SUN VALLEY WATER AND SEWER DISTRICT (PWS 5070051)
SOURCE WATER ASSESSMENT FINAL REPORT

October 31, 2000

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 assessment is based on a land use inventory of the designated assessment area, sensitivity factors associated with the wells, and aquifer characteristics.

This report, *Source Water Assessment for the Sun Valley Water and Sewer District, 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 water system.**

The Sun Valley Water and Sewer District drinking water system consists of nine wells in two groupings. Wells #1, #2, #3, #4A, and #5 supply the northeast portion of Sun Valley including the Sun Valley resort. Though these wells have moderate ratings in hydrologic sensitivity and high ratings in system construction, a lack of potential contaminant sources and the quality of the water delivered throughout the years kept the total well ratings at moderate susceptibility to volatile organic contamination, synthetic organic contamination, inorganic contamination, and microbial contamination. Wells #7, #8, #10, and #11 supply the Elkhorn area. These four wells have high ratings in hydrologic sensitivity and moderate to low ratings for system construction. Well #7 has a high overall susceptibility to inorganic contaminants and volatile organic contaminants. The other three wells have a total susceptibility rating of moderate for all types of contaminants. In September 1993, the Well #1, #2, #3 water quality tests had a detection of the volatile organic contaminant Tetrachlorethylene (PCE). Well #5 exceeded the Maximum Contaminant Level for cadmium in August 1991. Except for these occurrences, water quality tests have not detected volatile organic contaminants or synthetic organic contaminants in the well water. The inorganic contaminants barium, fluoride, nitrate, and sulfate have been detected in the well water, but at levels below the Maximum Contaminant Levels for drinking water. The system has a chlorine disinfection system that has prevented microbial contamination from affecting the drinking water.

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.

For the Sun Valley Water and Sewer District, source water protection activities should focus on sustaining and implementing practices aimed at wellhead protection. Issues raised in the recent 1995 Drinking Water Supply Report should be addressed. Keeping the wellhead and surface seal up to standards will reduce the susceptibility ratings. Other practices aimed at reducing the movement of contaminants within the designated source water areas should be investigated. Any accidental spills in the Big Wood River, Trail Creek, or from Highway 75 should be closely monitored. Disinfection practices should be maintained to prevent microbial contamination from becoming a concern. Most of the designated areas are outside the direct jurisdiction of

the Sun Valley Water and Sewer District. Partnerships with state and local agencies and industry groups should be established and are critical to success. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service. Source water protection activities for mining should be coordinated with the appropriate state and/or federal agencies responsible for the regulation or cleanup of the mine. Depending on the nature and status of the mine, various agencies could include the Idaho Department of Environmental Quality, the Environmental Protection Agency, the Idaho Department of Lands, the Bureau of Land Management, the U.S. Forest Service, or others. Due to the time involved with the movement of ground water, source water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the short term.

A community with a fully-developed source water protection program will incorporate many strategies. For assistance in developing protection strategies please contact the Twin Falls Regional Office of the Idaho Department of Environmental Quality or the Idaho Rural Water Association.

SOURCE WATER ASSESSMENT FOR THE SUN VALLEY WATER AND SEWER DISTRICT, 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 attached. 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 the 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 this 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 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.

Section 2. Conducting the Assessment

General Description of the Source Water Quality

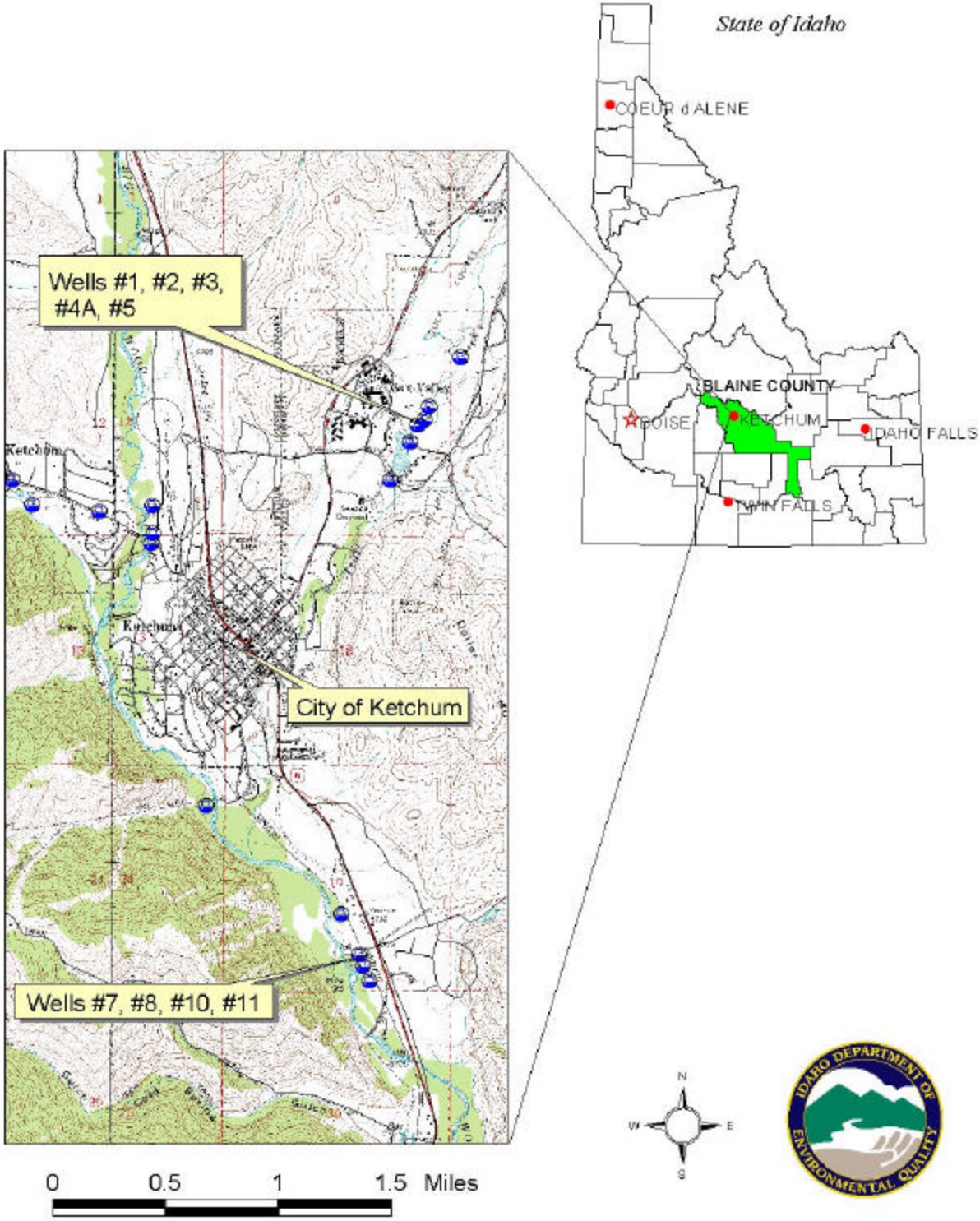
The Sun Valley Water and Sewer District has nine wells that make up a community system serving approximately 3,900 people through 760 connections. Seasonal fluctuations due to tourism can increase the population by over 200% (Castelin and Winner, 1975). The Sun Valley Water and Sewer District is located in Blaine County, at the confluence of Trail Creek and the Big Wood River (Figure 1). The public drinking water wells are located in and around the cities of Sun Valley and Ketchum.

There are no current, long term, recurring water chemistry problems in the drinking water sources. However, some of the sources have shown potential chemical problems during routine sampling. In September 1993, water from Wells #1, #2, and #3 had a detection of the volatile organic contaminant (VOC) Tetrachlorethylene (PCE). In August 1991, Well #5 water exceeded the Maximum Contaminant Level (MCL) for cadmium. Except for these occurrences, water quality tests have not detected VOCs or synthetic organic contaminants (SOCs) in the well water. The inorganic contaminants (IOCs) barium, fluoride, nitrate, and sulfate have been detected in the well water, but at levels below the MCLs for drinking water. The system has a chlorine disinfection system that has prevented microbial contamination from affecting the drinking water. Though no significant IOC, VOC, SOC, or microbial water chemistry problems currently exist, the possibility of contamination from nearby potential contaminant sources remains.

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 well) for water in the aquifer. DEQ 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 Big Wood River aquifer in the vicinity of the Sun Valley Water and Sewer District. The computer model used site-specific data, assimilated by DEQ from a variety of sources including the Sun Valley Water and Sewer District well logs, local area well logs, and various reports (Castelin and Winner, 1975; Frenzel, 1989). The delineation for Wells #1, #2, #3, #4A, and #5 can best be described as encompassing the entire Trail Creek watershed. The delineation for Wells #7, #8, #10, and #11 contains the Trail Creek Watershed, as well as seven miles of the Big Wood River valley, about 3.5 miles of the Warm Springs Creek valley, and into the adjoining creek valleys. The actual data used by DEQ in determining the source water assessment delineation area is available upon request.

Figure 1. Geographic Location of Sun Valley Water and Sewer District Wells



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 ground water contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Outside the Sun Valley Water and Sewer District, most of the land is undeveloped land, rangeland, and woodlands. Land uses include recreational facilities and mining operations. Land use within the immediate area of the ground water wells consists of urban, industrial, business, residential, and governmental uses.

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 potential 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.

Contaminant Source Inventory Process

A two-phased contaminant inventory of the study area was conducted during the spring and summer of 2000. The first phase involved identifying and documenting potential contaminant sources within the Sun Valley Water and Sewer District Source Water Assessment Area 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 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 Pat McMahon and Jack Brown of the Sun Valley Water and Sewer District and John Bokor of Idaho Rural Water Association.

Since the wells have two separate delineated source water areas, the wells have different numbers and types of potential contaminant sources. Wells #7, #8, #10, and #11 contain the City of Ketchum and have 65 potential contaminant sources (Table 1, Figures 2 and 3). Wells #1, #2, #3, #4A, and #5 have 16 potential contaminant sources (Table 2, Figure 4). The sources include a number of mines, government facilities, general contractors, general businesses, recreational facilities, businesses having underground storage tanks (USTs), and sites with completed and incompleted leaking underground storage tank (LUST) cleanups. Additionally, there are sites regulated under the National Pollutant Discharge Elimination System (NPDES), the Superfund Amendments and Reauthorization Act (SARA), and the Comprehensive Environmental Response Compensation and Liability Act (CERCLA).

Since the ground water aquifer is hydraulically connected to the surface water system (Luttrell and Brockway, 1984), the Big Wood River and other streams that cross the delineations will be considered potential sources of contamination. Finally, Highway 75 could be a potential source of contamination from an accidental spill.

Table 1. Sun Valley Water and Sewer District Wells #7, #8, #10, and #11 Potential Contaminant Inventory

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
	Big Wood River, Trail Creek	0-10	Database Search	IOC, VOC, SOC, Microbes
	Highway 75	0-10	Database Search	IOC, VOC, SOC, Microbes
1	LUST-incomplete	0-3	Database Search	VOC, SOC
2	LUST-complete	0-3	Database Search	VOC, SOC
3	LUST-complete	0-3	Database Search	VOC, SOC
4 (see #3)	LUST-complete	0-3	Database Search	VOC, SOC
5	LUST-complete	0-3	Database Search	VOC, SOC
6	LUST-complete	0-3	Database Search	VOC, SOC
7	LUST-complete	0-3	Database Search	VOC, SOC
8	LUST-complete	0-3	Database Search	VOC, SOC
9	LUST-complete	0-3	Database Search	VOC, SOC
10	UST-closed	0-3	Database Search	VOC, SOC
11 (see #8)	UST-closed	0-3	Database Search	VOC, SOC
12	UST-open	0-3	Database Search	VOC, SOC
13 (see #1)	UST-closed	0-3	Database Search	VOC, SOC
14 (see #2)	UST-closed	0-3	Database Search	VOC, SOC
15 (see #3)	UST-closed	0-3	Database Search	VOC, SOC
16 (see #9)	UST-open	0-3	Database Search	VOC, SOC
17	UST-open	0-3	Database Search	VOC, SOC
18	UST-open	0-3	Database Search	VOC, SOC
19	UST-closed	0-3	Database Search	VOC, SOC
20 (see #5)	UST-closed	0-3	Database Search	VOC, SOC
21 (see #6)	UST-closed	0-3	Database Search	VOC, SOC
22	General contractor	0-3	Database Search	VOC, SOC
23	General contractor	0-3	Database Search	VOC, SOC
24	Aircraft charter	0-3	Database Search	VOC, SOC
25	Taxicabs	0-3	Database Search	VOC, SOC
26	Building contractor	0-3	Database Search	VOC, SOC
27	Cleaner	0-3	Database Search	VOC
28	Motorcycle repair	0-3	Database Search	VOC, SOC
29	Commercial photographer	0-3	Database Search	IOC, VOC

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
30	General contractor	0-3	Database Search	VOC, SOC
31	Publisher	0-3	Database Search	IOC, VOC
32	General contractor	0-3	Database Search	VOC, SOC
33	Commercial photographer	0-3	Database Search	IOC, VOC
34	General contractor	0-3	Database Search	VOC, SOC
35	Batteries (Wholesale)	0-3	Database Search	IOC
36	Cleaners	0-3	Database Search	VOC
37	Home manufacturing	0-3	Database Search	IOC, VOC, SOC
38	Outdoor adventure	0-3	Database Search	VOC, SOC
39	Automotive supplies	0-3	Database Search	VOC, SOC
40	Photo finishing	0-3	Database Search	IOC, VOC
41	Outdoor adventure	0-3	Database Search	VOC, SOC
42	NPDES	0-3	Database Search	IOC
43	CERCLA	0-3	Database Search	IOC, VOC, SOC
44	Mine (Sand and Gravel)	0-3	Database Search	IOC
45	Mine (Sand and Gravel)	0-3	Database Search	IOC
46	Mine (Lead)	0-3	Database Search	IOC
47	SARA	0-3	Database Search	IOC, VOC, SOC
48 (see #9)	SARA	0-3	Database Search	VOC, SOC
49 (see #18)	SARA	0-3	Database Search	VOC, SOC
50	UST-open	3-6	Database Search	VOC, SOC
51	UST-closed	3-6	Database Search	VOC, SOC
52	General contractor	3-6	Database Search	VOC, SOC
53	Excavating contractor	3-6	Database Search	VOC, SOC
54	Delivery service	3-6	Database Search	VOC, SOC
55	General contractor	3-6	Database Search	VOC, SOC
56	Mine (Zinc)	6-10	Database Search	IOC
57	Mine (Lead)	6-10	Database Search	IOC
58	Mine (Silver)	6-10	Database Search	IOC
59	Mine (Lead)	6-10	Database Search	IOC
60	Mine (Lead)	6-10	Database Search	IOC
61	Unnamed mine	6-10	Database Search	IOC
62	Mine (Silver)	6-10	Database Search	IOC
63	Unnamed mine	6-10	Database Search	IOC
64	Mine (Lead)	6-10	Database Search	IOC
65	Guyer Hot Springs	6-10	Database Search	IOC

[1]LUST = leaking underground storage tank, UST = underground storage tank, NPDES = National Pollutant Discharge Elimination System site, SARA = Superfund Amendments and Reauthorization Act site, CERCLA = Comprehensive Environmental Response Compensation and Liability Act

[2]TOT = time-of-travel zones (zones indicating the number of years necessary for a particle of water to reach a well)

[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Figure 2. Wells #7, #8, #10, and #11 Delineation and Potential Contaminant Locations

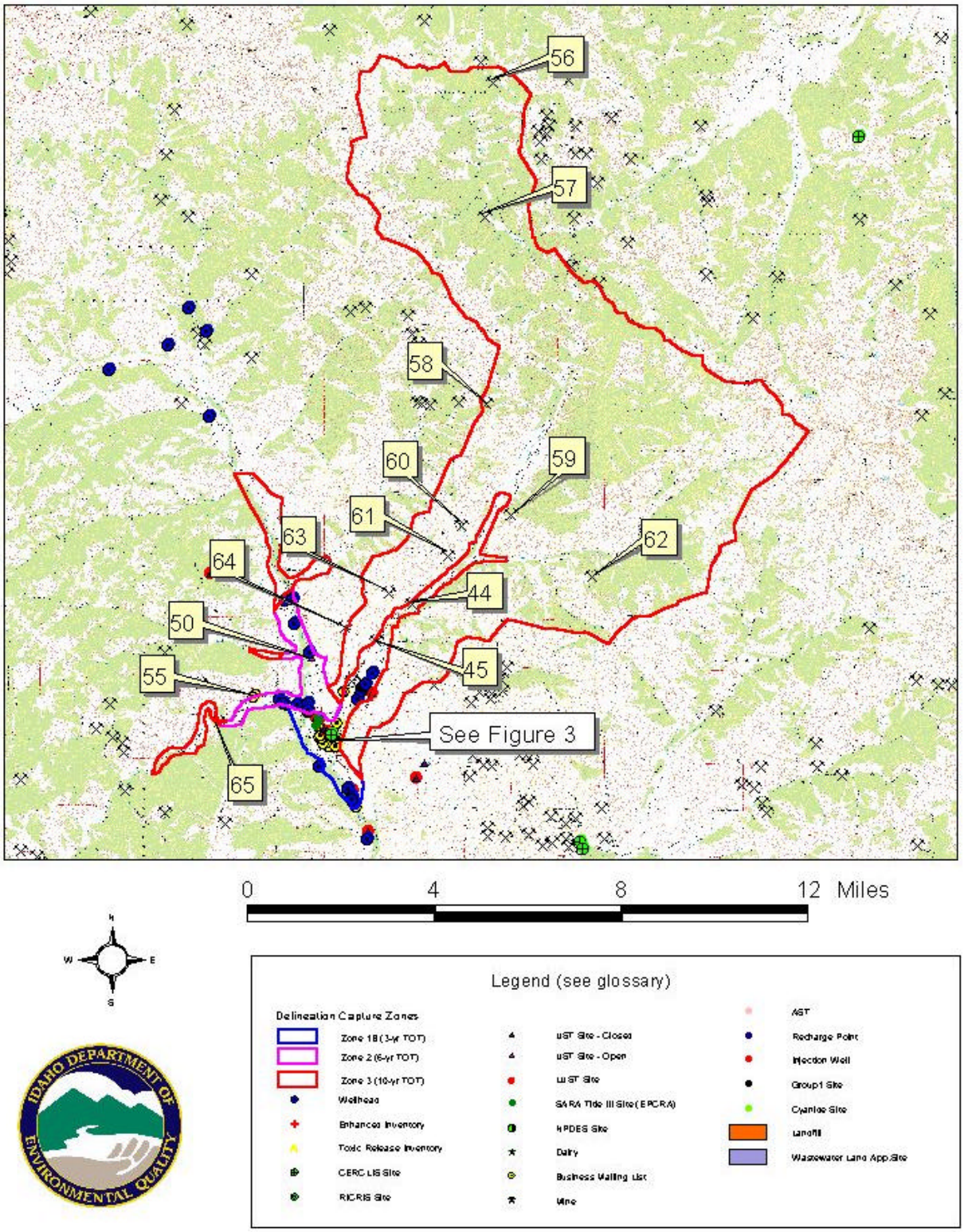


Figure 3. Wells #7, #8, #10, and #11 Delineation and Potential Contaminant Locations in and around Ketchum

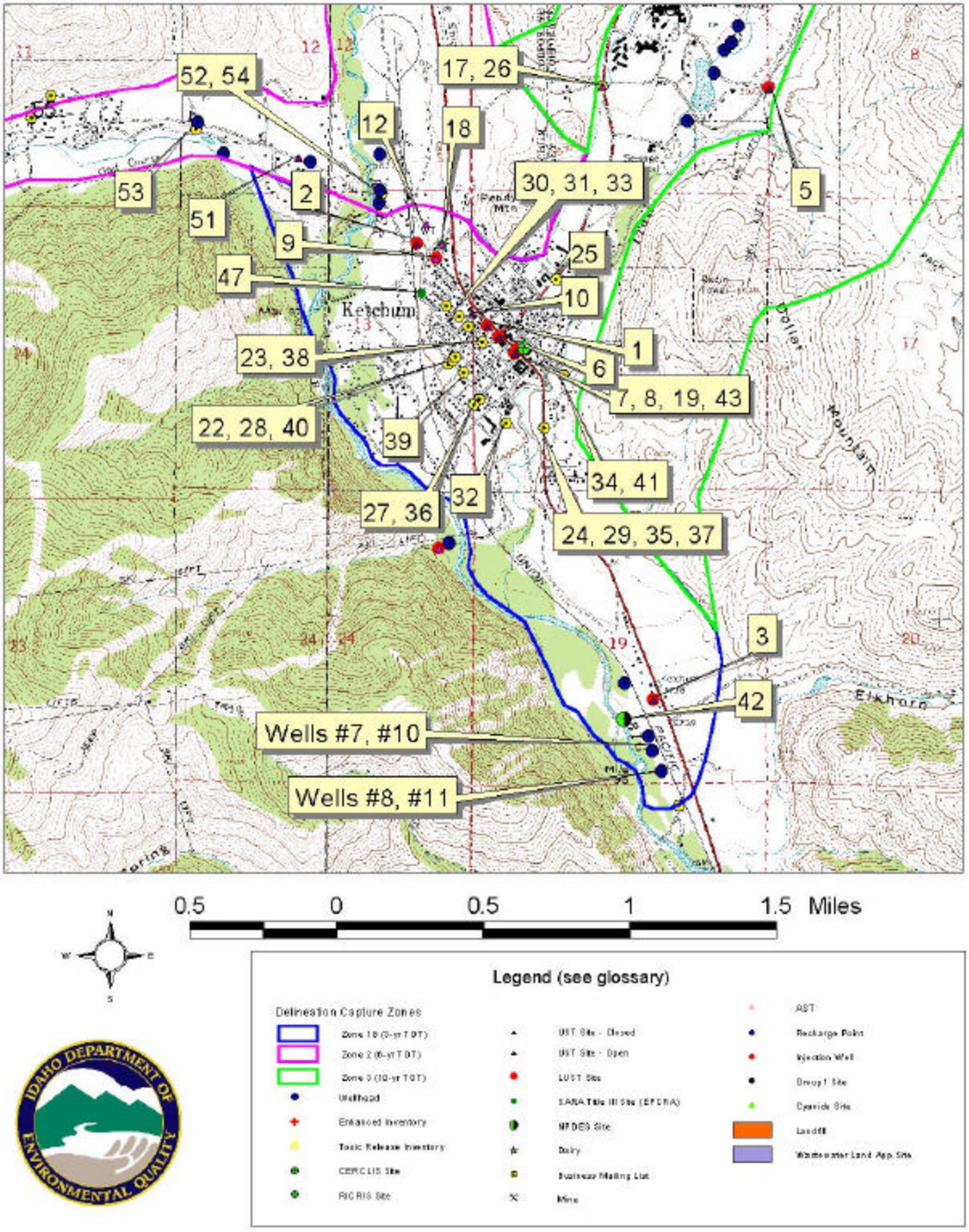
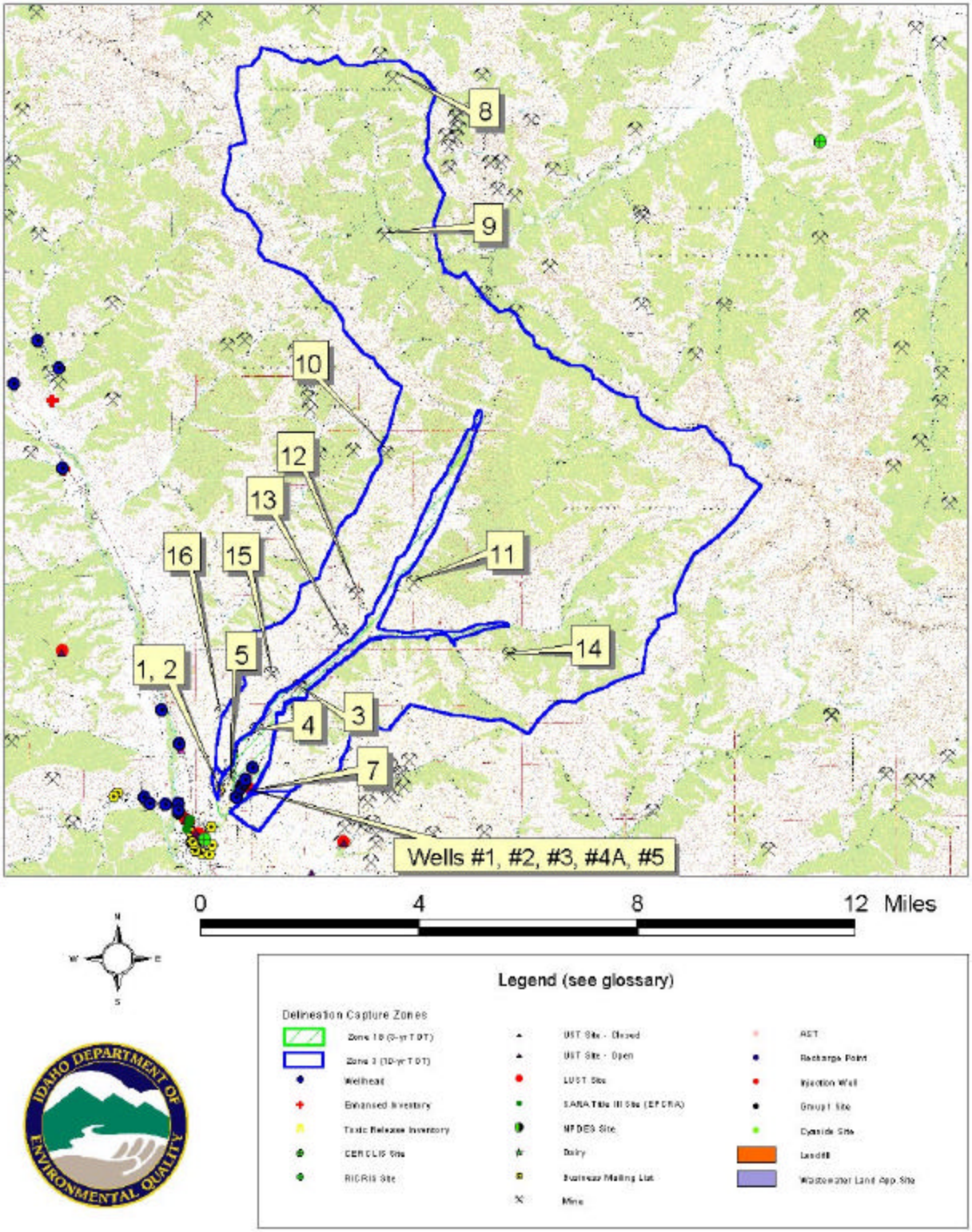


Table 2. Sun Valley Water and Sewer District Wells #1, #2, #3, #4A, and #5 Potential Contaminant Inventory

SITE #	Source Description[1]	TOT Zone[2] (years)	Source of Information	Potential Contaminants[3]
1	UST-open	0-3	Database Search	VOC, SOC
2	Building contractor	0-3	Database Search	VOC, SOC
3	Mine (Sand and Gravel)	0-3	Database Search	IOC
4	Mine (Sand and Gravel)	0-3	Database Search	IOC
5	Mine (Lead)	0-3	Database Search	IOC
6 (see #7)	LUST-complete	0-3	Database Search	VOC, SOC
7	UST-closed	0-3	Database Search	VOC, SOC
	Trail Creek	0-3	Database Search	IOC, VOC, SOC, Microbes
8	Mine (Zinc)	6-10	Database Search	IOC
9	Mine (Lead)	6-10	Database Search	IOC
10	Mine (Silver)	6-10	Database Search	IOC
11	Mine (Lead)	6-10	Database Search	IOC
12	Mine (Lead)	6-10	Database Search	IOC
13	Mine	6-10	Database Search	IOC
14	Mine (Silver)	6-10	Database Search	IOC
15	Mine	6-10	Database Search	IOC
16	Mine (Lead)	6-10	Database Search	IOC

[1]LUST = leaking underground storage tank, UST = underground storage tank
[2]TOT = time-of-travel zones (zones indicating the number of years necessary for a particle of water to reach a well)
[3]IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Figure 4. Wells #1, #2, #3, #4A, and #5 Delineation and Potential Contaminant Locations



Section 3. Susceptibility Analyses

The susceptibility of the sources 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. The following summaries describe the rationale for the susceptibility ranking.

Hydrologic Sensitivity

Hydrologic sensitivity was moderate for the five wells (#1, #2, #3, #4A, and #5) in the upper Sun Valley Water and Sewer District drinking water system (Table 4). Multiple factors affect the likelihood of movement of contaminants from the surface to the aquifer and lead to this moderate score. The soils within the delineation are classified as poorly to moderately drained, which reduces the score. The vadose zone (zone from land surface to the water table) is predominantly made of gravel, which increases the score. The depth to ground water is generally less than 50 feet below ground surface (bgs) and there is not at least 50 cumulative feet of low permeability layers to reduce the downward movement of contaminants, which increases the score.

Hydrologic sensitivity was high for the four wells (#7, #8, #10, and #11) south of Ketchum (Table 4). Multiple factors affect the likelihood of movement of contaminants from the surface to the aquifer and lead to this high score. The soils within the delineation are classified as moderate to well drained, which increases the score. The vadose zone is predominantly made of gravel. The depth to ground water is generally less than 20 feet bgs and there is not at least 50 cumulative feet of low permeability layers to reduce the downward movement of contaminants, which increases the score.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. Lower scores are indicative of better protection. The Sun Valley Water and Sewer District drinking water system consists of ten wells that extract ground water for domestic, industrial, recreational, and commercial uses. The well system construction scores were high for Wells #1, #2, #3, #4A, and #5. The system construction scores were moderate for #7, #8, and #11. Well #10 had a low system construction score.

All the wells had a *Drinking Water Supply Report* conducted in 1995. The nine tested wells were in substantial compliance with the regulations concerning public water systems (PWSs). All the wells except for Wells #1 and #2 have adequately protected wellheads and surface seals. Wells #1, #2, #3, #4A, and #5 fall within the 100-year flood plain, which leads to a higher score. Wells #1, #2, #3, #4A, and #5 do not have a means to continually disinfect their water. Wells #7, #8, #10, and #11 have chlorination water treatment systems. Well logs were available for all the wells, except for Wells #1, #2, and #3. When information was adequate, a determination was made as to whether the casing and annular seals had been extended into low permeability units and whether current PWS construction standards were being met.

The information obtained from the various well logs included 1) the depth of the well; 2) the casing diameter, thickness, depth, and formation type installed into; 3) water table depth; 4) screened or perforated intervals; 5) surface seal depth and formation type installed into; 6) year of construction; and 7) whether current Idaho Department of Water Resources (IDWR) construction standards are being met (Table 3).

Table 3. Well Construction Summary Information

Well #	Depth (ft)	Casing: diameter/thickness (in)	Casing: depth (ft)/ formation	Water Table Depth (ft)	Screened Interval (ft)	Surface seal: depth (ft)/ formation	Drill Year	IDWR[1] Standards Met?
1	150	6/NI[2]	150/NI	NI	NI	NI	1930s	No
2	150	8/NI	150/NI	46	NI	NI	1930s	No
3	190	10/NI	190/NI	50	NI	NI	NI	No
4A	76	12/0.375	43/Course gravel	19	33-43	NI	1966	No
5	104	12/0.375	49/Heavy clay and gravel	18	32-96	NI	1966	No
7	49	16/0.375	36.5/Gravel, boulders and clay	17	35-49	19/Gravel with some clay	1972	No
8	52	16/0.375	52/Rock	17	28-40	20/Boulders, clay and some gravel	1972	Yes
10	51	16/0.375	45/Clay and sand	11.5	32-42	20/Gravel and sand	1977	Yes
11	55.5	16/0.375	52/Gravel and sand and clay	12	31-40, 43-52	20/Gravel	1977	No

[1]Idaho Department of Water Resources
[2]NI = no information was available

System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. 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. In this case, Wells #7, #8, and #10 have both the casing and the annular seal in a low permeability unit. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. For the Sun Valley Water and Sewer District, none of the wells meet this criterion. Though Wells #4A, #5, #7, #8, #10, and #11 may have met construction standards at the time of their installation, only Well #8 and Well #10 of the Sun Valley Water and Sewer District meets current IDWR well construction standards.

The IDWR *Well Construction Standards Rules* (1993) require all PWSs follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. Various aspects of the standards can be assessed from well logs. Table 1 of the *Recommended Standards for Water Works* (1997) states that 8-inch steel casing requires a thickness of 0.322 inches, and 12-inch and 16-inch casing require a thickness of 0.375 inches. The standards state that screens will be installed and have openings based on sieve analysis of the formation. All wells used screens. Standard 3.2.4.1 requires all PWSs to have yield and drawdown tests that last "24 hours or until stabilized drawdown has continued for six hours at 1.5 times" the design pumping rate (Recommended Standards for Water Works, 1997). Only Well #8 and Well #10 had an adequate pumping test.

Based on local and nearby well logs and previous studies of the area (Castelin and Winner, 1975; Frenzel, 1989; Brockway and Kahlown, 1994), the Sun Valley Water and Sewer District wells are completed in the fluvioglacial (river and glacier deposited) sediments comprised of fine to coarse-grained gravel that have considerable quantities of water available for use. These sediments comprise the valley floor. The valley floor is 0.5 mile to 1.5 miles in width. The depth of the valley fill in the area of the Sun Valley Water and Sewer District is approximately 100 to 150 feet below land surface (Castelin and Winner, 1975). The ground water and surface water systems are hydraulically connected and the hydraulic potential within the aquifer does not vary greatly. Recharge is primarily from precipitation, tributary valley underflow, and canal and stream seepage losses (Luttrell and Brockway, 1984). Water quality problems have been attributed to sewage treatment facilities, mining, construction, and agriculture (Castelin and Winner, 1975).

Potential Contaminant Sources and Land Use

Wells #1, #2, #3, #4A, and #5rated moderate for IOCs (e.g., barium, fluoride) and low for SOCs (e.g., pesticides), VOCs (e.g., petroleum products), and microbial contaminants. Local mines and Trail Creek added the largest number of points for these wells.

Wells #7, #8, #10, and #11 rated moderate for IOCs, VOCs, and SOCs. The wells rated low for microbial contaminants. The largest number of points for the wells came from the various potential contaminant locations in the City of Ketchum and the nearby location of the Big Wood River and Highway 75. These sources could potentially contribute IOC, VOC, SOC, and microbial contaminants to the wells.

Final Susceptibility Ranking

Detections of IOCs above drinking water standard MCLs, a detection of total coliform bacteria, fecal coliform bacteria, or *E-coli* bacteria, or a detection of an SOC or VOC in a water chemistry test will automatically give a high susceptibility rating for a well despite the land use of the area because a pathway for contamination already exists. In September 1993, the Well #1, #2, #3 water quality test had a detection of the VOC Tetrachlorethylene. Well #5 exceeded the MCL for cadmium in August 1991. 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) contribute greatly to the overall ranking. For the Sun Valley Water and Sewer District, all the wells except for Well #7 rate as moderate for all types of contamination. Well #7 rates high for IOCs and VOCs.

Table 4. Summary of Sun Valley Water and Sewer District Susceptibility Evaluation

Well #	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
1	M	M	L	L	L	H	M	H*[2]	M	M
2	M	M	L	L	L	H	M	H*	M	M
3	M	M	L	L	L	H	M	H*	M	M
4A	M	M	L	L	L	H	M	M	M	M
5	M	M	L	L	L	H	H*	M	M	M
7	H	M	M	M	L	M	H	H	M	M
8	H	M	M	M	L	M	M	M	M	M
10	H	M	M	M	L	L	M	M	M	M
11	H	M	M	M	L	M	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
[2]H*: Denotes detection of VOC or exceedance of an IOC Maximum Contaminant Level

Susceptibility Summary

There are no current, long term, recurring water chemistry problems in the Sun Valley Water and Sewer District drinking water sources. However, some of the sources have detected potential chemical problems during routine sampling. In September 1993, the Well #1, #2, #3 water quality test had a detection of the VOC Tetrachlorethylene. Well #5 exceeded the MCL for cadmium in August 1991. Except for these occurrences, water quality tests have not detected volatile organic contaminants or synthetic organic contaminants in the well water. The inorganic contaminants barium, fluoride, nitrate, and sulfate have been detected in the well water, but at levels below the MCLs for drinking water. The system has a chlorine disinfection system that has prevented microbial contamination from affecting the drinking water.

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.

An effective source water protection program is tailored to the particular local source water protection area. A community with a fully-developed source water protection program will incorporate many strategies. For the Sun Valley Water and Sewer District, source water protection activities should focus on sustaining and implementing practices aimed at wellhead protection. Issues raised in the recent 1995 *Drinking Water Supply Report* should be addressed. Keeping the wellhead and surface seal up to standards will reduce the susceptibility ratings. Other practices aimed at reducing the movement of contaminants within the designated source water areas should be investigated. Any accidental spills in the Big Wood River, Trail Creek, or from Highway 75 should be closely monitored. Disinfection practices should be maintained to prevent microbial contamination. Though agricultural activities are currently not a major land use, the highly permeable nature of the soils and the movement rates of the water through the aquifer could make agricultural chemical leaching a concern. Most of the delineated areas are outside the direct jurisdiction of the Sun Valley Water and Sewer District. Partnerships with state and local agricultural agencies, county elected officials, and industry groups should be established and are critical to success. Source water protection activities for agriculture should be coordinated with the Idaho State Department of Agriculture, the Soil Conservation Commission, the local Soil Conservation District, and the Natural Resources Conservation Service. Source water protection activities for mining should be coordinated with the appropriate state and/or federal agencies responsible for the regulation or cleanup of the mine. Depending on the nature and status of the mine, various agencies could include Idaho Department of Environmental Quality, the U.S. Environmental Protection Agency, the Idaho Department of Lands, the Bureau of Land Management, the U.S. Forest Service, or others. Due to the time involved with the movement of ground water, wellhead protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term.

Assistance

Public water suppliers 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.

Twin Falls Regional DEQ Office	(208) 736-2190
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 (208) 743-6142 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.

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.

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

Dairy – Sites included in the primary contaminant source inventory that are regulated by Idaho State Department of Agriculture and that 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 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 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.

References Cited

Anderson, J.E. and K. Bideganeta. 1985. "A Preliminary Geologic Reconnaissance of the Geothermal Occurrences of the Wood River Drainage Area." Water Information Bulletin No. 30. Idaho Department of Water Resources. 49 pages.

Brockway, C.E. and M.A. Kahlown. 1994. "Hydrologic Evaluation of the Big Wood River – Silver Creek Watersheds." Idaho Water Resources Research Institute. 77 pages.

Castelin, P.M. and J.E. Winner. 1975. "Effects of Urbanization on the Water Resources of the Sun Valley-Ketchum Area, Blaine County, Idaho." Water Information Bulletin No. 40. Idaho Department of Water Resources. 86 pages.

Frenzel, S.A. 1989. "Water Resources of the Upper Big Wood River Basin, Idaho." U.S. Geological Survey. Water-Resources Investigations Report 89-4018. 47 pages.

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

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.

Luttrell, S.P. and C.E. Brockway. 1982. "Impacts of Individual On-Site Sewage Disposal Facilities on Mountain Valleys – Phase I. Research Technical Completion Report A-084-IDA. Idaho Water and Energy Resources Research Institute. University of Idaho. 52 pages.

Luttrell, S.P. and C.E. Brockway. 1984. "Impacts of Individual On-Site Sewage Disposal Facilities on Mountain Valleys – Phase II – Water-Quality Considerations. Research Technical Completion Report WRIP/371403. Idaho Water and Energy Resources Research Institute. University of Idaho. 74 pages.

Attachment A

Sun Valley Water and Sewer District
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) 2) Microbial Final Score = Hydrologic Sensitivity + System Construction + (Potential Contaminant/Land Use x 0.35)

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : SUN VALLEY WATER AND SEWER DIST Well# : WELL 1

Public Water System Number 5070051 09/27/2000 2:28:24 PM

1. System Construction		SCORE
Drill Date	01/01/1935	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1995
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	YES	NO	YES	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	4	3	3	1
(Score = # Sources X 2) 8 Points Maximum		8	6	6	2
Sources of Class II or III leacheable contaminants or	YES	1	1	0	
4 Points Maximum		1	1	0	
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	7	6	2
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	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					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	

Total Potential Contaminant Source / Land Use Score - Zone III	2	2	1	0
Cumulative Potential Contaminant / Land Use Score	11	9	7	2
4. Final Susceptibility Source Score	12	12	11	11
5. Final Well Ranking	Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : SUN VALLEY WATER AND SEWER DIST Well# : WELL 2

Public Water System Number 5070051 09/27/2000 2:28:58 PM

1. System Construction		SCORE
Drill Date		
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1995
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	YES	NO	YES	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	4	3	3	1
(Score = # Sources X 2) 8 Points Maximum		8	6	6	2
Sources of Class II or III leacheable contaminants or	YES	1	1	0	
4 Points Maximum		1	1	0	
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	7	6	2
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	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					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	1	0

Cumulative Potential Contaminant / Land Use Score	11	9	7	2
4. Final Susceptibility Source Score	12	12	11	11
5. Final Well Ranking	Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : SUN VALLEY WATER AND SEWER DIST Well# : WELL 3

Public Water System Number 5070051 09/27/2000 2:29:11 PM

1. System Construction		SCORE
Drill Date		
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	1995
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	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	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	YES	NO	YES	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	4	3	3	1
(Score = # Sources X 2) 8 Points Maximum		8	6	6	2
Sources of Class II or III leacheable contaminants or	YES	1	1	0	
4 Points Maximum		1	1	0	
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	7	6	2
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	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					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	1	0

Cumulative Potential Contaminant / Land Use Score	11	9	7	2
4. Final Susceptibility Source Score	11	11	10	10
5. Final Well Ranking	Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : SUN VALLEY WATER AND SEWER DIST Well# : WELL 4A

Public Water System Number 5070051 09/27/2000 2:29:24 PM

1. System Construction		SCORE
Drill Date	02/09/1966	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1995
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	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	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	4	3	3	1
(Score = # Sources X 2) 8 Points Maximum		8	6	6	2
Sources of Class II or III leacheable contaminants or	YES	1	1	0	
4 Points Maximum		1	1	0	
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	7	6	2
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	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					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	1	0

Cumulative Potential Contaminant / Land Use Score	11	9	7	2
4. Final Susceptibility Source Score	11	11	10	10
5. Final Well Ranking	Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : SUN VALLEY WATER AND SEWER DIST Well# : WELL 5

Public Water System Number 5070051 09/27/2000 2:29:36 PM

1. System Construction		SCORE
Drill Date	03/18/1966	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1995
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	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	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	YES	YES	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	4	3	3	1
(Score = # Sources X 2) 8 Points Maximum		8	6	6	2
Sources of Class II or III leacheable contaminants or	YES	1	1	0	
4 Points Maximum		1	1	0	
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	7	6	2
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	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					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	2	1	0

Cumulative Potential Contaminant / Land Use Score	11	9	7	2
4. Final Susceptibility Source Score	11	11	10	10
5. Final Well Ranking	Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : SUN VALLEY WATER AND SEWER DIST Well# : WELL 7

Public Water System Number 5070051 09/27/2000 2:29:48 PM

1. System Construction		SCORE
Drill Date	06/05/1972	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1995
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	URBAN/COMMERCIAL	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					
Contaminant sources present (Number of Sources)	YES	14	35	30	2
(Score = # Sources X 2) 8 Points Maximum		8	8	8	4
Sources of Class II or III leacheable contaminants or	YES	2	13	0	
4 Points Maximum		2	4	0	
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		10	12	8	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	0	1	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		2	3	2	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	0	0	
Sources of Class II or III leacheable contaminants or	YES	1	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	0	0	0

Cumulative Potential Contaminant / Land Use Score	16	17	12	6
4. Final Susceptibility Source Score	13	13	12	12
5. Final Well Ranking	High	High	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : SUN VALLEY WATER AND SEWER DIST Well# : WELL 8

Public Water System Number 5070051 09/27/2000 2:30:02 PM

1. System Construction		SCORE
Drill Date	11/30/1972	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1995
Well meets IDWR construction standards	YES	0
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	3

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	URBAN/COMMERCIAL	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					
Contaminant sources present (Number of Sources)	YES	14	35	30	2
(Score = # Sources X 2) 8 Points Maximum		8	8	8	4
Sources of Class II or III leacheable contaminants or	YES	2	13	0	
4 Points Maximum		2	4	0	
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		10	12	8	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	0	1	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		2	3	2	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	0	0	
Sources of Class II or III leacheable contaminants or	YES	1	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	0	0	0

Cumulative Potential Contaminant / Land Use Score	16	17	12	6
4. Final Susceptibility Source Score	12	12	11	11
5. Final Well Ranking	Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : SUN VALLEY WATER AND SEWER DIST Well# : WELL 10

Public Water System Number 5070051 09/27/2000 2:28:36 PM

1. System Construction		SCORE
Drill Date	07/26/1977	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1995
Well meets IDWR construction standards	YES	0
Wellhead and surface seal maintained	YES	0
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		1

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

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	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					
Contaminant sources present (Number of Sources)	YES	14	35	30	2
(Score = # Sources X 2) 8 Points Maximum		8	8	8	4
Sources of Class II or III leacheable contaminants or	YES	2	13	0	
4 Points Maximum		2	4	0	
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		10	12	8	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	0	1	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		2	3	2	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	0	0	
Sources of Class II or III leacheable contaminants or	YES	1	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	0	0	0

Cumulative Potential Contaminant / Land Use Score	16	17	12	6
4. Final Susceptibility Source Score	9	9	8	8
5. Final Well Ranking	Moderate	Moderate	Moderate	Moderate

Ground Water Susceptibility Report Public Water System Name : SUN VALLEY WATER AND SEWER DIST Well# : WELL 11

Public Water System Number 5070051 09/27/2000 2:28:47 PM

1. System Construction		SCORE
Drill Date	09/18/1977	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	1995
Well meets IDWR construction standards	NO	1
Wellhead and surface seal maintained	YES	0
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

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	URBAN/COMMERCIAL	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					
Contaminant sources present (Number of Sources)	YES	14	35	30	2
(Score = # Sources X 2) 8 Points Maximum		8	8	8	4
Sources of Class II or III leacheable contaminants or	YES	2	13	0	
4 Points Maximum		2	4	0	
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		10	12	8	4
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	0	1	0	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		2	3	2	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	0	0	
Sources of Class II or III leacheable contaminants or	YES	1	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		2	0	0	0

Cumulative Potential Contaminant / Land Use Score	16	17	12	6
4. Final Susceptibility Source Score	10	10	9	9
5. Final Well Ranking	Moderate	Moderate	Moderate	Moderate