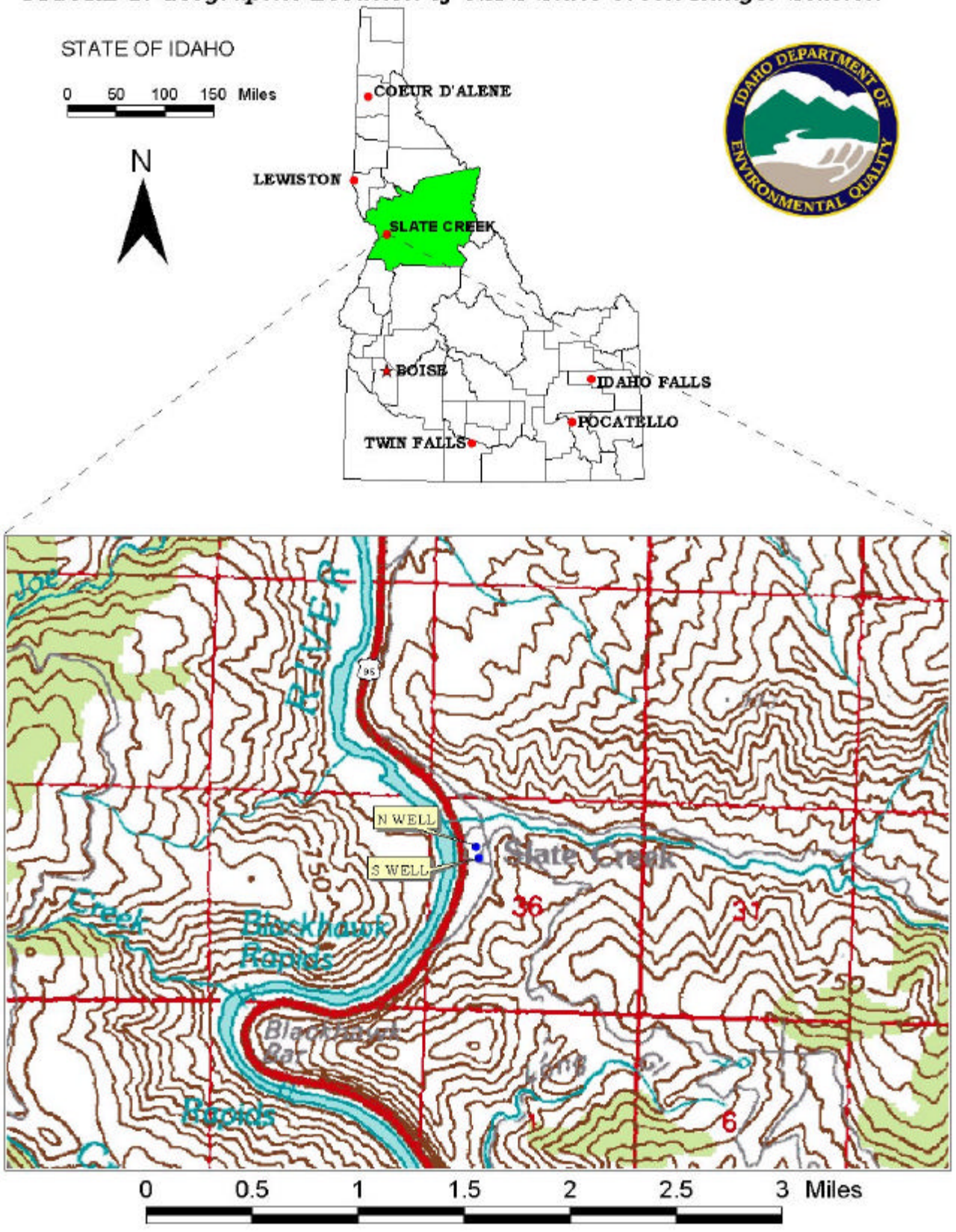
The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (TOT) zones (zones indicating the number of years necessary for a particle of water to reach a well) for water in the aquifer. DEQ contracted with the University of Idaho to perform the delineations using a refined computer model approved by the EPA in determining the 3-year (Zone 1B), 6-year (Zone 2), and 10-year (Zone 3) TOT for water associated with the alluvial aquifer of the Clearwater Plateau in the vicinity of the USFS Slate Creek Ranger Station wells. The computer model used site specific data, assimilated by the University of Idaho from a variety of sources including the USFS Slate Creek Ranger Station operator input, local area well logs, and hydrogeologic reports (detailed below).

The conceptual hydrogeologic model for the area of the USFS Slate Creek source wells is based on little known information and scarce data. A geologic map by Gaston and Bennett (1979) was used to interpret the geology. The Salmon River is thought to influence the ground water flow regime. There is also the potential for leakage from Slate Creek to influence the wells. Based on well logs, the wells are located in alluvium (sands and gravels) and possibly shale.

Bedrock in the Slate Creek area is comprised mostly of Columbia River Basalt (mostly Grande Ronde) and the Seven Devils Group (Gaston and Bennett, 1979). The wells derive water from the alluvium aquifer along the Salmon River. The general direction of ground water flow is believed to be toward the Salmon River.

The geology of the Slate Creek area is very complex. Based on the geologic maps by Gaston and Bennett (1979) several structural features exist in the near-field area of Slate Creek. It is unknown whether these features are barriers to flow. Little water level data exist and it is therefore not known whether these structural features act as hydrologic barriers.

FIGURE 1. Geographic Location of USFS Slate Creek Ranger Station



The Salmon River cuts through hundreds of feet of basalt. The river is assumed to gain water from the rock and discharge into the Snake River. The Salmon River is thought to be gaining for this reason and because it flows all year. Water in the river during baseflow conditions is from ground water.

It is believed that Slate Creek acquires water from the basalt by downcutting through the rock.

No aquifer recharge data are available for the Slate Creek area. In a study by Wyatt-Jaykim (1994), recharge to the central basin (Lewiston basin) was modeled as 1 inch per year; 2 inches per year was selected in the higher areas. Because the potential recharge area for Slate Creek lies at a higher elevation than Lewiston, precipitation rates are higher. The Slate Creek area receives about 18 inches per year (Nick Gerheart, 2001) versus 13 inches per year in Lewiston-Clarkston (Cohen and Ralston, 1980).

The delineated source water assessment areas for the USFS Slate Creek Ranger Station wells can best be described as corridors that extend to the north (North Well) and south (South Well) paralleling Highway 95 and encompassing part of the Salmon River. The North Well delineation is approximately 1,600 feet long and about 1,200 feet wide (Figure 2, Attachment A). The South Well delineation is approximately is approximately 2,650 feet long and about 1,200 feet wide (Figure 3, Attachment A). The actual data used by the University of Idaho 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 and has a sufficient likelihood of releasing such contaminants 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 groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area of the USFS Slate Creek Ranger Station wells consists of undeveloped land and a major transportation corridor, while the surrounding area is predominantly undeveloped.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. 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, including 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.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted in October 2001. The first phase involved identifying and documenting potential contaminant sources within the USFS Slate Creek Ranger Station source water assessment areas (Figures 2 and 3) through the use of computer databases and Geographic Information System maps developed by DEQ. The second, or enhanced, phase of the contaminant inventory involved contacting the operator to identify and add any additional potential sources in the area.

The North Well delineation (Figure 2, Attachment A) has Highway 95 and the Salmon River as the only potential contaminant sources. The South Well delineation (Figure 3, Attachment A) also crosses the Salmon River and Highway 95, but also contains an aquaculture discharge point regulated by the National Pollutant Discharge Elimination Permit (NPDES) system. As there is evidence of a connection between the Salmon River and the water levels in the well during flooding events, the system should have a contingency plan for water consumption during such events. In addition, the system should be aware that a spill on the section of Highway 95 contained within the delineations has a chance to contribute all classes of contamination to the aquifer.

Section 3. Susceptibility Analyses

The water system's susceptibility to contamination was ranked as high, moderate, or low risk according to the following considerations: hydrologic characteristics, physical integrity of the well, 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 each well is a qualitative, screening-level step that, in many cases, uses generalized assumptions and best professional judgement. Attachment B contains the susceptibility analysis worksheet for the system. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

The hydrologic sensitivity of a well is dependent upon four factors: the 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 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 protect the ground water from contamination.

Hydrologic sensitivity is moderate for both wells (Table 1). Regional soil data places the delineations within poor to moderate drained soils. In addition, local area well logs place the water table between 15 feet below ground surface (bgs) and 30 feet bgs. The vadose zones in the wells range from fine sand to boulder-sized gravel. The shallow depth of the wells prevented room for adequate low permeability layers.

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 is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination 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 capacity. If the wellhead and surface seal are maintained to standards, as outlined in Sanitary Surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced.

Both wells have high system construction scores. The North Well, installed in 1958, has 8-inch casing installed to 46 feet bgs with a perforated section from 37 feet bgs to 43 feet bgs. The South Well, installed in 1969, has perforated 6-inch casing to 36 feet bgs and an open hole to 50 feet bgs. The water is disinfected and pumped to a 38,000-gallon concrete storage tank. Gravity is the driving force to allow flow to structures and fire protection equipment. The 1999 Sanitary Survey shows that neither well was protected from surface flooding. Information regarding the adequacy of the wellhead seals or the casing construction above the floor of the wellhouse was not available.

A determination could not be made as to whether current public water system (PWS) construction standards are being met because no well logs were available. Though the well may have been in compliance with standards when it were completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. These standards include provisions for well screens, pumping tests, and casing thicknesses to name a few. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Six-inch diameter wells require a casing thickness of at least 0.288-inches and 8-inch diameter and larger casing requires 0.322-inch thick casing. The wells were assessed an additional point in the system construction rating.

Potential Contaminant Source and Land Use

The wells rated moderate for IOCs (i.e. nitrates, arsenic), VOCs (i.e. petroleum products, chlorinated solvents), and SOCs (i.e. pesticides), and low for microbial contaminants (i.e. bacteria). The Salmon River and Highway 95 accounted for the largest contribution of points to the potential contaminant inventory rating.

Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, if there are contaminant sources located within 50 feet of the source then the wellhead will automatically get a high susceptibility rating. 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 agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, the wells rated moderate for all categories.

Table 1. Summary of USFS Slate Creek Ranger Station Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
North Well	M	M	M	M	L	H	M	M	M	M
South Well	M	M	M	M	L	H	M	M	M	M

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

Susceptibility Summary

Overall, the wells rate moderate for all categories. The lack of potential contaminant sources and poorly to moderately draining soils counteracts the high ratings in system construction.

There are no current significant water problems currently affecting the USFS Slate Creek Ranger Station source water. The IOCs fluoride, cadmium, and nitrate have been detected, but at levels below the MCLs as set by the EPA. No SOCs or microbial contaminants have been detected in the well water. In August 1993, the VOCs bromodichloromethane and chloroform were detected, but these chemicals are by-products of a chlorine disinfection system.

Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility 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.

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 the USFS Slate Creek Ranger Station system drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey. Also, disinfection practices should be maintained and observed so volatile disinfection by-products do not enter the drinking water system. No chemicals should be stored or applied within the 50-foot radius of the wellheads. A contingency plan should be established to deal with any contamination of the Salmon River and possible spills from Highway 95. Since much of the designated protection areas are outside the direct jurisdiction of the USFS Slate Creek Ranger Station, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of source water protection. In addition, the wells should maintain sanitary standards regarding wellhead protection.

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 as the delineation encompasses much public land uses. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the U.S. Environmental Protection Agency. As there are transportation corridors through the delineation, the Department of Transportation should be involved in protection activities.

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 Lewiston Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

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.

Lewiston Regional DEQ Office (208) 799-4370

State DEQ Office (208) 373-0502

Website: http://www2.state.id.us/deq

Water suppliers serving fewer than 10,000 persons may contact John Bokor, Idaho Rural Water Association, at 1-800-962-3257 for assistance with wellhead protection strategies.

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 ASuperfund≅ 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 100year 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.

RICRIS – 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.

Where possible, a list of potential contaminant sites unable to be located with geocoding will be provided to water systems to determine if the potential contaminant sources are located within the source water assessment area.

References Cited

Cohen, P.L. and Ralston, D.R.; 1980; Reconnaissance study of the "Russell" Basalt aquifer in the Lewiston Basin of Idaho and Washington, Research Technical Completion Report, Idaho Water Resources Research Institute, University of Idaho, 164p.

Gaston, M.P. and E.H. Bennett; 1979; Geologic Map of the Grangeville Quadrangle, Idaho, Idaho Bureau of Mines and Geology, Moscow, Id.

Gerheart, N.; 2001; USFS, personal communication.

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Hydrology Program; 1984; Analysis of Aquifer Test Data from the Grande Ronde Formation, Clarkston, Washington, and Lewiston Idaho. Department of Geology and Geological Engineering, University of Idaho, Moscow, Idaho 83843.

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Idaho Department of Environmental Quality, 1997. 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.

Wyatt-Jaykim Engineers; 1994; Lewiston Basin deep aquifer study, Prepared for Lewiston Orchards Irrigation District (LOID).

Attachment A

USFS Slate Creek Ranger Station
Delineation Figures

Figure 2. USFS Slate Creek Ranger Station Delineation Map and Potential Contaminant Source Locations

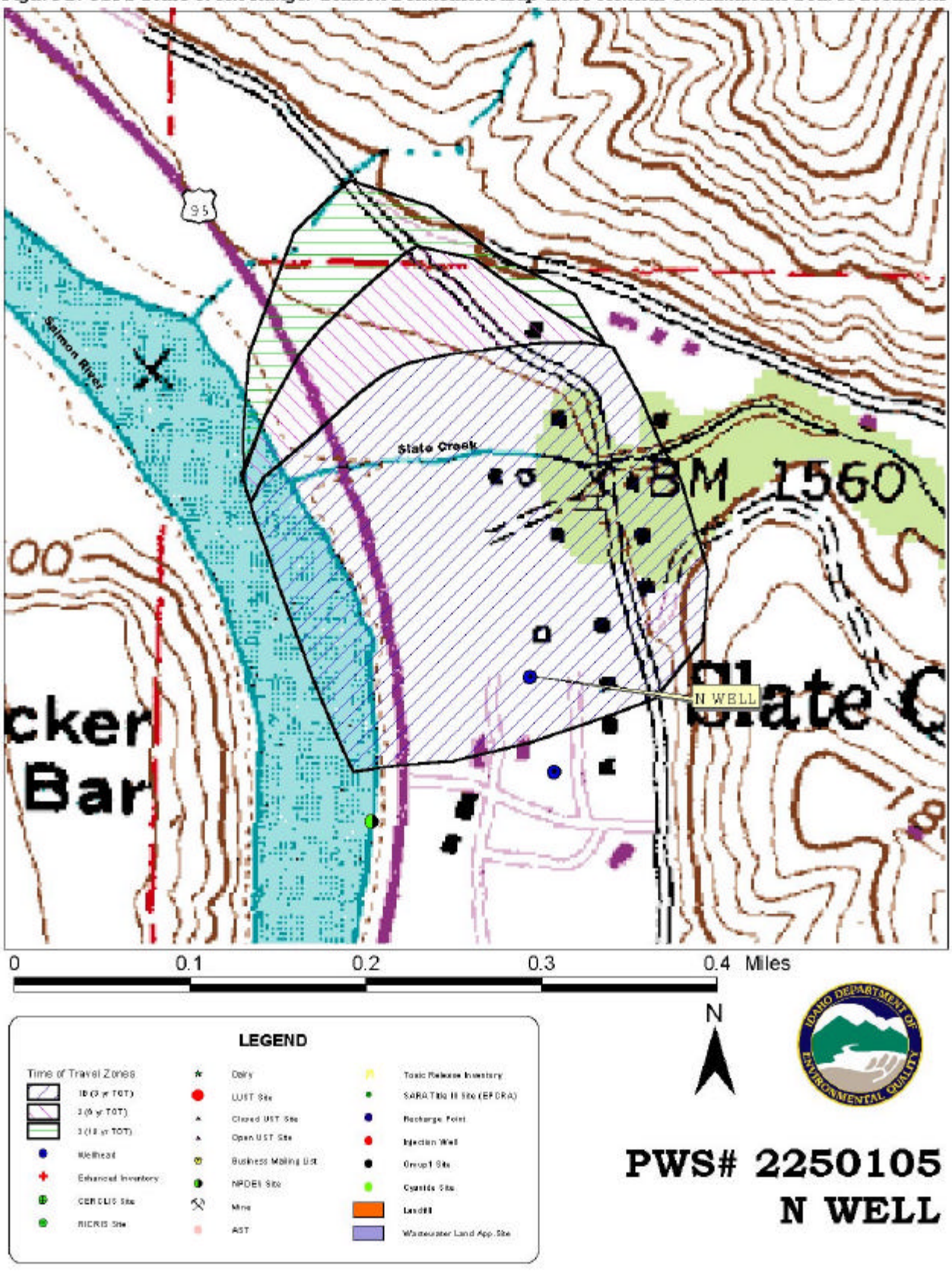

Figure 3. USFS Slate Creek Ranger Station Delineation Map and Potential Contaminant Source Locations

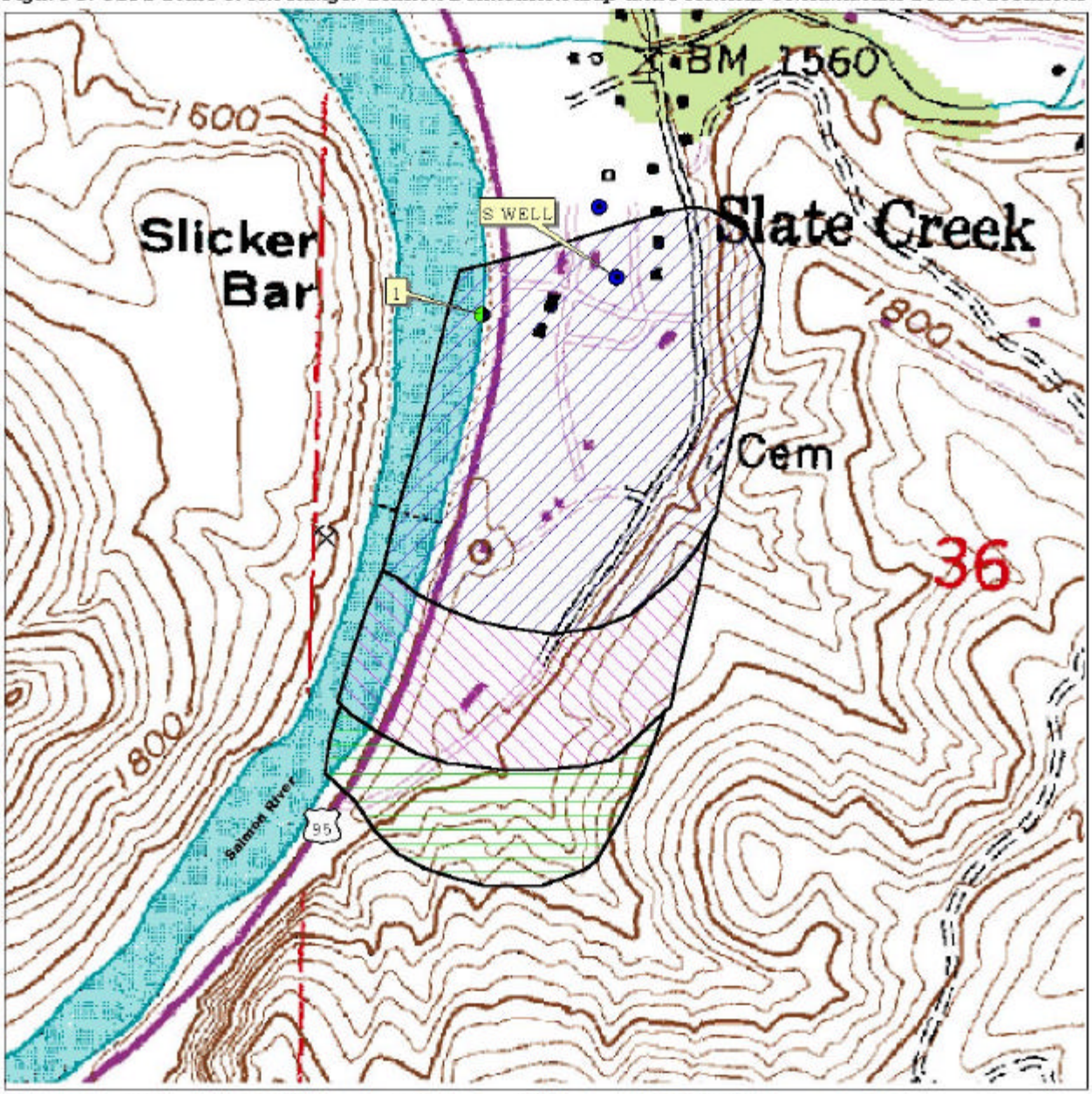

Table A-1. USFS Slate Creek Ranger Station North Well, Potential Contaminant Inventory

Site #	Source Description[1]	TOT ZONE[2]	Source of Information	Potential Contaminants[3]
	Salmon River	0-10	GIS Map	IOC, VOC, SOC, Microbes
	Highway 95	0-10	GIS Map	IOC, VOC, SOC, Microbes

[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

Table A-2. USFS Slate Creek Ranger Station South Well, Potential Contaminant Inventory

Site #	Source Description[1]	TOT ZONE[2]	Source of Information	Potential Contaminants[3]
1	NPDES Site	0-3	Database Search	IOC, Microbes
	Salmon River	0-10	GIS Map	IOC, VOC, SOC, Microbes
	Highway 95	0-10	GIS Map	IOC, VOC, SOC, Microbes

[1] NPDES = National Pollutant Discharge Elimination System
[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

Attachment B

USFS Slate Creek Ranger Station Susceptibility Analysis Worksheets

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) 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 : USFS SLATE CREEK RANGER STATION Well# : N WELL

Public Water System Number 2250105 11/20/2001 2:52:33 PM

1. System Construction		SCORE
Drill Date	08/01/1958	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	NO	0
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	YES	0
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	4

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	2	2	2	2
(Score = # Sources X 2) 8 Points Maximum		4	4	4	4
Sources of Class II or III leacheable contaminants or	YES	2	2	2	
4 Points Maximum		2	2	2	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land	0	0	0	0
Total Potential Contaminant Source / Land Use Score - Zone 1B		6	6	6	4
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	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	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	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score		11	11	11	4
4. Final Susceptibility Source Score		12	12	12	12
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : USFS SLATE CREEK RANGER STATION Well# : S WELL

Public Water System Number 2250105 11/20/2001 2:52:45 PM

1. System Construction		SCORE				
Drill Date		05/24/1969				
Driller Log Available		YES				
Sanitary Survey (if yes, indicate date of last survey)		NO	0			
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		YES	0			
Vadose zone composed of gravel, fractured rock or unknown		NO	0			
Depth to first water > 300 feet		NO	1			
Aquitard present with > 50 feet cumulative thickness		NO	2			
	Total Hydrologic Score		3			
3. Potential Contaminant / Land Use - ZONE 1A			IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	RANGELAND, WOODLAND, BASALT		0	0	0	0
Farm chemical use high		NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A		NO	NO	NO	NO	NO
	Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	0	0
Potential Contaminant / Land Use - ZONE 1B						
Contaminant sources present (Number of Sources)		YES	3	2	2	3
(Score = # Sources X 2) 8 Points Maximum			6	4	4	6
Sources of Class II or III leacheable contaminants or		YES	3	2	2	
4 Points Maximum			3	2	2	
Zone 1B contains or intercepts a Group 1 Area		NO	0	0	0	0
Land use Zone 1B	Less Than 25% Agricultural Land		0	0	0	0
	Total Potential Contaminant Source / Land Use Score - Zone 1B		9	6	6	6
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	Less than 25% Agricultural Land		0	0	0	
	Potential Contaminant Source / Land Use Score - Zone II		3	3	3	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		NO	0	0	0	
	Total Potential Contaminant Source / Land Use Score - Zone III		2	2	2	0
Cumulative Potential Contaminant / Land Use Score			14	11	11	6
4. Final Susceptibility Source Score			12	11	11	11
5. Final Well Ranking			Moderate	Moderate	Moderate	Moderate