NEZPERCE WATER DEPARTMENT (PWS 2310005)
SOURCE WATER ASSESSMENT FINAL REPORT

May 7, 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 (EPA) 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 Nezperce Water Department, 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 Nezperce Water Department drinking water system consists of two wells: Well #1 W 5th and Well #4 E 5th. Well #1 W 5th rated high susceptibility to IOC, VOC, SOC, and microbial contaminants. Well #4 E 5th rated automatically high for all contaminant classes due to its location along Ash Street as well as because there is a house within the 50 foot sanitary setback from the well. If institutional controls were used to close off access to within 50 feet of Well #4 E 5th, then the well would rate moderate susceptibility to all classes of contaminants. The main difference between the ratings was that the Well #4 E 5th log indicated the presence of low permeability clay layers that reduced the hydrologic sensitivity score to the low category.

The current significant water quality issue with the system is the repeated detections of total coliform bacteria. Total coliform bacteria have been detected in samples from Well #1 W 5th in January 1998 and October 2000 and at various locations throughout the Nezperce Water Department distribution system in July 1995, June 1996, November 1997, June, July, and September 2000, and March 2001. These numerous detections could signal a possible contamination problem, though a few may signal possible sampling errors. No VOCs or SOCs have ever been detected. The IOCs barium, chromium, fluoride, antimony, selenium, and nitrate have been detected, but at levels below the current maximum contaminant levels (MCLs) as set by the EPA. Though there have not been chemical problems with the system water, the Nezperce Water Department should be aware that the potential for contamination from the aquifer still exists.

This assessment should be used as a basis for determining appropriate new protection measures or re-evaluating existing protection efforts. No matter what ranking a source receives, protection is always important. Whether the source is currently located in a "pristine" area or an area with numerous industrial and/or agricultural land uses that require surveillance, the way to ensure good water quality in the future is to act now to protect valuable water supply resources. 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 Nezperce Water Department system drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey (an inspection conducted every five years with the purpose of determining the physical condition of a water system's components and its capacity), including removing paints from the well houses and repairing leaks. A hypochlorinator disinfection system was recently installed at Well #1 W 5th as a way to deal with the total coliform bacteria detections. In addition, approximately $500,000 of upgrades to the water well, tank, and lines has been recently completed. No chemicals should be stored or applied within the 50-foot radius of the wellheads and it is recommended that the radius be increased too as large as reasonably possible. A contingency plan should be established to deal with any contamination and possible spills from Highways 62 and 64. Ash Street, near Well #4 E 5th, should be diverted or closed to provide at least a 50-foot radius from the wellhead. Current information indicates that Ash Street is not used for traffic, but institutional controls could be used to block off a protected portion in case of future use. As much of the designated protection areas are outside the direct jurisdiction of the Nezperce Water Department, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations encompass much urban and commercial land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there are major transportation corridors through the delineation (Highways 62 and 64), the Idaho Department of Transportation should be involved in protection activities.

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

SOURCE WATER ASSESSMENT FOR NEZPERCE WATER DEPARTMENT, IDAHO

Section 1. Introduction - Basis for Assessment

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

Background

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

Level of Accuracy and Purpose of the Assessment

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

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

Section 2. Conducting the Assessment

General Description of the Source Water Quality

The public drinking water system for the Nezperce Water Department is comprised of two ground water wells that serve approximately 453 people through approximately 225 connections. The wells are located in Lewis County, to the east and west of Highway 62 along 5th Street (Figure 1).

The current significant water problem affecting the Nezperce Water Department source water is total coliform bacteria. Total coliform bacteria have been detected in samples from Well #1 W 5th in January 1998 and October 2000 and at various locations throughout the Nezperce Water Department distribution system in July 1995, June 1996, November 1997, June, July, and September 2000, and March 2001. These numerous detections could signal a possible contamination problem, though a few may signal possible sampling errors. The inorganic contaminants (IOCs) barium, chromium, fluoride, antimony, selenium, and nitrate have been detected, but at levels below the maximum contaminant levels (MCLs) as set by the EPA. No volatile organic contaminants (VOCs) or synthetic organic contaminants (SOCs) have been detected in the well water.

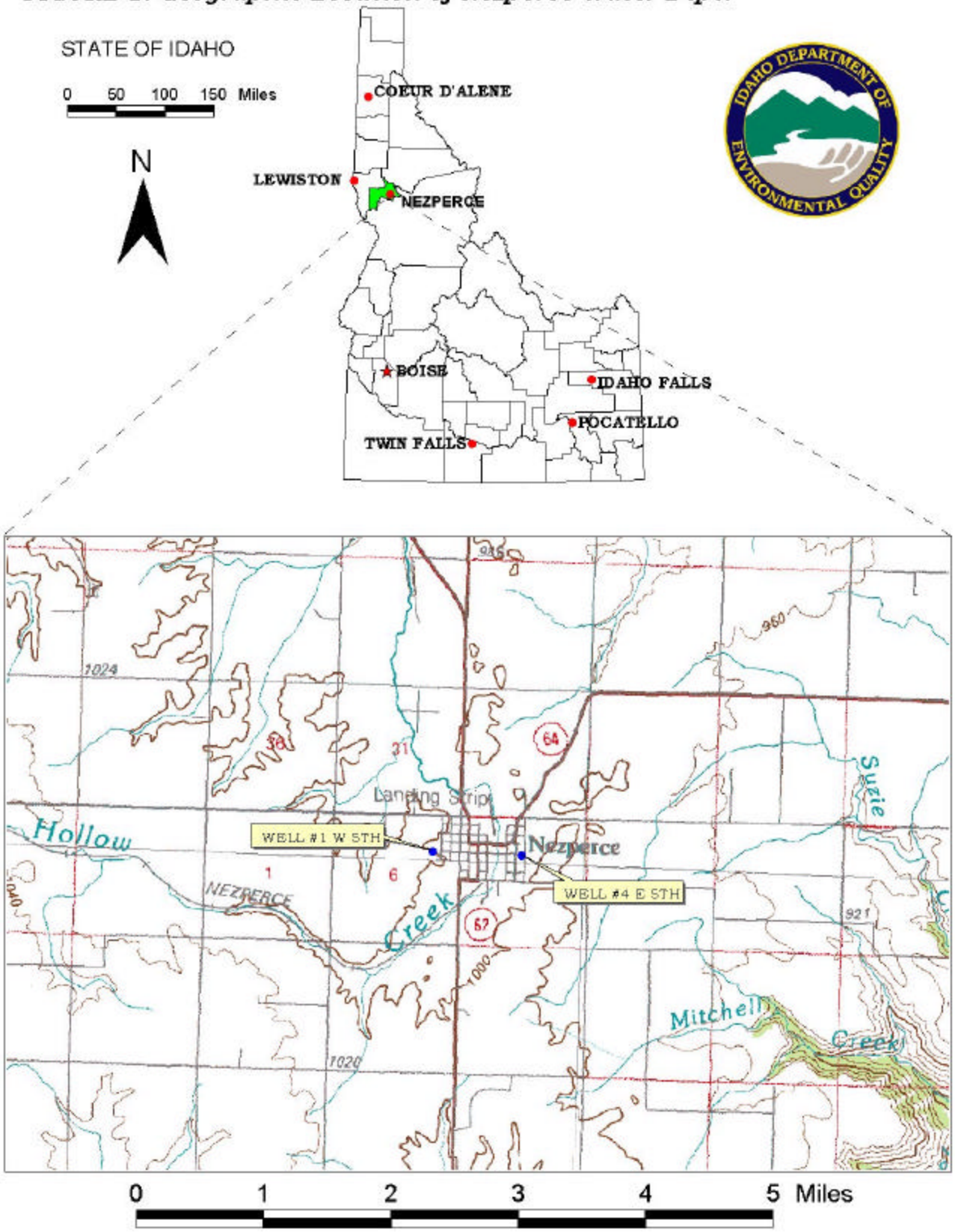
Defining the Zones of Contribution – Delineation

The delineation process establishes the physical area around a well that will become the focal point of the assessment. The process includes mapping the boundaries of the zone of contribution into time-of-travel (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 Grande Ronde aquifer of the Clearwater Plateau in the vicinity of the Nezperce Water Department wells. The computer model used site specific data, assimilated by the University of Idaho from a variety of sources including the Nezperce Water Department well logs and operator input, local area well logs, and hydrogeologic reports (detailed below).

The conceptual hydrogeologic model for the area of the Nezperce source wells is based on very little known information and scarce data. A 1:250,000-scale geologic map by Rember and Bennett (1979) provided the geology and locations for the boundaries. Structural features on the Rember and Bennett (1979) map are at a large scale leading to possible offsets of hundreds of meters at the scale of interest. The Nezperce source wells supply water to the Nezperce community. Two nearby surface water bodies are thought to influence the ground water flow regime; these are Lawyers Creek and the Clearwater River. Based on well logs the wells are located in fractured basalt. No well log was found for Nezperce Well #1 W 5th; the information was gathered from the system operator.

Wells located in basalt aquifers in northern Idaho produce up to 2,500 gallons per minute (gpm). Discharge of the Nezperce wells is about 300 gpm; however, the maximum potential discharge of the wells is unknown. Most of the ground water found in basalts lies in the vesicular contact, fracture zones or in the sediments between basalt flows. Static water level of the Nezperce Well #4 E 5th coincides with those found at the test points.

FIGURE 1. Geographic Location of Nezperce Water Dept.



Grande Ronde basalt covers much of the Nezperce area with small exposures of Saddle Mountains basalt (Rember and Bennett, 1979). The source wells derive water from these fractured basalt aquifers. According to Morrison-Maierle, Inc. (1976), the general direction of ground water flow is to the northeast.

One northwest-southeast trending fault (up-thrown block on the southwest side) exists to the northwest of the source wells as shown by Rember and Bennett (1979). It is assumed the fault is a hydrologic barrier. However, no data exist to support or refute this.

Headwaters of the Clearwater River begin approximately seven miles east of Syringa, Idaho at the confluence of the Lochsa and Selway Rivers. The Clearwater River discharges into the Snake River at Lewiston. Most of the water in the river during baseflow conditions is from ground water. Runoff from snowmelt during the spring months also contributes to the river.

Near Kamiah the Clearwater River separates two generalized hydrologic provinces, the Clearwater Plateau to the west and the Clearwater Uplands to the east. It is unknown whether the Clearwater River is gaining or losing at this reach of the river due to the complex hydrogeology. Based on information gathered during modeling of two sources at Lawyers Creek, water elevations at wells near and adjacent to the river are very different from each other.

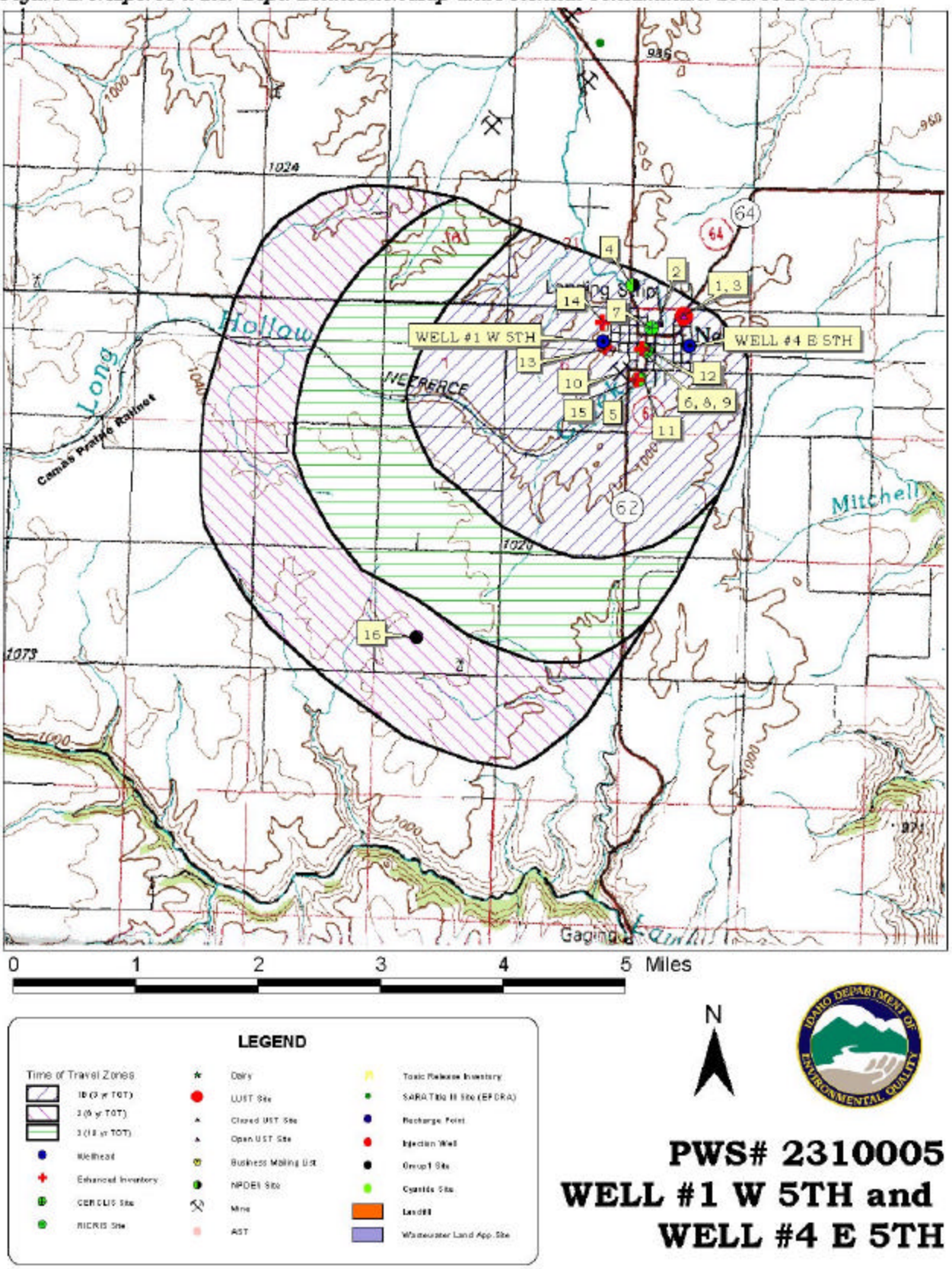
Lawyers Creek is thought to be a gaining creek because it is believed to flow year round. If it were a losing creek it would not flow during the summer. Further evidence is the headwaters are at a higher elevation; the creek then downcuts into the basalt gaining water from the rock and finally discharges into the Clearwater River.

No aquifer recharge data are available for the Nezperce area. In a study by Wyatt-Jaykim (1994), recharge to the central basin (Lewiston basin) was modeled as 1 inch/year; 2 inches/year was selected in the higher areas. Because Nezperce lies at a much higher elevation than much of the basin, precipitation rates are much higher, 13 inches/year in Lewiston-Clarkston (Cohen and Ralston, 1980) versus 20 inches/year at Nezperce (Castelin, 1976).

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 Nezperce Water Department can best be described as an ellipse stretching from downtown Nezperce to the southwest. The total area encompasses 9,736 acres. The 3-year TOT includes the entire City of Nezperce (Figure 2). The actual data used by the University of Idaho in determining the source water assessment delineation areas are available from DEQ upon request.

Figure 2. Nezperce Water Dept. Delineation Map and Potential Contaminant Source Locations



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.

Land use within the immediate area of the Nezperce Water Department wells consists of urban, residential, and major transportation corridors, while the surrounding area is predominantly undetermined agriculture.

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 from October 2001 to February 2002. The first phase involved identifying and documenting potential contaminant sources within the Nezperce Water Department source water assessment areas (Figure 2) 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.

Since Well #1 W 5th and Well #4 E 5th share the same delineation, both wells have the same potential contaminant sources (Table 1). The sources include underground storage tanks (UST), a leaking underground storage tank (LUST), multiple sites regulated by the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), the City of Nezperce municipal discharge site regulated by the National Pollutant Discharge Elimination System (NPDES) permit system, a site regulated by the Resource Conservation and Recovery Act (RCRA), and a site regulated by the Superfund Amendments and Reauthorization Act (SARA). The enhanced inventory identified four new agricultural sites as well as identifying that a local mine was closed and that two of the CERCLA sites were located outside of the City of Nezperce. In addition, the delineation contains Highways 62 and 64 as potential contaminant sources. The system should be aware that a spill on the section of Highways 62 or 64 contained within the delineation has a chance to contribute all classes of contamination to the aquifer.

Table 1. Nezperce Water Department Well #1 W 5th and Well #4 E 5th, Potential Contaminant Inventory

Site #	Source Description[1]	TOT ZONE (years)[2]	Source of Information	Potential Contaminants[3]
	Highway 64	0-3	GIS Map	IOC, VOC, SOC, Microbes
	Highway 62	0-10	GIS Map	IOC, VOC, SOC, Microbes
1, 3, 5	LUST Site: Cleanup Incomplete, Impact: GROUND WATER; UST Site – open; CERCLA site	0-3	Database Search	VOC, SOC
2	UST Site – closed	0-3	Database Search	VOC, SOC
4	NPDES – municipal	0-3	Database Search	IOC, Microbes
6	CERCLA site (not within city)	0-3	Database Search	None
7	CERCLA site (not within city)	0-3	Database Search	None
8	CERCLA site	0-3	Database Search	IOC, VOC, SOC
9	RCRA site	0-3	Database Search	IOC, VOC
10	Clay mine – historical	0-3	Database Search	IOC, VOC, SOC
11	SARA site	0-3	Database Search	VOC, SOC
12	Agricultural Retailer	0-3	Enhanced Inventory	IOC, VOC, SOC, Microbes
13	Agricultural Retailer	0-3	Enhanced Inventory	IOC, VOC, SOC, Microbes
14	Agricultural Retailer	0-3	Enhanced Inventory	IOC, Microbes
15	Agricultural Retailer	0-3	Enhanced Inventory	VOC, SOC
16	Group 1	6-10	Database Search	IOC

[1] LUST = leaking underground storage tank, UST = underground storage tank, CERCLA = Comprehensive Environmental Response Compensation and Liability Act, NPDES = National Pollutant Discharge Elimination System, RCRA = Resource Conservation and Recovery Act, SARA = Superfund Amendments and Reauthorization Act
[2] TOT = time-of-travel (in years) for a potential contaminant to reach the wellhead
[3] IOC = inorganic chemical, VOC = volatile organic chemical, SOC = synthetic organic chemical

Section 3. Susceptibility Analyses

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. Attachment 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 W 5th and is low for Well #4 E 5th (Table 2). Regional soil data places the delineations within poor to moderate drained soils, which reduces the rate of infiltration from the surface. The difference in the scores is predominantly due to having a well log for Well #4 E 5th, which shows that the vadose zone is composed of a 73-foot thick low permeability clay layer.

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 2001. Well #1 W 5th has a high system construction score and Well #4 E 5th has a moderate system construction score.

Well #1 W 5th was drilled in 1950 to an approximate depth of 200 feet below ground surface (bgs). No well log was available to determine to what depth the annular seal or casing was set to. Current capacity is at a level of 100 gpm. The sanitary survey (DEQ, 2001) states that Well #1 W 5th has a well house with a concrete slab floor, a discharge line that is equipped with a check valve, gate valve, pressure gauge, sampling tap, and meter, and a roof that is in need of repair.

Well #4 E 5th, drilled in 1969 to a depth of 250 feet, has 0.250-inch thick, 10-inch casing installed to 77 feet bgs and 0.250-inch thick, 8-inch casing installed to 233 feet bgs into "medium hard basalt." The annular seal was installed to 65 feet bgs into "black and purple clay." These materials are deemed to be low permeability zones. The static water table is approximately 100 feet bgs and the well produces from two zones: 133 to 173 feet bgs and 193 to 233 feet bgs from basalt and gravel. Current capacity is at a level of 150 gpm. With the information available, Well #4 E 5th was assessed to have a adequate well seal and to be protected from surface flooding.

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. Six-inch diameter wells require a casing thickness of at least 0.280-inches and 8-inch diameter casing requires 0.322-inch thick casing. The wells were assessed an additional point in the system construction rating.

Potential Contaminant Source and Land Use

As the delineations are the same, the land use scores are the same as well. Both wells rated high land use for IOCs (i.e. nitrates, arsenic), VOCs (i.e. petroleum products, chlorinated solvents), and SOCs (i.e. pesticides), and rated moderate land use for microbial contaminants (i.e. bacteria). The presence of Highways 62 and 64, as well as the large percentage of agricultural land influenced the scores the most.

Final Susceptibility Ranking

An IOC detection above a drinking water standard MCL, any detection of a VOC or SOC, or a detection of total coliform bacteria or fecal coliform bacteria at the wellhead will automatically give a high susceptibility rating to a well despite the land use of the area because a pathway for contamination already exists. Additionally, if there are contaminant sources located within 50 feet of the source then the wellhead will automatically get a high susceptibility rating. In this case, Well #1 W 5th automatically rated high for microbial contamination due to the numerous total coliform detections associated with the well. Well #4 E 5th automatically rated high for all contaminant categories due to having Ash Street and a home (DEQ, 1993) within 50 feet of the wellhead. 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, both wells rate high for all classes of contaminants.

Table 2 Summary of Nezperce Water Department Susceptibility Evaluation

Well	Susceptibility Scores[1]									
	Hydrologic Sensitivity	Contaminant Inventory				System Construction	**Final Susceptibility Ranking**			
		IOC	VOC	SOC	Microbials		IOC	VOC	SOC	Microbials
#1 W 5th	M	H	H	H	M	H	H	H	H	H*
#4 E 5th	L	H	H	H	M	M	H*[2]	H*	H*	H*

[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 rating due to total coliform detections (#1 W 5th) or due to location of wellhead having road and house within the 50 foot sanitary setback (#4 E 5th)

Susceptibility Summary

Overall, both wells rate high for all classes of contaminants. One main difference between the wells is that the Well #4 E 5th log showed the presence of a greater than 50-foot cumulative thickness of low permeability clay layers that lowered the hydrologic sensitivity score from moderate to low. If the presence of contaminant sources within 50 feet of Well #4 E 5th could be removed, all the final susceptibility scores for that well would be reduced to moderate.

The current significant water problem affecting the Nezperce Water Department source water is total coliform bacteria. Total coliform bacteria have been detected in samples from Well #1 W 5th in January 1998 and October 2000 and at various locations throughout the Nezperce Water Department distribution system in July 1995, June 1996, November 1997, June, July, and September 2000, and March 2001. These numerous detections could signal a possible contamination problem, though a few may signal possible sampling errors.

The IOCs barium, chromium, fluoride, antimony, selenium, and nitrate have been detected, but at levels below the MCLs as set by the EPA. No VOCs or SOCs have been detected in the well water.

Section 4. Options for Drinking Water Protection

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

An effective drinking water protection program is tailored to the particular local drinking water protection area. A community with a fully developed drinking water protection program will incorporate many strategies. For the Nezperce Water Department system drinking water protection activities should first focus on correcting any deficiencies outlined in the sanitary survey, including removing paints from the well houses and repairing leaks. A hypochlorinator disinfection system was recently installed at Well #1 W 5th as a way to deal with the total coliform bacteria detections. In addition, approximately $500,000 of upgrades to the water well, tank, and lines has been recently completed. No chemicals should be stored or applied within the 50-foot radius of the wellheads. A contingency plan should be established to deal with any contamination and possible spills from Highways 62 and 64. Ash Street, near Well #4 E 5th, should be diverted or closed to provide at least a 50-foot radius from the wellhead. Current information indicates that Ash Street is not used for traffic, but institutional controls could be used to block off a protected portion in case of future use. As much of the designated protection areas are outside the direct jurisdiction of the Nezperce Water Department, collaboration and partnerships with state and local agencies, and industry groups should be established and are critical to the success of drinking water protection. In addition, the well should maintain sanitary standards regarding wellhead protection.

Due to the time involved with the movement of ground water, drinking water protection activities should be aimed at long-term management strategies even though these strategies may not yield results in the near term. A strong public education program should be a primary focus of any drinking water protection plan as the delineations encompass much urban and commercial land uses. Public education topics could include proper lawn and garden care practices, household hazardous waste disposal methods, proper care and maintenance of septic systems, and the importance of water conservation to name but a few. There are multiple resources available to help communities implement protection programs, including the Drinking Water Academy of the EPA. As there are major transportation corridors through the delineation (Highways 62 and 64), the Idaho Department of Transportation should be involved in protection activities. 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.

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

Water suppliers serving fewer than 10,000 persons may contact Melinda Harper, (mlharper@idahoruralwater.com), Idaho Rural Water Association, at (208) 343-7001 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.

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Attachment A

Nezperce Water Department 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 : NEZPERCE WATER DEPT Well# : WELL #1 W 5TH

Public Water System Number 2310005 03/04/2002 2:01:13 PM

1. System Construction		SCORE
Drill Date	05/31/1950	
Driller Log Available	NO	
Sanitary Survey (if yes, indicate date of last survey)	YES	2001
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	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	NO	NO	NO	YES
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	9	12	11	5
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	9	6	5	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		18	16	16	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0

Cumulative Potential Contaminant / Land Use Score	28	26	26	14
4. Final Susceptibility Source Score	15	14	14	14
5. Final Well Ranking	High	High	High	High

Ground Water Susceptibility Report Public Water System Name : NEZPERCE WATER DEPT Well# : WELL #4 E 5TH

Public Water System Number 2310005 03/04/2002 2:01:27 PM

1. System Construction		SCORE
Drill Date	04/16/1969	
Driller Log Available	YES	
Sanitary Survey (if yes, indicate date of last survey)	YES	2001
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	NO	0
Total System Construction Score		2

2. Hydrologic Sensitivity		
Soils are poorly to moderately drained	YES	0
Vadose zone composed of gravel, fractured rock or unknown	NO	0
Depth to first water > 300 feet	NO	1
Aquitard present with > 50 feet cumulative thickness	YES	0
Total Hydrologic Score		1

3. Potential Contaminant / Land Use - ZONE 1A		IOC Score	VOC Score	SOC Score	Microbial Score
Land Use Zone 1A	IRRIGATED CROPLAND	2	2	2	2
Farm chemical use high	NO	0	0	0	
IOC, VOC, SOC, or Microbial sources in Zone 1A	YES	YES	YES	YES	YES
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	9	12	11	5
(Score = # Sources X 2) 8 Points Maximum		8	8	8	8
Sources of Class II or III leacheable contaminants or	YES	9	6	5	
4 Points Maximum		4	4	4	
Zone 1B contains or intercepts a Group 1 Area	YES	2	0	0	0
Land use Zone 1B	Greater Than 50% Irrigated Agricultural Land	4	4	4	4
Total Potential Contaminant Source / Land Use Score - Zone 1B		18	16	16	12
Potential Contaminant / Land Use - ZONE II					
Contaminant Sources Present	YES	2	2	2	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Land Use Zone II	Greater Than 50% Irrigated Agricultural Land	2	2	2	
Potential Contaminant Source / Land Use Score - Zone II		5	5	5	0
Potential Contaminant / Land Use - ZONE III					
Contaminant Source Present	YES	1	1	1	
Sources of Class II or III leacheable contaminants or	YES	1	1	1	
Is there irrigated agricultural lands that occupy > 50% of	YES	1	1	1	
Total Potential Contaminant Source / Land Use Score - Zone III		3	3	3	0
Cumulative Potential Contaminant / Land Use Score		28	26	26	14

4. Final Susceptibility Source Score	9	8	8	8
5. Final Well Ranking	High*	High*	High*	High*