COUGAR RIDGE SUBDIVISION (PWS 2350036)
SOURCE WATER ASSESSMENT FINAL REPORT

April 30, 2002

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

This report, *Source Water Assessment for Cougar Ridge Subdivision, Lewiston, 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.**

Final susceptibility scores are derived from equally weighting system construction scores, hydrologic sensitivity scores, and potential contaminant/land use scores. Therefore, a low rating in one or two categories coupled with a higher rating in other categories results in a final rating of low, moderate, or high susceptibility. With the potential contaminants associated with most urban and heavily agricultural areas, the best score a well can get is moderate. Potential contaminants are divided into four categories, inorganic contaminants (IOCs, i.e. nitrates, arsenic), volatile organic contaminants (VOCs, i.e. petroleum products), synthetic organic contaminants (SOCs, i.e. pesticides), and microbial contaminants (i.e. bacteria). As different wells can be subject to various contamination settings, separate scores are given for each type of contaminant.

The Cougar Ridge Subdivision drinking water system consists of two active wells. Well #2-South has a moderate susceptibility to all potential contaminants: IOCs, VOCs, SOCs, and microbial contaminants. Well #1-North has a moderate susceptibility to IOCs, VOCs, and SOCs. However, it has a high susceptibility to microbial contaminants due to the detection of total coliform bacteria and *E.coli* bacteria at the wellhead in 1997. The limited number of potential contaminant sources around the wells combined with the moderate system construction scores contributed to the overall susceptibility of the wells.

The current water chemistry issue that affects the wells of the Cougar Ridge Subdivision drinking water system pertains to the detection of total coliform bacteria and *E.coli* bacteria at the wellhead of Well #1 in September 1997. Total coliform bacteria have also been detected in the distribution system in December 1994, November 1997, and January 2000.

However, recent improvements have been made to the system. All “needed improvements” listed on the 2002 sanitary survey have been corrected. Additionally, meters and double check backflow devices have been installed at both wells. A near-by creek has been re-routed, a larger retaining dam has been built, and an overflow culvert was installed to reduce the potential for contamination. The roads in the vicinity of the wells have been paved to reduce the amount of dust. The Cougar Ridge Subdivision has implemented a policy to perform more bacterial tests than required as a safety measure due to the 1997 detection of coliform bacteria at Well #1. Recent tests have shown no bacteria in either well or in the distribution system.

No VOCs or SOCs have been detected in the drinking water system. The IOCs barium, lead, and fluoride have been detected in the system but at levels below the maximum contaminant levels (MCLs).

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

For the Cougar Ridge Subdivision, drinking water protection activities should focus on maintaining sanitary standards regarding wellhead protection. Disinfection practices should be implemented if microbial contamination becomes a problem. No chemicals should be stored or applied within the 50-foot radius of the wellhead. As much of the designated protection areas are outside the direct jurisdiction of the Cougar Ridge Subdivision, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. The Courgar Ridge Subdivision Water District has begun a strong public education program that includes septic system maintenance and household hazardous waste disposal methods. Other public education topics could include proper lawn and garden care practices and the importance of water conservation. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA.

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

SOURCE WATER ASSESSMENT FOR COUGAR RIDGE SUBDIVISION, LEWISTON, 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 rankings of this assessment mean.** Maps showing the delineated source water assessment area and the inventory of significant potential sources of contamination identified within that area are attached. The list of significant potential contaminant source categories and their rankings used to develop the assessment is also included.

Background

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

Level of Accuracy and Purpose of the Assessment

Since there are over 2,900 public water sources in Idaho, there is limited time and resources to accomplish the assessments. All assessments must be completed by May of 2003. An in-depth, site-specific investigation of each significant potential source of contamination is not possible. **Therefore, this assessment should be used as a planning tool, taken into account with local knowledge and concerns, to develop and implement appropriate protection measures for this source. The results should <u>not be</u> used as an absolute measure of risk and they should <u>not be</u> used to undermine public confidence in the water system.**

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

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The public drinking water system for the Cougar Ridge Subdivision is comprised of two ground water wells that serve approximately 100 people through 47 connections. The wells are located along Cougar Ridge Road approximately 3 miles east of Lewiston (Figure 1).

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However, recent improvements have been made to the system. All "needed improvements" listed on the 2002 sanitary survey have been corrected. Additionally, meters and double check backflow devices have been installed at both wells. A near-by creek has been re-routed, a larger retaining dam has been built, and an overflow culvert was installed to reduce the potential for contamination. The roads in the vicinity of the wells have been paved to reduce the amount of dust. The Cougar Ridge Subdivision has implemented a policy to perform more bacterial tests than required as a safety measure due to the 1997 detection of coliform bacteria at Well #1. Recent tests have shown no bacteria in either well or in the distribution system.

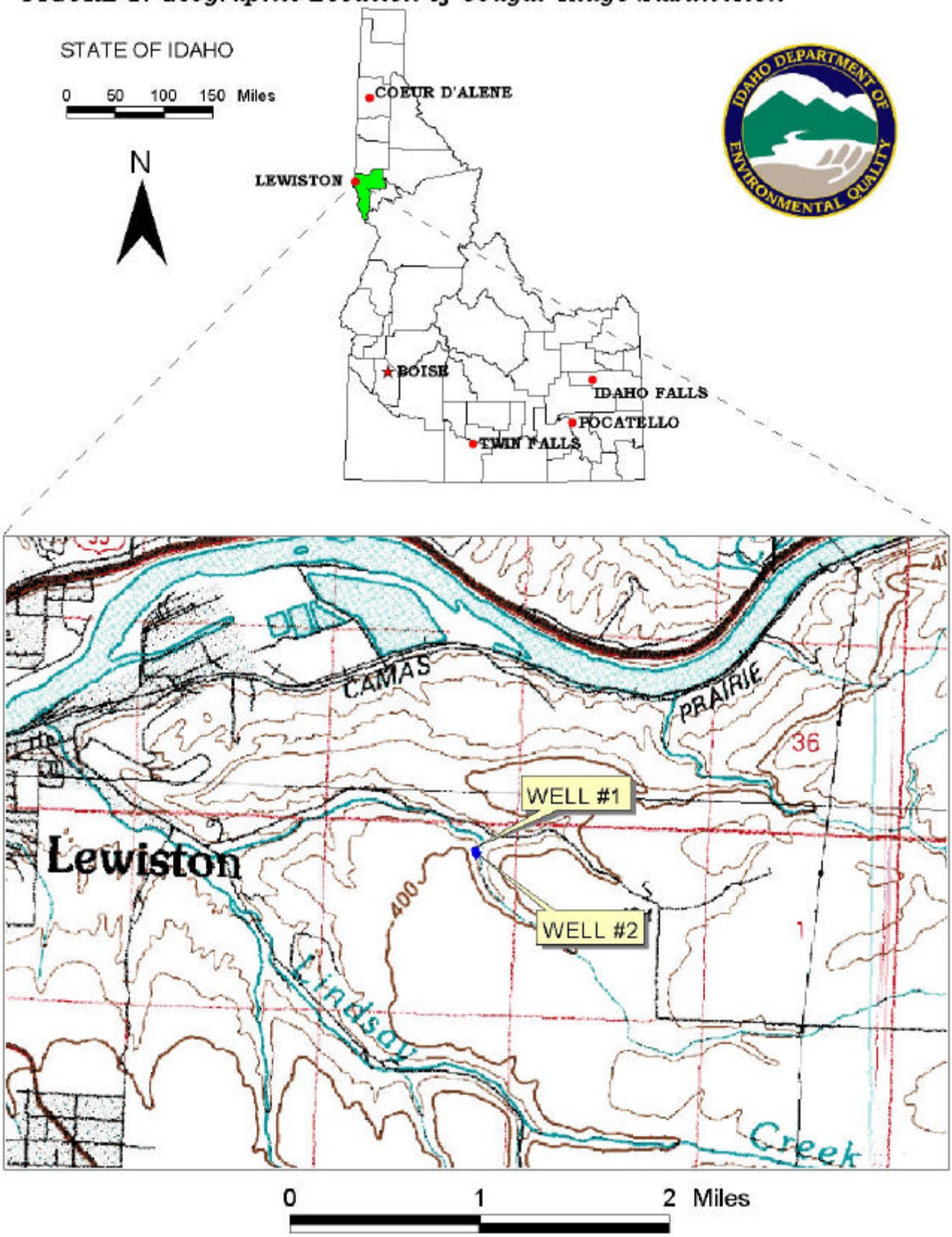
No VOCs or SOCs have been detected in the drinking water system. The IOCs barium, lead, and fluoride have been detected in the system but at levels below the maximum contaminant levels (MCLs).

Defining the Zones of Contribution – Delineation

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

The majority of the large production wells in Lewiston and environs are completed in the Grande Ronde Basalts. The Grande Ronde Formation of the Columbia River Basalt Flows provides most of the groundwater pumped in the vicinity of Lewiston because of its great thickness, extensive lateral continuity, and lack of fine-grained interbeds. The Grande Ronde is easily accessible to drilling at the confluence of the Clearwater and Snake Rivers and some of the tributary valleys such as Lapwai Creek where it has been exposed by erosion (Crosswaite, 1989). The Grande Ronde aquifer at Lewiston is called the "Lewiston Aquifer" (EPA, 1988), also referred to as the "Lewiston Basin Deep Aquifer" (Wyatt-Jaykim, 1994). Grande Ronde wells in the vicinity of Lewiston produce up to 2000 gallons per minute (gpm).

FIGURE 1. Geographic Location of Cougar Ridge Subdivision



Major faults, anticlinal folds, and a major topographic divide (the Blue Mountains) have been assumed by various parties (EPA, 1988; Wyatt-Jaykim, 1994) to form the regional impermeable boundaries of the Lewiston Basin Deep Aquifer. To the north, the aquifer is bounded by the Clearwater Escarpment, commonly referred to as the Lewiston Hill. Faults at the toe of Lewiston Hill include the Vista and Wilma faults. The northeastern boundary of the Lewiston Basin Deep Aquifer is taken to be the Cottonwood Creek Fault. The southeastern boundary is the Limekiln fault along the front of the Craig Mountains, which meets the Snake River at Limekiln rapids. From the Snake River westward, the Grande Ronde fault is considered to be the southern boundary of the Aquifer, until it meets the Blue Mountain topographic divide. This major topographic divide is assumed to be a regional groundwater divide.

Within the Lewiston Basin Deep Aquifer, water is generally assumed to flow from recharge in the highlands to discharge into the Snake and Clearwater Rivers. In addition, Cohen and Ralston (1980) mapped areas of possible river/aquifer interconnection, and proposed that (a) the aquifer discharges to the Snake below Lewiston, and (b) the aquifer is recharged from surface water from Lapwai Creek plus the Clearwater in the reach intersecting Lapwai Creek, and (c) that the aquifer is recharged from surface water in the vicinity of the confluence of the Snake River with Asotin Creek. These locations for surface water recharge to the aquifer were postulated where the basalt is dipping away from the creek.

Wyatt-Jaykim (1994) report that the present direction of groundwater flow is from the southeast to a cone of depression under Clarkston caused by the APUD wells. This is supported by water quality data suggesting that the Chief Timothy area now receives recharge from the Snake River.

A component of vertical recharge into the Grande Ronde is assumed to exist in this basin because the basalts overlying the Grande Ronde are laterally discontinuous as a result of the many rivers which have downcut into the Grande Ronde forming canyons (EPA, 1988), and because the interbed (comprised of clay and saprolite) which forms the top of the Grande Ronde is believed to allow vertical percolation (EPA, 1988).

Precipitation is 13 inches/year in Lewiston-Clarkston, whereas higher elevation areas average close to 25 inches annually (Cohen and Ralston, 1980). A modeling effort documented by Wyatt-Jaykim (1994), concluded on the basis of available data that 1 to 2 inches/year is a conservative estimate for recharge to the basalt aquifers in the vicinity of Lewiston and Lewiston Orchards. This ignores irrigation losses that would contribute to recharge of the basalts overlying the Grande Ronde in the vicinity of the Lewiston Orchards.

The capture zones delineated herein are based upon limited data and must be taken as best estimates. If more data become available in the future these delineations should be adjusted based on additional modeling incorporating the new data.

The delineated source water assessment areas for the wells of the Cougar Ridge Subdivision differ in shape and size. The delineation for Well #2-South is a southeastward trending corridor, approximately one-fourth mile wide and approximately three-fourths mile long (Figure 3). The delineated area for Well #1-North is distorted by interference from Well #2-South. The delineation of Well #1-North wraps around the delineated area of Well #2-South forming a U-shaped area that is wider on the northeast side and thin on the southwest side. It is approximately one-fourth mile wide and

approximately 1.5 miles long (Figure 2). The actual data used by the University of Idaho in determining the source water assessment delineation area is available from DEQ upon request.

Identifying Potential Sources of Contamination

A potential source of contamination is defined as any facility or activity that stores, uses, or produces, as a product or by-product, the contaminants regulated under the Safe Drinking Water Act and has a sufficient likelihood of releasing such contaminants at levels that could pose a concern relative to drinking water sources. The goal of the inventory process is to locate and describe those facilities, land uses, and environmental conditions that are potential sources of groundwater contamination. The locations of potential sources of contamination within the delineation areas were obtained by field surveys conducted by DEQ and from available databases.

Land use within the immediate area of the wells of the Cougar Ridge Subdivision consists of mostly residential land use while the surrounding area is undetermined agriculture and rangeland.

It is important to understand that a release may never occur from a potential source of contamination provided they are using best management practices. Many potential sources of contamination are regulated at the federal level, state level, or both to reduce the risk of release. Therefore, when a business, facility, or property is identified as a potential contaminant source, this should not be interpreted to mean that this business, facility, or property is in violation of any local, state, or federal environmental law or regulation. What it does mean is that the 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, including educational visits and inspections of stored materials. Many owners of such facilities may not even be aware that they are located near a public water supply well.

Contaminant Source Inventory Process

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

The delineated source water assessment area for Well #1-North of the Cougar Ridge Subdivision contains a mine in the 3-year TOT zone (Table 1). However, the delineation for Well #2-South does not contain any potential contaminant sources.

Table 1. Cougar Ridge Subdivision East Side Well #1-North, Potential Contaminant Inventory.

Site	Description of Source[1]	TOT[2] Zone	Source of Information	Potential Contaminants[3]
1	Mine	0 - 3	Database Search	IOC, VOC, SOC, Microbes

[2] **TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead**
[3] **IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical**

Figure 2. Cougar Ridge Subdivision Delineation Map and Potential Contaminant Source Locations

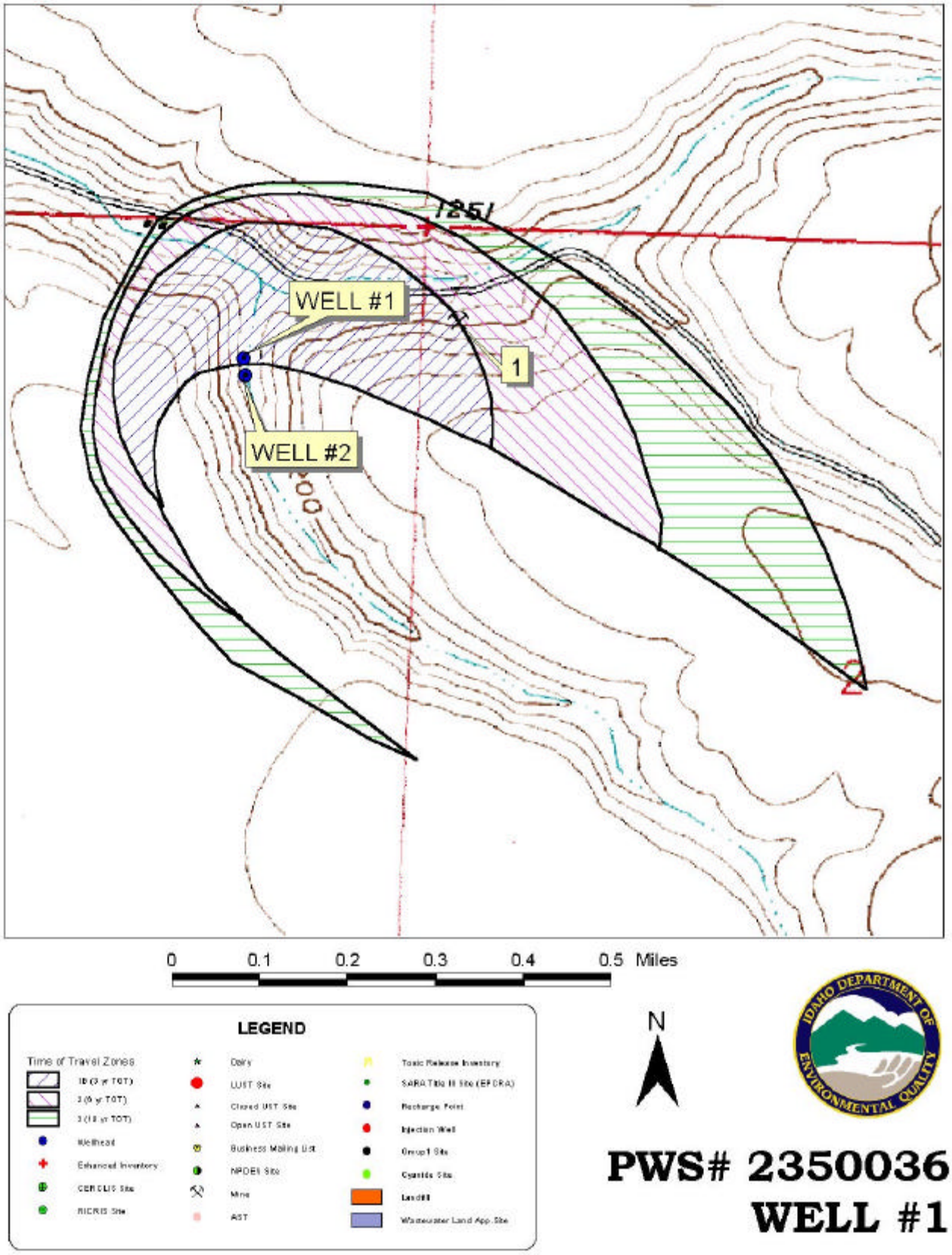
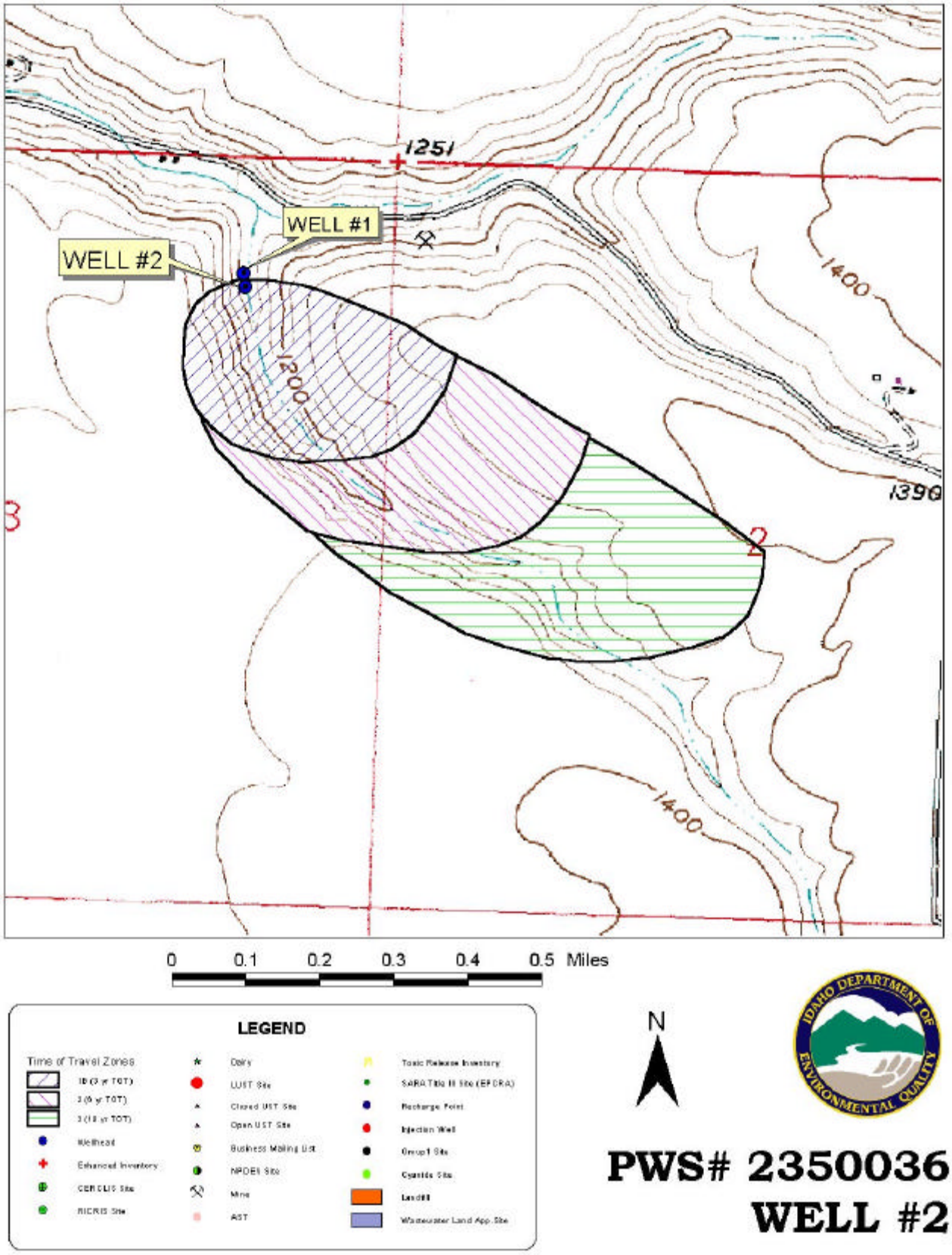


Figure 3. Cougar Ridge Subdivision Delineation Map and Potential Contaminant Source Locations



Section 3. Susceptibility Analyses

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

Hydrologic Sensitivity

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

Hydrologic sensitivity is moderate for Well #1-North and high for Well #2-South (Table 2). Regional soil data places the delineated areas within moderate to well drained soils. A well log was available with cross-referenced information from the 2002 sanitary survey, indicating that the well log is for Well #1-North. This well log indicates the presence of several clay layers above the producing zone, potentially decreasing the downward migration of contaminants to the aquifer. It also indicates that first ground water is found at 330 feet. A well log was not available for Well #2-South making it was difficult to determine the composition of the vadose zone, the presence of any impermeable layers above the producing zone, and the depth to first groundwater.

Well Construction

Well construction directly affects the ability of the well to protect the aquifer from contaminants. System construction scores are reduced when information shows that potential contaminants will have a more difficult time reaching the intake of the well. Lower scores imply a system is less vulnerable to contamination. For example, if the well casing and annular seal both extend into a low permeability unit, then the possibility of contamination is reduced and the system construction score goes down. If the highest production interval is more than 100 feet below the water table, then the system is considered to have better buffering capacity. If the wellhead and surface seal are maintained to standards, as outlined in sanitary surveys, then contamination down the well bore is less likely. If the well is protected from surface flooding and is outside the 100-year floodplain, then contamination from surface events is reduced. A sanitary survey was conducted in 2002 for the system.

The Cougar Ridge Subdivision wells rate moderate for system construction. The 2002 sanitary survey indicates that the wellhead and surface seals for both wells are maintained to standards and that the wells are properly protected from surface flooding. The well log for Well #2-South is unavailable, limiting the amount of well construction information. The 2002 sanitary survey states that Well #1 was drilled in 1993 to a depth of approximately 400 feet below ground surface (bgs). The available well log (that is assumed to be for Well #1-North) indicates that Well #1-North was drilled in 1993 to a depth of 370 feet bgs. It has a ten-inch casing set to 40 feet bgs into "clay" followed by an eight-inch casing set to a depth of 260 feet bgs into "basalt."

A determination was made as to whether current public water system (PWS) construction standards are being met. Though the wells may have been in compliance with standards when they were completed, current PWS well construction standards are more stringent. The Idaho Department of Water Resources *Well Construction Standards Rules* (1993) require all PWSs to follow DEQ standards as well. IDAPA 58.01.08.550 requires that PWSs follow the *Recommended Standards for Water Works* (1997) during construction. These standards include provisions for well screens, pumping tests, and casing thicknesses to name a few. Table 1 of the *Recommended Standards for Water Works* (1997) lists the required steel casing thickness for various diameter wells. Eight-inch diameter wells require a casing thickness of 0.322-inches and ten-inch diameter wells require a casing thickness of 0.365-inches. As such, the wells were assessed an additional point in the system construction rating.

Potential Contaminant Source and Land Use

The wells of the Cougar Ridge Subdivision rated low for IOCs (i.e. nitrates, arsenic), VOCs (i.e. petroleum products, chlorinated solvents), SOCs (i.e. pesticides), and microbial contaminants (i.e. bacteria). The rangeland surrounding the wells and the limited number of potential contaminant sources within the delineations contributed to the land use scores.

Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. In this case, total coliform bacteria and *E.coli* bacteria were detected at the wellhead of Well #1-North, giving an automatic high susceptibility to microbial contaminants. Additionally, if there are contaminant sources located within 50 feet of the source then the wellhead will automatically get a high susceptibility rating. Hydrologic sensitivity and system construction scores are heavily weighted in the final scores. Having multiple potential contaminant sources in the 0 to 3-year time of travel zone (Zone 1B) and agricultural land contribute greatly to the overall ranking. In terms of total susceptibility, Well #1-North rates moderate susceptibility to IOCs, VOCs, and SOCs and rates high susceptibility to microbial contaminants. Well #2-South of the Cougar Ridge Subdivision rates moderate susceptibility to all potential contaminant categories.

Table 2. Summary of Cougar Ridge Subdivision Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
Well #1	M	L	L	L	L	M	M	M	M	H*[2]
Well #2-South	H	L	L	L	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* = Automatic high susceptibility due to the detection of total coliform and *E.coli* bacteria at the wellhead

Susceptibility Summary

Overall, Well #1-North has a moderate susceptibility to IOCs, VOCs, and SOCs and has a high susceptibility to microbial contaminants. Well #2-South has a moderate susceptibility to all potential contaminant categories. The detection of total coliform bacteria and *E.coli* bacteria at the wellhead of Well #1-North in 1997 gives an automatic high susceptibility to microbial contaminants. The moderate hydrologic sensitivity and system construction scores of Well #1 and the limited number of potential contaminant sources within the delineation reflect the overall susceptibility of the well. The high hydrologic sensitivity combined with the moderate system construction score and the lack of potential contaminant sources around the well resulted in the overall susceptibility of Well #2-South.

The current water chemistry issue that affects the wells of the Cougar Ridge Subdivision drinking water system pertains to the detection of total coliform bacteria and *E.coli* bacteria at the wellhead of Well #1-North in September 1997. Total coliform bacteria have also been detected in the distribution system in December 1994, November 1997, and January 2000.

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Section 4. Options for Drinking Water Protection

The susceptibility assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what the susceptibility ranking a source receives, protection is always important. Whether the source is currently located in a “pristine” area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources.

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

Assistance

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

Lewiston Regional DEQ Office	(208) 799-4370
State DEQ Office	(208) 373-0502

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

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

POTENTIAL CONTAMINANT INVENTORY
LIST OF ACRONYMS AND DEFINITIONS

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

References Cited

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Appendix A

Cougar Ridge Subdivision Susceptibility Analysis Worksheets

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

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

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

Final Susceptibility Scoring:

0 - 5 Low Susceptibility

6 - 12 Moderate Susceptibility

≥ 13 High Susceptibility

Ground Water Susceptibility Report Public Water System Name : COUGAR RIDGE SUBD Well# : WELL #1

Public Water System Number 2350036 2/20/02 9:30:36 AM

1. System Construction		SCORE
Drill Date	1993	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	2002
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	NO	0
Depth to first water > 300 feet	YES	0
Aquitard present with > 50 feet cumulative thickness	YES	0
Total Hydrologic Score		2

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED PASTURE	1	1	1	1
Farm chemical use high	YES	0	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	NO	YES
Total Potential Contaminant Source/Land Use Score - Zone 1A		1	1	3	1
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	YES	1	1	1	1
(Score = # Sources X 2) 8 Points Maximum		2	2	2	2
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
4 Points Maximum		1	1	1	
Zone 1B contains or intercepts a Group 1 Area	NO	0	0	0	0
Land use Zone 1B	25 to 50% Non-Irrigated Agricultural Land	1	1	1	1
Total Potential Contaminant Source / Land Use Score - Zone 1B		4	4	4	3
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Less than 25% Agricultural Land	0	0	0	
Potential Contaminant Source / Land Use Score - Zone II		3	3	3	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	NO	0	0	0	
Total Potential Contaminant Source / Land Use Score - Zone III		0	0	0	0
Cumulative Potential Contaminant / Land Use Score		8	8	10	4
4. Final Susceptibility Source Score		8	8	8	8

5. Final Well Ranking	Moderate	Moderate	Moderate	High

Ground Water Susceptibility Report Public Water System Name : COUGAR RIDGE SUBD Well# : WELL 2-SOUTH

Public Water System Number 2350036 2/20/02 11:22:39 AM

1. System Construction		SCORE
Drill Date		
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	2002
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	RANGELAND, WOODLAND, BASALT	0	0	0	0
Farm chemical use high	YES	0	0	2	
IOC, VOC, SOC, or Microbial sources in Zone 1A	NO	NO	NO	NO	NO
Total Potential Contaminant Source/Land Use Score - Zone 1A		0	0	2	0
Potential Contaminant / Land Use - ZONE 1B					
Contaminant sources present (Number of Sources)	NO	0	0	0	0
(Score = # Sources X 2) 8 Points Maximum		0	0	0	0
Sources of Class II or III leacheable contaminants or	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% Non-Irrigated Agricultural Land	1	1	1	1
Total Potential Contaminant Source / Land Use Score - Zone 1B		1	1	1	1
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	25 to 50% Irrigated Agricultural Land	1	1	1	
Potential Contaminant Source / Land Use Score - Zone II		1	1	1	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	NO	0	0	0	
Sources of Class II or III leacheable contaminants or	NO	0	0	0	
Is there irrigated agricultural lands that occupy > 50% of	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	4	1
4. Final Susceptibility Source Score	10	10	11	10
5. Final Well Ranking	Moderate	Moderate	Moderate	Moderate