

THREE MILE WATER DISTRICT (PWSNO 1110028) SOURCE WATER ASSESSMENT REPORT

March 10, 2003



State of Idaho Department of Environmental Quality

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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 risk assessment is based on a land use inventory in the well recharge zone, sensitivity factors associated with how the well was constructed, and aquifer characteristics.

This report, *Source Water Assessment for Three Mile Water District*, describes the public drinking water sources; the recharge zones and potential contaminant sites located inside the recharge zone boundaries. This assessment, taken into account with local knowledge and concerns, should be used as a planning tool to develop and implement appropriate protection measures for this public water system. **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 Three Mile Water District operates a community water system serving a population of 1300 to 1500 rural residents north of Bonners Ferry in Boundary County Idaho. Drinking water and water for fire protection is supplied by two wellfields. The wellfield adjacent to the Moyie River has been in use since 1981. The district acquired sole ownership of a ground water well in the summer of 2001 that is part of the Hops wellfield Three Mile Water District and Bee Line Water District received jointly from Anheuser Busch in 1998. Three Mile drilled an additional three wells in the Hops wellfield in the summer of 2001.

The river wellfield ranked moderately susceptible to all classes of regulated contaminants in a susceptibility analysis prepared by DEQ January 21, 2003. The overall risk to the Hops wellfield is also moderate.

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 education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

The greatest water quality threat the district currently faces is from the natural corrosivity of the water. In order to protect Three Mile Water District customers from the long-term health effects of high copper concentrations leached from domestic piping, the August 1999 sanitary survey called for installation of corrosion control at both the River and Hops wellfields. In addition to continuing to operate and maintain the wellfields in compliance with the *Idaho Rules for Public Drinking Water Systems* there are a number of voluntary measures the district can incorporate into a drinking water protection plan such as fencing the Hops wellfield, forming ground water stewardship partnerships with landowners in the recharge zone, and involving its customers in protection efforts.

SOURCE WATER ASSESSMENT FOR THREE MILE WATER DISTRICT

Section 1. Introduction - Basis for Assessment

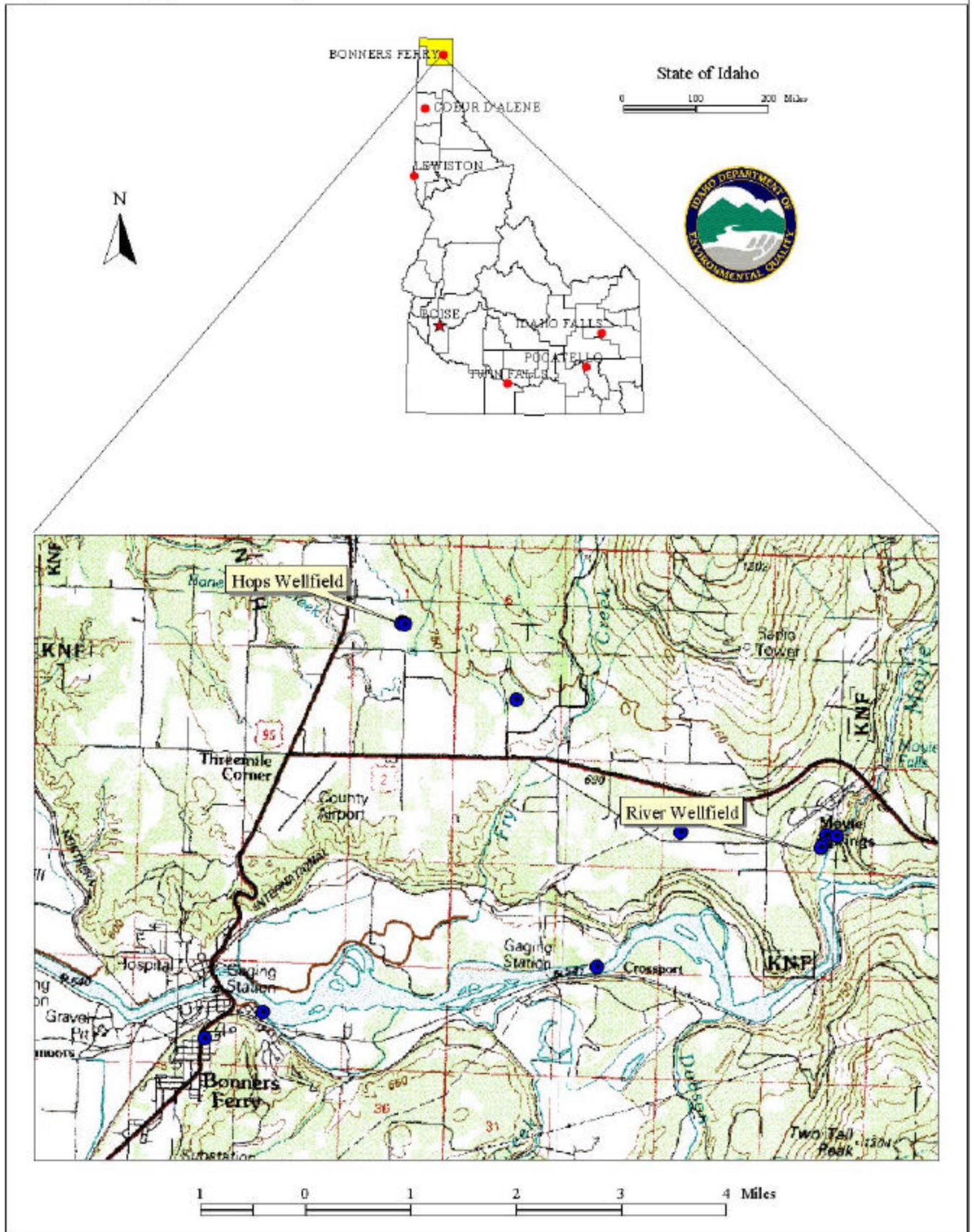
The following sections contain information necessary for understanding how and why this assessment was conducted. **It is important to review this information to understand what the ranking of this source means.** Maps showing the delineated source water assessment area and an inventory of significant potential sources of contamination identified within that area are included. The water Susceptibility Analysis Worksheets used to develop this assessment is 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 every public drinking water source in Idaho for its relative susceptibility to contaminants regulated by the Safe Drinking Water Act. These assessments are based on a land use inventory inside the delineated recharge zones, sensitivity factors associated with how the well is constructed, and aquifer characteristics. The state must complete more than 2900 assessments by May of 2003. Because resources and the time available to accomplish assessments are limited, an in-depth, site-specific investigation for every public water system is not possible.

The results of the source water assessment 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 ultimate goal of this assessment is to provide data to local communities for developing a protection strategy for their drinking water supply. The Idaho Department of Environmental Quality recognizes that pollution prevention activities generally require less time and money to implement than treating 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 source water protection program should be determined by the local community based on its own needs and limitations. Wellhead or source water protection is one facet of a comprehensive growth plan, and it can complement ongoing local planning efforts.

Figure 1. Geographic Location of Three Mile Water District



Section 2. Preparing for the Assessment

Defining the Zones of Contribution - Delineation

The delineation process establishes the physical area around a well or surface water intake that will become the focal point of the assessment and protection efforts. For wells, the process includes mapping the boundaries of the well recharge area into time of travel (TOT) zones indicating the number of years necessary for a particle of water flowing through the aquifer to reach a well.

The River wellfield consists of six wells ranging in depth from 30 to 66 feet. Located in close proximity to one another on the west side of the Moyie River, the wells were modeled as a single source. Actual pumping volumes for the last three years for the Three Mile river wellfield were obtained. A value of 14,733 ft³/day was used. No multiplication factor was added based on the stated goal of reduced reliance on the river wells in the future with greater reliance on the Hops wells. Pumping rates for these river wells are typically several hundred gallons per minute and hydraulic conductivity ranged between 25 and 333 feet per day.

The following boundary conditions and assumptions were used in building the WHAEM simulation for the River wellfield:

- The fractured rock found in the uplands to the north east of the sources was considered to be much lower in overall permeability than the glacial sediments in which the sources are located. The contact between these two formations was modeled as a no-flow boundary. In two areas where streams emerge from the uplands onto the sediments and where the upland topography favors a collection of runoff, flux linesinks were placed to provide a source of recharge to the ground water system. Constant head linesinks were placed in specific locations adjacent to the contact in order to generate the steep hydraulic head gradients seen between observation wells and the source wells.
- The Kootenai River was considered the ultimate discharge point for the groundwater systems and modeled with constant head linesinks.
- The Moyie River was modeled as a gaining stream, a local discharge point for ground water, using a flux type linesink. This type of boundary provided better calibration of the selected test points than simulating the river as a constant head boundary.
- The connection between the source wells, the ground water system, and the Moyie River is poorly understood. Anecdotal evidence, based on discussions with the operator of the Three Mile system, indicate a strong connection between the wells and the river. This is based on observations of water level and turbidity correlations with varying river conditions. Total pumpage from both the City of Moyie Springs and the Three Mile system amounts to less than 1ft³/second, a very small percentage of the flow of the Moyie River, even under base flow conditions (historical lows in September of 30-55 ft³/second). The actual amount of water taken from upgradient ground water sources vs. the river is unknown.

- The hydraulic conductivity used in the simulation (10 feet/day) is much lower than that estimated for the source wells. It was chosen based on review of well logs in the vicinity, which indicate less permeable materials than are seen right at the river. Since the majority of ground water travel to the wells would be at a distance from the river it was felt to be appropriate to use a conductivity more consistent with these materials. The impact of using a lower conductivity is a shorter, wider capture zone.

The simulated time of travel pathlines and capture zones were modified slightly in two ways to produce the final delineation shown in Figure 2. A buffer was added to account for uncertainty in the direction of flow. The river adjacent to the wellfield was included in the capture zone to acknowledge the likely contribution of surface water to the water systems, although the extent of the contribution is unknown. This addition may assist in the overall design of source water protection plans for these systems.

The Hops wellfield consists of 7 wells completed in glacial and other sediments located at the base of uplands comprised of fractured metasediments. Three Mile Water District owns 1 of the 3 original wells in the Hops wellfield and drilled additional wells in the summer of 2001. Because the wells are close together and pumping from a common source they have a common delineation.

The WHAEM analytical ground water flow model was used to determine the location of the wellfield recharge zone and Time of Travel zones illustrated in Figure 3. The simulated three year TOT extends to the east and abuts the fractured metasediment terrain. Because of the mountainous terrain and significant uncertainty regarding ground water flow in fractured rock, the six and ten year TOT were derived using local topography and the dimensions of the three year TOT as a guide. The focus in locating these other two time of travel zones was on the one significant stream emanating from the uplands in this vicinity with the potential for focussed recharge. The orientation of the resulting TOT ranges from northeast to east, with the assumption being that the ground water system is moving toward the Kootenai River as a final discharge location.

Identifying Potential Sources of Contamination

The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of water contamination. Inventories for all public water systems in Idaho were conducted in two-phases. The first phase involved identifying and documenting potential contaminant sources within a system's source water assessment area through the use of computer databases and Geographic Information System maps developed by DEQ. Maps showing the delineations and tables summarizing the results of the database search were then sent to system operators for review and correction during the second or enhanced phase of the inventory process.

Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. 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 potential for contamination exists due to the nature of the business, industry, or operation.

Section 3. Susceptibility Analysis

The susceptibility to contamination of all water sources in Idaho is being assessed on the following factors:

- physical integrity of the well or surface water intake,
- hydrologic characteristics,
- land use characteristics, and potentially significant contaminant sources
- historic water quality

The susceptibility rankings are specific to a particular potential contaminant or category of contaminants. 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. The following summaries describe the rationale for the susceptibility ranking. The susceptibility analysis worksheets for the River wellfield and the Hops wells in Attachment A, show in detail how the sources were scored.

System Construction

River Wells. Well construction directly affects the ability of a well to protect the aquifer from contaminants. Lower scores imply a well that can better protect the water. This portion of the susceptibility analysis relies on information from individual well logs and from the most recent sanitary survey of the public water system. Well logs for the Three Mile Water District River wells are not in the public water system file, but the wells are known to be 30 to 66 feet deep and located in the flood plain of the Moyie River. Without well logs, several construction features used to assess vulnerability to contamination are unknown and scored conservatively. The most recent sanitary survey of the system was in August 1999. No serious defects were noted wellhead and surface seal maintenance, but three of the river wells needed to have vented well caps installed. The survey report called for installation of corrosion control equipment.

Hops Wells. When the Hops wellfield was divided in the summer of 2001, Three Mile Water District received 1 of the original 3 Anheuser Busch Hops wells. No well log is available for this well. Well #2 was drilled in June 2001 to a depth of 126 feet. The 10-inch steel casing extends from 2 feet above ground to 125 feet with a well screen installed from 116 to 126 feet. The 19-foot deep bentonite surface seal terminates in a clay stratum that extends from the surface to 37 feet below. Static water level is 42 feet below ground.

Well #3, drilled in July 2001, is also 126 feet deep with a 10-inch casing from 1.5 feet above ground to the full depth of the well. It has an 18-foot deep surface seal that terminates in silty clay. The well log does not report the static water level. Correspondence dated November 2, 2001 and February 6, 2002 in the public water system file for Three Mile Water district note that before the well is used it needs to have a screen installed; it needs a pump test; the site and as-built plans must be approved.

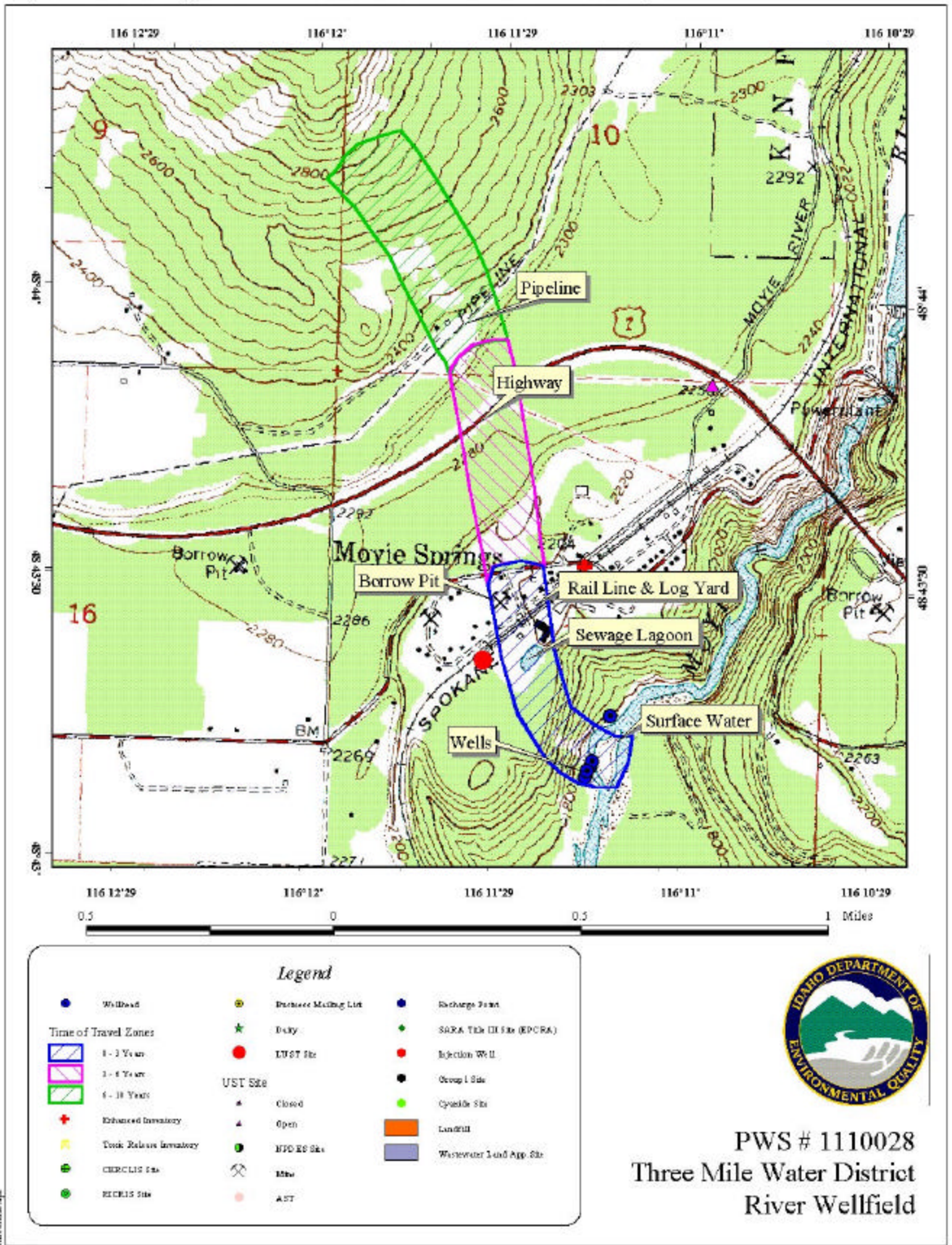
Well #4 has a 10 inch casing from 1.5 feet above grade to 111 feet; 8-inch casing between 107 and 112 feet and screens from 112 to 132 feet. The 18-foot deep surface seal extends into a clay stratum. The static water level is 41 feet below ground surface.

Hydrologic Sensitivity

River Wells. The susceptibility analyses for ground water sources includes assignment of hydrologic sensitivity scores that reflect natural geologic conditions at the well site and in the recharge zone. Information for this part of the analysis is derived from individual well logs and from the soil drainage classification inside the delineation boundaries. The River wellfield scored 4 points out of 6 points possible in this portion of the susceptibility analysis. Soils in the delineated recharge zone are mostly poorly drained to moderately well drained. Slowly draining soils help impede the migration of contaminants toward the wells. Because the well logs are not on file, no information is available about the composition of the soil above the water table at the river well sites. Data collected in 1994 including temperature and pH measurements, total coliform tests and two microscopic particulate analyses indicate that surface waters of the Moyie River do not directly influence the wells.

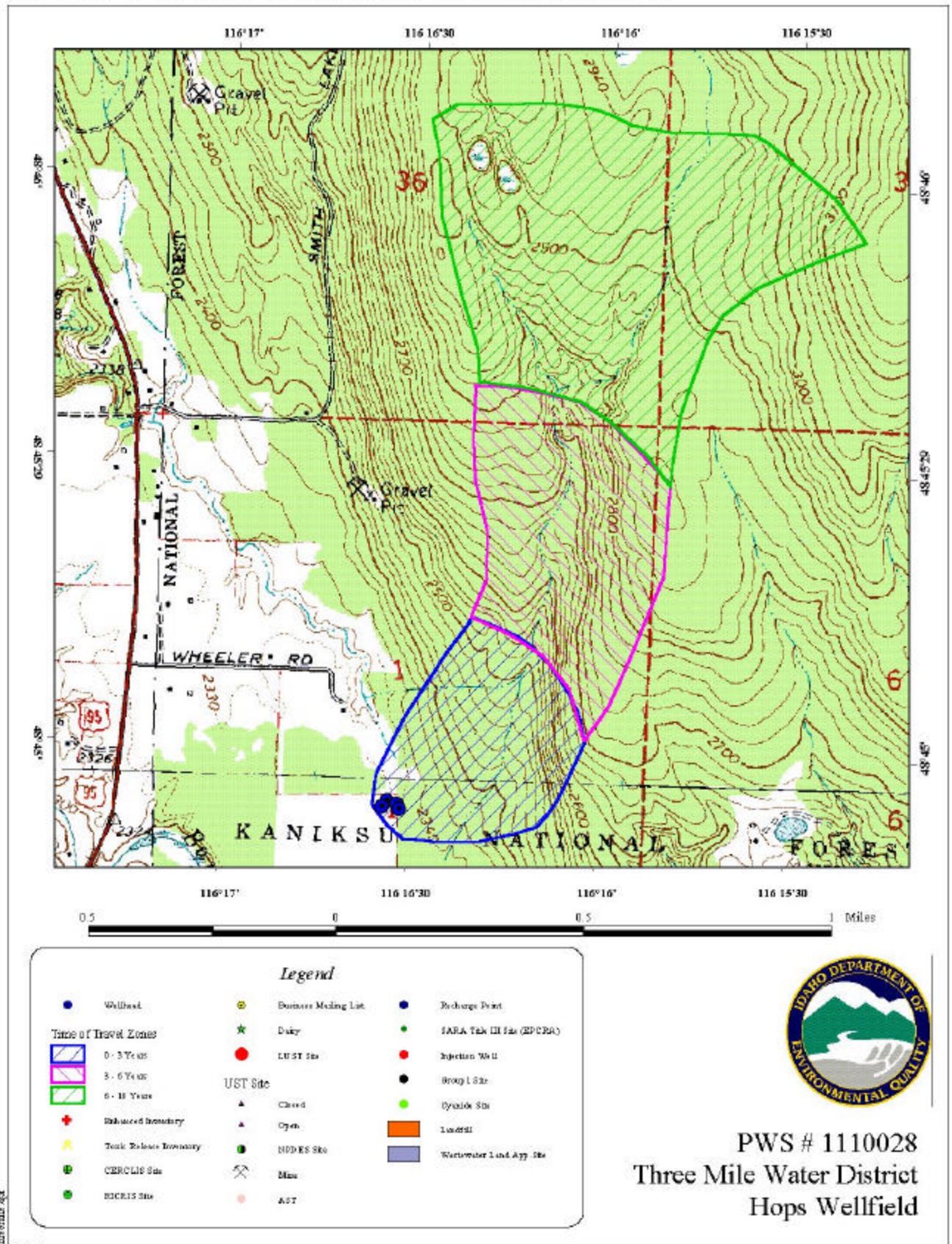
Hops Wells. The Hops Wells #2 and #3 scored 3 points out of 6 possible in the hydrologic sensitivity portion of the susceptibility analysis. Soils in the 3-6 and 6-10 year time of travel zones for the Hops Wells are classed as moderately well to well drained. Soils that drain rapidly are deemed less protective of ground water than slow draining soils. About half of the 0-3 year time of travel zone, including the part where the wells are located, is covered by poorly drained soils that inhibit the migration of contaminants toward the wells. The driller's reports for Hops Wells #2 shows clay beds with a cumulative thickness of 50 feet above the screened interval. In Hops Well #3, 105 feet of silt and clay lie over the water producing seam of coarse sand and gravel 105 to 116 feet below the surface.

Figure 2. River Wellfield Delineation and Potential Contaminant Inventory.



PWS # 1110028
 Three Mile Water District
 River Wellfield

Figure 3. Hops Wellfield Delineation and Potential Contaminant Inventory.



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PWS # 1110028
 Three Mile Water District
 Hops Wellfield

The hydrologic sensitivity scores for Hops Wells #1 and #4 are 5 points. In Hops Well #4 silt and clay form an aquitard 35 feet thick. Specific information about the soil composition above the water table at the Hops Well #1 site is unavailable.

Potential Contaminant Sources and Land Use.

River Wells. Land inside the 121-acre recharge zone delineated for the River wellfield is devoted to a mixture of urban, industrial and agricultural uses. Potential contaminant sources documented in the 0-3 year time of travel zone include surface water, a sewage lagoon, lumber mill, and rail line. Highway 2 crosses the 3-6 year time of travel zone, and a petroleum products pipeline crosses the 6-10 year TOT.

Hops Wells. The 450 acres enclosed by the Hops wellfield delineation are also mostly forested with some agricultural land in the 0-3 year time of travel zone. The public water system file mentions cattle grazing in the vicinity. No other potential sources of contamination are documented inside the delineation boundaries.

Historic Water Quality

Water from both the Hops wells and the River wells is corrosive enough to leach copper from domestic plumbing in concentrations exceeding the action level of 1.3 mg/l. Plans for installing an aeration corrosion control system, chlorinator and other improvements at the Hops wellfield site were approved in March 2002 but bids for the work were rejected. New plans were to be developed and put to bid in January 2003. Historically, the only other water quality problem at the Hops wellfield was the detection of the solvent Dichloromethane in a concentration of 2.0 µg/l in a sample tested in October 1997. The Maximum contaminant Level for Dichloromethane is 5.0 µg/l. The concentration was below detection levels when the water was retested for volatile organics in October 2001. Trihalomethanes detected in samples from the River wells are disinfection by products. Water from the River wells is chlorinated prior to distribution. Total coliform bacteria were absent from all routine monthly samples tested between January 1999 and January 2003. The chemical and radiological sampling results are summarized on the tables below.

Table 1. River Wellfield Chemical Test Results

Primary IOC Contaminants (Mandatory Tests)							
Contaminant	MCL (mg/l)	Results (mg/l)	Dates	Contaminant	MCL (mg/l)	Results (mg/l)	Dates
Antimony	0.006	ND	1/11/88 to 6/4/02	Nitrate	10	ND to 0.107	1/11/88 to 6/4/02
Arsenic	0.01	ND	1/11/88 to 6/4/02	Nickel	N/A	ND	1/11/88 to 6/4/02
Barium	2	ND	1/11/88 to 6/4/02	Selenium	0.05	ND	1/11/88 to 6/4/02
Beryllium	0.004	ND	1/11/88 to 6/4/02	Sodium	N/A	2.18 to 3.18	1/11/88 to 6/4/02
Cadmium	0.005	ND	1/11/88 to 6/4/02	Thallium	0.002	ND	1/11/88 to 6/4/02
Chromium	0.1	ND	1/11/88 to 6/4/02	Cyanide	0.02	ND	1/11/88 to 6/4/02
Mercury	0.002	ND	1/11/88 to 6/4/02	Fluoride	4.0	ND	1/11/88 to 6/4/02
Secondary and Other IOC Contaminants (Optional Tests)							
Contaminant	Recommended Maximum (mg/l)	Results				Dates	
Sulfate		3.5 mg/l				10/24/97	
Regulated and Unregulated Synthetic Organic Chemicals							
Contaminant			Results		Dates		
29 Regulated and 13 Unregulated Synthetic Organic Compounds			None Detected		10/11/93, 10/27/98, 6/4/02		
Regulated and Unregulated Volatile Organic Chemicals							
Contaminant			Results		Dates		
21 Regulated And 16 Unregulated Volatile Organic Compounds			None Detected except as noted below		9/28/92, 10/27/98, 6/4/02		
Trihalomethanes (MCL = 100 µg/l)			6.5 to 15.4 µg/l		10/27/98, 6/4/02		
Radiological Contaminants							
Contaminant	MCL	Results		Dates			
Gross Alpha, Including Ra & U	15 pC/l	0.1, 0.5 pC/l		10/24/97, 11/6/01			
Gross Beta Particle Activity	4 mrem/year	1.3 mrem		10/24/97			
		0.9 pC/l		11/6/01			

Table 2. Hops Wells Chemical Test Results

Primary IOC Contaminants (Mandatory Tests)							
Contaminant	MCL (mg/l)	Results (mg/l)	Dates	Contaminant	MCL (mg/l)	Results (mg/l)	Dates
Antimony	0.006	ND	9/4/84 through 10/25/01	Nitrate	10	ND to 0.5	9/4/84 to 12/3/02
Arsenic	0.01	ND	9/4/84 through 10/25/01	Nickel	N/A	ND	9/4/84 through 10/25/01
Barium	2	ND	9/4/84 through 10/25/01	Selenium	0.05	ND	9/4/84 through 10/25/01
Beryllium	0.004	ND	9/4/84 through 10/25/01	Sodium	N/A		9/4/84 through 10/25/01
Cadmium	0.005	ND	9/4/84 through 10/25/01	Thallium	0.002	ND	9/4/84 through 10/25/01
Chromium	0.1	ND to 0.002	9/4/84 through 10/25/01	Cyanide	0.02	ND	9/4/84 through 10/25/01
Mercury	0.002	ND	9/4/84 through 10/25/01	Fluoride	4.0	0.21 to 0.5	9/4/84 through 10/25/01
Regulated and Unregulated Synthetic Organic Chemicals							
Contaminant			Results		Dates		
29 Regulated and 13 Unregulated Synthetic Organic Compounds			None Detected		10/25/01		
Regulated and Unregulated Volatile Organic Chemicals							
Contaminant			Results		Dates		
21 Regulated And 16 Unregulated Volatile Organic Compounds			None Detected except as noted below		10/25/01		
Dichloromethane (MCL = 5.0 µg/l)			2.0µg/l ND		10/24/97 10/25/01		
Radiological Contaminants							
Contaminant	MCL	Results	Dates				
Gross Alpha, Including Ra & U	15 pC/l	6.6 pC/l	12/7/01				
Gross Beta Particle Activity	4 mrem/year	4.r pC/l	12/7/01				

Final Susceptibility Ranking

The River wellfield ranked moderately susceptible to all classes of regulated contaminants, mostly because of unknown risk factors associated with well construction and well site geology.

The Hops wellfield is also moderately susceptible to contamination. With 3 of the 4 well logs on file, the wells were scored individually even though they draw from a common source. The range of scores reflects variations in well construction and soil composition at the individual sites. Detection of any amount of a volatile organic chemical, such as the Dichloromethane found in the sample tested in October 1997, usually results in a high susceptibility ranking relative to VOCs. Given that Dichloromethane is a common solvent, and the concentration was below detection levels when the water was retested for volatile organics in October 2001, the presence of Dichloromethane in the sample was probably due to causes other than its presence in the ground water.

Totals for well construction and hydrologic sensitivity along with the cumulative scores for land use and potential contaminant sites are shown on Table 3. Complete susceptibility analysis worksheets for the Three Mile Water District water sources are in Attachment A.

Table 3. Summary of Three Mile Water District Susceptibility Evaluation

Cumulative Susceptibility Scores						
Source Name	System Construction 0-6 Possible	Hydrologic Sensitivity 0-6 Possible	Contaminant Inventory			
			IOC 0-30 Possible	VOC 0-30 Possible	SOC 0-30 Possible	Microbial 0-14 Possible
River Wellfield	5	4	12	14	14	8
Hops Well #1	4	5	2	2	2	4
Hops Well #2	2	3	2	2	2	4
Hops Well #3	3	3	2	2	2	4
Hops Well #4	2	5	2	2	2	4
Final Susceptibility Scores/Ranking						
	IOC	VOC	SOC	Microbial		
River Wellfield	11/Moderate	12/Moderate	12/Moderate	12/Moderate		
Hops Well #1	9/Moderate	9/Moderate	9/Moderate	11/Moderate		
Hops Well #2	5/Low	5/Low	5/Low	7/Moderate		
Hops Well #3	6/Moderate	6/Moderate	6/Moderate	8/Moderate		
Hops Well #4	7/Moderate	7/Moderate	7/Moderate	9/Moderate		

IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

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

- 1) $VOC/SOC/IOC \text{ Final Score} = \text{Hydrologic Sensitivity} + \text{System Construction} + (\text{Potential Contaminant/Land Use} \times 0.2)$
- 2) $\text{Microbial Final Score} = \text{Hydrologic Sensitivity} + \text{System Construction} + (\text{Potential Contaminant/Land Use} \times 0.35)$

The final ranking categories are as follows:

- 0 - 5 Low Susceptibility
- 6 - 12 Moderate Susceptibility
- > 13 High Susceptibility

Section 4. Options for Source 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 education and surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

The greatest water quality threat Three Mile Water District currently faces is from the natural corrosivity of the water. In order to protect its customers from the long-term health effects of high copper concentrations leached from domestic piping, the district must install corrosion control.

Continuing to operate and maintain the wells in compliance with the *Idaho Rules for Public Drinking Water Systems* should be the core strategy in any drinking water protection plan the district develops. At the Hops wellfield, the district might consider fencing the area around the wells to keep grazing cattle at least 50 feet from the wellheads. A voluntary measure every system should implement is development of a water emergency response plan. There is a simple fill-in-the-blanks form available on the DEQ website to guide systems through the process.

In order to raise public awareness, the district should consider visits to landowners and businesses in the recharge zones. Many of them may not be aware that they are in a sensitive area where household, business and agricultural practices can have a negative impact on a public water supply. The district can distribute industry specific best management practices brochures to encourage ground water stewardship. In conjunction with the county extension office, the district could promote workshops devoted to the proper use and storage of household and agricultural fertilizers and pesticides, backflow prevention and similar topics of interest in a rural neighborhood. Public involvement in ground water protection can also be encouraged through events like household hazardous waste collection days, demonstrations in the schools and so on.

Assistance

Public water suppliers and users may call the following IDEQ 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 IDEQ office for preliminary review and comments.

Idaho Department of Environmental Quality

Coeur d'Alene Regional IDEQ Office (208) 769-1422
State IDEQ Office, Boise (208) 373-0502
Website: <http://www.deq.state.id.us/>

Idaho Rural Water Association

Melinda Harper, Groundwater Protection Specialist (800) 962-3257
Website: <http://www.idahoruralwater.com>

Idaho Association of Soil Conservation Districts

Water quality and soil conservation (208) 338-5900
Website: <http://www.iascd.state.id.us/>

References Cited

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

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

Attachment A

Three Mile Water District Susceptibility Analysis Worksheets

Ground Water Susceptibility

Public Water System Name : **THREE MILE WATER DIST**

Source: **River Wellfield**

Public Water System Number : **1110028**

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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	UNKNOWN	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	UNKNOWN	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		5			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	YES	0			
Vadose zone composed of gravel, fractured rock or unknown	UNKNOWN	1			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	NO	2			
Total Hydrologic Score		4			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		Score	Score	Score	Score
Land Use	Mixed industrial/agricultural	2	2	2	2
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		2	2	2	2
Potential Contaminant / Land Use - ZONE 1B (3 YR. TOT)					
Contaminant sources present (Number of Sources)	YES	2	2	2	3
(Score = # Sources X 2) 8 Points Maximum		4	4	4	6
Sources of Class II or III leacheable contaminants or Microbials	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	6
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or Microbials	YES	1	1	1	
Land Use Zone II	25 to 50% Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		4	4	4	0
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	YES	0	1	1	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	1	1	
Do irrigated agricultural lands occupy > 50% of Zone	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	2	2	0
Cumulative Potential Contaminant / Land Use Score		12	14	14	8
4. Final Susceptibility Source Score		11	12	12	12
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility

Public Water System Name : **THREE MILE WATER DIST**
 Public Water System Number : **1110028**

Source: **HOPS WELL #1**
 1/21/03 8:55:59 AM

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	UNKNOWN	1			
Wellhead and surface seal maintained	YES	0			
Casing and annular seal extend to low permeability unit	UNKNOWN	2			
Highest production 100 feet below static water level	UNKNOWN	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	CLAY BEDS OVER GRAVEL	0			
Depth to first water > 300 feet	NO	1			
Aquitard present with > 50 feet cumulative thickness	UNKNOWN	2			
Total Hydrologic Score		5			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		Score	Score	Score	Score
Land Use	UNDEVELOPED FOREST	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 (3 YR. TOT)					
Contaminant sources present (Number of Sources)	YES	0	0	0	1
(Score = # Sources X 2) 8 Points Maximum		0	0	0	2
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
4 Points Maximum		0	0	0	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	25 to 50% Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		2	2	2	4
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Do irrigated agricultural lands occupy > 50% of Zone	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		2	2	2	4
4. Final Susceptibility Source Score		9	9	9	11
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility

Report

Public Water System Name : **THREE MILE WATER DIST**

Source: **HOPS WELL #2**

Public Water System Number : **1110028**

1/21/03 8:56:13 AM

1. System Construction		SCORE			
Drill Date	6/29/01				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	NO			0	
Well meets IDWR construction standards	YES. Status as domestic well needs to be corrected to "Municipal"			0	
Wellhead and surface seal maintained	UNKNOWN			1	
Casing and annular seal extend to low permeability unit	YES			0	
Highest production 100 feet below static water level	NO			1	
Well located outside the 100 year flood plain	YES			0	
Total System Construction Score				2	
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO			2	
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	YES			0	
Total Hydrologic Score				3	
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		Score	Score	Score	Score
Land Use Zone 1A	UNDEVELOPED FOREST	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 (3 YR. TOT)					
Contaminant sources present (Number of Sources)	YES	0	0	0	1
(Score = # Sources X 2) 8 Points Maximum		0	0	0	2
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
4 Points Maximum		0	0	0	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	25 to 50% Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		2	2	2	4
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Do irrigated agricultural lands occupy > 50% of Zone	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		2	2	2	4
4. Final Susceptibility Source Score		5	5	5	7
5. Final Well Ranking		Low	Low	Low	Moderate

Ground Water Susceptibility

Public Water System Name : **THREE MILE WATER DIST**

Source: **HOPS WELL #3**

Public Water System Number : **1110028**

1/21/03 8:56:29 AM

1. System Construction		SCORE			
Drill Date	6/29/01				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	NO				
Well meets IDWR construction standards	Needs screens, & yield and drawdown tests	1			
Wellhead and surface seal maintained	UNKNOWN	1			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		3			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
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	YES	0			
Total Hydrologic Score		3			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		Score	Score	Score	Score
Land Use Zone 1A	UNDEVELOPED FOREST	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 (3 YR. TOT)					
Contaminant sources present (Number of Sources)	YES	0	0	0	1
(Score = # Sources X 2) 8 Points Maximum		0	0	0	2
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
4 Points Maximum		0	0	0	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	25 to 50 % Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		2	2	2	4
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Land Use Zone II		0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Do irrigated agricultural lands occupy > 50% of Zone	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		2	2	2	4
4. Final Susceptibility Source Score		6	6	6	8
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility

Public Water System Name : **THREE MILE WATER DIST**

Source: **HOPS WELL #4**

Public Water System Number : **1110028**

1/21/03 8:56:56 AM

1. System Construction		SCORE			
Drill Date	8/2/01				
Driller Log Available	YES				
Sanitary Survey (if yes, indicate date of last survey)	NO				
Well meets IDWR construction standards		0			
Wellhead and surface seal maintained	UNKNOWN	1			
Casing and annular seal extend to low permeability unit	YES	0			
Highest production 100 feet below static water level	NO	1			
Well located outside the 100 year flood plain	YES	0			
Total System Construction Score		2			
2. Hydrologic Sensitivity					
Soils are poorly to moderately drained	NO	2			
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		5			
		IOC	VOC	SOC	Microbial
3. Potential Contaminant / Land Use - ZONE 1A (Sanitary Setback)		Score	Score	Score	Score
Land Use Zone 1A	UNDEVELOPED FOREST	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 (3 YR. TOT)					
Contaminant sources present (Number of Sources)	YES	0	0	0	1
(Score = # Sources X 2) 8 Points Maximum		0	0	0	2
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
4 Points Maximum		0	0	0	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	25 to 50% Agricultural Land	2	2	2	2
Total Potential Contaminant Source / Land Use Score - Zone 1B		2	2	2	4
Potential Contaminant / Land Use - ZONE II (6 YR. TOT)					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		0	0	0	0
Potential Contaminant / Land Use - ZONE III (10 YR. TOT)					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or Microbials	NO	0	0	0	
Do irrigated agricultural lands occupy > 50% of Zone	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		2	2	2	4
4. Final Susceptibility Source Score		7	7	7	9
5. Final Well Ranking		Moderate	Moderate	Moderate	Moderate

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 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 5mg/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.